











































The Drilling Tools.

Valid from 1/2006






The meaning of the Icons in the catalog.

The Surface Treatment-Icons	The Standard-Icons (Examples)	The Material-Icons (Examples)	Type	Drilling depth (Examples)
 Uncoated	 DIN 338	 HSS	 Type Maximiza	 12xd depth 12 x d
 FNZ Steam oxidized	 TITEX Standard	 HSS-E	 Type N (Drills)	 30xd depth 30 x d
 Black margins (steam oxidized)	The cutting direction-Icons		 Carbide tipped Drills	Coolant
 TIN	 right	 Solid Carbide K30F	 Type ALPHA4	 with internal coolant
 TiN-tip-coating	 left	 Solid Carbide K44XF	Type of Tool	
 TINAL FUTURA	The Shank-Icons (Examples)		 90° Point angle (Drills)	
 TINAL FUTURA TOP	 Straight Shank	 Solid Carbide K10	 Taper 1:50 (Reamers)	
 TFL-tip-coating	 Straight Shank with Tang	 Solid Carbide K20F	 angle 60° (counter-sinks)	
 TINAL-Micro-line	 Morse Taper Shank	The Application-Icons (Examples):		 angle 60° (centre drills)
 hard-nickel plated	 Straight Shank acc. To DIN 6535 HA	 Suited for HSC (High speed cutting)	Tolerance	
	 Straight Shank acc. To DIN 6535 HE	 Suited for hardened steels up to 45-55 HRC	 Tolerance H7 (Reamers)	

General Informations:

-  = New type in catalog
-  = New dimension in catalog
- Letters in red = New dimension
- Bold letters** = Stocked item
- Bold letters** (in connection with „Available at short notice“ for the type, see A3865TIN for example) = Delivery on short notice, modification done on a stocked item
- Standard letters = Delivery time on request
-  = also available in sets

Contents

The Range		
	Drilling Tools made of HSS/HSS-E and Subland Drills (incl Accessories)	3
	Drilling Tools made of Solid Carbide and Step Drills (incl. Accessories)	107
	Core Drills and Countersinks	207
	Centre Drills	215
	Reamers (incl. Accessories)	229

Technical Informations

V_c (m/min)

Type Selection and Recommended Cutting Data - Drills	257
--	-----

V_c (m/min)



































Type Selection and Recommended Cutting Data - Reamers, Core Drills, Countersinks and Centre Drills	349
--	-----



























Drilling Tools made of HSS/HSS-E.



Drilling Tools made of HSS/HSS-E.	4
Subland Drills made of HSS.	5
Accessories.	5
Drilling Tools for the <i>Application</i> – Steel, Stainless Steel, Aluminium and Cast Iron.	6
Drilling Tools for the <i>Technology</i> – Micro Machining.	20
General technical informations of Drills.	258
Type Selection and Recommendation Data – Drills.	264
Type Selection and Recommendation Data – Subland Drills	352

Drilling Tools made of HSS/HSS-E

Standard Type	DIN 1899		DIN 1897					TITEX-Std MEGAJET similarUFL	DIN 338								
	Micro Dills ESU	ESU Left	N	NS	UFL	UFL	UFL		UFL Left	N	N	H	W	N	UFL	N Left	H Left
Catalog No.	A3143	A3153	A1111	A1141	A1148	A1149 TIN	A1149 TFL	A2258	A6292 TIN	A1211	A1211 TIN	A1212	A1213	A1219	A1222	A1231	A1232
Surface Treatment																	
Material	HSS-E	HSS-E	HSS	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS
Diameter in mm	0,05 ... 1,45	0,05 ... 1,45	0,50 ... 32,0	0,30 ... 12,0	1,00 ... 20,0	1,00 ... 20,0	1,00 ... 20,0	1,00 ... 20,0	5,00 ... 24,0	0,20 ... 25,4	0,50 ... 16,0	0,35 ... 16,0	0,50 ... 16,0	3,00 ... 10,0	1,00 ... 16,0	0,20 ... 20,0	0,40 ... 16,0
																	
Page	78	80	22	27	28	31	30	77	100	33	39	40	42	43	44	47	49

Standard Type	DIN 1869 I		DIN 1869 II	DIN 1869 III	TITEX-Standard		TITEX-Std.	DIN 345					
	N	UFL	UFL	UFL	UFL	UFL	NS	N	N	W	NS	VA	AlphaXE
Catalog No.	A1611	A1622	A1722	A1822	A1922 S	A1922 L	A4141	A4211	A4211 TIN	A4213	A4241	A4244	A4247
Surface Treatment													
Material	HSS	HSS	HSS	HSS	HSS	HSS	HSS-E	HSS	HSS	HSS	HSS-E	HSS-E	HSS-E
Diameter in mm	2,00 ... 10,0	2,00 ... 12,7	3,00 ... 12,0	3,50 ... 12,0	6,00 ... 14,0	8,00 ... 12,0	10,0 ... 30,0	3,00 ... 100,0	5,00 ... 30,0	10,0 ... 32,0	10,0 ... 32,0	10,0 ... 32,0	10,0 ... 40,0
													
Page	72	73	75	75	76	76	82	83	88	89	90	91	92

DIN 338							DIN 339	DIN 340									
UFL Left	NS	VA	Alpha XE	UFL	UFL	VA	N	N	W	N	UFL	UFL Left	VA	Alpha XE	UFL	UFL	
A1234	A1241	A1244	A1247	A1249 TIN	A1249 TFL	A1254 TFT	A1411	A1511	A1513	A1519	A1522	A1534	A1544	A1547	A1549 TFL	A1549 TIP	
HSS	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS	HSS	HSS	HSS	HSS	HSS	HSS-E	HSS-E	HSS-E	HSS-E	
1,50 ... 12,7	1,00 ... 15,0	0,30 ... 15,0	1,00 ... 16,0	1,00 ... 16,0	1,00 ... 16,0	3,00 ... 16,0	1,00 ... 12,0	0,50 ... 25,0	1,00 ... 12,0	3,00 ... 10,0	1,00 ... 12,7	2,00 ... 10,0	1,00 ... 12,0	1,00 ... 12,0	1,00 ... 12,0	1,00 ... 12,0	
50	52	53	56	59	58	60	61	62	64	65	66	67	68	69	70	71	

DIN 341			DIN 1870 I		DIN 1870 II	TITEX-Standard				TITEX-Std.
N	UFL	Alpha XE	N	UFL	N	NC-Spotting Drills				Double Ended Body Drills
A4411	A4422	A4447	A4611	A4622	A4722	A1114	A1115	A1123	A1124	A1121
HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS
5,00 ... 50,0	10,0 ... 31,0	10,0 ... 31,0	8,00 ... 50,0	12,0 ... 30,0	8,00 ... 40,0	4,00 ... 20,0	4,00 ... 20,0	6,00 ... 20,0	6,00 ... 20,0	2,00 ... 10,0
93	95	96	97	98	99	24	24	26	26	25

Subland Drills

DIN 8374	DIN 8378	DIN 8376	DIN 8375	DIN 8379	DIN 8377
90°	90°	180°	90°	90°	180°
K6221	K6222	K6223	K7221	K7222	K7223
HSS	HSS	HSS	HSS	HSS	HSS
M 3 ... M 10	M 3 ... M 12	M 3 ... M 10	M 5 ... M 16	M 8 ... M 20	M 5 ... M 20
101	102	102	103	103	104

Accessories

DIN 2185	
Morse Taper Sleeves hardened	
Z2111	Z2112
HSS	HSS
Size A ... Size I	Size A ... Size I
105	105

Our offer for common applications:




General purpose (steel)

drilling depth	type		Dia. inch/mm		coating		shank			page
~3xd	A1111		0,5 – 32		FNZ		✓			22
	A1148		1 – 20				✓			28
	A1149TIN		1 – 20		TIN		✓			31
	A1149TFL		1 – 20		TFL		✓			30
	A2258		1 – 20			✓	✓			77
~5xd	A6292TIN		5 – 24	✓	TIN				✓	100
~8xd	A1211		0,2 – 25,4		FNZ		✓			33
	A4211		3 – 100		FNZ			✓		83
	A1211TIN		0,5 – 16		TIN		✓			39
	A4211TIN		5 – 30		TIN			✓		88
	A1222		1 – 16				✓			44
	A1231		0,2 – 20		FNZ	✓	✓			47
	A1234		1,5 – 12,7			✓	✓			50
	A1249TIN		1 – 16		TIN		✓			59
	A1249TFL		1 – 16		TFL		✓			58










This Type Selection is only a small guide to select the right tool for your precision cutting problem.

If you have a special machining task and you are looking for a suitable tool for it – please solve this problem by entering your specification online under www.walter-tools.com

Special recommendations

drilling depth	type		Dia. inch/mm		coating		shank			page
										
	A1411		1 - 12				✓			61
	A1511		0,5 - 25				✓			62
	A4411		5 - 50					✓		93
	A1519		3 - 10				✓			65
~12xd	A1522		1 - 12,7				✓			66
	A4422		10 - 31					✓		95
	A1534		2 - 10			✓	✓			67
	A1549TFL		1 - 12				✓			70
	A1549TIP		1 - 12				✓			71





















Smaller diameters

drilling depth	type		Dia. inch/mm		coating		shank			page
										
~5xd	A3143		0,05- 1,45				✓			78
~5xd	A3153		0,05- 1,45			✓	✓			80

This Type Selection is only a small guide to select the right tool for your precision cutting problem.

If you have a special machining task and you are looking for a suitable tool for it – please solve this problem by entering your specification online under www.walter-tools.com

General
purpose (steel)























drilling depth	type		Dia. inch/mm		coating		shank			page
										
~16xd	A1611		2- 10				<input checked="" type="checkbox"/>			72
										
~16xd	A4611		8- 50				<input checked="" type="checkbox"/>			97
										
~16xd	A1622		2- 12,7				<input checked="" type="checkbox"/>			73
										
~16xd	A4622		12 - 30				<input checked="" type="checkbox"/>			98
										
~22xd	A1722		3- 12				<input checked="" type="checkbox"/>			75
										
~22xd	A4722		8- 40				<input checked="" type="checkbox"/>			99
										
~30xd	A1822		3,5 - 12				<input checked="" type="checkbox"/>			75
										
~60xd	A1922S		6- 14				<input checked="" type="checkbox"/>			76
										
~85xd	A1922L		8- 12				<input checked="" type="checkbox"/>			76

This Type Selection is only a small guide to select the right tool for your precision cutting problem.

If you have a special machining task and you are looking for a suitable tool for it – please solve this problem by entering your specification online under www.walter-tools.com

Our offer for common applications:

stainless steels
(austenitic)

drilling depth	type		Dia. inch/mm		coating		shank			page
										
~3xd	A1141		0,3 – 12				✓			27
	A4141		10 – 30					✓		82
	A1148		1 – 20				✓			28
	A1149TIN		1 – 20				✓			31
	A1149TFL		1 – 20				✓			30
	A2258		1 – 20			✓	✓			77
~5xd	A6292TIN		5 – 24	✓					✓	100
~8xd	A1241		1 – 15				✓			52
	A4241		10 – 32					✓		90
	A1244		0,3 – 15				✓			53
	A4244		10 – 32					✓		91
	A1247		1 – 16				✓			56
	A4247		10 – 40					✓		92
	A1249TIN		1 – 16				✓			59
	A1249TFL		1 – 16				✓			58
	A1254TFT		3 – 16				✓			60

This Type Selection is only a small guide to select the right tool for your precision cutting problem.

If you have a special machining task and you are looking for a suitable tool for it – please solve this problem by entering your specification online under www.walter-tools.com

Special recommendations

drilling depth	type		Dia. inch/mm		coating		shank			page
	A1544		1 - 12				✓			68
	A1547		1 - 12				✓	✓		69
~12xd	A4447		10 - 31							96
	A1549TFL		1 - 12				✓			70
	A1549TIP		1 - 12				✓			71



















Smaller diameters

drilling depth	type		Dia. inch/mm		coating		shank			page
~5xd	A3143		0,05- 1,45				✓			78
~5xd	A3153		0,05- 1,45			✓	✓			80

This Type Selection is only a small guide to select the right tool for your precision cutting problem.

If you have a special machining task and you are looking for a suitable tool for it – please solve this problem by entering your specification online under www.walter-tools.com





































stainless steels
(austenitic)

drilling depth	type		Dia. inch/mm		coating		shank		page
									
									
~16xd	A1622		2- 12,7				<input checked="" type="checkbox"/>		73
									
~16xd	A4622		12 - 30				<input checked="" type="checkbox"/>		98
									
~22xd	A1722		3- 12				<input checked="" type="checkbox"/>		75
									
~22xd	A4722		8- 40				<input checked="" type="checkbox"/>		99
									
~30xd	A1822		3,5 - 12				<input checked="" type="checkbox"/>		75
									
~60xd	A1922S		6- 14				<input checked="" type="checkbox"/>		76
									
~85xd	A1922L		8- 12				<input checked="" type="checkbox"/>		76

This Type Selection is only a small guide to select the right tool for your precision cutting problem.
 If you have a special machining task and you are looking for a suitable tool for it – please solve this problem by entering your specification online under www.walter-tools.com

Our offer for common applications:

















Aluminium

drilling depth	type		Dia. inch/mm		coating		shank			page
										
~3xd	A1148		1 - 20				✓			28
	A1149TIN		1 - 20				✓			31
	A2258		1 - 20			✓	✓			77
~5xd	A6292TIN		5 - 24	✓					✓	100
~8xd	A1213		0,5 - 16				✓			42
	A4213		10 - 32					✓		89
	A1222		1 - 16				✓			44
	A1234		1,5 - 12,7			✓	✓			50
	A1249TIN		1 - 16				✓			59
	A1254TFT		3 - 16				✓			60
~12xd	A1513		1 - 12				✓			64
	A1522		1 - 12,7				✓			66
	A4422		10 - 31					✓		95
	A1534		2 - 10			✓	✓			67
	A1549TIP		1 - 12				✓			71










This Type Selection is only a small guide to select the right tool for your precision cutting problem.

If you have a special machining task and you are looking for a suitable tool for it – please solve this problem by entering your specification online under www.walter-tools.com

Special recommendations

drilling depth	type		Dia. inch/mm		coating		shank			page
										
										
~16xd	A1622		2- 12,7				✓			73
										
~16xd	A4622		12 - 30					✓		98
										
~22xd	A1722		3- 12				✓			75
										
~22xd	A4722		8- 40					✓		99
										
~30xd	A1822		3,5 - 12				✓			75
										
~60xd	A1922S		6- 14				✓			76
										
~85xd	A1922L		8- 12				✓			76

Smaller diameters

drilling depth	type		Dia. inch/mm		coating		shank			page
										
~5xd	A3143		0,05- 1,45				✓			78
~5xd	A3153		0,05- 1,45			✓	✓			80

This Type Selection is only a small guide to select the right tool for your precision cutting problem.

If you have a special machining task and you are looking for a suitable tool for it – please solve this problem by entering your specification online under www.walter-tools.com

Our offer for common applications:















Cast Iron

drilling depth	type		Dia. inch/mm		coating		shank			page
~3xd	A1111		0,5 – 32		FNZ		✓			22
	A1141		0,3 – 12		FNZ		✓			27
	A4141		10 – 30		FNZ			✓		82
	A1148		1 – 20				✓			28
	A1149TFL		1 – 20		TFL		✓			30
	A2258		1 – 20			✓	✓			77
~5xd	A6292TIN		5 – 24	✓	TIN				✓	100
~8xd	A1211		0,2 – 25,4		FNZ		✓			33
	A4211		3 – 100		FNZ			✓		83
	A1211TIN		0,5 – 16		TIN		✓			39
	A4211TIN		5 – 30		TIN			✓		88
	A1231		0,2 – 20		FNZ	✓	✓			47
	A1241		1 – 15		FNZ		✓			52
	A4241		10 – 32		FNZ			✓		90
	A1247		1 – 16				✓			56
	A4247		10 – 40					✓		92
	A1249TFL		1 – 16		TFL		✓			58










This Type Selection is only a small guide to select the right tool for your precision cutting problem.

If you have a special machining task and you are looking for a suitable tool for it – please solve this problem by entering your specification online under www.walter-tools.com

Special recommendations





















drilling depth	type		Dia. inch/mm		coating		shank			page
										
	A1411		1 - 12		FNZ		✓			61
	A1511		0,5 - 25		FNZ		✓			62
	A4411		5 - 50		FNZ			✓		93
~12xd	A1519		3 - 10		FNZ		✓			65
	A1547		1 - 12				✓			69
	A4447		10 - 31					✓		96
	A1549TFL		1 - 12		TFL		✓			70

Smaller diameters

drilling depth	type		Dia. inch/mm		coating		shank			page
										
~5xd	A3143		0,05- 1,45				✓			78
~5xd	A3153		0,05- 1,45	x		✓	✓			80

This Type Selection is only a small guide to select the right tool for your precision cutting problem.

If you have a special machining task and you are looking for a suitable tool for it – please solve this problem by entering your specification online under www.walter-tools.com

drilling depth	type		Dia. inch/mm		coating		shank			page
										
~16xd	A1611		2- 10				<input checked="" type="checkbox"/>			72
										
~16xd	A4611		8- 50					<input checked="" type="checkbox"/>		97
										
~16xd	A1622		2- 12,7				<input checked="" type="checkbox"/>			73
										
~16xd	A4622		12 - 30					<input checked="" type="checkbox"/>		98
										
~22xd	A1722		3- 12				<input checked="" type="checkbox"/>			75
										
~22xd	A4722		8- 40					<input checked="" type="checkbox"/>		99
										
~30xd	A1822		3,5 - 12				<input checked="" type="checkbox"/>			75
										
~60xd	A1922S		6- 14				<input checked="" type="checkbox"/>			76
										
~85xd	A1922L		8- 12				<input checked="" type="checkbox"/>			76

This Type Selection is only a small guide to select the right tool for your precision cutting problem.

If you have a special machining task and you are looking for a suitable tool for it – please solve this problem by entering your specification online under www.walter-tools.com

TITEX micro-drills: Sometimes it's the small things in life that perform



Drilling extremely small holes is a subject that is becoming more and more important in production. Because the increasing miniaturisation of all components has led to additional applications for micro-drills. TITEX has a long tradition and experience to match when it comes down to drilling the tiniest of holes.

But even with small drilled holes, high productivity plays a major role and is becoming increasingly important due to cost pressure.

With the ALPHA® 4 PLUS Micro, a micro-drill

with internal coolant supply, TITEX is able to supply a particularly competitive solution, making drilling depths of up to twelve times the hole diameter possible.

The complete catalogue range includes a large number of different micro-drills made of HSS and solid carbide, starting at a diameter of 0.05 mm. Which tool is the optimum and thus most productive solution depends to a large extent on the respective general production application.

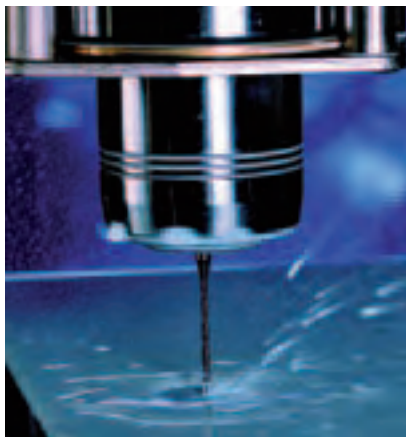
the greatest feats.

Micro machining

Solid carbide	cat.-no.		Dia. mm	1.1.1 Free cutting steel	1.1.2 Soft structural steel up to 550N/mm ²	1.1.3 Steel and cast steel from 550N/mm ² to 700 N/mm ²	1.2 Steel and cast steel from 700 to 1000 N/mm ²	1.3 Steel from 1000 to 1300 N/mm ²	1.7.2 Stainless steel austenitic, sulphured	1.7.3 Stainless steel austenitic	3.1 Cast iron, soft GG10 - GG20	3.2 Cast iron, soft GG25 - GG35	3.3.1 Nodular iron (SG-iron) GG40 - GG50	4.1 Copper, pure	4.3 Brass, brittle (free machining)	4.5 Bronze, soft	5.1 Aluminum commercial pure, Al-alloys wrought	5.2 Aluminum-Si-con-alloys, cast, below 10% Si	5.3 Aluminum-Si-con-alloys, cast 10-14% Si
	A3162		0,10-1,45	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	A1263		0,60-12,00								✓	✓	✓	✓	✓	✓	✓	✓	✓
	A1163		1,00-12,00								✓	✓	✓	✓	✓	✓	✓	✓	✓
	A1164TIN		1,50-16,00	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
	A6488TML	x	0,75-2,90	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	A6588TML	x	1,00-2,90	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

High Speed Steel

High Speed Steel	cat.-no.		Dia. mm	1.1.1 Free cutting steel	1.1.2 Soft structural steel up to 550N/mm ²	1.1.3 Steel and cast steel from 550N/mm ² to 700 N/mm ²	1.2 Steel and cast steel from 700 to 1000 N/mm ²	1.3 Steel from 1000 to 1300 N/mm ²	1.7.2 Stainless steel austenitic, sulphured	1.7.3 Stainless steel austenitic	3.1 Cast iron, soft GG10 - GG20	3.2 Cast iron, soft GG25 - GG35	3.3.1 Nodular iron (SG-iron) GG40 - GG50	4.1 Copper, pure	4.3 Brass, brittle (free machining)	4.5 Bronze, soft	5.1 Aluminum commercial pure, Al-alloys wrought	5.2 Aluminum-Si-con-alloys, cast, below 10% Si	5.3 Aluminum-Si-con-alloys, cast 10-14% Si
	A3143		0,05-1,45	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	LH A3153		0,05-1,45	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	A1111		0,50-32,00	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
	A1149TFL		1,00-20,00	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
	A1149TIN		1,00-20,00	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
	A1211TIN		0,50-16,00	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
	A1211		0,20-25,40	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓
	LH A1231		0,20-20,00	✓	✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓
	A1212		0,35-16,00												✓	✓	✓	✓	✓
	LH A1232		0,40-16,00												✓	✓	✓	✓	✓
	A1213		0,50-16,00	✓	✓	✓								✓		✓	✓	✓	✓
	A1244		0,30-15,00					✓	✓	✓					✓	✓	✓	✓	✓
	A1249TFL		1,00-16,00	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	A1249TIN		1,00-20,00	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	A1549TFL		1,00-12,00	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	A1549TIP		1,00-12,00	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓



Application examples.

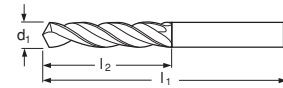
Catalog-No.	A 1211	A 1244	A 1249TIN	A 3162	A 6488TML
Drilled hole Ø mm	1,1	2,0	1,8	0,5	1,2
Depth mm	3,0	6,0	15,0	0,5	10,0
Material	C45	X5CrNiMo	9MnPb36	X8CrNiS 18-9	MS58
Strength N/mm ²	780				
Machine	Mach./Center	Mach./Center	engine lathe	Mach./Center	Mach./Center
Cutting speed					
v _C m/min	44,90	14,00	25,40	9,42	41,50
Feed/rev. f mm	0,03	0,02	0,02	0,01	0,01
Feed rate					
v _f mm/min	390	44,56	90	60	110
Coolant	Emulsion	Emulsion	Oil	Emulsion	Emulsion
Tool life					
Number of holes	2200	1600	2000	1200	7000
Tool life m	6,60	9,60	30,00	0,60	70,00

Screw Machine Drills, Short Series

A1111

Application: For materials forming long and short chips such as steel up to 1000 N/mm², cast iron, malleable iron, sintered iron, German silver, AISi-alloys (Si > 11%).

Remarks: Up to 3 mm bright finish



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1111...
0.50	20	3.0	-0.5
0.55	21	3.5	-0.55
0.60	21	3.5	-0.6
0.65	22	4.0	-0.65
0.70	23	4.5	-0.7
0.75	23	4.5	-0.75
0.80	24	5.0	-0.8
0.85	24	5.0	-0.85
0.90	25	5.5	-0.9
0.95	25	5.5	-0.95
1.00	26	6.0	-1
1.05	26	6.0	-1.05
1.10	28	7.0	-1.1
1.15	28	7.0	-1.15
1.20	30	8.0	-1.2
1.25	30	8.0	-1.25
1.30	30	8.0	-1.3
1.35	32	9.0	-1.35
1.40	32	9.0	-1.4
1.45	32	9.0	-1.45
1.50	32	9.0	-1.5
1.55	34	10.0	-1.55
1.60	34	10.0	-1.6
1.65	34	10.0	-1.65
1.70	34	10.0	-1.7
1.75	36	11.0	-1.75
1.80	36	11.0	-1.8
1.85	36	11.0	-1.85
1.90	36	11.0	-1.9
1.95	38	12.0	-1.95
2.00	38	12.0	-2
2.05	38	12.0	-2.05
2.10	38	12.0	-2.1
2.15	40	13.0	-2.15
2.20	40	13.0	-2.2
2.25	40	13.0	-2.25
2.30	40	13.0	-2.3
2.35	40	13.0	-2.35
2.40	43	14.0	-2.4
2.45	43	14.0	-2.45
2.50	43	14.0	-2.5
2.55	43	14.0	-2.55
2.60	43	14.0	-2.6
2.65	43	14.0	-2.65
2.70	46	16.0	-2.7
2.75	46	16.0	-2.75
2.80	46	16.0	-2.8
2.85	46	16.0	-2.85

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1111...
2.90	46	16.0	-2.9
2.95	46	16.0	-2.95
3.00	46	16.0	-3
3.10	49	18.0	-3.1
3.20	49	18.0	-3.2
3.25	49	18.0	-3.25
3.30	49	18.0	-3.3
3.40	52	20.0	-3.4
3.50	52	20.0	-3.5
3.60	52	20.0	-3.6
3.70	52	20.0	-3.7
3.75	52	20.0	-3.75
3.80	55	22.0	-3.8
3.90	55	22.0	-3.9
4.00	55	22.0	-4
4.10	55	22.0	-4.1
4.20	55	22.0	-4.2
4.25	55	22.0	-4.25
4.30	58	24.0	-4.3
4.40	58	24.0	-4.4
4.50	58	24.0	-4.5
4.60	58	24.0	-4.6
4.70	58	24.0	-4.7
4.75	58	24.0	-4.75
4.80	62	26.0	-4.8
4.90	62	26.0	-4.9
5.00	62	26.0	-5
5.10	62	26.0	-5.1
5.20	62	26.0	-5.2
5.25	62	26.0	-5.25
5.30	62	26.0	-5.3
5.40	66	28.0	-5.4
5.50	66	28.0	-5.5
5.60	66	28.0	-5.6
5.70	66	28.0	-5.7
5.75	66	28.0	-5.75
5.80	66	28.0	-5.8
5.90	66	28.0	-5.9
6.00	66	28.0	-6
6.10	70	31.0	-6.1
6.20	70	31.0	-6.2
6.25	70	31.0	-6.25
6.30	70	31.0	-6.3
6.40	70	31.0	-6.4
6.50	70	31.0	-6.5
6.60	70	31.0	-6.6
6.70	70	31.0	-6.7
6.75	74	34.0	-6.75

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1111...
6.80	74	34.0	-6.8
6.90	74	34.0	-6.9
7.00	74	34.0	-7
7.10	74	34.0	-7.1
7.20	74	34.0	-7.2
7.25	74	34.0	-7.25
7.30	74	34.0	-7.3
7.40	74	34.0	-7.4
7.50	74	34.0	-7.5
7.60	79	37.0	-7.6
7.70	79	37.0	-7.7
7.75	79	37.0	-7.75
7.80	79	37.0	-7.8
7.90	79	37.0	-7.9
8.00	79	37.0	-8
8.10	79	37.0	-8.1
8.20	79	37.0	-8.2
8.25	79	37.0	-8.25
8.30	79	37.0	-8.3
8.40	79	37.0	-8.4
8.50	79	37.0	-8.5
8.60	84	40.0	-8.6
8.70	84	40.0	-8.7
8.75	84	40.0	-8.75
8.80	84	40.0	-8.8
8.90	84	40.0	-8.9
9.00	84	40.0	-9
9.10	84	40.0	-9.1
9.20	84	40.0	-9.2
9.25	84	40.0	-9.25
9.30	84	40.0	-9.3
9.40	84	40.0	-9.4
9.50	84	40.0	-9.5
9.60	89	43.0	-9.6
9.70	89	43.0	-9.7
9.75	89	43.0	-9.75
9.80	89	43.0	-9.8
9.90	89	43.0	-9.9
10.00	89	43.0	-10
10.10	89	43.0	-10.1
10.20	89	43.0	-10.2
10.25	89	43.0	-10.25
10.30	89	43.0	-10.3
10.40	89	43.0	-10.4
10.50	89	43.0	-10.5
10.60	89	43.0	-10.6
10.70	95	47.0	-10.7
10.75	95	47.0	-10.75

Continued Screw Machine Drills, Short Series

A1111

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1111...
10.80	95	47.0	-10.8
10.90	95	47.0	-10.9
11.00	95	47.0	-11
11.10	95	47.0	-11.1
11.20	95	47.0	-11.2
11.25	95	47.0	-11.25
11.30	95	47.0	-11.3
11.40	95	47.0	-11.4
11.50	95	47.0	-11.5
11.60	95	47.0	-11.6
11.70	95	47.0	-11.7
11.75	95	47.0	-11.75
11.80	95	47.0	-11.8
11.90	102	51.0	-11.9
12.00	102	51.0	-12
12.10	102	51.0	-12.1
12.20	102	51.0	-12.2
12.25	102	51.0	-12.25
12.30	102	51.0	-12.3
12.40	102	51.0	-12.4
12.50	102	51.0	-12.5
12.60	102	51.0	-12.6
12.70	102	51.0	-12.7
12.75	102	51.0	-12.75
12.80	102	51.0	-12.8
12.90	102	51.0	-12.9
13.00	102	51.0	-13
13.10	102	51.0	-13.1
13.20	102	51.0	-13.2
13.25	107	54.0	-13.25

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1111...
13.30	107	54.0	-13.3
13.40	107	54.0	-13.4
13.50	107	54.0	-13.5
13.60	107	54.0	-13.6
13.70	107	54.0	-13.7
13.75	107	54.0	-13.75
13.80	107	54.0	-13.8
13.90	107	54.0	-13.9
14.00	107	54.0	-14
14.10	111	56.0	-14.1
14.20	111	56.0	-14.2
14.25	111	56.0	-14.25
14.30	111	56.0	-14.3
14.40	111	56.0	-14.4
14.50	111	56.0	-14.5
14.60	111	56.0	-14.6
14.70	111	56.0	-14.7
14.75	111	56.0	-14.75
14.80	111	56.0	-14.8
14.90	111	56.0	-14.9
15.00	111	56.0	-15
15.50	115	58.0	-15.5
16.00	115	58.0	-16
16.50	119	60.0	-16.5
17.00	119	60.0	-17
17.50	123	62.0	-17.5
18.00	123	62.0	-18
18.50	127	64.0	-18.5
19.00	127	64.0	-19
19.50	131	66.0	-19.5

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1111...
20.00	131	66.0	-20
20.50	136	68.0	-20.5
21.00	136	68.0	-21
21.50	141	70.0	-21.5
22.00	141	70.0	-22
22.50	146	72.0	-22.5
23.00	146	72.0	-23
23.50	146	72.0	-23.5
24.00	151	75.0	-24
24.50	151	75.0	-24.5
25.00	151	75.0	-25
25.50	156	78.0	-25.5
26.00	156	78.0	-26
26.50	156	78.0	-26.5
27.00	162	81.0	-27
27.50	162	81.0	-27.5
28.00	162	81.0	-28
28.50	168	84.0	-28.5
29.00	168	84.0	-29
29.50	168	84.0	-29.5
30.00	168	84.0	-30
31.00	174	87.0	-31
32.00	180	90.0	-32

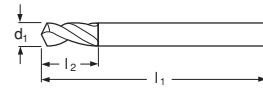


NC-Spotting Drills, Point Angle 120°

A1114

Application: For centering and countersinking especially on CNC machines. For even better positioning we would recommend TITEX PLUS Maximiza Solid Carbide Bore-Drills A1166 (page 129). Maximiza solid Carbide Bore- Drills can be used in the same way as NC-Spotting and Chamfering Drills but at much higher cutting speeds.

Due to the higher rigidity of carbide and its stiffness positioning accuracy will be even higher.



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1114...
4	55	18	-4
5	62	21	-5
6	66	22	-6

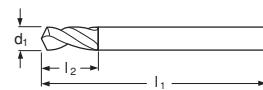
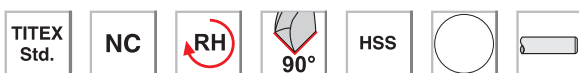
d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1114...
8	79	30	-8
10	89	34	-10
12	102	41	-12

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1114...
16	115	46	-16
20	131	53	-20

NC-Spotting Drills, Point Angle 90°

A1115

Application: For centering and countersinking especially on CNC machines.



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1115...
4	55	18	-4
5	62	21	-5
6	66	22	-6

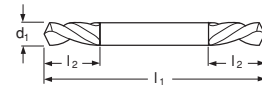
d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1115...
8	79	30	-8
10	89	34	-10
12	102	41	-12

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1115...
16	115	46	-16
20	131	53	-20

Double Ended Body Drills, Split Point 130°

A1121

Application: Rigid drill for thin sheet metal, mainly for assembly work and car repair body work. **Remarks:** Split point 130°



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1121...
2.0	38	12	-2
2.1	38	12	-2.1
2.2	40	13	-2.2
2.3	40	13	-2.3
2.4	43	14	-2.4
2.5	43	14	-2.5
2.6	43	14	-2.6
2.7	46	16	-2.7
2.8	46	16	-2.8
2.9	46	16	-2.9
3.0	46	16	-3
3.1	49	18	-3.1
3.2	49	18	-3.2
3.3	49	18	-3.3
3.4	52	20	-3.4
3.5	52	20	-3.5
3.6	52	20	-3.6
3.7	52	20	-3.7
3.8	55	22	-3.8
3.9	55	22	-3.9
4.0	55	22	-4

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1121...
4.1	55	22	-4.1
4.2	55	22	-4.2
4.3	58	24	-4.3
4.4	58	24	-4.4
4.5	58	24	-4.5
4.6	58	24	-4.6
4.7	58	24	-4.7
4.8	62	26	-4.8
4.9	62	26	-4.9
5.0	62	26	-5
5.1	62	26	-5.1
5.2	62	26	-5.2
5.3	62	26	-5.3
5.4	66	28	-5.4
5.5	66	28	-5.5
5.6	66	28	-5.6
5.7	66	28	-5.7
5.8	66	28	-5.8
5.9	66	28	-5.9
6.0	66	28	-6
6.1	70	31	-6.1

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1121...
6.2	70	31	-6.2
6.3	70	31	-6.3
6.4	70	31	-6.4
6.5	70	31	-6.5
6.6	70	31	-6.6
6.7	70	31	-6.7
6.8	74	34	-6.8
6.9	74	34	-6.9
7.0	74	34	-7
7.5	74	34	-7.5
8.0	79	37	-8
8.5	79	37	-8.5
9.0	84	40	-9
9.5	84	40	-9.5
10.0	89	43	-10

NC-Spotting Drills, Point Angle 120°

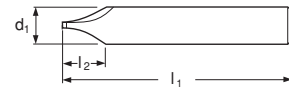
A1123

Application: For centering and countersinking especially on CNC machines.



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1123...
6	66	9	-6
8	79	12	-8
10	89	15	-10

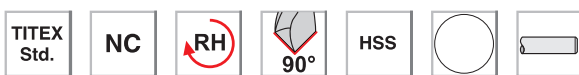
d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1123...
12	102	21	-12
16	115	31	-16
20	131	38	-20



NC-Spotting Drills, Point Angle 90°

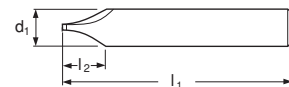
A1124

Application: For centering and countersinking especially on CNC machines.



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1124...
6	66	9	-6
8	79	12	-8
10	89	15	-10

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1124...
12	102	21	-12
16	115	31	-16
20	131	38	-20



Screw Machine Drills, Short Series

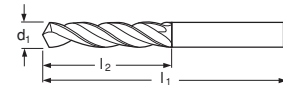
A1141

Application: Twist drill with increased red-hardness and reinforced geometry for steels of high tensile strength, stainless and heat resistant steels (300 and 400 series) Ni- and Co-based Super Alloys, hard cast materials.

Remarks: Up to 3 mm bright finish, heavy duty version



DIN
1897



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1141...
0.3	19	1.5	-0.3
0.4	19	2.5	-0.4
0.5	20	3.0	-0.5
0.6	21	3.5	-0.6
0.7	23	4.5	-0.7
0.8	24	5.0	-0.8
0.9	25	5.5	-0.9
1.0	26	6.0	-1
1.1	28	7.0	-1.1
1.2	30	8.0	-1.2
1.3	30	8.0	-1.3
1.4	32	9.0	-1.4
1.5	32	9.0	-1.5
1.6	34	10.0	-1.6
1.7	34	10.0	-1.7
1.8	36	11.0	-1.8
1.9	36	11.0	-1.9
2.0	38	12.0	-2
2.1	38	12.0	-2.1
2.2	40	13.0	-2.2
2.3	40	13.0	-2.3
2.4	43	14.0	-2.4
2.5	43	14.0	-2.5
2.6	43	14.0	-2.6
2.7	46	16.0	-2.7
2.8	46	16.0	-2.8
2.9	46	16.0	-2.9
3.0	46	16.0	-3
3.1	49	18.0	-3.1
3.2	49	18.0	-3.2
3.3	49	18.0	-3.3
3.4	52	20.0	-3.4
3.5	52	20.0	-3.5
3.6	52	20.0	-3.6
3.7	52	20.0	-3.7
3.8	55	22.0	-3.8

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1141...
3.9	55	22.0	-3.9
4.0	55	22.0	-4
4.1	55	22.0	-4.1
4.2	55	22.0	-4.2
4.3	58	24.0	-4.3
4.4	58	24.0	-4.4
4.5	58	24.0	-4.5
4.6	58	24.0	-4.6
4.7	58	24.0	-4.7
4.8	62	26.0	-4.8
4.9	62	26.0	-4.9
5.0	62	26.0	-5
5.1	62	26.0	-5.1
5.2	62	26.0	-5.2
5.3	62	26.0	-5.3
5.4	66	28.0	-5.4
5.5	66	28.0	-5.5
5.6	66	28.0	-5.6
5.7	66	28.0	-5.7
5.8	66	28.0	-5.8
5.9	66	28.0	-5.9
6.0	66	28.0	-6
6.1	70	31.0	-6.1
6.2	70	31.0	-6.2
6.3	70	31.0	-6.3
6.4	70	31.0	-6.4
6.5	70	31.0	-6.5
6.6	70	31.0	-6.6
6.7	70	31.0	-6.7
6.8	74	34.0	-6.8
6.9	74	34.0	-6.9
7.0	74	34.0	-7
7.1	74	34.0	-7.1
7.2	74	34.0	-7.2
7.3	74	34.0	-7.3
7.4	74	34.0	-7.4

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1141...
7.5	74	34.0	-7.5
7.6	79	37.0	-7.6
7.7	79	37.0	-7.7
7.8	79	37.0	-7.8
7.9	79	37.0	-7.9
8.0	79	37.0	-8
8.1	79	37.0	-8.1
8.2	79	37.0	-8.2
8.3	79	37.0	-8.3
8.4	79	37.0	-8.4
8.5	79	37.0	-8.5
8.6	84	40.0	-8.6
8.7	84	40.0	-8.7
8.8	84	40.0	-8.8
8.9	84	40.0	-8.9
9.0	84	40.0	-9
9.1	84	40.0	-9.1
9.2	84	40.0	-9.2
9.3	84	40.0	-9.3
9.4	84	40.0	-9.4
9.5	84	40.0	-9.5
9.6	89	43.0	-9.6
9.7	89	43.0	-9.7
9.8	89	43.0	-9.8
9.9	89	43.0	-9.9
10.0	89	43.0	-10
10.5	89	43.0	-10.5
11.0	95	47.0	-11
11.5	95	47.0	-11.5
12.0	102	51.0	-12

Screw Machine Drills, Short Series

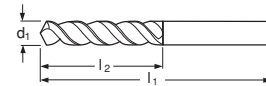
A1148

Application: Extremely good chip evacuation especially to be used on lathes, automatics and CNC equipment. For materials forming long chips i. e. steels up to 1000 N/mm², Al-, AlSi-, copper-alloys, stainless steels (300 series), tough brass.

Remarks: Up to 1,9 mm bright finish



DIN
1897



d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1148...
1.000		26	6	-1
1.016	No. 60	26	6	-NO60
1.041	No. 59	26	6	-NO59
1.067	No. 58	28	7	-NO58
1.092	No. 57	28	7	-NO57
1.100		28	7	-1.1
1.181	No. 56	30	8	-NO56
1.191	3/64 IN	30	8	-3/64IN
1.200		30	8	-1.2
1.300		30	8	-1.3
1.321	No. 55	32	9	-NO55
1.397	No. 54	32	9	-NO54
1.400		32	9	-1.4
1.500		32	9	-1.5
1.511	No. 53	34	10	-NO53
1.588	1/16 IN	34	10	-1/16IN
1.600		34	10	-1.6
1.613	No. 52	34	10	-NO52
1.700		34	10	-1.7
1.702	No. 51	36	11	-NO51
1.778	No. 50	36	11	-NO50
1.800		36	11	-1.8
1.854	No. 49	36	11	-NO49
1.900		36	11	-1.9
1.930	No. 48	38	12	-NO48
1.984	5/64 IN	38	12	-5/64IN
1.994	No. 47	38	12	-NO47
2.000		38	12	-2
2.057	No. 46	38	12	-NO46
2.083	No. 45	38	12	-NO45
2.100		38	12	-2.1
2.184	No. 44	40	13	-NO44
2.200		40	13	-2.2
2.261	No. 43	40	13	-NO43
2.300		40	13	-2.3
2.375	No. 42	43	14	-NO42
2.381	3/32 IN	43	14	-3/32IN
2.400		43	14	-2.4
2.438	No. 41	43	14	-NO41
2.489	No. 40	43	14	-NO40
2.500		43	14	-2.5
2.527	No. 39	43	14	-NO39
2.578	No. 38	43	14	-NO38
2.600		43	14	-2.6
2.642	No. 37	43	14	-NO37
2.700		46	16	-2.7
2.705	No. 36	46	16	-NO36
2.778	7/64 IN	46	16	-7/64IN

d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1148...
2.794	No. 35	46	16	-NO35
2.800		46	16	-2.8
2.819	No. 34	46	16	-NO34
2.870	No. 33	46	16	-NO33
2.900		46	16	-2.9
2.946	No. 32	46	16	-NO32
3.000		46	16	-3
3.048	No. 31	49	18	-NO31
3.100		49	18	-3.1
3.175	1/8 IN	49	18	-1/8IN
3.200		49	18	-3.2
3.264	No. 30	49	18	-NO30
3.300		49	18	-3.3
3.400		52	20	-3.4
3.454	No. 29	52	20	-NO29
3.500		52	20	-3.5
3.569	No. 28	52	20	-NO28
3.572	9/64 IN	52	20	-9/64IN
3.600		52	20	-3.6
3.658	No. 27	52	20	-NO27
3.700		52	20	-3.7
3.734	No. 26	52	20	-NO26
3.797	No. 25	55	22	-NO25
3.800		55	22	-3.8
3.861	No. 24	55	22	-NO24
3.900		55	22	-3.9
3.912	No. 23	55	22	-NO23
3.969	5/32 IN	55	22	-5/32IN
3.988	No. 22	55	22	-NO22
4.000		55	22	-4
4.039	No. 21	55	22	-NO21
4.089	No. 20	55	22	-NO20
4.100		55	22	-4.1
4.200		55	22	-4.2
4.216	No. 19	55	22	-NO19
4.300		58	24	-4.3
4.305	No. 18	58	24	-NO18
4.366	11/64 IN	58	24	-11/64IN
4.394	No. 17	58	24	-NO17
4.400		58	24	-4.4
4.496	No. 16	58	24	-NO16
4.500		58	24	-4.5
4.572	No. 15	58	24	-NO15
4.600		58	24	-4.6
4.623	No. 14	58	24	-NO14
4.699	No. 13	58	24	-NO13
4.700		58	24	-4.7
4.763	3/16 IN	62	26	-3/16IN

Continued Screw Machine Drills, Short Series

A1148



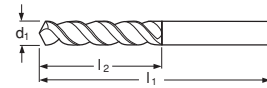
d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1148...	d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1148...
4.800		62	26	-4.8	8.400		79	37	-8.4
4.801	No. 12	62	26	-NO12	8.500		79	37	-8.5
4.851	No. 11	62	26	-NO11	8.600		84	40	-8.6
4.900		62	26	-4.9	8.700		84	40	-8.7
4.915	No. 10	62	26	-NO10	8.731	11/32 IN	84	40	-11/32IN
4.978	No. 9	62	26	-NO9	8.800		84	40	-8.8
5.000		62	26	-5	8.900		84	40	-8.9
5.055	No. 8	62	26	-NO8	9.000		84	40	-9
5.100		62	26	-5.1	9.100		84	40	-9.1
5.105	No. 7	62	26	-NO7	9.128	23/64 IN	84	40	-23/64IN
5.159	13/64 IN	62	26	-13/64IN	9.200		84	40	-9.2
5.182	No. 6	62	26	-NO6	9.300		84	40	-9.3
5.200		62	26	-5.2	9.400		84	40	-9.4
5.220	No. 5	62	26	-NO5	9.500		84	40	-9.5
5.300		62	26	-5.3	9.525	3/8 IN	89	43	-3/8IN
5.309	No. 4	66	28	-NO4	9.600		89	43	-9.6
5.400		66	28	-5.4	9.700		89	43	-9.7
5.410	No. 3	66	28	-NO3	9.800		89	43	-9.8
5.500		66	28	-5.5	9.900		89	43	-9.9
5.556	7/32 IN	66	28	-7/32IN	9.922	25/64 IN	89	43	-25/64IN
5.600		66	28	-5.6	10.000		89	43	-10
5.613	No. 2	66	28	-NO2	10.200		89	43	-10.2
5.700		66	28	-5.7	10.319	13/32 IN	89	43	-13/32IN
5.791	No. 1	66	28	-NO1	10.500		89	43	-10.5
5.800		66	28	-5.8	10.716	27/64 IN	95	47	-27/64IN
5.900		66	28	-5.9	10.800		95	47	-10.8
5.953	15/64 IN	66	28	-15/64IN	11.000		95	47	-11
6.000		66	28	-6	11.113	7/16 IN	95	47	-7/16IN
6.100		70	31	-6.1	11.200		95	47	-11.2
6.200		70	31	-6.2	11.500		95	47	-11.5
6.300		70	31	-6.3	11.509	29/64 IN	95	47	-29/64IN
6.350	1/4 IN	70	31	-1/4IN	11.800		95	47	-11.8
6.400		70	31	-6.4	11.906	15/32 IN	102	51	-15/32IN
6.500		70	31	-6.5	12.000		102	51	-12
6.600		70	31	-6.6	12.303	31/64 IN	102	51	-31/64IN
6.700		70	31	-6.7	12.500		102	51	-12.5
6.747	17/64 IN	74	34	-17/64IN	12.700	1/2 IN	102	51	-1/2IN
6.800		74	34	-6.8	12.800		102	51	-12.8
6.900		74	34	-6.9	13.000		102	51	-13
7.000		74	34	-7	13.300		107	54	-13.3
7.100		74	34	-7.1	13.500		107	54	-13.5
7.144	9/32 IN	74	34	-9/32IN	14.000		107	54	-14
7.200		74	34	-7.2	14.500		111	56	-14.5
7.300		74	34	-7.3	15.000		111	56	-15
7.400		74	34	-7.4	15.300		115	58	-15.3
7.500		74	34	-7.5	15.500		115	58	-15.5
7.541	19/64 IN	79	37	-19/64IN	16.000		115	58	-16
7.600		79	37	-7.6	16.500		119	60	-16.5
7.700		79	37	-7.7	17.000		119	60	-17
7.800		79	37	-7.8	17.500		123	62	-17.5
7.900		79	37	-7.9	18.000		123	62	-18
7.938	5/16 IN	79	37	-5/16IN	18.500		127	64	-18.5
8.000		79	37	-8	19.000		127	64	-19
8.100		79	37	-8.1	19.500		131	66	-19.5
8.200		79	37	-8.2	20.000		131	66	-20
8.300		79	37	-8.3					
8.334	21/64 IN	79	37	-21/64IN					

Screw Machine Drills, Short Series

A1149TFL

Application: High performance drill with extremely good chip evacuation, especially to be utilised on lathes, automatics and CNC equipment. Preferably for long chipping materials such as steels up to 1300 N/mm², incl. stainless steels (300 series), Al-, copper-alloys, tough brass. Coated with TINAL FUTURA for high machining

data and exceptional tool life. Also suitable for dry machining of steel materials.



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1149TFL...
1.00	26	6	-1
1.10	28	7	-1.1
1.20	30	8	-1.2
1.30	30	8	-1.3
1.40	32	9	-1.4
1.50	32	9	-1.5
1.60	34	10	-1.6
1.70	34	10	-1.7
1.80	36	11	-1.8
1.90	36	11	-1.9
2.00	38	12	-2
2.10	38	12	-2.1
2.20	40	13	-2.2
2.30	40	13	-2.3
2.40	43	14	-2.4
2.50	43	14	-2.5
2.60	43	14	-2.6
2.70	46	16	-2.7
2.80	46	16	-2.8
2.90	46	16	-2.9
3.00	46	16	-3
3.10	49	18	-3.1
3.20	49	18	-3.2
3.30	49	18	-3.3
3.40	52	20	-3.4
3.50	52	20	-3.5
3.60	52	20	-3.6
3.70	52	20	-3.7
3.80	55	22	-3.8
3.90	55	22	-3.9
4.00	55	22	-4
4.10	55	22	-4.1
4.20	55	22	-4.2
4.30	58	24	-4.3
4.40	58	24	-4.4
4.50	58	24	-4.5
4.60	58	24	-4.6
4.65	58	24	-4.65
4.70	58	24	-4.7
4.80	62	26	-4.8
4.90	62	26	-4.9
5.00	62	26	-5

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1149TFL...
5.10	62	26	-5.1
5.20	62	26	-5.2
5.30	62	26	-5.3
5.40	66	28	-5.4
5.50	66	28	-5.5
5.55	66	28	-5.55
5.60	66	28	-5.6
5.70	66	28	-5.7
5.80	66	28	-5.8
5.90	66	28	-5.9
6.00	66	28	-6
6.10	70	31	-6.1
6.20	70	31	-6.2
6.30	70	31	-6.3
6.40	70	31	-6.4
6.50	70	31	-6.5
6.60	70	31	-6.6
6.70	70	31	-6.7
6.80	74	34	-6.8
6.90	74	34	-6.9
7.00	74	34	-7
7.10	74	34	-7.1
7.20	74	34	-7.2
7.30	74	34	-7.3
7.40	74	34	-7.4
7.50	74	34	-7.5
7.60	79	37	-7.6
7.70	79	37	-7.7
7.80	79	37	-7.8
7.90	79	37	-7.9
8.00	79	37	-8
8.10	79	37	-8.1
8.20	79	37	-8.2
8.30	79	37	-8.3
8.40	79	37	-8.4
8.50	79	37	-8.5
8.60	84	40	-8.6
8.70	84	40	-8.7
8.80	84	40	-8.8
8.90	84	40	-8.9
9.00	84	40	-9
9.10	84	40	-9.1

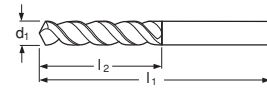
d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1149TFL...
9.20	84	40	-9.2
9.30	84	40	-9.3
9.40	84	40	-9.4
9.50	84	40	-9.5
9.60	89	43	-9.6
9.70	89	43	-9.7
9.80	89	43	-9.8
9.90	89	43	-9.9
10.00	89	43	-10
10.20	89	43	-10.2
10.50	89	43	-10.5
10.80	95	47	-10.8
11.00	95	47	-11
11.20	95	47	-11.2
11.30	95	47	-11.3
11.50	95	47	-11.5
11.80	95	47	-11.8
12.00	102	51	-12
12.50	102	51	-12.5
13.00	102	51	-13
13.10	102	51	-13.1
13.30	107	54	-13.3
13.50	107	54	-13.5
14.00	107	54	-14
14.50	111	56	-14.5
15.00	111	56	-15
15.10	115	58	-15.1
15.30	115	58	-15.3
15.50	115	58	-15.5
16.00	115	58	-16
16.50	119	60	-16.5
17.00	119	60	-17
17.50	123	62	-17.5
18.00	123	62	-18
18.50	127	64	-18.5
19.00	127	64	-19
19.50	131	66	-19.5
20.00	131	66	-20

Screw Machine Drills, Short Series

A1149TIN

Application: High performance drill with extremely good chip evacuation, especially to be utilised on lathes, automatics and CNC equipment. Preferably for long chipping materials such as steels up to 1300 N/mm², incl. stainless steels (300 series), Al-, copper-

alloys, tough brass. TiN-coated for increased cutting speeds and improved tool life.



d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1149TIN...
1.000		26	6	-1
1.100		28	7	-1.1
1.191	3/64 IN	30	8	-3/64IN
1.200		30	8	-1.2
1.300		30	8	-1.3
1.400		32	9	-1.4
1.500		32	9	-1.5
1.588	1/16 IN	34	10	-1/16IN
1.600		34	10	-1.6
1.700		34	10	-1.7
1.800		36	11	-1.8
1.900		36	11	-1.9
1.984	5/64 IN	38	12	-5/64IN
2.000		38	12	-2
2.100		38	12	-2.1
2.200		40	13	-2.2
2.300		40	13	-2.3
2.381	3/32 IN	43	14	-3/32IN
2.400		43	14	-2.4
2.500		43	14	-2.5
2.600		43	14	-2.6
2.700		46	16	-2.7
2.778	7/64 IN	46	16	-7/64IN
2.800		46	16	-2.8
2.900		46	16	-2.9
3.000		46	16	-3
3.100		49	18	-3.1
3.175	1/8 IN	49	18	-1/8IN
3.200		49	18	-3.2
3.300		49	18	-3.3
3.400		52	20	-3.4
3.500		52	20	-3.5
3.572	9/64 IN	52	20	-9/64IN
3.600		52	20	-3.6
3.700		52	20	-3.7
3.800		55	22	-3.8
3.900		55	22	-3.9
3.969	5/32 IN	55	22	-5/32IN
4.000		55	22	-4
4.100		55	22	-4.1
4.200		55	22	-4.2
4.300		58	24	-4.3
4.366	11/64 IN	58	24	-11/64IN
4.400		58	24	-4.4
4.500		58	24	-4.5
4.600		58	24	-4.6
4.650		58	24	-4.65
4.700		58	24	-4.7

d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1149TIN...
4.763	3/16 IN	62	26	-3/16IN
4.800		62	26	-4.8
4.900		62	26	-4.9
5.000		62	26	-5
5.100		62	26	-5.1
5.159	13/64 IN	62	26	-13/64IN
5.200		62	26	-5.2
5.300		62	26	-5.3
5.400		66	28	-5.4
5.500		66	28	-5.5
5.550		66	28	-5.55
5.556	7/32 IN	66	28	-7/32IN
5.600		66	28	-5.6
5.700		66	28	-5.7
5.800		66	28	-5.8
5.900		66	28	-5.9
5.953	15/64 IN	66	28	-15/64IN
6.000		66	28	-6
6.100		70	31	-6.1
6.200		70	31	-6.2
6.300		70	31	-6.3
6.350	1/4 IN	70	31	-1/4IN
6.400		70	31	-6.4
6.500		70	31	-6.5
6.600		70	31	-6.6
6.700		70	31	-6.7
6.747	17/64 IN	74	34	-17/64IN
6.800		74	34	-6.8
6.900		74	34	-6.9
7.000		74	34	-7
7.100		74	34	-7.1
7.144	9/32 IN	74	34	-9/32IN
7.200		74	34	-7.2
7.300		74	34	-7.3
7.400		74	34	-7.4
7.500		74	34	-7.5
7.541	19/64 IN	79	37	-19/64IN
7.600		79	37	-7.6
7.700		79	37	-7.7
7.800		79	37	-7.8
7.900		79	37	-7.9
7.938	5/16 IN	79	37	-5/16IN
8.000		79	37	-8
8.100		79	37	-8.1
8.200		79	37	-8.2
8.300		79	37	-8.3
8.334	21/64 IN	79	37	-21/64IN
8.400		79	37	-8.4

Continued Screw Machine Drills, Short Series

A1149TIN

d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1149TIN...
8.500		79	37	-8.5
8.600		84	40	-8.6
8.700		84	40	-8.7
8.731	11/32 IN	84	40	-11/32IN
8.800		84	40	-8.8
8.900		84	40	-8.9
9.000		84	40	-9
9.100		84	40	-9.1
9.128	23/64 IN	84	40	-23/64IN
9.200		84	40	-9.2
9.300		84	40	-9.3
9.400		84	40	-9.4
9.500		84	40	-9.5
9.525	3/8 IN	89	43	-3/8IN
9.600		89	43	-9.6
9.700		89	43	-9.7
9.800		89	43	-9.8
9.900		89	43	-9.9
9.922	25/64 IN	89	43	-25/64IN
10.000		89	43	-10
10.200		89	43	-10.2
10.319	13/32 IN	89	43	-13/32IN
10.500		89	43	-10.5
10.716	27/64 IN	95	47	-27/64IN
10.800		95	47	-10.8
11.000		95	47	-11
11.113	7/16 IN	95	47	-7/16IN
11.200		95	47	-11.2
11.300		95	47	-11.3
11.500		95	47	-11.5

d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1149TIN...
11.509	29/64 IN	95	47	-29/64IN
11.800		95	47	-11.8
11.906	15/32 IN	102	51	-15/32IN
12.000		102	51	-12
12.303	31/64 IN	102	51	-31/64IN
12.500		102	51	-12.5
12.700	1/2 IN	102	51	-1/2IN
12.800		102	51	-12.8
13.000		102	51	-13
13.100		102	51	-13.1
13.300		107	54	-13.3
13.500		107	54	-13.5
14.000		107	54	-14
14.500		111	56	-14.5
15.000		111	56	-15
15.100		115	58	-15.1
15.300		115	58	-15.3
15.500		115	58	-15.5
16.000		115	58	-16
16.500		119	60	-16.5
17.000		119	60	-17
17.500		123	62	-17.5
18.000		123	62	-18
18.500		127	64	-18.5
19.000		127	64	-19
19.500		131	66	-19.5
20.000		131	66	-20



Jobber Drills

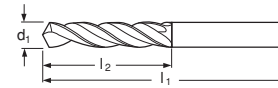


A1211

Application: For materials forming long and short chips such as steel up to 1000 N/mm², cast iron, malleable iron, sintered iron, German silver, AISi-alloys (Si > 11%).

Remarks: Up to 3 mm bright finish

DIN 338



d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1211...
0.200		19	2.5	-0.2
0.201	No. 92	19	2.5	-NO92
0.210		19	2.5	-0.21
0.211	No. 91	19	2.5	-NO91
0.220		19	2.5	-0.22
0.221	No. 90	19	2.5	-NO90
0.230		19	2.5	-0.23
0.231	No. 89	19	2.5	-NO89
0.240		19	2.5	-0.24
0.241	No. 88	19	3.0	-NO88
0.250		19	3.0	-0.25
0.254	No. 87	19	3.0	-NO87
0.260		19	3.0	-0.26
0.267	No. 86	19	3.0	-NO86
0.270		19	3.0	-0.27
0.279	No. 85	19	3.0	-NO85
0.280		19	3.0	-0.28
0.290		19	3.0	-0.29
0.292	No. 84	19	3.0	-NO84
0.300		19	3.0	-0.3
0.305	No. 83	19	4.0	-NO83
0.310		19	4.0	-0.31
0.318	No. 82	19	4.0	-NO82
0.320		19	4.0	-0.32
0.330		19	4.0	-0.33
0.330	No. 81	19	4.0	-NO81
0.340		19	4.0	-0.34
0.343	No. 80	19	4.0	-NO80
0.350		19	4.0	-0.35
0.360		19	4.0	-0.36
0.368	No. 79	19	4.0	-NO79
0.370		19	4.0	-0.37
0.380		19	4.0	-0.38
0.390		20	5.0	-0.39
0.397	1/64 IN	20	5.0	-1/64IN
0.400		20	5.0	-0.4
0.406	No. 78	20	5.0	-NO78
0.410		20	5.0	-0.41
0.420		20	5.0	-0.42
0.430		20	5.0	-0.43
0.440		20	5.0	-0.44
0.450		20	5.0	-0.45
0.457	No. 77	20	5.0	-NO77
0.460		20	5.0	-0.46
0.470		20	5.0	-0.47
0.480		20	5.0	-0.48
0.490		22	6.0	-0.49
0.500		22	6.0	-0.5

d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1211...
0.508	No. 76	22	6.0	-NO76
0.510		22	6.0	-0.51
0.520		22	6.0	-0.52
0.530		22	6.0	-0.53
0.533	No. 75	24	7.0	-NO75
0.540		24	7.0	-0.54
0.550		24	7.0	-0.55
0.560		24	7.0	-0.56
0.570		24	7.0	-0.57
0.572	No. 74	24	7.0	-NO74
0.580		24	7.0	-0.58
0.590		24	7.0	-0.59
0.600		24	7.0	-0.6
0.610	No. 73	26	8.0	-NO73
0.610		26	8.0	-0.61
0.620		26	8.0	-0.62
0.630		26	8.0	-0.63
0.635	No. 72	26	8.0	-NO72
0.640		26	8.0	-0.64
0.650		26	8.0	-0.65
0.660	No. 71	26	8.0	-NO71
0.660		26	8.0	-0.66
0.670		26	8.0	-0.67
0.680		28	9.0	-0.68
0.690		28	9.0	-0.69
0.700		28	9.0	-0.7
0.710		28	9.0	-0.71
0.711	No. 70	28	9.0	-NO70
0.720		28	9.0	-0.72
0.730		28	9.0	-0.73
0.740		28	9.0	-0.74
0.742	No. 69	28	9.0	-NO69
0.750		28	9.0	-0.75
0.760		30	10.0	-0.76
0.770		30	10.0	-0.77
0.780		30	10.0	-0.78
0.787	No. 68	30	10.0	-NO68
0.790		30	10.0	-0.79
0.794	1/32 IN	30	10.0	-1/32IN
0.800		30	10.0	-0.8
0.810		30	10.0	-0.81
0.813	No. 67	30	10.0	-NO67
0.820		30	10.0	-0.82
0.830		30	10.0	-0.83
0.838	No. 66	30	10.0	-NO66
0.840		30	10.0	-0.84
0.850		30	10.0	-0.85
0.860		32	11.0	-0.86

Continued Jobber Drills



A1211



d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1211...
0.870		32	11.0	-0.87
0.880		32	11.0	-0.88
0.889	No. 65	32	11.0	-NO65
0.890		32	11.0	-0.89
0.900		32	11.0	-0.9
0.910		32	11.0	-0.91
0.914	No. 64	32	11.0	-NO64
0.920		32	11.0	-0.92
0.930		32	11.0	-0.93
0.940	No. 63	32	11.0	-NO63
0.940		32	11.0	-0.94
0.950		32	11.0	-0.95
0.960		34	12.0	-0.96
0.965	No. 62	34	12.0	-NO62
0.970		34	12.0	-0.97
0.980		34	12.0	-0.98
0.990		34	12.0	-0.99
0.991	No. 61	34	12.0	-NO61
1.000		34	12.0	-1
1.010		34	12.0	-1.01
1.016	No. 60	34	12.0	-NO60
1.020		34	12.0	-1.02
1.030		34	12.0	-1.03
1.040		34	12.0	-1.04
1.041	No. 59	34	12.0	-NO59
1.050		34	12.0	-1.05
1.060		34	12.0	-1.06
1.067	No. 58	36	14.0	-NO58
1.070		36	14.0	-1.07
1.080		36	14.0	-1.08
1.090		36	14.0	-1.09
1.092	No. 57	36	14.0	-NO57
1.100		36	14.0	-1.1
1.110		36	14.0	-1.11
1.120		36	14.0	-1.12
1.130		36	14.0	-1.13
1.140		36	14.0	-1.14
1.150		36	14.0	-1.15
1.160		36	14.0	-1.16
1.170		36	14.0	-1.17
1.180		36	14.0	-1.18
1.181	No. 56	38	16.0	-NO56
1.190		38	16.0	-1.19
1.191	3/64 IN	38	16.0	-3/64IN
1.200		38	16.0	-1.2
1.210		38	16.0	-1.21
1.220		38	16.0	-1.22
1.230		38	16.0	-1.23
1.240		38	16.0	-1.24
1.250		38	16.0	-1.25
1.260		38	16.0	-1.26
1.270		38	16.0	-1.27
1.280		38	16.0	-1.28
1.290		38	16.0	-1.29
1.300		38	16.0	-1.3
1.310		38	16.0	-1.31
1.320		38	16.0	-1.32

d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1211...
1.321	No. 55	40	18.0	-NO55
1.330		40	18.0	-1.33
1.340		40	18.0	-1.34
1.350		40	18.0	-1.35
1.360		40	18.0	-1.36
1.370		40	18.0	-1.37
1.380		40	18.0	-1.38
1.390		40	18.0	-1.39
1.397	No. 54	40	18.0	-NO54
1.400		40	18.0	-1.4
1.410		40	18.0	-1.41
1.420		40	18.0	-1.42
1.430		40	18.0	-1.43
1.440		40	18.0	-1.44
1.450		40	18.0	-1.45
1.460		40	18.0	-1.46
1.470		40	18.0	-1.47
1.480		40	18.0	-1.48
1.490		40	18.0	-1.49
1.500		40	18.0	-1.5
1.510		43	20.0	-1.51
1.511	No. 53	43	20.0	-NO53
1.520		43	20.0	-1.52
1.530		43	20.0	-1.53
1.540		43	20.0	-1.54
1.550		43	20.0	-1.55
1.560		43	20.0	-1.56
1.570		43	20.0	-1.57
1.580		43	20.0	-1.58
1.588	1/16 IN	43	20.0	-1/16IN
1.590		43	20.0	-1.59
1.600		43	20.0	-1.6
1.610		43	20.0	-1.61
1.613	No. 52	43	20.0	-NO52
1.620		43	20.0	-1.62
1.630		43	20.0	-1.63
1.640		43	20.0	-1.64
1.650		43	20.0	-1.65
1.660		43	20.0	-1.66
1.670		43	20.0	-1.67
1.680		43	20.0	-1.68
1.690		43	20.0	-1.69
1.700		43	20.0	-1.7
1.702	No. 51	46	22.0	-NO51
1.710		46	22.0	-1.71
1.720		46	22.0	-1.72
1.730		46	22.0	-1.73
1.740		46	22.0	-1.74
1.750		46	22.0	-1.75
1.760		46	22.0	-1.76
1.770		46	22.0	-1.77
1.778	No. 50	46	22.0	-NO50
1.780		46	22.0	-1.78
1.790		46	22.0	-1.79
1.800		46	22.0	-1.8
1.810		46	22.0	-1.81
1.820		46	22.0	-1.82

Continued Jobber Drills



A1211



d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1211...
1.830		46	22.0	-1.83
1.840		46	22.0	-1.84
1.850		46	22.0	-1.85
1.854	No. 49	46	22.0	-NO49
1.860		46	22.0	-1.86
1.870		46	22.0	-1.87
1.880		46	22.0	-1.88
1.890		46	22.0	-1.89
1.900		46	22.0	-1.9
1.910		49	24.0	-1.91
1.920		49	24.0	-1.92
1.930		49	24.0	-1.93
1.930	No. 48	49	24.0	-NO48
1.940		49	24.0	-1.94
1.950		49	24.0	-1.95
1.960		49	24.0	-1.96
1.970		49	24.0	-1.97
1.980		49	24.0	-1.98
1.984	5/64 IN	49	24.0	-5/64IN
1.990		49	24.0	-1.99
1.994	No. 47	49	24.0	-NO47
2.000		49	24.0	-2
2.050		49	24.0	-2.05
2.057	No. 46	49	24.0	-NO46
2.083	No. 45	49	24.0	-NO45
2.100		49	24.0	-2.1
2.150		53	27.0	-2.15
2.184	No. 44	53	27.0	-NO44
2.200		53	27.0	-2.2
2.250		53	27.0	-2.25
2.261	No. 43	53	27.0	-NO43
2.300		53	27.0	-2.3
2.350		53	27.0	-2.35
2.375	No. 42	57	30.0	-NO42
2.381	3/32 IN	57	30.0	-3/32IN
2.400		57	30.0	-2.4
2.438	No. 41	57	30.0	-NO41
2.450		57	30.0	-2.45
2.489	No. 40	57	30.0	-NO40
2.500		57	30.0	-2.5
2.527	No. 39	57	30.0	-NO39
2.550		57	30.0	-2.55
2.578	No. 38	57	30.0	-NO38
2.600		57	30.0	-2.6
2.642	No. 37	57	30.0	-NO37
2.650		57	30.0	-2.65
2.700		61	33.0	-2.7
2.705	No. 36	61	33.0	-NO36
2.750		61	33.0	-2.75
2.778	7/64 IN	61	33.0	-7/64IN
2.794	No. 35	61	33.0	-NO35
2.800		61	33.0	-2.8
2.819	No. 34	61	33.0	-NO34
2.850		61	33.0	-2.85
2.870	No. 33	61	33.0	-NO33
2.900		61	33.0	-2.9
2.946	No. 32	61	33.0	-NO32

d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1211...
2.950		61	33.0	-2.95
3.000		61	33.0	-3
3.048	No. 31	65	36.0	-NO31
3.050		65	36.0	-3.05
3.100		65	36.0	-3.1
3.150		65	36.0	-3.15
3.175	1/8 IN	65	36.0	-1/8IN
3.200		65	36.0	-3.2
3.250		65	36.0	-3.25
3.264	No. 30	65	36.0	-NO30
3.300		65	36.0	-3.3
3.350		65	36.0	-3.35
3.400		70	39.0	-3.4
3.450		70	39.0	-3.45
3.454	No. 29	70	39.0	-NO29
3.500		70	39.0	-3.5
3.550		70	39.0	-3.55
3.569	No. 28	70	39.0	-NO28
3.572	9/64 IN	70	39.0	-9/64IN
3.600		70	39.0	-3.6
3.650		70	39.0	-3.65
3.658	No. 27	70	39.0	-NO27
3.700		70	39.0	-3.7
3.734	No. 26	70	39.0	-NO26
3.750		70	39.0	-3.75
3.797	No. 25	75	43.0	-NO25
3.800		75	43.0	-3.8
3.850		75	43.0	-3.85
3.861	No. 24	75	43.0	-NO24
3.900		75	43.0	-3.9
3.912	No. 23	75	43.0	-NO23
3.950		75	43.0	-3.95
3.969	5/32 IN	75	43.0	-5/32IN
3.988	No. 22	75	43.0	-NO22
4.000		75	43.0	-4
4.039	No. 21	75	43.0	-NO21
4.050		75	43.0	-4.05
4.089	No. 20	75	43.0	-NO20
4.100		75	43.0	-4.1
4.150		75	43.0	-4.15
4.200		75	43.0	-4.2
4.216	No. 19	75	43.0	-NO19
4.250		75	43.0	-4.25
4.300		80	47.0	-4.3
4.305	No. 18	80	47.0	-NO18
4.350		80	47.0	-4.35
4.366	11/64 IN	80	47.0	-11/64IN
4.394	No. 17	80	47.0	-NO17
4.400		80	47.0	-4.4
4.450		80	47.0	-4.45
4.496	No. 16	80	47.0	-NO16
4.500		80	47.0	-4.5
4.550		80	47.0	-4.55
4.572	No. 15	80	47.0	-NO15
4.600		80	47.0	-4.6
4.623	No. 14	80	47.0	-NO14
4.650		80	47.0	-4.65

Continued Jobber Drills



A1211



d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1211...
4.699	No. 13	80	47.0	-NO13
4.700		80	47.0	-4.7
4.750		80	47.0	-4.75
4.763	3/16 IN	86	52.0	-3/16IN
4.800		86	52.0	-4.8
4.801	No. 12	86	52.0	-NO12
4.850		86	52.0	-4.85
4.851	No. 11	86	52.0	-NO11
4.900		86	52.0	-4.9
4.915	No. 10	86	52.0	-NO10
4.950		86	52.0	-4.95
4.978	No. 9	86	52.0	-NO9
5.000		86	52.0	-5
5.050		86	52.0	-5.05
5.055	No. 8	86	52.0	-NO8
5.100		86	52.0	-5.1
5.105	No. 7	86	52.0	-NO7
5.150		86	52.0	-5.15
5.159	13/64 IN	86	52.0	-13/64IN
5.182	No. 6	86	52.0	-NO6
5.200		86	52.0	-5.2
5.220	No. 5	86	52.0	-NO5
5.250		86	52.0	-5.25
5.300		86	52.0	-5.3
5.309	No. 4	93	57.0	-NO4
5.350		93	57.0	-5.35
5.400		93	57.0	-5.4
5.410	No. 3	93	57.0	-NO3
5.450		93	57.0	-5.45
5.500		93	57.0	-5.5
5.550		93	57.0	-5.55
5.556	7/32 IN	93	57.0	-7/32IN
5.600		93	57.0	-5.6
5.613	No. 2	93	57.0	-NO2
5.650		93	57.0	-5.65
5.700		93	57.0	-5.7
5.750		93	57.0	-5.75
5.791	No. 1	93	57.0	-NO1
5.800		93	57.0	-5.8
5.850		93	57.0	-5.85
5.900		93	57.0	-5.9
5.944		93	57.0	-LET.A
5.950		93	57.0	-5.95
5.953	15/64 IN	93	57.0	-15/64IN
6.000		93	57.0	-6
6.045		101	63.0	-LET.B
6.050		101	63.0	-6.05
6.100		101	63.0	-6.1
6.147		101	63.0	-LET.C
6.150		101	63.0	-6.15
6.200		101	63.0	-6.2
6.248		101	63.0	-LET.D
6.250		101	63.0	-6.25
6.300		101	63.0	-6.3
6.350		101	63.0	-LET.E
6.350		101	63.0	-6.35
6.350	1/4 IN	101	63.0	-1/4IN

d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1211...
6.400		101	63.0	-6.4
6.450		101	63.0	-6.45
6.500		101	63.0	-6.5
6.528		101	63.0	-LET.F
6.550		101	63.0	-6.55
6.600		101	63.0	-6.6
6.629		101	63.0	-LET.G
6.650		101	63.0	-6.65
6.700		101	63.0	-6.7
6.747	17/64 IN	109	69.0	-17/64IN
6.750		109	69.0	-6.75
6.756		109	69.0	-LET.H
6.800		109	69.0	-6.8
6.850		109	69.0	-6.85
6.900		109	69.0	-6.9
6.909		109	69.0	-LET.I
6.950		109	69.0	-6.95
7.000		109	69.0	-7
7.036		109	69.0	-LET.J
7.050		109	69.0	-7.05
7.100		109	69.0	-7.1
7.137		109	69.0	-LET.K
7.144	9/32 IN	109	69.0	-9/32IN
7.150		109	69.0	-7.15
7.200		109	69.0	-7.2
7.250		109	69.0	-7.25
7.300		109	69.0	-7.3
7.350		109	69.0	-7.35
7.366		109	69.0	-LET.L
7.400		109	69.0	-7.4
7.450		109	69.0	-7.45
7.493		109	69.0	-LET.M
7.500		109	69.0	-7.5
7.541	19/64 IN	117	75.0	-19/64IN
7.550		117	75.0	-7.55
7.600		117	75.0	-7.6
7.650		117	75.0	-7.65
7.671		117	75.0	-LET.N
7.700		117	75.0	-7.7
7.750		117	75.0	-7.75
7.800		117	75.0	-7.8
7.850		117	75.0	-7.85
7.900		117	75.0	-7.9
7.938	5/16 IN	117	75.0	-5/16IN
7.950		117	75.0	-7.95
8.000		117	75.0	-8
8.026		117	75.0	-LET.O
8.050		117	75.0	-8.05
8.100		117	75.0	-8.1
8.150		117	75.0	-8.15
8.200		117	75.0	-8.2
8.204		117	75.0	-LET.P
8.250		117	75.0	-8.25
8.300		117	75.0	-8.3
8.334	21/64 IN	117	75.0	-21/64IN
8.350		117	75.0	-8.35
8.400		117	75.0	-8.4

Continued Jobber Drills



A1211



d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1211...
8.433		117	75.0	-LET.Q
8.450		117	75.0	-8.45
8.500		117	75.0	-8.5
8.550		125	81.0	-8.55
8.600		125	81.0	-8.6
8.611		125	81.0	-LET.R
8.650		125	81.0	-8.65
8.700		125	81.0	-8.7
8.731	11/32 IN	125	81.0	-11/32IN
8.750		125	81.0	-8.75
8.800		125	81.0	-8.8
8.839		125	81.0	-LET.S
8.850		125	81.0	-8.85
8.900		125	81.0	-8.9
8.950		125	81.0	-8.95
9.000		125	81.0	-9
9.050		125	81.0	-9.05
9.093		125	81.0	-LET.T
9.100		125	81.0	-9.1
9.128	23/64 IN	125	81.0	-23/64IN
9.150		125	81.0	-9.15
9.200		125	81.0	-9.2
9.250		125	81.0	-9.25
9.300		125	81.0	-9.3
9.347		125	81.0	-LET.U
9.350		125	81.0	-9.35
9.400		125	81.0	-9.4
9.450		125	81.0	-9.45
9.500		125	81.0	-9.5
9.525	3/8 IN	133	87.0	-3/8IN
9.550		133	87.0	-9.55
9.576		133	87.0	-LET.V
9.600		133	87.0	-9.6
9.650		133	87.0	-9.65
9.700		133	87.0	-9.7
9.750		133	87.0	-9.75
9.800		133	87.0	-9.8
9.804		133	87.0	-LET.W
9.850		133	87.0	-9.85
9.900		133	87.0	-9.9
9.922	25/64 IN	133	87.0	-25/64IN
9.950		133	87.0	-9.95
10.000		133	87.0	-10
10.084		133	87.0	-LET.X
10.100		133	87.0	-10.1
10.200		133	87.0	-10.2
10.250		133	87.0	-10.25
10.262		133	87.0	-LET.Y
10.300		133	87.0	-10.3
10.319	13/32 IN	133	87.0	-13/32IN
10.400		133	87.0	-10.4
10.490		133	87.0	-LET.Z
10.500		133	87.0	-10.5
10.600		133	87.0	-10.6
10.700		142	94.0	-10.7
10.716	27/64 IN	142	94.0	-27/64IN
10.750		142	94.0	-10.75

d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1211...
10.800		142	94.0	-10.8
10.900		142	94.0	-10.9
11.000		142	94.0	-11
11.100		142	94.0	-11.1
11.113	7/16 IN	142	94.0	-7/16IN
11.200		142	94.0	-11.2
11.250		142	94.0	-11.25
11.300		142	94.0	-11.3
11.400		142	94.0	-11.4
11.500		142	94.0	-11.5
11.509	29/64 IN	142	94.0	-29/64IN
11.550		142	94.0	-11.55
11.600		142	94.0	-11.6
11.700		142	94.0	-11.7
11.750		142	94.0	-11.75
11.800		142	94.0	-11.8
11.900		151	101.0	-11.9
11.906	15/32 IN	151	101.0	-15/32IN
12.000		151	101.0	-12
12.100		151	101.0	-12.1
12.200		151	101.0	-12.2
12.250		151	101.0	-12.25
12.300		151	101.0	-12.3
12.303	31/64 IN	151	101.0	-31/64IN
12.400		151	101.0	-12.4
12.500		151	101.0	-12.5
12.600		151	101.0	-12.6
12.700		151	101.0	-12.7
12.700	1/2 IN	151	101.0	-1/2IN
12.750		151	101.0	-12.75
12.800		151	101.0	-12.8
12.900		151	101.0	-12.9
13.000		151	101.0	-13
13.097	33/64 IN	151	101.0	-33/64IN
13.100		151	101.0	-13.1
13.200		151	101.0	-13.2
13.250		160	108.0	-13.25
13.300		160	108.0	-13.3
13.400		160	108.0	-13.4
13.494	17/32 IN	160	108.0	-17/32IN
13.500		160	108.0	-13.5
13.600		160	108.0	-13.6
13.700		160	108.0	-13.7
13.750		160	108.0	-13.75
13.800		160	108.0	-13.8
13.891	35/64 IN	160	108.0	-35/64IN
13.900		160	108.0	-13.9
14.000		160	108.0	-14
14.100		169	114.0	-14.1
14.200		169	114.0	-14.2
14.250		169	114.0	-14.25
14.288	9/16 IN	169	114.0	-9/16IN
14.300		169	114.0	-14.3
14.400		169	114.0	-14.4
14.500		169	114.0	-14.5
14.600		169	114.0	-14.6
14.684	37/64 IN	169	114.0	-37/64IN

Continued Jobber Drills



A1211



d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1211...	d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1211...
14.700		169	114.0	-14.7	17.463	11/16 IN	191	130.0	-11/16IN
14.750		169	114.0	-14.75	17.500		191	130.0	-17.5
14.800		169	114.0	-14.8	17.750		191	130.0	-17.75
14.900		169	114.0	-14.9	17.859	45/64 IN	191	130.0	-45/64IN
15.000		169	114.0	-15	18.000		191	130.0	-18
15.081	19/32 IN	178	120.0	-19/32IN	18.250		198	135.0	-18.25
15.100		178	120.0	-15.1	18.256	23/32 IN	198	135.0	-23/32IN
15.200		178	120.0	-15.2	18.500		198	135.0	-18.5
15.250		178	120.0	-15.25	18.653	47/64 IN	198	135.0	-47/64IN
15.300		178	120.0	-15.3	18.750		198	135.0	-18.75
15.400		178	120.0	-15.4	19.000		198	135.0	-19
15.478	39/64 IN	178	120.0	-39/64IN	19.050	3/4 IN	205	140.0	-3/4IN
15.500		178	120.0	-15.5	19.250		205	140.0	-19.25
15.600		178	120.0	-15.6	19.447	49/64 IN	205	140.0	-49/64IN
15.700		178	120.0	-15.7	19.500		205	140.0	-19.5
15.750		178	120.0	-15.75	19.750		205	140.0	-19.75
15.800		178	120.0	-15.8	19.844	25/32 IN	205	140.0	-25/32IN
15.875	5/8 IN	178	120.0	-5/8IN	20.000		205	140.0	-20
15.900		178	120.0	-15.9	20.241	51/64 IN	213	145.0	-51/64IN
16.000		178	120.0	-16	20.638	13/16 IN	213	145.0	-13/16IN
16.100		184	125.0	-16.1	21.000		213	145.0	-21
16.200		184	125.0	-16.2	21.431	27/32 IN	221	150.0	-27/32IN
16.250		184	125.0	-16.25	22.000		221	150.0	-22
16.272	41/64 IN	184	125.0	-41/64IN	22.225	7/8 IN	221	150.0	-7/8IN
16.300		184	125.0	-16.3	23.000		229	155.0	-23
16.400		184	125.0	-16.4	23.019	29/32 IN	229	155.0	-29/32IN
16.500		184	125.0	-16.5	23.813	15/16 IN	236	160.0	-15/16IN
16.600		184	125.0	-16.6	24.000		236	160.0	-24
16.669	21/32 IN	184	125.0	-21/32IN	24.606	31/32 IN	236	160.0	-31/32IN
16.700		184	125.0	-16.7	25.000		236	160.0	-25
16.750		184	125.0	-16.75	25.400	1 IN	243	165.0	-1IN
16.800		184	125.0	-16.8					
16.900		184	125.0	-16.9					
17.000		184	125.0	-17					
17.066	43/64 IN	191	130.0	-43/64IN					
17.250		191	130.0	-17.25					

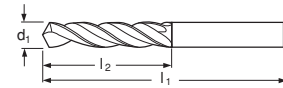
Jobber Drills



A1211TIN

Application: For materials forming long and short chips such as steel up to 1000 N/mm², cast iron, malleable iron, sintered iron, German silver, AISI-alloys (Si > 11%). TiN-coated for increased cutting speeds and improved tool life.

DIN 338						
B.S. 328	N	RH	118°	HSS	TIN	



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1211TIN...
0.5	22	6	-0.5
0.6	24	7	-0.6
0.7	28	9	-0.7
0.8	30	10	-0.8
0.9	32	11	-0.9
1.0	34	12	-1
1.1	36	14	-1.1
1.2	38	16	-1.2
1.3	38	16	-1.3
1.4	40	18	-1.4
1.5	40	18	-1.5
1.6	43	20	-1.6
1.7	43	20	-1.7
1.8	46	22	-1.8
1.9	46	22	-1.9
2.0	49	24	-2
2.1	49	24	-2.1
2.2	53	27	-2.2
2.3	53	27	-2.3
2.4	57	30	-2.4
2.5	57	30	-2.5
2.6	57	30	-2.6
2.7	61	33	-2.7
2.8	61	33	-2.8
2.9	61	33	-2.9
3.0	61	33	-3
3.1	65	36	-3.1
3.2	65	36	-3.2
3.3	65	36	-3.3
3.4	70	39	-3.4
3.5	70	39	-3.5
3.6	70	39	-3.6
3.7	70	39	-3.7
3.8	75	43	-3.8
3.9	75	43	-3.9
4.0	75	43	-4

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1211TIN...
4.1	75	43	-4.1
4.2	75	43	-4.2
4.3	80	47	-4.3
4.4	80	47	-4.4
4.5	80	47	-4.5
4.6	80	47	-4.6
4.7	80	47	-4.7
4.8	86	52	-4.8
4.9	86	52	-4.9
5.0	86	52	-5
5.1	86	52	-5.1
5.2	86	52	-5.2
5.3	86	52	-5.3
5.4	93	57	-5.4
5.5	93	57	-5.5
5.6	93	57	-5.6
5.7	93	57	-5.7
5.8	93	57	-5.8
5.9	93	57	-5.9
6.0	93	57	-6
6.1	101	63	-6.1
6.2	101	63	-6.2
6.3	101	63	-6.3
6.4	101	63	-6.4
6.5	101	63	-6.5
6.6	101	63	-6.6
6.7	101	63	-6.7
6.8	109	69	-6.8
6.9	109	69	-6.9
7.0	109	69	-7
7.1	109	69	-7.1
7.2	109	69	-7.2
7.3	109	69	-7.3
7.4	109	69	-7.4
7.5	109	69	-7.5
7.6	117	75	-7.6

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1211TIN...
7.7	117	75	-7.7
7.8	117	75	-7.8
7.9	117	75	-7.9
8.0	117	75	-8
8.1	117	75	-8.1
8.2	117	75	-8.2
8.3	117	75	-8.3
8.4	117	75	-8.4
8.5	117	75	-8.5
8.6	125	81	-8.6
8.7	125	81	-8.7
8.8	125	81	-8.8
8.9	125	81	-8.9
9.0	125	81	-9
9.1	125	81	-9.1
9.2	125	81	-9.2
9.3	125	81	-9.3
9.4	125	81	-9.4
9.5	125	81	-9.5
9.6	133	87	-9.6
9.7	133	87	-9.7
9.8	133	87	-9.8
9.9	133	87	-9.9
10.0	133	87	-10
10.2	133	87	-10.2
10.5	133	87	-10.5
11.0	142	94	-11
11.5	142	94	-11.5
12.0	151	101	-12
12.5	151	101	-12.5
13.0	151	101	-13
13.5	160	108	-13.5
14.0	160	108	-14
14.5	169	114	-14.5
15.0	169	114	-15
16.0	178	120	-16

Jobber Drills

A1212

Application: For brittle materials forming short chips such as brass, magnesium-alloys, ZAMAC, plastics (acrylic glass at shallow drilling depths), Tufnol.

DIN 338

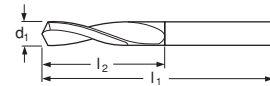
B.S. 328

H

RH

118°

HSS



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1212...
0.35	19	4	-0.35
0.40	20	5	-0.4
0.45	20	5	-0.45
0.50	22	6	-0.5
0.55	24	7	-0.55
0.60	24	7	-0.6
0.65	26	8	-0.65
0.70	28	9	-0.7
0.75	28	9	-0.75
0.80	30	10	-0.8
0.85	30	10	-0.85
0.90	32	11	-0.9
0.95	32	11	-0.95
1.00	34	12	-1
1.05	34	12	-1.05
1.10	36	14	-1.1
1.15	36	14	-1.15
1.20	38	16	-1.2
1.25	38	16	-1.25
1.30	38	16	-1.3
1.35	40	18	-1.35
1.40	40	18	-1.4
1.45	40	18	-1.45
1.50	40	18	-1.5
1.55	43	20	-1.55
1.60	43	20	-1.6
1.65	43	20	-1.65
1.70	43	20	-1.7
1.75	46	22	-1.75
1.80	46	22	-1.8
1.85	46	22	-1.85
1.90	46	22	-1.9
1.95	49	24	-1.95
2.00	49	24	-2
2.05	49	24	-2.05
2.10	49	24	-2.1
2.15	53	27	-2.15
2.20	53	27	-2.2
2.25	53	27	-2.25
2.30	53	27	-2.3
2.35	53	27	-2.35
2.40	57	30	-2.4
2.45	57	30	-2.45
2.50	57	30	-2.5
2.55	57	30	-2.55
2.60	57	30	-2.6
2.65	57	30	-2.65
2.70	61	33	-2.7

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1212...
2.75	61	33	-2.75
2.80	61	33	-2.8
2.85	61	33	-2.85
2.90	61	33	-2.9
2.95	61	33	-2.95
3.00	61	33	-3
3.05	65	36	-3.05
3.10	65	36	-3.1
3.15	65	36	-3.15
3.20	65	36	-3.2
3.25	65	36	-3.25
3.30	65	36	-3.3
3.35	65	36	-3.35
3.40	70	39	-3.4
3.45	70	39	-3.45
3.50	70	39	-3.5
3.55	70	39	-3.55
3.60	70	39	-3.6
3.65	70	39	-3.65
3.70	70	39	-3.7
3.75	70	39	-3.75
3.80	75	43	-3.8
3.85	75	43	-3.85
3.90	75	43	-3.9
3.95	75	43	-3.95
4.00	75	43	-4
4.10	75	43	-4.1
4.20	75	43	-4.2
4.25	75	43	-4.25
4.30	80	47	-4.3
4.40	80	47	-4.4
4.50	80	47	-4.5
4.60	80	47	-4.6
4.70	80	47	-4.7
4.75	80	47	-4.75
4.80	86	52	-4.8
4.90	86	52	-4.9
5.00	86	52	-5
5.10	86	52	-5.1
5.20	86	52	-5.2
5.25	86	52	-5.25
5.30	86	52	-5.3
5.40	93	57	-5.4
5.50	93	57	-5.5
5.60	93	57	-5.6
5.70	93	57	-5.7
5.75	93	57	-5.75
5.80	93	57	-5.8

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1212...
5.90	93	57	-5.9
6.00	93	57	-6
6.10	101	63	-6.1
6.20	101	63	-6.2
6.25	101	63	-6.25
6.30	101	63	-6.3
6.40	101	63	-6.4
6.50	101	63	-6.5
6.60	101	63	-6.6
6.70	101	63	-6.7
6.75	109	69	-6.75
6.80	109	69	-6.8
6.90	109	69	-6.9
7.00	109	69	-7
7.10	109	69	-7.1
7.20	109	69	-7.2
7.25	109	69	-7.25
7.30	109	69	-7.3
7.40	109	69	-7.4
7.50	109	69	-7.5
7.60	117	75	-7.6
7.70	117	75	-7.7
7.75	117	75	-7.75
7.80	117	75	-7.8
7.90	117	75	-7.9
8.00	117	75	-8
8.10	117	75	-8.1
8.20	117	75	-8.2
8.25	117	75	-8.25
8.30	117	75	-8.3
8.40	117	75	-8.4
8.50	117	75	-8.5
8.60	125	81	-8.6
8.70	125	81	-8.7
8.75	125	81	-8.75
8.80	125	81	-8.8
8.90	125	81	-8.9
9.00	125	81	-9
9.10	125	81	-9.1
9.20	125	81	-9.2
9.25	125	81	-9.25
9.30	125	81	-9.3
9.40	125	81	-9.4
9.50	125	81	-9.5
9.60	133	87	-9.6
9.70	133	87	-9.7
9.75	133	87	-9.75
9.80	133	87	-9.8

Continued Jobber Drills

A1212

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1212...
9.90	133	87	-9.9
10.00	133	87	-10
10.20	133	87	-10.2
10.50	133	87	-10.5
11.00	142	94	-11
11.50	142	94	-11.5

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1212...
12.00	151	101	-12
12.50	151	101	-12.5
13.00	151	101	-13
14.00	160	108	-14
15.00	169	114	-15
16.00	178	120	-16

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1212...



Jobber Drills

A1213

Application: For soft materials forming long chips such as Al-, copper-, zinc-, AlSi-alloys (Si < 12%), soft plastics, PVC, Polyamid, soft magnetic iron.

DIN 338

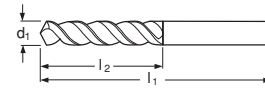
B.S. 328

W

RH

130°

HSS



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1213...
0.50	22	6	-0.5
0.55	24	7	-0.55
0.60	24	7	-0.6
0.65	26	8	-0.65
0.70	28	9	-0.7
0.75	28	9	-0.75
0.80	30	10	-0.8
0.85	30	10	-0.85
0.90	32	11	-0.9
0.95	32	11	-0.95
1.00	34	12	-1
1.05	34	12	-1.05
1.10	36	14	-1.1
1.15	36	14	-1.15
1.20	38	16	-1.2
1.25	38	16	-1.25
1.30	38	16	-1.3
1.35	40	18	-1.35
1.40	40	18	-1.4
1.45	40	18	-1.45
1.50	40	18	-1.5
1.55	43	20	-1.55
1.60	43	20	-1.6
1.65	43	20	-1.65
1.70	43	20	-1.7
1.75	46	22	-1.75
1.80	46	22	-1.8
1.85	46	22	-1.85
1.90	46	22	-1.9
1.95	49	24	-1.95
2.00	49	24	-2
2.05	49	24	-2.05
2.10	49	24	-2.1
2.15	53	27	-2.15
2.20	53	27	-2.2
2.25	53	27	-2.25
2.30	53	27	-2.3
2.35	53	27	-2.35
2.40	57	30	-2.4
2.45	57	30	-2.45
2.50	57	30	-2.5
2.55	57	30	-2.55
2.60	57	30	-2.6
2.65	57	30	-2.65
2.70	61	33	-2.7
2.75	61	33	-2.75
2.80	61	33	-2.8
2.85	61	33	-2.85

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1213...
2.90	61	33	-2.9
2.95	61	33	-2.95
3.00	61	33	-3
3.10	65	36	-3.1
3.20	65	36	-3.2
3.25	65	36	-3.25
3.30	65	36	-3.3
3.40	70	39	-3.4
3.50	70	39	-3.5
3.60	70	39	-3.6
3.65	70	39	-3.65
3.70	70	39	-3.7
3.75	70	39	-3.75
3.80	75	43	-3.8
3.90	75	43	-3.9
4.00	75	43	-4
4.10	75	43	-4.1
4.20	75	43	-4.2
4.25	75	43	-4.25
4.30	80	47	-4.3
4.40	80	47	-4.4
4.50	80	47	-4.5
4.60	80	47	-4.6
4.70	80	47	-4.7
4.75	80	47	-4.75
4.80	86	52	-4.8
4.90	86	52	-4.9
5.00	86	52	-5
5.10	86	52	-5.1
5.20	86	52	-5.2
5.25	86	52	-5.25
5.30	86	52	-5.3
5.40	93	57	-5.4
5.50	93	57	-5.5
5.60	93	57	-5.6
5.70	93	57	-5.7
5.75	93	57	-5.75
5.80	93	57	-5.8
5.90	93	57	-5.9
6.00	93	57	-6
6.10	101	63	-6.1
6.20	101	63	-6.2
6.25	101	63	-6.25
6.30	101	63	-6.3
6.40	101	63	-6.4
6.50	101	63	-6.5
6.60	101	63	-6.6
6.70	101	63	-6.7

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1213...
6.75	109	69	-6.75
6.80	109	69	-6.8
6.90	109	69	-6.9
7.00	109	69	-7
7.10	109	69	-7.1
7.20	109	69	-7.2
7.25	109	69	-7.25
7.30	109	69	-7.3
7.40	109	69	-7.4
7.50	109	69	-7.5
7.60	117	75	-7.6
7.70	117	75	-7.7
7.75	117	75	-7.75
7.80	117	75	-7.8
7.90	117	75	-7.9
8.00	117	75	-8
8.10	117	75	-8.1
8.20	117	75	-8.2
8.25	117	75	-8.25
8.30	117	75	-8.3
8.40	117	75	-8.4
8.50	117	75	-8.5
8.60	125	81	-8.6
8.70	125	81	-8.7
8.75	125	81	-8.75
8.80	125	81	-8.8
8.90	125	81	-8.9
9.00	125	81	-9
9.10	125	81	-9.1
9.20	125	81	-9.2
9.25	125	81	-9.25
9.30	125	81	-9.3
9.40	125	81	-9.4
9.50	125	81	-9.5
9.60	133	87	-9.6
9.70	133	87	-9.7
9.75	133	87	-9.75
9.80	133	87	-9.8
9.90	133	87	-9.9
10.00	133	87	-10
10.20	133	87	-10.2
10.50	133	87	-10.5
11.00	142	94	-11
11.20	142	94	-11.2
11.30	142	94	-11.3
11.50	142	94	-11.5
12.00	151	101	-12
12.50	151	101	-12.5

Continued Jobber Drills

A1213

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1213...
13.00	151	101	-13
13.30	160	108	-13.3
13.50	160	108	-13.5

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1213...
14.00	160	108	-14
14.50	169	114	-14.5
15.00	169	114	-15

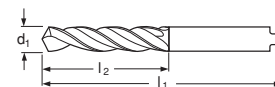
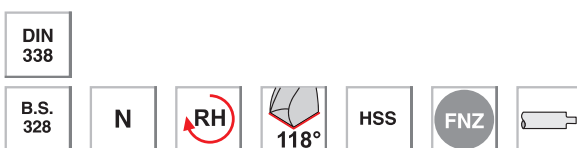
d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1213...
15.30	178	120	-15.3
15.50	178	120	-15.5
16.00	178	120	-16



Jobber Drills

A1219

Application: For materials forming long and short chips such as steel up to 1000 N/mm², cast iron, malleable iron, sintered iron, German silver, AlSi-alloys (Si > 11%).



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1219...
3.0	61	33	-3
3.2	65	36	-3.2
3.5	70	39	-3.5
3.8	75	43	-3.8
4.0	75	43	-4
4.2	75	43	-4.2
4.5	80	47	-4.5
4.8	86	52	-4.8
5.0	86	52	-5

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1219...
5.2	86	52	-5.2
5.5	93	57	-5.5
5.8	93	57	-5.8
6.0	93	57	-6
6.2	101	63	-6.2
6.5	101	63	-6.5
6.8	109	69	-6.8
7.0	109	69	-7
7.5	109	69	-7.5

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1219...
8.0	117	75	-8
8.5	117	75	-8.5
9.0	125	81	-9
9.5	125	81	-9.5
10.0	133	87	-10



Deep Hole Jobber Drills

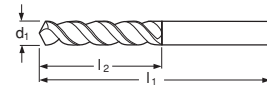


A1222

Application: Deep hole drilling design with extremely good chip evacuation. For materials forming long chips such as steel up to 1300 N/mm², Al-, AISi-, copper-alloys, stainless steels (300 series), soft bronze, tough brass.

Remarks: Up to 1,9 mm bright finish

DIN 338
B.S. 328
UFL
RH
130°
HSS



d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1222...
1.000		34	12	-1
1.016	No. 60	34	12	-NO60
1.041	No. 59	34	12	-NO59
1.067	No. 58	36	14	-NO58
1.092	No. 57	36	14	-NO57
1.100		36	14	-1.1
1.181	No. 56	38	16	-NO56
1.191	3/64 IN	38	16	-3/64IN
1.200		38	16	-1.2
1.300		38	16	-1.3
1.321	No. 55	40	18	-NO55
1.397	No. 54	40	18	-NO54
1.400		40	18	-1.4
1.500		40	18	-1.5
1.511	No. 53	43	20	-NO53
1.588	1/16 IN	43	20	-1/16IN
1.600		43	20	-1.6
1.613	No. 52	43	20	-NO52
1.700		43	20	-1.7
1.702	No. 51	46	22	-NO51
1.778	No. 50	46	22	-NO50
1.800		46	22	-1.8
1.854	No. 49	46	22	-NO49
1.900		46	22	-1.9
1.930	No. 48	49	24	-NO48
1.984	5/64 IN	49	24	-5/64IN
1.994	No. 47	49	24	-NO47
2.000		49	24	-2
2.057	No. 46	49	24	-NO46
2.083	No. 45	49	24	-NO45
2.100		49	24	-2.1
2.184	No. 44	53	27	-NO44
2.200		53	27	-2.2
2.261	No. 43	53	27	-NO43
2.300		53	27	-2.3
2.375	No. 42	57	30	-NO42
2.381	3/32 IN	57	30	-3/32IN
2.400		57	30	-2.4
2.438	No. 41	57	30	-NO41
2.489	No. 40	57	30	-NO40
2.500		57	30	-2.5
2.527	No. 39	57	30	-NO39
2.578	No. 38	57	30	-NO38
2.600		57	30	-2.6
2.642	No. 37	57	30	-NO37
2.700		61	33	-2.7
2.705	No. 36	61	33	-NO36
2.778	7/64 IN	61	33	-7/64IN

d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1222...
2.794	No. 35	61	33	-NO35
2.800		61	33	-2.8
2.819	No. 34	61	33	-NO34
2.870	No. 33	61	33	-NO33
2.900		61	33	-2.9
2.946	No. 32	61	33	-NO32
3.000		61	33	-3
3.048	No. 31	65	36	-NO31
3.100		65	36	-3.1
3.175	1/8 IN	65	36	-1/8IN
3.200		65	36	-3.2
3.264	No. 30	65	36	-NO30
3.300		65	36	-3.3
3.400		70	39	-3.4
3.454	No. 29	70	39	-NO29
3.500		70	39	-3.5
3.569	No. 28	70	39	-NO28
3.572	9/64 IN	70	39	-9/64IN
3.600		70	39	-3.6
3.658	No. 27	70	39	-NO27
3.700		70	39	-3.7
3.734	No. 26	70	39	-NO26
3.797	No. 25	75	43	-NO25
3.800		75	43	-3.8
3.861	No. 24	75	43	-NO24
3.900		75	43	-3.9
3.912	No. 23	75	43	-NO23
3.969	5/32 IN	75	43	-5/32IN
3.988	No. 22	75	43	-NO22
4.000		75	43	-4
4.039	No. 21	75	43	-NO21
4.089	No. 20	75	43	-NO20
4.100		75	43	-4.1
4.200		75	43	-4.2
4.216	No. 19	75	43	-NO19
4.300		80	47	-4.3
4.305	No. 18	80	47	-NO18
4.366	11/64 IN	80	47	-11/64IN
4.394	No. 17	80	47	-NO17
4.400		80	47	-4.4
4.496	No. 16	80	47	-NO16
4.500		80	47	-4.5
4.572	No. 15	80	47	-NO15
4.600		80	47	-4.6
4.623	No. 14	80	47	-NO14
4.699	No. 13	80	47	-NO13
4.700		80	47	-4.7
4.763	3/16 IN	86	52	-3/16IN

Continued Deep Hole Jobber Drills



A1222



d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1222...	d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1222...
4.800		86	52	-4.8	7.493		109	69	-LET.M
4.801	No. 12	86	52	-NO12	7.500		109	69	-7.5
4.851	No. 11	86	52	-NO11	7.541	19/64 IN	117	75	-19/64IN
4.900		86	52	-4.9	7.600		117	75	-7.6
4.915	No. 10	86	52	-NO10	7.671		117	75	-LET.N
4.978	No. 9	86	52	-NO9	7.700		117	75	-7.7
5.000		86	52	-5	7.800		117	75	-7.8
5.055	No. 8	86	52	-NO8	7.900		117	75	-7.9
5.100		86	52	-5.1	7.938	5/16 IN	117	75	-5/16IN
5.105	No. 7	86	52	-NO7	8.000		117	75	-8
5.159	13/64 IN	86	52	-13/64IN	8.026		117	75	-LET.O
5.182	No. 6	86	52	-NO6	8.100		117	75	-8.1
5.200		86	52	-5.2	8.200		117	75	-8.2
5.220	No. 5	86	52	-NO5	8.204		117	75	-LET.P
5.300		86	52	-5.3	8.300		117	75	-8.3
5.309	No. 4	93	57	-NO4	8.334	21/64 IN	117	75	-21/64IN
5.400		93	57	-5.4	8.400		117	75	-8.4
5.410	No. 3	93	57	-NO3	8.433		117	75	-LET.Q
5.500		93	57	-5.5	8.500		117	75	-8.5
5.556	7/32 IN	93	57	-7/32IN	8.600		125	81	-8.6
5.600		93	57	-5.6	8.611		125	81	-LET.R
5.613	No. 2	93	57	-NO2	8.700		125	81	-8.7
5.700		93	57	-5.7	8.731	11/32 IN	125	81	-11/32IN
5.791	No. 1	93	57	-NO1	8.800		125	81	-8.8
5.800		93	57	-5.8	8.839		125	81	-LET.S
5.900		93	57	-5.9	8.900		125	81	-8.9
5.944		93	57	-LET.A	9.000		125	81	-9
5.953	15/64 IN	93	57	-15/64IN	9.093		125	81	-LET.T
6.000		93	57	-6	9.100		125	81	-9.1
6.045		101	63	-LET.B	9.128	23/64 IN	125	81	-23/64IN
6.100		101	63	-6.1	9.200		125	81	-9.2
6.147		101	63	-LET.C	9.300		125	81	-9.3
6.200		101	63	-6.2	9.347		125	81	-LET.U
6.248		101	63	-LET.D	9.400		125	81	-9.4
6.300		101	63	-6.3	9.500		125	81	-9.5
6.350		101	63	-LET.E	9.525	3/8 IN	133	87	-3/8IN
6.350	1/4 IN	101	63	-1/4IN	9.576		133	87	-LET.V
6.400		101	63	-6.4	9.600		133	87	-9.6
6.500		101	63	-6.5	9.700		133	87	-9.7
6.528		101	63	-LET.F	9.800		133	87	-9.8
6.600		101	63	-6.6	9.804		133	87	-LET.W
6.629		101	63	-LET.G	9.900		133	87	-9.9
6.700		101	63	-6.7	9.922	25/64 IN	133	87	-25/64IN
6.747	17/64 IN	109	69	-17/64IN	10.000		133	87	-10
6.756		109	69	-LET.H	10.084		133	87	-LET.X
6.800		109	69	-6.8	10.200		133	87	-10.2
6.900		109	69	-6.9	10.262		133	87	-LET.Y
6.909		109	69	-LET.I	10.319	13/32 IN	133	87	-13/32IN
7.000		109	69	-7	10.490		133	87	-LET.Z
7.036		109	69	-LET.J	10.500		133	87	-10.5
7.100		109	69	-7.1	10.716	27/64 IN	142	94	-27/64IN
7.137		109	69	-LET.K	10.800		142	94	-10.8
7.144	9/32 IN	109	69	-9/32IN	11.000		142	94	-11
7.200		109	69	-7.2	11.113	7/16 IN	142	94	-7/16IN
7.300		109	69	-7.3	11.200		142	94	-11.2
7.366		109	69	-LET.L	11.500		142	94	-11.5
7.400		109	69	-7.4	11.509	29/64 IN	142	94	-29/64IN

Continued Deep Hole Jobber Drills



A1222

d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1222...
11.800		142	94	-11.8
11.906	15/32 IN	151	101	-15/32IN
12.000		151	101	-12
12.303	31/64 IN	151	101	-31/64IN
12.500		151	101	-12.5
12.700	1/2 IN	151	101	-1/2IN
13.000		151	101	-13
13.100		151	101	-13.1
13.300		160	108	-13.3

d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1222...
13.500		160	108	-13.5
14.000		160	108	-14
14.500		169	114	-14.5
15.000		169	114	-15
15.100		178	120	-15.1
15.300		178	120	-15.3
15.500		178	120	-15.5
16.000		178	120	-16



Jobber Drills, Left Hand Cut

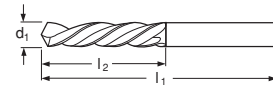
A1231

Application: For materials forming long and short chips such as steel up to 1000 N/mm², cast iron, malleable iron, sintered iron, German silver, AISi-alloys (Si > 11%).

Remarks: Up to 3 mm bright finish



DIN 338



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1231...
0.20	19	2.5	-0.2
0.25	19	3.0	-0.25
0.30	19	3.0	-0.3
0.35	19	4.0	-0.35
0.40	20	5.0	-0.4
0.45	20	5.0	-0.45
0.50	22	6.0	-0.5
0.55	24	7.0	-0.55
0.60	24	7.0	-0.6
0.65	26	8.0	-0.65
0.70	28	9.0	-0.7
0.75	28	9.0	-0.75
0.80	30	10.0	-0.8
0.85	30	10.0	-0.85
0.90	32	11.0	-0.9
0.95	32	11.0	-0.95
1.00	34	12.0	-1
1.05	34	12.0	-1.05
1.10	36	14.0	-1.1
1.15	36	14.0	-1.15
1.20	38	16.0	-1.2
1.25	38	16.0	-1.25
1.30	38	16.0	-1.3
1.35	40	18.0	-1.35
1.40	40	18.0	-1.4
1.45	40	18.0	-1.45
1.50	40	18.0	-1.5
1.55	43	20.0	-1.55
1.60	43	20.0	-1.6
1.65	43	20.0	-1.65
1.70	43	20.0	-1.7
1.75	46	22.0	-1.75
1.80	46	22.0	-1.8
1.85	46	22.0	-1.85
1.90	46	22.0	-1.9
1.95	49	24.0	-1.95
2.00	49	24.0	-2
2.05	49	24.0	-2.05
2.10	49	24.0	-2.1
2.15	53	27.0	-2.15
2.20	53	27.0	-2.2
2.25	53	27.0	-2.25
2.30	53	27.0	-2.3
2.35	53	27.0	-2.35
2.40	57	30.0	-2.4
2.45	57	30.0	-2.45
2.50	57	30.0	-2.5
2.55	57	30.0	-2.55

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1231...
2.60	57	30.0	-2.6
2.65	57	30.0	-2.65
2.70	61	33.0	-2.7
2.75	61	33.0	-2.75
2.80	61	33.0	-2.8
2.85	61	33.0	-2.85
2.90	61	33.0	-2.9
2.95	61	33.0	-2.95
3.00	61	33.0	-3
3.05	65	36.0	-3.05
3.10	65	36.0	-3.1
3.15	65	36.0	-3.15
3.20	65	36.0	-3.2
3.25	65	36.0	-3.25
3.30	65	36.0	-3.3
3.35	65	36.0	-3.35
3.40	70	39.0	-3.4
3.45	70	39.0	-3.45
3.50	70	39.0	-3.5
3.55	70	39.0	-3.55
3.60	70	39.0	-3.6
3.65	70	39.0	-3.65
3.70	70	39.0	-3.7
3.75	70	39.0	-3.75
3.80	75	43.0	-3.8
3.85	75	43.0	-3.85
3.90	75	43.0	-3.9
3.95	75	43.0	-3.95
4.00	75	43.0	-4
4.05	75	43.0	-4.05
4.10	75	43.0	-4.1
4.15	75	43.0	-4.15
4.20	75	43.0	-4.2
4.25	75	43.0	-4.25
4.30	80	47.0	-4.3
4.35	80	47.0	-4.35
4.40	80	47.0	-4.4
4.45	80	47.0	-4.45
4.50	80	47.0	-4.5
4.55	80	47.0	-4.55
4.60	80	47.0	-4.6
4.65	80	47.0	-4.65
4.70	80	47.0	-4.7
4.75	80	47.0	-4.75
4.80	86	52.0	-4.8
4.85	86	52.0	-4.85
4.90	86	52.0	-4.9
4.95	86	52.0	-4.95

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1231...
5.00	86	52.0	-5
5.10	86	52.0	-5.1
5.20	86	52.0	-5.2
5.25	86	52.0	-5.25
5.30	86	52.0	-5.3
5.40	93	57.0	-5.4
5.50	93	57.0	-5.5
5.60	93	57.0	-5.6
5.70	93	57.0	-5.7
5.75	93	57.0	-5.75
5.80	93	57.0	-5.8
5.90	93	57.0	-5.9
6.00	93	57.0	-6
6.10	101	63.0	-6.1
6.20	101	63.0	-6.2
6.25	101	63.0	-6.25
6.30	101	63.0	-6.3
6.40	101	63.0	-6.4
6.50	101	63.0	-6.5
6.60	101	63.0	-6.6
6.70	101	63.0	-6.7
6.75	109	69.0	-6.75
6.80	109	69.0	-6.8
6.90	109	69.0	-6.9
7.00	109	69.0	-7
7.10	109	69.0	-7.1
7.20	109	69.0	-7.2
7.25	109	69.0	-7.25
7.30	109	69.0	-7.3
7.40	109	69.0	-7.4
7.50	109	69.0	-7.5
7.60	117	75.0	-7.6
7.70	117	75.0	-7.7
7.75	117	75.0	-7.75
7.80	117	75.0	-7.8
7.90	117	75.0	-7.9
8.00	117	75.0	-8
8.10	117	75.0	-8.1
8.20	117	75.0	-8.2
8.25	117	75.0	-8.25
8.30	117	75.0	-8.3
8.40	117	75.0	-8.4
8.50	117	75.0	-8.5
8.60	125	81.0	-8.6
8.70	125	81.0	-8.7
8.75	125	81.0	-8.75
8.80	125	81.0	-8.8
8.90	125	81.0	-8.9

Continued Jobber Drills, Left Hand Cut

A1231



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1231...
9.00	125	81.0	-9
9.10	125	81.0	-9.1
9.20	125	81.0	-9.2
9.25	125	81.0	-9.25
9.30	125	81.0	-9.3
9.40	125	81.0	-9.4
9.50	125	81.0	-9.5
9.60	133	87.0	-9.6
9.70	133	87.0	-9.7
9.75	133	87.0	-9.75
9.80	133	87.0	-9.8
9.90	133	87.0	-9.9
10.00	133	87.0	-10
10.10	133	87.0	-10.1
10.20	133	87.0	-10.2
10.25	133	87.0	-10.25
10.30	133	87.0	-10.3
10.40	133	87.0	-10.4
10.50	133	87.0	-10.5
10.60	133	87.0	-10.6
10.70	142	94.0	-10.7
10.75	142	94.0	-10.75
10.80	142	94.0	-10.8
10.90	142	94.0	-10.9
11.00	142	94.0	-11
11.10	142	94.0	-11.1
11.20	142	94.0	-11.2
11.25	142	94.0	-11.25
11.30	142	94.0	-11.3
11.40	142	94.0	-11.4

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1231...
11.50	142	94.0	-11.5
11.60	142	94.0	-11.6
11.70	142	94.0	-11.7
11.75	142	94.0	-11.75
11.80	142	94.0	-11.8
11.90	151	101.0	-11.9
12.00	151	101.0	-12
12.10	151	101.0	-12.1
12.20	151	101.0	-12.2
12.25	151	101.0	-12.25
12.30	151	101.0	-12.3
12.40	151	101.0	-12.4
12.50	151	101.0	-12.5
12.60	151	101.0	-12.6
12.70	151	101.0	-12.7
12.75	151	101.0	-12.75
12.80	151	101.0	-12.8
12.90	151	101.0	-12.9
13.00	151	101.0	-13
13.10	151	101.0	-13.1
13.20	151	101.0	-13.2
13.25	160	108.0	-13.25
13.30	160	108.0	-13.3
13.40	160	108.0	-13.4
13.50	160	108.0	-13.5
13.60	160	108.0	-13.6
13.70	160	108.0	-13.7
13.75	160	108.0	-13.75
13.80	160	108.0	-13.8
13.90	160	108.0	-13.9

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1231...
14.00	160	108.0	-14
14.10	169	114.0	-14.1
14.20	169	114.0	-14.2
14.25	169	114.0	-14.25
14.30	169	114.0	-14.3
14.40	169	114.0	-14.4
14.50	169	114.0	-14.5
14.60	169	114.0	-14.6
14.70	169	114.0	-14.7
14.75	169	114.0	-14.75
14.80	169	114.0	-14.8
14.90	169	114.0	-14.9
15.00	169	114.0	-15
15.50	178	120.0	-15.5
16.00	178	120.0	-16
16.50	184	125.0	-16.5
17.00	184	125.0	-17
17.50	191	130.0	-17.5
18.00	191	130.0	-18
18.50	198	135.0	-18.5
19.00	198	135.0	-19
19.50	205	140.0	-19.5
20.00	205	140.0	-20

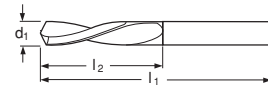
Jobber Drills, Left Hand Cut

A1232

Application: For brittle materials forming short chips such as brass, magnesium-alloys, ZAMAC, plastics (acrylic glass at shallow drilling depths), Tufnol.



DIN 338



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1232...
0.40	20	5	-0.4
0.50	22	6	-0.5
0.60	24	7	-0.6
0.70	28	9	-0.7
0.80	30	10	-0.8
0.90	32	11	-0.9
1.00	34	12	-1
1.05	34	12	-1.05
1.10	36	14	-1.1
1.15	36	14	-1.15
1.20	38	16	-1.2
1.25	38	16	-1.25
1.30	38	16	-1.3
1.35	40	18	-1.35
1.40	40	18	-1.4
1.45	40	18	-1.45
1.50	40	18	-1.5
1.55	43	20	-1.55
1.60	43	20	-1.6
1.65	43	20	-1.65
1.70	43	20	-1.7
1.75	46	22	-1.75
1.80	46	22	-1.8
1.85	46	22	-1.85
1.90	46	22	-1.9
1.95	49	24	-1.95
2.00	49	24	-2
2.05	49	24	-2.05
2.10	49	24	-2.1
2.15	53	27	-2.15
2.20	53	27	-2.2
2.25	53	27	-2.25
2.30	53	27	-2.3
2.35	53	27	-2.35
2.40	57	30	-2.4
2.45	57	30	-2.45
2.50	57	30	-2.5
2.55	57	30	-2.55
2.60	57	30	-2.6
2.65	57	30	-2.65
2.70	61	33	-2.7
2.75	61	33	-2.75

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1232...
2.80	61	33	-2.8
2.85	61	33	-2.85
2.90	61	33	-2.9
2.95	61	33	-2.95
3.00	61	33	-3
3.05	65	36	-3.05
3.10	65	36	-3.1
3.15	65	36	-3.15
3.20	65	36	-3.2
3.25	65	36	-3.25
3.30	65	36	-3.3
3.35	65	36	-3.35
3.40	70	39	-3.4
3.45	70	39	-3.45
3.50	70	39	-3.5
3.55	70	39	-3.55
3.60	70	39	-3.6
3.65	70	39	-3.65
3.70	70	39	-3.7
3.75	70	39	-3.75
3.80	75	43	-3.8
3.85	75	43	-3.85
3.90	75	43	-3.9
3.95	75	43	-3.95
4.00	75	43	-4
4.10	75	43	-4.1
4.20	75	43	-4.2
4.25	75	43	-4.25
4.30	80	47	-4.3
4.40	80	47	-4.4
4.50	80	47	-4.5
4.60	80	47	-4.6
4.70	80	47	-4.7
4.75	80	47	-4.75
4.80	86	52	-4.8
4.90	86	52	-4.9
5.00	86	52	-5
5.10	86	52	-5.1
5.20	86	52	-5.2
5.25	86	52	-5.25
5.30	86	52	-5.3
5.40	93	57	-5.4

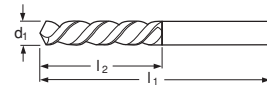
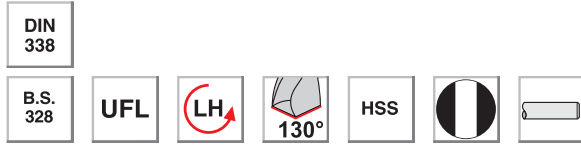
d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1232...
5.50	93	57	-5.5
5.60	93	57	-5.6
5.70	93	57	-5.7
5.75	93	57	-5.75
5.80	93	57	-5.8
5.90	93	57	-5.9
6.00	93	57	-6
6.10	101	63	-6.1
6.20	101	63	-6.2
6.25	101	63	-6.25
6.30	101	63	-6.3
6.40	101	63	-6.4
6.50	101	63	-6.5
6.60	101	63	-6.6
6.70	101	63	-6.7
6.75	109	69	-6.75
6.80	109	69	-6.8
6.90	109	69	-6.9
7.00	109	69	-7
7.10	109	69	-7.1
7.20	109	69	-7.2
7.30	109	69	-7.3
7.40	109	69	-7.4
7.50	109	69	-7.5
8.00	117	75	-8
8.50	117	75	-8.5
9.00	125	81	-9
9.50	125	81	-9.5
10.00	133	87	-10
11.00	142	94	-11
12.00	151	101	-12
13.00	151	101	-13
14.00	160	108	-14
15.00	169	114	-15
16.00	178	120	-16

Deep Hole Jobber Drills, Left Hand Cut

A1234

Application: Deep hole drilling design with extremely good chip evacuation. For materials forming long chips such as steel up to 1300 N/mm², Al-, AISI-, copper-alloys, stainless steels (300 series), soft bronze, tough brass.

Remarks: Up to 1,9 mm bright finish



d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1234...
1.500		40	18	-1.5
1.588	1/16 IN	43	20	-1/16IN
1.600		43	20	-1.6
1.613	No. 52	43	20	-NO52
1.700		43	20	-1.7
1.702	No. 51	46	22	-NO51
1.778	No. 50	46	22	-NO50
1.800		46	22	-1.8
1.854	No. 49	46	22	-NO49
1.900		46	22	-1.9
1.930	No. 48	49	24	-NO48
1.984	5/64 IN	49	24	-5/64IN
1.994	No. 47	49	24	-NO47
2.000		49	24	-2
2.057	No. 46	49	24	-NO46
2.083	No. 45	49	24	-NO45
2.100		49	24	-2.1
2.184	No. 44	53	27	-NO44
2.200		53	27	-2.2
2.261	No. 43	53	27	-NO43
2.300		53	27	-2.3
2.375	No. 42	57	30	-NO42
2.381	3/32 IN	57	30	-3/32IN
2.400		57	30	-2.4
2.438	No. 41	57	30	-NO41
2.489	No. 40	57	30	-NO40
2.500		57	30	-2.5
2.527	No. 39	57	30	-NO39
2.578	No. 38	57	30	-NO38
2.600		57	30	-2.6
2.642	No. 37	57	30	-NO37
2.700		61	33	-2.7
2.705	No. 36	61	33	-NO36
2.778	7/64 IN	61	33	-7/64IN
2.794	No. 35	61	33	-NO35
2.800		61	33	-2.8
2.819	No. 34	61	33	-NO34
2.870	No. 33	61	33	-NO33
2.900		61	33	-2.9
2.946	No. 32	61	33	-NO32
3.000		61	33	-3
3.048	No. 31	65	36	-NO31
3.100		65	36	-3.1
3.175	1/8 IN	65	36	-1/8IN
3.200		65	36	-3.2
3.264	No. 30	65	36	-NO30
3.300		65	36	-3.3
3.400		70	39	-3.4

d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1234...
3.454	No. 29	70	39	-NO29
3.500		70	39	-3.5
3.569	No. 28	70	39	-NO28
3.572	9/64 IN	70	39	-9/64IN
3.600		70	39	-3.6
3.658	No. 27	70	39	-NO27
3.700		70	39	-3.7
3.734	No. 26	70	39	-NO26
3.797	No. 25	75	43	-NO25
3.800		75	43	-3.8
3.861	No. 24	75	43	-NO24
3.900		75	43	-3.9
3.912	No. 23	75	43	-NO23
3.969	5/32 IN	75	43	-5/32IN
3.988	No. 22	75	43	-NO22
4.000		75	43	-4
4.039	No. 21	75	43	-NO21
4.089	No. 20	75	43	-NO20
4.100		75	43	-4.1
4.200		75	43	-4.2
4.216	No. 19	75	43	-NO19
4.300		80	47	-4.3
4.305	No. 18	80	47	-NO18
4.366	11/64 IN	80	47	-11/64IN
4.394	No. 17	80	47	-NO17
4.400		80	47	-4.4
4.496	No. 16	80	47	-NO16
4.500		80	47	-4.5
4.572	No. 15	80	47	-NO15
4.600		80	47	-4.6
4.623	No. 14	80	47	-NO14
4.699	No. 13	80	47	-NO13
4.700		80	47	-4.7
4.763	3/16 IN	86	52	-3/16IN
4.800		86	52	-4.8
4.801	No. 12	86	52	-NO12
4.851	No. 11	86	52	-NO11
4.900		86	52	-4.9
4.915	No. 10	86	52	-NO10
4.978	No. 9	86	52	-NO9
5.000		86	52	-5
5.055	No. 8	86	52	-NO8
5.100		86	52	-5.1
5.105	No. 7	86	52	-NO7
5.159	13/64 IN	86	52	-13/64IN
5.182	No. 6	86	52	-NO6
5.200		86	52	-5.2
5.220	No. 5	86	52	-NO5

Continued Deep Hole Jobber Drills, Left Hand Cut

A1234



d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1234...	d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1234...
5.300		86	52	-5.3	8.334	21/64 IN	117	75	-21/64IN
5.309	No. 4	93	57	-NO4	8.400		117	75	-8.4
5.400		93	57	-5.4	8.500		117	75	-8.5
5.410	No. 3	93	57	-NO3	8.600		125	81	-8.6
5.500		93	57	-5.5	8.700		125	81	-8.7
5.556	7/32 IN	93	57	-7/32IN	8.731	11/32 IN	125	81	-11/32IN
5.600		93	57	-5.6	8.800		125	81	-8.8
5.613	No. 2	93	57	-NO2	8.900		125	81	-8.9
5.700		93	57	-5.7	9.000		125	81	-9
5.791	No. 1	93	57	-NO1	9.100		125	81	-9.1
5.800		93	57	-5.8	9.128	23/64 IN	125	81	-23/64IN
5.900		93	57	-5.9	9.200		125	81	-9.2
5.953	15/64 IN	93	57	-15/64IN	9.300		125	81	-9.3
6.000		93	57	-6	9.400		125	81	-9.4
6.100		101	63	-6.1	9.500		125	81	-9.5
6.200		101	63	-6.2	9.525	3/8 IN	133	87	-3/8IN
6.300		101	63	-6.3	9.600		133	87	-9.6
6.350	1/4 IN	101	63	-1/4IN	9.700		133	87	-9.7
6.400		101	63	-6.4	9.800		133	87	-9.8
6.500		101	63	-6.5	9.900		133	87	-9.9
6.600		101	63	-6.6	9.922	25/64 IN	133	87	-25/64IN
6.700		101	63	-6.7	10.000		133	87	-10
6.747	17/64 IN	109	69	-17/64IN	10.200		133	87	-10.2
6.800		109	69	-6.8	10.319	13/32 IN	133	87	-13/32IN
6.900		109	69	-6.9	10.500		133	87	-10.5
7.000		109	69	-7	10.716	27/64 IN	142	94	-27/64IN
7.100		109	69	-7.1	10.800		142	94	-10.8
7.144	9/32 IN	109	69	-9/32IN	11.000		142	94	-11
7.200		109	69	-7.2	11.113	7/16 IN	142	94	-7/16IN
7.300		109	69	-7.3	11.200		142	94	-11.2
7.400		109	69	-7.4	11.500		142	94	-11.5
7.500		109	69	-7.5	11.509	29/64 IN	142	94	-29/64IN
7.541	19/64 IN	117	75	-19/64IN	11.800		142	94	-11.8
7.600		117	75	-7.6	11.906	15/32 IN	151	101	-15/32IN
7.700		117	75	-7.7	12.000		151	101	-12
7.800		117	75	-7.8	12.303	31/64 IN	151	101	-31/64IN
7.900		117	75	-7.9	12.700	1/2 IN	151	101	-1/2IN
7.938	5/16 IN	117	75	-5/16IN					
8.000		117	75	-8					
8.100		117	75	-8.1					
8.200		117	75	-8.2					
8.300		117	75	-8.3					

Jobber Drills

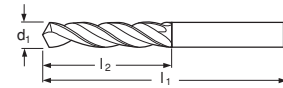
A1241

Application: Twist drill with increased red-hardness and reinforced geometry for steels of high tensile strength, stainless and heat resistant steels (300 and 400 series) Ni- and Co-based Super Alloys, hard cast materials.

Remarks: Up to 3 mm bright finish



DIN 338



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1241...
1.00	34	12	-1
1.05	34	12	-1.05
1.10	36	14	-1.1
1.15	36	14	-1.15
1.20	38	16	-1.2
1.25	38	16	-1.25
1.30	38	16	-1.3
1.35	40	18	-1.35
1.40	40	18	-1.4
1.45	40	18	-1.45
1.50	40	18	-1.5
1.55	43	20	-1.55
1.60	43	20	-1.6
1.65	43	20	-1.65
1.70	43	20	-1.7
1.75	46	22	-1.75
1.80	46	22	-1.8
1.85	46	22	-1.85
1.90	46	22	-1.9
1.95	49	24	-1.95
2.00	49	24	-2
2.05	49	24	-2.05
2.10	49	24	-2.1
2.15	53	27	-2.15
2.20	53	27	-2.2
2.25	53	27	-2.25
2.30	53	27	-2.3
2.35	53	27	-2.35
2.40	57	30	-2.4
2.45	57	30	-2.45
2.50	57	30	-2.5
2.55	57	30	-2.55
2.60	57	30	-2.6
2.65	57	30	-2.65
2.70	61	33	-2.7
2.75	61	33	-2.75
2.80	61	33	-2.8
2.85	61	33	-2.85
2.90	61	33	-2.9
2.95	61	33	-2.95
3.00	61	33	-3
3.10	65	36	-3.1
3.15	65	36	-3.15
3.20	65	36	-3.2
3.30	65	36	-3.3

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1241...
3.40	70	39	-3.4
3.50	70	39	-3.5
3.60	70	39	-3.6
3.70	70	39	-3.7
3.80	75	43	-3.8
3.90	75	43	-3.9
4.00	75	43	-4
4.10	75	43	-4.1
4.20	75	43	-4.2
4.30	80	47	-4.3
4.40	80	47	-4.4
4.50	80	47	-4.5
4.60	80	47	-4.6
4.70	80	47	-4.7
4.80	86	52	-4.8
4.90	86	52	-4.9
5.00	86	52	-5
5.10	86	52	-5.1
5.20	86	52	-5.2
5.30	86	52	-5.3
5.40	93	57	-5.4
5.50	93	57	-5.5
5.60	93	57	-5.6
5.70	93	57	-5.7
5.80	93	57	-5.8
5.90	93	57	-5.9
6.00	93	57	-6
6.10	101	63	-6.1
6.20	101	63	-6.2
6.30	101	63	-6.3
6.40	101	63	-6.4
6.50	101	63	-6.5
6.60	101	63	-6.6
6.70	101	63	-6.7
6.80	109	69	-6.8
6.90	109	69	-6.9
7.00	109	69	-7
7.10	109	69	-7.1
7.20	109	69	-7.2
7.30	109	69	-7.3
7.40	109	69	-7.4
7.50	109	69	-7.5
7.60	117	75	-7.6
7.70	117	75	-7.7
7.80	117	75	-7.8

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1241...
7.90	117	75	-7.9
8.00	117	75	-8
8.10	117	75	-8.1
8.20	117	75	-8.2
8.30	117	75	-8.3
8.40	117	75	-8.4
8.50	117	75	-8.5
8.60	125	81	-8.6
8.70	125	81	-8.7
8.80	125	81	-8.8
8.90	125	81	-8.9
9.00	125	81	-9
9.10	125	81	-9.1
9.20	125	81	-9.2
9.30	125	81	-9.3
9.40	125	81	-9.4
9.50	125	81	-9.5
9.60	133	87	-9.6
9.70	133	87	-9.7
9.80	133	87	-9.8
9.90	133	87	-9.9
10.00	133	87	-10
10.20	133	87	-10.2
10.50	133	87	-10.5
10.80	142	94	-10.8
11.00	142	94	-11
11.50	142	94	-11.5
11.80	142	94	-11.8
12.00	151	101	-12
12.20	151	101	-12.2
12.50	151	101	-12.5
12.80	151	101	-12.8
13.00	151	101	-13
13.50	160	108	-13.5
14.00	160	108	-14
14.50	169	114	-14.5
15.00	169	114	-15

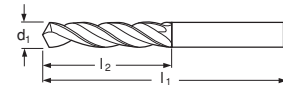
Jobber Drills



A1244

Application: For high tensile and work-hardening materials, stainless steels (austenitic) (300 series), heat resistant steels, titanium, hard bronze, special alloys.

DIN 338
B.S. 328
VA
RH
130°
HSS-E



d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1244...
0.300		19	3	-0.3
0.350		19	4	-0.35
0.397	1/64 IN	20	5	-1/64IN
0.400		20	5	-0.4
0.406	No. 78	20	5	-NO78
0.450		20	5	-0.45
0.457	No. 77	20	5	-NO77
0.500		22	6	-0.5
0.508	No. 76	22	6	-NO76
0.533	No. 75	24	7	-NO75
0.550		24	7	-0.55
0.572	No. 74	24	7	-NO74
0.600		24	7	-0.6
0.610	No. 73	26	8	-NO73
0.635	No. 72	26	8	-NO72
0.650		26	8	-0.65
0.660	No. 71	26	8	-NO71
0.700		28	9	-0.7
0.711	No. 70	28	9	-NO70
0.742	No. 69	28	9	-NO69
0.750		28	9	-0.75
0.787	No. 68	30	10	-NO68
0.794	1/32 IN	30	10	-1/32IN
0.800		30	10	-0.8
0.813	No. 67	30	10	-NO67
0.838	No. 66	30	10	-NO66
0.850		30	10	-0.85
0.889	No. 65	32	11	-NO65
0.900		32	11	-0.9
0.914	No. 64	32	11	-NO64
0.940	No. 63	32	11	-NO63
0.950		32	11	-0.95
0.965	No. 62	34	12	-NO62
0.991	No. 61	34	12	-NO61
1.000		34	12	-1
1.016	No. 60	34	12	-NO60
1.041	No. 59	34	12	-NO59
1.050		34	12	-1.05
1.067	No. 58	36	14	-NO58
1.092	No. 57	36	14	-NO57
1.100		36	14	-1.1
1.150		36	14	-1.15
1.181	No. 56	38	16	-NO56
1.191	3/64 IN	38	16	-3/64IN
1.200		38	16	-1.2
1.250		38	16	-1.25
1.300		38	16	-1.3
1.321	No. 55	40	18	-NO55

d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1244...
1.350		40	18	-1.35
1.397	No. 54	40	18	-NO54
1.400		40	18	-1.4
1.450		40	18	-1.45
1.500		40	18	-1.5
1.511	No. 53	43	20	-NO53
1.550		43	20	-1.55
1.588	1/16 IN	43	20	-1/16IN
1.600		43	20	-1.6
1.613	No. 52	43	20	-NO52
1.650		43	20	-1.65
1.700		43	20	-1.7
1.702	No. 51	46	22	-NO51
1.750		46	22	-1.75
1.778	No. 50	46	22	-NO50
1.800		46	22	-1.8
1.850		46	22	-1.85
1.854	No. 49	46	22	-NO49
1.900		46	22	-1.9
1.930	No. 48	49	24	-NO48
1.950		49	24	-1.95
1.984	5/64 IN	49	24	-5/64IN
1.994	No. 47	49	24	-NO47
2.000		49	24	-2
2.050		49	24	-2.05
2.057	No. 46	49	24	-NO46
2.083	No. 45	49	24	-NO45
2.100		49	24	-2.1
2.150		53	27	-2.15
2.184	No. 44	53	27	-NO44
2.200		53	27	-2.2
2.250		53	27	-2.25
2.261	No. 43	53	27	-NO43
2.300		53	27	-2.3
2.350		53	27	-2.35
2.375	No. 42	57	30	-NO42
2.381	3/32 IN	57	30	-3/32IN
2.400		57	30	-2.4
2.438	No. 41	57	30	-NO41
2.450		57	30	-2.45
2.489	No. 40	57	30	-NO40
2.500		57	30	-2.5
2.527	No. 39	57	30	-NO39
2.550		57	30	-2.55
2.578	No. 38	57	30	-NO38
2.600		57	30	-2.6
2.642	No. 37	57	30	-NO37
2.650		57	30	-2.65

Continued Jobber Drills



A1244



d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1244...
2.700		61	33	-2.7
2.705	No. 36	61	33	-NO36
2.750		61	33	-2.75
2.778	7/64 IN	61	33	-7/64IN
2.794	No. 35	61	33	-NO35
2.800		61	33	-2.8
2.819	No. 34	61	33	-NO34
2.850		61	33	-2.85
2.870	No. 33	61	33	-NO33
2.900		61	33	-2.9
2.946	No. 32	61	33	-NO32
2.950		61	33	-2.95
3.000		61	33	-3
3.048	No. 31	65	36	-NO31
3.100		65	36	-3.1
3.175	1/8 IN	65	36	-1/8IN
3.200		65	36	-3.2
3.264	No. 30	65	36	-NO30
3.300		65	36	-3.3
3.400		70	39	-3.4
3.454	No. 29	70	39	-NO29
3.500		70	39	-3.5
3.569	No. 28	70	39	-NO28
3.572	9/64 IN	70	39	-9/64IN
3.600		70	39	-3.6
3.650		70	39	-3.65
3.658	No. 27	70	39	-NO27
3.700		70	39	-3.7
3.734	No. 26	70	39	-NO26
3.797	No. 25	75	43	-NO25
3.800		75	43	-3.8
3.861	No. 24	75	43	-NO24
3.900		75	43	-3.9
3.912	No. 23	75	43	-NO23
3.969	5/32 IN	75	43	-5/32IN
3.988	No. 22	75	43	-NO22
4.000		75	43	-4
4.039	No. 21	75	43	-NO21
4.089	No. 20	75	43	-NO20
4.100		75	43	-4.1
4.200		75	43	-4.2
4.216	No. 19	75	43	-NO19
4.300		80	47	-4.3
4.305	No. 18	80	47	-NO18
4.366	11/64 IN	80	47	-11/64IN
4.394	No. 17	80	47	-NO17
4.400		80	47	-4.4
4.496	No. 16	80	47	-NO16
4.500		80	47	-4.5
4.572	No. 15	80	47	-NO15
4.600		80	47	-4.6
4.623	No. 14	80	47	-NO14
4.699	No. 13	80	47	-NO13
4.700		80	47	-4.7
4.763	3/16 IN	86	52	-3/16IN
4.800		86	52	-4.8
4.801	No. 12	86	52	-NO12

d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1244...
4.851	No. 11	86	52	-NO11
4.900		86	52	-4.9
4.915	No. 10	86	52	-NO10
4.978	No. 9	86	52	-NO9
5.000		86	52	-5
5.055	No. 8	86	52	-NO8
5.100		86	52	-5.1
5.105	No. 7	86	52	-NO7
5.159	13/64 IN	86	52	-13/64IN
5.182	No. 6	86	52	-NO6
5.200		86	52	-5.2
5.220	No. 5	86	52	-NO5
5.300		86	52	-5.3
5.309	No. 4	93	57	-NO4
5.400		93	57	-5.4
5.410	No. 3	93	57	-NO3
5.500		93	57	-5.5
5.556	7/32 IN	93	57	-7/32IN
5.600		93	57	-5.6
5.613	No. 2	93	57	-NO2
5.700		93	57	-5.7
5.791	No. 1	93	57	-NO1
5.800		93	57	-5.8
5.900		93	57	-5.9
5.953	15/64 IN	93	57	-15/64IN
6.000		93	57	-6
6.100		101	63	-6.1
6.200		101	63	-6.2
6.300		101	63	-6.3
6.350	1/4 IN	101	63	-1/4IN
6.400		101	63	-6.4
6.500		101	63	-6.5
6.600		101	63	-6.6
6.700		101	63	-6.7
6.747	17/64 IN	109	69	-17/64IN
6.800		109	69	-6.8
6.900		109	69	-6.9
7.000		109	69	-7
7.100		109	69	-7.1
7.144	9/32 IN	109	69	-9/32IN
7.200		109	69	-7.2
7.300		109	69	-7.3
7.400		109	69	-7.4
7.500		109	69	-7.5
7.541	19/64 IN	117	75	-19/64IN
7.600		117	75	-7.6
7.700		117	75	-7.7
7.800		117	75	-7.8
7.900		117	75	-7.9
7.938	5/16 IN	117	75	-5/16IN
8.000		117	75	-8
8.100		117	75	-8.1
8.200		117	75	-8.2
8.300		117	75	-8.3
8.334	21/64 IN	117	75	-21/64IN
8.400		117	75	-8.4
8.500		117	75	-8.5

Continued Jobber Drills



A1244

d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1244...
8.600		125	81	-8.6
8.700		125	81	-8.7
8.731	11/32 IN	125	81	-11/32IN
8.800		125	81	-8.8
8.900		125	81	-8.9
9.000		125	81	-9
9.100		125	81	-9.1
9.128	23/64 IN	125	81	-23/64IN
9.200		125	81	-9.2
9.300		125	81	-9.3
9.400		125	81	-9.4
9.500		125	81	-9.5
9.525	3/8 IN	133	87	-3/8IN
9.600		133	87	-9.6
9.700		133	87	-9.7
9.800		133	87	-9.8
9.900		133	87	-9.9
9.922	25/64 IN	133	87	-25/64IN
10.000		133	87	-10
10.200		133	87	-10.2
10.319	13/32 IN	133	87	-13/32IN

d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1244...
10.500		133	87	-10.5
10.716	27/64 IN	142	94	-27/64IN
11.000		142	94	-11
11.113	7/16 IN	142	94	-7/16IN
11.200		142	94	-11.2
11.500		142	94	-11.5
11.509	29/64 IN	142	94	-29/64IN
11.906	15/32 IN	151	101	-15/32IN
12.000		151	101	-12
12.303	31/64 IN	151	101	-31/64IN
12.500		151	101	-12.5
12.700	1/2 IN	151	101	-1/2IN
13.000		151	101	-13
13.500		160	108	-13.5
14.000		160	108	-14
14.500		169	114	-14.5
15.000		169	114	-15



Jobber Drills ALPHA X-E

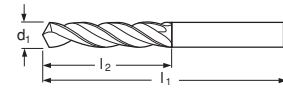
A1247

Application: High performance drill with excellent chip evacuation properties. For steels of medium and high tensile strength, i. e. deep holes in stainless steels, special brass, electrolytic copper, bronze, cast iron, malleable iron, special alloys, titanium alloys.

Remarks: Up to 1,9 mm bright finish



DIN 338



d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1247...
1.000		34	12	-1
1.016	No. 60	34	12	-NO60
1.041	No. 59	34	12	-NO59
1.067	No. 58	36	14	-NO58
1.092	No. 57	36	14	-NO57
1.100		36	14	-1.1
1.181	No. 56	38	16	-NO56
1.191	3/64 IN	38	16	-3/64IN
1.200		38	16	-1.2
1.300		38	16	-1.3
1.321	No. 55	40	18	-NO55
1.397	No. 54	40	18	-NO54
1.400		40	18	-1.4
1.500		40	18	-1.5
1.511	No. 53	43	20	-NO53
1.588	1/16 IN	43	20	-1/16IN
1.600		43	20	-1.6
1.613	No. 52	43	20	-NO52
1.700		43	20	-1.7
1.702	No. 51	46	22	-NO51
1.778	No. 50	46	22	-NO50
1.800		46	22	-1.8
1.854	No. 49	46	22	-NO49
1.900		46	22	-1.9
1.930	No. 48	49	24	-NO48
1.984	5/64 IN	49	24	-5/64IN
1.994	No. 47	49	24	-NO47
2.000		49	24	-2
2.057	No. 46	49	24	-NO46
2.083	No. 45	49	24	-NO45
2.100		49	24	-2.1
2.184	No. 44	53	27	-NO44
2.200		53	27	-2.2
2.261	No. 43	53	27	-NO43
2.300		53	27	-2.3
2.375	No. 42	57	30	-NO42
2.381	3/32 IN	57	30	-3/32IN
2.400		57	30	-2.4
2.438	No. 41	57	30	-NO41
2.489	No. 40	57	30	-NO40
2.500		57	30	-2.5
2.527	No. 39	57	30	-NO39
2.578	No. 38	57	30	-NO38
2.600		57	30	-2.6
2.642	No. 37	57	30	-NO37
2.700		61	33	-2.7
2.705	No. 36	61	33	-NO36
2.778	7/64 IN	61	33	-7/64IN

d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1247...
2.794	No. 35	61	33	-NO35
2.800		61	33	-2.8
2.819	No. 34	61	33	-NO34
2.870	No. 33	61	33	-NO33
2.900		61	33	-2.9
2.946	No. 32	61	33	-NO32
3.000		61	33	-3
3.048	No. 31	65	36	-NO31
3.100		65	36	-3.1
3.175	1/8 IN	65	36	-1/8IN
3.200		65	36	-3.2
3.264	No. 30	65	36	-NO30
3.300		65	36	-3.3
3.400		70	39	-3.4
3.454	No. 29	70	39	-NO29
3.500		70	39	-3.5
3.569	No. 28	70	39	-NO28
3.572	9/64 IN	70	39	-9/64IN
3.600		70	39	-3.6
3.658	No. 27	70	39	-NO27
3.700		70	39	-3.7
3.734	No. 26	70	39	-NO26
3.797	No. 25	75	43	-NO25
3.800		75	43	-3.8
3.861	No. 24	75	43	-NO24
3.900		75	43	-3.9
3.912	No. 23	75	43	-NO23
3.969	5/32 IN	75	43	-5/32IN
3.988	No. 22	75	43	-NO22
4.000		75	43	-4
4.039	No. 21	75	43	-NO21
4.089	No. 20	75	43	-NO20
4.100		75	43	-4.1
4.200		75	43	-4.2
4.216	No. 19	75	43	-NO19
4.300		80	47	-4.3
4.305	No. 18	80	47	-NO18
4.366	11/64 IN	80	47	-11/64IN
4.394	No. 17	80	47	-NO17
4.400		80	47	-4.4
4.496	No. 16	80	47	-NO16
4.500		80	47	-4.5
4.572	No. 15	80	47	-NO15
4.600		80	47	-4.6
4.623	No. 14	80	47	-NO14
4.699	No. 13	80	47	-NO13
4.700		80	47	-4.7
4.763	3/16 IN	86	52	-3/16IN

Continued Jobber Drills ALPHA X-E

A1247



d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1247...	d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1247...
4.800		86	52	-4.8	8.200		117	75	-8.2
4.801	No. 12	86	52	-NO12	8.300		117	75	-8.3
4.851	No. 11	86	52	-NO11	8.334	21/64 IN	117	75	-21/64IN
4.900		86	52	-4.9	8.400		117	75	-8.4
4.915	No. 10	86	52	-NO10	8.500		117	75	-8.5
4.978	No. 9	86	52	-NO9	8.600		125	81	-8.6
5.000		86	52	-5	8.700		125	81	-8.7
5.055	No. 8	86	52	-NO8	8.731	11/32 IN	125	81	-11/32IN
5.100		86	52	-5.1	8.800		125	81	-8.8
5.105	No. 7	86	52	-NO7	8.900		125	81	-8.9
5.159	13/64 IN	86	52	-13/64IN	9.000		125	81	-9
5.182	No. 6	86	52	-NO6	9.100		125	81	-9.1
5.200		86	52	-5.2	9.128	23/64 IN	125	81	-23/64IN
5.220	No. 5	86	52	-NO5	9.200		125	81	-9.2
5.300		86	52	-5.3	9.300		125	81	-9.3
5.309	No. 4	93	57	-NO4	9.400		125	81	-9.4
5.400		93	57	-5.4	9.500		125	81	-9.5
5.410	No. 3	93	57	-NO3	9.525	3/8 IN	133	87	-3/8IN
5.500		93	57	-5.5	9.600		133	87	-9.6
5.556	7/32 IN	93	57	-7/32IN	9.700		133	87	-9.7
5.600		93	57	-5.6	9.800		133	87	-9.8
5.613	No. 2	93	57	-NO2	9.900		133	87	-9.9
5.700		93	57	-5.7	9.922	25/64 IN	133	87	-25/64IN
5.791	No. 1	93	57	-NO1	10.000		133	87	-10
5.800		93	57	-5.8	10.200		133	87	-10.2
5.900		93	57	-5.9	10.319	13/32 IN	133	87	-13/32IN
5.953	15/64 IN	93	57	-15/64IN	10.500		133	87	-10.5
6.000		93	57	-6	10.716	27/64 IN	142	94	-27/64IN
6.100		101	63	-6.1	10.800		142	94	-10.8
6.200		101	63	-6.2	11.000		142	94	-11
6.300		101	63	-6.3	11.113	7/16 IN	142	94	-7/16IN
6.350	1/4 IN	101	63	-1/4IN	11.200		142	94	-11.2
6.400		101	63	-6.4	11.500		142	94	-11.5
6.500		101	63	-6.5	11.509	29/64 IN	142	94	-29/64IN
6.600		101	63	-6.6	11.800		142	94	-11.8
6.700		101	63	-6.7	11.906	15/32 IN	151	101	-15/32IN
6.747	17/64 IN	109	69	-17/64IN	12.000		151	101	-12
6.800		109	69	-6.8	12.303	31/64 IN	151	101	-31/64IN
6.900		109	69	-6.9	12.500		151	101	-12.5
7.000		109	69	-7	12.700	1/2 IN	151	101	-1/2IN
7.100		109	69	-7.1	13.000		151	101	-13
7.144	9/32 IN	109	69	-9/32IN	13.100		151	101	-13.1
7.200		109	69	-7.2	13.300		160	108	-13.3
7.300		109	69	-7.3	13.500		160	108	-13.5
7.400		109	69	-7.4	14.000		160	108	-14
7.500		109	69	-7.5	14.500		169	114	-14.5
7.541	19/64 IN	117	75	-19/64IN	15.000		169	114	-15
7.600		117	75	-7.6	15.100		178	120	-15.1
7.700		117	75	-7.7	15.300		178	120	-15.3
7.800		117	75	-7.8	15.500		178	120	-15.5
7.900		117	75	-7.9	16.000		178	120	-16
7.938	5/16 IN	117	75	-5/16IN					
8.000		117	75	-8					
8.100		117	75	-8.1					

Deep Hole Jobber Drills

A1249TFL

Application: High performance drill with extremely good chip evacuation, especially to be utilised on lathes, automatics and CNC equipment. Preferably for long chipping materials such as steels up to 1300 N/mm² incl. stainless steels (300 series), Al-, copper-alloys, tough brass. Coated with TINAL FUTURA for high machining data

and exceptional tool life. Also suitable for dry machining of steel materials.



DIN 338

B.S. 328

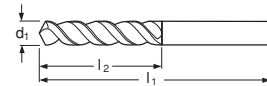
UFL

RH

130°

HSS-E

TFL



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1249TFL...
1.00	34	12	-1
1.10	36	14	-1.1
1.20	38	16	-1.2
1.30	38	16	-1.3
1.40	40	18	-1.4
1.50	40	18	-1.5
1.60	43	20	-1.6
1.70	43	20	-1.7
1.80	46	22	-1.8
1.90	46	22	-1.9
2.00	49	24	-2
2.10	49	24	-2.1
2.20	53	27	-2.2
2.30	53	27	-2.3
2.40	57	30	-2.4
2.50	57	30	-2.5
2.60	57	30	-2.6
2.70	61	33	-2.7
2.80	61	33	-2.8
2.90	61	33	-2.9
3.00	61	33	-3
3.10	65	36	-3.1
3.20	65	36	-3.2
3.30	65	36	-3.3
3.40	70	39	-3.4
3.50	70	39	-3.5
3.60	70	39	-3.6
3.70	70	39	-3.7
3.80	75	43	-3.8
3.90	75	43	-3.9
4.00	75	43	-4
4.10	75	43	-4.1
4.20	75	43	-4.2
4.30	80	47	-4.3
4.40	80	47	-4.4
4.50	80	47	-4.5
4.60	80	47	-4.6
4.65	80	47	-4.65
4.70	80	47	-4.7

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1249TFL...
4.80	86	52	-4.8
4.90	86	52	-4.9
5.00	86	52	-5
5.10	86	52	-5.1
5.20	86	52	-5.2
5.30	86	52	-5.3
5.40	93	57	-5.4
5.50	93	57	-5.5
5.55	93	57	-5.55
5.60	93	57	-5.6
5.70	93	57	-5.7
5.80	93	57	-5.8
5.90	93	57	-5.9
6.00	93	57	-6
6.10	101	63	-6.1
6.20	101	63	-6.2
6.30	101	63	-6.3
6.40	101	63	-6.4
6.50	101	63	-6.5
6.60	101	63	-6.6
6.70	101	63	-6.7
6.80	109	69	-6.8
6.90	109	69	-6.9
7.00	109	69	-7
7.10	109	69	-7.1
7.20	109	69	-7.2
7.30	109	69	-7.3
7.40	109	69	-7.4
7.50	109	69	-7.5
7.60	117	75	-7.6
7.70	117	75	-7.7
7.80	117	75	-7.8
7.90	117	75	-7.9
8.00	117	75	-8
8.10	117	75	-8.1
8.20	117	75	-8.2
8.30	117	75	-8.3
8.40	117	75	-8.4
8.50	117	75	-8.5

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1249TFL...
8.60	125	81	-8.6
8.70	125	81	-8.7
8.80	125	81	-8.8
8.90	125	81	-8.9
9.00	125	81	-9
9.10	125	81	-9.1
9.20	125	81	-9.2
9.30	125	81	-9.3
9.40	125	81	-9.4
9.50	125	81	-9.5
9.60	133	87	-9.6
9.70	133	87	-9.7
9.80	133	87	-9.8
9.90	133	87	-9.9
10.00	133	87	-10
10.20	133	87	-10.2
10.50	133	87	-10.5
11.00	142	94	-11
11.20	142	94	-11.2
11.30	142	94	-11.3
11.50	142	94	-11.5
12.00	151	101	-12
12.50	151	101	-12.5
13.00	151	101	-13
13.10	151	101	-13.1
13.30	160	108	-13.3
13.50	160	108	-13.5
14.00	160	108	-14
14.50	169	114	-14.5
15.00	169	114	-15
15.10	178	120	-15.1
15.30	178	120	-15.3
15.50	178	120	-15.5
16.00	178	120	-16

Deep Hole Jobber Drills

A1249TIN

Application: High performance drill with extremely good chip evacuation, especially to be utilised on lathes, automatics and CNC equipment. Preferably for long chipping materials such as steels up to 1300 N/mm² incl. stainless steels (300 series), Al-, copper-alloys,

tough brass. TiN-coated for increased cutting speeds and improved tool life.



DIN 338

B.S. 328

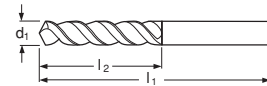
UFL

RH

130°

HSS-E

TiN



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1249TIN...
1.00	34	12	-1
1.10	36	14	-1.1
1.20	38	16	-1.2
1.30	38	16	-1.3
1.40	40	18	-1.4
1.50	40	18	-1.5
1.60	43	20	-1.6
1.70	43	20	-1.7
1.80	46	22	-1.8
1.90	46	22	-1.9
2.00	49	24	-2
2.10	49	24	-2.1
2.20	53	27	-2.2
2.30	53	27	-2.3
2.40	57	30	-2.4
2.50	57	30	-2.5
2.60	57	30	-2.6
2.70	61	33	-2.7
2.80	61	33	-2.8
2.90	61	33	-2.9
3.00	61	33	-3
3.10	65	36	-3.1
3.20	65	36	-3.2
3.30	65	36	-3.3
3.40	70	39	-3.4
3.50	70	39	-3.5
3.60	70	39	-3.6
3.70	70	39	-3.7
3.80	75	43	-3.8
3.90	75	43	-3.9
4.00	75	43	-4
4.10	75	43	-4.1
4.20	75	43	-4.2
4.30	80	47	-4.3
4.40	80	47	-4.4
4.50	80	47	-4.5
4.60	80	47	-4.6
4.65	80	47	-4.65
4.70	80	47	-4.7
4.80	86	52	-4.8
4.90	86	52	-4.9
5.00	86	52	-5

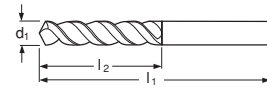
d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1249TIN...
5.10	86	52	-5.1
5.20	86	52	-5.2
5.30	86	52	-5.3
5.40	93	57	-5.4
5.50	93	57	-5.5
5.55	93	57	-5.55
5.60	93	57	-5.6
5.70	93	57	-5.7
5.80	93	57	-5.8
5.90	93	57	-5.9
6.00	93	57	-6
6.10	101	63	-6.1
6.20	101	63	-6.2
6.30	101	63	-6.3
6.40	101	63	-6.4
6.50	101	63	-6.5
6.60	101	63	-6.6
6.70	101	63	-6.7
6.80	109	69	-6.8
6.90	109	69	-6.9
7.00	109	69	-7
7.10	109	69	-7.1
7.20	109	69	-7.2
7.30	109	69	-7.3
7.40	109	69	-7.4
7.50	109	69	-7.5
7.60	117	75	-7.6
7.70	117	75	-7.7
7.80	117	75	-7.8
7.90	117	75	-7.9
8.00	117	75	-8
8.10	117	75	-8.1
8.20	117	75	-8.2
8.30	117	75	-8.3
8.40	117	75	-8.4
8.50	117	75	-8.5
8.60	125	81	-8.6
8.70	125	81	-8.7
8.80	125	81	-8.8
8.90	125	81	-8.9
9.00	125	81	-9
9.10	125	81	-9.1

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1249TIN...
9.20	125	81	-9.2
9.30	125	81	-9.3
9.40	125	81	-9.4
9.50	125	81	-9.5
9.60	133	87	-9.6
9.70	133	87	-9.7
9.80	133	87	-9.8
9.90	133	87	-9.9
10.00	133	87	-10
10.20	133	87	-10.2
10.50	133	87	-10.5
11.00	142	94	-11
11.20	142	94	-11.2
11.30	142	94	-11.3
11.50	142	94	-11.5
12.00	151	101	-12
12.50	151	101	-12.5
13.00	151	101	-13
13.10	151	101	-13.1
13.30	160	108	-13.3
13.50	160	108	-13.5
14.00	160	108	-14
14.50	169	114	-14.5
15.00	169	114	-15
15.10	178	120	-15.1
15.30	178	120	-15.3
15.50	178	120	-15.5
16.00	178	120	-16
16.50	184	125	-16.5
17.00	184	125	-17
17.50	191	130	-17.5
18.00	191	130	-18
18.50	198	135	-18.5
19.00	198	135	-19
19.50	205	140	-19.5
20.00	205	140	-20

Jobber Drills VA INOX

A1254TFT

Application: High-performance drill with special geometry and coating for drilling austenitic stainless steels. Due to excellent swarf control characteristics it is also ideal for other soft-tough materials, e.g soft structural steels, soft copper alloys.



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1254TFT...
3.00	61	33	-3
3.20	65	36	-3.2
3.30	65	36	-3.3
3.40	70	39	-3.4
3.50	70	39	-3.5
3.70	70	39	-3.7
3.80	75	43	-3.8
4.00	75	43	-4
4.20	75	43	-4.2
4.30	80	47	-4.3
4.50	80	47	-4.5
4.65	80	47	-4.65
4.70	80	47	-4.7
4.80	86	52	-4.8
5.00	86	52	-5
5.10	86	52	-5.1
5.30	86	52	-5.3
5.50	93	57	-5.5
5.55	93	57	-5.55
5.60	93	57	-5.6
5.80	93	57	-5.8

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1254TFT...
6.00	93	57	-6
6.50	101	63	-6.5
6.60	101	63	-6.6
6.80	109	69	-6.8
6.90	109	69	-6.9
7.00	109	69	-7
7.40	109	69	-7.4
7.50	109	69	-7.5
7.80	117	75	-7.8
8.00	117	75	-8
8.50	117	75	-8.5
8.60	125	81	-8.6
8.80	125	81	-8.8
9.00	125	81	-9
9.30	125	81	-9.3
9.40	125	81	-9.4
9.50	125	81	-9.5
9.80	133	87	-9.8
10.00	133	87	-10
10.20	133	87	-10.2
10.30	133	87	-10.3

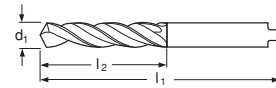
d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1254TFT...
10.50	133	87	-10.5
11.00	142	94	-11
11.20	142	94	-11.2
11.30	142	94	-11.3
11.50	142	94	-11.5
11.80	142	94	-11.8
12.00	151	101	-12
12.10	151	101	-12.1
12.50	151	101	-12.5
13.00	151	101	-13
13.20	151	101	-13.2
13.50	160	108	-13.5
14.00	160	108	-14
14.10	169	114	-14.1
14.20	169	114	-14.2
14.50	169	114	-14.5
15.00	169	114	-15
15.10	178	120	-15.1
15.20	178	120	-15.2
15.50	178	120	-15.5
16.00	178	120	-16

Straight Shank Bushing Drills, Long Series

A1411

Application: For materials forming long and short chips such as steel up to 1000 N/mm², cast iron, malleable iron, sintered iron, German silver, AISi-alloys (Si > 11%).

Remarks: Up to 3 mm bright finish, tang acc. to DIN 1809 from diameter 3 mm



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1411...
1.0	48	26	-1
1.1	50	28	-1.1
1.2	52	30	-1.2
1.3	52	30	-1.3
1.4	55	33	-1.4
1.5	55	33	-1.5
1.6	58	35	-1.6
1.7	58	35	-1.7
1.8	62	38	-1.8
1.9	62	38	-1.9
2.0	66	41	-2
2.1	66	41	-2.1
2.2	70	44	-2.2
2.3	70	44	-2.3
2.4	74	47	-2.4
2.5	74	47	-2.5
2.6	74	47	-2.6
2.7	79	51	-2.7
2.8	79	51	-2.8
2.9	79	51	-2.9
3.0	79	51	-3
3.1	84	55	-3.1
3.2	84	55	-3.2
3.3	84	55	-3.3
3.4	91	60	-3.4
3.5	91	60	-3.5
3.6	91	60	-3.6
3.7	91	60	-3.7
3.8	96	64	-3.8
3.9	96	64	-3.9
4.0	96	64	-4
4.1	96	64	-4.1
4.2	96	64	-4.2

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1411...
4.3	102	69	-4.3
4.4	102	69	-4.4
4.5	102	69	-4.5
4.6	102	69	-4.6
4.7	102	69	-4.7
4.8	108	74	-4.8
4.9	108	74	-4.9
5.0	108	74	-5
5.1	108	74	-5.1
5.2	108	74	-5.2
5.3	108	74	-5.3
5.4	116	80	-5.4
5.5	116	80	-5.5
5.6	116	80	-5.6
5.7	116	80	-5.7
5.8	116	80	-5.8
5.9	116	80	-5.9
6.0	116	80	-6
6.1	124	86	-6.1
6.2	124	86	-6.2
6.3	124	86	-6.3
6.4	124	86	-6.4
6.5	124	86	-6.5
6.6	124	86	-6.6
6.7	124	86	-6.7
6.8	133	93	-6.8
6.9	133	93	-6.9
7.0	133	93	-7
7.1	133	93	-7.1
7.2	133	93	-7.2
7.3	133	93	-7.3
7.4	133	93	-7.4
7.5	133	93	-7.5

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1411...
7.6	142	100	-7.6
7.7	142	100	-7.7
7.8	142	100	-7.8
7.9	142	100	-7.9
8.0	142	100	-8
8.1	142	100	-8.1
8.2	142	100	-8.2
8.3	142	100	-8.3
8.4	142	100	-8.4
8.5	142	100	-8.5
8.6	151	107	-8.6
8.7	151	107	-8.7
8.8	151	107	-8.8
8.9	151	107	-8.9
9.0	151	107	-9
9.1	151	107	-9.1
9.2	151	107	-9.2
9.3	151	107	-9.3
9.4	151	107	-9.4
9.5	151	107	-9.5
9.6	162	116	-9.6
9.7	162	116	-9.7
9.8	162	116	-9.8
9.9	162	116	-9.9
10.0	162	116	-10
10.2	162	116	-10.2
10.5	162	116	-10.5
10.8	173	125	-10.8
11.0	173	125	-11
11.5	173	125	-11.5
12.0	184	134	-12

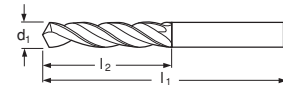
Straight Shank Drills, Long Series

A1511

Application: For materials forming long and short chips such as steel up to 1000 N/mm², cast iron, malleable iron, sintered iron, German silver, AISi-alloys (Si > 11%).

Remarks: Up to 3 mm bright finish

DIN 340



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1511...
0.50	32	12	-0.5
0.60	35	15	-0.6
0.70	42	21	-0.7
0.80	46	25	-0.8
0.90	51	29	-0.9
1.00	56	33	-1
1.05	56	33	-1.05
1.10	60	37	-1.1
1.15	60	37	-1.15
1.20	65	41	-1.2
1.25	65	41	-1.25
1.30	65	41	-1.3
1.35	70	45	-1.35
1.40	70	45	-1.4
1.45	70	45	-1.45
1.50	70	45	-1.5
1.55	76	50	-1.55
1.60	76	50	-1.6
1.65	76	50	-1.65
1.70	76	50	-1.7
1.75	80	53	-1.75
1.80	80	53	-1.8
1.85	80	53	-1.85
1.90	80	53	-1.9
1.95	85	56	-1.95
2.00	85	56	-2
2.05	85	56	-2.05
2.10	85	56	-2.1
2.15	90	59	-2.15
2.20	90	59	-2.2
2.25	90	59	-2.25
2.30	90	59	-2.3
2.35	90	59	-2.35
2.40	95	62	-2.4
2.45	95	62	-2.45
2.50	95	62	-2.5
2.55	95	62	-2.55
2.60	95	62	-2.6
2.65	95	62	-2.65
2.70	100	66	-2.7
2.75	100	66	-2.75
2.80	100	66	-2.8
2.85	100	66	-2.85
2.90	100	66	-2.9
2.95	100	66	-2.95
3.00	100	66	-3
3.05	106	69	-3.05
3.10	106	69	-3.1

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1511...
3.15	106	69	-3.15
3.20	106	69	-3.2
3.25	106	69	-3.25
3.30	106	69	-3.3
3.35	106	69	-3.35
3.40	112	73	-3.4
3.45	112	73	-3.45
3.50	112	73	-3.5
3.55	112	73	-3.55
3.60	112	73	-3.6
3.65	112	73	-3.65
3.70	112	73	-3.7
3.75	112	73	-3.75
3.80	119	78	-3.8
3.85	119	78	-3.85
3.90	119	78	-3.9
3.95	119	78	-3.95
4.00	119	78	-4
4.05	119	78	-4.05
4.10	119	78	-4.1
4.15	119	78	-4.15
4.20	119	78	-4.2
4.25	119	78	-4.25
4.30	126	82	-4.3
4.35	126	82	-4.35
4.40	126	82	-4.4
4.45	126	82	-4.45
4.50	126	82	-4.5
4.55	126	82	-4.55
4.60	126	82	-4.6
4.65	126	82	-4.65
4.70	126	82	-4.7
4.75	126	82	-4.75
4.80	132	87	-4.8
4.85	132	87	-4.85
4.90	132	87	-4.9
4.95	132	87	-4.95
5.00	132	87	-5
5.10	132	87	-5.1
5.20	132	87	-5.2
5.25	132	87	-5.25
5.30	132	87	-5.3
5.40	139	91	-5.4
5.50	139	91	-5.5
5.60	139	91	-5.6
5.70	139	91	-5.7
5.75	139	91	-5.75
5.80	139	91	-5.8

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1511...
5.90	139	91	-5.9
6.00	139	91	-6
6.10	148	97	-6.1
6.20	148	97	-6.2
6.25	148	97	-6.25
6.30	148	97	-6.3
6.40	148	97	-6.4
6.50	148	97	-6.5
6.60	148	97	-6.6
6.70	148	97	-6.7
6.75	156	102	-6.75
6.80	156	102	-6.8
6.90	156	102	-6.9
7.00	156	102	-7
7.10	156	102	-7.1
7.20	156	102	-7.2
7.25	156	102	-7.25
7.30	156	102	-7.3
7.40	156	102	-7.4
7.50	156	102	-7.5
7.60	165	109	-7.6
7.70	165	109	-7.7
7.75	165	109	-7.75
7.80	165	109	-7.8
7.90	165	109	-7.9
8.00	165	109	-8
8.10	165	109	-8.1
8.20	165	109	-8.2
8.25	165	109	-8.25
8.30	165	109	-8.3
8.40	165	109	-8.4
8.50	165	109	-8.5
8.60	175	115	-8.6
8.70	175	115	-8.7
8.75	175	115	-8.75
8.80	175	115	-8.8
8.90	175	115	-8.9
9.00	175	115	-9
9.10	175	115	-9.1
9.20	175	115	-9.2
9.25	175	115	-9.25
9.30	175	115	-9.3
9.40	175	115	-9.4
9.50	175	115	-9.5
9.60	184	121	-9.6
9.70	184	121	-9.7
9.75	184	121	-9.75
9.80	184	121	-9.8

Continued Straight Shank Drills, Long Series

A1511

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1511...
9.90	184	121	-9.9
10.00	184	121	-10
10.10	184	121	-10.1
10.20	184	121	-10.2
10.30	184	121	-10.3
10.40	184	121	-10.4
10.50	184	121	-10.5
10.60	184	121	-10.6
10.70	195	128	-10.7
10.80	195	128	-10.8
10.90	195	128	-10.9
11.00	195	128	-11
11.20	195	128	-11.2
11.50	195	128	-11.5
11.80	195	128	-11.8

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1511...
12.00	205	134	-12
12.20	205	134	-12.2
12.50	205	134	-12.5
12.80	205	134	-12.8
13.00	205	134	-13
13.20	205	134	-13.2
13.50	214	140	-13.5
13.80	214	140	-13.8
14.00	214	140	-14
14.50	220	144	-14.5
15.00	220	144	-15
15.50	227	149	-15.5
16.00	227	149	-16
17.00	235	154	-17
18.00	241	158	-18

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1511...
19.00	247	162	-19
20.00	254	166	-20
21.00	261	171	-21
22.00	268	176	-22
23.00	275	180	-23
24.00	282	185	-24
25.00	282	185	-25



Straight Shank Drills, Long Series

A1513

Application: For soft materials forming long chips such as Al-, copper-, zinc-, AlSi-alloys (Si < 12%), soft plastics, PVC, Polyamid, soft magnetic iron.

DIN 340

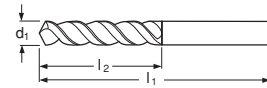
B.S. 328

W

RH

130°

HSS



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1513...
1.00	56	33	-1
1.10	60	37	-1.1
1.20	65	41	-1.2
1.25	65	41	-1.25
1.30	65	41	-1.3
1.40	70	45	-1.4
1.50	70	45	-1.5
1.60	76	50	-1.6
1.70	76	50	-1.7
1.75	80	53	-1.75
1.80	80	53	-1.8
1.90	80	53	-1.9
2.00	85	56	-2
2.10	85	56	-2.1
2.20	90	59	-2.2
2.25	90	59	-2.25
2.30	90	59	-2.3
2.40	95	62	-2.4
2.50	95	62	-2.5
2.60	95	62	-2.6
2.70	100	66	-2.7
2.75	100	66	-2.75
2.80	100	66	-2.8
2.90	100	66	-2.9
3.00	100	66	-3
3.10	106	69	-3.1
3.20	106	69	-3.2

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1513...
3.25	106	69	-3.25
3.30	106	69	-3.3
3.40	112	73	-3.4
3.50	112	73	-3.5
3.60	112	73	-3.6
3.70	112	73	-3.7
3.75	112	73	-3.75
3.80	119	78	-3.8
3.90	119	78	-3.9
4.00	119	78	-4
4.10	119	78	-4.1
4.20	119	78	-4.2
4.25	119	78	-4.25
4.30	126	82	-4.3
4.40	126	82	-4.4
4.50	126	82	-4.5
4.60	126	82	-4.6
4.70	126	82	-4.7
4.75	126	82	-4.75
4.80	132	87	-4.8
4.90	132	87	-4.9
5.00	132	87	-5
5.10	132	87	-5.1
5.20	132	87	-5.2
5.30	132	87	-5.3
5.40	139	91	-5.4
5.50	139	91	-5.5

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1513...
5.60	139	91	-5.6
5.70	139	91	-5.7
5.80	139	91	-5.8
5.90	139	91	-5.9
6.00	139	91	-6
6.10	148	97	-6.1
6.20	148	97	-6.2
6.30	148	97	-6.3
6.40	148	97	-6.4
6.50	148	97	-6.5
6.60	148	97	-6.6
6.70	148	97	-6.7
6.80	156	102	-6.8
6.90	156	102	-6.9
7.00	156	102	-7
7.50	156	102	-7.5
8.00	165	109	-8
8.50	165	109	-8.5
9.00	175	115	-9
9.50	175	115	-9.5
10.00	184	121	-10
10.50	184	121	-10.5
11.00	195	128	-11
11.50	195	128	-11.5
12.00	205	134	-12

Straight Shank Drills, Long Series

A1519

Application: For materials forming long and short chips such as steel up to 1000 N/mm², cast iron, malleable iron, sintered iron, German silver, AISi-alloys (Si > 11%).

DIN
340

B.S.
328

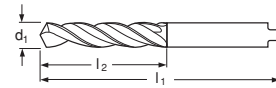
N

RH

118°

HSS

FNZ



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1519...
3.0	100	66	-3
3.2	106	69	-3.2
3.5	112	73	-3.5
3.8	119	78	-3.8
4.0	119	78	-4
4.2	119	78	-4.2
4.5	126	82	-4.5
4.8	132	87	-4.8
5.0	132	87	-5

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1519...
5.2	132	87	-5.2
5.5	139	91	-5.5
5.8	139	91	-5.8
6.0	139	91	-6
6.2	148	97	-6.2
6.5	148	97	-6.5
6.8	156	102	-6.8
7.0	156	102	-7
7.5	156	102	-7.5


d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1519...
8.0	165	109	-8
8.5	165	109	-8.5
9.0	175	115	-9
9.5	175	115	-9.5
10.0	184	121	-10

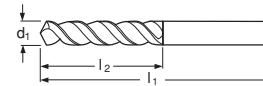
Deep Hole Straight Shank Drills, Long Series

A1522

Application: Deep hole drilling design with extremely good chip evacuation. For materials forming long chips such as steel up to 1300 N/mm², Al-, AISI-, copper-alloys, stainless steels (300 series), soft bronze, tough brass.

Remarks: Up to 1,9 mm bright finish

DIN 340	B.S. 328	UFL	RH	130°	HSS	
---------	----------	-----	----	------	-----	---



d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1522...
1.000		56	33	-1
1.100		60	37	-1.1
1.200		65	41	-1.2
1.300		65	41	-1.3
1.400		70	45	-1.4
1.500		70	45	-1.5
1.600		76	50	-1.6
1.700		76	50	-1.7
1.800		80	53	-1.8
1.900		80	53	-1.9
1.984	5/64 IN	85	56	-5/64IN
2.000		85	56	-2
2.100		85	56	-2.1
2.200		90	59	-2.2
2.300		90	59	-2.3
2.381	3/32 IN	95	62	-3/32IN
2.400		95	62	-2.4
2.500		95	62	-2.5
2.600		95	62	-2.6
2.700		100	66	-2.7
2.778	7/64 IN	100	66	-7/64IN
2.800		100	66	-2.8
2.900		100	66	-2.9
3.000		100	66	-3
3.100		106	69	-3.1
3.175	1/8 IN	106	69	-1/8IN
3.200		106	69	-3.2
3.300		106	69	-3.3
3.400		112	73	-3.4
3.500		112	73	-3.5
3.572	9/64 IN	112	73	-9/64IN
3.600		112	73	-3.6
3.700		112	73	-3.7
3.800		119	78	-3.8
3.900		119	78	-3.9
3.969	5/32 IN	119	78	-5/32IN
4.000		119	78	-4
4.100		119	78	-4.1
4.200		119	78	-4.2
4.300		126	82	-4.3
4.366	11/64 IN	126	82	-11/64IN
4.400		126	82	-4.4
4.500		126	82	-4.5
4.600		126	82	-4.6
4.700		126	82	-4.7
4.763	3/16 IN	132	87	-3/16IN
4.800		132	87	-4.8
4.900		132	87	-4.9

d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1522...
5.000		132	87	-5
5.100		132	87	-5.1
5.159	13/64 IN	132	87	-13/64IN
5.200		132	87	-5.2
5.300		132	87	-5.3
5.400		139	91	-5.4
5.500		139	91	-5.5
5.556	7/32 IN	139	91	-7/32IN
5.600		139	91	-5.6
5.700		139	91	-5.7
5.800		139	91	-5.8
5.900		139	91	-5.9
5.953	15/64 IN	139	91	-15/64IN
6.000		139	91	-6
6.100		148	97	-6.1
6.200		148	97	-6.2
6.300		148	97	-6.3
6.350	1/4 IN	148	97	-1/4IN
6.400		148	97	-6.4
6.500		148	97	-6.5
6.600		148	97	-6.6
6.700		148	97	-6.7
6.747	17/64 IN	156	102	-17/64IN
6.800		156	102	-6.8
6.900		156	102	-6.9
7.000		156	102	-7
7.100		156	102	-7.1
7.144	9/32 IN	156	102	-9/32IN
7.200		156	102	-7.2
7.300		156	102	-7.3
7.400		156	102	-7.4
7.500		156	102	-7.5
7.541	19/64 IN	165	109	-19/64IN
7.600		165	109	-7.6
7.700		165	109	-7.7
7.800		165	109	-7.8
7.900		165	109	-7.9
7.938	5/16 IN	165	109	-5/16IN
8.000		165	109	-8
8.100		165	109	-8.1
8.200		165	109	-8.2
8.300		165	109	-8.3
8.334	21/64 IN	165	109	-21/64IN
8.400		165	109	-8.4
8.500		165	109	-8.5
8.600		175	115	-8.6
8.700		175	115	-8.7
8.731	11/32 IN	175	115	-11/32IN

Continued Deep Hole Straight Shank Drills, Long Series

A1522

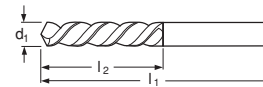
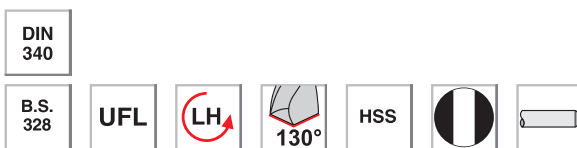
d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1522...	d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1522...
8.800		175	115	-8.8	10.500		184	121	-10.5
8.900		175	115	-8.9	10.716	27/64 IN	195	128	-27/64IN
9.000		175	115	-9	10.800		195	128	-10.8
9.100		175	115	-9.1	11.000		195	128	-11
9.128	23/64 IN	175	115	-23/64IN	11.113	7/16 IN	195	128	-7/16IN
9.200		175	115	-9.2	11.200		195	128	-11.2
9.300		175	115	-9.3	11.500		195	128	-11.5
9.400		175	115	-9.4	11.509	29/64 IN	195	128	-29/64IN
9.500		175	115	-9.5	11.800		195	128	-11.8
9.525	3/8 IN	184	121	-3/8IN	11.906	15/32 IN	205	134	-15/32IN
9.600		184	121	-9.6	12.000		205	134	-12
9.700		184	121	-9.7	12.303	31/64 IN	205	134	-31/64IN
9.800		184	121	-9.8	12.700	1/2 IN	205	134	-1/2IN
9.900		184	121	-9.9					
9.922	25/64 IN	184	121	-25/64IN					
10.000		184	121	-10					
10.200		184	121	-10.2					
10.319	13/32 IN	184	121	-13/32IN					



Straight Shank Drills, Long Series

A1534

Application: Deep hole drilling design with extremely good chip evacuation. For materials forming long chips such as steel up to 1300 N/mm², Al-, AlSi-, copper-alloys, stainless steels (300 series), soft bronze, tough brass.



d ₁ mm h7	l ₁ mm	l ₂ mm	Ordering code A1534...	d ₁ mm h7	l ₁ mm	l ₂ mm	Ordering code A1534...	d ₁ mm h7	l ₁ mm	l ₂ mm	Ordering code A1534...
2.0	85	56	-2	5.0	132	87	-5	8.0	165	109	-8
2.5	95	62	-2.5	5.5	139	91	-5.5	8.5	165	109	-8.5
3.0	100	66	-3	6.0	139	91	-6	9.0	175	115	-9
3.5	112	73	-3.5	6.5	148	97	-6.5	9.5	175	115	-9.5
4.0	119	78	-4	7.0	156	102	-7	10.0	184	121	-10
4.5	126	82	-4.5	7.5	156	102	-7.5				



Straight Shank Drills, Long Series

A1544

Application: For high tensile and work-hardening materials, stainless steels (austenitic) (300 series), heat resistant steels, titanium, hard bronze, special alloys.

DIN 340

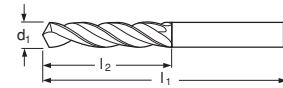
B.S. 328

VA

RH

130°

HSS-E



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1544...
1.0	56	33	-1
1.1	60	37	-1.1
1.2	65	41	-1.2
1.3	65	41	-1.3
1.4	70	45	-1.4
1.5	70	45	-1.5
1.6	76	50	-1.6
1.7	76	50	-1.7
1.8	80	53	-1.8
1.9	80	53	-1.9
2.0	85	56	-2
2.1	85	56	-2.1
2.2	90	59	-2.2
2.3	90	59	-2.3
2.4	95	62	-2.4
2.5	95	62	-2.5
2.6	95	62	-2.6
2.7	100	66	-2.7
2.8	100	66	-2.8
2.9	100	66	-2.9
3.0	100	66	-3
3.1	106	69	-3.1
3.2	106	69	-3.2
3.3	106	69	-3.3
3.4	112	73	-3.4
3.5	112	73	-3.5
3.6	112	73	-3.6
3.7	112	73	-3.7
3.8	119	78	-3.8
3.9	119	78	-3.9
4.0	119	78	-4
4.1	119	78	-4.1
4.2	119	78	-4.2

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1544...
4.3	126	82	-4.3
4.4	126	82	-4.4
4.5	126	82	-4.5
4.6	126	82	-4.6
4.7	126	82	-4.7
4.8	132	87	-4.8
4.9	132	87	-4.9
5.0	132	87	-5
5.1	132	87	-5.1
5.2	132	87	-5.2
5.3	132	87	-5.3
5.4	139	91	-5.4
5.5	139	91	-5.5
5.6	139	91	-5.6
5.7	139	91	-5.7
5.8	139	91	-5.8
5.9	139	91	-5.9
6.0	139	91	-6
6.1	148	97	-6.1
6.2	148	97	-6.2
6.3	148	97	-6.3
6.4	148	97	-6.4
6.5	148	97	-6.5
6.6	148	97	-6.6
6.7	148	97	-6.7
6.8	156	102	-6.8
6.9	156	102	-6.9
7.0	156	102	-7
7.1	156	102	-7.1
7.2	156	102	-7.2
7.3	156	102	-7.3
7.4	156	102	-7.4
7.5	156	102	-7.5

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1544...
7.6	165	109	-7.6
7.7	165	109	-7.7
7.8	165	109	-7.8
7.9	165	109	-7.9
8.0	165	109	-8
8.1	165	109	-8.1
8.2	165	109	-8.2
8.3	165	109	-8.3
8.4	165	109	-8.4
8.5	165	109	-8.5
8.6	175	115	-8.6
8.7	175	115	-8.7
8.8	175	115	-8.8
8.9	175	115	-8.9
9.0	175	115	-9
9.1	175	115	-9.1
9.2	175	115	-9.2
9.3	175	115	-9.3
9.4	175	115	-9.4
9.5	175	115	-9.5
9.6	184	121	-9.6
9.7	184	121	-9.7
9.8	184	121	-9.8
9.9	184	121	-9.9
10.0	184	121	-10
10.2	184	121	-10.2
10.5	184	121	-10.5
10.8	195	128	-10.8
11.0	195	128	-11
11.2	195	128	-11.2
11.5	195	128	-11.5
11.8	195	128	-11.8
12.0	205	134	-12

Straight Shank Drills, Long Series, ALPHA X-E

A1547

Application: High performance drill with excellent chip evacuation properties. For steels of medium and high tensile strength, i. e. deep holes in stainless steels, special brass, electrolytic copper, bronze, cast iron, malleable iron, special alloys, titanium alloys.

Remarks: Up to 1,9 mm bright finish

DIN 340

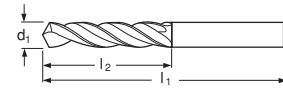
B.S. 328

ALPHA X-E

RH

130°

HSS-E



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1547...
1.0	56	33	-1
1.1	60	37	-1.1
1.2	65	41	-1.2
1.3	65	41	-1.3
1.4	70	45	-1.4
1.5	70	45	-1.5
1.6	76	50	-1.6
1.7	76	50	-1.7
1.8	80	53	-1.8
1.9	80	53	-1.9
2.0	85	56	-2
2.1	85	56	-2.1
2.2	90	59	-2.2
2.3	90	59	-2.3
2.4	95	62	-2.4
2.5	95	62	-2.5
2.6	95	62	-2.6
2.7	100	66	-2.7
2.8	100	66	-2.8
2.9	100	66	-2.9
3.0	100	66	-3
3.1	106	69	-3.1
3.2	106	69	-3.2
3.3	106	69	-3.3
3.4	112	73	-3.4
3.5	112	73	-3.5
3.6	112	73	-3.6
3.7	112	73	-3.7
3.8	119	78	-3.8
3.9	119	78	-3.9

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1547...
4.0	119	78	-4
4.1	119	78	-4.1
4.2	119	78	-4.2
4.3	126	82	-4.3
4.4	126	82	-4.4
4.5	126	82	-4.5
4.6	126	82	-4.6
4.7	126	82	-4.7
4.8	132	87	-4.8
4.9	132	87	-4.9
5.0	132	87	-5
5.1	132	87	-5.1
5.2	132	87	-5.2
5.3	132	87	-5.3
5.4	139	91	-5.4
5.5	139	91	-5.5
5.6	139	91	-5.6
5.7	139	91	-5.7
5.8	139	91	-5.8
5.9	139	91	-5.9
6.0	139	91	-6
6.1	148	97	-6.1
6.2	148	97	-6.2
6.3	148	97	-6.3
6.4	148	97	-6.4
6.5	148	97	-6.5
6.6	148	97	-6.6
6.7	148	97	-6.7
6.8	156	102	-6.8
7.0	156	102	-7

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1547...
7.1	156	102	-7.1
7.2	156	102	-7.2
7.3	156	102	-7.3
7.4	156	102	-7.4
7.5	156	102	-7.5
7.6	165	109	-7.6
7.7	165	109	-7.7
7.8	165	109	-7.8
7.9	165	109	-7.9
8.0	165	109	-8
8.1	165	109	-8.1
8.2	165	109	-8.2
8.3	165	109	-8.3
8.4	165	109	-8.4
8.5	165	109	-8.5
8.6	175	115	-8.6
8.7	175	115	-8.7
8.8	175	115	-8.8
8.9	175	115	-8.9
9.0	175	115	-9
10.0	184	121	-10
10.2	184	121	-10.2
10.5	184	121	-10.5
11.0	195	128	-11
11.5	195	128	-11.5
12.0	205	134	-12

Straight Shank Drills, Long Series

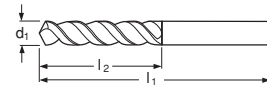
A1549TFL

Application: High performance drill with extremely good chip evacuation, especially to be utilised on lathes, automatics and CNC equipment. Preferably for long chipping materials such as steels up to 1300 N/mm² incl. stainless steels (300 series), Al-, copper-alloys, tough brass. Coated with TINAL FUTURA for high machining data

and exceptional tool life. Also suitable for dry machining of steel materials.



DIN 340



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1549TFL...
1.0	56	33	-1
1.1	60	37	-1.1
1.2	65	41	-1.2
1.3	65	41	-1.3
1.4	70	45	-1.4
1.5	70	45	-1.5
1.6	76	50	-1.6
1.7	76	50	-1.7
1.8	80	53	-1.8
1.9	80	53	-1.9
2.0	85	56	-2
2.1	85	56	-2.1
2.2	90	59	-2.2
2.3	90	59	-2.3
2.4	95	62	-2.4
2.5	95	62	-2.5
2.6	95	62	-2.6
2.7	100	66	-2.7
2.8	100	66	-2.8
2.9	100	66	-2.9
3.0	100	66	-3
3.1	106	69	-3.1
3.2	106	69	-3.2
3.3	106	69	-3.3
3.4	112	73	-3.4
3.5	112	73	-3.5
3.6	112	73	-3.6
3.7	112	73	-3.7
3.8	119	78	-3.8
3.9	119	78	-3.9
4.0	119	78	-4
4.1	119	78	-4.1
4.2	119	78	-4.2

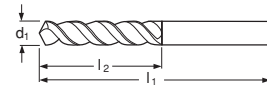
d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1549TFL...
4.3	126	82	-4.3
4.4	126	82	-4.4
4.5	126	82	-4.5
4.6	126	82	-4.6
4.7	126	82	-4.7
4.8	132	87	-4.8
4.9	132	87	-4.9
5.0	132	87	-5
5.1	132	87	-5.1
5.2	132	87	-5.2
5.3	132	87	-5.3
5.4	139	91	-5.4
5.5	139	91	-5.5
5.6	139	91	-5.6
5.7	139	91	-5.7
5.8	139	91	-5.8
5.9	139	91	-5.9
6.0	139	91	-6
6.1	148	97	-6.1
6.2	148	97	-6.2
6.3	148	97	-6.3
6.4	148	97	-6.4
6.5	148	97	-6.5
6.6	148	97	-6.6
6.7	148	97	-6.7
6.8	156	102	-6.8
6.9	156	102	-6.9
7.0	156	102	-7
7.1	156	102	-7.1
7.2	156	102	-7.2
7.3	156	102	-7.3
7.4	156	102	-7.4
7.5	156	102	-7.5

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1549TFL...
7.6	165	109	-7.6
7.7	165	109	-7.7
7.8	165	109	-7.8
7.9	165	109	-7.9
8.0	165	109	-8
8.1	165	109	-8.1
8.2	165	109	-8.2
8.3	165	109	-8.3
8.4	165	109	-8.4
8.5	165	109	-8.5
8.6	175	115	-8.6
8.7	175	115	-8.7
8.8	175	115	-8.8
8.9	175	115	-8.9
9.0	175	115	-9
9.1	175	115	-9.1
9.2	175	115	-9.2
9.3	175	115	-9.3
9.4	175	115	-9.4
9.5	175	115	-9.5
9.6	184	121	-9.6
9.7	184	121	-9.7
9.8	184	121	-9.8
9.9	184	121	-9.9
10.0	184	121	-10
10.2	184	121	-10.2
10.5	184	121	-10.5
11.0	195	128	-11
11.5	195	128	-11.5
12.0	205	134	-12

Straight Shank Drills, Long Series

A1549TIP

Application: High-performance drill with special geometry and coating to optimise chip formation and removal. Drilling depths of approx 12 - 15 x d are possible without feed interruption. Very wide range of application in all materials up to approx. 1300 N/mm².



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1549TIP...
1.0	56	33	-1
1.1	60	37	-1.1
1.2	65	41	-1.2
1.3	65	41	-1.3
1.4	70	45	-1.4
1.5	70	45	-1.5
1.6	76	50	-1.6
1.7	76	50	-1.7
1.8	80	53	-1.8
1.9	80	53	-1.9
2.0	85	56	-2
2.1	85	56	-2.1
2.2	90	59	-2.2
2.3	90	59	-2.3
2.4	95	62	-2.4
2.5	95	62	-2.5
2.6	95	62	-2.6
2.7	100	66	-2.7
2.8	100	66	-2.8
2.9	100	66	-2.9
3.0	100	66	-3
3.1	106	69	-3.1
3.2	106	69	-3.2
3.3	106	69	-3.3
3.4	112	73	-3.4
3.5	112	73	-3.5
3.6	112	73	-3.6
3.7	112	73	-3.7
3.8	119	78	-3.8
3.9	119	78	-3.9
4.0	119	78	-4
4.1	119	78	-4.1
4.2	119	78	-4.2

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1549TIP...
4.3	126	82	-4.3
4.4	126	82	-4.4
4.5	126	82	-4.5
4.6	126	82	-4.6
4.7	126	82	-4.7
4.8	132	87	-4.8
4.9	132	87	-4.9
5.0	132	87	-5
5.1	132	87	-5.1
5.2	132	87	-5.2
5.3	132	87	-5.3
5.4	139	91	-5.4
5.5	139	91	-5.5
5.6	139	91	-5.6
5.7	139	91	-5.7
5.8	139	91	-5.8
5.9	139	91	-5.9
6.0	139	91	-6
6.1	148	97	-6.1
6.2	148	97	-6.2
6.3	148	97	-6.3
6.4	148	97	-6.4
6.5	148	97	-6.5
6.6	148	97	-6.6
6.7	148	97	-6.7
6.8	156	102	-6.8
6.9	156	102	-6.9
7.0	156	102	-7
7.1	156	102	-7.1
7.2	156	102	-7.2
7.3	156	102	-7.3
7.4	156	102	-7.4
7.5	156	102	-7.5

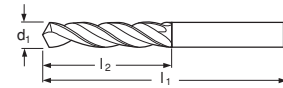
d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1549TIP...
7.6	165	109	-7.6
7.7	165	109	-7.7
7.8	165	109	-7.8
7.9	165	109	-7.9
8.0	165	109	-8
8.1	165	109	-8.1
8.2	165	109	-8.2
8.3	165	109	-8.3
8.4	165	109	-8.4
8.5	165	109	-8.5
8.6	175	115	-8.6
8.7	175	115	-8.7
8.8	175	115	-8.8
8.9	175	115	-8.9
9.0	175	115	-9
9.1	175	115	-9.1
9.2	175	115	-9.2
9.3	175	115	-9.3
9.4	175	115	-9.4
9.5	175	115	-9.5
9.6	184	121	-9.6
9.7	184	121	-9.7
9.8	184	121	-9.8
9.9	184	121	-9.9
10.0	184	121	-10
10.2	184	121	-10.2
10.5	184	121	-10.5
11.0	195	128	-11
11.5	195	128	-11.5
12.0	205	134	-12

Straight Shank Drills, Extra Long Series

A1611

Application: For materials forming long and short chips such as steel up to 1000 N/mm², cast iron, malleable iron, sintered iron, German silver, AISi-alloys (Si > 11%).

Remarks: Up to 3 mm bright finish



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1611...
2.0	125	85	-2
2.1	125	85	-2.1
2.2	135	90	-2.2
2.3	135	90	-2.3
2.4	140	95	-2.4
2.5	140	95	-2.5
2.6	140	95	-2.6
2.7	150	100	-2.7
2.8	150	100	-2.8
2.9	150	100	-2.9
3.0	150	100	-3
3.1	155	105	-3.1
3.2	155	105	-3.2
3.3	155	105	-3.3
3.4	165	115	-3.4
3.5	165	115	-3.5
3.6	165	115	-3.6
3.7	165	115	-3.7
3.8	175	120	-3.8
3.9	175	120	-3.9
4.0	175	120	-4
4.1	175	120	-4.1
4.2	175	120	-4.2
4.3	185	125	-4.3

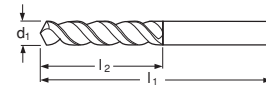
d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1611...
4.4	185	125	-4.4
4.5	185	125	-4.5
4.6	185	125	-4.6
4.7	185	125	-4.7
4.8	195	135	-4.8
4.9	195	135	-4.9
5.0	195	135	-5
5.1	195	135	-5.1
5.2	195	135	-5.2
5.3	195	135	-5.3
5.4	205	140	-5.4
5.5	205	140	-5.5
5.6	205	140	-5.6
5.7	205	140	-5.7
5.8	205	140	-5.8
5.9	205	140	-5.9
6.0	205	140	-6
6.1	215	150	-6.1
6.2	215	150	-6.2
6.3	215	150	-6.3
6.4	215	150	-6.4
6.5	215	150	-6.5
6.6	215	150	-6.6
6.7	215	150	-6.7

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1611...
6.8	225	155	-6.8
6.9	225	155	-6.9
7.0	225	155	-7
7.1	225	155	-7.1
7.2	225	155	-7.2
7.3	225	155	-7.3
7.4	225	155	-7.4
7.5	225	155	-7.5
7.6	240	165	-7.6
7.7	240	165	-7.7
7.8	240	165	-7.8
7.9	240	165	-7.9
8.0	240	165	-8
8.1	240	165	-8.1
8.2	240	165	-8.2
8.3	240	165	-8.3
8.5	240	165	-8.5
8.8	250	175	-8.8
9.0	250	175	-9
9.2	250	175	-9.2
9.5	250	175	-9.5
9.8	265	185	-9.8
10.0	265	185	-10

Deep Hole Straight Shank Drills, Extra Long Series

A1622

Application: Deep hole drilling design with extremely good chip evacuation. For materials forming long chips such as steel up to 1300 N/mm², Al-, AISI-, copper-alloys, stainless steels (300 series), soft bronze, tough brass.



d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1622...
2.000		125	85	-2
2.100		125	85	-2.1
2.200		135	90	-2.2
2.300		135	90	-2.3
2.381	3/32 IN	140	95	-3/32IN
2.400		140	95	-2.4
2.489	No. 40	140	95	-NO40
2.500		140	95	-2.5
2.527	No. 39	140	95	-NO39
2.578	No. 38	140	95	-NO38
2.600		140	95	-2.6
2.642	No. 37	140	95	-NO37
2.700		150	100	-2.7
2.705	No. 36	150	100	-NO36
2.778	7/64 IN	150	100	-7/64IN
2.794	No. 35	150	100	-NO35
2.800		150	100	-2.8
2.819	No. 34	150	100	-NO34
2.870	No. 33	150	100	-NO33
2.900		150	100	-2.9
2.946	No. 32	150	100	-NO32
3.000		150	100	-3
3.048	No. 31	155	105	-NO31
3.100		155	105	-3.1
3.175	1/8 IN	155	105	-1/8IN
3.200		155	105	-3.2
3.264	No. 30	155	105	-NO30
3.300		155	105	-3.3
3.400		165	115	-3.4
3.454	No. 29	165	115	-NO29
3.500		165	115	-3.5
3.569	No. 28	165	115	-NO28
3.572	9/64 IN	165	115	-9/64IN
3.600		165	115	-3.6
3.658	No. 27	165	115	-NO27
3.700		165	115	-3.7
3.734	No. 26	165	115	-NO26
3.797	No. 25	175	120	-NO25
3.800		175	120	-3.8
3.861	No. 24	175	120	-NO24
3.900		175	120	-3.9
3.912	No. 23	175	120	-NO23
3.969	5/32 IN	175	120	-5/32IN
3.988	No. 22	175	120	-NO22
4.000		175	120	-4
4.039	No. 21	175	120	-NO21
4.089	No. 20	175	120	-NO20
4.100		175	120	-4.1

d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1622...
4.200		175	120	-4.2
4.216	No. 19	175	120	-NO19
4.300		185	125	-4.3
4.305	No. 18	185	125	-NO18
4.366	11/64 IN	185	125	-11/64IN
4.394	No. 17	185	125	-NO17
4.400		185	125	-4.4
4.496	No. 16	185	125	-NO16
4.500		185	125	-4.5
4.572	No. 15	185	125	-NO15
4.600		185	125	-4.6
4.623	No. 14	185	125	-NO14
4.699	No. 13	185	125	-NO13
4.700		185	125	-4.7
4.763	3/16 IN	195	135	-3/16IN
4.800		195	135	-4.8
4.801	No. 12	195	135	-NO12
4.851	No. 11	195	135	-NO11
4.900		195	135	-4.9
4.915	No. 10	195	135	-NO10
4.978	No. 9	195	135	-NO9
5.000		195	135	-5
5.055	No. 8	195	135	-NO8
5.100		195	135	-5.1
5.105	No. 7	195	135	-NO7
5.159	13/64 IN	195	135	-13/64IN
5.182	No. 6	195	135	-NO6
5.200		195	135	-5.2
5.220	No. 5	195	135	-NO5
5.300		195	135	-5.3
5.309	No. 4	205	140	-NO4
5.400		205	140	-5.4
5.410	No. 3	205	140	-NO3
5.500		205	140	-5.5
5.556	7/32 IN	205	140	-7/32IN
5.600		205	140	-5.6
5.613	No. 2	205	140	-NO2
5.700		205	140	-5.7
5.791	No. 1	205	140	-NO1
5.800		205	140	-5.8
5.900		205	140	-5.9
5.953	15/64 IN	205	140	-15/64IN
6.000		205	140	-6
6.100		215	150	-6.1
6.200		215	150	-6.2
6.300		215	150	-6.3
6.350	1/4 IN	215	150	-1/4IN
6.400		215	150	-6.4

Continued Deep Hole Straight Shank Drills, Extra Long Series A1622

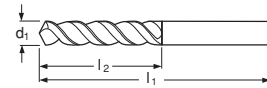
d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1622...	d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1622...
6.500		215	150	-6.5	8.900		250	175	-8.9
6.600		215	150	-6.6	9.000		250	175	-9
6.700		215	150	-6.7	9.100		250	175	-9.1
6.747	17/64 IN	225	155	-17/64IN	9.128	23/64 IN	250	175	-23/64IN
6.800		225	155	-6.8	9.200		250	175	-9.2
6.900		225	155	-6.9	9.300		250	175	-9.3
7.000		225	155	-7	9.400		250	175	-9.4
7.100		225	155	-7.1	9.500		250	175	-9.5
7.144	9/32 IN	225	155	-9/32IN	9.525	3/8 IN	265	185	-3/8IN
7.200		225	155	-7.2	9.600		265	185	-9.6
7.300		225	155	-7.3	9.700		265	185	-9.7
7.400		225	155	-7.4	9.800		265	185	-9.8
7.500		225	155	-7.5	9.900		265	185	-9.9
7.541	19/64 IN	240	165	-19/64IN	9.922	25/64 IN	265	185	-25/64IN
7.600		240	165	-7.6	10.000		265	185	-10
7.700		240	165	-7.7	10.319	13/32 IN	265	185	-13/32IN
7.800		240	165	-7.8	10.500		265	185	-10.5
7.900		240	165	-7.9	10.716	27/64 IN	280	195	-27/64IN
7.938	5/16 IN	240	165	-5/16IN	11.000		280	195	-11
8.000		240	165	-8	11.113	7/16 IN	280	195	-7/16IN
8.100		240	165	-8.1	11.500		280	195	-11.5
8.200		240	165	-8.2	11.509	29/64 IN	280	195	-29/64IN
8.300		240	165	-8.3	11.906	15/32 IN	295	205	-15/32IN
8.334	21/64 IN	240	165	-21/64IN	12.000		295	205	-12
8.400		240	165	-8.4	12.303	31/64 IN	295	205	-31/64IN
8.500		240	165	-8.5	12.700	1/2 IN	295	205	-1/2IN
8.600		250	175	-8.6					
8.700		250	175	-8.7					
8.731	11/32 IN	250	175	-11/32IN					
8.800		250	175	-8.8					



Deep Hole Straight Shank Drills, Extra Long Series

A1722

Application: Deep hole drill design with special geometry for optimum chip-control and chip evacuation. Enables drilling of deep holes without pecking in a wide range of materials up to approx. 1300 N/mm².



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1722...
3.0	190	130	-3
3.5	210	145	-3.5
4.0	220	150	-4
4.5	235	160	-4.5
5.0	245	170	-5
5.5	260	180	-5.5
6.0	260	180	-6
6.5	275	190	-6.5
7.0	290	200	-7

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1722...
7.5	290	200	-7.5
8.0	305	210	-8
8.5	305	210	-8.5
9.0	320	220	-9
9.5	320	220	-9.5
10.0	340	235	-10
10.5	340	235	-10.5
11.0	360	250	-11
11.5	360	250	-11.5

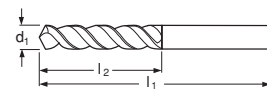
d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1722...
12.0	380	260	-12



Deep Hole Straight Shank Drills, Extra Long Series

A1822

Application: Deep hole drill design with special geometry for optimum chip-control and chip evacuation. Enables drilling of deep holes without pecking in a wide range of materials up to approx. 1300 N/mm².



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1822...
3.5	265	180	-3.5
4.0	280	190	-4
4.5	295	200	-4.5
5.0	315	210	-5
5.5	330	225	-5.5
6.0	330	225	-6

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1822...
6.5	350	235	-6.5
7.0	370	250	-7
7.5	370	250	-7.5
8.0	390	265	-8
8.5	390	265	-8.5
9.0	410	280	-9

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1822...
9.5	410	280	-9.5
10.0	430	295	-10
10.5	430	295	-10.5
11.0	450	305	-11
11.5	450	305	-11.5
12.0	480	305	-12



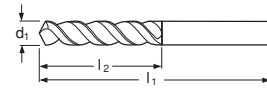
Deep Hole Straight Shank Drills, Extra Long Series

A1922L

Application: Deep hole drill design with special geometry for optimum chip-control and chip evacuation. Enables drilling of deep holes without pecking in a wide range of materials up to approx. 1300 N/mm².



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1922L...
8	800	700	-8
10	1000	800	-10
12	1000	800	-12



Deep Hole Straight Shank Drills, Extra Long Series

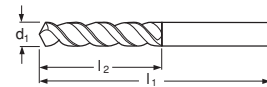
A1922S

Application: Deep hole drill design with special geometry for optimum chip-control and chip evacuation. Enables drilling of deep holes without pecking in a wide range of materials up to approx. 1300 N/mm².



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1922S...
6.0	500	400	-6
6.5	500	400	-6.5
7.0	500	400	-7
8.0	650	550	-8
9.0	650	550	-9
10.0	800	700	-10

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1922S...
11.0	800	700	-11
12.0	800	700	-12
13.0	800	700	-13
14.0	800	700	-14

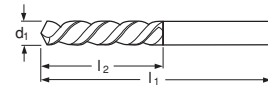


Screw Machine Drills, Short Series, Left Hand Cut

A2258

Application: Deep hole drilling design with extremely good chip evacuation. For materials forming long chips such as steel up to 1300 N/mm², Al-, AISi-, copper-alloys, stainless steels (300 series), soft bronze, tough brass.

Remarks: Overall length acc. to DIN 1897, extended flute length (not in accordance with DIN 1897)



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A2258...
1.0	26	8	-1
1.1	28	9	-1.1
1.2	30	10	-1.2
1.3	30	10	-1.3
1.4	32	12	-1.4
1.5	32	12	-1.5
1.6	34	13	-1.6
1.7	34	13	-1.7
1.8	36	14	-1.8
1.9	36	14	-1.9
2.0	38	16	-2
2.1	38	16	-2.1
2.2	40	17	-2.2
2.3	40	17	-2.3
2.4	43	18	-2.4
2.5	43	18	-2.5
2.6	43	18	-2.6
2.7	46	21	-2.7
2.8	46	21	-2.8
2.9	46	21	-2.9
3.0	46	21	-3
3.1	49	23	-3.1
3.2	49	23	-3.2
3.3	49	23	-3.3
3.4	52	26	-3.4
3.5	52	26	-3.5
3.6	52	26	-3.6
3.7	52	26	-3.7
3.8	55	29	-3.8
3.9	55	29	-3.9
4.0	55	29	-4
4.1	55	29	-4.1
4.2	55	29	-4.2
4.3	58	31	-4.3
4.4	58	31	-4.4
4.5	58	31	-4.5
4.6	58	31	-4.6
4.7	58	31	-4.7
4.8	62	34	-4.8

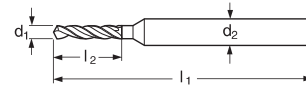
d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A2258...
4.9	62	34	-4.9
5.0	62	34	-5
5.1	62	34	-5.1
5.2	62	34	-5.2
5.3	62	34	-5.3
5.4	66	36	-5.4
5.5	66	36	-5.5
5.6	66	36	-5.6
5.7	66	36	-5.7
5.8	66	36	-5.8
5.9	66	36	-5.9
6.0	66	36	-6
6.1	70	40	-6.1
6.2	70	40	-6.2
6.3	70	40	-6.3
6.4	70	40	-6.4
6.5	70	40	-6.5
6.6	70	40	-6.6
6.7	70	40	-6.7
6.8	74	44	-6.8
6.9	74	44	-6.9
7.0	74	44	-7
7.1	74	44	-7.1
7.2	74	44	-7.2
7.3	74	44	-7.3
7.4	74	44	-7.4
7.5	74	44	-7.5
7.6	79	48	-7.6
7.7	79	48	-7.7
7.8	79	48	-7.8
7.9	79	48	-7.9
8.0	79	48	-8
8.1	79	48	-8.1
8.2	79	48	-8.2
8.3	79	48	-8.3
8.4	79	48	-8.4
8.5	79	48	-8.5
8.6	84	52	-8.6
8.7	84	52	-8.7

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A2258...
8.8	84	52	-8.8
8.9	84	52	-8.9
9.0	84	52	-9
9.1	84	52	-9.1
9.2	84	52	-9.2
9.3	84	52	-9.3
9.4	84	52	-9.4
9.5	84	52	-9.5
9.6	89	56	-9.6
9.7	89	56	-9.7
9.8	89	56	-9.8
9.9	89	56	-9.9
10.0	89	56	-10
10.2	89	56	-10.2
10.5	89	56	-10.5
10.8	95	61	-10.8
11.0	95	61	-11
11.5	95	61	-11.5
12.0	102	66	-12
12.5	102	66	-12.5
13.0	102	66	-13
13.5	107	70	-13.5
14.0	107	70	-14
14.5	111	73	-14.5
15.0	111	73	-15
15.5	115	75	-15.5
16.0	115	75	-16
17.0	119	78	-17
18.0	123	81	-18
19.0	127	83	-19
20.0	131	86	-20

Micro Precision Drills

A3143

Application: For materials forming long and short chips such as steel up to 1000 N/mm², cast iron, malleable iron, sintered iron, copper alloys, German silver, AISI-alloys.



d ₁ mm 0 - 0,004	l ₁ mm	l ₂ mm min.	d ₂ mm h8	Ordering code A3143...
0.05	25	0.3	1.0	-0.05
0.06	25	0.3	1.0	-0.06
0.07	25	0.4	1.0	-0.07
0.08	25	0.4	1.0	-0.08
0.09	25	0.4	1.0	-0.09
0.10	25	0.5	1.0	-0.1
0.11	25	0.5	1.0	-0.11
0.12	25	0.5	1.0	-0.12
0.13	25	0.8	1.0	-0.13
0.14	25	0.8	1.0	-0.14
0.15	25	0.8	1.0	-0.15
0.16	25	1.1	1.0	-0.16
0.17	25	1.1	1.0	-0.17
0.18	25	1.1	1.0	-0.18
0.19	25	1.1	1.0	-0.19
0.20	25	1.5	1.0	-0.2
0.21	25	1.5	1.0	-0.21
0.22	25	1.5	1.0	-0.22
0.23	25	1.5	1.0	-0.23
0.24	25	1.5	1.0	-0.24
0.25	25	1.9	1.0	-0.25
0.26	25	1.9	1.0	-0.26
0.27	25	1.9	1.0	-0.27
0.28	25	1.9	1.0	-0.28
0.29	25	1.9	1.0	-0.29
0.30	25	1.9	1.0	-0.3
0.31	25	2.4	1.0	-0.31
0.32	25	2.4	1.0	-0.32
0.33	25	2.4	1.0	-0.33
0.34	25	2.4	1.0	-0.34
0.35	25	2.4	1.0	-0.35
0.36	25	2.4	1.0	-0.36
0.37	25	2.4	1.0	-0.37
0.38	25	2.4	1.0	-0.38
0.39	25	3.0	1.0	-0.39
0.40	25	3.0	1.0	-0.4
0.41	25	3.0	1.0	-0.41
0.42	25	3.0	1.0	-0.42
0.43	25	3.0	1.0	-0.43
0.44	25	3.0	1.0	-0.44
0.45	25	3.0	1.0	-0.45
0.46	25	3.0	1.0	-0.46
0.47	25	3.0	1.0	-0.47
0.48	25	3.0	1.0	-0.48
0.49	25	3.4	1.0	-0.49
0.50	25	3.4	1.0	-0.5
0.51	25	3.4	1.0	-0.51
0.52	25	3.4	1.0	-0.52

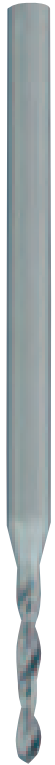
d ₁ mm 0 - 0,004	l ₁ mm	l ₂ mm min.	d ₂ mm h8	Ordering code A3143...
0.53	25	3.4	1.0	-0.53
0.54	25	3.9	1.0	-0.54
0.55	25	3.9	1.0	-0.55
0.56	25	3.9	1.0	-0.56
0.57	25	3.9	1.0	-0.57
0.58	25	3.9	1.0	-0.58
0.59	25	3.9	1.0	-0.59
0.60	25	3.9	1.0	-0.6
0.61	25	4.2	1.0	-0.61
0.62	25	4.2	1.0	-0.62
0.63	25	4.2	1.0	-0.63
0.64	25	4.2	1.0	-0.64
0.65	25	4.2	1.0	-0.65
0.66	25	4.2	1.0	-0.66
0.67	25	4.2	1.0	-0.67
0.68	25	4.8	1.0	-0.68
0.69	25	4.8	1.0	-0.69
0.70	25	4.8	1.0	-0.7
0.71	25	4.8	1.0	-0.71
0.72	25	4.8	1.0	-0.72
0.73	25	4.8	1.0	-0.73
0.74	25	4.8	1.0	-0.74
0.75	25	4.8	1.0	-0.75
0.76	25	5.3	1.0	-0.76
0.77	25	5.3	1.0	-0.77
0.78	25	5.3	1.0	-0.78
0.79	25	5.3	1.0	-0.79
0.80	25	5.3	1.5	-0.8
0.81	25	5.3	1.5	-0.81
0.82	25	5.3	1.5	-0.82
0.83	25	5.3	1.5	-0.83
0.84	25	5.3	1.5	-0.84
0.85	25	5.3	1.5	-0.85
0.86	25	6.0	1.5	-0.86
0.87	25	6.0	1.5	-0.87
0.88	25	6.0	1.5	-0.88
0.89	25	6.0	1.5	-0.89
0.90	25	6.0	1.5	-0.9
0.91	25	6.0	1.5	-0.91
0.92	25	6.0	1.5	-0.92
0.93	25	6.0	1.5	-0.93
0.94	25	6.0	1.5	-0.94
0.95	25	6.0	1.5	-0.95
0.96	25	6.8	1.5	-0.96
0.97	25	6.8	1.5	-0.97
0.98	25	6.8	1.5	-0.98
0.99	25	6.8	1.5	-0.99
1.00	25	6.8	1.5	-1

Continued Micro Precision Drills

A3143

d ₁ mm 0 - 0,004	l ₁ mm	l ₂ mm min.	d ₂ mm h8	Ordering code A3143...
1.05	25	6.8	1.5	-1.05
1.10	25	7.6	1.5	-1.1
1.15	25	7.6	1.5	-1.15
1.20	25	8.5	1.5	-1.2
1.25	25	8.5	1.5	-1.25
1.30	25	8.5	1.5	-1.3

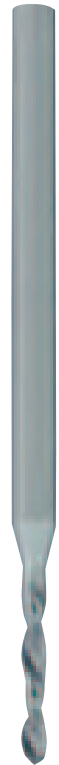
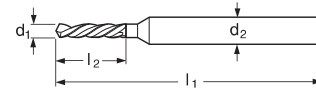
d ₁ mm 0 - 0,004	l ₁ mm	l ₂ mm min.	d ₂ mm h8	Ordering code A3143...
1.35	25	9.5	1.5	-1.35
1.40	25	9.5	1.5	-1.4
1.45	25	9.5	1.5	-1.45



Micro Precision Drills

A3153

Application: For materials forming long and short chips such as steel up to 1000 N/mm², cast iron, malleable iron, sintered iron, copper alloys, German silver, AISI-alloys.



d ₁ mm 0 - 0,004	l ₁ mm	l ₂ mm min.	d ₂ mm h8	Ordering code A3153...
0.05	25	0.3	1.0	-0.05
0.06	25	0.3	1.0	-0.06
0.07	25	0.4	1.0	-0.07
0.08	25	0.4	1.0	-0.08
0.09	25	0.4	1.0	-0.09
0.10	25	0.5	1.0	-0.1
0.11	25	0.5	1.0	-0.11
0.12	25	0.5	1.0	-0.12
0.13	25	0.8	1.0	-0.13
0.14	25	0.8	1.0	-0.14
0.15	25	0.8	1.0	-0.15
0.16	25	1.1	1.0	-0.16
0.17	25	1.1	1.0	-0.17
0.18	25	1.1	1.0	-0.18
0.19	25	1.1	1.0	-0.19
0.20	25	1.5	1.0	-0.2
0.21	25	1.5	1.0	-0.21
0.22	25	1.5	1.0	-0.22
0.23	25	1.5	1.0	-0.23
0.24	25	1.5	1.0	-0.24
0.25	25	1.9	1.0	-0.25
0.26	25	1.9	1.0	-0.26
0.27	25	1.9	1.0	-0.27
0.28	25	1.9	1.0	-0.28
0.29	25	1.9	1.0	-0.29
0.30	25	1.9	1.0	-0.3
0.31	25	2.4	1.0	-0.31
0.32	25	2.4	1.0	-0.32
0.33	25	2.4	1.0	-0.33
0.34	25	2.4	1.0	-0.34
0.35	25	2.4	1.0	-0.35
0.36	25	2.4	1.0	-0.36
0.37	25	2.4	1.0	-0.37
0.38	25	2.4	1.0	-0.38
0.39	25	3.0	1.0	-0.39
0.40	25	3.0	1.0	-0.4
0.41	25	3.0	1.0	-0.41
0.42	25	3.0	1.0	-0.42
0.43	25	3.0	1.0	-0.43
0.44	25	3.0	1.0	-0.44
0.45	25	3.0	1.0	-0.45
0.46	25	3.0	1.0	-0.46
0.47	25	3.0	1.0	-0.47
0.48	25	3.0	1.0	-0.48
0.49	25	3.4	1.0	-0.49
0.50	25	3.4	1.0	-0.5
0.51	25	3.4	1.0	-0.51
0.52	25	3.4	1.0	-0.52

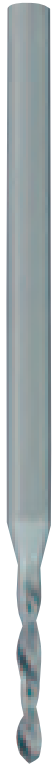
d ₁ mm 0 - 0,004	l ₁ mm	l ₂ mm min.	d ₂ mm h8	Ordering code A3153...
0.53	25	3.4	1.0	-0.53
0.54	25	3.9	1.0	-0.54
0.55	25	3.9	1.0	-0.55
0.56	25	3.9	1.0	-0.56
0.57	25	3.9	1.0	-0.57
0.58	25	3.9	1.0	-0.58
0.59	25	3.9	1.0	-0.59
0.60	25	3.9	1.0	-0.6
0.61	25	4.2	1.0	-0.61
0.62	25	4.2	1.0	-0.62
0.63	25	4.2	1.0	-0.63
0.64	25	4.2	1.0	-0.64
0.65	25	4.2	1.0	-0.65
0.66	25	4.2	1.0	-0.66
0.67	25	4.2	1.0	-0.67
0.68	25	4.8	1.0	-0.68
0.69	25	4.8	1.0	-0.69
0.70	25	4.8	1.0	-0.7
0.71	25	4.8	1.0	-0.71
0.72	25	4.8	1.0	-0.72
0.73	25	4.8	1.0	-0.73
0.74	25	4.8	1.0	-0.74
0.75	25	4.8	1.0	-0.75
0.76	25	5.3	1.0	-0.76
0.77	25	5.3	1.0	-0.77
0.78	25	5.3	1.0	-0.78
0.79	25	5.3	1.0	-0.79
0.80	25	5.3	1.5	-0.8
0.81	25	5.3	1.5	-0.81
0.82	25	5.3	1.5	-0.82
0.83	25	5.3	1.5	-0.83
0.84	25	5.3	1.5	-0.84
0.85	25	5.3	1.5	-0.85
0.86	25	6.0	1.5	-0.86
0.87	25	6.0	1.5	-0.87
0.88	25	6.0	1.5	-0.88
0.89	25	6.0	1.5	-0.89
0.90	25	6.0	1.5	-0.9
0.91	25	6.0	1.5	-0.91
0.92	25	6.0	1.5	-0.92
0.93	25	6.0	1.5	-0.93
0.94	25	6.0	1.5	-0.94
0.95	25	6.0	1.5	-0.95
0.96	25	6.8	1.5	-0.96
0.97	25	6.8	1.5	-0.97
0.98	25	6.8	1.5	-0.98
0.99	25	6.8	1.5	-0.99
1.00	25	6.8	1.5	-1

Continued Micro Precision Drills

A3153

d ₁ mm 0 - 0,004	l ₁ mm	l ₂ mm min.	d ₂ mm h8	Ordering code A3153...
1.05	25	6.8	1.5	-1.05
1.10	25	7.6	1.5	-1.1
1.15	25	7.6	1.5	-1.15
1.20	25	8.5	1.5	-1.2
1.25	25	8.5	1.5	-1.25
1.30	25	8.5	1.5	-1.3

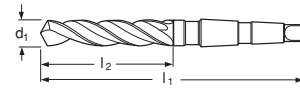
d ₁ mm 0 - 0,004	l ₁ mm	l ₂ mm min.	d ₂ mm h8	Ordering code A3153...
1.35	25	9.5	1.5	-1.35
1.40	25	9.5	1.5	-1.4
1.45	25	9.5	1.5	-1.45



Taper Shank Drills, Extra Short Series

A4141

Application: Twist drill with increased red-hardness and reinforced geometry for steels of high tensile strength, stainless and heat resistant steels (300 and 400 series) Ni- and Co-based Super Alloys, hard cast materials.




d ₁ mm h8	l ₁ mm	l ₂ mm	MT	Ordering code A4141...
10.0	138	57	1	-10
10.5	138	57	1	-10.5
11.0	142	61	1	-11
11.5	142	61	1	-11.5
12.0	147	66	1	-12
12.5	147	66	1	-12.5
13.0	147	66	1	-13
13.5	168	70	2	-13.5
14.0	168	70	2	-14
14.5	172	74	2	-14.5
15.0	172	74	2	-15
15.5	176	78	2	-15.5
16.0	176	78	2	-16
16.5	179	81	2	-16.5
17.0	179	81	2	-17
17.5	183	85	2	-17.5
18.0	183	85	2	-18
18.5	186	88	2	-18.5

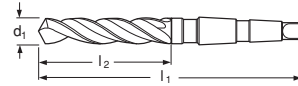
d ₁ mm h8	l ₁ mm	l ₂ mm	MT	Ordering code A4141...
19.0	186	88	2	-19
19.5	212	91	3	-19.5
20.0	212	91	3	-20
21.0	216	95	3	-21
22.0	219	98	3	-22
23.0	222	101	3	-23
24.0	225	104	3	-24
25.0	225	104	3	-25
26.0	256	107	4	-26
27.0	259	110	4	-27
28.0	259	110	4	-28
29.0	263	114	4	-29
30.0	263	114	4	-30

Taper Shank Drills

A4211

Application: For materials forming long and short chips such as steel up to 1000 N/mm², cast iron, malleable iron, sintered iron, German silver, AISI-alloys (Si > 11%).

DIN 345	N	RH	118°	HSS	FNZ	
B.S. 328						



d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	MT	Ordering code A4211...
3.000		114	33	1	-3
3.175	1/8 IN	117	36	1	-1/8IN
3.250		117	36	1	-3.25
3.500		120	39	1	-3.5
3.572	9/64 IN	120	39	1	-9/64IN
3.750		120	39	1	-3.75
3.969	5/32 IN	124	43	1	-5/32IN
4.000		124	43	1	-4
4.100		124	43	1	-4.1
4.200		124	43	1	-4.2
4.250		124	43	1	-4.25
4.300		128	47	1	-4.3
4.366	11/64 IN	128	47	1	-11/64IN
4.400		128	47	1	-4.4
4.500		128	47	1	-4.5
4.600		128	47	1	-4.6
4.700		128	47	1	-4.7
4.750		128	47	1	-4.75
4.763	3/16 IN	133	52	1	-3/16IN
4.800		133	52	1	-4.8
4.900		133	52	1	-4.9
5.000		133	52	1	-5
5.100		133	52	1	-5.1
5.159	13/64 IN	133	52	1	-13/64IN
5.200		133	52	1	-5.2
5.250		133	52	1	-5.25
5.300		133	52	1	-5.3
5.400		138	57	1	-5.4
5.500		138	57	1	-5.5
5.556	7/32 IN	138	57	1	-7/32IN
5.600		138	57	1	-5.6
5.700		138	57	1	-5.7
5.750		138	57	1	-5.75
5.800		138	57	1	-5.8
5.900		138	57	1	-5.9
5.953	15/64 IN	138	57	1	-15/64IN
6.000		138	57	1	-6
6.100		144	63	1	-6.1
6.200		144	63	1	-6.2
6.250		144	63	1	-6.25
6.300		144	63	1	-6.3
6.350	1/4 IN	144	63	1	-1/4IN
6.400		144	63	1	-6.4
6.500		144	63	1	-6.5
6.600		144	63	1	-6.6
6.700		144	63	1	-6.7
6.747	17/64 IN	150	69	1	-17/64IN
6.750		150	69	1	-6.75

d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	MT	Ordering code A4211...
6.800		150	69	1	-6.8
6.900		150	69	1	-6.9
7.000		150	69	1	-7
7.100		150	69	1	-7.1
7.144	9/32 IN	150	69	1	-9/32IN
7.200		150	69	1	-7.2
7.250		150	69	1	-7.25
7.300		150	69	1	-7.3
7.400		150	69	1	-7.4
7.500		150	69	1	-7.5
7.541	19/64 IN	156	75	1	-19/64IN
7.600		156	75	1	-7.6
7.700		156	75	1	-7.7
7.750		156	75	1	-7.75
7.800		156	75	1	-7.8
7.900		156	75	1	-7.9
7.938	5/16 IN	156	75	1	-5/16IN
8.000		156	75	1	-8
8.100		156	75	1	-8.1
8.200		156	75	1	-8.2
8.250		156	75	1	-8.25
8.300		156	75	1	-8.3
8.334	21/64 IN	156	75	1	-21/64IN
8.400		156	75	1	-8.4
8.500		156	75	1	-8.5
8.600		162	81	1	-8.6
8.700		162	81	1	-8.7
8.731	11/32 IN	162	81	1	-11/32IN
8.750		162	81	1	-8.75
8.800		162	81	1	-8.8
8.900		162	81	1	-8.9
9.000		162	81	1	-9
9.100		162	81	1	-9.1
9.128	23/64 IN	162	81	1	-23/64IN
9.200		162	81	1	-9.2
9.250		162	81	1	-9.25
9.300		162	81	1	-9.3
9.400		162	81	1	-9.4
9.500		162	81	1	-9.5
9.525	3/8 IN	168	87	1	-3/8IN
9.600		168	87	1	-9.6
9.700		168	87	1	-9.7
9.750		168	87	1	-9.75
9.800		168	87	1	-9.8
9.900		168	87	1	-9.9
9.922	25/64 IN	168	87	1	-25/64IN
10.000		168	87	1	-10
10.100		168	87	1	-10.1

Continued Taper Shank Drills

A4211



d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	MT	Ordering code A4211...
10.200		168	87	1	-10.2
10.250		168	87	1	-10.25
10.300		168	87	1	-10.3
10.319	13/32 IN	168	87	1	-13/32IN
10.400		168	87	1	-10.4
10.500		168	87	1	-10.5
10.600		168	87	1	-10.6
10.700		175	94	1	-10.7
10.716	27/64 IN	175	94	1	-27/64IN
10.750		175	94	1	-10.75
10.800		175	94	1	-10.8
10.900		175	94	1	-10.9
11.000		175	94	1	-11
11.100		175	94	1	-11.1
11.113	7/16 IN	175	94	1	-7/16IN
11.200		175	94	1	-11.2
11.250		175	94	1	-11.25
11.300		175	94	1	-11.3
11.400		175	94	1	-11.4
11.500		175	94	1	-11.5
11.509	29/64 IN	175	94	1	-29/64IN
11.600		175	94	1	-11.6
11.700		175	94	1	-11.7
11.750		175	94	1	-11.75
11.800		175	94	1	-11.8
11.900		182	101	1	-11.9
11.906	15/32 IN	182	101	1	-15/32IN
12.000		182	101	1	-12
12.100		182	101	1	-12.1
12.200		182	101	1	-12.2
12.250		182	101	1	-12.25
12.300		182	101	1	-12.3
12.303	31/64 IN	182	101	1	-31/64IN
12.400		182	101	1	-12.4
12.500		182	101	1	-12.5
12.600		182	101	1	-12.6
12.700		182	101	1	-12.7
12.700	1/2 IN	182	101	1	-1/2IN
12.750		182	101	1	-12.75
12.800		182	101	1	-12.8
12.900		182	101	1	-12.9
13.000		182	101	1	-13
13.097	33/64 IN	182	101	1	-33/64IN
13.100		182	101	1	-13.1
13.200		182	101	1	-13.2
13.250		189	108	1	-13.25
13.300		189	108	1	-13.3
13.400		189	108	1	-13.4
13.494	17/32 IN	189	108	1	-17/32IN
13.500		189	108	1	-13.5
13.600		189	108	1	-13.6
13.700		189	108	1	-13.7
13.750		189	108	1	-13.75
13.800		189	108	1	-13.8
13.891	35/64 IN	189	108	1	-35/64IN
13.900		189	108	1	-13.9
14.000		189	108	1	-14

d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	MT	Ordering code A4211...
14.100		212	114	2	-14.1
14.200		212	114	2	-14.2
14.250		212	114	2	-14.25
14.288	9/16 IN	212	114	2	-9/16IN
14.300		212	114	2	-14.3
14.400		212	114	2	-14.4
14.500		212	114	2	-14.5
14.600		212	114	2	-14.6
14.684	37/64 IN	212	114	2	-37/64IN
14.700		212	114	2	-14.7
14.750		212	114	2	-14.75
14.800		212	114	2	-14.8
14.900		212	114	2	-14.9
15.000		212	114	2	-15
15.081	19/32 IN	218	120	2	-19/32IN
15.100		218	120	2	-15.1
15.200		218	120	2	-15.2
15.250		218	120	2	-15.25
15.300		218	120	2	-15.3
15.400		218	120	2	-15.4
15.478	39/64 IN	218	120	2	-39/64IN
15.500		218	120	2	-15.5
15.600		218	120	2	-15.6
15.700		218	120	2	-15.7
15.750		218	120	2	-15.75
15.800		218	120	2	-15.8
15.875	5/8 IN	218	120	2	-5/8IN
15.900		218	120	2	-15.9
16.000		218	120	2	-16
16.100		223	125	2	-16.1
16.200		223	125	2	-16.2
16.250		223	125	2	-16.25
16.272	41/64 IN	223	125	2	-41/64IN
16.300		223	125	2	-16.3
16.400		223	125	2	-16.4
16.500		223	125	2	-16.5
16.600		223	125	2	-16.6
16.669	21/32 IN	223	125	2	-21/32IN
16.700		223	125	2	-16.7
16.750		223	125	2	-16.75
16.800		223	125	2	-16.8
16.900		223	125	2	-16.9
17.000		223	125	2	-17
17.066	43/64 IN	228	130	2	-43/64IN
17.100		228	130	2	-17.1
17.200		228	130	2	-17.2
17.250		228	130	2	-17.25
17.300		228	130	2	-17.3
17.400		228	130	2	-17.4
17.463	11/16 IN	228	130	2	-11/16IN
17.500		228	130	2	-17.5
17.600		228	130	2	-17.6
17.700		228	130	2	-17.7
17.750		228	130	2	-17.75
17.800		228	130	2	-17.8
17.859	45/64 IN	228	130	2	-45/64IN
17.900		228	130	2	-17.9

Continued Taper Shank Drills

A4211



d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	MT	Ordering code A4211...
18.000		228	130	2	-18
18.100		233	135	2	-18.1
18.200		233	135	2	-18.2
18.250		233	135	2	-18.25
18.256	23/32 IN	233	135	2	-23/32IN
18.300		233	135	2	-18.3
18.400		233	135	2	-18.4
18.500		233	135	2	-18.5
18.600		233	135	2	-18.6
18.653	47/64 IN	233	135	2	-47/64IN
18.700		233	135	2	-18.7
18.750		233	135	2	-18.75
18.800		233	135	2	-18.8
18.900		233	135	2	-18.9
19.000		233	135	2	-19
19.050	3/4 IN	238	140	2	-3/4IN
19.100		238	140	2	-19.1
19.200		238	140	2	-19.2
19.250		238	140	2	-19.25
19.300		238	140	2	-19.3
19.400		238	140	2	-19.4
19.447	49/64 IN	238	140	2	-49/64IN
19.500		238	140	2	-19.5
19.600		238	140	2	-19.6
19.700		238	140	2	-19.7
19.750		238	140	2	-19.75
19.800		238	140	2	-19.8
19.844	25/32 IN	238	140	2	-25/32IN
19.900		238	140	2	-19.9
20.000		238	140	2	-20
20.100		243	145	2	-20.1
20.200		243	145	2	-20.2
20.241	51/64 IN	243	145	2	-51/64IN
20.250		243	145	2	-20.25
20.300		243	145	2	-20.3
20.400		243	145	2	-20.4
20.500		243	145	2	-20.5
20.600		243	145	2	-20.6
20.638	13/16 IN	243	145	2	-13/16IN
20.700		243	145	2	-20.7
20.750		243	145	2	-20.75
20.800		243	145	2	-20.8
20.900		243	145	2	-20.9
21.000		243	145	2	-21
21.034	53/64 IN	243	145	2	-53/64IN
21.100		243	145	2	-21.1
21.200		243	145	2	-21.2
21.250		248	150	2	-21.25
21.300		248	150	2	-21.3
21.400		248	150	2	-21.4
21.431	27/32 IN	248	150	2	-27/32IN
21.500		248	150	2	-21.5
21.600		248	150	2	-21.6
21.700		248	150	2	-21.7
21.750		248	150	2	-21.75
21.800		248	150	2	-21.8
21.828	55/64 IN	248	150	2	-55/64IN

d ₁ mm h8	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	MT	Ordering code A4211...
21.900		248	150	2	-21.9
22.000		248	150	2	-22
22.100		248	150	2	-22.1
22.200		248	150	2	-22.2
22.225	7/8 IN	248	150	2	-7/8IN
22.250		248	150	2	-22.25
22.300		248	150	2	-22.3
22.400		248	150	2	-22.4
22.500		253	155	2	-22.5
22.600		253	155	2	-22.6
22.622	57/64 IN	253	155	2	-57/64IN
22.700		253	155	2	-22.7
22.750		253	155	2	-22.75
22.800		253	155	2	-22.8
22.900		253	155	2	-22.9
23.000		253	155	2	-23
23.019	29/32 IN	253	155	2	-29/32IN
23.250		276	155	3	-23.25
23.416	59/64 IN	276	155	3	-59/64IN
23.500		276	155	3	-23.5
23.750		281	160	3	-23.75
23.813	15/16 IN	281	160	3	-15/16IN
24.000		281	160	3	-24
24.209	61/64 IN	281	160	3	-61/64IN
24.250		281	160	3	-24.25
24.500		281	160	3	-24.5
24.606	31/32 IN	281	160	3	-31/32IN
24.750		281	160	3	-24.75
25.000		281	160	3	-25
25.003	63/64 IN	281	160	3	-63/64IN
25.250		286	165	3	-25.25
25.400	1 IN	286	165	3	-1IN
25.500		286	165	3	-25.5
25.750		286	165	3	-25.75
25.797	1.1/64 IN	286	165	3	-1.1/64IN
26.000		286	165	3	-26
26.194	1.1/32 IN	286	165	3	-1.1/32IN
26.250		286	165	3	-26.25
26.500		286	165	3	-26.5
26.591	1.3/64 IN	291	170	3	-1.3/64IN
26.750		291	170	3	-26.75
26.988	1.1/16 IN	291	170	3	-1.1/16IN
27.000		291	170	3	-27
27.250		291	170	3	-27.25
27.384	1.5/64 IN	291	170	3	-1.5/64IN
27.500		291	170	3	-27.5
27.750		291	170	3	-27.75
27.781	1.3/32 IN	291	170	3	-1.3/32IN
28.000		291	170	3	-28
28.178	1.7/64 IN	296	175	3	-1.7/64IN
28.250		296	175	3	-28.25
28.500		296	175	3	-28.5
28.575	1.1/8 IN	296	175	3	-1.1/8IN
28.750		296	175	3	-28.75
28.972	1.9/64 IN	296	175	3	-1.9/64IN
29.000		296	175	3	-29
29.250		296	175	3	-29.25

Continued Taper Shank Drills

A4211



d ₁ mm h8	Ø Inches/ Wire-Gauge	l ₁ mm	l ₂ mm	MT	Ordering code A4211...
29.369	1.5/32 IN	296	175	3	-1.5/32IN
29.500		296	175	3	-29.5
29.750		296	175	3	-29.75
29.766	1.11/64 IN	296	175	3	-1.11/64IN
30.000		296	175	3	-30
30.163	1.3/16 IN	301	180	3	-1.3/16IN
30.250		301	180	3	-30.25
30.500		301	180	3	-30.5
30.559	1.13/64 IN	301	180	3	-1.13/64IN
30.750		301	180	3	-30.75
30.956	1.7/32 IN	301	180	3	-1.7/32IN
31.000		301	180	3	-31
31.250		301	180	3	-31.25
31.353	1.15/64 IN	301	180	3	-1.15/64IN
31.500		301	180	3	-31.5
31.750	1.1/4 IN	306	185	3	-1.1/4IN
31.750		306	185	3	-31.75
32.000		334	185	4	-32
32.147	1.17/64 IN	334	185	4	-1.17/64IN
32.500		334	185	4	-32.5
32.544	1.9/32 IN	334	185	4	-1.9/32IN
32.941	1.19/64 IN	334	185	4	-1.19/64IN
33.000		334	185	4	-33
33.338	1.5/16 IN	334	185	4	-1.5/16IN
33.500		334	185	4	-33.5
33.734	1.21/64 IN	339	190	4	-1.21/64IN
34.000		339	190	4	-34
34.131	1.11/32 IN	339	190	4	-1.11/32IN
34.500		339	190	4	-34.5
34.528	1.23/64 IN	339	190	4	-1.23/64IN
34.925	1.3/8 IN	339	190	4	-1.3/8IN
35.000		339	190	4	-35
35.322	1.25/64 IN	339	190	4	-1.25/64IN
35.500		339	190	4	-35.5
35.719	1.13/32 IN	344	195	4	-1.13/32IN
36.000		344	195	4	-36
36.116	1.27/64 IN	344	195	4	-1.27/64IN
36.500		344	195	4	-36.5
36.513	1.7/16 IN	344	195	4	-1.7/16IN
36.909	1.29/64 IN	344	195	4	-1.29/64IN
37.000		344	195	4	-37
37.306	1.15/32 IN	344	195	4	-1.15/32IN
37.500		344	195	4	-37.5
37.703	1.31/64 IN	349	200	4	-1.31/64IN
38.000		349	200	4	-38
38.100	1.1/2 IN	349	200	4	-1.1/2IN
38.497	1.33/64 IN	349	200	4	-1.33/64IN
38.500		349	200	4	-38.5
38.894	1.17/32 IN	349	200	4	-1.17/32IN
39.000		349	200	4	-39
39.291	1.35/64 IN	349	200	4	-1.35/64IN
39.500		349	200	4	-39.5
39.688	1.9/16 IN	349	200	4	-1.9/16IN
40.000		349	200	4	-40
40.084	1.37/64 IN	354	205	4	-1.37/64IN
40.481	1.19/32 IN	354	205	4	-1.19/32IN
40.500		354	205	4	-40.5

d ₁ mm h8	Ø Inches/ Wire-Gauge	l ₁ mm	l ₂ mm	MT	Ordering code A4211...
40.878	1.39/64 IN	354	205	4	-1.39/64IN
41.000		354	205	4	-41
41.275	1.5/8 IN	354	205	4	-1.5/8IN
41.500		354	205	4	-41.5
41.672	1.41/64 IN	354	205	4	-1.41/64IN
42.000		354	205	4	-42
42.069	1.21/32 IN	354	205	4	-1.21/32IN
42.466	1.43/64 IN	354	205	4	-1.43/64IN
42.500		354	205	4	-42.5
42.863	1.11/16 IN	359	210	4	-1.11/16IN
43.000		359	210	4	-43
43.259	1.45/64 IN	359	210	4	-1.45/64IN
43.500		359	210	4	-43.5
43.656	1.23/32 IN	359	210	4	-1.23/32IN
44.000		359	210	4	-44
44.053	1.47/64 IN	359	210	4	-1.47/64IN
44.450	1.3/4 IN	359	210	4	-1.3/4IN
44.500		359	210	4	-44.5
45.000		359	210	4	-45
45.244	1.25/32 IN	364	215	4	-1.25/32IN
45.500		364	215	4	-45.5
46.000		364	215	4	-46
46.038	1.13/16 IN	364	215	4	-1.13/16IN
46.500		364	215	4	-46.5
46.831	1.27/32 IN	364	215	4	-1.27/32IN
47.000		364	215	4	-47
47.500		364	215	4	-47.5
47.625	1.7/8 IN	369	220	4	-1.7/8IN
48.000		369	220	4	-48
48.419	1.29/32 IN	369	220	4	-1.29/32IN
48.500		369	220	4	-48.5
49.000		369	220	4	-49
49.213	1.15/16 IN	369	220	4	-1.15/16IN
49.500		369	220	4	-49.5
50.000		369	220	4	-50
50.006	1.31/32 IN	374	225	4	-1.31/32IN
50.500		374	225	4	-50.5
50.800	2 IN	374	225	4	-2IN
51.000		412	225	5	-51
51.594	2.1/32 IN	412	225	5	-2.1/32IN
52.000		412	225	5	-52
52.388	2.1/16 IN	412	225	5	-2.1/16IN
53.000		412	225	5	-53
53.181	2.3/32 IN	417	230	5	-2.3/32IN
53.975	2.1/8 IN	417	230	5	-2.1/8IN
54.000		417	230	5	-54
54.769	2.5/32 IN	417	230	5	-2.5/32IN
55.000		417	230	5	-55
55.563	2.3/16 IN	417	230	5	-2.3/16IN
56.000		417	230	5	-56
56.356	2.7/32 IN	422	235	5	-2.7/32IN
57.000		422	235	5	-57
57.150	2.1/4 IN	422	235	5	-2.1/4IN
58.000		422	235	5	-58
58.738	2.5/16 IN	422	235	5	-2.5/16IN
59.000		422	235	5	-59
60.000		422	235	5	-60

Continued Taper Shank Drills

A4211

d ₁ mm h8	Ø Inches/ Wire-Gauge	l ₁ mm	l ₂ mm	MT	Ordering code A4211...
60.325	2.3/8 IN	427	240	5	-2.3/8IN
61.000		427	240	5	-61
61.913	2.7/16 IN	427	240	5	-2.7/16IN
62.000		427	240	5	-62
63.000	2.1/2 IN	427	240	5	-63
63.500		432	245	5	-2.1/2IN
64.000	2.9/16 IN	432	245	5	-64
65.000		432	245	5	-65
65.088	2.9/16 IN	432	245	5	-2.9/16IN
66.000		432	245	5	-66
66.675	2.5/8 IN	432	245	5	-2.5/8IN
67.000		432	245	5	-67
68.000	2.11/16 IN	437	250	5	-68
68.263		437	250	5	-2.11/16IN
69.000	2.3/4 IN	437	250	5	-69
69.850		437	250	5	-2.3/4IN
70.000	2.3/4 IN	437	250	5	-70
71.000		437	250	5	-71
72.000	2.3/4 IN	442	255	5	-72
73.000		442	255	5	-73
74.000	442	255	5	-74	

d ₁ mm h8	Ø Inches/ Wire-Gauge	l ₁ mm	l ₂ mm	MT	Ordering code A4211...
74.613	2.15/16 IN	442	255	5	-2.15/16IN
75.000		442	255	5	-75
76.000	3 IN	447	260	5	-76
76.200		447	260	5	-3IN
77.000	3 IN	514	260	6	-77
78.000		514	260	6	-78
79.000	3.1/4 IN	514	260	6	-79
80.000		514	260	6	-80
81.000	3.1/4 IN	519	265	6	-81
82.000		519	265	6	-82
82.550	3.1/4 IN	519	265	6	-3.1/4IN
83.000		519	265	6	-83
84.000	3.3/8 IN	519	265	6	-84
85.000		519	265	6	-85
85.725	3.3/8 IN	524	270	6	-3.3/8IN
87.313		524	270	6	-3.7/16IN
88.900	3.1/2 IN	524	270	6	-3.1/2IN
90.000		524	270	6	-90
95.000	3.1/2 IN	529	275	6	-95
100.000		534	280	6	-100

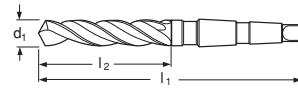


Taper Shank Drills

A4211TIN

Application: For materials forming long and short chips such as steel up to 1000 N/mm², cast iron, malleable iron, sintered iron, German silver, AISI-alloys (Si > 11%). TiN-coated for increased cutting speeds and improved tool life.

DIN 345						
B.S. 328	N	RH	118°	HSS	TIN	



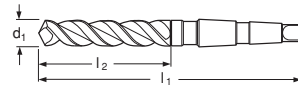
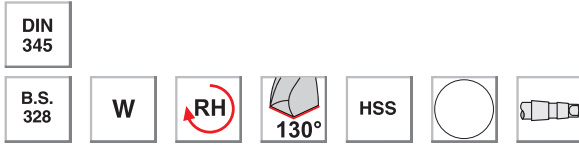
d ₁ mm h8	l ₁ mm	l ₂ mm	MT	Ordering code A4211TIN...
5.0	133	52	1	-5
6.0	138	57	1	-6
6.5	144	63	1	-6.5
6.8	150	69	1	-6.8
7.0	150	69	1	-7
8.0	156	75	1	-8
8.5	156	75	1	-8.5
9.0	162	81	1	-9
9.5	162	81	1	-9.5
10.0	168	87	1	-10
10.2	168	87	1	-10.2
10.5	168	87	1	-10.5
11.0	175	94	1	-11
11.5	175	94	1	-11.5
12.0	182	101	1	-12
12.5	182	101	1	-12.5
13.0	182	101	1	-13
13.5	189	108	1	-13.5
14.0	189	108	1	-14
14.5	212	114	2	-14.5
15.0	212	114	2	-15
15.5	218	120	2	-15.5
16.0	218	120	2	-16
16.5	223	125	2	-16.5

d ₁ mm h8	l ₁ mm	l ₂ mm	MT	Ordering code A4211TIN...
17.0	223	125	2	-17
17.5	228	130	2	-17.5
18.0	228	130	2	-18
18.5	233	135	2	-18.5
19.0	233	135	2	-19
19.5	238	140	2	-19.5
20.0	238	140	2	-20
20.5	243	145	2	-20.5
21.0	243	145	2	-21
21.5	248	150	2	-21.5
22.0	248	150	2	-22
22.5	253	155	2	-22.5
23.0	253	155	2	-23
24.0	281	160	3	-24
25.0	281	160	3	-25
26.0	286	165	3	-26
27.0	291	170	3	-27
28.0	291	170	3	-28
29.0	296	175	3	-29
30.0	296	175	3	-30

Taper Shank Drills

A4213

Application: For soft materials forming long chips such as Al-, copper-, zinc-, AISi-alloys (Si < 12%), soft plastics, PVC, Polyamid, soft magnetic iron.



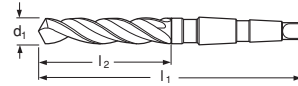
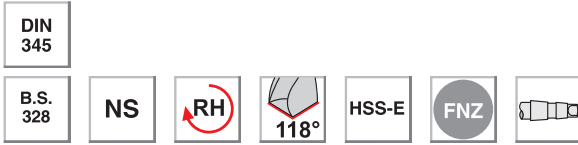
d ₁ mm h8	l ₁ mm	l ₂ mm	MT	Ordering code A4213...
10	168	87	1	-10
11	175	94	1	-11
12	182	101	1	-12
13	182	101	1	-13
14	189	108	1	-14
15	212	114	2	-15
16	218	120	2	-16
17	223	125	2	-17
18	228	130	2	-18
19	233	135	2	-19
20	238	140	2	-20
21	243	145	2	-21

d ₁ mm h8	l ₁ mm	l ₂ mm	MT	Ordering code A4213...
22	248	150	2	-22
23	253	155	2	-23
24	281	160	3	-24
25	281	160	3	-25
26	286	165	3	-26
27	291	170	3	-27
28	291	170	3	-28
29	296	175	3	-29
30	296	175	3	-30
31	301	180	3	-31
32	334	185	4	-32

Taper Shank Drills

A4241

Application: Twist drill with increased red-hardness and reinforced geometry for steels of high tensile strength, stainless and heat resistant steels (300 and 400 series) Ni- and Co-based Super Alloys, hard cast materials.



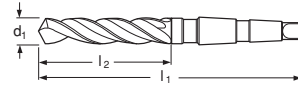
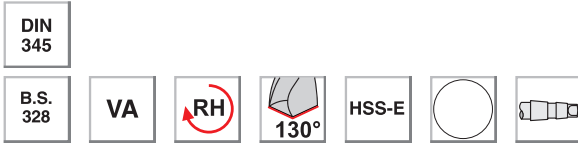
d ₁ mm h8	l ₁ mm	l ₂ mm	MT	Ordering code A4241...
10.00	168	87	1	-10
10.20	168	87	1	-10.2
10.50	168	87	1	-10.5
10.80	175	94	1	-10.8
11.00	175	94	1	-11
11.20	175	94	1	-11.2
11.50	175	94	1	-11.5
11.80	175	94	1	-11.8
12.00	182	101	1	-12
12.20	182	101	1	-12.2
12.50	182	101	1	-12.5
12.80	182	101	1	-12.8
13.00	182	101	1	-13
13.20	182	101	1	-13.2
13.50	189	108	1	-13.5
13.80	189	108	1	-13.8
14.00	189	108	1	-14
14.25	212	114	2	-14.25
14.50	212	114	2	-14.5
14.75	212	114	2	-14.75
15.00	212	114	2	-15
15.25	218	120	2	-15.25
15.50	218	120	2	-15.5
15.75	218	120	2	-15.75
16.00	218	120	2	-16
16.25	223	125	2	-16.25
16.50	223	125	2	-16.5
16.75	223	125	2	-16.75
17.00	223	125	2	-17
17.25	228	130	2	-17.25
17.50	228	130	2	-17.5
17.75	228	130	2	-17.75
18.00	228	130	2	-18
18.25	233	135	2	-18.25
18.50	233	135	2	-18.5
18.75	233	135	2	-18.75

d ₁ mm h8	l ₁ mm	l ₂ mm	MT	Ordering code A4241...
19.00	233	135	2	-19
19.25	238	140	2	-19.25
19.50	238	140	2	-19.5
19.75	238	140	2	-19.75
20.00	238	140	2	-20
20.25	243	145	2	-20.25
20.50	243	145	2	-20.5
20.75	243	145	2	-20.75
21.00	243	145	2	-21
21.25	248	150	2	-21.25
21.50	248	150	2	-21.5
21.75	248	150	2	-21.75
22.00	248	150	2	-22
22.25	248	150	2	-22.25
22.50	253	155	2	-22.5
22.75	253	155	2	-22.75
23.00	253	155	2	-23
23.50	276	155	3	-23.5
24.00	281	160	3	-24
24.50	281	160	3	-24.5
25.00	281	160	3	-25
25.50	286	165	3	-25.5
26.00	286	165	3	-26
26.50	286	165	3	-26.5
27.00	291	170	3	-27
27.50	291	170	3	-27.5
28.00	291	170	3	-28
28.50	296	175	3	-28.5
29.00	296	175	3	-29
29.50	296	175	3	-29.5
30.00	296	175	3	-30
30.50	301	180	3	-30.5
31.00	301	180	3	-31
31.50	301	180	3	-31.5
32.00	334	185	4	-32

Taper Shank Drills

A4244

Application: For high tensile and work-hardening materials, stainless steels (austenitic) (300 series), heat resistant steels, titanium, hard bronze, special alloys.



d ₁ mm h8	l ₁ mm	l ₂ mm	MT	Ordering code A4244...
10.00	168	87	1	-10
10.20	168	87	1	-10.2
10.50	168	87	1	-10.5
10.80	175	94	1	-10.8
11.00	175	94	1	-11
11.20	175	94	1	-11.2
11.50	175	94	1	-11.5
11.80	175	94	1	-11.8
12.00	182	101	1	-12
12.20	182	101	1	-12.2
12.50	182	101	1	-12.5
12.80	182	101	1	-12.8
13.00	182	101	1	-13
13.20	182	101	1	-13.2
13.50	189	108	1	-13.5
13.80	189	108	1	-13.8
14.00	189	108	1	-14
14.25	212	114	2	-14.25
14.50	212	114	2	-14.5
14.75	212	114	2	-14.75
15.00	212	114	2	-15
15.25	218	120	2	-15.25
15.50	218	120	2	-15.5
15.75	218	120	2	-15.75
16.00	218	120	2	-16
16.25	223	125	2	-16.25
16.50	223	125	2	-16.5
16.75	223	125	2	-16.75
17.00	223	125	2	-17
17.25	228	130	2	-17.25
17.50	228	130	2	-17.5
17.75	228	130	2	-17.75
18.00	228	130	2	-18
18.25	233	135	2	-18.25
18.50	233	135	2	-18.5
18.75	233	135	2	-18.75

d ₁ mm h8	l ₁ mm	l ₂ mm	MT	Ordering code A4244...
19.00	233	135	2	-19
19.25	238	140	2	-19.25
19.50	238	140	2	-19.5
19.75	238	140	2	-19.75
20.00	238	140	2	-20
20.25	243	145	2	-20.25
20.50	243	145	2	-20.5
20.75	243	145	2	-20.75
21.00	243	145	2	-21
21.25	248	150	2	-21.25
21.50	248	150	2	-21.5
21.75	248	150	2	-21.75
22.00	248	150	2	-22
22.25	248	150	2	-22.25
22.50	253	155	2	-22.5
22.75	253	155	2	-22.75
23.00	253	155	2	-23
23.50	276	155	3	-23.5
24.00	281	160	3	-24
24.50	281	160	3	-24.5
25.00	281	160	3	-25
25.50	286	165	3	-25.5
26.00	286	165	3	-26
26.50	286	165	3	-26.5
27.00	291	170	3	-27
27.50	291	170	3	-27.5
28.00	291	170	3	-28
28.50	296	175	3	-28.5
29.00	296	175	3	-29
29.50	296	175	3	-29.5
30.00	296	175	3	-30
30.50	301	180	3	-30.5
31.00	301	180	3	-31
31.50	301	180	3	-31.5
32.00	334	185	4	-32

Taper Shank Drills ALPHA X-E

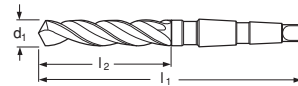
A4247

Application: High performance drill with excellent chip evacuation properties. For steels of medium and high tensile strength, i. e. deep holes in stainless steels, special brass, electrolytic copper, bronze, cast iron, malleable iron, special alloys, titanium alloys.

Remarks: Above 23.02 mm bright finish



DIN 345



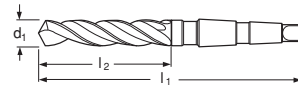
d ₁ mm h8	l ₁ mm	l ₂ mm	MT	Ordering code A4247...
10.00	168	87	1	-10
10.20	168	87	1	-10.2
10.50	168	87	1	-10.5
10.80	175	94	1	-10.8
11.00	175	94	1	-11
11.20	175	94	1	-11.2
11.50	175	94	1	-11.5
11.80	175	94	1	-11.8
12.00	182	101	1	-12
12.20	182	101	1	-12.2
12.50	182	101	1	-12.5
12.80	182	101	1	-12.8
13.00	182	101	1	-13
13.20	182	101	1	-13.2
13.50	189	108	1	-13.5
13.80	189	108	1	-13.8
14.00	189	108	1	-14
14.25	212	114	2	-14.25
14.50	212	114	2	-14.5
14.75	212	114	2	-14.75
15.00	212	114	2	-15
15.25	218	120	2	-15.25
15.50	218	120	2	-15.5
15.75	218	120	2	-15.75
16.00	218	120	2	-16
16.25	223	125	2	-16.25
16.50	223	125	2	-16.5
16.75	223	125	2	-16.75
17.00	223	125	2	-17
17.25	228	130	2	-17.25
17.50	228	130	2	-17.5
17.75	228	130	2	-17.75
18.00	228	130	2	-18
18.25	233	135	2	-18.25
18.50	233	135	2	-18.5
18.75	233	135	2	-18.75
19.00	233	135	2	-19
19.25	238	140	2	-19.25
19.50	238	140	2	-19.5
19.75	238	140	2	-19.75
20.00	238	140	2	-20
20.25	243	145	2	-20.25

d ₁ mm h8	l ₁ mm	l ₂ mm	MT	Ordering code A4247...
20.50	243	145	2	-20.5
20.75	243	145	2	-20.75
21.00	243	145	2	-21
21.25	248	150	2	-21.25
21.50	248	150	2	-21.5
21.75	248	150	2	-21.75
22.00	248	150	2	-22
22.25	248	150	2	-22.25
22.50	253	155	2	-22.5
22.75	253	155	2	-22.75
23.00	253	155	2	-23
23.50	276	155	3	-23.5
24.00	281	160	3	-24
24.50	281	160	3	-24.5
25.00	281	160	3	-25
25.50	286	165	3	-25.5
26.00	286	165	3	-26
26.50	286	165	3	-26.5
27.00	291	170	3	-27
27.50	291	170	3	-27.5
28.00	291	170	3	-28
28.50	296	175	3	-28.5
29.00	296	175	3	-29
29.50	296	175	3	-29.5
30.00	296	175	3	-30
30.50	301	180	3	-30.5
31.00	301	180	3	-31
31.50	301	180	3	-31.5
32.00	334	185	4	-32
32.50	334	185	4	-32.5
33.00	334	185	4	-33
33.50	334	185	4	-33.5
34.00	339	190	4	-34
34.50	339	190	4	-34.5
35.00	339	190	4	-35
36.00	344	195	4	-36
37.00	344	195	4	-37
38.00	349	200	4	-38
39.00	349	200	4	-39
40.00	349	200	4	-40

Taper Shank Drills, Long Series

A4411

Application: For materials forming long and short chips such as steel up to 1000 N/mm², cast iron, malleable iron, sintered iron, German silver, AISI-alloys (Si > 11%).



d ₁ mm h8	l ₁ mm	l ₂ mm	MT	Ordering code A4411...
5.00	155	74	1	-5
5.50	161	80	1	-5.5
6.00	161	80	1	-6
6.50	167	86	1	-6.5
6.80	174	93	1	-6.8
7.00	174	93	1	-7
7.50	174	93	1	-7.5
8.00	181	100	1	-8
8.10	181	100	1	-8.1
8.20	181	100	1	-8.2
8.25	181	100	1	-8.25
8.30	181	100	1	-8.3
8.40	181	100	1	-8.4
8.50	181	100	1	-8.5
8.60	188	107	1	-8.6
8.70	188	107	1	-8.7
8.75	188	107	1	-8.75
8.80	188	107	1	-8.8
8.90	188	107	1	-8.9
9.00	188	107	1	-9
9.10	188	107	1	-9.1
9.20	188	107	1	-9.2
9.25	188	107	1	-9.25
9.30	188	107	1	-9.3
9.40	188	107	1	-9.4
9.50	188	107	1	-9.5
9.60	197	116	1	-9.6
9.70	197	116	1	-9.7
9.75	197	116	1	-9.75
9.80	197	116	1	-9.8
9.90	197	116	1	-9.9
10.00	197	116	1	-10
10.10	197	116	1	-10.1
10.20	197	116	1	-10.2
10.25	197	116	1	-10.25
10.30	197	116	1	-10.3
10.40	197	116	1	-10.4
10.50	197	116	1	-10.5
10.60	197	116	1	-10.6
10.70	206	125	1	-10.7
10.75	206	125	1	-10.75
10.80	206	125	1	-10.8
10.90	206	125	1	-10.9
11.00	206	125	1	-11
11.10	206	125	1	-11.1
11.20	206	125	1	-11.2
11.25	206	125	1	-11.25
11.30	206	125	1	-11.3

d ₁ mm h8	l ₁ mm	l ₂ mm	MT	Ordering code A4411...
11.40	206	125	1	-11.4
11.50	206	125	1	-11.5
11.60	206	125	1	-11.6
11.70	206	125	1	-11.7
11.75	206	125	1	-11.75
11.80	206	125	1	-11.8
11.90	215	134	1	-11.9
12.00	215	134	1	-12
12.10	215	134	1	-12.1
12.20	215	134	1	-12.2
12.25	215	134	1	-12.25
12.30	215	134	1	-12.3
12.40	215	134	1	-12.4
12.50	215	134	1	-12.5
12.75	215	134	1	-12.75
13.00	215	134	1	-13
13.25	223	142	1	-13.25
13.50	223	142	1	-13.5
13.75	223	142	1	-13.75
14.00	223	142	1	-14
14.25	245	147	2	-14.25
14.50	245	147	2	-14.5
14.75	245	147	2	-14.75
15.00	245	147	2	-15
15.25	251	153	2	-15.25
15.50	251	153	2	-15.5
15.75	251	153	2	-15.75
16.00	251	153	2	-16
16.25	257	159	2	-16.25
16.50	257	159	2	-16.5
16.75	257	159	2	-16.75
17.00	257	159	2	-17
17.25	263	165	2	-17.25
17.50	263	165	2	-17.5
17.75	263	165	2	-17.75
18.00	263	165	2	-18
18.25	269	171	2	-18.25
18.50	269	171	2	-18.5
18.75	269	171	2	-18.75
19.00	269	171	2	-19
19.25	275	177	2	-19.25
19.50	275	177	2	-19.5
19.75	275	177	2	-19.75
20.00	275	177	2	-20
20.25	282	184	2	-20.25
20.50	282	184	2	-20.5
20.75	282	184	2	-20.75
21.00	282	184	2	-21

Continued Taper Shank Drills, Long Series

A4411

d ₁ mm h8	l ₁ mm	l ₂ mm	MT	Ordering code A4411...	d ₁ mm h8	l ₁ mm	l ₂ mm	MT	Ordering code A4411...
21.25	289	191	2	-21.25	33.00	397	248	4	-33
21.50	289	191	2	-21.5	33.50	397	248	4	-33.5
21.75	289	191	2	-21.75	34.00	406	257	4	-34
22.00	289	191	2	-22	34.50	406	257	4	-34.5
22.25	289	191	2	-22.25	35.00	406	257	4	-35
22.50	296	198	2	-22.5	35.50	406	257	4	-35.5
22.75	296	198	2	-22.75	36.00	416	267	4	-36
23.00	296	198	2	-23	36.50	416	267	4	-36.5
23.50	319	198	3	-23.5	37.00	416	267	4	-37
24.00	327	206	3	-24	37.50	416	267	4	-37.5
24.50	327	206	3	-24.5	38.00	426	277	4	-38
25.00	327	206	3	-25	38.50	426	277	4	-38.5
25.50	335	214	3	-25.5	39.00	426	277	4	-39
26.00	335	214	3	-26	39.50	426	277	4	-39.5
26.50	335	214	3	-26.5	40.00	426	277	4	-40
27.00	343	222	3	-27	41.00	436	287	4	-41
27.50	343	222	3	-27.5	42.00	436	287	4	-42
28.00	343	222	3	-28	43.00	447	298	4	-43
28.50	351	230	3	-28.5	44.00	447	298	4	-44
29.00	351	230	3	-29	45.00	447	298	4	-45
29.50	351	230	3	-29.5	46.00	459	310	4	-46
30.00	351	230	3	-30	47.00	459	310	4	-47
30.50	360	239	3	-30.5	48.00	470	321	4	-48
31.00	360	239	3	-31	49.00	470	321	4	-49
31.50	360	239	3	-31.5	50.00	470	321	4	-50
32.00	397	248	4	-32					
32.50	397	248	4	-32.5					

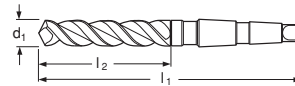


Taper Shank Drills, Long Series, Deep Hole Design

A4422

Application: Deep hole drilling design with extremely good chip evacuation. For materials forming long chips such as steel up to 1300 N/mm², Al-, AISI-, copper-alloys, stainless steels (300 series), soft bronze, tough brass.

Remarks: Above 23.02 mm bright finish



d ₁ mm h8	l ₁ mm	l ₂ mm	MT	Ordering code A4422...
10.00	197	116	1	-10
10.20	197	116	1	-10.2
10.50	197	116	1	-10.5
10.80	206	125	1	-10.8
11.00	206	125	1	-11
11.20	206	125	1	-11.2
11.50	206	125	1	-11.5
11.80	206	125	1	-11.8
12.00	215	134	1	-12
12.20	215	134	1	-12.2
12.50	215	134	1	-12.5
12.80	215	134	1	-12.8
13.00	215	134	1	-13
13.20	215	134	1	-13.2
13.50	223	142	1	-13.5
13.80	223	142	1	-13.8
14.00	223	142	1	-14
14.25	245	147	2	-14.25
14.50	245	147	2	-14.5
14.75	245	147	2	-14.75
15.00	245	147	2	-15
15.25	251	153	2	-15.25
15.50	251	153	2	-15.5
15.75	251	153	2	-15.75
16.00	251	153	2	-16
16.25	257	159	2	-16.25
16.50	257	159	2	-16.5
16.75	257	159	2	-16.75
17.00	257	159	2	-17
17.25	263	165	2	-17.25

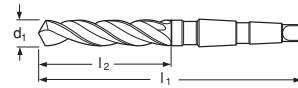
d ₁ mm h8	l ₁ mm	l ₂ mm	MT	Ordering code A4422...
17.50	263	165	2	-17.5
17.75	263	165	2	-17.75
18.00	263	165	2	-18
18.25	269	171	2	-18.25
18.50	269	171	2	-18.5
18.75	269	171	2	-18.75
19.00	269	171	2	-19
19.25	275	177	2	-19.25
19.50	275	177	2	-19.5
19.75	275	177	2	-19.75
20.00	275	177	2	-20
20.50	282	184	2	-20.5
21.00	282	184	2	-21
21.50	289	191	2	-21.5
22.00	289	191	2	-22
22.50	296	198	2	-22.5
23.00	296	198	2	-23
23.50	319	198	3	-23.5
24.00	327	206	3	-24
24.50	327	206	3	-24.5
25.00	327	206	3	-25
26.00	335	214	3	-26
27.00	343	222	3	-27
28.00	343	222	3	-28
29.00	351	230	3	-29
30.00	351	230	3	-30
31.00	360	239	3	-31

Taper Shank Drills

A4447

Application: High performance drill with excellent chip evacuation properties. For steels of medium and high tensile strength, i. e. deep holes in stainless steels, special brass, electrolytic copper, bronze, cast iron, malleable iron, special alloys, titanium alloys.

Remarks: Above 23.02 mm bright finish



d ₁ mm h8	l ₁ mm	l ₂ mm	MT	Ordering code A4447...
10.0	197	116	1	-10
10.5	197	116	1	-10.5
11.0	206	125	1	-11
11.5	206	125	1	-11.5
12.0	215	134	1	-12
12.5	215	134	1	-12.5
13.0	215	134	1	-13
13.5	223	142	1	-13.5
14.0	223	142	1	-14
15.0	245	147	2	-15
16.0	251	153	2	-16
17.0	257	159	2	-17
18.0	263	165	2	-18
19.0	269	171	2	-19
20.0	275	177	2	-20

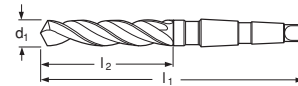
d ₁ mm h8	l ₁ mm	l ₂ mm	MT	Ordering code A4447...
21.0	282	184	2	-21
22.0	289	191	2	-22
23.0	296	198	2	-23
24.0	327	206	3	-24
25.0	327	206	3	-25
26.0	335	214	3	-26
27.0	343	222	3	-27
28.0	343	222	3	-28
29.0	351	230	3	-29
30.0	351	230	3	-30
31.0	360	239	3	-31



Taper Shank Drills, Extra Long Series

A4611

Application: For materials forming long and short chips such as steel up to 1000 N/mm², cast iron, malleable iron, sintered iron, German silver, AISi-alloys (Si > 11%).



d ₁ mm h8	l ₁ mm	l ₂ mm	MT	Ordering code A4611...
8.0	265	165	1	-8
8.5	265	165	1	-8.5
9.0	275	175	1	-9
9.5	275	175	1	-9.5
10.0	285	185	1	-10
10.5	285	185	1	-10.5
11.0	300	195	1	-11
11.5	300	195	1	-11.5
12.0	310	205	1	-12
12.5	310	205	1	-12.5
13.0	310	205	1	-13
13.5	325	220	1	-13.5
14.0	325	220	1	-14
14.5	340	220	2	-14.5
15.0	340	220	2	-15
15.5	355	230	2	-15.5
16.0	355	230	2	-16
16.5	355	230	2	-16.5
17.0	355	230	2	-17
17.5	370	245	2	-17.5
18.0	370	245	2	-18
18.5	370	245	2	-18.5
19.0	370	245	2	-19
19.5	385	260	2	-19.5
20.0	385	260	2	-20
20.5	385	260	2	-20.5
21.0	385	260	2	-21
21.5	405	270	2	-21.5
22.0	405	270	2	-22
22.5	405	270	2	-22.5

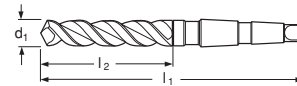
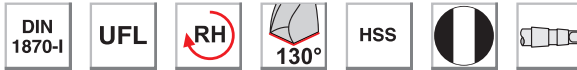
d ₁ mm h8	l ₁ mm	l ₂ mm	MT	Ordering code A4611...
23.0	405	270	2	-23
23.5	425	270	3	-23.5
24.0	440	290	3	-24
24.5	440	290	3	-24.5
25.0	440	290	3	-25
25.5	440	290	3	-25.5
26.0	440	290	3	-26
26.5	440	290	3	-26.5
27.0	460	305	3	-27
28.0	460	305	3	-28
29.0	460	305	3	-29
30.0	460	305	3	-30
31.0	480	320	3	-31
32.0	505	320	4	-32
33.0	505	320	4	-33
34.0	530	340	4	-34
35.0	530	340	4	-35
36.0	530	340	4	-36
37.0	530	340	4	-37
38.0	555	360	4	-38
39.0	555	360	4	-39
40.0	555	360	4	-40
41.0	555	360	4	-41
42.0	555	360	4	-42
45.0	585	385	4	-45
48.0	605	405	4	-48
50.0	605	405	4	-50

Taper Shank Drills, Extra Long Series, Deep Hole Design

A4622

Application: Deep hole drilling design with extremely good chip evacuation. For materials forming long chips such as steel up to 1300 N/mm², Al-, AISI-, copper-alloys, stainless steels (300 series), soft bronze, tough brass.

Remarks: Above 23.02 mm bright finish



d ₁ mm h8	l ₁ mm	l ₂ mm	MT	Ordering code A4622...
12.0	310	205	1	-12
12.5	310	205	1	-12.5
13.0	310	205	1	-13
13.5	325	220	1	-13.5
14.0	325	220	1	-14
14.5	340	220	2	-14.5
15.0	340	220	2	-15
15.5	355	230	2	-15.5
16.0	355	230	2	-16
16.5	355	230	2	-16.5
17.0	355	230	2	-17
17.5	370	245	2	-17.5
18.0	370	245	2	-18
18.5	370	245	2	-18.5
19.0	370	245	2	-19

d ₁ mm h8	l ₁ mm	l ₂ mm	MT	Ordering code A4622...
19.5	385	260	2	-19.5
20.0	385	260	2	-20
21.0	385	260	2	-21
22.0	405	270	2	-22
23.0	405	270	2	-23
24.0	440	290	3	-24
25.0	440	290	3	-25
26.0	440	290	3	-26
27.0	460	305	3	-27
28.0	460	305	3	-28
29.0	460	305	3	-29
30.0	460	305	3	-30

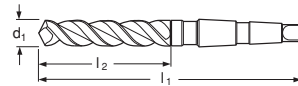


Taper Shank Drills, Extra Series, Deep Hole Design

A4722

Application: Deep hole drill design with special geometry for optimum chip-control and chip evacuation. Enables drilling of deep holes without pecking in a wide range of materials up to approx. 1300 N/mm².

Remarks: Above 23.02 mm bright finish



d ₁ mm h8	l ₁ mm	l ₂ mm	MT	Ordering code A4722...
8.0	330	210	1	-8
8.5	330	210	1	-8.5
9.0	345	220	1	-9
10.0	360	235	1	-10
10.5	360	235	1	-10.5
11.0	375	250	1	-11
11.5	375	250	1	-11.5
12.0	395	260	1	-12
12.5	395	260	1	-12.5
13.0	395	260	1	-13
13.5	410	275	1	-13.5
14.0	410	275	1	-14
14.5	425	275	2	-14.5
15.0	425	275	2	-15
15.5	445	295	2	-15.5
16.0	445	295	2	-16
16.5	445	295	2	-16.5
17.0	445	295	2	-17
17.5	465	310	2	-17.5
18.0	465	310	2	-18
18.5	465	310	2	-18.5

d ₁ mm h8	l ₁ mm	l ₂ mm	MT	Ordering code A4722...
19.0	465	310	2	-19
19.5	490	325	2	-19.5
20.0	490	325	2	-20
21.0	490	325	2	-21
22.0	515	345	2	-22
23.0	515	345	2	-23
24.0	555	365	3	-24
25.0	555	365	3	-25
26.0	555	365	3	-26
27.0	580	385	3	-27
28.0	580	385	3	-28
29.0	580	385	3	-29
30.0	580	385	3	-30
31.0	610	410	3	-31
32.0	635	410	4	-32
33.0	635	410	4	-33
34.0	665	430	4	-34
35.0	665	430	4	-35
38.0	695	460	4	-38
40.0	695	460	4	-40

High Performance Oil Feed Drills MEGAJET®

A6292TIN

Application: High Performance Drill with special geometry for optimum chip-control and chip evacuation in long-chipping materials. Preferably used for steels up to approx. 1000 N/mm², Al- and copper-alloys.

Remarks: Over 20 mm = point angle 118°

TITEX
Std.

MEGA
JET

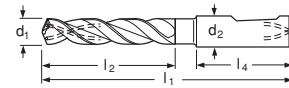


HSS-E

TIN



DIN6535
HE



d ₁ mm h8	l ₁ mm	l ₂ mm	l ₄ mm	d ₂ mm h6	Ordering code A6292TIN...
5.0	82	44	36	6	-5
5.1	82	44	36	6	-5.1
5.2	82	44	36	6	-5.2
5.3	82	44	36	6	-5.3
5.4	82	44	36	6	-5.4
5.5	82	44	36	6	-5.5
5.6	82	44	36	6	-5.6
5.7	82	44	36	6	-5.7
5.8	82	44	36	6	-5.8
5.9	82	44	36	6	-5.9
6.0	82	44	36	6	-6
6.1	91	53	36	8	-6.1
6.2	91	53	36	8	-6.2
6.3	91	53	36	8	-6.3
6.4	91	53	36	8	-6.4
6.5	91	53	36	8	-6.5
6.6	91	53	36	8	-6.6
6.7	91	53	36	8	-6.7
6.8	91	53	36	8	-6.8
6.9	91	53	36	8	-6.9
7.0	91	53	36	8	-7
7.1	91	53	36	8	-7.1
7.2	91	53	36	8	-7.2
7.3	91	53	36	8	-7.3
7.4	91	53	36	8	-7.4
7.5	91	53	36	8	-7.5
7.6	91	53	36	8	-7.6
7.7	91	53	36	8	-7.7
7.8	91	53	36	8	-7.8
7.9	91	53	36	8	-7.9
8.0	91	53	36	8	-8
8.1	103	61	40	10	-8.1
8.2	103	61	40	10	-8.2
8.3	103	61	40	10	-8.3
8.4	103	61	40	10	-8.4
8.5	103	61	40	10	-8.5
8.6	103	61	40	10	-8.6
8.7	103	61	40	10	-8.7
8.8	103	61	40	10	-8.8
8.9	103	61	40	10	-8.9
9.0	103	61	40	10	-9
9.1	103	61	40	10	-9.1

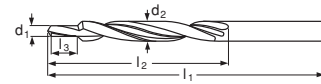
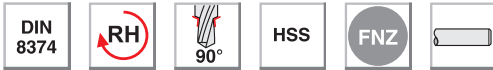
d ₁ mm h8	l ₁ mm	l ₂ mm	l ₄ mm	d ₂ mm h6	Ordering code A6292TIN...
9.2	103	61	40	10	-9.2
9.3	103	61	40	10	-9.3
9.4	103	61	40	10	-9.4
9.5	103	61	40	10	-9.5
9.6	103	61	40	10	-9.6
9.7	103	61	40	10	-9.7
9.8	103	61	40	10	-9.8
9.9	103	61	40	10	-9.9
10.0	103	61	40	10	-10
10.2	122	75	45	12	-10.2
10.5	122	75	45	12	-10.5
11.0	122	75	45	12	-11
11.5	122	75	45	12	-11.5
12.0	122	75	45	12	-12
12.5	134	87	45	14	-12.5
13.0	134	87	45	14	-13
13.5	134	87	45	14	-13.5
14.0	134	87	45	14	-14
14.5	150	100	48	16	-14.5
15.0	150	100	48	16	-15
15.5	150	100	48	16	-15.5
16.0	150	100	48	16	-16
16.5	162	112	48	18	-16.5
17.0	162	112	48	18	-17
17.5	162	112	48	18	-17.5
18.0	162	112	48	18	-18
18.5	176	124	50	20	-18.5
19.0	176	124	50	20	-19
19.5	176	124	50	20	-19.5
20.0	176	124	50	20	-20
20.5	207	145	56	25	-20.5
21.0	207	145	56	25	-21
21.5	207	145	56	25	-21.5
22.0	207	145	56	25	-22
22.5	207	145	56	25	-22.5
23.0	207	145	56	25	-23
23.5	207	145	56	25	-23.5
24.0	207	145	56	25	-24

Subland Drills

K6221

Application: For clearance holes acc. to DIN-ISO 273 and countersunk holes acc. to DIN 74, part 1, style A.

Remarks: d_1 for clearance holes acc. to DIN-ISO 273



	For thread size	d_2	d_1 mm	l_1 mm	l_2 mm	l_3 mm	Series	Counter-sunk acc. to DIN 74	Ordering code K6221...
▲	M 3	6.0	3.2	93	57	9	1	Af3	-6
	M 3	6.6	3.4	101	63	9	2	Am3	-6.6
	M 4	8.0	4.3	117	75	11	1	Af4	-8
▲	M 4	9.0	4.5	125	81	11	2	Am4	-9
	M 5	10.0	5.3	133	87	13	1	Af5	-10
	M 6	11.5	6.4	142	94	15	1	Af6	-11.5
	M 8	15.0	8.4	169	114	19	1	Af8	-15
	M 10	19.0	10.5	198	135	23	1	Af10	-19

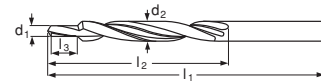
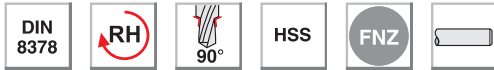
To K6221: ▲ = For clearance holes acc. to DIN-ISO 273 and countersunk holes acc. to DIN 74, part 1, style B, medium type and for screws acc. to DIN 7991.

Subland Drills

K6222

Application: For tapping drill sizes acc. to DIN 336, part 1.

Remarks: d_1 for clearance holes acc. to DIN-ISO 273



For thread size	d_2	d_1 mm	l_1 mm	l_2 mm	l_3 mm	Series	Ordering code K6222...
M 3	3.4	2.5	70	39	8.8	2	-3.4
M 4	4.5	3.3	80	47	11.4	2	-4.5
M 5	5.5	4.2	93	57	13.6	2	-5.5
M 6	6.6	5.0	101	63	16.5	2	-6.6
M 8	9.0	6.8	125	81	21.0	2	-9
M 10	11.0	8.5	142	94	25.5	2	-11
▲ M 12	14.0	10.2	160	108	30.0	0	-14
M 12	13.5	10.2	160	108	30.0	2	-13.5

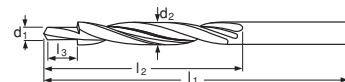


Subland Drills

K6223

Application: For clearance holes acc. to DIN-ISO 273 and counter-sunk holes acc. to DIN 74, part 2, style H.

Remarks: d_1 for clearance holes acc. to DIN-ISO 273



For thread size	d_2	d_1 mm	l_1 mm	l_2 mm	l_3 mm	Series	Counter-sunk acc. to DIN 74	Ordering code K6223...
M 3	6	3.2	93	57	9	1	Hf3	-6X3.2
M 3	6	3.4	93	57	9	2	Hm3	-6
M 4	8	4.3	117	75	11	1	Hf4	-8X4.3
M 4	8	4.5	117	75	11	2	Hm4	-8
M 5	10	5.5	133	87	13	2	Hm5	-10
M 6	11	6.6	142	94	15	2	Hm6	-11
M 8	15	9.0	169	114	19	2	Hm8	-15
M 10	18	11.0	191	130	23	2	Hm10	-18



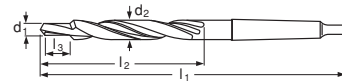
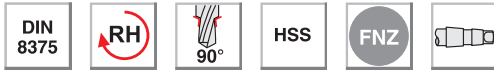
To K6222: ▲ = Not conforming to DIN

Subland Drills

K7221

Application: For clearance holes acc. to DIN-ISO 273 and countersunk holes acc. to DIN 74, part 1, style B.

Remarks: d_1 for clearance holes acc. to DIN-ISO 273



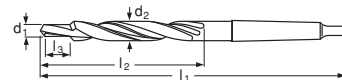
	For thread size	d_2	d_1 mm	l_1 mm	l_2 mm	l_3 mm	MT	Series	Counter-sunk acc. to DIN 74	Ordering code K7221...
	M 5	11.0	5.5	175	94	13	1	2	Bm5	-11
▲	M 6	11.5	6.4	175	94	15	1	1	Af6	-11.5
	M 6	13.0	6.6	182	101	15	1	2	Bm6	-13
▲	M 8	15.0	8.4	212	114	19	2	1	Af8	-15
	M 8	17.2	9.0	228	130	19	2	2	Bm8	-17.2
▲	M 10	19.0	10.5	233	135	23	2	1	Af10	-19
	M 10	21.5	11.0	248	150	23	2	2	Bm10	-21.5
▲	M 12	23.0	13.0	253	155	27	2	1	Af12	-23
	M 12	26.0	14.0	286	165	27	3	0	Bm12	-26X14
▲	M 14	26.0	15.0	286	165	31	3	1	Af14	-26X15
	M 14	29.0	16.0	296	175	31	3	0	Bm 14	-29
▲	M 16	30.0	17.0	296	175	35	3	1	Af16	-30

Subland Drills

K7222

Application: For tapping drill sizes acc. to DIN 336, part 1.

Remarks: d_1 for clearance holes acc. to DIN-ISO 273



	For thread size	d_2	d_1 mm	l_1 mm	l_2 mm	l_3 mm	MT	Series	Ordering code K7222...
	M 8	9.0	6.8	162	81	21.0	1	2	-9
	M 10	11.0	8.5	175	94	25.5	1	2	-11
▲	M 12	14.0	10.2	189	108	30.0	1	0	-14
	M 12	13.5	10.2	189	108	30.0	1	2	-13.5
	M 14	15.5	12.0	218	120	34.5	2	2	-15.5
▲	M 14	16.0	12.0	218	120	34.5	2	0	-16
▲	M 16	18.0	14.0	228	130	38.8	2	0	-18
	M 16	17.5	14.0	228	130	38.5	2	2	-17.5
	M 18	20.0	15.5	238	140	43.5	2	2	-20
	M 20	22.0	17.5	248	150	47.5	2	2	-22

To K7221: ▲ = For clearance holes acc. to DIN-ISO 273 and countersunk holes acc. to DIN 74, part 1, style A.

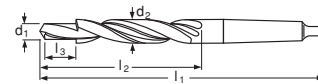
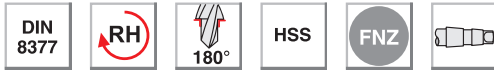
To K7222: ▲ = Not conforming to DIN

Subland Drills

K7223

Application: For clearance holes acc. to DIN-ISO 273 and counter-sunk holes acc. to DIN 74, part 2, style H.

Remarks: d_1 for clearance holes acc. to DIN-ISO 273



For thread size	d_2	d_1 mm	l_1 mm	l_2 mm	l_3 mm	MT	Series	Counter-sunk acc. to DIN 74	Ordering code K7223...
M 5	10	5.3	168	87	13	1	1	Hf5	-10X5.3
M 5	10	5.5	168	87	13	1	2	Hm5	-10
M 6	11	6.4	175	94	15	1	1	Hf6	-11X6.4
M 6	11	6.6	175	94	15	1	2	Hm6	-11
M 8	15	8.4	212	114	19	2	1	Hf8	-15X8.4
M 8	15	9.0	212	114	19	2	2	Hm8	-15
M 10	18	10.5	228	130	23	2	1	Hf10	-18X10.5
M 10	18	11.0	228	130	23	2	2	Hm10	-18
M 12	20	13.0	238	140	27	2	1	Hf12	-20X13
M 12	20	13.5	238	140	27	2	2	Hm12	-20
▲ M 12	20	14.0	238	140	27	2	0	-	-20X14
M 14	24	15.0	281	160	31	3	1	Hf14	-24X15
▲ M 14	24	15.5	281	160	31	3	2	Hm14	-24
▲ M 14	24	16.0	281	160	31	3	0	-	-24X16
M 16	26	17.0	286	165	35	3	1	Hf16	-26X17
M 16	26	17.5	286	165	35	3	2	Hm16	-26
▲ M 16	26	18.0	286	165	35	3	0	-	-26X18
M 18	30	20.0	296	175	39	3	2	Hm18	-30
M 20	33	22.0	334	185	43	4	2	Hm20	-33

To K7223: ▲ = Not conforming to DIN

MT-Sleeves For Taper Shank Drills

Z2111

Remarks: Outside MT ground; inside MT calibrated, with hardened tang



DIN
2185

Size	MT Outside No.	MT Inside No.	l ₁ mm	Ordering code Z2111...
A	2	1	92	-Let.A
B	3	2	112	-Let.B
C	3	1	99	-Let.C
D	4	3	140	-Let.D
E	4	2	124	-Let.E
F	5	4	171	-Let.F

Size	MT Outside No.	MT Inside No.	l ₁ mm	Ordering code Z2111...
G	5	3	156	-Let.G
H	6	5	218	-Let.H
I	6	4	218	-Let.I

MT-Sleeves For Taper Shank Drills

Z2112

Remarks: Hardened and both tapers ground.



DIN
2185

Size	MT Outside No.	MT Inside No.	l ₁ mm	Ordering code Z2112...
A	2	1	92	-Let.A
B	3	2	112	-Let.B
C	3	1	99	-Let.C
D	4	3	140	-Let.D
E	4	2	124	-Let.E
F	5	4	171	-Let.F

Size	MT Outside No.	MT Inside No.	l ₁ mm	Ordering code Z2112...
G	5	3	156	-Let.G
H	6	5	218	-Let.H
I	6	4	218	-Let.I

Drilling Tools made of Solid Carbide.



Drilling Tools made of Solid Carbide.	108
Step Drill made of Solid Carbide.	108
Accessories.	109
Drilling Tools for the <i>Application</i> – Steel, Stainless Steel, Aluminium and Cast Iron.	110
Drilling Tools for the <i>Technology</i> – HSC/HPC, Deep Hole Drilling, Micro Machining and Dry Machining.	118
General technical informations.	258
Type Selection and Recommendation Data – with coolant.	266
Type Selection and Recommendation Data – dry.	332

Drilling Tools without internal coolant supply made of Solid Carbide

l/d	~ 5 x d		~ 3 x d		~ 3 x d				~ 3 x d					
Standard	DIN 1899		DIN 6539		TITEX-Standard				DIN 6537 K					
Type	ESU	N	ALPHA2		Maximiza 3-Flute Drill				ALPHA2	ALPHA2	ALPHA2	ALPHA2	ALPHARc	ALPHA2
Catalog No.	A3162	A1163	A1164TIN	A1166	A1166TIN	A1167A	A1167B	A3265TIN	A3265TFL	A3865TIN	A3865TFL	A3269TFL	K3164TIN	
Surface Treatment														
Material	K30F	K30F	K30F	K30F	K30F	K30F	K30F	K30F	K30F	K30F	K30F	K30F	K30F	
Diameter in mm	0,10 ... 1,45	1,00 ... 12,0	1,50 ... 20,0	3,00 ... 20,0	3,00 ... 20,0	3,00 ... 20,0	3,00 ... 20,0	3,00 ... 20,0	3,00 ... 20,0	3,00 ... 20,0	3,00 ... 20,0	3,40 ... 10,4	3,00 ... 20,0	
Catalog Page	139	126	127	129	131	132	133	145	141	175	173	146	204	

Carbide Tipped Drills

NC-Spotting Drills

l/d	~ 5 x d						~ 8 x d		~ 3 x d	~ 3 x d	~ 8 x d		TITEX-Standard	
Standard	DIN 6537 L						DIN 338		DIN 8037	DIN 8041	DIN 338		NC	NC
Type	ALPHA2	ALPHA2	ALPHA22	ALPHA22	BSX	BSX	N	ALPHA22	HM	HM	AlphaHM	AlphaHM	NC	NC
Catalog No.	A3365TFT	A3965TFT	A3376TFL	A3976TFL	A3367	A3967	A1263	A1276TFL	A2971	A5971	A1272	A1273	A1174	A1174C
Surface Treatment														
Material	K30F	K30F	K30F	K30F	K30F	K30F	K30F	K30F	K10/20	K10/20	K10/20	K10/20	K30F	K30F
Diameter in mm	3,00 ... 25,0	3,00 ... 25,0	3,00 ... 12,0	3,00 ... 12,0	3,00 ... 16,0	3,00 ... 16,0	0,60 ... 12,0	3,00 ... 12,0	3,00 ... 16,0	8,00 ... 32,0	3,00 ... 13,0	3,00 ... 13,0	4,00 ... 20,0	4,00 ... 20,0
Catalog Page	153	180	159	183	157	182	135	138	138	188	136	137	134	134

Drilling Tools with internal coolant supply made of Solid Carbide

l/d	~ 3 x d				~ 5 x d						~ 8 x d				
Standard	DIN 6537K				DIN 6537L						TITEX-Standard				
Typ	ALPHA4	ALPHA4	ALPHA4	ALPHA4	ALPHA4	ALPHA4	ALPHA4	ALPHA4	ALPHA4 PLUS	ALPHAJET	ALPHA4 PLUS Micro	ALPHA4 XD8	ALPHA44	ALPHA44	ALPHAJET
Catalog No.	A3285TIN	A3285TFL	A3885TIN	A3885TFL	A3385TIN	A3385TFL	A3985TIN	A3985TFL	A3388TFT	A3387	A6488TML	A6485TFT	A3486TIP	A3586TIP	A3487
Surface Treatment															
Material	K30F	K30F	K30F	K30F	K30F	K30F	K30F	K30F	K44XF	K20F	K30F	K30F	K30F	K30F	K20F
Diameter in mm	3,00 ... 20,0	3,00 ... 20,0	3,00 ... 20,0	3,00 ... 20,0	3,00 ... 20,0	3,00 ... 25,0	3,00 ... 20,0	3,00 ... 25,0	3,00 ... 20,0	4,00 ... 20,0	0,75 ... 2,9	3,00 ... 20,0	5,00 ... 12,0	5,00 ... 12,0	5,00 ... 20,0
Catalog Page	151	147	178	176	165	160	186	184	168	167	192	189	170	171	170



























ALPHA POINT Drill body and Drill point

Accessories for ALPHA POINT

l/d	~ 12 x d			~16 x d ~20 x d ~25 x d ~30 x d				~ 3 x d ~5 x d ~7 x d			TITEX-Standard		TITEX-Standard			
Standard	TITEX-Standard			TITEX-Standard				TITEX-Standard			TITEX-Standard		TITEX-Standard			
Typ	ALPHA4 PLUS Micro	ALPHAJET	ALPHA4 XD12	ALPHA4 XD16	ALPHA4 XD20	ALPHA4 XD25	ALPHA4 XD30	ALPHA POINT Drill body	ALPHA POINT Drill points	ALPHA POINT Drill points	Screw	screwdriver	interchangeable blade	interchangeable blade		
Catalog No.	A6588TML	A3687	A6585TFT	A6685TFP	A6785TFP	A6885TFP	A6985TFP	A811XHNI	A821XHNI	A831XHNI	AX195TIN	AX196TFL	Z9311	Z9411	Z9412	Z9422 (for Z9412)
Surface Treatment																
Material	K30F	K20F	K30F	K30F	K30F	K30F	K30F				P45	P45				
Diameter in mm	1,00 ... 2,9	5,00 ... 20,0	3,00 ... 20,0	3,00 ... 12,0	3,00 ... 12,0	4,00 ... 8,50	4,00 ... 8,50	12,00 ... 30,0	12,00 ... 30,0	12,00 ... 30,0	12,00 ... 32,0	12,00 ... 32,0	12,00 ... 28,0	7,00 ... 25,0	7,00 ... 25,0	7,00 ... 25,0
Catalog Page	195	172	193	196	197	198	198	199	199	200	201	203	205	205	206	206

Our offer for common applications:

General
purpose (steel)

drilling depth	type		Dia. inch/mm		coating	shank		page
								
3xd	A1164TIN		1,5 – 20			✓		127
	A3265TFL		3 – 20				✓	141
	A3865TFL		3 – 20				✓	173
	A3285TFL		3 – 20	✓			✓	147
	A3885TFL		3 – 20	✓			✓	176
5xd	A3365TFT		3 – 25				✓	153
	A3965TFT		3 – 25				✓	180
	A3385TFL		3 – 25	✓			✓	160
	A3985TFL		3 – 25	✓			✓	184
8xd	A1276TFL		3 – 12			✓		138
	A6485TFT		3 – 20	✓			✓	189
12xd	A6585TFT		3 – 20	✓			✓	193

Your advantages:

- Wide range of diameters available especially for ALPHA 2 and ALPHA 4
- Most recommendations suit for different materials.
- High productivity and good availability

This Type Selection is only a small guide to select the right tool for your precision cutting problem.

If you have a special machining task and you are looking for a suitable tool for it – please solve this problem by entering your specification online under www.walter-tools.com

Special recommendations

Micro diameters

drilling depth	type		Dia. inch/mm		coating	shank	page
5xd	A3162		0,1 – 1,45			<input checked="" type="checkbox"/>	139
8xd	A6488TML		0,75– 2,9	<input checked="" type="checkbox"/>	TML	<input checked="" type="checkbox"/>	192
12xd	A6588TML		1 – 2,9	<input checked="" type="checkbox"/>	TML	<input checked="" type="checkbox"/>	195

Bigger Diameters (modular)

drilling depth	type		Dia. inch/mm		coating	shank	page
3xd	A811XHNI +AX195TIN		12 – 32,0	<input checked="" type="checkbox"/>	TIN	<input checked="" type="checkbox"/>	199/ 201
5xd	A821XHNI +AX195TIN		12 – 32,0	<input checked="" type="checkbox"/>	TIN	<input checked="" type="checkbox"/>	199/ 201
7xd	A831XHNI +AX195TIN		12 – 32,0	<input checked="" type="checkbox"/>	TIN	<input checked="" type="checkbox"/>	200/ 201

XD®-Technology


















drilling depth	type		Dia. inch/mm		coating	shank	page
16xd	A6685TFP		3 – 12	<input checked="" type="checkbox"/>	TFP	<input checked="" type="checkbox"/>	196
20xd	A6785TFP		3 – 12	<input checked="" type="checkbox"/>	TFP	<input checked="" type="checkbox"/>	197
25xd	A6885TFP		4 – 8,5	<input checked="" type="checkbox"/>	TFP	<input checked="" type="checkbox"/>	198
30xd	A6985TFP		4 – 8,5	<input checked="" type="checkbox"/>	TFP	<input checked="" type="checkbox"/>	198

This Type Selection is only a small guide to select the right tool for your precision cutting problem.

If you have a special machining task and you are looking for a suitable tool for it – please solve this problem by entering your specification online under www.walter-tools.com

Our offer for common applications:

stainless steels
(austenitic)

drilling depth	type		Dia. inch/mm		coating	shank  	page
3xd	A3285TFL		3 - 20	✓		✓	147
	A3885TFL		3 - 20	✓		✓	176
5xd	A3385TFL		3 - 25	✓		✓	160
	A3985TFL		3 - 25	✓		✓	184
8xd	A6485TFT		3 - 20	✓		✓	189
12xd	A6585TFT		3 - 20	✓		✓	193

Your advantages:

- Wide range of diameters available especially for ALPHA 2 and ALPHA 4
- Most recommendations suit for different materials.
- High productivity and good availability

This Type Selection is only a small guide to select the right tool for your precision cutting problem.

If you have a special machining task and you are looking for a suitable tool for it – please solve this problem by entering your specification online under www.walter-tools.com

Special recommendations

Micro diameters

drilling depth	type		Dia. inch/mm		coating	shank 	page
8xd	A6488TML		0,75 -2,9	✓	TML	✓	192
12xd	A6588TML		1 - 2,9	✓	TML	✓	195

Bigger Diameters (modular)

drilling depth	type		Dia. inch/mm		coating	shank 	page
3xd	A811XHNI +AX195TIN		12 - 32,0	✓	TIN	✓	199/ 201
5xd	A821XHNI +AX195TIN		12 - 32,0	✓	TIN	✓	199/ 201
7xd	A831XHNI +AX195TIN		12 - 32,0	✓	TIN	✓	200/ 201

XD®-Technology

drilling depth	type		Dia. inch/mm		coating	shank 	page
16xd	A6685TFP		3 - 12	✓	TFP	✓	196
20xd	A6785TFP		3 - 12	✓	TFP	✓	197
25xd	A6885TFP		4 - 8,5	✓	TFP	✓	198
30xd	A6985TFP		4 - 8,5	✓	TFP	✓	198

This Type Selection is only a small guide to select the right tool for your precision cutting problem.

If you have a special machining task and you are looking for a suitable tool for it – please solve this problem by entering your specification online under www.walter-tools.com

Our offer for common applications:

Aluminium

drilling depth	type		Dia. inch/mm		coating	shank		page
3xd	A1164TIN		1,5 - 20			✓		127
	A1167B*		3 - 20			✓		133
	A3265TFL		3 - 20				✓	141
	A3865TFL		3 - 20				✓	173
	A3285TFL		3 - 20	✓			✓	147
	A3885TFL		3 - 20	✓			✓	176
5xd	A3365TFT		3 - 25				✓	153
	A3367		3 - 16				✓	157
	A3387*		4 - 20	✓			✓	167
	A3965TFT		3 - 25				✓	180
	A3385TFL		3 - 25	✓			✓	160
	A3967		3 - 16				✓	182
	A3985TFL		3 - 25	✓			✓	184
8xd	A1276TFL		3 - 12			✓	✓	138
	A3487*		5 - 20	✓			✓	170
	A6485TFT		3 - 20	✓			✓	189
12xd	A3687*		5 - 20	✓			✓	172
	A6585TFT		3 - 20	✓			✓	193

* for short chipping materials suitably

This Type Selection is only a small guide to select the right tool for your precision cutting problem.

If you have a special machining task and you are looking for a suitable tool for it – please solve this problem by entering your specification online under www.walter-tools.com

Special recommendations

Micro diameters

drilling depth	type		Dia. inch/mm		coating	shank	page
5xd	A3162		0,1 – 1,45			<input checked="" type="checkbox"/>	139
8xd	A6488TML		0,75– 2,9	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	192
12xd	A6588TML		1 – 2,9	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	195

Bigger Diameters (modular)

drilling depth	type		Dia. inch/mm		coating	shank	page
3xd	A811XHNI +AX195TIN		12 – 32,0	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/> 199/ 201
5xd	A821XHNI +AX195TIN		12 – 32,0	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/> 199/ 201
7xd	A831XHNI +AX195TIN		12 – 32,0	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/> 200/ 201

XD®-Technology



drilling depth	type		Dia. inch/mm		coating	shank	page
16xd	A6685TFP		3 – 12	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	196
20xd	A6785TFP		3 – 12	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	197
25xd	A6885TFP		4 – 8,5	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	198
30xd	A6985TFP		4 – 8,5	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	198

This Type Selection is only a small guide to select the right tool for your precision cutting problem.

If you have a special machining task and you are looking for a suitable tool for it – please solve this problem by entering your specification online under www.walter-tools.com

Our offer for common applications:

Cast Iron

drilling depth	type		Dia. inch/mm		coating	shank		page
3xd	A1164TIN		1,5 - 20			✓		127
	A1167A*		3 - 20			✓		132
	A3265TFL		3 - 20				✓	141
	A3865TFL		3 - 20				✓	173
	A3285TFL		3 - 20	✓			✓	147
	A3885TFL		3 - 20	✓			✓	176
5xd	A3365TFT		3 - 25				✓	153
	A3367		3 - 16				✓	157
	A3387*		4 - 20	✓			✓	167
	A3965TFT		3 - 25				✓	180
	A3385TFL		3 - 25	✓			✓	160
	A3967		3 - 16				✓	182
	A3985TFL		3 - 25	✓			✓	184
8xd	A1276TFL		3 - 12			✓	✓	138
	A3487*		5 - 20	✓			✓	170
	A6485TFT		3 - 20	✓			✓	189
12xd	A3687*		5 - 20	✓			✓	172
	A6585TFT		3 - 20	✓			✓	193

* for short chipping materials suitably

This Type Selection is only a small guide to select the right tool for your precision cutting problem.

If you have a special machining task and you are looking for a suitable tool for it – please solve this problem by entering your specification online under www.walter-tools.com

Special recommendations

Micro diameters

drilling depth	type		Dia. inch/mm		coating	shank	page
5xd	A3162		0,1 – 1,45			 DIN6535 HA DIN6535 HE	139
8xd	A6488TML		0,75– 2,9				192
12xd	A6588TML		1 – 2,9				195

Bigger Diameters (modular)

drilling depth	type		Dia. inch/mm		coating	shank	page
3xd	A811XHNI +AX196TFL		12 – 32,0			 DIN6535 HA ISO 9766	199/ 203
5xd	A821XHNI +AX196TFL		12 – 32,0				199/ 203
7xd	A831XHNI +AX196TFL		12 – 32,0				200/ 203

XD®-Technology



drilling depth	type		Dia. inch/mm		coating	shank	page
16xd	A6685TFP		3 – 12				196
20xd	A6785TFP		3 – 12				197
25xd	A6885TFP		4 – 8,5				198
30xd	A6985TFP		4 – 8,5				198

This Type Selection is only a small guide to select the right tool for your precision cutting problem.

If you have a special machining task and you are looking for a suitable tool for it – please solve this problem by entering your specification online under www.walter-tools.com

TITEX micro-drills: Sometimes it's the small things in life that perform



Drilling extremely small holes is a subject that is becoming more and more important in production. Because the increasing miniaturisation of all components has led to additional applications for micro-drills. TITEX has a long tradition and experience to match when it comes down to drilling the tiniest of holes.

But even with small drilled holes, high productivity plays a major role and is becoming increasingly important due to cost pressure.

With the ALPHA® 4 PLUS Micro, a micro-drill

with internal coolant supply, TITEX is able to supply a particularly competitive solution, making drilling depths of up to twelve times the hole diameter possible.

The complete catalogue range includes a large number of different micro-drills made of HSS and solid carbide, starting at a diameter of 0.05 mm. Which tool is the optimum and thus most productive solution depends to a large extent on the respective general production application.

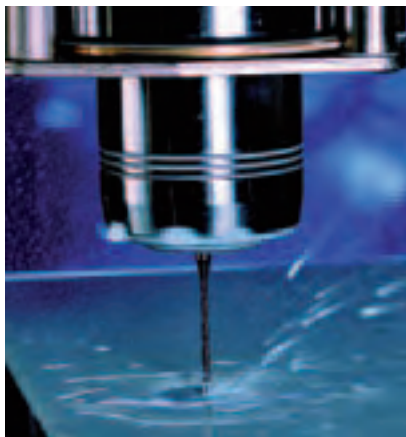
the greatest feats.

Micro machining

Solid carbide	cat.-no.		Dia. mm	1.1.1 Free cutting steel	1.1.2 Soft structural steel up to 550N/mm ²	1.1.3 Steel and cast steel from 550N/mm ² to 700 N/mm ²	1.2 Steel and cast steel from 700 to 1000 N/mm ²	1.3 Steel from 1000 to 1300 N/mm ²	1.7.2 Stainless steel austenitic, sulphured	1.7.3 Stainless steel austenitic	3.1 Cast iron, soft GG10 - GG20	3.2 Cast iron, soft GG25 - GG35	3.3.1 Nodular iron (SG-iron) GG40 - GG50	4.1 Copper, pure	4.3 Brass, brittle (free machining)	4.5 Bronze, soft	5.1 Aluminum commercial pure, Al-alloys wrought	5.2 Aluminum-Si-con-alloys, cast, below 10% Si	5.3 Aluminum-Si-con-alloys, cast 10-14% Si
	A3162		0,10-1,45	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	A1263		0,60-12,00								✓	✓	✓	✓	✓	✓	✓	✓	✓
	A1163		1,00-12,00								✓	✓	✓	✓	✓	✓	✓	✓	✓
	A1164TIN		1,50-16,00	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓
	A6488TML	x	0,75-2,90	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	A6588TML	x	1,00-2,90	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

High Speed Steel

High Speed Steel	cat.-no.		Dia. mm	1.1.1 Free cutting steel	1.1.2 Soft structural steel up to 550N/mm ²	1.1.3 Steel and cast steel from 550N/mm ² to 700 N/mm ²	1.2 Steel and cast steel from 700 to 1000 N/mm ²	1.3 Steel from 1000 to 1300 N/mm ²	1.7.2 Stainless steel austenitic, sulphured	1.7.3 Stainless steel austenitic	3.1 Cast iron, soft GG10 - GG20	3.2 Cast iron, soft GG25 - GG35	3.3.1 Nodular iron (SG-iron) GG40 - GG50	4.1 Copper, pure	4.3 Brass, brittle (free machining)	4.5 Bronze, soft	5.1 Aluminum commercial pure, Al-alloys wrought	5.2 Aluminum-Si-con-alloys, cast, below 10% Si	5.3 Aluminum-Si-con-alloys, cast 10-14% Si
	A3143		0,05-1,45	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	LH A3153		0,05-1,45	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	A1111		0,50-32,00	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	A1149TFL		1,00-20,00	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	A1149TIN		1,00-20,00	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	A1211TIN		0,50-16,00	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓				
	A1211		0,20-25,40	✓	✓	✓	✓				✓	✓	✓		✓				
	LH A1231		0,20-20,00	✓	✓	✓	✓				✓	✓	✓		✓				
	A1212		0,35-16,00												✓				
	LH A1232		0,40-16,00												✓				
	A1213		0,50-16,00	✓	✓	✓								✓			✓	✓	✓
	A1244		0,30-15,00					✓	✓	✓					✓				
	A1249TFL		1,00-16,00	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	A1249TIN		1,00-20,00	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	A1549TFL		1,00-12,00	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	A1549TIP		1,00-12,00	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓



Application examples.

Catalog-No.	A 1211	A 1244	A 1249TIN	A 3162	A 6488TML
Drilled hole Ø mm	1,1	2,0	1,8	0,5	1,2
Depth mm	3,0	6,0	15,0	0,5	10,0
Material	C45	X5CrNiMo	9MnPb36	X8CrNiS 18-9	MS58
Strength N/mm ²	780				
Machine	Mach./Center	Mach./Center	engine lathe	Mach./Center	Mach./Center
Cutting speed					
v _C m/min	44,90	14,00	25,40	9,42	41,50
Feed/rev. f mm	0,03	0,02	0,02	0,01	0,01
Feed rate					
v _f mm/min	390	44,56	90	60	110
Coolant	Emulsion	Emulsion	Oil	Emulsion	Emulsion
Tool life					
Number of holes	2200	1600	2000	1200	7000
Tool life m	6,60	9,60	30,00	0,60	70,00

The HSC and HPC technologies from TITEX: The quicker you are, the better your opportunities.



Some things never change. Such as the attempts by manufacturing companies to achieve higher productivity. TITEX offers economical solutions in the HSC (High Speed Cutting) and HPC (High Performance Cutting) sectors.

HSC means a significant decrease in the time required for the metal cutting volume by significantly increasing cutting speed, and it begins at around double the conventional values. HSC machining puts a great strain on machines and tools: High spindle speeds as well as

highly dynamic axle drives are needed, then the tools must be characterised by high heat resistance and good chip removal.

In contrast, HPC technology is about making the most of productivity reserves on the machines and control units already available. In this case the emphasis is on cutting speed and feed. HPC tools correspond to those of HSC in as far as they have been optimised for high feed rates. To keep component load within reasonable limits, HPC tools are designed in such a way that the metal cutting forces

Dry machining with TITEX: For ecological and economical top performances



Cooling lubricants are both an economical and ecological problem for every manufacturing company. Up to 16% of manufacturing costs can be allocated to cooling lubricants (procurement, use, disposal etc.).

In other words, minimising the consumption of cooling lubricants has an extremely positive effects on all aspects of production, including productivity. Quite often it is impossible to do without cooling lubricants completely. In such cases, the use of MQL (minimum quantity lubrication) is an alternative. With this method,

a small amount of highly active lubricant is added to compressed air. The machine has to be specially equipped for MQL machining. Care must be taken that the small amount of cooling lubricant reaches the metal cutting spot.

Special tool versions with shank ends optimised for MQL machining are recommended, since these guarantee good throughput of the cooling lubricant from the spindle into the drilling tool.

you need real specialists.

Dry machining	cat.-no.		Dia. mm	1.1.1 Free cutting steel	1.1.2 Soft structural steel up to 550N/mm ²	1.1.3 Steel and cast steel from 550N/mm ² to 700 N/mm ²	1.2 Steel and cast steel from 700 to 1000 N/mm ²	3.1 Cast iron, soft GG10 - GG20	3.2 Cast iron, soft GG25 - GG35	3.3.1 Nodular iron (SG-iron) GG40-GG50	3.3.2 Nodular iron (SG-iron) GG60-GG80	4.1 Copper, pure	4.3 Brass, brittle (free machining)	5.2 Aluminium-Silicon-alloys, cast, below 10% Si	5.3 Aluminium-Silicon-alloys, cast 10-14% Si
	A3285TFL	x	3.00-20.00	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	A3385TFL	x	3.00-25.00	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	A3885TFL	x	3.00-20.00	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	A3985TFL	x	3.00-25.00	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	A3388TFT	x	3.00-20.00	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	A6485TFT	x	3.00-20.00	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	A6585TFT	x	3.00-20.00	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	A6685TFP	x	3.00-12.00	✓	✓	✓	✓	✓	✓		✓	✓	✓		
	A6785TFP	x	3.00-12.50	✓	✓	✓	✓	✓	✓		✓	✓	✓		
	A6885TFP	x	4.00-8.50	✓	✓	✓	✓	✓	✓		✓	✓	✓		
	A6985TFP	x	4.00-8.50	✓	✓	✓	✓	✓	✓		✓	✓	✓		
	A3367		4.00-16.00									✓		✓	✓
	A3967		3.00-16.00									✓		✓	✓
	A1276TFL		3.00-12.00	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	A3265TFL		3.00-20.00	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	A3365TFT		3.00-25.00	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	A3865TFL		3.00-20.00	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
	A3965TFT		3.00-25.00	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓



Application examples.

Catalog-No.	A3388TFT	A3388TFT Special	A3388 TFT Special	A3388 TFT Special	A3085 Special
Drilled hole Ø mm	10.44	14.0	10.03 x 14	7.4 x 10	8
Depth mm	32.0	37.0	28	28	40
Material	Cf53 (1.1213)	GG26Cr	AlSi7Mg	AlSi7Mg	AlMg1
Machine	Mach./Center	Mach./Center	transfer line	transfer line	special purpose machine
Cutting speed v _c m/min	75.40	62.90	425	225	201
Feed/rev. f mm	0.24	0.21	0.26	0.21	0.12
Feed rate v _f mm/min	550	300	3510	2033	960
Coolant	MQL	MQL	MQL	MQL	MQL
Tool life					
Number of holes	3894	4700	3600*	3600*	2500*
Tool life m	124.5	173.5	1000*	1000*	10000*

*Drill can still be used

Deep hole – drilling with TITEX: There are only a very few who have the right techn



The deep hole drilling range begins with drilling depth ratios greater than five times the tool diameter. Drilling deep holes is as difficult as it is time-consuming. Which is why economical solutions are of particular interest here. There is a long tradition of such solutions at TITEX. With our latest development, XD® technology,

we at TITEX have managed to safely produce deep drilled holes of more than 30 times the tool diameter using solid carbide tools. This results in a considerable increase in productivity.

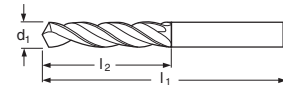
No special machines are required to use XD® technology from TITEX, it can be used on practically every machining centre. Resulting in more flexibility in production. No special demands are made for cooling lubricant feeding either, since chip removal mainly takes place through the special tool geometry.

Solid Carbide Twist Drills

A1163

Application: Solid carbide twist drills, preferably used for non-ferrous metals, abrasive plastics, high silicon aluminium alloys, glass- and carbon fibre-reinforced synthetics. Up to diameter 3 mm also for general purpose (steel and cast iron).

DIN
6539



d ₁ mm h7	l ₁ mm	l ₂ mm	Ordering code A1163...
1.0	26	6	-1
1.1	28	7	-1.1
1.2	30	8	-1.2
1.3	30	8	-1.3
1.4	32	9	-1.4
1.5	32	9	-1.5
1.6	34	10	-1.6
1.7	34	10	-1.7
1.8	36	11	-1.8
1.9	36	11	-1.9
2.0	38	12	-2
2.1	38	12	-2.1
2.2	40	13	-2.2
2.3	40	13	-2.3
2.4	43	14	-2.4
2.5	43	14	-2.5
2.6	43	14	-2.6
2.7	46	16	-2.7
2.8	46	16	-2.8
2.9	46	16	-2.9
3.0	46	16	-3
3.1	49	18	-3.1
3.2	49	18	-3.2
3.3	49	18	-3.3
3.4	52	20	-3.4
3.5	52	20	-3.5
3.6	52	20	-3.6
3.7	52	20	-3.7
3.8	55	22	-3.8
3.9	55	22	-3.9
4.0	55	22	-4
4.1	55	22	-4.1
4.2	55	22	-4.2

d ₁ mm h7	l ₁ mm	l ₂ mm	Ordering code A1163...
4.3	58	24	-4.3
4.4	58	24	-4.4
4.5	58	24	-4.5
4.6	58	24	-4.6
4.7	58	24	-4.7
4.8	62	26	-4.8
4.9	62	26	-4.9
5.0	62	26	-5
5.1	62	26	-5.1
5.2	62	26	-5.2
5.3	62	26	-5.3
5.4	66	28	-5.4
5.5	66	28	-5.5
5.6	66	28	-5.6
5.7	66	28	-5.7
5.8	66	28	-5.8
5.9	66	28	-5.9
6.0	66	28	-6
6.1	70	31	-6.1
6.2	70	31	-6.2
6.3	70	31	-6.3
6.4	70	31	-6.4
6.5	70	31	-6.5
6.6	70	31	-6.6
6.7	70	31	-6.7
6.8	74	34	-6.8
6.9	74	34	-6.9
7.0	74	34	-7
7.1	74	34	-7.1
7.2	74	34	-7.2
7.3	74	34	-7.3
7.4	74	34	-7.4
7.5	74	34	-7.5

d ₁ mm h7	l ₁ mm	l ₂ mm	Ordering code A1163...
7.6	79	37	-7.6
7.7	79	37	-7.7
7.8	79	37	-7.8
7.9	79	37	-7.9
8.0	79	37	-8
8.1	79	37	-8.1
8.2	79	37	-8.2
8.3	79	37	-8.3
8.4	79	37	-8.4
8.5	79	37	-8.5
8.6	84	40	-8.6
8.7	84	40	-8.7
8.8	84	40	-8.8
8.9	84	40	-8.9
9.0	84	40	-9
9.1	84	40	-9.1
9.2	84	40	-9.2
9.3	84	40	-9.3
9.4	84	40	-9.4
9.5	84	40	-9.5
9.6	89	43	-9.6
9.7	89	43	-9.7
9.8	89	43	-9.8
9.9	89	43	-9.9
10.0	89	43	-10
10.2	89	43	-10.2
10.5	89	43	-10.5
11.0	95	47	-11
11.5	95	47	-11.5
12.0	102	51	-12

Solid Carbide Drills ALPHA® 2

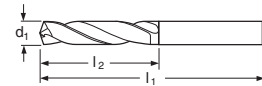


A1164TIN

Application: High performance twist drill for steels and cast materials. Also suited for ferritic, pearlitic and martensitic Stainless Steels (Ni < 4%) and PH-steels such as 17-4PH. Note: machining austenitic stainless steel generally requires tools with internal coolant. Also suitable for dry machining of steel materials.

Remarks: Up to 1,9 mm dimensions acc. to DIN 1897

DIN 6539	5xd					
ALPHA 2	RH	140°	K30F	TIN		HRC 45-55



d ₁ mm h7	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1164TIN...
1.500		32	9	-1.5
1.588	1/16 IN	34	10	-1/16IN
1.600		34	10	-1.6
1.700		34	10	-1.7
1.800		36	11	-1.8
1.820		36	11	-1.82
1.900		36	11	-1.9
1.984	5/64 IN	38	12	-5/64IN
2.000		38	12	-2
2.050		38	12	-2.05
2.100		38	12	-2.1
2.200		40	13	-2.2
2.300		40	13	-2.3
2.381	3/32 IN	43	14	-3/32IN
2.400		43	14	-2.4
2.500		43	14	-2.5
2.600		43	14	-2.6
2.700		46	16	-2.7
2.778	7/64 IN	46	16	-7/64IN
2.800		46	16	-2.8
2.900		46	16	-2.9
3.000		46	16	-3
3.100		49	18	-3.1
3.175	1/8 IN	49	18	-1/8IN
3.200		49	18	-3.2
3.250		49	18	-3.25
3.300		49	18	-3.3
3.400		52	20	-3.4
3.500		52	20	-3.5
3.572	9/64 IN	52	20	-9/64IN
3.600		52	20	-3.6
3.650		52	20	-3.65
3.700		52	20	-3.7
3.800		55	22	-3.8
3.900		55	22	-3.9
3.969	5/32 IN	55	22	-5/32IN
4.000		55	22	-4
4.100		55	22	-4.1
4.200		55	22	-4.2
4.300		58	24	-4.3
4.366	11/64 IN	58	24	-11/64IN
4.400		58	24	-4.4
4.500		58	24	-4.5
4.600		58	24	-4.6
4.650		58	24	-4.65
4.700		58	24	-4.7
4.763	3/16 IN	62	26	-3/16IN
4.800		62	26	-4.8

d ₁ mm h7	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1164TIN...
4.900		62	26	-4.9
5.000		62	26	-5
5.100		62	26	-5.1
5.159	13/64 IN	62	26	-13/64IN
5.200		62	26	-5.2
5.300		62	26	-5.3
5.400		66	28	-5.4
5.500		66	28	-5.5
5.550		66	28	-5.55
5.556	7/32 IN	66	28	-7/32IN
5.600		66	28	-5.6
5.700		66	28	-5.7
5.800		66	28	-5.8
5.900		66	28	-5.9
5.953	15/64 IN	66	28	-15/64IN
6.000		66	28	-6
6.100		70	31	-6.1
6.200		70	31	-6.2
6.300		70	31	-6.3
6.350	1/4 IN	70	31	-1/4IN
6.400		70	31	-6.4
6.500		70	31	-6.5
6.600		70	31	-6.6
6.700		70	31	-6.7
6.747	17/64 IN	74	34	-17/64IN
6.800		74	34	-6.8
6.900		74	34	-6.9
7.000		74	34	-7
7.100		74	34	-7.1
7.144	9/32 IN	74	34	-9/32IN
7.200		74	34	-7.2
7.300		74	34	-7.3
7.400		74	34	-7.4
7.500		74	34	-7.5
7.541	19/64 IN	79	37	-19/64IN
7.550		79	37	-7.55
7.600		79	37	-7.6
7.700		79	37	-7.7
7.800		79	37	-7.8
7.900		79	37	-7.9
7.938	5/16 IN	79	37	-5/16IN
8.000		79	37	-8
8.100		79	37	-8.1
8.200		79	37	-8.2
8.300		79	37	-8.3
8.334	21/64 IN	79	37	-21/64IN
8.400		79	37	-8.4
8.500		79	37	-8.5

Continued Solid Carbide Drills ALPHA® 2



A1164TIN



d ₁ mm h7	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1164TIN...
8.600		84	40	-8.6
8.700		84	40	-8.7
8.731	11/32 IN	84	40	-11/32IN
8.800		84	40	-8.8
8.900		84	40	-8.9
9.000		84	40	-9
9.100		84	40	-9.1
9.128	23/64 IN	84	40	-23/64IN
9.200		84	40	-9.2
9.300		84	40	-9.3
9.400		84	40	-9.4
9.500		84	40	-9.5
9.525	3/8 IN	89	43	-3/8IN
9.550		89	43	-9.55
9.600		89	43	-9.6
9.700		89	43	-9.7
9.800		89	43	-9.8
9.900		89	43	-9.9
9.922	25/64 IN	89	43	-25/64IN
10.000		89	43	-10
10.100		89	43	-10.1
10.200		89	43	-10.2
10.300		89	43	-10.3
10.319	13/32 IN	89	43	-13/32IN
10.400		89	43	-10.4
10.500		89	43	-10.5
10.600		89	43	-10.6
10.700		95	47	-10.7
10.716	27/64 IN	95	47	-27/64IN
10.800		95	47	-10.8
10.900		95	47	-10.9
11.000		95	47	-11
11.100		95	47	-11.1
11.113	7/16 IN	95	47	-7/16IN
11.200		95	47	-11.2
11.300		95	47	-11.3
11.400		95	47	-11.4
11.500		95	47	-11.5
11.509	29/64 IN	95	47	-29/64IN
11.550		95	47	-11.55
11.600		95	47	-11.6
11.700		95	47	-11.7
11.800		95	47	-11.8
11.900		102	51	-11.9
11.906	15/32 IN	102	51	-15/32IN
12.000		102	51	-12
12.100		102	51	-12.1
12.200		102	51	-12.2
12.250		102	51	-12.25
12.300		102	51	-12.3
12.303	31/64 IN	102	51	-31/64IN
12.400		102	51	-12.4
12.500		102	51	-12.5
12.600		102	51	-12.6

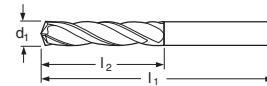
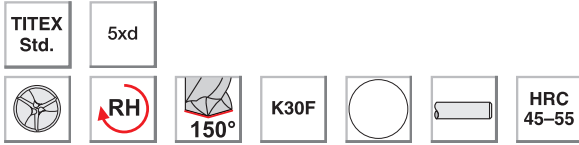
d ₁ mm h7	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1164TIN...
12.700	1/2 IN	102	51	-1/2IN
12.700		102	51	-12.7
12.750		102	51	-12.75
12.800		102	51	-12.8
12.900		102	51	-12.9
13.000		102	51	-13
13.100		102	51	-13.1
13.200		102	51	-13.2
13.300		107	54	-13.3
13.400		107	54	-13.4
13.494	17/32 IN	107	54	-17/32IN
13.500		107	54	-13.5
13.600		107	54	-13.6
13.700		107	54	-13.7
13.800		107	54	-13.8
13.900		107	54	-13.9
14.000		107	54	-14
14.100		111	56	-14.1
14.200		111	56	-14.2
14.288	9/16 IN	111	56	-9/16IN
14.300		111	56	-14.3
14.400		111	56	-14.4
14.500		111	56	-14.5
14.600		111	56	-14.6
14.700		111	56	-14.7
14.750		111	56	-14.75
14.800		111	56	-14.8
14.900		111	56	-14.9
15.000		111	56	-15
15.100		115	58	-15.1
15.200		115	58	-15.2
15.300		115	58	-15.3
15.400		115	58	-15.4
15.500		115	58	-15.5
15.600		115	58	-15.6
15.700		115	58	-15.7
15.800		115	58	-15.8
15.875	5/8 IN	115	58	-5/8IN
15.900		115	58	-15.9
16.000		115	58	-16
16.500		119	60	-16.5
17.000		119	60	-17
17.500		123	62	-17.5
18.000		123	62	-18
18.500		127	64	-18.5
19.000		127	64	-19
19.050	3/4 IN	131	66	-3/4IN
19.500		131	66	-19.5
20.000		131	66	-20

Maximiza Solid Carbide 3-Flute Drills

A1166

Application: Ideal for short chipping materials. Especially suited for difficult to machine materials such as steels above 1300 N/mm², Super-alloys (Ni- and Co-based), titanium alloys and hard bronzes. Also ideal for centering prior to the use of solid carbide twist drills at drilling depth > 5 x dia.

Remarks: Overall length acc. to DIN 6539, extended flute length (not in accordance with DIN 6539)



d ₁ mm h7	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1166...
3.000		46	22	-3
3.100		49	24	-3.1
3.175	1/8 IN	49	24	-1/8IN
3.200		49	24	-3.2
3.300		49	24	-3.3
3.400		52	27	-3.4
3.500		52	27	-3.5
3.572	9/64 IN	52	27	-9/64IN
3.600		52	27	-3.6
3.700		52	27	-3.7
3.800		55	30	-3.8
3.900		55	30	-3.9
3.969	5/32 IN	55	30	-5/32IN
4.000		55	30	-4
4.100		55	30	-4.1
4.200		55	30	-4.2
4.300		58	32	-4.3
4.366	11/64 IN	58	32	-11/64IN
4.400		58	32	-4.4
4.500		58	32	-4.5
4.600		58	32	-4.6
4.700		58	32	-4.7
4.763	3/16 IN	62	35	-3/16IN
4.800		62	35	-4.8
4.900		62	35	-4.9
5.000		62	35	-5
5.100		62	35	-5.1
5.159	13/64 IN	62	35	-13/64IN
5.200		62	35	-5.2
5.300		62	35	-5.3
5.400		66	39	-5.4
5.500		66	39	-5.5
5.556	7/32 IN	66	39	-7/32IN
5.600		66	39	-5.6
5.700		66	39	-5.7
5.800		66	39	-5.8
5.900		66	39	-5.9
5.953	15/64 IN	66	39	-15/64IN
6.000		66	39	-6
6.100		70	42	-6.1
6.200		70	42	-6.2
6.300		70	42	-6.3
6.350	1/4 IN	70	42	-1/4IN
6.400		70	42	-6.4
6.500		70	42	-6.5
6.600		70	42	-6.6
6.700		70	42	-6.7
6.747	17/64 IN	74	45	-17/64IN

d ₁ mm h7	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1166...
6.800		74	45	-6.8
6.900		74	45	-6.9
7.000		74	45	-7
7.100		74	45	-7.1
7.144	9/32 IN	74	45	-9/32IN
7.200		74	45	-7.2
7.300		74	45	-7.3
7.400		74	45	-7.4
7.500		74	45	-7.5
7.541	19/64 IN	79	48	-19/64IN
7.600		79	48	-7.6
7.700		79	48	-7.7
7.800		79	48	-7.8
7.900		79	48	-7.9
7.938	5/16 IN	79	48	-5/16IN
8.000		79	48	-8
8.100		79	48	-8.1
8.200		79	48	-8.2
8.300		79	48	-8.3
8.334	21/64 IN	79	48	-21/64IN
8.400		79	48	-8.4
8.500		79	48	-8.5
8.600		84	52	-8.6
8.700		84	52	-8.7
8.731	11/32 IN	84	52	-11/32IN
8.800		84	52	-8.8
8.900		84	52	-8.9
9.000		84	52	-9
9.100		84	52	-9.1
9.128	23/64 IN	84	52	-23/64IN
9.200		84	52	-9.2
9.300		84	52	-9.3
9.400		84	52	-9.4
9.500		84	52	-9.5
9.525	3/8 IN	89	55	-3/8IN
9.600		89	55	-9.6
9.700		89	55	-9.7
9.800		89	55	-9.8
9.900		89	55	-9.9
9.922	25/64 IN	89	55	-25/64IN
10.000		89	55	-10
10.100		89	55	-10.1
10.200		89	55	-10.2
10.300		89	55	-10.3
10.319	13/32 IN	89	55	-13/32IN
10.400		89	55	-10.4
10.500		89	55	-10.5
10.600		89	55	-10.6

Continued Maximiza Solid Carbide 3-Flute Drills

A1166



d ₁ mm h7	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1166...	d ₁ mm h7	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1166...
10.700	27/64 IN	95	60	-10.7	13.700	9/16 IN	107	66	-13.7
10.716		95	60	-27/64IN	13.800		107	66	-13.8
10.800		95	60	-10.8	13.900		107	66	-13.9
10.900	7/16 IN	95	60	-10.9	14.000	5/8 IN	107	66	-14
11.000		95	60	-11	14.100		111	70	-14.1
11.100		95	60	-11.1	14.200		111	70	-14.2
11.113	29/64 IN	95	60	-7/16IN	14.288	11/16 IN	111	70	-9/16IN
11.200		95	60	-11.2	14.300		111	70	-14.3
11.300		95	60	-11.3	14.400		111	70	-14.4
11.400	15/32 IN	95	60	-11.4	14.500	3/4 IN	111	70	-14.5
11.500		95	60	-11.5	14.600		111	70	-14.6
11.509		95	60	-29/64IN	14.700		111	70	-14.7
11.600	31/64 IN	95	60	-11.6	14.800	7/8 IN	111	70	-14.8
11.700		95	60	-11.7	14.900		111	70	-14.9
11.800		95	60	-11.8	15.000		111	70	-15
11.900	1/2 IN	102	65	-11.9	15.100	1 1/8 IN	115	73	-15.1
11.906		102	65	-15/32IN	15.200		115	73	-15.2
12.000		102	65	-12	15.300		115	73	-15.3
12.100	9/16 IN	102	65	-12.1	15.400	1 1/4 IN	115	73	-15.4
12.200		102	65	-12.2	15.500		115	73	-15.5
12.300		102	65	-12.3	15.600		115	73	-15.6
12.303	5/8 IN	102	65	-31/64IN	15.700	1 3/8 IN	115	73	-15.7
12.400		102	65	-12.4	15.800		115	73	-15.8
12.500		102	65	-12.5	15.875		115	73	-5/8IN
12.600	11/16 IN	102	65	-12.6	15.900	1 1/2 IN	115	73	-15.9
12.700		102	65	-12.7	16.000		115	73	-16
12.700		102	65	-1/2IN	16.500		119	73	-16.5
12.800	3/4 IN	102	65	-12.8	17.000	1 3/4 IN	119	73	-17
12.900		102	65	-12.9	17.463		123	76	-11/16IN
13.000		102	65	-13	17.500		123	76	-17.5
13.100	7/8 IN	102	65	-13.1	18.000	1 7/8 IN	123	76	-18
13.200		102	65	-13.2	18.500		127	76	-18.5
13.300		107	66	-13.3	19.000		127	76	-19
13.400	1 1/8 IN	107	66	-13.4	19.050	2 IN	131	79	-3/4IN
13.500		107	66	-13.5	19.500		131	79	-19.5
13.600		107	66	-13.6	20.000		131	79	-20

Maximiza Solid Carbide 3-Flute Drills

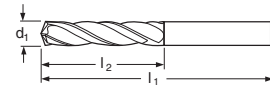
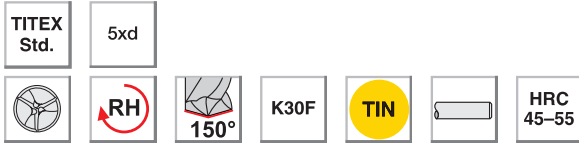
A1166TIN

Delivery on short notice,

Application: Ideal for short chipping materials. Especially suited for difficult to machine materials such as steels above 1300 N/mm², Super-alloys (Ni- and Co-based), titanium alloys and hard bronzes. Also ideal for centering prior to the use of solid carbide twist drills

at drilling depth > 5 x dia. TiN-coated for increased cutting speeds and improved tool life.

Remarks: Overall length acc. to DIN 6539, extended flute length (not in accordance with DIN 6539).



d ₁ mm h7	l ₁ mm	l ₂ mm	Ordering code A1166TIN...
3.0	46	22	-3
3.3	49	24	-3.3
3.5	52	27	-3.5
4.0	55	30	-4
4.2	55	30	-4.2
4.5	58	32	-4.5
4.6	58	32	-4.6
5.0	62	35	-5
5.5	66	39	-5.5
6.0	66	39	-6
6.5	70	42	-6.5
6.8	74	45	-6.8
7.0	74	45	-7
7.4	74	45	-7.4
7.5	74	45	-7.5

d ₁ mm h7	l ₁ mm	l ₂ mm	Ordering code A1166TIN...
7.8	79	48	-7.8
8.0	79	48	-8
8.5	79	48	-8.5
9.0	84	52	-9
9.3	84	52	-9.3
9.5	84	52	-9.5
10.0	89	55	-10
10.2	89	55	-10.2
10.5	89	55	-10.5
11.0	95	60	-11
11.2	95	60	-11.2
11.5	95	60	-11.5
12.0	102	65	-12
12.5	102	65	-12.5
13.0	102	65	-13

d ₁ mm h7	l ₁ mm	l ₂ mm	Ordering code A1166TIN...
13.5	107	66	-13.5
14.0	107	66	-14
14.5	111	70	-14.5
15.0	111	70	-15
15.5	115	73	-15.5
16.0	115	73	-16
16.5	119	73	-16.5
17.0	119	73	-17
17.5	123	76	-17.5
18.0	123	76	-18
18.5	127	76	-18.5
19.0	127	76	-19
19.5	131	79	-19.5
20.0	131	79	-20

Maximiza Solid Carbide 3-Flute Drills

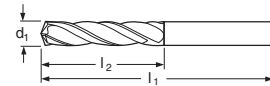
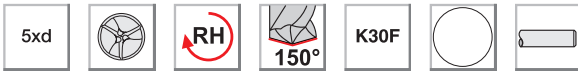
A1167A

Application: For high penetration-rates in short chipping and / or brittle materials such as grey cast iron, nodular-iron, malleable iron, AISi-alloys and bronzes.
Also suited for dry machining of cast iron.

Remarks: 0° rake angle; overall length acc. to DIN 6539, extended flute length (not in accordance with DIN 6539)



TITEX
Std.



d ₁ mm h7	l ₁ mm	l ₂ mm	Ordering code A1167A...
3.0	46	22	-3
3.1	49	24	-3.1
3.2	49	24	-3.2
3.3	49	24	-3.3
3.4	52	27	-3.4
3.5	52	27	-3.5
3.6	52	27	-3.6
3.7	52	27	-3.7
3.8	55	30	-3.8
3.9	55	30	-3.9
4.0	55	30	-4
4.1	55	30	-4.1
4.2	55	30	-4.2
4.3	58	32	-4.3
4.4	58	32	-4.4
4.5	58	32	-4.5
4.6	58	32	-4.6
4.7	58	32	-4.7
4.8	62	35	-4.8
4.9	62	35	-4.9
5.0	62	35	-5
5.1	62	35	-5.1
5.2	62	35	-5.2
5.3	62	35	-5.3
5.4	66	39	-5.4
5.5	66	39	-5.5
5.6	66	39	-5.6
5.7	66	39	-5.7
5.8	66	39	-5.8
5.9	66	39	-5.9
6.0	66	39	-6
6.1	70	42	-6.1
6.2	70	42	-6.2
6.3	70	42	-6.3
6.4	70	42	-6.4
6.5	70	42	-6.5
6.6	70	42	-6.6
6.7	70	42	-6.7
6.8	74	45	-6.8
6.9	74	45	-6.9
7.0	74	45	-7
7.1	74	45	-7.1
7.2	74	45	-7.2
7.3	74	45	-7.3
7.4	74	45	-7.4
7.5	74	45	-7.5
7.6	79	48	-7.6
7.7	79	48	-7.7

d ₁ mm h7	l ₁ mm	l ₂ mm	Ordering code A1167A...
7.8	79	48	-7.8
7.9	79	48	-7.9
8.0	79	48	-8
8.1	79	48	-8.1
8.2	79	48	-8.2
8.3	79	48	-8.3
8.4	79	48	-8.4
8.5	79	48	-8.5
8.6	84	52	-8.6
8.7	84	52	-8.7
8.8	84	52	-8.8
8.9	84	52	-8.9
9.0	84	52	-9
9.1	84	52	-9.1
9.2	84	52	-9.2
9.3	84	52	-9.3
9.4	84	52	-9.4
9.5	84	52	-9.5
9.6	89	55	-9.6
9.7	89	55	-9.7
9.8	89	55	-9.8
9.9	89	55	-9.9
10.0	89	55	-10
10.1	89	55	-10.1
10.2	89	55	-10.2
10.3	89	55	-10.3
10.4	89	55	-10.4
10.5	89	55	-10.5
10.6	89	55	-10.6
10.7	95	60	-10.7
10.8	95	60	-10.8
10.9	95	60	-10.9
11.0	95	60	-11
11.1	95	60	-11.1
11.2	95	60	-11.2
11.3	95	60	-11.3
11.4	95	60	-11.4
11.5	95	60	-11.5
11.6	95	60	-11.6
11.7	95	60	-11.7
11.8	95	60	-11.8
11.9	102	65	-11.9
12.0	102	65	-12
12.1	102	65	-12.1
12.2	102	65	-12.2
12.3	102	65	-12.3
12.4	102	65	-12.4
12.5	102	65	-12.5

d ₁ mm h7	l ₁ mm	l ₂ mm	Ordering code A1167A...
12.6	102	65	-12.6
12.7	102	65	-12.7
12.8	102	65	-12.8
12.9	102	65	-12.9
13.0	102	65	-13
13.1	102	65	-13.1
13.2	102	65	-13.2
13.3	107	66	-13.3
13.4	107	66	-13.4
13.5	107	66	-13.5
13.6	107	66	-13.6
13.7	107	66	-13.7
13.8	107	66	-13.8
13.9	107	66	-13.9
14.0	107	66	-14
14.1	111	70	-14.1
14.2	111	70	-14.2
14.3	111	70	-14.3
14.4	111	70	-14.4
14.5	111	70	-14.5
14.6	111	70	-14.6
14.7	111	70	-14.7
14.8	111	70	-14.8
14.9	111	70	-14.9
15.0	111	70	-15
15.1	115	73	-15.1
15.2	115	73	-15.2
15.3	115	73	-15.3
15.4	115	73	-15.4
15.5	115	73	-15.5
15.6	115	73	-15.6
15.7	115	73	-15.7
15.8	115	73	-15.8
15.9	115	73	-15.9
16.0	115	73	-16
16.5	119	73	-16.5
17.0	119	73	-17
17.5	123	76	-17.5
18.0	123	76	-18
18.5	127	76	-18.5
19.0	127	76	-19
19.5	131	79	-19.5
20.0	131	79	-20

Maximiza Solid Carbide 3-Flute Drills

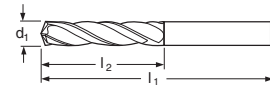
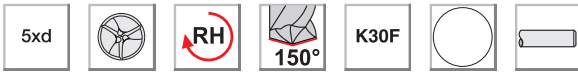
A1167B

Application: For high penetration-rates in soft, long chipping materials such as wrought aluminium and tough brass.

Remarks: 15° rake angle; overall length acc. to DIN 6539, extended flute length (not in accordance with DIN 6539)



TITEX
Std.



d ₁ mm h7	l ₁ mm	l ₂ mm	Ordering code A1167B...
3.0	46	22	-3
3.1	49	24	-3.1
3.2	49	24	-3.2
3.3	49	24	-3.3
3.4	52	27	-3.4
3.5	52	27	-3.5
3.6	52	27	-3.6
3.7	52	27	-3.7
3.8	55	30	-3.8
3.9	55	30	-3.9
4.0	55	30	-4
4.1	55	30	-4.1
4.2	55	30	-4.2
4.3	58	32	-4.3
4.4	58	32	-4.4
4.5	58	32	-4.5
4.6	58	32	-4.6
4.7	58	32	-4.7
4.8	62	35	-4.8
4.9	62	35	-4.9
5.0	62	35	-5
5.1	62	35	-5.1
5.2	62	35	-5.2
5.3	62	35	-5.3
5.4	66	39	-5.4
5.5	66	39	-5.5
5.6	66	39	-5.6
5.7	66	39	-5.7
5.8	66	39	-5.8
5.9	66	39	-5.9
6.0	66	39	-6
6.1	70	42	-6.1
6.2	70	42	-6.2
6.3	70	42	-6.3
6.4	70	42	-6.4
6.5	70	42	-6.5
6.6	70	42	-6.6
6.7	70	42	-6.7
6.8	74	45	-6.8
6.9	74	45	-6.9
7.0	74	45	-7
7.1	74	45	-7.1
7.2	74	45	-7.2
7.3	74	45	-7.3
7.4	74	45	-7.4
7.5	74	45	-7.5
7.6	79	48	-7.6
7.7	79	48	-7.7

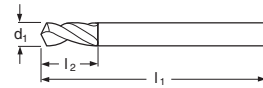
d ₁ mm h7	l ₁ mm	l ₂ mm	Ordering code A1167B...
7.8	79	48	-7.8
7.9	79	48	-7.9
8.0	79	48	-8
8.1	79	48	-8.1
8.2	79	48	-8.2
8.3	79	48	-8.3
8.4	79	48	-8.4
8.5	79	48	-8.5
8.6	84	52	-8.6
8.7	84	52	-8.7
8.8	84	52	-8.8
8.9	84	52	-8.9
9.0	84	52	-9
9.1	84	52	-9.1
9.2	84	52	-9.2
9.3	84	52	-9.3
9.4	84	52	-9.4
9.5	84	52	-9.5
9.6	89	55	-9.6
9.7	89	55	-9.7
9.8	89	55	-9.8
9.9	89	55	-9.9
10.0	89	55	-10
10.1	89	55	-10.1
10.2	89	55	-10.2
10.3	89	55	-10.3
10.4	89	55	-10.4
10.5	89	55	-10.5
10.6	89	55	-10.6
10.7	95	60	-10.7
10.8	95	60	-10.8
10.9	95	60	-10.9
11.0	95	60	-11
11.1	95	60	-11.1
11.2	95	60	-11.2
11.3	95	60	-11.3
11.4	95	60	-11.4
11.5	95	60	-11.5
11.6	95	60	-11.6
11.7	95	60	-11.7
11.8	95	60	-11.8
11.9	102	65	-11.9
12.0	102	65	-12
12.1	102	65	-12.1
12.2	102	65	-12.2
12.3	102	65	-12.3
12.4	102	65	-12.4
12.5	102	65	-12.5

d ₁ mm h7	l ₁ mm	l ₂ mm	Ordering code A1167B...
12.6	102	65	-12.6
12.7	102	65	-12.7
12.8	102	65	-12.8
12.9	102	65	-12.9
13.0	102	65	-13
13.1	102	65	-13.1
13.2	102	65	-13.2
13.3	107	66	-13.3
13.4	107	66	-13.4
13.5	107	66	-13.5
13.6	107	66	-13.6
13.7	107	66	-13.7
13.8	107	66	-13.8
13.9	107	66	-13.9
14.0	107	66	-14
14.1	111	70	-14.1
14.2	111	70	-14.2
14.3	111	70	-14.3
14.4	111	70	-14.4
14.5	111	70	-14.5
14.6	111	70	-14.6
14.7	111	70	-14.7
14.8	111	70	-14.8
14.9	111	70	-14.9
15.0	111	70	-15
15.1	115	73	-15.1
15.2	115	73	-15.2
15.3	115	73	-15.3
15.4	115	73	-15.4
15.5	115	73	-15.5
15.6	115	73	-15.6
15.7	115	73	-15.7
15.8	115	73	-15.8
15.9	115	73	-15.9
16.0	115	73	-16
16.5	119	73	-16.5
17.0	119	73	-17
17.5	123	76	-17.5
18.0	123	76	-18
18.5	127	76	-18.5
19.0	127	76	-19
19.5	131	79	-19.5
20.0	131	79	-20

Solid Carbide NC-Spotting Drills, Point Angle 90°

A1174

Application: For centering and countersinking especially on CNC machines.



d ₁ mm h6	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1174...
3.000		46	11	-3
4.000		55	15	-4
5.000		62	16	-5
6.000		66	17	-6
6.350	1/4 IN	70	18	-1/4IN
8.000		79	22	-8
9.525	3/8 IN	89	26	-3/8IN
10.000		89	26	-10
12.000		102	30	-12

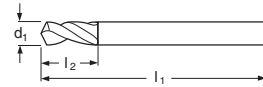
d ₁ mm h6	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1174...
12.700	1/2 IN	102	30	-1/2IN
15.875	5/8 IN	115	34	-5/8IN
16.000		115	34	-16
20.000		131	40	-20

Solid Carbide NC-Spotting Drills, Point Angle 120°



A1174C

Application: For centering and countersinking especially on CNC machines.



d ₁ mm h6	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1174C...
3.000		46	11	-3
4.000		55	15	-4
5.000		62	16	-5
6.000		66	17	-6
6.350	1/4 IN	70	18	-1/4IN
8.000		79	22	-8
9.525	3/8 IN	89	26	-3/8IN
10.000		89	26	-10
12.000		102	30	-12

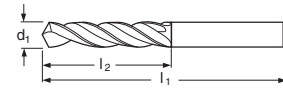
d ₁ mm h6	Ø Inches/ Wire- Gauge	l ₁ mm	l ₂ mm	Ordering code A1174C...
12.700	1/2 IN	102	30	-1/2IN
15.875	5/8 IN	115	34	-5/8IN
16.000		115	34	-16
20.000		131	40	-20

Solid Carbide Twist Drills

A1263

Application: Solid carbide twist drills, preferably used for non-ferrous metals, abrasive plastics, high silicon aluminium alloys, glass- and carbon fibre-reinforced synthetics. Up to diameter 3 mm also for general purpose (steel and cast iron).

DIN 338



d ₁ mm h7	l ₁ mm	l ₂ mm	Ordering code A1263...
0.6	24	7	-0.6
0.7	28	9	-0.7
0.8	30	10	-0.8
0.9	32	11	-0.9
1.0	34	12	-1
1.1	36	14	-1.1
1.2	38	16	-1.2
1.3	38	16	-1.3
1.4	40	18	-1.4
1.5	40	18	-1.5
1.6	43	20	-1.6
1.7	43	20	-1.7
1.8	46	22	-1.8
1.9	46	22	-1.9
2.0	49	24	-2
2.1	49	24	-2.1
2.2	53	27	-2.2
2.3	53	27	-2.3
2.4	57	30	-2.4
2.5	57	30	-2.5
2.6	57	30	-2.6
2.7	61	33	-2.7
2.8	61	33	-2.8
2.9	61	33	-2.9
3.0	61	33	-3
3.1	65	36	-3.1
3.2	65	36	-3.2
3.3	65	36	-3.3
3.4	70	39	-3.4
3.5	70	39	-3.5
3.6	70	39	-3.6
3.7	70	39	-3.7
3.8	75	43	-3.8
3.9	75	43	-3.9
4.0	75	43	-4
4.1	75	43	-4.1

d ₁ mm h7	l ₁ mm	l ₂ mm	Ordering code A1263...
4.2	75	43	-4.2
4.3	80	47	-4.3
4.4	80	47	-4.4
4.5	80	47	-4.5
4.6	80	47	-4.6
4.7	80	47	-4.7
4.8	86	52	-4.8
4.9	86	52	-4.9
5.0	86	52	-5
5.1	86	52	-5.1
5.2	86	52	-5.2
5.3	86	52	-5.3
5.4	93	57	-5.4
5.5	93	57	-5.5
5.6	93	57	-5.6
5.7	93	57	-5.7
5.8	93	57	-5.8
5.9	93	57	-5.9
6.0	93	57	-6
6.1	101	63	-6.1
6.2	101	63	-6.2
6.3	101	63	-6.3
6.4	101	63	-6.4
6.5	101	63	-6.5
6.6	101	63	-6.6
6.7	101	63	-6.7
6.8	109	69	-6.8
6.9	109	69	-6.9
7.0	109	69	-7
7.1	109	69	-7.1
7.2	109	69	-7.2
7.3	109	69	-7.3
7.4	109	69	-7.4
7.5	109	69	-7.5
7.6	117	75	-7.6
7.7	117	75	-7.7

d ₁ mm h7	l ₁ mm	l ₂ mm	Ordering code A1263...
7.8	117	75	-7.8
7.9	117	75	-7.9
8.0	117	75	-8
8.1	117	75	-8.1
8.2	117	75	-8.2
8.3	117	75	-8.3
8.4	117	75	-8.4
8.5	117	75	-8.5
8.6	125	81	-8.6
8.7	125	81	-8.7
8.8	125	81	-8.8
8.9	125	81	-8.9
9.0	125	81	-9
9.1	125	81	-9.1
9.2	125	81	-9.2
9.3	125	81	-9.3
9.4	125	81	-9.4
9.5	125	81	-9.5
9.6	133	87	-9.6
9.7	133	87	-9.7
9.8	133	87	-9.8
9.9	133	87	-9.9
10.0	133	87	-10
10.2	133	87	-10.2
10.5	133	87	-10.5
10.8	142	94	-10.8
11.0	142	94	-11
11.2	142	94	-11.2
11.5	142	94	-11.5
11.8	142	94	-11.8
12.0	151	101	-12

Carbide Tipped Drills ALPHA HM

A1272

Application: Application with no requirements for high cutting data, mainly in synthetic materials with fillers, hard cast materials, hard bronzes etc.

Remarks: Carbide tipped, body: HSS



DIN 338

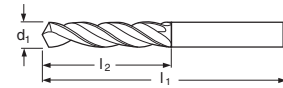
ALPHA HM



K10/20



HRC 45-55



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1272...
3.0	61	33	-3
3.1	65	36	-3.1
3.2	65	36	-3.2
3.3	65	36	-3.3
3.4	70	39	-3.4
3.5	70	39	-3.5
3.6	70	39	-3.6
3.7	70	39	-3.7
3.8	75	43	-3.8
3.9	75	43	-3.9
4.0	75	43	-4
4.1	75	43	-4.1
4.2	75	43	-4.2
4.3	80	47	-4.3
4.4	80	47	-4.4
4.5	80	47	-4.5
4.6	80	47	-4.6
4.7	80	47	-4.7
4.8	86	52	-4.8
4.9	86	52	-4.9
5.0	86	52	-5
5.1	86	52	-5.1
5.2	86	52	-5.2
5.3	86	52	-5.3
5.4	93	57	-5.4
5.5	93	57	-5.5
5.6	93	57	-5.6
5.7	93	57	-5.7
5.8	93	57	-5.8
5.9	93	57	-5.9
6.0	93	57	-6
6.1	101	63	-6.1
6.2	101	63	-6.2
6.3	101	63	-6.3
6.4	101	63	-6.4
6.5	101	63	-6.5

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1272...
6.6	101	63	-6.6
6.7	101	63	-6.7
6.8	109	69	-6.8
6.9	109	69	-6.9
7.0	109	69	-7
7.1	109	69	-7.1
7.2	109	69	-7.2
7.3	109	69	-7.3
7.4	109	69	-7.4
7.5	109	69	-7.5
7.6	117	75	-7.6
7.7	117	75	-7.7
7.8	117	75	-7.8
7.9	117	75	-7.9
8.0	117	75	-8
8.1	117	75	-8.1
8.2	117	75	-8.2
8.3	117	75	-8.3
8.4	117	75	-8.4
8.5	117	75	-8.5
8.6	125	81	-8.6
8.7	125	81	-8.7
8.8	125	81	-8.8
8.9	125	81	-8.9
9.0	125	81	-9
9.1	125	81	-9.1
9.2	125	81	-9.2
9.3	125	81	-9.3
9.4	125	81	-9.4
9.5	125	81	-9.5
9.6	133	87	-9.6
9.7	133	87	-9.7
9.8	133	87	-9.8
9.9	133	87	-9.9
10.0	133	87	-10
10.1	133	87	-10.1

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1272...
10.2	133	87	-10.2
10.3	133	87	-10.3
10.4	133	87	-10.4
10.5	133	87	-10.5
10.6	133	87	-10.6
10.7	142	94	-10.7
10.8	142	94	-10.8
10.9	142	94	-10.9
11.0	142	94	-11
11.1	142	94	-11.1
11.2	142	94	-11.2
11.3	142	94	-11.3
11.4	142	94	-11.4
11.5	142	94	-11.5
11.6	142	94	-11.6
11.7	142	94	-11.7
11.8	142	94	-11.8
11.9	151	101	-11.9
12.0	151	101	-12
12.1	151	101	-12.1
12.2	151	101	-12.2
12.3	151	101	-12.3
12.4	151	101	-12.4
12.5	151	101	-12.5
12.6	151	101	-12.6
12.7	151	101	-12.7
12.8	151	101	-12.8
12.9	151	101	-12.9
13.0	151	101	-13

Carbide Tipped Drills ALPHA HM

A1273

Application: For hardened steels from approx. 45 HRC up to 65 HRC. **Remarks:** Carbide tipped, body: HSS, with special point geometry



DIN 338

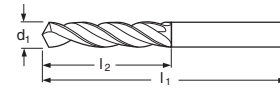
ALPHA HM



K10/20



HRC 55-63



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1273...
3.0	61	33	-3
3.1	65	36	-3.1
3.2	65	36	-3.2
3.3	65	36	-3.3
3.4	70	39	-3.4
3.5	70	39	-3.5
3.6	70	39	-3.6
3.7	70	39	-3.7
3.8	75	43	-3.8
3.9	75	43	-3.9
4.0	75	43	-4
4.1	75	43	-4.1
4.2	75	43	-4.2
4.3	80	47	-4.3
4.4	80	47	-4.4
4.5	80	47	-4.5
4.6	80	47	-4.6
4.7	80	47	-4.7
4.8	86	52	-4.8
4.9	86	52	-4.9
5.0	86	52	-5
5.1	86	52	-5.1
5.2	86	52	-5.2
5.3	86	52	-5.3
5.4	93	57	-5.4
5.5	93	57	-5.5
5.6	93	57	-5.6
5.7	93	57	-5.7
5.8	93	57	-5.8
5.9	93	57	-5.9
6.0	93	57	-6
6.1	101	63	-6.1
6.2	101	63	-6.2
6.3	101	63	-6.3
6.4	101	63	-6.4
6.5	101	63	-6.5

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1273...
6.6	101	63	-6.6
6.7	101	63	-6.7
6.8	109	69	-6.8
6.9	109	69	-6.9
7.0	109	69	-7
7.1	109	69	-7.1
7.2	109	69	-7.2
7.3	109	69	-7.3
7.4	109	69	-7.4
7.5	109	69	-7.5
7.6	117	75	-7.6
7.7	117	75	-7.7
7.8	117	75	-7.8
7.9	117	75	-7.9
8.0	117	75	-8
8.1	117	75	-8.1
8.2	117	75	-8.2
8.3	117	75	-8.3
8.4	117	75	-8.4
8.5	117	75	-8.5
8.6	125	81	-8.6
8.7	125	81	-8.7
8.8	125	81	-8.8
8.9	125	81	-8.9
9.0	125	81	-9
9.1	125	81	-9.1
9.2	125	81	-9.2
9.3	125	81	-9.3
9.4	125	81	-9.4
9.5	125	81	-9.5
9.6	133	87	-9.6
9.7	133	87	-9.7
9.8	133	87	-9.8
9.9	133	87	-9.9
10.0	133	87	-10
10.1	133	87	-10.1

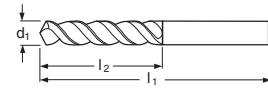
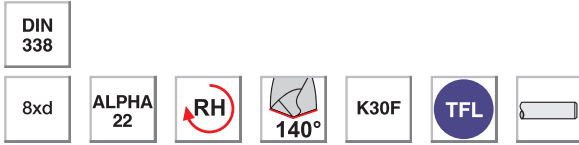
d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A1273...
10.2	133	87	-10.2
10.3	133	87	-10.3
10.4	133	87	-10.4
10.5	133	87	-10.5
10.6	133	87	-10.6
10.7	142	94	-10.7
10.8	142	94	-10.8
10.9	142	94	-10.9
11.0	142	94	-11
11.1	142	94	-11.1
11.2	142	94	-11.2
11.3	142	94	-11.3
11.4	142	94	-11.4
11.5	142	94	-11.5
11.6	142	94	-11.6
11.7	142	94	-11.7
11.8	142	94	-11.8
11.9	151	101	-11.9
12.0	151	101	-12
12.1	151	101	-12.1
12.2	151	101	-12.2
12.3	151	101	-12.3
12.4	151	101	-12.4
12.5	151	101	-12.5
12.6	151	101	-12.6
12.7	151	101	-12.7
12.8	151	101	-12.8
12.9	151	101	-12.9
13.0	151	101	-13

Solid Carbide Deep Hole Drills ALPHA® 22

A1276TFL

Application: High Performance Drill with UFL profile for deep hole drilling without pecks in materials up to approx. 1000 N/mm², especially suitable for steels and cast iron, non-ferrous metals such as Aluminium-, Copper-, Zinc- and Magnesium alloys. Also suitable for dry machining of steel materials.

Remarks: Helix angle ca. 40°



d ₁ mm h7	l ₁ mm	l ₂ mm	Ordering code A1276TFL...
3.0	61	33	-3
3.1	65	36	-3.1
3.2	65	36	-3.2
3.3	65	36	-3.3
3.4	70	39	-3.4
3.5	70	39	-3.5
3.7	70	39	-3.7
3.8	75	43	-3.8
4.0	75	43	-4
4.2	75	43	-4.2
4.3	80	47	-4.3
4.5	80	47	-4.5
4.7	80	47	-4.7
4.8	86	52	-4.8
5.0	86	52	-5

d ₁ mm h7	l ₁ mm	l ₂ mm	Ordering code A1276TFL...
5.1	86	52	-5.1
5.2	86	52	-5.2
5.5	93	57	-5.5
5.8	93	57	-5.8
6.0	93	57	-6
6.1	101	63	-6.1
6.5	101	63	-6.5
6.6	101	63	-6.6
6.8	109	69	-6.8
7.0	109	69	-7
7.5	109	69	-7.5
7.8	117	75	-7.8
8.0	117	75	-8
8.1	117	75	-8.1
8.5	117	75	-8.5

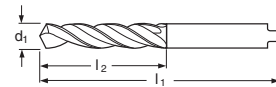
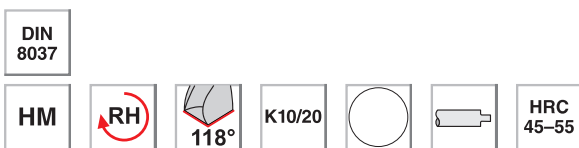
d ₁ mm h7	l ₁ mm	l ₂ mm	Ordering code A1276TFL...
9.0	125	81	-9
9.5	125	81	-9.5
10.0	133	87	-10
10.2	133	87	-10.2
10.5	133	87	-10.5
11.0	142	94	-11
11.5	142	94	-11.5
12.0	151	101	-12

Carbide Tipped Drills

A2971

Application: Application with no requirements for high cutting data, mainly in synthetic materials with fillers, hard cast materials, hard bronzes etc.

Remarks: Carbide tipped; Intermediate sizes available on short notice upon request.



d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A2971...
3.0	50	20	-3
3.5	56	25	-3.5
3.8	56	25	-3.8
4.0	56	25	-4
4.2	63	28	-4.2
4.5	63	28	-4.5
4.8	63	28	-4.8
5.0	63	28	-5
5.2	71	32	-5.2
5.5	71	32	-5.5
5.8	71	32	-5.8
6.0	71	32	-6

d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A2971...
6.5	71	32	-6.5
6.8	80	40	-6.8
7.0	80	40	-7
7.5	80	40	-7.5
8.0	80	40	-8
8.5	90	50	-8.5
9.0	90	50	-9
9.5	90	50	-9.5
10.0	100	56	-10
10.5	100	56	-10.5
11.0	100	56	-11
11.5	112	63	-11.5

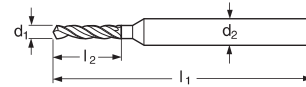
d ₁ mm h8	l ₁ mm	l ₂ mm	Ordering code A2971...
12.0	112	63	-12
13.0	112	63	-13
14.0	125	71	-14
15.0	125	71	-15
16.0	140	80	-16

Solid Carbide Micro Precision Drills

A3162

Application: Steels of medium and high tensile strength, stainless steels (300 and 400 series), cast iron, chilled cast iron, AlSi-alloys, titanium-alloys.

DIN 1899



d ₁ mm 0 - 0,004	l ₁ mm	l ₂ mm min.	d ₂ mm h8	Ordering code A3162...
0.10	25	0.5	1.0	-0.1
0.11	25	0.5	1.0	-0.11
0.12	25	0.5	1.0	-0.12
0.13	25	0.8	1.0	-0.13
0.14	25	0.8	1.0	-0.14
0.15	25	0.8	1.0	-0.15
0.16	25	1.1	1.0	-0.16
0.17	25	1.1	1.0	-0.17
0.18	25	1.1	1.0	-0.18
0.19	25	1.1	1.0	-0.19
0.20	25	1.5	1.0	-0.2
0.21	25	1.5	1.0	-0.21
0.22	25	1.5	1.0	-0.22
0.23	25	1.5	1.0	-0.23
0.24	25	1.5	1.0	-0.24
0.25	25	1.9	1.0	-0.25
0.26	25	1.9	1.0	-0.26
0.27	25	1.9	1.0	-0.27
0.28	25	1.9	1.0	-0.28
0.29	25	1.9	1.0	-0.29
0.30	25	1.9	1.0	-0.3
0.31	25	2.4	1.0	-0.31
0.32	25	2.4	1.0	-0.32
0.33	25	2.4	1.0	-0.33
0.34	25	2.4	1.0	-0.34
0.35	25	2.4	1.0	-0.35
0.36	25	2.4	1.0	-0.36
0.37	25	2.4	1.0	-0.37
0.38	25	2.4	1.0	-0.38
0.39	25	3.0	1.0	-0.39
0.40	25	3.0	1.0	-0.4
0.41	25	3.0	1.0	-0.41
0.42	25	3.0	1.0	-0.42
0.43	25	3.0	1.0	-0.43
0.44	25	3.0	1.0	-0.44
0.45	25	3.0	1.0	-0.45
0.46	25	3.0	1.0	-0.46
0.47	25	3.0	1.0	-0.47
0.48	25	3.0	1.0	-0.48
0.49	25	3.4	1.0	-0.49
0.50	25	3.4	1.0	-0.5
0.51	25	3.4	1.0	-0.51
0.52	25	3.4	1.0	-0.52
0.53	25	3.4	1.0	-0.53
0.54	25	3.9	1.0	-0.54
0.55	25	3.9	1.0	-0.55
0.56	25	3.9	1.0	-0.56
0.57	25	3.9	1.0	-0.57

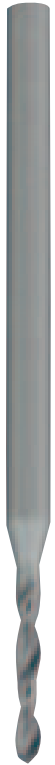
d ₁ mm 0 - 0,004	l ₁ mm	l ₂ mm min.	d ₂ mm h8	Ordering code A3162...
0.58	25	3.9	1.0	-0.58
0.59	25	3.9	1.0	-0.59
0.60	25	3.9	1.0	-0.6
0.61	25	4.2	1.0	-0.61
0.62	25	4.2	1.0	-0.62
0.63	25	4.2	1.0	-0.63
0.64	25	4.2	1.0	-0.64
0.65	25	4.2	1.0	-0.65
0.66	25	4.2	1.0	-0.66
0.67	25	4.2	1.0	-0.67
0.68	25	4.8	1.0	-0.68
0.69	25	4.8	1.0	-0.69
0.70	25	4.8	1.0	-0.7
0.71	25	4.8	1.0	-0.71
0.72	25	4.8	1.0	-0.72
0.73	25	4.8	1.0	-0.73
0.74	25	4.8	1.0	-0.74
0.75	25	4.8	1.0	-0.75
0.76	25	5.3	1.0	-0.76
0.77	25	5.3	1.0	-0.77
0.78	25	5.3	1.0	-0.78
0.79	25	5.3	1.0	-0.79
0.80	25	5.3	1.5	-0.8
0.81	25	5.3	1.5	-0.81
0.82	25	5.3	1.5	-0.82
0.83	25	5.3	1.5	-0.83
0.84	25	5.3	1.5	-0.84
0.85	25	5.3	1.5	-0.85
0.86	25	6.0	1.5	-0.86
0.87	25	6.0	1.5	-0.87
0.88	25	6.0	1.5	-0.88
0.89	25	6.0	1.5	-0.89
0.90	25	6.0	1.5	-0.9
0.91	25	6.0	1.5	-0.91
0.92	25	6.0	1.5	-0.92
0.93	25	6.0	1.5	-0.93
0.94	25	6.0	1.5	-0.94
0.95	25	6.0	1.5	-0.95
0.96	25	6.8	1.5	-0.96
0.97	25	6.8	1.5	-0.97
0.98	25	6.8	1.5	-0.98
0.99	25	6.8	1.5	-0.99
1.00	25	6.8	1.5	-1
1.05	25	6.8	1.5	-1.05
1.10	25	7.6	1.5	-1.1
1.15	25	7.6	1.5	-1.15
1.20	25	8.5	1.5	-1.2
1.25	25	8.5	1.5	-1.25

Continued Solid Carbide Micro Precision Drills

A3162

d ₁ mm 0 - 0,004	l ₁ mm	l ₂ mm min.	d ₂ mm h8	Ordering code A3162...
1.30	25	8.5	1.5	-1.3
1.35	25	9.5	1.5	-1.35
1.40	25	9.5	1.5	-1.4

d ₁ mm 0 - 0,004	l ₁ mm	l ₂ mm min.	d ₂ mm h8	Ordering code A3162...
1.45	25	9.5	1.5	-1.45



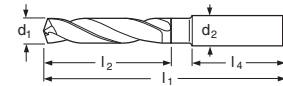
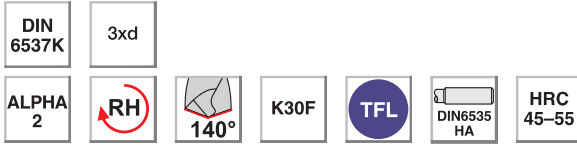
Solid Carbide Drills ALPHA® 2



A3265TFL

Application: High performance twist drill for steels and cast materials. Also suited for ferritic, pearlitic and martensitic Stainless Steels (Ni < 4%) and PH-steels such as 17-4PH. Note: machining austenitic stainless steel generally requires tools with internal coolant. Coa-

ted with TINAL FUTURA for high machining data and exceptional tool life. Also suitable for dry machining of steel materials.



d ₁ mm m7	Ø Inches/ Wire-Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3265TFL...
3.000		6	62	20	36	-3
3.100		6	62	20	36	-3.1
3.175	1/8 IN	6	62	20	36	-1/8IN
3.200		6	62	20	36	-3.2
3.250		6	62	20	36	-3.25
3.300		6	62	20	36	-3.3
3.400		6	62	20	36	-3.4
3.500		6	62	20	36	-3.5
3.572	9/64 IN	6	62	20	36	-9/64IN
3.600		6	62	20	36	-3.6
3.650		6	62	20	36	-3.65
3.700		6	62	20	36	-3.7
3.800		6	66	24	36	-3.8
3.900		6	66	24	36	-3.9
3.969	5/32 IN	6	66	24	36	-5/32IN
4.000		6	66	24	36	-4
4.100		6	66	24	36	-4.1
4.200		6	66	24	36	-4.2
4.300		6	66	24	36	-4.3
4.366	11/64 IN	6	66	24	36	-11/64IN
4.400		6	66	24	36	-4.4
4.500		6	66	24	36	-4.5
4.600		6	66	24	36	-4.6
4.650		6	66	24	36	-4.65
4.700		6	66	24	36	-4.7
4.763	3/16 IN	6	66	28	36	-3/16IN
4.800		6	66	28	36	-4.8
4.900		6	66	28	36	-4.9
5.000		6	66	28	36	-5
5.100		6	66	28	36	-5.1
5.159	13/64 IN	6	66	28	36	-13/64IN
5.200		6	66	28	36	-5.2
5.300		6	66	28	36	-5.3
5.400		6	66	28	36	-5.4
5.500		6	66	28	36	-5.5
5.550		6	66	28	36	-5.55
5.556	7/32 IN	6	66	28	36	-7/32IN
5.600		6	66	28	36	-5.6
5.700		6	66	28	36	-5.7
5.800		6	66	28	36	-5.8
5.900		6	66	28	36	-5.9
5.953	15/64 IN	6	66	28	36	-15/64IN
6.000		6	66	28	36	-6
6.100		8	79	34	36	-6.1
6.200		8	79	34	36	-6.2
6.300		8	79	34	36	-6.3
6.350	1/4 IN	8	79	34	36	-1/4IN
6.400		8	79	34	36	-6.4

Continued Solid Carbide Drills ALPHA® 2



A3265TFL



d ₁ mm m7	Ø Inches/ Wire-Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3265TFL...
6.500		8	79	34	36	-6.5
6.600		8	79	34	36	-6.6
6.700		8	79	34	36	-6.7
6.747	17/64 IN	8	79	34	36	-17/64IN
6.800		8	79	34	36	-6.8
6.900		8	79	34	36	-6.9
7.000		8	79	34	36	-7
7.100		8	79	41	36	-7.1
7.144	9/32 IN	8	79	41	36	-9/32IN
7.200		8	79	41	36	-7.2
7.300		8	79	41	36	-7.3
7.400		8	79	41	36	-7.4
7.500		8	79	41	36	-7.5
7.541	19/64 IN	8	79	41	36	-19/64IN
7.550		8	79	41	36	-7.55
7.600		8	79	41	36	-7.6
7.700		8	79	41	36	-7.7
7.800		8	79	41	36	-7.8
7.900		8	79	41	36	-7.9
7.938	5/16 IN	8	79	41	36	-5/16IN
8.000		8	79	41	36	-8
8.100		10	89	47	40	-8.1
8.200		10	89	47	40	-8.2
8.300		10	89	47	40	-8.3
8.334	21/64 IN	10	89	47	40	-21/64IN
8.400		10	89	47	40	-8.4
8.500		10	89	47	40	-8.5
8.600		10	89	47	40	-8.6
8.700		10	89	47	40	-8.7
8.731	11/32 IN	10	89	47	40	-11/32IN
8.800		10	89	47	40	-8.8
8.900		10	89	47	40	-8.9
9.000		10	89	47	40	-9
9.100		10	89	47	40	-9.1
9.128	23/64 IN	10	89	47	40	-23/64IN
9.200		10	89	47	40	-9.2
9.300		10	89	47	40	-9.3
9.400		10	89	47	40	-9.4
9.500		10	89	47	40	-9.5
9.525	3/8 IN	10	89	47	40	-3/8IN
9.550		10	89	47	40	-9.55
9.600		10	89	47	40	-9.6
9.700		10	89	47	40	-9.7
9.800		10	89	47	40	-9.8
9.900		10	89	47	40	-9.9
9.922	25/64 IN	10	89	47	40	-25/64IN
10.000		10	89	47	40	-10
10.100		12	102	55	45	-10.1
10.200		12	102	55	45	-10.2
10.300		12	102	55	45	-10.3
10.319	13/32 IN	12	102	55	45	-13/32IN
10.400		12	102	55	45	-10.4
10.500		12	102	55	45	-10.5
10.600		12	102	55	45	-10.6
10.700		12	102	55	45	-10.7
10.716	27/64 IN	12	102	55	45	-27/64IN
10.800		12	102	55	45	-10.8

Continued Solid Carbide Drills ALPHA® 2



A3265TFL



d ₁ mm m7	Ø Inches/ Wire-Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3265TFL...
10.900		12	102	55	45	-10.9
11.000		12	102	55	45	-11
11.100		12	102	55	45	-11.1
11.113	7/16 IN	12	102	55	45	-7/16IN
11.200		12	102	55	45	-11.2
11.300		12	102	55	45	-11.3
11.400		12	102	55	45	-11.4
11.500		12	102	55	45	-11.5
11.509	29/64 IN	12	102	55	45	-29/64IN
11.550		12	102	55	45	-11.55
11.600		12	102	55	45	-11.6
11.700		12	102	55	45	-11.7
11.800		12	102	55	45	-11.8
11.900		12	102	55	45	-11.9
11.906	15/32 IN	12	102	55	45	-15/32IN
12.000		12	102	55	45	-12
12.100		14	107	60	45	-12.1
12.200		14	107	60	45	-12.2
12.250		14	107	60	45	-12.25
12.300		14	107	60	45	-12.3
12.303	31/64 IN	14	107	60	45	-31/64IN
12.400		14	107	60	45	-12.4
12.500		14	107	60	45	-12.5
12.600		14	107	60	45	-12.6
12.700		14	107	60	45	-12.7
12.700	1/2 IN	14	107	60	45	-1/2IN
12.750		14	107	60	45	-12.75
12.800		14	107	60	45	-12.8
12.900		14	107	60	45	-12.9
13.000		14	107	60	45	-13
13.100		14	107	60	45	-13.1
13.200		14	107	60	45	-13.2
13.300		14	107	60	45	-13.3
13.400		14	107	60	45	-13.4
13.494	17/32 IN	14	107	60	45	-17/32IN
13.500		14	107	60	45	-13.5
13.600		14	107	60	45	-13.6
13.700		14	107	60	45	-13.7
13.800		14	107	60	45	-13.8
13.900		14	107	60	45	-13.9
14.000		14	107	60	45	-14
14.100		16	115	65	48	-14.1
14.200		16	115	65	48	-14.2
14.288	9/16 IN	16	115	65	48	-9/16IN
14.300		16	115	65	48	-14.3
14.400		16	115	65	48	-14.4
14.500		16	115	65	48	-14.5
14.600		16	115	65	48	-14.6
14.700		16	115	65	48	-14.7
14.750		16	115	65	48	-14.75
14.800		16	115	65	48	-14.8
15.000		16	115	65	48	-15
15.100		16	115	65	48	-15.1
15.200		16	115	65	48	-15.2
15.300		16	115	65	48	-15.3
15.500		16	115	65	48	-15.5
15.600		16	115	65	48	-15.6

Continued Solid Carbide Drills ALPHA® 2



A3265TFL



d ₁ mm m7	Ø Inches/ Wire-Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3265TFL...
15.700		16	115	65	48	-15.7
15.800		16	115	65	48	-15.8
15.875	5/8 IN	16	115	65	48	-5/8IN
15.900		16	115	65	48	-15.9
16.000		16	115	65	48	-16
16.100		18	123	73	48	-16.1
16.200		18	123	73	48	-16.2
16.300		18	123	73	48	-16.3
16.400		18	123	73	48	-16.4
16.500		18	123	73	48	-16.5
16.600		18	123	73	48	-16.6
16.700		18	123	73	48	-16.7
16.750		18	123	73	48	-16.75
16.800		18	123	73	48	-16.8
17.000		18	123	73	48	-17
17.200		18	123	73	48	-17.2
17.300		18	123	73	48	-17.3
17.500		18	123	73	48	-17.5
17.600		18	123	73	48	-17.6
17.700		18	123	73	48	-17.7
17.800		18	123	73	48	-17.8
18.000		18	123	73	48	-18
18.200		20	131	79	50	-18.2
18.500		20	131	79	50	-18.5
18.700		20	131	79	50	-18.7
18.800		20	131	79	50	-18.8
19.000		20	131	79	50	-19
19.050	3/4 IN	20	131	79	50	-3/4IN
19.500		20	131	79	50	-19.5
19.700		20	131	79	50	-19.7
19.800		20	131	79	50	-19.8
20.000		20	131	79	50	-20

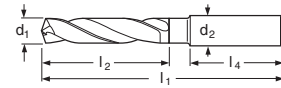
Solid Carbide Drills ALPHA® 2



A3265TIN

Application: High performance twist drill for steels and cast materials. Also suited for ferritic, pearlitic and martensitic Stainless Steels (Ni < 4%) and PH-steels such as 17-4PH. Note: machining austenitic stainless steel generally requires tools with internal coolant. Also suitable for dry machining of steel materials.

DIN 6537K	3xd					
ALPHA 2	RH	140°	K30F	TIN	DIN6535 HA	HRC 45-55



d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3265TIN...
3.00	6	62	20	36	-3
3.10	6	62	20	36	-3.1
3.20	6	62	20	36	-3.2
○ 3.25	6	62	20	36	-3.25
3.30	6	62	20	36	-3.3
3.40	6	62	20	36	-3.4
3.50	6	62	20	36	-3.5
3.70	6	62	20	36	-3.7
3.80	6	66	24	36	-3.8
4.00	6	66	24	36	-4
4.10	6	66	24	36	-4.1
4.20	6	66	24	36	-4.2
4.30	6	66	24	36	-4.3
4.50	6	66	24	36	-4.5
4.65	6	66	24	36	-4.65
4.80	6	66	28	36	-4.8
5.00	6	66	28	36	-5
5.10	6	66	28	36	-5.1
5.20	6	66	28	36	-5.2
5.50	6	66	28	36	-5.5
5.55	6	66	28	36	-5.55
5.80	6	66	28	36	-5.8
6.00	6	66	28	36	-6
6.10	8	79	34	36	-6.1
6.20	8	79	34	36	-6.2
6.30	8	79	34	36	-6.3
6.40	8	79	34	36	-6.4
6.50	8	79	34	36	-6.5
6.60	8	79	34	36	-6.6
6.80	8	79	34	36	-6.8
6.90	8	79	34	36	-6.9
7.00	8	79	34	36	-7
7.10	8	79	41	36	-7.1
7.40	8	79	41	36	-7.4
7.50	8	79	41	36	-7.5
7.80	8	79	41	36	-7.8
7.90	8	79	41	36	-7.9
8.00	8	79	41	36	-8
8.10	10	89	47	40	-8.1
8.20	10	89	47	40	-8.2
8.40	10	89	47	40	-8.4
8.50	10	89	47	40	-8.5
8.60	10	89	47	40	-8.6
8.70	10	89	47	40	-8.7
8.80	10	89	47	40	-8.8
○ 8.90	10	89	47	40	-8.9
9.00	10	89	47	40	-9
9.20	10	89	47	40	-9.2

d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3265TIN...
9.30	10	89	47	40	-9.3
9.50	10	89	47	40	-9.5
9.60	10	89	47	40	-9.6
9.70	10	89	47	40	-9.7
9.80	10	89	47	40	-9.8
10.00	10	89	47	40	-10
10.10	12	102	55	45	-10.1
10.20	12	102	55	45	-10.2
10.30	12	102	55	45	-10.3
10.40	12	102	55	45	-10.4
10.50	12	102	55	45	-10.5
○ 10.60	12	102	55	45	-10.6
10.80	12	102	55	45	-10.8
11.00	12	102	55	45	-11
11.20	12	102	55	45	-11.2
11.50	12	102	55	45	-11.5
11.80	12	102	55	45	-11.8
12.00	12	102	55	45	-12
12.20	14	107	60	45	-12.2
○ 12.25	14	107	60	45	-12.25
12.30	14	107	60	45	-12.3
12.50	14	107	60	45	-12.5
12.70	14	107	60	45	-12.7
○ 12.75	14	107	60	45	-12.75
13.00	14	107	60	45	-13
○ 13.10	14	107	60	45	-13.1
13.30	14	107	60	45	-13.3
13.50	14	107	60	45	-13.5
14.00	14	107	60	45	-14
14.50	16	115	65	48	-14.5
○ 14.75	16	115	65	48	-14.75
15.00	16	115	65	48	-15
○ 15.10	16	115	65	48	-15.1
15.50	16	115	65	48	-15.5
16.00	16	115	65	48	-16
○ 16.50	18	123	73	48	-16.5
○ 16.75	18	123	73	48	-16.75
○ 17.00	18	123	73	48	-17
○ 17.50	18	123	73	48	-17.5
○ 18.00	18	123	73	48	-18
○ 19.00	20	131	79	50	-19
○ 19.50	20	131	79	50	-19.5
○ 20.00	20	131	79	50	-20

○ = Available as long as stock exists. Recommended substitute tool: A3265TFL.

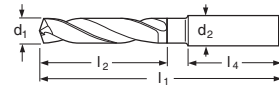
Solid Carbide Drills ALPHA® Rc

A3269TFL

Application: Special drill design, particularly suited for hardened steels up to ca. 65 HRC.

Remarks: With corrected rake angle, for tapping drill size M4 - M12

DIN 6537K	3xd						
ALPHA Rc	RH	140°	K30F	TFL	DIN6535 HA	HRC ...65	



d_1 mm m7	d_2 mm h6	l_1 mm	l_2 mm max.	l_4 mm	Ordering code A3269TFL...
3.4	6	62	20	36	-3.4
4.3	6	66	24	36	-4.3
5.1	6	66	28	36	-5.1

d_1 mm m7	d_2 mm h6	l_1 mm	l_2 mm max.	l_4 mm	Ordering code A3269TFL...
6.9	8	79	34	36	-6.9
8.6	10	89	47	40	-8.6
10.4	12	102	55	45	-10.4

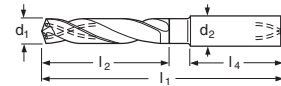
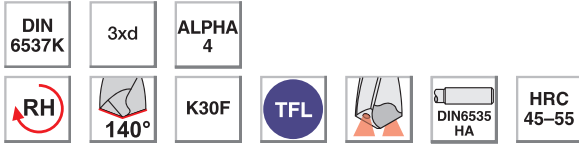


Solid Carbide Oil-Feed Drills ALPHA® 4



A3285TFL

Application: Solid Carbide High Performance Drill, preferably used for Steel and Cast Iron materials, incl. austenitic Stainless Steels and Heat-Resistant Steels, also for Non-Ferrous Metals such as Aluminium-, Copper-, Zinc- and Magnesium Alloys. Coated with TINAL FUTURA for high machining data and exceptional tool life.



d ₁ mm m7	Ø Inches/ Wire-Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3285TFL...
3.000		6	62	20	36	-3
3.100		6	62	20	36	-3.1
3.175	1/8 IN	6	62	20	36	-1/8IN
3.200		6	62	20	36	-3.2
3.250		6	62	20	36	-3.25
3.300		6	62	20	36	-3.3
3.400		6	62	20	36	-3.4
3.500		6	62	20	36	-3.5
3.572	9/64 IN	6	62	20	36	-9/64IN
3.600		6	62	20	36	-3.6
3.650		6	62	20	36	-3.65
3.700		6	62	20	36	-3.7
3.800		6	66	24	36	-3.8
3.900		6	66	24	36	-3.9
3.969	5/32 IN	6	66	24	36	-5/32IN
4.000		6	66	24	36	-4
4.100		6	66	24	36	-4.1
4.200		6	66	24	36	-4.2
4.300		6	66	24	36	-4.3
4.366	11/64 IN	6	66	24	36	-11/64IN
4.400		6	66	24	36	-4.4
4.500		6	66	24	36	-4.5
4.600		6	66	24	36	-4.6
4.650		6	66	24	36	-4.65
4.700		6	66	24	36	-4.7
4.763	3/16 IN	6	66	28	36	-3/16IN
4.800		6	66	28	36	-4.8
4.900		6	66	28	36	-4.9
5.000		6	66	28	36	-5
5.100		6	66	28	36	-5.1
5.159	13/64 IN	6	66	28	36	-13/64IN
5.200		6	66	28	36	-5.2
5.300		6	66	28	36	-5.3
5.400		6	66	28	36	-5.4
5.500		6	66	28	36	-5.5
5.550		6	66	28	36	-5.55
5.556	7/32 IN	6	66	28	36	-7/32IN
5.600		6	66	28	36	-5.6
5.700		6	66	28	36	-5.7
5.800		6	66	28	36	-5.8
5.900		6	66	28	36	-5.9
5.953	15/64 IN	6	66	28	36	-15/64IN
6.000		6	66	28	36	-6
6.100		8	79	34	36	-6.1
6.200		8	79	34	36	-6.2
6.300		8	79	34	36	-6.3
6.350	1/4 IN	8	79	34	36	-1/4IN
6.400		8	79	34	36	-6.4

Continued Solid Carbide Oil-Feed Drills ALPHA® 4



A3285TFL



d ₁ mm m7	Ø Inches/ Wire-Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3285TFL...
6.500		8	79	34	36	-6.5
6.600		8	79	34	36	-6.6
6.700		8	79	34	36	-6.7
6.747	17/64 IN	8	79	34	36	-17/64IN
6.800		8	79	34	36	-6.8
6.900		8	79	34	36	-6.9
7.000		8	79	34	36	-7
7.100		8	79	41	36	-7.1
7.144	9/32 IN	8	79	41	36	-9/32IN
7.200		8	79	41	36	-7.2
7.300		8	79	41	36	-7.3
7.400		8	79	41	36	-7.4
7.500		8	79	41	36	-7.5
7.541	19/64 IN	8	79	41	36	-19/64IN
7.550		8	79	41	36	-7.55
7.600		8	79	41	36	-7.6
7.700		8	79	41	36	-7.7
7.800		8	79	41	36	-7.8
7.900		8	79	41	36	-7.9
7.938	5/16 IN	8	79	41	36	-5/16IN
8.000		8	79	41	36	-8
8.100		10	89	47	40	-8.1
8.200		10	89	47	40	-8.2
8.300		10	89	47	40	-8.3
8.334	21/64 IN	10	89	47	40	-21/64IN
8.400		10	89	47	40	-8.4
8.500		10	89	47	40	-8.5
8.600		10	89	47	40	-8.6
8.700		10	89	47	40	-8.7
8.731	11/32 IN	10	89	47	40	-11/32IN
8.800		10	89	47	40	-8.8
8.900		10	89	47	40	-8.9
9.000		10	89	47	40	-9
9.100		10	89	47	40	-9.1
9.128	23/64 IN	10	89	47	40	-23/64IN
9.200		10	89	47	40	-9.2
9.300		10	89	47	40	-9.3
9.400		10	89	47	40	-9.4
9.500		10	89	47	40	-9.5
9.525	3/8 IN	10	89	47	40	-3/8IN
9.550		10	89	47	40	-9.55
9.600		10	89	47	40	-9.6
9.700		10	89	47	40	-9.7
9.800		10	89	47	40	-9.8
9.900		10	89	47	40	-9.9
9.922	25/64 IN	10	89	47	40	-25/64IN
10.000		10	89	47	40	-10
10.100		12	102	55	45	-10.1
10.200		12	102	55	45	-10.2
10.300		12	102	55	45	-10.3
10.319	13/32 IN	12	102	55	45	-13/32IN
10.400		12	102	55	45	-10.4
10.500		12	102	55	45	-10.5
10.600		12	102	55	45	-10.6
10.700		12	102	55	45	-10.7
10.716	27/64 IN	12	102	55	45	-27/64IN
10.800		12	102	55	45	-10.8

Continued Solid Carbide Oil-Feed Drills ALPHA® 4



A3285TFL



d ₁ mm m7	Ø Inches/ Wire-Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3285TFL...
10.900		12	102	55	45	-10.9
11.000		12	102	55	45	-11
11.100		12	102	55	45	-11.1
11.113	7/16 IN	12	102	55	45	-7/16IN
11.200		12	102	55	45	-11.2
11.300		12	102	55	45	-11.3
11.400		12	102	55	45	-11.4
11.500		12	102	55	45	-11.5
11.509	29/64 IN	12	102	55	45	-29/64IN
11.550		12	102	55	45	-11.55
11.600		12	102	55	45	-11.6
11.700		12	102	55	45	-11.7
11.800		12	102	55	45	-11.8
11.900		12	102	55	45	-11.9
11.906	15/32 IN	12	102	55	45	-15/32IN
12.000		12	102	55	45	-12
12.100		14	107	60	45	-12.1
12.200		14	107	60	45	-12.2
12.250		14	107	60	45	-12.25
12.300		14	107	60	45	-12.3
12.303	31/64 IN	14	107	60	45	-31/64IN
12.400		14	107	60	45	-12.4
12.500		14	107	60	45	-12.5
12.600		14	107	60	45	-12.6
12.700		14	107	60	45	-12.7
12.700	1/2 IN	14	107	60	45	-1/2IN
12.750		14	107	60	45	-12.75
12.800		14	107	60	45	-12.8
12.900		14	107	60	45	-12.9
13.000		14	107	60	45	-13
13.100		14	107	60	45	-13.1
13.200		14	107	60	45	-13.2
13.300		14	107	60	45	-13.3
13.400		14	107	60	45	-13.4
13.494	17/32 IN	14	107	60	45	-17/32IN
13.500		14	107	60	45	-13.5
13.600		14	107	60	45	-13.6
13.700		14	107	60	45	-13.7
13.800		14	107	60	45	-13.8
13.900		14	107	60	45	-13.9
14.000		14	107	60	45	-14
14.100		16	115	65	48	-14.1
14.200		16	115	65	48	-14.2
14.288	9/16 IN	16	115	65	48	-9/16IN
14.300		16	115	65	48	-14.3
14.400		16	115	65	48	-14.4
14.500		16	115	65	48	-14.5
14.600		16	115	65	48	-14.6
14.700		16	115	65	48	-14.7
14.750		16	115	65	48	-14.75
14.800		16	115	65	48	-14.8
15.000		16	115	65	48	-15
15.100		16	115	65	48	-15.1
15.200		16	115	65	48	-15.2
15.300		16	115	65	48	-15.3
15.500		16	115	65	48	-15.5
15.600		16	115	65	48	-15.6

Continued Solid Carbide Oil-Feed Drills ALPHA® 4



A3285TFL



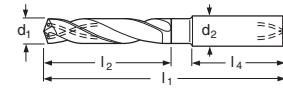
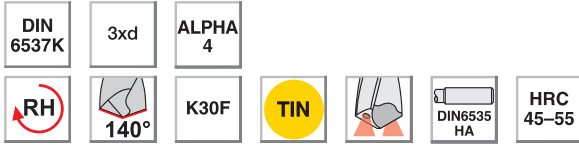
d ₁ mm m7	Ø Inches/ Wire-Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3285TFL...
15.700	5/8 IN	16	115	65	48	-15.7
15.800		16	115	65	48	-15.8
15.875		16	115	65	48	-5/8IN
15.900		16	115	65	48	-15.9
16.000		16	115	65	48	-16
16.100		18	123	73	48	-16.1
16.200		18	123	73	48	-16.2
16.300		18	123	73	48	-16.3
16.400		18	123	73	48	-16.4
16.500		18	123	73	48	-16.5
16.600		18	123	73	48	-16.6
16.700		18	123	73	48	-16.7
16.750		18	123	73	48	-16.75
16.800		18	123	73	48	-16.8
17.000		18	123	73	48	-17
17.200		18	123	73	48	-17.2
17.300		18	123	73	48	-17.3
17.500		18	123	73	48	-17.5
17.600		18	123	73	48	-17.6
17.700		18	123	73	48	-17.7
17.800		18	123	73	48	-17.8
18.000		18	123	73	48	-18
18.200		20	131	79	50	-18.2
18.500		20	131	79	50	-18.5
18.700		20	131	79	50	-18.7
18.800		20	131	79	50	-18.8
19.000		20	131	79	50	-19
19.050	3/4 IN	20	131	79	50	-3/4IN
19.500		20	131	79	50	-19.5
19.700		20	131	79	50	-19.7
19.800		20	131	79	50	-19.8
20.000		20	131	79	50	-20

Solid Carbide Oil-Feed Drills ALPHA® 4



A3285TIN

Application: Solid Carbide High Performance Drill, preferably used for Steel and Cast Iron materials, incl. austenitic Stainless Steels and Heat-Resistant Steels, also for Non-Ferrous Metals such as Aluminum-, Copper-, Zinc- and Magnesium Alloys.



d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3285TIN...
3.00	6	62	20	36	-3
3.10	6	62	20	36	-3.1
3.20	6	62	20	36	-3.2
3.25	6	62	20	36	-3.25
3.30	6	62	20	36	-3.3
3.40	6	62	20	36	-3.4
3.50	6	62	20	36	-3.5
3.60	6	62	20	36	-3.6
3.70	6	62	20	36	-3.7
3.80	6	66	24	36	-3.8
3.90	6	66	24	36	-3.9
4.00	6	66	24	36	-4
4.10	6	66	24	36	-4.1
4.20	6	66	24	36	-4.2
4.30	6	66	24	36	-4.3
4.40	6	66	24	36	-4.4
4.50	6	66	24	36	-4.5
4.60	6	66	24	36	-4.6
4.65	6	66	24	36	-4.65
4.70	6	66	24	36	-4.7
4.80	6	66	28	36	-4.8
4.90	6	66	28	36	-4.9
5.00	6	66	28	36	-5
5.10	6	66	28	36	-5.1
5.20	6	66	28	36	-5.2
5.30	6	66	28	36	-5.3
5.40	6	66	28	36	-5.4
5.50	6	66	28	36	-5.5
5.55	6	66	28	36	-5.55
5.60	6	66	28	36	-5.6
5.70	6	66	28	36	-5.7
5.80	6	66	28	36	-5.8
5.90	6	66	28	36	-5.9
6.00	6	66	28	36	-6
6.10	8	79	34	36	-6.1
6.20	8	79	34	36	-6.2
6.30	8	79	34	36	-6.3
6.40	8	79	34	36	-6.4
6.50	8	79	34	36	-6.5
6.60	8	79	34	36	-6.6
6.80	8	79	34	36	-6.8
6.90	8	79	34	36	-6.9
7.00	8	79	34	36	-7
7.10	8	79	41	36	-7.1
7.20	8	79	41	36	-7.2
7.30	8	79	41	36	-7.3
7.40	8	79	41	36	-7.4
7.50	8	79	41	36	-7.5

d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3285TIN...
7.70	8	79	41	36	-7.7
7.80	8	79	41	36	-7.8
7.90	8	79	41	36	-7.9
8.00	8	79	41	36	-8
8.10	10	89	47	40	-8.1
8.20	10	89	47	40	-8.2
8.30	10	89	47	40	-8.3
8.40	10	89	47	40	-8.4
8.50	10	89	47	40	-8.5
8.60	10	89	47	40	-8.6
8.70	10	89	47	40	-8.7
8.80	10	89	47	40	-8.8
9.00	10	89	47	40	-9
9.10	10	89	47	40	-9.1
9.20	10	89	47	40	-9.2
9.30	10	89	47	40	-9.3
9.50	10	89	47	40	-9.5
9.60	10	89	47	40	-9.6
9.70	10	89	47	40	-9.7
9.80	10	89	47	40	-9.8
9.90	10	89	47	40	-9.9
10.00	10	89	47	40	-10
10.10	12	102	55	45	-10.1
10.20	12	102	55	45	-10.2
10.30	12	102	55	45	-10.3
10.40	12	102	55	45	-10.4
10.50	12	102	55	45	-10.5
10.60	12	102	55	45	-10.6
10.70	12	102	55	45	-10.7
10.80	12	102	55	45	-10.8
11.00	12	102	55	45	-11
11.10	12	102	55	45	-11.1
11.20	12	102	55	45	-11.2
11.30	12	102	55	45	-11.3
11.50	12	102	55	45	-11.5
11.70	12	102	55	45	-11.7
11.80	12	102	55	45	-11.8
12.00	12	102	55	45	-12
12.10	14	107	60	45	-12.1
12.20	14	107	60	45	-12.2
12.25	14	107	60	45	-12.25
12.30	14	107	60	45	-12.3
12.50	14	107	60	45	-12.5
12.60	14	107	60	45	-12.6
12.70	14	107	60	45	-12.7
12.75	14	107	60	45	-12.75
12.80	14	107	60	45	-12.8
13.00	14	107	60	45	-13

○ = Available as long as stock exists. Recommended substitute tool: A3285TFL.

Continued Solid Carbide Oil-Feed Drills ALPHA® 4



A3285TIN



	d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3285TIN...
	13.30	14	107	60	45	-13.3
	13.50	14	107	60	45	-13.5
○	13.80	14	107	60	45	-13.8
	14.00	14	107	60	45	-14
○	14.10	16	115	65	48	-14.1
○	14.20	16	115	65	48	-14.2
	14.50	16	115	65	48	-14.5
○	14.75	16	115	65	48	-14.75
	15.00	16	115	65	48	-15
○	15.10	16	115	65	48	-15.1
○	15.20	16	115	65	48	-15.2
○	15.30	16	115	65	48	-15.3
	15.50	16	115	65	48	-15.5
○	15.80	16	115	65	48	-15.8
	16.00	16	115	65	48	-16

	d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3285TIN...
○	16.50	18	123	73	48	-16.5
○	16.75	18	123	73	48	-16.75
○	17.00	18	123	73	48	-17
○	17.50	18	123	73	48	-17.5
○	17.60	18	123	73	48	-17.6
○	18.00	18	123	73	48	-18
○	18.50	20	131	79	50	-18.5
○	19.00	20	131	79	50	-19
○	19.50	20	131	79	50	-19.5
○	20.00	20	131	79	50	-20

○ = Available as long as stock exists. Recommended substitute tool: A3285TFL.

Solid Carbide Drills ALPHA® 2



A3365TFT

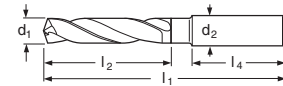
Application: High performance twist drill for steels and cast materials. Also suited for ferritic, pearlitic and martensitic Stainless Steels (Ni < 4%) and PH-steels such as 17-4PH. Note: machining austenitic stainless steel generally requires tools with internal coolant. Coated with TINAL FUTURA TOP (TFT) for excellent chip transportation.

Gives process reliability at extended drilling depths. *Pecks or dwells not necessary even at deep drilling depths.*

Remarks: Above 20 mm - dimensions according to TITEX PLUS-Standard.



DIN 6537L	5xd					
ALPHA 2	RH	140°	K30F	TFT	DIN6535 HA	HRC 45-55



d ₁ mm m7	Ø Inches/ Wire-Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3365TFT...
3.000		6	66	28	36	-3
3.100		6	66	28	36	-3.1
3.175	1/8 IN	6	66	28	36	-1/8IN
3.200		6	66	28	36	-3.2
3.250		6	66	28	36	-3.25
3.300		6	66	28	36	-3.3
3.400		6	66	28	36	-3.4
3.500		6	66	28	36	-3.5
3.572	9/64 IN	6	66	28	36	-9/64IN
3.600		6	66	28	36	-3.6
3.650		6	66	28	36	-3.65
3.700		6	66	28	36	-3.7
3.800		6	74	36	36	-3.8
3.900		6	74	36	36	-3.9
3.969	5/32 IN	6	74	36	36	-5/32IN
4.000		6	74	36	36	-4
4.100		6	74	36	36	-4.1
4.200		6	74	36	36	-4.2
4.300		6	74	36	36	-4.3
4.366	11/64 IN	6	74	36	36	-11/64IN
4.400		6	74	36	36	-4.4
4.500		6	74	36	36	-4.5
4.600		6	74	36	36	-4.6
4.650		6	74	36	36	-4.65
4.700		6	74	36	36	-4.7
4.763	3/16 IN	6	82	44	36	-3/16IN
4.800		6	82	44	36	-4.8
4.900		6	82	44	36	-4.9
5.000		6	82	44	36	-5
5.100		6	82	44	36	-5.1
5.159	13/64 IN	6	82	44	36	-13/64IN
5.200		6	82	44	36	-5.2
5.300		6	82	44	36	-5.3
5.400		6	82	44	36	-5.4
5.500		6	82	44	36	-5.5
5.550		6	82	44	36	-5.55
5.556	7/32 IN	6	82	44	36	-7/32IN
5.600		6	82	44	36	-5.6
5.700		6	82	44	36	-5.7
5.800		6	82	44	36	-5.8
5.900		6	82	44	36	-5.9
5.953	15/64 IN	6	82	44	36	-15/64IN
6.000		6	82	44	36	-6
6.100		8	91	53	36	-6.1
6.200		8	91	53	36	-6.2
6.300		8	91	53	36	-6.3
6.350	1/4 IN	8	91	53	36	-1/4IN
6.400		8	91	53	36	-6.4

Continued Solid Carbide Drills ALPHA® 2



A3365TFT



d ₁ mm m7	Ø Inches/ Wire-Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3365TFT...
6.500		8	91	53	36	-6.5
6.600		8	91	53	36	-6.6
6.700		8	91	53	36	-6.7
6.747	17/64 IN	8	91	53	36	-17/64IN
6.800		8	91	53	36	-6.8
6.900		8	91	53	36	-6.9
7.000		8	91	53	36	-7
7.100		8	91	53	36	-7.1
7.144	9/32 IN	8	91	53	36	-9/32IN
7.200		8	91	53	36	-7.2
7.300		8	91	53	36	-7.3
7.400		8	91	53	36	-7.4
7.500		8	91	53	36	-7.5
7.541	19/64 IN	8	91	53	36	-19/64IN
7.550		8	91	53	36	-7.55
7.600		8	91	53	36	-7.6
7.700		8	91	53	36	-7.7
7.800		8	91	53	36	-7.8
7.900		8	91	53	36	-7.9
7.938	5/16 IN	8	91	53	36	-5/16IN
8.000		8	91	53	36	-8
8.100		10	103	61	40	-8.1
8.200		10	103	61	40	-8.2
8.300		10	103	61	40	-8.3
8.334	21/64 IN	10	103	61	40	-21/64IN
8.400		10	103	61	40	-8.4
8.500		10	103	61	40	-8.5
8.600		10	103	61	40	-8.6
8.700		10	103	61	40	-8.7
8.731	11/32 IN	10	103	61	40	-11/32IN
8.800		10	103	61	40	-8.8
8.900		10	103	61	40	-8.9
9.000		10	103	61	40	-9
9.100		10	103	61	40	-9.1
9.128	23/64 IN	10	103	61	40	-23/64IN
9.200		10	103	61	40	-9.2
9.300		10	103	61	40	-9.3
9.400		10	103	61	40	-9.4
9.500		10	103	61	40	-9.5
9.525	3/8 IN	10	103	61	40	-3/8IN
9.550		10	103	61	40	-9.55
9.600		10	103	61	40	-9.6
9.700		10	103	61	40	-9.7
9.800		10	103	61	40	-9.8
9.900		10	103	61	40	-9.9
9.922	25/64 IN	10	103	61	40	-25/64IN
10.000		10	103	61	40	-10
10.100		12	118	71	45	-10.1
10.200		12	118	71	45	-10.2
10.300		12	118	71	45	-10.3
10.319	13/32 IN	12	118	71	45	-13/32IN
10.400		12	118	71	45	-10.4
10.500		12	118	71	45	-10.5
10.600		12	118	71	45	-10.6
10.700		12	118	71	45	-10.7
10.716	27/64 IN	12	118	71	45	-27/64IN
10.800		12	118	71	45	-10.8

Continued Solid Carbide Drills ALPHA® 2



A3365TFT



d ₁ mm m7	Ø Inches/ Wire-Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3365TFT...
10.900		12	118	71	45	-10.9
11.000		12	118	71	45	-11
11.100		12	118	71	45	-11.1
11.113	7/16 IN	12	118	71	45	-7/16IN
11.200		12	118	71	45	-11.2
11.300		12	118	71	45	-11.3
11.400		12	118	71	45	-11.4
11.500		12	118	71	45	-11.5
11.509	29/64 IN	12	118	71	45	-29/64IN
11.550		12	118	71	45	-11.55
11.600		12	118	71	45	-11.6
11.700		12	118	71	45	-11.7
11.800		12	118	71	45	-11.8
11.900		12	118	71	45	-11.9
11.906	15/32 IN	12	118	71	45	-15/32IN
12.000		12	118	71	45	-12
12.100		14	124	77	45	-12.1
12.200		14	124	77	45	-12.2
12.250		14	124	77	45	-12.25
12.300		14	124	77	45	-12.3
12.303	31/64 IN	14	124	77	45	-31/64IN
12.400		14	124	77	45	-12.4
12.500		14	124	77	45	-12.5
12.600		14	124	77	45	-12.6
12.700	1/2 IN	14	124	77	45	-1/2IN
12.700		14	124	77	45	-12.7
12.750		14	124	77	45	-12.75
12.800		14	124	77	45	-12.8
12.900		14	124	77	45	-12.9
13.000		14	124	77	45	-13
13.100		14	124	77	45	-13.1
13.200		14	124	77	45	-13.2
13.300		14	124	77	45	-13.3
13.400		14	124	77	45	-13.4
13.494	17/32 IN	14	124	77	45	-17/32IN
13.500		14	124	77	45	-13.5
13.600		14	124	77	45	-13.6
13.700		14	124	77	45	-13.7
13.800		14	124	77	45	-13.8
13.900		14	124	77	45	-13.9
14.000		14	124	77	45	-14
14.100		16	133	83	48	-14.1
14.200		16	133	83	48	-14.2
14.288	9/16 IN	16	133	83	48	-9/16IN
14.300		16	133	83	48	-14.3
14.400		16	133	83	48	-14.4
14.500		16	133	83	48	-14.5
14.600		16	133	83	48	-14.6
14.700		16	133	83	48	-14.7
14.750		16	133	83	48	-14.75
14.800		16	133	83	48	-14.8
15.000		16	133	83	48	-15
15.100		16	133	83	48	-15.1
15.200		16	133	83	48	-15.2
15.300		16	133	83	48	-15.3
15.500		16	133	83	48	-15.5
15.600		16	133	83	48	-15.6

Continued Solid Carbide Drills ALPHA® 2



A3365TFT



d ₁ mm m7	Ø Inches/ Wire-Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3365TFT...
15.700	5/8 IN	16	133	83	48	-15.7
15.800		16	133	83	48	-15.8
15.875		16	133	83	48	-5/8IN
15.900		16	133	83	48	-15.9
16.000		16	133	83	48	-16
16.100		18	143	93	48	-16.1
16.200		18	143	93	48	-16.2
16.300		18	143	93	48	-16.3
16.400		18	143	93	48	-16.4
16.500		18	143	93	48	-16.5
16.600		18	143	93	48	-16.6
16.700		18	143	93	48	-16.7
16.750		18	143	93	48	-16.75
16.800		18	143	93	48	-16.8
17.000		18	143	93	48	-17
17.200		18	143	93	48	-17.2
17.300		18	143	93	48	-17.3
17.500		18	143	93	48	-17.5
17.600		18	143	93	48	-17.6
17.700		18	143	93	48	-17.7
17.800		18	143	93	48	-17.8
18.000		18	143	93	48	-18
18.200		20	153	101	50	-18.2
18.500		20	153	101	50	-18.5
18.700		20	153	101	50	-18.7
18.800		20	153	101	50	-18.8
19.000		20	153	101	50	-19
19.050	3/4 IN	20	153	101	50	-3/4IN
19.500		20	153	101	50	-19.5
19.700		20	153	101	50	-19.7
19.800		20	153	101	50	-19.8
20.000		20	153	101	50	-20
20.500		25	166	108	56	-20.5
21.000		25	166	108	56	-21
21.500		25	166	108	56	-21.5
22.000		25	166	108	56	-22
22.500		25	173	115	56	-22.5
23.000		25	173	115	56	-23
23.500		25	173	115	56	-23.5
24.000		25	173	115	56	-24
24.500		25	180	122	56	-24.5
25.000		25	180	122	56	-25

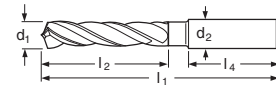
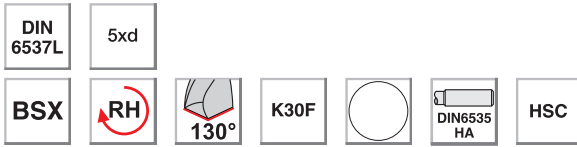
Maximiza Solid Carbide 3-Flute Drills

A3367

Application: 3-flute high penetration drill with special point geometry for grey cast-, nodular- and malleable iron, AISi-alloys, non-ferrous metals and titanium and titanium-alloys. Also suited for dry machining of cast iron.

For cutting Cast Iron and Dry Machining applications we recommend TINAL FUTURA coating.

Remarks: Point geometry SX



d ₁ mm m7	Ø Inches/ Wire-Gauge	d ₂ mm	l ₁ mm	l ₂ mm	l ₄ mm	Ordering code A3367...
3.000		6	66	28	36	-3
3.150		6	66	28	36	-3.15
3.175	1/8 IN	6	66	28	36	-1/8IN
3.300		6	66	28	36	-3.3
3.500		6	66	28	36	-3.5
3.572	9/64 IN	6	66	28	36	-9/64IN
3.700		6	66	28	36	-3.7
3.800		6	74	36	36	-3.8
3.969	5/32 IN	6	74	36	36	-5/32IN
4.000		6	74	36	36	-4
4.200		6	74	36	36	-4.2
4.300		6	74	36	36	-4.3
4.366	11/64 IN	6	74	36	36	-11/64IN
4.450		6	74	36	36	-4.45
4.500		6	74	36	36	-4.5
4.650		6	74	36	36	-4.65
4.763	3/16 IN	6	82	44	36	-3/16IN
5.000		6	82	44	36	-5
5.159	13/64 IN	6	82	44	36	-13/64IN
5.500		6	82	44	36	-5.5
5.550		6	82	44	36	-5.55
5.556	7/32 IN	6	82	44	36	-7/32IN
5.750		6	82	44	36	-5.75
5.900		6	82	44	36	-5.9
5.953	15/64 IN	6	82	44	36	-15/64IN
6.000		6	82	44	36	-6
6.350	1/4 IN	8	91	53	36	-1/4IN
6.500		8	91	53	36	-6.5
6.550		8	91	53	36	-6.55
6.747	17/64 IN	8	91	53	36	-17/64IN
6.800		8	91	53	36	-6.8
7.000		8	91	53	36	-7
7.144	9/32 IN	8	91	53	36	-9/32IN
7.250		8	91	53	36	-7.25
7.400		8	91	53	36	-7.4
7.450		8	91	53	36	-7.45
7.500		8	91	53	36	-7.5
7.541	19/64 IN	8	91	53	36	-19/64IN
7.550		8	91	53	36	-7.55
7.938	5/16 IN	8	91	53	36	-5/16IN
8.000		8	91	53	36	-8
8.334	21/64 IN	10	103	61	40	-21/64IN
8.500		10	103	61	40	-8.5
8.731	11/32 IN	10	103	61	40	-11/32IN
8.750		10	103	61	40	-8.75
9.000		10	103	61	40	-9
9.128	23/64 IN	10	103	61	40	-23/64IN
9.300		10	103	61	40	-9.3

Continued Maximiza Solid Carbide 3-Flute Drills

A3367



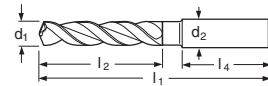
d ₁ mm m7	Ø Inches/ Wire-Gauge	d ₂ mm	l ₁ mm	l ₂ mm	l ₄ mm	Ordering code A3367...
9.400		10	103	61	40	-9.4
9.500		10	103	61	40	-9.5
9.525	3/8 IN	10	103	61	40	-3/8IN
9.550		10	103	61	40	-9.55
9.922	25/64 IN	10	103	61	40	-25/64IN
10.000		10	103	61	40	-10
10.200		12	118	71	45	-10.2
10.319	13/32 IN	12	118	71	45	-13/32IN
10.500		12	118	71	45	-10.5
10.716	27/64 IN	12	118	71	45	-27/64IN
11.000		12	118	71	45	-11
11.113	7/16 IN	12	118	71	45	-7/16IN
11.200		12	118	71	45	-11.2
11.300		12	118	71	45	-11.3
11.500		12	118	71	45	-11.5
11.509	29/64 IN	12	118	71	45	-29/64IN
11.550		12	118	71	45	-11.55
11.700		12	118	71	45	-11.7
11.906	15/32 IN	12	118	71	45	-15/32IN
12.000		12	118	71	45	-12
12.303	31/64 IN	14	124	77	45	-31/64IN
12.500		14	124	77	45	-12.5
12.700	1/2 IN	14	124	77	45	-1/2IN
13.000		14	124	77	45	-13
13.100		14	124	77	45	-13.1
13.300		14	124	77	45	-13.3
13.500		14	124	77	45	-13.5
14.000		14	124	77	45	-14
14.288	9/16 IN	16	133	83	48	-9/16IN
14.500		16	133	83	48	-14.5
15.000		16	133	83	48	-15
15.100		16	133	83	48	-15.1
15.300		16	133	83	48	-15.3
15.500		16	133	83	48	-15.5
15.875	5/8 IN	16	133	83	48	-5/8IN
16.000		16	133	83	48	-16

Solid Carbide Deep Hole Drills ALPHA® 22

A3376TFL

Application: High Performance Drill with UFL profile for deep hole drilling without pecks in materials up to approx. 1000 N/mm², especially suitable for steels and cast iron, non-ferrous metals such as Aluminium-, Copper-, Zinc- and Magnesium alloys. *Especially suitable for dry-cutting of steels and cast materials.*

DIN
6537L



d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3376TFL...
3.0	6	66	28	36	-3
3.3	6	66	28	36	-3.3
3.5	6	66	28	36	-3.5
4.0	6	74	36	36	-4
4.2	6	74	36	36	-4.2
4.5	6	74	36	36	-4.5
5.0	6	82	44	36	-5
5.5	6	82	44	36	-5.5
6.0	6	82	44	36	-6
6.5	8	91	53	36	-6.5
6.8	8	91	53	36	-6.8
7.0	8	91	53	36	-7

d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3376TFL...
7.5	8	91	53	36	-7.5
8.0	8	91	53	36	-8
8.5	10	103	61	40	-8.5
9.0	10	103	61	40	-9
9.5	10	103	61	40	-9.5
10.0	10	103	61	40	-10
10.2	12	118	71	45	-10.2
10.5	12	118	71	45	-10.5
11.0	12	118	71	45	-11
11.5	12	118	71	45	-11.5
12.0	12	118	71	45	-12

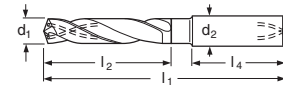
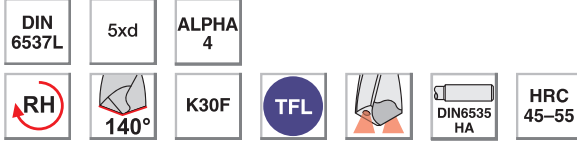
Solid Carbide Oil-Feed Drills ALPHA® 4



A3385TFL

Application: Solid Carbide High Performance Drill, preferably used for Steel and Cast Iron materials, incl. austenitic Stainless Steels and Heat-Resistant Steels, also for Non-Ferrous Metals such as Aluminium-, Copper-, Zinc- and Magnesium Alloys. Coated with TINAL FUTURA for high machining data and exceptional tool life.

Remarks: Above 20 mm - dimensions according to TITEX PLUS-Standard.



d ₁ mm m7	Ø Inches/ Wire-Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3385TFL...
3.000		6	66	28	36	-3
3.100		6	66	28	36	-3.1
3.175	1/8 IN	6	66	28	36	-1/8IN
3.200		6	66	28	36	-3.2
3.250		6	66	28	36	-3.25
3.300		6	66	28	36	-3.3
3.400		6	66	28	36	-3.4
3.500		6	66	28	36	-3.5
3.572	9/64 IN	6	66	28	36	-9/64IN
3.600		6	66	28	36	-3.6
3.650		6	66	28	36	-3.65
3.700		6	66	28	36	-3.7
3.800		6	74	36	36	-3.8
3.900		6	74	36	36	-3.9
3.969	5/32 IN	6	74	36	36	-5/32IN
4.000		6	74	36	36	-4
4.100		6	74	36	36	-4.1
4.200		6	74	36	36	-4.2
4.300		6	74	36	36	-4.3
4.366	11/64 IN	6	74	36	36	-11/64IN
4.400		6	74	36	36	-4.4
4.500		6	74	36	36	-4.5
4.600		6	74	36	36	-4.6
4.650		6	74	36	36	-4.65
4.700		6	74	36	36	-4.7
4.763	3/16 IN	6	82	44	36	-3/16IN
4.800		6	82	44	36	-4.8
4.900		6	82	44	36	-4.9
5.000		6	82	44	36	-5
5.100		6	82	44	36	-5.1
5.159	13/64 IN	6	82	44	36	-13/64IN
5.200		6	82	44	36	-5.2
5.300		6	82	44	36	-5.3
5.400		6	82	44	36	-5.4
5.500		6	82	44	36	-5.5
5.550		6	82	44	36	-5.55
5.556	7/32 IN	6	82	44	36	-7/32IN
5.600		6	82	44	36	-5.6
5.700		6	82	44	36	-5.7
5.800		6	82	44	36	-5.8
5.900		6	82	44	36	-5.9
5.953	15/64 IN	6	82	44	36	-15/64IN
6.000		6	82	44	36	-6
6.100		8	91	53	36	-6.1
6.200		8	91	53	36	-6.2
6.300		8	91	53	36	-6.3
6.350	1/4 IN	8	91	53	36	-1/4IN
6.400		8	91	53	36	-6.4

Continued Solid Carbide Oil-Feed Drills ALPHA® 4



A3385TFL



d ₁ mm m7	Ø Inches/ Wire-Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3385TFL...
6.500		8	91	53	36	-6.5
6.600		8	91	53	36	-6.6
6.700		8	91	53	36	-6.7
6.747	17/64 IN	8	91	53	36	-17/64IN
6.800		8	91	53	36	-6.8
6.900		8	91	53	36	-6.9
7.000		8	91	53	36	-7
7.100		8	91	53	36	-7.1
7.144	9/32 IN	8	91	53	36	-9/32IN
7.200		8	91	53	36	-7.2
7.300		8	91	53	36	-7.3
7.400		8	91	53	36	-7.4
7.500		8	91	53	36	-7.5
7.541	19/64 IN	8	91	53	36	-19/64IN
7.550		8	91	53	36	-7.55
7.600		8	91	53	36	-7.6
7.700		8	91	53	36	-7.7
7.800		8	91	53	36	-7.8
7.900		8	91	53	36	-7.9
7.938	5/16 IN	8	91	53	36	-5/16IN
8.000		8	91	53	36	-8
8.100		10	103	61	40	-8.1
8.200		10	103	61	40	-8.2
8.300		10	103	61	40	-8.3
8.334	21/64 IN	10	103	61	40	-21/64IN
8.400		10	103	61	40	-8.4
8.500		10	103	61	40	-8.5
8.600		10	103	61	40	-8.6
8.700		10	103	61	40	-8.7
8.731	11/32 IN	10	103	61	40	-11/32IN
8.800		10	103	61	40	-8.8
8.900		10	103	61	40	-8.9
9.000		10	103	61	40	-9
9.100		10	103	61	40	-9.1
9.128	23/64 IN	10	103	61	40	-23/64IN
9.200		10	103	61	40	-9.2
9.300		10	103	61	40	-9.3
9.400		10	103	61	40	-9.4
9.500		10	103	61	40	-9.5
9.525	3/8 IN	10	103	61	40	-3/8IN
9.550		10	103	61	40	-9.55
9.600		10	103	61	40	-9.6
9.700		10	103	61	40	-9.7
9.800		10	103	61	40	-9.8
9.900		10	103	61	40	-9.9
9.922	25/64 IN	10	103	61	40	-25/64IN
10.000		10	103	61	40	-10
10.100		12	118	71	45	-10.1
10.200		12	118	71	45	-10.2
10.300		12	118	71	45	-10.3
10.319	13/32 IN	12	118	71	45	-13/32IN
10.400		12	118	71	45	-10.4
10.500		12	118	71	45	-10.5
10.600		12	118	71	45	-10.6
10.700		12	118	71	45	-10.7
10.716	27/64 IN	12	118	71	45	-27/64IN
10.800		12	118	71	45	-10.8

Continued Solid Carbide Oil-Feed Drills ALPHA® 4



A3385TFL



d ₁ mm m7	Ø Inches/ Wire-Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3385TFL...
10.900		12	118	71	45	-10.9
11.000		12	118	71	45	-11
11.100		12	118	71	45	-11.1
11.113	7/16 IN	12	118	71	45	-7/16IN
11.200		12	118	71	45	-11.2
11.300		12	118	71	45	-11.3
11.400		12	118	71	45	-11.4
11.500		12	118	71	45	-11.5
11.509	29/64 IN	12	118	71	45	-29/64IN
11.550		12	118	71	45	-11.55
11.600		12	118	71	45	-11.6
11.700		12	118	71	45	-11.7
11.800		12	118	71	45	-11.8
11.900		12	118	71	45	-11.9
11.906	15/32 IN	12	118	71	45	-15/32IN
12.000		12	118	71	45	-12
12.100		14	124	77	45	-12.1
12.200		14	124	77	45	-12.2
12.250		14	124	77	45	-12.25
12.300		14	124	77	45	-12.3
12.303	31/64 IN	14	124	77	45	-31/64IN
12.400		14	124	77	45	-12.4
12.500		14	124	77	45	-12.5
12.600		14	124	77	45	-12.6
12.700	1/2 IN	14	124	77	45	-1/2IN
12.700		14	124	77	45	-12.7
12.750		14	124	77	45	-12.75
12.800		14	124	77	45	-12.8
12.900		14	124	77	45	-12.9
13.000		14	124	77	45	-13
13.100		14	124	77	45	-13.1
13.200		14	124	77	45	-13.2
13.300		14	124	77	45	-13.3
13.400		14	124	77	45	-13.4
13.494	17/32 IN	14	124	77	45	-17/32IN
13.500		14	124	77	45	-13.5
13.600		14	124	77	45	-13.6
13.700		14	124	77	45	-13.7
13.800		14	124	77	45	-13.8
13.900		14	124	77	45	-13.9
14.000		14	124	77	45	-14
14.100		16	133	83	48	-14.1
14.200		16	133	83	48	-14.2
14.288	9/16 IN	16	133	83	48	-9/16IN
14.300		16	133	83	48	-14.3
14.400		16	133	83	48	-14.4
14.500		16	133	83	48	-14.5
14.600		16	133	83	48	-14.6
14.700		16	133	83	48	-14.7
14.750		16	133	83	48	-14.75
14.800		16	133	83	48	-14.8
14.900		16	133	83	48	-14.9
15.000		16	133	83	48	-15
15.100		16	133	83	48	-15.1
15.200		16	133	83	48	-15.2
15.300		16	133	83	48	-15.3
15.400		16	133	83	48	-15.4

Continued Solid Carbide Oil-Feed Drills ALPHA® 4



A3385TFL



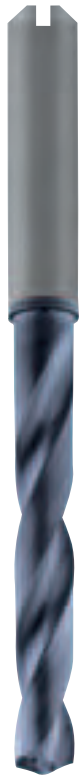
d ₁ mm m7	Ø Inches/ Wire-Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3385TFL...
15.500		16	133	83	48	-15.5
15.600		16	133	83	48	-15.6
15.700		16	133	83	48	-15.7
15.800	5/8 IN	16	133	83	48	-15.8
15.875		16	133	83	48	-5/8IN
15.900		16	133	83	48	-15.9
16.000		16	133	83	48	-16
16.100		18	143	93	48	-16.1
16.200		18	143	93	48	-16.2
16.300		18	143	93	48	-16.3
16.400		18	143	93	48	-16.4
16.500		18	143	93	48	-16.5
16.600		18	143	93	48	-16.6
16.700		18	143	93	48	-16.7
16.750		18	143	93	48	-16.75
16.800		18	143	93	48	-16.8
16.900		18	143	93	48	-16.9
17.000		18	143	93	48	-17
17.100		18	143	93	48	-17.1
17.200		18	143	93	48	-17.2
17.300		18	143	93	48	-17.3
17.400		18	143	93	48	-17.4
17.500		18	143	93	48	-17.5
17.600		18	143	93	48	-17.6
17.700		18	143	93	48	-17.7
17.800		18	143	93	48	-17.8
17.900		18	143	93	48	-17.9
18.000		18	143	93	48	-18
18.100		20	153	101	50	-18.1
18.200		20	153	101	50	-18.2
18.300		20	153	101	50	-18.3
18.400		20	153	101	50	-18.4
18.500		20	153	101	50	-18.5
18.600		20	153	101	50	-18.6
18.700		20	153	101	50	-18.7
18.800		20	153	101	50	-18.8
18.900		20	153	101	50	-18.9
19.000	3/4 IN	20	153	101	50	-19
19.050		20	153	101	50	-3/4IN
19.100		20	153	101	50	-19.1
19.200		20	153	101	50	-19.2
19.300		20	153	101	50	-19.3
19.400		20	153	101	50	-19.4
19.500		20	153	101	50	-19.5
19.600		20	153	101	50	-19.6
19.700		20	153	101	50	-19.7
19.800		20	153	101	50	-19.8
19.900		20	153	101	50	-19.9
20.000		20	153	101	50	-20
20.500		25	166	108	56	-20.5
21.000		25	166	108	56	-21
21.500		25	166	108	56	-21.5
22.000		25	166	108	56	-22
22.500		25	173	115	56	-22.5
23.000		25	173	115	56	-23
23.500		25	173	115	56	-23.5
24.000		25	173	115	56	-24

Continued Solid Carbide Oil-Feed Drills ALPHA® 4



A3385TFL

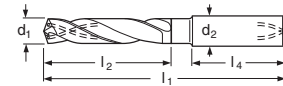
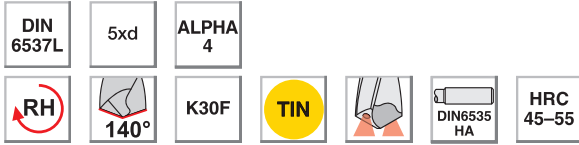
d ₁ mm m7	Ø Inches/ Wire-Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3385TFL...
24.500		25	180	122	56	-24.5
25.000		25	180	122	56	-25



Solid Carbide Oil-Feed Drills ALPHA® 4

A3385TIN

Application: Solid Carbide High Performance Drill, preferably used for Steel and Cast Iron materials, incl. austenitic Stainless Steels and Heat-Resistant Steels, also for Non-Ferrous Metals such as Aluminum-, Copper-, Zinc- and Magnesium Alloys.



d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3385TIN...
3.00	6	66	28	36	-3
3.10	6	66	28	36	-3.1
3.20	6	66	28	36	-3.2
○ 3.25	6	66	28	36	-3.25
3.30	6	66	28	36	-3.3
3.40	6	66	28	36	-3.4
3.50	6	66	28	36	-3.5
3.60	6	66	28	36	-3.6
3.70	6	66	28	36	-3.7
3.80	6	74	36	36	-3.8
3.90	6	74	36	36	-3.9
4.00	6	74	36	36	-4
4.10	6	74	36	36	-4.1
4.20	6	74	36	36	-4.2
4.30	6	74	36	36	-4.3
4.40	6	74	36	36	-4.4
4.50	6	74	36	36	-4.5
4.60	6	74	36	36	-4.6
4.65	6	74	36	36	-4.65
4.70	6	74	36	36	-4.7
4.80	6	82	44	36	-4.8
4.90	6	82	44	36	-4.9
5.00	6	82	44	36	-5
5.10	6	82	44	36	-5.1
5.20	6	82	44	36	-5.2
5.30	6	82	44	36	-5.3
5.40	6	82	44	36	-5.4
5.50	6	82	44	36	-5.5
5.55	6	82	44	36	-5.55
5.60	6	82	44	36	-5.6
5.70	6	82	44	36	-5.7
5.80	6	82	44	36	-5.8
5.90	6	82	44	36	-5.9
6.00	6	82	44	36	-6
6.10	8	91	53	36	-6.1
6.20	8	91	53	36	-6.2
6.30	8	91	53	36	-6.3
6.40	8	91	53	36	-6.4
6.50	8	91	53	36	-6.5
6.60	8	91	53	36	-6.6
6.70	8	91	53	36	-6.7
6.80	8	91	53	36	-6.8
6.90	8	91	53	36	-6.9
7.00	8	91	53	36	-7
7.10	8	91	53	36	-7.1
7.20	8	91	53	36	-7.2
7.30	8	91	53	36	-7.3
7.40	8	91	53	36	-7.4

d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3385TIN...
7.50	8	91	53	36	-7.5
○ 7.60	8	91	53	36	-7.6
7.80	8	91	53	36	-7.8
7.90	8	91	53	36	-7.9
8.00	8	91	53	36	-8
8.10	10	103	61	40	-8.1
8.20	10	103	61	40	-8.2
8.30	10	103	61	40	-8.3
8.40	10	103	61	40	-8.4
8.50	10	103	61	40	-8.5
8.60	10	103	61	40	-8.6
8.70	10	103	61	40	-8.7
8.80	10	103	61	40	-8.8
○ 8.90	10	103	61	40	-8.9
9.00	10	103	61	40	-9
○ 9.10	10	103	61	40	-9.1
9.20	10	103	61	40	-9.2
9.30	10	103	61	40	-9.3
○ 9.40	10	103	61	40	-9.4
9.50	10	103	61	40	-9.5
9.60	10	103	61	40	-9.6
9.70	10	103	61	40	-9.7
9.80	10	103	61	40	-9.8
○ 9.90	10	103	61	40	-9.9
10.00	10	103	61	40	-10
10.10	12	118	71	45	-10.1
10.20	12	118	71	45	-10.2
10.30	12	118	71	45	-10.3
10.40	12	118	71	45	-10.4
10.50	12	118	71	45	-10.5
○ 10.60	12	118	71	45	-10.6
○ 10.70	12	118	71	45	-10.7
10.80	12	118	71	45	-10.8
○ 10.90	12	118	71	45	-10.9
11.00	12	118	71	45	-11
11.10	12	118	71	45	-11.1
11.20	12	118	71	45	-11.2
○ 11.30	12	118	71	45	-11.3
○ 11.40	12	118	71	45	-11.4
11.50	12	118	71	45	-11.5
○ 11.60	12	118	71	45	-11.6
11.70	12	118	71	45	-11.7
11.80	12	118	71	45	-11.8
○ 11.90	12	118	71	45	-11.9
12.00	12	118	71	45	-12
12.10	14	124	77	45	-12.1
12.20	14	124	77	45	-12.2
12.30	14	124	77	45	-12.3

○ = Available as long as stock exists. Recommended substitute tool: A3385TFL.

Continued Solid Carbide Oil-Feed Drills ALPHA® 4

A3385TIN



d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3385TIN...
12.50	14	124	77	45	-12.5
12.60	14	124	77	45	-12.6
12.70	14	124	77	45	-12.7
○ 12.75	14	124	77	45	-12.75
○ 12.80	14	124	77	45	-12.8
○ 12.90	14	124	77	45	-12.9
13.00	14	124	77	45	-13
○ 13.10	14	124	77	45	-13.1
○ 13.20	14	124	77	45	-13.2
13.30	14	124	77	45	-13.3
○ 13.40	14	124	77	45	-13.4
13.50	14	124	77	45	-13.5
○ 13.60	14	124	77	45	-13.6
○ 13.70	14	124	77	45	-13.7
○ 13.80	14	124	77	45	-13.8
○ 13.90	14	124	77	45	-13.9
14.00	14	124	77	45	-14
○ 14.10	16	133	83	48	-14.1
○ 14.20	16	133	83	48	-14.2
○ 14.30	16	133	83	48	-14.3
○ 14.40	16	133	83	48	-14.4
14.50	16	133	83	48	-14.5
○ 14.60	16	133	83	48	-14.6
○ 14.70	16	133	83	48	-14.7
○ 14.75	16	133	83	48	-14.75
○ 14.80	16	133	83	48	-14.8
○ 14.90	16	133	83	48	-14.9
15.00	16	133	83	48	-15
○ 15.10	16	133	83	48	-15.1
○ 15.20	16	133	83	48	-15.2
○ 15.30	16	133	83	48	-15.3
15.50	16	133	83	48	-15.5
○ 15.60	16	133	83	48	-15.6
○ 15.70	16	133	83	48	-15.7
○ 15.80	16	133	83	48	-15.8
16.00	16	133	83	48	-16

d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3385TIN...
○ 16.10	18	143	93	48	-16.1
○ 16.20	18	143	93	48	-16.2
○ 16.30	18	143	93	48	-16.3
○ 16.40	18	143	93	48	-16.4
○ 16.50	18	143	93	48	-16.5
○ 16.75	18	143	93	48	-16.75
○ 16.80	18	143	93	48	-16.8
○ 17.00	18	143	93	48	-17
○ 17.10	18	143	93	48	-17.1
○ 17.20	18	143	93	48	-17.2
○ 17.30	18	143	93	48	-17.3
○ 17.40	18	143	93	48	-17.4
○ 17.50	18	143	93	48	-17.5
○ 17.60	18	143	93	48	-17.6
○ 17.70	18	143	93	48	-17.7
○ 17.80	18	143	93	48	-17.8
○ 17.90	18	143	93	48	-17.9
○ 18.00	18	143	93	48	-18
○ 18.10	20	153	101	50	-18.1
○ 18.20	20	153	101	50	-18.2
○ 18.30	20	153	101	50	-18.3
○ 18.40	20	153	101	50	-18.4
○ 18.50	20	153	101	50	-18.5
○ 18.60	20	153	101	50	-18.6
○ 18.80	20	153	101	50	-18.8
○ 19.00	20	153	101	50	-19
○ 19.20	20	153	101	50	-19.2
○ 19.30	20	153	101	50	-19.3
○ 19.40	20	153	101	50	-19.4
○ 19.50	20	153	101	50	-19.5
○ 19.70	20	153	101	50	-19.7
○ 19.80	20	153	101	50	-19.8
○ 19.90	20	153	101	50	-19.9
○ 20.00	20	153	101	50	-20

○ = Available as long as stock exists. Recommended substitute tool: A3385TFL.

Solid Carbide Oil-Feed Drills, straight flute

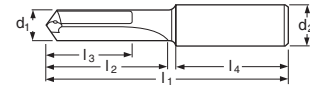
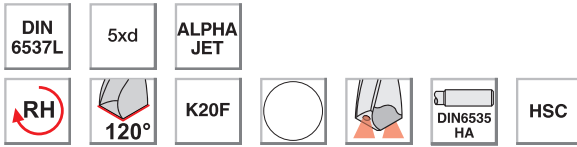


A3387

Application: High performance drill for short-chipping materials, especially Cast Iron, AISi-alloys and Al-alloys of higher tensile strength. High penetration rates plus excellent hole quality (tolerance, alignment, straightness, cylindricity, surface finish and roundness. For

cutting Cast Iron and Dry Machining applications we recommend TINAL FUTURA coating.

Remarks: 2 straight flutes, 4 margins



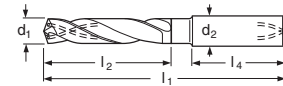
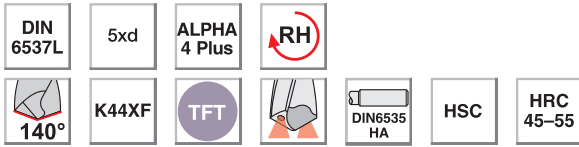
d ₁ mm k6	d ₂ mm	l ₁ mm	l ₂ mm	l ₃ mm	l ₄ mm	Ordering code A3387...
4.0	6	74	36	24.00	36	-4
4.2	6	74	36	23.40	36	-4.2
5.0	6	82	44	29.00	36	-5
5.5	6	82	44	27.50	36	-5.5
6.0	6	82	44	26.00	36	-6
6.5	8	91	53	33.50	36	-6.5
6.8	8	91	53	32.60	36	-6.8
7.0	8	91	53	32.00	36	-7
7.5	8	91	53	34.25	36	-7.5
8.0	8	91	53	33.00	36	-8
8.5	10	103	61	39.75	40	-8.5
9.0	10	103	61	38.50	40	-9
10.0	10	103	61	41.00	40	-10
10.2	12	118	71	50.60	45	-10.2
10.5	12	118	71	50.00	45	-10.5
11.0	12	118	71	49.00	45	-11
11.5	12	118	71	48.00	45	-11.5
12.0	12	118	71	47.00	45	-12
12.5	14	124	77	52.00	45	-12.5
13.0	14	124	77	51.00	45	-13
14.0	14	124	77	49.00	45	-14
15.0	16	133	83	60.50	48	-15
15.5	16	133	83	59.75	48	-15.5
16.0	16	133	83	59.00	48	-16
17.0	18	143	93	67.50	48	-17
17.5	18	143	93	66.75	48	-17.5
18.0	18	143	93	66.00	48	-18
19.5	20	153	101	71.75	50	-19.5
20.0	20	153	101	71.00	50	-20

Solid Carbide Oil-Feed Drills ALPHA® 4 PLUS



A3388TFT

Application: Twist drill for high performance cutting (HPC) in steel and cast iron. Remarkable low machining forces gives reduced component stress and clean, quiet cutting action.



d ₁ mm m7	Ø Inches/ Wire-Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3388TFT...
3.000		6	66	28	36	-3
3.175	1/8 IN	6	66	28	36	-1/8IN
3.300		6	66	28	36	-3.3
3.500		6	66	28	36	-3.5
3.572	9/64 IN	6	66	28	36	-9/64IN
3.700		6	66	28	36	-3.7
3.969	5/32 IN	6	74	36	36	-5/32IN
4.000		6	74	36	36	-4
4.200		6	74	36	36	-4.2
4.366	11/64 IN	6	74	36	36	-11/64IN
4.500		6	74	36	36	-4.5
4.650		6	74	36	36	-4.65
4.763	3/16 IN	6	82	44	36	-3/16IN
5.000		6	82	44	36	-5
5.100		6	82	44	36	-5.1
5.159	13/64 IN	6	82	44	36	-13/64IN
5.500		6	82	44	36	-5.5
5.550		6	82	44	36	-5.55
5.556	7/32 IN	6	82	44	36	-7/32IN
5.800		6	82	44	36	-5.8
5.953	15/64 IN	6	82	44	36	-15/64IN
6.000		6	82	44	36	-6
6.200		8	91	53	36	-6.2
6.350	1/4 IN	8	91	53	36	-1/4IN
6.500		8	91	53	36	-6.5
6.747	17/64 IN	8	91	53	36	-17/64IN
6.800		8	91	53	36	-6.8
7.000		8	91	53	36	-7
7.144	9/32 IN	8	91	53	36	-9/32IN
7.400		8	91	53	36	-7.4
7.500		8	91	53	36	-7.5
7.541	19/64 IN	8	91	53	36	-19/64IN
7.800		8	91	53	36	-7.8
7.938	5/16 IN	8	91	53	36	-5/16IN
8.000		8	91	53	36	-8
8.334	21/64 IN	10	103	61	40	-21/64IN
8.500		10	103	61	40	-8.5
8.731	11/32 IN	10	103	61	40	-11/32IN
8.800		10	103	61	40	-8.8
9.000		10	103	61	40	-9
9.128	23/64 IN	10	103	61	40	-23/64IN
9.300		10	103	61	40	-9.3
9.500		10	103	61	40	-9.5
9.525	3/8 IN	10	103	61	40	-3/8IN
9.800		10	103	61	40	-9.8
9.922	25/64 IN	10	103	61	40	-25/64IN
10.000		10	103	61	40	-10
10.200		12	118	71	45	-10.2

Continued Solid Carbide Oil-Feed Drills ALPHA® 4 PLUS



A3388TFT



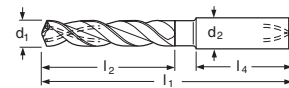
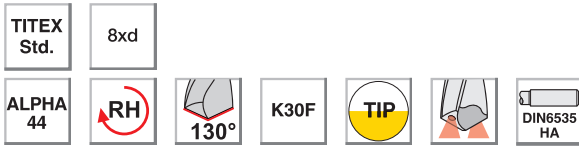
d ₁ mm m7	Ø Inches/ Wire-Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3388TFT...
10.319	13/32 IN	12	118	71	45	-13/32IN
10.500		12	118	71	45	-10.5
10.716		12	118	71	45	-27/64IN
10.800	7/16 IN	12	118	71	45	-10.8
11.000		12	118	71	45	-11
11.113		12	118	71	45	-7/16IN
11.200	29/64 IN	12	118	71	45	-11.2
11.500		12	118	71	45	-11.5
11.509		12	118	71	45	-29/64IN
11.800	15/32 IN	12	118	71	45	-11.8
11.906		12	118	71	45	-15/32IN
12.000		12	118	71	45	-12
12.303	1/2 IN	14	124	77	45	-31/64IN
12.500		14	124	77	45	-12.5
12.700		14	124	77	45	-1/2IN
12.750	17/32 IN	14	124	77	45	-12.75
13.000		14	124	77	45	-13
13.100		14	124	77	45	-13.1
13.494	9/16 IN	14	124	77	45	-17/32IN
13.500		14	124	77	45	-13.5
13.800		14	124	77	45	-13.8
14.000	5/8 IN	14	124	77	45	-14
14.288		16	133	83	48	-9/16IN
14.500		16	133	83	48	-14.5
15.000	3/4 IN	16	133	83	48	-15
15.100		16	133	83	48	-15.1
15.500		16	133	83	48	-15.5
15.875	18.000	16	133	83	48	-5/8IN
16.000		16	133	83	48	-16
16.500		18	143	93	48	-16.5
17.000	18.500	18	143	93	48	-17
17.500		18	143	93	48	-17.5
18.000		18	143	93	48	-18
18.500	19.000	20	153	101	50	-18.5
19.000		20	153	101	50	-19
19.050		20	153	101	50	-3/4IN
19.500	20.000	20	153	101	50	-19.5
20.000		20	153	101	50	-20

Solid Carbide Oil-Feed Drills ALPHA® 44

A3486TIP

Application: High Performance Drill with UFL profile for deep hole drilling without pecks in steels up to approx. 1300 N/mm², Stainless Steels, non-ferrous metals such as Aluminium-, Copper-, Zinc- and Magnesium alloys.

Remarks: Helix angle ca. 40°



d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3486TIP...
5.0	6	101	63	36	-5
5.1	6	101	63	36	-5.1
5.2	6	101	63	36	-5.2
5.5	6	101	63	36	-5.5
5.8	6	101	63	36	-5.8
6.0	6	101	63	36	-6
6.1	8	117	79	36	-6.1
6.5	8	117	79	36	-6.5
6.6	8	117	79	36	-6.6
6.8	8	117	79	36	-6.8
7.0	8	117	79	36	-7
7.5	8	117	79	36	-7.5

d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3486TIP...
7.8	8	117	79	36	-7.8
8.0	8	117	79	36	-8
8.1	10	133	91	40	-8.1
8.5	10	133	91	40	-8.5
9.0	10	133	91	40	-9
9.5	10	133	91	40	-9.5
10.0	10	133	91	40	-10
10.2	12	151	104	45	-10.2
10.5	12	151	104	45	-10.5
11.0	12	151	104	45	-11
11.5	12	151	104	45	-11.5
12.0	12	151	104	45	-12

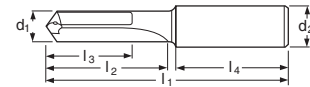
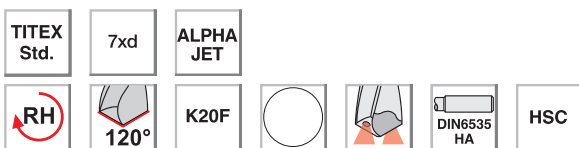
Solid Carbide Oil-Feed Drills, straight flute

A3487

Application: High performance drill for short-chipping materials, especially Cast Iron, AlSi-alloys and Al-alloys of higher tensile strength. High penetration rates plus excellent hole quality (tolerance, alignment, straightness, cylindricity, surface finish and roundness. For

cutting Cast Iron and Dry Machining applications we recommend TINAL FUTURA coating.

Remarks: 2 straight flutes, 4 margins



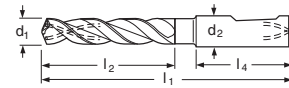
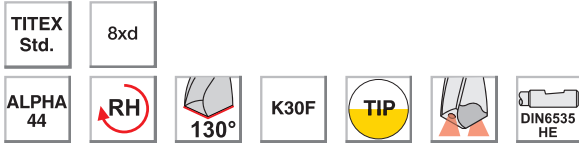
d ₁ mm k6	d ₂ mm	l ₁ mm	l ₂ mm	l ₃ mm	l ₄ mm	Ordering code A3487...
5.0	6	101	63	48.00	36	-5
6.0	6	101	63	45.00	36	-6
7.0	8	117	79	58.00	36	-7
8.0	8	117	79	59.00	36	-8
9.0	10	133	91	68.50	40	-9
10.0	10	133	91	71.00	40	-10
11.0	12	151	104	82.00	45	-11
12.0	12	151	104	80.00	45	-12
14.0	14	160	113	85.00	45	-14
15.0	16	178	128	105.50	48	-15
16.0	16	178	128	104.00	48	-16
17.0	18	191	141	115.50	48	-17
17.5	18	191	141	114.75	48	-17.5
18.0	18	191	141	114.00	48	-18
20.0	20	205	153	123.00	50	-20

Solid Carbide Oil-Feed Drills ALPHA® 44

A3586TIP

Application: High Performance Drill with UFL profile for deep hole drilling without pecks in steels up to approx. 1300 N/mm², Stainless Steels, non-ferrous metals such as Aluminium-, Copper-, Zinc- and Magnesium alloys.

Remarks: Helix angle ca. 40°



d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3586TIP...
5.0	6	101	63	36	-5
5.1	6	101	63	36	-5.1
5.2	6	101	63	36	-5.2
5.5	6	101	63	36	-5.5
5.8	6	101	63	36	-5.8
6.0	6	101	63	36	-6
6.1	8	117	79	36	-6.1
6.5	8	117	79	36	-6.5
6.6	8	117	79	36	-6.6
6.8	8	117	79	36	-6.8
7.0	8	117	79	36	-7
7.5	8	117	79	36	-7.5

d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3586TIP...
7.8	8	117	79	36	-7.8
8.0	8	117	79	36	-8
8.1	10	133	91	40	-8.1
8.5	10	133	91	40	-8.5
9.0	10	133	91	40	-9
9.5	10	133	91	40	-9.5
10.0	10	133	91	40	-10
10.2	12	151	104	45	-10.2
10.5	12	151	104	45	-10.5
11.0	12	151	104	45	-11
11.5	12	151	104	45	-11.5
12.0	12	151	104	45	-12

Solid Carbide Oil-Feed Drills, straight flute



A3687

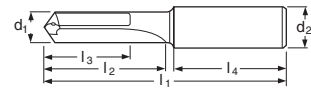
Application: High performance drill for short-chipping materials, especially Cast Iron, AISi-alloys and Al-alloys of higher tensile strength. High penetration rates plus excellent hole quality (tolerance, alignment, straightness, cylindricity, surface finish and roundness. For

cutting Cast Iron and Dry Machining applications we recommend TINAL FUTURA coating.

Remarks: 2 straight flutes, 4 margins



TITEX Std.	12xd	ALPHA JET
RH	120°	K20F
		DIN6535 HA
		HSC



d ₁ mm k6	d ₂ mm	l ₁ mm	l ₂ mm	l ₃ mm	l ₄ mm	Ordering code A3687...
5.0	6	132	94	79.00	36	-5
5.5	6	139	101	84.50	36	-5.5
6.0	6	139	101	83.00	36	-6
6.5	8	165	127	107.50	36	-6.5
6.8	8	165	127	106.60	36	-6.8
7.0	8	165	127	106.00	36	-7
7.5	8	165	127	108.25	36	-7.5
8.0	8	165	127	107.00	36	-8
8.5	10	184	142	120.75	40	-8.5
9.0	10	184	142	119.50	40	-9
10.0	10	184	142	122.00	40	-10
10.2	12	205	158	137.60	45	-10.2
10.5	12	205	158	137.00	45	-10.5
11.0	12	205	158	136.00	45	-11
11.5	12	205	158	135.00	45	-11.5
12.0	12	205	158	134.00	45	-12
12.5	14	214	167	142.00	45	-12.5
13.0	14	214	167	141.00	45	-13
14.0	14	214	167	139.00	45	-14
15.0	16	227	177	154.50	48	-15
16.0	16	227	177	153.00	48	-16
17.0	18	241	191	165.50	48	-17
18.0	18	241	191	164.00	48	-18
20.0	20	254	202	172.00	50	-20

Solid Carbide Drills ALPHA® 2

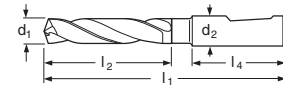
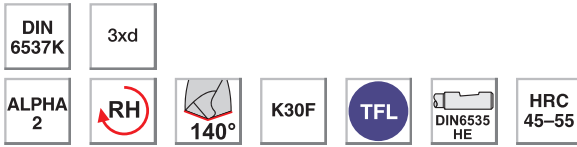


A3865TFL

Delivery on short notice,

Application: High performance twist drill for steels and cast materials. Also suited for ferritic, pearlitic and martensitic Stainless Steels (Ni < 4%) and PH-steels such as 17-4PH. Note: machining austenitic stainless steel generally requires tools with internal coolant. Coa-

ted with TINAL FUTURA for high machining data and exceptional tool life. Also suitable for dry machining of steel materials.



d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3865TFL...
3.00	6	62	20	36	-3
3.10	6	62	20	36	-3.1
3.20	6	62	20	36	-3.2
3.25	6	62	20	36	-3.25
3.30	6	62	20	36	-3.3
3.40	6	62	20	36	-3.4
3.50	6	62	20	36	-3.5
3.60	6	62	20	36	-3.6
3.65	6	62	20	36	-3.65
3.70	6	62	20	36	-3.7
3.80	6	66	24	36	-3.8
3.90	6	66	24	36	-3.9
4.00	6	66	24	36	-4
4.10	6	66	24	36	-4.1
4.20	6	66	24	36	-4.2
4.30	6	66	24	36	-4.3
4.40	6	66	24	36	-4.4
4.50	6	66	24	36	-4.5
4.60	6	66	24	36	-4.6
4.65	6	66	24	36	-4.65
4.70	6	66	24	36	-4.7
4.80	6	66	28	36	-4.8
4.90	6	66	28	36	-4.9
5.00	6	66	28	36	-5
5.10	6	66	28	36	-5.1
5.20	6	66	28	36	-5.2
5.30	6	66	28	36	-5.3
5.40	6	66	28	36	-5.4
5.50	6	66	28	36	-5.5
5.55	6	66	28	36	-5.55
5.60	6	66	28	36	-5.6
5.70	6	66	28	36	-5.7
5.80	6	66	28	36	-5.8
5.90	6	66	28	36	-5.9
6.00	6	66	28	36	-6
6.10	8	79	34	36	-6.1
6.20	8	79	34	36	-6.2
6.30	8	79	34	36	-6.3
6.40	8	79	34	36	-6.4
6.50	8	79	34	36	-6.5
6.60	8	79	34	36	-6.6
6.70	8	79	34	36	-6.7
6.80	8	79	34	36	-6.8
6.90	8	79	34	36	-6.9
7.00	8	79	34	36	-7
7.10	8	79	41	36	-7.1
7.20	8	79	41	36	-7.2
7.30	8	79	41	36	-7.3

d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3865TFL...
7.40	8	79	41	36	-7.4
7.50	8	79	41	36	-7.5
7.55	8	79	41	36	-7.55
7.60	8	79	41	36	-7.6
7.70	8	79	41	36	-7.7
7.80	8	79	41	36	-7.8
7.90	8	79	41	36	-7.9
8.00	8	79	41	36	-8
8.10	10	89	47	40	-8.1
8.20	10	89	47	40	-8.2
8.30	10	89	47	40	-8.3
8.40	10	89	47	40	-8.4
8.50	10	89	47	40	-8.5
8.60	10	89	47	40	-8.6
8.70	10	89	47	40	-8.7
8.80	10	89	47	40	-8.8
8.90	10	89	47	40	-8.9
9.00	10	89	47	40	-9
9.10	10	89	47	40	-9.1
9.20	10	89	47	40	-9.2
9.30	10	89	47	40	-9.3
9.40	10	89	47	40	-9.4
9.50	10	89	47	40	-9.5
9.55	10	89	47	40	-9.55
9.60	10	89	47	40	-9.6
9.70	10	89	47	40	-9.7
9.80	10	89	47	40	-9.8
9.90	10	89	47	40	-9.9
10.00	10	89	47	40	-10
10.10	12	102	55	45	-10.1
10.20	12	102	55	45	-10.2
10.30	12	102	55	45	-10.3
10.40	12	102	55	45	-10.4
10.50	12	102	55	45	-10.5
10.60	12	102	55	45	-10.6
10.70	12	102	55	45	-10.7
10.80	12	102	55	45	-10.8
10.90	12	102	55	45	-10.9
11.00	12	102	55	45	-11
11.10	12	102	55	45	-11.1
11.20	12	102	55	45	-11.2
11.30	12	102	55	45	-11.3
11.40	12	102	55	45	-11.4
11.50	12	102	55	45	-11.5
11.55	12	102	55	45	-11.55
11.60	12	102	55	45	-11.6
11.70	12	102	55	45	-11.7
11.80	12	102	55	45	-11.8

Continued Solid Carbide Drills ALPHA® 2



A3865TFL

Delivery on short notice,



d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3865TFL...	d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3865TFL...
11.90	12	102	55	45	-11.9	15.30	16	115	65	48	-15.3
12.00	12	102	55	45	-12	15.50	16	115	65	48	-15.5
12.10	14	107	60	45	-12.1	15.60	16	115	65	48	-15.6
12.20	14	107	60	45	-12.2	15.70	16	115	65	48	-15.7
12.25	14	107	60	45	-12.25	15.80	16	115	65	48	-15.8
12.30	14	107	60	45	-12.3	15.90	16	115	65	48	-15.9
12.40	14	107	60	45	-12.4	16.00	16	115	65	48	-16
12.50	14	107	60	45	-12.5	16.10	18	123	73	48	-16.1
12.60	14	107	60	45	-12.6	16.20	18	123	73	48	-16.2
12.70	14	107	60	45	-12.7	16.30	18	123	73	48	-16.3
12.75	14	107	60	45	-12.75	16.40	18	123	73	48	-16.4
12.80	14	107	60	45	-12.8	16.50	18	123	73	48	-16.5
12.90	14	107	60	45	-12.9	16.60	18	123	73	48	-16.6
13.00	14	107	60	45	-13	16.70	18	123	73	48	-16.7
13.10	14	107	60	45	-13.1	16.75	18	123	73	48	-16.75
13.20	14	107	60	45	-13.2	16.80	18	123	73	48	-16.8
13.30	14	107	60	45	-13.3	17.00	18	123	73	48	-17
13.40	14	107	60	45	-13.4	17.20	18	123	73	48	-17.2
13.50	14	107	60	45	-13.5	17.30	18	123	73	48	-17.3
13.60	14	107	60	45	-13.6	17.50	18	123	73	48	-17.5
13.70	14	107	60	45	-13.7	17.60	18	123	73	48	-17.6
13.80	14	107	60	45	-13.8	17.70	18	123	73	48	-17.7
13.90	14	107	60	45	-13.9	17.80	18	123	73	48	-17.8
14.00	14	107	60	45	-14	18.00	18	123	73	48	-18
14.10	16	115	65	48	-14.1	18.20	20	131	79	50	-18.2
14.20	16	115	65	48	-14.2	18.50	20	131	79	50	-18.5
14.30	16	115	65	48	-14.3	18.70	20	131	79	50	-18.7
14.40	16	115	65	48	-14.4	18.80	20	131	79	50	-18.8
14.50	16	115	65	48	-14.5	19.00	20	131	79	50	-19
14.60	16	115	65	48	-14.6	19.50	20	131	79	50	-19.5
14.70	16	115	65	48	-14.7	19.70	20	131	79	50	-19.7
14.75	16	115	65	48	-14.75	19.80	20	131	79	50	-19.8
14.80	16	115	65	48	-14.8	20.00	20	131	79	50	-20
15.00	16	115	65	48	-15						
15.10	16	115	65	48	-15.1						
15.20	16	115	65	48	-15.2						

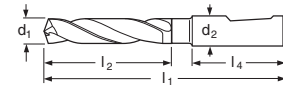
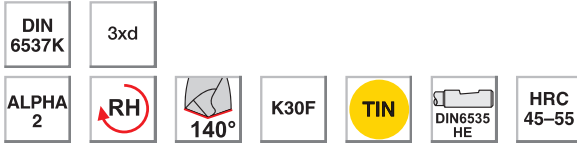
Solid Carbide Drills ALPHA® 2



A3865TIN

Delivery on short notice,

Application: High performance twist drill for steels and cast materials. Also suited for ferritic, pearlitic and martensitic Stainless Steels (Ni < 4%) and PH-steels such as 17-4PH. Note: machining austenitic stainless steel generally requires tools with internal coolant. Also suitable for dry machining of steel materials.



d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3865TIN...
3.00	6	62	20	36	-3
3.10	6	62	20	36	-3.1
3.20	6	62	20	36	-3.2
○ 3.25	6	62	20	36	-3.25
3.30	6	62	20	36	-3.3
3.40	6	62	20	36	-3.4
3.50	6	62	20	36	-3.5
3.70	6	62	20	36	-3.7
3.80	6	66	24	36	-3.8
4.00	6	66	24	36	-4
4.10	6	66	24	36	-4.1
4.20	6	66	24	36	-4.2
4.30	6	66	24	36	-4.3
4.50	6	66	24	36	-4.5
4.65	6	66	24	36	-4.65
4.80	6	66	28	36	-4.8
5.00	6	66	28	36	-5
5.10	6	66	28	36	-5.1
5.20	6	66	28	36	-5.2
5.50	6	66	28	36	-5.5
5.55	6	66	28	36	-5.55
5.80	6	66	28	36	-5.8
6.00	6	66	28	36	-6
6.10	8	79	34	36	-6.1
6.20	8	79	34	36	-6.2
6.30	8	79	34	36	-6.3
6.40	8	79	34	36	-6.4
6.50	8	79	34	36	-6.5
6.60	8	79	34	36	-6.6
6.80	8	79	34	36	-6.8
6.90	8	79	34	36	-6.9
7.00	8	79	34	36	-7
7.10	8	79	41	36	-7.1
7.40	8	79	41	36	-7.4
7.50	8	79	41	36	-7.5
7.80	8	79	41	36	-7.8
7.90	8	79	41	36	-7.9
8.00	8	79	41	36	-8
8.10	10	89	47	40	-8.1
8.20	10	89	47	40	-8.2
8.40	10	89	47	40	-8.4
8.50	10	89	47	40	-8.5
8.60	10	89	47	40	-8.6
8.70	10	89	47	40	-8.7
8.80	10	89	47	40	-8.8

d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3865TIN...
○ 8.90	10	89	47	40	-8.9
9.00	10	89	47	40	-9
9.20	10	89	47	40	-9.2
9.30	10	89	47	40	-9.3
9.50	10	89	47	40	-9.5
9.60	10	89	47	40	-9.6
9.70	10	89	47	40	-9.7
9.80	10	89	47	40	-9.8
10.00	10	89	47	40	-10
10.10	12	102	55	45	-10.1
10.20	12	102	55	45	-10.2
10.30	12	102	55	45	-10.3
10.40	12	102	55	45	-10.4
10.50	12	102	55	45	-10.5
○ 10.60	12	102	55	45	-10.6
10.80	12	102	55	45	-10.8
11.00	12	102	55	45	-11
11.20	12	102	55	45	-11.2
11.50	12	102	55	45	-11.5
11.80	12	102	55	45	-11.8
12.00	12	102	55	45	-12
12.20	14	107	60	45	-12.2
○ 12.25	14	107	60	45	-12.25
12.30	14	107	60	45	-12.3
12.50	14	107	60	45	-12.5
12.70	14	107	60	45	-12.7
13.00	14	107	60	45	-13
○ 13.10	14	107	60	45	-13.1
13.30	14	107	60	45	-13.3
13.50	14	107	60	45	-13.5
14.00	14	107	60	45	-14
14.50	16	115	65	48	-14.5
○ 14.75	16	115	65	48	-14.75
15.00	16	115	65	48	-15
○ 15.10	16	115	65	48	-15.1
15.50	16	115	65	48	-15.5
16.00	16	115	65	48	-16
○ 16.50	18	123	73	48	-16.5
○ 17.00	18	123	73	48	-17
○ 17.50	18	123	73	48	-17.5
○ 18.00	18	123	73	48	-18
○ 19.00	20	131	79	50	-19
○ 20.00	20	131	79	50	-20

○ = Available as long as stock exists. Recommended substitute tool: A3865TFL.

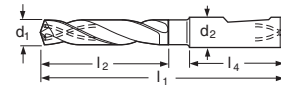
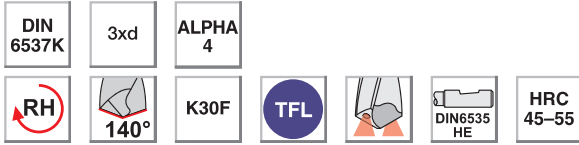
Solid Carbide Oil-Feed Drills ALPHA® 4



A3885TFL

Delivery on short notice,

Application: Solid Carbide High Performance Drill, preferably used for Steel and Cast Iron materials, incl. austenitic Stainless Steels and Heat-Resistant Steels, also for Non-Ferrous Metals such as Aluminium-, Copper-, Zinc- and Magnesium Alloys. Coated with TINAL FUTURA for high machining data and exceptional tool life.



d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3885TFL...
3.00	6	62	20	36	-3
3.10	6	62	20	36	-3.1
3.20	6	62	20	36	-3.2
3.25	6	62	20	36	-3.25
3.30	6	62	20	36	-3.3
3.40	6	62	20	36	-3.4
3.50	6	62	20	36	-3.5
3.60	6	62	20	36	-3.6
3.65	6	62	20	36	-3.65
3.70	6	62	20	36	-3.7
3.80	6	66	24	36	-3.8
3.90	6	66	24	36	-3.9
4.00	6	66	24	36	-4
4.10	6	66	24	36	-4.1
4.20	6	66	24	36	-4.2
4.30	6	66	24	36	-4.3
4.40	6	66	24	36	-4.4
4.50	6	66	24	36	-4.5
4.60	6	66	24	36	-4.6
4.65	6	66	24	36	-4.65
4.70	6	66	24	36	-4.7
4.80	6	66	28	36	-4.8
4.90	6	66	28	36	-4.9
5.00	6	66	28	36	-5
5.10	6	66	28	36	-5.1
5.20	6	66	28	36	-5.2
5.30	6	66	28	36	-5.3
5.40	6	66	28	36	-5.4
5.50	6	66	28	36	-5.5
5.55	6	66	28	36	-5.55
5.60	6	66	28	36	-5.6
5.70	6	66	28	36	-5.7
5.80	6	66	28	36	-5.8
5.90	6	66	28	36	-5.9
6.00	6	66	28	36	-6
6.10	8	79	34	36	-6.1
6.20	8	79	34	36	-6.2
6.30	8	79	34	36	-6.3
6.40	8	79	34	36	-6.4
6.50	8	79	34	36	-6.5
6.60	8	79	34	36	-6.6
6.70	8	79	34	36	-6.7
6.80	8	79	34	36	-6.8
6.90	8	79	34	36	-6.9
7.00	8	79	34	36	-7
7.10	8	79	41	36	-7.1
7.20	8	79	41	36	-7.2
7.30	8	79	41	36	-7.3

d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3885TFL...
7.40	8	79	41	36	-7.4
7.50	8	79	41	36	-7.5
7.55	8	79	41	36	-7.55
7.60	8	79	41	36	-7.6
7.70	8	79	41	36	-7.7
7.80	8	79	41	36	-7.8
7.90	8	79	41	36	-7.9
8.00	8	79	41	36	-8
8.10	10	89	47	40	-8.1
8.20	10	89	47	40	-8.2
8.30	10	89	47	40	-8.3
8.40	10	89	47	40	-8.4
8.50	10	89	47	40	-8.5
8.60	10	89	47	40	-8.6
8.70	10	89	47	40	-8.7
8.80	10	89	47	40	-8.8
8.90	10	89	47	40	-8.9
9.00	10	89	47	40	-9
9.10	10	89	47	40	-9.1
9.20	10	89	47	40	-9.2
9.30	10	89	47	40	-9.3
9.40	10	89	47	40	-9.4
9.50	10	89	47	40	-9.5
9.55	10	89	47	40	-9.55
9.60	10	89	47	40	-9.6
9.70	10	89	47	40	-9.7
9.80	10	89	47	40	-9.8
9.90	10	89	47	40	-9.9
10.00	10	89	47	40	-10
10.10	12	102	55	45	-10.1
10.20	12	102	55	45	-10.2
10.30	12	102	55	45	-10.3
10.40	12	102	55	45	-10.4
10.50	12	102	55	45	-10.5
10.60	12	102	55	45	-10.6
10.70	12	102	55	45	-10.7
10.80	12	102	55	45	-10.8
10.90	12	102	55	45	-10.9
11.00	12	102	55	45	-11
11.10	12	102	55	45	-11.1
11.20	12	102	55	45	-11.2
11.30	12	102	55	45	-11.3
11.40	12	102	55	45	-11.4
11.50	12	102	55	45	-11.5
11.55	12	102	55	45	-11.55
11.60	12	102	55	45	-11.6
11.70	12	102	55	45	-11.7
11.80	12	102	55	45	-11.8

Continued Solid Carbide Oil-Feed Drills ALPHA® 4



A3885TFL

Delivery on short notice,



d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3885TFL...
11.90	12	102	55	45	-11.9
12.00	12	102	55	45	-12
12.10	14	107	60	45	-12.1
12.20	14	107	60	45	-12.2
12.25	14	107	60	45	-12.25
12.30	14	107	60	45	-12.3
12.40	14	107	60	45	-12.4
12.50	14	107	60	45	-12.5
12.60	14	107	60	45	-12.6
12.70	14	107	60	45	-12.7
12.75	14	107	60	45	-12.75
12.80	14	107	60	45	-12.8
12.90	14	107	60	45	-12.9
13.00	14	107	60	45	-13
13.10	14	107	60	45	-13.1
13.20	14	107	60	45	-13.2
13.30	14	107	60	45	-13.3
13.40	14	107	60	45	-13.4
13.50	14	107	60	45	-13.5
13.60	14	107	60	45	-13.6
13.70	14	107	60	45	-13.7
13.80	14	107	60	45	-13.8
13.90	14	107	60	45	-13.9
14.00	14	107	60	45	-14
14.10	16	115	65	48	-14.1
14.20	16	115	65	48	-14.2
14.30	16	115	65	48	-14.3
14.40	16	115	65	48	-14.4
14.50	16	115	65	48	-14.5
14.60	16	115	65	48	-14.6
14.70	16	115	65	48	-14.7
14.75	16	115	65	48	-14.75
14.80	16	115	65	48	-14.8
15.00	16	115	65	48	-15
15.10	16	115	65	48	-15.1
15.20	16	115	65	48	-15.2

d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3885TFL...
15.30	16	115	65	48	-15.3
15.50	16	115	65	48	-15.5
15.60	16	115	65	48	-15.6
15.70	16	115	65	48	-15.7
15.80	16	115	65	48	-15.8
15.90	16	115	65	48	-15.9
16.00	16	115	65	48	-16
16.10	18	123	73	48	-16.1
16.20	18	123	73	48	-16.2
16.30	18	123	73	48	-16.3
16.40	18	123	73	48	-16.4
16.50	18	123	73	48	-16.5
16.60	18	123	73	48	-16.6
16.70	18	123	73	48	-16.7
16.75	18	123	73	48	-16.75
16.80	18	123	73	48	-16.8
17.00	18	123	73	48	-17
17.20	18	123	73	48	-17.2
17.30	18	123	73	48	-17.3
17.50	18	123	73	48	-17.5
17.60	18	123	73	48	-17.6
17.70	18	123	73	48	-17.7
17.80	18	123	73	48	-17.8
18.00	18	123	73	48	-18
18.20	20	131	79	50	-18.2
18.50	20	131	79	50	-18.5
18.70	20	131	79	50	-18.7
18.80	20	131	79	50	-18.8
19.00	20	131	79	50	-19
19.50	20	131	79	50	-19.5
19.70	20	131	79	50	-19.7
19.80	20	131	79	50	-19.8
20.00	20	131	79	50	-20

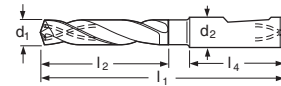
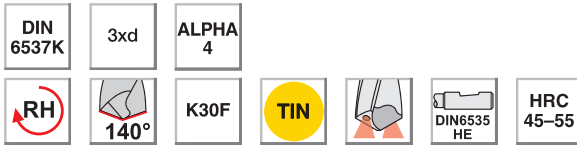
Solid Carbide Oil-Feed Drills ALPHA® 4



A3885TIN

Delivery on short notice,

Application: Solid Carbide High Performance Drill, preferably used for Steel and Cast Iron materials, incl. austenitic Stainless Steels and Heat-Resistant Steels, also for Non-Ferrous Metals such as Aluminum-, Copper-, Zinc- and Magnesium Alloys.



d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3885TIN...
3.00	6	62	20	36	-3
3.10	6	62	20	36	-3.1
3.20	6	62	20	36	-3.2
3.25	6	62	20	36	-3.25
3.30	6	62	20	36	-3.3
3.40	6	62	20	36	-3.4
3.50	6	62	20	36	-3.5
3.60	6	62	20	36	-3.6
3.70	6	62	20	36	-3.7
3.80	6	66	24	36	-3.8
3.90	6	66	24	36	-3.9
4.00	6	66	24	36	-4
4.10	6	66	24	36	-4.1
4.20	6	66	24	36	-4.2
4.30	6	66	24	36	-4.3
4.40	6	66	24	36	-4.4
4.50	6	66	24	36	-4.5
4.60	6	66	24	36	-4.6
4.65	6	66	24	36	-4.65
4.70	6	66	24	36	-4.7
4.80	6	66	28	36	-4.8
4.90	6	66	28	36	-4.9
5.00	6	66	28	36	-5
5.10	6	66	28	36	-5.1
5.20	6	66	28	36	-5.2
5.30	6	66	28	36	-5.3
5.40	6	66	28	36	-5.4
5.50	6	66	28	36	-5.5
5.55	6	66	28	36	-5.55
5.60	6	66	28	36	-5.6
5.70	6	66	28	36	-5.7
5.80	6	66	28	36	-5.8
5.90	6	66	28	36	-5.9
6.00	6	66	28	36	-6
6.10	8	79	34	36	-6.1
6.20	8	79	34	36	-6.2
6.30	8	79	34	36	-6.3
6.40	8	79	34	36	-6.4
6.50	8	79	34	36	-6.5
6.60	8	79	34	36	-6.6
6.80	8	79	34	36	-6.8
6.90	8	79	34	36	-6.9
7.00	8	79	34	36	-7
7.10	8	79	41	36	-7.1
7.20	8	79	41	36	-7.2
7.30	8	79	41	36	-7.3
7.40	8	79	41	36	-7.4
7.50	8	79	41	36	-7.5

d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3885TIN...
7.70	8	79	41	36	-7.7
7.80	8	79	41	36	-7.8
7.90	8	79	41	36	-7.9
8.00	8	79	41	36	-8
8.10	10	89	47	40	-8.1
8.20	10	89	47	40	-8.2
8.30	10	89	47	40	-8.3
8.40	10	89	47	40	-8.4
8.50	10	89	47	40	-8.5
8.60	10	89	47	40	-8.6
8.70	10	89	47	40	-8.7
8.80	10	89	47	40	-8.8
9.00	10	89	47	40	-9
9.10	10	89	47	40	-9.1
9.20	10	89	47	40	-9.2
9.30	10	89	47	40	-9.3
9.50	10	89	47	40	-9.5
9.60	10	89	47	40	-9.6
9.70	10	89	47	40	-9.7
9.80	10	89	47	40	-9.8
9.90	10	89	47	40	-9.9
10.00	10	89	47	40	-10
10.10	12	102	55	45	-10.1
10.20	12	102	55	45	-10.2
10.30	12	102	55	45	-10.3
10.40	12	102	55	45	-10.4
10.50	12	102	55	45	-10.5
10.60	12	102	55	45	-10.6
10.70	12	102	55	45	-10.7
10.80	12	102	55	45	-10.8
11.00	12	102	55	45	-11
11.10	12	102	55	45	-11.1
11.20	12	102	55	45	-11.2
11.50	12	102	55	45	-11.5
11.70	12	102	55	45	-11.7
11.80	12	102	55	45	-11.8
12.00	12	102	55	45	-12
12.10	14	107	60	45	-12.1
12.20	14	107	60	45	-12.2
12.25	14	107	60	45	-12.25
12.30	14	107	60	45	-12.3
12.50	14	107	60	45	-12.5
12.60	14	107	60	45	-12.6
12.70	14	107	60	45	-12.7
12.75	14	107	60	45	-12.75
12.80	14	107	60	45	-12.8
12.90	14	107	60	45	-12.9
13.00	14	107	60	45	-13

○ = Available as long as stock exists. Recommended substitute tool: A3885TFL.

Continued Solid Carbide Oil-Feed Drills ALPHA® 4



A3885TIN

Delivery on short notice,

	d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3885TIN...
	13.30	14	107	60	45	-13.3
	13.50	14	107	60	45	-13.5
○	13.80	14	107	60	45	-13.8
	14.00	14	107	60	45	-14
○	14.10	16	115	65	48	-14.1
○	14.20	16	115	65	48	-14.2
	14.50	16	115	65	48	-14.5
○	14.75	16	115	65	48	-14.75
	15.00	16	115	65	48	-15
○	15.10	16	115	65	48	-15.1
○	15.20	16	115	65	48	-15.2
	15.50	16	115	65	48	-15.5

	d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3885TIN...
○	15.80	16	115	65	48	-15.8
	16.00	16	115	65	48	-16
○	16.50	18	123	73	48	-16.5
○	17.00	18	123	73	48	-17
○	17.60	18	123	73	48	-17.6
○	18.00	18	123	73	48	-18
○	19.00	20	131	79	50	-19
○	19.50	20	131	79	50	-19.5



○ = Available as long as stock exists. Recommended substitute tool: A3885TFL.

Solid Carbide Drills ALPHA® 2



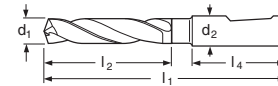
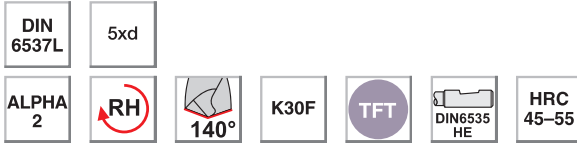
A3965TFT

Delivery on short notice,

Application: High performance twist drill for steels and cast materials. Also suited for ferritic, pearlitic and martensitic Stainless Steels (Ni < 4%) and PH-steels such as 17-4PH. Note: machining austenitic stainless steel generally requires tools with internal coolant. Coated with TINAL FUTURA TOP (TFT) for excellent chip transportation.

Gives process reliability at extended drilling depths. *Pecks or dwells not necessary even at deep drilling depths.*

Remarks: Above 20 mm - dimensions according to TITEX PLUS-Standard.



d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3965TFT...
3.00	6	66	28	36	-3
3.10	6	66	28	36	-3.1
3.20	6	66	28	36	-3.2
3.25	6	66	28	36	-3.25
3.30	6	66	28	36	-3.3
3.40	6	66	28	36	-3.4
3.50	6	66	28	36	-3.5
3.60	6	66	28	36	-3.6
3.65	6	66	28	36	-3.65
3.70	6	66	28	36	-3.7
3.80	6	74	36	36	-3.8
3.90	6	74	36	36	-3.9
4.00	6	74	36	36	-4
4.10	6	74	36	36	-4.1
4.20	6	74	36	36	-4.2
4.30	6	74	36	36	-4.3
4.40	6	74	36	36	-4.4
4.50	6	74	36	36	-4.5
4.60	6	74	36	36	-4.6
4.65	6	74	36	36	-4.65
4.70	6	74	36	36	-4.7
4.80	6	82	44	36	-4.8
4.90	6	82	44	36	-4.9
5.00	6	82	44	36	-5
5.10	6	82	44	36	-5.1
5.20	6	82	44	36	-5.2
5.30	6	82	44	36	-5.3
5.40	6	82	44	36	-5.4
5.50	6	82	44	36	-5.5
5.55	6	82	44	36	-5.55
5.60	6	82	44	36	-5.6
5.70	6	82	44	36	-5.7
5.80	6	82	44	36	-5.8
5.90	6	82	44	36	-5.9
6.00	6	82	44	36	-6
6.10	8	91	53	36	-6.1
6.20	8	91	53	36	-6.2
6.30	8	91	53	36	-6.3
6.40	8	91	53	36	-6.4
6.50	8	91	53	36	-6.5
6.60	8	91	53	36	-6.6
6.70	8	91	53	36	-6.7
6.80	8	91	53	36	-6.8
6.90	8	91	53	36	-6.9
7.00	8	91	53	36	-7
7.10	8	91	53	36	-7.1
7.20	8	91	53	36	-7.2
7.30	8	91	53	36	-7.3

d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3965TFT...
7.40	8	91	53	36	-7.4
7.50	8	91	53	36	-7.5
7.55	8	91	53	36	-7.55
7.60	8	91	53	36	-7.6
7.70	8	91	53	36	-7.7
7.80	8	91	53	36	-7.8
7.90	8	91	53	36	-7.9
8.00	8	91	53	36	-8
8.10	10	103	61	40	-8.1
8.20	10	103	61	40	-8.2
8.30	10	103	61	40	-8.3
8.40	10	103	61	40	-8.4
8.50	10	103	61	40	-8.5
8.60	10	103	61	40	-8.6
8.70	10	103	61	40	-8.7
8.80	10	103	61	40	-8.8
8.90	10	103	61	40	-8.9
9.00	10	103	61	40	-9
9.10	10	103	61	40	-9.1
9.20	10	103	61	40	-9.2
9.30	10	103	61	40	-9.3
9.40	10	103	61	40	-9.4
9.50	10	103	61	40	-9.5
9.55	10	103	61	40	-9.55
9.60	10	103	61	40	-9.6
9.70	10	103	61	40	-9.7
9.80	10	103	61	40	-9.8
9.90	10	103	61	40	-9.9
10.00	10	103	61	40	-10
10.10	12	118	71	45	-10.1
10.20	12	118	71	45	-10.2
10.30	12	118	71	45	-10.3
10.40	12	118	71	45	-10.4
10.50	12	118	71	45	-10.5
10.60	12	118	71	45	-10.6
10.70	12	118	71	45	-10.7
10.80	12	118	71	45	-10.8
10.90	12	118	71	45	-10.9
11.00	12	118	71	45	-11
11.10	12	118	71	45	-11.1
11.20	12	118	71	45	-11.2
11.30	12	118	71	45	-11.3
11.40	12	118	71	45	-11.4
11.50	12	118	71	45	-11.5
11.55	12	118	71	45	-11.55
11.60	12	118	71	45	-11.6
11.70	12	118	71	45	-11.7
11.80	12	118	71	45	-11.8

Continued Solid Carbide Drills ALPHA® 2



A3965TFT

Delivery on short notice,



d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3965TFT...	d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3965TFT...
11.90	12	118	71	45	-11.9	16.00	16	133	83	48	-16
12.00	12	118	71	45	-12	16.10	18	143	93	48	-16.1
12.10	14	124	77	45	-12.1	16.20	18	143	93	48	-16.2
12.20	14	124	77	45	-12.2	16.30	18	143	93	48	-16.3
12.25	14	124	77	45	-12.25	16.40	18	143	93	48	-16.4
12.30	14	124	77	45	-12.3	16.50	18	143	93	48	-16.5
12.40	14	124	77	45	-12.4	16.60	18	143	93	48	-16.6
12.50	14	124	77	45	-12.5	16.70	18	143	93	48	-16.7
12.60	14	124	77	45	-12.6	16.75	18	143	93	48	-16.75
12.70	14	124	77	45	-12.7	16.80	18	143	93	48	-16.8
12.75	14	124	77	45	-12.75	17.00	18	143	93	48	-17
12.80	14	124	77	45	-12.8	17.20	18	143	93	48	-17.2
12.90	14	124	77	45	-12.9	17.30	18	143	93	48	-17.3
13.00	14	124	77	45	-13	17.50	18	143	93	48	-17.5
13.10	14	124	77	45	-13.1	17.60	18	143	93	48	-17.6
13.20	14	124	77	45	-13.2	17.70	18	143	93	48	-17.7
13.30	14	124	77	45	-13.3	17.80	18	143	93	48	-17.8
13.40	14	124	77	45	-13.4	18.00	18	143	93	48	-18
13.50	14	124	77	45	-13.5	18.20	20	153	101	50	-18.2
13.60	14	124	77	45	-13.6	18.50	20	153	101	50	-18.5
13.70	14	124	77	45	-13.7	18.70	20	153	101	50	-18.7
13.80	14	124	77	45	-13.8	18.80	20	153	101	50	-18.8
13.90	14	124	77	45	-13.9	19.00	20	153	101	50	-19
14.00	14	124	77	45	-14	19.50	20	153	101	50	-19.5
14.10	16	133	83	48	-14.1	19.70	20	153	101	50	-19.7
14.20	16	133	83	48	-14.2	19.80	20	153	101	50	-19.8
14.30	16	133	83	48	-14.3	20.00	20	153	101	50	-20
14.40	16	133	83	48	-14.4	20.50	25	166	108	56	-20.5
14.50	16	133	83	48	-14.5	21.00	25	166	108	56	-21
14.60	16	133	83	48	-14.6	21.50	25	166	108	56	-21.5
14.70	16	133	83	48	-14.7	22.00	25	166	108	56	-22
14.75	16	133	83	48	-14.75	22.50	25	173	115	56	-22.5
14.80	16	133	83	48	-14.8	23.00	25	173	115	56	-23
15.00	16	133	83	48	-15	23.50	25	173	115	56	-23.5
15.10	16	133	83	48	-15.1	24.00	25	173	115	56	-24
15.20	16	133	83	48	-15.2	24.50	25	180	122	56	-24.5
15.30	16	133	83	48	-15.3	25.00	25	180	122	56	-25
15.50	16	133	83	48	-15.5						
15.60	16	133	83	48	-15.6						
15.70	16	133	83	48	-15.7						
15.80	16	133	83	48	-15.8						
15.90	16	133	83	48	-15.9						

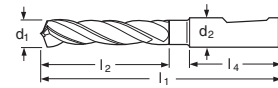
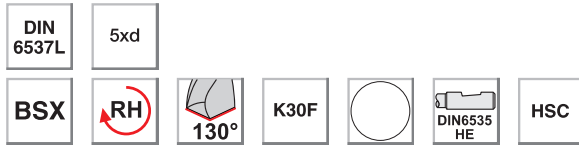
Maximiza Solid Carbide 3-Flute Drills

A3967

Application: 3-flute high penetration drill with special point geometry for grey cast-, nodular- and malleable iron, AISi-alloys, non-ferrous metals and titanium and titanium-alloys. Also suited for dry machining of cast iron.

For cutting Cast Iron and Dry Machining applications we recommend TINAL FUTURA coating.

Remarks: Point geometry SX



d ₁ mm m7	d ₂ mm	l ₁ mm	l ₂ mm	l ₄ mm	Ordering code A3967...
3.00	6	66	28	36	-3
3.15	6	66	28	36	-3.15
3.30	6	66	28	36	-3.3
3.50	6	66	28	36	-3.5
3.70	6	66	28	36	-3.7
3.80	6	74	36	36	-3.8
4.00	6	74	36	36	-4
4.20	6	74	36	36	-4.2
4.30	6	74	36	36	-4.3
4.45	6	74	36	36	-4.45
4.50	6	74	36	36	-4.5
4.65	6	74	36	36	-4.65
5.00	6	82	44	36	-5
5.50	6	82	44	36	-5.5
5.55	6	82	44	36	-5.55
5.75	6	82	44	36	-5.75
5.90	6	82	44	36	-5.9
6.00	6	82	44	36	-6
6.50	8	91	53	36	-6.5
6.55	8	91	53	36	-6.55
6.80	8	91	53	36	-6.8
7.00	8	91	53	36	-7
7.25	8	91	53	36	-7.25
7.40	8	91	53	36	-7.4
7.45	8	91	53	36	-7.45
7.50	8	91	53	36	-7.5
7.55	8	91	53	36	-7.55
8.00	8	91	53	36	-8
8.50	10	103	61	40	-8.5
8.75	10	103	61	40	-8.75

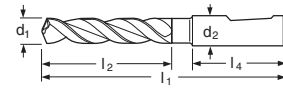
d ₁ mm m7	d ₂ mm	l ₁ mm	l ₂ mm	l ₄ mm	Ordering code A3967...
9.00	10	103	61	40	-9
9.30	10	103	61	40	-9.3
9.40	10	103	61	40	-9.4
9.50	10	103	61	40	-9.5
9.55	10	103	61	40	-9.55
10.00	10	103	61	40	-10
10.20	12	118	71	45	-10.2
10.50	12	118	71	45	-10.5
11.00	12	118	71	45	-11
11.20	12	118	71	45	-11.2
11.30	12	118	71	45	-11.3
11.50	12	118	71	45	-11.5
11.55	12	118	71	45	-11.55
11.70	12	118	71	45	-11.7
12.00	12	118	71	45	-12
12.50	14	124	77	45	-12.5
13.00	14	124	77	45	-13
13.10	14	124	77	45	-13.1
13.30	14	124	77	45	-13.3
13.50	14	124	77	45	-13.5
14.00	14	124	77	45	-14
14.50	16	133	83	48	-14.5
15.00	16	133	83	48	-15
15.10	16	133	83	48	-15.1
15.30	16	133	83	48	-15.3
15.50	16	133	83	48	-15.5
16.00	16	133	83	48	-16

Solid Carbide Deep Hole Drills ALPHA® 22

A3976TFL

Application: High Performance Drill with UFL profile for deep hole drilling without pecks in materials up to approx. 1000 N/mm², especially suitable for steels and cast iron, non-ferrous metals such as Aluminium-, Copper-, Zinc- and Magnesium alloys.

DIN 6537L	8xd	ALPHA 22	RH	140°	K30F	TFL	DIN6535 HE
-----------	-----	----------	----	------	------	-----	------------



d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3976TFL...
3.0	6	66	28	36	-3
3.3	6	66	28	36	-3.3
3.5	6	66	28	36	-3.5
4.0	6	74	36	36	-4
4.2	6	74	36	36	-4.2
4.5	6	74	36	36	-4.5
5.0	6	82	44	36	-5
5.5	6	82	44	36	-5.5
6.0	6	82	44	36	-6
6.5	8	91	53	36	-6.5
6.8	8	91	53	36	-6.8
7.0	8	91	53	36	-7

d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3976TFL...
7.5	8	91	53	36	-7.5
8.0	8	91	53	36	-8
8.5	10	103	61	40	-8.5
9.0	10	103	61	40	-9
9.5	10	103	61	40	-9.5
10.0	10	103	61	40	-10
10.2	12	118	71	45	-10.2
10.5	12	118	71	45	-10.5
11.0	12	118	71	45	-11
11.5	12	118	71	45	-11.5
12.0	12	118	71	45	-12

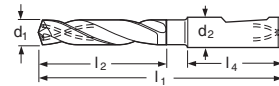
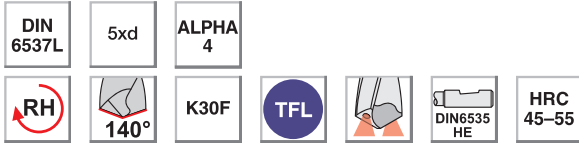
Solid Carbide Oil-Feed Drills ALPHA® 4



A3985TFL

Application: Solid Carbide High Performance Drill, preferably used for Steel and Cast Iron materials, incl. austenitic Stainless Steels and Heat-Resistant Steels, also for Non-Ferrous Metals such as Aluminium-, Copper-, Zinc- and Magnesium Alloys. Coated with TINAL FUTURA for high machining data and exceptional tool life.

Remarks: Above 20 mm - dimensions according to TITEX PLUS-Standard.



d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3985TFL...
3.00	6	66	28	36	-3
3.10	6	66	28	36	-3.1
3.20	6	66	28	36	-3.2
3.25	6	66	28	36	-3.25
3.30	6	66	28	36	-3.3
3.40	6	66	28	36	-3.4
3.50	6	66	28	36	-3.5
3.60	6	66	28	36	-3.6
3.65	6	66	28	36	-3.65
3.70	6	66	28	36	-3.7
3.80	6	74	36	36	-3.8
3.90	6	74	36	36	-3.9
4.00	6	74	36	36	-4
4.10	6	74	36	36	-4.1
4.20	6	74	36	36	-4.2
4.30	6	74	36	36	-4.3
4.40	6	74	36	36	-4.4
4.50	6	74	36	36	-4.5
4.60	6	74	36	36	-4.6
4.65	6	74	36	36	-4.65
4.70	6	74	36	36	-4.7
4.80	6	82	44	36	-4.8
4.90	6	82	44	36	-4.9
5.00	6	82	44	36	-5
5.10	6	82	44	36	-5.1
5.20	6	82	44	36	-5.2
5.30	6	82	44	36	-5.3
5.40	6	82	44	36	-5.4
5.50	6	82	44	36	-5.5
5.55	6	82	44	36	-5.55
5.60	6	82	44	36	-5.6
5.70	6	82	44	36	-5.7
5.80	6	82	44	36	-5.8
5.90	6	82	44	36	-5.9
6.00	6	82	44	36	-6
6.10	8	91	53	36	-6.1
6.20	8	91	53	36	-6.2
6.30	8	91	53	36	-6.3
6.40	8	91	53	36	-6.4
6.50	8	91	53	36	-6.5
6.60	8	91	53	36	-6.6
6.70	8	91	53	36	-6.7
6.80	8	91	53	36	-6.8
6.90	8	91	53	36	-6.9
7.00	8	91	53	36	-7
7.10	8	91	53	36	-7.1
7.20	8	91	53	36	-7.2
7.30	8	91	53	36	-7.3

d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3985TFL...
7.40	8	91	53	36	-7.4
7.50	8	91	53	36	-7.5
7.55	8	91	53	36	-7.55
7.60	8	91	53	36	-7.6
7.70	8	91	53	36	-7.7
7.80	8	91	53	36	-7.8
7.90	8	91	53	36	-7.9
8.00	8	91	53	36	-8
8.10	10	103	61	40	-8.1
8.20	10	103	61	40	-8.2
8.30	10	103	61	40	-8.3
8.40	10	103	61	40	-8.4
8.50	10	103	61	40	-8.5
8.60	10	103	61	40	-8.6
8.70	10	103	61	40	-8.7
8.80	10	103	61	40	-8.8
8.90	10	103	61	40	-8.9
9.00	10	103	61	40	-9
9.10	10	103	61	40	-9.1
9.20	10	103	61	40	-9.2
9.30	10	103	61	40	-9.3
9.40	10	103	61	40	-9.4
9.50	10	103	61	40	-9.5
9.55	10	103	61	40	-9.55
9.60	10	103	61	40	-9.6
9.70	10	103	61	40	-9.7
9.80	10	103	61	40	-9.8
9.90	10	103	61	40	-9.9
10.00	10	103	61	40	-10
10.10	12	118	71	45	-10.1
10.20	12	118	71	45	-10.2
10.30	12	118	71	45	-10.3
10.40	12	118	71	45	-10.4
10.50	12	118	71	45	-10.5
10.60	12	118	71	45	-10.6
10.70	12	118	71	45	-10.7
10.80	12	118	71	45	-10.8
10.90	12	118	71	45	-10.9
11.00	12	118	71	45	-11
11.10	12	118	71	45	-11.1
11.20	12	118	71	45	-11.2
11.30	12	118	71	45	-11.3
11.40	12	118	71	45	-11.4
11.50	12	118	71	45	-11.5
11.55	12	118	71	45	-11.55
11.60	12	118	71	45	-11.6
11.70	12	118	71	45	-11.7
11.80	12	118	71	45	-11.8

Continued Solid Carbide Oil-Feed Drills ALPHA® 4



A3985TFL



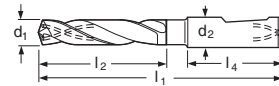
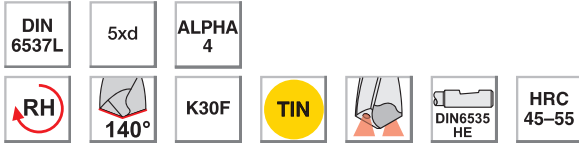
d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3985TFL...
11.90	12	118	71	45	-11.9
12.00	12	118	71	45	-12
12.10	14	124	77	45	-12.1
12.20	14	124	77	45	-12.2
12.25	14	124	77	45	-12.25
12.30	14	124	77	45	-12.3
12.40	14	124	77	45	-12.4
12.50	14	124	77	45	-12.5
12.60	14	124	77	45	-12.6
12.70	14	124	77	45	-12.7
12.75	14	124	77	45	-12.75
12.80	14	124	77	45	-12.8
12.90	14	124	77	45	-12.9
13.00	14	124	77	45	-13
13.10	14	124	77	45	-13.1
13.20	14	124	77	45	-13.2
13.30	14	124	77	45	-13.3
13.40	14	124	77	45	-13.4
13.50	14	124	77	45	-13.5
13.60	14	124	77	45	-13.6
13.70	14	124	77	45	-13.7
13.80	14	124	77	45	-13.8
13.90	14	124	77	45	-13.9
14.00	14	124	77	45	-14
14.10	16	133	83	48	-14.1
14.20	16	133	83	48	-14.2
14.30	16	133	83	48	-14.3
14.40	16	133	83	48	-14.4
14.50	16	133	83	48	-14.5
14.60	16	133	83	48	-14.6
14.70	16	133	83	48	-14.7
14.75	16	133	83	48	-14.75
14.80	16	133	83	48	-14.8
14.90	16	133	83	48	-14.9
15.00	16	133	83	48	-15
15.10	16	133	83	48	-15.1
15.20	16	133	83	48	-15.2
15.30	16	133	83	48	-15.3
15.40	16	133	83	48	-15.4
15.50	16	133	83	48	-15.5
15.60	16	133	83	48	-15.6
15.70	16	133	83	48	-15.7
15.80	16	133	83	48	-15.8
15.90	16	133	83	48	-15.9
16.00	16	133	83	48	-16
16.10	18	143	93	48	-16.1
16.20	18	143	93	48	-16.2
16.30	18	143	93	48	-16.3

d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3985TFL...
16.40	18	143	93	48	-16.4
16.50	18	143	93	48	-16.5
16.60	18	143	93	48	-16.6
16.70	18	143	93	48	-16.7
16.75	18	143	93	48	-16.75
16.80	18	143	93	48	-16.8
16.90	18	143	93	48	-16.9
17.00	18	143	93	48	-17
17.10	18	143	93	48	-17.1
17.20	18	143	93	48	-17.2
17.30	18	143	93	48	-17.3
17.40	18	143	93	48	-17.4
17.50	18	143	93	48	-17.5
17.60	18	143	93	48	-17.6
17.70	18	143	93	48	-17.7
17.80	18	143	93	48	-17.8
17.90	18	143	93	48	-17.9
18.00	18	143	93	48	-18
18.10	20	153	101	50	-18.1
18.20	20	153	101	50	-18.2
18.30	20	153	101	50	-18.3
18.40	20	153	101	50	-18.4
18.50	20	153	101	50	-18.5
18.60	20	153	101	50	-18.6
18.70	20	153	101	50	-18.7
18.80	20	153	101	50	-18.8
18.90	20	153	101	50	-18.9
19.00	20	153	101	50	-19
19.10	20	153	101	50	-19.1
19.20	20	153	101	50	-19.2
19.30	20	153	101	50	-19.3
19.40	20	153	101	50	-19.4
19.50	20	153	101	50	-19.5
19.60	20	153	101	50	-19.6
19.70	20	153	101	50	-19.7
19.80	20	153	101	50	-19.8
19.90	20	153	101	50	-19.9
20.00	20	153	101	50	-20
20.50	25	166	108	56	-20.5
21.00	25	166	108	56	-21
21.50	25	166	108	56	-21.5
22.00	25	166	108	56	-22
22.50	25	173	115	56	-22.5
23.00	25	173	115	56	-23
23.50	25	173	115	56	-23.5
24.00	25	173	115	56	-24
24.50	25	180	122	56	-24.5
25.00	25	180	122	56	-25

Solid Carbide Oil-Feed Drills ALPHA® 4

A3985TIN

Application: Solid Carbide High Performance Drill, preferably used for Steel and Cast Iron materials, incl. austenitic Stainless Steels and Heat-Resistant Steels, also for Non-Ferrous Metals such as Aluminum-, Copper-, Zinc- and Magnesium Alloys.



d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3985TIN...
3.00	6	66	28	36	-3
3.10	6	66	28	36	-3.1
3.20	6	66	28	36	-3.2
○ 3.25	6	66	28	36	-3.25
3.30	6	66	28	36	-3.3
3.40	6	66	28	36	-3.4
3.50	6	66	28	36	-3.5
3.60	6	66	28	36	-3.6
3.70	6	66	28	36	-3.7
3.80	6	74	36	36	-3.8
3.90	6	74	36	36	-3.9
4.00	6	74	36	36	-4
4.10	6	74	36	36	-4.1
4.20	6	74	36	36	-4.2
4.30	6	74	36	36	-4.3
4.40	6	74	36	36	-4.4
4.50	6	74	36	36	-4.5
4.60	6	74	36	36	-4.6
4.65	6	74	36	36	-4.65
4.70	6	74	36	36	-4.7
4.80	6	82	44	36	-4.8
4.90	6	82	44	36	-4.9
5.00	6	82	44	36	-5
5.10	6	82	44	36	-5.1
5.20	6	82	44	36	-5.2
5.30	6	82	44	36	-5.3
5.40	6	82	44	36	-5.4
5.50	6	82	44	36	-5.5
5.55	6	82	44	36	-5.55
5.60	6	82	44	36	-5.6
5.70	6	82	44	36	-5.7
5.80	6	82	44	36	-5.8
5.90	6	82	44	36	-5.9
6.00	6	82	44	36	-6
6.10	8	91	53	36	-6.1
6.20	8	91	53	36	-6.2
6.30	8	91	53	36	-6.3
6.40	8	91	53	36	-6.4
6.50	8	91	53	36	-6.5
6.60	8	91	53	36	-6.6
6.70	8	91	53	36	-6.7
6.80	8	91	53	36	-6.8
6.90	8	91	53	36	-6.9
7.00	8	91	53	36	-7
7.10	8	91	53	36	-7.1
7.20	8	91	53	36	-7.2
7.30	8	91	53	36	-7.3
7.40	8	91	53	36	-7.4

d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3985TIN...
7.50	8	91	53	36	-7.5
○ 7.60	8	91	53	36	-7.6
7.80	8	91	53	36	-7.8
7.90	8	91	53	36	-7.9
8.00	8	91	53	36	-8
8.10	10	103	61	40	-8.1
8.20	10	103	61	40	-8.2
8.30	10	103	61	40	-8.3
8.40	10	103	61	40	-8.4
8.50	10	103	61	40	-8.5
8.60	10	103	61	40	-8.6
8.70	10	103	61	40	-8.7
8.80	10	103	61	40	-8.8
○ 8.90	10	103	61	40	-8.9
9.00	10	103	61	40	-9
○ 9.10	10	103	61	40	-9.1
9.20	10	103	61	40	-9.2
9.30	10	103	61	40	-9.3
○ 9.40	10	103	61	40	-9.4
9.50	10	103	61	40	-9.5
9.60	10	103	61	40	-9.6
9.70	10	103	61	40	-9.7
9.80	10	103	61	40	-9.8
○ 9.90	10	103	61	40	-9.9
10.00	10	103	61	40	-10
10.10	12	118	71	45	-10.1
10.20	12	118	71	45	-10.2
10.30	12	118	71	45	-10.3
10.40	12	118	71	45	-10.4
10.50	12	118	71	45	-10.5
○ 10.60	12	118	71	45	-10.6
10.80	12	118	71	45	-10.8
○ 10.90	12	118	71	45	-10.9
11.00	12	118	71	45	-11
11.10	12	118	71	45	-11.1
11.20	12	118	71	45	-11.2
○ 11.40	12	118	71	45	-11.4
11.50	12	118	71	45	-11.5
○ 11.60	12	118	71	45	-11.6
11.70	12	118	71	45	-11.7
11.80	12	118	71	45	-11.8
○ 11.90	12	118	71	45	-11.9
12.00	12	118	71	45	-12
12.10	14	124	77	45	-12.1
12.20	14	124	77	45	-12.2
○ 12.25	14	124	77	45	-12.25
12.30	14	124	77	45	-12.3
○ 12.40	14	124	77	45	-12.4

○ = Available as long as stock exists. Recommended substitute tool: A3985TFL.

Continued Solid Carbide Oil-Feed Drills ALPHA® 4

A3985TIN



d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3985TIN...	d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A3985TIN...
12.50	14	124	77	45	-12.5	○ 16.20	18	143	93	48	-16.2
12.60	14	124	77	45	-12.6	○ 16.30	18	143	93	48	-16.3
12.70	14	124	77	45	-12.7	○ 16.40	18	143	93	48	-16.4
○ 12.75	14	124	77	45	-12.75	○ 16.50	18	143	93	48	-16.5
○ 12.80	14	124	77	45	-12.8	○ 16.60	18	143	93	48	-16.6
○ 12.90	14	124	77	45	-12.9	○ 16.75	18	143	93	48	-16.75
13.00	14	124	77	45	-13	○ 16.80	18	143	93	48	-16.8
○ 13.10	14	124	77	45	-13.1	○ 16.90	18	143	93	48	-16.9
○ 13.20	14	124	77	45	-13.2	○ 17.00	18	143	93	48	-17
13.30	14	124	77	45	-13.3	○ 17.10	18	143	93	48	-17.1
○ 13.40	14	124	77	45	-13.4	○ 17.20	18	143	93	48	-17.2
13.50	14	124	77	45	-13.5	○ 17.30	18	143	93	48	-17.3
○ 13.60	14	124	77	45	-13.6	○ 17.40	18	143	93	48	-17.4
○ 13.70	14	124	77	45	-13.7	○ 17.50	18	143	93	48	-17.5
○ 13.80	14	124	77	45	-13.8	○ 17.60	18	143	93	48	-17.6
○ 13.90	14	124	77	45	-13.9	○ 17.70	18	143	93	48	-17.7
14.00	14	124	77	45	-14	○ 17.80	18	143	93	48	-17.8
○ 14.10	16	133	83	48	-14.1	○ 18.00	18	143	93	48	-18
○ 14.20	16	133	83	48	-14.2	○ 18.10	20	153	101	50	-18.1
○ 14.30	16	133	83	48	-14.3	○ 18.20	20	153	101	50	-18.2
○ 14.40	16	133	83	48	-14.4	○ 18.30	20	153	101	50	-18.3
14.50	16	133	83	48	-14.5	○ 18.40	20	153	101	50	-18.4
○ 14.70	16	133	83	48	-14.7	○ 18.50	20	153	101	50	-18.5
○ 14.75	16	133	83	48	-14.75	○ 18.70	20	153	101	50	-18.7
○ 14.80	16	133	83	48	-14.8	○ 18.80	20	153	101	50	-18.8
15.00	16	133	83	48	-15	○ 18.90	20	153	101	50	-18.9
○ 15.10	16	133	83	48	-15.1	○ 19.00	20	153	101	50	-19
○ 15.20	16	133	83	48	-15.2	○ 19.20	20	153	101	50	-19.2
○ 15.30	16	133	83	48	-15.3	○ 19.40	20	153	101	50	-19.4
15.50	16	133	83	48	-15.5	○ 19.50	20	153	101	50	-19.5
○ 15.60	16	133	83	48	-15.6	○ 19.60	20	153	101	50	-19.6
○ 15.70	16	133	83	48	-15.7	○ 19.70	20	153	101	50	-19.7
○ 15.80	16	133	83	48	-15.8	○ 19.80	20	153	101	50	-19.8
○ 15.90	16	133	83	48	-15.9	○ 19.90	20	153	101	50	-19.9
16.00	16	133	83	48	-16	○ 20.00	20	153	101	50	-20
○ 16.10	18	143	93	48	-16.1						

○ = Available as long as stock exists. Recommended substitute tool: A3985TFL.

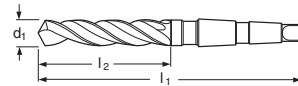
Carbide Tipped Taper Shank Drills

A5971

Application: Application with no requirements for high cutting data, mainly in synthetic materials with fillers, hard cast materials, hard bronzes etc.

Remarks: Carbide tipped, body: HSS

DIN
8041



d ₁ mm h8	l ₁ mm	l ₂ mm	MT	Ordering code A5971...
8.0	140	50	1	-8
8.5	140	50	1	-8.5
9.0	140	50	1	-9
9.5	140	50	1	-9.5
10.0	140	50	1	-10
10.5	140	50	1	-10.5
11.0	140	50	1	-11
11.5	146	56	1	-11.5
12.0	146	56	1	-12
12.5	146	56	1	-12.5
13.0	146	56	1	-13
13.5	168	63	2	-13.5
14.0	168	63	2	-14
14.5	168	63	2	-14.5
15.0	168	63	2	-15
15.5	175	70	2	-15.5
16.0	175	70	2	-16
16.5	175	70	2	-16.5
17.0	175	70	2	-17
17.5	185	80	2	-17.5
18.0	185	80	2	-18

d ₁ mm h8	l ₁ mm	l ₂ mm	MT	Ordering code A5971...
18.5	185	80	2	-18.5
19.0	185	80	2	-19
19.5	215	90	3	-19.5
20.0	215	90	3	-20
21.0	215	90	3	-21
22.0	215	90	3	-22
23.0	225	100	3	-23
24.0	225	100	3	-24
25.0	225	100	3	-25
26.0	260	110	4	-26
27.0	260	110	4	-27
28.0	260	110	4	-28
29.0	275	125	4	-29
30.0	275	125	4	-30
31.0	275	125	4	-31
32.0	275	125	4	-32

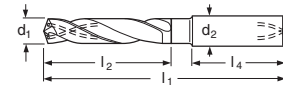
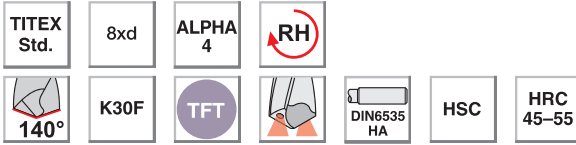
Solid Carbide Oil-Feed Drills ALPHA® 4 XD8



A6485TFT

Application: Solid Carbide High Performance Drill, preferably used for Steel and Cast Iron materials, incl. austenitic Stainless Steels and Heat-Resistant Steels, also for Non-Ferrous Metals such as Aluminum-, Copper-, Zinc- and Magnesium Alloys. Coated with TINAL

FUTURA TOP (TFT) for excellent chip transportation. Gives process reliability at extended drilling depths. *Deep hole drilling up to 8xd without pecks or dwells.*



d ₁ mm m7	Ø Inches/ Wire-Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A6485TFT...
3.000		6	74	34	36	-3
3.100		6	74	34	36	-3.1
3.175	1/8 IN	6	74	34	36	-1/8IN
3.200		6	74	34	36	-3.2
3.300		6	74	34	36	-3.3
3.400		6	74	34	36	-3.4
3.500		6	74	34	36	-3.5
3.572	9/64 IN	6	74	34	36	-9/64IN
3.600		6	74	34	36	-3.6
3.700		6	74	34	36	-3.7
3.800		6	85	45	36	-3.8
3.900		6	85	45	36	-3.9
3.969	5/32 IN	6	85	45	36	-5/32IN
4.000		6	85	45	36	-4
4.100		6	85	45	36	-4.1
4.200		6	85	45	36	-4.2
4.300		6	85	45	36	-4.3
4.366	11/64 IN	6	85	45	36	-11/64IN
4.400		6	85	45	36	-4.4
4.500		6	85	45	36	-4.5
4.600		6	85	45	36	-4.6
4.700		6	85	45	36	-4.7
4.763	3/16 IN	6	97	57	36	-3/16IN
4.800		6	97	57	36	-4.8
4.900		6	97	57	36	-4.9
5.000		6	97	57	36	-5
5.100		6	97	57	36	-5.1
5.159	13/64 IN	6	97	57	36	-13/64IN
5.200		6	97	57	36	-5.2
5.300		6	97	57	36	-5.3
5.400		6	97	57	36	-5.4
5.500		6	97	57	36	-5.5
5.556	7/32 IN	6	97	57	36	-7/32IN
5.600		6	97	57	36	-5.6
5.700		6	97	57	36	-5.7
5.800		6	97	57	36	-5.8
5.900		6	97	57	36	-5.9
5.953	15/64 IN	6	97	57	36	-15/64IN
6.000		6	97	57	36	-6
6.100		8	106	66	36	-6.1
6.200		8	106	66	36	-6.2
6.300		8	106	66	36	-6.3
6.350	1/4 IN	8	106	66	36	-1/4IN
6.400		8	106	66	36	-6.4
6.500		8	106	66	36	-6.5
6.600		8	106	66	36	-6.6
6.700		8	106	66	36	-6.7
6.747	17/64 IN	8	106	66	36	-17/64IN

Continued Solid Carbide Oil-Feed Drills ALPHA® 4 XD8



A6485TFT



d ₁ mm m7	Ø Inches/ Wire-Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A6485TFT...
6.800		8	106	66	36	-6.8
6.900		8	106	66	36	-6.9
7.000		8	106	66	36	-7
7.100	9/32 IN	8	116	76	36	-7.1
7.144		8	116	76	36	-9/32IN
7.200		8	116	76	36	-7.2
7.300		8	116	76	36	-7.3
7.400		8	116	76	36	-7.4
7.500		8	116	76	36	-7.5
7.541	19/64 IN	8	116	76	36	-19/64IN
7.600		8	116	76	36	-7.6
7.700		8	116	76	36	-7.7
7.800		8	116	76	36	-7.8
7.900		8	116	76	36	-7.9
7.938		8	116	76	36	-5/16IN
8.000	5/16 IN	8	116	76	36	-8
8.100		10	139	95	40	-8.1
8.200		10	139	95	40	-8.2
8.300	21/64 IN	10	139	95	40	-8.3
8.334		10	139	95	40	-21/64IN
8.400		10	139	95	40	-8.4
8.500		10	139	95	40	-8.5
8.600		10	139	95	40	-8.6
8.700		10	139	95	40	-8.7
8.731	11/32 IN	10	139	95	40	-11/32IN
8.800		10	139	95	40	-8.8
8.900		10	139	95	40	-8.9
9.000	23/64 IN	10	139	95	40	-9
9.100		10	139	95	40	-9.1
9.128		10	139	95	40	-23/64IN
9.200		10	139	95	40	-9.2
9.300		10	139	95	40	-9.3
9.400		10	139	95	40	-9.4
9.500	3/8 IN	10	139	95	40	-9.5
9.525		10	139	95	40	-3/8IN
9.600		10	139	95	40	-9.6
9.700		10	139	95	40	-9.7
9.800		10	139	95	40	-9.8
9.900		10	139	95	40	-9.9
9.922	25/64 IN	10	139	95	40	-25/64IN
10.000		10	139	95	40	-10
10.100		12	163	114	45	-10.1
10.200	13/32 IN	12	163	114	45	-10.2
10.300		12	163	114	45	-10.3
10.319		12	163	114	45	-13/32IN
10.400		12	163	114	45	-10.4
10.500		12	163	114	45	-10.5
10.600		12	163	114	45	-10.6
10.700	27/64 IN	12	163	114	45	-10.7
10.716		12	163	114	45	-27/64IN
10.800		12	163	114	45	-10.8
10.900		12	163	114	45	-10.9
11.000		12	163	114	45	-11
11.100		12	163	114	45	-11.1
11.113	7/16 IN	12	163	114	45	-7/16IN
11.200		12	163	114	45	-11.2
11.300		12	163	114	45	-11.3

Continued Solid Carbide Oil-Feed Drills ALPHA® 4 XD8



A6485TFT



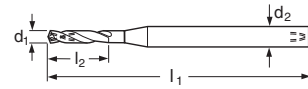
d ₁ mm m7	Ø Inches/ Wire-Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A6485TFT...
11.400		12	163	114	45	-11.4
11.500		12	163	114	45	-11.5
11.509	29/64 IN	12	163	114	45	-29/64IN
11.600		12	163	114	45	-11.6
11.700		12	163	114	45	-11.7
11.800		12	163	114	45	-11.8
11.900		12	163	114	45	-11.9
11.906	15/32 IN	12	163	114	45	-15/32IN
12.000		12	163	114	45	-12
12.303	31/64 IN	14	182	133	45	-31/64IN
12.500		14	182	133	45	-12.5
12.700	1/2 IN	14	182	133	45	-1/2IN
13.000		14	182	133	45	-13
13.494	17/32 IN	14	182	133	45	-17/32IN
13.500		14	182	133	45	-13.5
14.000		14	182	133	45	-14
14.288	9/16 IN	16	204	152	48	-9/16IN
14.500		16	204	152	48	-14.5
15.000		16	204	152	48	-15
15.500		16	204	152	48	-15.5
15.875	5/8 IN	16	204	152	48	-5/8IN
16.000		16	204	152	48	-16
16.500		18	223	171	48	-16.5
17.000		18	223	171	48	-17
17.500		18	223	171	48	-17.5
18.000		18	223	171	48	-18
18.500		20	244	190	50	-18.5
19.000		20	244	190	50	-19
19.050	3/4 IN	20	244	190	50	-3/4IN
19.500		20	244	190	50	-19.5
20.000		20	244	190	50	-20

Solid Carbide drill ALPHA 4 PLUS Micro 8xd



A6488TML

Application: High performance drill for small holes with a wide application range. Especially suited for steels including stainless steels, cast iron materials, non-ferrous metals and Ni-base alloys.



d ₁ mm m7	Ø Inches/ Wire- Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	Ordering code A6488TML...
0.750		3	55	10	-0.75
0.800		3	55	10	-0.8
0.880		3	55	10	-0.88
0.900		3	55	10	-0.9
0.950		3	55	10	-0.95
1.000		3	55	15	-1
1.080		3	55	15	-1.08
1.100		3	55	15	-1.1
1.191	3/64 IN	3	55	15	-3/64IN
1.200		3	55	15	-1.2
1.250		3	55	15	-1.25
1.300		3	55	15	-1.3
1.400		3	55	15	-1.4
1.450		3	55	15	-1.45
1.500		3	68	20	-1.5
1.588	1/16 IN	3	68	20	-1/16IN
1.600		3	68	20	-1.6
1.650		3	68	20	-1.65

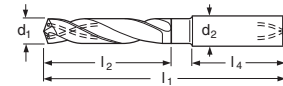
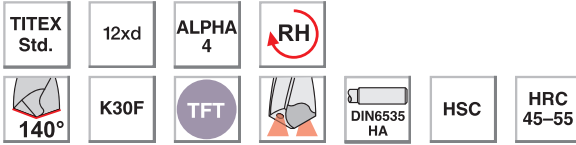
d ₁ mm m7	Ø Inches/ Wire- Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	Ordering code A6488TML...
1.700		3	68	20	-1.7
1.800		3	68	20	-1.8
1.820		3	68	20	-1.82
1.900		3	68	20	-1.9
2.000		3	74	25	-2
2.050		3	74	25	-2.05
2.100		3	74	25	-2.1
2.200		3	74	25	-2.2
2.300		3	74	25	-2.3
2.381	3/32 IN	3	74	25	-3/32IN
2.400		3	74	25	-2.4
2.500		3	81	30	-2.5
2.600		3	81	30	-2.6
2.700		3	81	30	-2.7
2.778	7/64 IN	3	81	30	-7/64IN
2.800		3	81	30	-2.8
2.900		3	81	30	-2.9

Solid Carbide Oil Feed Drills ALPHA 4 XD12



A6585TFT

Application: High performance drill for deep holes with a wide application range. Especially suited for steels including stainless steels, cast iron materials, non-ferrous metals. With 4 margins for excellent hole quality and alignment. With special geometry and low friction surface. For deep holes up to 12x dia without pecking.



d ₁ mm m7	Ø Inches/ Wire-Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A6585TFT...
3.000		6	92	54	36	-3
3.100		6	92	54	36	-3.1
3.175	1/8 IN	6	92	54	36	-1/8IN
3.200		6	92	54	36	-3.2
3.300		6	92	54	36	-3.3
3.400		6	92	54	36	-3.4
3.500		6	92	54	36	-3.5
3.572	9/64 IN	6	92	54	36	-9/64IN
3.600		6	92	54	36	-3.6
3.700		6	92	54	36	-3.7
3.800		6	102	64	36	-3.8
3.900		6	102	64	36	-3.9
3.969	5/32 IN	6	102	64	36	-5/32IN
4.000		6	102	64	36	-4
4.100		6	102	64	36	-4.1
4.200		6	102	64	36	-4.2
4.300		6	102	64	36	-4.3
4.366	11/64 IN	6	102	64	36	-11/64IN
4.400		6	102	64	36	-4.4
4.500		6	102	64	36	-4.5
4.600		6	102	64	36	-4.6
4.700		6	102	64	36	-4.7
4.763	3/16 IN	6	121	83	36	-3/16IN
4.800		6	121	83	36	-4.8
4.900		6	121	83	36	-4.9
5.000		6	121	83	36	-5
5.100		6	121	83	36	-5.1
5.159	13/64 IN	6	121	83	36	-13/64IN
5.200		6	121	83	36	-5.2
5.300		6	121	83	36	-5.3
5.400		6	121	83	36	-5.4
5.500		6	121	83	36	-5.5
5.550		6	121	83	36	-5.55
5.556	7/32 IN	6	121	83	36	-7/32IN
5.600		6	121	83	36	-5.6
5.700		6	121	83	36	-5.7
5.800		6	121	83	36	-5.8
5.900		6	121	83	36	-5.9
6.000		6	121	83	36	-6
6.100		8	148	110	36	-6.1
6.200		8	148	110	36	-6.2
6.300		8	148	110	36	-6.3
6.350	1/4 IN	8	148	110	36	-1/4IN
6.400		8	148	110	36	-6.4
6.500		8	148	110	36	-6.5
6.600		8	148	110	36	-6.6
6.700		8	148	110	36	-6.7
6.747	17/64 IN	8	148	110	36	-17/64IN

Continued Solid Carbide Oil Feed Drills ALPHA 4 XD12



A6585TFT



d ₁ mm m7	Ø Inches/ Wire-Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A6585TFT...
6.800		8	148	110	36	-6.8
6.900		8	148	110	36	-6.9
7.000		8	148	110	36	-7
7.100	9/32 IN	8	148	110	36	-7.1
7.144		8	148	110	36	-9/32IN
7.200		8	148	110	36	-7.2
7.300		8	148	110	36	-7.3
7.400		8	148	110	36	-7.4
7.500		8	148	110	36	-7.5
7.541	19/64 IN	8	148	110	36	-19/64IN
7.800		8	148	110	36	-7.8
7.900		8	148	110	36	-7.9
7.938	5/16 IN	8	148	110	36	-5/16IN
8.000		8	148	110	36	-8
8.100		10	180	138	40	-8.1
8.200		10	180	138	40	-8.2
8.300		10	180	138	40	-8.3
8.400		10	180	138	40	-8.4
8.500		10	180	138	40	-8.5
8.600		10	180	138	40	-8.6
8.700		10	180	138	40	-8.7
8.731	11/32 IN	10	180	138	40	-11/32IN
8.800		10	180	138	40	-8.8
9.000		10	180	138	40	-9
9.128	23/64 IN	10	180	138	40	-23/64IN
9.200		10	180	138	40	-9.2
9.300		10	180	138	40	-9.3
9.500	3/8 IN	10	180	138	40	-9.5
9.525		10	180	138	40	-3/8IN
9.600		10	180	138	40	-9.6
9.700		10	180	138	40	-9.7
9.800		10	180	138	40	-9.8
9.922		10	180	138	40	-25/64IN
10.000		10	180	138	40	-10
10.100		12	206	158	45	-10.1
10.200		12	206	158	45	-10.2
10.300	13/32 IN	12	206	158	45	-10.3
10.319		12	206	158	45	-13/32IN
10.400		12	206	158	45	-10.4
10.500	27/64 IN	12	206	158	45	-10.5
10.716		12	206	158	45	-27/64IN
10.800		12	206	158	45	-10.8
11.000	7/16 IN	12	206	158	45	-11
11.100		12	206	158	45	-11.1
11.113		12	206	158	45	-7/16IN
11.200		12	206	158	45	-11.2
11.500		12	206	158	45	-11.5
11.509		12	206	158	45	-29/64IN
11.700	15/32 IN	12	206	158	45	-11.7
11.800		12	206	158	45	-11.8
11.906		12	206	158	45	-15/32IN
12.000		12	206	158	45	-12
12.100		14	230	182	45	-12.1
12.200		14	230	182	45	-12.2
12.300	31/64 IN	14	230	182	45	-12.3
12.303		14	230	182	45	-31/64IN
12.500		14	230	182	45	-12.5

Continued Solid Carbide Oil Feed Drills ALPHA 4 XD12



A6585TFT

d ₁ mm m7	Ø Inches/ Wire-Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A6585TFT...
12.600	1/2 IN	14	230	182	45	-12.6
12.700		14	230	182	45	-1/2IN
13.000		14	230	182	45	-13
13.494	17/32 IN	14	230	182	45	-17/32IN
13.500		14	230	182	45	-13.5
14.000		14	230	182	45	-14
14.288	9/16 IN	16	260	208	48	-9/16IN
14.500		16	260	208	48	-14.5
15.000		16	260	208	48	-15
15.500	5/8 IN	16	260	208	48	-15.5
15.875		16	260	208	48	-5/8IN
16.000		16	260	208	48	-16
16.500		18	285	234	48	-16.5
17.000		18	285	234	48	-17
17.500		18	285	234	48	-17.5
18.000		18	285	234	48	-18
18.500		20	310	258	50	-18.5
19.000		20	310	258	50	-19
19.500		20	310	258	50	-19.5
20.000		20	310	258	50	-20

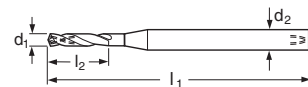
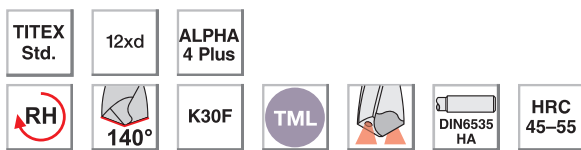


Solid Carbide drill ALPHA 4 PLUS Micro 12xd



A6588TML

Application: High performance drill for small holes with a wide application range. Especially suited for steels including stainless steels, cast iron materials, non-ferrous metals and Ni-base alloys.



d ₁ mm m7	Ø Inches/ Wire- Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	Ordering code A6588TML...
1.000	3/64 IN	3	55	21	-1
1.100		3	55	21	-1.1
1.191		3	55	21	-3/64IN
1.200	1/16 IN	3	55	21	-1.2
1.300		3	55	21	-1.3
1.400		3	55	21	-1.4
1.500		3	68	28	-1.5
1.588		3	68	28	-1/16IN
1.600		3	68	28	-1.6
1.700		3	68	28	-1.7
1.800		3	68	28	-1.8
1.900		3	68	28	-1.9

d ₁ mm m7	Ø Inches/ Wire- Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	Ordering code A6588TML...
2.000		3	74	35	-2
2.100		3	74	35	-2.1
2.200		3	74	35	-2.2
2.300	3/32 IN	3	74	35	-2.3
2.381		3	74	35	-3/32IN
2.400		3	74	35	-2.4
2.500		3	81	42	-2.5
2.600		3	81	42	-2.6
2.700		3	81	42	-2.7
2.778	7/64 IN	3	81	42	-7/64IN
2.800		3	81	42	-2.8
2.900		3	81	42	-2.9



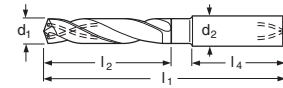
Solid Carbide Oil Feed Drill ALPHA 4 XD16



A6685TFP

Application: High performance drill for deep holes with a wide application range. Especially suited for steels including stainless steels, cast iron materials, non-ferrous metals. With 4 margins for excellent hole quality and alignment. With special geometry and low friction surface. For deep holes up to 16x dia without pecking.

TITEX Std.	16xd	ALPHA 4	RH
140°	K30F	TFP	DIN6535 HA
			HSC
			HRC 45-55



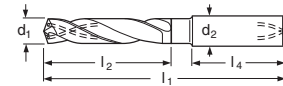
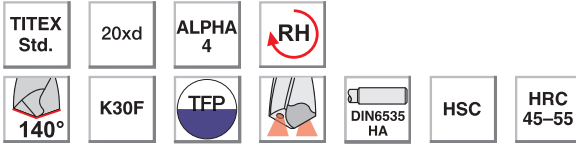
d ₁ mm m7	Ø Inches/ Wire-Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A6685TFP...
3.000		6	100	57	36	-3
3.175	1/8 IN	6	120	78	36	-1/8IN
4.000		6	120	78	36	-4
4.500		6	140	100	36	-4.5
5.000		6	140	100	36	-5
5.500		6	150	110	36	-5.5
6.000		6	160	120	36	-6
6.350	1/4 IN	8	175	135	36	-1/4IN
6.500		8	175	135	36	-6.5
7.000		8	175	135	36	-7
8.000		8	192	152	36	-8
8.500		10	206	162	40	-8.5
9.000		10	206	162	40	-9
9.525	3/8 IN	10	224	180	40	-3/8IN
10.000		10	224	180	40	-10
11.000		12	247	198	45	-11
12.000		12	265	216	45	-12

Solid Carbide Oil Feed Drill ALPHA 4 XD20



A6785TFP

Application: High performance drill for deep holes with a wide application range. Especially suited for steels including stainless steels, cast iron materials, non-ferrous metals. With 4 margins for excellent hole quality and alignment. With special geometry and low friction surface. For deep holes up to 20x dia without pecking.



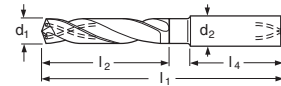
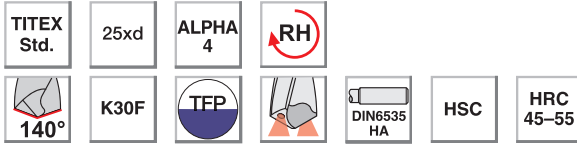
d ₁ mm m7	∅ Inches/ Wire-Gauge	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A6785TFP...
3.000		6	107	65	36	-3
3.175	1/8 IN	6	134	92	36	-1/8IN
4.000		6	134	92	36	-4
4.500		6	158	118	36	-4.5
5.000		6	158	118	36	-5
5.500		6	170	132	36	-5.5
6.000		6	182	144	36	-6
6.350	1/4 IN	8	200	162	36	-1/4IN
6.500		8	200	162	36	-6.5
7.000		8	200	162	36	-7
8.000		8	222	184	36	-8
8.500		10	240	198	40	-8.5
9.000		10	240	198	40	-9
9.525	3/8 IN	10	262	220	40	-3/8IN
10.000		10	262	220	40	-10
11.000		12	289	242	45	-11
12.000		12	311	264	45	-12

Solid Carbide Oil Feed Drill ALPHA 4 XD25



A6885TFP

Application: High performance drill for deep holes with a wide application range. Especially suited for steels including stainless steels, cast iron materials, non-ferrous metals. With 4 margins for excellent hole quality and alignment. With special geometry and low friction surface. For deep holes up to 25x dia without pecking.



d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A6885TFP...
4.00	6	156	114	36	-4
4.50	6	185	145	36	-4.5
5.00	6	185	145	36	-5
5.50	6	200	160	36	-5.5
6.00	6	214	174	36	-6
6.35	8	234	194	36	-1/4IN

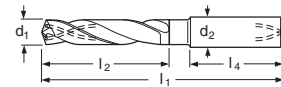
d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A6885TFP...
6.50	8	234	194	36	-6.5
7.00	8	234	194	36	-7
8.00	8	260	220	36	-8
8.50	10	289	243	40	-8.5

Solid Carbide Oil Feed Drill ALPHA 4 XD30



A6985TFP

Application: High performance drill for deep holes with a wide application range. Especially suited for steels including stainless steels, cast iron materials, non-ferrous metals. With 4 margins for excellent hole quality and alignment. With special geometry and low friction surface. For deep holes up to 30x dia without pecking.



d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A6985TFP...
4.00	6	174	133	36	-4
4.50	6	208	169	36	-4.5
5.00	6	208	169	36	-5
5.50	6	225	187	36	-5.5
6.00	6	242	204	36	-6
6.35	8	268	228	36	-1/4IN

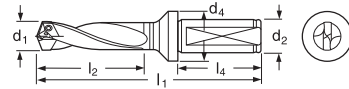
d ₁ mm m7	d ₂ mm h6	l ₁ mm	l ₂ mm max.	l ₄ mm	Ordering code A6985TFP...
6.50	8	268	228	36	-6.5
7.00	8	268	228	36	-7
8.00	8	294	256	36	-8
8.50	10	330	287	40	-8.5

ALPHA[®] POINT Drill body 3xd



A811XHNI

Application: Drill body for ALPHA POINT modular drilling system with high wear-resistance provided by special coating



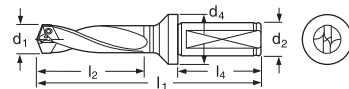
Nominal size	For drill point	d ₂ mm	d ₄ mm	l ₁ mm	l ₂ mm	l ₄ mm	Ordering code A811XHNI...
12	12.00...12.99	20	30	118	48	50	-12
13	13.00...13.99	20	30	122	52	50	-13
14	14.00...14.99	20	30	126	56	50	-14
15	15.00...15.99	20	30	130	60	50	-15
16	16.00...16.99	20	30	134	64	50	-16
17	17.00...17.99	20	30	138	68	50	-17
18	18.00...18.99	20	30	142	72	50	-18
19	19.00...19.99	20	30	146	76	50	-19
20	20.00...20.99	20	30	150	80	50	-20
21	21.00...21.99	20	30	154	84	56	-21
22	22.00...23.99	25	35	165	88	56	-22
24	24.00...25.99	25	35	173	96	56	-24
26	26.00...27.99	25	35	181	104	60	-26
28	28.00...29.99	32	42	194	112	60	-28
30	30.00...31.99	32	42	202	120	60	-30

ALPHA[®] POINT Drill body 5xd



A821XHNI

Application: Drill body for ALPHA POINT modular drilling system with high wear-resistance provided by special coating



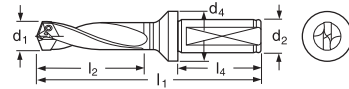
Nominal size	For drill point	d ₂ mm	d ₄ mm	l ₁ mm	l ₂ mm	l ₄ mm	Ordering code A821XHNI...
12	12.00...12.99	20	30	142	72	50	-12
13	13.00...13.99	20	30	148	78	50	-13
14	14.00...14.99	20	30	154	84	50	-14
15	15.00...15.99	20	30	160	90	50	-15
16	16.00...16.99	20	30	166	96	50	-16
17	17.00...17.99	20	30	172	102	50	-17
18	18.00...18.99	20	30	178	108	50	-18
19	19.00...19.99	20	30	184	114	50	-19
20	20.00...20.99	20	30	190	120	50	-20
21	21.00...21.99	20	30	196	126	56	-21
22	22.00...23.99	25	35	209	132	56	-22
24	24.00...25.99	25	35	221	144	56	-24
26	26.00...27.99	25	35	233	156	60	-26
28	28.00...29.99	32	42	250	168	60	-28
30	30.00...31.99	32	42	262	180	60	-30

ALPHA® POINT Drill body 7xd



A831XHNI

Application: Drill body for ALPHA POINT modular drilling system with high wear-resistance provided by special coating



Nominal size	For drill point	d ₂ mm	d ₄ mm	l ₁ mm	l ₂ mm	l ₄ mm	Ordering code A831XHNI...
12	12.00...12.99	20	30	166	96	50	-12
13	13.00...13.99	20	30	174	104	50	-13
14	14.00...14.99	20	30	182	112	50	-14
15	15.00...15.99	20	30	190	120	50	-15
16	16.00...16.99	20	30	198	128	50	-16
17	17.00...17.99	20	30	206	136	50	-17
18	18.00...18.99	20	30	214	144	50	-18
19	19.00...19.99	20	30	222	152	50	-19
20	20.00...20.99	20	30	230	160	50	-20
21	21.00...21.99	20	30	238	168	56	-21
22	22.00...23.99	25	35	253	176	56	-22
24	24.00...25.99	25	35	269	192	56	-24
26	26.00...27.99	25	35	285	208	60	-26
28	28.00...29.99	32	42	306	224	60	-28
30	30.00...31.99	32	42	322	240	60	-30

ALPHA[®] POINT - drill points



AX195TIN



Application: Drill point for ALPHA POINT modular drilling system with high toughness for universal use in steels of lower to medium tensile strength and non-ferrous metals



d ₁ mm	ØInches/ Wire- Gauge	For drill body 3xd	For drill body 5xd	For drill body 7xd	Ordering code AX195TIN...
12.000		-12	-12	-12	-12
12.100		-12	-12	-12	-12.1
12.200		-12	-12	-12	-12.2
12.300		-12	-12	-12	-12.3
12.400		-12	-12	-12	-12.4
12.500		-12	-12	-12	-12.5
12.600		-12	-12	-12	-12.6
12.700		-12	-12	-12	-12.7
12.700	1/2IN	-12	-12	-12	-1/2IN
12.800		-12	-12	-12	-12.8
12.900		-12	-12	-12	-12.9
13.000		-13	-13	-13	-13
13.097	33/64IN	-13	-13	-13	-33/64IN
13.100		-13	-13	-13	-13.1
13.200		-13	-13	-13	-13.2
13.300		-13	-13	-13	-13.3
13.400		-13	-13	-13	-13.4
13.494	17/32IN	-13	-13	-13	-17/32IN
13.500		-13	-13	-13	-13.5
13.600		-13	-13	-13	-13.6
13.700		-13	-13	-13	-13.7
13.800		-13	-13	-13	-13.8
13.891	35/64IN	-13	-13	-13	-35/64IN
13.900		-13	-13	-13	-13.9
14.000		-14	-14	-14	-14
14.100		-14	-14	-14	-14.1
14.200		-14	-14	-14	-14.2
14.288	9/16IN	-14	-14	-14	-9/16IN
14.300		-14	-14	-14	-14.3
14.400		-14	-14	-14	-14.4
14.500		-14	-14	-14	-14.5
14.600		-14	-14	-14	-14.6
14.684	37/64IN	-14	-14	-14	-37/64IN
14.700		-14	-14	-14	-14.7
14.800		-14	-14	-14	-14.8
14.900		-14	-14	-14	-14.9
15.000		-15	-15	-15	-15
15.081	19/32IN	-15	-15	-15	-19/32IN
15.100		-15	-15	-15	-15.1
15.200		-15	-15	-15	-15.2
15.300		-15	-15	-15	-15.3
15.400		-15	-15	-15	-15.4
15.478	39/64IN	-15	-15	-15	-39/64IN
15.500		-15	-15	-15	-15.5
15.600		-15	-15	-15	-15.6
15.700		-15	-15	-15	-15.7
15.800		-15	-15	-15	-15.8
15.875	5/8IN	-15	-15	-15	-5/8IN

d ₁ mm	ØInches/ Wire- Gauge	For drill body 3xd	For drill body 5xd	For drill body 7xd	Ordering code AX195TIN...
15.900		-15	-15	-15	-15.9
16.000		-16	-16	-16	-16
16.272	41/64IN	-16	-16	-16	-41/64IN
16.500		-16	-16	-16	-16.5
16.669	21/32IN	-16	-16	-16	-21/32IN
16.700		-16	-16	-16	-16.7
16.800		-16	-16	-16	-16.8
17.000		-17	-17	-17	-17
17.066	43/64IN	-17	-17	-17	-43/64IN
17.463	11/16IN	-17	-17	-17	-11/16IN
17.500		-17	-17	-17	-17.5
17.700		-17	-17	-17	-17.7
17.800		-17	-17	-17	-17.8
17.859	45/64IN	-17	-17	-17	-45/64IN
18.000		-18	-18	-18	-18
18.256	23/32IN	-18	-18	-18	-23/32IN
18.500		-18	-18	-18	-18.5
18.653	47/64IN	-18	-18	-18	-47/64IN
18.700		-18	-18	-18	-18.7
18.800		-18	-18	-18	-18.8
19.000		-19	-19	-19	-19
19.050	3/4IN	-19	-19	-19	-3/4IN
19.200		-19	-19	-19	-19.2
19.447	49/64IN	-19	-19	-19	-49/64IN
19.500		-19	-19	-19	-19.5
19.700		-19	-19	-19	-19.7
19.800		-19	-19	-19	-19.8
19.844	25/32IN	-19	-19	-19	-25/32IN
20.000		-20	-20	-20	-20
20.241	51/64IN	-20	-20	-20	-51/64IN
20.500		-20	-20	-20	-20.5
20.638	13/16IN	-20	-20	-20	-13/16IN
21.000		-21	-21	-21	-21
21.431	27/32IN	-21	-21	-21	-27/32IN
21.500		-21	-21	-21	-21.5
22.000		-22	-22	-22	-22
22.225	7/8IN	-22	-22	-22	-7/8IN
22.500		-22	-22	-22	-22.5
23.000		-22	-22	-22	-23
23.019	29/32IN	-22	-22	-22	-29/32IN
23.500		-22	-22	-22	-23.5
23.813	15/16IN	-22	-22	-22	-15/16IN
24.000		-24	-24	-24	-24
24.500		-24	-24	-24	-24.5
24.606	31/32IN	-24	-24	-24	-31/32IN
25.000		-24	-24	-24	-25
25.400		-24	-24	-24	-25.4
25.400	1IN	-24	-24	-24	-1IN

Continued ALPHA® POINT - drill points



AX195TIN



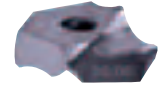
d ₁ mm	ØInches/ Wire- Gauge	For drill body 3xd	For drill body 5xd	For drill body 7xd	Ordering code AX195TIN...
25.500		-24	-24	-24	-25.5
26.000		-26	-26	-26	-26
26.500		-26	-26	-26	-26.5
27.000		-26	-26	-26	-27
27.500		-26	-26	-26	-27.5
28.000		-28	-28	-28	-28
28.500		-28	-28	-28	-28.5
29.000		-28	-28	-28	-29
29.500		-28	-28	-28	-29.5

d ₁ mm	ØInches/ Wire- Gauge	For drill body 3xd	For drill body 5xd	For drill body 7xd	Ordering code AX195TIN...
30.000		-30	-30	-30	-30
30.500		-30	-30	-30	-30.5
31.000		-30	-30	-30	-31
31.500		-30	-30	-30	-31.5
32.000		-30	-30	-30	-32

ALPHA® POINT - drill points



AX196TFL



Application: Drill Point for ALPHA POINT modular drilling system with high abrasive wear resistance mainly for use in cast iron materials.



d ₁ mm	ØInches/ Wire- Gauge	For drill body 3xd	For drill body 5xd	For drill body 7xd	Ordering code AX196TFL...
12.000		-12	-12	-12	-12
12.100		-12	-12	-12	-12.1
12.200		-12	-12	-12	-12.2
12.300		-12	-12	-12	-12.3
12.400		-12	-12	-12	-12.4
12.500		-12	-12	-12	-12.5
12.600		-12	-12	-12	-12.6
12.700		-12	-12	-12	-12.7
12.700	1/2IN	-12	-12	-12	-1/2IN
12.800		-12	-12	-12	-12.8
12.900		-12	-12	-12	-12.9
13.000		-13	-13	-13	-13
13.097	33/64IN	-13	-13	-13	-33/64IN
13.100		-13	-13	-13	-13.1
13.200		-13	-13	-13	-13.2
13.300		-13	-13	-13	-13.3
13.400		-13	-13	-13	-13.4
13.494	17/32IN	-13	-13	-13	-17/32IN
13.500		-13	-13	-13	-13.5
13.600		-13	-13	-13	-13.6
13.700		-13	-13	-13	-13.7
13.800		-13	-13	-13	-13.8
13.891	35/64IN	-13	-13	-13	-35/64IN
13.900		-13	-13	-13	-13.9
14.000		-14	-14	-14	-14
14.100		-14	-14	-14	-14.1
14.200		-14	-14	-14	-14.2
14.288	9/16IN	-14	-14	-14	-9/16IN
14.300		-14	-14	-14	-14.3
14.400		-14	-14	-14	-14.4
14.500		-14	-14	-14	-14.5
14.600		-14	-14	-14	-14.6
14.684	37/64IN	-14	-14	-14	-37/64IN
14.700		-14	-14	-14	-14.7
14.800		-14	-14	-14	-14.8
14.900		-14	-14	-14	-14.9
15.000		-15	-15	-15	-15
15.081	19/32IN	-15	-15	-15	-19/32IN
15.100		-15	-15	-15	-15.1
15.200		-15	-15	-15	-15.2
15.300		-15	-15	-15	-15.3
15.400		-15	-15	-15	-15.4
15.478	39/64IN	-15	-15	-15	-39/64IN
15.500		-15	-15	-15	-15.5
15.600		-15	-15	-15	-15.6
15.700		-15	-15	-15	-15.7
15.800		-15	-15	-15	-15.8
15.875	5/8IN	-15	-15	-15	-5/8IN

d ₁ mm	ØInches/ Wire- Gauge	For drill body 3xd	For drill body 5xd	For drill body 7xd	Ordering code AX196TFL...
15.900		-15	-15	-15	-15.9
16.000		-16	-16	-16	-16
16.272	41/64IN	-16	-16	-16	-41/64IN
16.500		-16	-16	-16	-16.5
16.669	21/32IN	-16	-16	-16	-21/32IN
16.700		-16	-16	-16	-16.7
16.800		-16	-16	-16	-16.8
17.000		-17	-17	-17	-17
17.066	43/64IN	-17	-17	-17	-43/64IN
17.463	11/16IN	-17	-17	-17	-11/16IN
17.500		-17	-17	-17	-17.5
17.700		-17	-17	-17	-17.7
17.800		-17	-17	-17	-17.8
17.859	45/64IN	-17	-17	-17	-45/64IN
18.000		-18	-18	-18	-18
18.256	23/32IN	-18	-18	-18	-23/32IN
18.500		-18	-18	-18	-18.5
18.653	47/64IN	-18	-18	-18	-47/64IN
18.700		-18	-18	-18	-18.7
18.800		-18	-18	-18	-18.8
19.000		-19	-19	-19	-19
19.050	3/4IN	-19	-19	-19	-3/4IN
19.200		-19	-19	-19	-19.2
19.447	49/64IN	-19	-19	-19	-49/64IN
19.500		-19	-19	-19	-19.5
19.700		-19	-19	-19	-19.7
19.800		-19	-19	-19	-19.8
19.844	25/32IN	-19	-19	-19	-25/32IN
20.000		-20	-20	-20	-20
20.241	51/64IN	-20	-20	-20	-51/64IN
20.500		-20	-20	-20	-20.5
20.638	13/16IN	-20	-20	-20	-13/16IN
21.000		-21	-21	-21	-21
21.431	27/32IN	-21	-21	-21	-27/32IN
21.500		-21	-21	-21	-21.5
22.000		-22	-22	-22	-22
22.225	7/8IN	-22	-22	-22	-7/8IN
22.500		-22	-22	-22	-22.5
23.000		-22	-22	-22	-23
23.019	29/32IN	-22	-22	-22	-29/32IN
23.500		-22	-22	-22	-23.5
23.813	15/16IN	-22	-22	-22	-15/16IN
24.000		-24	-24	-24	-24
24.500		-24	-24	-24	-24.5
24.606	31/32IN	-24	-24	-24	-31/32IN
25.000		-24	-24	-24	-25
25.400		-24	-24	-24	-25.4
25.400	1IN	-24	-24	-24	-1IN

Continued ALPHA® POINT - drill points



AX196TFL



d ₁ mm	Ø Inches/ Wire- Gauge	For drill body 3xd	For drill body 5xd	For drill body 7xd	Ordering code AX196TFL...
25.500		-24	-24	-24	-25.5
26.000		-26	-26	-26	-26
26.500		-26	-26	-26	-26.5
27.000		-26	-26	-26	-27
27.500		-26	-26	-26	-27.5
28.000		-28	-28	-28	-28
28.500		-28	-28	-28	-28.5
29.000		-28	-28	-28	-29
29.500		-28	-28	-28	-29.5

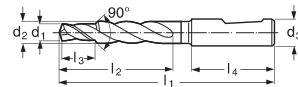
d ₁ mm	Ø Inches/ Wire- Gauge	For drill body 3xd	For drill body 5xd	For drill body 7xd	Ordering code AX196TFL...
30.000		-30	-30	-30	-30
30.500		-30	-30	-30	-30.5
31.000		-30	-30	-30	-31
31.500		-30	-30	-30	-31.5
32.000		-30	-30	-30	-32

Solid Carbide Combined Drill and Chamfer Tool

K3164TIN

Application: High performance tool for drilling and chamfering of tapping holes in steel and cast iron, SG iron, malleable iron. For metric and metric fine threads.

Remarks: Dimensions acc. to DIN 6537, plain shank with whistle notch acc. to DIN 6535 form HE, pilot length acc. to DIN 8378



For thread size	d ₁ mm	d ₂ mm	d ₃ mm	l ₁ mm	l ₂ mm	l ₃ mm	l ₄ mm	Ordering code K3164TIN...
M 4	3.3	4.5	6	66	28	11.4	36	-M4
M 5	4.2	6.0	6	66	28	13.6	36	-M5
M 6	5.0	7.0	8	79	41	16.5	36	-M6
M 8	6.8	9.5	10	89	47	21.0	40	-M8
M 8 x 1	7.0	9.8	10	89	47	21.0	40	-M8X1
M 10	8.5	12.0	12	102	55	25.5	45	-M10
M 10 x 1	9.0	12.0	12	102	55	25.5	45	-M10X1
M 12	10.2	14.0	14	107	60	30.0	45	-M12
M 12 x 1.5	10.5	14.0	14	107	60	30.0	45	-M12X1.5
M 14	12.0	16.0	16	115	65	34.5	48	-M14
M 14 x 1.5	12.5	16.0	16	115	65	34.5	48	-M14X1.5
M 16	14.0	18.0	18	123	73	38.5	48	-M16
M 16 x 1.5	14.5	18.0	18	123	73	38.5	48	-M16X1.5

Screw for ALPHA®POINT drill



Z9311



TITEX
Std.

For drill points	Designation	Spanner size	Ordering code Z9311...
12-13.9	12	Torx 7 IP	-12
14-15.9	14	Torx 8 IP	-14
16-17.9	16	Torx 8 IP	-16

For drill points	Designation	Spanner size	Ordering code Z9311...
18-19.9	18	Torx 15 IP	-18
20-21.9	20	Torx 20 IP	-20
22-23.9	22	Torx 20 IP	-22

For drill points	Designation	Spanner size	Ordering code Z9311...
24-25.9	24	Torx 20 IP	-24
26-27.9	26	Torx 25 IP	-26
28-32	28	Torx 25 IP	-28

Screwdriver for ALPHA®POINT drill



Z9411



TITEX
Std.

For drill points	Designation	Ordering code Z9411...
12-13.9	7	-7
14-17.9	8	-8
18-19.9	15	-15

For drill points	Designation	Ordering code Z9411...
20-25.9	20	-20
26-32	25	-25

Screwdriver for ALPHA POINT



Z9412

Remarks: For usage together with interchangeable blade type Z9422



TITEX
Std.

For drill points	Designation	Ordering code Z9412...
1-5	1-5	-1-5

Interchangeable blade for Z9412



Z9422



TITEX
Std.

For drill points	Designation	Ordering code Z9422...
12-13.9	7	-7
14-17.9	8	-8
18-19.9	15	-15















For drill points	Designation	Ordering code Z9422...
20-25.9	20	-20
26-32	25	-25

Core Drills, Countersinks.



Core Drills.	208
Countersinks.	208
How to find your Core Drill and Countersink	350
Type Selection and Recommendation Data – Core Drills.	361
Type Selection and Recommendation Data – Countersinks.	364

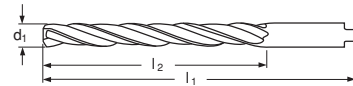
Core Drills and Countersinks made of HSS

Standard	DIN 344	DIN 343	DIN 334 Form C	DIN 334 Form C	DIN 334 Form C	DIN 334 Form D	DIN 335 Form D
Type	N	N	3-flute 60°	3-flute 90°	3-flute 90°	3-flute 60°	3-flute 90°
Catalog No.	E1111	E3111	E6818	E6819	E6819 TIN	E7818	E7819
Surface Treatment							
Material	HSS	HSS	HSS	HSS	HSS	HSS	HSS
Diameter in mm	4,80 ... 16,0	7,80 ... 49,6	6,30 ... 25,0	4,30 ... 31,0	6,00 ... 31,0	16,0 ... 80,0	15,0 ... 80,0
							
Page	209	210	211	212	213	213	214

Core Drills

E1111

Application: General purpose.



d ₁ mm h8	l ₁ mm	l ₂ mm	Min. pre-drill- Ø	Ordering code E1111...
4.80	108	74	3.5	-4.8
5.00	108	74	3.5	-5
5.80	116	80	4.2	-5.8
6.00	116	80	4.2	-6
6.80	133	93	4.9	-6.8
7.00	133	93	4.9	-7
7.80	142	100	5.6	-7.8
8.00	142	100	5.6	-8
8.80	151	107	6.3	-8.8
9.00	151	107	6.3	-9
9.80	162	116	7.0	-9.8
10.00	162	116	7.0	-10

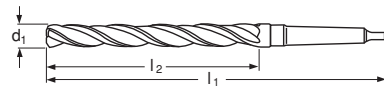
d ₁ mm h8	l ₁ mm	l ₂ mm	Min. pre-drill- Ø	Ordering code E1111...
10.75	173	125	7.7	-10.75
11.00	173	125	7.7	-11
11.75	184	134	8.4	-11.75
12.00	184	134	8.4	-12
12.75	184	134	9.1	-12.75
13.00	184	134	9.1	-13
13.75	194	142	9.8	-13.75
14.00	194	142	9.8	-14
14.75	202	147	10.5	-14.75
15.00	202	147	10.5	-15
15.75	211	153	11.2	-15.75
16.00	211	153	11.2	-16



Taper Shank Core Drills

E3111

Application: General purpose.



d ₁ mm h8	MT	l ₁ mm	l ₂ mm	Min. pre-drill- Ø	Ordering code E3111...
7.80	1	156	75	5.6	-7.8
8.00	1	156	75	5.6	-8
8.80	1	162	81	6.3	-8.8
9.00	1	162	81	6.3	-9
9.80	1	168	87	7.0	-9.8
10.00	1	168	87	7.0	-10
10.75	1	175	94	7.7	-10.75
11.00	1	175	94	7.7	-11
11.75	1	182	101	8.4	-11.75
12.00	1	182	101	8.4	-12
12.75	1	182	101	9.1	-12.75
13.00	1	182	101	9.1	-13
13.75	1	189	108	9.8	-13.75
14.00	1	189	108	9.8	-14
14.75	2	212	114	10.5	-14.75
15.00	2	212	114	10.5	-15
15.75	2	218	120	11.2	-15.75
16.00	2	218	120	11.2	-16
16.75	2	223	125	11.9	-16.75
17.00	2	223	125	11.9	-17
17.75	2	228	130	12.6	-17.75
18.00	2	228	130	12.6	-18
18.70	2	233	135	13.3	-18.7
19.00	2	233	135	13.3	-19
19.70	2	238	140	14.0	-19.7
20.00	2	238	140	14.0	-20
20.70	2	243	145	14.6	-20.7
21.00	2	243	145	14.6	-21
21.70	2	248	150	15.3	-21.7
22.00	2	248	150	15.3	-22
22.70	2	253	155	16.0	-22.7
23.00	2	253	155	16.0	-23
23.70	3	281	160	16.6	-23.7
24.00	3	281	160	16.6	-24
24.70	3	281	160	17.3	-24.7
25.00	3	281	160	17.3	-25
25.70	3	286	165	18.0	-25.7
26.00	3	286	165	18.0	-26
26.70	3	291	170	18.6	-26.7

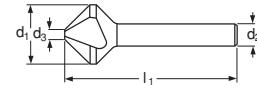
d ₁ mm h8	MT	l ₁ mm	l ₂ mm	Min. pre-drill- Ø	Ordering code E3111...
27.00	3	291	170	18.6	-27
27.70	3	291	170	19.3	-27.7
28.00	3	291	170	19.3	-28
28.70	3	296	175	20.0	-28.7
29.00	3	296	175	20.0	-29
29.70	3	296	175	20.5	-29.7
30.00	3	296	175	20.5	-30
30.60	3	301	180	21.0	-30.6
31.00	3	301	180	21.0	-31
31.60	4	306	185	22.0	-31.6
32.00	4	334	185	22.0	-32
32.60	4	334	185	23.0	-32.6
33.00	4	334	185	23.0	-33
33.60	4	339	190	24.0	-33.6
34.00	4	339	190	24.0	-34
34.60	4	339	190	25.0	-34.6
35.00	4	339	190	25.0	-35
35.60	4	344	195	25.5	-35.6
36.00	4	344	195	25.5	-36
36.60	4	344	195	26.0	-36.6
37.00	4	344	195	26.0	-37
37.60	4	349	200	26.5	-37.6
38.00	4	349	200	26.5	-38
38.60	4	349	200	27.0	-38.6
39.00	4	349	200	27.0	-39
39.60	4	349	200	28.0	-39.6
40.00	4	349	200	28.0	-40
40.60	4	354	205	28.5	-40.6
41.00	4	354	205	28.5	-41
41.60	4	354	205	29.0	-41.6
42.00	4	354	205	29.0	-42
42.60	4	359	210	30.0	-42.6
43.00	4	359	210	30.0	-43
43.60	4	359	210	30.0	-43.6
44.60	4	359	210	31.0	-44.6
49.60	4	369	220	34.5	-49.6

Countersinks 60°

E6818

Application: Cuts without vibration and scores, accurate centering and good chip removal. For deburring, countersinking and chamfering of holes, e. g. for head screws and rivets, also suitable for cylindrical counterboring of screw holes and chamfering of tapping holes.

Remarks: Relief-ground



d ₁ mm	l ₁ mm	d ₃ mm	d ₂ mm h9	Ordering code E6818...
6.3	45	1.6	5	-6.3
8.0	50	2.0	6	-8
12.5	56	3.2	8	-12.5

d ₁ mm	l ₁ mm	d ₃ mm	d ₂ mm h9	Ordering code E6818...
16.0	63	4.0	10	-16
20.0	67	5.0	10	-20
25.0	71	6.3	10	-25

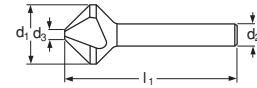
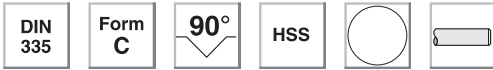


Countersinks 90°

E6819

Application: Cuts without vibration and scores, accurate centering and good chip removal. For deburring, countersinking and chamfering of holes, e. g. for head screws and rivets, also suitable for cylindrical counterboring of screw holes and chamfering of tapping holes.

Remarks: Relief-ground



	d ₁ mm z9	Fine counter- sinking	Medium counter- sinking	l ₁ mm	d ₃ mm	d ₂ mm h9	Ordering code E6819...
▲	4.3	M 2.0	M 1.8	40	1.3	4	-4.3
▲	5.0	M 2.5	M 2	40	1.5	4	-5
	5.3			40	1.5	4	-5.3
	5.8			45	1.5	5	-5.8
▲	6.0	M 3	M 2.5	45	1.5	5	-6
	6.3			45	1.5	5	-6.3
▲	7.0	M 3.5	M 3	50	1.8	6	-7
	7.3			50	1.8	6	-7.3
▲	8.0	M 4	M 3:5	50	2.0	6	-8
	8.3			50	2.0	6	-8.3
	9.4			50	2.2	6	-9.4
▲	10.0	M 5	M 4	50	2.5	6	-10
	10.4			50	1.5	6	-10.4
▲	11.5	M 6	M 5	56	2.8	8	-11.5
	12.4			56	2.8	8	-12.4
	13.4			56	2.9	8	-13.4
▲	15.0	M 8	M 6	60	3.2	10	-15
	16.5			60	3.2	10	-16.5
▲	19.0	M 10	M 8	63	3.5	10	-19
	20.5			63	3.5	10	-20.5
▲	23.0	M 12	M 10	67	3.8	10	-23
	25.0			67	3.8	10	-25
	30.0			71	4.2	12	-30
	31.0			71	4.2	12	-31

▲ = For countersunk screws acc. to DIN 963, 964, 965, 966, 7513, 7516

Countersinks 90°

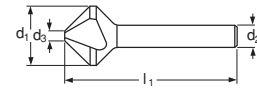


E6819TIN

Application: Cuts without vibration and scores, accurate centering and good chip removal. For deburring, countersinking and chamfering of holes, e. g. for head screws and rivets, also suitable for cylindrical counterboring of screw holes and chamfering of tapping

holes. *TIN-coated for increased cutting speeds and improved tool life.*

Remarks: Relief-ground



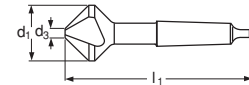
	d ₁ mm z9	Fine counter-sinking	Medium counter-sinking	l ₁ mm	d ₃ mm	d ₂ mm h9	Ordering code E6819TIN...
▲	6.0	M 3	M 2.5	45	1.5	5	-6
▲	7.0	M 3.5	M 3	50	1.8	6	-7
▲	8.0	M 4	M 3.5	50	2.0	6	-8
	8.3			50	2.0	6	-8.3
▲	10.0	M 5	M 4	50	2.5	6	-10
	10.4			50	2.5	6	-10.4
▲	11.5	M 6	M 5	56	2.8	8	-11.5
	12.4			56	2.8	8	-12.4
▲	15.0	M 8	M 6	60	3.2	10	-15
	16.5			60	3.2	10	-16.5
▲	19.0	M 10	M 8	63	3.5	10	-19
	20.5			63	3.5	10	-20.5
▲	23.0	M 12	M 10	67	3.8	10	-23
	25.0			67	3.8	10	-25
	31.0			71	4.2	12	-31

Taper Shank Countersinks 60°

E7818

Application: Cuts without vibration and scores, accurate centering and good chip removal. For deburring, countersinking and chamfering of holes, e. g. for head screws and rivets, also suitable for cylindrical counterboring of screw holes and chamfering of tapping holes.

Remarks: Relief-ground



d ₁ mm	l ₁ mm	d ₃ mm	MT	Ordering code E7818...
16.0	90	4.0	1	-16
20.0	106	5.0	2	-20
25.0	112	6.3	2	-25
31.5	118	10.0	2	-31.5
40.0	150	12.5	3	-40
50.0	160	16.0	3	-50

d ₁ mm	l ₁ mm	d ₃ mm	MT	Ordering code E7818...
63.0	190	20.0	4	-63
80.0	200	25.0	4	-80

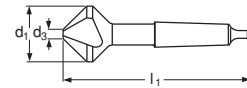
▲ = For countersunk screws acc. to DIN 963, 964, 965, 966, 7513, 7516

Taper Shank Countersinks 90°

E7819

Application: Cuts without vibration and scores, accurate centering and good chip removal. For deburring, countersinking and chamfering of holes, e. g. for head screws and rivets, also suitable for cylindrical counterboring of screw holes and chamfering of tapping holes.

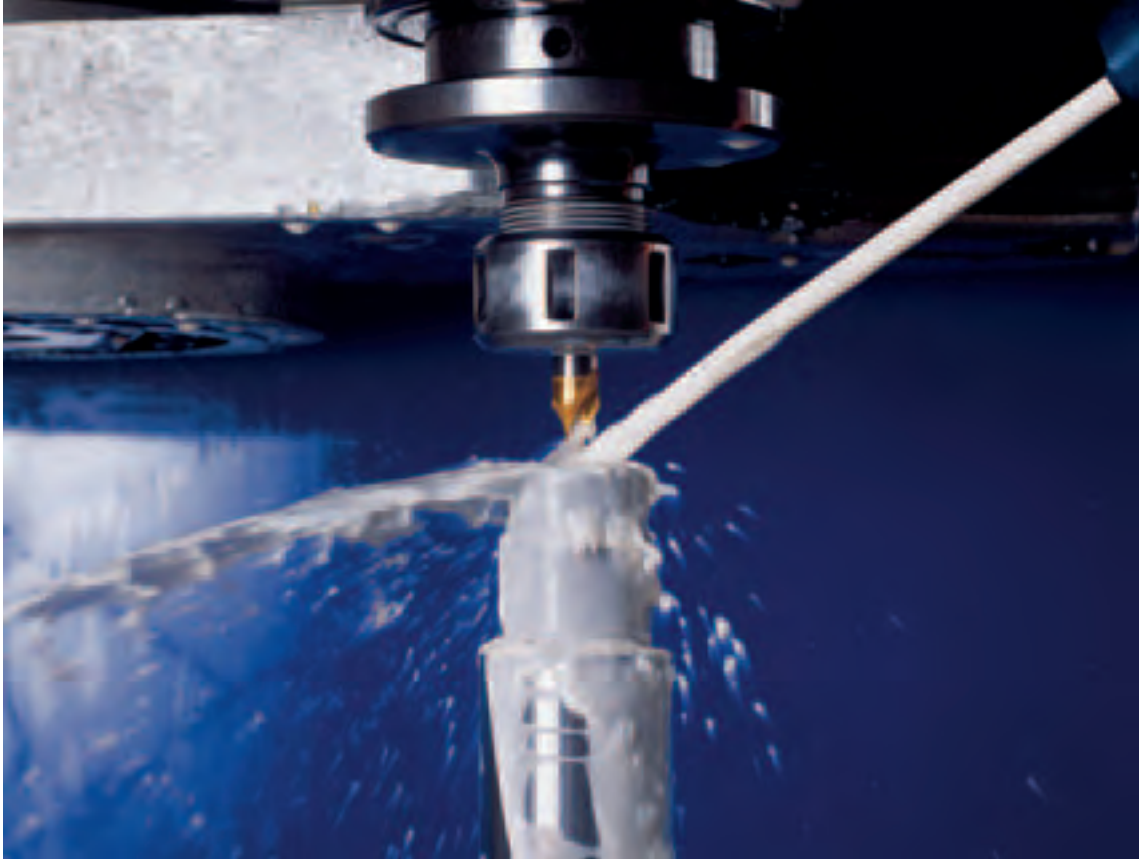
Remarks: Relief-ground



	d ₁ mm z9	Fine counter- sinking	Medium counter- sinking	l ₁ mm	d ₃ mm	MT	Ordering code E7819...
▲	15.0	M 8	M 6	85	3.2	1	-15
	16.5			85	3.2	1	-16.5
▲	19.0	M 10	M 8	100	3.5	2	-19
	20.5			100	3.5	2	-20.5
▲	23.0	M 12	M 10	106	3.8	2	-23
	25.0			106	3.8	2	-25
▲	26.0	M 14	M 12	106	3.8	2	-26
	28.0			112	4.0	2	-28
▲	30.0	M 16	M 14	112	4.2	2	-30
	31.0			112	4.2	2	-31
▲	34.0	M 18	M 16	118	4.5	2	-34
▲	37.0	M 20	M 18	118	4.8	2	-37
	40.0			140	10.0	3	-40
	50.0			150	14.0	3	-50
	63.0			180	16.0	4	-63
	80.0			190	22.0	4	-80

▲ = For countersunk screws acc. to DIN 963, 964, 965, 966, 7513, 7516























Centre Drills.



Centre Drills.	216
Taper Pin Drills.	216
How to to find your Centre Drill	350
Type Selection and Recommendation Data – Centre Drills.	368

Centre Drills, Multi-Step Drills and Taper Pin Drills














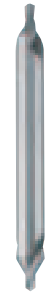








Double Ended Centre-Drills

Standard Type	DIN 333 A					DIN 333 R (Radius style)				DIN 333 B	
			with flattened shank		Left Hand			with flattened shank		Left Hand	
Catalog No.	K1111	K1111 TIN	K1112	K1131	K1161	K1113	K1113 TIN	K1114	K1133	K1215	K1235
Surface Treatment											
Material	HSS	HSS	HSS	HSS	HM	HSS	HSS	HSS	HSS	HSS	HSS
Diameter in mm	0,50 ... 12,5	1,00 ... 5,00	1,60 ... 5,00	0,50 ... 6,30	0,50 ... 6,30	0,50 ... 12,5	1,00 ... 5,00	1,60 ... 5,00	1,00 ... 3,15	1,00 ... 10,0	1,00 ... 6,30
											
Page	217	218	218	220	221	219	219	220	221	222	222

Double Ended Centre-Drills

Multi-Step Drills

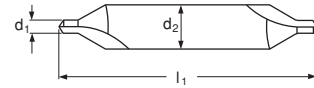
Taper Pin Drills

Standard Type	TITEX Standard					Amerik. Std. ANSI B 94.11	Brit. Std. B.S. 328	TITEX Standard		1898 A	1898 B
								with flattened shank	with flattened shank		
Catalog No.	K1311	K1313	K1411 S	K1411 M	K1411 L	K1811	K1911	K2511	K2513	K2929	K4929
Surface Treatment											
Material	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS
Diameter in mm	0,63 ... 6,00	1,00 ... 4,00	0,75 ... 5,00	0,75 ... 4,00	2,00 ... 4,00	0,64 ... 7,94	1,19 ... 7,94	M 4 ... M 24	M 4 ... M 24	1,00 ... 12,0	5,00 ... 25,0
											
Page	223	223	225	224	224	225	226	226	227	228	228

Centre Drills

K1111

Application: For 60° centre holes without protecting chamfer acc. to DIN 332 A.



d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1111...
▲ 0.50	3.15	25.0	-0.5
▲ 0.80	3.15	25.0	-0.8
1.00	3.15	31.5	-1
1.25	3.15	31.5	-1.25
1.60	4.00	35.5	-1.6
2.00	5.00	40.0	-2

d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1111...
2.50	6.30	45.0	-2.5
3.15	8.00	50.0	-3.15
4.00	10.00	56.0	-4
5.00	12.50	63.0	-5
6.30	16.00	71.0	-6.3
8.00	20.00	80.0	-8

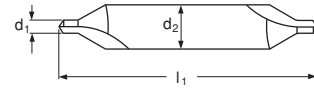
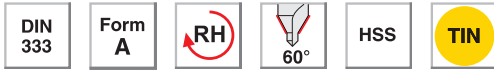
d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1111...
10.00	25.00	100.0	-10
12.50	31.50	125.0	-12.5

▲ = Single end

Centre Drills

K1111TIN

Application: For 60° centre holes without protecting chamfer acc. to DIN 332 A.



d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1111TIN...
1.00	3.15	31.5	-1
1.25	3.15	31.5	-1.25
1.60	4.00	35.5	-1.6

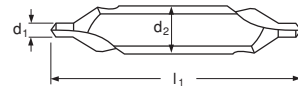
d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1111TIN...
2.00	5.00	40.0	-2
2.50	6.30	45.0	-2.5
3.15	8.00	50.0	-3.15

d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1111TIN...
4.00	10.00	56.0	-4
5.00	12.50	63.0	-5

Centre Drills

K1112

Application: For 60° centre holes without protecting chamfer acc. to DIN 332 A. **Remarks:** flatted shank



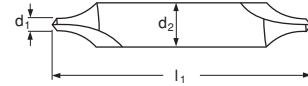
d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1112...
1.60	4.0	35.5	-1.6
2.00	5.0	40.0	-2
2.50	6.3	45.0	-2.5

d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1112...
3.15	8.0	50.0	-3.15
4.00	10.0	56.0	-4
5.00	12.5	63.0	-5

Centre Drills

K1113

Application: For 60° centre holes without protecting chamfer with radius acc. to DIN 332 R.



d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1113...
▲ 0.50	3.15	25.0	-0.5
▲ 0.80	3.15	25.0	-0.8
1.00	3.15	31.5	-1
1.25	3.15	31.5	-1.25
1.60	4.00	35.5	-1.6
2.00	5.00	40.0	-2

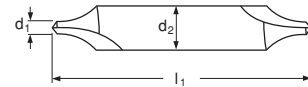
d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1113...
2.50	6.30	45.0	-2.5
3.15	8.00	50.0	-3.15
4.00	10.00	56.0	-4
5.00	12.50	63.0	-5
6.30	16.00	71.0	-6.3
8.00	20.00	80.0	-8

d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1113...
10.00	25.00	100.0	-10
12.50	31.50	125.0	-12.5

Centre Drills

K1113TIN

Application: For 60° centre holes without protecting chamfer with radius acc. to DIN 332 R.



d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1113TIN...
1.00	3.15	31.5	-1
1.25	3.15	31.5	-1.25
1.60	4.00	35.5	-1.6

d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1113TIN...
2.00	5.00	40.0	-2
2.50	6.30	45.0	-2.5
3.15	8.00	50.0	-3.15

d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1113TIN...
4.00	10.00	56.0	-4
5.00	12.50	63.0	-5

▲ = Single end

Centre Drills

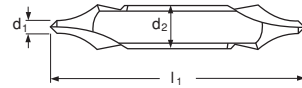
K1114

Application: For 60° centre holes without protecting chamfer with radius acc. to DIN 332 R. **Remarks:** flatted shank



d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1114...
1.60	4.0	35.5	-1.6
2.00	5.0	40.0	-2
2.50	6.3	45.0	-2.5

d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1114...
3.15	8.0	50.0	-3.15
4.00	10.0	56.0	-4
5.00	12.5	63.0	-5



Centre Drills, Left Hand Cut

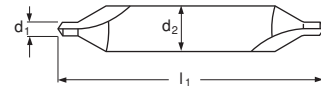
K1131

Application: For 60° centre holes without protecting chamfer acc. to DIN 332 A.



d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1131...
▲ 0.50	3.15	25.0	-0.5
▲ 0.80	3.15	25.0	-0.8
1.00	3.15	31.5	-1
1.25	3.15	31.5	-1.25
1.60	4.00	35.5	-1.6
2.00	5.00	40.0	-2

d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1131...
2.50	6.30	45.0	-2.5
3.15	8.00	50.0	-3.15
4.00	10.00	56.0	-4
5.00	12.50	63.0	-5
6.30	16.00	71.0	-6.3



▲ = Single end

Centre Drills, Left Hand Cut

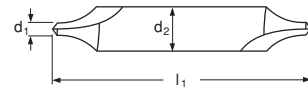
K1133

Application: For 60° centre holes without protecting chamfer with radius acc. to DIN 332 R.



d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1133...
1.00	3.15	31.5	-1
1.25	3.15	31.5	-1.25
1.60	4.00	35.5	-1.6

d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1133...
2.00	5.00	40.0	-2
2.50	6.30	45.0	-2.5
3.15	8.00	50.0	-3.15



Solid Carbide Centre Drills

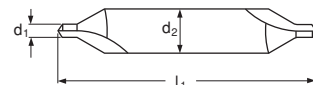
K1161

Application: For 60° centre holes without protecting chamfer acc. to DIN 332 A.



d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1161...
▲ 0.50	3.15	25.0	-0.5
▲ 0.80	3.15	25.0	-0.8
1.00	3.15	31.5	-1
1.25	3.15	31.5	-1.25
1.60	4.00	35.5	-1.6
2.00	5.00	40.0	-2

d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1161...
2.50	6.30	45.0	-2.5
3.15	8.00	50.0	-3.15
4.00	10.00	56.0	-4
5.00	12.50	63.0	-5
6.30	16.00	71.0	-6.3



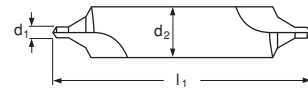
▲ = Single end

Centre Drills

K1215

Application: For 60° centre holes with protecting chamfer 120° acc. to DIN 332 B.

Remarks: With protecting chamfer of 120° (relief ground)



d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1215...
1.00	4.0	35.5	-1
1.25	5.0	40.0	-1.25
1.60	6.3	45.0	-1.6
2.00	8.0	50.0	-2
2.50	10.0	56.0	-2.5
3.15	11.2	60.0	-3.15

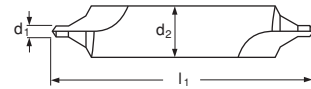
d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1215...
4.00	14.0	67.0	-4
5.00	18.0	75.0	-5
6.30	20.0	80.0	-6.3
8.00	25.0	100.0	-8
10.00	31.5	125.0	-10

Centre Drills, Left Hand Cut

K1235

Application: For 60° centre holes with protecting chamfer 120° acc. to DIN 332 B.

Remarks: With protecting chamfer of 120° (relief ground)



d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1235...
1.00	4.0	35.5	-1
1.25	5.0	40.0	-1.25
1.60	6.3	45.0	-1.6

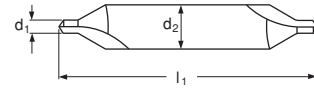
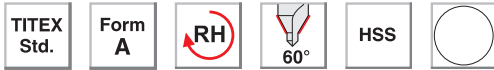
d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1235...
2.00	8.0	50.0	-2
2.50	10.0	56.0	-2.5
3.15	11.2	60.0	-3.15

d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1235...
4.00	14.0	67.0	-4
5.00	18.0	75.0	-5
6.30	20.0	80.0	-6.3

Centre Drills

K1311

Application: For 60° centre holes without protecting chamfer acc. to DIN 332 A.



d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1311...
▲ 0.63	3.15	20.0	-0.63
0.75	3.50	35.0	-0.75
1.00	4.00	31.5	-1
1.50	5.00	40.0	-1.5
1.60	5.00	40.0	-1.6
2.00	6.00	45.0	-2

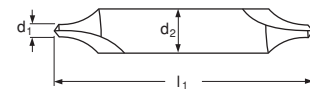
d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1311...
2.00	6.30	45.0	-2X6.3
2.50	8.00	50.0	-2.5
3.00	8.00	50.0	-3X8
3.00	10.00	56.0	-3
3.15	10.00	56.0	-3.15
4.00	12.00	66.0	-4

d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1311...
5.00	14.00	78.0	-5
6.00	18.00	90.0	-6

Centre Drills

K1313

Application: For 60° centre holes without protecting chamfer with radius acc. to DIN 332 R.



d ₁ mm	d ₂ mm	l ₁ mm	Ordering code K1313...
1.0	4	31.5	-1
1.5	5	40.0	-1.5
2.0	6	45.0	-2

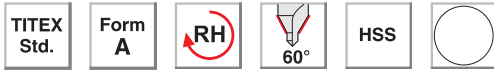
d ₁ mm	d ₂ mm	l ₁ mm	Ordering code K1313...
2.5	8	50.0	-2.5
3.0	10	56.0	-3
4.0	12	66.0	-4

▲ = Single end

Centre Drills, Extra Length

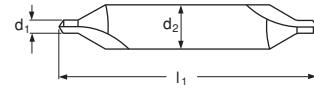
K1411L

Application: For 60° centre holes without protecting chamfer acc. to DIN 332 A.



d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1411L...
2.00	5.0	200	-2X5
2.50	6.3	200	-2.5X6.3
3.15	8.0	200	-3.15X8

d ₁ mm	d ₂ mm h9	l ₁ mm	Ordering code K1411L...
4.00	10.0	200	-4X10



Centre Drills, Extra Length

K1411M

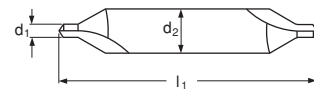
Application: For 60° centre holes without protecting chamfer acc. to DIN 332 A.



d ₁ mm	d ₂ mm	l ₁ mm	Ordering code K1411M...
0.75	3.5	120	-0.75X3.5
1.00	4.0	120	-1X4
1.50	5.0	120	-1.5X5

d ₁ mm	d ₂ mm	l ₁ mm	Ordering code K1411M...
2.00	6.0	120	-2X6
2.50	8.0	120	-2.5X8
3.00	8.0	120	-3X8

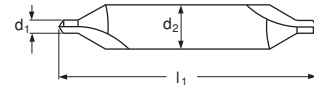
d ₁ mm	d ₂ mm	l ₁ mm	Ordering code K1411M...
3.00	10.0	120	-3X10
4.00	10.0	120	-4X10
4.00	12.0	120	-4X12



Centre Drills, Extra Length

K1411S

Application: For 60° centre holes without protecting chamfer acc. to DIN 332 A.

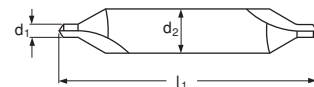


d ₁ mm	d ₂ mm	l ₁ mm	Ordering code K1411S...	d ₁ mm	d ₂ mm	l ₁ mm	Ordering code K1411S...
0.75	3.5	60	-0.75X3.5	3.00	10.0	100	-3X10
1.00	4.0	60	-1X4	4.00	10.0	100	-4X10
1.50	5.0	60	-1.5X5	4.00	12.0	100	-4X12
2.00	6.0	80	-2X6	5.00	14.0	120	-5X14
2.50	8.0	80	-2.5X8				
3.00	8.0	80	-3X8				

Centre Drills

K1811

Application: For 60° centre holes without protecting chamfer acc. to DIN 332 A.

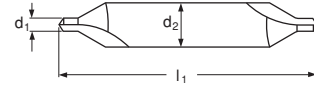


Designation	d ₁ mm	d ₁ Inches	d ₂ mm	d ₂ Inches	l ₁ mm	l ₁ Inches	Ordering code K1811...
Nr. 00	0.64	1/40	3.18	1/8	31	1 7/32	-NO.00
Nr. 0	0.79	1/32	3.18	1/8	31	1 7/32	-NO.0
Nr. 1	1.19	3/64	3.18	1/8	32	1 1/4	-NO1
Nr. 2	1.98	5/64	4.76	3/16	48	1 7/8	-NO2
Nr. 3	2.78	7/64	6.35	1/4	51	2	-NO3
Nr. 4	3.18	1/8	7.94	5/16	54	2 1/8	-NO4
Nr. 5	4.76	3/16	11.11	7/16	70	2 3/4	-NO5
Nr. 6	5.56	7/32	12.70	1/2	76	3	-NO6
Nr. 7	6.35	1/4	15.88	5/8	83	3 1/4	-NO7
Nr. 8	7.97	5/16	19.05	3/4	89	3 1/2	-NO8

Centre Drills

K1911

Application: For 60° centre holes without protecting chamfer acc. to DIN 332 A.

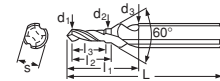


Designation	d ₁ mm	d ₁ Inches	d ₂ mm	d ₂ Inches	l ₁ mm	l ₁ Inches	Ordering code K1911...
B.S. 1	1.19	3/64	3.18	1/8	38.0	1 1/2	-BS1
B.S. 2	1.59	1/16	4.76	3/16	44.5	1 3/4	-BS2
B.S. 3	2.38	3/32	6.35	1/4	51.0	2	-BS3
B.S. 4	3.18	1/8	7.94	5/16	57.0	2 1/4	-BS4
B.S. 5	4.76	3/16	11.11	7/16	63.5	2 1/2	-BS5
B.S. 6	6.35	1/4	15.88	5/8	76.0	3	-BS6
B.S. 7	7.94	5/16	19.05	3/4	89.0	3 1/2	-BS7

Combined Drills And Countersinks

K2511

Application: For centre holes acc. to DIN 332 D. (Especially suitable for shaft centering of electrical motors). **Remarks:** Flatted shank

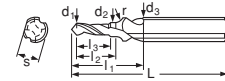


For thread size	d ₁ mm h8	d ₂ mm h8	d ₃ mm h7	L	l ₁ mm	l ₂ mm	l ₃ mm	S	Ordering code K2511...
M 4	3.3	4.3	8.0	63	23	12.6	11.0	6.75	-M4
M 5	4.2	5.3	10.0	67	27	15.2	13.0	8.45	-M5
M 6	5.0	6.4	12.5	71	33	18.9	16.0	10.45	-M6
M 8	6.8	8.4	14.0	88	41	23.0	19.5	12.50	-M8
M 10	8.5	10.5	16.0	94	47	27.7	23.0	14.85	-M10
M 12	10.2	13.0	20.0	105	59	34.5	28.0	18.45	-M12
M 16	14.0	17.0	25.0	132	67	41.3	33.0	23.40	-M16
M 20	17.5	21.0	31.5	145	77	48.4	38.0	29.35	-M20
M 24	21.0	25.0	40.0	160	90	57.0	45.0	36.50	-M24

Combined Drills And Countersinks

K2513

Application: For centre holes acc. to DIN 332 DR. (Especially suitable for shaft centering of electrical motors). **Remarks:** With radius



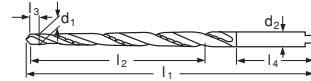
For thread size	d ₁ mm h8	d ₂ mm h8	d ₃ mm h7	L	l ₁ mm	l ₂ mm	l ₃ mm	R	S	Ordering code K2513...
M 4	3.3	4.3	8.0	63	23	12.6	11.0	5.0	6.75	-M4
M 5	4.2	5.3	10.0	67	27	15.2	13.0	6.3	8.45	-M5
M 6	5.0	6.4	12.5	71	33	18.9	16.0	8.0	10.45	-M6
M 8	6.8	8.4	14.0	88	41	23.0	19.5	10.0	12.50	-M8
M 10	8.5	10.5	16.0	94	47	27.7	23.0	16.0	14.85	-M10
M 12	10.2	13.0	20.0	105	59	34.5	28.0	20.0	18.45	-M12
M 16	14.0	17.0	25.0	132	67	41.3	33.0	25.0	23.40	-M16
M 20	17.5	21.0	31.5	145	77	48.4	38.0	31.5	29.35	-M20
M 24	21.0	25.0	40.0	160	90	57.0	45.0	40.0	36.50	-M24

Taper Pin Drills

K2929

Application: For taper-pin holes acc. to DIN 1, DIN 258, DIN 7977 and DIN 7978.

Remarks: Diameter d_1 of taper-pin drill corresponds to nominal dia. of taper-pin.

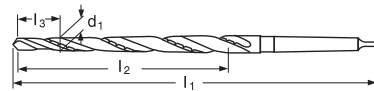


d_1 mm	d_2 mm	l_1 mm	l_2 mm	l_3 mm	l_4 mm	Ordering code K2929...
1.0	1.60	50	26	5	16	-1
1.5	2.00	64	34	5	20	-1.5
2.0	3.15	86	48	5	29	-2
2.5	3.15	86	48	5	29	-2.5
3.0	4.00	100	58	5	32	-3
4.0	5.00	112	68	5	34	-4
5.0	6.30	122	73	5	38	-5
6.0	8.00	160	105	5	42	-6
8.0	10.00	207	145	5	46	-8
10.0	12.50	245	175	5	50	-10
12.0	16.00	290	210	10	58	-12

Taper Shank Taper Pin Drills

K4929

Application: For taper-pin holes acc. to DIN 1, DIN 258, DIN 7977 and DIN 7978.



d_1 mm	l_1 mm	l_2 mm	l_3 mm	MT to DIN228 part 1	Ordering code K4929...
5	155	73	5	1	-5
6	187	105	5	1	-6
8	227	145	5	1	-8
10	257	175	5	1	-10
12	315	210	10	2	-12
14	325	220	10	2	-14

d_1 mm	l_1 mm	l_2 mm	l_3 mm	MT to DIN228 part 1	Ordering code K4929...
16	335	230	10	2	-16
20	377	250	10	3	-20
25	427	300	10	3	-25

Reamers made of HSS and Solid Carbide.



























Reamers made of HSS and Solid Carbide.	230
Accessories.	230
Type Selection and Recommendation Data.	380
General technical informations.	387

Reamers

Chucking Reamers

Chucking Reamers with Morse Taper Shank

Standard Type	DIN 212	DIN 212	DIN 212	DIN 212	TITEX-Standard	TITEX-Standard	DIN 208	DIN 208	DIN 208	TITEX-Standard	TITEX-Standard	TITEX-Standard
		Left hand helix	Left hand helix	Quick helix		Left hand helix	A	Left hand helix	Quick helix		Left hand helix	Expansion Reamers
Form	A/C	B/D	B/D	E			A	B	C			
Catalog No.	F1342	F1352	F1352 HUN	F1353	F1362	F1371	F4142	F4152	F4153	F4162	F4171	F4214
Surface Treatment												
Material	HSS-E	HSS-E	HSS-E	HSS-E	K10	K10	HSS-E	HSS-E	HSS-E	K10	K10	HSS
Diameter. in mm	1,00 ... 20,0	0,90 ... 20,0	0,95 ... 12,0	1,00 ... 20,0	2,00 ... 20,0	2,00 ... 20,0	5,00 ... 32,0	5,00 ... 40,0	5,00 ... 32,0	5,00 ... 20,0	5,00 ... 20,0	10,00 ... 20,0
												
Page	235	237	241	242	243	244	248	249	250	251	252	253

























Taper Pin Reamers

Hand-Reamers

Adjustable Hand-Reamers

Shell Reamers

Accessories

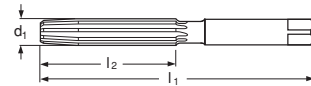
Standard Type	DIN 9 A	DIN 2179	DIN 2180	DIN 311	DIN 204 C	TITEX-Standard	DIN 206	DIN 206	DIN 859	DIN 859	DIN 219	DIN 217
	Taper 1:50	Taper 1:50	Taper 1:50	Bridge Reamers	Taper for MT	Taper 1:10		Left hand helix		Left hand helix	Left hand helix	Taper shank arbors
Form	A				C		A	B	A	B	B	
Catalog No.	F3317	F3234	F6134	F4535	F3417	F3517	F1111	F1131	F1211	F1231	F7133	Z2311
Surface Treatment												
Material	HSS	HSS-E	HSS-E	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS-E	HSS-E
Diameter. in mm	1,00 ... 30,0	1,00 ... 12,0	5,00 ... 20,0	6,40 ... 32,0	MT 0 ... MT 6	5,00 ... 23,0	1,00 ... 30,0	1,00 ... 50,0	4,00 ... 30,0	8,00 ... 30,0	25,00 ... 60,00	13,00 ... 50,00
												
Page	246	245	255	254	247	247	231	232	234	234	255	256

Hand Reamers

F1111

Application: General purpose, e. g. steel, aluminium and copper alloys.

Remarks: With long chamfer for through holes



d ₁ mm	l ₁ mm	l ₂ mm	Ordering code F1111...
1.0	34	13	-1
1.5	41	20	-1.5
2.0	50	25	-2
2.5	58	29	-2.5
3.0	62	31	-3
3.5	71	35	-3.5
4.0	76	38	-4
4.5	81	41	-4.5
5.0	87	44	-5
5.5	93	47	-5.5
6.0	93	47	-6
6.5	100	50	-6.5
7.0	107	54	-7
7.5	107	54	-7.5
8.0	115	58	-8

d ₁ mm	l ₁ mm	l ₂ mm	Ordering code F1111...
8.5	115	58	-8.5
9.0	124	62	-9
9.5	124	62	-9.5
10.0	133	66	-10
10.5	133	66	-10.5
11.0	142	71	-11
11.5	142	71	-11.5
12.0	152	76	-12
12.5	152	76	-12.5
13.0	152	76	-13
13.5	163	81	-13.5
14.0	163	81	-14
14.5	163	81	-14.5
15.0	163	81	-15
16.0	175	87	-16

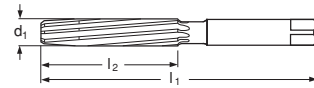
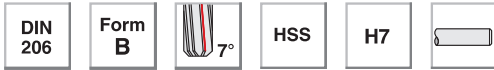
d ₁ mm	l ₁ mm	l ₂ mm	Ordering code F1111...
17.0	175	87	-17
18.0	188	93	-18
19.0	188	93	-19
20.0	201	100	-20
21.0	201	100	-21
22.0	215	107	-22
23.0	215	107	-23
24.0	231	115	-24
25.0	231	115	-25
26.0	231	115	-26
27.0	247	124	-27
28.0	247	124	-28
29.0	247	124	-29
30.0	247	124	-30

Hand Reamers

F1131

Application: General purpose, e. g. steel, aluminium and copper alloys. To produce holes of precise roundness and excellent surface finish.

Remarks: With long chamfer for through holes



d ₁ mm	l ₁ mm	l ₂ mm	Ordering code F1131...
1.0	34	13	-1
1.1	36	15	-1.1
1.2	38	17	-1.2
1.3	38	17	-1.3
1.4	41	20	-1.4
1.5	41	20	-1.5
1.6	44	21	-1.6
1.7	44	21	-1.7
1.8	47	23	-1.8
1.9	47	23	-1.9
2.0	50	25	-2
2.1	50	25	-2.1
2.2	54	27	-2.2
2.3	54	27	-2.3
2.4	58	29	-2.4
2.5	58	29	-2.5
2.6	58	29	-2.6
2.7	62	31	-2.7
2.8	62	31	-2.8
2.9	62	31	-2.9
3.0	62	31	-3
3.1	66	33	-3.1
3.2	66	33	-3.2
3.3	66	33	-3.3
3.4	71	35	-3.4
3.5	71	35	-3.5
3.6	71	35	-3.6
3.7	71	35	-3.7
3.8	76	38	-3.8
3.9	76	38	-3.9
4.0	76	38	-4
4.1	76	38	-4.1
4.2	76	38	-4.2
4.3	81	41	-4.3
4.4	81	41	-4.4
4.5	81	41	-4.5
4.6	81	41	-4.6
4.7	81	41	-4.7
4.8	87	44	-4.8
4.9	87	44	-4.9
5.0	87	44	-5
5.1	87	44	-5.1
5.2	87	44	-5.2
5.3	87	44	-5.3
5.4	93	47	-5.4
5.5	93	47	-5.5
5.6	93	47	-5.6
5.7	93	47	-5.7

d ₁ mm	l ₁ mm	l ₂ mm	Ordering code F1131...
5.8	93	47	-5.8
5.9	93	47	-5.9
6.0	93	47	-6
6.1	100	50	-6.1
6.2	100	50	-6.2
6.3	100	50	-6.3
6.4	100	50	-6.4
6.5	100	50	-6.5
6.6	100	50	-6.6
6.7	100	50	-6.7
6.8	107	54	-6.8
6.9	107	54	-6.9
7.0	107	54	-7
7.1	107	54	-7.1
7.2	107	54	-7.2
7.3	107	54	-7.3
7.4	107	54	-7.4
7.5	107	54	-7.5
7.6	115	58	-7.6
7.7	115	58	-7.7
7.8	115	58	-7.8
7.9	115	58	-7.9
8.0	115	58	-8
8.1	115	58	-8.1
8.2	115	58	-8.2
8.3	115	58	-8.3
8.4	115	58	-8.4
8.5	115	58	-8.5
8.6	124	62	-8.6
8.7	124	62	-8.7
8.8	124	62	-8.8
8.9	124	62	-8.9
9.0	124	62	-9
9.1	124	62	-9.1
9.2	124	62	-9.2
9.3	124	62	-9.3
9.4	124	62	-9.4
9.5	124	62	-9.5
9.6	133	66	-9.6
9.7	133	66	-9.7
9.8	133	66	-9.8
9.9	133	66	-9.9
10.0	133	66	-10
10.5	133	66	-10.5
11.0	142	71	-11
11.5	142	71	-11.5
12.0	152	76	-12
12.5	152	76	-12.5

d ₁ mm	l ₁ mm	l ₂ mm	Ordering code F1131...
13.0	152	76	-13
13.5	163	81	-13.5
14.0	163	81	-14
14.5	163	81	-14.5
15.0	163	81	-15
15.5	175	87	-15.5
16.0	175	87	-16
16.5	175	87	-16.5
17.0	175	87	-17
17.5	188	93	-17.5
18.0	188	93	-18
18.5	188	93	-18.5
19.0	188	93	-19
19.5	201	100	-19.5
20.0	201	100	-20
20.5	201	100	-20.5
21.0	201	100	-21
21.5	201	100	-21.5
22.0	215	107	-22
22.5	215	107	-22.5
23.0	215	107	-23
23.5	215	107	-23.5
24.0	231	115	-24
24.5	231	115	-24.5
25.0	231	115	-25
25.5	231	115	-25.5
26.0	231	115	-26
26.5	231	115	-26.5
27.0	247	124	-27
27.5	247	124	-27.5
28.0	247	124	-28
28.5	247	124	-28.5
29.0	247	124	-29
29.5	247	124	-29.5
30.0	247	124	-30
31.0	265	133	-31
32.0	265	133	-32
33.0	265	133	-33
34.0	284	142	-34
35.0	284	142	-35
36.0	284	142	-36
37.0	284	142	-37
38.0	305	152	-38
39.0	305	152	-39
40.0	305	152	-40
41.0	305	152	-41
42.0	305	152	-42
43.0	326	163	-43

Continued Hand Reamers

F1131

d ₁ mm	l ₁ mm	l ₂ mm	Ordering code F1131...
44.0	326	163	-44
45.0	326	163	-45
46.0	326	163	-46

d ₁ mm	l ₁ mm	l ₂ mm	Ordering code F1131...
47.0	326	163	-47
48.0	347	174	-48
49.0	347	174	-49

d ₁ mm	l ₁ mm	l ₂ mm	Ordering code F1131...
50.0	347	174	-50

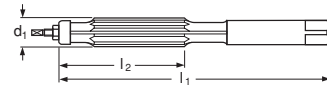


Expansion Hand Reamers

F1211

Application: General purpose, e. g. steel, aluminium and copper alloys.

Remarks: Adjustment range approx. 0,01 x diameter; alternative fits and diameters upon request



	d ₁ mm	l ₁ mm	l ₂ mm	Ordering code F1211...
▲	4	76	24	-4
▲	5	87	30	-5
▲	6	93	33	-6
▲	7	107	38	-7
	8	115	42	-8
	9	124	46	-9
	10	133	50	-10
	11	142	51	-11
	12	152	56	-12

	d ₁ mm	l ₁ mm	l ₂ mm	Ordering code F1211...
	13	152	56	-13
	14	163	61	-14
	15	163	61	-15
	16	175	67	-16
	17	175	67	-17
	18	188	68	-18
	19	188	68	-19
	20	201	75	-20
	22	215	82	-22

	d ₁ mm	l ₁ mm	l ₂ mm	Ordering code F1211...
	24	231	85	-24
	25	231	85	-25
	26	231	85	-26
	28	247	94	-28
	30	247	94	-30

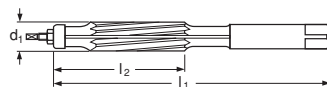


Expansion Hand Reamers

F1231

Application: General purpose, e. g. steel, aluminium and copper alloys. To produce holes of precise roundness and excellent surface finish.

Remarks: Adjustment range approx. 0,01 x diameter; alternative fits and diameters upon request



	d ₁ mm	l ₁ mm	l ₂ mm	Ordering code F1231...
	8	115	42	-8
	9	124	46	-9
	10	133	50	-10
	11	142	51	-11
	12	152	56	-12
	13	152	56	-13
	14	163	61	-14
	15	163	61	-15
	16	175	67	-16

	d ₁ mm	l ₁ mm	l ₂ mm	Ordering code F1231...
	17	175	67	-17
	18	188	68	-18
	19	188	68	-19
	20	201	75	-20
	22	215	82	-22
	24	231	85	-24
	25	231	85	-25
	26	231	85	-26
	28	247	94	-28

	d ₁ mm	l ₁ mm	l ₂ mm	Ordering code F1231...
	30	247	94	-30



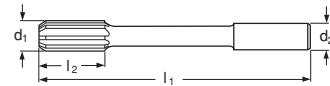
▲ = Without lock-nut

Chucking Reamers

F1342

Application: General purpose, e. g. steel, aluminium and copper alloys.

Remarks: Dia. up to 2,1 mm = TITEX Standard; dia. up to 3,7 mm with double ended drillpoint.



d ₁ mm	No. of teeth	l ₁ mm	l ₂ mm	d ₂ mm h9	Ordering code F1342...
1.0	3	34	5.5	1.0	-1
1.1	3	36	6.5	1.1	-1.1
1.2	3	36	6.5	1.1	-1.2
1.3	3	38	7.5	1.2	-1.3
1.4	3	40	8.0	1.3	-1.4
1.5	3	40	8.0	1.4	-1.5
1.6	3	43	9.0	1.5	-1.6
1.7	3	43	9.0	1.5	-1.7
1.8	4	46	10.0	1.7	-1.8
1.9	4	46	10.0	1.7	-1.9
2.0	4	49	11.0	1.9	-2
2.1	4	49	11.0	1.9	-2.1
2.2	4	53	12.0	2.2	-2.2
2.3	4	53	12.0	2.3	-2.3
2.4	4	57	14.0	2.4	-2.4
2.5	4	57	14.0	2.5	-2.5
2.6	4	57	14.0	2.6	-2.6
2.7	6	61	15.0	2.7	-2.7
2.8	6	61	15.0	2.8	-2.8
2.9	6	61	15.0	2.9	-2.9
3.0	6	61	15.0	3.0	-3
3.1	6	65	16.0	3.1	-3.1
3.2	6	65	16.0	3.2	-3.2
3.3	6	65	16.0	3.3	-3.3
3.4	6	70	18.0	3.4	-3.4
3.5	6	70	18.0	3.5	-3.5
3.6	6	70	18.0	3.6	-3.6
3.7	6	70	18.0	3.7	-3.7
3.8	6	75	19.0	4.0	-3.8
3.9	6	75	19.0	4.0	-3.9
4.0	6	75	19.0	4.0	-4
4.1	6	75	19.0	4.0	-4.1
4.2	6	75	19.0	4.0	-4.2
4.3	6	80	21.0	4.5	-4.3
4.4	6	80	21.0	4.5	-4.4
4.5	6	80	21.0	4.5	-4.5
4.6	6	80	21.0	4.5	-4.6
4.7	6	80	21.0	4.5	-4.7
4.8	6	86	23.0	5.0	-4.8
4.9	6	86	23.0	5.0	-4.9
5.0	6	86	23.0	5.0	-5
5.1	6	86	23.0	5.0	-5.1
5.2	6	86	23.0	5.0	-5.2
5.3	6	86	23.0	5.0	-5.3
5.4	6	93	26.0	5.6	-5.4
5.5	6	93	26.0	5.6	-5.5
5.6	6	93	26.0	5.6	-5.6
5.7	6	93	26.0	5.6	-5.7

d ₁ mm	No. of teeth	l ₁ mm	l ₂ mm	d ₂ mm h9	Ordering code F1342...
5.8	6	93	26.0	5.6	-5.8
5.9	6	93	26.0	5.6	-5.9
6.0	6	93	26.0	5.6	-6
6.1	6	101	28.0	6.3	-6.1
6.2	6	101	28.0	6.3	-6.2
6.3	6	101	28.0	6.3	-6.3
6.4	6	101	28.0	6.3	-6.4
6.5	6	101	28.0	6.3	-6.5
6.6	6	101	28.0	6.3	-6.6
6.7	6	101	28.0	6.3	-6.7
6.8	6	109	31.0	7.1	-6.8
6.9	6	109	31.0	7.1	-6.9
7.0	6	109	31.0	7.1	-7
7.1	6	109	31.0	7.1	-7.1
7.2	6	109	31.0	7.1	-7.2
7.3	6	109	31.0	7.1	-7.3
7.4	6	109	31.0	7.1	-7.4
7.5	6	109	31.0	7.1	-7.5
7.6	6	117	33.0	8.0	-7.6
7.7	6	117	33.0	8.0	-7.7
7.8	6	117	33.0	8.0	-7.8
7.9	6	117	33.0	8.0	-7.9
8.0	6	117	33.0	8.0	-8
8.1	6	117	33.0	8.0	-8.1
8.2	6	117	33.0	8.0	-8.2
8.3	6	117	33.0	8.0	-8.3
8.4	6	117	33.0	8.0	-8.4
8.5	6	117	33.0	8.0	-8.5
8.6	6	125	36.0	9.0	-8.6
8.7	6	125	36.0	9.0	-8.7
8.8	6	125	36.0	9.0	-8.8
8.9	6	125	36.0	9.0	-8.9
9.0	6	125	36.0	9.0	-9
9.1	6	125	36.0	9.0	-9.1
9.2	6	125	36.0	9.0	-9.2
9.3	6	125	36.0	9.0	-9.3
9.4	6	125	36.0	9.0	-9.4
9.5	6	125	36.0	9.0	-9.5
9.6	6	133	38.0	10.0	-9.6
9.7	6	133	38.0	10.0	-9.7
9.8	6	133	38.0	10.0	-9.8
9.9	6	133	38.0	10.0	-9.9
10.0	6	133	38.0	10.0	-10
10.1	6	133	38.0	10.0	-10.1
10.2	6	133	38.0	10.0	-10.2
10.3	6	133	38.0	10.0	-10.3
10.4	6	133	38.0	10.0	-10.4
10.5	6	133	38.0	10.0	-10.5

Continued Chucking Reamers

F1342

d ₁ mm	No. of teeth	l ₁ mm	l ₂ mm	d ₂ mm h9	Ordering code F1342...
10.6	6	133	38.0	10.0	-10.6
10.7	6	142	41.0	10.0	-10.7
10.8	6	142	41.0	10.0	-10.8
10.9	6	142	41.0	10.0	-10.9
11.0	6	142	41.0	10.0	-11
11.5	6	142	41.0	10.0	-11.5
12.0	6	151	44.0	10.0	-12
12.5	6	151	44.0	10.0	-12.5
13.0	6	151	44.0	10.0	-13
13.5	6	160	47.0	12.5	-13.5
14.0	8	160	47.0	12.5	-14
14.5	8	162	50.0	12.5	-14.5

d ₁ mm	No. of teeth	l ₁ mm	l ₂ mm	d ₂ mm h9	Ordering code F1342...
15.0	8	162	50.0	12.5	-15
15.5	8	170	52.0	12.5	-15.5
16.0	8	170	52.0	12.5	-16
16.5	8	175	54.0	14.0	-16.5
17.0	8	175	54.0	14.0	-17
17.5	8	182	56.0	14.0	-17.5
18.0	8	182	56.0	14.0	-18
18.5	8	189	58.0	16.0	-18.5
19.0	8	189	58.0	16.0	-19
19.5	8	195	60.0	16.0	-19.5
20.0	8	195	60.0	16.0	-20

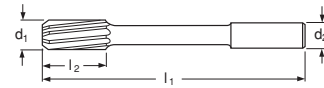


Chucking Reamers

F1352

Application: General purpose, e. g. steel, aluminium and copper alloys. To produce holes of precise roundness and excellent surface finish.

Remarks: Dia. up to 1,3 mm = TITEX Standard; dia. up to 3,7 mm with double ended drillpoint.



d ₁ mm	No. of teeth	l ₁ mm	l ₂ mm	d ₂ mm h9	Ordering code F1352...
0.9	3	34	5.5	0.9	-0.9
1.0	3	34	5.5	1.0	-1
1.1	3	36	6.5	1.1	-1.1
1.2	3	38	7.5	1.2	-1.2
1.3	3	38	7.5	1.3	-1.3
1.4	3	40	8.0	1.4	-1.4
1.5	3	40	8.0	1.5	-1.5
1.6	3	43	9.0	1.6	-1.6
1.7	3	43	9.0	1.7	-1.7
1.8	4	46	10.0	1.8	-1.8
1.9	4	46	10.0	1.9	-1.9
2.0	4	49	11.0	2.0	-2
2.1	4	49	11.0	2.1	-2.1
2.2	4	53	12.0	2.2	-2.2
2.3	4	53	12.0	2.3	-2.3
2.4	4	57	14.0	2.4	-2.4
2.5	4	57	14.0	2.5	-2.5
2.6	4	57	14.0	2.6	-2.6
2.7	6	61	15.0	2.7	-2.7
2.8	6	61	15.0	2.8	-2.8
2.9	6	61	15.0	2.9	-2.9
3.0	6	61	15.0	3.0	-3
3.1	6	65	16.0	3.1	-3.1
3.2	6	65	16.0	3.2	-3.2
3.3	6	65	16.0	3.3	-3.3
3.4	6	70	18.0	3.4	-3.4
3.5	6	70	18.0	3.5	-3.5
3.6	6	70	18.0	3.6	-3.6
3.7	6	70	18.0	3.7	-3.7
3.8	6	75	19.0	4.0	-3.8
3.9	6	75	19.0	4.0	-3.9
4.0	6	75	19.0	4.0	-4
4.1	6	75	19.0	4.0	-4.1
4.2	6	75	19.0	4.0	-4.2
4.3	6	80	21.0	4.5	-4.3
4.4	6	80	21.0	4.5	-4.4
4.5	6	80	21.0	4.5	-4.5
4.6	6	80	21.0	4.5	-4.6
4.7	6	80	21.0	4.5	-4.7
4.8	6	86	23.0	5.0	-4.8
4.9	6	86	23.0	5.0	-4.9
5.0	6	86	23.0	5.0	-5
5.1	6	86	23.0	5.0	-5.1
5.2	6	86	23.0	5.0	-5.2
5.3	6	86	23.0	5.0	-5.3
5.4	6	93	26.0	5.6	-5.4
5.5	6	93	26.0	5.6	-5.5
5.6	6	93	26.0	5.6	-5.6

d ₁ mm	No. of teeth	l ₁ mm	l ₂ mm	d ₂ mm h9	Ordering code F1352...
5.7	6	93	26.0	5.6	-5.7
5.8	6	93	26.0	5.6	-5.8
5.9	6	93	26.0	5.6	-5.9
6.0	6	93	26.0	5.6	-6
6.1	6	101	28.0	6.3	-6.1
6.2	6	101	28.0	6.3	-6.2
6.3	6	101	28.0	6.3	-6.3
6.4	6	101	28.0	6.3	-6.4
6.5	6	101	28.0	6.3	-6.5
6.6	6	101	28.0	6.3	-6.6
6.7	6	101	28.0	6.3	-6.7
6.8	6	109	31.0	7.1	-6.8
6.9	6	109	31.0	7.1	-6.9
7.0	6	109	31.0	7.1	-7
7.1	6	109	31.0	7.1	-7.1
7.2	6	109	31.0	7.1	-7.2
7.3	6	109	31.0	7.1	-7.3
7.4	6	109	31.0	7.1	-7.4
7.5	6	109	31.0	7.1	-7.5
7.6	6	117	33.0	8.0	-7.6
7.7	6	117	33.0	8.0	-7.7
7.8	6	117	33.0	8.0	-7.8
7.9	6	117	33.0	8.0	-7.9
8.0	6	117	33.0	8.0	-8
8.1	6	117	33.0	8.0	-8.1
8.2	6	117	33.0	8.0	-8.2
8.3	6	117	33.0	8.0	-8.3
8.4	6	117	33.0	8.0	-8.4
8.5	6	117	33.0	8.0	-8.5
8.6	6	125	36.0	9.0	-8.6
8.7	6	125	36.0	9.0	-8.7
8.8	6	125	36.0	9.0	-8.8
8.9	6	125	36.0	9.0	-8.9
9.0	6	125	36.0	9.0	-9
9.1	6	125	36.0	9.0	-9.1
9.2	6	125	36.0	9.0	-9.2
9.3	6	125	36.0	9.0	-9.3
9.4	6	125	36.0	9.0	-9.4
9.5	6	125	36.0	9.0	-9.5
9.6	6	133	38.0	10.0	-9.6
9.7	6	133	38.0	10.0	-9.7
9.8	6	133	38.0	10.0	-9.8
9.9	6	133	38.0	10.0	-9.9
10.0	6	133	38.0	10.0	-10
10.1	6	133	38.0	10.0	-10.1
10.2	6	133	38.0	10.0	-10.2
10.3	6	133	38.0	10.0	-10.3
10.4	6	133	38.0	10.0	-10.4

Continued Chucking Reamers

F1352

d ₁ mm	No. of teeth	l ₁ mm	l ₂ mm	d ₂ mm h9	Ordering code F1352...
10.5	6	133	38.0	10.0	-10.5
10.6	6	133	38.0	10.0	-10.6
10.7	6	142	41.0	10.0	-10.7
10.8	6	142	41.0	10.0	-10.8
10.9	6	142	41.0	10.0	-10.9
11.0	6	142	41.0	10.0	-11
11.5	6	142	41.0	10.0	-11.5
12.0	6	151	44.0	10.0	-12
12.5	6	151	44.0	10.0	-12.5
13.0	6	151	44.0	10.0	-13
13.5	8	160	47.0	12.5	-13.5
14.0	8	160	47.0	12.5	-14

d ₁ mm	No. of teeth	l ₁ mm	l ₂ mm	d ₂ mm h9	Ordering code F1352...
14.5	8	162	50.0	12.5	-14.5
15.0	8	162	50.0	12.5	-15
15.5	8	170	52.0	12.5	-15.5
16.0	8	170	52.0	12.5	-16
16.5	8	175	54.0	14.0	-16.5
17.0	8	175	54.0	14.0	-17
17.5	8	182	56.0	14.0	-17.5
18.0	8	182	56.0	14.0	-18
18.5	8	189	58.0	16.0	-18.5
19.0	8	189	58.0	16.0	-19
19.5	8	195	60.0	16.0	-19.5
20.0	8	195	60.0	16.0	-20



Reamer Selection Table for F 1352 HUN

Example:

Required fit: $d = 4,25 \text{ mm F8}$

Selection: Basic diameter + table value for F8 = 1/100 Micro Reamer
 $4,25 + 0,02 = 4,27 \text{ mm diameter}$

Tool required: TITEX Micro Reamer F 1352 HUN

Nominal dia. d mm from up to	Table values for required fit in mm														
	A 9	A 11	B 8	B 9	B 10	B 11	C 8	C 9	C 10	C 11	D 7	D 8	D 9	D 10	D 11
1– 3	+0,28	+0,31	–	+0,15	+0,17	+0,18	–	+0,07	+0,09	+0,10	–	–	+0,03	+0,05	+0,06
3– 6	+0,29	+0,32	+0,15	+0,16	+0,17	+0,19	+0,08	+0,09	+0,10	+0,12	–	+0,04	+0,05	+0,06	+0,08
6–10	+0,30	+0,35	+0,16	+0,17	+0,19	+0,22	+0,09	+0,10	+0,12	+0,15	–	+0,05	+0,06	+0,08	+0,11
10–18	+0,32	+0,37	+0,16	+0,18	+0,20	+0,23	+0,11	+0,12	+0,14	+0,18	+0,06	+0,06	+0,08	+0,10	+0,13
	E 7	E 8	E 9	F 7	F 8	F 9	F 10	G 6	G 7	H 6	H 7	H 8	H 9	H 10	H 11
1– 3	–	+0,02	+0,03	+0,01	+0,01	+0,02	–	–	–	–	–	–	+0,01	+0,03	+0,04
3– 6	–	+0,03	+0,04	–	+0,02	+0,03	+0,04	–	+0,01	–	–	+0,01	+0,02	+0,03	+0,05
6–10	+0,03	+0,03	+0,05	+0,02	+0,02	+0,03	+0,05	–	+0,01	–	–	+0,01	+0,02	+0,04	+0,07
10–18	+0,04	+0,04	+0,06	+0,02	+0,03	+0,04	+0,07	+0,01	–	–	+0,01	+0,01	+0,03	+0,05	+0,08
	H 12	H 13	J 6	J 7	J 8	JS 6	JS 7	JS 8	JS 9	K 7	K 8	M 6	M 7	M 8	N 6
1– 3	+0,08	+0,11	–	–	–	–	–	+0,00	+0,00	–	–0,01	–	–	–	–
3– 6	+0,09	+0,14	–	+0,00	+0,00	–	+0,00	+0,00	+0,00	–	–	–	–	–0,01	–
6–10	+0,12	+0,18	–	+0,00	+0,00	–	+0,00	+0,00	+0,00	–	–0,01	–0,01	–0,01	–0,01	–
10–18	+0,14	+0,22	–	+0,00	+0,00	–	+0,00	+0,00	+0,01	–	–0,01	–0,01	–0,01	–0,01	–
	N 7	N 8	N 9	N 10	N 11	P 6	P 7	R 6	R 7	S 6	S 7	U 6	U 7	U 10	Z 10
1– 3	–0,01	–0,01	–0,02	–0,02	–0,02	–	–	–	–	–	–0,02	–	–	–	–0,04
3– 6	–0,01	–0,01	–0,01	–0,02	–0,02	–	–	–	–0,02	–	–	–	–0,03	–0,04	–0,05
6–10	–	–0,02	–0,01	–0,02	–0,02	–	–0,02	–	–0,02	–	–0,03	–	–0,03	–0,05	–0,06
10–18	–0,01	–0,02	–0,02	–0,02	–0,03	–	–0,02	–	–0,03	–	–0,03	–	–	–0,05	–0,07

Notes for use with the above table

This table is formulated to allow selection of Micro Reamers with diameters within 1/100 mm steps.

The values given take into consideration the basic manufacturing tolerances as standard. These are

$$\begin{aligned} &\text{up to diameter } 6 \text{ mm } + \begin{matrix} 0,004 \text{ mm} \\ 0 \end{matrix} \\ &\text{above diameter } 6 \text{ mm } + \begin{matrix} 0,005 \text{ mm} \\ 0 \end{matrix} \end{aligned}$$

All tolerances in the grey part are achievable with Micro Reamers, as they correspond to the manufacturing tolerances for reamers acc. to DIN 1420.

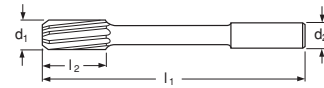
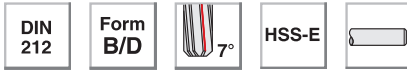
On all sections coloured red the lower Tolerance-Band Limit for Reamers acc. to DIN 1420 was reduced by 25%. This will result in decreased tool life with reference to the hole-tolerance. Table values coloured grey should only be applied in special cases.

Chucking Reamers, Micro Precision Reamers

F1352HUN

Application: General purpose, e. g. steel, aluminium and copper alloys. To produce holes of precise roundness and excellent surface finish.

Remarks: Dia. up to 3,75 mm with double ended Drillpoint and TITEX Standard; for selection of a Micro Reamer, taking into consideration its diameter, see Reamers Selection Table on the opposite page. Reamers in increments of $\varnothing 0,01$ mm. Manufacturing tolerances: - up to dia. 6 mm $0 / + 0,004$ above dia. 6 mm $0 / + 0,005$

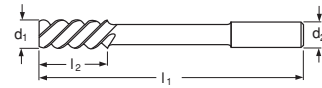
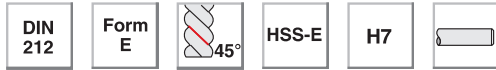


d ₁ mm		No. of teeth	l ₁ mm	l ₂ mm	d ₂ mm h9	Ordering code F1352HUN...
-	0.95	3	34	5.5	=d1	-0.95
0.97	- 1.06	3	34	5.5	=d1	-0.97 - -1.06
1.07	- 1.18	3	34	6.5	=d1	-1.07 - -1.18
1.19	- 1.32	3	34	7.5	=d1	-1.19 - -1.32
1.33	- 1.50	3	40	8.0	=d1	-1.33 - -1.5
1.51	- 1.70	3	43	9.0	=d1	-1.51 - -1.7
1.71	- 1.90	4	46	10.0	=d1	-1.71 - -1.9
1.91	- 2.12	4	49	11.0	=d1	-1.91 - -2.12
2.13	- 2.36	4	53	12.0	=d1	-2.13 - -2.36
2.37	- 2.65	4	57	14.0	=d1	-2.37 - -2.65
2.66	- 3.00	6	61	15.0	=d1	-2.66 - -3
3.01	- 3.35	6	65	16.0	=d1	-3.01 - -3.35
3.36	- 3.75	6	70	18.0	=d1	-3.36 - -3.75
3.76	- 4.25	6	75	19.0	4.0	-3.76 - -4.25
4.26	- 4.75	6	80	21.0	4.5	-4.26 - -4.75
4.76	- 5.30	6	86	23.0	5.0	-4.76 - -5.3
5.31	- 6.00	6	93	26.0	5.6	-5.31 - -6
6.01	- 6.70	6	101	28.0	6.3	-6.01 - -6.7
6.71	- 7.50	6	109	31.0	7.1	-6.71 - -7.5
7.51	- 8.50	6	117	33.0	8.0	-7.51 - -8.5
8.51	- 9.50	6	125	36.0	9.0	-8.51 - -9.5
9.51	- 10.60	6	133	38.0	10.0	-9.51 - -10.6
10.61	- 11.80	6	142	41.0	10.0	-10.61 - -11.8
11.81	- 12.00	6	151	44.0	10.0	-11.81 - -12

Chucking Reamers, Quick Helix

F1353

Application: For through holes in soft materials forming long chips such as aluminium and copper alloys. Particularly suitable for volume production.



d ₁ mm	No. of teeth	l ₁ mm	l ₂ mm	d ₂ mm h9	Ordering code F1353...
1.0	2	34	5.5	1.0	-1
1.1	2	36	6.5	1.1	-1.1
1.2	2	36	6.5	1.1	-1.2
1.3	2	38	7.5	1.3	-1.3
1.4	2	40	8.0	1.3	-1.4
1.5	2	40	8.0	1.5	-1.5
1.6	2	43	9.0	1.6	-1.6
1.7	2	43	9.0	1.7	-1.7
1.8	2	46	10.0	1.8	-1.8
1.9	2	46	10.0	1.9	-1.9
2.0	3	49	11.0	1.9	-2
2.1	3	49	11.0	2.1	-2.1
2.2	3	53	12.0	2.2	-2.2
2.3	3	53	12.0	2.3	-2.3
2.4	3	57	14.0	2.4	-2.4
2.5	3	57	14.0	2.5	-2.5
2.6	3	57	14.0	2.6	-2.6
2.7	3	61	15.0	2.7	-2.7
2.8	3	61	15.0	2.8	-2.8
2.9	3	61	15.0	2.9	-2.9
3.0	3	61	15.0	3.0	-3
3.5	3	70	18.0	3.5	-3.5
4.0	3	75	19.0	4.0	-4
4.5	3	80	21.0	4.5	-4.5
5.0	3	86	23.0	5.0	-5
5.5	3	93	26.0	5.6	-5.5
6.0	3	93	26.0	5.6	-6
6.5	3	101	28.0	6.3	-6.5
7.0	3	109	31.0	7.1	-7
7.5	3	109	31.0	7.1	-7.5

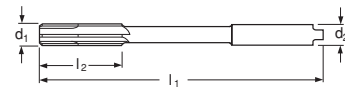
d ₁ mm	No. of teeth	l ₁ mm	l ₂ mm	d ₂ mm h9	Ordering code F1353...
8.0	3	117	33.0	8.0	-8
8.5	3	117	33.0	8.0	-8.5
9.0	3	125	36.0	9.0	-9
9.5	3	125	36.0	9.0	-9.5
10.0	4	133	38.0	10.0	-10
10.5	4	133	38.0	10.0	-10.5
11.0	4	142	41.0	10.0	-11
11.5	4	142	41.0	10.0	-11.5
12.0	4	151	44.0	10.0	-12
12.5	4	151	44.0	10.0	-12.5
13.0	4	151	44.0	10.0	-13
13.5	4	160	47.0	12.5	-13.5
14.0	4	160	47.0	12.5	-14
14.5	4	162	50.0	12.5	-14.5
15.0	6	162	50.0	12.5	-15
15.5	6	170	52.0	12.5	-15.5
16.0	6	170	52.0	12.5	-16
16.5	6	175	54.0	14.0	-16.5
17.0	6	175	54.0	14.0	-17
17.5	6	182	56.0	14.0	-17.5
18.0	6	182	56.0	14.0	-18
18.5	6	189	58.0	16.0	-18.5
19.0	6	189	58.0	16.0	-19
19.5	6	195	60.0	16.0	-19.5
20.0	6	195	60.0	16.0	-20

Solid Carbide Chucking Reamers

F1362

Application: General purpose, e. g. steel, aluminium and copper alloys.

Remarks: Dia. above 7,5 mm with solid carbide head, above 16 mm dia. carbide tipped; unequal spacing of teeth, diameters above 5,5 mm with tang acc. to DIN 1809; alternative fits and diameters upon request



	d ₁ mm	No. of teeth	l ₁ mm	l ₂ mm	d ₂ mm h9	Type	Ordering code F1362...
▲	2.0	4	49	11	2.0	A	-2
▲	2.2	4	57	15	2.2	A	-2.2
▲	2.5	4	57	15	2.5	A	-2.5
▲	2.8	4	61	15	2.8	A	-2.8
▲	3.0	6	61	15	3.0	A	-3
▲	3.2	6	70	18	3.2	A	-3.2
▲	3.5	6	70	18	3.5	A	-3.5
■	4.0	6	75	19	4.0	C	-4
■	4.5	6	80	21	4.5	C	-4.5
■	5.0	6	86	23	5.0	C	-5
■	5.5	6	93	26	5.6	C	-5.5
■	6.0	6	93	26	5.6	C	-6
■	6.5	6	101	28	6.3	C	-6.5
■	7.0	6	109	31	7.1	C	-7
■	7.5	6	109	31	7.1	C	-7.5
■	8.0	6	117	33	8.0	C	-8
	8.5	6	117	33	8.0	A	-8.5
	9.0	6	125	36	9.0	A	-9
	9.5	6	125	36	9.0	A	-9.5
	10.0	6	133	38	10.0	A	-10
	10.5	6	133	38	10.0	A	-10.5
	11.0	6	142	41	10.0	A	-11
	11.5	6	142	41	10.0	A	-11.5
	12.0	6	151	44	10.0	A	-12
	12.5	6	151	44	10.0	A	-12.5
	13.0	6	151	44	10.0	A	-13
	13.5	8	160	47	12.5	A	-13.5
	14.0	8	160	47	12.5	A	-14
	14.5	8	162	50	12.5	A	-14.5
	15.0	8	162	50	12.5	A	-15
	15.5	8	170	52	12.5	A	-15.5
	16.0	8	170	52	12.5	A	-16
	17.0	8	175	54	14.0	A	-17
	18.0	8	182	56	14.0	A	-18
	19.0	8	189	58	16.0	A	-19
	20.0	8	195	60	16.0	A	-20

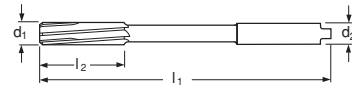
▲ = Dimensions acc. to DIN 212 Part 1 Form A ■ = Dimensions acc. to DIN 8093 Form A

Solid Carbide Chucking Reamers

F1371

Application: General purpose, e. g. steel, aluminium and copper alloys.

Remarks: Dia. above 7,5 mm with solid carbide head, above 16 mm dia. carbide tipped; unequal spacing of teeth, diameters above 5,5 mm with tang acc. to DIN 1809; alternative fits and diameters upon request



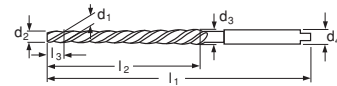
	d ₁ mm	No. of teeth	l ₁ mm	l ₂ mm	d ₂ mm h9	Type	Ordering code F1371...
▲	2.0	4	49	11	2.0	B	-2
▲	2.2	4	57	15	2.2	B	-2.2
▲	2.5	4	57	15	2.5	B	-2.5
▲	2.8	4	61	15	2.8	B	-2.8
▲	3.0	4	61	15	3.0	B	-3
▲	3.2	6	70	18	3.2	B	-3.2
▲	3.5	6	70	18	3.5	B	-3.5
■	4.0	6	75	19	4.0	D	-4
■	4.5	6	80	21	4.5	D	-4.5
■	5.0	6	86	23	5.0	D	-5
■	5.5	6	93	26	5.6	D	-5.5
■	6.0	6	93	26	5.6	D	-6
■	6.5	6	101	28	6.3	D	-6.5
■	7.0	6	109	31	7.1	D	-7
■	7.5	6	109	31	7.1	D	-7.5
■	8.0	6	117	33	8.0	D	-8
	8.5	6	117	33	8.0	B	-8.5
	9.0	6	125	36	9.0	B	-9
	9.5	6	125	36	9.0	B	-9.5
	10.0	6	133	38	10.0	B	-10
	10.5	6	133	38	10.0	B	-10.5
	11.0	6	142	41	10.0	B	-11
	11.5	6	142	41	10.0	B	-11.5
	12.0	6	151	44	10.0	B	-12
	12.5	6	151	44	10.0	B	-12.5
	13.0	6	151	44	10.0	B	-13
	13.5	8	160	47	12.5	B	-13.5
	14.0	8	160	47	12.5	B	-14
	14.5	8	162	50	12.5	B	-14.5
	15.0	8	162	50	12.5	B	-15
	15.5	8	170	52	12.5	B	-15.5
	16.0	8	170	52	12.5	B	-16
	17.0	8	175	54	14.0	B	-17
	18.0	8	182	56	14.0	B	-18
	19.0	8	189	58	16.0	B	-19
	20.0	8	195	60	16.0	B	-20

▲ = Dimensions acc. to DIN 212 Part 1 Form B ■ = Dimensions acc. to DIN 8093 Form B

Taper Pin Reamers, Quick Helix

F3234

Application: For taper pinholes acc. to DIN 258, DIN 1447, DIN 7977, DIN 7978 and DIN EN 28736, DIN EN 28737, DIN EN 28744. **Remarks:** Dia. above 1,5 mm = TITEX-Standard

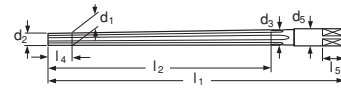


d ₁ mm	d ₂ mm h9	d ₃ mm	d ₄ mm	l ₁ mm	l ₂ mm	l ₃ mm	No. of teeth	Ordering code F3234...
1.0	0.8	1.46	1.40	60	33	5	2	-1
1.5	1.3	2.14	2.10	70	42	5	2	-1.5
2.0	1.9	2.86	3.15	86	48	5	3	-2
2.5	1.9	3.36	3.15	86	48	5	3	-2.5
3.0	2.9	4.06	4.00	100	58	5	3	-3
4.0	3.9	5.26	5.00	112	68	5	3	-4
5.0	4.9	6.36	6.30	122	73	5	3	-5
6.0	5.9	8.00	8.00	160	105	5	3	-6
8.0	7.9	10.80	10.00	207	145	5	3	-8
10.0	9.9	13.40	12.50	245	175	5	3	-10
12.0	11.8	16.00	16.00	290	210	10	3	-12

Taper Reamers

F3317

Application: For taper pinholes acc. to DIN 258, DIN 1447, DIN 7977, DIN 7978 and DIN EN 28736, DIN EN 28737, DIN EN 28744. **Remarks:** Straight shank with square



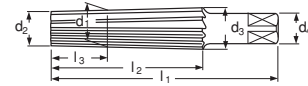
d_1 mm	d_2 mm	d_3 mm	d_5 mm h11	l_1 mm	l_2 mm	l_4 mm	No. of teeth	Ordering code F3317...
1.0	0.9	1.46	3.15	46	28	5	3	-1
1.2	1.1	1.74	3.15	50	32	5	3	-1.2
1.5	1.4	2.14	3.15	57	37	5	3	-1.5
2.0	1.9	2.86	3.15	68	48	5	3	-2
2.5	2.4	3.36	3.15	68	48	5	4	-2.5
3.0	2.9	4.06	4.00	80	58	5	5	-3
4.0	3.9	5.26	5.00	93	68	5	5	-4
5.0	4.9	6.36	6.30	100	73	5	5	-5
6.0	5.9	8.00	8.00	135	105	5	6	-6
8.0	7.9	10.80	10.00	180	145	5	6	-8
10.0	9.9	13.40	12.50	215	175	5	6	-10
12.0	11.8	16.00	14.00	255	210	10	8	-12
16.0	15.8	20.40	18.00	280	230	10	8	-16
20.0	19.8	24.80	22.40	310	250	10	8	-20
25.0	24.7	30.70	28.00	370	300	15	10	-25
30.0	29.7	36.10	31.50	400	320	15	10	-30

Taper Reamers

F3417

Application: For Morse tapers acc. to DIN 228. (E.g. taper sockets).

Remarks: Straight shank with square



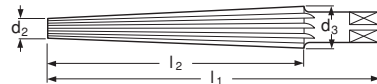
For MT	d ₁ mm	d ₂ mm	d ₃ mm	d ₄ mm	l ₁ mm	l ₂ mm	l ₃ mm	No. of teeth	Ordering code F3417...
0	9.045	6.547	9.722	8.0	93	61	48	6	-MK0
1	12.065	9.571	12.863	10.0	102	66	50	7	-MK1
2	17.780	14.733	18.679	14.0	121	79	61	8	-MK2
3	23.825	20.010	24.829	20.0	146	96	76	8	-MK3
4	31.267	26.229	32.410	25.0	179	119	97	10	-MK4
5	44.399	37.873	45.767	31.5	222	150	124	12	-MK5
6	63.348	54.172	65.016	45.0	300	208	176	14	-MK6

Taper Reamers

F3517

Application: For heavily tapered holes.

Remarks: Straight shank with square



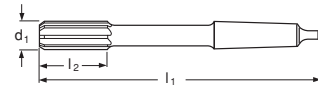
d ₂ mm	d ₃ mm	No. of teeth	l ₁ mm	l ₂ mm	Ordering code F3517...
5	15	7	140	100	-5
10	25	9	195	150	-10
15	35	11	250	200	-15

d ₂ mm	d ₃ mm	No. of teeth	l ₁ mm	l ₂ mm	Ordering code F3517...
23	45	11	275	220	-23

Taper Shank Machine Reamers

F4142

Application: General purpose, e. g. steel, aluminium and copper alloys.



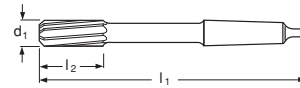
d ₁ mm	No. of teeth	l ₁ mm	l ₂ mm	MT	Ordering code F4142...
5	6	133	23	1	-5
6	6	138	26	1	-6
7	6	150	31	1	-7
8	6	156	33	1	-8
9	6	162	36	1	-9
10	6	168	38	1	-10
11	6	175	41	1	-11
12	6	182	44	1	-12
13	6	182	44	1	-13
14	8	189	47	1	-14
15	8	204	50	2	-15
16	8	210	52	2	-16
17	8	214	54	2	-17
18	8	219	56	2	-18
19	8	223	58	2	-19

d ₁ mm	No. of teeth	l ₁ mm	l ₂ mm	MT	Ordering code F4142...
20	8	228	60	2	-20
21	8	232	62	2	-21
22	8	237	64	2	-22
23	8	241	66	2	-23
24	8	268	68	3	-24
25	8	268	68	3	-25
26	8	273	70	3	-26
27	10	277	71	3	-27
28	10	277	71	3	-28
29	10	281	73	3	-29
30	10	281	73	3	-30
31	10	285	75	3	-31
32	10	317	77	4	-32

Taper Shank Machine Reamers

F4152

Application: General purpose, e. g. steel, aluminium and copper alloys. To produce holes of precise roundness and excellent surface finish.



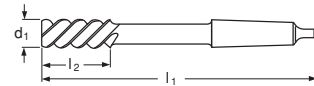
d ₁ mm	No. of teeth	l ₁ mm	l ₂ mm	MT	Ordering code F4152...
5.0	6	133	23	1	-5
5.5	6	138	26	1	-5.5
6.0	6	138	26	1	-6
6.5	6	144	28	1	-6.5
7.0	6	150	31	1	-7
7.5	6	150	31	1	-7.5
8.0	6	156	33	1	-8
8.5	6	156	33	1	-8.5
9.0	6	162	36	1	-9
9.5	6	162	36	1	-9.5
10.0	6	168	38	1	-10
10.5	6	168	38	1	-10.5
11.0	6	175	41	1	-11
11.5	6	175	41	1	-11.5
12.0	6	182	44	1	-12
12.5	6	182	44	1	-12.5
13.0	6	182	44	1	-13
13.5	8	189	47	1	-13.5
14.0	8	189	47	1	-14
14.5	8	204	50	2	-14.5
15.0	8	204	50	2	-15
15.5	8	210	52	2	-15.5
16.0	8	210	52	2	-16
16.5	8	214	54	2	-16.5
17.0	8	214	54	2	-17
17.5	8	219	56	2	-17.5
18.0	8	219	56	2	-18
18.5	8	223	58	2	-18.5
19.0	8	223	58	2	-19
19.5	8	228	60	2	-19.5
20.0	8	228	60	2	-20
20.5	8	232	62	2	-20.5
21.0	8	232	62	2	-21

d ₁ mm	No. of teeth	l ₁ mm	l ₂ mm	MT	Ordering code F4152...
21.5	8	237	64	2	-21.5
22.0	8	237	64	2	-22
22.5	8	241	66	2	-22.5
23.0	8	241	66	2	-23
23.5	8	241	66	2	-23.5
24.0	8	268	68	3	-24
24.5	8	268	68	3	-24.5
25.0	8	268	68	3	-25
25.5	8	273	70	3	-25.5
26.0	8	273	70	3	-26
26.5	8	273	70	3	-26.5
27.0	10	277	71	3	-27
27.5	10	277	71	3	-27.5
28.0	10	277	71	3	-28
28.5	10	281	73	3	-28.5
29.0	10	281	73	3	-29
29.5	10	281	73	3	-29.5
30.0	10	281	73	3	-30
30.5	10	285	75	3	-30.5
31.0	10	285	75	3	-31
31.5	10	285	75	3	-31.5
32.0	10	317	77	4	-32
33.0	10	317	77	4	-33
34.0	10	321	78	4	-34
35.0	10	321	78	4	-35
36.0	10	325	79	4	-36
37.0	10	325	79	4	-37
38.0	10	329	81	4	-38
39.0	10	329	81	4	-39
40.0	10	329	81	4	-40

Taper Shank Machine Reamers, Quick Helix

F4153

Application: For through holes in soft materials forming long chips such as aluminium and copper alloys. Particularly suitable for volume production.



d ₁ mm	No. of teeth	l ₁ mm	l ₂ mm	MT	Ordering code F4153...
5	3	133	23	1	-5
6	3	138	26	1	-6
7	3	150	31	1	-7
8	3	156	33	1	-8
9	3	162	36	1	-9
10	3	168	38	1	-10
11	3	175	41	1	-11
12	3	182	44	1	-12
13	3	182	44	1	-13
14	3	189	47	1	-14
15	3	204	50	2	-15
16	3	210	52	2	-16
17	3	214	54	2	-17
18	3	219	56	2	-18
19	3	223	58	2	-19

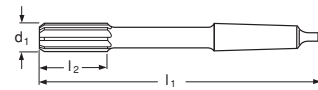
d ₁ mm	No. of teeth	l ₁ mm	l ₂ mm	MT	Ordering code F4153...
20	3	228	60	2	-20
21	3	232	62	2	-21
22	3	237	64	2	-22
23	3	241	66	2	-23
24	3	268	68	3	-24
25	3	268	68	3	-25
26	3	273	70	3	-26
27	3	277	71	3	-27
28	3	277	71	3	-28
29	3	281	73	3	-29
30	3	281	73	3	-30
31	3	285	75	3	-31
32	3	317	77	4	-32

Taper Shank Solid Carbide Machine Reamers

F4162

Application: General purpose, e. g. steel, aluminium and copper alloys.

Remarks: Dia. up to 16 mm with solid carbide head, dia. above 16 mm carbide tipped, with unequal spacing of teeth; alternative fits and diameters upon request



	d ₁ mm	No. of teeth	l ₁ mm	l ₂ mm	MT	Type	Ordering code F4162...
▲	5	6	133	23	1	A	-5
▲	6	6	138	26	1	A	-6
▲	7	6	150	31	1	A	-7
■	8	6	156	33	1	A	-8
■	9	6	162	36	1	A	-9
■	10	6	168	38	1	A	-10
■	11	6	175	41	1	A	-11
■	12	6	182	44	1	A	-12
■	13	6	182	44	1	A	-13
■	14	8	189	47	1	A	-14
■	15	8	204	50	2	A	-15
■	16	8	210	52	2	A	-16
■	21	6	232	62	2	A	-21
■	22	6	237	64	2	A	-22
■	23	6	241	66	2	A	-23
■	24	8	268	68	3	A	-24
■	25	8	268	68	3	A	-25
■	26	8	273	70	3	A	-26
■	27	8	277	71	3	A	-27
■	28	8	277	71	3	A	-28
■	30	8	281	73	3	A	-30
■	32	8	317	77	4	A	-32

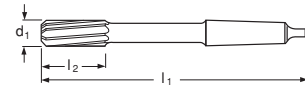
▲ = Dimensions acc. to DIN 208 Form A ■ = Dimensions acc. to DIN 8094 Form A

Solid Carbide Machine Reamers with Taper Shank

F4171

Application: General purpose, e. g. steel, aluminium and copper alloys.

Remarks: Carbide grade K10, dia. up to 16 mm with solid carbide head, dia. above 16 mm carbide tipped, with unequal spacing of teeth; alternative fits and diameters upon request



	d ₁ mm	No. of teeth	l ₁ mm	l ₂ mm	MT	Type	Ordering code F4171...
▲	5	6	133	23	1	B	-5
▲	6	6	138	26	1	B	-6
▲	7	6	150	31	1	B	-7
■	8	6	156	33	1	B	-8
■	9	6	162	36	1	B	-9
■	10	6	168	38	1	B	-10
■	11	6	175	41	1	B	-11
■	12	6	182	44	1	B	-12
■	13	6	182	44	1	B	-13
■	14	6	189	47	1	B	-14
■	15	6	204	50	2	B	-15
■	16	6	210	52	2	B	-16
■	17	6	214	54	2	B	-17
■	18	6	219	56	2	B	-18
■	19	6	223	58	2	B	-19
■	20	6	228	60	2	B	-20

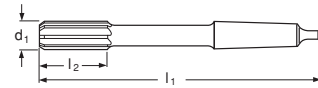
▲ = Dimensions acc. to DIN 208 Form B ■ = Dimensions acc. to DIN 8094 Form B

Taper Shank Expansion Machine Reamers

F4214

Application: For close fits.

Remarks: Adjustable up to 0,01 diameter max., dimensions acc. to DIN 208



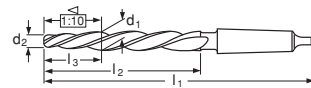
d ₁ mm	No. of teeth	l ₁ mm	l ₂ mm	MT	Ordering code F4214...
10	9	168	38	1	-10
11	9	175	41	1	-11
12	9	182	44	1	-12
13	9	182	44	1	-13
14	9	189	47	1	-14
15	9	204	50	2	-15

d ₁ mm	No. of teeth	l ₁ mm	l ₂ mm	MT	Ordering code F4214...
16	9	210	52	2	-16
17	9	214	54	2	-17
18	9	219	56	2	-18
19	9	223	58	2	-19
20	9	228	60	2	-20

Taper Shank Bridge Reamers

F4535

Application: General purpose, e. g. steel, aluminium and copper alloys. **Remarks:** Long chamfer

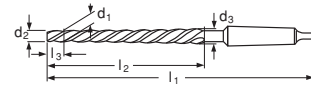


d ₁ mm k11	No. of teeth	d ₂ mm	l ₁ mm	l ₂ mm	l ₃ mm	MT	Ordering code F4535...
6.4	3	4.6	151	75	19	1	-6.4
7.4	3	5.3	156	80	22	1	-7.4
8.4	3	6.0	161	85	25	1	-8.4
9.5	4	6.9	166	90	27	1	-9.5
10.0	4	7.1	171	95	30	1	-10
11.0	4	7.8	176	100	33	1	-11
12.0	4	8.2	199	105	39	2	-12
13.0	4	9.2	199	105	39	2	-13
14.0	4	9.9	209	115	42	2	-14
15.0	4	10.6	219	125	45	2	-15
16.0	5	11.4	229	135	48	2	-16
17.0	5	12.1	251	135	51	3	-17
18.0	5	12.4	261	145	58	3	-18
19.0	5	13.4	261	145	58	3	-19
20.0	5	14.0	271	155	62	3	-20
21.0	5	15.0	271	155	62	3	-21
22.0	5	15.6	281	165	66	3	-22
23.0	5	16.6	281	165	66	3	-23
24.0	5	17.0	296	180	72	3	-24
25.0	5	18.0	296	180	72	3	-25
26.0	5	19.0	296	180	72	3	-26
27.0	5	19.4	311	195	78	3	-27
28.0	5	20.4	311	195	78	3	-28
29.0	5	21.4	311	195	78	3	-29
30.0	5	22.4	311	195	78	3	-30
31.0	5	22.4	326	210	84	3	-31
32.0	5	23.8	354	210	84	4	-32

Taper Shank, Taper Pin Reamers, Quick Helix

F6134

Application: For taper pinholes acc. to DIN 258, DIN 1447, DIN 7977, DIN 7978 and DIN EN 28736, DIN EN 28737, DIN EN 28744.



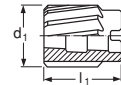
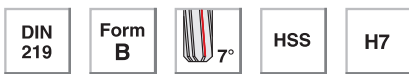
d ₁ mm	d ₂ mm	d ₃ mm	l ₁ mm	l ₂ mm	l ₃ mm	MT	No. of teeth	Ordering code F6134...
5	4.9	6.36	155	73	5	1	3	-5
6	5.9	8.00	187	105	5	1	3	-6
8	7.9	10.80	227	145	5	1	3	-8
10	9.9	13.40	257	175	5	1	3	-10
12	11.8	16.00	315	210	10	2	3	-12
16	15.8	20.40	335	230	10	2	3	-16
20	19.8	24.80	377	250	10	3	3	-20

Shell Reamers

F7133

Application: General purpose, e. g. steel, aluminium alloys, non-ferrous metals and cast iron.

Remarks: Inside taper 1:30 with drive slot



d ₁ mm	No. of teeth	Taper bore-Ø mm	l ₁ mm	Ordering code F7133...
25	8	13	45	-25
26	8	13	45	-26
27	8	13	45	-27
28	8	13	45	-28
29	8	13	45	-29
30	8	13	45	-30
31	10	16	50	-31
32	10	16	50	-32
33	10	16	50	-33
34	10	16	50	-34
35	10	16	50	-35
36	10	19	56	-36
37	10	19	56	-37
38	10	19	56	-38
39	10	19	56	-39

d ₁ mm	No. of teeth	Taper bore-Ø mm	l ₁ mm	Ordering code F7133...
40	10	19	56	-40
42	10	19	56	-42
44	12	22	63	-44
45	12	22	63	-45
46	12	22	63	-46
47	12	22	63	-47
48	12	22	63	-48
50	12	22	63	-50
52	12	27	71	-52
55	12	27	71	-55
58	12	27	71	-58
60	12	27	71	-60

Taper Shank Arbors For Shell Reamers

Z2311

DIN
217

For Taper bore-Ø mm	MT	l ₁ mm	Ordering code Z2311...
13	3	250	*13
16	3	261	*16
19	4	298	*19

For Taper bore-Ø mm	MT	l ₁ mm	Ordering code Z2311...
22	4	312	*22
27	5	359	*27
32	5	376	*32

For Taper bore-Ø mm	MT	l ₁ mm	Ordering code Z2311...
40	5	396	*40
50	5	416	*50



Type Selection and Recommendation Data – Drilling Tools.



General technical informations	258
How to find your Drill	264
Type Selection and Recommendation Data – Drills with coolant.	266
Type Selection and Recommendation Data – Drills dry.	332
Micro Drills – rpm-Nomogram	346
Feed Curve-Diagram	347

TITEX High Speed Steels

The most commonly used cutting materials for drills, taps, reamers and other cutting tools are high speed steels. They offer the following advantages:

- High toughness
- Easy machining
- Low costs

Four groups of High Speed Steels are used for TITEX tools

HSS High speed steel for general purposes.
(Twist drills, hand taps, core drills, countersinks, some reamers, centre drills, subland drills)

HSS-E High speed steel with 5% Co to withstand higher stress, especially thermal stress.
(High performance twist drills, machine taps, some reamers)

HSS-E Co8 High speed steel with 8% Co. gives maximum thermal loading, corresponds to the American standard designation M42
(special tools)

HSS-E-PM High Speed Steel with a very high alloy content, manufactured using powder metallurgy.
Advantages: High purity and evenness of microstructure, high wear resistance and ability to withstand thermal loading.
(High performance taps, special tools)

TITEX tool designation	Material no.	Abbreviation	Old standard designation	American standard designation AISI-ASTM	French standard designation AFNOR	British standard designation BS	Italian standard designation UNI	Alloy table					
								C	Cr	W	Mo	V	Co
HSS	1.3343	S 6-5-2	DMo5	M2	–	BM2	HS 6-5-2	0.82	4.0	6.5	5.0	2.0	–
HSS-E	1.3243	S 6-5-2-5	EMo5 Co5	M35	6.5.2.5	–	HS 6-5-2-5	0.82	4.5	6.0	5.0	2.0	5.0
HSS-E Co8	1.3247	S 2-10-1-8	–	M42	–	BM42	HS 2-9-1-8	1.08	4.0	1.5	9.5	1.2	8.25
HSS-E-PM	Commercial designation ASP												

TITEX Carbides

Carbides are being used to an increasing extent as the cutting material for rotary tools, especially drills. They demonstrate the following advantages, compared with the High Speed Steels traditionally used in this sector:

- Higher hardness and wear-resistance
- Greater hardness at high temperatures (heat-resistance)
- Greater stiffness (2.5 to 3 times the Young's modulus of HSS)
- Sharper cutting edges (no grinding burrs)

Structure of the Carbides

Carbides consist primarily of tungsten carbide (WC) as the hard material and cobalt (Co) as the bonding agent. The cobalt content is usually between 6 and 12%. The rule of thumb here is:

The higher the cobalt content, the greater the toughness but the lower the wear-resistance and vice versa.

A further defining factor in carbides is the grain size. Hardness increases as the grain size decreases.

Carbides Used for TITEX-Precision Tools

TITEX material designation	Co%	Grain size	Hardness HV
K10	6	Normal	1650
K20F	6-7	Fine	1650-1800
K30F	10	Very fine	1550
K44XF	12	Ultra-fine	1700
P45	11	Normal	1350

TITEX Surface Treatments and Coatings

The two main methods currently in use for improving the performance of cutting tools are:

- Surface treatment
- Hard material coatings

Steam Oxidising of HSS Tools

Method	Achievable Effect	Achievable Properties
Dry steam atmosphere 520 to 580°C	Strongly adhering layer of oxide consisting of Fe ₃ O ₄ of approx. 0,003 to 0,010 mm depth	Low tendency to cold welding Increased surface hardness gives improved wear-resistance Increased corrosion resistance Improved anti-frictional properties due to better adhesion of lubricant caused by FeO-crystals Reduction of grinding stress

Nitriding of HSS Tools

Method	Achievable Effect	Achievable Properties
Treatment in nitrogen-releasing media, 530 to 570°C	Enrichment of tool surface with nitrogen and partially with carbon	Low tendency to cold welding and build-up on cutting edge Increased hardness and therefore increased wear-resistance

Coatings

Surface-coating has evolved into a recognised technology for improving the performance of metal-cutting tools. Unlike conventional surface treatments, coatings are applied to the surface in the form of a very thin layer without changing the chemical composition of the tool surface.

PVD-processes, which run at process temperatures below 600°C and therefore do not cause any change to the substrate metal, are used for coat-

ing TITEX tools made of HSS and solid carbide. The hard coatings applied are harder and more wear resistant than the cutting material itself.









In addition to the latter they-

- Lead to an improvement of the anti-frictional properties of the tool surface
- Form a division between the cutting tool material and material to be cut
- Act as a thermal insulation layer.

These benefits result in increased tool life for the

coated tools at increased cutting speeds and feed rates.

The gold-coloured **TiN** coating is the universal coating for TITEX drills. However, in general when drilling, the greater hardness and heat resistance of the grey-violet **TINAL FUTURA** coating produces a longer tool life, especially for high performance cutting data and materials which are difficult to machine.

Surface treatment/coating	Method/coating	Properties	Designation in TITEX order code	Colour of tool surface
	No treatment		None, BLK	Bright
	Steam treatment	Universal treatment for HSS	None, FNZ	Black
	TiN-coating	Universal coating	TiN	Gold
	TiN-tip coating	Special coating for best swarf transportation	TIP	Gold
	TINAL FUTURA-coating	High performance coating with broad range of applications	TFL	Grey-violet
	TINAL FUTURA TOP-coating	High performance coating with very low friction	TFT	Grey-violet
	TINAL FUTURA TIP-coating	High performance for best swarf transportation	TFP	Grey-violet
	TINAL Micro coating	Special coating for small drills with very low friction	TML	Grey-violet

Twist Drills with straight shank

Dimensions

TITEX Cat. No.	A 11...		A 12...		A 14...		A 15...		A 16...		A 17...		A 18...	
Dia. mm above - up to	DIN 1897		DIN 338		DIN 339		DIN 340		DIN 1869					
	l ₁	l ₂	l ₁	l ₂	l ₁	l ₂	l ₁	l ₂	Series 1		Series 2		Series 3	
	l ₁	l ₂	l ₁	l ₂	l ₁	l ₂	l ₁	l ₂	l ₁	l ₂	l ₁	l ₂	l ₁	l ₂
0,18 – 0,24	19	1,5	19	2,5			19*	3*						
0,24 – 0,30	19	1,5	19	3			19*	4,5*						
0,30 – 0,38	19	2	19	4			24*	7*						
0,38 – 0,48	19	2,5	20	5			28*	10*						
0,48 – 0,53	20	3	22	6			32*	12*						
0,53 – 0,60	21	3,5	24	7			35*	15*						
0,60 – 0,67	22	4	26	8			38*	18*						
0,67 – 0,75	23	4,5	28	9			42*	21*						
0,75 – 0,85	24	5	30	10			46*	25*						
0,85 – 0,95	25	5,5	32	11			51*	29*						
0,95 – 1,06	26	6	34	12	48	26	56	33						
1,06 – 1,18	28	7	36	14	50	28	60	37						
1,18 – 1,32	30	8	38	16	52	30	65	41						
1,32 – 1,50	32	9	40	18	55	33	70	45						
1,50 – 1,70	34	10	43	20	58	35	76	50						
1,70 – 1,90	36	11	46	22	62	38	80	53						
1,90 – 2,12	38	12	49	24	66	41	85	56	125	85				
2,12 – 2,36	40	13	53	27	70	44	90	59	135	90				
2,36 – 2,65	43	14	57	30	74	47	95	62	140	95				
2,65 – 3,00	46	16	61	33	79	51	100	66	150	100	190	130		
3,00 – 3,35	49	18	65	36	84	55	106	69	155	105	200	135		
3,35 – 3,75	52	20	70	39	91	60	112	73	165	115	210	145	265	180
3,75 – 4,25	55	22	75	43	96	64	119	78	175	120	220	150	280	190
4,25 – 4,75	58	24	80	47	102	69	126	82	185	125	235	160	295	200
4,75 – 5,30	62	26	86	52	108	74	132	87	195	135	245	170	315	210
5,30 – 6,00	66	28	93	57	116	80	139	91	205	140	260	180	330	225
6,00 – 6,70	70	31	101	63	124	86	148	97	215	150	275	190	350	235
6,70 – 7,50	74	34	109	69	133	93	156	102	225	155	290	200	370	250
7,50 – 8,50	79	37	117	75	142	100	165	109	240	165	305	210	390	265
8,50 – 9,50	84	40	125	81	151	107	175	115	250	175	320	220	410	280
9,50 – 10,60	89	43	133	87	162	116	184	121	265	185	340	235	430	295
10,60 – 11,80	95	47	142	94	173	125	195	128	280	195	360	250	450	305
11,80 – 13,20	102	51	151	101	184	134	205	134	295	205	380	260	480	305
13,20 – 14,00	107	54	160	108	194	142	214	140						
14,00 – 15,00	111	56	169	114	202	147	220	144						
15,00 – 16,00	115	58	178	120	211	153	227	149						
16,00 – 17,00	119	60	184	125	218	159	235	154						
17,00 – 18,00	123	62	191	130	226	165	241	158						
18,00 – 19,00	127	64	198	135	234	171	247	162						
19,00 – 20,00	131	66	205	140	242	177	254	166						
20,00 – 21,20	136	68	213*	145*			261	171						
21,20 – 22,40	141	70	221*	150*			268	176						
22,40 – 23,02	146	72	229*	155*			275	180						
23,02 – 23,60	146	72	229*	155*			275	180						
23,60 – 25,00	151	75	236*	160*			282	185						
25,00 – 26,50	156	78	243*	165*			290	190						
26,50 – 28,00	162	81	251*	170*			298	195						
28,00 – 30,00	168	84	259*	175*			307	201						
30,00 – 31,50	174	87	267*	180*			316	207						
31,50 – 31,75	180	90	275*	185*			325*	213*						
31,75 – 33,50	180	90	275*	185*			325*	213*						
33,50 – 35,50	186	93	283*	190*			338*	222*						
35,50 – 37,50	193	96	292*	195*			348*	228*						
37,50 – 40,00	200	100	300*	200*			356*	234*						
40,00 – 42,50	207*	104*	308*	205*			368*	241*						
42,50 – 45,00	214*	108*	316*	210*			378*	248*						
45,00 – 47,50	221*	112*	324*	215*			390*	255*						
47,50 – 50,00	228*	116*	332*	220*			400*	262*						

*) TITEX-Standard

Twist Drills with Morse Taper Shank Dimensions

TITEX Cat. No.	A 41...			A 42...			A 43...			A 44...			A 46...		A 47...			
	TITEX- Standard		M T **	DIN 345		M T **	DIN 346		M T **	DIN 341		M T **	DIN 1870 Series 1		Series 2		M T **	
	l ₁	l ₂		l ₁	l ₂		l ₁	l ₂		l ₁	l ₂		l ₁	l ₂	l ₁	l ₂		
above - up to																		
2,65 – 3,00				114	33	1												
3,00 – 3,35				117	36	1												
3,35 – 3,75				120	39	1												
3,75 – 4,25				124	43	1												
4,25 – 4,75				128	47	1												
4,75 – 5,30				133	52	1				155	74	1						
5,30 – 6,00				138	57	1				161	80	1						
6,00 – 6,70				144	63	1				167	86	1						
6,70 – 7,50				150	69	1				174	93	1						
7,50 – 8,50				156	75	1				181	100	1	265	165	330	210	1	
8,50 – 9,50				162	81	1				188	107	1	275	175	345	220	1	
9,50 – 10,60	138	57	1	168	87	1	185*	87*	2	197	116	1	285	185	360	235	1	
10,60 – 11,80	142	61	1	175	94	1	192*	94*	2	206	125	1	300	195	375	250	1	
11,80 – 13,20	147	66	1	182	101	1	199	101	2	215	134	1	310	205	395	260	1	
13,20 – 14,00	168	70	2	189	108	1	206	108	2	223	142	1	325	220	410	275	1	
14,00 – 15,00	172	74	2	212	114	2				245	147	2	340	220	425	275	2	
15,00 – 16,00	176	78	2	218	120	2				251	153	2	355	230	445	295	2	
16,00 – 17,00	179	81	2	223	125	2	246*	125*	3	257	159	2	355	230	445	295	2	
17,00 – 18,00	183	85	2	228	130	2	251*	130*	3	263	165	2	370	245	465	310	2	
18,00 – 19,00	186	88	2	233	135	2	256	135	3	269	171	2	370	245	465	310	2	
19,00 – 20,00	212	91	3	238	140	2	261	140	3	275	177	2	385	260	490	325	2	
20,00 – 21,20	216	95	3	243	145	2	266	145	3	282	184	2	385	260	490	325	2	
21,20 – 22,40	219	98	3	248	150	2	271	150	3	289	191	2	405	270	515	345	2	
22,40 – 23,02	222	101	3	253	155	2	276	155	3	296	198	2	405	270	515	345	2	
23,02 – 23,60	222	101	3	276	155	3				319	198	3	425	270	535	345	3	
23,60 – 25,00	225	104	3	281	160	3				327	206	3	440	290	555	365	3	
25,00 – 26,50	256	107	4	286	165	3	314*	165*	4	335	214	3	440	290	555	365	3	
26,50 – 28,00	259	110	4	291	170	3	319	170	4	343	222	3	460	305	580	385	3	
28,00 – 30,00	263	114	4	296	175	3	324	175	4	351	230	3	460	305	580	385	3	
30,00 – 31,50				301	180	3	329	180	4	360	239	3	480	320	610	410	3	
31,50 – 31,75				306	185	3	334	185	4	369	248	3	480	320	610	410	3	
31,75 – 33,50				334	185	4				397	248	4	505	320	635	410	4	
33,50 – 35,50				339	190	4				406	257	4	530	340	665	430	4	
35,50 – 37,50				344	195	4				416	267	4	530	340	665	430	4	
37,50 – 40,00				349	200	4				426	277	4	555	360	695	460	4	
40,00 – 42,50				354	205	4	392	205	5	436	287	4	555	360	695	460	4	
42,50 – 45,00				359	210	4	397	210	5	447	298	4	585	385	735	490	4	
45,00 – 47,50				364	215	4	402	215	5	459	310	4	585	385	735	490	4	
47,50 – 50,00				369	220	4	407	220	5	470	321	4	605	405	765	510	4	
50,00 – 50,80				374	225	4	412	225	5	485*	336*	4						
50,80 – 53,00				412	225	5				523*	336*	5						
53,00 – 56,00				417	230	5				534*	347*	5						
56,00 – 60,00				422	235	5				550*	363*	5						
60,00 – 63,00				427	240	5				566*	379*	5						
63,00 – 67,00				432	245	5	499	245	6	581*	394*	5						
67,00 – 71,00				437	250	5	504	250	6	599*	412*	5						
71,00 – 75,00				442	255	5	509	255	6	617*	430*	5						
75,00 – 76,20				447	260	5	514	260	6	637*	450*	5						
76,20 – 80,00				514	260	6				704*	450*	6						
80,00 – 85,00				519	265	6				727*	473*	6						
85,00 – 90,00				524	270	6				750*	496*	6						
90,00 – 95,00				529	275	6												
95,00 – 100,00				534	280	6												

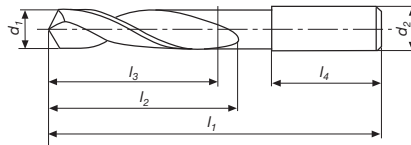
*) TITEX-Standard

**) MT = Morse Taper

Twist Drills Dimensions

Solid Carbide Twist Drills standardized shank type ALPHA

TITEX Cat. No.		A 32... A 38...				A 33... A 39...			
Standard		DIN 6537 K				DIN 6537 L			
Dia. mm above	up to	d ₂ h6	Twist Drills, short series (K)			Twist Drills, long series (L)			l ₄
			l ₁	l ₂ max.	l ₃ min.	l ₁	l ₂ max.	l ₃ min.	
2,90	3,75	6	62	20	14	66	28	23	36
3,75	4,75		66	24	17	74	36	29	
4,75	6,00			28	20	82	44	35	
6,00	7,00	8	79	34	24	91	53	43	40
7,00	8,00			41	29				
8,00	10,00	10	89	47	35	103	61	49	40
10,00	12,00	12	102	55	40	118	71	56	45
12,00	14,00	14	107	60	43	124	77	60	
14,00	16,00	16	115	65	45	133	83	63	48
16,00	18,00	18	123	73	51	143	93	71	
18,00	20,00	20	131	79	55	153	101	77	50



HSS-Co Twist Drills standardized shank type MegaJet

TITEX Cat. No.		A 62..			
Standard		TITEX-Standard			
above	Ø mm d ₁ (h8) up to	l ₁ mm	l ₂ mm	d ₂ (h6) mm	l ₄ mm
6,0	8,0	91	53	8	36
8,0	10,0	103	61	10	40
10,0	12,0	122	75	12	45
12,0	14,0	134	87	14	45
14,0	16,0	150	100	16	48
16,0	18,0	162	112	18	48
18,0	20,0	176	124	20	50
20,0	24,0	207	145	25	56

How to find your drill!

1

Choose the **material group** that corresponds with your work-piece material.

2

Choose the **drilling depth** for your application.

3

Choose the **mode of coolant supply** according to your machine tool. Consideration should also be given to the last column which indicates coolant type.

4

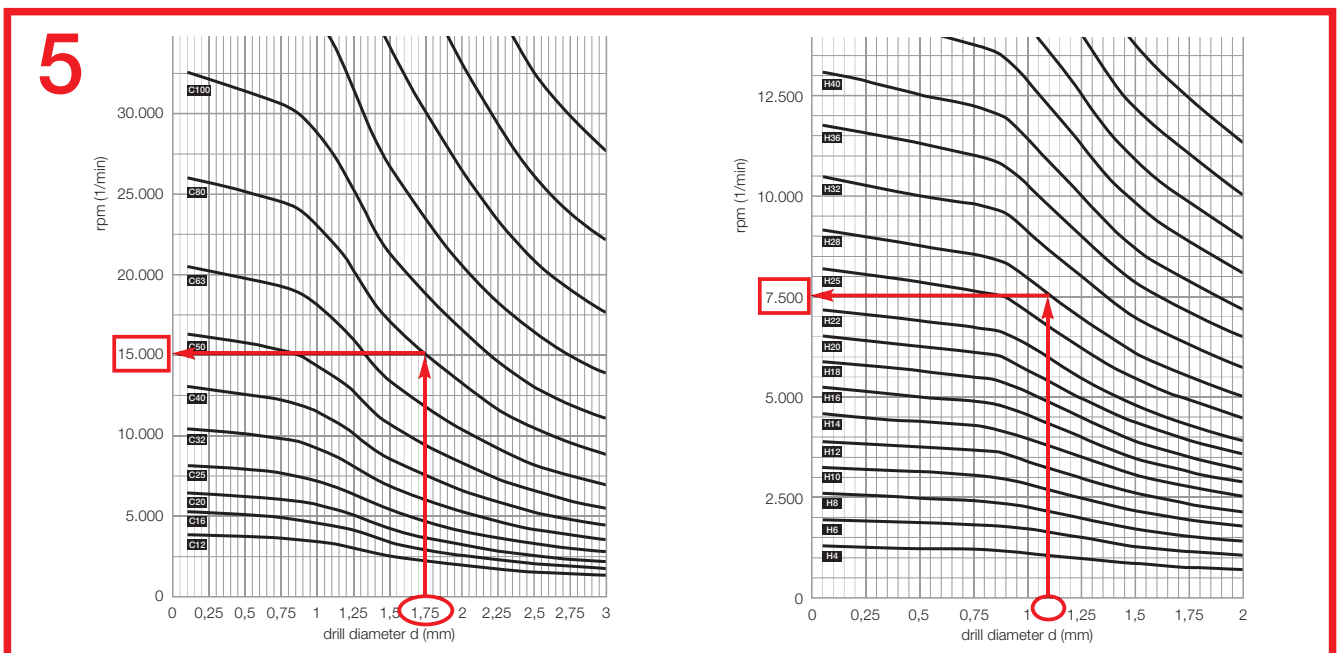
The centre column recommends an appropriate selection of **standard tools** to choose from. The most suitable tool for your application is determined by deciding upon the tools general dimensions (standard), shank type, tool style and cutting material. Consideration should also be taken of the cutting data. See Step 5 and 6.

5

The **cutting speed** for the selected tool can be obtained directly from column v_c . For Micro drills you will find an entry starting with C (solid carbide, f.e. C80) or H (HSS, f.e. H28) in that column. For these drills you can get the rpm value from the nomograms on page 346.

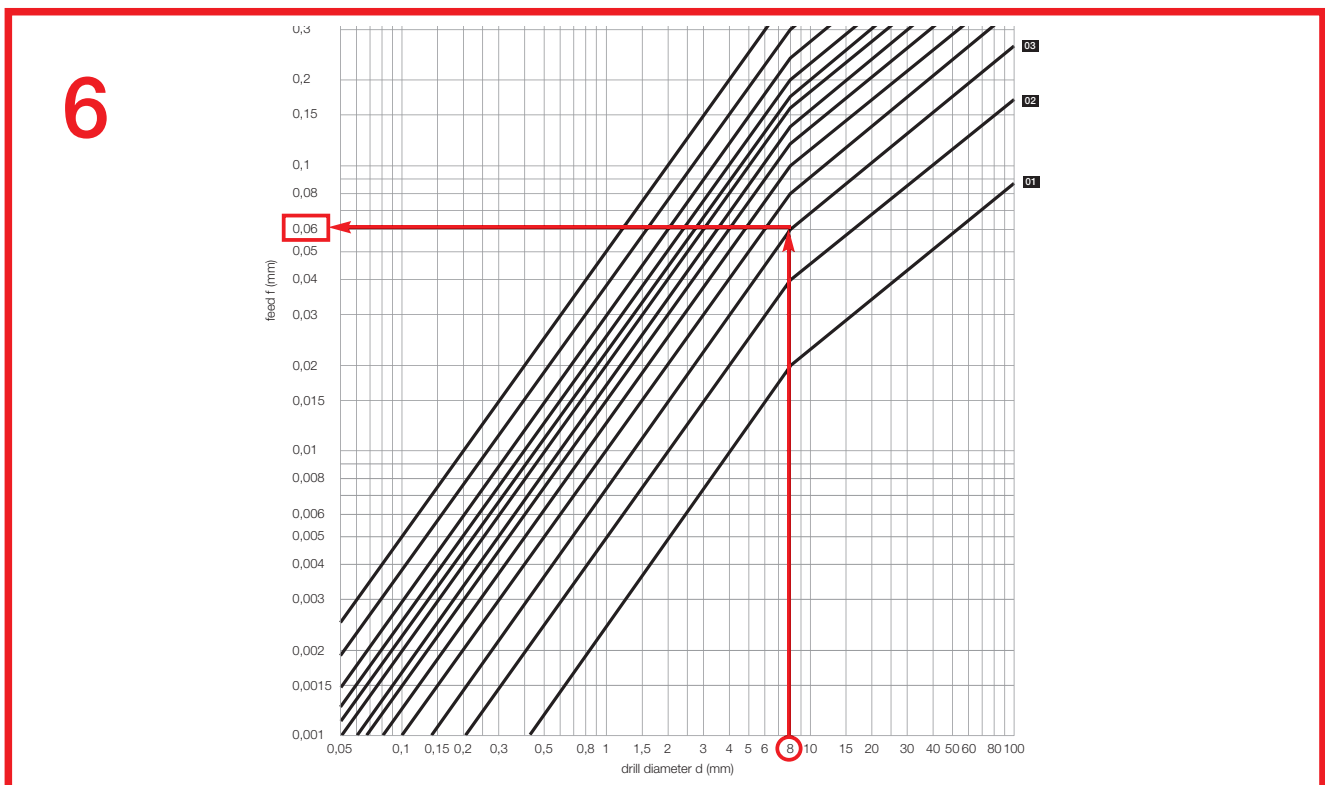
6

Upon the **selection of the recommended** feed-curve number (shown under column Feed Curve) the feed per revolution can be obtained by utilising the nomogram on page 347.



Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v_c (m/min)	Feed curve no.	Coolant	
1 Material Group 1.1.1 Free Machining Steel DIN: 1.0711 9S20 1.0715 9SMn28 1.0718 9SMnPb28 1.0721 10S20 1.0723 15S22 1.0726 35S20 1.0736 9SMn36 1.0737 9MnPb36 AISI/SAE 1212 1213 12L13 1108 1140 1215 12L14	2 3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	120	12		
				6535 HA	A3285TFL						
				6535 HE	A3885TIN						
				6535 HA	A3285TIN						
				TP-Standard	ISO 9766			A811XHNI + AX195TIN			ALPHA POINT
	BS: 210A15 210M15 212M36 220M07 230M07 240M07 EN: 1A 1B 32M	5 x d		DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	100	12	
					6535 HA	A3265TFL					
					6535 HE	A3865TIN					
					6535 HA	A3265TIN					
					DIN 6539	cyl.			A1164TIN		
DIN 1897				cyl.	A1149TFL	UFL	HSS-Co	53	12		
					A1149TIN						
					A1148						
A1111				N	HSS	32	9				
DIN 6537 L				6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	140	16		
	A3985TFL	ALPHA 4	K30F		120	12					
	6535 HA	A3985TIN			100						
	6535 HA	A3385TIN									
	TP-Standard	ISO 9766	A6292TIN		MegaJet	HSS-Co	53	12			
DIN 1899	cyl.	A3162	ESU	K30F	C80	6					
					A3153		ESU, left	HSS-Co	H28	9	
					A3143		ESU				
		DIN 6537 L	6535 HE	A3965TFT	ALPHA 2	K30F	90	10			
				A3365TFT							
				A3976TFL			ALPHA 22		80		
				A3376TFL							
TP-Standard	cyl.	A2258	UFL left hand cut	HSS-Co	34	9					



Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant
Material Group 1.1.1 Free Machining Steel DIN: 1.0711 9S20 1.0715 9SMn28 1.0718 9SMnPb28 1.0721 10S20 1.0723 15S22 1.0726 35S20 1.0736 9SMn36 1.0737 9MnPb36 AISI/SAE 1212 1213 12L13 1108 1140 1215 12L14 BS: 210A15 210M15 212M36 220M07 230M07 240M07 EN: 1A 1B 32M	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	120	12	
				6535 HA	A3285TFL					
				6535 HE	A3885TIN					
				6535 HA	A3285TIN					
			TP-Standard	ISO 9766	A811XHNI + AX195TIN	ALPHA POINT	P45	110	7	
				DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	100	
		6535 HA	A3265TFL							
		6535 HE	A3865TIN							
		6535 HA	A3265TIN							
		DIN 6539	cyl.	A1164TIN	ALPHA 2	K30F	95	12		
		DIN 1897	cyl.	A1149TFL	UFL	HSS-Co	53	12		
				A1149TIN						
	A1148			N	HSS	38	10			
	A1111					32	9			
	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	140	16	
				6535 HE	A3985TFL	ALPHA 4	K30F	120	12	
				6535 HA	A3385TFL					
				6535 HE	A3985TIN					
				6535 HA	A3385TIN					
				TP-Standard	6535 HE	A6292TIN	MegaJet	HSS-Co	53	12
			ISO 9766		A821XHNI + AX195TIN	ALPHA POINT	P45	110	7	
			DIN 1899	cyl.	A3162	ESU	K30F	C80	6	
					A3153	ESU, left	HSS-Co	H28	9	
					A3143	ESU				
		DIN 6537 L		6535 HE	A3965TFT	ALPHA 2	K30F	90	10	
			6535 HA	A3365TFT						
			6535 HE	A3976TFL	ALPHA 22	80				
			6535 HA	A3376TFL						
		TP-Standard	cyl.	A2258	UFL left hand cut	HSS-Co	34	9		
		7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	120	10
A6488TML						ALPHA 4 PLUS Micro	C80		9	
6535 HE					A3586TIP	ALPHA 44	K30F	95	10	
6535 HA	A3486TIP									
ISO 9766	A831XHNI + AX195TIN				ALPHA POINT	P45	105	6		
	DIN 338				cyl.	A1276TFL	ALPHA 22	K30F	75	9
A1249TFL				UFL		HSS-Co	45	10		
A1249TIN										
A1254TFT				VA INOX		48				
A1211TIN				N		HSS	36	9		
A1247				ALPHA X-E		HSS-Co	34			
A1222				UFL		HSS	30			
A1234			UFL left hand cut	28						
A1213			W	8						
Tang			A1219			N				
cyl.	A1231		N, left hand cut							
	A1211		N							
	DIN 345		MT	A4211TIN	N	HSS	30	9		
				A4247	ALPHA X-E	HSS-Co	25	8		
A4213				W						
A4211				N						

HA

cyl.

Internal coolant

Oil






















HE

MT

External coolant

Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant						
Material Group 1.1.1 (Cont.)	12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	120	10							
					A6588TML	ALPHA 4 PLUS Micro		C80	7							
			DIN 339	Tang		A1411	N	HSS	24	8						
						DIN 340	cyl.			A1549TIP		UFL	HSS-Co	36	9	
			A1549TFL		40											
			A1547	ALPHA X-E	28											
			A1534	UFL left hand cut	HSS			24		8						
			A1522	UFL				26								
			A1513	W				24								
			DIN 341	MT		A1511	N									
	A1519															
	16 x d		TP-Standard	6535 HA	A6685TFP	ALPHA 4 XD16	K30F	110	9							
					DIN 1869 I	cyl.			A1622		UFL	HSS	22	6		
		A1611	N	21			7									
		DIN 1870 I	MT		A4622	UFL	HSS	19	6							
					A4611	N		18	7							
		20 x d		TP-Standard	6535 HA	A6785TFP	ALPHA 4 XD20	K30F	105	9						
						DIN 1869 II	cyl.			A1722		UFL	HSS	21	6	
										DIN 1870 II		MT		A4722	UFL	
		25 x d		TP-Standard	6535 HA	A6885TFP	ALPHA 4 XD25	K30F	95	8						
		30 x d		TP-Standard	6535 HA	A6985TFP	ALPHA 4 XD30	K30F	95	8						
	DIN 1869 III					cyl.	A1822		UFL	HSS		20	6			
	60 x d		TP-Standard		cyl.	A1922S	UFL	HSS	15	4						
85 x d		TP-Standard		cyl.	A1922L	UFL	HSS	15	4							

 HA

 cyl.

 Internal coolant

 Oil






 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant	
Material Group 1.1.2 Soft structural steels up to 550 N/mm ² (163 HB) DIN: 1.0038 RSt37-2 1.0044 St44-2 1.0050 St50-2 1.0116 St37-3 1.0301 C10 1.0330 St12 1.0338 St14 1.0345 H I 1.0347 RRSt13 1.0425 H II 1.0570 St52-3 1.1121 Ck10 AISI/SAE: A284 (D) A366 A414 (C) A442 (55) A515Gr.65;55 A516Gr.65;55 A570 (36) A570 (50) A573 (58) A611 (C) A619 A620 1008 1010 1012 BS: 040A10 045M10 1449 2CR; 3CR 1449 37/23CR 1501Gr.161-360; 164-360; -400 3CR 4360-40C 4360-50B EN: 2A 2B 32A	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	120	12		
				6535 HA	A3285TFL						
				6535 HE	A3885TIN						
				6535 HA	A3285TIN						
			TP-Standard	ISO 9766	A811XHNI + AX195TIN	ALPHA POINT	P45	110	7		
				DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	100		12
		6535 HA			A3265TFL						
		6535 HE			A3865TIN						
		6535 HA			A3265TIN						
		DIN 6539		cyl.	A1164TIN	ALPHA 2	K30F	95	12		
		DIN 1897		cyl.	A1149TFL	UFL	HSS-Co	53	12		
			A1149TIN		48						
				A1148	N	HSS	38	9			
				A1111			32	8			
	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	140	16		
				6535 HE	A3985TFL	ALPHA 4	K30F	120	10		
				6535 HA	A3385TFL						
				6535 HE	A3985TIN						
				6535 HA	A3385TIN						
				TP-Standard	6535 HE	A6292TIN	MegaJet	HSS-Co	53	9	
					ISO 9766	A821XHNI + AX195TIN	ALPHA POINT	P45	105	7	
				DIN 1899	cyl.		A3162	ESU	K30F	C80	5
							A3153	ESU, left	HSS-Co	H28	8
A3143							ESU				
DIN 6537 L				6535 HE	A3965TFT	ALPHA 2	K30F	90	10		
		A3365TFT									
		6535 HE		A3976TFL	ALPHA 22	80		9			
		6535 HA	A3376TFL								
TP-Standard		cyl.	A2258	UFL left hand cut	HSS-Co	34	8				

 HA

 cyl.

 Internal coolant

 Oil




























 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant			
Material Group 1.1.2 (Cont.)	7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	120	10				
					A6488TML	ALPHA 4 PLUS Micro		C80	8				
				6535 HE	A3586TIP	ALPHA 44	95	9					
				6535 HA	A3486TIP								
		ISO 9766	A831XHNI + AX195TIN	ALPHA POINT	P45	100	6						
			DIN 338	cyl.		A1276TFL	ALPHA 22	K30F	75	8			
							A1254TFT		VA INOX	HSS-Co		48	9
							A1249TFL		UFL			45	
							A1249TIN			40			
						A1211TIN	N	HSS	36	8			
						A1247	ALPHA X-E		HSS-Co	34			
						A1211	N	HSS		28		7	
						A1234	UFL left hand cut		8				
						A1213	W		7				
						A1222	UFL		30	8			
						Tang	A1219	N	28	7			
	cyl.					A1231	N, left hand cut						
		DIN 345	MT	A4211TIN	N		HSS	30	8				
				A4247	ALPHA X-E			HSS-Co					
				A4211	N				HSS		25	7	
	A4213	W											
	12 x d		TP-Standard		6535 HA	A6585TFT	ALPHA 4 XD12	K30F	120	9			
						A6588TML	ALPHA 4 PLUS Micro		C80	7			
			DIN 339	Tang			A1411	N	HSS	24	7		
										DIN 340	cyl.		
			A1549TFL		40								
			A1547	ALPHA X-E	HSS	28							
			A1534	UFL left hand cut		24							
			A1511	N	HSS		7						
			A1513	W									
			A1522	UFL		26							
			A1519	N		24							
			DIN 341	MT		A4447	ALPHA X-E	HSS-Co	25	8			
							A4411		N	HSS		21	7
A4422							UFL		22				
16 x d			TP-Standard		6535 HA	A6685TFP	ALPHA 4 XD16	K30F	110	8			
							DIN 1869 I		cyl.			A1611	N
		A1622	UFL	22									
		DIN 1870 I	MT		A4611		N	HSS	18	6			
	A4622				UFL		19						
	20 x d		TP-Standard		6535 HA	A6785TFP	ALPHA 4 XD20	K30F	105	8			
						DIN 1869 II	cyl.			A1722		UFL	HSS
		DIN 1870 II	MT	A4722	UFL			HSS		18	5		
25 x d		TP-Standard		6535 HA	A6885TFP	ALPHA 4 XD25	K30F	95	7				
30 x d		TP-Standard		6535 HA	A6985TFP	ALPHA 4 XD30	K30F	95	7				
						DIN 1869 III		cyl.	A1822		UFL	HSS	20
60 x d		TP-Standard		cyl.	A1922S	UFL	HSS	15	4				
85 x d		TP-Standard		cyl.	A1922L	UFL	HSS	15	4				

 HA

 cyl.

 Internal coolant

 Oil

 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant					
Material Group 1.1.3 Steel and cast steel from 550 to 700 N/mm ² (163 up to 210 HB) DIN: 1.0060 St60-2 1.0401 C15 1.0402 C22 1.5637 10Ni14 1.5713 13NiCr6 1.5752 14NiCr14 1.6543 21NiCrMo22 1.7015 15Cr3 1.7335 13CrMo44 1.8902 StE420 1.0473 19Mn6 1.0481 17Mn4 1.0501 C35 1.0562 StE355 1.1133 20Mn5 1.1170 28Mn6 1.5415 15Mo3 1.5419 22Mo4 1.5423 16Mo5 1.5622 14Ni6 AISI/SAE: BS: A182-F11;F12 050A20 A204 (A) 055M15 A350LF3 070M26 A387(12) 523M15 A414(F),(G) 620Gr.27;31 A515(70) 655A12 A537 655M13 A588 805A20 A612 805M20 A633(C) 1501-503-690 1015 4360 55E 1025 1035 EN: 11L08 2 1330 2C 3115 2D 3415 36A 3310 36B 4419 206 4520 362 5015 8620 8720 9314	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	105	12						
				6535 HA	A3285TFL										
				6535 HE	A3885TIN										
				6535 HA	A3285TIN										
		TP-Standard	ISO 9766	A811XHNI + AX195TIN	ALPHA POINT	P45	95	7							
			DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	95	12						
				6535 HA	A3265TFL										
				6535 HE	A3865TIN										
				6535 HA	A3265TIN										
		DIN 6539	cyl.	A1164TIN	ALPHA 2	K30F	90	12							
	DIN 1897	cyl.	A1149TFL	UFL	HSS-Co	53	12								
			A1149TIN												
			A1148												
			A1111												
	N	HSS	32	9											
	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	130	16						
				6535 HE	A3985TFL	ALPHA 4	K30F	100	10						
				6535 HA	A3385TFL										
				6535 HE	A3985TIN										
				6535 HA	A3385TIN										
				TP-Standard	ISO 9766	A6292TIN	MegaJet	HSS-Co	53		9				
		ISO 9766	A821XHNI + AX195TIN	ALPHA POINT	P45	90	7								
			DIN 1899	cyl.	A3162	ESU	K30F	C80	6						
					A3153	ESU, left	HSS-Co	H28	9						
					A3143	ESU									
	DIN 6537 L				6535 HE	A3965TFT	ALPHA 2	K30F	85		10				
	6535 HA	A3365TFT													
	6535 HE	A3976TFL	ALPHA 22	75	9										
	6535 HA	A3376TFL													
	TP-Standard	cyl.	A2258	UFL left hand cut	HSS-Co	34	9								
	7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	105	10						
					A6488TML	ALPHA 4 PLUS Micro		C80	8						
					6535 HE	A3586TIP	ALPHA 44		90		9				
					6535 HA	A3486TIP									
					ISO 9766	A831XHNI + AX195TIN	ALPHA POINT	P45	85		6				
						DIN 338	cyl.	A1276TFL	ALPHA 22		K30F	71	8		
								A1254TFT	VA INOX						HSS-Co
								A1249TFL	UFL			45	9		
								A1249TIN							
								A1211TIN	N		HSS	36	8		
A1247		ALPHA X-E	HSS-Co	34											
A1222		UFL	HSS	30											
A1234		UFL left hand cut		28											
A1213		W													
Tang		A1219	N												
cyl.		A1231	N, left hand cut	N											
									A1211						
									DIN 345	MT	A4211TIN	N	HSS	30	9
	A4247								ALPHA X-E	HSS-Co	25	8			
A4213	W	HSS													
A4211	N														

HA

cyl.

Internal coolant

Oil






















HE

MT

External coolant

Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant						
Material Group 1.1.3 (Cont.)	12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	100	9							
					A6588TML	ALPHA 4 PLUS Micro		C63	7							
			DIN 339	Tang		A1411	N	HSS	24	8						
						DIN 340	cyl.			A1549TIP		UFL	HSS-Co	36	9	
			A1549TFL		40											
			A1547	ALPHA X-E	28											
			A1534	UFL left hand cut	HSS			24		8						
			A1522	UFL				26								
			A1513	W				24								
			DIN 341	MT		A1511	N									
	A1519															
	16 x d		TP-Standard	6535 HA	A6685TFP	ALPHA 4 XD16	K30F	95	8							
					DIN 1869 I	cyl.			A1622		UFL	HSS	22	6		
		A1611	N	21			7									
		DIN 1870 I	MT		A4622	UFL	HSS	19	6							
					A4611	N		18	7							
		20 x d		TP-Standard	6535 HA	A6785TFP	ALPHA 4 XD20	K30F	90	8						
						DIN 1869 II	cyl.			A1722		UFL	HSS	21	6	
										DIN 1870 II		MT		A4722	UFL	
		25 x d		TP-Standard	6535 HA	A6885TFP	ALPHA 4 XD25	K30F	85	7						
		30 x d		TP-Standard	6535 HA	A6985TFP	ALPHA 4 XD30	K30F	85	7						
	DIN 1869 III					cyl.	A1822		UFL	HSS		20	6			
	60 x d		TP-Standard		cyl.	A1922S	UFL	HSS	15	4						
85 x d		TP-Standard		cyl.	A1922L	UFL	HSS	15	4							

 HA

 cyl.

 Internal coolant

 Oil

 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant
Material Group 1.2 Steel and Cast Steel 700 up to 1000 N/mm ² DIN: 1.0503 C45V 1.0601 C 60 U, N 1.0728 60S20 1.1167 36 Mn5V 1.1191 Ck 45V 1.5120 38MnSi4V 1.5755 31NiCr14V 1.7033 34Cr4V AISI/SAE: BS: 1045 Fe690-2FN 1060 080 M 46 1146 150 M 36 3310 530 A 32 3415 EN: 9314 8, 14, 15, 5132 32M, 43D, 44, 201	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	90	10	
				6535 HA	A3285TFL			85		
				6535 HE	A3885TIN					
				6535 HA	A3285TIN					
		TP-Standard	ISO 9766	A811XHNI + AX195TIN	ALPHA POINT	P45	80	6		
			DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	80	10	
				6535 HA	A3265TFL			75		
				6535 HE	A3865TIN					
				6535 HA	A3265TIN					
			DIN 6539	cyl.	A1164TIN	ALPHA 2	K30F	75	10	
	DIN 1897		cyl.	A1149TFL	UFL	HSS-Co	53	12		
				A1149TIN			48			
				A1148			32			
	TP-Standard		M...	A1111	N	HSS	28	9		
	5 x d			DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	110	12
		6535 HE			A3985TFL	ALPHA 4	K30F	85	9	
		6535 HA			A3385TFL					
		6535 HE			A3985TIN	80				
		6535 HA		A3385TIN						
		TP-Standard		6535 HE	A6292TIN	MegaJet	HSS-Co	48	10	
ISO 9766		A821XHNI + AX195TIN		ALPHA POINT	P45	75	6			
DIN 1899		cyl.		A3162	ESU	K30F	C63	5		
				A3153	ESU, left	HSS-Co	H25	9		
				A3143	ESU					
DIN 6537 L		6535 HE	A3965TFT	ALPHA 2	K30F	71	9			
		6535 HA	A3365TFT							
		6535 HE	A3976TFL	ALPHA 22						
		6535 HA	A3376TFL							
TP-Standard	cyl.	A1166TIN	maximiza standard	K30F	75	9				
		A2258	UFL left hand cut	HSS-Co	28					

HA

cyl.

Internal coolant

Oil




























HE

MT

External coolant

Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant						
Material Group 1.2 (Cont.)	7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	90	9							
					A6488TML	ALPHA 4 PLUS Micro		C63	7							
				6535 HE	A3586TIP	ALPHA 44		71	8							
				6535 HA	A3486TIP											
		ISO 9766	A831XHNI + AX195TIN	ALPHA POINT	P45	75	5									
			DIN 338	cyl.			A1276TFL	ALPHA 22	K30F	67	8					
							A1249TFL	UFL	HSS-Co	42	9					
							A1249TIN			38						
							A1211TIN	N	HSS	32						
							A1247	ALPHA X-E	HSS-Co	28						
							A1241	NS			8					
							A1222	UFL	HSS	26	9					
							A1234	UFL left hand cut								
							Tang	A1219	N		24		8			
							cyl.	A1231	N, left hand cut							
							A1211	N		28						
	DIN 345						MT				A4211TIN		N	HSS	28	9
		A4247	ALPHA X-E	HSS-Co	25											
		A4241	NS			8										
		A4211	N	HSS	21											
	12 x d		TP-Standard		6535 HA	A6585TFT	ALPHA 4 XD12	K30F	85	8						
						A6588TML	ALPHA 4 PLUS Micro		C63	6						
			DIN 339	Tang					HSS	21	8					
													DIN 340	cyl.		
			A1549TFL			36										
			A1547	ALPHA X-E		24	9									
			A1534	UFL left hand cut	HSS	22										
			A1522	UFL			8									
			A1511	N		21										
			Tang	A1519												
			DIN 341	MT				A4447	ALPHA X-E	HSS-Co	21	9				
								A4422	UFL	HSS	20	8				
A4411		N							18							
16 x d			TP-Standard		6535 HA	A6685TFP	ALPHA 4 XD16	K30F	80	7						
							DIN 1869 I		cyl.				A1622	UFL	HSS	19
		A1611	N		17			7								
	DIN 1870 I	MT					A4622	UFL	HSS	17	6					
							A4611	N			15		7			
	20 x d		TP-Standard		6535 HA	A6785TFP	ALPHA 4 XD20	K30F	75	7						
						DIN 1869 II	cyl.						HSS	18	6	
														DIN 1870 II	MT	
25 x d		TP-Standard		6535 HA	A6885TFP	ALPHA 4 XD25	K30F	71	6							
30 x d		TP-Standard		6535 HA	A6985TFP	ALPHA 4 XD30	K30F	71	6							
						DIN 1869 III		cyl.					HSS	17	6	
60 x d		TP-Standard		cyl.	A1922S	UFL	HSS	13	4							
85 x d		TP-Standard		cyl.	A1922L	UFL	HSS	13	4							

 HA

 cyl.

 Internal coolant

 Oil















 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant					
Material Group 1.3 Steel 1000 up to 1300 N/mm ² DIN: 1.1521 46 MnSi4 V 1.5736 36NiCr10V 1.6511 36CrNiMo4V 1.7225 42CrMo4V 1.8159 50CrV4V AISI/SAE: BS: 5140 640 H 35 4140 816 M 40 4142 708 A 42 4340 735 A 50 9840 EN: 19A, 24, 6145 47, 110 6150 111A	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	60	7						
				6535 HA	A3285TFL										
				6535 HE	A3885TIN										
				6535 HA	A3285TIN										
				6535 HE	A3865TFL						ALPHA 2	K30F	53	7	
		6535 HA	A3265TFL												
		6535 HE	A3865TIN												
		6535 HA	A3265TIN												
		DIN 6539	cyl.	A1164TIN	ALPHA 2	K30F	48	7							
		DIN 1897	cyl.	A1149TFL	UFL	HSS-Co	38	8							
				A1149TIN											
				A1141	NS					19	7				
				A1148	UFL										
				A1111	N					HSS	15				
		TP-Standard	MT	A4141	NS	HSS-Co	17	7							
	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	75	9						
				6535 HE	A3985TFL	ALPHA 4					K30F	56	7		
				6535 HA	A3385TFL										
				6535 HE	A3985TIN										
				6535 HA	A3385TIN										
		DIN 1899	cyl.	A3162	ESU	K30F	C40	4							
		DIN 6537 L	6535 HE	A3965TFT	ALPHA 2	K30F	45	6							
				6535 HA	A3365TFT										
		TP-Standard	cyl.	A1166TIN	maximiza standard	K30F	50	4							
				A1166						40					
				A2258	UFL left hand cut					HSS-Co	14	5			
		7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	60	6					
						A6488TML	ALPHA 4 PLUS Micro					C50	5		
						6535 HE	A3586TIP							ALPHA 44	45
						6535 HA	A3486TIP								
DIN 338	cyl.					A1249TFL	UFL							HSS-Co	
A1249TIN															
A1211TIN			N	HSS	19	5									
A1241			NS				HSS-Co	12,5							
A1247			ALPHA X-E												
A1244			VA												
A1222			UFL	HSS	11										
A1211			N												
Tang	A1219														
DIN 345	MT		A4211TIN	N	HSS	16	5								
			A4241	NS					HSS-Co	11					
		A4247	ALPHA X-E												
		A4244	VA												
		A4211	N	HSS							9				

 HA

 cyl.

 Internal coolant

 Oil




























 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant								
Material Group 1.3 (Cont.)	12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	56	6									
					A6588TML	ALPHA 4 PLUS Micro		C40	4									
			DIN 339	Tang		A1411	N	HSS	7,1	5								
						DIN 340	cyl.			A1549TIP		UFL	HSS-Co	18	6			
			A1549TFL		22													
			A1547	ALPHA X-E	10													
			A1544	VA	9													
			A1522	UFL	8,5													
			A1511	N	7,1													
			DIN 341	MT		A1519		HSS-Co	9	5								
	A4447					ALPHA X-E	9											
						A4422	UFL	HSS	7,5									
		A4411				N	6,3											
		16 x d					TP-Standard		6535 HA			A6685TFP	ALPHA 4 XD16	K30F	56	5		
												DIN 1869 I	cyl.			A1622		UFL
						A1611	N		5									
						DIN 1870 I	MT					A4622	UFL	HSS	5,6	4		
	A4611		N	4,5														
	20 x d			TP-Standard	6535 HA			A6785TFP		ALPHA 4 XD20	K30F	53	5					
								DIN 1869 II		cyl.			A1722					UFL
	DIN 1870 II		MT		A4722	UFL	HSS		5,3		4							
					25 x d			TP-Standard	6535 HA	A6885TFP		ALPHA 4 XD25		K30F	48	5		
	30 x d			TP-Standard			6535 HA			A6985TFP	ALPHA 4 XD30	K30F	48		5			
						DIN 1869 III		cyl.		A1822	UFL		HSS	5,6	3			
	60 x d			TP-Standard			cyl.				A1922S	UFL		HSS		4,5		3
85 x d						TP-Standard		cyl.			A1922L	UFL	HSS		4,5	3		
	Material Group 1.4 Steels 1300 up to 1600 N/mm ² Spring Steels, hardened Wear-resisting Steels Maraging Steels 360-440 HB DIN: 1.0908 60SiMn5 1.2713 55NiCrV6V 1.8161 58CrV4 Hardox 400 AISI/SAE: BS: 9260 P600 L 6 Creus. 4000 17-4 PH BH 224/5 15-5 PH PH 13-8 Mo P600		3 x d				DIN 6537 K			6535 HE	A3885TFL	ALPHA 4		K30F	42			4
6535 HA					A3285TFL													
6535 HE					A3885TIN			40										
6535 HA		A3285TIN																
DIN 6537 K		6535 HE					A3865TFL	ALPHA 2	K30F	34	4							
						6535 HA	A3265TFL											
						6535 HE	A3865TIN						32					
					6535 HA	A3265TIN												
DIN 6539		cyl.				A1164TIN		ALPHA 2	K30F		32	4						
						DIN 1897		cyl.			A1149TFL			UFL	HSS-Co	16	5	
											A1149TIN					15		
							A1141				NS			12,5		6		
							A1148				UFL							
A1111		N			7,5													
DIN 8041	MT		A5971	carbide tipped	K10/20	25	2											
TP-Standard	MT		A4141	NS		HSS-Co	11		6									

 HA

 cyl.

 Internal coolant

 Oil

 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant	
Material Group 1.4 (Cont.)	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	50	5		
				6535 HE	A3985TFL	ALPHA 4	K30F	38	4		
				6535 HA	A3385TFL						
				6535 HE	A3985TIN			36			
		6535 HA	A3385TIN								
			DIN 1899	cyl.	A3162	ESU	K30F	C25	3		
			DIN 6537 L	6535 HE	A3965TFT	ALPHA 2	K30F	26	3		
				6535 HA	A3365TFT						
		TP-Standard	cyl.	A1166TIN	maximiza standard	K30F	40	4			
				A1166			36				
	7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	38	4		
					A6488TML	ALPHA 4 PLUS Micro		C32	3		
			DIN 338	cyl.	A1272	ALPHA HM	K10/20	22	2		
					A1249TFL	UFL	HSS-Co	8,5	4		
					A1249TIN			8			
					A1241	NS		6,7			
					A1244	VA					
					A1247	ALPHA X-E					
					A1211	N	HSS	4			
		Tang	A1219								
		DIN 345	MT	A4241	NS	HSS-Co	6	4			
				A4244	VA						
				A4247	ALPHA X-E						
				A4211	N	HSS	3,4				
		12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	36	3	
						A6588TML	ALPHA 4 PLUS Micro		C25		
				DIN 339	Tang	A1411	N	HSS	2,5	3	
						DIN 340	cyl.	A1549TIP	UFL	HSS-Co	5
			A1549TFL			5,6					
	A1544		VA		4,2						
	A1547		ALPHA X-E								
	Tang		A1511	N	HSS	2,5					
									A1519		
DIN 341	MT		A4447	ALPHA X-E	HSS-Co	3,8	3				
			A4411	N	HSS	2,2					
16 x d			TP-Standard	6535 HA	A6685TFP	ALPHA 4 XD16	K30F	34	3		
					DIN 1869 I	cyl.	A1611	N	HSS	1,6	3
	DIN 1870 I		MT	A4611	N	HSS	1,4	3			
20 x d		TP-Standard	6535 HA	A6785TFP	ALPHA 4 XD20	K30F	32	3			
25 x d		TP-Standard	6535 HA	A6885TFP	ALPHA 4 XD25	K30F	30	3			
30 x d		TP-Standard	6535 HA	A6985TFP	ALPHA 4 XD30	K30F	30	3			

HA

cyl.

Internal coolant

Oil

































HE

MT

External coolant

Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant				
Material Group 1.5.1 Steel, hardened Maraging Steels 45-55 HRC AISI/SAE: 300 M	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	36	3					
				6535 HA	A3285TFL			32						
				6535 HE	A3885TIN									
				6535 HA	A3285TIN									
			DIN 6537 K	6535 HA	A3269TFL	ALPHA Rc	K30F	36	3					
					6535 HE	A3865TFL		ALPHA 2			26			
				6535 HA	A3265TFL	24								
					6535 HE			A3865TIN						
				DIN 6539	6535 HA	A3265TIN		ALPHA 2			K30F	24	3	
						cyl.						A1164TIN		
	DIN 8041	MT	A5971	carbide tipped	K10/20	20	2							
	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	36	4					
					A3985TFL	ALPHA 4	K30F	30	3					
					A3385TFL									
					A3985TIN	28								
					A3385TIN									
			DIN 6537 L	6535 HE	A3965TFT	ALPHA 2	K30F	21	3					
					6535 HA						A3365TFT			
				TP-Standard	cyl.	A1166TIN		maximiza standard	K30F	30	3			
						A1166				26				
7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	28	3						
				A6488TML	ALPHA 4 PLUS Micro		C25	2						
		DIN 338	cyl.	A1272	ALPHA HM	K10/20	18	2						
12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	28	3						
				A6588TML	ALPHA 4 PLUS Micro		C20	2						
16 x d		TP-Standard	6535 HA	A6685TFF	ALPHA 4 XD16	K30F	22	2						
20 x d		TP-Standard	6535 HA	A6785TFF	ALPHA 4 XD20	K30F	21	2						
25 x d		TP-Standard	6535 HA	A6885TFF	ALPHA 4 XD25	K30F	20	2						
30 x d		TP-Standard	6535 HA	A6985TFF	ALPHA 4 XD30	K30F	20	2						
Material Group 1.5.2 Steel hardened, 55-65 HRC	3 x d		DIN 6537 K	6535 HA	A3269TFL	ALPHA Rc	K30F	25	2					
	7-8 x d		DIN 338	cyl.	A1273	ALPHA HM	K10/20	11	1					

 HA

 cyl.

 Internal coolant

 Oil
















 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant	
Material Group 1.6.1 Tool Steel, unalloyed annealed, e.g. 1.1673 C135W 1.1830 C85W	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	80	9		
				6535 HA	A3285TFL						
				6535 HE	A3885TIN						
				6535 HA	A3285TIN						
		TP-Standard	ISO 9766	A811XHNI + AX195TIN	ALPHA POINT	P45	71	6			
			DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	71	9		
				6535 HA	A3265TFL						
				6535 HE	A3865TIN						
				6535 HA	A3265TIN						
			DIN 6539	cyl.	A1164TIN	ALPHA 2	K30F	67	9		
			DIN 1897	cyl.	A1149TFL	UFL	HSS-Co	40	10		
					A1149TIN						
	A1148				NS			20			8
	A1141										
	A1111		N	HSS	15						
	TP-Standard		MT	A4141	NS	HSS-Co	18	8			
	5 x d			DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	100	10	
		6535 HE			A3985TFL	ALPHA 4	K30F	75	9		
		6535 HA			A3385TFL						
		6535 HE			A3985TIN						
		6535 HA		A3385TIN							
		TP-Standard		6535 HE	A6292TIN	MegaJet	HSS-Co	36	10		
				ISO 9766	A821XHNI + AX195TIN	ALPHA POINT	P45	67	6		
				DIN 1899	cyl.	A3162	ESU	K30F	C50	5	
						A3153	ESU, left	HSS-Co	H14	9	
						A3143	ESU			6	
		DIN 6537 L		6535 HE	A3965TFT	ALPHA 2	K30F	63	8		
					A3365TFT						
A3976TFL			ALPHA 22		60	7					
A3376TFL											
TP-Standard		cyl.	A1166	maximiza standard	K30F	60	6				
			A1166TIN								
			A2258	UFL left hand cut	HSS-Co	19	8				

 HA

 cyl.

 Internal coolant

 Oil

























 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant						
Material Group 1.6.1 (Cont.)	7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	80	8							
					A6488TML	ALPHA 4 PLUS Micro		C63	5							
				6535 HE	A3586TIP	ALPHA 44	63	7								
				6535 HA	A3486TIP											
		ISO 9766	A831XHNI + AX195TIN	ALPHA POINT	P45	67	5									
			DIN 338	cyl.			A1276TFL	ALPHA 22	K30F	56	6					
							A1249TFL	UFL	HSS-Co	30	9					
							A1249TIN			26						
							A1211TIN	N	HSS	22	7					
							A1247	ALPHA X-E	HSS-Co	19	8					
							A1241	NS		17	6					
							A1244	VA								
							A1222	UFL	HSS	14	8					
							A1234	UFL left hand cut		15						
							Tang	A1219	N	12,5	6					
							cyl.	A1231	N, left hand cut							
	A1211							N								
	DIN 345						MT	A4211TIN	N	HSS	20		7			
								A4247	ALPHA X-E	HSS-Co	17		8			
								A4241	NS		15		6			
								A4244	VA							
		A4211	N	HSS	11											
	12 x d		TP-Standard		6535 HA	A6585TFT	ALPHA 4 XD12	K30F	75	8						
						A6588TML	ALPHA 4 PLUS Micro		C50	4						
			DIN 339	Tang			A1411	N	HSS	9,5	5					
							DIN 340	cyl.			A1549TIP		UFL	HSS-Co	20	7
			A1549TFL			22					8					
			A1547	ALPHA X-E		14					7					
			A1544	VA		13					5					
			A1534	UFL left hand cut	HSS	11					7					
			A1522	UFL		12,5										
			A1511	N		9,5					5					
			A1519													
			DIN 341	MT	A4447	ALPHA X-E	HSS-Co	12,5	7							
					A4422	UFL	HSS	11								
					A4411	N		8,5	5							
			16 x d		TP-Standard		6535 HA	A6685TFP	ALPHA 4 XD16	K30F	71	7				
								DIN 1869 I	cyl.					A1622	UFL	HSS
				A1611	N		7,1			4						
				DIN 1870 I	MT					A4622			UFL	HSS	9,5	6
	A4611	N											6,3		4	
	20 x d			TP-Standard		6535 HA	A6785TFP	ALPHA 4 XD20	K30F	67	7					
DIN 1869 II			cyl.							A1722	UFL		HSS	10	5	
										DIN 1870 II	MT			A4722	UFL	
25 x d		TP-Standard		6535 HA	A6885TFP	ALPHA 4 XD25	K30F	63	6							
30 x d		TP-Standard		6535 HA	A6985TFP	ALPHA 4 XD30	K30F	63	6							
					DIN 1869 III	cyl.		A1822	UFL		HSS	9,5	5			
60 x d		TP-Standard		cyl.	A1922S	UFL	HSS	7,5	4							
85 x d		TP-Standard		cyl.	A1922L	UFL	HSS	7,5	4							

 HA

 cyl.

 Internal coolant

 Oil
















 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant
Material Group 1.6.2 Tool Steel, low alloyed, annealed Ball Bearing Steel, annealed 1.2241 51CrV4 1.2550 60WCrV7 1.2713 55NiCrMoV6 1.3505 100Cr6	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	80	10	
				6535 HA	A3285TFL					
				6535 HE	A3885TIN					
				6535 HA	A3285TIN					
		TP-Standard	ISO 9766	A811XHNI + AX195TIN	ALPHA POINT	P45	71	6		
			DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	71	10	
				6535 HA	A3265TFL					
				6535 HE	A3865TIN					
				6535 HA	A3265TIN					
			DIN 6539	cyl.	A1164TIN	ALPHA 2	K30F	67	10	
	DIN 1897		cyl.	A1149TFL	UFL	HSS-Co	40	10		
				A1149TIN						
				A1148						
				A1141			NS			
				A1111	N	HSS	15	8		
	TP-Standard	MT	A4141	NS	HSS-Co	18	8			
	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	100	12	
				6535 HE	A3985TFL	ALPHA 4	K30F	75	9	
				6535 HA	A3385TFL					
				6535 HE	A3985TIN					
				6535 HA	A3385TIN					
			TP-Standard	6535 HE	A6292TIN	MegaJet	HSS-Co	30	10	
				ISO 9766	A821XHNI + AX195TIN	ALPHA POINT	P45	67	6	
			DIN 1899	cyl.	A3162	ESU	K30F	C32	5	
					A3153	ESU, left	HSS-Co	H12	7	
					A3143	ESU		H16		
DIN 6537 L		6535 HE	A3965TFT	ALPHA 2	K30F	63	9			
		6535 HA	A3365TFT							
		6535 HE	A3976TFL	ALPHA 22		67				
	6535 HA	A3376TFL								
TP-Standard	cyl.	A1166TIN	maximiza standard	K30F	67	9				
		A1166			63					
		A2258	UFL left hand cut	HSS-Co	17			6		

 HA

 cyl.

 Internal coolant

 Oil





























 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant							
Material Group 1.6.2 (Cont.)	7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	80	9								
					A6488TML	ALPHA 4 PLUS Micro		C63	4								
				6535 HE	A3586TIP	ALPHA 44	P45	63	8								
				6535 HA	A3486TIP			5									
		ISO 9766	A831XHNI + AX195TIN	ALPHA POINT													
			DIN 338	cyl.			A1276TFL	ALPHA 22	K30F	63	8						
							A1249TFL	UFL	HSS-Co	30	9						
							A1249TIN			26							
							A1211TIN	N	HSS	22	8						
							A1247	ALPHA X-E	HSS-Co	17	6						
							A1241	NS									
							A1244	VA									
							A1222	UFL									
							A1234	UFL left hand cut	HSS	15	7						
							Tang	A1219		N	12,5		6				
							cyl.	A1231	N, left hand cut								
	A1211						N										
	DIN 345						MT				A4211TIN		N	HSS	20	8	
											A4247		ALPHA X-E	HSS-Co	15	6	
		A4241	NS														
		A4244	VA														
		A4211	N	HSS	11												
	12 x d		TP-Standard		6535 HA	A6585TFT	ALPHA 4 XD12	K30F	75	8							
						A6588TML	ALPHA 4 PLUS Micro		C50	3							
			DIN 339	Tang			A1411	N	HSS	9,5	5						
										DIN 340	cyl.				A1549TIP	UFL	HSS-Co
			A1549TFL		22												
			A1547	ALPHA X-E	HSS	13	5										
			A1544	VA													
			A1534	UFL left hand cut	HSS	11											
			A1522	UFL		6											
			A1511	N		9,5	5										
			Tang	A1519													
			DIN 341	MT				A4447	ALPHA X-E	HSS-Co	11	5					
								A4422	UFL	HSS	10	6					
								A4411	N		8,5	5					
	16 x d		TP-Standard		6535 HA	A6885TFP	ALPHA 4 XD16	K30F	71	7							
							DIN 1869 I		cyl.				A1622	UFL	HSS	8,5	5
		A1611	N	7,1	4												
		DIN 1870 I	MT					A4622	UFL	HSS	7,5	5					
A4611								N	6,3		4						
20 x d			TP-Standard		6535 HA	A6785TFP	ALPHA 4 XD20	K30F	67	7							
						DIN 1869 II	cyl.					HSS	8	5			
													DIN 1870 II	MT			
25 x d		TP-Standard		6535 HA	A6885TFP	ALPHA 4 XD25	K30F	63	6								
30 x d		TP-Standard		6535 HA	A6985TFP	ALPHA 4 XD30	K30F	63	6								
						DIN 1869 III		cyl.				HSS	7,5	4			
60 x d		TP-Standard		cyl.	A1922S	UFL	HSS	6	4								
85 x d		TP-Standard		cyl.	A1922L	UFL	HSS	6	4								

 HA

 cyl.

 Internal coolant

 Oil




















 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant						
Material Group 1.6.3 Tool Steel, high alloyed, annealed 1.2080 X210Cr12 1.2316 X36CrMo17 1.2343 X38CrMoV51 1.2379 X155CrVMo121 1.3343 S6-5-2	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	67	9							
				6535 HA	A3285TFL			63								
				6535 HE	A3885TIN											
				6535 HA	A3285TIN											
			DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	60	9							
				6535 HA	A3265TFL			56								
				6535 HE	A3865TIN											
				6535 HA	A3265TIN											
		DIN 6539	cyl.		A1164TIN	ALPHA 2	K30F	56	9							
					DIN 1897			cyl.			A1149TFL	UFL	HSS-Co	21	5	
											A1149TIN			18		
											A1148					
	A1111	N	HSS	8,5	4											
	TP-Standard	MT	A4141	NS	HSS-Co	11	4									
	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	85	10							
				6535 HE	A3985TFL	ALPHA 4	K30F	63	8							
				6535 HA	A3385TFL											
				6535 HE	A3985TIN	60										
				6535 HA	A3385TIN											
				TP-Standard	6535 HE	A6292TIN	MegaJet	HSS-Co	25		5					
			DIN 1899	cyl.	A3162	ESU	K30F	C32	4							
					A3153	ESU, left	HSS-Co	H10	5							
					A3143	ESU		4								
		DIN 6537 L	6535 HE		A3965TFT	ALPHA 2	K30F	50	7							
A3365TFT																
A3976TFL					ALPHA 22	56		8								
A3376TFL																
TP-Standard		cyl.		A1166TIN	maximiza standard	K30F	56	8								
				A1166	UFL left hand cut	HSS-Co	11	5								
				A2258												
7-8 x d			TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	67	8							
					A6488TML	ALPHA 4 PLUS Micro		C50	3							
	6535 HE				A3586TIP	ALPHA 44		50	6							
	6535 HA				A3486TIP											
					DIN 338	cyl.		A1276TFL	ALPHA 22		K30F	53	7			
								A1249TFL	UFL		HSS-Co	17	4			
		A1249TIN	N	HSS			15	8,5								
		A1211TIN														
		A1247	ALPHA X-E	HSS-Co			11	5								
		A1241	NS				4									
	A1244	VA	HSS	9,5	7,5											
	A1222	UFL														
A1234	UFL left hand cut															
Tang	A1219	N	7,5													
cyl.	A1231	N, left hand cut														
	A1211	N														
DIN 345	MT		A4211TIN	N	HSS	7,5	4									
			A4247	ALPHA X-E	HSS-Co	10	5									
			A4241	NS		4										
			A4244	VA												
			A4211	N	HSS	6,7										

 HA

 cyl.

 Internal coolant

 Oil





























 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant		
Material Group 1.6.3 (Cont.)	12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	63	7			
					A6588TML	ALPHA 4 PLUS Micro		C40	3			
			DIN 339	Tang		A1411	N	HSS	6,3	3		
						DIN 340	cyl.		A1549TIP	UFL		HSS-Co
			A1549TFL		14							
			A1547	ALPHA X-E	9,5							
			A1544	VA	HSS			8	3			
			A1534	UFL left hand cut								
			A1522	UFL								
			Tang		A1511	N	HSS	6,3	3			
					A1519							
			DIN 341	MT	A4447	ALPHA X-E	HSS-Co	8,5	4			
		A4422			UFL	HSS	7,1					
		A4411			N	5,6	3					
	16 x d		TP-Standard	6535 HA	A6685TFP	ALPHA 4 XD16	K30F	60	7			
					DIN 1869 I	cyl.		A1622	UFL		HSS	6
		A1611	N	4,8								
		DIN 1870 I	MT	A4622			UFL	HSS	5,3	3		
				A4611			N		4,2			
		20 x d		TP-Standard	6535 HA	A6785TFP	ALPHA 4 XD20	K30F	56	6		
	DIN 1869 II					cyl.	A1722		UFL	HSS		5,6
			DIN 1870 II	MT	A4722		UFL	HSS	5	3		
	25 x d		TP-Standard	6535 HA	A6885TFP	ALPHA 4 XD25	K30F	53	6			
	30 x d		TP-Standard	6535 HA	A6985TFP	ALPHA 4 XD30	K30F	53	6			
					DIN 1869 III	cyl.		A1822	UFL		HSS	5,3
	60 x d		TP-Standard	cyl.	A1922S	UFL	HSS	4,2	2			
					A1922L	UFL		HSS	4,2		2	
	85 x d		TP-Standard	cyl.	A1922L	UFL	HSS	4,2	2			
Material Group 1.7.1 Stainless and Heat Resistant Steel, ferric (Ni < 2%) martensic, annealed 1.4002 X6CrAl13 1.4006 X10Cr13 AISI/SAE: BS: 301 301 S 21 303 303 S 21 304 304 S 31 316 316 S 31 317 321	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	42	7			
					A3285TFL							
					A3885TIN			40				
					A3285TIN							
			TP-Standard	ISO 9766	A811XHNI + AX195TIN	ALPHA POINT	P45	38	6			
					DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	42	6	
							A3265TFL					
							A3865TIN			40		
							A3265TIN					
					DIN 6539	cyl.	A1164TIN	ALPHA 2	K30F	40	6	
		DIN 1897	cyl.	A1149TFL	UFL	HSS-Co	16	7				
				A1149TIN								
				A1141	NS		12,5					
				A1148	UFL							
				A1111	N		HSS			7,5	4	
		TP-Standard	MT	A4141	NS	HSS-Co	11	7				

 HA

 cyl.

 Internal coolant

 Oil












 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant					
Material Group 1.7.1 (Cont.)	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	48	9						
				6535 HE	A3985TFL	ALPHA 4	K30F	42	7						
				6535 HA	A3385TFL										
				6535 HE	A3985TIN			38							
			6535 HA	A3385TIN											
			TP-Standard	6535 HE	A6292TIN	MegaJet	HSS-Co	22	7						
				ISO 9766	A821XHNI + AX195TIN	ALPHA POINT	P45	36	6						
			DIN 1899	cyl.		A3162	ESU	K30F	C16	3					
						A3153	ESU, left	HSS-Co	H8	6					
						A3143	ESU		H10						
			DIN 6537 L	6535 HE	6535 HA	6535 HE	A3965TFT	ALPHA 2	K30F	40	5				
							A3365TFT								
							A3976TFL	ALPHA 22			6				
							A3376TFL								
	TP-Standard		cyl.			A1166TIN	maximiza standard	K30F	38	6					
						A1166			34						
						A2258	UFL left hand cut	HSS-Co	10,5	5					
	7-8 x d			TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	42	6					
		A6488TML				ALPHA 4 PLUS Micro	C32		3						
		6535 HE				A3586TIP	ALPHA 44		32	5					
		6535 HA				A3486TIP									
		ISO 9766				A831XHNI + AX195TIN	ALPHA POINT	P45	34						
						DIN 338	cyl.		A1276TFL	ALPHA 22		K30F	38	5	
									A1249TFL	UFL		HSS-Co	12,5	6	
			A1249TIN						11						
			A1247	ALPHA X-E					10,5	5					
			A1241	NS											
			A1222	UFL	HSS				8,5						
			A1234	UFL left hand cut											
			A1211	N					6,3	4					
			Tang	A1219											
			DIN 345	MT						A4247	ALPHA X-E	HSS-Co	9,5	5	
A4241		NS													
A4211		N				HSS	5,6	4							

 HA

 cyl.

 Internal coolant

 Oil





























 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant									
Material Group 1.7.1 (Cont.)	12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	42	6										
					A6588TML	ALPHA 4 PLUS Micro		C25	3										
			DIN 339	Tang			A1411	N	HSS	4,8	3								
							DIN 340	cyl.					A1549TIP	UFL	HSS-Co	8,5	5		
			A1549TFL		9,5														
			A1547	ALPHA X-E	8														
			A1534	UFL left hand cut	6,3														
								A1522	UFL	HSS	4,8	3							
								A1511	N										
								A1519											
								A1519											
			DIN 341	MT				A4447	ALPHA X-E	HSS-Co	7,1	5							
		A4422						UFL	HSS		5,6								
		A4411						N	4,2		3								
	16 x d		TP-Standard	6535 HA		A6685TFP	ALPHA 4 XD16	K30F	40	5									
						DIN 1869 I	cyl.					A1622	UFL	HSS	4,8	4			
		A1611	N	3,6	3														
		DIN 1870 I	MT				A4622	UFL	HSS	4,2	4								
							A4611	N		3,2	3								
							20 x d			TP-Standard	6535 HA			A6785TFP	ALPHA 4 XD20	K30F	36	5	
														DIN 1869 II	cyl.				
		DIN 1870 II	MT			A4722	UFL	HSS	4	4									
						25 x d			TP-Standard	6535 HA			A6885TFP	ALPHA 4 XD25	K30F	34	5		
		30 x d		TP-Standard	6535 HA						A6985TFP		ALPHA 4 XD30	K30F		34	5		
	DIN 1869 III					cyl.				A1822	UFL	HSS	4,2		3				
		60 x d		TP-Standard						A1922S	UFL		HSS	3,4	3				
	85 x d						TP-Standard				A1922L	UFL		HSS	3,4	3			
		Material Group 1.7.2 Stainless and Heat Resistant Steel, austenitic sulphured e.g. 1.4305 X10CrNiS189	3 x d		DIN 6537 K			6535 HE			A3885TFL	ALPHA 4	K30F		67	7			
6535 HA	A3285TFL																		
6535 HE	A3885TIN																		
6535 HA	A3285TIN																		
TP-Standard	ISO 9766							A811XHNI + AX195TIN	ALPHA POINT	P45	60	5							
								DIN 6537 K	6535 HE		A3865TFL	ALPHA 2		K30F	60	6			
6535 HA	A3265TFL																		
6535 HE	A3865TIN																		
6535 HA	A3265TIN																		
DIN 6539	cyl.							A1164TIN	ALPHA 2	K30F	56	6							
								DIN 1897	cyl.						A1149TFL	UFL	HSS-Co	24	7
A1149TIN					19														
A1141	NS				15	6													
A1148	UFL				12,5														
					A1111	N	HSS	10,5	4										
					A1111			10,5											
TP-Standard	MT				A4141	NS	HSS-Co	13	6										

 HA

 cyl.

 Internal coolant

 Oil
















 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant			
Material Group 1.7.2 (Cont.)	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	75	9				
				6535 HE	A3985TFL	ALPHA 4	K30F	63	7				
				6535 HA	A3385TFL								
				6535 HE	A3985TIN			60					
			6535 HA	A3385TIN									
			6535 HE	A6292TIN	MegaJet	HSS-Co	28	7					
		TP-Standard	6535 HE	A6292TIN									
			ISO 9766	A821XHNI + AX195TIN	ALPHA POINT	P45	56	5					
			DIN 1899	cyl.		A3162	ESU	K30F	C32	3			
						A3153	ESU, left	HSS-Co	H12	6			
						A3143	ESU						
			DIN 6537 L	6535 HE	A3976TFL	ALPHA 22	K30F	53	5				
	6535 HA										A3376TFL		
	6535 HE										A3965TFT	ALPHA 2	50
	6535 HA										A3365TFT		
	TP-Standard		cyl.	A2258	UFL left hand cut	HSS-Co	10,5	6					
	7-8 x d			TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	67	6			
						A6488TML	ALPHA 4 PLUS Micro		C50	3			
						6535 HE	A3586TIP		ALPHA 44	53		5	
					6535 HA	A3486TIP							
		ISO 9766			A831XHNI + AX195TIN	ALPHA POINT	P45		4				
					DIN 338	cyl.		A1276TFL	ALPHA 22	K30F	53	5	
								A1254TFT	VA INOX	HSS-Co	20	12	
								A1249TFL	UFL		17	7	
								A1249TIN			14		
			A1247	ALPHA X-E				HSS	11	6			
			A1244	VA					10,5				
			A1241	NS									
			A1222	UFL					9				
			A1234	UFL left hand cut									
		A1211	N		7,5	4							
		A1219											
		Tang											
DIN 345		MT			A4247	ALPHA X-E	HSS-Co	10	6				
	A4244				VA	9,5							
	A4241				NS								
	A4211				N	HSS	6,7	4					

 HA

 cyl.

 Internal coolant

 Oil





























 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant					
Material Group 1.7.2 (Cont.)	12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	63	6						
					A6588TML	ALPHA 4 PLUS Micro		C40	3						
			DIN 339	Tang	DIN 340	cyl.	A1411	N	HSS	6	4				
							A1549TIP	UFL		HSS-Co	11		6		
			A1549TFL		14										
			A1547	ALPHA X-E	9										
			A1544	VA	8,5										
			Tang	DIN 341	MT	A4411	cyl.	A1534	UFL left hand cut	HSS	7,1	5			
								A1522	UFL		6				
								A1511	N					4	
								A1519			8				
								A4447	ALPHA X-E					HSS-Co	8
		A4422						UFL	HSS		6,3				5
		16 x d		TP-Standard	DIN 1869 I	cyl.	A4411	N	HSS	5,3	4				
	A6685TFP						ALPHA 4 XD16	K30F		60	5				
			DIN 1870 I	MT	A4611	cyl.	A1622	UFL	HSS	5	4				
							A1611	N		4,2					
			DIN 1870 I	MT	A4622	cyl.	A4622	UFL	HSS	4,5	4				
							A4611	N		3,6					
	20 x d			TP-Standard	DIN 1869 II	cyl.	A6785TFP	ALPHA 4 XD20	K30F	56	5				
							A1722	UFL		HSS			4,5	4	
				DIN 1870 II	MT	A4722	cyl.	A4722	UFL	HSS	4	4			
	25 x d			TP-Standard	DIN 1870 II	MT	A4722	UFL	HSS	4	4				
	30 x d			TP-Standard	DIN 1869 III	cyl.	A6985TFP	ALPHA 4 XD30	K30F	53	5				
							A1822	UFL		HSS			4	4	
	60 x d			TP-Standard	DIN 1869 III	cyl.	A1922S	UFL	HSS	2,6	3				
		A1922L					UFL	HSS		2,6			3		
85 x d		TP-Standard	DIN 1869 III	cyl.	A1922L	UFL	HSS	2,6	3						
Material Group 1.7.3 Stainless and Heat Resistant Steel austenitic (Ni > 4%) e.g. 1.4301 X5CrNi1810 14312 G-X10CrNi188 1.4541 X6CrNiTi1810 1.4541 X6CrNiTi17122 1.4837 G-X40CrNiSi2512 AISI 304 316 321	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	42	5						
					6535 HA			A3285TFL			40				
					6535 HE			A3885TIN							
					6535 HA			A3285TIN							
			TP-Standard	ISO 9766	A811XHNI + AX195TIN	cyl.	A811XHNI + AX195TIN	ALPHA POINT	P45	38	5				
							DIN 1897	A1149TFL		UFL			HSS-Co	14	5
			A1149TIN		12,5										
			A1141	NS	10,5	4									
			A1148	UFL											
			TP-Standard	MT	A4141	cyl.	A1111	N	HSS	6,3	3				
							A4141	NS		HSS-Co			9,5	4	

 HA

 cyl.

 Internal coolant

 Oil




















 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant					
Material Group 1.7.3 (Cont.)	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	48	6						
				6535 HE	A3985TFL	ALPHA 4	K30F	42	5						
				6535 HA	A3385TFL										
				6535 HE	A3985TIN			38							
				6535 HA	A3385TIN										
		TP-Standard	6535 HE	A6292TIN	MegaJet	HSS-Co	21	5							
				ISO 9766	A821XHNI + AX195TIN	ALPHA POINT	P45	36							
			DIN 1899	cyl.		A3162	ESU	K30F	C16	3					
						A3153	ESU, left	HSS-Co	H6	4					
						A3143	ESU		H8						
	TP-Standard		cyl.	A2258	UFL left hand cut	HSS-Co	8,5	4							
	7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	42	5						
					A6488TML	ALPHA 4 PLUS Micro		C32	2						
					6535 HE	A3586TIP	ALPHA 44	32	4						
					6535 HA	A3486TIP									
					ISO 9766	A831XHNI + AX195TIN	ALPHA POINT	P45	34						
						DIN 338	cyl.		A1254TFT		VA INOX	HSS-Co	12	9	
									A1249TFL		UFL		10	5	
									A1249TIN				9		
									A1247		ALPHA X-E	HSS	7,5	4	
		A1244	VA												
		A1241	NS												
		A1222	UFL	6					3						
		A1234	UFL left hand cut												
		A1211	N	4,5											
		Tang	A1219												
		DIN 345	MT		A4247	ALPHA X-E	HSS-Co	6,7	4						
					A4244	VA									
					A4241	NS									
					A4211	N	HSS	4	3						
	12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	42	4						
					A6588TML	ALPHA 4 PLUS Micro		C25	2						
		DIN 339	Tang		A1411	N	HSS	3,6	3						
DIN 340		cyl.			A1549TIP	UFL	HSS-Co	7,1	4						
					A1549TFL			8							
					A1547	ALPHA X-E		6							
					A1544	VA	HSS	4,8	3						
					A1534	UFL left hand cut									
					A1522	UFL									
					A1511	N									
Tang		A1519		3,6											
DIN 341		MT			A4447	ALPHA X-E	HSS-Co	5,3	4						
					A4422	UFL		HSS	4,2		3				
					A4411	N		3,2							

 HA

 cyl.

 Internal coolant

 Oil































 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant				
Material Group 1.7.3 (Cont.)	16 x d		TP-Standard	6535 HA	A6685TFP	ALPHA 4 XD16	K30F	40	4					
			DIN 1869 I	cyl.	A1622	UFL	HSS	3,4	3					
		DIN 1870 I	MT	A1611	N	HSS	2,5	3						
				A4622	UFL		3							
	20 x d		TP-Standard	6535 HA	A6785TFP	ALPHA 4 XD20	K30F	36	4					
			DIN 1869 II	cyl.	A1722	UFL	HSS	3	2					
	25 x d		TP-Standard	6535 HA	A6885TFP	ALPHA 4 XD25	K30F	34	3					
											DIN 1870 II	MT	A4722	UFL
	30 x d		TP-Standard	6535 HA	A6985TFP	ALPHA 4 XD30	K30F	34	3					
											DIN 1869 III	cyl.	A1822	UFL
	60 x d		TP-Standard	cyl.	A1922S	UFL	HSS	1,7	2					
	85 x d		TP-Standard	cyl.	A1922L	UFL	HSS	1,7	2					
	Material Group 1.7.4 Stainless Steel Precipitation-Hardened DIN: 1.4542 X5CrNiCuNb1714 AISI/SAE: 630 17-4PH 15-5PH	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	42	6				
6535 HA					A3285TFL									
6535 HE					A3885TIN									
6535 HA					A3285TIN									
			DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	34	5					
				6535 HA	A3265TFL									
				6535 HE	A3865TIN									
				6535 HA	A3265TIN									
			DIN 6539	cyl.	A1164TIN	ALPHA 2	K30F	32	5					
			DIN 1897	cyl.	A1149TFL	UFL	HSS-Co	16	6					
					A1149TIN									
					A1141	NS								
A1148		UFL												
TP-Standard		MT	A1111	N	HSS	6,3	5							
			A4141	NS	HSS-Co	7,5								
5 x d			DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	48	6					
				6535 HE	A3985TFL	ALPHA 4	K30F	42						
				6535 HA	A3385TFL	MegaJet					HSS-Co	17	5	
				6535 HE	A3985TIN									
				6535 HA	A3385TIN									
		TP-Standard	6535 HE	A6292TIN										
			DIN 1899	cyl.	A3162	ESU	K30F	C20	3					
					A3153	ESU, left	HSS-Co	H6	5					
	A3143				ESU									
	DIN 6537 L		6535 HE	A3965TFT	ALPHA 2	K30F	32	5						
			6535 HA	A3365TFT										
TP-Standard	cyl.		A2258	UFL left hand cut	HSS-Co	6,7	5							

 HA

 cyl.

 Internal coolant

 Oil

























 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant							
Material Group 1.7.4 (Cont.)	7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	42	5								
					A6488TML	ALPHA 4 PLUS Micro		C32	2								
					A3586TIP	ALPHA 44		32	4								
		A3486TIP															
			DIN 338	cyl.			A1249TFL	UFL	HSS-Co	11	6						
							A1249TIN										
							A1211TIN	N	HSS	9	5						
							A1241	NS	HSS-Co	6							
							A1247	ALPHA X-E									
							A1244	VA									
							A1234	UFL left hand cut	HSS	4,5							
							A1222	UFL			5,3						
							A1211	N			4,5						
							A1219										
							DIN 345	MT					A4211TIN	N	HSS	8	5
	A4241												NS	HSS-Co	5,3		
	A4247	ALPHA X-E															
	A4244	VA															
	A4211	N	HSS	4													
	12 x d		TP-Standard	6535 HA		A6585TFT	ALPHA 4 XD12	K30F	42	5							
						A6588TML	ALPHA 4 PLUS Micro		C25	2							
						A1411	N		HSS	3,6		5					
		DIN 340	cyl.				A1549TIP	UFL	HSS-Co	7,1	4						
							A1549TFL				9	5					
							A1547	ALPHA X-E			4,8						
							A1544	VA									
							A1534	UFL left hand cut	HSS	3,6							
							A1522	UFL			4,2	4					
		A1511	N	3,6	5												
		A1519															
		DIN 341	MT				A4447	ALPHA X-E	HSS-Co	4,2	5						
							A4422	UFL	HSS	3,6	4						
							A4411	N		3,2	5						
16 x d			TP-Standard	6535 HA		A6685TFP	ALPHA 4 XD16	K30F	40	5							
	DIN 1869 I					cyl.								3	4		
														A1611	N	2,5	5
	DIN 1870 I	MT							2,6	4							
									A4611	N	2,2	5					
	20 x d		TP-Standard	6535 HA		A6785TFP	ALPHA 4 XD20	K30F	36	4							
DIN 1869 II						cyl.								2,6	3		
														A1722	UFL	HSS	2,6
DIN 1870 II	MT							2,2	3								
25 x d		TP-Standard	6535 HA		A6885TFP	ALPHA 4 XD25	K30F	34	4								
30 x d		TP-Standard	6535 HA		A6985TFP	ALPHA 4 XD30	K30F	34	4								
					DIN 1869 III	cyl.								2,4	3		
60 x d		TP-Standard		cyl.	A1922S	UFL	HSS	1,3	2								
85 x d		TP-Standard		cyl.	A1922L	UFL	HSS	1,3	2								
Material Group 1.8 Manganese SteelsAr- mour Plate DIN: 13401 X120Mn12 AISI/SAE: A128 (A)	3 x d		DIN 6537 K	6535 HA	A3269TFL	ALPHA Rc	K30F	40	3								
	5 x d		TP-Standard		A1166TIN	maximiza standard	K30F	30	3								
					A1166			28									

 HA

 cyl.

 Internal coolant

 Oil



















 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant			
Material Group 2.1 Super Alloys Ni- and Co-based up to 900 N/mm ² DIN: 2.4602 Hastelloy C 2.4665 Hastelloy X HS 21 IN-102 1.4876 Incoloy 800 2.4816 Inconel 600 2.4856 Inconel 625 2.4360 Monel 400 2.4630 Nimonic 75	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	32	4				
				6535 HA	A3285TFL								
				6535 HE	A3885TIN								
				6535 HA	A3285TIN								
		TP-Standard	ISO 9766	A811XHNI + AX195TIN	ALPHA POINT	P45	26	3					
			DIN 1897	cyl.		A1149TFL	UFL	HSS-Co	15	4			
						A1149TIN							
						A1141	NS		10				
	A1148					UFL							
	A1111					N	HSS		6,3			3	
	A1141					NS	HSS-Co		9			4	
	TP-Standard	MT	A4141	NS									
	5 x d		DIN 6537 L		6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	40	5			
					6535 HE	A3985TFL	ALPHA 4	K30F	30	4			
					6535 HA	A3385TFL							
					6535 HE	A3985TIN							
					6535 HA	A3385TIN							
					TP-Standard	ISO 9766	A6292TIN	MegaJet	HSS-Co	13		4	
					ISO 9766	A821XHNI + AX195TIN	ALPHA POINT	P45	25	3			
						DIN 1899	cyl.		A3162	ESU		K30F	C12
		TP-Standard	cyl.	A1166					maximiza standard	K30F	18		4
						A2258	UFL left hand cut	HSS-Co	7,5				
		7-8 x d		TP-Standard		6535 HA	A6485TFT	ALPHA 4 XD8	K30F	32	4		
							A6488TML	ALPHA 4 PLUS Micro		C20	3		
6535 HE						A3586TIP	ALPHA 44	20					
6535 HA						A3486TIP							
ISO 9766						A831XHNI + AX195TIN	ALPHA POINT	P45		24			
	DIN 338		cyl.		A1249TFL	UFL	HSS-Co	10	4				
					A1249TIN								
					A1247	ALPHA X-E		6,7					
					A1244	VA							
					A1241	NS							
					A1222	UFL		HSS			4,2	3	
		A1211			N								
		Tang			A1219								
DIN 345	MT			A4247	ALPHA X-E	HSS-Co	6	4					
				A4244	VA								
				A4241	NS								
				A4211	N		HSS			3,8	3		

 HA

 cyl.

 Internal coolant

 Oil




























 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant		
Material Group 2.1 (Cont.)	12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	30	3			
					A6588TML	ALPHA 4 PLUS Micro		C20	2			
			DIN 339	Tang	DIN 340	cyl.	A1411	N	HSS	3	3	
							A1549TIP	UFL		HSS-Co	7,1	
			A1549TFL									
			A1544	VA	4,8	3	3					
			A1547	ALPHA X-E								
			A1522	UFL	HSS	3	3					
		A1511	N									
		DIN 341	Tang	MT	MT	cyl.	A1519		HSS-Co	4,2	4	
	A4447						ALPHA X-E	HSS		2,6	3	
	A4422						UFL					
	A4411	N										
	16 x d		TP-Standard	6535 HA	6535 HA	A6685TFP	ALPHA 4 XD16	K30F	30	3		
						DIN 1869 I	cyl.		A1622	UFL		HSS
		DIN 1870 I	MT	A4622	UFL	HSS	1,8	3				
				A4611	N							
		20 x d		TP-Standard	6535 HA	6535 HA	A6785TFP	ALPHA 4 XD20	K30F	28	3	
							DIN 1869 II	cyl.		A1722	UFL	
	DIN 1870 II	MT	A4722	UFL	HSS	1,6	3					
25 x d		TP-Standard	6535 HA	6535 HA	A6885TFP	ALPHA 4 XD25	K30F	26	3			
30 x d		TP-Standard	6535 HA	6535 HA	A6985TFP	ALPHA 4 XD30	K30F	26	3			
					DIN 1869 III	cyl.		A1822	UFL		HSS	1,7
Material Group 2.2 Super Alloys Ni- and Co-based 900 up to 1200 N/mm ² DIN: 2.4670 Inconel 713 Inconel X-750 M-252 2.4632 Nimonic 90 Nimonic Pk 33 2.4654 Waspalloy Stellite 306	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	20	3			
				6535 HE	A3285TFL			18				
				6535 HE	A3885TIN							
				6535 HE	A3285TIN							
			DIN 6537 K	6535 HA	A3269TFL	ALPHA Rc	K30F	16	3			
			DIN 6539	cyl.	A1163	N-solid carbide	K30F	7,1	3			
			DIN 1897	cyl.	A1141	NS	HSS-Co	5	3			
	A1148	UFL										
	A1111	N	HSS	2,5								
	TP-Standard	MT	A4141	NS	HSS-Co	4,5	3					
	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	24	4			
				6535 HE	A3985TFL	ALPHA 4		K30F	18		3	
				6535 HA	A3385TFL							
6535 HE				A3985TIN	16							
6535 HA				A3385TIN								
		DIN 1899	cyl.	A3143	ESU	HSS-Co	H320	3				
				A3153	ESU, left							
		TP-Standard	cyl.	A1166	maximiza standard	K30F	12	3				
A2258	UFL left hand cut	HSS-Co	3,4									

 HA

 cyl.

 Internal coolant

 Oil
























 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant		
Material Group 2.2 (Cont.)	7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	18	3			
					A6488TML	ALPHA 4 PLUS Micro		C16	2			
			6535 HE	A3586TIP	ALPHA 44	HSS-Co	2,6	1,3	3			
			6535 HA	A3486TIP								
			DIN 338	cyl.		A1263	N-solid carbide	K30F	4,8	3		
						A1244	VA	HSS-Co	2,6			
						A1241	NS					
						A1247	ALPHA X-E					
						Tang	A1222	UFL	HSS			1,3
							A1211	N				
		DIN 345	MT		A4244	VA	HSS-Co	2,4	3			
					A4241	NS						
	A4247				ALPHA X-E							
	A4211				N							
	12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	17	3			
					A6588TML	ALPHA 4 PLUS Micro		C12	2			
			DIN 339	Tang		A1411	N	HSS	1	2		
						DIN 340	cyl.					
		A1544	VA									
		A1522	UFL	HSS	1							
		A1511	N									
		Tang	A1519									
			DIN 341	MT		A4447	ALPHA X-E	HSS-Co	1,5	2		
		A4422				UFL	HSS					1
		A4411				N						
		16 x d		TP-Standard	6535 HA	A6685TFP	ALPHA 4 XD16	K30F	16	2		
						DIN 1869 I	cyl.					
			A1611	N								
			DIN 1870 I	MT		A4622	UFL	HSS	1	2		
						A4611	N					
20 x d				TP-Standard	6535 HA	A6785TFP	ALPHA 4 XD20	K30F	15	2		
		DIN 1869 II				cyl.						A1722
	DIN 1870 II		MT		A4722			UFL	HSS	1	2	
25 x d		TP-Standard	6535 HA	A6885TFP	ALPHA 4 XD25	K30F	14	2				
30 x d		TP-Standard	6535 HA	A6985TFP	ALPHA 4 XD30	K30F	14	2				
				DIN 1869 III	cyl.					A1822	UFL	HSS

 HA

 cyl.

 Internal coolant

 Oil


































 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant	
Material Group 2.3 Super Alloys Ni- and Co-based above 1200 N/mm ² DIN: Astroloy 2.4668 Inconel 718 2.4973 René 41 René 95 Stellite 6 2.4636 Udimet 700	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	12	3		
				6535 HA	A3285TFL						
			DIN 6537 K	6535 HA	A3269TFL	ALPHA Rc	K30F	10	3		
					DIN 1897	cyl.	A1141	NS	HSS-Co	3,8	3
	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	14	4		
					6535 HE	A3985TFL	ALPHA 4	K30F	11	3	
	7-8 x d		TP-Standard	6535 HA	A1166	maximiza standard	K30F	8	3		
					A6485TFT	ALPHA 4 XD8	K30F	11	3		
			DIN 338	cyl.	A1244	VA	HSS-Co	2	3		
						A1247	ALPHA X-E				
						A1241	NS				
		DIN 345	MT	A4244	VA	HSS-Co	1,7	3			
					A4247	ALPHA X-E					
					A4241	NS					
		12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	10,5	3	
	A6588TML					ALPHA 4 PLUS Micro	C12		2		
			DIN 340	cyl.	A1547	ALPHA X-E	HSS-Co	1,3	2		
						A1544	VA				
	20 x d		TP-Standard	6535 HA	A6685TFF	ALPHA 4 XD16	K30F	9,5	2		
						A6785TFF					ALPHA 4 XD20
	25 x d		TP-Standard	6535 HA	A6885TFF	ALPHA 4 XD25	K30F	8,5	2		
	30 x d		TP-Standard	6535 HA	A6985TFF	ALPHA 4 XD30	K30F	8,5	2		
Material Group 3.1 Cast Iron, soft DIN: 0.6010 GG-10 0.6015 GG-15 0.6020 GG-20 AISI/SAE: BS: A48-20B Grade 150 A48-25B Grade 220 A48-30B A48-40B	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	120	16		
				6535 HA	A3285TFL						
				6535 HE	A3885TIN						110
				6535 HA	A3285TIN						
			TP-Standard	ISO 9766	A811XHNI + AX196TFL	ALPHA POINT	P45	110	12		
						A811XHNI + AX195TIN	105				
			DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	100	16		
						6535 HA					A3265TFL
						6535 HE					A3865TIN
	6535 HA					A3265TIN					
	DIN 6539		cyl.	A1164TIN	ALPHA 2	K30F	95	16			
					A1163					N-solid carbide	56
	DIN 1897		cyl.	A1149TFL	UFL	HSS-Co	53	16			
					A1149TIN						
		A1141			NS					34	
		A1148			UFL						
DIN 8041	MT	A5971	carbide tipped	K10/20	30	6					
			A4141					NS	HSS-Co	30	16

 HA

 cyl.

 Internal coolant

 Oil












 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant			
Material Group 3.1 (Cont.)	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	150	20				
				6535 HE	A3985TFL	ALPHA 4	K30F	120	16				
				6535 HA	A3385TFL								
				6535 HE	A3985TIN			105					
				6535 HA	A3385TIN								
				A3387	ALPHAJET	K20F	125	10					
			TP-Standard	6535 HE	A6292TIN	MegaJet	HSS-Co	50	12				
				ISO 9766	A821XHNI + AX196TFL	ALPHA POINT	P45	110					
					A821XHNI + AX195TIN			100					
				DIN 1899	cyl.		A3162	ESU	K30F		C80	7	
		A3143						HSS-Co	H25	12			
		A3153					ESU, left						
		DIN 6537 L			6535 HE	A3965TFT	ALPHA 2	K30F	90	16			
					6535 HA	A3365TFT							
	6535 HE				A3976TFL	ALPHA 22		85	12				
	6535 HA				A3376TFL								
					A3367	Maximiza type SX		90	16				
		A3967											
	TP-Standard	cyl.				A1167A	maximiza type A	K30F	90	12			
				A2258		UFL left hand cut	HSS-Co	28					
	7-8 x d			TP-Standard		6535 HA	A6485TFT	ALPHA 4 XD8	K30F	120	16		
							A6488TML	ALPHA 4 PLUS Micro		C100	10		
						6535 HE	A3586TIP	ALPHA 44		90	12		
						6535 HA	A3486TIP						
							A3487	ALPHAJET	K20F	105	9		
			ISO 9766			A831XHNI + AX196TFL	ALPHA POINT	P45	110	12			
						A831XHNI + AX195TIN			95	10			
						DIN 338	cyl.		A1276TFL	ALPHA 22	K30F		80
		A1263		N-solid carbide					45	6			
		A1272		ALPHA HM	K10/20				28	5			
		A1249TFL		UFL	HSS-Co				42	12			
		A1249TIN											
		A1211TIN		N	HSS				40	10			
		A1247		ALPHA X-E	HSS-Co				26	12			
	A1241	NS											
	A1222	UFL		HSS	24								
	A1234	UFL left hand cut											
	A1211	N							10				
Tang	A1219												
cyl.	A1231	N, left hand cut											
DIN 345	MT			A4211TIN	N				HSS	34	10		
				A4247	ALPHA X-E				HSS-Co	24	12		
				A4241	NS								
			A4211	N	HSS	21	10						

 HA

 cyl.

 Internal coolant

 Oil

































 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant			
Material Group 3.1 (Cont.)	12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	120	12				
					A6588TML	ALPHA 4 PLUS Micro		C80	8				
					A3687	ALPHAJET	K20F	100					
			DIN 339	Tang		A1411	N	HSS	20	9			
						A1549TIP	UFL	HSS-Co	36	10			
			A1549TFL										
			A1547	ALPHA X-E	22								
			A1522	UFL	HSS	20							
			A1534	UFL left hand cut									
			A1511	N									
			DIN 341	MT		A1519				9			
						A4447	ALPHA X-E	HSS-Co	20	10			
						A4422	UFL	HSS	18				
			A4411	N		9							
	16 x d		TP-Standard	6535 HA	A6685TFP	ALPHA 4 XD16	K30F	110	12				
					A1622	UFL	HSS	17	9				
		A1611	N		8								
		DIN 1869 I	cyl.			A4622	UFL	HSS	15	9			
						A4611	N		8				
		DIN 1870 I	MT										
	20 x d		TP-Standard	6535 HA	A6785TFP	ALPHA 4 XD20	K30F	105	10				
					A1722	UFL	HSS	16	8				
		DIN 1869 II	cyl.										
	DIN 1870 II	MT			A4722	UFL	HSS	14	8				
	25 x d		TP-Standard	6535 HA	A6885TFP	ALPHA 4 XD25	K30F	95	10				
	30 x d		TP-Standard	6535 HA	A6985TFP	ALPHA 4 XD30	K30F	95	10				
A1822					UFL	HSS	15	8					
DIN 1869 III	cyl.												
60 x d		TP-Standard	cyl.	A1922S	UFL	HSS	12	6					
85 x d		TP-Standard	cyl.	A1922L	UFL	HSS	12	6					
Material Group 3.2 Cast Iron, soft DIN: 0.6025 GG-25 0.6030 GG-30 0.6035 GG-35 0.6040 GG-40 AISI/SAE: BS: A48-45B Grade 260 A48-50B Grade 300 A48-60B Grade 350 Grade 400	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	100	16				
				6535 HA	A3285TFL								
				6535 HE	A3885TIN						90		
				6535 HA	A3285TIN								
			TP-Standard	ISO 9766			A811XHNI + AX196TFL	ALPHA POINT	P45	95	12		
							A811XHNI + AX195TIN			85			
				DIN 6537 K	6535 HE	6535 HA	A3865TFL	ALPHA 2	K30F	85	16		
							A3265TFL						
							A3865TIN			80			
							A3265TIN						
				DIN 6539	cyl.			A1164TIN	ALPHA 2	K30F	80	16	
								A1163			N-solid carbide		
		DIN 1897		cyl.			A1149TFL	UFL	HSS-Co	42	16		
							A1149TIN						
			A1141				NS			26			
			A1148				UFL						
		DIN 8041	MT			A1111	N	HSS	24	12			
						A5971	carbide tipped	K10/20	25	6			
		TP-Standard	MT			A4141	NS	HSS-Co	22	16			

 HA

 cyl.

 Internal coolant

 Oil













 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant					
Material Group 3.2 (Cont.)	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	125	16						
				6535 HE	A3985TFL	ALPHA 4	K30F	95							
				6535 HA	A3385TFL										
				6535 HE	A3985TIN			85							
				6535 HA	A3385TIN										
					A3387	ALPHAJET	K20F	100			10				
		TP-Standard	6535 HE	A6292TIN	MegaJet	HSS-Co	40	12							
			ISO 9766	A821XHNI + AX196TFL	ALPHA POINT	P45	90								
					A821XHNI + AX195TIN		80								
			DIN 1899	cyl.		A3162	ESU	K30F	C63	6					
						A3143		HSS-Co	H18	12					
						A3153	ESU, left								
	DIN 6537 L			6535 HE		A3965TFT	ALPHA 2	K30F	75	16					
				6535 HA		A3365TFT									
				6535 HE		A3976TFL	ALPHA 22		71	12					
			6535 HA	A3376TFL											
				A3367	Maximiza type SX		75	16							
				A3967											
	TP-Standard		cyl.		A1167A	maximiza type A	K30F	75	12						
					A2258	UFL left hand cut	HSS-Co	22							
	7-8 x d			TP-Standard		6535 HA	A6485TFT	ALPHA 4 XD8	K30F	100	16				
							A6488TML	ALPHA 4 PLUS Micro		C80	10				
						6535 HE	A3586TIP	ALPHA 44		80	12				
						6535 HA	A3486TIP								
							A3487	ALPHAJET	K20F	85	9				
						ISO 9766	A831XHNI + AX196TFL	ALPHA POINT	P45				10		
													75		
						DIN 338	cyl.		A1276TFL	ALPHA 22	K30F		67	12	
									A1263	N-solid carbide			36	6	
									A1272	ALPHA HM	K10/20		22	5	
									A1249TFL	UFL	HSS-Co		34	12	
A1249TIN															
A1211TIN			N	HSS	32				10						
A1247			ALPHA X-E	HSS-Co	21				12						
A1241			NS												
A1222			UFL	HSS	19										
Tang			A1219	N					10						
cyl.	A1234		UFL left hand cut		12										
	A1231		N, left hand cut		10										
	A1211		N												
DIN 345	MT		A4211TIN	N	HSS				28	10					
			A4247	ALPHA X-E	HSS-Co				18	12					
		A4241	NS												
		A4211	N	HSS	17	10									

 HA

 cyl.

 Internal coolant

 Oil



























 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant		
Material Group 3.2 (Cont.)	12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	95	12			
					A6588TML	ALPHA 4 PLUS Micro		C63	8			
					A3687	ALPHAJET	K20F	80				
			DIN 339	Tang		A1411	N	HSS	16	9		
						DIN 340	cyl.	A1549TIP	UFL	HSS-Co		30
			A1549TFL									
			A1547	ALPHA X-E	18							
			A1522	UFL	HSS	16						
			A1534	UFL left hand cut								
				Tang	A1519	N		9				
				cyl.	A1511							
			DIN 341	MT		A4447	ALPHA X-E	HSS-Co	16	10		
	A4422					UFL	HSS	14				
	A4411					N		9				
	16 x d		TP-Standard	6535 HA	A6885TFP	ALPHA 4 XD16	K30F	90	12			
					DIN 1869 I	cyl.	A1622	UFL	HSS		14	9
		A1611	N	8								
		DIN 1870 I	MT		A4622	UFL	HSS	12	9			
					A4611	N		8				
		20 x d		TP-Standard	6535 HA	A6785TFP	ALPHA 4 XD20	K30F	85	10		
	DIN 1869 II					cyl.	A1722	UFL	HSS	12,5		8
							DIN 1870 II	MT		A4722		UFL
	25 x d		TP-Standard	6535 HA	A6885TFP	ALPHA 4 XD25	K30F	80	10			
	30 x d		TP-Standard	6535 HA	A6985TFP	ALPHA 4 XD30	K30F	80	10			
DIN 1869 III					cyl.	A1822	UFL	HSS	12		8	
60 x d		TP-Standard		cyl.	A1922S	UFL	HSS	9,5	6			
85 x d		TP-Standard		cyl.	A1922L	UFL	HSS	9,5	6			
Material Group 3.3.1 Nodular Iron (SG) DIN: 0.7040 GGG-40 0.7050 GGG-50 0.7060 GGG-60 AISI/SAE: BS: 60-40-18 420/12 65-45-12 500/7 80-55-06 600/3 Ni-Resist	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	100	16			
				6535 HA	A3285TFL							
				6535 HE	A3885TIN							
				6535 HA	A3285TIN							
			TP-Standard	ISO 9766		A811XHNI + AX196TFL	ALPHA POINT	P45	95	12		
						A811XHNI + AX195TIN			85			
				DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	85	16		
						6535 HA						A3265TFL
						6535 HE						A3865TIN
						6535 HA						A3265TIN
			DIN 6539	cyl.		A1164TIN	ALPHA 2	K30F	80	16		
						A1163	N-solid carbide		45	8		
		DIN 1897	cyl.		A1149TFL	UFL	HSS-Co	42	16			
					A1149TIN							
					A1141	NS					26	
					A1148	UFL						
		DIN 8041	MT		A5971	carbide tipped	K10/20	25	6			
					TP-Standard	MT		A4141	NS		HSS-Co	22

 HA

 cyl.

 Internal coolant

 Oil

 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant							
Material Group 3.3.1 (Cont.)	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	125	16								
				6535 HE	A3985TFL	ALPHA 4	K30F	95									
				6535 HA	A3385TFL												
				6535 HE	A3985TIN			85									
				6535 HA	A3385TIN												
					A3387	ALPHAJET	K20F	100			6						
		TP-Standard	6535 HE	A6292TIN	MegaJet	HSS-Co	40	12									
			ISO 9766	A821XHNI + AX196TFL	ALPHA POINT	P45	90										
				A821XHNI + AX195TIN			80										
			DIN 1899	cyl.	A3162	ESU	K30F			C63	6						
					A3143		HSS-Co			H18							
					A3153	ESU, left											
	DIN 6537 L	6535 HE	A3965TFT	ALPHA 2	K30F	75	16										
			A3365TFT														
			A3976TFL	ALPHA 22					71	12							
			A3376TFL														
			A3367	Maximiza type SX					75	16							
			A3967														
	TP-Standard	cyl.	A1167A	maximiza type A	K30F	75	12										
			A2258	UFL left hand cut	HSS-Co	22											
	7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	100	16								
					A6488TML	ALPHA 4 PLUS Micro		C80			10						
					A3586TIP	ALPHA 44		80			12						
					A3486TIP												
					ISO 9766	A831XHNI + AX196TFL		ALPHA POINT			P45	85	10				
						A831XHNI + AX195TIN						75					
					DIN 338	cyl.		A1276TFL			ALPHA 22	K30F	67	12			
								A1263			N-solid carbide		36			6	
								A1272			ALPHA HM		K10/20			22	5
								A1249TFL			UFL		HSS-Co			34	12
								A1249TIN									
								A1211TIN			N		HSS			32	10
A1247		ALPHA X-E	HSS-Co	21			12										
A1241		NS															
A1222		UFL	HSS	19													
Tang		A1219	N				10										
cyl.		A1234	UFL left hand cut				12										
		A1231	N, left hand cut				10										
	A1211	N															
DIN 345	MT	A4211TIN	N	HSS	28	10											
		A4247	ALPHA X-E	HSS-Co	18												
		A4241	NS														
		A4211	N	HSS	17			10									

HA

cyl.

Internal coolant

Oil

HE

MT

External coolant

Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant		
Material Group 3.3.1 (Cont.)	12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	95	12			
					A6588TML	ALPHA 4 PLUS Micro		C63	8			
			DIN 339	Tang	A1411	N	HSS	16	9			
			DIN 340	cyl.	A1549TIP	UFL	HSS-Co	30	10			
		A1549TFL										
		A1547			ALPHA X-E							
		A1522			UFL							
		A1534			UFL left hand cut							
		Tang	A1519	N	HSS	16	9					
		cyl.	A1511									
		DIN 341	MT	A4447	ALPHA X-E	HSS-Co	16	10				
				A4422	UFL	HSS	14	9				
	A4411			N								
	16 x d		TP-Standard	6535 HA	A6685TFP	ALPHA 4 XD16	K30F	90	12			
			DIN 1869 I	cyl.	A1622	UFL	HSS	14	9			
		A1611			N	8						
		DIN 1870 I	MT	A4622	UFL	HSS	12	9				
				A4611	N			8				
		20 x d		TP-Standard	6535 HA	A6785TFP	ALPHA 4 XD20	K30F	85	10		
	DIN 1869 II			cyl.	A1722	UFL	HSS	12,5	8			
	DIN 1870 II		MT	A4722	UFL	HSS	11	8				
	25 x d		TP-Standard	6535 HA	A6885TFP	ALPHA 4 XD25	K30F	80	10			
	30 x d		TP-Standard	6535 HA	A6985TFP	ALPHA 4 XD30	K30F	80	10			
			DIN 1869 III	cyl.	A1822	UFL	HSS	12	8			
60 x d		TP-Standard	cyl.	A1922S	UFL	HSS	9,5	6				
85 x d		TP-Standard	cyl.	A1922L	UFL	HSS	9,5	6				
Material Group 3.3.2 Nodular Iron (SG) DIN: 0.7060 GGG-60 0.7070 GGG-70 0.7080 GGG-80 AISI/SAE: BS: 80-55-06 600/3 100-70-03 700/2 120-90-02 800/2	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	75	16			
					6535 HA			A3285TFL			71	
					6535 HE			A3885TIN				
					6535 HA			A3285TIN				
			TP-Standard	ISO 9766	A811XHNI + AX196TFL	ALPHA POINT	P45	71	10			
				DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	67	16		
						6535 HA			A3265TFL			63
						6535 HE			A3865TIN			
						6535 HA			A3265TIN			
			DIN 6539	cyl.	A1164TIN	ALPHA 2	K30F	63	16			
					A1163	N-solid carbide		34	6			
			DIN 1897	cyl.	A1149TFL	UFL	HSS-Co	36	12			
		A1149TIN										
		A1141			NS							
		A1148			UFL							
		A1111			N	HSS		18				
		DIN 8041	MT	A5971	carbide tipped	K10/20	15	4				
		TP-Standard	MT	A4141	NS	HSS-Co	17	12				

HA

cyl.

Internal coolant

Oil













HE

MT

External coolant

Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant					
Material Group 3.3.2 (Cont.)	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	95	16						
				6535 HE	A3985TFL	ALPHA 4	K30F	71	12						
				6535 HA	A3385TFL										
				6535 HE	A3985TIN			67							
			6535 HA	A3385TIN											
			TP-Standard	6535 HE	A6292TIN	MegaJet	HSS-Co	30	12						
				ISO 9766	A821XHNI + AX196TFL	ALPHA POINT	P45	67	10						
				DIN 1899	cyl.		A3162		ESU		K30F	C50	4		
		A3143							HSS-Co	H14	10				
		A3153						ESU, left							
		DIN 6537 L		6535 HE			A3965TFT		ALPHA 2	K30F	60	12			
							A3365TFT								
							A3976TFL		ALPHA 22						56
							A3376TFL								
							A3367		Maximiza type SX						60
		TP-Standard		cyl.			A1167A		maximiza type A	K30F	60	10			
	A2258							UFL left hand cut	HSS-Co	16					
	7-8 x d			TP-Standard	6535 HA	A6485TFT		ALPHA 4 XD8	K30F	75	12				
						A6488TML		ALPHA 4 PLUS Micro			C63		10		
						6535 HE	A3586TIP			ALPHA 44			56		
						6535 HA	A3486TIP								
			ISO 9766	A831XHNI + AX196TFL		ALPHA POINT	P45	63	9						
				DIN 338	cyl.		A1276TFL		ALPHA 22	K30F	56	10			
							A1263		N-solid carbide		28	5			
							A1272		ALPHA HM	K10/20	14	4			
		A1249TFL						UFL	HSS-Co	28	10				
		A1249TIN								26					
		A1211TIN						N	HSS	25	9				
		A1247						ALPHA X-E	HSS-Co	15	10				
		A1241						NS							
		A1222						UFL	HSS	14					
	Tang	A1219						N			9				
	cyl.	A1234		UFL left hand cut			10								
		A1231		N, left hand cut			9								
		A1211		N											
		DIN 345	MT			A4211TIN		N	HSS	22	9				
	A4247						ALPHA X-E	HSS-Co	13	10					
	A4241						NS								
	A4211						N	HSS	12,5	9					

 HA

 cyl.

 Internal coolant

 Oil



























 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant	
Material Group 3.3.2 (Cont.)	12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	71	12		
					A6588TML	ALPHA 4 PLUS Micro		C50	8		
			DIN 339	Tang		A1411	N	HSS	12	8	
						DIN 340	cyl.		A1549TIP	UFL	
			A1549TFL		24						
			A1547	ALPHA X-E	13						
			A1522	UFL	12						
			Tang	cyl.		A1519	N	HSS		8	
						A1511					
			DIN 341	MT		A4447	ALPHA X-E	HSS-Co	11	9	
	A4422	UFL				HSS	10,5				
	A4411	N					8				
	16 x d		TP-Standard	6535 HA	A6685TFP	ALPHA 4 XD16	K30F	67	10		
					DIN 1869 I	cyl.		A1622	UFL		HSS
		A1611	N	6							
		DIN 1870 I	MT		A4622	UFL	HSS	9	8		
					A4611	N		6			
		20 x d		DIN 1869 II	cyl.	A1722	UFL	HSS	9,5	7	
						DIN 1870 II	MT		A4722	UFL	
30 x d			DIN 1869 III	cyl.	A1822	UFL	HSS	9	7		
60 x d			TP-Standard	cyl.	A1922S	UFL	HSS	7,1	5		
85 x d		TP-Standard	cyl.	A1922L	UFL	HSS	7,1	5			
Material Group 3.4 Malleable Iron DIN: GTW-40 GTW-45 GTW-55 GTS-35 GTS-55 AISI/SAE: ASTM A47: Gr. 38510, 35018 ASTM A 602:Gr. M3210 SAE J 158: Gr. M4504, M5003	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	100	16		
					6535 HA						A3285TFL
					6535 HE						A3885TIN
					6535 HA						A3285TIN
			TP-Standard	ISO 9766		A811XHNI + AX196TFL	ALPHA POINT	P45	95	12	
						A811XHNI + AX195TIN			85		
				DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	85	16	
						6535 HA			A3265TFL		
						6535 HE			A3865TIN		
						6535 HA			A3265TIN		
		DIN 6539	cyl.		A1164TIN	ALPHA 2	K30F	80	16		
					A1163	N-solid carbide		45			8
		DIN 1897	cyl.		A1149TFL	UFL	HSS-Co	42	16		
					A1149TIN			26			
					A1141	NS					
					A1148	UFL					
DIN 8041	MT		A5971	carbide tipped	HSS	24	12				
TP-Standard	MT		A4141	NS	HSS-Co	22	16				

 HA

 cyl.

 Internal coolant

 Oil













 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant		
Material Group 3.4 (Cont.)	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	125	16			
				6535 HE	A3985TFL	ALPHA 4	K30F	95				
				6535 HA	A3385TFL							
				6535 HE	A3985TIN			85				
				6535 HA	A3385TIN							
				A3387	ALPHAJET	K20F	100	10				
			TP-Standard	6535 HE	A6292TIN	MegaJet	HSS-Co	40	12			
			ISO 9766	A821XHNI + AX196TFL	ALPHA POINT	P45	90					
				A821XHNI + AX195TIN			80					
			7-8 x d		DIN 1899	cyl.	A3162	ESU	K30F	C63	6	
		A3143						HSS-Co	H18	12		
		A3153					ESU, left					
		DIN 6537 L			6535 HE	A3965TFT	ALPHA 2	K30F	75	16		
	A3365TFT											
	A3976TFL					ALPHA 22	71					12
	A3376TFL											
	A3367			Maximiza type SX		75	16					
		6535 HE		A3967								
		TP-Standard		cyl.	A1167A	maximiza type A	K30F	75	12			
					A2258	UFL left hand cut	HSS-Co	22				
				TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	100	16		
			A6488TML			ALPHA 4 PLUS Micro	C80		8			
			A3586TIP			ALPHA 44	80		12			
			6535 HA		A3486TIP							
			ISO 9766		A831XHNI + AX196TFL	ALPHA POINT	P45	85	10			
					A831XHNI + AX195TIN			75				
				DIN 338	cyl.	A1276TFL	ALPHA 22	K30F	67	12		
						A1263	N-solid carbide		36	6		
						A1272	ALPHA HM	K10/20	22	5		
						A1249TFL	UFL	HSS-Co	34	12		
						A1249TIN						
						A1211TIN	N	HSS	32	10		
	A1247	ALPHA X-E				HSS-Co	21	12				
	A1241	NS										
	A1222	UFL				HSS	19					
	Tang	A1219				N		10				
	cyl.	A1234				UFL left hand cut		12				
		A1231				N, left hand cut		10				
		A1211	N									
	DIN 345	MT	A4211TIN	N	HSS	28	10					
			A4247	ALPHA X-E	HSS-Co	18	12					
			A4241	NS								
			A4211	N	HSS	17	10					

 HA

 cyl.

 Internal coolant

 Oil


























 HE

 MT

 External coolant


 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant				
Material Group 3.4 (Cont.)	12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	95	12					
					A6588TML	ALPHA 4 PLUS Micro		C63	7					
			DIN 339	Tang			A1411	N	HSS	16	9			
							DIN 340	cyl.					A1549TIP	UFL
			A1549TFL											
			A1547	ALPHA X-E										
			A1522	UFL										
			Tang					A1519	N	HSS	16	9		
								A1511						
			DIN 341	MT				A4447	ALPHA X-E	HSS-Co	16	10		
								A4422	UFL		HSS			14
								A4411	N					9
		16 x d		TP-Standard	6535 HA		A6685TFP	ALPHA 4 XD16	K30F	90	12			
							DIN 1869 I	cyl.						
	A1611		N	8										
	DIN 1870 I		MT				A4622	UFL	HSS	12	9			
							A4611	N			8			
	20 x d			TP-Standard	6535 HA		A6785TFP	ALPHA 4 XD20	K30F	85	10			
		DIN 1869 II					cyl.							A1722
			DIN 1870 II	MT					A4722	UFL	HSS	11		8
	25 x d		TP-Standard	6535 HA		A6885TFP	ALPHA 4 XD25	K30F	80	10				
	30 x d		TP-Standard	6535 HA		A6985TFP	ALPHA 4 XD30	K30F	80	10				
						DIN 1869 III	cyl.							A1822
	60 x d		TP-Standard		cyl.	A1922S	UFL	HSS	9,5	6				
	85 x d		TP-Standard		cyl.	A1922L	UFL	HSS	9,5	6				
	Material Group 3.5 Chilled Cast Iron 400-600 HB	3 x d		DIN 6537 K	6535 HA	A3269TFL	ALPHA Rc	K30F	45	6				
				DIN 8041	MT	A5971	carbide tipped	K10/20	17	2				
		5 x d		TP-Standard		cyl.	A1166	maximiza standard	K30F	25	3			
7-8 x d			DIN 338		cyl.	A1272	ALPHA HM	K10/20	13	2				
						A1273								

 HA

 cyl.

 Internal coolant

 Oil















 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant					
Material Group 4.1 Copper, pure DIN: 2.0060 E-Cu 2.0080 F-Cu 2.0090 SF-Cu 2.0070 SE-Cu	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	210	9						
				6535 HA	A3285TFL			180							
				6535 HE	A3885TIN										
				6535 HA	A3285TIN										
			TP-Standard	ISO 9766	A811XHNI + AX195TIN	ALPHA POINT	P45	170	8						
			DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	190	7						
				6535 HA	A3265TFL										
		6535 HE		A3865TIN	180										
		6535 HA		A3265TIN											
		DIN 6539		cyl.	A1164TIN						ALPHA 2	K30F	180	7	
					A1163						N-solid carbide	140			
		DIN 1897		cyl.	A1149TFL						UFL	HSS-Co	75	5	
			A1149TIN			63									
			A1148												
	A1141		NS		53	6									
	A1111		N		48										
	TP-Standard	MT	A4141	NS	HSS-Co	48	6								
	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	240	10						
					A3985TFL	ALPHA 4	K30F	180	8						
					A3385TFL										
					A3985TIN										
				6535 HA	A3385TIN	170									
				TP-Standard	6535 HE		A6292TIN	MegaJet	HSS-Co	75	8				
				ISO 9766	A821XHNI + AX195TIN	ALPHA POINT	P45	160							
			DIN 1899	cyl.	A3162	ESU	K30F	C125	6						
								A3153			ESU, left	HSS-Co	H40	5	
								A3143			ESU				
			DIN 6537 L	6535 HE	A3965TFT	ALPHA 2	K30F	170	6						
A3365TFT															
A3976TFL					ALPHA 22						150				
A3376TFL															
A3367		Maximiza type SX			190						8				
A3967															
TP-Standard		cyl.	A1167B	maximiza type B	K30F	160	8								
			A2258	UFL left hand cut	HSS-Co	48	5								

 HA

 cyl.

 Internal coolant

 Oil





























 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant			
Material Group 4.1 (Cont.)	7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	170	7				
					A6488TML	ALPHA 4 PLUS Micro		C125	5				
				6535 HE	A3586TIP	ALPHA 44	P45	150	7				
				6535 HA	A3486TIP	ALPHA POINT							
		ISO 9766	A831XHNI + AX195TIN	ALPHA POINT		DIN 338	cyl.	A1276TFL	ALPHA 22	K30F	140	5	
		A1263	N-solid carbide	HSS-Co		110							
		A1254TFT	VA INOX			HSS	60	4					
		A1249TFL	UFL	HSS			53	5					
		A1249TIN	N			HSS-Co	48						
		A1211TIN	N	HSS			42	4					
		A1247	ALPHA X-E			HSS			42	5			
		A1241	NS	HSS			42	5					
		A1222	UFL			HSS			42	5			
		A1234	UFL left hand cut	HSS			42	5					
		A1213	W			HSS			42	5			
		Tang	A1219	N			HSS	42			5		
	cyl.	A1211	N	HSS		42			5				
	DIN 345	MT	A4211TIN				N	HSS		45	5		
	A4247		ALPHA X-E	HSS-Co		42							
	A4241		NS	HSS		38							
	A4213		W										
	A4211		N										
	12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	160	7				
					A6588TML	ALPHA 4 PLUS Micro		C125	4				
			DIN 339	Tang	A1411	N	HSS	36	4				
			DIN 340	cyl.	A1549TIP	UFL	HSS-Co	45	4				
		A1549TFL			UFL	HSS		50					
		A1547			ALPHA X-E		HSS	40					
		A1534			UFL left hand cut	HSS		36					
		A1522			UFL		HSS	36					
		A1513			W	HSS				36			
		Tang	A1519	N	HSS		36						
		cyl.	A1511	N		HSS		36					
		DIN 341	MT	A4447	ALPHA X-E		HSS-Co		36	4			
				A4422	UFL	HSS	32						
				A4411	N	HSS	32						
	16 x d		TP-Standard	6535 HA	A6685TFP	ALPHA 4 XD16	K30F	140	6				
					DIN 1869 I	cyl.		A1622	UFL		HSS	30	3
		A1611	N										
		DIN 1870 I	MT	A4622	UFL	HSS	26	3					
A4611				N									
20 x d			TP-Standard	6535 HA	A6785TFP	ALPHA 4 XD20	K30F	130	5				
	DIN 1869 II				cyl.	A1722		UFL	HSS		28	3	
	A4722					UFL		HSS			25		
DIN 1870 II	MT	A4722	UFL	HSS	25	3							
25 x d		TP-Standard	6535 HA	A6885TFP	ALPHA 4 XD25	K30F	125	5					
30 x d		TP-Standard	6535 HA	A6985TFP	ALPHA 4 XD30	K30F	125	5					
				DIN 1869 III	cyl.		A1822	UFL		HSS	28	3	
60 x d		TP-Standard	cyl.	A1922S	UFL	HSS	21	2					
85 x d		TP-Standard	cyl.	A1922L	UFL	HSS	21	2					

 HA

 cyl.

 Internal coolant

 Oil















 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant	
Material Group 4.2 Copper-Nickel:Zinc Alloys German Silver DIN: 2.0770 CuNi10Zn42Pb (Ns4711Pb) 2.0790 CuNi18Zn19Pb (Ns6218Pb)	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	150	12		
				6535 HA	A3285TFL						
				6535 HE	A3885TIN						
				6535 HA	A3285TIN						
			TP-Standard	ISO 9766	A811XHNI + AX195TIN	ALPHA POINT	P45	130	10		
				DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	130	10	
		6535 HA			A3265TFL						
		6535 HE			A3865TIN						
		6535 HA			A3265TIN						
		DIN 6539		cyl.	A1164TIN	ALPHA 2	K30F	120	10		
					A1163	N-solid carbide		90	9		
		DIN 1897	cyl.	A1149TFL	UFL	HSS-Co	67	8			
	A1149TIN										
	A1148			N	HSS		34	9			
										A1111	
	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	200	16		
				6535 HE	A3985TFL	ALPHA 4	K30F	150	12		
				6535 HA	A3385TFL						
				6535 HE	A3985TIN						
				6535 HA	A3385TIN						
				TP-Standard	6535 HE	A6292TIN	MegaJet	HSS-Co	60		10
			ISO 9766		A821XHNI + AX195TIN	ALPHA POINT	P45	130			
				DIN 1899	cyl.	A3162	ESU	K30F	C63	8	
						A3153	ESU, left	HSS-Co	H25		
A3143						ESU					
DIN 6537 L				6535 HE	A3965TFT	ALPHA 2	K30F	140	10		
				6535 HA	A3365TFT						
		6535 HE		A3976TFL	ALPHA 22	120					
		6535 HA	A3376TFL								
		6535 HE	A3367	Maximiza type SX	90	12					
TP-Standard		cyl.	A1167B	maximiza type B	K30F	80	9				
			A2258	UFL left hand cut	HSS-Co	30	7				

 HA

 cyl.

 Internal coolant

 Oil



























 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant		
Material Group 4.2 (Cont.)	7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	150	12			
					A6488TML	ALPHA 4 PLUS Micro		C100	8			
				6535 HE	A3586TIP	ALPHA 44		125	9			
				6535 HA	A3486TIP							
		ISO 9766	A831XHNI + AX195TIN	ALPHA POINT	P45	130	10					
			DIN 338	cyl.		A1276TFL	ALPHA 22	K30F	110	9		
						A1263	N-solid carbide			7		
						A1254TFT	VA INOX	HSS-Co	53			
						A1249TFL	UFL					
						A1249TIN						
						A1247	ALPHA X-E	HSS	30			
						A1244	VA					
	A1222					UFL	26					
	A1234					UFL left hand cut						
	Tang					A1219	N					
	cyl.	A1211										
	DIN 345	MT		A4247	ALPHA X-E	HSS-Co	26	7				
				A4244	VA							
				A4211	N	HSS	24					
	12 x d		TP-Standard		6535 HA	A6585TFT	ALPHA 4 XD12	K30F	140	12		
						A6588TML	ALPHA 4 PLUS Micro		C100	7		
			DIN 339	Tang			A1411	N	HSS	22	6	
							DIN 340	cyl.			A1549TIP	
			A1549TFL									
			A1547	ALPHA X-E	HSS	25						
			A1544	VA								
			A1534	UFL left hand cut		22						
			A1522	UFL								
			A1511	N								
			Tang	A1519								
DIN 341			MT		A4447	ALPHA X-E	HSS-Co	22	6			
		A4422			UFL	HSS		20				
		A4411			N							
16 x d			TP-Standard		6535 HA	A6685TFP	ALPHA 4 XD16	K30F	140	10		
							DIN 1869 I		cyl.			A1622
		A1611	N									
		DIN 1870 I	MT		A4622		UFL	HSS	17	5		
	A4611				N							
	20 x d		TP-Standard		6535 HA	A6785TFP	ALPHA 4 XD20	K30F	130	10		
						DIN 1869 II	cyl.			A1722		UFL
		DIN 1870 II	MT		A4722			UFL		HSS	16	5
25 x d		TP-Standard		6535 HA	A6885TFP	ALPHA 4 XD25	K30F	120	10			
30 x d		TP-Standard		6535 HA	A6985TFP	ALPHA 4 XD30	K30F	120	10			
						DIN 1869 III		cyl.			A1822	UFL
60 x d		TP-Standard		cyl.			A1922S			UFL	HSS	13
85 x d		TP-Standard		cyl.	A1922L	UFL	HSS	13	4			

 HA

 cyl.

 Internal coolant

 Oil














 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant		
Material Group 4.3 Brass, brittle free machining DIN: 2.0380 CuZn39Pb2 (Ms58) 2.0401 CuZn39Pb3 2.0402 CuZn40Pb2 BS: CZ 121, CZ 122	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	190	16			
				6535 HA	A3285TFL							
				6535 HE	A3885TIN							
				6535 HA	A3285TIN							
			TP-Standard	ISO 9766	A811XHNI + AX195TIN	ALPHA POINT	P45	160			12	
			DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	180	16			
				6535 HA	A3265TFL							
				6535 HE	A3865TIN							
				6535 HA	A3265TIN							
			DIN 6539	cyl.	A1164TIN	ALPHA 2	K30F	160			16	
					A1163	N-solid carbide		110			12	
	DIN 1897	cyl.	A1149TFL	UFL	HSS-Co	105	12					
			A1149TIN			95						
			A1111	N		67						
	DIN 8041	MT	A5971	carbide tipped	K10/20	63	8					
	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	250	20			
				6535 HE	A3985TFL	ALPHA 4	K30F	190			16	
				6535 HA	A3385TFL							
				6535 HE	A3985TIN							
				6535 HA	A3385TIN							
					A3387			ALPHAJET				K20F
			TP-Standard	6535 HE	A6292TIN			MegaJet	HSS-Co	90		12
DIN 1899			cyl.	A3162	ESU	K30F	C100	8				
				A3143			HSS-Co			H56	12	
				A3153	ESU, left							
DIN 6537 L			6535 HE	A3965TFT	ALPHA 2	K30F	190	16				
		A3365TFT										
		A3976TFL		ALPHA 22								
		A3376TFL										
		A3367		Maximiza type SX								
6535 HE		A3967										
TP-Standard		cyl.	A1167A	maximiza type A	K30F	140	12					
			A2258	UFL left hand cut		HSS-Co			56	10		

 HA

 cyl.

 Internal coolant

 Oil


























 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant			
Material Group 4.3 (Cont.)	7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	190	10				
					A6488TML	ALPHA 4 PLUS Micro		C125	12				
					6535 HE	A3586TIP	ALPHA 44	140					
						6535 HA	A3486TIP						
		6535 HA	A3487	ALPHAJET	K20F	210	16						
			ISO 9766	A831XHNI + AX195TIN	ALPHA POINT	P45	160	12					
			DIN 338	cyl.		A1276TFL	ALPHA 22	K30F	150	16			
						A1263	N-solid carbide		90	9			
						A1272	ALPHA HM	K10/20	60	7			
						A1249TFL	UFL	HSS-Co	85	10			
						A1249TIN			75				
						A1211TIN	N	HSS	67				
						A1247	ALPHA X-E	HSS-Co	60				
						A1232	tool type H, left hand cut		HSS				
						A1234	UFL left hand cut						
						A1231	N, left hand cut			53			
						A1212	tool type H			60			
						A1222	UFL		53				
						Tang	A1219	N					
						cyl.	A1211						
	DIN 345	MT	A4211TIN	N	HSS	60	10						
			A4247	ALPHA X-E	HSS-Co	53							
			A4211	N	HSS	48							
	12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	180	10				
					A6588TML	ALPHA 4 PLUS Micro		C100					
					A3687	ALPHAJET	K20F	200	16				
						DIN 339		Tang	A1411		N	HSS	45
		DIN 340	cyl.		A1549TIP	UFL	HSS-Co	63	9				
					A1549TFL			71					
					A1547	ALPHA X-E	50						
					A1534	UFL left hand cut	HSS	45					
					A1522	UFL							
					Tang	A1519	N						
		cyl.	A1511										
		DIN 341	MT	A4447	ALPHA X-E	HSS-Co	45	9					
				A4422	UFL	HSS	40						
				A4411	N								
		16 x d		TP-Standard	6535 HA	A6685TFF	ALPHA 4 XD16	K30F	170	9			
						DIN 1869 I	cyl.		A1622	UFL		HSS	38
	A1611		N										
DIN 1870 I	MT		A4622	UFL	HSS	34	8						
			A4611	N									
20 x d		TP-Standard	6535 HA	A6785TFF	ALPHA 4 XD20	K30F	160	9					
				DIN 1869 II	cyl.		A1722	UFL		HSS	36	7	
							DIN 1870 II	MT			A4722		
25 x d		TP-Standard	6535 HA	A6885TFF	ALPHA 4 XD25	K30F	150	8					
30 x d		TP-Standard	6535 HA	A6985TFF	ALPHA 4 XD30	K30F	150	8					
				DIN 1869 III	cyl.		A1822	UFL		HSS	34	7	
60 x d		TP-Standard	cyl.	A1922S	UFL	HSS	26	5					
85 x d		TP-Standard	cyl.	A1922L	UFL	HSS	26	5					

 HA

 cyl.

 Internal coolant

 Oil















 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant		
Material Group 4.4 Brass, tough DIN: 2.0240 CuZn15 (Ms85) 2.0335 CuZn36 (Ms63) 2.0330 CuZn36Pb1 2.0375 CuZn36Pb3 2.0360 CuZn40 (Ms60) AISI/SAE: Naval Brass CZ 112 C51000 Special Brass, tough DIN: 2.0470 CuZn28Sn1 (SoMs71) 2.0490 CuZn31Si1 (SoMs68) BS: CZ 108 CZ 114	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	190	12			
				6535 HA	A3285TFL							
				6535 HE	A3885TIN							
				6535 HA	A3285TIN							
			TP-Standard	ISO 9766	A811XHNI + AX195TIN	ALPHA POINT	P45	150	9			
			DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	170	12			
				6535 HA	A3265TFL							
				6535 HE	A3865TIN							
				6535 HA	A3265TIN							
			DIN 6539	cyl.	A1164TIN	ALPHA 2	K30F	160	12			
					A1163	N-solid carbide		110	9			
	DIN 1897	cyl.	A1149TFL	UFL	HSS-Co	71	12					
			A1149TIN									
			A1148			40						
			A1111	N	HSS	38						
	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	210	12			
				6535 HE	A3985TFL	ALPHA 4		K30F			160	10
				6535 HA	A3385TFL							
				6535 HE	A3985TIN							
				6535 HA	A3385TIN							
				TP-Standard	6535 HE	A6292TIN		MegaJet			HSS-Co	60
			ISO 9766			A821XHNI + AX195TIN	ALPHA POINT	P45	150	9		
				DIN 1899	cyl.	A3162	ESU	K30F	C100	8		
A3153						ESU, left	HSS-Co		H32	10		
A3143						ESU						
DIN 6537 L				6535 HE	A3965TFT	ALPHA 2	K30F	150	10			
				6535 HA	A3365TFT							
		6535 HE		A3976TFL	ALPHA 22	130						
		6535 HA	A3376TFL	Maximiza type SX	150	12						
		6535 HE	A3967									
TP-Standard		cyl.	A1167B	maximiza type B	K30F	140	10					
			A2258	UFL left hand cut		HSS-Co			36			

 HA

 cyl.

 Internal coolant

 Oil

 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant																
Material Group 4.4 (Cont.)	7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	150	9																	
					A6488TML	ALPHA 4 PLUS Micro		C125	7																	
				6535 HE	A3586TIP	ALPHA 44	P45	130	8																	
				6535 HA	A3486TIP																					
		ISO 9766	A831XHNI + AX195TIN	ALPHA POINT		140																				
			DIN 338	cyl.			A1276TFL	ALPHA 22	K30F	120	9															
							A1263	N-solid carbide		90	7															
							A1254TFT	VA INOX	HSS-Co	56	10															
							A1249TFL	UFL																		
							A1249TIN																			
							A1247	ALPHA X-E	HSS	36	9															
							A1222	UFL		34																
							A1234	UFL left hand cut																		
							A1213	W																		
							Tang	A1219	N																	
							cyl.	A1211																		
	DIN 345						MT				A4247		ALPHA X-E	HSS-Co	32	9										
		A4213	W	HSS	30																					
		A4211	N																							
	12 x d		TP-Standard		6535 HA	A6585TFT	ALPHA 4 XD12	K30F	150	9																
						A6588TML	ALPHA 4 PLUS Micro		C100	6																
			DIN 339	Tang			A1411	N	HSS	28	8															
													DIN 340	cyl.		A1549TIP	UFL	HSS-Co	48	9						
																						A1549TFL				
																						A1547	ALPHA X-E	HSS	28	8
																						A1534	UFL left hand cut			
																						A1522	UFL			
																						A1513	W			
													A1511	N												
													Tang	A1519												
													DIN 341	MT				A4447	ALPHA X-E	HSS-Co	26	8				
		A4422	UFL	HSS	25																					
A4411		N																								
16 x d			TP-Standard		6535 HA	A6685TFP	ALPHA 4 XD16	K30F	150	8																
							DIN 1869 I					cyl.		A1622	UFL	HSS	24	6								
	A1611	N																								
	DIN 1870 I	MT		A4622	UFL			HSS	21	6																
																				A4611	N					
	20 x d		TP-Standard		6535 HA	A6785TFP	ALPHA 4 XD20	K30F	150	7																
						DIN 1869 II	cyl.						A1722	UFL	HSS	22	6									
																			DIN 1870 II	MT	A4722	UFL	HSS	20	6	
25 x d		TP-Standard		6535 HA	A6885TFP	ALPHA 4 XD25	K30F	140	7																	
30 x d		TP-Standard		6535 HA	A6985TFP	ALPHA 4 XD30	K30F	140	7																	
						DIN 1869 III					cyl.	A1822	UFL	HSS	22	6										
60 x d		TP-Standard		cyl.	A1922S	UFL	HSS	17	4																	
85 x d		TP-Standard		cyl.	A1922L	UFL	HSS	17	4																	

HA

cyl.

Internal coolant

Oil















HE

MT

External coolant

Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant	
Material Group 4.5 Bronze, soft DIN: 2.1020 CuSn6 (SnBz6) 2.1086 G-CuSn10Zn (Rg 10) 2.1090 G-CuSn7ZnPb (Rg 7) AISI: Am BS: CDA 544 PB 102 CDA 65500 CDA 656	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	180	12		
				6535 HA	A3285TFL						
				6535 HE	A3885TIN						
				6535 HA	A3285TIN						
			TP-Standard	ISO 9766	A811XHNI + AX195TIN	ALPHA POINT	P45	140	9		
				DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	160	12	
		6535 HA			A3265TFL						
		6535 HE			A3865TIN						
		6535 HA			A3265TIN						
		DIN 6539		cyl.	A1164TIN	ALPHA 2	K30F	150	12		
					A1163	N-solid carbide		100	9		
		DIN 1897	cyl.	A1149TFL	UFL	HSS-Co	71	12			
	A1149TIN										
	A1148			N	40						
	A1111				HSS		38				
	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	200	12		
				6535 HE	A3985TFL	ALPHA 4	K30F	150	10		
				6535 HA	A3385TFL						
				6535 HE	A3985TIN						
				6535 HA	A3385TIN						
				TP-Standard	6535 HE	A6292TIN	MegaJet	HSS-Co	60		12
			ISO 9766	A821XHNI + AX195TIN	ALPHA POINT	P45	140	9			
				DIN 1899	cyl.	A3162	ESU	K30F	C100	8	
						A3153	ESU, left	HSS-Co	H32	10	
A3143						ESU					
DIN 6537 L				6535 HE	A3965TFT	ALPHA 2	K30F	140	10		
					A3365TFT						
		A3976TFL			ALPHA 22	125					
		A3376TFL	Maximiza type SX		140	12					
		A3967									
TP-Standard		cyl.	A1167B	maximiza type B	K30F	130	10				
A2258		UFL left hand cut	HSS-Co	34							

 HA

 cyl.

 Internal coolant

 Oil





























 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant						
Material Group 4.5 (Cont.)	7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	150	9							
					A6488TML	ALPHA 4 PLUS Micro		C100	7							
				6535 HE	A3586TIP	ALPHA 44	P45	105	8							
				6535 HA	A3486TIP											
		ISO 9766	A831XHNI + AX195TIN	ALPHA POINT		130										
			DIN 338	cyl.			A1276TFL	ALPHA 22	K30F	120	9					
							A1263	N-solid carbide		80	7					
							A1249TFL	UFL	HSS-Co	56	10					
							A1249TIN									
							A1247	ALPHA X-E	HSS	32	9					
							A1244	VA								
							A1222	UFL								
	A1234						UFL left hand cut									
	Tang						A1219	N								
	cyl.						A1211									
	DIN 345						MT			A4247	ALPHA X-E		HSS-Co	28	9	
										A4244	VA					
			A4211	N	HSS	26										
	12 x d			TP-Standard		6535 HA	A6585TFT	ALPHA 4 XD12	K30F	140	9					
							A6588TML	ALPHA 4 PLUS Micro		C80	6					
				DIN 339	Tang			A1411	N	HSS	26	8				
								DIN 340	cyl.					A1549TIP	UFL	HSS-Co
				A1549TFL												
		A1547		ALPHA X-E	28	8										
		A1544		VA	HSS	26										
		A1534		UFL left hand cut												
		A1522		UFL												
		Tang					A1511	N								
							A1519									
		DIN 341		MT			A4447	ALPHA X-E	HSS-Co	24	8					
			A4422				UFL	HSS	22							
			A4411				N									
		16 x d		TP-Standard		6535 HA	A6685TFP	ALPHA 4 XD16	K30F	120	8					
							DIN 1869 I	cyl.					A1622	UFL	HSS	22
			A1611	N												
			DIN 1870 I	MT			A4622	UFL	HSS	19	6					
	A4611						N									
20 x d			TP-Standard		6535 HA	A6785TFP	ALPHA 4 XD20	K30F	110	7						
						DIN 1869 II	cyl.					A1722	UFL	HSS	20	6
	DIN 1870 II		MT		A4722			UFL			HSS	18	6			
25 x d		TP-Standard		6535 HA	A6885TFP	ALPHA 4 XD25	K30F	105	7							
30 x d		TP-Standard		6535 HA	A6985TFP	ALPHA 4 XD30	K30F	105	7							
						DIN 1869 III		cyl.				A1822	UFL	HSS	19	6
60 x d		TP-Standard		cyl.			A1922S			UFL		HSS	15	4		
85 x d		TP-Standard		cyl.	A1922L	UFL	HSS	15	4							

 HA

 cyl.

 Internal coolant

 Oil











 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant		
Material Group 4.6 Bronze, special (Aluminiumbronze, Berylliumbronze, Siliconbronze etc.) up to 200 HB DIN: 2.0916 CuAl5 2.0932 CuAl8Fe3 (AlBz8Fe) 2.0966 CuAl10Ni5Fe4 (AlBz10Ni) 2.1247 CuBe2F40 2.1525 CuSi3Mn AMPCO 8... 16 AISI/SAE: AMPCO 8...16 CT-00 10-N 75Cu-5Al 77Cu-15Pb-7Sn-1Fe-1C CDA 544 (PhBz) CDA 65600 BS: CA 104	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	90	12			
				6535 HA	A3285TFL							
				6535 HE	A3885TIN							
				6535 HA	A3285TIN							
				TP-Standard	ISO 9766			A811XHNI + AX195TIN	ALPHA POINT		P45	75
			DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	90	12			
				6535 HE	A3265TFL							
				6535 HE	A3865TIN							
				6535 HA	A3265TIN							
				DIN 6539	cyl.			A1164TIN	ALPHA 2		K30F	80
	A1163	N-solid carbide	60	8								
	DIN 1897	cyl.	A1149TFL	UFL	HSS-Co	42	10					
						A1149TIN	N		HSS	28	8	
						A1148				26		
	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	110	12			
				6535 HE	A3985TFL	ALPHA 4	K30F	85	10			
				6535 HA	A3385TFL							
				6535 HE	A3985TIN							
				6535 HA	A3385TIN							
			TP-Standard	6535 HE	A6292TIN			MegaJet	HSS-Co	38	9	
DIN 1899			cyl.	A3162	ESU	K30F	C50	6				
							A3153	ESU, left		HSS-Co	H22	7
							A3143	ESU				
							DIN 6537 L	6535 HE		A3976TFL	ALPHA 22	K30F
	6535 HA	A3376TFL										
6535 HE	A3965TFT	ALPHA 2	85	10								
6535 HA	A3365TFT											
TP-Standard	cyl.	A3367	Maximiza type SX	HSS-Co	71							
					A3967							
TP-Standard	cyl.	A1167A	maximiza type A	HSS-Co	71	8						
					A2258	UFL left hand cut		25	7			

 HA

 cyl.

 Internal coolant

 Oil




























 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant				
Material Group 4.6 (Cont.)	7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	90	9					
					A6488TML	ALPHA 4 PLUS Micro		C63	7					
				6535 HE	A3586TIP	ALPHA 44	P45	71	8					
				6535 HA	A3486TIP									
		ISO 9766	A831XHNI + AX195TIN	ALPHA POINT		67	8							
			DIN 338	cyl.			A1276TFL	ALPHA 22	K30F	67	9			
							A1263	N-solid carbide		60	8			
							A1249TFL	UFL	HSS-Co	34	7			
							A1249TIN							
							A1211TIN	N	HSS	32	7			
							A1247	ALPHA X-E	HSS-Co	25	6			
							A1244	VA						
							A1222	UFL	HSS	24	7			
							A1234	UFL left hand cut						
							Tang	A1219	N	6				
							cyl.	A1231	N, left hand cut					
							A1211	N						
	DIN 345	MT				A4211TIN	N	HSS	28	7				
						A4247	ALPHA X-E	HSS-Co	22	6				
						A4244	VA							
						A4211	N	HSS	20					
	12 x d		TP-Standard		6535 HA	A6585TFT	ALPHA 4 XD12	K30F	85	9				
						A6588TML	ALPHA 4 PLUS Micro		C50	6				
			DIN 340	cyl.			A1549TIP	UFL	HSS-Co	30	7			
							A1549TFL							
							A1547	ALPHA X-E	22	6				
							A1544	VA		5				
							A1534	UFL left hand cut	HSS	20	6			
							A1522	UFL						
		DIN 341	MT				A4447	ALPHA X-E	HSS-Co	19	6			
							A4422	UFL	HSS	17				
	16 x d		TP-Standard		6535 HA	A6685TFP	ALPHA 4 XD16	K30F	80	8				
DIN 1869 I						cyl.	A1622		UFL	HSS		17	5	
DIN 1870 I		MT	A4622	UFL	HSS	15	5							
20 x d		TP-Standard		6535 HA	A6785TFP	ALPHA 4 XD20	K30F	75	7					
					DIN 1869 II	cyl.		A1722	UFL		HSS	16	5	
					DIN 1870 II	MT		A4722	UFL		HSS	14	5	
25 x d		TP-Standard		6535 HA	A6885TFP	ALPHA 4 XD25	K30F	71	7					
30 x d		TP-Standard		6535 HA	A6985TFP	ALPHA 4 XD30	K30F	71	7					
					DIN 1869 III	cyl.		A1822	UFL		HSS	15	4	
60 x d		TP-Standard		cyl.	A1922S	UFL	HSS	12	3					
85 x d		TP-Standard		cyl.	A1922L	UFL	HSS	12	3					

 HA

 cyl.

 Internal coolant

 Oil














 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant
Material Group 4.7 Bronze, special (Aluminiumbronze, Berylliumbronze) 200-300 HB DIN: 2.0978 CuAl11Ni6Fe5 (AlBz11Ni) 2.1245 CuBe1,7 F55 2.1247 CuBe2F70 AMPCO 20	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	71	5	
				6535 HA	A3285TFL					
				6535 HE	A3885TIN					
				6535 HA	A3285TIN					
		TP-Standard	ISO 9766	A811XHNI + AX195TIN	ALPHA POINT	P45	53	5		
			DIN 6537 K	6535 HA	A3269TFL	ALPHA Rc	K30F	67	5	
				6535 HE	A3865TFL	ALPHA 2				
				6535 HA	A3265TFL					
				6535 HE	A3865TIN					
			DIN 6539	cyl.	A1164TIN	ALPHA 2	K30F	50	5	
					A1163	N-solid carbide		25	3	
			DIN 1897	cyl.	A1149TFL	UFL	HSS-Co	32	7	
	A1149TIN									
	A1148									
	A1141	NS								
	TP-Standard	MT	A1111	N	HSS	18	6			
			A4141	NS	HSS-Co	18				
	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	85	7	
				6535 HE	A3985TFL	ALPHA 4	K30F	67	5	
				6535 HA	A3385TFL					
				6535 HE	A3985TIN					
			TP-Standard	6535 HE	A6292TIN	MegaJet				HSS-Co
				ISO 9766	A821XHNI + AX195TIN	ALPHA POINT	P45	50	5	
				DIN 1899	cyl.	A3162	ESU	K30F	C25	3
A3153						ESU, left	HSS-Co	H12	5	
A3143						ESU				
DIN 6537 L			6535 HE	A3965TFT	ALPHA 2	K30F	67	5		
				A3365TFT	ALPHA 22					
				A3976TFL						
		A3376TFL		Maximiza type SX						
		A3367								
6535 HE		A3967	TP-Standard	cyl.	A1166	maximiza standard	K30F	36	4	
A1167A		maximiza type A								
A2258		UFL left hand cut			HSS-Co	16	5			

 HA

 cyl.

 Internal coolant

 Oil




























 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant														
Material Group 4.7 (Cont.)	7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	71	5															
					A6488TML	ALPHA 4 PLUS Micro		C50	4															
				6535 HE	A3586TIP	ALPHA 44	50																	
				6535 HA	A3486TIP																			
		ISO 9766	A831XHNI + AX195TIN	ALPHA POINT	P45	48																		
			DIN 338	cyl.			A1276TFL	ALPHA 22	K30F	56	4													
							A1263	N-solid carbide		25	3													
							A1249TFL	UFL	HSS-Co	15	5													
							A1249TIN																	
							A1247	ALPHA X-E	HSS	12														
							A1244	VA																
							A1241	NS																
							A1222	UFL																
							A1234	UFL left hand cut																
							A1219	N																
							Tang	A1219	N															
	cyl.						A1211																	
	DIN 345	MT				A4247	ALPHA X-E	HSS-Co	13	5														
						A4244	VA																	
						A4241	NS																	
						A4211	N																	
	12 x d		TP-Standard		6535 HA	A6585TFT	ALPHA 4 XD12	K30F	67	5														
						A6588TML	ALPHA 4 PLUS Micro		C40	3														
			DIN 339	Tang			A1411	N	HSS	8,5	4													
													DIN 340	cyl.		A1549TIP	UFL	HSS-Co	16	5				
																						A1549TFL	19	4
																						A1547		
																						A1544	VA	
																						A1534	UFL left hand cut	
																						A1522	UFL	
													A1511	N										
													Tang	A1519	N									
DIN 341		MT				A4447	ALPHA X-E	HSS-Co	10	4														
						A4422	UFL	HSS	7,5															
						A4411	N																	
16 x d			TP-Standard		6535 HA	A6685TFP	ALPHA 4 XD16	K30F	63	4														
	DIN 1869 I					cyl.						A1622	UFL	HSS	6	3								
		A1611	N																					
		DIN 1870 I	MT		A4622			UFL	HSS	5	3													
					A4611			N																
	20 x d		TP-Standard		6535 HA	A6785TFP	ALPHA 4 XD20	K30F	60	4														
DIN 1869 II						cyl.						A1722	UFL	HSS	5,3	3								
																		DIN 1870 II	MT	A4722	UFL	HSS	4,5	3
25 x d		TP-Standard		6535 HA	A6885TFP	ALPHA 4 XD25	K30F	56	3															
30 x d		TP-Standard		6535 HA	A6985TFP	ALPHA 4 XD30	K30F	56	3															
					DIN 1869 III	cyl.					A1822	UFL	HSS	4,8	3									
60 x d		TP-Standard		cyl.	A1922S	UFL	HSS	3	2															
85 x d		TP-Standard		cyl.	A1922L	UFL	HSS	3	2															

 HA

 cyl.

 Internal coolant

 Oil































 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant
Material Group 4.8 Bronze, special (Aluminiumbronze, Berylliumbronze) above 300 HB DIN: 2.1245 CuBe2,7F110 2.1247 CuBe2F125 AMPCO 21 ..26	3 x d		DIN 6537 K	6535 HA	A3269TFL	ALPHA Rc	K30F	36	4	
			DIN 6539	cyl.	A1163	N-solid carbide	K30F	25	3	
			DIN 1897	cyl.	A1141	NS	HSS-Co	12,5	3	
			DIN 8041	MT	A5971	carbide tipped	K10/20	15	2	
			TP-Standard	MT	A4141	NS	HSS-Co	11	3	
	5 x d		DIN 1899	cyl.	A3162	ESU	K30F	C25	3	
			TP-Standard	cyl.	A1166 A1167A	maximiza standard maximiza type A	K30F	30	3	
	7-8 x d		DIN 338	cyl.	A1263	N-solid carbide	K30F	20	3	
					A1272	ALPHA HM	K10/20	12,5	2	
					A1241	NS	HSS-Co	9,5		
					A1247	ALPHA X-E				
			DIN 345	MT	A1244	VA	HSS-Co	8,5	2	
					A4241	NS				
					A4247	ALPHA X-E				
	12 x d		DIN 340	cyl.	A4244	VA	HSS-Co	7,1	2	
					A1544	VA				
			DIN 341	MT	A1547	ALPHA X-E	HSS-Co	6,3	2	
Material Group 5.1 Aluminium commercially pure, Aluminium-Alloy, wrought DIN: 3.0255 Al99,5 3.0615 AlMgSiPb 3.2315 AlMgSi1 3.3535 AlMg3 3.4365 AlZnMg Cu1,5 3.3211 AlMg1SiCu Int'l Reg. Record 1050A 6012 6082 5754 7075 6061	3 x d		DIN 6537 K	6535 HE	A3885TIN	ALPHA 4	K30F	360	16	
				6535 HA	A3285TIN					
				TP-Standard	ISO 9766	A811XHNI AX195TIN	ALPHA POINT	P45	340	12
			DIN 6537 K	6535 HE	A3865TIN	ALPHA 2	K30F	250	16	
					6535 HA					
			DIN 6539	cyl.	A1164TIN	ALPHA 2	K30F	250	16	
			A1163	N-solid carbide		220	10			
		DIN 1897	cyl.	A1149TIN	UFL	HSS-Co	95	16		
				A1148			75			
	A1111			N	HSS	63				
	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	450	16	
					A3985TIN	ALPHA 4	K30F	360		
					A3385TIN					
			TP-Standard	6535 HE	A6292TIN	MegaJet	HSS-Co	105	12	
			ISO 9766	A821XHNI AX195TIN	ALPHA POINT	P45	340			
			DIN 1899	cyl.	A3162	ESU	K30F	C200	9	
					A3153	ESU, left	HSS-Co	H63		
A3143					ESU					
DIN 6537 L		6535 HE	A3965TFT	ALPHA 2	K30F	250	16			
			6535 HA						A3367	Maximiza type SX
	6535 HE	A3967								
	TP-Standard	cyl.	A1167B	maximiza type B	K30F	200	10			
A2258	UFL left hand cut	HSS-Co	67	12						

 HA

 cyl.

 Internal coolant

 Oil































 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant				
Material Group 5.1 (Cont.)	7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	400	16					
					A6488TML	ALPHA 4 PLUS Micro		C250	10					
				6535 HE	A3586TIP	ALPHA 44	P45	340	12					
				6535 HA	A3486TIP	ALPHA POINT								
			DIN 338	cyl.		A1263	N-solid carbide	K30F	200	9				
						A1254TFT	VA INOX	HSS-Co	95	8				
						A1249TIN	UFL	HSS	60	12				
						A1213	W							
						A1222	UFL							
						A1234	UFL left hand cut							
			Tang	A1219	N	HSS	53	12						
			cyl.	A1211	W									
	DIN 345		MT	A4213	N	HSS	50	12						
				A4211										
	12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	380	16					
					A6588TML	ALPHA 4 PLUS Micro		C250	8					
			DIN 339	Tang	A1411	N	HSS	50	9					
			DIN 340	cyl.		A1549TIP	UFL	HSS-Co	71		8			
		A1534				UFL left hand cut	HSS	53	9					
		A1522				UFL								
		A1513				W								
		A1511				N								
		Tang	A1519		HSS	45	9							
		DIN 341	MT	A4422					UFL					
				A4411	N									
		16 x d		TP-Standard	6535 HA	A6685TFP	ALPHA 4 XD16	K30F	360	16				
							DIN 1869 I		cyl.	A1622		UFL	HSS	45
			A1611	N	42									
	DIN 1870 I		MT	A4622	UFL		HSS	38	7					
				A4611	N			36						
	20 x d			TP-Standard	6535 HA	A6785TFP	ALPHA 4 XD20	K30F	340	12				
						DIN 1869 II	cyl.		A1722	UFL		HSS	42	6
DIN 1870 II						MT	A4722		UFL	HSS		36	6	
25 x d		TP-Standard	6535 HA	A6885TFP	ALPHA 4 XD25	K30F	320	12						
30 x d		TP-Standard	6535 HA	A6985TFP	ALPHA 4 XD30	K30F	320	12						
					DIN 1869 III		cyl.	A1822		UFL	HSS	40	6	
60 x d		TP-Standard		cyl.	A1922S	UFL	HSS	30	5					
85 x d		TP-Standard		cyl.	A1922L	UFL	HSS	30	5					

 HA

 cyl.

 Internal coolant

 Oil












 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant	
Material Group 5.2 Aluminium-Silicon-Alloys cast below 10% Si DIN: 3.2341 G-AISI5Mg 3.2151 G-AIS6Cu4 Int'l Reg. Record 3052 3054 BS: LM 4, 12, 16, 21, 22, 24, 25, 27 US: AA 296.0(B295) - A 333.1 354.0 - A 360.2 361.0 / 361.1 - 364.0/364.2 A380.0	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	250	16		
				6535 HA	A3285TFL						
				6535 HE	A3885TIN						
				6535 HA	A3285TIN						
			TP-Standard	ISO 9766	A811XHNI + AX195TIN	ALPHA POINT	P45	210	12		
					DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F		220
		6535 HA	A3265TFL								
		6535 HE	A3865TIN								
		6535 HA	A3265TIN								
		DIN 6539	cyl.	A1164TIN	ALPHA 2	K30F	200	16			
				A1163	N-solid carbide					170	10
		DIN 1897	cyl.	A1149TFL	UFL	HSS-Co	60	12			
	A1149TIN										
	A1148			N	HSS		42				
	A1111										
	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	320		16	
				6535 HE	A3985TFL	ALPHA 4	K30F	250			
				6535 HA	A3385TFL						
				6535 HE	A3985TIN						
				6535 HA	A3385TIN						
				TP-Standard	6535 HE	A6292TIN	ALPHAJET	K20F	260		
		ISO 9766	A821XHNI + AX195TIN			ALPHA POINT	P45	210			
			DIN 1899	cyl.	A3162	ESU	K30F	C160	9		
		A3153			ESU, left	HSS-Co	H40	12			
A3143		ESU									
DIN 6537 L		6535 HE	A3965TFT	ALPHA 2	K30F	240	16				
			A3365TFT	ALPHA 22					220	12	
	A3976TFL										
	A3376TFL										
	A3367		Maximiza type SX			200			16		
TP-Standard	cyl.	A1167B	maximiza type B	K30F	150	10					
		A2258	UFL left hand cut	HSS-Co	45	12					

 HA

 cyl.

 Internal coolant

 Oil

 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant			
Material Group 5.2 (Cont.)	7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	250	16				
					A6488TML	ALPHA 4 PLUS Micro		C200	12				
					6535 HE	A3586TIP	ALPHA 44	K20F	220		10		
						6535 HA	A3486TIP		A3487		ALPHAJET	K20F	260
				ISO 9766	A831XHNI + AX195TIN		ALPHA POINT	P45	210		12		
						DIN 338	cyl.	A1276TFL	ALPHA 22		K30F		220
				A1263				N-solid carbide	HSS-Co			150	9
				A1254TFT				VA INOX			HSS	56	10
		A1249TFL	UFL	HSS				50	12				
		A1249TIN						45					
		A1247	ALPHA X-E	HSS				38					
		A1213	W					40					
		A1222	UFL	N				36					
		A1234	UFL left hand cut										
		Tang	A1219	N									
		cyl.	A1211										
	DIN 345	MT	A4247	ALPHA X-E	HSS-Co	38	12						
			A4213	W	HSS	34							
			A4211	N		32							
			12 x d		TP-Standard	6535 HA	A6585TFT		ALPHA 4 XD12	K30F	240	12	
							A6588TML		ALPHA 4 PLUS Micro		C160	10	
							A3687		ALPHAJET	K20F	250	9	
	DIN 339	Tang						A1411	N		HSS	32	
				DIN 340	cyl.	A1549TIP	UFL	HSS-Co	42	9			
	A1549TFL					48							
	A1547	ALPHA X-E				HSS	38	10					
	A1534	UFL left hand cut					32						
	A1522	UFL	HSS			34							
	A1513	W				32							
	A1511	N											
	Tang	A1519											
	DIN 341	MT	A4447	ALPHA X-E	HSS-Co	34	10						
A4422			UFL	HSS	30								
A4411			N		28								
16 x d		TP-Standard	6535 HA	A6685TFF	ALPHA 4 XD16	K30F	220	12					
				DIN 1869 I	cyl.		A1622	UFL		HSS	28	9	
							A1611	N			26		
	DIN 1870 I	MT	A4622	UFL	HSS	25	9						
			A4611	N		24							
			20 x d			TP-Standard		6535 HA		A6785TFF	ALPHA 4 XD20	K30F	210
DIN 1869 II	cyl.	A1722			UFL		HSS		28	8			
		DIN 1870 II	MT	A4722	UFL	HSS		24	8				
25 x d		TP-Standard	6535 HA	A6885TFF	ALPHA 4 XD25	K30F	200	10					
30 x d		TP-Standard	6535 HA	A6985TFF	ALPHA 4 XD30	K30F	200	10					
				DIN 1869 III	cyl.		A1822	UFL		HSS	26	8	
60 x d		TP-Standard	cyl.	A1922S	UFL	HSS	20	6					
85 x d		TP-Standard	cyl.	A1922L	UFL	HSS	20	6					

HA

cyl.

Internal coolant

Oil
















HE

MT

External coolant

Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant						
Material Group 5.3 Aluminium-Silicon-Alloys cast 10-14 % Si DIN: 3.2381 G-AlSi10Mg 3.2581 G-AlSi12 BS LM 6, 9, 13, 20 US: AA336 (A332)-339.1 369.0 / 369.1 343.0 - 385.1 413	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	240	16							
				6535 HA	A3285TFL											
				6535 HE	A3885TIN											
				6535 HA	A3285TIN											
			TP-Standard	ISO 9766	A811XHNI + AX195TIN	ALPHA POINT	P45	190			12					
								200								
			DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	200	16							
				6535 HA	A3265TFL											
				6535 HE	A3865TIN											
				6535 HA	A3265TIN											
			DIN 6539	cyl.	A1164TIN	ALPHA 2	K30F	180			16					
								A1163					N-solid carbide	150	10	
	DIN 1897	cyl.	A1149TFL	UFL	HSS-Co	48	12									
						A1149TIN										
						A1148										
			A1111	N	HSS	30										
	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	300	16							
				6535 HE	A3985TFL											
				6535 HA	A3385TFL	ALPHA 4	K30F	240								
				6535 HE	A3985TIN											
				6535 HA	A3385TIN	ALPHAJET	K20F	240			9					
				6535 HA	A3387											
				TP-Standard	6535 HE	A6292TIN	MegaJet	HSS-Co			60	12				
											190					
			ISO 9766	A821XHNI + AX195TIN	ALPHA POINT	P45	190									
			DIN 1899	cyl.	A3162	ESU	K30F	C125			9					
								A3153					ESU, left	HSS-Co	H28	10
															A3143	
		DIN 6537 L	6535 HE	A3976TFL	ALPHA 22	K30F	200	12								
							A3376TFL									
				A3965TFT	ALPHA 2	K30F	210			16						
A3365TFT																
6535 HE				A3367	Maximiza type SX	180										
TP-Standard		cyl.	A1167A	maximiza type A	K30F	130	10									
	A2258					UFL left hand cut			HSS-Co	32						

 HA

 cyl.

 Internal coolant

 Oil




























 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant							
Material Group 5.3 (Cont.)	7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	240	16								
					A6488TML	ALPHA 4 PLUS Micro		C160	12								
					A3586TIP	ALPHA 44		200	10								
				6535 HA	A3486TIP	ALPHAJET	K20F	240	9								
					A3487												
		ISO 9766	A831XHNI + AX195TIN	ALPHA POINT	P45	190	12										
			DIN 338	cyl.			A1276TFL	ALPHA 22	K30F	200	12						
							A1263	N-solid carbide		130	9						
							A1249TFL	UFL	HSS-Co	42	10						
							A1249TIN			36							
							A1247	ALPHA X-E		32							
								A1222	UFL	HSS	28						
								A1234	UFL left hand cut								
								A1213	W								
								Tang	A1219	N	26						
							cyl.	A1211									
	DIN 345						MT				A4247		ALPHA X-E	HSS-Co	28	10	
											A4213		W	HSS	24		
											A4211		N				
	12 x d		TP-Standard		6535 HA	A6585TFT	ALPHA 4 XD12	K30F	220	12							
						A6588TML	ALPHA 4 PLUS Micro		C125	10							
						A3687	ALPHAJET		K20F	240		9					
			DIN 339	Tang				N	HSS	22	9						
										DIN 340	cyl.				A1549TIP	UFL	HSS-Co
			A1549TFL		36												
			A1547	ALPHA X-E	28												
				A1534	UFL left hand cut	HSS	24										
				A1522	UFL												
				A1513	W												
				A1511	N		22										
				Tang	A1519												
			DIN 341	MT				A4447	ALPHA X-E	HSS-Co	24	9					
								A4422	UFL	HSS	21						
A4411								N	20								
16 x d				TP-Standard		6535 HA	A6685TFP	ALPHA 4 XD16	K30F	210	12						
							DIN 1869 I	cyl.					A1622	UFL	HSS	21	7
			A1611	N	19												
	DIN 1870 I		MT				A4622	UFL	HSS	18	7						
							A4611	N		17							
	20 x d		TP-Standard		6535 HA	A6785TFP	ALPHA 4 XD20	K30F	200	12							
						DIN 1869 II	cyl.					UFL	HSS	19	7		
														DIN 1870 II			MT
25 x d		TP-Standard		6535 HA	A6885TFP	ALPHA 4 XD25	K30F	190	10								
					30 x d	TP-Standard		6535 HA	A6985TFP		ALPHA 4 XD30	K30F	190	10			
	DIN 1869 III	cyl.					UFL		HSS	18	6						
60 x d		TP-Standard		cyl.			UFL	HSS	14	5							
85 x d		TP-Standard		cyl.			UFL	HSS	14	5							

 HA

 cyl.

 Internal coolant

 Oil































 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant											
Material Group 5.4 Aluminium-Silicon-Alloys cast above 14 % Si DIN: AISi17Cu4 AISi21CuNiMg AISi25CuNiMg BS: LM 28, 29, 30 US: AA390.0 - 393.2	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	190	16												
				6535 HA	A3285TFL																
				6535 HE	A3885TIN																
				6535 HA	A3285TIN																
			DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	160	12												
				6535 HA	A3265TFL																
				6535 HE	A3865TIN																
				6535 HA	A3265TIN																
			DIN 6539	cyl.		A1164TIN	ALPHA 2	K30F	140	12											
						A1163	N-solid carbide														
	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	250	16												
				6535 HE	A3985TFL	ALPHA 4					K30F	190									
				6535 HA	A3385TFL																
				6535 HE	A3985TIN	ALPHA 4					K30F	160									
				6535 HA	A3385TIN																
					DIN 1899	cyl.						A3387	ALPHAJET	K20F	200	9					
												A3162	ESU					K30F	C80	8	
					DIN 6537 L	6535 HE						A3976TFL	ALPHA 22	K30F	160	12					
												A3376TFL	ALPHA 2					K30F	170		
												A3965TFT									
												6535 HA	A3365TFT					Maximiza type SX	K30F	140	16
												6535 HE	A3967								
		TP-Standard	cyl.					A1167A	maximiza type A	K30F		90	9								
7-8 x d			TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	190	16												
					A6488TML	ALPHA 4 PLUS Micro															
					6535 HE	A3586TIP					ALPHA 44	K30F	160								
					6535 HA	A3486TIP															
					DIN 338	cyl.						A3487	ALPHAJET	K20F	200	9					
												A1276TFL	ALPHA 22								
		DIN 338	cyl.		A1263	N-solid carbide	K30F	160	12												
12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	180	16													
				A6588TML	ALPHA 4 PLUS Micro																
				A3687	ALPHAJET					K20F	190	9									
16 x d		TP-Standard	6535 HA	A6685TFP	ALPHA 4 XD16	K30F	170	12													
20 x d		TP-Standard	6535 HA	A6785TFP	ALPHA 4 XD20	K30F	160	10													
25 x d		TP-Standard	6535 HA	A6885TFP	ALPHA 4 XD25	K30F	150	10													
30 x d		TP-Standard	6535 HA	A6985TFP	ALPHA 4 XD30	K30F	150	10													

 HA

 cyl.

 Internal coolant

 Oil























 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant			
Material Group 6.1 Titanium, commercially pure (99,8%) and Titanium-alloys up to 700 N/mm ² DIN: 3.7034 Ti99,7 3.7124 TiCu2 3.7024/25 commer, pure 3.7034/35 commer, pure 3.7055 commer, pure 3.7064/65 commer, pure BS: TA 1-9, 21-24 52-55, 58 AMS: 4900, 4902, 4921 4941, 4942 ASTM: Gr. 1-3, 4, 7, 11	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	56	6				
				6535 HA	A3285TFL								
				6535 HE	A3885TIN								
				6535 HA	A3285TIN								
			DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	40	5				
				6535 HA	A3265TFL								
				6535 HE	A3865TIN								
				6535 HA	A3265TIN								
		DIN 6539	cyl.	A1164TIN	ALPHA 2	K30F	36	5					
				A1163	N-solid carbide					25	3		
		DIN 1897	cyl.	A1148	UFL	HSS-Co	12,5	4					
				A1141	NS								
	A1111			N	HSS					10			
	TP-Standard	MT	A4141	NS	HSS-Co	11	4						
	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	60	6				
				6535 HE	A3985TFL	ALPHA 4	K30F	48					
				6535 HA	A3385TFL								
				6535 HE	A3985TIN								
				6535 HA	A3385TIN								
			DIN 1899	cyl.	A3162	ESU	K30F	C25	3				
					A3143						HSS-Co	H8	4
		DIN 6537 L	cyl.	6535 HE	A3976TFL	ALPHA 22	K30F	38	5				
				6535 HA	A3376TFL								
				6535 HE	A3965TFT	ALPHA 2					Maximiza type SX	30	4
				6535 HA	A3365TFT								
				6535 HE	A3967								
	TP-Standard	cyl.	A1166	maximiza standard	K30F	28	3						
			A2258	UFL left hand cut	HSS-Co	9,5	4						
	7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	45	5				
					A6488TML	ALPHA 4 PLUS Micro					C40	4	
					6535 HE	A3586TIP							
				6535 HA	A3486TIP								
					DIN 338	cyl.	A1276TFL	ALPHA 22	K30F	34	5		
A1263							N-solid carbide	HSS-Co					19
A1254TFT		VA INOX	10				4						
A1247		ALPHA X-E											
A1244		VA											
A1241		NS											
Tang		A1219	N	HSS	6,7								
cyl.		A1211											
DIN 345	MT	A4247	ALPHA X-E	HSS-Co	7,5	4							
		A4244	VA										
		A4241	NS										
		A4211	N					HSS	6				

 HA

 cyl.

 Internal coolant

 Oil


































 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant	
Material Group 6.1 (Cont.)	12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	42	5		
					A6588TML	ALPHA 4 PLUS Micro		C40	3		
			DIN 339	Tang	A1411	N	HSS	4,8	3		
				DIN 340	cyl.	A1547	ALPHA X-E	HSS-Co	6	3	
			A1544			VA					
			Tang	A1511	N	HSS	4,8				
	A1519										
	DIN 341	MT	A4447	ALPHA X-E	HSS-Co	5,3	3				
			A4411	N	HSS	4,2					
	16 x d		TP-Standard	6535 HA	A6685TFP	ALPHA 4 XD16	K30F	36	4		
			DIN 1869 I	cyl.	A1611	N	HSS	3,4	3		
		DIN 1870 I	MT	A4611	N	HSS	3	3			
	20 x d		TP-Standard	6535 HA	A6785TFP	ALPHA 4 XD20	K30F	34	4		
	25 x d		TP-Standard	6535 HA	A6885TFP	ALPHA 4 XD25	K30F	32	4		
	30 x d		TP-Standard	6535 HA	A6985TFP	ALPHA 4 XD30	K30F	32	4		
Material Group 6.2 Titanium, commercially pure and Titanium-alloys above 700 N/mm ² DIN: 3.7154 Ti6Al5Zr0,5Mo0,2Si 3.7164 TiAl6V4 3.7184 Ti4Al4Mo2Sn0,5Si Ti5,5Al3,5Sn3Zr1Nb0,3Mo0,3Si AMS: 4911, 4928, 4935 4954, 4965, 4967 ASTM: Gr.5	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	48	5		
				6535 HA	A3285TFL						
				6535 HE	A3885TIN			42			
				6535 HA	A3285TIN						
			DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	34	4		
				6535 HA	A3265TFL						
				6535 HE	A3865TIN			30			
				6535 HA	A3265TIN						
		DIN 6539	cyl.	A1164TIN	ALPHA 2	K30F	30	4			
				A1163	N-solid carbide		17	2			
		DIN 1897	cyl.	A1148	UFL	HSS-Co	10	4			
				A1141	NS						
	TP-Standard	MT	A4141	NS	HSS-Co	9	4				
	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	53	5		
				6535 HE	A3985TFL	ALPHA 4	K30F	40			
				6535 HA	A3385TFL						
				6535 HE	A3985TIN			36			
			DIN 1899	cyl.	A3162	ESU	K30F	C20	2		
DIN 6537 L					6535 HE	A3976TFL	ALPHA 22	K30F	32	4	
					6535 HA	A3376TFL					
6535 HE					A3965TFT	ALPHA 2	Maximiza type SX	28	3		
6535 HA		A3365TFT									
6535 HE		A3967			24						
TP-Standard		cyl.	A1166	maximiza standard	K30F	21	2				
			A2258	UFL left hand cut	HSS-Co	7,5	4				

 HA

 cyl.

 Internal coolant

 Oil





































 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant		
Material Group 6.2 (Cont.)	7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	34	5			
					A6488TML	ALPHA 4 PLUS Micro		C40	3			
			6535 HE	A3586TIP	ALPHA 44	HSS-Co	32					
			6535 HA	A3486TIP								
			DIN 338	cyl.		A1276TFL	ALPHA 22	K30F	28	4		
						A1263	N-solid carbide		13	2		
						A1247	ALPHA X-E	HSS-Co	6,7	4		
						A1244	VA					
						A1241	NS					
	DIN 345	MT		A4247	ALPHA X-E	HSS-Co	6	4				
				A4244	VA							
				A4241	NS							
	12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	30	4			
					A6588TML	ALPHA 4 PLUS Micro		C32	3			
			DIN 340	cyl.		A1547	ALPHA X-E	HSS-Co	4,8	3		
						A1544	VA					
		DIN 341	MT		A4447	ALPHA X-E	HSS-Co	4,2	3			
		16 x d		TP-Standard	6535 HA	A6685TFP	ALPHA 4 XD16	K30F	24	4		
	20 x d		TP-Standard	6535 HA	A6785TFP	ALPHA 4 XD20	K30F	21	3			
25 x d		TP-Standard	6535 HA	A6885TFP	ALPHA 4 XD25	K30F	19	3				
30 x d		TP-Standard	6535 HA	A6985TFP	ALPHA 4 XD30	K30F	19	3				
Material Group 8.1 Zinc-Alloys DIN: 2.2140.05 GD-ZnAl4 2.2143 GD-ZnAl4Cu3 ZnCu4Pb1 Zamak 400 Zamak 410	3 x d		DIN 6537 K	6535 HE	A3885TIN	ALPHA 4	K30F	250	16			
					6535 HA	A3285TIN						
			TP-Standard	ISO 9766		A811XHNI + AX195TIN	ALPHA POINT	P45	240	12		
			DIN 6537 K	cyl.		6535 HE	A3865TIN	ALPHA 2	K30F	200	16	
						6535 HA	A3265TIN					
		DIN 6539	cyl.			A1164TIN	ALPHA 2	K30F	200	16		
						A1163	N-solid carbide		150	9		
						DIN 1897	cyl.		A1149TFL	UFL	HSS-Co	95
		A1149TIN										
	A1148											
					A1111	N	HSS	67				
	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	320	16			
					A3985TIN	ALPHA 4		K30F			250	
					A3385TIN							
			TP-Standard	6535 HE		A6292TIN	MegaJet	HSS-Co	170	12		
						ISO 9766	A821XHNI + AX195TIN		ALPHA POINT	P45	240	
				DIN 1899	cyl.		A3162	ESU	K30F	C125	9	
		A3153					ESU, left	HSS-Co		H56	12	
		A3143					ESU					
DIN 6537 L		6535 HE			A3965TFT	ALPHA 2	K30F	210	16			
					A3365TFT							
					A3367	Maximiza type SX					180	
TP-Standard		6535 HE			A3967							
	A1167B				maximiza type B	K30F	150	10				
				A2258	UFL left hand cut	HSS-Co	60	12				

 HA

 cyl.

 Internal coolant

 Oil




























 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant						
Material Group 8.1 (Cont.)	7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	250	16							
					A6488TML	ALPHA 4 PLUS Micro		C200	12							
				6535 HE	A3586TIP	ALPHA 44	P45	240								
				ISO 9766	A831XHNI + AX195TIN	ALPHA POINT										
			DIN 338	cyl.		A1263	N-solid carbide	K30F	150	9						
						A1249TFL	UFL	HSS-Co	85	10						
						A1249TIN		HSS	60	12						
						A1213	W									
						A1222	UFL									
						A1234	UFL left hand cut									
	Tang					A1219	N	HSS	53	12						
	cyl.					A1211										
	DIN 345					MT	A4213	W	HSS	53		12				
							A4211	N								
	12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	240	16							
					A6588TML	ALPHA 4 PLUS Micro		C160	10							
			DIN 339	Tang		A1411	N	HSS	50	9						
						DIN 340	cyl.			A1549TIP		UFL	HSS-Co	71	8	
		A1549TFL														
		A1534	UFL left hand cut	HSS	50			9								
		A1522	UFL													
		A1513	W													
		A1511	N													
		Tang	A1519		HSS	45	9									
		DIN 341	MT	A4422					UFL							
				A4411	N											
		16 x d		TP-Standard	6535 HA	A6685TFP	ALPHA 4 XD16	K30F	220	16						
						DIN 1869 I	cyl.						A1622	UFL	HSS	42
			A1611	N												
			DIN 1870 I	MT	A4622			UFL	HSS	38	7					
	A4611				N											
	20 x d		TP-Standard	6535 HA	A6785TFP	ALPHA 4 XD20	K30F	210	12							
					DIN 1869 II	cyl.						A1722	UFL	HSS	40	6
DIN 1870 II												MT	A4722			
25 x d		TP-Standard	6535 HA	A6885TFP	ALPHA 4 XD25	K30F	200	12								
30 x d		TP-Standard	6535 HA	A6985TFP	ALPHA 4 XD30	K30F	200	12								
				DIN 1869 III	cyl.					A1822	UFL	HSS	38	6		
60 x d		TP-Standard		cyl.	A1922S	UFL	HSS	30	5							
85 x d		TP-Standard		cyl.	A1922L	UFL	HSS	30	5							

 HA

 cyl.

 Internal coolant

 Oil






















 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant
Material Group 9.1 Thermoplastics without filler PP Polypropylen PS Polystyrol POM Polyoxymethylen (Delrin) PC Polycarbonat (Makrolon) PA Polyamid (Ultramid) PMMA Polymethylmetahcrylat Acrylic, Acetal, ABS, Acrylonitrile-Butadiene-Styrene, Cellulose Acetate, Epoxy, Melamine, Furan, Phenolic, Polysulfone, -styrene, -arylether, -imide, -ethylene, -butadiene, -urethane, Fluorcarbons: TFE Tetrafluoroethylene, CTFE Chlortrifluoroethylene	3 x d		DIN 6537 K	6535 HE	A3885TIN	ALPHA 4	K30F	100	16	
				6535 HA	A3285TIN					
		TP-Standard	ISO 9766	A811XHNI + AX195TIN	ALPHA POINT	P45	95	12		
			DIN 6537 K	6535 HE	A3865TIN	ALPHA 2	K30F	90	16	
				6535 HA	A3265TIN					
		DIN 6539	cyl.	A1164TIN	ALPHA 2	K30F	90	16		
				A1163	N-solid carbide		40	12		
		DIN 1897	cyl.	A1149TFL	UFL	HSS-Co	40	12		
				A1149TIN						
				A1148						
			A1111	N	HSS					
	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	130	16	
				6535 HE	A3985TIN	ALPHA 4	K30F	100		
				6535 HA	A3385TIN					
					A3387	ALPHAJET	K20F	80	8	
			TP-Standard	ISO 9766	A821XHNI + AX195TIN	ALPHA POINT	P45	95	12	
			DIN 1899	cyl.	A3162	ESU	K30F	C32	12	
					A3143		HSS-Co	H32		
		DIN 6537 L	6535 HE	A3965TFT	ALPHA 2	K30F	90	16		
			6535 HA	A3365TFT	Maximiza type SX		40			
			6535 HE	A3967						
		TP-Standard	cyl.	A2258	UFL left hand cut	HSS-Co	34	12		
	7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	100	16	
					A6488TML	ALPHA 4 PLUS Micro		C100		
				6535 HE	A3586TIP	ALPHA 44	100			
				6535 HA	A3486TIP					
					A3487	ALPHAJET	K20F	80	8	
ISO 9766			A831XHNI + AX195TIN	ALPHA POINT	P45	95	12			
			DIN 338	cyl.	A1263	N-solid carbide	K30F	36	12	
					A1249TFL	UFL	HSS-Co	34		
		A1249TIN								
		A1247			ALPHA X-E			10		
		A1213			W	HSS		12		
		A1222			UFL			10		
		A1212	tool type H		10					
		Tang	A1219	N		12				
	cyl.	A1234	UFL left hand cut							
		A1231	N, left hand cut							
		A1211	N							
DIN 345	MT	A4247	ALPHA X-E	HSS-Co	30	10				
		A4213	W	HSS		12				
		A4211	N							

 HA

 cyl.

 Internal coolant

 Oil






















 HE

 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills with coolant

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v_c (m/min)	Feed curve no.	Coolant			
Material Group 9.1 (Cont.)	12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	95	16				
					A6588TML	ALPHA 4 PLUS Micro		C100					
					A3687	ALPHAJET	K20F	75	8				
			DIN 339	Tang			A1411	N	HSS	75	10		
							DIN 340	cyl.		A1549TIP			UFL
							A1549TFL		UFL left hand cut	HSS	26	10	
							A1547	ALPHA X-E					
							A1522	UFL					
							A1513	W					
							A1534	UFL left hand cut					
	A1511						N						
	DIN 341		MT			A1519	N	HSS-Co	22	9			
						A4447	ALPHA X-E						
		A4422				UFL							
						A4411	N	HSS	10				
						A4622	UFL						
						A4611	N						
						A4622	UFL						
	16 x d		TP-Standard	6535 HA		A6685TFP	ALPHA 4 XD16	K30F	90	16			
						DIN 1869 I	cyl.					A1622	UFL
		DIN 1870 I	MT			A4622		UFL	HSS	17	9		
						A4611	N						
	20 x d		TP-Standard	6535 HA		A6785TFP	ALPHA 4 XD20	K30F	85	12			
						DIN 1869 II	cyl.					A1722	UFL
		DIN 1870 II	MT			A4722		UFL	HSS	16	8		
	A4722					UFL							
	25 x d		TP-Standard	6535 HA		A6885TFP	ALPHA 4 XD25	K30F	80	12			
30 x d		TP-Standard	6535 HA		A6985TFP	ALPHA 4 XD30	K30F	80	12				
					DIN 1869 III	cyl.					A1822	UFL	HSS
60 x d		TP-Standard	cyl.		A1922S		UFL	HSS	13	6			
85 x d		TP-Standard	cyl.		A1922L	UFL	HSS	13	6				

 HA

 cyl.

 Internal coolant

 Oil

 HE
























 MT

 External coolant

 Soluble Oil

Type Selection and Recommended Cutting Data - Drills

dry

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant	
Material Group 1.1.2 Soft structural steels up to 550 N/mm ² (163 HB) DIN: 1.0038 RSt37-2 1.0044 St44-2 1.0050 St50-2 1.0116 St37-3 1.0301 C10 1.0330 St12 1.0338 St14 1.0345 H I 1.0347 RRSt13 1.0425 H II 1.0570 St52-3 1.1121 Ck10 AISI/SAE: A284 (D) A366 A414 (C) A442 (55) A515Gr.65;55 A516Gr.65;55 A570 (36) A570 (50) A573 (58) A611 (C) A619 A620 1008 1010 1012 BS: 040A10 045M10 1449 2CR; 3CR 1449 37/23CR 1501Gr.161-360; 164-360; -400 3CR 4360-40C 4360-50B EN: 2A 2B 32A	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	85	8		
				6535 HA	A3285TFL			80			
				6535 HE	A3885TIN						
				6535 HA	A3285TIN						
			DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	75	7		
				6535 HA	A3265TFL						
				6535 HE	A3865TIN						
				6535 HA	A3265TIN						
			DIN 6539	cyl.	A1164TIN	ALPHA 2	K30F	71	7		
			DIN 1897	cyl.	A1149TFL	UFL	HSS-Co	32	7		
	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	100	9		
				6535 HE	A3985TFL	ALPHA 4	K30F	85	8		
				6535 HA	A3385TFL						
				6535 HE	A3985TIN	80					
				6535 HA	A3385TIN						
			DIN 6537 L	6535 HE	A3976TFL	ALPHA 22	K30F	75	7		
				6535 HA	A3376TFL	ALPHA 2					
				6535 HE	A3965TFT						
				6535 HA	A3365TFT						
				7-8 x d		TP-Standard					6535 HA
DIN 338	cyl.	A1276TFL	ALPHA 22				K30F	75	6		
		A1254TFT	VA INOX				HSS-Co	42	9		
		A1249TFL	UFL	32	6						
12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	80	8			
			DIN 340	cyl.	A1549TFL	UFL	HSS-Co	30		6	
16 x d		TP-Standard	6535 HA	A6685TFP	ALPHA 4 XD16	K30F	75	6			
20 x d		TP-Standard	6535 HA	A6785TFP	ALPHA 4 XD20	K30F	71	6			
25 x d		TP-Standard	6535 HA	A6885TFP	ALPHA 4 XD25	K30F	67	5			
30 x d		TP-Standard	6535 HA	A6985TFP	ALPHA 4 XD30	K30F	67	5			

 HA

 cyl.

 Internal coolant

 MQL

 HE


























 MT

 External coolant

 Dry (used compressed air)

Type Selection and Recommended Cutting Data - Drills

dry

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant
Material Group 1.1.3 Steel and cast steel from 550 to 700 N/mm ² (163 up to 210 HB) DIN: 1.0060 St60-2 1.0401 C15 1.0402 C22 1.5637 10Ni14 1.5713 13NiCr6 1.5752 14NiCr14 1.6543 21NiCrMo22 1.7015 15Cr3 1.7335 13CrMo44 1.8902 StE420 1.0473 19Mn6 1.0481 17Mn4 1.0501 C35 1.0562 StE355 1.1133 20Mn5 1.1170 28Mn6 1.5415 15Mo3 1.5419 22Mo4 1.5423 16Mo5 1.5622 14Ni6 AISI/SAE: BS: A182-F11;F12 050A20 A204 (A) 055M15 A350LF3 070M26 A387(12) 523M15 A414(F),(G) 620Gr.27;31 A515(70) 655A12 A537 655M13 A588 805A20 A612 805M20 A633(C) 1501-503-690 1015 4360 55E 1025 1035 EN: 11L08 2 1330 2C 3115 2D 3415 36A 3310 36B 4419 206 4520 362 5015 8620 8720 9314	3 x d		DIN 6537 K	6535 HE 6535 HA 6535 HE 6535 HA	A3885TFL A3285TFL A3885TIN A3285TIN	ALPHA 4	K30F	85 80	9	
	DIN 6537 K	6535 HE 6535 HA 6535 HE 6535 HA	A3865TFL A3265TFL A3865TIN A3265TIN	ALPHA 2	K30F	75 71	8			
	DIN 6539	cyl.	A1164TIN	ALPHA 2	K30F	71	8			
	DIN 1897	cyl.	A1149TFL	UFL	HSS-Co	32	8			
	5 x d		DIN 6537 L	6535 HA 6535 HE 6535 HA 6535 HE 6535 HA	A3388TFT A3985TFL A3385TFL A3985TIN A3385TIN	ALPHA 4 PLUS ALPHA 4	K44XF K30F	100 85 80	10 9	
		DIN 6537 L	6535 HE 6535 HA 6535 HE 6535 HA	A3976TFL A3376TFL A3965TFT A3365TFT	ALPHA 22 ALPHA 2	K30F	75	8		
	7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	85	9	
		DIN 338	cyl.	A1276TFL A1254TFT A1249TFL	ALPHA 22 VA INOX UFL	K30F HSS-Co	75 42 32	7 10 7		
	12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	80	9	
		DIN 340	cyl.	A1549TFL	UFL	HSS-Co	30	7		
	16 x d		TP-Standard	6535 HA	A6685TFP	ALPHA 4 XD16	K30F	75	7	
	20 x d		TP-Standard	6535 HA	A6785TFP	ALPHA 4 XD20	K30F	71	7	
	25 x d		TP-Standard	6535 HA	A6885TFP	ALPHA 4 XD25	K30F	67	6	
	30 x d		TP-Standard	6535 HA	A6985TFP	ALPHA 4 XD30	K30F	67	6	

 HA

 cyl.

 Internal coolant

 MQL

 HE

 MT

 External coolant

 Dry (used compressed air)

Type Selection and Recommended Cutting Data - Drills

dry

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant	
Material Group 1.2 Steel and Cast Steel 700 up to 1000 N/mm ² DIN: 1.0070 St70-2 1.0503 C45V 1.0554 GS-70 1.0601 C 60 U, N 1.0728 60S20 1.1167 36 Mn5V 1.1191 Ck 45V 1.5120 38MnSi4V 1.5755 31NiCr14V 1.7033 34Cr4V AISI/SAE: BS: 1045 Fe690-2FN 1060 080 M 46 1146 150 M 36 3310 530 A 32 3415 EN: 9314 8, 14, 15, 5132 32M, 43D, 44, 201	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	75	8		
				6535 HA	A3285TFL						
				6535 HE	A3885TIN						
				6535 HA	A3285TIN						
			DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	67	7		
				6535 HA	A3265TFL						
				6535 HE	A3865TIN						
				6535 HA	A3265TIN						
		DIN 6539	cyl.	A1164TIN	ALPHA 2	K30F	60	7			
				DIN 1897	cyl.	A1149TFL	UFL	HSS-Co	26	7	
		5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	85	9	
					6535 HE	A3985TFL	ALPHA 4	K30F	75	8	
	6535 HA				A3385TFL						
	6535 HE				A3985TIN						
				DIN 6537 L	6535 HE	A3976TFL	ALPHA 22	K30F	67	7	
					6535 HA	A3376TFL					
					6535 HE	A3965TFT	ALPHA 2				
					6535 HA	A3365TFT					
	7-8 x d			TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	75	8	
					DIN 338	cyl.	A1276TFL	ALPHA 22	K30F	67	6
	12 x d			TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	71	8	
					DIN 340	cyl.	A1549TFL	UFL	HSS-Co	25	6
	16 x d		TP-Standard	6535 HA	A6685TFP	ALPHA 4 XD16	K30F	67	6		
	20 x d		TP-Standard	6535 HA	A6785TFP	ALPHA 4 XD20	K30F	63	6		
25 x d		TP-Standard	6535 HA	A6885TFP	ALPHA 4 XD25	K30F	60	5			
30 x d		TP-Standard	6535 HA	A6985TFP	ALPHA 4 XD30	K30F	60	5			
Material Group 1.6.2 Tool Steel, low alloyed, annealed Ball Bearing Steel, annealed 1.2241 51CrV4 1.2550 60WCrV7 1.2713 55NiCrMoV6 1.3505 100Cr6	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	71	8		
				6535 HA	A3285TFL						
				6535 HE	A3885TIN						
				6535 HA	A3285TIN						
			DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	60	7		
				6535 HA	A3265TFL						
				6535 HE	A3865TIN						
				6535 HA	A3265TIN						
		DIN 6539	cyl.	A1164TIN	ALPHA 2	K30F	56	7			
		DIN 1897	cyl.	A1149TFL	UFL	HSS-Co	21	7			
		5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	80	9	
					6535 HE	A3985TFL	ALPHA 4	K30F	71	8	
	6535 HA				A3385TFL						
	6535 HE				A3985TIN						
			DIN 6537 L	6535 HE	A3976TFL	ALPHA 22	K30F	60	7		
				6535 HA	A3376TFL						
	6535 HE	A3965TFT	ALPHA 2								
	6535 HA	A3365TFT									

HA

cyl.

Internal coolant

MQL

HE

















MT

External coolant

Dry (used compressed air)

Type Selection and Recommended Cutting Data - Drills

dry

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant
Material Group 1.6.2 (Cont.)	7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	71	8	
			DIN 338	cyl.	A1276TFL	ALPHA 22	K30F	60	6	
					A1249TFL	UFL	HSS-Co	21		
	12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	67	8	
			DIN 340	cyl.	A1549TFL	UFL	HSS-Co	20	6	
	16 x d		TP-Standard	6535 HA	A6685TFP	ALPHA 4 XD16	K30F	63	6	
	20 x d		TP-Standard	6535 HA	A6785TFP	ALPHA 4 XD20	K30F	60	6	
	25 x d		TP-Standard	6535 HA	A6885TFP	ALPHA 4 XD25	K30F	56	5	
30 x d		TP-Standard	6535 HA	A6985TFP	ALPHA 4 XD30	K30F	56	5		
Material Group 1.7.2 Stainless and Heat Resistant Steel, austenitic sulphured e.g. 1.4305 X10CrNiS189	7-8 x d		DIN 338	cyl.	A1254TFT	VA INOX	HSS-Co	10,5	5	
Material Group 1.7.3 Stainless and Heat Resistant Steel austenitic (Ni > 4%) e.g. 1.4301 X5CrNi1810 14312 G-X10CrNi188 1.4541 X6CrNiTi1810 1.4541 X6CrNiTi17122 1.4837 G-X40CrNiSi2512 AISI 304 316 321	7-8 x d		DIN 338	cyl.	A1254TFT	VA INOX	HSS-Co	8,5	5	

 HA

 cyl.

 Internal coolant

 MQL

 HE



























 MT

 External coolant

 Dry (used compressed air)

Type Selection and Recommended Cutting Data - Drills

dry

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant	
Material Group 3.1 Cast Iron, soft DIN: 0.6010 GG-10 0.6015 GG-15 0.6020 GG-20 AISI/SAE: BS: A48-20B Grade 150 A48-25B Grade 220 A48-30B A48-40B	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	110	12		
				6535 HA	A3285TFL			100			
				6535 HE	A3885TIN						
				6535 HA	A3285TIN						
			DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	85	12		
				6535 HA	A3265TFL						
				6535 HE	A3865TIN						
				6535 HA	A3265TIN						
			DIN 6539	cyl.	A1164TIN	ALPHA 2	K30F	80	12		
			DIN 1897	cyl.	A1149TFL	UFL	HSS-Co	42	10		
	5 x d		DIN 6537 L	6535 HA	A3888TFT	ALPHA 4 PLUS	K44XF	140	12		
				6535 HE	A3985TFL	ALPHA 4	K30F	110			
				6535 HA	A3385TFL						
				6535 HE	A3985TIN	100					
				6535 HA	A3385TIN						
			DIN 6537 L	6535 HE	A3976TFL	ALPHA 22	K30F	85	10		
				6535 HA	A3376TFL						
				6535 HE	A3965TFT	ALPHA 2					90
				6535 HA	A3365TFT						
		7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	110	12	
A3487	ALPHAJET					K20F	90	9			
	DIN 338		cyl.	A1276TFL	ALPHA 22	K30F	85	10			
				A1249TFL	UFL	HSS-Co	42	9			
12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	105	12			
				A3687	ALPHAJET	K20F	85	8			
		DIN 340	cyl.	A1549TFL	UFL	HSS-Co	40	9			
16 x d		TP-Standard	6535 HA	A6685TFP	ALPHA 4 XD16	K30F	100	10			
20 x d		TP-Standard	6535 HA	A6785TFP	ALPHA 4 XD20	K30F	95	10			
25 x d		TP-Standard	6535 HA	A6885TFP	ALPHA 4 XD25	K30F	90	10			
30 x d		TP-Standard	6535 HA	A6985TFP	ALPHA 4 XD30	K30F	90	10			

 HA

 cyl.


 Internal coolant

 MQL

 HE



























 MT

 External coolant

 Dry (used compressed air)

Type Selection and Recommended Cutting Data - Drills

dry

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant		
Material Group 3.2 Cast Iron, soft DIN: 0.6025 GG-25 0.6030 GG-30 0.6035 GG-35 0.6040 GG-40 AISI/SAE: BS: A48-45B Grade 260 A48-50B Grade 300 A48-60B Grade 350 Grade 400	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	110	12			
				6535 HA	A3285TFL							
				6535 HE	A3885TIN			100				
				6535 HA	A3285TIN							
			DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	71	12			
				6535 HA	A3265TFL							
				6535 HE	A3865TIN			67				
				6535 HA	A3265TIN							
			DIN 6539	cyl.	A1164TIN	ALPHA 2	K30F	67	12			
			DIN 1897	cyl.	A1149TFL	UFL	HSS-Co	36	10			
	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	120	12			
				6535 HE	A3985TFL	ALPHA 4					K30F	110
				6535 HA	A3385TFL	ALPHAJET	K20F	95				
				6535 HE	A3985TIN						100	
				6535 HA	A3385TIN							
			DIN 6537 L	6535 HE	A3976TFL	ALPHA 22	K30F	71	10			
				6535 HA	A3376TFL	ALPHA 2						
				6535 HE	A3965TFT			75				
				6535 HA	A3365TFT							
		7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	110	12		
A3487	ALPHAJET					K20F	80	9				
	DIN 338		cyl.	A1276TFL	ALPHA 22	K30F	71	10				
				A1249TFL	UFL					HSS-Co	36	9
12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	105	12				
				A3687	ALPHAJET	K20F	75	8				
		DIN 340	cyl.	A1549TFL	UFL	HSS-Co	36	9				
16 x d		TP-Standard	6535 HA	A6685TFP	ALPHA 4 XD16	K30F	100	10				
20 x d		TP-Standard	6535 HA	A6785TFP	ALPHA 4 XD20	K30F	95	10				
25 x d		TP-Standard	6535 HA	A6885TFP	ALPHA 4 XD25	K30F	90	10				
30 x d		TP-Standard	6535 HA	A6985TFP	ALPHA 4 XD30	K30F	90	10				

 HA

 cyl.


 Internal coolant

 MQL

 HE





























 MT

 External coolant

 Dry (used compressed air)

Type Selection and Recommended Cutting Data - Drills

dry

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant
Material Group 3.3.1 Nodular Iron (SG) DIN: 0.7040 GGG-40 0.7050 GGG-50 0.7060 GGG-60 AISI/SAE: BS: 60-40-18 420/12 65-45-12 500/7 80-55-06 600/3 Ni-Resist	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	110	12	
				6535 HA	A3285TFL			100		
				6535 HE	A3885TIN					
		6535 HA	A3285TIN							
			DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	75	12	
				6535 HA	A3265TFL					
	6535 HE			A3865TIN						
	6535 HA			A3265TIN						
	DIN 6539	cyl.	A1164TIN	ALPHA 2	K30F	75	12			
	DIN 1897	cyl.	A1149TFL	UFL	HSS-Co	36	10			
	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	120	12	
				6535 HE	A3985TFL	ALPHA 4	K30F	110		
				6535 HA	A3385TFL					
				6535 HE	A3985TIN	100				
				6535 HA	A3385TIN					
			DIN 6537 L	6535 HE	A3976TFL	ALPHA 22	K30F	90	10	
				6535 HA	A3376TFL	ALPHA 2				
				6535 HE	A3965TFT					
6535 HA		A3365TFT	80							
7-8 x d			TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	110	12	
					DIN 338	cyl.	A1276TFL	ALPHA 22	K30F	
		A1249TFL	UFL	HSS-Co	36	9				
12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	105	12		
				DIN 340	cyl.	A1549TFL	UFL	HSS-Co		36
Material Group 3.3.2 Nodular Iron (SG) DIN: 0.7060 GGG-60 0.7070 GGG-70 0.7080 GGG-80 AISI/SAE: BS: 80-55-06 600/3 100-70-03 700/2 120-90-02 800/2	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	67	12	
				6535 HA	A3285TFL			60		
				6535 HE	A3885TIN					
		6535 HA	A3285TIN							
			DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	56	10	
				6535 HA	A3265TFL					
	6535 HE			A3865TIN						
	6535 HA			A3265TIN						
	DIN 6539	cyl.	A1164TIN	ALPHA 2	K30F	45	10			
	DIN 1897	cyl.	A1149TFL	UFL	HSS-Co	16	9			
	5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	75	12	
				6535 HE	A3985TFL	ALPHA 4	K30F	67		
				6535 HA	A3385TFL					
				6535 HE	A3985TIN	60				
				6535 HA	A3385TIN					
			DIN 6537 L	6535 HE	A3965TFT	ALPHA 2	K30F	56	10	
				6535 HA	A3365TFT	ALPHA 22				
				6535 HE	A3976TFL					
6535 HA		A3376TFL								
7-8 x d			TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	67	12	
					DIN 338	cyl.	A1276TFL	ALPHA 22	K30F	
		A1249TFL	UFL	HSS-Co	16	8				
12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	63	12		
				DIN 340	cyl.	A1549TFL	UFL	HSS-Co		15

 HA

 cyl.

 Internal coolant

 MQL

 HE

 MT

 External coolant

 Dry (used compressed air)

Type Selection and Recommended Cutting Data - Drills

dry

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant				
Material Group 3.3.2 (Cont.)	16 x d		TP-Standard	6535 HA	A6685TFP	ALPHA 4 XD16	K30F	60	10					
	20 x d		TP-Standard	6535 HA	A6785TFP	ALPHA 4 XD20	K30F	56	10					
	25 x d		TP-Standard	6535 HA	A6885TFP	ALPHA 4 XD25	K30F	53	10					
	30 x d		TP-Standard	6535 HA	A6985TFP	ALPHA 4 XD30	K30F	53	10					
Material Group 3.4 Malleable Iron DIN: GTW-40 GTW-45 GTW-55 GTS-35 GTS-55 AIS/SAE: ASTM A47: Gr. 38510, 35018 ASTM A 602:Gr. M3210 SAE J 158: Gr. 4504, M5003	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	85	12					
				6535 HA	A3285TFL			80						
				6535 HE	A3885TIN									
				6535 HA	A3285TIN									
		DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	71	12						
			6535 HA	A3265TFL			60							
			6535 HE	A3865TIN										
			6535 HA	A3265TIN										
		DIN 6539	cyl.		A1164TIN	ALPHA 2	K30F	56	12					
					A1149TFL	UFL	HSS-Co	26	12					
					5 x d		DIN 6537 L	6535 HA	A3388TFT	ALPHA 4 PLUS	K44XF	95	12	
								6535 HE	A3985TFL	ALPHA 4	K30F	85		
	6535 HA	A3385TFL												
	6535 HE	A3985TIN												
		DIN 6537 L	cyl.		6535 HA	A3385TIN	ALPHA 2	K30F	71	10				
					6535 HE	A3965TFT								
6535 HA					A3365TFT	ALPHA 22								
6535 HE					A3976TFL									
6535 HA	A3376TFL													
7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	85	12						
				DIN 338	cyl.	A1276TFL	ALPHA 22	K30F	71	10				
	A1249TFL	UFL	HSS-Co			26								
12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	80	12						
				DIN 340	cyl.	A1549TFL	UFL	HSS-Co	25	10				
16 x d		TP-Standard	6535 HA			A6685TFP	ALPHA 4 XD16	K30F	75	10				
20 x d		TP-Standard	6535 HA	A6785TFP	ALPHA 4 XD20	K30F	71	10						
25 x d		TP-Standard	6535 HA	A6885TFP	ALPHA 4 XD25	K30F	67	10						
30 x d		TP-Standard	6535 HA	A6985TFP	ALPHA 4 XD30	K30F	67	10						
Material Group 4.1 Copper, pure DIN: 2.0060 E-Cu 2.0080 F-Cu 2.0090 SF-Cu 2.0070 SE-Cu	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	150	7					
				6535 HA	A3285TFL			140						
				6535 HE	A3885TIN									
				6535 HA	A3285TIN									
		DIN 6537 K	cyl.		6535 HE	A3865TFL	ALPHA 2	K30F	130	5				
					6535 HA	A3265TFL			120					
					6535 HE	A3865TIN								
6535 HA	A3265TIN													
DIN 6539	cyl.			A1164TIN	ALPHA 2	K30F	120	5						

HA

cyl.

Internal coolant

MQL

HE

MT

External coolant

Dry (used compressed air)

Type Selection and Recommended Cutting Data - Drills

dry

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant
Material Group 4.1 (Cont.)	5 x d		DIN 6537 L	6535 HA	A3388TFFT	ALPHA 4 PLUS	K44XF	200	9	
				6535 HE	A3985TFL	ALPHA 4	K30F	150	7	
				6535 HA	A3385TFL			140		
				6535 HE	A3985TIN					
		6535 HA	A3385TIN							
			DIN 6537 L	6535 HE	A3976TFL	ALPHA 22	K30F	125	5	
				6535 HA	A3376TFL	ALPHA 2				
				6535 HE	A3965TFFT			6		
	6535 HA			A3365TFFT	Maximiza type SX					
	7-8 x d		TP-Standard	6535 HA	A6485TFFT	ALPHA 4 XD8	K30F	150	6	
			DIN 338	cyl.	A1276TFL	ALPHA 22	K30F	125	4	
					A1254TFFT	VA INOX	HSS-Co	53		
	12 x d		TP-Standard	6535 HA	A6585TFFT	ALPHA 4 XD12	K30F	140	6	
	16 x d		TP-Standard	6535 HA	A6685TFP	ALPHA 4 XD16	K30F	140	5	
	20 x d		TP-Standard	6535 HA	A6785TFP	ALPHA 4 XD20	K30F	130	5	
	25 x d		TP-Standard	6535 HA	A6885TFP	ALPHA 4 XD25	K30F	120	5	
30 x d		TP-Standard	6535 HA	A6985TFP	ALPHA 4 XD30	K30F	120	5		
Material Group 4.3 Brass, brittle free machining DIN: 2.0380 CuZn39Pb2 (Ms58) 2.0401 CuZn39Pb3 2.0402 CuZn40Pb2 BS: CZ 121, CZ 122	3 x d		DIN 6537 K	6535 HE	A3885TFL	ALPHA 4	K30F	190	16	
				6535 HA	A3285TFL					
				6535 HE	A3885TIN		170			
				6535 HA	A3285TIN					
			DIN 6537 K	6535 HE	A3865TFL	ALPHA 2	K30F	180	16	
				6535 HA	A3265TFL					
				6535 HE	A3865TIN		160			
				6535 HA	A3265TIN					
		DIN 6539	cyl.	A1164TIN	ALPHA 2	K30F	160	16		
				A1163	N-solid carbide					110
		DIN 1897	cyl.	A1149TFL	UFL	HSS-Co	85	12		
				A1149TIN						75
	A1148				63					
	A1111			N	HSS	53				
	DIN 8041	MT	A5971	carbide tipped	K10/20	63	8			
	5 x d		DIN 6537 L	6535 HA	A3388TFFT	ALPHA 4 PLUS	K44XF	220	16	
				6535 HE	A3985TFL	ALPHA 4	K30F	190		
				6535 HA	A3385TFL			170		
6535 HE				A3985TIN						
6535 HA				A3385TIN						
TP-Standard				6535 HE	A6292TIN	MegaJet	HSS-Co	75		
			DIN 1899	cyl.	A3162	ESU	K30F	C100	8	
					A3143		HSS-Co	H45	12	
		A3153			ESU, left					
		DIN 6537 L	6535 HE	A3965TFFT	ALPHA 2	K30F	190	16		
A3365TFFT										
6535 HE		A3367	Maximiza type SX		150					
		A3967								
TP-Standard		cyl.	A1167A	maximiza type A	K30F	140	12			
			A2258	UFL left hand cut	HSS-Co	56				

HA

cyl.

Internal coolant

MQL

HE



























MT

External coolant

Dry (used compressed air)

Type Selection and Recommended Cutting Data - Drills

dry

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant	
Material Group 4.3 (Cont.)	7-8 x d		TP-Standard	6535 HA	A6485TFT	ALPHA 4 XD8	K30F	190	12		
			DIN 338	cyl.	A1263	N-solid carbide	K30F	90	9		
		A1272			ALPHA HM	K10/20	60	7			
		A1249TFL			UFL	HSS-Co	67	10			
		A1249TIN					60				
		A1211TIN			N	HSS					
		A1247			ALPHA X-E	HSS-Co	53				
		A1212			tool type H	HSS	48				
		A1222			UFL		42				
		A1232			tool type H, left hand cut		48				
		Tang				A1219	N		42		
		cyl.	A1234	UFL left hand cut							
			A1231	N, left hand cut							
			A1211	N							
			DIN 345	MT	A4211TIN	N	HSS	53	10		
	A4247	ALPHA X-E	HSS-Co	45							
	A4211	N	HSS	38							
	12 x d		TP-Standard	6535 HA	A6585TFT	ALPHA 4 XD12	K30F	180	12		
			DIN 339	Tang	A1411	N	HSS	36	9		
		DIN 340			cyl.	A1549TFL	UFL	HSS-Co	56	9	
						A1547	ALPHA X-E		45		
						A1522	UFL	HSS	36		
						A1534	UFL left hand cut				
		Tang				A1519	N				
		cyl.			A1511						
			DIN 341	MT	A4447	ALPHA X-E	HSS-Co	38	9		
		A4422	UFL	HSS	32						
		A4411	N								
		16 x d		TP-Standard	6535 HA	A6685TFP	ALPHA 4 XD16	K30F	170	10	
	DIN 1869 I			cyl.	A1622	UFL	HSS	30	8		
			A1611		N						
	DIN 1870 I		MT	A4622	UFL	HSS	26	8			
		A4611		N							
20 x d		TP-Standard	6535 HA	A6785TFP	ALPHA 4 XD20	K30F	160	10			
		DIN 1869 II	cyl.	A1722	UFL	HSS	28	7			
	DIN 1870 II	MT	A4722	UFL	HSS	25	7				
25 x d		TP-Standard	6535 HA	A6885TFP	ALPHA 4 XD25	K30F	150	10			
30 x d		TP-Standard	6535 HA	A6985TFP	ALPHA 4 XD30	K30F	150	10			
		DIN 1869 III	cyl.	A1822	UFL	HSS	26	7			
60 x d		TP-Standard	cyl.	A1922S	UFL	HSS	21	5			
85 x d		TP-Standard	cyl.	A1922L	UFL	HSS	21	5			

 HA

 cyl.

 Internal coolant

 MQL

 HE






















 MT

 External coolant

 Dry (used compressed air)

Type Selection and Recommended Cutting Data - Drills

dry

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant
Material Group 5.1 Aluminium commercially pure, Aluminium-Alloy, wrought DIN: 3.0255 Al99,5 3.0615 AlMgSiPb 3.2315 AlMgSi1 3.3535 AlMg3 3.4365 AlZnMg Cu1,5 3.3211 AlMg1SiCu Int'l Reg. Record 1050A 6012 6082 5754 7075 6061	3 x d		DIN 6539	cyl.	A1163	N-solid carbide	K30F	150	10	
	5 x d		DIN 1899	cyl.	A3162	ESU	K30F	C160	10	
			DIN 6537 L	6535 HA 6535 HE	A3367 A3967	Maximiza type SX	K30F	200	12	
	7-8 x d		DIN 338	cyl.	A1263	N-solid carbide	K30F	150	10	
Material Group 5.2 Aluminium-Silicon-Alloys cast below 10% si DIN: 3.2341 G-AlSi5Mg 3.2151 G-AlSi6Cu4 Int'l Reg. Record 3052 3054 BS: LM 4, 12, 16, 21, 22, 24, 25, 27 US: AA 296.0(B295) - A 333.1 354.0 - A 360.2 361.0 / 361.1 - 364.0/364.2 A380.0	3 x d		DIN 6539	cyl.	A1163	N-solid carbide	K30F	120	10	
	5 x d		DIN 1899	cyl.	A3162	ESU	K30F	C125	10	
			DIN 6537 L	6535 HA 6535 HE	A3367 A3967	Maximiza type SX	K30F	140	12	
	7-8 x d		DIN 338	cyl.	A1263	N-solid carbide	K30F	120	10	
Material Group 5.3 Aluminium-Silicon-Alloys cast 10-14 % Si DIN: 3.2381 G-AlSi10Mg 3.2581 G-AlSi12 BS LM 6, 9, 13, 20 US: AA336 (A332)-339.1 369.0 / 369.1 343.0 - 385.1 413	3 x d		DIN 6539	cyl.	A1163	N-solid carbide	K30F	120	10	
	5 x d		DIN 1899	cyl.	A3162	ESU	K30F	C125	10	
			DIN 6537 L	6535 HA 6535 HE	A3367 A3967	Maximiza type SX	K30F	140	12	
	7-8 x d		DIN 338	cyl.	A1263	N-solid carbide	K30F	120	10	

 HA

 cyl.


 Internal coolant

 MQL

 HE





























 MT

 External coolant

 Dry (used compressed air)

Type Selection and Recommended Cutting Data - Drills

dry

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant	
Material Group 7.1 Magnesium-Alloys, wrought and cast DIN: 3.5612 MgAl6Zn 3.5812 MgAl8Zn G-MgAl9Zn2 3.5200 MgMn2 (M1) 3.5912 G-MgAl9Zn1 AISI: Am AZ 21A - 92A HK 31A HM 21A and 31A HZ 31A and 32A ZE 41A and 63A ZK 40A - 61A	3 x d		DIN 6539	cyl.	A1163	N-solid carbide	K30F	210	10		
			DIN 1897	cyl.	A1148	UFL	HSS-Co	90	12		
	5 x d		DIN 1899	cyl.	A3162	ESU	K30F	C160	9		
			DIN 6537 L	6535 HA	A3367	Maximiza type SX	K30F	180	16		
				6535 HE	A3967						
	TP-Standard	cyl.	A1167B	maximiza type B	K30F	170	10				
	7-8 x d		DIN 338	cyl.	A1263	N-solid carbide	K30F	170	8		
					A1247	ALPHA X-E	HSS-Co	75			10
					A1232	tool type H, left hand cut	HSS	67			
					A1212	tool type H					
					A1222	UFL					
					A1234	UFL left hand cut					
	DIN 345	MT	A4247	ALPHA X-E	HSS-Co	63	10				
	12 x d		DIN 340	cyl.	A1547	ALPHA X-E	HSS-Co	56	9		
					A1522	UFL	HSS	50			
					A1534	UFL left hand cut					
			DIN 341	MT	A4447	ALPHA X-E	HSS-Co	50			9
	A4422	UFL	HSS	45							
	16 x d		DIN 1869 I	cyl.	A1622	UFL	HSS	38	8		
			DIN 1870 I	MT	A4622	UFL	HSS	34	8		
20 x d		DIN 1869 II	cyl.	A1722	UFL	HSS	36	7			
		DIN 1870 II	MT	A4722	UFL	HSS	32	7			
30 x d		DIN 1869 III	cyl.	A1822	UFL	HSS	34	7			
60 x d		TP-Standard	cyl.	A1922S	UFL	HSS	26	5			
85 x d		TP-Standard	cyl.	A1922L	UFL	HSS	26	5			
Material Group 9.2 Plastics, reinforced with organic fillers Pertinax Resitex Toufnell	3 x d		DIN 6539	cyl.	A1163	N-solid carbide	K30F	67	8		
			DIN 1897	cyl.	A1149TFL	UFL	HSS-Co	42	8		
					A1149TIN			36			
					A1148			24			
			A1111	N	HSS						
DIN 8041	MT	A5971	carbide tipped	K10/20	42	6					

 HA

 cyl.


 Internal coolant

 MQL

 HE



































 MT

 External coolant

 Dry (used compressed air)

Type Selection and Recommended Cutting Data - Drills

dry

Material group	Max. drilling depth	Coolant type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v _c (m/min)	Feed curve no.	Coolant																				
Material Group 9.2 (Cont.)	5 x d		DIN 1899	cyl.	A3162	ESU	K30F	C50	8																					
					A3153	ESU, left	HSS-Co	H20																						
					A3143	ESU																								
			DIN 6537 L	6535 HA 6535 HE	A3367 A3967	Maximiza type SX	K30F	50	8																					
											TP-Standard	cyl.	A1167A	maximiza type A	K30F	50	8													
			7-8 x d		DIN 338	cyl.	A1263	N-solid carbide	K30F	60	8																			
	A1272	ALPHA HM					K10/20	40	6																					
	A1249TFL	UFL					HSS-Co	36	8																					
	A1249TIN							32																						
	A1211TIN	N					HSS	21																						
	A1222	UFL																												
	A1234	UFL left hand cut																												
	A1212	tool type H																												
	Tang	A1219					N																							
	cyl.	A1232					tool type H, left hand cut																							
	DIN 345	MT					A4211TIN	N	HSS	28			8																	
															A4211	19														
															DIN 339	Tang	A1411	N	HSS	18	8									
																							DIN 340	cyl.	A1549TFL	UFL	HSS-Co	32	8	
																									A1522		HSS	18		
					A1534	UFL left hand cut																								
		Tang	A1519	N																										
		cyl.	A1511																											
	DIN 341	MT	A4422	UFL	HSS	16	8																							
									A4411	N																				
	16 x d		DIN 1869 I	cyl.	A1622	UFL	HSS	15	7																					
					A1611	N																								
	DIN 1870 I	MT	A4622	UFL	HSS	13	7																							
									A4611	N																				
	20 x d		DIN 1869 II	cyl.	A1722	UFL	HSS	14	7																					
					DIN 1870 II	MT	A4722	UFL			HSS	12,5	7																	
	30 x d		DIN 1869 III	cyl.	A1822	UFL	HSS	14	6																					
	60 x d		TP-Standard	cyl.	A1922S	UFL	HSS	10,5	5																					
85 x d		TP-Standard	cyl.	A1922L	UFL	HSS	10,5	5																						
Material Group 9.3 Plastics, reinforced with anorganic fillers GFK - Fibreglass reinfor. CFK - Carbonfiber rein- for. FORMICA/RESOPAL	3 x d		DIN 6539	cyl.	A1163	N-solid carbide	K30F	67	8																					
			DIN 1897	cyl.	A1149TFL	UFL	HSS-Co	24	8																					
			DIN 8041	MT	A5971	carbide tipped	K10/20	42	6																					
	5 x d		DIN 1899	cyl.	A3162	ESU	K30F	C50	8																					
					DIN 6537 L	6535 HA 6535 HE	A3367 A3967	Maximiza type SX	K30F	71	10																			
													TP-Standard	cyl.	A1167A	maximiza type A	K30F	50	8											
	7-8 x d		DIN 338	cyl.	A1263	N-solid carbide	K30F	60	8																					
					A1272	ALPHA HM	K10/20	40	6																					
					A1249TFL	UFL	HSS-Co	21	8																					
	12 x d		DIN 340	cyl.	A1549TFL	UFL	HSS-Co	18	8																					

 HA

 cyl.

 Internal coolant

 MQL

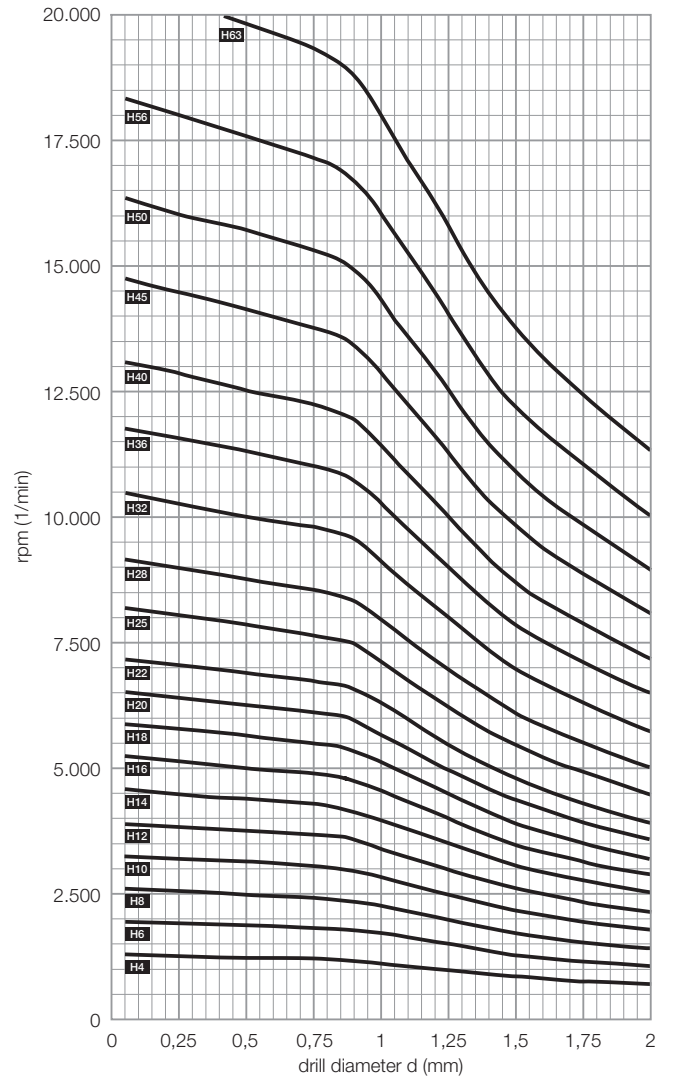
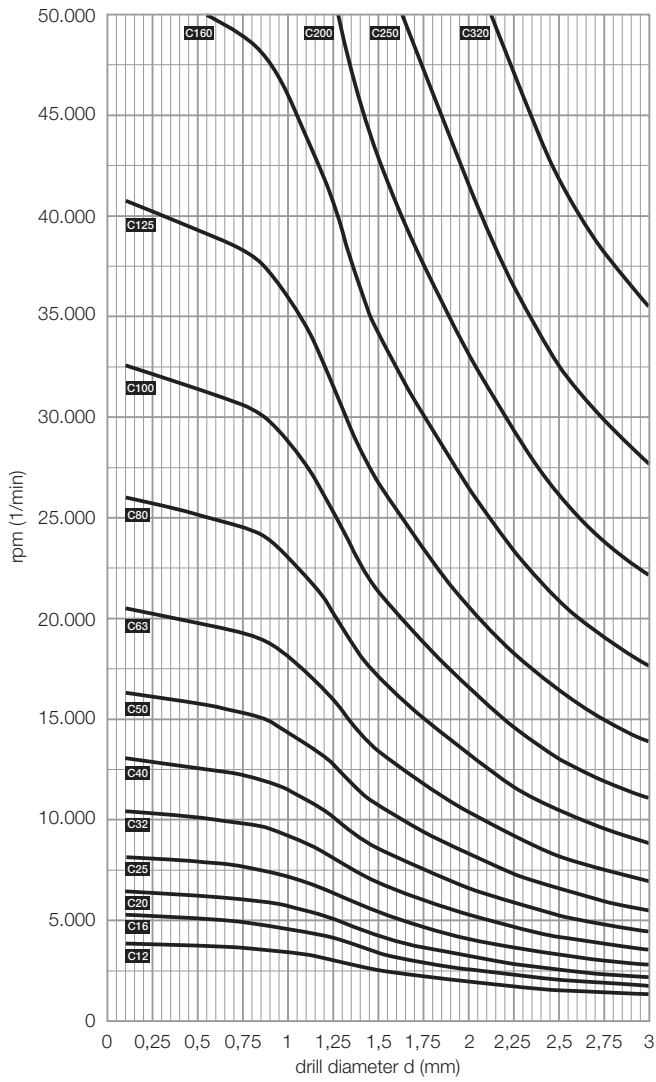
 HE

 MT

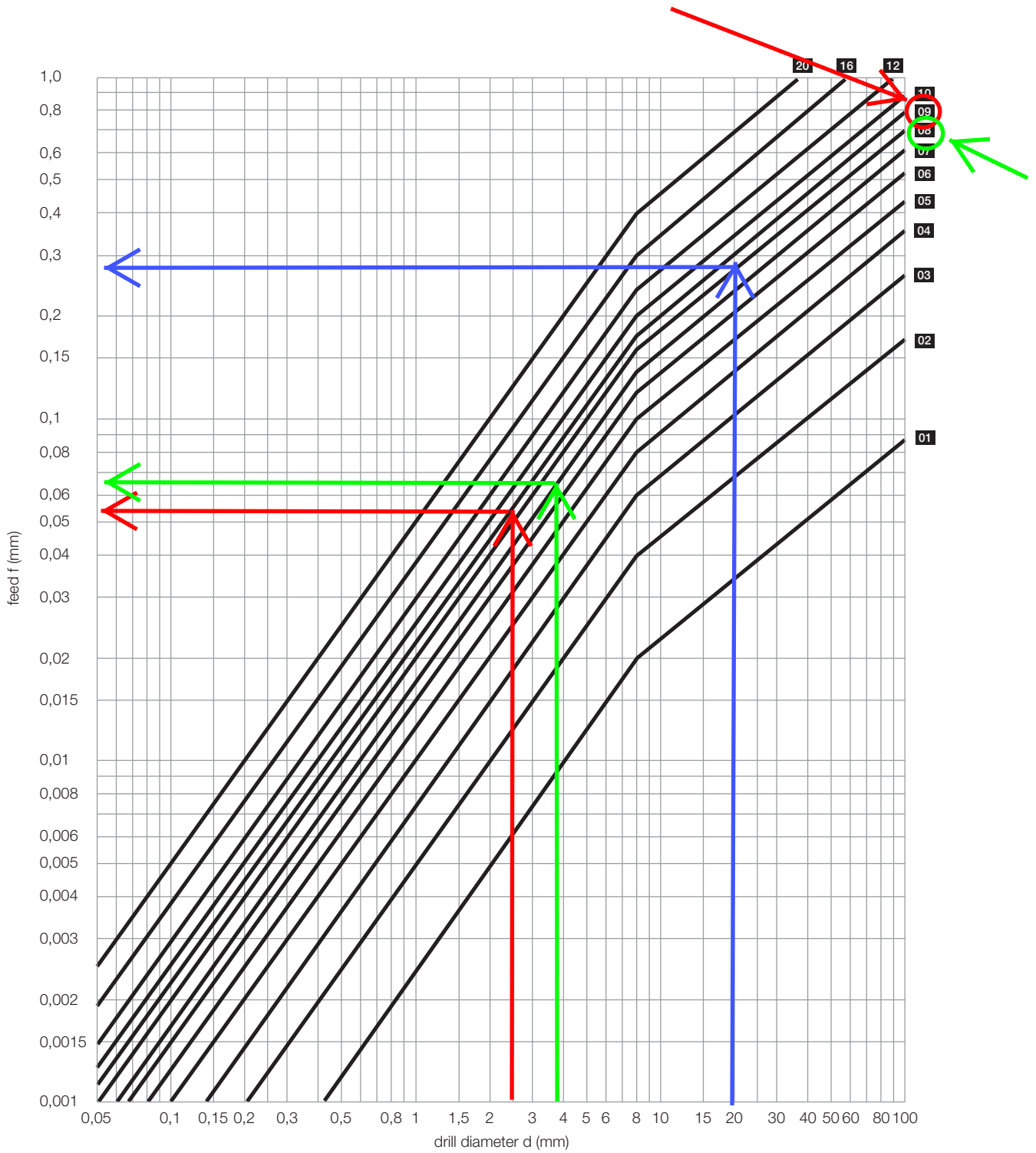
 External coolant

 Dry (used compressed air)

Micro Drills – rpm Diagram



Feed Curve-Diagram



Core Drills, Centre Drills, Subland Drills, Countersinks and Reamers made of HSS and Solid Carbide.



How to find your:	
– Core Drill, Countersink, Centre Drill and Subland Drill	350
Type Selection and Recommendation Data	
– Subland Drills	352
Type Selection and Recommendation Data	
– Core Drills	361
Type Selection and Recommendation Data	
– Countersinks	364
Type Selection and Recommendation Data	
– Centre Drills	368
Type Selection and Recommendation Data	
– Reamers	380
General technical informations – Reamers	386

How to find your subland drill, core drill, centre drill or countersink!

1

Choose the **material group** that corresponds with your work-piece material.

2

Choose the **mode of coolant supply** according to your machine tool. Consideration should also be given to the last column which indicates coolant type.

3

The centre column recommends an appropriate selection of **standard tools** to choose from. The most suitable tool for your application is determined by deciding upon the tools general dimensions (standard), shank type, tool style and cutting material. Consideration should also be taken of the cutting data. See Step 4 and 5.

4

The **cutting speed** for the selected tool can be obtained directly from column v_c .

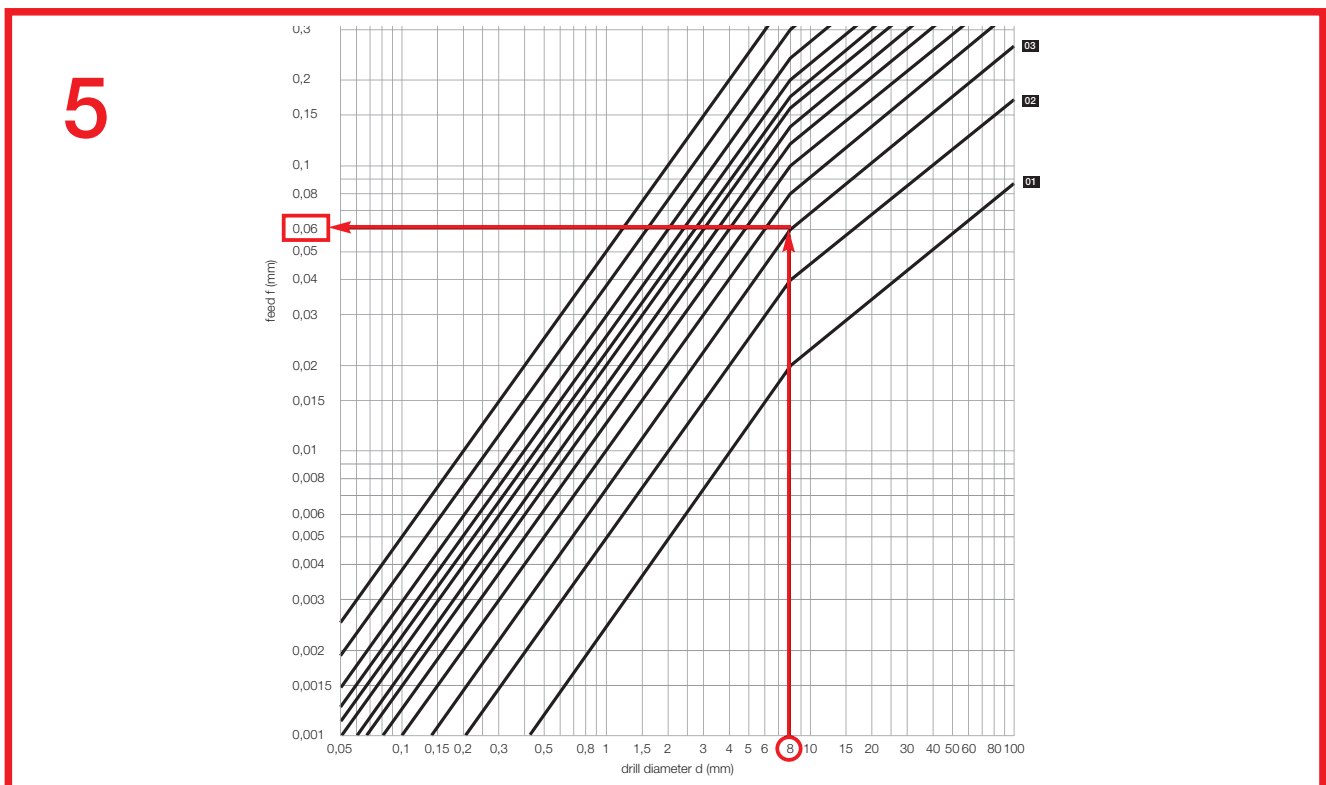
5

Upon the **selection of the recommended** feed-curve number (shown under column Feed Curve) the feed per revolution can be obtained by utilising the nomogram on page 347.





































Subland drill: Use small diameter of step drill (d_1) to determine feed. Use large diameter of step drill to determine revolutions per minute.

Type Selection and Recommended Cutting Data







































Material group	Coolant Type	Standard	Shank	Angle	Cat. No.	Cutting material	V _c (m/min)	Feed curve no.	Coolant
Material Group 1.1.1 Free Machining Steel		TP-Norm	standard plain shank	90°	K3164TIN	K30F	95	12	
		DIN 8374	cyl.	90°	K6221	HSS	32	8	
		DIN 8378	cyl.	90°	K6222	HSS	32	8	
		DIN 8376	cyl.	180°	K6223	HSS	32	8	
		DIN 8375	MT	90°	K7221	HSS	32	8	
		DIN 8379	MT	90°	K7222	HSS	32	8	
		DIN 8377	MT	180°	K7223	HSS	32	8	
		TP-Norm	flat	60°	K2511 K2513	HSS	32	8	
Material Group 1.1.2 Soft structural steels up to 550 N/mm ² (163 HB)		TP-Norm	standard plain shank	90°	K3164TIN	K30F	95	12	
		DIN 8374	cyl.	90°	K6221	HSS	32	7	
		DIN 8378	cyl.	90°	K6222	HSS	32	7	
		DIN 8376	cyl.	180°	K6223	HSS	32	7	
		DIN 8375	MT	90°	K7221	HSS	32	7	
		DIN 8379	MT	90°	K7222	HSS	32	7	
		DIN 8377	MT	180°	K7223	HSS	32	7	
		TP-Norm	flat	60°	K2511 K2513	HSS	32	7	
Material Group 1.1.3 Steel and cast steel from 550 to 700 N/mm ² (163 up to 210 HB)		TP-Norm	standard plain shank	90°	K3164TIN	K30F	90	12	
		DIN 8374	cyl.	90°	K6221	HSS	32	8	
		DIN 8378	cyl.	90°	K6222	HSS	32	8	
		DIN 8376	cyl.	180°	K6223	HSS	32	8	
		DIN 8375	MT	90°	K7221	HSS	32	8	






































Type Selection and Recommended Cutting Data - Subland Drills

Material group	Coolant Type	Standard	Shank	Angle	Cat. No.	Cutting material	V _c (m/min)	Feed curve no.	Coolant	
Material Group 1.1.1 Free Machining Steel		TP-Norm	standard plain shank	90°	K3164TIN	K30F	95	12		
		DIN 8374	cyl.	90°	K6221	HSS	32	8		
		DIN 8378	cyl.	90°	K6222	HSS	32	8		
		DIN 8376	cyl.	180°	K6223	HSS	32	8		
		DIN 8375	MT	90°	K7221	HSS	32	8		
		DIN 8379	MT	90°	K7222	HSS	32	8		
		DIN 8377	MT	180°	K7223	HSS	32	8		
		TP-Norm	flat	60°	K2511 K2513	HSS	32	8		
Material Group 1.1.2 Soft structural steels up to 550 N/mm ² (163 HB)		TP-Norm	standard plain shank	90°	K3164TIN	K30F	95	12		
		DIN 8374	cyl.	90°	K6221	HSS	32	7		
		DIN 8378	cyl.	90°	K6222	HSS	32	7		
		DIN 8376	cyl.	180°	K6223	HSS	32	7		
		DIN 8375	MT	90°	K7221	HSS	32	7		
		DIN 8379	MT	90°	K7222	HSS	32	7		
		DIN 8377	MT	180°	K7223	HSS	32	7		
		TP-Norm	flat	60°	K2511 K2513	HSS	32	7		
Material Group 1.1.3 Steel and cast steel from 550 to 700 N/mm ² (163 up to 210 HB)		TP-Norm	standard plain shank	90°	K3164TIN	K30F	90	12		
		DIN 8374	cyl.	90°	K6221	HSS	32	8		
		DIN 8378	cyl.	90°	K6222	HSS	32	8		
		DIN 8376	cyl.	180°	K6223	HSS	32	8		
		DIN 8375	MT	90°	K7221	HSS	32	8		
		DIN 8379	MT	90°	K7222	HSS	32	8		
		DIN 8377	MT	180°	K7223	HSS	32	8		
		TP-Norm	flat	60°	K2511 K2513	HSS	32	8		
Material Group 1.2 Steel and Cast Steel 700 up to 1000 N/mm ² DIN: 1.0070 St70-2 1.0503 C45V 1.0554 GS-70 1.0601 C 60 U, N 1.0728 60S20 1.1167 36 Mn5V 1.1191 Ck 45V 1.5120 38MnSi4V 1.5755 31NiCr14V 1.7033 34Cr4V AISI/SAE: BS: 1045 Fe690-2FN 1060 080 M 46 1146 150 M 36 3310 530 A 32 3415 EN: 9314 8, 14, 15, 5132 32M, 43D, 44, 201		TP-Norm	standard plain shank	90°	K3164TIN	K30F	75	10		
		DIN 8374	cyl.	90°	K6221	HSS	28	8		
		DIN 8378	cyl.	90°	K6222	HSS	28	8		
		DIN 8376	cyl.	180°	K6223	HSS	28	8		
		DIN 8375	MT	90°	K7221	HSS	28	8		
		DIN 8379	MT	90°	K7222	HSS	28	8		
		DIN 8377	MT	180°	K7223	HSS	28	8		
		TP-Norm	flat	60°	K2511 K2513	HSS	28	8		












































Type Selection and Recommended Cutting Data - Subland Drills

Material group	Coolant Type	Standard	Shank	Angle	Cat. No.	Cutting material	v _c (m/min)	Feed curve no.	Coolant
Material Group 1.3 Steel 1000 up to 1300 N/mm ² DIN: 1.1521 46 MnSi4 V 1.5736 36NiCr10V 1.6511 36CrNiMo4V 1.7225 42CrMo4V 1.8159 50CrV4V AISI/SAE:BS: 5140 640 H 35 4140 816 M 40 4142 708 A 42 4340 735 A 50 9840 EN: 19A, 24, 6145 47, 110 6150 111A		TP-Norm	standard plain shank	90°	K3164TIN	K30F	48	7	
		DIN 8374	cyl.	90°	K6221	HSS	12	6	
		DIN 8378	cyl.	90°	K6222	HSS	12	6	
		DIN 8376	cyl.	180°	K6223	HSS	12	6	
		DIN 8375	MT	90°	K7221	HSS	12	6	
		DIN 8379	MT	90°	K7222	HSS	12	6	
		DIN 8377	MT	180°	K7223	HSS	12	6	
		TP-Norm	flat	60°	K2511	HSS	12	6	
							K2513		
Material Group 1.4 Steels 1300 up to 1600 N/mm ² Spring Steels, hardened Wear-resisting Steels Maraging Steels 360-440 HB DIN: 1.0908 60SiMn5 1.2713 55NiCroV6V 1.8161 58CrV4 Hardox 400 AISI/SAE: BS: 9260 P600 L 6 Creus. 4000 17-4 PH BH 224/5 15-5 PH PH 13-8 Mo P600		TP-Norm	standard plain shank	90°	K3164TIN	K30F	32	4	
		DIN 8374	cyl.	90°	K6221	HSS	4,8	4	
		DIN 8378	cyl.	90°	K6222	HSS	4,8	4	
		DIN 8376	cyl.	180°	K6223	HSS	4,8	4	
		DIN 8375	MT	90°	K7221	HSS	4,8	4	
		DIN 8379	MT	90°	K7222	HSS	4,8	4	
		DIN 8377	MT	180°	K7223	HSS	4,8	4	
		TP-Norm	flat	60°	K2511	HSS	4,8	4	
							K2513		
Material Group 1.5.1 Steel, hardened Maraging Steels 45-55 HRC AISI/SAE: 300 M		TP-Norm	standard plain shank	90°	K3164TIN	K30F	24	3	
Material Group 1.6.1 Tool Steel, unalloyed annealed, e.g. 1.1673 C135W 1.1830 C85W		TP-Norm	standard plain shank	90°	K3164TIN	K30F	67	9	
		DIN 8374	cyl.	90°	K6221	HSS	15	7	
		DIN 8378	cyl.	90°	K6222	HSS	15	7	
		DIN 8376	cyl.	180°	K6223	HSS	15	7	
		DIN 8375	MT	90°	K7221	HSS	15	7	
		DIN 8379	MT	90°	K7222	HSS	15	7	
		DIN 8377	MT	180°	K7223	HSS	15	7	
		TP-Norm	flat	60°	K2511	HSS	15	7	
							K2513		
Material Group 1.6.2 Tool Steel, low alloyed, annealed Ball Bearing Steel, annealed 1.2241 51CrV4 1.2550 60WCrV7 1.2713 55NiCrMoV6 1.3505 100Cr6		TP-Norm	standard plain shank	90°	K3164TIN	K30F	67	10	
		DIN 8374	cyl.	90°	K6221	HSS	15	7	
		DIN 8378	cyl.	90°	K6222	HSS	15	7	
		DIN 8376	cyl.	180°	K6223	HSS	15	7	
		DIN 8375	MT	90°	K7221	HSS	15	7	
		DIN 8379	MT	90°	K7222	HSS	15	7	
		DIN 8377	MT	180°	K7223	HSS	15	7	
		TP-Norm	flat	60°	K2511	HSS	15	7	
							K2513		





































Type Selection and Recommended Cutting Data - Subland Drills

Material group	Coolant Type	Standard	Shank	Angle	Cat. No.	Cutting material	V _c (m/min)	Feed curve no.	Coolant
Material Group 1.6.3 Tool Steel, high alloyed, annealed 1.2080 X210Cr12 1.2316 X36CrMo17 1.2343 X38CrMoV51 1.2379 X155CrVMo121 1.3343 S6-5-2		TP-Norm	standard plain shank	90°	K3164TIN	K30F	56	9	
		DIN 8374	cyl.	90°	K6221	HSS	8,5	4	
		DIN 8378	cyl.	90°	K6222	HSS	8,5	4	
		DIN 8376	cyl.	180°	K6223	HSS	8,5	4	
		DIN 8375	MT	90°	K7221	HSS	8,5	4	
		DIN 8379	MT	90°	K7222	HSS	8,5	4	
		DIN 8377	MT	180°	K7223	HSS	8,5	4	
		TP-Norm	flat	60°	K2511 K2513	HSS	8,5	4	
Material Group 1.7.1 Stainless and Heat Resistant Steel, ferric (Ni < 2%) martensitic, annealed 1.4002 X6CrAl13 1.4006 X10Cr13 AISI/SAE: BS: 301 301 S 21 303 303 S21 304 304 S 31 316 316 S 31 317 321		TP-Norm	standard plain shank	90°	K3164TIN	K30F	40	6	
		DIN 8374	cyl.	90°	K6221	HSS	7,5	4	
		DIN 8378	cyl.	90°	K6222	HSS	7,5	4	
		DIN 8376	cyl.	180°	K6223	HSS	7,5	4	
		DIN 8375	MT	90°	K7221	HSS	7,5	4	
		DIN 8379	MT	90°	K7222	HSS	7,5	4	
		DIN 8377	MT	180°	K7223	HSS	7,5	4	
		TP-Norm	flat	60°	K2511 K2513	HSS	7,5	4	
Material Group 1.7.2 Stainless and Heat Resistant Steel, austenitic sulphured e.g. 1.4305 X10CrNiS189		TP-Norm	standard plain shank	90°	K3164TIN	K30F	56	6	
		DIN 8374	cyl.	90°	K6221	HSS	8,5	4	
		DIN 8378	cyl.	90°	K6222	HSS	8,5	4	
		DIN 8376	cyl.	180°	K6223	HSS	8,5	4	
		DIN 8375	MT	90°	K7221	HSS	8,5	4	
		DIN 8379	MT	90°	K7222	HSS	8,5	4	
		DIN 8377	MT	180°	K7223	HSS	8,5	4	
		TP-Norm	flat	60°	K2511 K2513	HSS	8,5	4	
Material Group 1.7.3 Stainless and Heat Resistant Steel austenitic (Ni > 4%) e.g. 1.4301 X5CrNi1810 14312 G-X10CrNi188 1.4541 X6CrNiTi1810 1.4541 X6CrNiTi17122 1.4837 G-X40CrNiSi2512 AISI 304 316 321		DIN 8374	cyl.	90°	K6221	HSS	5	3	
		DIN 8378	cyl.	90°	K6222	HSS	5	3	
		DIN 8376	cyl.	180°	K6223	HSS	5	3	
		DIN 8375	MT	90°	K7221	HSS	5	3	
		DIN 8379	MT	90°	K7222	HSS	5	3	
		DIN 8377	MT	180°	K7223	HSS	5	3	
		TP-Norm	flat	60°	K2511 K2513	HSS	5	3	





































Type Selection and Recommended Cutting Data - Subland Drills

Material group	Coolant Type	Standard	Shank	Angle	Cat. No.	Cutting material	v _c (m/min)	Feed curve no.	Coolant
Material Group 1.7.4 Stainless Steel Precipitation-Hardened DIN: 1.4542 X5CrNiCuNb1714 AISI/SAE: 630 17-4PH 15-5PH		TP-Norm	standard plain shank	90°	K3164TIN	K30F	32	5	
		DIN 8374	cyl.	90°	K6221	HSS	5	5	
		DIN 8378	cyl.	90°	K6222	HSS	5	5	
		DIN 8376	cyl.	180°	K6223	HSS	5	5	
		DIN 8375	MT	90°	K7221	HSS	5	5	
		DIN 8379	MT	90°	K7222	HSS	5	5	
		DIN 8377	MT	180°	K7223	HSS	5	5	
		TP-Norm	flat	60°	K2511	HSS	5	5	
Material Group 2.1 Super Alloys Ni- and Co-based up to 900 N/mm ² DIN: 2.4602 Hastelloy C 2.4665 Hastelloy X HS 21 IN-102 1.4876 Incoloy 800 2.4816 Inconel 600 2.4856 Inconel 625 2.4360 Monel 400 2.4630 Nimonic 75		DIN 8374	cyl.	90°	K6221	HSS	5	3	
		DIN 8378	cyl.	90°	K6222	HSS	5	3	
		DIN 8376	cyl.	180°	K6223	HSS	5	3	
		DIN 8375	MT	90°	K7221	HSS	5	3	
		DIN 8379	MT	90°	K7222	HSS	5	3	
		DIN 8377	MT	180°	K7223	HSS	5	3	
		TP-Norm	flat	60°	K2511	HSS	5	3	
					K2513				
Material Group 2.2 Super Alloys Ni- and Co-based 900 up to 1200 N/mm ² DIN: 2.4670 Inconel 713 Inconel X-750 M-252 2.4632 Nimonic 90 Nimonic Pk 33 2.4654 Waspalloy Stellite 306		DIN 8374	cyl.	90°	K6221	HSS	1,6	3	
		DIN 8378	cyl.	90°	K6222	HSS	1,6	3	
		DIN 8376	cyl.	180°	K6223	HSS	1,6	3	
		DIN 8375	MT	90°	K7221	HSS	1,6	3	
		DIN 8379	MT	90°	K7222	HSS	1,6	3	
		DIN 8377	MT	180°	K7223	HSS	1,6	3	
		TP-Norm	flat	60°	K2511	HSS	1,6	3	
					K2513				
Material Group 3.1 Cast Iron, soft DIN: 0.6010 GG-10 0.6015 GG-15 0.6020 GG-20 AISI/SAE: BS: A48-20B Grade 150 A48-25B Grade 220 A48-30B A48-40B		TP-Norm	standard plain shank	90°	K3164TIN	K30F	95	16	
		DIN 8374	cyl.	90°	K6221	HSS	26	12	
		DIN 8378	cyl.	90°	K6222	HSS	26	12	
		DIN 8376	cyl.	180°	K6223	HSS	26	12	
		DIN 8375	MT	90°	K7221	HSS	26	12	
		DIN 8379	MT	90°	K7222	HSS	26	12	
		DIN 8377	MT	180°	K7223	HSS	26	12	
		TP-Norm	flat	60°	K2511	HSS	26	12	
			K2513						
Material Group 3.2 Cast Iron, soft DIN: 0.6025 GG-25 0.6030 GG-30 0.6035 GG-35 0.6040 GG-40 AISI/SAE: BS: A48-45B Grade 260 A48-50B Grade 300 A48-60B Grade 350 Grade 400		TP-Norm	standard plain shank	90°	K3164TIN	K30F	80	16	
		DIN 8374	cyl.	90°	K6221	HSS	21	12	
		DIN 8378	cyl.	90°	K6222	HSS	21	12	
		DIN 8376	cyl.	180°	K6223	HSS	21	12	
		DIN 8375	MT	90°	K7221	HSS	21	12	
		DIN 8379	MT	90°	K7222	HSS	21	12	
		DIN 8377	MT	180°	K7223	HSS	21	12	
		TP-Norm	flat	60°	K2511	HSS	21	12	
			K2513						





































Type Selection and Recommended Cutting Data - Subland Drills

Material group	Coolant Type	Standard	Shank	Angle	Cat. No.	Cutting material	v _c (m/min)	Feed curve no.	Coolant
Material Group 3.3.1 Nodular Iron (SG) DIN: 0.7040 GGG-40 0.7050 GGG-50 0.7060 GGG-60 AISI/SAE: BS: 60-40-18 420/12 65-45-12 500/7 80-55-06 600/3 Ni-Resist		TP-Norm	standard plain shank	90°	K3164TIN	K30F	80	16	
		DIN 8374	cyl.	90°	K6221	HSS	21	12	
		DIN 8378	cyl.	90°	K6222	HSS	21	12	
		DIN 8376	cyl.	180°	K6223	HSS	21	12	
		DIN 8375	MT	90°	K7221	HSS	21	12	
		DIN 8379	MT	90°	K7222	HSS	21	12	
		DIN 8377	MT	180°	K7223	HSS	21	12	
		TP-Norm	flat	60°	K2511	HSS	21	12	
Material Group 3.3.2 Nodular Iron (SG) DIN: 0.7060 GGG-60 0.7070 GGG-70 0.7080 GGG-80 AISI/SAE: BS: 80-55-06 600/3 100-70-03 700/2 120-90-02 800/2		TP-Norm	standard plain shank	90°	K3164TIN	K30F	63	16	
		DIN 8374	cyl.	90°	K6221	HSS	16	10	
		DIN 8378	cyl.	90°	K6222	HSS	16	10	
		DIN 8376	cyl.	180°	K6223	HSS	16	10	
		DIN 8375	MT	90°	K7221	HSS	16	10	
		DIN 8379	MT	90°	K7222	HSS	16	10	
		DIN 8377	MT	180°	K7223	HSS	16	10	
		TP-Norm	flat	60°	K2511	HSS	16	10	
Material Group 3.4 Malleable Iron DIN: GTW-40 GTW-45 GTW-55 GTS-35 GTS-55 AISI/SAE: ASTM A47: Gr. 38510, 35018 ASTM A 602:Gr. M3210 SAE J 158: Gr. M4504, M5003		TP-Norm	standard plain shank	90°	K3164TIN	K30F	80	16	
		DIN 8374	cyl.	90°	K6221	HSS	21	12	
		DIN 8378	cyl.	90°	K6222	HSS	21	12	
		DIN 8376	cyl.	180°	K6223	HSS	21	12	
		DIN 8375	MT	90°	K7221	HSS	21	12	
		DIN 8379	MT	90°	K7222	HSS	21	12	
		DIN 8377	MT	180°	K7223	HSS	21	12	
		TP-Norm	flat	60°	K2511	HSS	21	12	
Material Group 4.1 Copper, pure DIN: 2.0060 E-Cu 2.0080 F-Cu 2.0090 SF-Cu 2.0070 SE-Cu		TP-Norm	standard plain shank	90°	K3164TIN	K30F	180	7	
		DIN 8374	cyl.	90°	K6221	HSS	48	5	
		DIN 8378	cyl.	90°	K6222	HSS	48	5	
		DIN 8376	cyl.	180°	K6223	HSS	48	5	
		DIN 8375	MT	90°	K7221	HSS	48	5	
		DIN 8379	MT	90°	K7222	HSS	48	5	
		DIN 8377	MT	180°	K7223	HSS	48	5	
		TP-Norm	flat	60°	K2511	HSS	48	5	









































Type Selection and Recommended Cutting Data - Subland Drills

Material group	Coolant Type	Standard	Shank	Angle	Cat. No.	Cutting material	v _c (m/min)	Feed curve no.	Coolant
Material Group 4.2 Copper-Nickel:Zinc Alloys German Silver DIN: 2.0770 CuNi10Zn42Pb (Ns4711Pb) 2.0790 CuNi18Zn19Pb (Ns6218Pb)		TP-Norm	standard plain shank	90°	K3164TIN	K30F	120	10	
		DIN 8374	cyl.	90°	K6221	HSS	30	8	
		DIN 8378	cyl.	90°	K6222	HSS	30	8	
		DIN 8376	cyl.	180°	K6223	HSS	30	8	
		DIN 8375	MT	90°	K7221	HSS	30	8	
		DIN 8379	MT	90°	K7222	HSS	30	8	
		DIN 8377	MT	180°	K7223	HSS	30	8	
		TP-Norm	flat	60°	K2511 K2513	HSS	30	8	
Material Group 4.3 Brass, brittle free machining DIN: 2.0380 CuZn39Pb2 (Ms58) 2.0401 CuZn39Pb3 2.0402 CuZn40Pb2 BS: CZ 121, CZ 122		TP-Norm	standard plain shank	90°	K3164TIN	K30F	160	16	
		DIN 8374	cyl.	90°	K6221	HSS	60	12	
		DIN 8378	cyl.	90°	K6222	HSS	60	12	
		DIN 8376	cyl.	180°	K6223	HSS	60	12	
		DIN 8375	MT	90°	K7221	HSS	60	12	
		DIN 8379	MT	90°	K7222	HSS	60	12	
		DIN 8377	MT	180°	K7223	HSS	60	12	
		TP-Norm	flat	60°	K2511 K2513	HSS	60	12	
Material Group 4.4 Brass, tough DIN: 2.0240 CuZn15 (Ms85) 2.0335 CuZn36 (Ms63) 2.0330 CuZn36Pb1 2.0375 CuZn36Pb3 2.0360 CuZn40 (Ms60) AISI/SAE: Naval Brass CZ 112 C51000 Special Brass. tough DIN: 2.0470 CuZn28Sn1 (SoMs71) 2.0490 CuZn31Si1 (SoMs68) BS: CZ 108 CZ 114		TP-Norm	standard plain shank	90°	K3164TIN	K30F	160	12	
		DIN 8374	cyl.	90°	K6221	HSS	38	10	
		DIN 8378	cyl.	90°	K6222	HSS	38	10	
		DIN 8376	cyl.	180°	K6223	HSS	38	10	
		DIN 8375	MT	90°	K7221	HSS	38	10	
		DIN 8379	MT	90°	K7222	HSS	38	10	
		DIN 8377	MT	180°	K7223	HSS	38	10	
		TP-Norm	flat	60°	K2511 K2513	HSS	38	10	
Material Group 4.5 Bronze, soft DIN: 2.1020 CuSn6 (SnBz6) 2.1086 G-CuSn10Zn (Rg 10) 2.1090 G-CuSn7ZnPb (Rg 7) AISI: Am BS: CDA 544 PB 102 CDA 65500 CDA 656		TP-Norm	standard plain shank	90°	K3164TIN	K30F	150	12	
		DIN 8374	cyl.	90°	K6221	HSS	34	10	
		DIN 8378	cyl.	90°	K6222	HSS	34	10	
		DIN 8376	cyl.	180°	K6223	HSS	34	10	
		DIN 8375	MT	90°	K7221	HSS	34	10	
		DIN 8379	MT	90°	K7222	HSS	34	10	
		DIN 8377	MT	180°	K7223	HSS	34	10	
		TP-Norm	flat	60°	K2511 K2513	HSS	34	10	

Type Selection and Recommended Cutting Data - Subland Drills









Material group	Coolant Type	Standard	Shank	Angle	Cat. No.	Cutting material	v _c (m/min)	Feed curve no.	Coolant
Material Group 4.6 Bronze, special (Aluminiumbronze, Berylliumbronze, Siliconbronze etc.) up to 200 HB DIN: 2.0916 CuAl5 2.0932 CuAl8Fe3 (AlBz8Fe) 2.0966 CuAl10Ni5Fe4 (AlBz10Ni) 2.1247 CuBe2F40 2.1525 CuSi3Mn AMPCO 8... 16		TP-Norm	standard plain shank	90°	K3164TIN	K30F	80	12	
		DIN 8374	cyl.	90°	K6221	HSS	26	7	
		DIN 8378	cyl.	90°	K6222	HSS	26	7	
		DIN 8376	cyl.	180°	K6223	HSS	26	7	
		DIN 8375	MT	90°	K7221	HSS	26	7	
		DIN 8379	MT	90°	K7222	HSS	26	7	
		DIN 8377	MT	180°	K7223	HSS	26	7	
		TP-Norm	flat	60°	K2511	HSS	26	7	
					K2513				
Material Group 4.7 Bronze, special (Aluminiumbronze, Berylliumbronze) 200-300 HB DIN: 2.0978 CuAl11Ni6Fe5 (AlBz11Ni) 2.1245 CuBe1,7 F55 2.1247 CuBe2F70 AMPCO 20		TP-Norm	standard plain shank	90°	K3164TIN	K30F	50	5	
		DIN 8374	cyl.	90°	K6221	HSS	14	5	
		DIN 8378	cyl.	90°	K6222	HSS	14	5	
		DIN 8376	cyl.	180°	K6223	HSS	14	5	
		DIN 8375	MT	90°	K7221	HSS	14	5	
		DIN 8379	MT	90°	K7222	HSS	14	5	
		DIN 8377	MT	180°	K7223	HSS	14	5	
		TP-Norm	flat	60°	K2511	HSS	14	5	
					K2513				
Material Group 5.1 Aluminium commercially pure, Aluminium-Alloy, wrought DIN: 3.0255 Al99,5 3.0615 AlMgSiPb 3.2315 AlMgSi1 3.3535 AlMg3 3.4365 AlZnMg Cu1,5 3.3211 AlMg1SiCu Int'l Reg. Record 1050A 6012 6082 5754 7075 6061		TP-Norm	standard plain shank	90°	K3164TIN	K30F	250	16	
		DIN 8374	cyl.	90°	K6221	HSS	63	16	
		DIN 8378	cyl.	90°	K6222	HSS	63	16	
		DIN 8376	cyl.	180°	K6223	HSS	63	16	
		DIN 8375	MT	90°	K7221	HSS	63	16	
		DIN 8379	MT	90°	K7222	HSS	63	16	
		DIN 8377	MT	180°	K7223	HSS	63	16	
		TP-Norm	flat	60°	K2511	HSS	63	16	
					K2513				
Material Group 5.2 Aluminium-Silicon-Alloys cast below 10% si DIN: 3.2341 G-AlSi5Mg 3.2151 G-AlSi6Cu4 Int'l Reg. Record 3052 3054 BS: LM 4, 12, 16, 21, 22, 24, 25, 27 US: AA 296.0(B295) - A 333.1 354.0 - A 360.2 361.0 / 361.1 - 364.0/364.2 A380.0		TP-Norm	standard plain shank	90°	K3164TIN	K30F	200	16	
		DIN 8374	cyl.	90°	K6221	HSS	42	12	
		DIN 8378	cyl.	90°	K6222	HSS	42	12	
		DIN 8376	cyl.	180°	K6223	HSS	42	12	
		DIN 8375	MT	90°	K7221	HSS	42	12	
		DIN 8379	MT	90°	K7222	HSS	42	12	
		DIN 8377	MT	180°	K7223	HSS	42	12	
		TP-Norm	flat	60°	K2511	HSS	42	12	
					K2513				

Type Selection and Recommended Cutting Data - Subland Drills

Material group	Coolant Type	Standard	Shank	Angle	Cat. No.	Cutting material	v _c (m/min)	Feed curve no.	Coolant
Material Group 5.3 Aluminium-Silicon-Alloys cast 10-14 % Si DIN: 3.2381 G-AISI10Mg 3.2581 G-AISI12 BS LM 6, 9, 13, 20 US: AA336 (A332)-339.1 369.0 / 369.1 343.0 - 385.1 413		TP-Norm	standard plain shank	90°	K3164TIN	K30F	180	16	
		DIN 8374	cyl.	90°	K6221	HSS	30	12	
		DIN 8378	cyl.	90°	K6222	HSS	30	12	
		DIN 8376	cyl.	180°	K6223	HSS	30	12	
		DIN 8375	MT	90°	K7221	HSS	30	12	
		DIN 8379	MT	90°	K7222	HSS	30	12	
		DIN 8377	MT	180°	K7223	HSS	30	12	
		TP-Norm	flat	60°	K2511 K2513	HSS	30	12	
Material Group 5.4 Aluminium-Silicon-Alloys cast above 14 % Si		TP-Norm	standard plain shank	90°	K3164TIN	K30F	140	12	
Material Group 6.1 Titanium, commercially pure (99,8%) and Titanium-alloys up to 700 N/mm ² DIN: 3.7034 Ti99,7 3.7124 TiCu2 3.7024/25 commer, pure 3.7034/35 commer, pure 3.7055 commer, pure 3.7064/65 commer, pure BS: TA 1-9, 21-24 52-55, 58 AMS: 4900, 4902, 4921 4941, 4942 ASTM: Gr. 1-3, 4, 7, 11		TP-Norm	standard plain shank	90°	K3164TIN	K30F	36	5	
		DIN 8374	cyl.	90°	K6221	HSS	8	4	
		DIN 8378	cyl.	90°	K6222	HSS	8	4	
		DIN 8376	cyl.	180°	K6223	HSS	8	4	
		DIN 8375	MT	90°	K7221	HSS	8	4	
		DIN 8379	MT	90°	K7222	HSS	8	4	
		DIN 8377	MT	180°	K7223	HSS	8	4	
		TP-Norm	flat	60°	K2511 K2513	HSS	8	4	
Material Group 6.2 Titanium, commercially pure and Titanium-alloys above 700 N/mm ²		TP-Norm	standard plain shank	90°	K3164TIN	K30F	30	4	
Material Group 8.1 Zinc-Alloys DIN: 2.2140.05 GD-ZnAl4 2.2143 GD-ZnAl4Cu3 ZnCu4Pb1 Zamak 400 Zamak 410		TP-Norm	standard plain shank	90°	K3164TIN	K30F	200	16	
		DIN 8374	cyl.	90°	K6221	HSS	67	16	
		DIN 8378	cyl.	90°	K6222	HSS	67	16	
		DIN 8376	cyl.	180°	K6223	HSS	67	16	
		DIN 8375	MT	90°	K7221	HSS	67	16	
		DIN 8379	MT	90°	K7222	HSS	67	16	
		DIN 8377	MT	180°	K7223	HSS	67	16	
		TP-Norm	flat	60°	K2511 K2513	HSS	67	16	
Material Group 9.1 Thermoplastics without filler PP Polypropylen PS Polystyrol POM Polyoxymethylen (Delrin) PC Polycarbonat (Makrolon) PA Polyamid (Ultramid) PMMA Polymethyl- metacrylat		TP-Norm	standard plain shank	90°	K3164TIN	K30F	90	16	
		DIN 8374	cyl.	90°	K6221	HSS	40	12	
		DIN 8378	cyl.	90°	K6222	HSS	40	12	
		DIN 8376	cyl.	180°	K6223	HSS	40	12	
		DIN 8375	MT	90°	K7221	HSS	40	12	
		DIN 8379	MT	90°	K7222	HSS	40	12	
		DIN 8377	MT	180°	K7223	HSS	40	12	
		TP-Norm	flat	60°	K2511 K2513	HSS	40	12	

Type Selection and Recommended Cutting Data - Subland Drills

dry

Material group	Coolant Type	Standard	Shank	Angle	Cat. No.	Cutting material	v_c (m/min)	Feed curve no.	Coolant
Material Group 9.2 Plastics, reinforced with organic fillers Pertinax Resitex Toufnell		DIN 8374	cyl.	90°	K6221	HSS	24	8	
		DIN 8378	cyl.	90°	K6222	HSS	24	8	
		DIN 8376	cyl.	180°	K6223	HSS	24	8	
		DIN 8375	MT	90°	K7221	HSS	24	8	
		DIN 8379	MT	90°	K7222	HSS	24	8	
		DIN 8377	MT	180°	K7223	HSS	24	8	
		TP-Norm	flat	60°	K2511 K2513	HSS	24	8	

 External coolant

 Minimum

 Dry




Type Selection and Recommended Cutting Data - Core Drills

Material group	Coolant Type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v_c (m/min)	Feed curve no.	Coolant
Material Group 1.1.1 Free Machining Steel		DIN 344	tang	E1111	N (core drill)	HSS	28	8	
		DIN 343	MT	E3111	N (core drill)	HSS	28	8	
Material Group 1.1.2 Soft structural steels up to 550 N/mm ² (163 HB)		DIN 344	tang	E1111	N (core drill)	HSS	28	7	
		DIN 343	MT	E3111	N (core drill)	HSS	28	7	
Material Group 1.1.3 Steel and cast steel from 550 to 700 N/mm ² (163 up to 210 HB)		DIN 344	tang	E1111	N (core drill)	HSS	28	8	
		DIN 343	MT	E3111	N (core drill)	HSS	28	8	
Material Group 1.2 Steel and Cast Steel 700 up to 1000 N/mm ²		DIN 344	tang	E1111	N (core drill)	HSS	24	8	
		DIN 343	MT	E3111	N (core drill)	HSS	24	8	
Material Group 1.3 Steel 1000 up to 1300 N/mm ²		DIN 344	tang	E1111	N (core drill)	HSS	9	5	
		DIN 343	MT	E3111	N (core drill)	HSS	9	5	
Material Group 1.4 Steels 1300 up to 1600 N/mm ² Spring Steels, hardened Wear-resisting Steels Maraging Steels 360-440 HB		DIN 344	tang	E1111	N (core drill)	HSS	3,2	4	
		DIN 343	MT	E3111	N (core drill)	HSS	3,2	4	
Material Group 1.6.1 Tool Steel, unalloyed annealed, e.g.		DIN 344	tang	E1111	N (core drill)	HSS	12	6	
		DIN 343	MT	E3111	N (core drill)	HSS	12	6	
Material Group 1.6.2 Tool Steel, low alloyed, annealed Ball Bearing Steel, annealed		DIN 344	tang	E1111	N (core drill)	HSS	12	6	
		DIN 343	MT	E3111	N (core drill)	HSS	12	6	
Material Group 1.6.3 Tool Steel, high alloyed, annealed		DIN 344	tang	E1111	N (core drill)	HSS	7,1	3	
		DIN 343	MT	E3111	N (core drill)	HSS	7,1	3	
Material Group 1.7.1 Stainless and Heat Resistant Steel, ferric (Ni < 2%) martensic, annealed		DIN 344	tang	E1111	N (core drill)	HSS	6	3	
		DIN 343	MT	E3111	N (core drill)	HSS	6	3	
Material Group 1.7.2 Stainless and Heat Resistant Steel, austenitic sulphured		DIN 344	tang	E1111	N (core drill)	HSS	6,7	4	
		DIN 343	MT	E3111	N (core drill)	HSS	6,7	4	
Material Group 1.7.3 Stainless and Heat Resistant Steel austenitic (Ni > 4%)		DIN 344	tang	E1111	N (core drill)	HSS	4	3	
		DIN 343	MT	E3111	N (core drill)	HSS	4	3	
Material Group 1.7.4 Stainless Steel Precipitation-Hardened		DIN 344	tang	E1111	N (core drill)	HSS	4	5	
		DIN 343	MT	E3111	N (core drill)	HSS	4	5	
Material Group 2.1 Super Alloys Ni- and Co-based up to 900 N/mm ²		DIN 344	tang	E1111	N (core drill)	HSS	3,8	3	
		DIN 343	MT	E3111	N (core drill)	HSS	3,8	3	
Material Group 2.2 Super Alloys Ni- and Co-based 900 up to 1200 N/mm ²		DIN 344	tang	E1111	N (core drill)	HSS	1,1	3	
		DIN 343	MT	E3111	N (core drill)	HSS	1,1	3	







Type Selection and Recommended Cutting Data - Core Drills

Material group	Coolant Type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v_c (m/min)	Feed curve no.	Coolant
Material Group 3.1 Cast Iron, soft		DIN 344	tang	E1111	N (core drill)	HSS	22	10	
		DIN 343	MT	E3111	N (core drill)	HSS	22	10	
Material Group 3.2 Cast Iron, soft		DIN 344	tang	E1111	N (core drill)	HSS	18	10	
		DIN 343	MT	E3111	N (core drill)	HSS	18	10	
Material Group 3.3.1 Nodular Iron (SG)		DIN 344	tang	E1111	N (core drill)	HSS	18	10	
		DIN 343	MT	E3111	N (core drill)	HSS	18	10	
Material Group 3.3.2 Nodular Iron (SG)		DIN 344	tang	E1111	N (core drill)	HSS	13	9	
		DIN 343	MT	E3111	N (core drill)	HSS	13	9	
Material Group 3.4 Malleable Iron		DIN 344	tang	E1111	N (core drill)	HSS	18	10	
		DIN 343	MT	E3111	N (core drill)	HSS	18	10	
Material Group 4.1 Copper, pure		DIN 344	tang	E1111	N (core drill)	HSS	40	4	
		DIN 343	MT	E3111	N (core drill)	HSS	40	4	
Material Group 4.2 Copper-Nickel:Zinc Alloys German Silver		DIN 344	tang	E1111	N (core drill)	HSS	25	7	
		DIN 343	MT	E3111	N (core drill)	HSS	25	7	
Material Group 4.3 Brass, brittle free machining		DIN 344	tang	E1111	N (core drill)	HSS	50	10	
		DIN 343	MT	E3111	N (core drill)	HSS	50	10	
Material Group 4.4 Brass, tough		DIN 344	tang	E1111	N (core drill)	HSS	32	9	
		DIN 343	MT	E3111	N (core drill)	HSS	32	9	
Material Group 4.5 Bronze, soft		DIN 344	tang	E1111	N (core drill)	HSS	28	9	
		DIN 343	MT	E3111	N (core drill)	HSS	28	9	
Material Group 4.6 Bronze, special (Aluminiumbronze, Berylliumbronze, Siliconbronze etc.) up to 200 HB		DIN 344	tang	E1111	N (core drill)	HSS	22	6	
		DIN 343	MT	E3111	N (core drill)	HSS	22	6	
Material Group 4.7 Bronze, special (Aluminiumbronze, Berylliumbronze) 200-300 HB		DIN 344	tang	E1111	N (core drill)	HSS	10,5	4	
		DIN 343	MT	E3111	N (core drill)	HSS	10,5	4	
Material Group 5.1 Aluminium commercially pure, Aluminium-Alloy, wrought		DIN 344	tang	E1111	N (core drill)	HSS	56	12	
		DIN 343	MT	E3111	N (core drill)	HSS	56	12	
Material Group 5.2 Aluminium-Silicon-Alloys cast below 10% si		DIN 344	tang	E1111	N (core drill)	HSS	36	12	
		DIN 343	MT	E3111	N (core drill)	HSS	36	12	
Material Group 5.3 Aluminium-Silicon-Alloys cast 10-14 % Si		DIN 344	tang	E1111	N (core drill)	HSS	25	10	
		DIN 343	MT	E3111	N (core drill)	HSS	25	10	
Material Group 6.1 Titanium, commercially pure (99,8%) and Titanium-alloys up to 700 N/mm ²		DIN 344	tang	E1111	N (core drill)	HSS	6	4	
		DIN 343	MT	E3111	N (core drill)	HSS	6	4	
Material Group 8.1 Zinc-Alloys		DIN 344	tang	E1111	N (core drill)	HSS	56	12	
		DIN 343	MT	E3111	N (core drill)	HSS	56	12	

















































Type Selection and Recommended Cutting Data - Core Drills

Material group	Coolant Type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v_c (m/min)	Feed curve no.	Coolant
Material Group 9.1 Thermoplastics without filler		DIN 344	tang	E1111	N (core drill)	HSS	32	12	
		DIN 343	MT	E3111	N (core drill)	HSS	32	12	














































Type Selection and Recommended Cutting Data - Core Drills dry

Material group	Coolant Type	Standard	Shank	Cat. No.	Type of tool	Cutting material	v_c (m/min)	Feed curve no.	Coolant
Material Group 4.3 Brass, brittle free machining		DIN 344	tang	E1111	N (core drill)	HSS	40	10	
		DIN 343	MT	E3111	N (core drill)	HSS	40	10	
Material Group 9.2 Plastics, reinforced with organic fillers		DIN 344	tang	E1111	N (core drill)	HSS	20	8	
		DIN 343	MT	E3111	N (core drill)	HSS	20	8	














































Type Selection and Recommended Cutting Data - Countersinks

Material group	Coolant type	Standard	Shank	Angle	Cat. No.	Cutting material	v_c (m/min)	Feed curve no.	Coolant
Material Group 1.1.1 Free Machining Steel		DIN 334	cyl.	60°	E6818	HSS	20	7	
		DIN 335	cyl.	90°	E6819	HSS	20	7	
					E6819TIN		26	8	
		DIN 334	MT	60°	E7818	HSS	20	7	
		DIN 335	MT	90°	E7819	HSS	20	7	
Material Group 1.1.2 Soft structural steels up to 550 N/mm ² (163 HB)		DIN 334	cyl.	60°	E6818	HSS	20	6	
		DIN 335	cyl.	90°	E6819	HSS	20	6	
					E6819TIN		26	7	
		DIN 334	MT	60°	E7818	HSS	20	6	
		DIN 335	MT	90°	E7819	HSS	20	6	
Material Group 1.1.3 Steel and cast steel from 550 to 700 N/mm ² (163 up to 210 HB)		DIN 334	cyl.	60°	E6818	HSS	20	7	
		DIN 335	cyl.	90°	E6819	HSS	20	7	
					E6819TIN		26	8	
		DIN 334	MT	60°	E7818	HSS	20	7	
		DIN 335	MT	90°	E7819	HSS	20	7	
Material Group 1.2 Steel and Cast Steel 700 up to 1000 N/mm ² (210-295 HB)		DIN 334	cyl.	60°	E6818	HSS	17	7	
		DIN 335	cyl.	90°	E6819	HSS	17	7	
					E6819TIN		22	8	
		DIN 334	MT	60°	E7818	HSS	17	7	
		DIN 335	MT	90°	E7819	HSS	17	7	
Material Group 1.3 Steel 1000 up to 1300 N/mm ² (295-380 HB)		DIN 334	cyl.	60°	E6818	HSS	7,1	5	
		DIN 335	cyl.	90°	E6819	HSS	7,1	5	
					E6819TIN		14		
		DIN 334	MT	60°	E7818	HSS	7,1	5	
		DIN 335	MT	90°	E7819	HSS	7,1	5	
Material Group 1.6.1 Tool Steel, unalloyed annealed, e.g. 1.1673 C135W 1.1830 C85W		DIN 334	cyl.	60°	E6818	HSS	9,5	6	
		DIN 335	cyl.	90°	E6819	HSS	9,5	6	
					E6819TIN		18	7	
		DIN 334	MT	60°	E7818	HSS	9,5	6	
		DIN 335	MT	90°	E7819	HSS	9,5	6	
Material Group 1.6.2 Tool Steel, low alloyed, annealed Ball Bearing Steel, annealed 1.2241 51CrV4 1.2550 60WCrV7 1.2713 55NiCrMoV6 1.3505 100Cr6		DIN 334	cyl.	60°	E6818	HSS	9,5	6	
		DIN 335	cyl.	90°	E6819	HSS	9,5	6	
					E6819TIN		18	8	
		DIN 334	MT	60°	E7818	HSS	9,5	6	
		DIN 335	MT	90°	E7819	HSS	9,5	6	
Material Group 1.6.3 Tool Steel, high alloyed, annealed 1.2080 X210Cr12 1.2316 X36CrMo17 1.2343 X38CrMoV51 1.2379 X155CrVMo121 1.3343 S6-5-2		DIN 334	cyl.	60°	E6818	HSS	5,3	3	
		DIN 335	cyl.	90°	E6819	HSS	5,3	3	
					E6819TIN		6,3	4	
		DIN 334	MT	60°	E7818	HSS	5,3	3	
		DIN 335	MT	90°	E7819	HSS	5,3	3	




































Type Selection and Recommended Cutting Data - Countersinks

Material group	Coolant type	Standard	Shank	Angle	Cat. No.	Cutting material	v_c (m/min)	Feed curve no.	Coolant
Material Group 1.7.1 Stainless and Heat Resistant Steel, ferric (Ni < 2%) martensitic, annealed 1.4002 X6CrAl13 1.4006 X10Cr13		DIN 334	cyl.	60°	E6818	HSS	4,8	3	
		DIN 335	cyl.	90°	E6819	HSS	4,8	3	
		DIN 334	MT	60°	E7818	HSS	4,8	3	
		DIN 335	MT	90°	E7819	HSS	4,8	3	
Material Group 1.7.2 Stainless and Heat Resistant Steel, austenitic sulphured e.g. 1.4305 X10CrNiS189		DIN 334	cyl.	60°	E6818	HSS	4,8	3	
		DIN 335	cyl.	90°	E6819	HSS	4,8	3	
		DIN 334	MT	60°	E7818	HSS	4,8	3	
		DIN 335	MT	90°	E7819	HSS	4,8	3	
Material Group 1.7.3 Stainless and Heat Resistant Steel austenitic (Ni > 4%)		DIN 334	cyl.	60°	E6818	HSS	3	3	
		DIN 335	cyl.	90°	E6819	HSS	3	3	
		DIN 334	MT	60°	E7818	HSS	3	3	
		DIN 335	MT	90°	E7819	HSS	3	3	
Material Group 1.7.4 Stainless Steel Precipitation-Hardened		DIN 334	cyl.	60°	E6818	HSS	3	4	
		DIN 335	cyl.	90°	E6819 E6819TIN	HSS	3 6,7	4 5	
		DIN 334	MT	60°	E7818	HSS	3	4	
		DIN 335	MT	90°	E7819	HSS	3	4	
Material Group 2.1 Super Alloys Ni- and Co-based up to 900 N/mm ²		DIN 334	cyl.	60°	E6818	HSS	3	3	
		DIN 335	cyl.	90°	E6819	HSS	3	3	
		DIN 334	MT	60°	E7818	HSS	3	3	
		DIN 335	MT	90°	E7819	HSS	3	3	
Material Group 2.2 Super Alloys Ni- and Co-based 900 up to 1200 N/mm ²		DIN 334	cyl.	60°	E6818	HSS	1	3	
		DIN 335	cyl.	90°	E6819	HSS	1	3	
		DIN 334	MT	60°	E7818	HSS	1	3	
		DIN 335	MT	90°	E7819	HSS	1	3	
Material Group 3.1 Cast Iron, soft Grade 100 ... Grade 220		DIN 334	cyl.	60°	E6818	HSS	16	10	
		DIN 335	cyl.	90°	E6819 E6819TIN	HSS	16 30	10	
		DIN 334	MT	60°	E7818	HSS	16	10	
		DIN 335	MT	90°	E7819	HSS	16	10	
Material Group 3.2 Cast Iron, soft Grade 200 ... Grade 400		DIN 334	cyl.	60°	E6818	HSS	13	10	
		DIN 335	cyl.	90°	E6819 E6819TIN	HSS	13 24	10	
		DIN 334	MT	60°	E7818	HSS	13	10	
		DIN 335	MT	90°	E7819	HSS	13	10	
Material Group 3.3.1 Nodular Iron (SG)		DIN 334	cyl.	60°	E6818	HSS	13	10	
		DIN 335	cyl.	90°	E6819 E6819TIN	HSS	13 24	10	
		DIN 334	MT	60°	E7818	HSS	13	10	
		DIN 335	MT	90°	E7819	HSS	13	10	













Type Selection and Recommended Cutting Data - Countersinks

Material group	Coolant type	Standard	Shank	Angle	Cat. No.	Cutting material	v_c (m/min)	Feed curve no.	Coolant
Material Group 3.3.2 Nodular Iron (SG)		DIN 334	cyl.	60°	E6818	HSS	10	9	
		DIN 335	cyl.	90°	E6819 E6819TIN	HSS	10 18	9	
		DIN 334	MT	60°	E7818	HSS	10	9	
		DIN 335	MT	90°	E7819	HSS	10	9	
Material Group 3.4 Malleable Iron		DIN 334	cyl.	60°	E6818	HSS	13	10	
		DIN 335	cyl.	90°	E6819 E6819TIN	HSS	13 24	10	
		DIN 334	MT	60°	E7818	HSS	13	10	
		DIN 335	MT	90°	E7819	HSS	13	10	
Material Group 4.1 Copper, pure		DIN 334	cyl.	60°	E6818	HSS	30	4	
		DIN 335	cyl.	90°	E6819 E6819TIN	HSS	30 38	4 5	
		DIN 334	MT	60°	E7818	HSS	30	4	
		DIN 335	MT	90°	E7819	HSS	30	4	
Material Group 4.2 Copper-Nickel:Zinc Alloys German Silver		DIN 334	cyl.	60°	E6818	HSS	18	7	
		DIN 335	cyl.	90°	E6819	HSS	18	7	
		DIN 334	MT	60°	E7818	HSS	18	7	
		DIN 335	MT	90°	E7819	HSS	18	7	
Material Group 4.3 Brass, brittle free machining		DIN 334	cyl.	60°	E6818	HSS	36	10	
		DIN 335	cyl.	90°	E6819 E6819TIN	HSS	36 48	10	
		DIN 334	MT	60°	E7818	HSS	36	10	
		DIN 335	MT	90°	E7819	HSS	36	10	
Material Group 4.4 Brass, tough Special Brass, tough		DIN 334	cyl.	60°	E6818	HSS	24	9	
		DIN 335	cyl.	90°	E6819	HSS	24	9	
		DIN 334	MT	60°	E7818	HSS	24	9	
		DIN 335	MT	90°	E7819	HSS	24	9	
Material Group 4.5 Bronze, soft		DIN 334	cyl.	60°	E6818	HSS	21	9	
		DIN 335	cyl.	90°	E6819	HSS	21	9	
		DIN 334	MT	60°	E7818	HSS	21	9	
		DIN 335	MT	90°	E7819	HSS	21	9	
Material Group 4.6 Bronze, special (Aluminiumbronze, Berylliumbronze, Siliconbronze etc.) up to 200 HB		DIN 334	cyl.	60°	E6818	HSS	16	6	
		DIN 335	cyl.	90°	E6819 E6819TIN	HSS	16 24	6 7	
		DIN 334	MT	60°	E7818	HSS	16	6	
		DIN 335	MT	90°	E7819	HSS	16	6	
Material Group 4.7 Bronze, special (Aluminiumbronze, Berylliumbronze) 200-300 HB		DIN 334	cyl.	60°	E6818	HSS	8	4	
		DIN 335	cyl.	90°	E6819	HSS	8	4	
		DIN 334	MT	60°	E7818	HSS	8	4	
		DIN 335	MT	90°	E7819	HSS	8	4	
















Type Selection and Recommended Cutting Data - Countersinks

Material group	Coolant type	Standard	Shank	Angle	Cat. No.	Cutting material	v_c (m/min)	Feed curve no.	Coolant
Material Group 5.1 Aluminium commercially pure, Aluminium-Alloy, wrought		DIN 334	cyl.	60°	E6818	HSS	40	12	
		DIN 335	cyl.	90°	E6819	HSS	40	12	
		DIN 334	MT	60°	E7818	HSS	40	12	
		DIN 335	MT	90°	E7819	HSS	40	12	
Material Group 5.2 Aluminium-Silicon-Alloys cast below 10% si		DIN 334	cyl.	60°	E6818	HSS	26	12	
		DIN 335	cyl.	90°	E6819	HSS	26	12	
		DIN 334	MT	60°	E7818	HSS	26	12	
		DIN 335	MT	90°	E7819	HSS	26	12	
Material Group 5.3 Aluminium-Silicon-Alloys cast 10-14 % Si		DIN 334	cyl.	60°	E6818	HSS	18	10	
		DIN 335	cyl.	90°	E6819	HSS	18	10	
		DIN 334	MT	60°	E7818	HSS	18	10	
		DIN 335	MT	90°	E7819	HSS	18	10	
Material Group 6.1 Titanium, commercially pure (99,8%) and Titanium-alloys up to 700 N/mm ²		DIN 334	cyl.	60°	E6818	HSS	4,8	4	
		DIN 335	cyl.	90°	E6819	HSS	4,8	4	
		DIN 334	MT	60°	E7818	HSS	4,8	4	
		DIN 335	MT	90°	E7819	HSS	4,8	4	
Material Group 8.1 Zinc-Alloys		DIN 334	cyl.	60°	E6818	HSS	40	12	
		DIN 335	cyl.	90°	E6819	HSS	40	12	
		DIN 334	MT	60°	E7818	HSS	40	12	
		DIN 335	MT	90°	E7819	HSS	40	12	
Material Group 9.1 Thermoplastics without filler PP Polypropylen PS Polystyrol POM Polyoxymethylen (Delrin) PC Polycarbonat (Makrolon) PA Polyamid (Ultramid) PMMA Polymethylmetahcrylat		DIN 334	cyl.	60°	E6818	HSS	25	12	
		DIN 335	cyl.	90°	E6819	HSS	25	12	
		DIN 334	MT	60°	E7818	HSS	25	12	
		DIN 335	MT	90°	E7819	HSS	25	12	
Material Group 9.2 Plastics, reinforced with organic fillers Pertinax Resitex Toufnell		DIN 334	cyl.	60°	E6818	HSS	15	7	
		DIN 335	cyl.	90°	E6819 E6819TIN	HSS	15 24	7	
		DIN 334	MT	60°	E7818	HSS	15	7	
		DIN 335	MT	90°	E7819	HSS	15	7	




















Type Selection and Recommended Cutting Data - Centre Drills

Material group	Coolant Type	Standard	Form	Remarks	Cat. No.	Cutting material	v_c (m/min)	Feed curve no.	Coolant		
Material Group 1.1.1 Free Machining Steel		DIN 333	A	60°	K1111	HSS	28	8			
							K1111TIN	36		9	
				60°, with flat	K1112		28	8			
			R	60°	K1113		HSS	36		9	
								K1113TIN		36	9
				60°, with flat	K1114			28		8	
			A	60°, left	K1131		HSS	28		8	
					K1133						
			B	60°/120°	K1215		HSS	28		8	
		60°/120°, left			K1235						
		TP-Norm	A	60°	K1311	HSS	28	8			
					K1313						
				60°, extra long	K1411L						
					K1411M						
			K1411S								
ANSI B 94.11 M-1979	A	60°	K1811	HSS	28	8					
B.S. 328	A	60°	K1911	HSS	28	8					
Material Group 1.1.2 Soft structural steels up to 550 N/mm ² (163 HB)		DIN 333	A	60°	K1111	HSS	28	7			
							K1111TIN	36		8	
				60°, with flat	K1112		28	7			
			R	60°	K1113		HSS	36		8	
								K1113TIN		36	8
				60°, with flat	K1114			28		7	
			A	60°, left	K1131		HSS	28		7	
					K1133						
			B	60°/120°	K1215		HSS	28		7	
		60°/120°, left			K1235						
		TP-Norm	A	60°	K1311	HSS	28	7			
					K1313						
				60°, extra long	K1411L						
					K1411M						
			K1411S								
ANSI B 94.11 M-1979	A	60°	K1811	HSS	28	7					
B.S. 328	A	60°	K1911	HSS	28	7					
Material Group 1.1.3 Steel and cast steel from 550 to 700 N/mm ² (163 up to 210 HB)		DIN 333	A	60°	K1111	HSS	28	8			
							K1111TIN	36		9	
				60°, with flat	K1112		28	8			
			R	60°	K1113		HSS	36		9	
								K1113TIN		36	9
				60°, with flat	K1114			28		8	
			A	60°, left	K1131		HSS	28		8	
					K1133						
			B	60°/120°	K1215		HSS	28		8	
		60°/120°, left			K1235						
		TP-Norm	A	60°	K1311	HSS	28	8			
					K1313						
				60°, extra long	K1411L						
					K1411M						
			K1411S								
ANSI B 94.11 M-1979	A	60°	K1811	HSS	28	8					
B.S. 328	A	60°	K1911	HSS	28	8					














Type Selection and Recommended Cutting Data - Centre Drills

Material group	Coolant Type	Standard	Form	Remarks	Cat. No.	Cutting material	v _c (m/min)	Feed curve no.	Coolant		
Material Group 1.2 Steel and Cast Steel 700 up to 1000 N/mm ²		DIN 333	A	60°	K1111	HSS	24	8			
				60°, with flat	K1112		24	8			
			R	60°	K1113		32	9			
				60°, with flat	K1114						
			A	60°, left	K1131		24	8			
			R		K1133						
			B	60°/120°	K1215						
				60°/120°, left	K1235						
		TP-Norm	A	60°	K1311	HSS	24	8			
			R		K1313						
			A	60°, extra long	K1411L						
					K1411M						
			K1411S								
		ANSI B 94.11 M-1979	A	60°	K1811	HSS	24	8			
		B.S. 328	A	60°	K1911	HSS	24	8			
		Material Group 1.3 Steel 1000 up to 1300 N/mm ²		DIN 333	A	60°	K1111	HSS	11	6	
						60°, with flat	K1112		20		
R	60°				K1113	11					
	60°, with flat				K1114						
A	60°, left				K1131	20	11				
R					K1133						
B	60°/120°				K1215						
	60°/120°, left				K1235						
TP-Norm	A			60°	K1311	HSS	11	6			
	R				K1313						
	A			60°, extra long	K1411L						
					K1411M						
	K1411S										
ANSI B 94.11 M-1979	A			60°	K1811	HSS	11	6			
B.S. 328	A			60°	K1911	HSS	11	6			
Material Group 1.4 Steels 1300 up to 1600 N/mm ² Spring Steels, hardened Wear-resisting Steels Maraging Steels 360-440 HB				DIN 333	A	60°	K1111	HSS	4,2	4	
						60°, with flat	K1112				
		R	60°		K1113						
			60°, with flat		K1114						
		A	60°, left		K1131	4,2	4				
		R			K1133						
		B	60°/120°		K1215						
			60°/120°, left		K1235						
		TP-Norm	A	60°	K1311	HSS	4,2	4			
			R		K1313						
			A	60°, extra long	K1411L						
					K1411M						
			K1411S								
		ANSI B 94.11 M-1979	A	60°	K1811	HSS	4,2	4			
		B.S. 328	A	60°	K1911	HSS	4,2	4			
















Type Selection and Recommended Cutting Data - Centre Drills

Material group	Coolant Type	Standard	Form	Remarks	Cat. No.	Cutting material	v _c (m/min)	Feed curve no.	Coolant			
Material Group 1.6.1 Tool Steel, unalloyed annealed, e.g. 1.1673 C135W 1.1830 C85W		DIN 333	A	60°	K1111	HSS	14	7				
				60°, with flat	K1112		25	8				
				60°	K1113		14	7				
			R	60°	K1113		HSS	25		8	7	
				60°, with flat	K1114			14				
				60°, left	K1131							
			A	60°, left	K1131		HSS	14		7		
				60°/120°	K1215							
			R	60°/120°	K1215		HSS	14		7		
		60°/120°, left		K1235								
		TP-Norm	A	60°	K1311	HSS	14	7				
					K1313							
				60°, extra long	K1411L							
					K1411M							
		ANSI B 94.11 M-1979	A	60°	K1811	HSS	14	7				
K1911												
Material Group 1.6.2 Tool Steel, low alloyed, annealed Ball Bearing Steel, annealed 1.2241 51CrV4 1.2550 60WCrV7 1.2713 55NiCrMoV6 1.3505 100Cr6		DIN 333	A	60°	K1111	HSS	14	7				
				60°, with flat	K1112		25	9				
				60°	K1113		14	7				
			R	60°	K1113		HSS	25		9	7	
				60°, with flat	K1114			14				
				60°, left	K1131							
			A	60°, left	K1131		HSS	14		7		
				60°/120°	K1215							
			R	60°/120°	K1215		HSS	14		7		
		60°/120°, left		K1235								
		TP-Norm	A	60°	K1311	HSS	14	7				
					K1313							
				60°, extra long	K1411L							
					K1411M							
		ANSI B 94.11 M-1979	A	60°	K1811	HSS	14	7				
K1911												
Material Group 1.6.3 Tool Steel, high alloyed, annealed 1.2080 X210Cr12 1.2316 X36CrMo17 1.2343 X38CrMoV51 1.2379 X155CrVMo121 1.3343 S6-5-2		DIN 333	A	60°	K1111	HSS	7,5	4				
				60°, with flat	K1112		8,5					
				60°	K1113		7,5					
			R	60°	K1113		HSS			8,5	4	
				60°, with flat	K1114					7,5		
				60°, left	K1131							
			A	60°, left	K1131		HSS			7,5	4	
				60°/120°	K1215							
			R	60°/120°	K1215		HSS			7,5	4	
		60°/120°, left		K1235								
		TP-Norm	A	60°	K1311	HSS	7,5	4				
					K1313							
				60°, extra long	K1411L							
					K1411M							
		ANSI B 94.11 M-1979	A	60°	K1811	HSS	7,5	4				
K1911												




















Type Selection and Recommended Cutting Data - Centre Drills

Material group	Coolant Type	Standard	Form	Remarks	Cat. No.	Cutting material	v _c (m/min)	Feed curve no.	Coolant
Material Group 1.7.1 Stainless and Heat Resistant Steel, ferric (Ni < 2%) martensitic, annealed 1.4002 X6CrAl13 1.4006 X10Cr13 AISI/SAE: BS: 301 301 S 21 303 303 S 21 304 304 S 31 316 316 S 31 317 321		DIN 333	A	60°	K1111	HSS	6,7	4	
				60°, with flat	K1112				
			R	60°	K1113				
				60°, with flat	K1114				
			A	60°, left	K1131				
					K1133				
			B	60°/120°	K1215				
				60°/120°, left	K1235				
		TP-Norm	A	60°	K1311	HSS	6,7	4	
				K1313					
			60°, extra long	K1411L					
				K1411M K1411S					
		ANSI B 94.11 M-1979	A	60°	K1811	HSS	6,7	4	
		B.S. 328	A	60°	K1911	HSS	6,7	4	
		Material Group 1.7.2 Stainless and Heat Resistant Steel, austenitic sulphured e.g. 1.4305 X10CrNiS189		DIN 333	A	60°	K1111	HSS	7,5
60°, with flat	K1112								
R	60°				K1113				
	60°, with flat				K1114				
A	60°, left				K1131				
					K1133				
B	60°/120°				K1215				
	60°/120°, left				K1235				
TP-Norm	A			60°	K1311	HSS	7,5	4	
				K1313					
	60°, extra long			K1411L					
				K1411M K1411S					
ANSI B 94.11 M-1979	A			60°	K1811	HSS	7,5	4	
B.S. 328	A			60°	K1911	HSS	7,5	4	
Material Group 1.7.3 Stainless and Heat Resistant Steel austenitic (Ni > 4%) e.g. 1.4301 X5CrNi1810 14312 G-X10CrNi188 1.4541 X6CrNiTi1810 1.4541 X6CrNiTi17122 1.4837 G-X40CrNiSi2512 AISI 304 316 321				DIN 333	A	60°	K1111	HSS	4,5
		60°, with flat	K1112						
		R	60°		K1113				
			60°, with flat		K1114				
		A	60°, left		K1131				
					K1133				
		B	60°/120°		K1215				
			60°/120°, left		K1235				
		TP-Norm	A	60°	K1311	HSS	4,5	3	
				K1313					
			60°, extra long	K1411L					
				K1411M K1411S					
		ANSI B 94.11 M-1979	A	60°	K1811	HSS	4,5	3	
		B.S. 328	A	60°	K1911	HSS	4,5	3	
















Type Selection and Recommended Cutting Data - Centre Drills

Material group	Coolant Type	Standard	Form	Remarks	Cat. No.	Cutting material	v _c (m/min)	Feed curve no.	Coolant			
Material Group 1.7.4 Stainless Steel Precipitation-Hardened DIN: 1.4542 X5CrNiCuNb1714 AISI/SAE: 630 17-4PH 15-5PH		DIN 333	A	60°	K1111	HSS	4,5	5				
				60°, with flat	K1112		9					
				60°	K1113		4,5					
			R	60°	K1113		9					
				60°, with flat	K1114		4,5					
				60°, left	K1131							
			A	60°, left	K1133							
				B	60°/120°		K1215					
					60°/120°, left		K1235					
			TP-Norm	A	60°		K1311	HSS		4,5	5	
							K1313					
				A	60°, extra long		K1411L					
		K1411M										
		K1411S										
		ANSI B 94.11 M-1979	A	60°	K1811	HSS	4,5	5				
		B.S. 328	A	60°	K1911	HSS	4,5	5				
		Material Group 2.1 Super Alloys Ni- and Co-based up to 900 N/mm ²		DIN 333	A	60°	K1111	HSS	4,5	3		
						60°, with flat	K1112					
60°	K1113											
R	60°, with flat				K1114							
	A				60°, left	K1131						
					K1133							
B	60°/120°				K1215							
	60°/120°, left				K1235							
TP-Norm	A			60°	K1311	HSS	4,5	3				
					K1313							
	A			60°, extra long	K1411L							
					K1411M							
K1411S												
ANSI B 94.11 M-1979	A			60°	K1811	HSS	4,5	3				
B.S. 328	A			60°	K1911	HSS	4,5	3				
Material Group 2.2 Super Alloys Ni- and Co-based 900 up to 1200 N/mm ²		DIN 333	A	60°	K1111	HSS	1,4	3				
				60°, with flat	K1112							
				60°	K1113							
			R	60°, with flat	K1114							
				A	60°, left					K1131		
					K1133							
			B	60°	K1161					K10/20	6	2
				A	60°/120°					K1215	HSS	1,4
		60°/120°, left	K1235									
		TP-Norm	A	60°	K1311	HSS	1,4	3				
					K1313							
			A	60°, extra long	K1411L							
K1411M												
K1411S												
ANSI B 94.11 M-1979	A	60°	K1811	HSS	1,4	3						
B.S. 328	A	60°	K1911	HSS	1,4	3						















Type Selection and Recommended Cutting Data - Centre Drills

Material group	Coolant Type	Standard	Form	Remarks	Cat. No.	Cutting material	v _c (m/min)	Feed curve no.	Coolant			
Material Group 3.1 Cast Iron, soft DIN: 0.6010 GG-10 0.6015 GG-15 0.6020 GG-20 AISI/SAE: BS: A48-20B Grade 150 A48-25B Grade 220 A48-30B A48-40B		DIN 333	A	60°	K1111	HSS	24	12				
							K1111TIN			40		
				60°, with flat	K1112		24					
			R	60°	K1113		K10/20			40		
					K1113TIN					24		
				60°, with flat	K1114							
			A	60°, left	K1131		HSS			24	12	
			R		K1133							
			A	60°	K1161							
			B	60°/120°	K1215		HSS			24	12	
				K1235								
		60°/120°, left		K1235								
		TP-Norm	A	60°	HSS	24	12					
									K1311			
			R						K1313			
			A	60°, extra long					K1411L			
						K1411M						
				K1411S								
ANSI B 94.11 M-1979	A	60°	HSS	24	12							
B.S. 328	A	60°	HSS	24	12							
Material Group 3.2 Cast Iron, soft DIN: 0.6025 GG-25 0.6030 GG-30 0.6035 GG-35 0.6040 GG-40 AISI/SAE: BS: A48-45B Grade 260 A48-50B Grade 300 A48-60B Grade 350 Grade 400		DIN 333	A	60°	K1111	HSS	19	12				
							K1111TIN			32		
				60°, with flat	K1112		19					
			R	60°	K1113		K10/20			32		
					K1113TIN					19		
				60°, with flat	K1114							
			A	60°, left	K1131		HSS			19	12	
			R		K1133							
			A	60°	K1161							
			B	60°/120°	K1215		HSS			19	12	
				K1235								
		60°/120°, left		K1235								
		TP-Norm	A	60°	HSS	19	12					
									K1311			
			R						K1313			
			A	60°, extra long					K1411L			
						K1411M						
				K1411S								
ANSI B 94.11 M-1979	A	60°	HSS	19	12							
B.S. 328	A	60°	HSS	19	12							
Material Group 3.3.1 Nodular Iron (SG) DIN: 0.7040 GGG-40 0.7050 GGG-50 0.7060 GGG-60 AISI/SAE: BS: 60-40-18 420/12 65-45-12 500/7 80-55-06 600/3 Ni-Resist		DIN 333	A	60°	K1111	HSS	19	12				
							K1111TIN			32		
				60°, with flat	K1112		19					
			R	60°	K1113		K10/20			32		
					K1113TIN					19		
				60°, with flat	K1114							
			A	60°, left	K1131		HSS			19	12	
			R		K1133							
			A	60°	K1161							
			B	60°/120°	K1215		HSS			19	12	
				K1235								
		60°/120°, left		K1235								
		TP-Norm	A	60°	HSS	19	12					
									K1311			
			R						K1313			
			A	60°, extra long					K1411L			
						K1411M						
				K1411S								
ANSI B 94.11 M-1979	A	60°	HSS	19	12							
B.S. 328	A	60°	HSS	19	12							















Type Selection and Recommended Cutting Data - Centre Drills

Material group	Coolant Type	Standard	Form	Remarks	Cat. No.	Cutting material	v _c (m/min)	Feed curve no.	Coolant	
Material Group 3.3.2 Nodular Iron (SG) DIN: 0.7060 GGG-60 0.7070 GGG-70 0.7080 GGG-80 AISI/SAE: BS: 80-55-06 600/3 100-70-03 700/2 120-90-02 800/2		DIN 333	A	60°	K1111	HSS	14	10		
							K1111TIN			25
				60°, with flat	K1112		14			
			R	60°	K1113		14			
					K1113TIN					25
				60°, with flat	K1114					14
			A	60°, left	K1131		14			
					K1133					
				60°	K1161					K10/20
		B	60°/120°	K1215	HSS	14	10			
			60°/120°, left	K1235						
		TP-Norm	A	60°	K1311	HSS	14	10		
					K1313					
			60°, extra long	K1411L						
				K1411M						
		K1411S								
		ANSI B 94.11 M-1979	A	60°	K1811	HSS	14	10		
		B.S. 328	A	60°	K1911	HSS	14	10		
Material Group 3.4 Malleable Iron DIN: GTW-40 GTW-45 GTW-55 GTS-35 GTS-55 AISI/SAE: ASTM A47: Gr. 38510, 35018 ASTM A 602:Gr. M3210 SAE J 158: Gr. M4504, M5003		DIN 333	A	60°	K1111	HSS	19	12		
							K1111TIN			32
				60°, with flat	K1112		19			
			R	60°	K1113		19			
					K1113TIN					32
				60°, with flat	K1114					19
			A	60°, left	K1131		19			
					K1133					
				60°	K1161					K10/20
		B	60°/120°	K1215	HSS	19	12			
			60°/120°, left	K1235						
		TP-Norm	A	60°	K1311	HSS	19	12		
					K1313					
			60°, extra long	K1411L						
				K1411M						
		K1411S								
		ANSI B 94.11 M-1979	A	60°	K1811	HSS	19	12		
		B.S. 328	A	60°	K1911	HSS	19	12		
Material Group 4.1 Copper, pure DIN: 2.0060 E-Cu 2.0080 F-Cu 2.0090 SF-Cu 2.0070 SE-Cu		DIN 333	A	60°	K1111	HSS	42	5		
							K1111TIN			53
				60°, with flat	K1112		42			
			R	60°	K1113		42			
					K1113TIN					53
				60°, with flat	K1114					42
			A	60°, left	K1131		42			
					K1133					
				60°	K1161					K10/20
		B	60°/120°	K1215	HSS	42				
			60°/120°, left	K1235						
		TP-Norm	A	60°	K1311	HSS	42	5		
					K1313					
			60°, extra long	K1411L						
				K1411M						
		K1411S								
		ANSI B 94.11 M-1979	A	60°	K1811	HSS	42	5		
		B.S. 328	A	60°	K1911	HSS	42	5		


















Type Selection and Recommended Cutting Data - Centre Drills

Material group	Coolant Type	Standard	Form	Remarks	Cat. No.	Cutting material	v _c (m/min)	Feed curve no.	Coolant				
Material Group 4.2 Copper-Nickel:Zinc Alloys German Silver DIN: 2.0770 CuNi10Zn42Pb (Ns4711Pb) 2.0790 CuNi18Zn19Pb (Ns6218Pb)		DIN 333	A	60°	K1111	HSS	26	8					
				60°, with flat	K1112								
			R	60°	K1113								
				60°, with flat	K1114								
			A	60°, left	K1131								
					K1133								
			A	60°	K1161					K10/20	80	6	
					B					60°/120°	K1215	HSS	26
		60°/120°, left	K1235										
		TP-Norm	A	60°	K1311	HSS	26	8					
					K1313								
			A	60°, extra long	K1411L								
					K1411M								
					K1411S								
ANSI B 94.11 M-1979	A	60°	K1811	HSS	26	8							
B.S. 328	A	60°	K1911	HSS	26	8							
Material Group 4.3 Brass, brittle free machining DIN: 2.0380 CuZn39Pb2 (Ms58) 2.0401 CuZn39Pb3 2.0402 CuZn40Pb2 BS: CZ 121, CZ 122		DIN 333	A	60°	K1111	HSS	53	12					
				60°, with flat	K1112								
				R	60°						K1113		
					60°, with flat						K1114		
			A	60°, left	K1131								
					K1133								
			A	60°	K1161		K10/20	100			8		
					B		60°/120°	K1215		HSS	53	12	
			60°/120°, left	K1235									
			TP-Norm	A	60°		K1311	HSS		53	12		
		K1313											
		A		60°, extra long	K1411L								
					K1411M								
		K1411S											
		ANSI B 94.11 M-1979	A	60°	K1811	HSS	53	12					
		B.S. 328	A	60°	K1911	HSS	53	12					
		Material Group 4.4 Brass, tough DIN: 2.0240 CuZn15 (Ms85) 2.0335 CuZn36 (Ms63) 2.0330 CuZn36Pb1 2.0375 CuZn36Pb3 2.0360 CuZn40 (Ms60) AISI/SAE: Naval Brass CZ 112 C51000 SPecial Brass. tough DIN: 2.0470 CuZn28Sn1 (SoMs71) 2.0490 CuZn31Si1 (SoMs68) BS: CZ 108 CZ 114		DIN 333	A	60°	K1111	HSS		34	10		
						60°, with flat	K1112						
R	60°				K1113								
	60°, with flat				K1114								
A	60°, left				K1131								
					K1133								
A	60°				K1161	K10/20	100		6				
					B	60°/120°	K1215		HSS				
60°/120°, left	K1235												
TP-Norm	A			60°	K1311	HSS	34	10					
					K1313								
	A			60°, extra long	K1411L								
					K1411M								
K1411S													
ANSI B 94.11 M-1979	A	60°	K1811	HSS	34	10							
B.S. 328	A	60°	K1911	HSS	34	10							




















Type Selection and Recommended Cutting Data - Centre Drills

Material group	Coolant Type	Standard	Form	Remarks	Cat. No.	Cutting material	v _c (m/min)	Feed curve no.	Coolant			
Material Group 4.5 Bronze, soft DIN: 2.1020 CuSn6 (SnBz6) 2.1086 G-CuSn10Zn (Rg 10) 2.1090 G-CuSn7ZnPb (Rg 7) AISI: Am BS: CDA 544 PB 102 CDA 65500 CDA 656		DIN 333	A	60°	K1111	HSS	30	10				
				60°, with flat	K1112							
			R	60°	K1113							
				60°, with flat	K1114							
			A	60°, left	K1131							
					K1133							
			A	60°	K1161					K10/20	90	6
			B	60°/120°	K1215					HSS	30	10
		60°/120°, left		K1235								
		TP-Norm	A	60°	K1311	HSS	30	10				
					K1313							
			60°, extra long	K1411L								
				K1411M								
		K1411S										
ANSI B 94.11 M-1979	A	60°	K1811	HSS	30	10						
B.S. 328	A	60°	K1911	HSS	30	10						
Material Group 4.6 Bronze, special (Aluminiumbronze, Berylliumbronze, Siliconbronze etc.) up to 200 HB DIN: 2.0916 CuAl5 2.0932 CuAl8Fe3 (AlBz8Fe) 2.0966 CuAl10Ni5Fe4 (AlBz10Ni) 2.1247 CuBe2F40 2.1525 CuSi3Mn AMPKO 8... 16 AISI/SAE: AMPKO 8...16 CT-00 10-N 75Cu-5Al 77Cu-15Pb-7Sn-1Fe-1C CDA 544 (PhBz) CDA 65600 BS: CA 104		DIN 333	A	60°	K1111	HSS	24	7				
				60°, with flat	K1112							
			R	60°	K1113							
				60°, with flat	K1114							
			A	60°, left	K1131							
					K1133							
			A	60°	K1161					K10/20	60	6
			B	60°/120°	K1215					HSS	24	7
		60°/120°, left		K1235								
		TP-Norm	A	60°	K1311	HSS	24	7				
					K1313							
			60°, extra long	K1411L								
				K1411M								
		K1411S										
ANSI B 94.11 M-1979	A	60°	K1811	HSS	24	7						
B.S. 328	A	60°	K1911	HSS	24	7						
Material Group 4.7 Bronze, special (Aluminiumbronze, Berylliumbronze) 200-300 HB DIN: 2.0978 CuAl11Ni6Fe5 (AlBz11Ni) 2.1245 CuBe1,7 F55 2.1247 CuBe2F70 AMPKO 20		DIN 333	A	60°	K1111	HSS	13	5				
				60°, with flat	K1112							
			R	60°	K1113							
				60°, with flat	K1114							
			A	60°, left	K1131							
					K1133							
			A	60°	K1161					K10/20	25	2
			B	60°/120°	K1215					HSS	13	5
		60°/120°, left		K1235								
		TP-Norm	A	60°	K1311	HSS	13	5				
					K1313							
			60°, extra long	K1411L								
				K1411M								
		K1411S										
ANSI B 94.11 M-1979	A	60°	K1811	HSS	13	5						
B.S. 328	A	60°	K1911	HSS	13	5						
Material Group 4.8 Bronze, special (Aluminiumbronze, Berylliumbronze) above 300 HB		DIN 333	A	60°	K1161	K10/20	20	2				








Type Selection and Recommended Cutting Data - Centre Drills

Material group	Coolant Type	Standard	Form	Remarks	Cat. No.	Cutting material	v _c (m/min)	Feed curve no.	Coolant			
Material Group 5.1 Aluminium commercially pure, Aluminium-Alloy, wrought		DIN 333	A	60°	K1111	HSS	60	16				
				60°, with flat	K1112							
			R	60°	K1113							
				60°, with flat	K1114							
			A	60°, left	K1131							
					K1133							
			A	60°	K1161					K10/20	220	9
			B	60°/120°	K1215					HSS	60	16
		60°/120°, left		K1235								
		TP-Norm	A	60°	K1311	HSS	60	16				
					K1313							
			A	60°, extra long	K1411L							
					K1411M							
					K1411S							
		ANSI B 94.11 M-1979	A	60°	K1811	HSS	60	16				
B.S. 328	A	60°	K1911	HSS	60	16						
Material Group 5.2 Aluminium-Silicon-Alloys cast below 10% si DIN: 3.2341 G-AISi5Mg 3.2151 G-AISi6Cu4 Int'l Reg. Record 3052 3054 BS: LM 4, 12, 16, 21, 22, 24, 25, 27 US: AA 296.0(B295) - A 333.1 354.0 - A 360.2 361.0 / 361.1 - 364.0/364.2 A380.0		DIN 333	A	60°	K1111	HSS	38	12				
				60°, with flat	K1112							
			R	60°	K1113							
				60°, with flat	K1114							
			A	60°, left	K1131							
					K1133							
			A	60°	K1161					K10/20	170	8
			B	60°/120°	K1215					HSS	38	12
		60°/120°, left		K1235								
		TP-Norm	A	60°	K1311	HSS	38	12				
					K1313							
			A	60°, extra long	K1411L							
					K1411M							
					K1411S							
		ANSI B 94.11 M-1979	A	60°	K1811	HSS	38	12				
B.S. 328	A	60°	K1911	HSS	38	12						
Material Group 5.3 Aluminium-Silicon-Alloys cast 10-14 % Si DIN: 3.2381 G-AISi10Mg 3.2581 G-AISi12 BS LM 6, 9, 13, 20 US: AA336 (A332)-339.1 369.0 / 369.1 343.0 - 385.1 413		DIN 333	A	60°	K1111	HSS	26	12				
				60°, with flat	K1112							
			R	60°	K1113							
				60°, with flat	K1114							
			A	60°, left	K1131							
					K1133							
			A	60°	K1161					K10/20	150	8
			B	60°/120°	K1215					HSS	26	12
		60°/120°, left		K1235								
		TP-Norm	A	60°	K1311	HSS	26	12				
					K1313							
			A	60°, extra long	K1411L							
					K1411M							
					K1411S							
		ANSI B 94.11 M-1979	A	60°	K1811	HSS	26	12				
B.S. 328	A	60°	K1911	HSS	26	12						
Material Group 5.4 Aluminium-Silicon-Alloys cast above 14 % Si		DIN 333	A	60°	K1161	K10/20	100	7				

Type Selection and Recommended Cutting Data - Centre Drills

Material group	Coolant Type	Standard	Form	Remarks	Cat. No.	Cutting material	v _c (m/min)	Feed curve no.	Coolant	
Material Group 6.1 Titanium, commercially pure (99,8%) and Titanium-alloys up to 700 N/mm ² DIN: 3.7034 Ti99,7 3.7124 TiCu2 3.7024/25 commer, pure 3.7034/35 commer, pure 3.7055 commer, pure 3.7064/65 commer, pure BS: TA 1-9, 21-24 52-55, 58 AMS: 4900, 4902, 4921 4941, 4942 ASTM: Gr. 1-3, 4, 7, 11		DIN 333	A	60°	K1111	HSS	7,1	4		
				60°, with flat	K1112					
			R	60°	K1113					
				60°, with flat	K1114					
			A	60°, left	K1131					
			R		K1133					
			A	60°	K1161	K10/20	20	2		
			B	60°/120°	K1215	HSS	7,1	4		
				60°/120°, left	K1235					
			TP-Norm	A	60°	K1311	HSS	7,1	4	
						K1313				
				A	60°, extra long	K1411L				
						K1411M				
				K1411S						
ANSI B 94.11 M-1979	A	60°	K1811	HSS	7,1	4				
B.S. 328	A	60°	K1911	HSS	7,1	4				
Material Group 6.2 Titanium, commercially pure and Titanium-alloys above 700 N/mm ²		DIN 333	A	60°	K1161	K10/20	14	2		
Material Group 8.1 Zinc-Alloys		DIN 333	A	60°	K1111	HSS	60	16		
				60°, with flat	K1112					
			R	60°	K1113					
				60°, with flat	K1114					
			A	60°, left	K1131					
			R		K1133					
			A	60°	K1161	K10/20	150	7		
			B	60°/120°	K1215	HSS	60	16		
				60°/120°, left	K1235					
			TP-Norm	A	60°	K1311	HSS	60	16	
						K1313				
				A	60°, extra long	K1411L				
						K1411M				
				K1411S						
ANSI B 94.11 M-1979	A	60°	K1811	HSS	60	16				
B.S. 328	A	60°	K1911	HSS	60	16				
Material Group 9.1 Thermoplastics without filler PP Polypropylen PS Polystyrol POM Polyoxymethylen (Delrin) PC Polycarbonat (Makrolon) PA Polyamid (Ultramid) PMMA Polymethylmetahcrylat Acrylic, Acetal, ABS, Acrylonitrile-Butadiene-Styrene, Cellulose Acetate, Epoxy, Melamine, Fuean, Phenolic, Polysulfone, -styrene, -arylether, -imide, -ethylene, -butadiene, -urethane, Fluorcarbons: TFE Tetrafluoroethylene, CTFE Chlorotrifluoroethylene		DIN 333	A	60°	K1111	HSS	36	12		
				60°, with flat	K1112					
			R	60°	K1113					
				60°, with flat	K1114					
			A	60°, left	K1131					
			R		K1133					
			A	60°	K1161	K10/20	40	10		
			B	60°/120°	K1215	HSS	36	12		
				60°/120°, left	K1235					
			TP-Norm	A	60°	K1311	HSS	36	12	
						K1313				
				A	60°, extra long	K1411L				
						K1411M				
				K1411S						
ANSI B 94.11 M-1979	A	60°	K1811	HSS	36	12				
B.S. 328	A	60°	K1911	HSS	36	12				

Type Selection and Recommended Cutting Data - Centre Drills dry

Material group	Coolant Type	Standard	Form	Remarks	Cat. No.	Cutting material	v _c (m/min)	Feed curve no.	Coolant		
Material Group 9.2 Plastics, reinforced with organic fillers Pertinax Resitex Toufnell		DIN 333	A	60°	K1111	HSS	21	8			
				K1111TIN	32						
			60°, with flat	K1112	21						
			R	60°	K1113		32				
				K1113TIN	21						
			60°, with flat	K1114							
			A	60°, left	K1131						
			R		K1133						
			A	60°	K1161		K10/20			67	6
			B	60°/120°	K1215		HSS			21	8
		60°/120°, left		K1235							
		TP-Norm	A	60°	K1311	HSS	21	8			
					K1313						
					60°, extra long					K1411L	
					K1411M						
K1411S											
ANSI B 94.11 M-1979	A	60°	K1811	HSS	21	8					
B.S. 328	A	60°	K1911	HSS	21	8					
Material Group 9.3 Plastics, reinforced with anorganic fillers GFK - Fibreglass reinfor. CFK - Carbonfiber reinfor. FORMICA/RESOPAL		DIN 333	A	60°	K1161	K10/20	67	6			

How to find your reamer!

1

Choose the material group that correspond with your work-piece material.

2

Choose the type of hole for your application.

3

In the centre column (step 3) recommends an appropriate selection of standard tools to choose from. The most suitable tool for your application is determined by deciding upon the tool material. Consideration should be taken of the cutting data (see step 4).

4

The cutting speed for the selected tool can be obtained directly from column v_c .

5

Upon the selection of the recommended feed curve number (shown under column Feed Curve) the feed per revolution can be obtained by utilising the nomogram on page 386.

Reamers

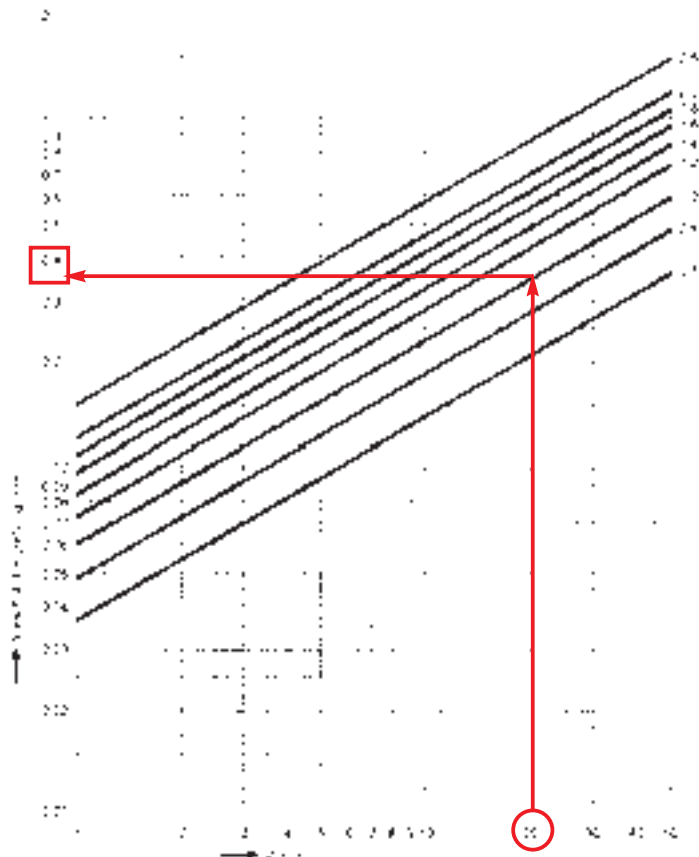
Type Selection and Recommended Cutting Data

Material to be machined: Typical Examples	Type of hole			Tool material	Cutting speeds v_c (m/min)	Feed curve
	Type of reamer recommended					
Material Group 1.1 Low- and Non-Alloy Steel and Cast Steel up to 700 N/mm^2 DIN: 1 1.0037 St37-2 1.0044 St44-2 1.0301 C 10 G 1.0345 H I 1.0401 C 15 G 1.0416 GS-38 1.0425 H II 1.0435 H III 1.0501 C35 1.0551 GS-52 1.0711 9S20 1.0718 9SMnPb28 1.0726 35S20 1.1121 Ck 10 G	F 1342 F 4142	F 1352 F4152 F 7133 F 1342 F 4142	F 1342 F 4142	HSS-E	10-16	1,0
			F 1353 F 4153			
	F 1371 F 4171 F 1362 F 4162	F 1371 F 4171 F 1362 F 4162	F 1362 F 4162	HM	12-18	1,0
			3		4	5

Recommended Values for Feed

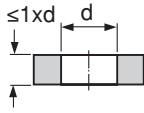
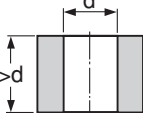
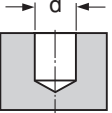
(Feed depends on the diameter)

5



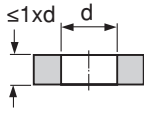
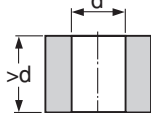
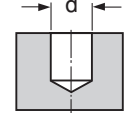
Reamers

Type Selection and Recommended Cutting Data

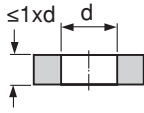
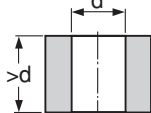
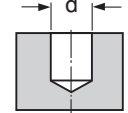
Material to be machined: Typical Examples	Type of hole			Tool material	Cutting speeds V_c (m/min)	Feed curve
						
	Type of reamer recommended					
Material Group 1.1.1 - 1.1.3 Low- and Non-Alloy Steel and Cast Steel up to 700 N/mm ² DIN: 1.0037 St37-2 1.0044 St44-2 1.0301 C 10 G 1.0345 H I 1.0401 C 15 G 1.0416 GS-38 1.0425 H II 1.0435 H III 1.0501 C35 1.0551 GS-52 1.0711 9S20 1.0718 9SMnPb28 1.0726 35S20 1.1121 Ck 10 G 1.1132 Cq 15 G 1.1141 Ck 15 G 1.7131 16MnCr5G 1.7147 20MnCr5G	F 1342 F 4142	F 1352 F 4152 F 7133 F 1342 F 4142	F 1342 F 4142	HSS-Co	10-16	1,0
		F 1353 F 4153				2,0
Material Group 1.1.1 - 1.1.3 Low- and Non-Alloy Steel and Cast Steel up to 700 N/mm ² DIN: 1.0037 St37-2 1.0044 St44-2 1.0301 C 10 G 1.0345 H I 1.0401 C 15 G 1.0416 GS-38 1.0425 H II 1.0435 H III 1.0501 C35 1.0551 GS-52 1.0711 9S20 1.0718 9SMnPb28 1.0726 35S20 1.1121 Ck 10 G 1.1132 Cq 15 G 1.1141 Ck 15 G 1.7131 16MnCr5G 1.7147 20MnCr5G	F 1371 F 4171 F 1362 F 4162	F 1371 F 4171 F 1362 F 4162	F 1362 F 4162	Carbide	12-18	1,0
Material Group 1.2 Steel and Cast Steel 700 up to 1000 N/mm ² DIN: 1.0070 St70-2 1.0503 C45V 1.0554 GS-70 1.0601 C60 U, N 1.0728 60 S20 1.1167 36Mn5 V 1.1191 Ck45 V 1.5120 38MnSi4 V 1.5755 31NiCr14 V 1.7033 34Cr4 V	F 1362 F 4162	F 1362 F 4162	F 1362 F 4162	Carbide	8-12	1,0
	F 1342 F 4142	F 1352 F 4152 F 7133 F 1342 F 4142	F 1342 F 4142			HSS-Co
Material Group 1.3 and 1.4 Steel above 1000 N/mm ² DIN: 1.5121 46MnSi4 V 1.5736 36NiCr10 V 1.6511 36CrNiMo4 V 1.7225 42CrMo4 V 1.8159 50CrV4 V	F 1371 F 4171 F 1362 F 4162	F 1371 F 4171 F 1362 F 4162	F 1362 F 4162	Carbide	5-10	0,8
Material Group 1.6.1 - 1.6.3, 1.7.1 Tool Steel, annealed e.g. 1.1654 C110W 1.2713 55NiCrMoV6 1.2080 X210Cr12 1.2343 X38CrMoV51	F 1362 F 4162	F 1362 F 4162	F 1362 F 4162	Carbide	5-10	1,0
	F 1342 F 4142	F 1352 F 4152 F 7133 F 1342 F 4142	F 1342 F 4142			HSS-Co

Reamers

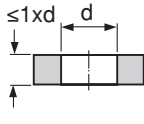
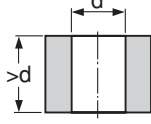
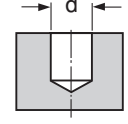
Type Selection and Recommended Cutting Data

Material to be machined: Typical Examples	Type of hole			Tool material	Cutting speeds V_c (m/min)	Feed curve
						
	Type of reamer recommended					
Material Group 1.7.3 Stainless and Heat Resistant Steel, austenitic (Ni > 4 %) DIN: 1.4301 X5CrNi18 10 1.4312 G-X10CrNi18 8 1.4541 X6CrNiTi18 10 1.4571 X6CrNiTi17 12 2 1.4837 G-X40CrNiSi25 12	F 1362 F 4162	F 1362 F 4162	F 1362 F 4162	Carbide	6-10	0,8
	F 1342 F 4142	F 1352 F 4152 F 1342 F 4142	F 1342 F 4142	HSS-Co	3-5	0,8
Material Group 3.1 Cast Iron, soft DIN: 0.6010 GG-10 0.6015 GG-15 0.6020 GG-20	F 1362 F 4162	F 1362 F 4162	F 1362 F 4162	Carbide	10-30	1,2
	F 1342 F 4142	F 1342 F 4142	F 1342 F 4142	HSS-Co	8-12	1,2
Material Group 3.2 Cast Iron, soft DIN: 0.6025 GG-25 0.6030 GG-30 0.6035 GG-35 0.6040 GG-40	F 1362 F 4162	F 1362 F 4162	F 1362 F 4162	Carbide	10-30	1,1
	F 1342 F 4142	F 1342 F 4142	F 1342 F 4142	HSS-Co	6-10	1,0
Material Group 3.3 Nodular Iron (SG) DIN: 0.7040 GGG-40 0.7050 GGG-50 0.7060 GGG-60	F 1362 F 4162	F 1362 F 4162	F 1362 F 4162	Carbide	10-20	1,0
	F 1342 F 4142	F 1342 F 4142	F 1342 F 4142	HSS-Co	8-10	1,0
Material Group 3.4 Malleable Iron DIN: GTW-40 GTW-45 GTW-55 GTS-35 GTS-55	F 1362 F 4162 F 1371 F 4171	F 1362 F 4162 F 1371 F 4171	F 1362 F 4162 F 1371 F 4171	Carbide	10-16	1,0
	F 1342 F 4142	F 1342 F 4142 F 1352 F 4152 F 7133	F 1342 F 4142	HSS-Co	8-12	1,0
Material Group 4.1 Copper, pure DIN: 2.0060 E-Cu 2.0070 SE-Cu 2.0080 F-Cu 2.0090 SF-Cu	F 1342 F 4142	F 1352 F 4152 F 7133	F 1342 F 4142	HSS-Co	12-18	1,2
		F 1353 F 4153				2,0
	F 1371 F 4171 F 1362 F 4162	F 1371 F 4171 F 1362 F 4162	F 1362 F 4162	Carbide	20-40	2,0

Reamers Type Selection and Recommended Cutting Data

Material to be machined: Typical Examples	Type of hole			Tool material	Cutting speeds V_c (m/min)	Feed curve
						
	Type of reamer recommended					
Material Group 4.3 Brass, brittle, free machining DIN: 2.0380 CuZn39Pb2 (Ms58) 2.0401 CuZn39Pb3 2.0402 CuZn40Pb2	F 1342 F 4142	F 1342 F 4142	F 1342 F 4142	HSS-Co	16–20	1,2
	F 1362 F 4162	F 1362 F 4162	F 1362 F 4162	Carbide	20–30	1,2
Material Group 4.4 – 4.6 Brass, tough e.g. 2.0335 CuZn36 (Ms63) 2.0375 CuZn36Pb3 Bronze Bronze e.g. 2.1090 G-CuSn7ZnPb(Rg7)	F 1342 F 4142	F 1352 F 4152 F 1342 F 4142	F 1342 F 4142	HSS-Co	8–12	1,0
	F 1362 F 4162	F 1362 F 4162	F 1362 F 4162	Carbide	20–30	1,0
Material Group 4.7 – 4.8 Bronze, special e.g. AMPCO 2.1245 CuBe1,7F55	F 1371 F 4171 F 1362 F 4162	F 1371 F 4171 F 1362 F 4162	F 1362 F 4162	Carbide	5–10	0,8
Material Group 5.1 Aluminium, commercially pure Aluminium-Alloy, wrought DIN: 3.0255 Al99,5 3.0615 AlMgSiPb 3.2315 AlMgSi1 3.3211 Almg1SiCu 3.3535 AlMg3 3.4365 AlZnMgCu1,5		F 1353 F 4153		HSS-Co	16–20	2,0
	F 1352 F 4152 F 7133	F 1352 F 4152 F 7133	F 1342 F 4142 F 7112			1,2
Material Group 5.2 Aluminium-Silicon-Alloys cast below 10 % Si. DIN: 3.2151 G-AISi6Cu4 3.2341 G-AISi5Mg		F 1353 F 4153		HSS-Co	12–16	2,0
	F 1352 F 4152 F 7133 F 1342 F 4142	F 1352 F 4152 F 7133	F 1342 F 4142			1,2
Material Group 5.3 Aluminium-Silicon-Alloys cast 10–14 % Si. DIN: 3.2381 G-AISi10Mg 3.2581 G-AISi12	F 1342 F 4142	F 1342 F 4142 F 1352 F 4152 F 7133	F 1342 F 4142	HSS-Co	8–12	1,2
	F 1371 F 4171 F 1362 F 4162	F 1371 F 4171 F 1362 F 4162	F 1362 F 4162	Carbide	12–20	1,2

Reamers Type Selection and Recommended Cutting Data

Material to be machined: Typical Examples	Type of hole			Tool material	Cutting speeds V_c (m/min)	Feed curve
						
Type of reamer recommended						
Material Group 5.4 Aluminium-Silicon-Alloys cast above 14 % Si DIN: AlSi17Cu4 AlSi21CuNiMg AlSi25CuNiMg	F 1362 F 4162	F 1362 F 4162	F 1362 F 4162	Carbide	10–16	1,0
Material Group 6.1 Titanium, commercially pure (99,8%) And Titanium-alloys up to 700 N/mm ² e.g. 3.7034 Ti99,7 3.7124TiCu2	F 1362 F 4162	F 1362 F 4162	F 1362 F 4162	Carbide	6–10	0,8
	F 1342 F 4142	F 1352 F 4152 F 1342 F 4142	F 1342 F 4142	HSS-Co	3–5	0,8
Material Group 6.2 Titanium, commercially pure and Titanium-alloys above 700 N/mm ² e.g. 3.7164 TiAl6V4	F 1371 F 4171 F 1362 F 4162	F 1371 F 4171 F 1362 F 4162	F1362 F 4162	Carbide	5–10	0,8
Material Group 7.1 Magnesium-Alloys, wrought and cast DIN: 3.5612 MgAl6Zn 3.5812 MgAl8Zn G-MgAl9Zn2 3.5200 MgMn2 (M1) 3.5912 G-MgAl9Zn1(AZ91)	F 1342 F 4142	F 1342 F 4142	F 1342 F 4142	HSS-Co	16–20	1,2
	F 1362 F 4162	F 1362 F 4162	F 1362 F 4162	Carbide	16–20	1,2
Material Group 8.1 Zinc-Alloys e.g. 2.2143 GD-ZnAl4Cu3		F 1353 F 4153		HSS-Co		2,0
	F 1352 F 4152 F 7133	F 1352 F 4152 F 7133	F 1342 F 4142 F 7112		16–20	1,2
Material Group 9.1 Thermoplastics without filler PA Polyamid (Ultramid) PC Polycarbonat (Makrolon)		F 1353 F 4153		HSS-Co		2,0
	F 1352 F 4152 F 7133	F 1352 F 4152 F 7133	F 1342 F 4142 F 7112		16–20	1,2
Material Group 9.2 and 9.3 Plastics, reinforced with organic fillers GFK - Fibreglass reinfor. CFK - Carbon Fibre reinfor. FORMICA/RESOPAL	F 1371 F 4171 F 1362 F 4162	F 1371 F 4171 F 1362 F 4162	F1362 F 4162	Carbide	5–10	0,8

Reamers

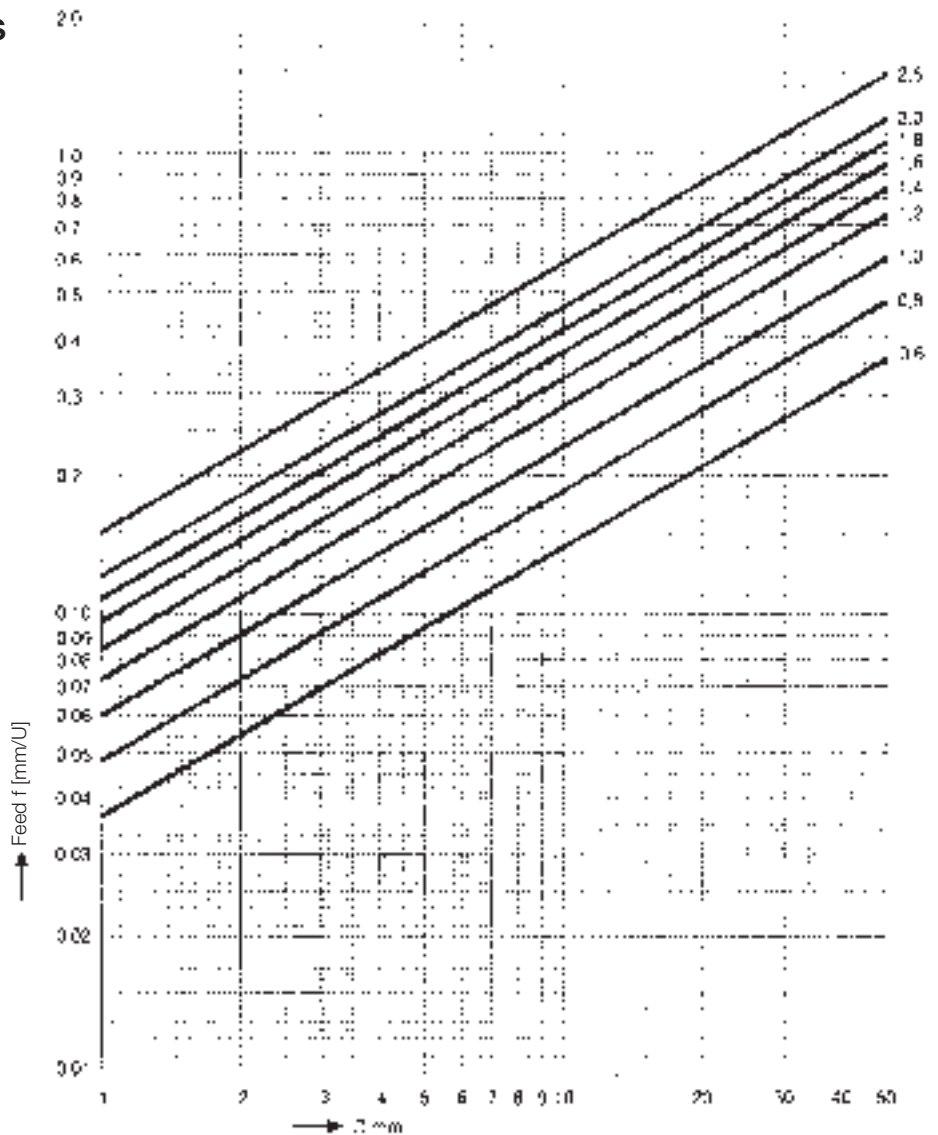
Type Selection and Recommended Cutting Data

Feed

Feed Curve No.	Ø mm						
	2,5	4	6,3	10	16	25	40
	Feed [mm/rev]						
2,5	0,25	0,33	0,45	0,58	0,75	1,0	1,3
2,0	0,2	0,27	0,36	0,46	0,6	0,8	1,0
1,8	0,18	0,24	0,32	0,41	0,54	0,72	0,9
1,6	0,16	0,22	0,29	0,37	0,48	0,64	0,8
1,4	0,14	0,2	0,25	0,32	0,42	0,56	0,7
1,2	0,12	0,16	0,22	0,28	0,36	0,48	0,6
1,0	0,1	0,14	0,18	0,23	0,3	0,4	0,5
0,8	0,08	0,11	0,15	0,18	0,24	0,32	0,4
0,6	0,06	0,08	0,11	0,14	0,18	0,24	0,3

Recommended Values for Feed

(Feed depends on the diameter)



Reamers with straight shank Dimensions

TITEX PLUS Cat. No.	F 11 ..			F 13 ..			F 12 .. F 13 ..		
Standard	DIN 206			DIN 212			DIN 859		
above – up to	l_1	l_2	$d_2 e9$	l_1	l_2	$d_2 h9$	l_1	l_2	$d_2 e9$
0,75– 1,06	34	13		34	5,5				
1,06– 1,18	36	15		36	6,5				
1,19– 1,32	38	17		38	7,5				
1,32– 1,5	41	20		40	8				
1,5 – 1,7	44	21		43	9				
1,7 – 1,9	47	23		46	10				
1,9 – 2,12	50	25		49	11	$d_1 = d_2$			
2,12– 2,36	54	27		53	12				
2,36– 2,65	58	29		57	14				
2,65– 3,0	62	31		61	15				
3,0 – 3,35	66	33		65	16				
3,35– 3,75	71	35		70	18				
3,75– 4,25	76	38		75	19	4	76	38	
4,25– 4,75	81	41		80	21	4,5	81	41	
4,75– 5,3	87	44		86	23	5	87	44	
5,3 – 6,0	93	47		93	26	5,6	93	47	
6,0 – 6,7	100	50		101	28	6,3	100	50	
6,7 – 7,5	107	54		109	31	7,1	107	54	
7,5 – 8,5	115	58		117	33	8	115	58	
8,5 – 9,5	124	62		125	36	9	124	62	
9,5 –10,6	133	66		133	38	10	133	66	
10,6 –11,8	142	71	$d_1 = d_2$	142	41	10	142	71	$d_1 = d_2$
11,8 –13,2	152	76		151	44	10	152	76	
13,2 –14,0	163	81		160	47	12,5	163	81	
14,0 –15,0	163	81		162	50	12,5	163	81	
15,0 –16,0	175	87		170	52	12,5	175	87	
16,0 –17,0	175	87		175	54	14	175	87	
17,0 –18,0	188	93		182	56	14	188	93	
18,0 –19,0	188	93		189	58	16	188	93	
19,0 –21,2	201	100		195	60	16	201	100	
21,2 –23,6	215	107					215	107	
23,6 –26,5	231	115					231	115	
26,5 –30,0	247	124					247	124	
30,0 –33,5	265	133					265	133	
33,5 –37,5	284	142					284	142	
37,5 –42,5	305	152					305	152	
42,5 –47,5	326	163					326	163	
47,5 –53,0	347	174					347	174	
53,0 –60,0	367	184					367	181	
60,0 –67,0	387	194					387	194	
67,0 –75,0	406	203					406	203	

Reamers with Morse Taper Shank Dimensions

TITEX PLUS Cat. No.	F 41 .. F 42 ..			F 43 ..			F 45 ..		
Standard	DIN 208 DIN 8094			DIN 209			DIN 311		
above – up to	l ₁	l ₂	MT ¹⁾	l ₁	l ₂	MT ¹⁾	l ₁	l ₂	MT ¹⁾
4,75– 5,3	133	23	1						
5,3 – 6,0	138	26	1						
6,0 – 6,7	144	28	1				151	75	1
6,7 – 7,5	150	31	1				156	80	1
7,5 – 8,5	156	33	1				161	85	1
8,5 – 9,5	162	36	1				166	90	1
9,5 –10,6	168	38	1				171	95	1
10,6 –11,8	175	41	1				176	100	1
11,8 –13,2	182	44	1				199	105	2
13,2 –14,0	189	47	1				209	115	2
14,0 –15,0	204	50	2				219	125	2
15,0 –16,0	210	52	2				229	135	2
16,0 –17,0	214	54	2				251	135	3
17,0 –18,0	219	56	2				261	145	3
18,0 –19,0	223	58	2				261	145	3
19,0 –20,0	228	60	2	228	36	2	271	155	3
20,0 –21,2	232	62	2	232	36	2	271	155	3
21,2 –22,4	237	64	2	237	36	2	281	165	3
22,4 –23,6	241	66	2	241	36	2	281	165	3
23,6 –25,0	268	68	3	268	36	3	296	180	3
25,0 –26,5	273	70	3	273	36	3	296	180	3
26,5 –28,0	277	71	3	277	38	3	311	195	3
28,0 –30,0	281	73	3	281	38	3	311	195	3
30,0 –31,5	285	75	3	285	38	3	326	210	3
31,5 –33,5	317	77	4	317	38	4	354	210	4
33,5 –35,5	321	78	4	321	38	4	364	220	4
35,5 –37,5	325	79	4	325	42	4	364	220	4
37,5 –40,0	329	81	4	329	42	4	374	230	4
40,0 –42,5	333	82	4	333	42	4	374	230	4
42,5 –45,0	336	83	4	336	42	4	384	240	4
45,0 –47,5	340	84	4	340	45	4	384	240	4
47,5 –50,0	344	86	4	344	45	4	394	250	4

¹⁾ MT = Morse Taper

The TITEX-Programme from „A-Z“

Do you know the catalog number of the tool you require. If so, the following alphabetical-numerical table will tell you on which page of the catalog you can find the relevant tool.

Cat. No.	Page	Cat. No.	Page	Cat. No.	Page	Cat. No.	Page
A1111	22	A1547	69	A4411	93	F4162	251
A1114	24	A1549TFL	70	A4422	95	F4171	252
A1115	24	A1549TIP	71	A4447	96	F4214	253
A1121	25	A1611	72	A4611	97	F4535	254
A1123	26	A1622	73	A4622	98	F6134	255
A1124	26	A1722	75	A4722	99	F7133	255
A1141	27	A1822	75	A5971	188	K1111	217
A1148	28	A1922L	76	A6292TIN	100	K1111TIN	218
A1149TFL	30	A1922S	76	A6485TFT	189	K1112	218
A1149TIN	31	A2258	77	A6488TML	192	K1113	219
A1163	126	A3143	78	A6585TFT	195	K1113TIN	219
A1164TIN	127	A3153	80	A6588TML	195	K1114	220
A1166	129	A3162	139	A6685TFP	196	K1131	220
A1166TIN	131	A3265TFL	141	A6785TFP	197	K1133	221
A1167A	132	A3265TIN	145	A6885TFP	198	K1161	221
A1167B	133	A3269TFL	146	A6985TFP	198	K1215	222
A1174	134	A3285TFL	147	A811XHNI	199	K1235	222
A1174C	134	A3285 TIN	151	A821XHNI	199	K1311	223
A1211	33	A3365TFT	153	A831XHNI	200	K1313	223
A1211TIN	39	A3367	157	AX195TIN	201	K1411L	224
A1212	40	A3376TFL	159	AX196TFL	203	K1411M	224
A1213	42	A3385TFL	160	E1111	209	K1411S	225
A1219	43	A3385TIN	165	E3111	210	K1811	225
A1222	44	A3387	167	E6818	211	K1911	226
A1231	47	A3388TFT	168	E6819	212	K2511	226
A1232	49	A3486TIP	170	E7818	213	K2513	227
A1234	50	A3487	170	E7819	214	K2929	228
A1241	52	A3586TIP	171	E6819TIN	213	K3164TIN	204
A1244	53	A3687	172	F1111	231	K4929	228
A1247	56	A3865TFL	173	F1131	232	K6221	101
A1249TFL	58	A3865TIN	175	F1211	234	K6222	102
A1249TIN	59	A3885TFL	176	F1231	234	K6223	102
A1254TFT	60	A3885TIN	178	F1342	235	K7221	103
A1263	135	A3965TFT	180	F1352	237	K7222	103
A1272	136	A3967	182	F1352HUN	241	K7223	104
A1273	137	A3976TFL	183	F1353	242	Z2111	105
A1276TFL	138	A3985TFL	184	F1362	243	Z2112	105
A2971	138	A3985TIN	186	F1371	244	Z2311	256
A1411	61	A4141	82	F3234	245	Z9311	205
A1511	62	A4211	83	F3317	246	Z9411	205
A1513	64	A4211TIN	88	F3417	247	Z9412	206
A1519	65	A4213	89	F3517	247	Z9422	206
A1522	66	A4241	90	F4142	248		
A1534	67	A4244	91	F4152	249		
A1544	68	A4247	92	F4153	250		

