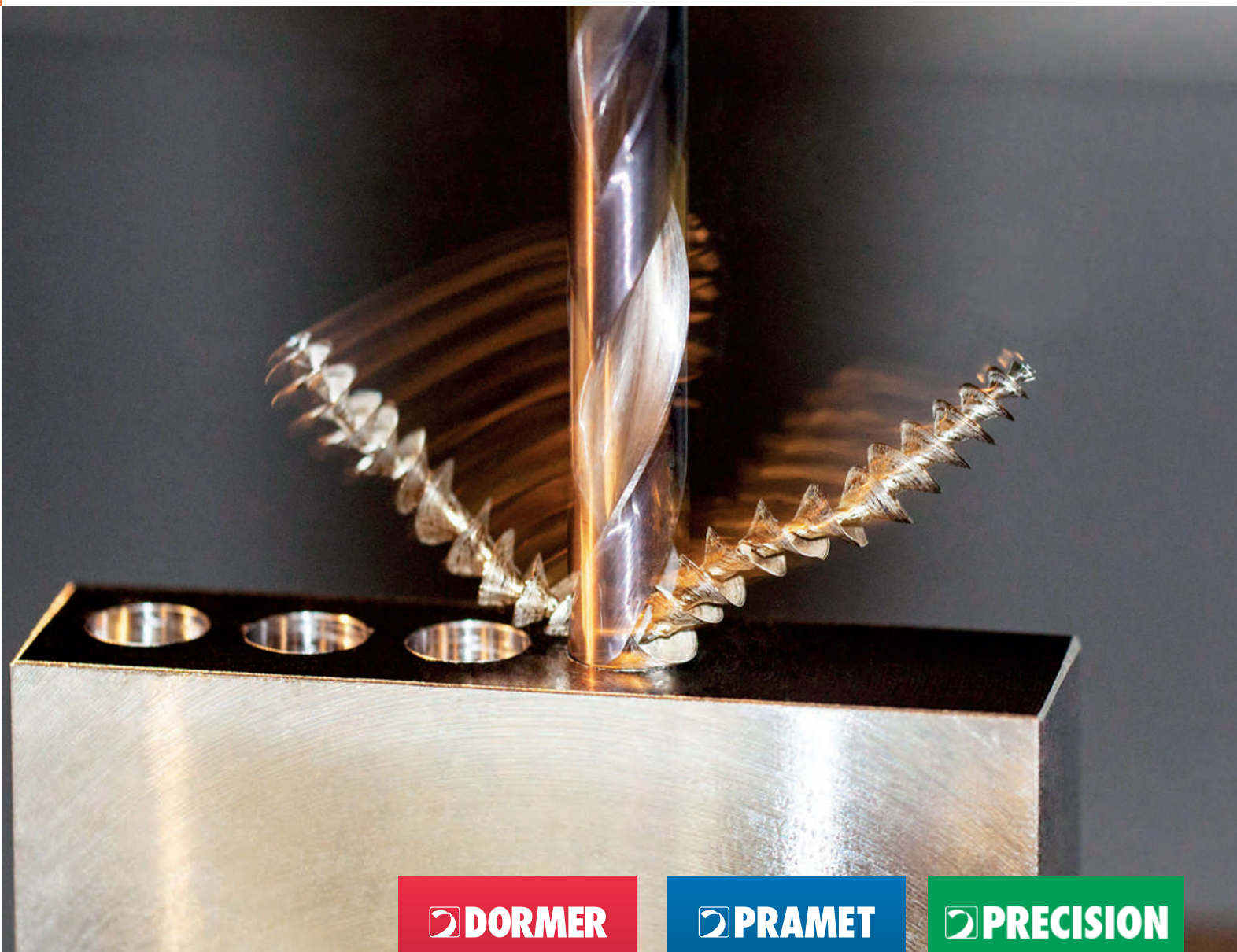


DORMER PRAMET

HOLEMAKING

2023 – 2024



 **DORMER**

 **PRAMET**

 **PRECISION**

6		WMG & ISO 13399
10	DRILLS	INSTRUCTIONS
15		SOLID CARBIDE DRILLS
80		HSS DRILLS
82		HSS STUB DRILLS
112		HSS JOBBER LENGTH DRILLS
184		HSS LONG LENGTH
215		HSS REDUCED SHANK
224		HSS TAPER SHANK
235		HSS CENTER DRILLS
265		AEROSPACE
274		MRO
292		SCREW EXTRACTORS
297		TECHNICAL INFORMATION
308			REAMERS AND COUNTERSINKS
393	INDEXABLE DRILLS	INSTRUCTIONS
402		HYDRA DRILLS
427		TECHNICAL INFORMATION
436		INDEXABLE DRILLS
461		TECHNICAL INFORMATION



PRODUCT FAMILY		PRODUCT FAMILY		PRODUCT FAMILY		PRODUCT FAMILY	
0		A206	261	B954	339	L	
0860	203	A210	263	C		L10	120
1		A217	255	C0500-12	272	M	
1511	205	A218	256	C0500-6	268	M40CO	104
1813	206	A221	254	C0501-12	272	M41CO	104
2		A225	257	C0501-6	268	M42CO	104
209	225	A242	264	D		M51CO	201
209CO	234	A266	262	D33F	29	M52CO	201
239TBT	156	A321	280	D33L	29	M900	293
2A	118	A400	239	D33M	29	M901	294
2ACO	176	A402	240	D33W	29	M902	295
3		A412	237	D444	182	Q	
301JD	281	A413	238	DC	69	QC0860P	209
311SM	276	A510	161	DS-120	74	QC1290P	210
312SM	278	A520	97	DS-142	76	QC21P	164
321MD	279	A553	163	DS-90	71	QC21PM	167
331HD	284	A620	109	G		QC41P	99
332HD	286	A720	103	G106	365	QC91P	196
333HD	289	A723	111	G107	354	QC91PM	198
341SD	290	A777	178	G125	375	R	
342SDT	291	A900	168	G129	358	R10	124
4		A920	101	G132	370	R100	33
4602	369	A940	199	G135	359	R10A	137
4603	357	A952	233	G136	363	R10B	149
5		A976	211	G137	371	R10CO	172
500-12	270	A977	213	G138	372	R10H	121
500-6	266	A978	214	G142	362	R10P	114
501-12	270	ATR41	273	G149	353	R120	26
501-6	266	B		G154	361	R122	75
502-12	270	B100	340	G171	368	R123	72
502-6	266	B101	335	G236	374	R125	77
5ATL	190	B121	338	G314	356	R15	124
5ATS	228	B122	333	G335	360	R15A	137
A		B161	336	G338	373	R15B	149
A002	144	B170	322	G400	352	R15CO	172
A002S	147	B180	324	G506	366	R15P	114
A012	140	B301	343	G560	364	R18	124
A022	95	B400	316	G570	355	R18A	137
A100	128	B411	320	G600	367	R18B	149
A101	136	B441	321	G702	378	R18CO	172
A108	152	B442	319	G703	379	R18H	121
A110	193	B481	317	G704	380	R18P	114
A117	107	B610	327	G705	376	R200	70
A119	89	B620	330	G706	377	R40	84
A120	93	B630	332	H		R40C	90
A122	253	B640	337	H851	416	R41	84
A123	88	B650	342	H8512	423	R41C	90
A125	207	B660	344	H853	418	R42	84
A130	230	B670	346	H855	420	R42C	90
A147	170	B680	348	H858	422	R453	55
A170	218	B690	334	H860	424	R454	51
A176	157	B901	326	H861	425	R457	46
A200	259	B903	345	HX10	158	R458	41
A201	258	B952	347	HX15	158	R459	60
A205	260	B953	331	HX18	158	R463	66



SOLID ROUND TOOLS – CONTENT (ALPHABETICAL)

PRODUCT FAMILY		PRODUCT FAMILY		PRODUCT FAMILY		PRODUCT FAMILY	
R467	63	R56CO	222	R960	414	SPR-120	247
R51	186	R57	220	S		SPRG-90	246
R510	39	R58	223	S209	227	SPRG-120	248
R51FS	192	R6011	73	SPL-90	249	SPS-90	241
R52	186	R7131	78	SPL-120	251	SPS-120	243
R520	36	R88CO	180	SPLG-90	250	SPSG-90	242
R55	186	R89CO	180	SPLG-120	252	SPSG-120	244
R56	216	R950	412	SPR-90	245		



INDEXABLE TOOLS – CONTENT (ALPHABETICAL)

PRODUCT FAMILY	
8	
802D	444
803D	448
804D	451
805D	456
E	
EP	458
I	
I802D	442
I803D	446
I804D	454



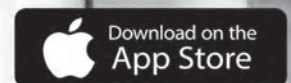
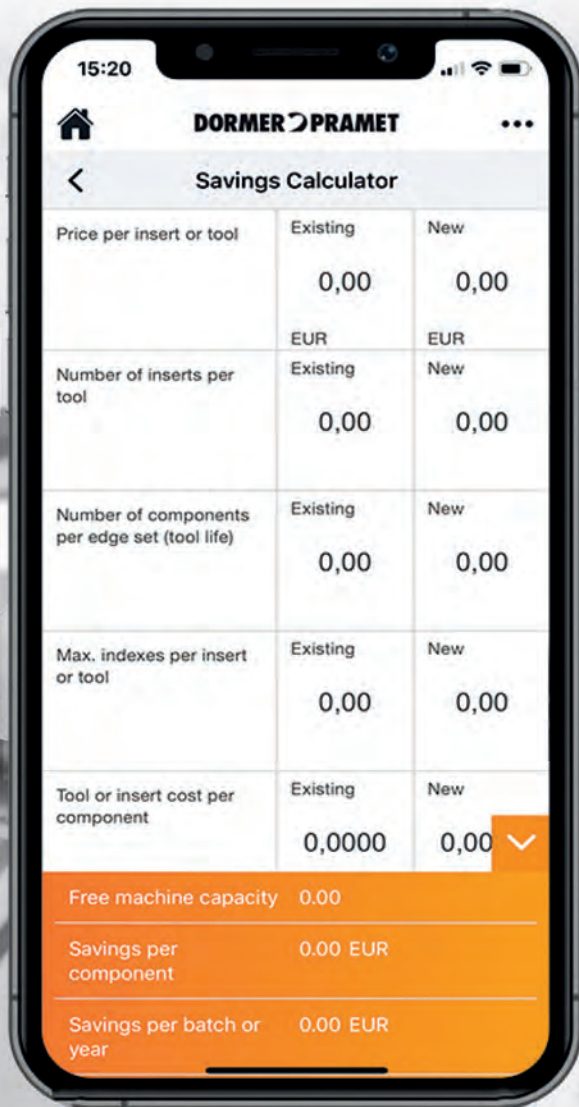
INDEXABLE INSERTS – CONTENT (ALPHABETICAL)

PRODUCT FAMILY	
S	
SCET	459
X	
XPET	460



POCKET SAVER

Our machining calculator allows you to measure the savings based on different products and applications. A useful pocket-sized tool, which will help keep cash in your pockets! **Simply Reliable.**





6		WMG & ISO 13399
10	DRILLS	INSTRUCTIONS
15		SOLID CARBIDE DRILLS
80		HSS DRILLS
82		HSS STUB DRILLS
112		HSS JOBBER LENGTH DRILLS
184		HSS LONG LENGTH
215		HSS REDUCED SHANK
224		HSS TAPER SHANK
235		HSS CENTER DRILLS
265		AEROSPACE
274		MRO
292		SCREW EXTRACTORS
297		TECHNICAL INFORMATION
308			REAMERS AND COUNTERSINKS
393	INDEXABLE DRILLS	INSTRUCTIONS
402		HYDRA DRILLS
427		TECHNICAL INFORMATION
436		INDEXABLE DRILLS
463		TECHNICAL INFORMATION



WORKPIECE MATERIAL GROUPS (WMG)

ISO

To select a cutting grade and geometry for a broad range of workpiece materials

General definition

i.e. Steel, Stainless Steel...

P M K N S H

Subgroup

To navigate and select a tool by suitability for a more specific range of workpiece materials

Definition by structure/composition

i.e. Plain Carbon Steel, Alloy Steel...

P M K N S H

P1

P2

P3

P4

WMG

To select and provide cutting conditions within a bandwidth of $\pm 10\%$

Definition by hardness/ultimate tensile strength

i.e. $160 < 220 \text{ HB}$, $620 < 900 \text{ N/mm}^2$...

P			
P1	P1.1	P1.2	P1.3
P2	P2.1	P2.2	P2.3
P3	P3.1	P3.2	P3.3
P4	P4.1	P4.2	P4.3

ABOUT DORMER PRAMET'S WORKPIECE MATERIAL CLASSIFICATION

Workpiece **Material Groups (WMG)** are used to support easy and reliable selection of the right cutting tool and starting values for machining conditions in particular applications.

Dormer Pramet classifies workpiece materials into six different coloured groups;

- **Blue:** Steel and cast steel (P-group)
- **Yellow:** Stainless steel (M-group)
- **Red:** Cast iron (K-group)
- **Green:** Non-ferrous metals (N-group)
- **Brown:** High-temperature alloys (S-group)
- **Grey:** Hardened materials (H-group)

Each of these are divided into subgroups on the basis of their structure and/or composition. For example, P-group steel and cast steel is split into four subgroups, namely;

- **P1** – Free machining steel
- **P2** – Plain carbon steel
- **P3** – Alloy steel
- **P4** – Tool steel

A final division includes material properties, such as hardness and ultimate tensile strength. This is to provide our customers with a complete tool recommendation, including starting values for cutting speed and feed.

The table on the next page includes a description of each workpiece material group, as well as examples of commonly used designations.



WMG (WORK MATERIAL GROUP)

ISO group	WMG (Work Material Group)	Hardness (HB or HRC)	Ultimate Tensile Strength (MPa)				
P	P1	P1.1	Free machining steel	Sulfurized	< 240 HB	≤ 830	
		P1.2	(carbon steels with increased machinability)	Sulfurized and phosphorized	< 180 HB	≤ 620	
		P1.3		Sulfurized/phosphorized and leaded	< 180 HB	≤ 620	
	P2	P2.1	Plain carbon steel (steels comprised of mainly iron and carbon)	Containing <0.25 % C	< 180 HB	≤ 620	
		P2.2		Containing <0.55 % C	< 240 HB	≤ 830	
		P2.3		Containing >0.55 % C	< 300 HB	≤ 1030	
	P3	P3.1	Alloy steel (carbon steels with an alloying content ≤ 10%)	Annealed	< 180 HB	≤ 620	
		P3.2		Hardened and tempered	180 – 260 HB	> 620 ≤ 900	
		P3.3			260 – 360 HB	> 900 ≤ 1240	
	P4	P4.1	Tool steel (special alloy steel for tools, dies and molds)	Annealed	< 26 HRC	≤ 900	
		P4.2		Hardened and tempered	26 – 39 HRC	> 900 ≤ 1240	
		P4.3			39 – 45 HRC	> 1240 ≤ 1450	
M	M1	M1.1	Ferritic stainless steel (straight chromium non-hardenable alloys)	Annealed	< 160 HB	≤ 520	
		M1.2			160 – 220 HB	> 520 ≤ 700	
	M2	M2.1	Martensitic stainless steel (straight chromium hardenable alloys)	Quenched and tempered	< 200 HB	≤ 670	
		M2.2			200 – 280 HB	> 670 ≤ 950	
	M2.3	280 – 380 HB			> 950 ≤ 1300		
	M3	M3.1	Austenitic stainless steel (chromium-nickel and chromium-nickel-manganese alloys)	Precipitation-hardened	< 200 HB	≤ 750	
		M3.2			200 – 260 HB	> 750 ≤ 870	
	M3.3	260 – 300 HB			> 870 ≤ 1040		
	M4	M4.1	Austenitic-ferritic (DUPLEX) or super-austenitic stainless steel		< 300 HB	≤ 990	
		M4.2	Precipitation hardening austenitic stainless steel		300 – 380 HB	≤ 1320	
	K	K1	K1.1	Gray iron or Automotive Gray iron (GG) (iron-carbon castings with a lamellar graphite microstructure)	Ferritic or ferritic-pearlitic	< 180 HB	≤ 190
			K1.2		Ferritic-pearlitic or pearlitic	180 – 240 HB	> 190 ≤ 310
K1.3			Pearlitic		240 – 280 HB	> 310 ≤ 390	
K2		K2.1	Malleable iron (GTS/GTW) (iron-carbon castings with a graphite-free microstructure)	Ferritic	< 160 HB	≤ 400	
		K2.2		Ferritic or pearlitic	160 – 200 HB	> 400 ≤ 550	
		K2.3		Pearlitic	200 – 240 HB	> 550 ≤ 660	
K3		K3.1	Ductile iron (GGG) (iron-carbon castings with a nodular graphite microstructure)	Ferritic	< 180 HB	≤ 560	
		K3.2		Ferritic or pearlitic	180 – 220 HB	> 560 ≤ 680	
		K3.3		Pearlitic	220 – 260 HB	> 680 ≤ 800	
K4		K4.1	Austenitic gray iron (ASTM A436) (iron-carbon alloy castings with an austenitic lamellar graphite microstructure)		< 180 HB	≤ 190	
		K4.2	Austenitic ductile iron (ASTM A439 or ASTM A571) (iron-carbon alloy castings with an austenitic nodular graphite microstructure)		< 240 HB	≤ 740	
		K4.3	Austempered ductile iron (ASTM A897) (iron-carbon alloy castings with an ausferrite microstructure)		< 280 HB	> 840 ≤ 980	
	K4.4	280 – 320 HB		> 980 ≤ 1130			
	K4.5	320 – 360 HB		> 1130 ≤ 1280			
K5	K5.1	Compacted graphite iron CGI (ASTM A842) (iron-carbon castings with a vermicular graphite structure)	Ferritic	< 180 HB	≤ 400		
	K5.2		Ferritic-pearlitic	180 – 220 HB	> 400 ≤ 450		
	K5.3		Pearlitic	220 – 260 HB	> 450 ≤ 500		
N	N1	N1.1	Commercially pure wrought aluminium		< 60 HB	≤ 240	
		N1.2	Wrought aluminium alloys	Half hard tempered	60 – 100 HB	> 240 ≤ 400	
		N1.3		Full hard tempered	100 – 150 HB	> 400 ≤ 590	
	N2	N2.1	Cast aluminium alloys		< 75 HB	≤ 240	
		N2.2		75 – 90 HB	> 240 ≤ 270		
		N2.3		90 – 140 HB	> 270 ≤ 440		
	N3	N3.1	Free-cutting copper-alloys materials with excellent machining properties		–	–	
		N3.2	Short-chip copper-alloys with good to moderate machining properties		–	–	
		N3.3	Electrolytic copper and long-chip copper-alloys with moderate to poor machining properties		–	–	
	N4	N4.1	Thermoplastic polymers		–	–	
		N4.2	Thermosetting polymers		–	–	
		N4.3	Reinforced polymers or composites		–	–	
N5	N5.1	Graphite		–	–		
S	S1	S1.1	Titanium or titanium alloys		< 200 HB	≤ 660	
		S1.2		200 – 280 HB	> 660 ≤ 950		
		S1.3		280 – 360 HB	> 950 ≤ 1200		
	S2	S2.1	Fe-based high-temperature alloys		< 200 HB	≤ 690	
		S2.2		200 – 280 HB	> 690 ≤ 970		
	S3	S3.1	Ni-based high-temperature alloys		< 280 HB	≤ 940	
		S3.2		280 – 360 HB	> 940 ≤ 1200		
	S4	S4.1	Co-based high-temperature alloys		< 240 HB	≤ 800	
S4.2		240 – 320 HB		> 800 ≤ 1070			
H	H1	H1.1	Chilled cast iron		< 440 HB	–	
		H2.1	Hardened cast iron		< 55 HRC	–	
	H2.2	> 55 HRC		–			
	H3	H3.1	Hardened steel < 55 HRC		< 51 HRC	–	
		H3.2		51 – 55 HRC	–		
	H4	H4.1	Hardened steel > 55 HRC		55 – 59 HRC	–	
H4.2		> 59 HRC		–			



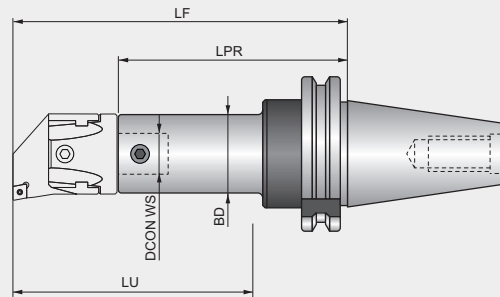
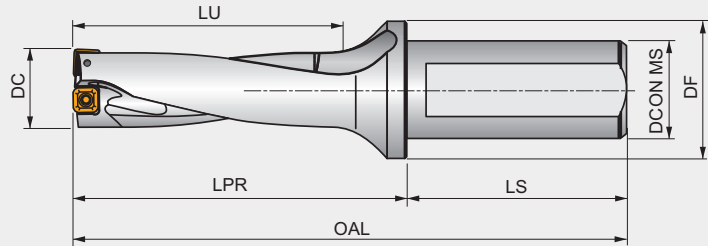
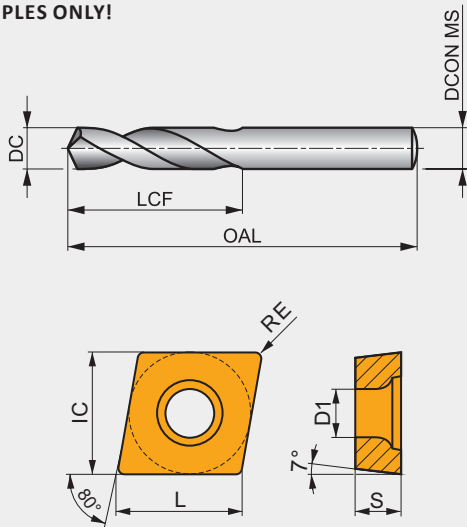
CUTTING TOOL PARAMETERS ACCORDING TO ISO 13399

All cutting tools are defined by a number of parameters according to the standard ISO 13399. This list contains all the parameters used in this catalogue and their definitions.

ISO 13399 is an international cutting tool information standard. It provides dimensions and parameters in a neutral format that is independent of any particular system or company nomenclature. When cutting tools are clearly defined according to a global standard, all types of software can process the electronic data more quickly, improving the quality of communication and helping to make the exchange of information run smoothly. By supporting a com-

mon language in our cutting tool descriptions will assist this system to system communication. It will save you significant amount of time, providing an easier gathering of high-quality data across our 40,000 solid and indexable tools. By using a ISO 13399 compliant system, there will be no need to manually interpret data and key-enter it into your system.

EXAMPLES ONLY!



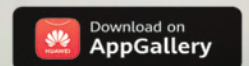
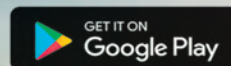
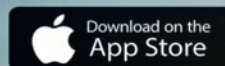
ISO 13399	description
BD	Body diameter
BDX	Body diameter maximum
CZC MS	Connection size code machine side
D1	Fixing hole diameter
DC	Cutting diameter
DCN	Cutting diameter minimum
DCON MS	Connection diameter machine side
DCON WS	Connection diameter workpiece side
DCX	Cutting diameter maximum
DHUB	Hub diameter
FLGT	Flange thickness
IC	Inscribed circle diameter
L	Cutting edge length
LB	Body length
LF	Functional length
LPR	Protruding length
LU	Usable length
OAL	Overall length
RE	Corner radius
S	Insert thickness
WF	Functional width
APMX	Depth of cut maximum
D1	Fixing hole diameter
DC_1	Cutting diameter first cutting step
DC_2	Cutting diameter second cutting step

ISO 13399	description
DF	Flange diameter
DH	Head diameter
GPD	Guide pilot diameter
GPL	Guide pilot length
H	Shank height
HSD	Size of drive part
IC	Inscribed circle diameter
LCF	Length chip flute
LCOL	Collet length
LDC	Distance reference point PK
LH	Head length
LS	Shank length
LSC	Clamping length
NOF	Number of flutes
PLGL	Plug length
RCSK	Radius countersunk
RE	Corner radius
SDI	Step diameter increments
SDL	Step diameter length
SDL_1	Step diameter length first cutting step
SDL_2	Step diameter length second cutting step
TDZ	Thread diameter size
THLGTH	Thread length
WSC	Clamping width



YOUR PERSONAL LIBRARY

Always revisiting the same sections of our publications? Our library app allows you to save key pages that you can revert back to again and again, whenever you need to. Simply Reliable. **Simply Reliable.**



SOLID CARBIDE DRILLS
HSS DRILLS





HOLEMAKING – GENERAL CONTENT

6		WMG & ISO 13399
10	DRILLS	INSTRUCTIONS
15		SOLID CARBIDE DRILLS
80		HSS DRILLS
82		HSS STUB DRILLS
112		HSS JOBBER LENGTH DRILLS
184		HSS LONG LENGTH
215		HSS REDUCED SHANK
224		HSS TAPER SHANK
235		HSS CENTER DRILLS
265		AEROSPACE
274		MRO
292		SCREW EXTRACTORS
297		TECHNICAL INFORMATION
308			REAMERS AND COUNTERSINKS
393	INDEXABLE DRILLS	INSTRUCTIONS
402		HYDRA DRILLS
427		TECHNICAL INFORMATION
436		INDEXABLE DRILLS
463		TECHNICAL INFORMATION

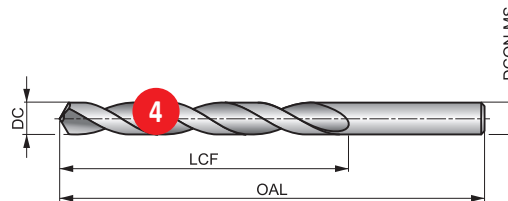


1 R100



Solid Carbide Jobber Drill, Bright Finish

Improved wear resistance for increased productivity and extended tool life. A 120°, 4-facet point helps with self-centering and reduces cutting forces. Can be used with all CNC machine applications.



HM	DIN 338	4xD
120°	Bright	
λ 20-35°	R	DC h7

Workpiece material group suitability, starting values for cutting speed (m/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 79.

99 S	111 S	115 S	85 S	75 S	66 S	66 S	53 S	45 S	40 S	34 S	27 S	75 T	56 T
K1.3	K2.1	K2.2	K2.3	K3.1	K3.2	K3.3	K4.1	K4.2	K4.3	K4.4	K4.5	K5.1	K5.2
42 T	68 T	55 T	44 T	60 T	46 T	37 T	55 T	42 T	31 T	26 T	22 T	63 T	47 T
K5.3	N1.1	N1.2	N1.3	N2.1	N2.2	N2.3	N3.1	N3.2	N4.1	N4.2	H1.1	H2.1	H2.2
37 T	200 V	150 V	100 V	172 V	155 V	112 V	423 V	250 V	60 X	100 V	56 S	33 S	36 S
H3.1	H3.2												
37 S	30 S												

Product	DC [mm]	DC [inch]	LCF [mm]	OAL [mm]	DCON MS [mm]
R1001.0	1.00	0.0394	12.0	34.0	1.00
R1001.1	1.10	0.0433	14.0	36.0	1.10
R1001.2	1.20	0.0472	16.0	38.0	1.20
R1001.3	1.30	0.0512	16.0	38.0	1.30
R1001.4	1.40	0.0551	18.0	40.0	1.40
R1001.5	1.50	0.0591	18.0	40.0	1.50
R1001.6	1.60	0.0630	20.0	43.0	1.60
R1001.7	1.70	0.0669	20.0	43.0	1.70
R1001.8	1.80	0.0709	22.0	46.0	1.80
R1001.9	1.90	0.0748	22.0	46.0	1.90

Product	DC [mm]	DC [inch]	LCF [mm]	OAL [mm]	DCON MS [mm]
R1003.6	3.60	0.1417	39.0	70.0	3.60
R1003.7	3.70	0.1457	39.0	70.0	3.70
R1003.8	3.80	0.1496	43.0	75.0	3.80
R1003.9	3.90	0.1535	43.0	75.0	3.90
R1004.0	4.00	0.1575	43.0	75.0	4.00
R1004.1	4.10	0.1614	43.0	75.0	4.10
R1004.2	4.20	0.1654	43.0	75.0	4.20
R1004.3	4.30	0.1693	47.0	80.0	4.30
R1004.4	4.40	0.1732	47.0	80.0	4.40
R1004.5	4.50	0.1772	47.0	80.0	4.50

Pos.	Description
1	Designation of drill
2	Product description
3	Illustrative picture
4	Schematic drawing of tool

Pos.	Description
5	Product features
6	Material group recommendations incl. speed and feed guidance
7	Product code
8	Product dimensions

Typical page with drills displayed – specific page details will differ.



SOLID CARBIDE & HSS DRILLS – ICONS OVERVIEW

GENERAL ICONS

	Primary use		Possible use
--	-------------	--	--------------

APPLICATION ANGLE

	60° Countersink Center Drill		Radius Countersink Center Drill		Pre-Drill with 90° Chamfer (for tapping)
	Drill Point 118°		Spot Drill Point 90°/120°		Spot Drill Point 150°
	Drill Point 120°		Spot-weld Drill Point 180°		Spot Drill Point 90°
	Drill Point 122°		Step-drill (for fasteners) 180° Counterbore		Spot Drill Point 120°
	Drill Point 130°		Step-drill (for fasteners) 90° Counterbore		
	Drill Point 135°		Drill Point 140°		

BASIC STANDARD GROUP (BSG)

	BS 328 – Drills and Reamers Standards		DIN 1899 – Micro Drill Standards		DIN 8037 – Carbide Tipped Drill Standards
	DIN 1869 / 1 – Straight Shank Extra Long Drill Standards		DIN 333A – Center Drill Standards		DIN 8374 – Subland Drill Standards
	DIN 1869 / 2 – Straight Shank Extra Long Drill Standards		DIN 333R – Straight Shank Countersink Standards		DIN 8376 – Step Drill Standards
	DIN 1869 / 3 – Straight Shank Extra Long Drill Standards		DIN 338 – Straight Shank Drill Standards		DIN 8377 – Subland Drill Standards
	DIN 1870 (1) – Morse Taper Shank Extra Long Drill Standards		DIN 340 – Taper Length Drill Standards		DIN/ANSI Standards
	DIN 1870 (2) – Morse Taper Shank Extra Long Drill Standards		DIN 341 – Morse Taper Shank Long Drill Standards		Dormer Standards
	DIN 1897 – Stub Drill Standards		DIN 345 – Morse Taper Shank Drill Standards		NAS907 – Aerospace Drill Standards

COATING

	Aluminum Chromium Nitride (with smoothing process)		Bronze Tempered (Bronze Oxide) Surface Treatment		Titanium Aluminum Nitride (with smoothing process)
	Bright (uncoated)		Combination Bright and Steam Tempered		Titanium Aluminum Nitride Coating
	Bright and TiN (Tip Coating)		Steam Tempered (Steam Oxide) Surface Treatment		Titanium Nitride Coating



SOLID CARBIDE & HSS DRILLS – ICONS OVERVIEW

COOLANT SUPPLY PROPERTY (CSP)



Through Tool Coolant

CUTTING DIRECTION



Left Hand Rotation / Cutting



Right Hand Rotation / Cutting

CUTTING DIAMETER TOLERANCE ZONE CLASS (TCDC)



h8 – Industry Standard Tool Tolerance Zone (based on diameter range)



h7 – Industry Standard Tool Tolerance Zone (based on diameter range)



m7 – Industry Standard Tool Tolerance Zone (based on diameter range)

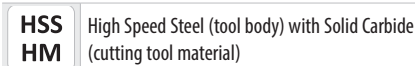


h6 – Industry Standard Tool Tolerance Zone (based on diameter range)

MATERIAL CODE (BMC)



Hard Material (Solid Carbide)



High Speed Steel (tool body) with Solid Carbide (cutting tool material)



High Speed Steel Tool Material



High Speed Cobalt Steel Tool Material

SHANK



Cylindrical Shank / Straight Shank



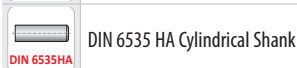
Cylindrical Shank with Tang



Morse Taper Shank



Cylindrical Shank with Flat



DIN 6535 HA Cylindrical Shank

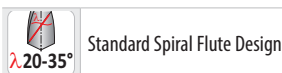


Reduced Cylindrical Shank

SPIRAL FORM



Quick Spiral Flute Design



Standard Spiral Flute Design



Continuously Thinned Web Flute Design



Slow Spiral Flute Design



Quick Spiral Flute Design



Special Point Thinning Design

USABLE LENGTH DIAMETER RATIO (ULDR)



1.25xD Usable Tool Depth to Diameter Ratio



2.5xD Usable Tool Depth to Diameter Ratio



5xD Usable Tool Depth to Diameter Ratio



1.5xD Usable Tool Depth to Diameter Ratio



20xD Usable Tool Depth to Diameter Ratio



6xD Usable Tool Depth to Diameter Ratio



10xD Usable Tool Depth to Diameter Ratio



25xD Usable Tool Depth to Diameter Ratio



8xD Usable Tool Depth to Diameter Ratio



15xD Usable Tool Depth to Diameter Ratio



3xD Usable Tool Depth to Diameter Ratio



1xD Usable Tool Depth to Diameter Ratio



4xD Usable Tool Depth to Diameter Ratio



SOLID CARBIDE DRILLS




FORCE X

HIGH PERFORMANCE CARBIDE DRILLS

VERSATILE PRODUCTION DRILLS FOR A WIDE RANGE OF MATERIALS

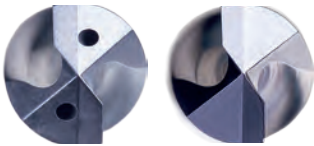
FORCE X carbide drills are developed for high performance machining applications in a wide variety of work-materials such as Carbon and Alloy Steels up to 1500 MPa and Cast-Iron. FORCE X drills also perform well in Stainless Steel and Aluminum making them an ideal first choice for subcontract machining companies.

FEATURES AND BENEFITS

- CTW  – Unique Flute Construction with a continuously thinned web and rolled heel design.
- Modified 4-Facet Split Point with large secondary chisel edge angle.
- Premium micrograin carbide substrate with TiAlN coating.
- 3xD and 5xD options available in solid and coolant-feed variants.
- 8xD with coolant-feed.

COMPARED TO CONVENTIONAL DRILLS FORCE X ARE:

- **Outstandingly economical** – Able to be re-ground multiple times, this significantly increases total tool life.
- **Consistently high quality and performance** – with excellent positional accuracy and swarf control, ensuring a superior quality hole tolerance and surface finish.
- **More productive** – with high drilling speeds and prolonged tool-life.



RANGE DETAILS

3xD



R457

Coolant-feed

R458

Solid

- 3.00 – 20.00 mm
- 1/8 – 3/4 inch, N30 – N1, A – Z

5xD



R453

Coolant-feed

R454

Solid

- 3.00 – 20.00 mm
- 1/8 – 3/4 inch, N30 – N1, A – Z

8xD



R459

Coolant-feed

- 3.00 – 16.00 mm
- 1/8 – 5/8 inch



FORCE X

HIGH PERFORMANCE CARBIDE DRILLS



MACHINING EXAMPLE

			Free Machining Steel P1.3	Alloy Steel P3.3	Gray Iron K1.2
Workpiece			1.0718 (11SMnPb30)	1.6582 (34CrNiMo6)	0.6025 (GG-25)
Hardness		HB	180	325	215
Tensile strength		MPa	620	1120	260
Diameter		mm	8 (R4578.0)	8 (R4598.0)	8 (R4538.0)
Hole depth		mm	3×D (24)	8×D (64)	5×D (40)
Cutting speed	v_c	m/min	207	73	77
Feed	f	mm/rev	0.26	0.14	0.26
Coolant			Emulsion 8 % through coolant	Emulsion 8 % through coolant	Emulsion 8 % through coolant




FORCE M

HIGH PERFORMANCE CARBIDE DRILLS

HIGH VOLUME PRODUCTION DRILLS FOR STAINLESS STEEL

FORCE M carbide drills have been engineered to provide the highest performance and process reliability when drilling Stainless steels and Heat resistant super alloys. FORCE M drills are ideal for applications where it is necessary to drill a large number of holes with high and constant accuracy.

FEATURES AND BENEFITS

- CTW  – Unique Flute Construction with a continuously thinned web and rolled heel design.
- S-Shape 4-Facet Split Point with precise thin edge honing and strong outer corner design.
- Premium micrograin carbide substrate with TiAlN coating.
- 3xD and 5xD with coolant-feed.
- 8xD with coolant-feed available upon request.

COMPARED TO CONVENTIONAL DRILLS FORCE M PROVIDE:

- **Reliable performance** – with a smooth cutting action to prevent onset of work-hardening and built up edge.
- **Optimized productivity** – with excellent chip-management and a better force distribution to allow high penetration rates.
- **Exceptional tool life** – with stronger corner and cutting edges to withstand deformation wear.



RANGE DETAILS

3xD



R467

Coolant-feed

- 3.00 – 16.00 mm
- 1/8 – 5/8 inch

5xD



R463

Coolant-feed

- 3.00 – 16.00 mm
- 1/8 – 5/8 inch

8xD



R469

Coolant-feed

Available upon request

- 3.00 – 16.00 mm
- 1/8 – 5/8 inch



FORCE M

HIGH PERFORMANCE CARBIDE DRILLS



MACHINING EXAMPLE

			Ferritic SST M1.2	Austenitic SST M3.2	High Strength SST M4.1
Workpiece			1.4104 (AISI 430F)	1.4401 (AISI 316)	1.4501 (Super DUPLEX)
Hardness		HB	220	200	240
Tensile strength		MPa	700	750	770
Diameter		mm	8 (R4678.0)	8 (S-R4698.0)	8 (R4638.0)
Hole depth		mm	3×D (24)	8×D (64)	5×D (40)
Cutting speed	v_c	m/min	99	74	57
Feed	f	mm/rev	0.16	0.14	0.12
Coolant			Emulsion 8 % through coolant	Emulsion 8 % through coolant	Emulsion 8% through coolant



FORCE N

HIGH PERFORMANCE CARBIDE DRILLS

HIGH PENETRATION RATE DRILLS FOR ALUMINUM

FORCE N carbide drills are recommended for high speed drilling operations in wrought and cast Aluminum alloys. The flute and cutting geometry are specifically designed to break the swarf into small manageable chips to enhance chip-removal. FORCE N drills provide superior performance and tool life for mid-high volume manufacturing companies.

FEATURES AND BENEFITS

- Special web thinning with higher than standard helix angle.
- Unique geometry with convex cutting edges and 4-facet self-centering point.
- Premium micrograin carbide substrate with bright finish.
- 5xD and 8xD with coolant-feed available upon request.

COMPARED TO CONVENTIONAL DRILLS FORCE N DELIVER:

- **Superior performance** – with high drilling speeds and long tool life.
- **Economical solution** – which can be used across all types of Aluminum from soft through to abrasive grades.
- **Optimized process** – designed to reduce thrust force improving hole quality and reducing exit burr which occurs when drilling soft materials.



RANGE DETAILS

5xD

R445

Coolant-feed

Available upon request

- 3.00 – 16.00 mm
- 1/8 – 5/8 inch

8xD

R448

Coolant-feed

Available upon request

- 3.00 – 16.00 mm
- 1/8 – 5/8 inch

Up to
12xD

Longer lengths available upon request



FORCE N

HIGH PERFORMANCE CARBIDE DRILLS



MACHINING EXAMPLE

			Wrought Aluminum N1.2	Cast Aluminum N2.2
Workpiece			AW 2024-O (3.1355)	A242.0
Hardness		HB	50	75
Tensile strength		MPa	200	220
Diameter		mm	8 mm (R4458.0)	8 mm (S-R4488.0)
Hole depth		mm	5×D (40)	8×D (64)
Cutting speed	v_c	m/min	357	374
Feed	f	mm/rev	0.80	0.33
Coolant			Emulsion 8 % through coolant	Emulsion 8 % through coolant



Exit burr with conventional drill



Exit burr with FORCE N drill

FOLLOW US



SHARE



LIKE



COMMENT



TAG




RE-TWEET








SOLID CARBIDE – NAVIGATOR TOOL MATERIALS

Carbide materials

Carbide Materials (or Hard Materials)		<p>A sintered powder metallurgy substrate, consisting of a metallic carbide composite with binder metal. The most central raw material is tungsten carbide (WC). Tungsten carbide contributes to the hardness of the material. Tantalum carbide (TaC), titanium carbide (TiC) and niobium carbide (NbC) complements WC and adjusts the properties to what is desired. These three materials are called cubic carbides. Cobalt (Co) acts as a binder and keeps the material together.</p> <p>Carbide materials are often characterised by high compression strength, high hardness and therefore high wear resistance, but also by limited flexural strength and toughness. Carbide is used in taps, reamers, milling cutters, drills and thread milling cutters.</p>
--	---	--

Surface Coatings

Bright (uncoated)		<p>Bright finish (uncoated surface) improves chip flow in soft or non-ferrous materials, plastics and composites while maintaining sharp cutting edges.</p>
Titanium Nitride coating (TiN)		<p>Titanium Nitride is a gold coloured ceramic coating applied by physical vapor deposition (PVD). High hardness combined with low friction properties ensures longer tool life and/or better cutting performance from tools which have not been coated.</p>
Titanium Aluminum Nitride coatings (TiAlN)		<p>Titanium Aluminum Nitride is a multi layer ceramic coating applied by PVD coating technology, which exhibits high toughness and oxidation stability. These properties make it ideal for higher speeds and feeds, while at the same time improving tool life. TiAlN is used in drilling, tapping, and milling applications and can be suitable for use when machining without coolant. TiAlN-Top coating is the same as TiAlN but with a post-coating process designed to smooth out imperfections, enhance chip flow and reduce built up edge.</p>



Material code (BMC)	HM	HM	HM	HM	HM	HM	HM	HM	HM	HM	HM	HM	HM
Basic standard group (BSG)	DIN 6539	PRECISION	DIN 338	DIN 6539	DIN 338	DIN 6537K	DIN 6537K	DIN 6537L	DIN 6537L	DORMER	DIN 6537K	DIN 6537L	PRECISION
Usable length (ULDR)	2.5xD	3xD	4xD	2.5xD	4xD	3xD	3xD	5xD	5xD	8xD	3xD	5xD	1xD
Application angle	120°	118°	120°	130°	130°	140°	140°	140°	140°	140°	140°	140°	60°
Coating	Bright	Bright	Bright	TIN	TIN	TIAlN	TIAlN	TIAlN	TIAlN	TIAlN	TIAlN	TIAlN	Bright
Shank						DIN 6535HA	DIN 6535HA	DIN 6535HA	DIN 6535HA	DIN 6535HA	DIN 6535HA	DIN 6535HA	
Spiral form	λ20-35°	λ20-35°	λ20-35°	λ20-35°	λ20-35°	GTW	GTW	GTW	GTW	GTW	GTW	GTW	λ20-35°
Hand (Cutting direction)	R	R	R	R	R	R	R	R	R	R	R	R	R
Cooling (CSP)													
Product Family Code	R120	D33F-D33W-D33L-D33M	R100	R520	R510	R458	R457	R454	R453	R459	R467	R463	DC
PSF cutting diameters range	1.00 - 12.00	N68 - 1/2	1.00 - 14.00	3.00 - 16.50	3.00 - 14.00	3.00 - 20.00	3.00 - 20.00	3.00 - 20.00	3.00 - 20.00	3.00 - 16.00	3.00 - 16.00	3.00 - 16.00	N0 - N6
	26	29	33	36	39	41	46	51	55	60	63	66	69
P	P1	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
	P2	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
	P3	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
	P4	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
M	M1		☑		☑	☑	☑	☑	☑	☑	☑	☑	
	M2		☑		☑	☑	☑	☑	☑	☑	☑	☑	
	M3				☑	☑	☑	☑	☑	☑	☑	☑	
	M4				☑	☑	☑	☑	☑	☑	☑	☑	
K	K1	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
	K2	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
	K3	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
	K4	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
	K5	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
N	N1	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
	N2	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
	N3	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
	N4	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
	N5	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
S	S1	☑			☑	☑	☑	☑	☑	☑	☑	☑	☑
	S2	☑			☑	☑	☑	☑	☑	☑	☑	☑	☑
	S3	☑			☑	☑	☑	☑	☑	☑	☑	☑	☑
	S4	☑			☑	☑	☑	☑	☑	☑	☑	☑	☑
H	H1	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
	H2	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
	H3	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
	H4	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑

☑ Primary use ☐ Possible use



	HM DIN 333A 1xD 60° Bright R	HM PRECISION 1xD 90° Bright λ 20-35° R	HM DORMER 1xD 90° Bright λ 20-35° R	HM DORMER 1xD 90° TIAN DIN 6535HA λ 20-35° R	HM PRECISION 1xD 120° Bright λ 20-35° R	HM DORMER 1xD 120° Bright λ 20-35° R	HM PRECISION 1xD 142° Bright λ 20-35° R	HM DORMER 1xD 150° TIAN λ 20-35° R	HM DORMER 3xD 90° TIAN DIN 6535HA λ 20-35° R Coolant						
	R200	DS-90	R123	R6011	DS-120	R122	DS-142	R125	R7131						
	1.00 - 5.00	1/8 - 1/2	5.00 - 20.00	6.00 - 16.00	1/8 - 1/2	5.00 - 20.00	1/8 - 1/2	5.00 - 16.00	3.30 - 10.40						
	70	71	72	73	74	75	76	77	78						
P1	■	■	■	■	■	■	■	■	■						
P2	■	■	■	■	■	■	■	■	■						
P3	■	■	■	■	■	■	■	■	■						
P4	■	■	■	■	■	■	■	■	■						
M1		■	■	■	■	■	■	■	■						
M2		■	■	■	■	■	■	■	■						
M3		■	■	■	■	■	■	■	■						
M4															
K1	■	■	■	■	■	■	■	■	■						
K2	■	■	■	■	■	■	■	■	■						
K3	■	■	■	■	■	■	■	■	■						
K4	■	■	■	■	■	■	■	■	■						
K5	■	■	■	■	■	■	■	■	■						
N1	■	■	■	■	■	■	■	■	■						
N2	■	■	■	■	■	■	■	■	■						
N3	■	■	■	■	■	■	■	■	■						
N4		■	■	■	■	■	■	■	■						
N5															
S1		■	■	■	■	■	■	■	■						
S2		■	■	■	■	■	■	■	■						
S3		■	■	■	■	■	■	■	■						
S4		■	■	■	■	■	■	■	■						
H1		■	■	■	■	■	■	■	■						
H2		■	■	■	■	■	■	■	■						
H3		■	■	■	■	■	■	■	■						
H4		■	■	■	■	■	■	■	■						

■ Primary use ▣ Possible use



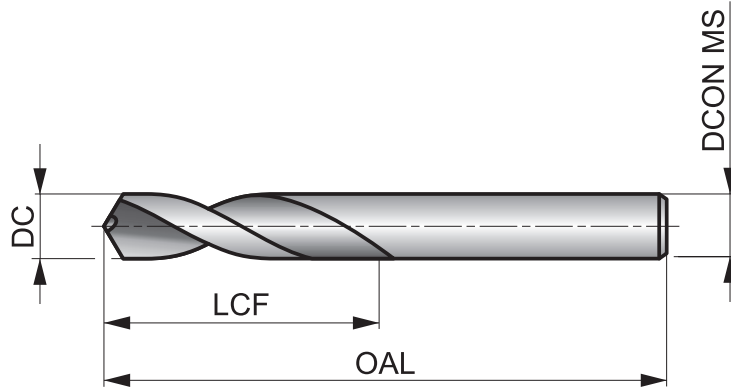
R120



Solid Carbide Stub Drill, Bright Finish

Improved wear resistance for increased productivity and extended tool life. A 120°, 4-facet point helps with self-centering and reduces cutting forces. Suitable for drilling hard and abrasive materials and can be used with all CNC machine applications.

HM	DIN 6539	2.5xD
120°	Bright	
λ _{20-35°}	R	DC h7



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 79.

P1.1 325 S	P1.2 364 S	P1.3 377 S	P2.1 279 S	P2.2 246 S	P2.3 217 S	P3.1 217 S	P3.2 174 S	P3.3 148 S	P4.1 131 S	P4.2 112 S	P4.3 89 S	K1.1 246 U	K1.2 184 U
K1.3 138 U	K2.1 223 U	K2.2 180 U	K2.3 144 U	K3.1 197 U	K3.2 151 U	K3.3 121 U	K4.1 180 U	K4.2 138 U	K4.3 102 U	K4.4 85 U	K4.5 72 U	K5.1 207 U	K5.2 154 U
K5.3 121 U	N1.1 656 W	N1.2 492 W	N1.3 328 W	N2.1 564 W	N2.2 509 W	N2.3 367 W	N3.1 1529 W	N3.2 902 W	N3.3 453 W	N4.1 197 U	N4.2 328 U	S1.1 148 T	S1.2 115 T
S1.3 82 T	S2.1 131 T	S2.2 92 T	S3.1 98 T	S3.2 66 T	S4.1 75 T	S4.2 52 T	H1.1 184 S	H2.1 108 S	H2.2 118 S	H3.1 121 S	H3.2 98 S		

Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(mm)	(inch)					
R1201.0	1.00	.0394	6.0	26.0	1.00	1	5979348
R1201.1	1.10	.0433	7.0	28.0	1.10	1	5979389
R1201.2	1.20	.0472	8.0	30.0	1.20	1	5979421
R1201.3	1.30	.0512	8.0	30.0	1.30	1	5979465
R1201.4	1.40	.0551	9.0	32.0	1.40	1	5979506
R1201.5	1.50	.0591	9.0	32.0	1.50	1	5979514
R1201.6	1.60	.0630	10.0	34.0	1.60	1	5979517
R1201.7	1.70	.0669	10.0	34.0	1.70	1	5979520
R1201.8	1.80	.0709	11.0	36.0	1.80	1	5979523
R1201.9	1.90	.0748	11.0	36.0	1.90	1	5979354
R1202.0	2.00	.0787	12.0	38.0	2.00	1	5979379
R1202.1	2.10	.0827	12.0	38.0	2.10	1	5979383
R1202.2	2.20	.0866	13.0	40.0	2.20	1	5979387
R1202.3	2.30	.0906	13.0	40.0	2.30	1	5979391
R1202.4	2.40	.0945	14.0	43.0	2.40	1	5979394
R1202.5	2.50	.0984	14.0	43.0	2.50	1	5979397
R1202.6	2.60	.1024	14.0	43.0	2.60	1	5979400
R1202.7	2.70	.1063	16.0	46.0	2.70	1	5979403
R1202.8	2.80	.1102	16.0	46.0	2.80	1	5979406
R1202.9	2.90	.1142	16.0	46.0	2.90	1	5979409
R1203.0	3.00	.1181	16.0	46.0	3.00	1	5979412



Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(mm)	(inch)	(mm)	(mm)	(mm)		
R1203.1	3.10	.1220	18.0	49.0	3.10	1	5979415
R1203.2	3.20	.1260	18.0	49.0	3.20	1	5979418
R1203.3	3.30	.1299	18.0	49.0	3.30	1	5979426
R1203.4	3.40	.1339	20.0	52.0	3.40	1	5979433
R1203.5	3.50	.1378	20.0	52.0	3.50	1	5979437
R1203.6	3.60	.1417	20.0	52.0	3.60	1	5979441
R1203.7	3.70	.1457	20.0	52.0	3.70	1	5979445
R1203.8	3.80	.1496	22.0	55.0	3.80	1	5979449
R1203.9	3.90	.1535	22.0	55.0	3.90	1	5979453
R1204.0	4.00	.1575	22.0	55.0	4.00	1	5979456
R1204.1	4.10	.1614	22.0	55.0	4.10	1	5979459
R1204.2	4.20	.1654	22.0	55.0	4.20	1	5979462
R1204.3	4.30	.1693	24.0	58.0	4.30	1	5979468
R1204.4	4.40	.1732	24.0	58.0	4.40	1	5979471
R1204.5	4.50	.1772	24.0	58.0	4.50	1	5979475
R1204.6	4.60	.1811	24.0	58.0	4.60	1	5979479
R1204.7	4.70	.1850	24.0	58.0	4.70	1	5979483
R1204.8	4.80	.1890	26.0	62.0	4.80	1	5979487
R1204.9	4.90	.1929	26.0	62.0	4.90	1	5979490
R1205.0	5.00	.1969	26.0	62.0	5.00	1	5979494
R1205.1	5.10	.2008	26.0	62.0	5.10	1	5979498
R1205.2	5.20	.2047	26.0	62.0	5.20	1	5979502
R1205.3	5.30	.2087	26.0	62.0	5.30	1	5979512
R1205.4	5.40	.2126	28.0	66.0	5.40	1	5979470
R1205.5	5.50	.2165	28.0	66.0	5.50	1	5979511
R1205.6	5.60	.2205	28.0	66.0	5.60	1	5979539
R1205.7	5.70	.2244	28.0	66.0	5.70	1	5979571
R1205.8	5.80	.2283	28.0	66.0	5.80	1	5979606
R1205.9	5.90	.2323	28.0	66.0	5.90	1	5979614
R1206.0	6.00	.2362	28.0	66.0	6.00	1	5979619
R1206.1	6.10	.2402	31.0	70.0	6.10	1	5979623
R1206.2	6.20	.2441	31.0	70.0	6.20	1	5979626
R1206.3	6.30	.2480	31.0	70.0	6.30	1	5979474
R1206.4	6.40	.2520	31.0	70.0	6.40	1	5979478
R1206.5	6.50	.2559	31.0	70.0	6.50	1	5979482
R1206.6	6.60	.2598	31.0	70.0	6.60	1	5979486
R1206.7	6.70	.2638	31.0	70.0	6.70	1	5979489
R1206.8	6.80	.2677	34.0	74.0	6.80	1	5979492
R1206.9	6.90	.2717	34.0	74.0	6.90	1	5979496
R1207.0	7.00	.2756	34.0	74.0	7.00	1	5979500
R1207.1	7.10	.2795	34.0	74.0	7.10	1	5979504
R1207.2	7.20	.2835	34.0	74.0	7.20	1	5979508
R1207.3	7.30	.2874	34.0	74.0	7.30	1	5979515
R1207.4	7.40	.2913	34.0	74.0	7.40	1	5979518
R1207.5	7.50	.2953	34.0	74.0	7.50	1	5979521
R1207.6	7.60	.2992	37.0	79.0	7.60	1	5979524
R1207.7	7.70	.3031	37.0	79.0	7.70	1	5979526
R1207.8	7.80	.3071	37.0	79.0	7.80	1	5979528
R1207.9	7.90	.3110	37.0	79.0	7.90	1	5979530
R1208.0	8.00	.3150	37.0	79.0	8.00	1	5979532
R1208.1	8.10	.3189	37.0	79.0	8.10	1	5979535
R1208.2	8.20	.3228	37.0	79.0	8.20	1	5979538
R1208.3	8.30	.3268	37.0	79.0	8.30	1	5979542
R1208.4	8.40	.3307	37.0	79.0	8.40	1	5979545
R1208.5	8.50	.3346	37.0	79.0	8.50	1	5979548
R1208.6	8.60	.3386	40.0	84.0	8.60	1	5979551
R1208.7	8.70	.3425	40.0	84.0	8.70	1	5979554
R1208.8	8.80	.3465	40.0	84.0	8.80	1	5979557



Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(mm)	(inch)	(mm)	(mm)	(mm)		
R1208.9	8.90	.3504	40.0	84.0	8.90	1	5979560
R1209.0	9.00	.3543	40.0	84.0	9.00	1	5979563
R1209.1	9.10	.3583	40.0	84.0	9.10	1	5979566
R1209.2	9.20	.3622	40.0	84.0	9.20	1	5979569
R1209.3	9.30	.3661	40.0	84.0	9.30	1	5979574
R1209.4	9.40	.3701	40.0	84.0	9.40	1	5979577
R1209.5	9.50	.3740	40.0	84.0	9.50	1	5979580
R1209.6	9.60	.3780	43.0	89.0	9.60	1	5979583
R1209.7	9.70	.3819	43.0	89.0	9.70	1	5979587
R1209.8	9.80	.3858	43.0	89.0	9.80	1	5979591
R1209.9	9.90	.3898	43.0	89.0	9.90	1	5979594
R12010.0	10.00	.3937	43.0	89.0	10.00	1	5979358
R12010.2	10.20	.4016	43.0	89.0	10.20	1	5979361
R12010.5	10.50	.4134	43.0	89.0	10.50	1	5979365
R12011.0	11.00	.4331	47.0	95.0	11.00	1	5979368
R12011.5	11.50	.4528	47.0	95.0	11.50	1	5979371
R12012.0	12.00	.4724	51.0	102.0	12.00	1	5979375



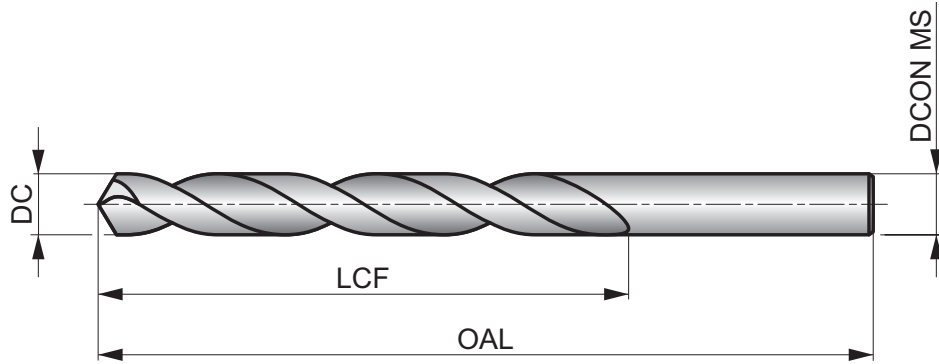
D33F • D33W • D33L • D33M



Solid Carbide Jobber Drill, Bright Finish

Improved wear resistance for increased productivity and extended tool life. A 118°, 4-facet self-centering Point. Low thrust design. For abrasive or non-ferrous materials.

HM	PRECISION	3×D
118°	Bright	
λ 20-35°	R	



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 79.

P1.1 ■ 325 S	P1.2 ■ 364 S	P1.3 ■ 377 S	P2.1 ■ 279 S	P2.2 ■ 246 S	P2.3 ■ 217 S	P3.1 ■ 217 S	P3.2 ■ 174 S	P3.3 ■ 148 S	P4.1 ■ 131 S	P4.2 ■ 112 S	P4.3 ■ 89 S	M1.1 ■ 135 S	M1.2 ■ 115 S
M2.1 ■ 121 S	M2.2 ■ 98 S	K1.1 ■ 246 T	K1.2 ■ 184 T	K1.3 ■ 138 T	K2.1 ■ 223 T	K2.2 ■ 180 T	K2.3 ■ 144 T	K3.1 ■ 197 T	K3.2 ■ 151 T	K3.3 ■ 121 T	K4.1 ■ 180 T	K4.2 ■ 138 T	K4.3 ■ 102 T
K4.4 ■ 85 T	K4.5 ■ 72 T	K5.1 ■ 207 T	K5.2 ■ 154 T	K5.3 ■ 121 T	N1.1 ■ 656 V	N1.2 ■ 492 V	N1.3 ■ 328 V	N2.1 ■ 564 V	N2.2 ■ 509 V	N2.3 ■ 367 V	N3.1 ■ 1388 V	N3.2 ■ 820 V	N4.1 ■ 197 X
N4.2 ■ 328 V	H1.1 ■ 184 S	H2.1 ■ 108 S	H2.2 ■ 118 S	H3.1 ■ 121 S	H3.2 ■ 98 S	H4.1 ■ 98 S	H4.2 ■ 82 S						

Product	DC	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(mm)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
D33WN68	–	N68	0.79	–	.0310	.313	1.250	.031	1	6001815
D33F1/32	1/32	–	0.80	–	.0313	.313	1.250	.031	1	6002760
D33WN67	–	N67	0.81	–	.0320	.313	1.250	.032	1	6002214
D33WN66	–	N66	0.84	–	.0330	.313	1.250	.033	1	6002208
D33WN65	–	N65	0.89	–	.0350	.625	1.375	.035	1	6002205
D33WN64	–	N64	0.91	–	.0360	.625	1.375	.036	1	6002202
D33WN63	–	N63	0.94	–	.0370	.625	1.375	.037	1	6002199
D33WN62	–	N62	0.97	–	.0380	.625	1.375	.038	1	6002197
D33WN61	–	N61	0.99	–	.0390	.625	1.375	.039	1	6002194
D33M1.0	–	–	1.00	–	.0394	.630	1.496	.039	1	6002316
D33WN60	–	N60	1.02	–	.0400	.750	1.500	.040	1	6002192
D33WN59	–	N59	1.04	–	.0410	.750	1.500	.041	1	6002188
D33WN58	–	N58	1.07	–	.0420	.750	1.500	.042	1	6002186
D33WN57	–	N57	1.09	–	.0430	.750	1.500	.043	1	6002182
D33WN56	–	N56	1.18	–	.0465	.750	1.500	.046	1	6002180
D33F3/64	3/64	–	1.19	–	.0469	.750	1.500	.047	1	6002731
D33WN55	–	N55	1.32	–	.0520	.750	1.500	.052	1	6002178
D33WN54	–	N54	1.40	–	.0550	.750	1.500	.055	1	6002175
D33M1.5	–	–	1.50	–	.0591	.748	1.496	.059	1	6002320
D33WN53	–	N53	1.51	–	.0595	.750	1.500	.059	1	6002172
D33F1/16	1/16	–	1.59	–	.0625	.750	1.500	.063	1	6002738



Product	DC	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(mm)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
D33WN52	—	N52	1.61	—	.0635	.750	1.500	.064	1	6002169
D33WN51	—	N51	1.70	—	.0670	.750	1.500	.067	1	6002166
D33WN50	—	N50	1.78	—	.0700	.875	1.750	.070	1	6002163
D33WN49	—	N49	1.85	—	.0730	.875	1.750	.073	1	6002157
D33WN48	—	N48	1.93	—	.0760	.875	1.750	.076	1	6002151
D33F5/64	5/64	—	1.98	—	.0781	.875	1.750	.078	1	6002736
D33WN47	—	N47	1.99	—	.0785	.875	1.750	.079	1	6002147
D33M2.0	—	—	2.00	—	.0787	.866	1.732	.079	1	6002353
D33M2.05	—	—	2.05	—	.0807	.866	1.732	.081	1	6002364
D33WN46	—	N46	2.06	—	.0810	.875	1.750	.081	1	6002145
D33WN45	—	N45	2.08	—	.0820	.875	1.750	.082	1	6002140
D33WN44	—	N44	2.18	—	.0860	1.000	2.000	.086	1	6002136
D33WN43	—	N43	2.26	—	.0890	1.000	2.000	.089	1	6002132
D33WN42	—	N42	2.37	—	.0935	1.000	2.000	.093	1	6002128
D33F3/32	3/32	—	2.38	—	.0938	1.000	2.000	.094	1	6002730
D33WN41	—	N41	2.44	—	.0960	1.000	2.000	.096	1	6002124
D33WN40	—	N40	2.49	—	.0980	1.000	2.000	.098	1	6002120
D33M2.5	—	—	2.50	—	.0984	.984	1.968	.098	1	6002368
D33WN39	—	N39	2.53	—	.0995	1.250	2.250	.100	1	6002106
D33WN38	—	N38	2.58	—	.1015	1.250	2.250	.102	1	6002103
D33WN37	—	N37	2.64	—	.1040	1.250	2.250	.104	1	6002098
D33WN36	—	N36	2.71	—	.1065	1.250	2.250	.106	1	6002091
D33F7/64	7/64	—	2.78	—	.1094	1.250	2.250	.109	1	6002740
D33WN35	—	N35	2.79	—	.1100	1.250	2.250	.110	1	6002086
D33WN34	—	N34	2.82	—	.1110	1.250	2.250	.111	1	6002082
D33WN33	—	N33	2.87	—	.1130	1.250	2.250	.113	1	6002077
D33WN32	—	N32	2.95	—	.1160	1.250	2.250	.116	1	6002073
D33M3.0	—	—	3.00	—	.1181	1.260	2.244	.118	1	6002373
D33WN31	—	N31	3.05	—	.1200	1.250	2.250	.120	1	6002069
D33F1/8	1/8	—	3.18	—	.1250	1.250	2.250	.125	1	6002763
D33WN30	—	N30	3.26	—	.1285	1.250	2.250	.129	1	6002064
D33M3.3	—	—	3.30	—	.1299	1.260	2.244	.130	1	6002378
D33WN29	—	N29	3.45	—	.1360	1.375	2.500	.136	1	6002224
D33M3.5	—	—	3.50	—	.1378	1.378	2.480	.138	1	6002382
D33WN28	—	N28	3.57	—	.1405	1.375	2.500	.141	1	6002221
D33F9/64	9/64	—	3.57	—	.1406	1.375	2.500	.141	1	6002742
D33WN27	—	N27	3.66	—	.1440	1.375	2.500	.144	1	6002217
D33WN26	—	N26	3.73	—	.1470	1.375	2.500	.147	1	6002211
D33WN25	—	N25	3.80	—	.1495	1.375	2.500	.149	1	6002184
D33WN24	—	N24	3.86	—	.1520	1.375	2.500	.152	1	6002154
D33WN23	—	N23	3.91	—	.1540	1.375	2.500	.154	1	6002112
D33F5/32	5/32	—	3.97	—	.1563	1.375	2.500	.156	1	6002735
D33WN22	—	N22	3.99	—	.1570	1.375	2.500	.157	1	6002055
D33M4.0	—	—	4.00	—	.1575	1.378	2.480	.158	1	6002386
D33WN21	—	N21	4.04	—	.1590	1.375	2.500	.159	1	6002473
D33WN20	—	N20	4.09	—	.1610	1.375	2.500	.161	1	6002468
D33WN19	—	N19	4.22	—	.1660	1.625	2.750	.166	1	6002460
D33WN18	—	N18	4.31	—	.1695	1.625	2.750	.170	1	6002457
D33F11/64	11/64	—	4.37	—	.1719	1.625	2.750	.172	1	6002765
D33WN17	—	N17	4.39	—	.1730	1.625	2.750	.173	1	6002454
D33WN16	—	N16	4.50	—	.1770	1.625	2.750	.177	1	6002451
D33M4.5	—	—	4.50	—	.1772	1.614	2.756	.177	1	6002390
D33WN15	—	N15	4.57	—	.1800	1.625	2.750	.180	1	6002448
D33WN14	—	N14	4.62	—	.1820	1.625	2.750	.182	1	6002444
D33WN13	—	N13	4.70	—	.1850	1.625	2.750	.185	1	6002441
D33F3/16	3/16	—	4.76	—	.1875	1.625	2.750	.188	1	6002729
D33WN12	—	N12	4.80	—	.1890	1.625	2.750	.189	1	6002438
D33WN11	—	N11	4.85	—	.1910	1.625	2.750	.191	1	6002432



Product	DC	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(mm)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
D33WN10	–	N10	4.91	–	.1935	1.625	2.750	.194	1	6002429
D33WN9	–	N9	4.98	–	.1960	1.750	3.000	.196	1	6001936
D33M5.0	–	–	5.00	–	.1969	1.732	2.953	.197	1	6002394
D33WN8	–	N8	5.05	–	.1990	1.750	3.000	.199	1	6001909
D33WN7	–	N7	5.11	–	.2010	1.750	3.000	.201	1	6001872
D33F13/64	13/64	–	5.16	–	.2031	1.750	3.000	.203	1	6002704
D33WN6	–	N6	5.18	–	.2040	1.750	3.000	.204	1	6002190
D33WN5	–	N5	5.22	–	.2055	1.750	3.000	.205	1	6002160
D33WN4	–	N4	5.31	–	.2090	1.750	3.000	.209	1	6002117
D33WN3	–	N3	5.41	–	.2130	1.750	3.000	.213	1	6002227
D33M5.5	–	–	5.50	–	.2165	1.732	2.953	.216	1	6002397
D33F7/32	7/32	–	5.56	–	.2188	1.750	3.000	.219	1	6002739
D33WN2	–	N2	5.61	–	.2210	1.750	3.000	.221	1	6002463
D33WN1	–	N1	5.79	–	.2280	1.750	3.000	.228	1	6002426
D33LA	–	–	5.94	A	.2340	2.000	3.250	.234	1	6002743
D33F15/64	15/64	–	5.95	–	.2344	2.000	3.250	.234	1	6002711
D33M6.0	–	–	6.00	–	.2362	1.968	3.228	.236	1	6002400
D33LB	–	–	6.03	B	.2374	2.000	3.250	.237	1	6002744
D33LC	–	–	6.15	C	.2421	2.000	3.250	.242	1	6002745
D33LD	–	–	6.25	D	.2461	2.000	3.250	.246	1	6002746
D33F1/4	1/4	–	6.35	–	.2500	2.000	3.250	.250	1	6002762
D33M6.5	–	–	6.50	–	.2559	1.968	3.228	.256	1	6002406
D33LF	–	–	6.53	F	.2571	2.000	3.250	.257	1	6002747
D33LG	–	–	6.63	G	.2610	1.125	3.500	.261	1	6002748
D33F17/64	17/64	–	6.75	–	.2656	1.125	3.500	.266	1	6002714
D33LH	–	–	6.76	H	.2661	1.125	3.500	.266	1	6002750
D33LI	–	–	6.91	I	.2720	1.125	3.500	.272	1	6002751
D33M7.0	–	–	7.00	–	.2756	2.126	3.504	.276	1	6002409
D33LJ	–	–	7.04	J	.2772	1.125	3.500	.277	1	6002752
D33LK	–	–	7.14	K	.2811	1.125	3.500	.281	1	6002753
D33F9/32	9/32	–	7.15	–	.2813	1.125	3.500	.281	1	6002741
D33LL	–	–	7.37	L	.2902	1.125	3.500	.290	1	6002754
D33LM	–	–	7.49	M	.2949	1.375	3.750	.295	1	6002755
D33M7.5	–	–	7.50	–	.2953	2.362	3.740	.295	1	6002412
D33F19/64	19/64	–	7.54	–	.2969	1.375	3.750	.297	1	6002718
D33LN	–	–	7.67	N	.3020	1.375	3.750	.302	1	6002756
D33F5/16	5/16	–	7.94	–	.3125	1.375	3.750	.313	1	6002734
D33M8.0	–	–	8.00	–	.3150	2.362	3.740	.315	1	6002415
D33LO	–	–	8.03	O	.3161	1.375	3.750	.316	1	6002757
D33LP	–	–	8.20	P	.3228	1.375	3.750	.323	1	6002758
D33F21/64	21/64	–	8.33	–	.3281	1.500	4.000	.328	1	6002723
D33LQ	–	–	8.43	Q	.3319	1.500	4.000	.332	1	6002759
D33M8.5	–	–	8.50	–	.3346	2.480	3.937	.335	1	6002418
D33LR	–	–	8.61	R	.3390	1.500	4.000	.339	1	6002761
D33F11/32	11/32	–	8.73	–	.3437	1.500	4.000	.344	1	6002764
D33LS	–	–	8.84	S	.3480	1.500	4.000	.348	1	6002301
D33M9.0	–	–	9.00	–	.3543	2.756	3.937	.354	1	6002420
D33LT	–	–	9.09	T	.3580	1.500	4.000	.358	1	6002360
D33F23/64	23/64	–	9.13	–	.3594	1.750	4.250	.359	1	6002724
D33LU	–	–	9.35	U	.3680	1.750	4.250	.368	1	6002403
D33M9.5	–	–	9.50	–	.3740	2.756	4.252	.374	1	6002423
D33F3/8	3/8	–	9.53	–	.3750	1.750	4.250	.375	1	6002732
D33LV	–	–	9.58	V	.3772	1.750	4.250	.377	1	6002435
D33LW	–	–	9.80	W	.3858	1.875	4.500	.386	1	6002470
D33F25/64	25/64	–	9.92	–	.3906	1.875	4.500	.391	1	6002725
D33M10.0	–	–	10.00	–	.3937	2.874	4.488	.394	1	6002324
D33LX	–	–	10.08	X	.3969	1.875	4.500	.397	1	6002477
D33LY	–	–	10.26	Y	.4039	1.875	4.500	.404	1	6002480



Product	DC	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(mm)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
D33F13/32	13/32	–	10.32	–	.4063	1.875	4.500	.406	1	6002702
D33LZ	–	–	10.49	Z	.4130	1.875	4.500	.413	1	6002483
D33M10.5	–	–	10.50	–	.4134	2.874	4.488	.413	1	6002328
D33F27/64	27/64	–	10.72	–	.4219	1.875	4.500	.422	1	6002726
D33M10.75	–	–	10.75	–	.4232	2.874	4.488	.423	1	6002333
D33M11.0	–	–	11.00	–	.4331	2.874	4.488	.433	1	6002338
D33F7/16	7/16	–	11.11	–	.4375	1.875	4.500	.438	1	6002737
D33M11.5	–	–	11.50	–	.4528	2.992	4.724	.453	1	6002342
D33F29/64	29/64	–	11.51	–	.4531	3.000	4.750	.453	1	6002728
D33F15/32	15/32	–	11.90	–	.4687	3.000	4.750	.469	1	6002707
D33M12.0	–	–	12.00	–	.4724	2.992	4.724	.472	1	6002347
D33F31/64	31/64	–	12.30	–	.4844	3.000	4.750	.484	1	6002733
D33F1/2	1/2	–	12.70	–	.5000	3.000	4.750	.500	1	6002749



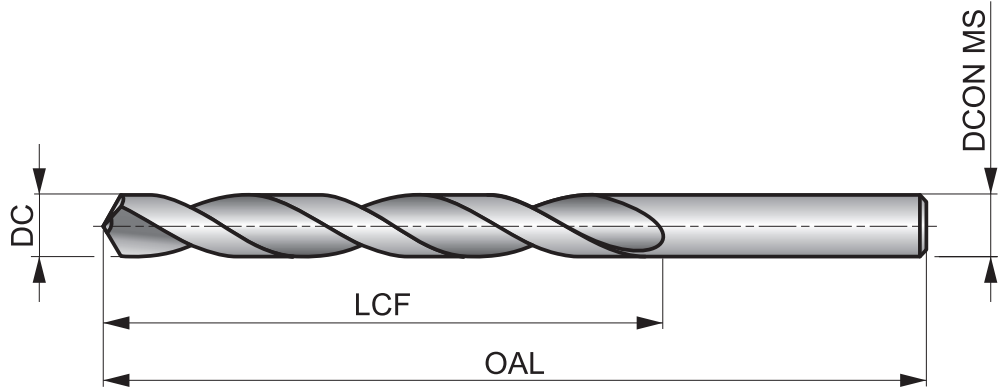
R100



Solid Carbide Jobber Drill, Bright Finish

Improved wear resistance for increased productivity and extended tool life. A 120°, 4-facet point helps with self-centering and reduces cutting forces. Can be used with all CNC machine applications.

HM	DIN 338	4xD
120°	Bright	
λ 20-35°	R	DC h7



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 79.

P1.1 ■ 325 S	P1.2 ■ 364 S	P1.3 ■ 377 S	P2.1 ■ 279 S	P2.2 ■ 246 S	P2.3 ■ 217 S	P3.1 ■ 217 S	P3.2 ■ 174 S	P3.3 ■ 148 S	P4.1 ■ 131 S	P4.2 ■ 112 S	P4.3 ■ 89 S	K1.1 ■ 246 T	K1.2 ■ 184 T
K1.3 ■ 138 T	K2.1 ■ 223 T	K2.2 ■ 180 T	K2.3 ■ 144 T	K3.1 ■ 197 T	K3.2 ■ 151 T	K3.3 ■ 121 T	K4.1 ■ 180 T	K4.2 ■ 138 T	K4.3 ■ 102 T	K4.4 ■ 85 T	K4.5 ■ 72 T	K5.1 ■ 207 T	K5.2 ■ 154 T
K5.3 ■ 121 T	N1.1 ■ 656 V	N1.2 ■ 492 V	N1.3 ■ 328 V	N2.1 ■ 564 V	N2.2 ■ 509 V	N2.3 ■ 367 V	N3.1 ■ 1388 V	N3.2 ■ 820 V	N4.1 ■ 197 X	N4.2 ■ 328 V	H1.1 ■ 184 S	H2.1 ■ 108 S	H2.2 ■ 118 S
H3.1 ■ 121 S	H3.2 ■ 98 S												

Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(mm)	(inch)					
R1001.0	1.00	.0394	12.0	34.0	1.00	1	5979793
R1001.1	1.10	.0433	14.0	36.0	1.10	1	5979825
R1001.2	1.20	.0472	16.0	38.0	1.20	1	5979859
R1001.3	1.30	.0512	16.0	38.0	1.30	1	5979865
R1001.4	1.40	.0551	18.0	40.0	1.40	1	5979869
R1001.5	1.50	.0591	18.0	40.0	1.50	1	5979872
R1001.6	1.60	.0630	20.0	43.0	1.60	1	5979875
R1001.7	1.70	.0669	20.0	43.0	1.70	1	5979722
R1001.8	1.80	.0709	22.0	46.0	1.80	1	5979726
R1001.9	1.90	.0748	22.0	46.0	1.90	1	5979730
R1002.0	2.00	.0787	24.0	49.0	2.00	1	5979765
R1002.1	2.10	.0827	24.0	49.0	2.10	1	5979768
R1002.2	2.20	.0866	27.0	53.0	2.20	1	5979771
R1002.3	2.30	.0906	27.0	53.0	2.30	1	5979774
R1002.4	2.40	.0945	30.0	57.0	2.40	1	5979777
R1002.5	2.50	.0984	30.0	57.0	2.50	1	5979781
R1002.6	2.60	.1024	30.0	57.0	2.60	1	5979784
R1002.7	2.70	.1063	33.0	61.0	2.70	1	5979787
R1002.8	2.80	.1102	33.0	61.0	2.80	1	5979790
R1002.9	2.90	.1142	33.0	61.0	2.90	1	5979796
R1003.0	3.00	.1181	33.0	61.0	3.00	1	5979799



Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(mm)	(inch)	(mm)	(mm)	(mm)		
R1003.1	3.10	.1220	36.0	65.0	3.10	1	5979802
R1003.2	3.20	.1260	36.0	65.0	3.20	1	5979805
R1003.3	3.30	.1299	36.0	65.0	3.30	1	5979808
R1003.4	3.40	.1339	39.0	70.0	3.40	1	5979811
R1003.5	3.50	.1378	39.0	70.0	3.50	1	5979814
R1003.6	3.60	.1417	39.0	70.0	3.60	1	5979817
R1003.7	3.70	.1457	39.0	70.0	3.70	1	5979819
R1003.8	3.80	.1496	43.0	75.0	3.80	1	5979823
R1003.9	3.90	.1535	43.0	75.0	3.90	1	5979827
R1004.0	4.00	.1575	43.0	75.0	4.00	1	5979830
R1004.1	4.10	.1614	43.0	75.0	4.10	1	5979833
R1004.2	4.20	.1654	43.0	75.0	4.20	1	5979837
R1004.3	4.30	.1693	47.0	80.0	4.30	1	5979842
R1004.4	4.40	.1732	47.0	80.0	4.40	1	5979845
R1004.5	4.50	.1772	47.0	80.0	4.50	1	5979848
R1004.6	4.60	.1811	47.0	80.0	4.60	1	5979850
R1004.7	4.70	.1850	47.0	80.0	4.70	1	5979853
R1004.8	4.80	.1890	52.0	86.0	4.80	1	5979856
R1004.9	4.90	.1929	52.0	86.0	4.90	1	5979862
R1005.0	5.00	.1969	52.0	86.0	5.00	1	5979836
R1005.1	5.10	.2008	52.0	86.0	5.10	1	5979874
R1005.2	5.20	.2047	52.0	86.0	5.20	1	5979908
R1005.3	5.30	.2087	52.0	86.0	5.30	1	5979941
R1005.4	5.40	.2126	57.0	93.0	5.40	1	5979977
R1005.5	5.50	.2165	57.0	93.0	5.50	1	5979984
R1005.6	5.60	.2205	57.0	93.0	5.60	1	5979988
R1005.7	5.70	.2244	57.0	93.0	5.70	1	5979992
R1005.8	5.80	.2283	57.0	93.0	5.80	1	5979997
R1005.9	5.90	.2323	57.0	93.0	5.90	1	5979841
R1006.0	6.00	.2362	57.0	93.0	6.00	1	5979844
R1006.1	6.10	.2402	63.0	101.0	6.10	1	5979847
R1006.2	6.20	.2441	63.0	101.0	6.20	1	5979851
R1006.3	6.30	.2480	63.0	101.0	6.30	1	5979854
R1006.4	6.40	.2520	63.0	101.0	6.40	1	5979857
R1006.5	6.50	.2559	63.0	101.0	6.50	1	5979860
R1006.6	6.60	.2598	63.0	101.0	6.60	1	5979863
R1006.7	6.70	.2638	63.0	101.0	6.70	1	5979866
R1006.8	6.80	.2677	69.0	109.0	6.80	1	5979870
R1006.9	6.90	.2717	69.0	109.0	6.90	1	5979878
R1007.0	7.00	.2756	69.0	109.0	7.00	1	5979881
R1007.1	7.10	.2795	69.0	109.0	7.10	1	5979884
R1007.2	7.20	.2835	69.0	109.0	7.20	1	5979887
R1007.3	7.30	.2874	69.0	109.0	7.30	1	5979890
R1007.4	7.40	.2913	69.0	109.0	7.40	1	5979893
R1007.5	7.50	.2953	69.0	109.0	7.50	1	5979896
R1007.6	7.60	.2992	75.0	117.0	7.60	1	5979899
R1007.7	7.70	.3031	75.0	117.0	7.70	1	5979902
R1007.8	7.80	.3071	75.0	117.0	7.80	1	5979905
R1007.9	7.90	.3110	75.0	117.0	7.90	1	5979911
R1008.0	8.00	.3150	75.0	117.0	8.00	1	5979914
R1008.1	8.10	.3189	75.0	117.0	8.10	1	5979917
R1008.2	8.20	.3228	75.0	117.0	8.20	1	5979920
R1008.3	8.30	.3268	75.0	117.0	8.30	1	5979923
R1008.4	8.40	.3307	75.0	117.0	8.40	1	5979927
R1008.5	8.50	.3346	75.0	117.0	8.50	1	5979929
R1008.6	8.60	.3386	81.0	125.0	8.60	1	5979932
R1008.7	8.70	.3425	81.0	125.0	8.70	1	5979935
R1008.8	8.80	.3465	81.0	125.0	8.80	1	5979938



Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(mm)	(inch)	(mm)	(mm)	(mm)		
R1008.9	8.90	.3504	81.0	125.0	8.90	1	5979943
R1009.0	9.00	.3543	81.0	125.0	9.00	1	5979945
R1009.1	9.10	.3583	81.0	125.0	9.10	1	5979948
R1009.2	9.20	.3622	81.0	125.0	9.20	1	5979951
R1009.3	9.30	.3661	81.0	125.0	9.30	1	5979954
R1009.4	9.40	.3701	81.0	125.0	9.40	1	5979957
R1009.5	9.50	.3740	81.0	125.0	9.50	1	5979961
R1009.6	9.60	.3780	87.0	133.0	9.60	1	5979965
R1009.7	9.70	.3819	87.0	133.0	9.70	1	5979969
R1009.8	9.80	.3858	87.0	133.0	9.80	1	5979973
R1009.9	9.90	.3898	87.0	133.0	9.90	1	5979980
R10010.0	10.00	.3937	87.0	133.0	10.00	1	5979734
R10010.2	10.20	.4016	87.0	133.0	10.20	1	5979738
R10010.5	10.50	.4134	87.0	133.0	10.50	1	5979742
R10011.0	11.00	.4331	94.0	142.0	11.00	1	5979746
R10011.5	11.50	.4528	94.0	142.0	11.50	1	5979748
R10012.0	12.00	.4724	101.0	151.0	12.00	1	5979752
R10013.0	13.00	.5118	101.0	151.0	13.00	1	5979756
R10014.0	14.00	.5512	108.0	160.0	14.00	1	5979762



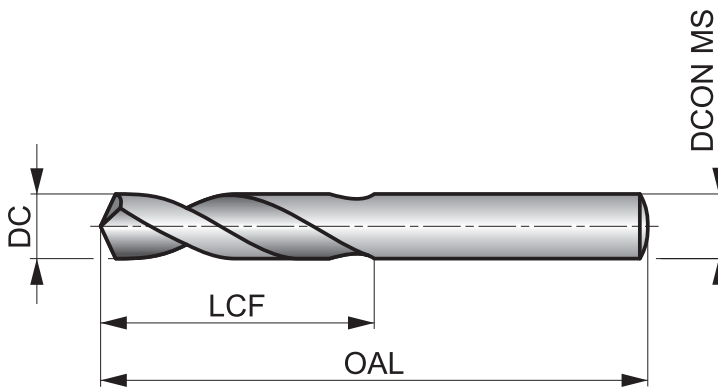
R520



CDX Solid Carbide Stub Drill, TiN Coated

High performance Stub Drill, able to produce high quality and accurate holes at high speeds and feeds (H8 hole tolerance). The 130° point angle helps with self-centering and reduces cutting forces. TiN coating improves performance and extends the tool life. Suitable for all CNC machines and many materials.

CDX



HM	DIN 6539	2.5×D
130°	TiN	
λ 20-35°	R	DC h7

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 79.

P1.1 ■ 390 X	P1.2 ■ 440 X	P1.3 ■ 453 X	P2.1 ■ 335 X	P2.2 ■ 295 X	P2.3 ■ 262 X	P3.1 ■ 266 X	P3.2 ■ 213 X	P3.3 ■ 180 X	P4.1 ■ 157 X	P4.2 ■ 135 X	P4.3 ■ 112 W	M1.1 ■ 226 W	M1.2 ■ 190 W
M2.1 ■ 200 W	M2.2 ■ 164 W	K1.1 ■ 295 Y	K1.2 ■ 220 Y	K1.3 ■ 164 Y	K2.1 ■ 262 X	K2.2 ■ 213 X	K2.3 ■ 171 X	K3.1 ■ 233 X	K3.2 ■ 177 X	K3.3 ■ 144 X	K4.1 ■ 217 X	K4.2 ■ 161 X	K4.3 ■ 118 X
K4.4 ■ 102 X	K4.5 ■ 85 X	K5.1 ■ 243 X	K5.2 ■ 184 X	K5.3 ■ 141 X	N1.1 ■ 738 Z	N1.2 ■ 554 Z	N1.3 ■ 371 Z	N2.1 ■ 758 Y	N2.2 ■ 682 Y	N2.3 ■ 492 Y	N4.1 ■ 246 Z	N4.2 ■ 377 V	S1.1 ■ 197 W
S1.2 ■ 148 V	S1.3 ■ 115 U	H1.1 ■ 213 U	H2.1 ■ 125 U	H2.2 ■ 118 T	H3.1 ■ 141 U	H3.2 ■ 115 U							

DCON MS tolerance h7.

Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
R5203.0	—	3.00	.1181	16.0	46.0	3.00	1	5981147
R5203.1	—	3.10	.1220	18.0	49.0	3.10	1	5981152
R5201/8	1/8	3.18	.1250	18.0	49.0	3.18	1	5980549
R5203.2	—	3.20	.1260	18.0	49.0	3.20	1	5981155
R5203.3	—	3.30	.1299	18.0	49.0	3.30	1	5981161
R5203.4	—	3.40	.1339	20.0	52.0	3.40	1	5981164
R5203.5	—	3.50	.1378	20.0	52.0	3.50	1	5981167
R5203.6	—	3.60	.1417	20.0	52.0	3.60	1	5981171
R5203.7	—	3.70	.1457	20.0	52.0	3.70	1	5981174
R5203.8	—	3.80	.1496	22.0	55.0	3.80	1	5981178
R5203.9	—	3.90	.1535	22.0	55.0	3.90	1	5981182
R5204.0	—	4.00	.1575	22.0	55.0	4.00	1	5981201
R5204.1	—	4.10	.1614	22.0	55.0	4.10	1	5981204
R5204.2	—	4.20	.1654	22.0	55.0	4.20	1	5981208
R5204.3	—	4.30	.1693	24.0	58.0	4.30	1	5981212
R5204.4	—	4.40	.1732	24.0	58.0	4.40	1	5981216
R5204.5	—	4.50	.1772	24.0	58.0	4.50	1	5981220
R5204.6	—	4.60	.1811	24.0	58.0	4.60	1	5981225
R5204.7	—	4.70	.1850	24.0	58.0	4.70	1	5981227
R5204.8	—	4.80	.1890	26.0	62.0	4.80	1	5981230
R5204.9	—	4.90	.1929	26.0	62.0	4.90	1	5981236



Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
R5205.0	–	5.00	.1969	26.0	62.0	5.00	1	5981242
R5205.1	–	5.10	.2008	26.0	62.0	5.10	1	5981244
R5205.2	–	5.20	.2047	26.0	62.0	5.20	1	5981247
R5205.3	–	5.30	.2087	26.0	62.0	5.30	1	5981252
R5205.4	–	5.40	.2126	28.0	66.0	5.40	1	5981254
R5205.5	–	5.50	.2165	28.0	66.0	5.50	1	5981257
R5205.6	–	5.60	.2205	28.0	66.0	5.60	1	5981260
R5205.8	–	5.80	.2283	28.0	66.0	5.80	1	5981266
R5205.9	–	5.90	.2323	28.0	66.0	5.90	1	5981269
R5206.0	–	6.00	.2362	28.0	66.0	6.00	1	5981142
R5206.1	–	6.10	.2402	31.0	70.0	6.10	1	5981176
R5206.2	–	6.20	.2441	31.0	70.0	6.20	1	5981218
R5206.3	–	6.30	.2480	31.0	70.0	6.30	1	5981226
R5201/4	1/4	6.35	.2500	31.0	70.0	6.35	1	5980546
R5206.4	–	6.40	.2520	31.0	70.0	6.40	1	5981229
R5206.5	–	6.50	.2559	31.0	70.0	6.50	1	5981233
R5206.6	–	6.60	.2598	31.0	70.0	6.60	1	5981237
R5206.7	–	6.70	.2638	31.0	70.0	6.70	1	5981073
R5206.8	–	6.80	.2677	34.0	74.0	6.80	1	5981077
R5206.9	–	6.90	.2717	34.0	74.0	6.90	1	5981080
R5207.0	–	7.00	.2756	34.0	74.0	7.00	1	5981084
R5207.1	–	7.10	.2795	34.0	74.0	7.10	1	5981088
R5207.2	–	7.20	.2835	34.0	74.0	7.20	1	5981092
R5207.3	–	7.30	.2874	34.0	74.0	7.30	1	5981096
R5207.4	–	7.40	.2913	34.0	74.0	7.40	1	5981099
R5207.5	–	7.50	.2953	34.0	74.0	7.50	1	5981102
R5207.6	–	7.60	.2992	37.0	79.0	7.60	1	5981105
R5207.7	–	7.70	.3031	37.0	79.0	7.70	1	5981111
R5207.8	–	7.80	.3071	37.0	79.0	7.80	1	5981114
R5205/16	5/16	7.94	.3126	37.0	79.0	7.94	1	5981275
R5208.0	–	8.00	.3150	37.0	79.0	8.00	1	5981126
R5208.1	–	8.10	.3189	37.0	79.0	8.10	1	5981129
R5208.2	–	8.20	.3228	37.0	79.0	8.20	1	5981131
R5208.3	–	8.30	.3268	37.0	79.0	8.30	1	5981135
R5208.4	–	8.40	.3307	37.0	79.0	8.40	1	5981138
R5208.5	–	8.50	.3346	37.0	79.0	8.50	1	5981145
R5208.6	–	8.60	.3386	40.0	84.0	8.60	1	5981148
R5208.7	–	8.70	.3425	40.0	84.0	8.70	1	5981150
R5208.8	–	8.80	.3465	40.0	84.0	8.80	1	5981153
R5209.0	–	9.00	.3543	40.0	84.0	9.00	1	5981159
R5209.1	–	9.10	.3583	40.0	84.0	9.10	1	5981163
R5209.3	–	9.30	.3661	40.0	84.0	9.30	1	5981169
R5209.5	–	9.50	.3740	40.0	84.0	9.50	1	5981180
R5203/8	3/8	9.52	.3748	43.0	89.0	9.52	1	5981189
R5209.6	–	9.60	.3780	43.0	89.0	9.60	1	5981184
R5209.7	–	9.70	.3819	43.0	89.0	9.70	1	5981190
R5209.8	–	9.80	.3858	43.0	89.0	9.80	1	5981194
R52010.0	–	10.00	.3937	43.0	89.0	10.00	1	5980551
R52010.1	–	10.10	.3976	43.0	89.0	10.10	1	5980554
R52010.2	–	10.20	.4016	43.0	89.0	10.20	1	5980557
R52010.3	–	10.30	.4055	43.0	89.0	10.30	1	5980560
R52010.4	–	10.40	.4094	43.0	89.0	10.40	1	5980563
R52010.5	–	10.50	.4134	43.0	89.0	10.50	1	5980566
R52011.0	–	11.00	.4331	47.0	95.0	11.00	1	5980569
R5207/16	7/16	11.11	.4374	47.0	95.0	11.11	1	5981120
R52011.2	–	11.20	.4409	47.0	95.0	11.20	1	5980575
R52011.5	–	11.50	.4528	47.0	95.0	11.50	1	5980579
R52012.0	–	12.00	.4724	51.0	102.0	12.00	1	5980589



Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
R52012.5	–	12.50	.4921	51.0	102.0	12.50	1	5980591
R5201/2	1/2	12.70	.5000	51.0	102.0	12.70	1	5980542
R52013.0	–	13.00	.5118	51.0	102.0	13.00	1	5980595
R52013.5	–	13.50	.5315	54.0	107.0	13.50	1	5980598
R52014.0	–	14.00	.5512	54.0	107.0	14.00	1	5980612
R52014.2	–	14.20	.5591	56.0	111.0	14.20	1	5981124
R52014.25	–	14.25	.5610	56.0	111.0	14.25	1	5981158
R52014.5	–	14.50	.5709	56.0	111.0	14.50	1	5981198
R52015.0	–	15.00	.5906	56.0	111.0	15.00	1	5981238
R52015.1	–	15.10	.5945	58.0	115.0	15.10	1	5981272
R5205/8	5/8	15.88	.6252	58.0	115.0	15.88	1	5981108
R52016.0	–	16.00	.6299	58.0	115.0	16.00	1	5981285
R52016.5	–	16.50	.6496	60.0	119.0	16.50	1	5981289



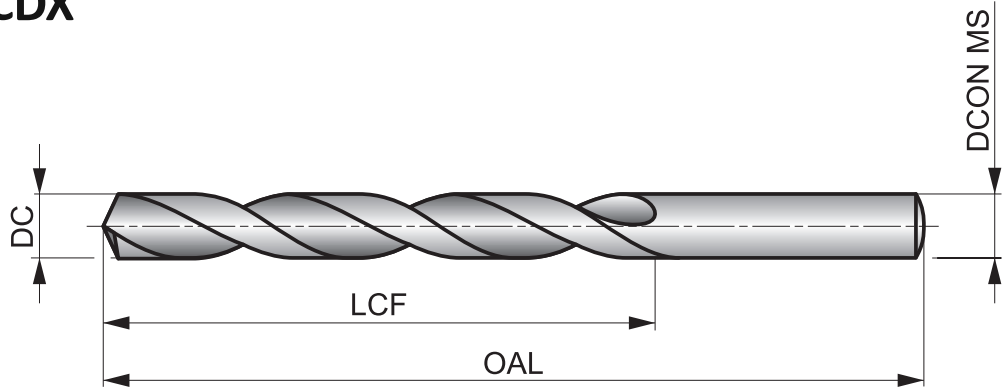
R510



CDX Solid Carbide Jobber Drill, TiN Coated

High performance drill, able to produce high quality and accurate holes at high speeds and feeds (H8 hole tolerance). The 130° point helps with self-centering and reduces cutting forces. TiN coating improves performance and extends the life of the tool. Suitable for all CNC machines and many materials.

CDX



HM	DIN 338	4xD
130°	TiN	
λ 20-35°	R	DC h7

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 79.

P1.1 ■ 390 W	P1.2 ■ 440 W	P1.3 ■ 453 W	P2.1 ■ 335 W	P2.2 ■ 295 W	P2.3 ■ 262 V	P3.1 ■ 266 W	P3.2 ■ 213 W	P3.3 ■ 180 V	P4.1 ■ 157 W	P4.2 ■ 135 V	P4.3 ■ 112 V	M1.1 ■ 226 V	M1.2 ■ 190 V
M2.1 ■ 200 V	M2.2 ■ 164 V	K1.1 ■ 295 X	K1.2 ■ 220 X	K1.3 ■ 164 X	K2.1 ■ 262 W	K2.2 ■ 213 W	K2.3 ■ 171 W	K3.1 ■ 233 W	K3.2 ■ 177 W	K3.3 ■ 144 W	K4.1 ■ 217 W	K4.2 ■ 161 W	K4.3 ■ 118 W
K4.4 ■ 102 W	K4.5 ■ 85 W	K5.1 ■ 243 W	K5.2 ■ 184 W	K5.3 ■ 141 W	N1.1 ■ 738 Y	N1.2 ■ 554 Y	N1.3 ■ 371 Y	N2.1 ■ 758 X	N2.2 ■ 682 X	N2.3 ■ 492 X	N4.1 ■ 246 X	N4.2 ■ 377 V	S1.1 ■ 148 V
H1.1 ■ 213 T	H2.1 ■ 125 T	H2.2 ■ 118 S	H3.1 ■ 141 T	H3.2 ■ 115 T									

DCON MS tolerance h7.

Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
R5103.0	–	3.00	.1181	33.0	61.0	3.00	1	5980504
R5101/8	1/8	3.18	.1250	36.0	65.0	3.18	1	5980502
R5103.2	–	3.20	.1260	36.0	65.0	3.20	1	5980508
R5103.3	–	3.30	.1299	36.0	65.0	3.30	1	5980512
R5103.4	–	3.40	.1339	39.0	70.0	3.40	1	5980515
R5103.5	–	3.50	.1378	39.0	70.0	3.50	1	5980518
R5103.7	–	3.70	.1457	39.0	70.0	3.70	1	5980522
R5103.9	–	3.90	.1535	43.0	75.0	3.90	1	5980526
R5104.0	–	4.00	.1575	43.0	75.0	4.00	1	5980538
R5104.1	–	4.10	.1614	43.0	75.0	4.10	1	5980540
R5104.2	–	4.20	.1654	43.0	75.0	4.20	1	5980543
R5104.3	–	4.30	.1693	47.0	80.0	4.30	1	5980545
R5104.5	–	4.50	.1772	47.0	80.0	4.50	1	5980548
R5104.7	–	4.70	.1850	47.0	80.0	4.70	1	5980556
R5103/16	3/16	4.76	.1874	52.0	86.0	4.76	1	5980529
R5104.9	–	4.90	.1929	52.0	86.0	4.90	1	5980559
R5105.0	–	5.00	.1969	52.0	86.0	5.00	1	5980562
R5105.1	–	5.10	.2008	52.0	86.0	5.10	1	5980565
R5105.5	–	5.50	.2165	57.0	93.0	5.50	1	5980571
R5105.6	–	5.60	.2205	57.0	93.0	5.60	1	5980472
R5105.7	–	5.70	.2244	57.0	93.0	5.70	1	5980510



Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
R5106.0	–	6.00	.2362	57.0	93.0	6.00	1	5980607
R5101/4	1/4	6.35	.2500	63.0	101.0	6.35	1	5980460
R5106.5	–	6.50	.2559	63.0	101.0	6.50	1	5980615
R5106.6	–	6.60	.2598	63.0	101.0	6.60	1	5980619
R5106.8	–	6.80	.2677	69.0	109.0	6.80	1	5980622
R5107.0	–	7.00	.2756	69.0	109.0	7.00	1	5980478
R5107.3	–	7.30	.2874	69.0	109.0	7.30	1	5980481
R5107.4	–	7.40	.2913	69.0	109.0	7.40	1	5980484
R5107.5	–	7.50	.2953	69.0	109.0	7.50	1	5980488
R5107.8	–	7.80	.3071	75.0	117.0	7.80	1	5980493
R5105/16	5/16	7.94	.3126	75.0	117.0	7.94	1	5980539
R5108.0	–	8.00	.3150	75.0	117.0	8.00	1	5980505
R5108.5	–	8.50	.3346	75.0	117.0	8.50	1	5980507
R5108.7	–	8.70	.3425	81.0	125.0	8.70	1	5980513
R5108.8	–	8.80	.3465	81.0	125.0	8.80	1	5980516
R5109.0	–	9.00	.3543	81.0	125.0	9.00	1	5980519
R5109.2	–	9.20	.3622	81.0	125.0	9.20	1	5980521
R5109.3	–	9.30	.3661	81.0	125.0	9.30	1	5980525
R5109.5	–	9.50	.3740	81.0	125.0	9.50	1	5980531
R5103/8	3/8	9.52	.3748	87.0	133.0	9.52	1	5980530
R5109.9	–	9.90	.3898	87.0	133.0	9.90	1	5980533
R51010.0	–	10.00	.3937	87.0	133.0	10.00	1	5980534
R51010.2	–	10.20	.4016	87.0	133.0	10.20	1	5980568
R51010.3	–	10.30	.4055	87.0	133.0	10.30	1	5980574
R51010.4	–	10.40	.4094	87.0	133.0	10.40	1	5980577
R51010.5	–	10.50	.4134	87.0	133.0	10.50	1	5980581
R51010.8	–	10.80	.4252	94.0	142.0	10.80	1	5980585
R51011.0	–	11.00	.4331	94.0	142.0	11.00	1	5980424
R5107/16	7/16	11.11	.4374	94.0	142.0	11.11	1	5980500
R51011.2	–	11.20	.4409	94.0	142.0	11.20	1	5980427
R51011.5	–	11.50	.4528	94.0	142.0	11.50	1	5980431
R51012.0	–	12.00	.4724	101.0	151.0	12.00	1	5980441
R5101/2	1/2	12.70	.5000	101.0	151.0	12.70	1	5980417
R51013.0	–	13.00	.5118	101.0	151.0	13.00	1	5980448
R51014.0	–	14.00	.5512	108.0	160.0	14.00	1	5980458



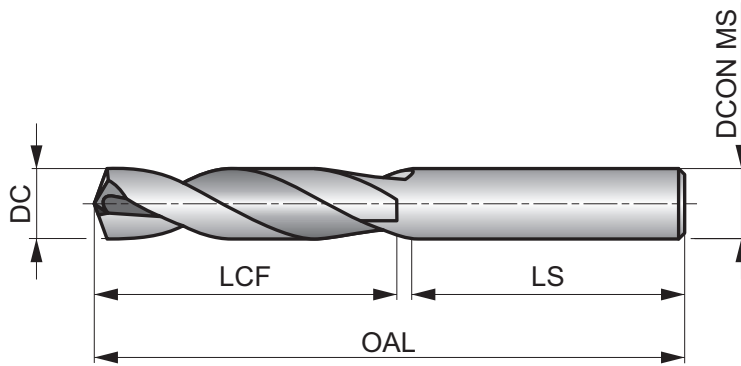
R458



FORCE X Solid Carbide 3XD Drill, TiAlN Coated

High performance drill, able to produce high quality and accurate holes at high speeds and feeds (H9 hole tolerance). Self centering 140°, 4-facet split point and CTW flute construction for enhanced penetration rates. TiAlN coating increases surface hardness and improves tool life.

FORCE X



HM	DIN 6537K	3xD
140°	TiAlN	DIN 6535HA
CTW	R	DC m7

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 79.

P1.1 ■ 469 W	P1.2 ■ 525 W	P1.3 ■ 545 W	P2.1 ■ 400 W	P2.2 ■ 354 W	P2.3 ■ 312 V	P3.1 ■ 348 V	P3.2 ■ 282 V	P3.3 ■ 236 V	P4.1 ■ 207 V	P4.2 ■ 177 V	P4.3 ■ 144 U	M1.1 ■ 197 U	M1.2 ■ 167 U
M2.1 ■ 177 U	M2.2 ■ 144 U	M2.3 ■ 121 T	M3.1 ■ 108 T	M3.2 ■ 92 T	M3.3 ■ 85 T	M4.1 ■ 79 T	M4.2 ■ 69 T	K1.1 ■ 289 W	K1.2 ■ 213 W	K1.3 ■ 161 W	K2.1 ■ 256 V	K2.2 ■ 210 V	K2.3 ■ 167 V
K3.1 ■ 230 V	K3.2 ■ 177 V	K3.3 ■ 141 V	K4.1 ■ 213 V	K4.2 ■ 161 V	K4.3 ■ 118 V	K4.4 ■ 98 V	K4.5 ■ 85 V	K5.1 ■ 240 V	K5.2 ■ 180 V	K5.3 ■ 138 V	N1.1 ■ 656 W	N1.2 ■ 492 W	N1.3 ■ 328 W
N2.1 ■ 807 V	N2.2 ■ 728 V	N2.3 ■ 525 V	N3.1 ■ 978 V	N3.2 ■ 577 V	N3.3 ■ 289 V	S1.1 ■ 144 U	S1.2 ■ 118 U	S1.3 ■ 105 T	H1.1 ■ 148 U	H2.1 ■ 85 U	H2.2 ■ 79 U	H3.1 ■ 98 U	H3.2 ■ 79 U

DCON MS tolerance h6.

Product	DC (inch)	DC (Wire gauge size)	DC (Letter size)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	LS (mm)	DCON MS (mm)	Pack Qty	MID
R4583.0	—	—	—	3.00	.1181	20.0	62.0	36.0	6.00	1	5981063
R4583.1	—	—	—	3.10	.1220	20.0	62.0	36.0	6.00	1	5981066
R4581/8	1/8	—	—	3.18	.1250	20.0	62.0	36.0	6.00	1	5980514
R4583.2	—	—	—	3.20	.1260	20.0	62.0	36.0	6.00	1	5981070
R458N30	—	N30	—	3.26	.1283	20.0	62.0	36.0	6.00	1	5980227
R4583.3	—	—	—	3.30	.1299	20.0	62.0	36.0	6.00	1	5981074
R4583.4	—	—	—	3.40	.1339	20.0	62.0	36.0	6.00	1	5981081
R458N29	—	N29	—	3.45	.1360	20.0	62.0	36.0	6.00	1	5980221
R4583.5	—	—	—	3.50	.1378	20.0	62.0	36.0	6.00	1	5981086
R458N28	—	N28	—	3.57	.1406	20.0	62.0	36.0	6.00	1	5980216
R4589/64	9/64	—	—	3.57	.1406	20.0	62.0	36.0	6.00	1	5980470
R4583.6	—	—	—	3.60	.1417	20.0	62.0	36.0	6.00	1	5981090
R458N27	—	N27	—	3.66	.1441	20.0	62.0	36.0	6.00	1	5980213
R4583.7	—	—	—	3.70	.1457	20.0	62.0	36.0	6.00	1	5981093
R4583.73	—	—	—	3.73	.1469	24.0	66.0	36.0	6.00	1	5981095
R458N26	—	N26	—	3.73	.1469	24.0	66.0	36.0	6.00	1	5980210
R458N25	—	N25	—	3.80	.1496	24.0	66.0	36.0	6.00	1	5980207
R4583.8	—	—	—	3.80	.1496	24.0	66.0	36.0	6.00	1	5981098
R458N24	—	N24	—	3.86	.1520	24.0	66.0	36.0	6.00	1	5980204
R4583.9	—	—	—	3.90	.1535	24.0	66.0	36.0	6.00	1	5981101
R458N23	—	N23	—	3.91	.1539	24.0	66.0	36.0	6.00	1	5980201



Product	DC	DC	DC	DC	DC	LCF	OAL	LS	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(mm)	(inch)	(mm)	(mm)	(mm)	(mm)		
R4585/32	5/32	–	–	3.97	.1563	24.0	66.0	36.0	6.00	1	5980485
R458N22	–	N22	–	3.99	.1571	24.0	66.0	36.0	6.00	1	5980198
R4584.0	–	–	–	4.00	.1575	24.0	66.0	36.0	6.00	1	5981132
R458N21	–	N21	–	4.04	.1591	24.0	66.0	36.0	6.00	1	5980192
R458N20	–	N20	–	4.09	.1610	24.0	66.0	36.0	6.00	1	5980188
R4584.1	–	–	–	4.10	.1614	24.0	66.0	36.0	6.00	1	5981134
R4584.2	–	–	–	4.20	.1654	24.0	66.0	36.0	6.00	1	5981137
R458N19	–	N19	–	4.22	.1661	24.0	66.0	36.0	6.00	1	5980180
R4584.3	–	–	–	4.30	.1693	24.0	66.0	36.0	6.00	1	5981140
R458N18	–	N18	–	4.31	.1697	24.0	66.0	36.0	6.00	1	5980176
R45811/64	11/64	–	–	4.37	.1719	24.0	66.0	36.0	6.00	1	5980411
R458N17	–	N17	–	4.39	.1728	24.0	66.0	36.0	6.00	1	5980172
R4584.4	–	–	–	4.40	.1732	24.0	66.0	36.0	6.00	1	5981143
R4584.5	–	–	–	4.50	.1772	24.0	66.0	36.0	6.00	1	5981149
R458N16	–	N16	–	4.50	.1772	24.0	66.0	36.0	6.00	1	5980169
R458N15	–	N15	–	4.57	.1799	24.0	66.0	36.0	6.00	1	5980166
R4584.6	–	–	–	4.60	.1811	24.0	66.0	36.0	6.00	1	5981151
R458N14	–	N14	–	4.62	.1819	24.0	66.0	36.0	6.00	1	5980163
R458N13	–	N13	–	4.70	.1850	24.0	66.0	36.0	6.00	1	5980160
R4584.7	–	–	–	4.70	.1850	24.0	66.0	36.0	6.00	1	5981154
R4583/16	3/16	–	–	4.76	.1875	28.0	66.0	36.0	6.00	1	5981103
R4584.8	–	–	–	4.80	.1890	28.0	66.0	36.0	6.00	1	5981157
R458N12	–	N12	–	4.80	.1890	28.0	66.0	36.0	6.00	1	5980156
R458N11	–	N11	–	4.85	.1909	28.0	66.0	36.0	6.00	1	5980153
R4584.9	–	–	–	4.90	.1929	28.0	66.0	36.0	6.00	1	5981160
R458N10	–	N10	–	4.92	.1937	28.0	66.0	36.0	6.00	1	5980150
R458N9	–	N9	–	4.98	.1961	28.0	66.0	36.0	6.00	1	5980253
R4585.0	–	–	–	5.00	.1969	28.0	66.0	36.0	6.00	1	5981175
R458N8	–	N8	–	5.06	.1992	28.0	66.0	36.0	6.00	1	5980250
R4585.1	–	–	–	5.10	.2008	28.0	66.0	36.0	6.00	1	5981181
R458N7	–	N7	–	5.11	.2010	28.0	66.0	36.0	6.00	1	5980247
R45813/64	13/64	–	–	5.16	.2031	28.0	66.0	36.0	6.00	1	5980456
R458N6	–	N6	–	5.18	.2039	28.0	66.0	36.0	6.00	1	5980243
R4585.2	–	–	–	5.20	.2047	28.0	66.0	36.0	6.00	1	5980322
R458N5	–	N5	–	5.22	.2055	28.0	66.0	36.0	6.00	1	5980240
R4585.3	–	–	–	5.30	.2087	28.0	66.0	36.0	6.00	1	7361260
R458N4	–	N4	–	5.31	.2091	28.0	66.0	36.0	6.00	1	5980237
R4585.4	–	–	–	5.40	.2126	28.0	66.0	36.0	6.00	1	7361261
R458N3	–	N3	–	5.41	.2130	28.0	66.0	36.0	6.00	1	5980226
R4585.5	–	–	–	5.50	.2165	28.0	66.0	36.0	6.00	1	5980360
R4587/32	7/32	–	–	5.56	.2188	28.0	66.0	36.0	6.00	1	5980394
R4585.6	–	–	–	5.60	.2205	28.0	66.0	36.0	6.00	1	5980397
R458N2	–	N2	–	5.61	.2209	28.0	66.0	36.0	6.00	1	5980184
R4585.7	–	–	–	5.70	.2244	28.0	66.0	36.0	6.00	1	5980435
R458N1	–	N1	–	5.79	.2280	28.0	66.0	36.0	6.00	1	5980146
R4585.8	–	–	–	5.80	.2283	28.0	66.0	36.0	6.00	1	5980474
R4585.9	–	–	–	5.90	.2323	28.0	66.0	36.0	6.00	1	7361262
R45815/64	15/64	–	–	5.95	.2344	28.0	66.0	36.0	6.00	1	5980494
R4586.0	–	–	–	6.00	.2362	28.0	66.0	36.0	6.00	1	5980492
R458B	–	–	B	6.05	.2380	34.0	79.0	36.0	8.00	1	7361263
R4586.1	–	–	–	6.10	.2402	34.0	79.0	36.0	8.00	1	5980329
R458C	–	–	C	6.15	.2421	34.0	79.0	36.0	8.00	1	7361264
R4586.2	–	–	–	6.20	.2441	34.0	79.0	36.0	8.00	1	5980333
R458D	–	–	D	6.25	.2461	34.0	79.0	36.0	8.00	1	5980131
R4586.3	–	–	–	6.30	.2480	34.0	79.0	36.0	8.00	1	5980336
R4581/4	1/4	–	–	6.35	.2500	34.0	79.0	36.0	8.00	1	5980479
R4586.4	–	–	–	6.40	.2520	34.0	79.0	36.0	8.00	1	5980339
R4586.5	–	–	–	6.50	.2559	34.0	79.0	36.0	8.00	1	5980342



Product	DC	DC	DC	DC	DC	LCF	OAL	LS	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(mm)	(inch)	(mm)	(mm)	(mm)	(mm)		
R458F	–	–	F	6.53	.2571	34.0	79.0	36.0	8.00	1	7361266
R4586.6	–	–	–	6.60	.2598	34.0	79.0	36.0	8.00	1	5980345
R458G	–	–	G	6.63	.2610	34.0	79.0	36.0	8.00	1	7361267
R4586.7	–	–	–	6.70	.2638	34.0	79.0	36.0	8.00	1	5980347
R45817/64	17/64	–	–	6.75	.2656	34.0	79.0	36.0	8.00	1	5980517
R458H	–	–	H	6.76	.2661	34.0	79.0	36.0	8.00	1	5980134
R4586.8	–	–	–	6.80	.2677	34.0	79.0	36.0	8.00	1	5980350
R4586.9	–	–	–	6.90	.2717	34.0	79.0	36.0	8.00	1	5980353
R458I	–	–	I	6.91	.2720	34.0	79.0	36.0	8.00	1	7361268
R4587.0	–	–	–	7.00	.2756	34.0	79.0	36.0	8.00	1	5980356
R458J	–	–	J	7.04	.2772	34.0	79.0	36.0	8.00	1	7361269
R4587.1	–	–	–	7.10	.2795	41.0	79.0	36.0	8.00	1	5980362
R4589/32	9/32	–	–	7.14	.2813	41.0	79.0	36.0	8.00	1	5980467
R4587.2	–	–	–	7.20	.2835	41.0	79.0	36.0	8.00	1	7361271
R4587.3	–	–	–	7.30	.2874	41.0	79.0	36.0	8.00	1	5980366
R458L	–	–	L	7.37	.2902	41.0	79.0	36.0	8.00	1	5980136
R4587.4	–	–	–	7.40	.2913	41.0	79.0	36.0	8.00	1	5980369
R4587.5	–	–	–	7.50	.2953	41.0	79.0	36.0	8.00	1	5980373
R45819/64	19/64	–	–	7.54	.2969	41.0	79.0	36.0	8.00	1	5981188
R4587.6	–	–	–	7.60	.2992	41.0	79.0	36.0	8.00	1	5980377
R458N	–	–	N	7.67	.3020	41.0	79.0	36.0	8.00	1	5980144
R4587.7	–	–	–	7.70	.3031	41.0	79.0	36.0	8.00	1	5980381
R4587.8	–	–	–	7.80	.3071	41.0	79.0	36.0	8.00	1	5980385
R4587.9	–	–	–	7.90	.3110	41.0	79.0	36.0	8.00	1	5980388
R4585/16	5/16	–	–	7.94	.3125	41.0	79.0	36.0	8.00	1	5980480
R4588.0	–	–	–	8.00	.3150	41.0	79.0	36.0	8.00	1	5980400
R4580	–	–	O	8.03	.3161	47.0	89.0	40.0	10.00	1	5980256
R4588.1	–	–	–	8.10	.3189	47.0	89.0	40.0	10.00	1	5980403
R4588.2	–	–	–	8.20	.3228	47.0	89.0	40.0	10.00	1	5980406
R4588.3	–	–	–	8.30	.3268	47.0	89.0	40.0	10.00	1	7361273
R45821/64	21/64	–	–	8.33	.3281	47.0	89.0	40.0	10.00	1	5981046
R4588.4	–	–	–	8.40	.3307	47.0	89.0	40.0	10.00	1	5980409
R458Q	–	–	Q	8.43	.3319	47.0	89.0	40.0	10.00	1	5980260
R4588.5	–	–	–	8.50	.3346	47.0	89.0	40.0	10.00	1	5980412
R4588.6	–	–	–	8.60	.3386	47.0	89.0	40.0	10.00	1	5980415
R458R	–	–	R	8.61	.3390	47.0	89.0	40.0	10.00	1	7361274
R4588.7	–	–	–	8.70	.3425	47.0	89.0	40.0	10.00	1	5980418
R45811/32	11/32	–	–	8.73	.3438	47.0	89.0	40.0	10.00	1	5980408
R4588.8	–	–	–	8.80	.3465	47.0	89.0	40.0	10.00	1	5980421
R458S	–	–	S	8.84	.3480	47.0	89.0	40.0	10.00	1	7361275
R4588.9	–	–	–	8.90	.3504	47.0	89.0	40.0	10.00	1	7361276
R4589.0	–	–	–	9.00	.3543	47.0	89.0	40.0	10.00	1	5980425
R458T	–	–	T	9.09	.3579	47.0	89.0	40.0	10.00	1	5980263
R4589.1	–	–	–	9.10	.3583	47.0	89.0	40.0	10.00	1	5980428
R45823/64	23/64	–	–	9.13	.3594	47.0	89.0	40.0	10.00	1	5981051
R4589.2	–	–	–	9.20	.3622	47.0	89.0	40.0	10.00	1	7361277
R4589.3	–	–	–	9.30	.3661	47.0	89.0	40.0	10.00	1	5980439
R458U	–	–	U	9.35	.3681	47.0	89.0	40.0	10.00	1	5980266
R4589.4	–	–	–	9.40	.3701	47.0	89.0	40.0	10.00	1	5980443
R4589.5	–	–	–	9.50	.3740	47.0	89.0	40.0	10.00	1	5980445
R4583/8	3/8	–	–	9.53	.3750	47.0	89.0	40.0	10.00	1	5981109
R458V	–	–	V	9.58	.3772	47.0	89.0	40.0	10.00	1	7361278
R4589.6	–	–	–	9.60	.3780	47.0	89.0	40.0	10.00	1	5980449
R4589.7	–	–	–	9.70	.3819	47.0	89.0	40.0	10.00	1	5980454
R4589.8	–	–	–	9.80	.3858	47.0	89.0	40.0	10.00	1	5980457
R4589.9	–	–	–	9.90	.3898	47.0	89.0	40.0	10.00	1	5980461
R45825/64	25/64	–	–	9.92	.3906	47.0	89.0	40.0	10.00	1	5981055
R45810.0	–	–	–	10.00	.3937	47.0	89.0	40.0	10.00	1	5980520



Product	DC	DC	DC	DC	DC	LCF	OAL	LS	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(mm)	(inch)	(mm)	(mm)	(mm)	(mm)		
R458X	–	–	X	10.08	.3969	55.0	102.0	45.0	12.00	1	5980271
R45810.1	–	–	–	10.10	.3976	55.0	102.0	45.0	12.00	1	5980523
R45810.2	–	–	–	10.20	.4016	55.0	102.0	45.0	12.00	1	5980524
R458Y	–	–	Y	10.26	.4039	55.0	102.0	45.0	12.00	1	5980359
R45810.3	–	–	–	10.30	.4055	55.0	102.0	45.0	12.00	1	5980527
R45813/32	13/32	–	–	10.32	.4063	55.0	102.0	45.0	12.00	1	5980453
R45810.4	–	–	–	10.40	.4094	55.0	102.0	45.0	12.00	1	5980364
R45810.5	–	–	–	10.50	.4134	55.0	102.0	45.0	12.00	1	5980370
R45810.6	–	–	–	10.60	.4173	55.0	102.0	45.0	12.00	1	5980374
R45810.7	–	–	–	10.70	.4213	55.0	102.0	45.0	12.00	1	7361280
R45827/64	27/64	–	–	10.72	.4219	55.0	102.0	45.0	12.00	1	5981058
R45810.8	–	–	–	10.80	.4252	55.0	102.0	45.0	12.00	1	5980378
R45810.9	–	–	–	10.90	.4291	55.0	102.0	45.0	12.00	1	7361281
R45811.0	–	–	–	11.00	.4331	55.0	102.0	45.0	12.00	1	5980384
R45811.1	–	–	–	11.10	.4370	55.0	102.0	45.0	12.00	1	7361282
R4587/16	7/16	–	–	11.11	.4375	55.0	102.0	45.0	12.00	1	5980391
R45811.2	–	–	–	11.20	.4409	55.0	102.0	45.0	12.00	1	5980387
R45811.3	–	–	–	11.30	.4449	55.0	102.0	45.0	12.00	1	7361283
R45811.4	–	–	–	11.40	.4488	55.0	102.0	45.0	12.00	1	5980390
R45811.5	–	–	–	11.50	.4528	55.0	102.0	45.0	12.00	1	5980393
R45829/64	29/64	–	–	11.51	.4531	55.0	102.0	45.0	12.00	1	5981061
R45811.6	–	–	–	11.60	.4567	55.0	102.0	45.0	12.00	1	5980396
R45811.7	–	–	–	11.70	.4606	55.0	102.0	45.0	12.00	1	7361284
R45811.8	–	–	–	11.80	.4646	55.0	102.0	45.0	12.00	1	5980399
R45811.9	–	–	–	11.90	.4685	55.0	102.0	45.0	12.00	1	7361285
R45815/32	15/32	–	–	11.91	.4688	55.0	102.0	45.0	12.00	1	5980490
R45812.0	–	–	–	12.00	.4724	55.0	102.0	45.0	12.00	1	5980414
R45812.1	–	–	–	12.10	.4764	60.0	107.0	45.0	14.00	1	5980419
R45812.2	–	–	–	12.20	.4803	60.0	107.0	45.0	14.00	1	5980422
R45831/64	31/64	–	–	12.30	.4844	60.0	107.0	45.0	14.00	1	5981115
R45812.5	–	–	–	12.50	.4921	60.0	107.0	45.0	14.00	1	5980426
R45812.7	–	–	–	12.70	.5000	60.0	107.0	45.0	14.00	1	5980430
R4581/2	1/2	–	–	12.70	.5000	60.0	107.0	45.0	14.00	1	5980442
R45812.8	–	–	–	12.80	.5039	60.0	107.0	45.0	14.00	1	5980433
R45813.0	–	–	–	13.00	.5118	60.0	107.0	45.0	14.00	1	5980438
R45833/64	33/64	–	–	13.10	.5156	60.0	107.0	45.0	14.00	1	5981118
R45813.3	–	–	–	13.30	.5236	60.0	107.0	45.0	14.00	1	7361286
R45817/32	17/32	–	–	13.49	.5313	60.0	107.0	45.0	14.00	1	5980511
R45813.5	–	–	–	13.50	.5315	60.0	107.0	45.0	14.00	1	5980446
R45813.8	–	–	–	13.80	.5433	60.0	107.0	45.0	14.00	1	5980450
R45835/64	35/64	–	–	13.89	.5469	60.0	107.0	45.0	14.00	1	5981121
R45814.0	–	–	–	14.00	.5512	60.0	107.0	45.0	14.00	1	5980459
R45814.25	–	–	–	14.25	.5610	65.0	115.0	48.0	16.00	1	5980462
R4589/16	9/16	–	–	14.29	.5625	65.0	115.0	48.0	16.00	1	5980464
R45814.5	–	–	–	14.50	.5709	65.0	115.0	48.0	16.00	1	5980465
R45837/64	37/64	–	–	14.68	.5781	65.0	115.0	48.0	16.00	1	5981125
R45814.8	–	–	–	14.80	.5827	65.0	115.0	48.0	16.00	1	5980468
R45815.0	–	–	–	15.00	.5906	65.0	115.0	48.0	16.00	1	5980471
R45819/32	19/32	–	–	15.08	.5938	65.0	115.0	48.0	16.00	1	5981185
R45815.1	–	–	–	15.10	.5945	65.0	115.0	48.0	16.00	1	5980475
R45815.3	–	–	–	15.30	.6024	65.0	115.0	48.0	16.00	1	7361287
R45839/64	39/64	–	–	15.48	.6094	65.0	115.0	48.0	16.00	1	5981127
R45815.5	–	–	–	15.50	.6102	65.0	115.0	48.0	16.00	1	5980483
R45815.8	–	–	–	15.80	.6220	65.0	115.0	48.0	16.00	1	5980487
R4585/8	5/8	–	–	15.88	.6250	65.0	115.0	48.0	16.00	1	5980489
R45816.0	–	–	–	16.00	.6299	65.0	115.0	48.0	16.00	1	5980496
R45841/64	41/64	–	–	16.27	.6406	73.0	123.0	48.0	18.00	1	5981162
R45816.5	–	–	–	16.50	.6496	73.0	123.0	48.0	18.00	1	5980499



Product	DC	DC	DC	DC	DC	LCF	OAL	LS	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(mm)	(inch)	(mm)	(mm)	(mm)	(mm)		
R45821/32	21/32	–	–	16.67	.6563	73.0	123.0	48.0	18.00	1	5981197
R45817.0	–	–	–	17.00	.6693	73.0	123.0	48.0	18.00	1	5980503
R45843/64	43/64	–	–	17.07	.6720	73.0	123.0	48.0	18.00	1	5981165
R45811/16	11/16	–	–	17.46	.6874	73.0	123.0	48.0	18.00	1	5980405
R45817.5	–	–	–	17.50	.6890	73.0	123.0	48.0	18.00	1	5980506
R45817.8	–	–	–	17.80	.7008	73.0	123.0	48.0	18.00	1	5980509
R45845/64	45/64	–	–	17.86	.7031	73.0	123.0	48.0	18.00	1	5981168
R45818.0	–	–	–	18.00	.7087	73.0	123.0	48.0	18.00	1	5981043
R45823/32	23/32	–	–	18.26	.7189	79.0	131.0	50.0	20.00	1	5981049
R45818.5	–	–	–	18.50	.7283	79.0	131.0	50.0	20.00	1	5981078
R45847/64	47/64	–	–	18.65	.7343	79.0	131.0	50.0	20.00	1	5981170
R45819.0	–	–	–	19.00	.7480	79.0	131.0	50.0	20.00	1	5981112
R4583/4	–	–	–	19.05	.7500	79.0	131.0	50.0	20.00	1	5981106
R45819.5	–	–	–	19.50	.7677	79.0	131.0	50.0	20.00	1	5981146
R45819.8	–	–	–	19.80	.7795	79.0	131.0	50.0	20.00	1	5981177
R45820.0	–	–	–	20.00	.7874	79.0	131.0	50.0	20.00	1	5981192



R457

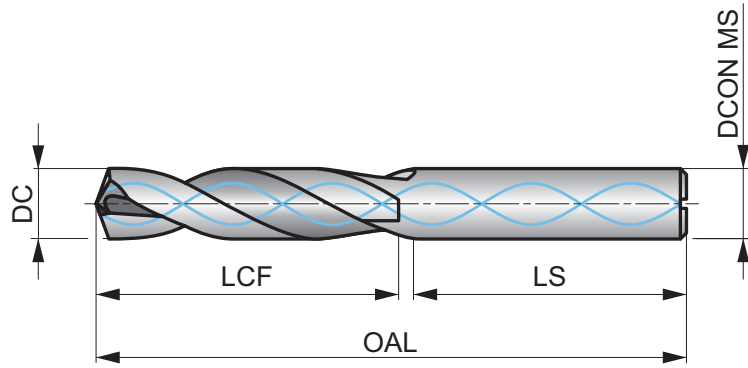


FORCE X Solid Carbide 3XD Drill with Coolant Feed, TiAlN Coated

High performance drill, able to produce high quality and accurate holes at high speeds and feeds (H9 hole tolerance). Self centering 140°, 4-facet split point and CTW flute construction for enhanced penetration rates. Coolant holes to enhance chip evacuation. TiAlN coating increases surface hardness and improves tool life.

FORCE X

HM	DIN 6537K	3xD
140°	TiAlN	DIN 6535HA
CTW	R	
DC m7		



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 79.

P1.1 ■ 587 W	P1.2 ■ 656 W	P1.3 ■ 679 W	P2.1 ■ 502 W	P2.2 ■ 443 W	P2.3 ■ 390 V	P3.1 ■ 436 V	P3.2 ■ 351 V	P3.3 ■ 295 V	P4.1 ■ 259 V	P4.2 ■ 220 V	P4.3 ■ 180 U	M1.1 ■ 246 V	M1.2 ■ 210 V
M2.1 ■ 220 V	M2.2 ■ 180 V	M2.3 ■ 151 U	M3.1 ■ 135 V	M3.2 ■ 115 V	M3.3 ■ 105 V	M4.1 ■ 98 U	M4.2 ■ 85 U	K1.1 ■ 361 W	K1.2 ■ 266 W	K1.3 ■ 200 W	K2.1 ■ 322 V	K2.2 ■ 262 V	K2.3 ■ 210 V
K3.1 ■ 285 V	K3.2 ■ 220 V	K3.3 ■ 177 V	K4.1 ■ 266 V	K4.2 ■ 200 V	K4.3 ■ 148 V	K4.4 ■ 125 V	K4.5 ■ 105 V	K5.1 ■ 299 V	K5.2 ■ 226 V	K5.3 ■ 174 V	N1.1 ■ 820 W	N1.2 ■ 617 W	N1.3 ■ 410 W
N2.1 ■ 1010 V	N2.2 ■ 909 V	N2.3 ■ 656 V	N3.1 ■ 1224 W	N3.2 ■ 722 W	N3.3 ■ 361 W	S1.1 ■ 180 V	S1.2 ■ 148 V	S1.3 ■ 131 U	H1.1 ■ 184 U	H2.1 ■ 108 U	H2.2 ■ 98 U	H3.1 ■ 121 U	H3.2 ■ 98 U

DCON MS tolerance h6.

Product	DC (inch)	DC (Wire gauge size)	DC (Letter size)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	LS (mm)	DCON MS (mm)	Pack Qty	MID
R4573.0	–	–	–	3.00	.1181	20.0	62.0	36.0	6.00	1	5979225
R4573.1	–	–	–	3.10	.1220	20.0	62.0	36.0	6.00	1	5979229
R4571/8	1/8	–	–	3.18	.1250	20.0	62.0	36.0	6.00	1	5979015
R4573.2	–	–	–	3.20	.1260	20.0	62.0	36.0	6.00	1	5979232
R457N30	–	N30	–	3.26	.1283	20.0	62.0	36.0	6.00	1	5979343
R4573.3	–	–	–	3.30	.1299	20.0	62.0	36.0	6.00	1	5979236
R4573.4	–	–	–	3.40	.1339	20.0	62.0	36.0	6.00	1	5979240
R457N29	–	N29	–	3.45	.1360	20.0	62.0	36.0	6.00	1	5979338
R4573.5	–	–	–	3.50	.1378	20.0	62.0	36.0	6.00	1	5979244
R457N28	–	N28	–	3.57	.1406	20.0	62.0	36.0	6.00	1	5979335
R4579/64	9/64	–	–	3.57	.1406	20.0	62.0	36.0	6.00	1	5980283
R4573.6	–	–	–	3.60	.1417	20.0	62.0	36.0	6.00	1	5979246
R457N27	–	N27	–	3.66	.1441	20.0	62.0	36.0	6.00	1	5979331
R4573.7	–	–	–	3.70	.1457	20.0	62.0	36.0	6.00	1	5979249
R457N26	–	N26	–	3.73	.1469	24.0	66.0	36.0	6.00	1	5979324
R457N25	–	N25	–	3.80	.1496	24.0	66.0	36.0	6.00	1	5979321
R4573.8	–	–	–	3.80	.1496	24.0	66.0	36.0	6.00	1	5979256
R457N24	–	N24	–	3.86	.1520	24.0	66.0	36.0	6.00	1	5979318
R4573.9	–	–	–	3.90	.1535	24.0	66.0	36.0	6.00	1	5979260
R457N23	–	N23	–	3.91	.1539	24.0	66.0	36.0	6.00	1	5979315
R4575/32	5/32	–	–	3.97	.1563	24.0	66.0	36.0	6.00	1	5980298



Product	DC	DC	DC	DC	DC	LCF	OAL	LS	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(mm)	(inch)	(mm)	(mm)	(mm)	(mm)		
R457N22	—	N22	—	3.99	.1571	24.0	66.0	36.0	6.00	1	5979312
R4574.0	—	—	—	4.00	.1575	24.0	66.0	36.0	6.00	1	5979285
R457N21	—	N21	—	4.04	.1591	24.0	66.0	36.0	6.00	1	5979309
R4574.05	—	—	—	4.05	.1594	24.0	66.0	36.0	6.00	1	5979287
R457N20	—	N20	—	4.09	.1610	24.0	66.0	36.0	6.00	1	5979306
R4574.1	—	—	—	4.10	.1614	24.0	66.0	36.0	6.00	1	5979292
R4574.2	—	—	—	4.20	.1654	24.0	66.0	36.0	6.00	1	5979295
R4574.3	—	—	—	4.30	.1693	24.0	66.0	36.0	6.00	1	5979298
R457N18	—	N18	—	4.31	.1697	24.0	66.0	36.0	6.00	1	5979297
R45711/64	11/64	—	—	4.37	.1719	24.0	66.0	36.0	6.00	1	5979050
R457N17	—	N17	—	4.39	.1728	24.0	66.0	36.0	6.00	1	5979291
R4574.4	—	—	—	4.40	.1732	24.0	66.0	36.0	6.00	1	5979301
R4574.5	—	—	—	4.50	.1772	24.0	66.0	36.0	6.00	1	5979304
R457N16	—	N16	—	4.50	.1772	24.0	66.0	36.0	6.00	1	5979289
R457N15	—	N15	—	4.57	.1799	24.0	66.0	36.0	6.00	1	5979286
R4574.6	—	—	—	4.60	.1811	24.0	66.0	36.0	6.00	1	5979307
R457N14	—	N14	—	4.62	.1819	24.0	66.0	36.0	6.00	1	5979284
R4574.7	—	—	—	4.70	.1850	24.0	66.0	36.0	6.00	1	5979310
R4573/16	3/16	—	—	4.76	.1875	28.0	66.0	36.0	6.00	1	5979263
R4574.8	—	—	—	4.80	.1890	28.0	66.0	36.0	6.00	1	5979313
R457N11	—	N11	—	4.85	.1909	28.0	66.0	36.0	6.00	1	5979277
R4574.9	—	—	—	4.90	.1929	28.0	66.0	36.0	6.00	1	5979319
R457N9	—	N9	—	4.98	.1961	28.0	66.0	36.0	6.00	1	5979369
R4575.0	—	—	—	5.00	.1969	28.0	66.0	36.0	6.00	1	5980432
R4575.05	—	—	—	5.05	.1988	28.0	66.0	36.0	6.00	1	5980440
R457N8	—	N8	—	5.06	.1992	28.0	66.0	36.0	6.00	1	5979360
R4575.1	—	—	—	5.10	.2008	28.0	66.0	36.0	6.00	1	5980444
R457N7	—	N7	—	5.11	.2010	28.0	66.0	36.0	6.00	1	5979357
R45713/64	13/64	—	—	5.16	.2031	28.0	66.0	36.0	6.00	1	5979077
R457N6	—	N6	—	5.18	.2039	28.0	66.0	36.0	6.00	1	5979353
R4575.2	—	—	—	5.20	.2047	28.0	66.0	36.0	6.00	1	5980447
R457N5	—	N5	—	5.22	.2055	28.0	66.0	36.0	6.00	1	5979350
R4575.3	—	—	—	5.30	.2087	28.0	66.0	36.0	6.00	1	7361237
R457N4	—	N4	—	5.31	.2091	28.0	66.0	36.0	6.00	1	5979346
R4575.4	—	—	—	5.40	.2126	28.0	66.0	36.0	6.00	1	7361238
R457N3	—	N3	—	5.41	.2130	28.0	66.0	36.0	6.00	1	5979341
R4575.5	—	—	—	5.50	.2165	28.0	66.0	36.0	6.00	1	5980451
R4577/32	7/32	—	—	5.56	.2188	28.0	66.0	36.0	6.00	1	5980386
R4575.6	—	—	—	5.60	.2205	28.0	66.0	36.0	6.00	1	5980287
R457N2	—	N2	—	5.61	.2209	28.0	66.0	36.0	6.00	1	5979303
R4575.7	—	—	—	5.70	.2244	28.0	66.0	36.0	6.00	1	5980290
R457N1	—	N1	—	5.79	.2280	28.0	66.0	36.0	6.00	1	5979273
R4575.8	—	—	—	5.80	.2283	28.0	66.0	36.0	6.00	1	5980293
R4575.9	—	—	—	5.90	.2323	28.0	66.0	36.0	6.00	1	7361239
R457A	—	—	A	5.94	.2339	28.0	66.0	36.0	6.00	1	5979254
R45715/64	15/64	—	—	5.95	.2344	28.0	66.0	36.0	6.00	1	5979114
R4576.0	—	—	—	6.00	.2362	28.0	66.0	36.0	6.00	1	5980303
R457B	—	—	B	6.05	.2380	34.0	79.0	36.0	8.00	1	7361240
R4576.05	—	—	—	6.05	.2382	34.0	79.0	36.0	8.00	1	5980306
R4576.1	—	—	—	6.10	.2402	34.0	79.0	36.0	8.00	1	5980309
R457C	—	—	C	6.15	.2421	34.0	79.0	36.0	8.00	1	7361241
R4576.2	—	—	—	6.20	.2441	34.0	79.0	36.0	8.00	1	5980312
R457D	—	—	D	6.25	.2461	34.0	79.0	36.0	8.00	1	5979257
R4576.3	—	—	—	6.30	.2480	34.0	79.0	36.0	8.00	1	5980320
R4571/4	1/4	—	—	6.35	.2500	34.0	79.0	36.0	8.00	1	5979135
R4576.4	—	—	—	6.40	.2520	34.0	79.0	36.0	8.00	1	5980323
R4576.5	—	—	—	6.50	.2559	34.0	79.0	36.0	8.00	1	5980327
R457F	—	—	F	6.53	.2571	34.0	79.0	36.0	8.00	1	7361243



Product	DC	DC	DC	DC	DC	LCF	OAL	LS	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(mm)	(inch)	(mm)	(mm)	(mm)	(mm)		
R4576.6	–	–	–	6.60	.2598	34.0	79.0	36.0	8.00	1	5980331
R457G	–	–	G	6.63	.2610	34.0	79.0	36.0	8.00	1	7361244
R4576.7	–	–	–	6.70	.2638	34.0	79.0	36.0	8.00	1	5980335
R45717/64	17/64	–	–	6.75	.2656	34.0	79.0	36.0	8.00	1	5979316
R4576.8	–	–	–	6.80	.2677	34.0	79.0	36.0	8.00	1	5980338
R4576.9	–	–	–	6.90	.2717	34.0	79.0	36.0	8.00	1	5980341
R457I	–	–	I	6.91	.2720	34.0	79.0	36.0	8.00	1	7361245
R4577.0	–	–	–	7.00	.2756	34.0	79.0	36.0	8.00	1	5980344
R457J	–	–	J	7.04	.2772	41.0	79.0	36.0	8.00	1	7361246
R4577.1	–	–	–	7.10	.2795	41.0	79.0	36.0	8.00	1	5980349
R4579/32	9/32	–	–	7.14	.2813	41.0	79.0	36.0	8.00	1	5980280
R4577.2	–	–	–	7.20	.2835	41.0	79.0	36.0	8.00	1	7361248
R4577.3	–	–	–	7.30	.2874	41.0	79.0	36.0	8.00	1	5980352
R4577.4	–	–	–	7.40	.2913	41.0	79.0	36.0	8.00	1	5980358
R4577.5	–	–	–	7.50	.2953	41.0	79.0	36.0	8.00	1	5980363
R45719/64	19/64	–	–	7.54	.2969	41.0	79.0	36.0	8.00	1	5979192
R4577.6	–	–	–	7.60	.2992	41.0	79.0	36.0	8.00	1	5980367
R457N	–	–	N	7.67	.3020	41.0	79.0	36.0	8.00	1	5979271
R4577.7	–	–	–	7.70	.3031	41.0	79.0	36.0	8.00	1	5980371
R4577.8	–	–	–	7.80	.3071	41.0	79.0	36.0	8.00	1	5980375
R4577.9	–	–	–	7.90	.3110	41.0	79.0	36.0	8.00	1	5980379
R4575/16	5/16	–	–	7.94	.3125	41.0	79.0	36.0	8.00	1	5980296
R4578.0	–	–	–	8.00	.3150	41.0	79.0	36.0	8.00	1	5980389
R457O	–	–	O	8.03	.3161	47.0	89.0	40.0	10.00	1	5979013
R4578.05	–	–	–	8.05	.3169	47.0	89.0	40.0	10.00	1	5980392
R4578.1	–	–	–	8.10	.3189	47.0	89.0	40.0	10.00	1	5980398
R4578.2	–	–	–	8.20	.3228	47.0	89.0	40.0	10.00	1	5980401
R457P	–	–	P	8.20	.3228	47.0	89.0	40.0	10.00	1	7361249
R4578.3	–	–	–	8.30	.3268	47.0	89.0	40.0	10.00	1	7361250
R45721/64	21/64	–	–	8.33	.3281	47.0	89.0	40.0	10.00	1	5979203
R4578.4	–	–	–	8.40	.3307	47.0	89.0	40.0	10.00	1	5980404
R457Q	–	–	Q	8.43	.3319	47.0	89.0	40.0	10.00	1	5979034
R4578.5	–	–	–	8.50	.3346	47.0	89.0	40.0	10.00	1	5980407
R4578.6	–	–	–	8.60	.3386	47.0	89.0	40.0	10.00	1	5980410
R457R	–	–	R	8.61	.3390	47.0	89.0	40.0	10.00	1	7361251
R4578.7	–	–	–	8.70	.3425	47.0	89.0	40.0	10.00	1	5980413
R45711/32	11/32	–	–	8.73	.3438	47.0	89.0	40.0	10.00	1	5979048
R4578.8	–	–	–	8.80	.3465	47.0	89.0	40.0	10.00	1	5980416
R457S	–	–	S	8.84	.3480	47.0	89.0	40.0	10.00	1	7361252
R4578.9	–	–	–	8.90	.3504	47.0	89.0	40.0	10.00	1	5980420
R4579.0	–	–	–	9.00	.3543	47.0	89.0	40.0	10.00	1	5980423
R4579.1	–	–	–	9.10	.3583	47.0	89.0	40.0	10.00	1	5980429
R45723/64	23/64	–	–	9.13	.3594	47.0	89.0	40.0	10.00	1	5979209
R4579.2	–	–	–	9.20	.3622	47.0	89.0	40.0	10.00	1	7361253
R4579.3	–	–	–	9.30	.3661	47.0	89.0	40.0	10.00	1	5980436
R457U	–	–	U	9.35	.3681	47.0	89.0	40.0	10.00	1	5979080
R4579.4	–	–	–	9.40	.3701	47.0	89.0	40.0	10.00	1	5980122
R4579.5	–	–	–	9.50	.3740	47.0	89.0	40.0	10.00	1	5980159
R4573/8	3/8	–	–	9.53	.3750	47.0	89.0	40.0	10.00	1	5979269
R457V	–	–	V	9.58	.3772	47.0	89.0	40.0	10.00	1	7361254
R4579.6	–	–	–	9.60	.3780	47.0	89.0	40.0	10.00	1	5980195
R4579.7	–	–	–	9.70	.3819	47.0	89.0	40.0	10.00	1	5980233
R4579.8	–	–	–	9.80	.3858	47.0	89.0	40.0	10.00	1	5980268
R457W	–	–	W	9.80	.3858	47.0	89.0	40.0	10.00	1	7361255
R4579.9	–	–	–	9.90	.3898	47.0	89.0	40.0	10.00	1	5980274
R45725/64	25/64	–	–	9.92	.3906	47.0	89.0	40.0	10.00	1	5979212
R45710.0	–	–	–	10.00	.3937	47.0	89.0	40.0	10.00	1	5979017
R45710.05	–	–	–	10.05	.3957	55.0	102.0	45.0	12.00	1	5979019



Product	DC	DC	DC	DC	DC	LCF	OAL	LS	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(mm)	(inch)	(mm)	(mm)	(mm)	(mm)		
R457X	–	–	X	10.08	.3969	55.0	102.0	45.0	12.00	1	5979117
R45710.1	–	–	–	10.10	.3976	55.0	102.0	45.0	12.00	1	5979021
R45710.2	–	–	–	10.20	.4016	55.0	102.0	45.0	12.00	1	5979023
R457Y	–	–	Y	10.26	.4039	55.0	102.0	45.0	12.00	1	5979125
R45710.3	–	–	–	10.30	.4055	55.0	102.0	45.0	12.00	1	5979025
R45713/32	13/32	–	–	10.32	.4063	55.0	102.0	45.0	12.00	1	5979075
R45710.4	–	–	–	10.40	.4094	55.0	102.0	45.0	12.00	1	5979027
R457Z	–	–	Z	10.49	.4130	55.0	102.0	45.0	12.00	1	5979128
R45710.5	–	–	–	10.50	.4134	55.0	102.0	45.0	12.00	1	5979029
R45710.6	–	–	–	10.60	.4173	55.0	102.0	45.0	12.00	1	5979030
R45727/64	27/64	–	–	10.72	.4219	55.0	102.0	45.0	12.00	1	5979218
R45710.8	–	–	–	10.80	.4252	55.0	102.0	45.0	12.00	1	7361256
R45711.0	–	–	–	11.00	.4331	55.0	102.0	45.0	12.00	1	5979032
R4577/16	7/16	–	–	11.11	.4375	55.0	102.0	45.0	12.00	1	5980382
R45711.2	–	–	–	11.20	.4409	55.0	102.0	45.0	12.00	1	5979036
R45711.3	–	–	–	11.30	.4449	55.0	102.0	45.0	12.00	1	7361257
R45711.4	–	–	–	11.40	.4488	55.0	102.0	45.0	12.00	1	5979038
R45711.5	–	–	–	11.50	.4528	55.0	102.0	45.0	12.00	1	5979040
R45729/64	29/64	–	–	11.51	.4531	55.0	102.0	45.0	12.00	1	5979221
R45711.6	–	–	–	11.60	.4567	55.0	102.0	45.0	12.00	1	5979042
R45711.8	–	–	–	11.80	.4646	55.0	102.0	45.0	12.00	1	5979044
R45715/32	15/32	–	–	11.91	.4688	55.0	102.0	45.0	12.00	1	5979110
R45712.0	–	–	–	12.00	.4724	55.0	102.0	45.0	12.00	1	5979052
R45712.05	–	–	–	12.05	.4744	60.0	107.0	45.0	14.00	1	5979053
R45712.1	–	–	–	12.10	.4764	60.0	107.0	45.0	14.00	1	5979057
R45712.2	–	–	–	12.20	.4803	60.0	107.0	45.0	14.00	1	5979060
R45731/64	31/64	–	–	12.30	.4844	60.0	107.0	45.0	14.00	1	5979272
R45712.5	–	–	–	12.50	.4921	60.0	107.0	45.0	14.00	1	5979062
R45712.7	–	–	–	12.70	.5000	60.0	107.0	45.0	14.00	1	5979064
R4571/2	1/2	–	–	12.70	.5000	60.0	107.0	45.0	14.00	1	5979132
R45712.8	–	–	–	12.80	.5039	60.0	107.0	45.0	14.00	1	5979066
R45713.0	–	–	–	13.00	.5118	60.0	107.0	45.0	14.00	1	5979068
R45733/64	33/64	–	–	13.10	.5156	60.0	107.0	45.0	14.00	1	5979274
R45713.3	–	–	–	13.30	.5236	60.0	107.0	45.0	14.00	1	7361258
R45717/32	17/32	–	–	13.49	.5313	60.0	107.0	45.0	14.00	1	5979282
R45713.5	–	–	–	13.50	.5315	60.0	107.0	45.0	14.00	1	5979070
R45713.8	–	–	–	13.80	.5433	60.0	107.0	45.0	14.00	1	5979072
R45735/64	35/64	–	–	13.89	.5469	60.0	107.0	45.0	14.00	1	5979276
R45714.0	–	–	–	14.00	.5512	60.0	107.0	45.0	14.00	1	5979082
R45714.25	–	–	–	14.25	.5610	65.0	115.0	48.0	16.00	1	5979085
R4579/16	9/16	–	–	14.29	.5625	65.0	115.0	48.0	16.00	1	5980276
R45714.5	–	–	–	14.50	.5709	65.0	115.0	48.0	16.00	1	5979088
R45737/64	37/64	–	–	14.68	.5781	65.0	115.0	48.0	16.00	1	5979278
R45714.8	–	–	–	14.80	.5827	65.0	115.0	48.0	16.00	1	5979091
R45715.0	–	–	–	15.00	.5906	65.0	115.0	48.0	16.00	1	5979094
R45719/32	19/32	–	–	15.08	.5938	65.0	115.0	48.0	16.00	1	5979188
R45715.1	–	–	–	15.10	.5945	65.0	115.0	48.0	16.00	1	5979098
R45715.3	–	–	–	15.30	.6024	65.0	115.0	48.0	16.00	1	7361259
R45739/64	39/64	–	–	15.48	.6094	65.0	115.0	48.0	16.00	1	5979280
R45715.5	–	–	–	15.50	.6102	65.0	115.0	48.0	16.00	1	5979102
R45715.8	–	–	–	15.80	.6220	65.0	115.0	48.0	16.00	1	5979106
R4575/8	5/8	–	–	15.88	.6250	65.0	115.0	48.0	16.00	1	5980301
R45716.0	–	–	–	16.00	.6299	65.0	115.0	48.0	16.00	1	5979120
R45741/64	41/64	–	–	16.27	.6406	73.0	123.0	48.0	18.00	1	5980284
R45716.5	–	–	–	16.50	.6496	73.0	123.0	48.0	18.00	1	5979172
R45721/32	21/32	–	–	16.67	.6563	73.0	123.0	48.0	18.00	1	5979200
R45717.0	–	–	–	17.00	.6693	73.0	123.0	48.0	18.00	1	5979215



Product	DC	DC	DC	DC	DC	LCF	OAL	LS	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(mm)	(inch)	(mm)	(mm)	(mm)	(mm)		
R45743/64	43/64	–	–	17.07	.6720	73.0	123.0	48.0	18.00	1	5980317
R45711/16	11/16	–	–	17.46	.6874	73.0	123.0	48.0	18.00	1	5979046
R45717.5	–	–	–	17.50	.6890	73.0	123.0	48.0	18.00	1	5979253
R45745/64	45/64	–	–	17.86	.7031	73.0	123.0	48.0	18.00	1	5980355
R45718.0	–	–	–	18.00	.7087	73.0	123.0	48.0	18.00	1	5979322
R45723/32	23/32	–	–	18.26	.7189	79.0	131.0	50.0	20.00	1	5979206
R45718.5	–	–	–	18.50	.7283	79.0	131.0	50.0	20.00	1	5979325
R45747/64	47/64	–	–	18.65	.7343	79.0	131.0	50.0	20.00	1	5980395
R45718.8	–	–	–	18.80	.7402	79.0	131.0	50.0	20.00	1	5979329
R45719.0	–	–	–	19.00	.7480	79.0	131.0	50.0	20.00	1	5979332
R4573/4	3/4	–	–	19.05	.7500	79.0	131.0	50.0	20.00	1	5979266
R45719.5	–	–	–	19.50	.7677	79.0	131.0	50.0	20.00	1	5979180
R45719.8	–	–	–	19.80	.7795	79.0	131.0	50.0	20.00	1	5979184
R45720.0	–	–	–	20.00	.7874	79.0	131.0	50.0	20.00	1	5979196



R454

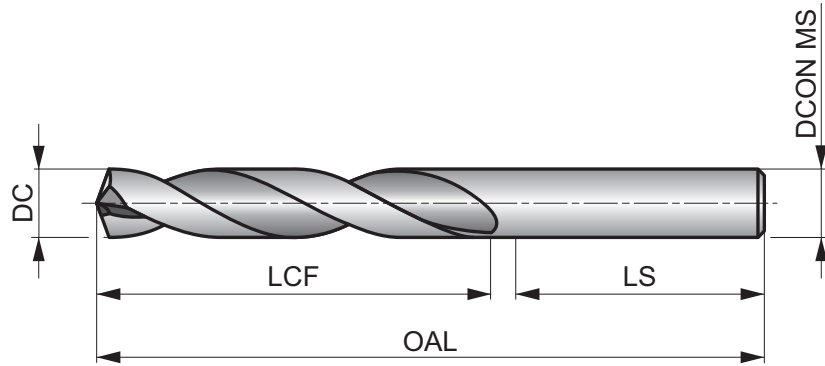


FORCE X Solid Carbide 5XD Drill, TiAlN Coated

High performance drill, able to produce high quality and accurate holes at high speeds and feeds (H9 hole tolerance). Self centering 140°, 4-facet split point and CTW flute construction for enhanced penetration rates. TiAlN coating increases surface hardness and improves tool life.

FORCE X

HM	DIN 6537L	5xD
140°	TiAlN	DIN 6535HA
CTW	R	DC m7



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 79.

P1.1 ■ 440 V	P1.2 ■ 492 V	P1.3 ■ 509 V	P2.1 ■ 377 V	P2.2 ■ 331 V	P2.3 ■ 292 V	P3.1 ■ 328 V	P3.2 ■ 262 V	P3.3 ■ 223 V	P4.1 ■ 194 V	P4.2 ■ 164 V	P4.3 ■ 135 U	M1.1 ■ 184 U	M1.2 ■ 157 U
M2.1 ■ 164 U	M2.2 ■ 135 U	M2.3 ■ 115 T	M3.1 ■ 102 T	M3.2 ■ 85 T	M3.3 ■ 79 T	M4.1 ■ 75 T	M4.2 ■ 66 T	K1.1 ■ 272 W	K1.2 ■ 200 W	K1.3 ■ 151 W	K2.1 ■ 243 V	K2.2 ■ 197 V	K2.3 ■ 157 V
K3.1 ■ 213 V	K3.2 ■ 164 V	K3.3 ■ 135 V	K4.1 ■ 200 V	K4.2 ■ 151 V	K4.3 ■ 112 V	K4.4 ■ 95 V	K4.5 ■ 79 V	K5.1 ■ 223 V	K5.2 ■ 171 V	K5.3 ■ 131 V	N1.1 ■ 617 W	N1.2 ■ 463 W	N1.3 ■ 308 W
N2.1 ■ 758 V	N2.2 ■ 682 V	N2.3 ■ 492 V	N3.1 ■ 919 V	N3.2 ■ 541 V	N3.3 ■ 272 V	S1.1 ■ 135 U	S1.2 ■ 112 U	S1.3 ■ 98 T	H1.1 ■ 138 U	H2.1 ■ 82 U	H2.2 ■ 75 U	H3.1 ■ 92 U	H3.2 ■ 75 U

DCON MS tolerance h6.

Product	DC (inch)	DC (Wire gauge size)	DC (Letter size)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	LS (mm)	DCON MS (mm)	Pack Qty	MID
R4543.0	—	—	—	3.00	.1181	28.0	66.0	36.0	6.00	1	5979852
R4543.1	—	—	—	3.10	.1220	28.0	66.0	36.0	6.00	1	5979855
R4541/8	1/8	—	—	3.18	.1250	28.0	66.0	36.0	6.00	1	5979974
R4543.2	—	—	—	3.20	.1260	28.0	66.0	36.0	6.00	1	5979858
R454N30	—	N30	—	3.26	.1283	28.0	66.0	36.0	6.00	1	5980077
R4543.3	—	—	—	3.30	.1299	28.0	66.0	36.0	6.00	1	5979861
R4543.4	—	—	—	3.40	.1339	28.0	66.0	36.0	6.00	1	5979864
R454N29	—	N29	—	3.45	.1360	28.0	66.0	36.0	6.00	1	5980006
R4543.5	—	—	—	3.50	.1378	28.0	66.0	36.0	6.00	1	5979868
R454N28	—	N28	—	3.57	.1406	28.0	66.0	36.0	6.00	1	5979966
R4549/64	9/64	—	—	3.57	.1406	28.0	66.0	36.0	6.00	1	5979250
R4543.6	—	—	—	3.60	.1417	28.0	66.0	36.0	6.00	1	5979871
R454N27	—	N27	—	3.66	.1441	28.0	66.0	36.0	6.00	1	5979924
R4543.7	—	—	—	3.70	.1457	28.0	66.0	36.0	6.00	1	5979876
R454N26	—	N26	—	3.73	.1469	36.0	74.0	36.0	6.00	1	5979572
R4543.8	—	—	—	3.80	.1496	36.0	74.0	36.0	6.00	1	5979879
R454N24	—	N24	—	3.86	.1520	36.0	74.0	36.0	6.00	1	5979561
R4543.9	—	—	—	3.90	.1535	36.0	74.0	36.0	6.00	1	5979885
R4545/32	5/32	—	—	3.97	.1563	36.0	74.0	36.0	6.00	1	5980068
R4544.0	—	—	—	4.00	.1575	36.0	74.0	36.0	6.00	1	5979913
R454N21	—	N21	—	4.04	.1591	36.0	74.0	36.0	6.00	1	5979553



Product	DC	DC	DC	DC	DC	LCF	OAL	LS	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(mm)	(inch)	(mm)	(mm)	(mm)	(mm)		
R454N20	–	N20	–	4.09	.1610	36.0	74.0	36.0	6.00	1	5979550
R4544.1	–	–	–	4.10	.1614	36.0	74.0	36.0	6.00	1	5979919
R4544.2	–	–	–	4.20	.1654	36.0	74.0	36.0	6.00	1	5980020
R454N19	–	N19	–	4.22	.1661	36.0	74.0	36.0	6.00	1	5979544
R4544.3	–	–	–	4.30	.1693	36.0	74.0	36.0	6.00	1	5980061
R45411/64	11/64	–	–	4.37	.1719	36.0	74.0	36.0	6.00	1	5980033
R4544.4	–	–	–	4.40	.1732	36.0	74.0	36.0	6.00	1	5980103
R4544.5	–	–	–	4.50	.1772	36.0	74.0	36.0	6.00	1	5980137
R454N16	–	N16	–	4.50	.1772	36.0	74.0	36.0	6.00	1	5979533
R454N15	–	N15	–	4.57	.1799	36.0	74.0	36.0	6.00	1	5979531
R4544.6	–	–	–	4.60	.1811	36.0	74.0	36.0	6.00	1	5980170
R454N14	–	N14	–	4.62	.1819	36.0	74.0	36.0	6.00	1	5979529
R4544.7	–	–	–	4.70	.1850	36.0	74.0	36.0	6.00	1	5980178
R4543/16	3/16	–	–	4.76	.1875	44.0	82.0	36.0	6.00	1	5979889
R4544.8	–	–	–	4.80	.1890	44.0	82.0	36.0	6.00	1	5980182
R454N11	–	N11	–	4.85	.1909	44.0	82.0	36.0	6.00	1	5979522
R4544.9	–	–	–	4.90	.1929	44.0	82.0	36.0	6.00	1	5980187
R454N10	–	N10	–	4.92	.1937	44.0	82.0	36.0	6.00	1	5979519
R454N9	–	N9	–	4.98	.1961	44.0	82.0	36.0	6.00	1	5979937
R4545.0	–	–	–	5.00	.1969	44.0	82.0	36.0	6.00	1	5980038
R454N8	–	N8	–	5.06	.1992	44.0	82.0	36.0	6.00	1	5979934
R4545.1	–	–	–	5.10	.2008	44.0	82.0	36.0	6.00	1	5980042
R454N7	–	N7	–	5.11	.2010	44.0	82.0	36.0	6.00	1	5980097
R45413/64	13/64	–	–	5.16	.2031	44.0	82.0	36.0	6.00	1	5980070
R454N6	–	N6	–	5.18	.2039	44.0	82.0	36.0	6.00	1	5980093
R4545.2	–	–	–	5.20	.2047	44.0	82.0	36.0	6.00	1	5980045
R454N5	–	N5	–	5.22	.2055	44.0	82.0	36.0	6.00	1	5980089
R454N4	–	N4	–	5.31	.2091	44.0	82.0	36.0	6.00	1	5980085
R454N3	–	N3	–	5.41	.2130	44.0	82.0	36.0	6.00	1	5980044
R4545.5	–	–	–	5.50	.2165	44.0	82.0	36.0	6.00	1	5980048
R4547/32	7/32	–	–	5.56	.2188	44.0	82.0	36.0	6.00	1	5980148
R4545.6	–	–	–	5.60	.2205	44.0	82.0	36.0	6.00	1	5980051
R454N2	–	N2	–	5.61	.2209	44.0	82.0	36.0	6.00	1	5979547
R4545.7	–	–	–	5.70	.2244	44.0	82.0	36.0	6.00	1	5980055
R454N1	–	N1	–	5.79	.2280	44.0	82.0	36.0	6.00	1	5979516
R4545.8	–	–	–	5.80	.2283	44.0	82.0	36.0	6.00	1	5980058
R454A	–	–	A	5.94	.2339	44.0	82.0	36.0	6.00	1	5979491
R45415/64	15/64	–	–	5.95	.2344	44.0	82.0	36.0	6.00	1	5979928
R4546.0	–	–	–	6.00	.2362	44.0	82.0	36.0	6.00	1	5980075
R454B	–	–	B	6.05	.2380	53.0	91.0	36.0	8.00	1	7361224
R4546.1	–	–	–	6.10	.2402	53.0	91.0	36.0	8.00	1	5980080
R454C	–	–	C	6.15	.2421	53.0	91.0	36.0	8.00	1	7361225
R4546.2	–	–	–	6.20	.2441	53.0	91.0	36.0	8.00	1	5980084
R454D	–	–	D	6.25	.2461	53.0	91.0	36.0	8.00	1	5979495
R4546.3	–	–	–	6.30	.2480	53.0	91.0	36.0	8.00	1	5980088
R4541/4	1/4	–	–	6.35	.2500	53.0	91.0	36.0	8.00	1	5979970
R454E	–	–	E	6.35	.2500	53.0	91.0	36.0	8.00	1	7361226
R4546.4	–	–	–	6.40	.2520	53.0	91.0	36.0	8.00	1	5980092
R4546.5	–	–	–	6.50	.2559	53.0	91.0	36.0	8.00	1	5980096
R454F	–	–	F	6.53	.2571	53.0	91.0	36.0	8.00	1	7361227
R4546.6	–	–	–	6.60	.2598	53.0	91.0	36.0	8.00	1	5980100
R454G	–	–	G	6.63	.2610	53.0	91.0	36.0	8.00	1	7361228
R4546.7	–	–	–	6.70	.2638	53.0	91.0	36.0	8.00	1	5980106
R45417/64	17/64	–	–	6.75	.2656	53.0	91.0	36.0	8.00	1	5979798
R454H	–	–	H	6.76	.2661	53.0	91.0	36.0	8.00	1	5979499
R4546.8	–	–	–	6.80	.2677	53.0	91.0	36.0	8.00	1	5980109
R4546.9	–	–	–	6.90	.2717	53.0	91.0	36.0	8.00	1	5980111



Product	DC	DC	DC	DC	DC	LCF	OAL	LS	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(mm)	(inch)	(mm)	(mm)	(mm)	(mm)		
R454I	–	–	I	6.91	.2720	53.0	91.0	36.0	8.00	1	7361229
R4547.0	–	–	–	7.00	.2756	53.0	91.0	36.0	8.00	1	5980113
R454J	–	–	J	7.04	.2772	53.0	91.0	36.0	8.00	1	7361230
R4547.1	–	–	–	7.10	.2795	53.0	91.0	36.0	8.00	1	5980116
R4549/32	9/32	–	–	7.14	.2813	53.0	91.0	36.0	8.00	1	5979241
R4547.3	–	–	–	7.30	.2874	53.0	91.0	36.0	8.00	1	5980119
R454L	–	–	L	7.37	.2902	53.0	91.0	36.0	8.00	1	5979503
R4547.4	–	–	–	7.40	.2913	53.0	91.0	36.0	8.00	1	5980123
R4547.5	–	–	–	7.50	.2953	53.0	91.0	36.0	8.00	1	5980126
R45419/64	19/64	–	–	7.54	.2969	53.0	91.0	36.0	8.00	1	5979822
R4547.6	–	–	–	7.60	.2992	53.0	91.0	36.0	8.00	1	5980130
R454N	–	–	N	7.67	.3020	53.0	91.0	36.0	8.00	1	5979513
R4547.7	–	–	–	7.70	.3031	53.0	91.0	36.0	8.00	1	5980133
R4547.8	–	–	–	7.80	.3071	53.0	91.0	36.0	8.00	1	5980140
R4547.9	–	–	–	7.90	.3110	53.0	91.0	36.0	8.00	1	5980142
R4545/16	5/16	–	–	7.94	.3125	53.0	91.0	36.0	8.00	1	5980064
R4548.0	–	–	–	8.00	.3150	53.0	91.0	36.0	8.00	1	5980151
R4540	–	–	O	8.03	.3161	61.0	103.0	40.0	10.00	1	5979940
R4548.1	–	–	–	8.10	.3189	61.0	103.0	40.0	10.00	1	5980155
R4548.2	–	–	–	8.20	.3228	61.0	103.0	40.0	10.00	1	5980157
R45421/64	21/64	–	–	8.33	.3281	61.0	103.0	40.0	10.00	1	5979831
R4548.4	–	–	–	8.40	.3307	61.0	103.0	40.0	10.00	1	5980162
R454Q	–	–	Q	8.43	.3319	61.0	103.0	40.0	10.00	1	5979944
R4548.5	–	–	–	8.50	.3346	61.0	103.0	40.0	10.00	1	5980164
R4548.6	–	–	–	8.60	.3386	61.0	103.0	40.0	10.00	1	5980167
R454R	–	–	R	8.61	.3390	61.0	103.0	40.0	10.00	1	7361233
R4548.7	–	–	–	8.70	.3425	61.0	103.0	40.0	10.00	1	5980175
R45411/32	11/32	–	–	8.73	.3438	61.0	103.0	40.0	10.00	1	5980029
R4548.8	–	–	–	8.80	.3465	61.0	103.0	40.0	10.00	1	5979222
R454S	–	–	S	8.84	.3480	61.0	103.0	40.0	10.00	1	7361234
R4548.9	–	–	–	8.90	.3504	61.0	103.0	40.0	10.00	1	5979268
R4549.0	–	–	–	9.00	.3543	61.0	103.0	40.0	10.00	1	5979294
R4549.1	–	–	–	9.10	.3583	61.0	103.0	40.0	10.00	1	5979327
R45423/64	23/64	–	–	9.13	.3594	61.0	103.0	40.0	10.00	1	5979838
R4549.3	–	–	–	9.30	.3661	61.0	103.0	40.0	10.00	1	5979364
R454U	–	–	U	9.35	.3681	61.0	103.0	40.0	10.00	1	5979949
R4549.4	–	–	–	9.40	.3701	61.0	103.0	40.0	10.00	1	5979372
R4549.5	–	–	–	9.50	.3740	61.0	103.0	40.0	10.00	1	5979376
R4543/8	3/8	–	–	9.53	.3750	61.0	103.0	40.0	10.00	1	5979895
R4549.6	–	–	–	9.60	.3780	61.0	103.0	40.0	10.00	1	5979381
R4549.7	–	–	–	9.70	.3819	61.0	103.0	40.0	10.00	1	5979385
R4549.8	–	–	–	9.80	.3858	61.0	103.0	40.0	10.00	1	5979228
R4549.9	–	–	–	9.90	.3898	61.0	103.0	40.0	10.00	1	5979233
R454W	–	–	W	9.80	.3858	61.0	103.0	40.0	10.00	1	7361236
R45425/64	25/64	–	–	9.92	.3906	61.0	103.0	40.0	10.00	1	5979840
R45410.0	–	–	–	10.00	.3937	61.0	103.0	40.0	10.00	1	5979978
R454X	–	–	X	10.08	.3969	70.0	118.0	45.0	12.00	1	5979952
R45410.1	–	–	–	10.10	.3976	70.0	118.0	45.0	12.00	1	5979981
R45410.2	–	–	–	10.20	.4016	70.0	118.0	45.0	12.00	1	5979985
R454Y	–	–	Y	10.26	.4039	70.0	118.0	45.0	12.00	1	5979955
R45410.3	–	–	–	10.30	.4055	70.0	118.0	45.0	12.00	1	5979989
R45413/32	13/32	–	–	10.32	.4063	70.0	118.0	45.0	12.00	1	5980067
R45410.4	–	–	–	10.40	.4094	70.0	118.0	45.0	12.00	1	5979993
R454Z	–	–	Z	10.49	.4130	70.0	118.0	45.0	12.00	1	5979959
R45410.5	–	–	–	10.50	.4134	70.0	118.0	45.0	12.00	1	5979996
R45410.6	–	–	–	10.60	.4173	70.0	118.0	45.0	12.00	1	5980000
R45427/64	27/64	–	–	10.72	.4219	70.0	118.0	45.0	12.00	1	5979843
R45411.0	–	–	–	11.00	.4331	70.0	118.0	45.0	12.00	1	5980003



Product	DC	DC	DC	DC	DC	LCF	OAL	LS	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(mm)	(inch)	(mm)	(mm)	(mm)	(mm)		
R4547/16	7/16	–	–	11.11	.4375	70.0	118.0	45.0	12.00	1	5980145
R45411.2	–	–	–	11.20	.4409	70.0	118.0	45.0	12.00	1	5980009
R45411.4	–	–	–	11.40	.4488	70.0	118.0	45.0	12.00	1	5980012
R45411.5	–	–	–	11.50	.4528	70.0	118.0	45.0	12.00	1	5980015
R45429/64	29/64	–	–	11.51	.4531	70.0	118.0	45.0	12.00	1	5979849
R45411.6	–	–	–	11.60	.4567	70.0	118.0	45.0	12.00	1	5980018
R45411.8	–	–	–	11.80	.4646	70.0	118.0	45.0	12.00	1	5980022
R45415/32	15/32	–	–	11.91	.4688	70.0	118.0	45.0	12.00	1	5979926
R45412.0	–	–	–	12.00	.4724	70.0	118.0	45.0	12.00	1	5980037
R45412.1	–	–	–	12.10	.4764	76.0	124.0	45.0	14.00	1	5980040
R45412.2	–	–	–	12.20	.4803	76.0	124.0	45.0	14.00	1	5980047
R45431/64	31/64	–	–	12.30	.4844	76.0	124.0	45.0	14.00	1	5979898
R45412.5	–	–	–	12.50	.4921	76.0	124.0	45.0	14.00	1	5980050
R45412.7	–	–	–	12.70	.5000	76.0	124.0	45.0	14.00	1	5980053
R4541/2	1/2	–	–	12.70	.5000	76.0	124.0	45.0	14.00	1	5979962
R45412.8	–	–	–	12.80	.5039	76.0	124.0	45.0	14.00	1	5980057
R45413.0	–	–	–	13.00	.5118	76.0	124.0	45.0	14.00	1	5980060
R45433/64	33/64	–	–	13.10	.5156	76.0	124.0	45.0	14.00	1	5979901
R45417/32	17/32	–	–	13.49	.5313	76.0	124.0	45.0	14.00	1	5979795
R45413.5	–	–	–	13.50	.5315	76.0	124.0	45.0	14.00	1	5980062
R45413.8	–	–	–	13.80	.5433	76.0	124.0	45.0	14.00	1	5980065
R45435/64	35/64	–	–	13.89	.5469	76.0	124.0	45.0	14.00	1	5979904
R45414.0	–	–	–	14.00	.5512	76.0	124.0	45.0	14.00	1	5980074
R45414.25	–	–	–	14.25	.5610	82.0	133.0	48.0	16.00	1	5980081
R4549/16	9/16	–	–	14.29	.5625	82.0	133.0	48.0	16.00	1	5979237
R45414.5	–	–	–	14.50	.5709	82.0	133.0	48.0	16.00	1	5979778
R45437/64	37/64	–	–	14.68	.5781	82.0	133.0	48.0	16.00	1	5979907
R45414.8	–	–	–	14.80	.5827	82.0	133.0	48.0	16.00	1	5979813
R45415.0	–	–	–	15.00	.5906	82.0	133.0	48.0	16.00	1	5979846
R45419/32	19/32	–	–	15.08	.5938	82.0	133.0	48.0	16.00	1	5979820
R45415.1	–	–	–	15.10	.5945	82.0	133.0	48.0	16.00	1	5979882
R45439/64	39/64	–	–	15.48	.6094	82.0	133.0	48.0	16.00	1	5979910
R45415.5	–	–	–	15.50	.6102	82.0	133.0	48.0	16.00	1	5979915
R45415.8	–	–	–	15.80	.6220	82.0	133.0	48.0	16.00	1	5979922
R4545/8	5/8	–	–	15.88	.6250	82.0	133.0	48.0	16.00	1	5980071
R45416.0	–	–	–	16.00	.6299	82.0	133.0	48.0	16.00	1	5979931
R45441/64	41/64	–	–	16.27	.6406	91.0	143.0	48.0	18.00	1	5980189
R45416.5	–	–	–	16.50	.6496	91.0	143.0	48.0	18.00	1	5979783
R45421/32	21/32	–	–	16.67	.6563	91.0	143.0	48.0	18.00	1	5979828
R45417.0	–	–	–	17.00	.6693	91.0	143.0	48.0	18.00	1	5979786
R45443/64	43/64	–	–	17.07	.6720	91.0	143.0	48.0	18.00	1	5980026
R45411/16	11/16	–	–	17.46	.6874	91.0	143.0	48.0	18.00	1	5980025
R45417.5	–	–	–	17.50	.6890	91.0	143.0	48.0	18.00	1	5979789
R45417.8	–	–	–	17.80	.7008	91.0	143.0	48.0	18.00	1	5979792
R45445/64	45/64	–	–	17.86	.7031	91.0	143.0	48.0	18.00	1	5980030
R45418.0	–	–	–	18.00	.7087	91.0	143.0	48.0	18.00	1	5979801
R45423/32	23/32	–	–	18.26	.7189	99.0	153.0	50.0	20.00	1	5979834
R45418.5	–	–	–	18.50	.7283	99.0	153.0	50.0	20.00	1	5979804
R45447/64	47/64	–	–	18.65	.7343	99.0	153.0	50.0	20.00	1	5980034
R45419.0	–	–	–	19.00	.7480	99.0	153.0	50.0	20.00	1	5979807
R4543/4	3/4	–	–	19.05	.7500	99.0	153.0	50.0	20.00	1	5979892
R45419.5	–	–	–	19.50	.7677	99.0	153.0	50.0	20.00	1	5979810
R45419.8	–	–	–	19.80	.7795	99.0	153.0	50.0	20.00	1	5979816
R45420.0	–	–	–	20.00	.7874	99.0	153.0	50.0	20.00	1	5979824



R453

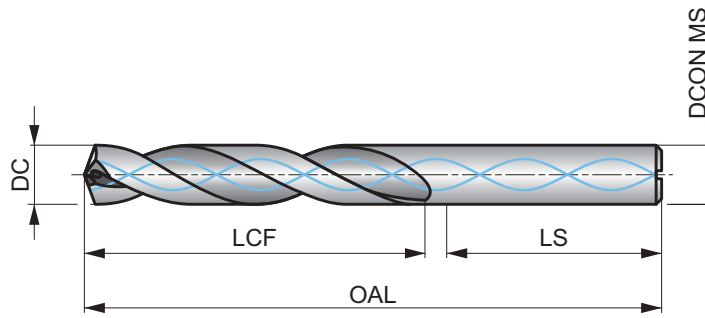


FORCE X Solid Carbide 5XD Drill with Coolant Feed, TiAlN Coated

High performance drill, able to produce high quality and accurate holes at high speeds and feeds (H9 hole tolerance). Self centering 140°, 4-facet split point and CTW flute construction for enhanced penetration rates. Coolant holes to enhance chip evacuation. TiAlN coating increases surface hardness and improves tool life.

FORCE X

HM	DIN 6537L	5xD
140°	TiAlN	DIN 6535HA
CTW	R	
DC m7		



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 79.

P1.1 ■ 558 V	P1.2 ■ 623 V	P1.3 ■ 646 V	P2.1 ■ 476 V	P2.2 ■ 420 V	P2.3 ■ 371 V	P3.1 ■ 413 V	P3.2 ■ 335 V	P3.3 ■ 282 V	P4.1 ■ 246 V	P4.2 ■ 210 V	P4.3 ■ 171 U	M1.1 ■ 233 V	M1.2 ■ 200 V
M2.1 ■ 210 V	M2.2 ■ 171 V	M2.3 ■ 144 U	M3.1 ■ 128 V	M3.2 ■ 108 V	M3.3 ■ 98 V	M4.1 ■ 95 U	M4.2 ■ 82 U	K1.1 ■ 344 W	K1.2 ■ 253 W	K1.3 ■ 190 W	K2.1 ■ 305 V	K2.2 ■ 249 V	K2.3 ■ 200 V
K3.1 ■ 272 V	K3.2 ■ 210 V	K3.3 ■ 167 V	K4.1 ■ 253 V	K4.2 ■ 190 V	K4.3 ■ 141 V	K4.4 ■ 118 V	K4.5 ■ 98 V	K5.1 ■ 282 V	K5.2 ■ 217 V	K5.3 ■ 164 V	N1.1 ■ 781 W	N1.2 ■ 587 W	N1.3 ■ 390 W
N2.1 ■ 961 V	N2.2 ■ 863 V	N2.3 ■ 623 V	N3.1 ■ 1161 W	N3.2 ■ 686 W	N3.3 ■ 344 W	S1.1 ■ 171 V	S1.2 ■ 141 V	S1.3 ■ 125 U	H1.1 ■ 174 U	H2.1 ■ 102 U	H2.2 ■ 95 U	H3.1 ■ 115 U	H3.2 ■ 95 U

DCON MS tolerance h6.

Product	DC (inch)	DC (Wire gauge size)	DC (Letter size)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	LS (mm)	DCON MS (mm)	Pack Qty	MID
R4533.0	—	—	—	3.00	.1181	28.0	66.0	36.0	6.00	1	5979633
R4533.1	—	—	—	3.10	.1220	28.0	66.0	36.0	6.00	1	5979636
R4531/8	1/8	—	—	3.18	.1250	28.0	66.0	36.0	6.00	1	5979930
R4533.2	—	—	—	3.20	.1260	28.0	66.0	36.0	6.00	1	5979642
R453N30	—	N30	—	3.26	.1283	28.0	66.0	36.0	6.00	1	5979877
R4533.3	—	—	—	3.30	.1299	28.0	66.0	36.0	6.00	1	5979645
R4533.4	—	—	—	3.40	.1339	28.0	66.0	36.0	6.00	1	5979648
R453N29	—	N29	—	3.45	.1360	28.0	66.0	36.0	6.00	1	5980039
R4533.5	—	—	—	3.50	.1378	28.0	66.0	36.0	6.00	1	5979651
R453N28	—	N28	—	3.57	.1406	28.0	66.0	36.0	6.00	1	5980036
R4539/64	9/64	—	—	3.57	.1406	28.0	66.0	36.0	6.00	1	5979488
R4533.6	—	—	—	3.60	.1417	28.0	66.0	36.0	6.00	1	5979654
R453N27	—	N27	—	3.66	.1441	28.0	66.0	36.0	6.00	1	5980032
R4533.7	—	—	—	3.70	.1457	28.0	66.0	36.0	6.00	1	5979657
R453N26	—	N26	—	3.73	.1469	36.0	74.0	36.0	6.00	1	5980028
R4533.8	—	—	—	3.80	.1496	36.0	74.0	36.0	6.00	1	5979660
R453N24	—	N24	—	3.86	.1520	36.0	74.0	36.0	6.00	1	5979982
R4533.9	—	—	—	3.90	.1535	36.0	74.0	36.0	6.00	1	5979663
R453N23	—	N23	—	3.91	.1539	36.0	74.0	36.0	6.00	1	5979939
R4535/32	5/32	—	—	3.97	.1563	36.0	74.0	36.0	6.00	1	5978954
R453N22	—	N22	—	3.99	.1571	36.0	74.0	36.0	6.00	1	5979903



Product	DC	DC	DC	DC	DC	LCF	OAL	LS	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(mm)	(inch)	(mm)	(mm)	(mm)	(mm)		
R4534.0	–	–	–	4.00	.1575	36.0	74.0	36.0	6.00	1	5978985
R453N21	–	N21	–	4.04	.1591	36.0	74.0	36.0	6.00	1	5979867
R4534.05	–	–	–	4.05	.1594	36.0	74.0	36.0	6.00	1	5978987
R453N20	–	N20	–	4.09	.1610	36.0	74.0	36.0	6.00	1	5979764
R4534.1	–	–	–	4.10	.1614	36.0	74.0	36.0	6.00	1	5978989
R4534.2	–	–	–	4.20	.1654	36.0	74.0	36.0	6.00	1	5978991
R453N19	–	N19	–	4.22	.1661	36.0	74.0	36.0	6.00	1	5979757
R4534.3	–	–	–	4.30	.1693	36.0	74.0	36.0	6.00	1	5978932
R453N18	–	N18	–	4.31	.1697	36.0	74.0	36.0	6.00	1	5979754
R45311/64	11/64	–	–	4.37	.1719	36.0	74.0	36.0	6.00	1	5980001
R4534.4	–	–	–	4.40	.1732	36.0	74.0	36.0	6.00	1	5978933
R4534.5	–	–	–	4.50	.1772	36.0	74.0	36.0	6.00	1	5978934
R453N16	–	N16	–	4.50	.1772	36.0	74.0	36.0	6.00	1	5979745
R453N15	–	N15	–	4.57	.1799	36.0	74.0	36.0	6.00	1	5979740
R4534.6	–	–	–	4.60	.1811	36.0	74.0	36.0	6.00	1	5978935
R453N14	–	N14	–	4.62	.1819	36.0	74.0	36.0	6.00	1	5979736
R4534.7	–	–	–	4.70	.1850	36.0	74.0	36.0	6.00	1	5978936
R4533/16	3/16	–	–	4.76	.1875	44.0	82.0	36.0	6.00	1	5979666
R4534.8	–	–	–	4.80	.1890	44.0	82.0	36.0	6.00	1	5978937
R453N12	–	N12	–	4.80	.1890	44.0	82.0	36.0	6.00	1	5979729
R453N11	–	N11	–	4.85	.1909	44.0	82.0	36.0	6.00	1	5979724
R4534.9	–	–	–	4.90	.1929	44.0	82.0	36.0	6.00	1	5978938
R453N10	–	N10	–	4.92	.1937	44.0	82.0	36.0	6.00	1	5979717
R453N9	–	N9	–	4.98	.1961	44.0	82.0	36.0	6.00	1	5979894
R4535.0	–	–	–	5.00	.1969	44.0	82.0	36.0	6.00	1	5978944
R4535.05	–	–	–	5.05	.1988	44.0	82.0	36.0	6.00	1	5978945
R453N8	–	N8	–	5.06	.1992	44.0	82.0	36.0	6.00	1	5979891
R4535.1	–	–	–	5.10	.2008	44.0	82.0	36.0	6.00	1	5978946
R453N7	–	N7	–	5.11	.2010	44.0	82.0	36.0	6.00	1	5979888
R45313/64	13/64	–	–	5.16	.2031	44.0	82.0	36.0	6.00	1	5979672
R4535.2	–	–	–	5.20	.2047	44.0	82.0	36.0	6.00	1	5978947
R453N5	–	N5	–	5.22	.2055	44.0	82.0	36.0	6.00	1	5979883
R4535.3	–	–	–	5.30	.2087	44.0	82.0	36.0	6.00	1	7361201
R453N4	–	N4	–	5.31	.2091	44.0	82.0	36.0	6.00	1	5979880
R4535.4	–	–	–	5.40	.2126	44.0	82.0	36.0	6.00	1	7361202
R453N3	–	N3	–	5.41	.2130	44.0	82.0	36.0	6.00	1	5979873
R4535.5	–	–	–	5.50	.2165	44.0	82.0	36.0	6.00	1	5978948
R4537/32	7/32	–	–	5.56	.2188	44.0	82.0	36.0	6.00	1	5979507
R4535.6	–	–	–	5.60	.2205	44.0	82.0	36.0	6.00	1	5978949
R453N2	–	N2	–	5.61	.2209	44.0	82.0	36.0	6.00	1	5979760
R4535.7	–	–	–	5.70	.2244	44.0	82.0	36.0	6.00	1	5978950
R453N1	–	N1	–	5.79	.2280	44.0	82.0	36.0	6.00	1	5979712
R4535.8	–	–	–	5.80	.2283	44.0	82.0	36.0	6.00	1	5978951
R4535.9	–	–	–	5.90	.2323	44.0	82.0	36.0	6.00	1	7361203
R453A	–	–	A	5.94	.2339	44.0	82.0	36.0	6.00	1	5979694
R45315/64	15/64	–	–	5.95	.2344	44.0	82.0	36.0	6.00	1	5979555
R4536.0	–	–	–	6.00	.2362	44.0	82.0	36.0	6.00	1	5978956
R453B	–	–	B	6.05	.2380	53.0	91.0	36.0	8.00	1	7361204
R4536.05	–	–	–	6.05	.2382	53.0	91.0	36.0	8.00	1	5978957
R4536.1	–	–	–	6.10	.2402	53.0	91.0	36.0	8.00	1	5978958
R453C	–	–	C	6.15	.2421	53.0	91.0	36.0	8.00	1	7361205
R4536.2	–	–	–	6.20	.2441	53.0	91.0	36.0	8.00	1	5978959
R453D	–	–	D	6.25	.2461	53.0	91.0	36.0	8.00	1	5979697
R4536.3	–	–	–	6.30	.2480	53.0	91.0	36.0	8.00	1	5978960
R4531/4	1/4	–	–	6.35	.2500	53.0	91.0	36.0	8.00	1	5979925
R4536.4	–	–	–	6.40	.2520	53.0	91.0	36.0	8.00	1	5978961
R4536.5	–	–	–	6.50	.2559	53.0	91.0	36.0	8.00	1	5978962
R453F	–	–	F	6.53	.2571	53.0	91.0	36.0	8.00	1	7361207



Product	DC	DC	DC	DC	DC	LCF	OAL	LS	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(mm)	(inch)	(mm)	(mm)	(mm)	(mm)		
R4536.6	—	—	—	6.60	.2598	53.0	91.0	36.0	8.00	1	5978963
R453G	—	—	G	6.63	.2610	53.0	91.0	36.0	8.00	1	7361208
R4536.7	—	—	—	6.70	.2638	53.0	91.0	36.0	8.00	1	5978965
R45317/64	17/64	—	—	6.75	.2656	53.0	91.0	36.0	8.00	1	5979579
R4536.8	—	—	—	6.80	.2677	53.0	91.0	36.0	8.00	1	5978966
R4536.9	—	—	—	6.90	.2717	53.0	91.0	36.0	8.00	1	5978967
R453I	—	—	I	6.91	.2720	53.0	91.0	36.0	8.00	1	7361209
R4537.0	—	—	—	7.00	.2756	53.0	91.0	36.0	8.00	1	5978968
R453J	—	—	J	7.04	.2772	53.0	91.0	36.0	8.00	1	7361210
R4537.1	—	—	—	7.10	.2795	53.0	91.0	36.0	8.00	1	5978970
R453K	—	—	K	7.14	.2811	53.0	91.0	36.0	8.00	1	7361211
R4539/32	9/32	—	—	7.14	.2813	53.0	91.0	36.0	8.00	1	5979484
R4537.2	—	—	—	7.20	.2835	53.0	91.0	36.0	8.00	1	7361212
R4537.3	—	—	—	7.30	.2874	53.0	91.0	36.0	8.00	1	5978971
R453L	—	—	L	7.37	.2902	53.0	91.0	36.0	8.00	1	5979702
R4537.4	—	—	—	7.40	.2913	53.0	91.0	36.0	8.00	1	5978973
R453M	—	—	M	7.49	.2949	53.0	91.0	36.0	8.00	1	5979705
R4537.5	—	—	—	7.50	.2953	53.0	91.0	36.0	8.00	1	5978975
R45319/64	19/64	—	—	7.54	.2969	53.0	91.0	36.0	8.00	1	5979599
R4537.6	—	—	—	7.60	.2992	53.0	91.0	36.0	8.00	1	5978977
R453N	—	—	N	7.67	.3020	53.0	91.0	36.0	8.00	1	5979708
R4537.7	—	—	—	7.70	.3031	53.0	91.0	36.0	8.00	1	5978979
R4537.8	—	—	—	7.80	.3071	53.0	91.0	36.0	8.00	1	5978983
R4537.9	—	—	—	7.90	.3110	53.0	91.0	36.0	8.00	1	5979424
R4535/16	5/16	—	—	7.94	.3125	53.0	91.0	36.0	8.00	1	5978952
R4538.0	—	—	—	8.00	.3150	53.0	91.0	36.0	8.00	1	5979534
R4530	—	—	O	8.03	.3161	61.0	103.0	40.0	10.00	1	5979897
R4538.05	—	—	—	8.05	.3169	61.0	103.0	40.0	10.00	1	5979568
R4538.1	—	—	—	8.10	.3189	61.0	103.0	40.0	10.00	1	5979575
R4538.2	—	—	—	8.20	.3228	61.0	103.0	40.0	10.00	1	5979578
R453P	—	—	P	8.20	.3228	61.0	103.0	40.0	10.00	1	7361213
R4538.3	—	—	—	8.30	.3268	61.0	103.0	40.0	10.00	1	7361214
R45321/64	21/64	—	—	8.33	.3281	61.0	103.0	40.0	10.00	1	5979612
R4538.4	—	—	—	8.40	.3307	61.0	103.0	40.0	10.00	1	5979581
R453Q	—	—	Q	8.43	.3319	61.0	103.0	40.0	10.00	1	5979900
R4538.5	—	—	—	8.50	.3346	61.0	103.0	40.0	10.00	1	5979584
R4538.6	—	—	—	8.60	.3386	61.0	103.0	40.0	10.00	1	5979429
R453R	—	—	R	8.61	.3390	61.0	103.0	40.0	10.00	1	7361215
R4538.7	—	—	—	8.70	.3425	61.0	103.0	40.0	10.00	1	5979432
R45311/32	11/32	—	—	8.73	.3438	61.0	103.0	40.0	10.00	1	5979998
R4538.8	—	—	—	8.80	.3465	61.0	103.0	40.0	10.00	1	5979436
R453S	—	—	S	8.84	.3480	61.0	103.0	40.0	10.00	1	7361216
R4538.9	—	—	—	8.90	.3504	61.0	103.0	40.0	10.00	1	5979440
R4539.0	—	—	—	9.00	.3543	61.0	103.0	40.0	10.00	1	5979444
R4539.1	—	—	—	9.10	.3583	61.0	103.0	40.0	10.00	1	5979448
R45323/64	23/64	—	—	9.13	.3594	61.0	103.0	40.0	10.00	1	5979620
R4539.2	—	—	—	9.20	.3622	61.0	103.0	40.0	10.00	1	7361217
R4539.3	—	—	—	9.30	.3661	61.0	103.0	40.0	10.00	1	5979452
R453U	—	—	U	9.35	.3681	61.0	103.0	40.0	10.00	1	5979909
R4539.4	—	—	—	9.40	.3701	61.0	103.0	40.0	10.00	1	5979454
R4539.5	—	—	—	9.50	.3740	61.0	103.0	40.0	10.00	1	5979458
R4533/8	3/8	—	—	9.53	.3750	61.0	103.0	40.0	10.00	1	5979674
R4539.6	—	—	—	9.60	.3780	61.0	103.0	40.0	10.00	1	5979461
R4539.7	—	—	—	9.70	.3819	61.0	103.0	40.0	10.00	1	5979467
R4539.8	—	—	—	9.80	.3858	61.0	103.0	40.0	10.00	1	5979472
R453W	—	—	W	9.80	.3858	61.0	103.0	40.0	10.00	1	7361219
R4539.9	—	—	—	9.90	.3898	61.0	103.0	40.0	10.00	1	5979476
R45325/64	25/64	—	—	9.92	.3906	61.0	103.0	40.0	10.00	1	5979624



Product	DC	DC	DC	DC	DC	LCF	OAL	LS	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(mm)	(inch)	(mm)	(mm)	(mm)	(mm)		
R45310.0	–	–	–	10.00	.3937	61.0	103.0	40.0	10.00	1	5979933
R45310.05	–	–	–	10.05	.3957	70.0	118.0	45.0	12.00	1	5979936
R453X	–	–	X	10.08	.3969	70.0	118.0	45.0	12.00	1	5979912
R45310.1	–	–	–	10.10	.3976	70.0	118.0	45.0	12.00	1	5979942
R45310.2	–	–	–	10.20	.4016	70.0	118.0	45.0	12.00	1	5979946
R453Y	–	–	Y	10.26	.4039	70.0	118.0	45.0	12.00	1	5979916
R45310.3	–	–	–	10.30	.4055	70.0	118.0	45.0	12.00	1	5979950
R45313/32	13/32	–	–	10.32	.4063	70.0	118.0	45.0	12.00	1	5979639
R45310.4	–	–	–	10.40	.4094	70.0	118.0	45.0	12.00	1	5979953
R45310.5	–	–	–	10.50	.4134	70.0	118.0	45.0	12.00	1	5979956
R45310.6	–	–	–	10.60	.4173	70.0	118.0	45.0	12.00	1	5979960
R45327/64	27/64	–	–	10.72	.4219	70.0	118.0	45.0	12.00	1	5979627
R45310.8	–	–	–	10.80	.4252	70.0	118.0	45.0	12.00	1	7361220
R45311.0	–	–	–	11.00	.4331	70.0	118.0	45.0	12.00	1	5979964
R4537/16	7/16	–	–	11.11	.4375	70.0	118.0	45.0	12.00	1	5979464
R45311.2	–	–	–	11.20	.4409	70.0	118.0	45.0	12.00	1	5979968
R45311.3	–	–	–	11.30	.4449	70.0	118.0	45.0	12.00	1	7361221
R45311.4	–	–	–	11.40	.4488	70.0	118.0	45.0	12.00	1	5979972
R45311.5	–	–	–	11.50	.4528	70.0	118.0	45.0	12.00	1	5979976
R45329/64	29/64	–	–	11.51	.4531	70.0	118.0	45.0	12.00	1	5979630
R45311.6	–	–	–	11.60	.4567	70.0	118.0	45.0	12.00	1	5979986
R45311.8	–	–	–	11.80	.4646	70.0	118.0	45.0	12.00	1	5979990
R45315/32	15/32	–	–	11.91	.4688	70.0	118.0	45.0	12.00	1	5979552
R45312.0	–	–	–	12.00	.4724	70.0	118.0	45.0	12.00	1	5980005
R45312.05	–	–	–	12.05	.4744	76.0	124.0	45.0	14.00	1	5980008
R45312.2	–	–	–	12.20	.4803	76.0	124.0	45.0	14.00	1	5980011
R45331/64	31/64	–	–	12.30	.4844	76.0	124.0	45.0	14.00	1	5978931
R45312.5	–	–	–	12.50	.4921	76.0	124.0	45.0	14.00	1	5980014
R45312.7	–	–	–	12.70	.5000	76.0	124.0	45.0	14.00	1	5980017
R4531/2	1/2	–	–	12.70	.5000	76.0	124.0	45.0	14.00	1	5979921
R45312.8	–	–	–	12.80	.5039	76.0	124.0	45.0	14.00	1	5980023
R45313.0	–	–	–	13.00	.5118	76.0	124.0	45.0	14.00	1	5979536
R45333/64	33/64	–	–	13.10	.5156	76.0	124.0	45.0	14.00	1	5978942
R45313.3	–	–	–	13.30	.5236	76.0	124.0	45.0	14.00	1	7361222
R45317/32	17/32	–	–	13.49	.5313	76.0	124.0	45.0	14.00	1	5979576
R45313.5	–	–	–	13.50	.5315	76.0	124.0	45.0	14.00	1	5979570
R45313.8	–	–	–	13.80	.5433	76.0	124.0	45.0	14.00	1	5979602
R45335/64	35/64	–	–	13.89	.5469	76.0	124.0	45.0	14.00	1	5978953
R45314.0	–	–	–	14.00	.5512	76.0	124.0	45.0	14.00	1	5979680
R45314.25	–	–	–	14.25	.5610	82.0	133.0	48.0	16.00	1	5979684
R4539/16	9/16	–	–	14.29	.5625	82.0	133.0	48.0	16.00	1	5979480
R45314.5	–	–	–	14.50	.5709	82.0	133.0	48.0	16.00	1	5979688
R45337/64	37/64	–	–	14.68	.5781	82.0	133.0	48.0	16.00	1	5978964
R45314.8	–	–	–	14.80	.5827	82.0	133.0	48.0	16.00	1	5979691
R45315.0	–	–	–	15.00	.5906	82.0	133.0	48.0	16.00	1	5979540
R45319/32	19/32	–	–	15.08	.5938	82.0	133.0	48.0	16.00	1	5979596
R45315.1	–	–	–	15.10	.5945	82.0	133.0	48.0	16.00	1	5979543
R45315.3	–	–	–	15.30	.6024	82.0	133.0	48.0	16.00	1	7361223
R45315.5	–	–	–	15.50	.6102	82.0	133.0	48.0	16.00	1	5979546
R45315.8	–	–	–	15.80	.6220	82.0	133.0	48.0	16.00	1	5979549
R4535/8	5/8	–	–	15.88	.6250	82.0	133.0	48.0	16.00	1	5978955
R45316.0	–	–	–	16.00	.6299	82.0	133.0	48.0	16.00	1	5979559
R45341/64	41/64	–	–	16.27	.6406	91.0	143.0	48.0	18.00	1	5978939
R45316.5	–	–	–	16.50	.6496	91.0	143.0	48.0	18.00	1	5979562
R45321/32	21/32	–	–	16.67	.6563	91.0	143.0	48.0	18.00	1	5979608
R45317.0	–	–	–	17.00	.6693	91.0	143.0	48.0	18.00	1	5979564
R45343/64	43/64	–	–	17.07	.6720	91.0	143.0	48.0	18.00	1	5978940
R45311/16	11/16	–	–	17.46	.6874	91.0	143.0	48.0	18.00	1	5979995



Product	DC	DC	DC	DC	DC	LCF	OAL	LS	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(mm)	(inch)	(mm)	(mm)	(mm)	(mm)		
R45317.5	–	–	–	17.50	.6890	91.0	143.0	48.0	18.00	1	5979567
R45317.8	–	–	–	17.80	.7008	91.0	143.0	48.0	18.00	1	5979573
R45345/64	45/64	–	–	17.86	.7031	91.0	143.0	48.0	18.00	1	5978941
R45318.0	–	–	–	18.00	.7087	91.0	143.0	48.0	18.00	1	5979582
R45323/32	23/32	–	–	18.26	.7189	99.0	153.0	50.0	20.00	1	5979616
R45318.5	–	–	–	18.50	.7283	99.0	153.0	50.0	20.00	1	5979585
R45347/64	47/64	–	–	18.65	.7343	99.0	153.0	50.0	20.00	1	5978943
R45319.0	–	–	–	19.00	.7480	99.0	153.0	50.0	20.00	1	5979588
R4533/4	3/4	–	–	19.05	.7500	99.0	153.0	50.0	20.00	1	5979669
R45319.5	–	–	–	19.50	.7677	99.0	153.0	50.0	20.00	1	5979590
R45319.8	–	–	–	19.80	.7795	99.0	153.0	50.0	20.00	1	5979593
R45320.0	–	–	–	20.00	.7874	99.0	153.0	50.0	20.00	1	5979605



R459

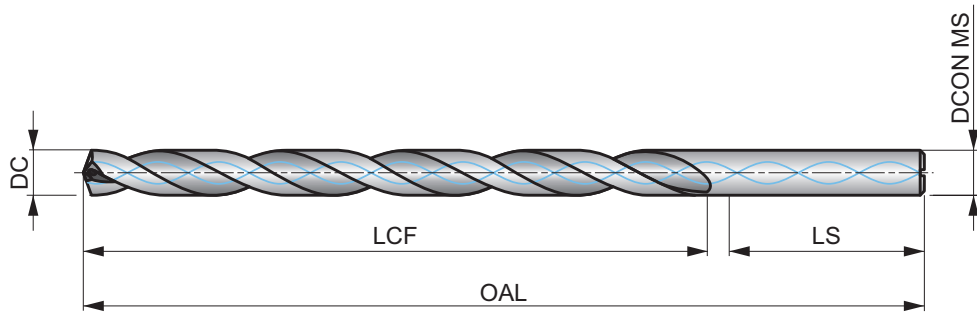


FORCE X Solid Carbide 8XD Drill with Coolant Feed, TiAlN Coated

High performance drill, able to produce high quality and accurate holes at high speeds and feeds (H9 hole tolerance). Self centering 140°, 4-facet split point and CTW flute construction for enhanced penetration rates. Coolant holes to enhance chip evacuation. TiAlN coating increases surface hardness and improves tool life.

FORCE X

HM	DORMER	8xD
140°	TiAlN	DIN 6535HA
CTW	R	
DC m7		



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 79.

P1.1 ■ 469 V	P1.2 ■ 525 V	P1.3 ■ 545 V	P2.1 ■ 400 V	P2.2 ■ 354 U	P2.3 ■ 312 U	P3.1 ■ 348 U	P3.2 ■ 282 U	P3.3 ■ 236 U	P4.1 ■ 207 U	P4.2 ■ 177 U	P4.3 ■ 144 T	M1.1 ■ 197 V	M1.2 ■ 167 V
M2.1 ■ 177 V	M2.2 ■ 144 V	M2.3 ■ 121 U	M3.1 ■ 108 V	M3.2 ■ 92 V	M3.3 ■ 85 V	M4.1 ■ 79 U	M4.2 ■ 69 U	K1.1 ■ 289 W	K1.2 ■ 213 W	K1.3 ■ 161 W	K2.1 ■ 256 V	K2.2 ■ 210 V	K2.3 ■ 167 V
K3.1 ■ 230 V	K3.2 ■ 177 V	K3.3 ■ 141 V	K4.1 ■ 213 V	K4.2 ■ 161 V	K4.3 ■ 118 V	K4.4 ■ 98 V	K4.5 ■ 85 V	K5.1 ■ 240 V	K5.2 ■ 180 V	K5.3 ■ 138 V	N1.1 ■ 656 W	N1.2 ■ 492 W	N1.3 ■ 328 W
N2.1 ■ 807 V	N2.2 ■ 728 V	N2.3 ■ 525 V	N3.1 ■ 978 V	N3.2 ■ 577 V	N3.3 ■ 289 V								

DCON MS tolerance h6.

Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	LS (mm)	DCON MS (mm)	Pack Qty	MID
R4593.0	–	3.00	.1181	37.0	79.0	36.0	6.00	1	6718973
R4593.1	–	3.10	.1220	37.0	79.0	36.0	6.00	1	6718974
R4591/8	1/8	3.18	.1250	37.0	79.0	36.0	6.00	1	6718975
R4593.2	–	3.20	.1260	37.0	79.0	36.0	6.00	1	6718976
R4593.3	–	3.30	.1299	37.0	79.0	36.0	6.00	1	6718977
R4593.4	–	3.40	.1339	37.0	79.0	36.0	6.00	1	6718978
R4593.5	–	3.50	.1378	37.0	79.0	36.0	6.00	1	6718979
R4599/64	9/64	3.57	.1406	37.0	79.0	36.0	6.00	1	6718990
R4593.6	–	3.60	.1417	37.0	79.0	36.0	6.00	1	6718991
R4593.7	–	3.70	.1457	37.0	79.0	36.0	6.00	1	6718992
R4593.8	–	3.80	.1496	48.0	90.0	36.0	6.00	1	6718993
R4593.9	–	3.90	.1535	48.0	90.0	36.0	6.00	1	6718994
R4595/32	5/32	3.97	.1563	48.0	90.0	36.0	6.00	1	6718995
R4594.0	–	4.00	.1575	48.0	90.0	36.0	6.00	1	6718996
R4594.1	–	4.10	.1614	48.0	90.0	36.0	6.00	1	6718997
R4594.2	–	4.20	.1654	48.0	90.0	36.0	6.00	1	6718998
R4594.3	–	4.30	.1693	48.0	90.0	36.0	6.00	1	6718999
R45911/64	11/64	4.37	.1719	48.0	90.0	36.0	6.00	1	6719000
R4594.4	–	4.40	.1732	48.0	90.0	36.0	6.00	1	6719001
R4594.5	–	4.50	.1772	48.0	90.0	36.0	6.00	1	6719002
R4594.6	–	4.60	.1811	48.0	90.0	36.0	6.00	1	6719003



Product	DC	DC	DC	LCF	OAL	LS	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)	(mm)		
R4594.7	–	4.70	.1850	62.0	104.0	36.0	6.00	1	6719004
R4593/16	3/16	4.76	.1875	62.0	104.0	36.0	6.00	1	6719005
R4594.8	–	4.80	.1890	62.0	104.0	36.0	6.00	1	6719006
R4594.9	–	4.90	.1929	62.0	104.0	36.0	6.00	1	6719007
R4595.0	–	5.00	.1969	62.0	104.0	36.0	6.00	1	6719008
R4595.1	–	5.10	.2008	62.0	104.0	36.0	6.00	1	6719009
R45913/64	13/64	5.16	.2031	62.0	104.0	36.0	6.00	1	6719010
R4595.2	–	5.20	.2047	62.0	104.0	36.0	6.00	1	6719011
R4595.3	–	5.30	.2087	62.0	104.0	36.0	6.00	1	6719012
R4595.4	–	5.40	.2126	62.0	104.0	36.0	6.00	1	6719013
R4595.5	–	5.50	.2165	62.0	104.0	36.0	6.00	1	6719014
R4597/32	7/32	5.56	.2188	62.0	104.0	36.0	6.00	1	6719015
R4595.6	–	5.60	.2205	62.0	104.0	36.0	6.00	1	6719016
R4595.7	–	5.70	.2244	62.0	104.0	36.0	6.00	1	6719017
R4595.8	–	5.80	.2283	62.0	104.0	36.0	6.00	1	6719018
R4595.9	–	5.90	.2323	62.0	104.0	36.0	6.00	1	6719019
R45915/64	15/64	5.95	.2344	62.0	104.0	36.0	6.00	1	6719020
R4596.0	–	6.00	.2362	62.0	104.0	36.0	6.00	1	6719021
R4596.1	–	6.10	.2402	84.0	126.0	36.0	8.00	1	6719022
R4596.2	–	6.20	.2441	84.0	126.0	36.0	8.00	1	6719023
R4596.3	–	6.30	.2480	84.0	126.0	36.0	8.00	1	6719024
R4591/4	1/4	6.35	.2500	84.0	126.0	36.0	8.00	1	6719025
R4596.4	–	6.40	.2520	84.0	126.0	36.0	8.00	1	6719026
R4596.5	–	6.50	.2559	84.0	126.0	36.0	8.00	1	6719027
R4596.6	–	6.60	.2598	84.0	126.0	36.0	8.00	1	6719028
R4596.7	–	6.70	.2638	84.0	126.0	36.0	8.00	1	6719029
R45917/64	17/64	6.75	.2656	84.0	126.0	36.0	8.00	1	6719030
R4596.8	–	6.80	.2677	84.0	126.0	36.0	8.00	1	6719031
R4596.9	–	6.90	.2717	84.0	126.0	36.0	8.00	1	6719032
R4597.0	–	7.00	.2756	84.0	126.0	36.0	8.00	1	6719033
R4597.1	–	7.10	.2795	84.0	126.0	36.0	8.00	1	6719034
R4599/32	9/32	7.14	.2813	84.0	126.0	36.0	8.00	1	6719035
R4597.2	–	7.20	.2835	84.0	126.0	36.0	8.00	1	6719036
R4597.3	–	7.30	.2874	84.0	126.0	36.0	8.00	1	6719037
R4597.4	–	7.40	.2913	84.0	126.0	36.0	8.00	1	6719038
R4597.5	–	7.50	.2953	84.0	126.0	36.0	8.00	1	6719039
R45919/64	19/64	7.54	.2969	84.0	126.0	36.0	8.00	1	6719040
R4597.6	–	7.60	.2992	84.0	126.0	36.0	8.00	1	6719041
R4597.7	–	7.70	.3031	84.0	126.0	36.0	8.00	1	6719042
R4597.8	–	7.80	.3071	84.0	126.0	36.0	8.00	1	6719043
R4597.9	–	7.90	.3110	84.0	126.0	36.0	8.00	1	6719044
R4595/16	5/16	7.94	.3125	84.0	126.0	36.0	8.00	1	6719045
R4598.0	–	8.00	.3150	84.0	126.0	36.0	8.00	1	6719046
R4598.1	–	8.10	.3189	106.0	152.0	40.0	10.00	1	6719047
R4598.2	–	8.20	.3228	106.0	152.0	40.0	10.00	1	6719048
R4598.3	–	8.30	.3268	106.0	152.0	40.0	10.00	1	6719049
R45921/64	21/64	8.33	.3281	106.0	152.0	40.0	10.00	1	6719050
R4598.4	–	8.40	.3307	106.0	152.0	40.0	10.00	1	6719051
R4598.5	–	8.50	.3346	106.0	152.0	40.0	10.00	1	6719052
R4598.6	–	8.60	.3386	106.0	152.0	40.0	10.00	1	6719053
R4598.7	–	8.70	.3425	106.0	152.0	40.0	10.00	1	6719054
R45911/32	11/32	8.73	.3438	106.0	152.0	40.0	10.00	1	6719055
R4598.8	–	8.80	.3465	106.0	152.0	40.0	10.00	1	6719056
R4598.9	–	8.90	.3504	106.0	152.0	40.0	10.00	1	6719057
R4599.0	–	9.00	.3543	106.0	152.0	40.0	10.00	1	6719058
R4599.1	–	9.10	.3583	106.0	152.0	40.0	10.00	1	6719059
R45923/64	23/64	9.13	.3594	106.0	152.0	40.0	10.00	1	6719060
R4599.2	–	9.20	.3622	106.0	152.0	40.0	10.00	1	6719061



Product	DC	DC	DC	LCF	OAL	LS	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)	(mm)		
R4599.3	–	9.30	.3661	106.0	152.0	40.0	10.00	1	6719062
R4599.4	–	9.40	.3701	106.0	152.0	40.0	10.00	1	6719063
R4599.5	–	9.50	.3740	106.0	152.0	40.0	10.00	1	6719064
R4593/8	3/8	9.53	.3750	106.0	152.0	40.0	10.00	1	6719065
R4599.6	–	9.60	.3780	106.0	152.0	40.0	10.00	1	6719066
R4599.7	–	9.70	.3819	106.0	152.0	40.0	10.00	1	6719067
R4599.8	–	9.80	.3858	106.0	152.0	40.0	10.00	1	6719068
R4599.9	–	9.90	.3898	106.0	152.0	40.0	10.00	1	6719069
R45925/64	25/64	9.92	.3906	106.0	152.0	40.0	10.00	1	6719070
R45910.0	–	10.00	.3937	106.0	152.0	40.0	10.00	1	6719071
R45910.2	–	10.20	.4016	128.0	180.0	45.0	12.00	1	6719072
R45910.3	–	10.30	.4055	128.0	180.0	45.0	12.00	1	6719073
R45913/32	13/32	10.32	.4063	128.0	180.0	45.0	12.00	1	6719074
R45910.4	–	10.40	.4094	128.0	180.0	45.0	12.00	1	6719075
R45910.5	–	10.50	.4134	128.0	180.0	45.0	12.00	1	6719076
R45927/64	27/64	10.72	.4219	128.0	180.0	45.0	12.00	1	6719077
R45910.8	–	10.80	.4252	128.0	180.0	45.0	12.00	1	6719078
R45911.0	–	11.00	.4331	128.0	180.0	45.0	12.00	1	6719079
R4597/16	7/16	11.11	.4375	128.0	180.0	45.0	12.00	1	6719080
R45911.2	–	11.20	.4409	128.0	180.0	45.0	12.00	1	6719081
R45911.3	–	11.30	.4449	128.0	180.0	45.0	12.00	1	6719082
R45911.5	–	11.50	.4528	128.0	180.0	45.0	12.00	1	6719083
R45929/64	29/64	11.51	.4531	128.0	180.0	45.0	12.00	1	6719084
R45911.8	–	11.80	.4646	128.0	180.0	45.0	12.00	1	6719085
R45915/32	15/32	11.91	.4688	128.0	180.0	45.0	12.00	1	6719086
R45912.0	–	12.00	.4724	128.0	180.0	45.0	12.00	1	6719087
R45912.2	–	12.20	.4803	151.0	202.0	48.0	14.00	1	6719088
R45931/64	31/64	12.30	.4844	151.0	202.0	48.0	14.00	1	6719089
R45912.5	–	12.50	.4921	151.0	202.0	48.0	14.00	1	6719090
R4591/2	1/2	12.70	.5000	151.0	202.0	48.0	14.00	1	6719091
R45912.8	–	12.80	.5039	151.0	202.0	48.0	14.00	1	6719092
R45913.0	–	13.00	.5118	151.0	202.0	48.0	14.00	1	6719093
R45933/64	33/64	13.10	.5156	151.0	202.0	48.0	14.00	1	6719094
R45917/32	17/32	13.49	.5313	151.0	202.0	48.0	14.00	1	6719095
R45913.5	–	13.50	.5315	151.0	202.0	48.0	14.00	1	6719096
R45935/64	35/64	13.89	.5469	151.0	202.0	48.0	14.00	1	6719097
R45914.0	–	14.00	.5512	151.0	202.0	48.0	14.00	1	6719098
R45914.25	–	14.25	.5610	172.0	227.0	48.0	16.00	1	6719099
R4599/16	9/16	14.29	.5625	172.0	227.0	48.0	16.00	1	6719100
R45914.5	–	14.50	.5709	172.0	227.0	48.0	16.00	1	6719101
R45937/64	37/64	14.68	.5781	172.0	227.0	48.0	16.00	1	6719102
R45915.0	–	15.00	.5906	172.0	227.0	48.0	16.00	1	6719103
R45919/32	19/32	15.08	.5938	172.0	227.0	48.0	16.00	1	6719104
R45915.1	–	15.10	.5945	172.0	227.0	48.0	16.00	1	6719105
R45915.5	–	15.50	.6102	172.0	227.0	48.0	16.00	1	6719107
R4595/8	5/8	15.88	.6250	172.0	227.0	48.0	16.00	1	6719108
R45916.0	–	16.00	.6299	172.0	227.0	48.0	16.00	1	6719109



R467

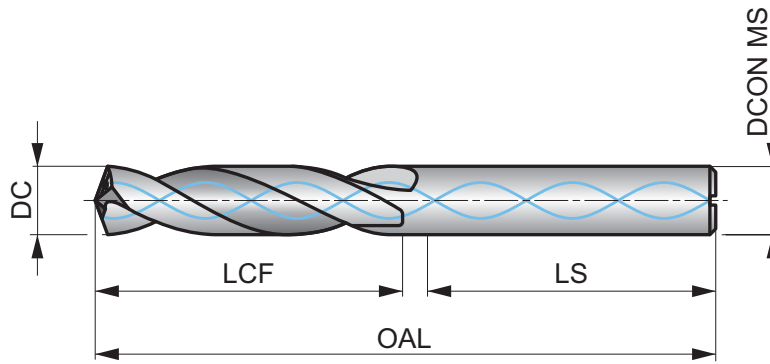


FORCE M Solid Carbide 3XD Drill with Coolant Feed, TiAlN Coated

High performance drill, able to produce high quality and accurate holes at high speeds and feeds (H9 hole tolerance in stainless steel and heat resistant materials). A 140°, 4-facet split point and CTW flute construction. Coolant holes enhance chip evacuation. TiAlN coating increases surface hardness and improves tool life.

FORCE M

HM	DIN 6537K	3xD
140°	TiAlN	DIN 6535HA
CTW	R	
DC m7		



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 79.

M1.1 ■ 384 G	M1.2 ■ 325 G	M2.1 ■ 341 G	M2.2 ■ 279 G	M2.3 ■ 233 E	M3.1 ■ 285 G	M3.2 ■ 246 G	M3.3 ■ 223 F	M4.1 ■ 197 F	M4.2 ■ 171 E	S1.1 ■ 180 V	S1.2 ■ 148 V	S1.3 ■ 131 U	S2.1 ■ 197 U
S2.2 ■ 184 U	S3.1 ■ 148 U	S3.2 ■ 131 U	S4.1 ■ 115 U	S4.2 ■ 105 U									

DCON MS tolerance h6.

Product	DC (inch)	DC (Wire gauge size)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	LS (mm)	DCON MS (mm)	Pack Qty	MID
R4673.0	–	–	3.00	.1181	20.0	62.0	36.0	6.00	1	7625100
R4673.1	–	–	3.10	.1220	20.0	62.0	36.0	6.00	1	7625101
R4671/8	1/8	–	3.18	.1250	20.0	62.0	36.0	6.00	1	7625102
R4673.2	–	–	3.20	.1260	20.0	62.0	36.0	6.00	1	7625103
R4673.3	–	–	3.30	.1299	20.0	62.0	36.0	6.00	1	7625104
R4673.4	–	–	3.40	.1339	20.0	62.0	36.0	6.00	1	7625105
R467N29	–	N29	3.45	.1360	20.0	62.0	36.0	6.00	1	7625106
R4673.5	–	–	3.50	.1378	20.0	62.0	36.0	6.00	1	7625107
R4679/64	9/64	–	3.57	.1406	20.0	62.0	36.0	6.00	1	7625108
R4673.6	–	–	3.60	.1417	20.0	62.0	36.0	6.00	1	7625109
R4673.7	–	–	3.70	.1457	20.0	62.0	36.0	6.00	1	7625110
R4673.8	–	–	3.80	.1496	24.0	66.0	36.0	6.00	1	7625111
R4673.9	–	–	3.90	.1535	24.0	66.0	36.0	6.00	1	7625112
R4675/32	5/32	–	3.97	.1563	24.0	66.0	36.0	6.00	1	7625113
R4674.0	–	–	4.00	.1575	24.0	66.0	36.0	6.00	1	7625114
R4674.05	–	–	4.05	.1594	24.0	66.0	36.0	6.00	1	7625115
R4674.1	–	–	4.10	.1614	24.0	66.0	36.0	6.00	1	7625116
R4674.2	–	–	4.20	.1654	24.0	66.0	36.0	6.00	1	7625117
R4674.3	–	–	4.30	.1693	24.0	66.0	36.0	6.00	1	7625118
R46711/64	11/64	–	4.37	.1719	24.0	66.0	36.0	6.00	1	7625119
R4674.4	–	–	4.40	.1732	24.0	66.0	36.0	6.00	1	7625120
R4674.5	–	–	4.50	.1772	24.0	66.0	36.0	6.00	1	7625121
R4674.6	–	–	4.60	.1811	24.0	66.0	36.0	6.00	1	7625122
R4674.7	–	–	4.70	.1850	24.0	66.0	36.0	6.00	1	7625123
R4673/16	3/16	–	4.76	.1875	28.0	66.0	36.0	6.00	1	7625124



Product	DC	DC	DC	DC	LCF	OAL	LS	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(mm)	(inch)	(mm)	(mm)	(mm)	(mm)		
R4674.8	—	—	4.80	.1890	28.0	66.0	36.0	6.00	1	7625125
R4674.9	—	—	4.90	.1929	28.0	66.0	36.0	6.00	1	7625126
R4675.0	—	—	5.00	.1969	28.0	66.0	36.0	6.00	1	7625127
R4675.05	—	—	5.05	.1988	28.0	66.0	36.0	6.00	1	7625128
R4675.1	—	—	5.10	.2008	28.0	66.0	36.0	6.00	1	7625129
R467N7	—	N7	5.11	.2010	28.0	66.0	36.0	6.00	1	7625130
R46713/64	13/64	—	5.16	.2031	28.0	66.0	36.0	6.00	1	7625131
R4675.2	—	—	5.20	.2047	28.0	66.0	36.0	6.00	1	7625132
R467N5	—	N5	5.22	.2055	28.0	66.0	36.0	6.00	1	7625133
R4675.3	—	—	5.30	.2087	28.0	66.0	36.0	6.00	1	7625134
R4675.4	—	—	5.40	.2126	28.0	66.0	36.0	6.00	1	7625135
R4675.5	—	—	5.50	.2165	28.0	66.0	36.0	6.00	1	7625136
R4677/32	7/32	—	5.56	.2188	28.0	66.0	36.0	6.00	1	7625137
R4675.6	—	—	5.60	.2205	28.0	66.0	36.0	6.00	1	7625138
R4675.7	—	—	5.70	.2244	28.0	66.0	36.0	6.00	1	7625139
R4675.8	—	—	5.80	.2283	28.0	66.0	36.0	6.00	1	7625140
R4675.9	—	—	5.90	.2323	28.0	66.0	36.0	6.00	1	7625141
R46715/64	15/64	—	5.95	.2344	28.0	66.0	36.0	6.00	1	7625142
R4676.0	—	—	6.00	.2362	28.0	66.0	36.0	6.00	1	7625143
R4676.05	—	—	6.05	.2382	34.0	79.0	36.0	8.00	1	7625144
R4676.1	—	—	6.10	.2402	34.0	79.0	36.0	8.00	1	7625145
R4676.2	—	—	6.20	.2441	34.0	79.0	36.0	8.00	1	7625146
R4676.3	—	—	6.30	.2480	34.0	79.0	36.0	8.00	1	7625147
R4671/4	1/4	—	6.35	.2500	34.0	79.0	36.0	8.00	1	7625148
R4676.4	—	—	6.40	.2520	34.0	79.0	36.0	8.00	1	7625149
R4676.5	—	—	6.50	.2559	34.0	79.0	36.0	8.00	1	7625150
R4676.6	—	—	6.60	.2598	34.0	79.0	36.0	8.00	1	7625151
R4676.7	—	—	6.70	.2638	34.0	79.0	36.0	8.00	1	7625152
R46717/64	17/64	—	6.75	.2656	34.0	79.0	36.0	8.00	1	7625153
R4676.8	—	—	6.80	.2677	34.0	79.0	36.0	8.00	1	7625154
R4676.9	—	—	6.90	.2717	34.0	79.0	36.0	8.00	1	7625155
R4677.0	—	—	7.00	.2756	34.0	79.0	36.0	8.00	1	7625156
R4677.1	—	—	7.10	.2795	41.0	79.0	36.0	8.00	1	7625157
R4679/32	9/32	—	7.14	.2813	41.0	79.0	36.0	8.00	1	7625158
R4677.2	—	—	7.20	.2835	41.0	79.0	36.0	8.00	1	7625159
R4677.3	—	—	7.30	.2874	41.0	79.0	36.0	8.00	1	7625160
R4677.4	—	—	7.40	.2913	41.0	79.0	36.0	8.00	1	7625161
R4677.5	—	—	7.50	.2953	41.0	79.0	36.0	8.00	1	7625162
R46719/64	19/64	—	7.54	.2969	41.0	79.0	36.0	8.00	1	7625163
R4677.6	—	—	7.60	.2992	41.0	79.0	36.0	8.00	1	7625164
R4677.7	—	—	7.70	.3031	41.0	79.0	36.0	8.00	1	7625165
R4677.8	—	—	7.80	.3071	41.0	79.0	36.0	8.00	1	7625166
R4675/16	5/16	—	7.94	.3125	41.0	79.0	36.0	8.00	1	7625168
R4678.0	—	—	8.00	.3150	41.0	79.0	36.0	8.00	1	7625169
R4678.05	—	—	8.05	.3169	47.0	89.0	40.0	10.00	1	7625170
R4678.1	—	—	8.10	.3189	47.0	89.0	40.0	10.00	1	7625171
R4678.2	—	—	8.20	.3228	47.0	89.0	40.0	10.00	1	7625172
R4678.3	—	—	8.30	.3268	47.0	89.0	40.0	10.00	1	7625173
R4678.4	—	—	8.40	.3307	47.0	89.0	40.0	10.00	1	7625175
R4678.5	—	—	8.50	.3346	47.0	89.0	40.0	10.00	1	7625176
R4678.6	—	—	8.60	.3386	47.0	89.0	40.0	10.00	1	7625177
R4678.7	—	—	8.70	.3425	47.0	89.0	40.0	10.00	1	7625178
R46711/32	11/32	—	8.73	.3438	47.0	89.0	40.0	10.00	1	7625179
R4678.8	—	—	8.80	.3465	47.0	89.0	40.0	10.00	1	7625180
R4678.9	—	—	8.90	.3504	47.0	89.0	40.0	10.00	1	7625181
R4679.0	—	—	9.00	.3543	47.0	89.0	40.0	10.00	1	7625182
R4679.1	—	—	9.10	.3583	47.0	89.0	40.0	10.00	1	7625183
R46723/64	23/64	—	9.13	.3594	47.0	89.0	40.0	10.00	1	7625184



Product	DC	DC	DC	DC	LCF	OAL	LS	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(mm)	(inch)	(mm)	(mm)	(mm)	(mm)		
R4679.3	–	–	9.30	.3661	47.0	89.0	40.0	10.00	1	7625186
R4679.4	–	–	9.40	.3701	47.0	89.0	40.0	10.00	1	7625187
R4679.5	–	–	9.50	.3740	47.0	89.0	40.0	10.00	1	7625188
R4673/8	3/8	–	9.53	.3750	47.0	89.0	40.0	10.00	1	7625189
R4679.6	–	–	9.60	.3780	47.0	89.0	40.0	10.00	1	7625190
R4679.7	–	–	9.70	.3819	47.0	89.0	40.0	10.00	1	7625191
R4679.8	–	–	9.80	.3858	47.0	89.0	40.0	10.00	1	7625192
R4679.9	–	–	9.90	.3898	47.0	89.0	40.0	10.00	1	7625193
R46725/64	25/64	–	9.92	.3906	47.0	89.0	40.0	10.00	1	7625194
R46710.0	–	–	10.00	.3937	47.0	89.0	40.0	10.00	1	7625195
R46710.05	–	–	10.05	.3957	55.0	102.0	45.0	12.00	1	7625196
R46710.1	–	–	10.10	.3976	55.0	102.0	45.0	12.00	1	7625197
R46710.2	–	–	10.20	.4016	55.0	102.0	45.0	12.00	1	7625198
R46710.3	–	–	10.30	.4055	55.0	102.0	45.0	12.00	1	7625199
R46713/32	13/32	–	10.32	.4063	55.0	102.0	45.0	12.00	1	7625200
R46710.4	–	–	10.40	.4094	55.0	102.0	45.0	12.00	1	7625201
R46710.5	–	–	10.50	.4134	55.0	102.0	45.0	12.00	1	7625202
R46710.6	–	–	10.60	.4173	55.0	102.0	45.0	12.00	1	7625203
R46727/64	27/64	–	10.72	.4219	55.0	102.0	45.0	12.00	1	7625204
R46710.9	–	–	10.90	.4291	55.0	102.0	45.0	12.00	1	7625206
R46711.0	–	–	11.00	.4331	55.0	102.0	45.0	12.00	1	7625207
R4677/16	7/16	–	11.11	.4375	55.0	102.0	45.0	12.00	1	7625208
R46711.2	–	–	11.20	.4409	55.0	102.0	45.0	12.00	1	7625209
R46711.4	–	–	11.40	.4488	55.0	102.0	45.0	12.00	1	7625211
R46711.5	–	–	11.50	.4528	55.0	102.0	45.0	12.00	1	7625212
R46729/64	29/64	–	11.51	.4531	55.0	102.0	45.0	12.00	1	7625213
R46711.8	–	–	11.80	.4646	55.0	102.0	45.0	12.00	1	7625215
R46715/32	15/32	–	11.91	.4688	55.0	102.0	45.0	12.00	1	7625216
R46712.0	–	–	12.00	.4724	55.0	102.0	45.0	12.00	1	7625217
R46712.05	–	–	12.05	.4744	60.0	107.0	45.0	14.00	1	7625218
R46712.1	–	–	12.10	.4764	60.0	107.0	45.0	14.00	1	7625219
R46712.2	–	–	12.20	.4803	60.0	107.0	45.0	14.00	1	7625220
R46731/64	31/64	–	12.30	.4844	60.0	107.0	45.0	14.00	1	7625221
R46712.5	–	–	12.50	.4921	60.0	107.0	45.0	14.00	1	7625222
R46712.7	–	–	12.70	.5000	60.0	107.0	45.0	14.00	1	7625224
R4671/2	1/2	–	12.70	.5000	60.0	107.0	45.0	14.00	1	7625223
R46713.0	–	–	13.00	.5118	60.0	107.0	45.0	14.00	1	7625226
R46733/64	33/64	–	13.10	.5156	60.0	107.0	45.0	14.00	1	7625227
R46717/32	17/32	–	13.49	.5313	60.0	107.0	45.0	14.00	1	7625229
R46713.5	–	–	13.50	.5315	60.0	107.0	45.0	14.00	1	7625230
R46735/64	35/64	–	13.89	.5469	60.0	107.0	45.0	14.00	1	7625232
R46714.0	–	–	14.00	.5512	60.0	107.0	45.0	14.00	1	7625233
R46714.25	–	–	14.25	.5610	65.0	115.0	48.0	16.00	1	7625234
R4679/16	9/16	–	14.29	.5625	65.0	115.0	48.0	16.00	1	7625235
R46714.5	–	–	14.50	.5709	65.0	115.0	48.0	16.00	1	7625236
R46737/64	37/64	–	14.68	.5781	65.0	115.0	48.0	16.00	1	7625237
R46715.0	–	–	15.00	.5906	65.0	115.0	48.0	16.00	1	7625239
R46719/32	19/32	–	15.08	.5938	65.0	115.0	48.0	16.00	1	7625240
R46715.1	–	–	15.10	.5945	65.0	115.0	48.0	16.00	1	7625241
R46715.3	–	–	15.30	.6024	65.0	115.0	48.0	16.00	1	7625242
R46715.5	–	–	15.50	.6102	65.0	115.0	48.0	16.00	1	7625244
R4675/8	5/8	–	15.88	.6250	65.0	115.0	48.0	16.00	1	7625246
R46716.0	–	–	16.00	.6299	65.0	115.0	48.0	16.00	1	7625247



R463

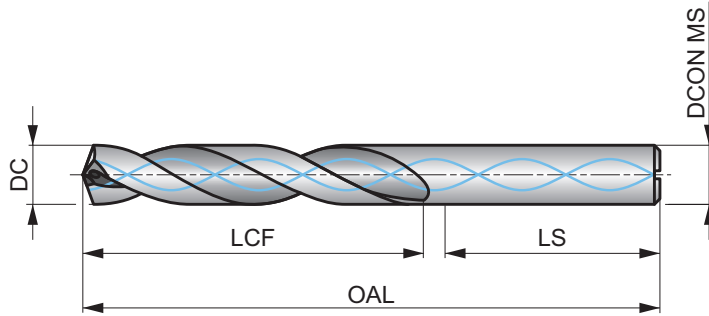


FORCE M Solid Carbide 5XD Drill with Coolant Feed. TiAIN Coated

High performance drill, able to produce high quality and accurate holes at high speeds and feeds (H9 hole tolerance in stainless steel and heat resistant materials). A 140°, 4-facet split point and CTW flute construction. Coolant holes enhance chip evacuation. TiAIN coating increases surface hardness and improves tool life.

FORCE M

HM	DIN 6537L	5xD
140°	TiAIN	DIN 6535HA
CTW	R	
DC m7		



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 79.

M1.1 ■ 364 G	M1.2 ■ 308 G	M2.1 ■ 325 G	M2.2 ■ 266 G	M2.3 ■ 220 E	M3.1 ■ 272 G	M3.2 ■ 233 G	M3.3 ■ 213 F	M4.1 ■ 187 F	M4.2 ■ 161 E	S1.1 ■ 171 V	S1.2 ■ 141 V	S1.3 ■ 125 U	S2.1 ■ 187 U
S2.2 ■ 174 U	S3.1 ■ 141 U	S3.2 ■ 125 U	S4.1 ■ 108 U	S4.2 ■ 98 U									

DCON MS tolerance h6.

Product	DC (inch)	DC (Wire gauge size)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	LS (mm)	DCON MS (mm)	Pack Qty	MID
R4633.0	—	—	3.00	.1181	28.0	66.0	36.0	6.00	1	7624913
R4633.1	—	—	3.10	.1220	28.0	66.0	36.0	6.00	1	7624914
R4631/8	1/8	—	3.18	.1250	28.0	66.0	36.0	6.00	1	7624915
R4633.2	—	—	3.20	.1260	28.0	66.0	36.0	6.00	1	7624916
R4633.3	—	—	3.30	.1299	28.0	66.0	36.0	6.00	1	7624917
R4633.4	—	—	3.40	.1339	28.0	66.0	36.0	6.00	1	7624918
R463N29	—	N29	3.45	.1360	28.0	66.0	36.0	6.00	1	7624919
R4633.5	—	—	3.50	.1378	28.0	66.0	36.0	6.00	1	7624960
R4639/64	9/64	—	3.57	.1406	28.0	66.0	36.0	6.00	1	7624961
R4633.6	—	—	3.60	.1417	28.0	66.0	36.0	6.00	1	7624962
R4633.7	—	—	3.70	.1457	28.0	66.0	36.0	6.00	1	7624963
R4633.8	—	—	3.80	.1496	36.0	74.0	36.0	6.00	1	7624964
R4633.9	—	—	3.90	.1535	36.0	74.0	36.0	6.00	1	7624965
R4635/32	5/32	—	3.97	.1563	36.0	74.0	36.0	6.00	1	7624966
R4634.0	—	—	4.00	.1575	36.0	74.0	36.0	6.00	1	7624967
R4634.05	—	—	4.05	.1594	36.0	74.0	36.0	6.00	1	7624968
R4634.1	—	—	4.10	.1614	36.0	74.0	36.0	6.00	1	7624969
R4634.2	—	—	4.20	.1654	36.0	74.0	36.0	6.00	1	7624970
R4634.3	—	—	4.30	.1693	36.0	74.0	36.0	6.00	1	7624971
R46311/64	11/64	—	4.37	.1719	36.0	74.0	36.0	6.00	1	7624972
R4634.4	—	—	4.40	.1732	36.0	74.0	36.0	6.00	1	7624973
R4634.5	—	—	4.50	.1772	36.0	74.0	36.0	6.00	1	7624974
R4634.6	—	—	4.60	.1811	36.0	74.0	36.0	6.00	1	7624975
R4634.7	—	—	4.70	.1850	36.0	74.0	36.0	6.00	1	7624976
R4633/16	3/16	—	4.76	.1875	44.0	82.0	36.0	6.00	1	7624977



Product	DC	DC	DC	DC	LCF	OAL	LS	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(mm)	(inch)	(mm)	(mm)	(mm)	(mm)		
R4634.8	–	–	4.80	.1890	44.0	82.0	36.0	6.00	1	7624978
R4634.9	–	–	4.90	.1929	44.0	82.0	36.0	6.00	1	7624979
R4635.0	–	–	5.00	.1969	44.0	82.0	36.0	6.00	1	7624980
R4635.05	–	–	5.05	.1988	44.0	82.0	36.0	6.00	1	7624981
R4635.1	–	–	5.10	.2008	44.0	82.0	36.0	6.00	1	7624982
R463N7	–	N7	5.11	.2010	44.0	82.0	36.0	6.00	1	7624983
R46313/64	13/64	–	5.16	.2031	44.0	82.0	36.0	6.00	1	7624984
R4635.2	–	–	5.20	.2047	44.0	82.0	36.0	6.00	1	7624985
R463N5	–	N5	5.22	.2055	44.0	82.0	36.0	6.00	1	7624986
R4635.3	–	–	5.30	.2087	44.0	82.0	36.0	6.00	1	7624987
R4635.5	–	–	5.50	.2165	44.0	82.0	36.0	6.00	1	7624989
R4637/32	7/32	–	5.56	.2188	44.0	82.0	36.0	6.00	1	7624990
R4635.6	–	–	5.60	.2205	44.0	82.0	36.0	6.00	1	7624991
R4635.7	–	–	5.70	.2244	44.0	82.0	36.0	6.00	1	7624992
R4635.8	–	–	5.80	.2283	44.0	82.0	36.0	6.00	1	7624993
R4635.9	–	–	5.90	.2323	44.0	82.0	36.0	6.00	1	7624994
R46315/64	15/64	–	5.95	.2344	44.0	82.0	36.0	6.00	1	7624995
R4636.0	–	–	6.00	.2362	44.0	82.0	36.0	6.00	1	7624996
R4636.05	–	–	6.05	.2382	53.0	91.0	36.0	8.00	1	7624997
R4636.1	–	–	6.10	.2402	53.0	91.0	36.0	8.00	1	7624998
R4636.2	–	–	6.20	.2441	53.0	91.0	36.0	8.00	1	7624999
R4636.3	–	–	6.30	.2480	53.0	91.0	36.0	8.00	1	7625000
R4631/4	1/4	–	6.35	.2500	53.0	91.0	36.0	8.00	1	7625001
R4636.4	–	–	6.40	.2520	53.0	91.0	36.0	8.00	1	7625002
R4636.5	–	–	6.50	.2559	53.0	91.0	36.0	8.00	1	7625003
R4636.6	–	–	6.60	.2598	53.0	91.0	36.0	8.00	1	7625004
R4636.7	–	–	6.70	.2638	53.0	91.0	36.0	8.00	1	7625005
R46317/64	17/64	–	6.75	.2656	53.0	91.0	36.0	8.00	1	7625006
R4636.8	–	–	6.80	.2677	53.0	91.0	36.0	8.00	1	7625007
R4636.9	–	–	6.90	.2717	53.0	91.0	36.0	8.00	1	7625008
R4637.0	–	–	7.00	.2756	53.0	91.0	36.0	8.00	1	7625009
R4637.1	–	–	7.10	.2795	53.0	91.0	36.0	8.00	1	7625010
R4637.2	–	–	7.20	.2835	53.0	91.0	36.0	8.00	1	7625012
R4637.3	–	–	7.30	.2874	53.0	91.0	36.0	8.00	1	7625013
R4637.4	–	–	7.40	.2913	53.0	91.0	36.0	8.00	1	7625014
R4637.5	–	–	7.50	.2953	53.0	91.0	36.0	8.00	1	7625015
R4637.6	–	–	7.60	.2992	53.0	91.0	36.0	8.00	1	7625017
R4637.7	–	–	7.70	.3031	53.0	91.0	36.0	8.00	1	7625018
R4637.8	–	–	7.80	.3071	53.0	91.0	36.0	8.00	1	7625019
R4637.9	–	–	7.90	.3110	53.0	91.0	36.0	8.00	1	7625020
R4635/16	5/16	–	7.94	.3125	53.0	91.0	36.0	8.00	1	7625021
R4638.0	–	–	8.00	.3150	53.0	91.0	36.0	8.00	1	7625022
R4638.05	–	–	8.05	.3169	61.0	103.0	40.0	10.00	1	7625023
R4638.1	–	–	8.10	.3189	61.0	103.0	40.0	10.00	1	7625024
R4638.2	–	–	8.20	.3228	61.0	103.0	40.0	10.00	1	7625025
R4638.3	–	–	8.30	.3268	61.0	103.0	40.0	10.00	1	7625026
R46321/64	21/64	–	8.33	.3281	61.0	103.0	40.0	10.00	1	7625027
R4638.4	–	–	8.40	.3307	61.0	103.0	40.0	10.00	1	7625028
R4638.5	–	–	8.50	.3346	61.0	103.0	40.0	10.00	1	7625029
R4638.6	–	–	8.60	.3386	61.0	103.0	40.0	10.00	1	7625030
R4638.7	–	–	8.70	.3425	61.0	103.0	40.0	10.00	1	7625031
R46311/32	11/32	–	8.73	.3438	61.0	103.0	40.0	10.00	1	7625032
R4638.8	–	–	8.80	.3465	61.0	103.0	40.0	10.00	1	7625033
R4638.9	–	–	8.90	.3504	61.0	103.0	40.0	10.00	1	7625034
R4639.0	–	–	9.00	.3543	61.0	103.0	40.0	10.00	1	7625035
R4639.1	–	–	9.10	.3583	61.0	103.0	40.0	10.00	1	7625036
R46323/64	23/64	–	9.13	.3594	61.0	103.0	40.0	10.00	1	7625037
R4639.2	–	–	9.20	.3622	61.0	103.0	40.0	10.00	1	7625038

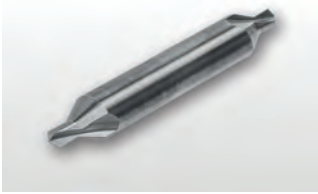


Product	DC	DC	DC	DC	LCF	OAL	LS	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(mm)	(inch)	(mm)	(mm)	(mm)	(mm)		
R4639.3	—	—	9.30	.3661	61.0	103.0	40.0	10.00	1	7625039
R4639.4	—	—	9.40	.3701	61.0	103.0	40.0	10.00	1	7625040
R4639.5	—	—	9.50	.3740	61.0	103.0	40.0	10.00	1	7625041
R4633/8	3/8	—	9.53	.3750	61.0	103.0	40.0	10.00	1	7625042
R4639.6	—	—	9.60	.3780	61.0	103.0	40.0	10.00	1	7625043
R4639.7	—	—	9.70	.3819	61.0	103.0	40.0	10.00	1	7625044
R4639.8	—	—	9.80	.3858	61.0	103.0	40.0	10.00	1	7625045
R4639.9	—	—	9.90	.3898	61.0	103.0	40.0	10.00	1	7625046
R46310.0	—	—	10.00	.3937	61.0	103.0	40.0	10.00	1	7625048
R46310.05	—	—	10.05	.3957	70.0	118.0	45.0	12.00	1	7625049
R46310.1	—	—	10.10	.3976	70.0	118.0	45.0	12.00	1	7625050
R46310.2	—	—	10.20	.4016	70.0	118.0	45.0	12.00	1	7625051
R46310.3	—	—	10.30	.4055	70.0	118.0	45.0	12.00	1	7625052
R46313/32	13/32	—	10.32	.4063	70.0	118.0	45.0	12.00	1	7625053
R46310.4	—	—	10.40	.4094	70.0	118.0	45.0	12.00	1	7625054
R46310.5	—	—	10.50	.4134	70.0	118.0	45.0	12.00	1	7625055
R46327/64	27/64	—	10.72	.4219	70.0	118.0	45.0	12.00	1	7625057
R46310.8	—	—	10.80	.4252	70.0	118.0	45.0	12.00	1	7625058
R46311.0	—	—	11.00	.4331	70.0	118.0	45.0	12.00	1	7625060
R4637/16	7/16	—	11.11	.4375	70.0	118.0	45.0	12.00	1	7625061
R46311.2	—	—	11.20	.4409	70.0	118.0	45.0	12.00	1	7625062
R46311.3	—	—	11.30	.4449	70.0	118.0	45.0	12.00	1	7625063
R46311.4	—	—	11.40	.4488	70.0	118.0	45.0	12.00	1	7625064
R46311.5	—	—	11.50	.4528	70.0	118.0	45.0	12.00	1	7625065
R46329/64	29/64	—	11.51	.4531	70.0	118.0	45.0	12.00	1	7625066
R46311.6	—	—	11.60	.4567	70.0	118.0	45.0	12.00	1	7625067
R46311.8	—	—	11.80	.4646	70.0	118.0	45.0	12.00	1	7625068
R46315/32	15/32	—	11.91	.4688	70.0	118.0	45.0	12.00	1	7625069
R46312.0	—	—	12.00	.4724	70.0	118.0	45.0	12.00	1	7625070
R46312.05	—	—	12.05	.4744	76.0	124.0	45.0	14.00	1	7625071
R46312.2	—	—	12.20	.4803	76.0	124.0	45.0	14.00	1	7625072
R46331/64	31/64	—	12.30	.4844	76.0	124.0	45.0	14.00	1	7625073
R46312.5	—	—	12.50	.4921	76.0	124.0	45.0	14.00	1	7625074
R46312.7	—	—	12.70	.5000	76.0	124.0	45.0	14.00	1	7625076
R4631/2	1/2	—	12.70	.5000	76.0	124.0	45.0	14.00	1	7625075
R46312.8	—	—	12.80	.5039	76.0	124.0	45.0	14.00	1	7625077
R46313.0	—	—	13.00	.5118	76.0	124.0	45.0	14.00	1	7625078
R46333/64	33/64	—	13.10	.5156	76.0	124.0	45.0	14.00	1	7625079
R46313.5	—	—	13.50	.5315	76.0	124.0	45.0	14.00	1	7625082
R46313.8	—	—	13.80	.5433	76.0	124.0	45.0	14.00	1	7625083
R46314.0	—	—	14.00	.5512	76.0	124.0	45.0	14.00	1	7625085
R46314.25	—	—	14.25	.5610	82.0	133.0	48.0	16.00	1	7625086
R46314.5	—	—	14.50	.5709	82.0	133.0	48.0	16.00	1	7625088
R46315.0	—	—	15.00	.5906	82.0	133.0	48.0	16.00	1	7625091
R46315.3	—	—	15.30	.6024	82.0	133.0	48.0	16.00	1	7625094
R46315.5	—	—	15.50	.6102	82.0	133.0	48.0	16.00	1	7625096
R46315.8	—	—	15.80	.6220	82.0	133.0	48.0	16.00	1	7625097
R46316.0	—	—	16.00	.6299	82.0	133.0	48.0	16.00	1	7625099



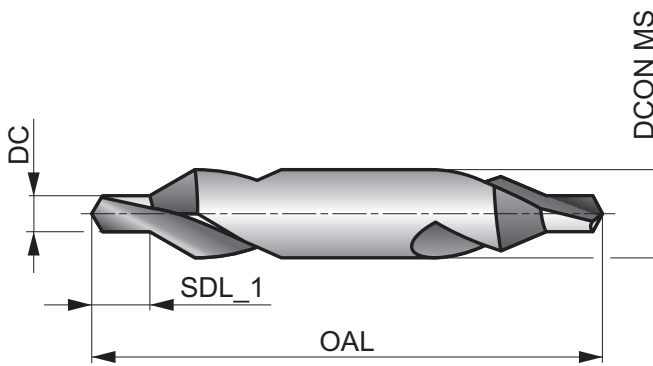
DC

PRECISION



Solid Carbide General Purpose Drill & Countersink (Center Drill)

60° Countersink. Better abrasion resistance / longer tool life. Bright finish improves chip flow in soft or non-ferrous materials



HM	PRECISION	1xD
60°	Bright	
λ 20-35°	R	

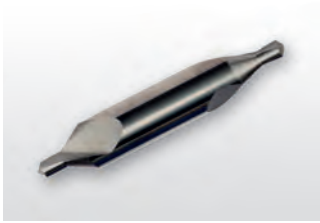
Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 79.

P1.1 ■ 325 S	P1.2 ■ 364 S	P1.3 ■ 377 S	P2.1 ■ 279 S	P2.2 ■ 246 S	P2.3 ■ 217 S	P3.1 ■ 217 S	P3.2 ■ 174 S	P3.3 ■ 148 S	P4.1 ■ 131 S	P4.2 ■ 112 S	P4.3 ■ 89 S	K1.1 ■ 246 T	K1.2 ■ 184 T
K1.3 ■ 138 T	K2.1 ■ 223 T	K2.2 ■ 180 T	K2.3 ■ 144 T	K3.1 ■ 197 T	K3.2 ■ 151 T	K3.3 ■ 121 T	K4.1 ■ 180 T	K4.2 ■ 138 T	K4.3 ■ 102 T	K4.4 ■ 85 T	K4.5 ■ 72 T	K5.1 ■ 207 T	K5.2 ■ 154 T
K5.3 ■ 121 T	N1.1 ■ 656 V	N1.2 ■ 492 V	N1.3 ■ 328 V	N2.1 ■ 564 V	N2.2 ■ 509 V	N2.3 ■ 367 V	N3.1 ■ 1388 V	N3.2 ■ 820 V	N4.1 ■ 197 X	N4.2 ■ 328 V	H1.1 ■ 184 S	H2.1 ■ 108 S	H2.2 ■ 118 S
H3.1 ■ 121 S	H3.2 ■ 98 S	H4.1 ■ 98 S	H4.2 ■ 82 S										

Product	Nr.	DC (inch)	DC (inch)	SDL_1 (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
DCN0	0	1/32	.0313	1/32	1.1/2	1/8	1	6002219
DCN1	1	3/64	.0469	3/64	1.1/2	1/8	1	6002246
DCN2	2	5/64	.0781	5/64	2"	3/16	1	6002278
DCN3	3	7/64	.1094	7/64	2"	1/4	1	6002325
DCN4	4	1/8	.1250	1/8	2.1/8	5/16	1	6002372
DCN5	5	3/16	.1875	3/16	2.3/4	7/16	1	6002380
DCN6	6	7/32	.2188	7/32	3"	1/2	1	6002384



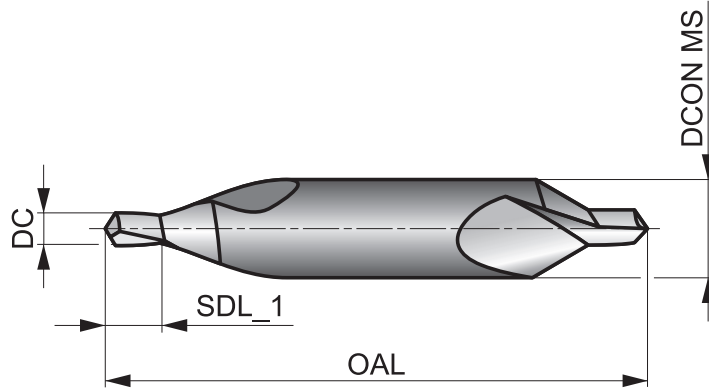
R200



Solid Carbide Center Drill with 118° Point and 60° Countersink, Bright Finish

Recommended for starting a precise hole in the end of a shaft so it can be securely held prior to machining. Suitable to machine a number of materials and has two drilling ends to give increased productivity per tool. Includes a 118° point angle and 60° countersink. Suitable for all CNC machines.

HM	DIN 333A	1×D
60°	Bright	
R		



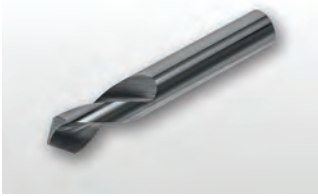
Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 79.

P1.1 ■ 197 H	P1.2 ■ 220 H	P1.3 ■ 226 H	P2.1 ■ 167 H	P2.2 ■ 148 F	P2.3 ■ 131 D	P3.1 ■ 144 E	P3.2 ■ 118 E	P3.3 ■ 98 D	P4.1 ■ 85 E	P4.2 ■ 72 D	P4.3 ■ 59 C	K1.1 ■ 131 H	K1.2 ■ 98 E
K1.3 ■ 72 E	K2.1 ■ 121 D	K2.2 ■ 98 D	K2.3 ■ 79 D	K3.1 ■ 108 D	K3.2 ■ 82 D	K3.3 ■ 66 D	K4.1 ■ 98 D	K4.2 ■ 75 D	K4.3 ■ 56 D	K4.4 ■ 46 D	K4.5 ■ 39 D	K5.1 ■ 112 D	K5.2 ■ 85 D
K5.3 ■ 66 D	N1.1 ■ 394 I	N1.2 ■ 295 I	N1.3 ■ 197 H	N2.1 ■ 505 G	N2.2 ■ 453 G	N2.3 ■ 328 G	N3.1 ■ 554 G	N3.2 ■ 328 H	N3.3 ■ 164 F				

Product	DC	DC	SDL_1	OAL	DCON MS	Pack Qty	MID
	(mm)	(inch)					
R2001.0X3.15	1.00	.0394	1.7 - 1.3	31.0	3.15	1	7191824
R2001.25X3.15	1.25	.0492	2.0 - 1.6	31.0	3.15	1	7191825
R2001.6X4.0	1.60	.0630	2.6 - 2.0	35.0	4.00	1	7191826
R2002.0X5.0	2.00	.0787	3.1 - 2.5	40.0	5.00	1	7191827
R2002.5X6.3	2.50	.0984	3.8 - 3.1	45.0	6.30	1	7191828
R2003.15X8.0	3.15	.1240	4.6 - 3.9	50.0	8.00	1	7191829
R2004.0X10.0	4.00	.1575	5.9 - 5.0	55.0	10.00	1	7191830
R2005.0X12.5	5.00	.1969	7.2 - 6.3	63.0	12.50	1	7191831



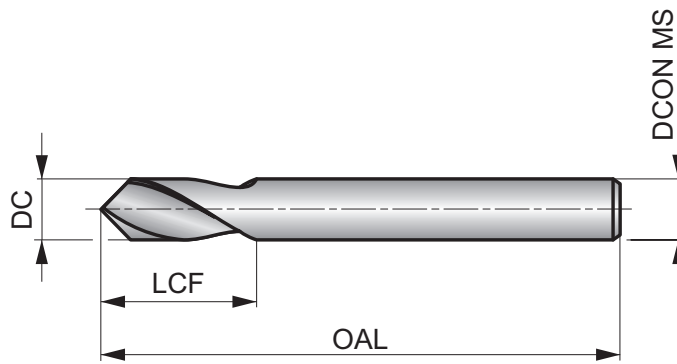
DS-90



General Purpose Solid Carbide Standard Length - Spotting Drill

General purpose solid carbide standard length spotting drill. Provides 90° included angle spot locations or chamfers for follow-up drilling & tapping operations.

HM	PRECISION	1×D
90°	Bright	
λ 20-35°	R	



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 79.

P1.1 ■ 325 S	P1.2 ■ 364 S	P1.3 ■ 377 S	P2.1 ■ 279 S	P2.2 ■ 246 S	P2.3 ■ 217 S	P3.1 ■ 217 S	P3.2 ■ 174 S	P3.3 ■ 148 S	P4.1 ■ 131 S	P4.2 ■ 112 S	P4.3 ■ 89 S	M1.1 ■ 240 S	M1.2 ■ 200 S
M2.1 ■ 213 S	M2.2 ■ 174 S	M3.1 ■ 171 S	M3.2 ■ 148 S	K1.1 ■ 246 T	K1.2 ■ 184 T	K1.3 ■ 138 T	K2.1 ■ 223 T	K2.2 ■ 180 T	K2.3 ■ 144 T	K3.1 ■ 197 T	K3.2 ■ 151 T	K3.3 ■ 121 T	K4.1 ■ 180 T
K4.2 ■ 138 T	K4.3 ■ 102 T	K4.4 ■ 85 T	K4.5 ■ 72 T	K5.1 ■ 207 T	K5.2 ■ 154 T	K5.3 ■ 121 T	N1.1 ■ 656 V	N1.2 ■ 492 V	N1.3 ■ 328 V	N2.1 ■ 564 V	N2.2 ■ 509 V	N2.3 ■ 367 V	N3.1 ■ 1388 V
N3.2 ■ 820 V	N3.3 ■ 410 V	N4.1 ■ 197 X	N4.2 ■ 328 V	S1.1 ■ 148 T	S1.2 ■ 115 T	S1.3 ■ 82 S	S2.1 ■ 131 S	S2.2 ■ 92 S	S3.1 ■ 98 S	S3.2 ■ 66 S	S4.1 ■ 75 S	S4.2 ■ 52 S	H1.1 ■ 184 S
H2.1 ■ 108 S	H2.2 ■ 118 S	H3.1 ■ 121 S	H3.2 ■ 98 S	H4.1 ■ 98 S	H4.2 ■ 82 S								

Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(inch)					
DS901/8	1/8	.1250	3/8	2"	.125	1	6002225
DS903/16	3/16	.1875	3/4	3"	.188	1	6002228
DS901/4	1/4	.2500	3/4	3"	.250	1	6002392
DS905/16	5/16	.3125	1"	2.1/2"	.313	1	6002232
DS903/8	3/8	.3750	1"	3"	.375	1	6002230
DS901/2	1/2	.5000	1"	4"	.500	1	6002389

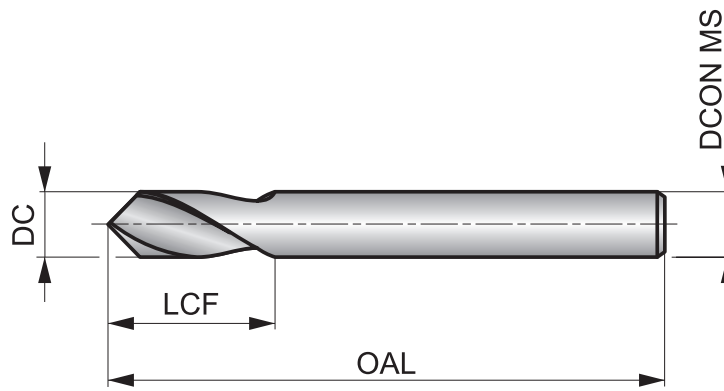


R123



Solid Carbide Spotting Drill, 90° Point

The precision engineered point angle provides an accurate guide to help with centering of follow-up drilling of the hole. A 90° point helps with self-centering and reduces cutting forces when drilling into a variety of materials.



HM	DORMER	1×D
90°	Bright	
λ 20-35°	R	DC h6

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 79.

P1.1 ■ 325 S	P1.2 ■ 364 S	P1.3 ■ 377 S	P2.1 ■ 279 S	P2.2 ■ 246 S	P2.3 ■ 217 S	P3.1 ■ 217 S	P3.2 ■ 174 S	P3.3 ■ 148 S	P4.1 ■ 131 S	P4.2 ■ 112 S	P4.3 ■ 89 S	M1.1 ■ 240 S	M1.2 ■ 200 S
M2.1 ■ 213 S	M2.2 ■ 174 S	M3.1 ■ 171 S	M3.2 ■ 148 S	K1.1 ■ 246 T	K1.2 ■ 184 T	K1.3 ■ 138 T	K2.1 ■ 223 T	K2.2 ■ 180 T	K2.3 ■ 144 T	K3.1 ■ 197 T	K3.2 ■ 151 T	K3.3 ■ 121 T	K4.1 ■ 180 T
K4.2 ■ 138 T	K4.3 ■ 102 T	K4.4 ■ 85 T	K4.5 ■ 72 T	K5.1 ■ 207 T	K5.2 ■ 154 T	K5.3 ■ 121 T	N1.1 ■ 656 V	N1.2 ■ 492 V	N1.3 ■ 328 V	N2.1 ■ 564 V	N2.2 ■ 509 V	N2.3 ■ 367 V	N3.1 ■ 1388 V
N3.2 ■ 820 V	N3.3 ■ 410 V	N4.1 ■ 197 X	N4.2 ■ 328 V	S1.1 ■ 148 T	S1.2 ■ 115 T	S1.3 ■ 82 S	S2.1 ■ 131 S	S2.2 ■ 92 S	S3.1 ■ 98 S	S3.2 ■ 66 S	S4.1 ■ 75 S	S4.2 ■ 52 S	H1.1 ■ 184 S
H2.1 ■ 108 S	H2.2 ■ 118 S	H3.1 ■ 121 S	H3.2 ■ 98 S										

Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(mm)	(inch)					
R1235.0	5.00	.1969	16.0	62.0	5.00	1	5979835
R1236.0	6.00	.2362	17.0	66.0	6.00	1	5979839
R1238.0	8.00	.3150	22.0	79.0	8.00	1	5979682
R12310.0	10.00	.3937	26.0	89.0	10.00	1	5979788
R12312.0	12.00	.4724	30.0	102.0	12.00	1	5979821
R12316.0	16.00	.6299	34.0	115.0	16.00	1	5979829
R12320.0	20.00	.7874	40.0	131.0	20.00	1	5979832

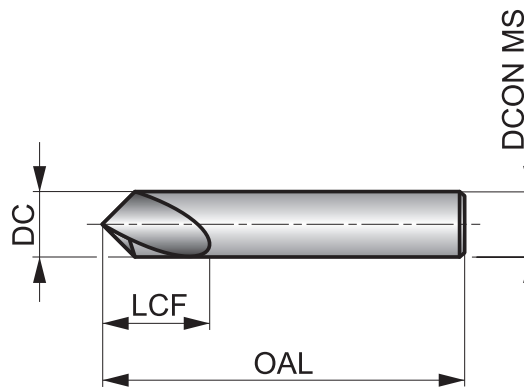


R6011



Solid Carbide Spotting Drill, 90° Point, TiAlN Coated

The precision engineered point angle provides an accurate guide to help with centering of follow-up drilling of the hole. A 90° point helps with self-centering and reduces cutting forces when drilling into the material. TiAlN coating improves performance and extends the tool life. Suitable for drilling many materials.



HM	DORMER	1xD
90°	TiAlN	DIN 6535HA
λ _{20-35°}	R	DC h6

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 79.

P1.1 ■ 390 S	P1.2 ■ 440 S	P1.3 ■ 453 S	P2.1 ■ 335 S	P2.2 ■ 295 S	P2.3 ■ 262 S	P3.1 ■ 266 S	P3.2 ■ 213 S	P3.3 ■ 180 S	P4.1 ■ 157 S	P4.2 ■ 135 S	P4.3 ■ 112 S	M1.1 ■ 269 S	M1.2 ■ 230 S
M2.1 ■ 240 S	M2.2 ■ 197 S	M3.1 ■ 190 S	M3.2 ■ 164 S	K1.1 ■ 262 T	K1.2 ■ 194 T	K1.3 ■ 144 T	K2.1 ■ 282 T	K2.2 ■ 230 T	K2.3 ■ 184 T	K3.1 ■ 249 T	K3.2 ■ 190 T	K3.3 ■ 154 T	K4.1 ■ 233 T
K4.2 ■ 174 T	K4.3 ■ 128 T	K4.4 ■ 108 T	K4.5 ■ 92 T	K5.1 ■ 262 T	K5.2 ■ 197 T	K5.3 ■ 151 T	N1.1 ■ 656 V	N1.2 ■ 492 V	N1.3 ■ 328 V	N2.1 ■ 564 V	N2.2 ■ 509 V	N2.3 ■ 367 V	N3.1 ■ 1388 V
N3.2 ■ 820 V	N3.3 ■ 410 V	N4.1 ■ 197 X	N4.2 ■ 328 V	S1.1 ■ 180 T	S1.2 ■ 148 T	S1.3 ■ 115 S	S2.1 ■ 174 S	S2.2 ■ 138 S	S3.1 ■ 131 S	S3.2 ■ 98 S	S4.1 ■ 102 S	S4.2 ■ 79 S	H1.1 ■ 184 S
H2.1 ■ 108 S	H2.2 ■ 118 S	H3.1 ■ 121 S	H3.2 ■ 98 S										

DCON MS tolerance h6.

Product	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
R60116.0	6.00	.2362	16.0	50.0	6.00	1	7341676
R601110.0	10.00	.3937	25.0	70.0	10.00	1	7341677
R601116.0	16.00	.6299	26.0	90.0	16.00	1	7341678

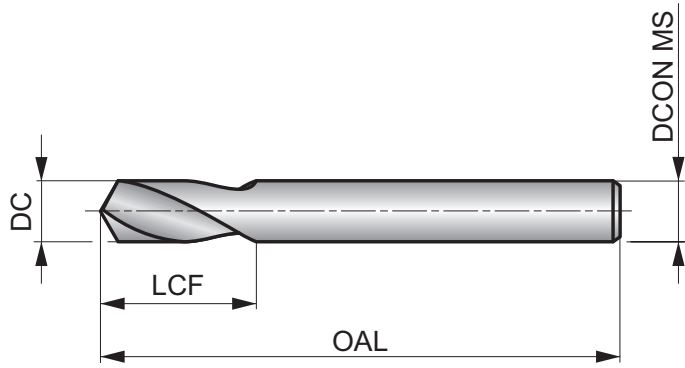


DS-120



General Purpose Solid Carbide Standard Length - Spotting Drill

General purpose solid carbide standard length spotting drill. Provides 120° included angle spot locations or chamfers for follow-up drilling & tapping operations.



HM	PRECISION	1×D
120°	Bright	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 79.

P1.1 ■ 325 S	P1.2 ■ 364 S	P1.3 ■ 377 S	P2.1 ■ 279 S	P2.2 ■ 246 S	P2.3 ■ 217 S	P3.1 ■ 217 S	P3.2 ■ 174 S	P3.3 ■ 148 S	P4.1 ■ 131 S	P4.2 ■ 112 S	P4.3 ■ 89 S	M1.1 ■ 240 S	M1.2 ■ 200 S
M2.1 ■ 213 S	M2.2 ■ 174 S	M3.1 ■ 171 S	M3.2 ■ 148 S	K1.1 ■ 246 T	K1.2 ■ 184 T	K1.3 ■ 138 T	K2.1 ■ 223 T	K2.2 ■ 180 T	K2.3 ■ 144 T	K3.1 ■ 197 T	K3.2 ■ 151 T	K3.3 ■ 121 T	K4.1 ■ 180 T
K4.2 ■ 138 T	K4.3 ■ 102 T	K4.4 ■ 85 T	K4.5 ■ 72 T	K5.1 ■ 207 T	K5.2 ■ 154 T	K5.3 ■ 121 T	N1.1 ■ 656 V	N1.2 ■ 492 V	N1.3 ■ 328 V	N2.1 ■ 564 V	N2.2 ■ 509 V	N2.3 ■ 367 V	N3.1 ■ 1388 V
N3.2 ■ 820 V	N3.3 ■ 410 V	N4.1 ■ 197 X	N4.2 ■ 328 V	S1.1 ■ 148 T	S1.2 ■ 115 T	S1.3 ■ 82 S	S2.1 ■ 131 S	S2.2 ■ 92 S	S3.1 ■ 98 S	S3.2 ■ 66 S	S4.1 ■ 75 S	S4.2 ■ 52 S	H1.1 ■ 184 S
H2.1 ■ 108 S	H2.2 ■ 118 S	H3.1 ■ 121 S	H3.2 ■ 98 S	H4.1 ■ 98 S	H4.2 ■ 82 S								

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
DS1201/8	1/8	.1250	9/16	2"	.125	1	7378063
DS1203/16	3/16	.1875	3/4	3"	.188	1	7378064
DS1201/4	1/4	.2500	1"	3"	.250	1	7378068
DS1205/16	5/16	.3125	1"	2.1/2"	.313	1	7378066
DS1203/8	3/8	.3750	1"	3"	.375	1	7378065
DS1201/2	1/2	.5000	1.1/4	4"	.500	1	7378067



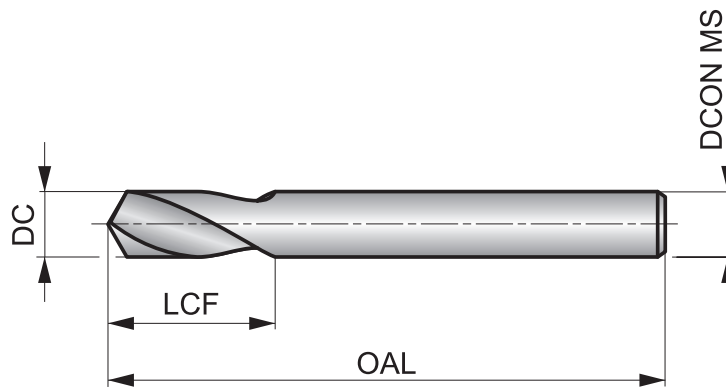
R122



Solid Carbide Spotting Drill, 120° Point

The precision engineered point angle provides an accurate guide to help with centering of follow-up drilling of the hole. A 120° point angle helps with self-centering and reduces cutting forces when drilling a variety of materials.

HM	DORMER	1×D
120°	Bright	
λ 20-35°	R	DC h6



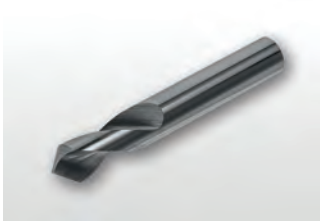
Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 79.

P1.1 ■ 325 S	P1.2 ■ 364 S	P1.3 ■ 377 S	P2.1 ■ 279 S	P2.2 ■ 246 S	P2.3 ■ 217 S	P3.1 ■ 217 S	P3.2 ■ 174 S	P3.3 ■ 148 S	P4.1 ■ 131 S	P4.2 ■ 112 S	P4.3 ■ 89 S	M1.1 ■ 240 S	M1.2 ■ 200 S
M2.1 ■ 213 S	M2.2 ■ 174 S	M3.1 ■ 171 S	M3.2 ■ 148 S	K1.1 ■ 246 T	K1.2 ■ 184 T	K1.3 ■ 138 T	K2.1 ■ 223 T	K2.2 ■ 180 T	K2.3 ■ 144 T	K3.1 ■ 197 T	K3.2 ■ 151 T	K3.3 ■ 121 T	K4.1 ■ 180 T
K4.2 ■ 138 T	K4.3 ■ 102 T	K4.4 ■ 85 T	K4.5 ■ 72 T	K5.1 ■ 207 T	K5.2 ■ 154 T	K5.3 ■ 121 T	N1.1 ■ 656 V	N1.2 ■ 492 V	N1.3 ■ 328 V	N2.1 ■ 564 V	N2.2 ■ 509 V	N2.3 ■ 367 V	N3.1 ■ 1388 V
N3.2 ■ 820 V	N3.3 ■ 410 V	N4.1 ■ 197 X	N4.2 ■ 328 V	S1.1 ■ 148 T	S1.2 ■ 115 T	S1.3 ■ 82 S	S2.1 ■ 131 S	S2.2 ■ 92 S	S3.1 ■ 98 S	S3.2 ■ 66 S	S4.1 ■ 75 S	S4.2 ■ 52 S	H1.1 ■ 184 S
H2.1 ■ 108 S	H2.2 ■ 118 S	H3.1 ■ 121 S	H3.2 ■ 98 S										

Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(mm)	(inch)					
R1225.0	5.00	.1969	16.0	62.0	5.00	1	5979677
R1226.0	6.00	.2362	17.0	66.0	6.00	1	5979714
R1228.0	8.00	.3150	22.0	79.0	8.00	1	5979755
R12210.0	10.00	.3937	26.0	89.0	10.00	1	5979597
R12212.0	12.00	.4724	30.0	102.0	12.00	1	5979600
R12216.0	16.00	.6299	34.0	115.0	16.00	1	5979603
R12220.0	20.00	.7874	40.0	131.0	20.00	1	5979610

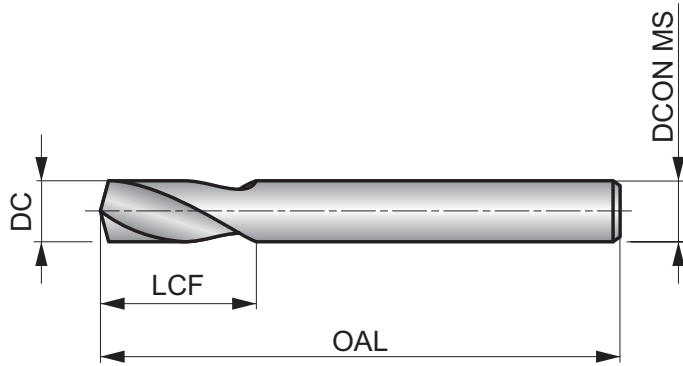


DS-142



General Purpose Solid Carbide Standard Length - Spotting Drill

General purpose solid carbide standard length spotting drill. Provides 142° included angle spot locations or chamfers for follow-up drilling & tapping operations.



HM	PRECISION	1×D
142°	Bright	
λ 20-35°	R	

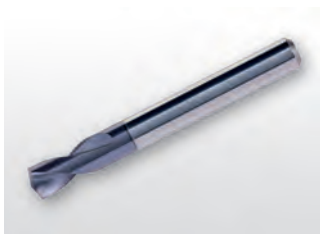
Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 79.

P1.1 ■ 325 S	P1.2 ■ 364 S	P1.3 ■ 377 S	P2.1 ■ 279 S	P2.2 ■ 246 S	P2.3 ■ 217 S	P3.1 ■ 217 S	P3.2 ■ 174 S	P3.3 ■ 148 S	P4.1 ■ 131 S	P4.2 ■ 112 S	P4.3 ■ 89 S	M1.1 ■ 240 S	M1.2 ■ 200 S
M2.1 ■ 213 S	M2.2 ■ 174 S	M3.1 ■ 171 S	M3.2 ■ 148 S	K1.1 ■ 246 T	K1.2 ■ 184 T	K1.3 ■ 138 T	K2.1 ■ 223 T	K2.2 ■ 180 T	K2.3 ■ 144 T	K3.1 ■ 197 T	K3.2 ■ 151 T	K3.3 ■ 121 T	K4.1 ■ 180 T
K4.2 ■ 138 T	K4.3 ■ 102 T	K4.4 ■ 85 T	K4.5 ■ 72 T	K5.1 ■ 207 T	K5.2 ■ 154 T	K5.3 ■ 121 T	N1.1 ■ 656 V	N1.2 ■ 492 V	N1.3 ■ 328 V	N2.1 ■ 564 V	N2.2 ■ 509 V	N2.3 ■ 367 V	N3.1 ■ 1388 V
N3.2 ■ 820 V	N3.3 ■ 410 V	N4.1 ■ 197 X	N4.2 ■ 328 V	S1.1 ■ 148 T	S1.2 ■ 115 T	S1.3 ■ 82 S	S2.1 ■ 131 S	S2.2 ■ 92 S	S3.1 ■ 98 S	S3.2 ■ 66 S	S4.1 ■ 75 S	S4.2 ■ 52 S	H1.1 ■ 184 S
H2.1 ■ 108 S	H2.2 ■ 118 S	H3.1 ■ 121 S	H3.2 ■ 98 S	H4.1 ■ 98 S	H4.2 ■ 82 S								

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
DS1421/8	1/8	.1250	9./16	2"	.125	1	7378069
DS1423/16	3/16	.1878	3/4	3"	.188	1	7378970
DS1421/4	1/4	.2500	1"	3"	.250	1	7378974
DS1425/16	5/16	.3125	1"	2.1/2"	.313	1	7378972
DS1423/8	3/8	.3750	1"	3"	.375	1	7378971
DS1421/2	1/2	.5000	1.1/4	4"	.500	1	7378973

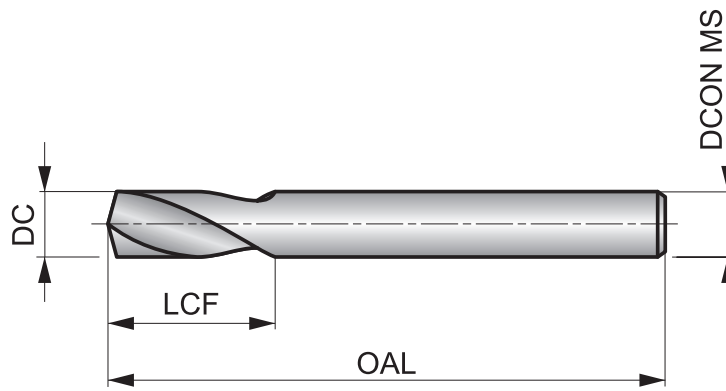


R125



Solid Carbide Spotting Drill, 150° Point, TiAlN Coated

The precision engineered point angle provides an accurate guide to help with centering of follow-up drilling of the hole. A 150° point helps with self-centering and reduces cutting forces when drilling into the material. TiAlN coating improves performance and extends the tool life. Suitable for drilling many materials.



HM	DORMER	1xD
150°	TiAlN	
λ 20-35°	R	DC h6

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 79.

P1.1 ■ 390 S	P1.2 ■ 440 S	P1.3 ■ 453 S	P2.1 ■ 335 S	P2.2 ■ 295 S	P2.3 ■ 262 S	P3.1 ■ 266 S	P3.2 ■ 213 S	P3.3 ■ 180 S	P4.1 ■ 157 S	P4.2 ■ 135 S	P4.3 ■ 112 S	M1.1 ■ 269 S	M1.2 ■ 230 S
M2.1 ■ 240 S	M2.2 ■ 197 S	M3.1 ■ 190 S	M3.2 ■ 164 S	K1.1 ■ 262 T	K1.2 ■ 194 T	K1.3 ■ 144 T	K2.1 ■ 282 T	K2.2 ■ 230 T	K2.3 ■ 184 T	K3.1 ■ 249 T	K3.2 ■ 190 T	K3.3 ■ 154 T	K4.1 ■ 233 T
K4.2 ■ 174 T	K4.3 ■ 128 T	K4.4 ■ 108 T	K4.5 ■ 92 T	K5.1 ■ 262 T	K5.2 ■ 197 T	K5.3 ■ 151 T	N1.1 ■ 656 V	N1.2 ■ 492 V	N1.3 ■ 328 V	N2.1 ■ 564 V	N2.2 ■ 509 V	N2.3 ■ 367 V	N3.1 ■ 1388 V
N3.2 ■ 820 V	N3.3 ■ 410 V	N4.1 ■ 197 X	N4.2 ■ 328 V	S1.1 ■ 180 T	S1.2 ■ 148 T	S1.3 ■ 115 S	S2.1 ■ 174 S	S2.2 ■ 138 S	S3.1 ■ 131 S	S3.2 ■ 98 S	S4.1 ■ 102 S	S4.2 ■ 79 S	H1.1 ■ 184 S
H2.1 ■ 108 S	H2.2 ■ 118 S	H3.1 ■ 121 S	H3.2 ■ 98 S										

DCON MS tolerance h6.

Product	DC (mm)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
R1255.0	5.00	16.0	62.0	5.00	1	7820527
R1256.0	6.00	17.0	66.0	6.00	1	7820528
R1258.0	8.00	22.0	79.0	8.00	1	7820529
R12510.0	10.00	26.0	89.0	10.00	1	7820760
R12512.0	12.00	30.0	102.0	12.00	1	7820761
R12516.0	16.00	34.0	115.0	16.00	1	7820762

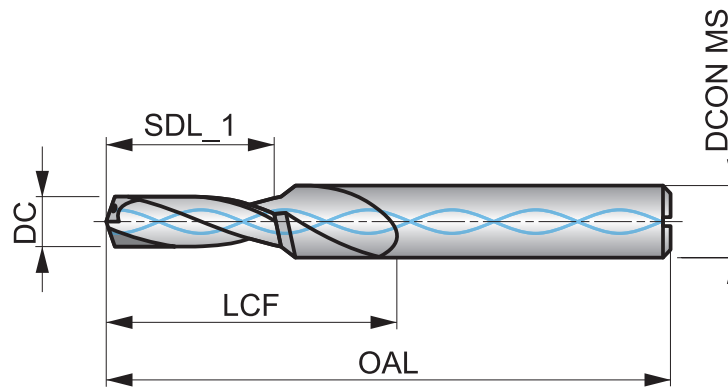


R7131



Solid Carbide Step Drill, TiAlN Coated with Coolant Feed

Versatile, with specific Pilot diameters and lengths for achieving hole size and depth for metric threads. Drill and chamfer in one operation reduces cycle time and tooling inventory. A 140° point angle and 90° countersink. TiAlN coating improves performance and extends the tool life. Suitable for drilling many materials.



HM	DORMER	3xD
90°	TiAlN	DIN 6535HA
λ 20-35°	R	
DC m7		

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 79.

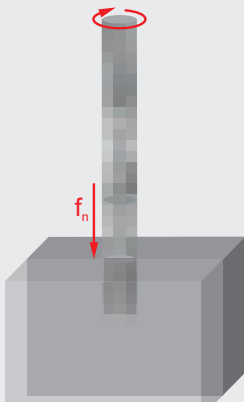
P1.1 ■ 456 W	P1.2 ■ 512 W	P1.3 ■ 528 W	P2.1 ■ 390 W	P2.2 ■ 344 W	P2.3 ■ 305 V	P3.1 ■ 315 V	P3.2 ■ 253 V	P3.3 ■ 213 V	P4.1 ■ 187 V	P4.2 ■ 157 V	M1.1 ■ 203 V	M1.2 ■ 171 V	M2.1 ■ 180 V
M2.2 ■ 148 V	M3.1 ■ 154 V	M3.2 ■ 131 V	M3.3 ■ 118 U	M4.1 ■ 115 U	K1.1 ■ 295 W	K1.2 ■ 220 W	K1.3 ■ 164 W	K2.1 ■ 302 V	K2.2 ■ 246 V	K2.3 ■ 197 V	K3.1 ■ 269 V	K3.2 ■ 203 V	K3.3 ■ 164 V
K4.1 ■ 249 V	K4.2 ■ 187 V	K4.3 ■ 138 V	K4.4 ■ 118 V	K4.5 ■ 98 V	K5.1 ■ 282 V	K5.2 ■ 210 V	K5.3 ■ 164 V	N1.1 ■ 820 W	N1.2 ■ 617 W	N1.3 ■ 410 W	N2.1 ■ 1010 V	N2.2 ■ 909 V	N2.3 ■ 656 V
N3.1 ■ 1224 W	N3.2 ■ 722 W	N3.3 ■ 361 W											

DCON MS tolerance h6.

Product	DC (mm)	DC (inch)	SDL_1 (mm)	LCF (mm)	OAL (mm)	DCON MS (mm)	TDZ	Pack Qty	MID
R71313.3	3.30	.1299	11.40	20.0	66.0	6.00	M4	1	7341679
R71314.2	4.20	.1654	13.60	24.0	66.0	6.00	M5	1	7341680
R71315.0	5.00	.1969	16.50	28.0	79.0	8.00	M6	1	7341681
R71316.8	6.80	.2677	21.00	34.0	89.0	10.00	M8	1	7341682
R71318.5	8.50	.3346	25.50	47.0	102.0	12.00	M10	1	7341683
R713110.2	10.20	.4016	30.00	55.0	107.0	14.00	M12	1	7341684
R713110.4	10.40	.4094	30.00	55.0	107.0	14.00	M12	1	7341685



DRILLING FEED RATE CHART



Feed per revolution (f_n)
Depending on the working conditions it might be necessary to adjust these values $\pm 25\%$.

How to use this table to find the feed per revolution (f_n):

1. Find your Alpha Code on the product page (example: 46J, "J" is the Alpha Code).
2. Find the closest diameter for your cutting application in the top row of the table.
3. Find your Alpha Code in the left column of the table.
4. The intersection (cell) of the Diameter and Alpha Code is the feed per revolution (f_n).

	\varnothing DC															
	1mm/ 1/32"	2mm/ 3/32"	3mm/ 1/8"	4mm/ 5/32"	5mm/ 3/16"	6mm/ 1/4"	8mm/ 5/16"	10mm/ 3/8"	12mm/ 1/2"	15mm/ 9/16"	16mm/ 5/8"	20mm/ 3/4"	25mm/ 1"	30mm/ 1.1/8"	40mm/ 1.5/8"	50mm/ 2"
A	0.0004	0.0009	0.0011	0.0013	0.0014	0.0017	0.0021	0.0024	0.0027	0.0032	0.0034	0.0043	0.0049	0.0053	0.0061	0.0069
B	0.0006	0.0011	0.0015	0.0016	0.0018	0.0021	0.0026	0.0031	0.0035	0.0041	0.0043	0.0053	0.0060	0.0065	0.0074	0.0082
C	0.0006	0.0013	0.0017	0.0020	0.0022	0.0025	0.0031	0.0039	0.0043	0.0049	0.0051	0.0063	0.0071	0.0077	0.0087	0.0094
D	0.0006	0.0015	0.0021	0.0024	0.0027	0.0031	0.0039	0.0047	0.0051	0.0059	0.0061	0.0074	0.0083	0.0090	0.0100	0.0108
E	0.0007	0.0017	0.0024	0.0028	0.0031	0.0037	0.0045	0.0055	0.0059	0.0068	0.0071	0.0085	0.0094	0.0102	0.0112	0.0122
F	0.0007	0.0020	0.0029	0.0033	0.0037	0.0043	0.0054	0.0065	0.0070	0.0080	0.0083	0.0098	0.0108	0.0116	0.0126	0.0135
G	0.0007	0.0022	0.0033	0.0038	0.0043	0.0050	0.0063	0.0075	0.0081	0.0091	0.0094	0.0110	0.0122	0.0130	0.0140	0.0148
H	0.0008	0.0026	0.0040	0.0046	0.0051	0.0059	0.0075	0.0090	0.0096	0.0107	0.0110	0.0126	0.0140	0.0148	0.0157	0.0165
I	0.0008	0.0030	0.0047	0.0053	0.0059	0.0068	0.0087	0.0104	0.0110	0.0122	0.0126	0.0142	0.0157	0.0165	0.0173	0.0181
J	0.0009	0.0033	0.0053	0.0060	0.0067	0.0078	0.0098	0.0117	0.0124	0.0137	0.0142	0.0159	0.0175	0.0183	0.0191	0.0198
K	0.0010	0.0036	0.0059	0.0067	0.0075	0.0087	0.0110	0.0130	0.0138	0.0153	0.0157	0.0177	0.0193	0.0201	0.0209	0.0215
L	0.0011	0.0040	0.0065	0.0073	0.0082	0.0094	0.0120	0.0142	0.0152	0.0165	0.0169	0.0191	0.0207	0.0215	0.0224	0.0231
M	0.0012	0.0043	0.0071	0.0080	0.0089	0.0102	0.0130	0.0154	0.0165	0.0177	0.0181	0.0205	0.0220	0.0228	0.0238	0.0248
N	0.0013	0.0047	0.0077	0.0086	0.0095	0.0110	0.0140	0.0165	0.0179	0.0189	0.0193	0.0219	0.0234	0.0242	0.0253	0.0265
S	0.0003	0.0006	0.0008	0.0010	0.0012	0.0015	0.0020	0.0031	0.0039	0.0048	0.0051	0.0059	0.0070	0.0070	0.0090	-
T	0.0006	0.0011	0.0016	0.0020	0.0024	0.0028	0.0035	0.0043	0.0051	0.0063	0.0067	0.0075	0.0080	0.0090	0.0100	-
U	0.0010	0.0019	0.0028	0.0031	0.0035	0.0042	0.0055	0.0067	0.0079	0.0088	0.0091	0.0094	0.0110	0.0120	0.0140	-
V	0.0015	0.0027	0.0039	0.0045	0.0051	0.0060	0.0079	0.0098	0.0110	0.0122	0.0126	0.0134	0.0160	0.0170	0.0200	-
W	0.0019	0.0035	0.0051	0.0059	0.0067	0.0079	0.0102	0.0130	0.0150	0.0165	0.0169	0.0177	0.0190	0.0190	0.0200	-
X	0.0022	0.0041	0.0059	0.0071	0.0083	0.0098	0.0130	0.0165	0.0189	0.0210	0.0217	0.0228	-	-	-	-
Y	0.0027	0.0049	0.0071	0.0087	0.0102	0.0125	0.0169	0.0217	0.0276	0.0276	0.0276	0.0291	-	-	-	-
Z	0.0037	0.0068	0.0098	0.0128	0.0157	0.0210	0.0315	0.0394	0.0433	0.0463	0.0472	0.0472	-	-	-	-





HSS DRILLS




HSS DRILLS – NAVIGATOR TOOL MATERIALS





Tool materials

High Speed Steel		A medium-alloyed high speed steel that has good machinability and good performance. HSS exhibits hardness, toughness and wear resistance characteristics that make it attractive in a wide range of applications, for example in drills and taps.
Cobalt High Speed Steel		This high speed steel contains cobalt for increased hot hardness. The composition of HSCo is a good combination of toughness and hardness. It has good machinability and good wear resistance, which makes it usable for drills, taps, milling cutters and reamers.





Carbide materials

Carbide and High Speed Steel		Combined carbide and high speed steel materials typically joined together with high temperature braze alloy as the interface. This brazed combination of tool materials offers a solid carbide cutting portion which provides high compression strength, hardness and wear resistance attached to a high speed steel body which provides flexural strength and toughness in the tool body.
-------------------------------------	---	--

Surface Treatments

Bright (uncoated)		Bright finish (uncoated surface) improves chip flow in soft or non-ferrous materials, plastics and composites while maintaining sharp cutting edges.
Combination Bright and Steam Tempered		Combination of bright and steam tempering can be effective as the blue oxide more porous surface acts to retain and pull cutting fluid into the hole while the bright surface assists in chip evacuation. This combination is achieved by grinding the bright surface after tempering.
Steam Tempering		Steam tempering gives a strongly adhering blue oxide surface that acts to retain cutting fluid and prevent chip to tool welding, thereby counteracting the formation of a built-up edge. Steam tempering can be applied to any bright tool but is most effective on drills and taps.
Bronze Tempering		Bronze tempering creates a smooth thin bronze oxide layer on the tool surface. Similar to Steam Tempering it helps to prevent chip to tool welding and aids in chip evacuation. Bronze tempering can be applied to any bright tool and can also be applied in combination with Steam Tempering on some tools.

Surface Coatings

Bright and TiN (Tip Coating)		Titanium Nitride is a gold colored ceramic coating applied by physical vapor deposition (PVD). High hardness combined with low friction properties ensures longer tool life and/or better cutting performance over tools which have not been coated.
Titanium Nitride (TiN)		Titanium Nitride is a gold colored ceramic coating applied by physical vapor deposition (PVD). High hardness combined with low friction properties ensures longer tool life and/or better cutting performance over tools which have not been coated.
Titanium Aluminum Nitride coatings (TiAlN, TiAlN-Top & X-CEED)		Titanium Aluminum Nitride is a multi layer ceramic coating applied by PVD coating technology, which exhibits high toughness and oxidation stability. These properties make it ideal for higher speeds and feeds, while at the same time improving tool life. TiAlN is used in drilling, tapping, and milling applications and can be suitable for use when machining without coolant. TiAlN-Top coating is the same as TiAlN but with a post-coating process designed to smooth out imperfections, enhance chip flow and reduce built up edge.
Alcrona coatings (Alcrona-Top)		The Alcrona (AlCrN) family of coatings are aluminum chromium nitride coatings mostly used for milling cutters. The two unique properties of these coatings are high hot hardness and high oxidation resistance. When used on tools for machining applications involving heavy mechanical and thermal stresses, these properties translate into superior wear resistance. Multiple levels or specific versions of these coatings are available and specific for various tools and applications.



		HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	
Material code (BMC)		HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	
Basic standard group (BSG)		ANSI	DIN 1897	DIN 1897	NAS 907	DIN 1897	DIN ANSI	DIN 1897	ANSI	DIN ANSI	DIN 1899	ANSI	DIN 1897	DIN 1897
Usable length (ULDR)		2.5xD	1.5xD	1.25xD	2.5xD	2.5xD	2.5xD	2.5xD	3xD	3xD	2.5xD	2.5xD	2.5xD	2.5xD
Application angle														
Coating		Bright	ST	ST	ST	ST	TiN-Tip	TiN	Bright	Bright	Bright	Bronze	Bronze	Bronze
Shank														
Spiral form														
Hand (Cutting direction)														
Cooling (CSP)														
							ADX		PFX					
Product Family Code		R40 R41 R42	A123	A119	R40C R41C R42C	A120	A022	A520	QC41P	A920	A720	M40CO M41CO M42CO	A117	A620
PSF cutting diameters range		N60 - 1"	3/32 - 1/4	3.30 - 5.10	N60 - 1/2	0.50 - 25.00	0.50 - 16.00	3.00 - 13.00	1/16 - 11/16	1.00 - 20.00	0.15 - 1.40	N60 - 3/4	1.00 - 13.00	2.50 - 13.00
P	P1	■	■	■	■	■	■	■	■	■	■	■	■	■
	P2	■	■	■	■	■	■	■	■	■	■	■	■	■
	P3	■	■	■	■	■	■	■	■	■	■	■	■	■
	P4	■	■	■	■	■	■	■	■	■	■	■	■	■
M	M1	■	■	■	■	■	■	■	■	■	■	■	■	■
	M2	■	■	■	■	■	■	■	■	■	■	■	■	■
	M3	■	■	■	■	■	■	■	■	■	■	■	■	■
	M4	■	■	■	■	■	■	■	■	■	■	■	■	■
K	K1	■	■	■	■	■	■	■	■	■	■	■	■	■
	K2	■	■	■	■	■	■	■	■	■	■	■	■	■
	K3	■	■	■	■	■	■	■	■	■	■	■	■	■
	K4	■	■	■	■	■	■	■	■	■	■	■	■	■
	K5	■	■	■	■	■	■	■	■	■	■	■	■	■
N	N1	■	■	■	■	■	■	■	■	■	■	■	■	■
	N2	■	■	■	■	■	■	■	■	■	■	■	■	■
	N3	■	■	■	■	■	■	■	■	■	■	■	■	■
	N4	■	■	■	■	■	■	■	■	■	■	■	■	■
	N5	■	■	■	■	■	■	■	■	■	■	■	■	■
S	S1	■	■	■	■	■	■	■	■	■	■	■	■	■
	S2	■	■	■	■	■	■	■	■	■	■	■	■	■
	S3	■	■	■	■	■	■	■	■	■	■	■	■	■
	S4	■	■	■	■	■	■	■	■	■	■	■	■	■
H	H1	■	■	■	■	■	■	■	■	■	■	■	■	■
	H2	■	■	■	■	■	■	■	■	■	■	■	■	■
	H3	■	■	■	■	■	■	■	■	■	■	■	■	■
	H4	■	■	■	■	■	■	■	■	■	■	■	■	■

■ Primary use □ Possible use



HSS-E



1xD

180°



λ 20-35°



A723

6.00 - 8.00

111

P1



P2



P3



P4



M1

M2

M3

M4

K1

K2

K3

K4

K5

N1

N2

N3

N4

N5

S1

S2

S3

S4

H1

H2

H3

H4

■ Primary use

▣ Possible use



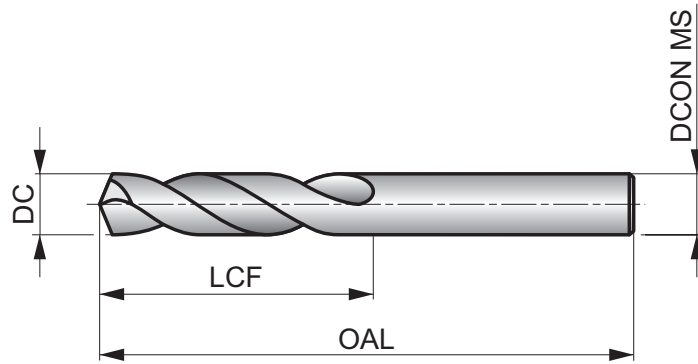
R40 / R41 / R42



HSS General Purpose Stub Length Drill, Bright Finish

A general duty cost effective drill with bright finish. The 118° point and conventional flute form makes it easy to regrind. The short length makes this drill very rigid and suitable for hand held and machine drilling. Bright finish can improve chip flow in soft or non-ferrous materials.

HSS	ANSI	2.5×D
	Bright	
	R	



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 118 J	P1.2 ■ 131 J	P1.3 ■ 135 J	P2.1 ■ 102 J	P2.2 ■ 89 G	P2.3 ▣ 79 F	P3.1 ▣ 69 G	P3.2 ▣ 56 G	P3.3 ▣ 46 F	P4.1 ▣ 39 G	P4.2 ▣ 33 F	P4.3 ▣ 30 E	M1.1 ▣ 72 F	M1.2 ▣ 62 F
M2.1 ▣ 66 F	M2.2 ▣ 52 F	M3.1 ▣ 33 H	M3.2 ▣ 30 H	M3.3 ▣ 26 D	M4.1 ▣ 33 D	K1.1 ■ 105 J	K1.2 ■ 79 G	K1.3 ■ 59 G	K2.1 ■ 82 F	K2.2 ■ 66 F	K2.3 ■ 52 F	K3.1 ▣ 72 F	K3.2 ▣ 56 F
K3.3 ▣ 43 F	K4.1 ▣ 66 F	K4.2 ▣ 49 F	K4.3 ▣ 36 F	K4.4 ▣ 33 F	K4.5 ▣ 26 F	K5.1 ▣ 75 F	K5.2 ▣ 56 F	K5.3 ▣ 43 F	N1.1 ■ 108 K	N1.2 ■ 82 K	N1.3 ■ 56 J	N2.1 ■ 151 I	N2.2 ■ 138 I
N2.3 ■ 98 I	N3.1 ▣ 210 I	N3.2 ▣ 125 J	N3.3 ▣ 62 H	N4.1 ■ 98 K	N4.2 ■ 115 I	N4.3 ▣ 56 G	S1.1 ■ 89 G	S1.2 ▣ 52 E	S1.3 ▣ 26 C	S2.1 ▣ 36 F	S2.2 ▣ 20 B	S3.1 ▣ 26 F	S3.2 ▣ 13 B
S4.1 ▣ 20 F	S4.2 ▣ 10 B												

Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
R41N60	–	N60	–	.0400	.500	1.375	.040	12	5999309
R41N59	–	N59	–	.0410	.500	1.375	.041	12	5999301
R41N58	–	N58	–	.0420	.500	1.375	.042	12	5999297
R41N57	–	N57	–	.0430	.500	1.375	.043	12	5999293
R41N56	–	N56	–	.0465	.500	1.375	.046	12	5999289
R403/64	3/64	–	–	.0469	.500	1.375	.047	12	5998475
R41N55	–	N55	–	.0520	.625	1.625	.052	12	5999285
R41N54	–	N54	–	.0550	.625	1.625	.055	12	5999281
R41N53	–	N53	–	.0595	.625	1.625	.059	12	5999277
R401/16	1/16	–	–	.0625	.625	1.625	.063	12	5998567
R41N52	–	N52	–	.0635	.688	1.688	.064	12	5999268
R41N51	–	N51	–	.0670	.688	1.688	.067	12	5999264
R41N50	–	N50	–	.0700	.688	1.688	.070	12	5999260
R41N49	–	N49	–	.0730	.688	1.688	.073	12	5999253
R41N48	–	N48	–	.0760	.688	1.688	.076	12	5999249
R405/64	5/64	–	–	.0781	.688	1.688	.078	12	5998532
R41N47	–	N47	–	.0785	.688	1.688	.079	12	5999245
R41N46	–	N46	–	.0810	.750	1.750	.081	12	5999241
R41N45	–	N45	–	.0820	.750	1.750	.082	12	5999237



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
R41N44	—	N44	—	.0860	.750	1.750	.086	12	5999233
R41N43	—	N43	—	.0890	.750	1.750	.089	12	5999420
R41N42	—	N42	—	.0935	.750	1.750	.093	12	5999417
R403/32	3/32	—	—	.0938	.750	1.750	.094	12	5998638
R41N41	—	N41	—	.0960	.813	1.813	.096	12	5999414
R41N40	—	N40	—	.0980	.813	1.813	.098	12	5999411
R41N39	—	N39	—	.0995	.813	1.813	.100	12	5999357
R41N38	—	N38	—	.1015	.813	1.813	.102	12	5999315
R41N37	—	N37	—	.1040	.813	1.813	.104	12	5999273
R41N36	—	N36	—	.1065	.813	1.813	.106	12	5999227
R407/64	7/64	—	—	.1094	.813	1.813	.109	12	5998576
R41N35	—	N35	—	.1100	.875	1.875	.110	12	5998883
R41N34	—	N34	—	.1110	.875	1.875	.111	12	5998875
R41N33	—	N33	—	.1130	.875	1.875	.113	12	5998872
R41N32	—	N32	—	.1160	.875	1.875	.116	12	5998868
R41N31	—	N31	—	.1200	.875	1.875	.120	12	5998865
R401/8	1/8	—	—	.1250	.875	1.875	.125	12	5998575
R41N30	—	N30	—	.1285	.938	1.938	.129	12	5998862
R41N29	—	N29	—	.1360	.938	1.938	.136	12	5998855
R41N28	—	N28	—	.1405	.938	1.938	.141	12	5998852
R409/64	9/64	—	—	.1406	.938	1.938	.141	12	5998592
R41N27	—	N27	—	.1440	1.000	2.063	.144	12	5998849
R41N26	—	N26	—	.1470	1.000	2.063	.147	12	5998846
R41N25	—	N25	—	.1495	1.000	2.063	.149	12	5998839
R41N24	—	N24	—	.1520	1.000	2.063	.152	12	5998836
R41N23	—	N23	—	.1540	1.000	2.063	.154	12	5998833
R405/32	5/32	—	—	.1563	1.000	2.063	.156	12	5998527
R41N22	—	N22	—	.1570	1.063	2.125	.157	12	5998830
R41N21	—	N21	—	.1590	1.063	2.125	.159	12	5998826
R41N20	—	N20	—	.1610	1.063	2.125	.161	12	5998823
R41N19	—	N19	—	.1660	1.063	2.125	.166	12	5998817
R41N18	—	N18	—	.1695	1.063	2.125	.170	12	5998813
R4011/64	11/64	—	—	.1719	1.063	2.125	.172	12	5998587
R41N17	—	N17	—	.1730	1.125	2.188	.173	12	5998807
R41N16	—	N16	—	.1770	1.125	2.188	.177	12	5998801
R41N15	—	N15	—	.1800	1.125	2.188	.180	12	5998797
R41N14	—	N14	—	.1820	1.125	2.188	.182	12	5998793
R41N13	—	N13	—	.1850	1.125	2.188	.185	12	5998789
R403/16	3/16	—	—	.1875	1.125	2.188	.188	12	5998634
R41N12	—	N12	—	.1890	1.188	2.250	.189	12	5998785
R41N11	—	N11	—	.1910	1.188	2.250	.191	12	5998780
R41N10	—	N10	—	.1935	1.188	2.250	.194	12	5998776
R41N9	—	N9	—	.1960	1.188	2.250	.196	12	5999322
R41N8	—	N8	—	.1990	1.188	2.250	.199	12	5999319
R41N7	—	N7	—	.2010	1.188	2.250	.201	12	5999312
R4013/64	13/64	—	—	.2031	1.188	2.250	.203	12	5998608
R41N6	—	N6	—	.2040	1.250	2.375	.204	12	5999305
R41N5	—	N5	—	.2055	1.250	2.375	.205	12	5999256
R41N4	—	N4	—	.2090	1.250	2.375	.209	12	5999405
R41N3	—	N3	—	.2130	1.250	2.375	.213	12	5998858
R407/32	7/32	—	—	.2188	1.250	2.375	.219	12	5998574
R41N2	—	N2	—	.2210	1.313	2.438	.221	12	5998820
R41N1	—	N1	—	.2280	1.313	2.438	.228	12	5998771
R42A	—	—	A	.2340	1.313	2.438	.234	12	5999326
R4015/64	15/64	—	—	.2344	1.313	2.438	.234	12	5998619
R42B	—	—	B	.2380	1.375	2.500	.238	12	5999330
R42C	—	—	C	.2420	1.375	2.500	.242	12	5999334
R42D	—	—	D	.2460	1.375	2.500	.246	12	5998908



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
R401/4	1/4	—	—	.2500	1.375	2.500	.250	12	5998572
R42F	—	—	F	.2570	1.438	2.625	.257	12	5998915
R42G	—	—	G	.2610	1.438	2.625	.261	12	5998919
R4017/64	17/64	—	—	.2656	1.438	2.625	.266	12	5998625
R42H	—	—	H	.2660	1.500	2.688	.266	12	5998923
R42I	—	—	I	.2720	1.500	2.688	.272	12	5998927
R42J	—	—	J	.2770	1.500	2.688	.277	12	5998932
R42K	—	—	K	.2810	1.500	2.688	.281	12	5998935
R409/32	9/32	—	—	.2813	1.500	2.688	.281	12	5998585
R42L	—	—	L	.2900	1.563	2.750	.290	12	5998938
R42M	—	—	M	.2950	1.563	2.750	.295	12	5998944
R4019/64	19/64	—	—	.2969	1.563	2.750	.297	12	5998633
R42N	—	—	N	.3020	1.625	2.813	.302	12	5998947
R405/16	5/16	—	—	.3125	1.625	2.813	.313	6	5998523
R42O	—	—	O	.3160	1.688	2.938	.316	6	5998950
R42P	—	—	P	.3230	1.688	2.938	.323	6	5998951
R4021/64	21/64	—	—	.3281	1.688	2.938	.328	6	5998645
R42Q	—	—	Q	.3320	1.688	3.000	.332	6	5998953
R42R	—	—	R	.3390	1.688	3.000	.339	6	5998955
R4011/32	11/32	—	—	.3438	1.688	3.000	.344	6	5998584
R42S	—	—	S	.3480	1.750	3.063	.348	6	5998957
R42T	—	—	T	.3580	1.750	3.063	.358	6	5998959
R4023/64	23/64	—	—	.3594	1.750	3.063	.359	6	5998655
R42U	—	—	U	.3680	1.813	3.125	.368	6	5998961
R403/8	3/8	—	—	.3750	1.813	3.125	.375	6	5998478
R42V	—	—	V	.3770	1.875	3.250	.377	6	5998963
R42W	—	—	W	.3860	1.875	3.250	.386	6	5998968
R4025/64	25/64	—	—	.3906	1.875	3.250	.391	6	5998507
R42X	—	—	X	.3970	1.938	3.313	.397	6	5998970
R42Y	—	—	Y	.4040	1.938	3.313	.404	6	5998972
R4013/32	13/32	—	—	.4063	1.938	3.313	.406	6	5998605
R42Z	—	—	Z	.4130	2.000	3.375	.413	6	5998974
R4027/64	27/64	—	—	.4219	2.000	3.375	.422	6	5998588
R407/16	7/16	—	—	.4375	2.063	3.438	.438	6	5998571
R4029/64	29/64	—	—	.4531	2.125	3.563	.453	6	5998631
R4015/32	15/32	—	—	.4688	2.125	3.625	.469	6	5998616
R4031/64	31/64	—	—	.4844	2.188	3.688	.484	6	5998484
R401/2	1/2	—	—	.5000	2.250	3.750	.500	6	5998570
R4033/64	33/64	—	—	.5156	2.375	3.875	.516	1	5998487
R4017/32	17/32	—	—	.5313	2.375	3.875	.531	1	5998621
R4035/64	35/64	—	—	.5469	2.500	4.000	.547	1	5998490
R409/16	9/16	—	—	.5625	2.500	4.000	.563	1	5998582
R4037/64	37/64	—	—	.5781	2.625	4.125	.578	1	5998493
R4019/32	19/32	—	—	.5938	2.625	4.125	.594	1	5998629
R4039/64	39/64	—	—	.6094	2.750	4.250	.609	1	5998496
R405/8	5/8	—	—	.6250	2.750	4.250	.625	1	5998538
R4041/64	41/64	—	—	.6406	2.875	4.500	.641	1	5998499
R4021/32	21/32	—	—	.6563	2.875	4.500	.656	1	5998641
R4043/64	43/64	—	—	.6719	2.875	4.625	.672	1	5998503
R4011/16	11/16	—	—	.6875	2.875	4.625	.688	1	5998578
R4045/64	45/64	—	—	.7031	3.000	4.750	.703	1	5998510
R4023/32	23/32	—	—	.7188	3.000	4.750	.719	1	5998649
R4047/64	47/64	—	—	.7344	3.125	5.000	.734	1	5998514
R403/4	3/4	—	—	.7500	3.125	5.000	.750	1	5998644
R4049/64	49/64	—	—	.7656	3.250	5.125	.766	1	5998518
R4025/32	25/32	—	—	.7813	3.250	5.125	.781	1	5998471
R4051/64	51/64	—	—	.7969	3.375	5.250	.797	1	5998541
R4013/16	13/16	—	—	.8125	3.375	5.250	.813	1	5998602



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
R4053/64	53/64	—	—	.8281	3.500	5.375	.828	1	5998545
R4027/32	27/32	—	—	.8438	3.500	5.375	.844	1	5998553
R4055/64	55/64	—	—	.8594	3.500	5.500	.859	1	5998549
R407/8	7/8	—	—	.8750	3.500	5.500	.875	1	5998579
R4057/64	57/64	—	—	.8906	3.625	5.625	.891	1	5998559
R4029/32	29/32	—	—	.9063	3.625	5.625	.906	1	5998624
R4059/64	59/64	—	—	.9219	3.750	5.750	.922	1	5998562
R4015/16	15/16	—	—	.9375	3.750	5.750	.938	1	5998611
R4031/32	31/32	—	—	.9688	3.875	5.875	.969	1	5998481
R4063/64	63/64	—	—	.9844	4.000	6.000	.984	1	5998568
R401	1"	—	—	1.0000	4.000	6.000	1.000	1	5998671
R401.1/16	1.1/16	—	—	1.0625	4.000	6.250	1.063	1	5998505
R401.1/8	1.1/8	—	—	1.1250	4.000	6.375	1.125	1	5998517
R401.3/16	1.3/16	—	—	1.1875	4.250	6.625	1.188	1	5998536
R401.1/4	1.1/4	—	—	1.2500	4.375	6.750	1.250	1	5998513
R401.1/2	1.1/2	—	—	1.5000	4.875	7.500	1.500	1	5998509

A=Styles in Set, B=No. in Set, C=Diameters in Set.



Product	A	B	C	Pack Qty	MID
C29R40SET	R40	29	1/16-1/2 x 64ths	1	5995635



Product	A	B	C	Pack Qty	MID
C60R41SET	R41	60	N1 - N60	1	5995608



Product	A	B	C	Pack Qty	MID
C26R42SET	R42	26	A - Z	1	5995604

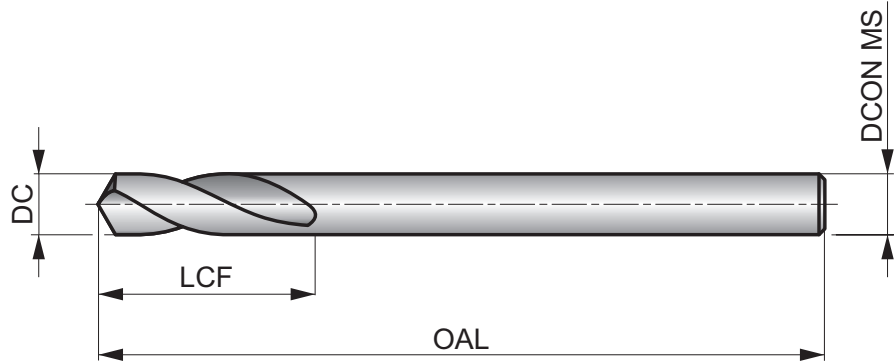


A123



HSS Stub Drill, Steam Tempered Finish, for Sheet Metal

Specially designed for drilling thin materials and sheet metal. A 120° point and a steam tempered finish which stops workpiece material from sticking to the cutting edge, giving a better hole finish and more accurate diameter. Suitable for drilling in many materials.



HSS	DIN 1897	1.5×D
120°	ST	
λ 20-35°	R	DC h8

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 118 E	P1.2 ■ 131 E	P1.3 ■ 135 E	P2.1 ■ 102 E	P2.2 ■ 89 C	P2.3 ▣ 79 C	P3.1 ▣ 69 C	P3.2 ▣ 56 C	P3.3 ▣ 46 C	P4.1 ▣ 39 C	P4.2 ▣ 33 C	P4.3 ▣ 30 B	M1.1 ▣ 72 C	M1.2 ▣ 62 C
M2.1 ▣ 66 C	M2.2 ▣ 52 C	M3.1 ▣ 33 D	M3.2 ▣ 30 D	M3.3 ▣ 26 D	M4.1 ▣ 33 B	N1.1 ■ 108 E	N1.2 ■ 82 E	N1.3 ■ 56 E	N2.1 ▣ 151 D	N2.2 ▣ 138 D	N2.3 ▣ 98 D	N3.1 ■ 184 D	N3.2 ■ 108 E
N3.3 ■ 56 D	N4.1 ▣ 98 F	N4.2 ▣ 115 E	N4.3 ▣ 56 D	S1.1 ▣ 89 C	S1.2 ▣ 39 B	S1.3 ▣ 23 A	S2.1 ▣ 36 C	S2.2 ▣ 20 A	S3.1 ▣ 26 C	S3.2 ▣ 13 A	S4.1 ▣ 20 C	S4.2 ▣ 10 A	

Sheet Metal Drill.

Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A1233/32S	3/32	2.38	.0937	14.0	43.0	2.38	10	7189761
A1232.5S	–	2.50	.0984	14.0	43.0	2.50	10	7189762
A1233.0S	–	3.00	.1181	16.0	46.0	3.00	10	7189763
A1231/8S	1/8	3.18	.1250	18.0	49.0	3.18	10	7189764
A1233.2S	–	3.20	.1260	18.0	49.0	3.20	10	7189765
A1233.3S	–	3.30	.1299	18.0	49.0	3.30	10	7189766
A1233.5S	–	3.50	.1378	18.0	52.0	3.50	10	7189767
A1233.7S	–	3.70	.1457	18.0	52.0	3.70	10	7189769
A1235/32S	5/32	3.97	.1563	18.0	55.0	3.97	10	7189780
A1234.0S	–	4.00	.1575	18.0	55.0	4.00	10	7189781
A1234.1S	–	4.10	.1614	18.0	55.0	4.10	10	7189782
A1234.2S	–	4.20	.1654	18.0	55.0	4.20	10	7189783
A1234.5S	–	4.50	.1772	18.0	58.0	4.50	10	7189784
A1233/16S	3/16	4.76	.1875	18.0	62.0	4.76	10	7189785
A1234.8S	–	4.80	.1890	18.0	62.0	4.80	10	7189786
A1234.9S	–	4.90	.1929	18.0	62.0	4.90	10	7189787
A1235.0S	–	5.00	.1969	18.0	62.0	5.00	10	7189788
A1235.5S	–	5.50	.2165	18.0	66.0	5.50	10	7189789
A1237/32S	7/32	5.56	.2188	18.0	66.0	5.56	10	7189790
A1236.0S	–	6.00	.2362	18.0	66.0	6.00	10	7189791
A1231/4S	1/4	6.35	.2500	19.0	70.0	6.35	10	7189792

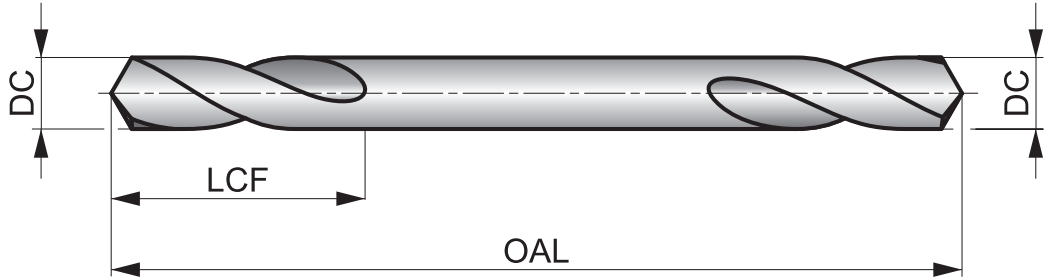


A119



HSS Double Ended Stub Drill, Steam Tempered Finish

A short double-ended drill designed for drilling holes through sheet metal. Possible to use both ends, giving twice the tool life. A 120° conventional point to aid self-centering. Suitable for drilling in many materials. Steam tempered finish retains cutting fluid and prevents chip to tool welding.



HSS	DIN 1897	1.25xD
120°	ST	
λ 20-35°	R	DC h8

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 102 C	P1.2 ■ 112 C	P1.3 ■ 115 C	P2.1 ■ 85 C	P2.2 ■ 75 C	P2.3 ■ 66 C	P3.1 ■ 39 C	P3.2 ■ 30 C	P3.3 ■ 26 C	P4.1 ■ 23 C	P4.2 ■ 20 C	P4.3 ■ 16 A	M1.1 ■ 69 A	M1.2 ■ 56 A
M2.1 ■ 59 A	M2.2 ■ 49 A	M3.1 ■ 26 C	M3.2 ■ 23 C	M3.3 ■ 20 C	M4.1 ■ 33 A	N1.1 ■ 108 C	N1.2 ■ 82 C	N1.3 ■ 56 C	N2.1 ■ 151 C	N2.2 ■ 138 C	N2.3 ■ 98 C	N3.1 ■ 184 C	N3.2 ■ 108 C
N3.3 ■ 56 A	N4.1 ■ 98 I	N4.2 ■ 115 C	S1.1 ■ 89 A	S1.2 ■ 39 A	S1.3 ■ 23 A	S2.1 ■ 16 C	S2.2 ■ 13 C	S3.1 ■ 13 C	S3.2 ■ 10 C	S4.1 ■ 10 C	S4.2 ■ 7 C		

Sheet Metal Drill.

Product	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	D CON MS (mm)	Pack Qty	MID
A1193.3	3.30	.1299	11.0	49.0	3.30	10	7189827
A1193.6	3.60	.1417	12.0	52.0	3.60	10	7189828
A1194.1	4.10	.1614	14.0	55.0	4.10	10	7189829
A1194.2	4.20	.1654	14.0	55.0	4.20	10	7189840
A1194.9	4.90	.1929	17.0	62.0	4.90	10	7189841
A1195.1	5.10	.2008	17.0	62.0	5.10	10	7189842

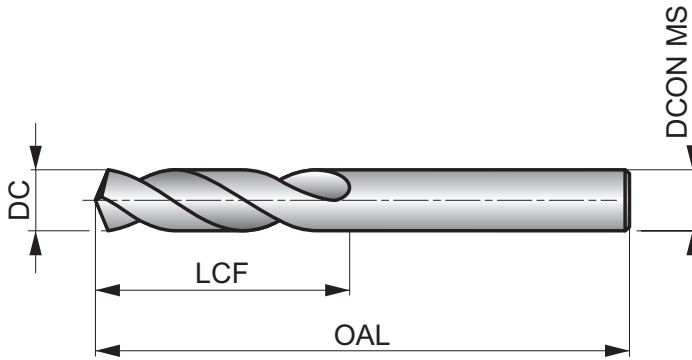


R40C / R41C / R42C



NAS 907 Type C HSS Stub Length Drill, Steam Tempered

Heavy duty versatile drill with steam tempered finish. A 135° self-centering split point reduces cutting forces and prevents the drill from walking when contacting the workpiece. The thicker web and short length makes this drill very rigid and suitable for hand held and machine drilling of many materials.



HSS	NAS 907	2.5×D
135°	ST	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 118 J	P1.2 ■ 131 J	P1.3 ■ 135 J	P2.1 ■ 102 J	P2.2 ■ 89 G	P2.3 ■ 79 F	P3.1 ■ 69 G	P3.2 ■ 56 G	P3.3 ■ 46 F	P4.1 ■ 39 G	P4.2 ▣ 33 F	P4.3 ▣ 30 E	M1.1 ■ 72 F	M1.2 ■ 62 F
M2.1 ■ 66 F	M2.2 ■ 52 F	M3.1 ▣ 33 H	M3.2 ▣ 30 H	M3.3 ▣ 26 D	M4.1 ▣ 33 D	K1.1 ■ 105 J	K1.2 ■ 79 G	K1.3 ■ 59 G	K2.1 ■ 82 F	K2.2 ■ 66 F	K2.3 ■ 52 F	K3.1 ■ 72 F	K3.2 ■ 56 F
K3.3 ■ 43 F	K4.1 ■ 66 F	K4.2 ■ 49 F	K4.3 ▣ 36 F	K4.4 ▣ 33 F	K4.5 ▣ 26 F	K5.1 ■ 75 F	K5.2 ■ 56 F	K5.3 ▣ 43 F	N1.1 ▣ 108 K	N1.2 ▣ 82 K	N1.3 ▣ 56 J	N2.1 ▣ 151 I	N2.2 ▣ 138 I
N2.3 ▣ 98 I	N3.1 ▣ 210 I	N3.2 ▣ 125 J	N3.3 ▣ 62 H	N4.1 ▣ 98 K	N4.2 ▣ 115 I	N4.3 ▣ 56 G	S1.1 ■ 89 G	S1.2 ▣ 52 E	S1.3 ▣ 26 C	S2.1 ▣ 36 F	S2.2 ▣ 20 B	S3.1 ▣ 26 F	S3.2 ▣ 13 B
S4.1 ▣ 20 F	S4.2 ▣ 10 B												

Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
R41CN60	—	N60	—	.0400	.500	1.375	.040	12	5998673 1)
R41CN59	—	N59	—	.0410	.500	1.375	.041	12	5998665 1)
R41CN58	—	N58	—	.0420	.500	1.375	.042	12	5998661 1)
R41CN57	—	N57	—	.0430	.500	1.375	.043	12	5998657 1)
R41CN56	—	N56	—	.0465	.500	1.375	.046	12	5998651 1)
R41CN55	—	N55	—	.0520	.625	1.625	.052	12	5998647 1)
R41CN54	—	N54	—	.0550	.625	1.625	.055	12	5998642 1)
R41CN53	—	N53	—	.0595	.625	1.625	.059	12	5998635 1)
R40C1/16	1/16	—	—	.0625	.625	1.625	.063	12	5999397
R41CN52	—	N52	—	.0635	.688	1.688	.064	12	5998630
R41CN51	—	N51	—	.0670	.688	1.688	.067	12	5998626
R41CN50	—	N50	—	.0700	.688	1.688	.070	12	5998623
R41CN49	—	N49	—	.0730	.688	1.688	.073	12	5998615
R41CN48	—	N48	—	.0760	.688	1.688	.076	12	5998612
R40C5/64	5/64	—	—	.0781	.688	1.688	.078	12	5999447
R41CN47	—	N47	—	.0785	.688	1.688	.079	12	5998610
R41CN46	—	N46	—	.0810	.750	1.750	.081	12	5998607
R41CN45	—	N45	—	.0820	.750	1.750	.082	12	5998604
R41CN44	—	N44	—	.0860	.750	1.750	.086	12	5998598

1) No Split Point



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
R41CN43	—	N43	—	.0890	.750	1.750	.089	12	5998594
R41CN42	—	N42	—	.0935	.750	1.750	.093	12	5998591
R40C3/32	3/32	—	—	.0938	.750	1.750	.094	12	5999441
R41CN41	—	N41	—	.0960	.813	1.813	.096	12	5998589
R41CN40	—	N40	—	.0980	.813	1.813	.098	12	5998586
R41CN39	—	N39	—	.0995	.813	1.813	.100	12	5998580
R41CN38	—	N38	—	.1015	.813	1.813	.102	12	5998577
R41CN37	—	N37	—	.1040	.813	1.813	.104	12	5998573
R41CN36	—	N36	—	.1065	.813	1.813	.106	12	5998569
R40C7/64	7/64	—	—	.1094	.813	1.813	.109	12	5999450
R41CN35	—	N35	—	.1100	.875	1.875	.110	12	5998563
R41CN34	—	N34	—	.1110	.875	1.875	.111	12	5998560
R41CN33	—	N33	—	.1130	.875	1.875	.113	12	5998557
R41CN32	—	N32	—	.1160	.875	1.875	.116	12	5998554
R41CN31	—	N31	—	.1200	.875	1.875	.120	12	5998550
R40C1/8	1/8	—	—	.1250	.875	1.875	.125	12	5999409
R41CN30	—	N30	—	.1285	.938	1.938	.129	12	5998547
R41CN29	—	N29	—	.1360	.938	1.938	.136	12	5998537
R41CN28	—	N28	—	.1405	.938	1.938	.141	12	5998533
R40C9/64	9/64	—	—	.1406	.938	1.938	.141	12	5999452
R41CN27	—	N27	—	.1440	1.000	2.063	.144	12	5998528
R41CN26	—	N26	—	.1470	1.000	2.063	.147	12	5998697
R41CN25	—	N25	—	.1495	1.000	2.063	.149	12	5998694
R41CN24	—	N24	—	.1520	1.000	2.063	.152	12	5998691
R41CN23	—	N23	—	.1540	1.000	2.063	.154	12	5998688
R40C5/32	5/32	—	—	.1563	1.000	2.063	.156	12	5999446
R41CN22	—	N22	—	.1570	1.063	2.125	.157	12	5998682
R41CN21	—	N21	—	.1590	1.063	2.125	.159	12	5998639
R41CN20	—	N20	—	.1610	1.063	2.125	.161	12	5998601
R41CN19	—	N19	—	.1660	1.063	2.125	.166	12	5998521
R41CN18	—	N18	—	.1695	1.063	2.125	.170	12	5998628
R40C11/64	11/64	—	—	.1719	1.063	2.125	.172	12	5999415
R41CN17	—	N17	—	.1730	1.125	2.188	.173	12	5998620
R41CN16	—	N16	—	.1770	1.125	2.188	.177	12	5998617
R41CN15	—	N15	—	.1800	1.125	2.188	.180	12	5998613
R41CN14	—	N14	—	.1820	1.125	2.188	.182	12	5998609
R41CN13	—	N13	—	.1850	1.125	2.188	.185	12	5998606
R40C3/16	3/16	—	—	.1875	1.125	2.188	.188	12	5999440
R41CN12	—	N12	—	.1890	1.188	2.250	.189	12	5998603
R41CN11	—	N11	—	.1910	1.188	2.250	.191	12	5998600
R41CN10	—	N10	—	.1935	1.188	2.250	.194	12	5998597
R41CN9	—	N9	—	.1960	1.188	2.250	.196	12	5998685
R41CN8	—	N8	—	.1990	1.188	2.250	.199	12	5998679
R41CN7	—	N7	—	.2010	1.188	2.250	.201	12	5998676
R40C13/64	13/64	—	—	.2031	1.188	2.250	.203	12	5999421
R41CN6	—	N6	—	.2040	1.250	2.375	.204	12	5998669
R41CN5	—	N5	—	.2055	1.250	2.375	.205	12	5998618
R41CN4	—	N4	—	.2090	1.250	2.375	.209	12	5998583
R41CN3	—	N3	—	.2130	1.250	2.375	.213	12	5998543
R40C7/32	7/32	—	—	.2188	1.250	2.375	.219	12	5999449
R41CN2	—	N2	—	.2210	1.313	2.438	.221	12	5998566
R41CN1	—	N1	—	.2280	1.313	2.438	.228	12	5998595
R42CA	—	—	A	.2340	1.313	2.438	.234	12	5999338
R40C15/64	15/64	—	—	.2344	1.313	2.438	.234	12	5999425
R42CB	—	—	B	.2380	1.375	2.500	.238	12	5999342
R42CC	—	—	C	.2420	1.375	2.500	.242	12	5999346
R42CD	—	—	D	.2460	1.375	2.500	.246	12	5999350
R40C1/4	1/4	—	—	.2500	1.375	2.500	.250	12	5999406



Product	DC (inch)	DC (Wire gauge size)	DC (Letter size)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
R42CF	–	–	F	.2570	1.438	2.625	.257	12	5999362
R42CG	–	–	G	.2610	1.438	2.625	.261	12	5999367
R40C17/64	17/64	–	–	.2656	1.438	2.625	.266	12	5999427
R42CH	–	–	H	.2660	1.500	2.688	.266	12	5999373
R42CI	–	–	I	.2720	1.500	2.688	.272	12	5999377
R42CJ	–	–	J	.2770	1.500	2.688	.277	12	5999381
R42CK	–	–	K	.2810	1.500	2.688	.281	12	5999386
R40C9/32	9/32	–	–	.2813	1.500	2.688	.281	12	5999451
R42CM	–	–	M	.2950	1.563	2.750	.295	12	5999395
R40C19/64	19/64	–	–	.2969	1.563	2.750	.297	12	5999429
R42CL	–	–	L	.2990	1.563	2.750	.299	12	5999390
R42CN	–	–	N	.3020	1.625	2.813	.302	12	5999398
R40C5/16	5/16	–	–	.3125	1.625	2.813	.313	6	5999444
R42CO	–	–	O	.3160	1.688	2.938	.316	6	5999402
R42CP	–	–	P	.3230	1.688	2.938	.323	6	5999408
R40C21/64	21/64	–	–	.3281	1.688	2.938	.328	6	5999433
R42CQ	–	–	Q	.3320	1.688	3.000	.332	6	5998896
R42CR	–	–	R	.3390	1.688	3.000	.339	6	5998941
R40C11/32	11/32	–	–	.3438	1.688	3.000	.344	6	5999412
R42CS	–	–	S	.3480	1.750	3.063	.348	6	5998965
R42CT	–	–	T	.3580	1.750	3.063	.358	6	5998994
R40C23/64	23/64	–	–	.3594	1.750	3.063	.359	6	5999435
R42CU	–	–	U	.3680	1.813	3.125	.368	6	5999038
R40C3/8	3/8	–	–	.3750	1.813	3.125	.375	6	5999442
R40C3/8-T ¹⁾	3/8	–	–	.3750	1.813	3.125	.375	6	7652434
R42CV	–	–	V	.3770	1.875	3.250	.377	6	5999047
R42CW	–	–	W	.3860	1.875	3.250	.386	6	5999052
R40C25/64	25/64	–	–	.3906	1.875	3.250	.391	6	5999437
R42CX	–	–	X	.3970	1.938	3.313	.397	6	5999056
R42CY	–	–	Y	.4040	1.938	3.313	.404	6	5999060
R40C13/32	13/32	–	–	.4063	1.938	3.313	.406	6	5999418
R42CZ	–	–	Z	.4130	2.000	3.375	.413	6	5998903
R40C27/64	27/64	–	–	.4219	2.000	3.375	.422	6	5999438
R40C7/16	7/16	–	–	.4375	2.063	3.438	.438	6	5999448
R40C29/64	29/64	–	–	.4531	2.125	3.563	.453	6	5999439
R40C15/32	15/32	–	–	.4688	2.125	3.625	.469	6	5999423
R40C31/64	31/64	–	–	.4844	2.188	3.688	.484	6	5999443
R40C1/2	1/2	–	–	.5000	2.250	3.750	.500	6	5999400

¹⁾ With Tang.



A=Styles in Set, B=No. in Set, C=Diameters in Set.

Product	A	B	C	Pack Qty	MID
C29R40CSET	R40C	29	1/16 - 1/2 x 64ths	1	5995632



Product	A	B	C	Pack Qty	MID
C60R41CSET	R41C	60	N1 - N60	1	5995677

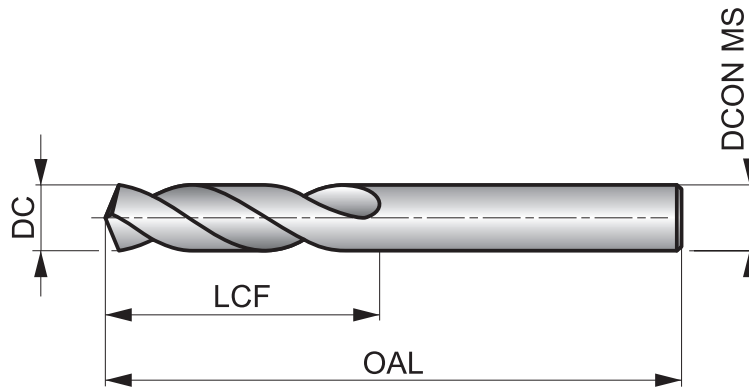


A120



HSS Stub Drill, Steam Tempered Finish

Versatile drill with Steam tempered finish. A 135° split point reduces the forces when drilling and prevents the drill from wandering over the surface of the material. Steam tempered finish retains cutting fluid and prevents chip to tool welding. Suitable for hand-held and machine drilling of many materials.



HSS	DIN 1897	2.5xD
135°	ST	
λ20-35°	R	DC h8

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 118 J	P1.2 ■ 131 J	P1.3 ■ 135 J	P2.1 ■ 102 J	P2.2 ■ 89 G	P2.3 ▣ 79 F	P3.1 ■ 69 G	P3.2 ■ 56 G	P3.3 ▣ 46 F	P4.1 ■ 39 G	P4.2 ▣ 33 F	P4.3 ▣ 30 E	M1.1 ■ 72 F	M1.2 ■ 62 F
M2.1 ■ 66 F	M2.2 ■ 52 F	M3.1 ▣ 33 H	M3.2 ▣ 30 H	M3.3 ▣ 26 H	M4.1 ▣ 33 D	K1.1 ■ 105 J	K1.2 ■ 79 G	K1.3 ■ 59 G	K2.1 ■ 82 F	K2.2 ■ 66 F	K2.3 ▣ 52 F	K3.1 ■ 72 F	K3.2 ■ 56 F
K3.3 ▣ 43 F	K4.1 ■ 66 F	K4.2 ■ 49 F	K4.3 ▣ 36 F	K4.4 ▣ 33 F	K4.5 ▣ 26 F	K5.1 ■ 75 F	K5.2 ■ 56 F	K5.3 ▣ 43 F	N1.1 ▣ 108 K	N1.2 ▣ 82 K	N1.3 ▣ 56 J	N2.1 ▣ 151 I	N2.2 ▣ 138 I
N2.3 ▣ 98 I	N3.1 ▣ 210 I	N3.2 ▣ 125 J	N3.3 ▣ 62 H	N4.1 ▣ 98 K	N4.2 ▣ 115 I	N4.3 ▣ 56 G	S1.1 ■ 89 G	S1.2 ▣ 52 E	S1.3 ▣ 26 C	S2.1 ▣ 36 F	S2.2 ▣ 20 B	S3.1 ▣ 26 F	S3.2 ▣ 13 B
S4.1 ▣ 20 F	S4.2 ▣ 10 B												

DC < 1mm Bright; 2.9mm => DC > 13.0mm 118° Point.

Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID	Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)				(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A120.5	–	0.50	.0197	3.0	20.0	0.50	10	5968434	A1202.0	–	2.00	.0787	12.0	38.0	2.00	10	5967997
A120.6	–	0.60	.0236	3.5	21.0	0.60	10	5968436	A1202.1	–	2.10	.0827	12.0	38.0	2.10	10	5968002
A120.7	–	0.70	.0276	4.5	23.0	0.70	10	5968438	A1202.2	–	2.20	.0866	13.0	40.0	2.20	10	5968005
A1201/32	1/32	0.79	.0313	5.0	24.0	0.79	10	5968484	A1202.25	–	2.25	.0886	13.0	40.0	2.25	10	5968008
A120.8	–	0.80	.0315	5.0	24.0	0.80	10	5968440	A1202.3	–	2.30	.0906	13.0	40.0	2.30	10	5968014
A120.9	–	0.90	.0354	5.5	25.0	0.90	10	5968441	A1203/32	3/32	2.38	.0938	14.0	43.0	2.38	10	5968605
A1201.0	–	1.00	.0394	6.0	26.0	1.00	10	5968444	A1202.4	–	2.40	.0945	14.0	43.0	2.40	10	5968017
A1201.1	–	1.10	.0433	7.0	28.0	1.10	10	5968446	A1202.5	–	2.50	.0984	14.0	43.0	2.50	10	5968020
A1201.2	–	1.20	.0472	8.0	30.0	1.20	10	5968448	A1202.6	–	2.60	.1024	14.0	43.0	2.60	10	5968023
A1201.3	–	1.30	.0512	8.0	30.0	1.30	10	5968451	A1202.7	–	2.70	.1063	16.0	46.0	2.70	10	5968029
A1201.4	–	1.40	.0551	9.0	32.0	1.40	10	5968457	A1207/64	7/64	2.78	.1094	16.0	46.0	2.78	10	5968678
A1201.5	–	1.50	.0591	9.0	32.0	1.50	10	5968461	A1202.8	–	2.80	.1102	16.0	46.0	2.80	10	5968033
A1201/16	1/16	1.59	.0625	10.0	34.0	1.59	10	5968478	A1202.9	–	2.90	.1142	16.0	46.0	2.90	10	5968036
A1201.6	–	1.60	.0630	10.0	34.0	1.60	10	5968464	A1203.0	–	3.00	.1181	16.0	46.0	3.00	10	5968079
A1201.7	–	1.70	.0669	10.0	34.0	1.70	10	5968467	A1203.1	–	3.10	.1220	18.0	49.0	3.10	10	5968084
A1201.8	–	1.80	.0709	11.0	36.0	1.80	10	5968472	A1201/8	1/8	3.18	.1250	18.0	49.0	3.18	10	5968494
A1201.9	–	1.90	.0748	11.0	36.0	1.90	10	5968475	A1203.2	–	3.20	.1260	18.0	49.0	3.20	10	5968090
A1205/64	5/64	1.98	.0781	12.0	38.0	1.98	10	5968501	A1203.25	–	3.25	.1280	18.0	49.0	3.25	10	5968095



Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A1203.3	–	3.30	.1299	18.0	49.0	3.30	10	5968100
A1203.4	–	3.40	.1339	20.0	52.0	3.40	10	5968108
A1203.5	–	3.50	.1378	20.0	52.0	3.50	10	5968431
A1209/64	9/64	3.57	.1406	20.0	52.0	3.57	10	5968632
A1203.6	–	3.60	.1417	20.0	52.0	3.60	10	5968458
A1203.7	–	3.70	.1457	20.0	52.0	3.70	10	5968489
A1203.8	–	3.80	.1496	22.0	55.0	3.80	10	5968532
A1203.9	–	3.90	.1535	22.0	55.0	3.90	10	5968590
A1205/32	5/32	3.97	.1563	22.0	55.0	3.97	10	5968497
A1204.0	–	4.00	.1575	22.0	55.0	4.00	10	5968437
A1204.1	–	4.10	.1614	22.0	55.0	4.10	10	5968439
A1204.2	–	4.20	.1654	22.0	55.0	4.20	10	5968442
A1204.3	–	4.30	.1693	24.0	58.0	4.30	10	5968443
A12011/64	11/64	4.37	.1719	24.0	58.0	4.37	10	5967977
A1204.4	–	4.40	.1732	24.0	58.0	4.40	10	5968445
A1204.5	–	4.50	.1772	24.0	58.0	4.50	10	5968447
A1204.6	–	4.60	.1811	24.0	58.0	4.60	10	5968450
A1204.7	–	4.70	.1850	24.0	58.0	4.70	10	5968452
A1203/16	3/16	4.76	.1875	26.0	62.0	4.76	10	5968600
A1204.8	–	4.80	.1890	26.0	62.0	4.80	10	5968455
A1204.9	–	4.90	.1929	26.0	62.0	4.90	10	5968460
A1205.0	–	5.00	.1969	26.0	62.0	5.00	10	5968463
A1205.1	–	5.10	.2008	26.0	62.0	5.10	10	5968466
A12013/64	13/64	5.16	.2031	26.0	62.0	5.16	10	5967945
A1205.2	–	5.20	.2047	26.0	62.0	5.20	10	5968469
A1205.3	–	5.30	.2087	26.0	62.0	5.30	10	5968471
A1205.4	–	5.40	.2126	28.0	66.0	5.40	10	5968474
A1205.5	–	5.50	.2165	28.0	66.0	5.50	10	5968477
A1207/32	7/32	5.56	.2188	28.0	66.0	5.56	10	5968677
A1205.6	–	5.60	.2205	28.0	66.0	5.60	10	5968480
A1205.7	–	5.70	.2244	28.0	66.0	5.70	10	5968483
A1205.8	–	5.80	.2283	28.0	66.0	5.80	10	5968486
A1205.9	–	5.90	.2323	28.0	66.0	5.90	10	5968492
A12015/64	15/64	5.95	.2344	28.0	66.0	5.95	10	5967968
A1206.0	–	6.00	.2362	28.0	66.0	6.00	10	5968509
A1206.1	–	6.10	.2402	31.0	70.0	6.10	10	5968513
A1206.2	–	6.20	.2441	31.0	70.0	6.20	10	5968518
A1206.3	–	6.30	.2480	31.0	70.0	6.30	10	5968522
A1201/4	1/4	6.35	.2500	31.0	70.0	6.35	10	5968487
A1206.4	–	6.40	.2520	31.0	70.0	6.40	10	5968527
A1206.5	–	6.50	.2559	31.0	70.0	6.50	10	5968537
A1206.6	–	6.60	.2598	31.0	70.0	6.60	10	5968543
A1206.7	–	6.70	.2638	31.0	70.0	6.70	10	5968547
A1206.8	–	6.80	.2677	34.0	74.0	6.80	10	5968552
A1206.9	–	6.90	.2717	34.0	74.0	6.90	10	5968557
A1207.0	–	7.00	.2756	34.0	74.0	7.00	10	5968565
A1207.1	–	7.10	.2795	34.0	74.0	7.10	10	5968570
A1209/32	9/32	7.14	.2813	34.0	74.0	7.14	10	5968629
A1207.2	–	7.20	.2835	34.0	74.0	7.20	10	5968575
A1207.3	–	7.30	.2874	34.0	74.0	7.30	10	5968580
A1207.4	–	7.40	.2913	34.0	74.0	7.40	10	5968585
A1207.5	–	7.50	.2953	34.0	74.0	7.50	10	5968595
A1207.6	–	7.60	.2992	37.0	79.0	7.60	10	5968515
A1207.7	–	7.70	.3031	37.0	79.0	7.70	10	5968573
A1207.8	–	7.80	.3071	37.0	79.0	7.80	10	5968626
A1207.9	–	7.90	.3110	37.0	79.0	7.90	10	5968654
A1205/16	5/16	7.94	.3125	37.0	79.0	7.94	10	5968496
A1208.0	–	8.00	.3150	37.0	79.0	8.00	10	5968680
A1208.1	–	8.10	.3189	37.0	79.0	8.10	10	5968524

Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A1208.2	–	8.20	.3228	37.0	79.0	8.20	10	5968529
A1208.3	–	8.30	.3268	37.0	79.0	8.30	10	5968534
A1208.4	–	8.40	.3307	37.0	79.0	8.40	10	5968539
A1208.5	–	8.50	.3346	37.0	79.0	8.50	10	5968541
A1208.6	–	8.60	.3386	40.0	84.0	8.60	10	5968549
A1208.7	–	8.70	.3425	40.0	84.0	8.70	10	5968554
A12011/32	11/32	8.73	.3438	40.0	84.0	8.73	10	5967930
A1208.8	–	8.80	.3465	40.0	84.0	8.80	10	5968559
A1208.9	–	8.90	.3504	40.0	84.0	8.90	10	5968563
A1209.0	–	9.00	.3543	40.0	84.0	9.00	10	5968567
A1209.1	–	9.10	.3583	40.0	84.0	9.10	10	5968578
A1209.2	–	9.20	.3622	40.0	84.0	9.20	10	5968583
A1209.3	–	9.30	.3661	40.0	84.0	9.30	10	5968587
A1209.4	–	9.40	.3701	40.0	84.0	9.40	10	5968593
A1209.5	–	9.50	.3740	40.0	84.0	9.50	10	5968599
A1203/8	3/8	9.52	.3750	43.0	89.0	9.52	10	5968435
A1209.6	–	9.60	.3780	43.0	89.0	9.60	10	5968602
A1209.7	–	9.70	.3819	43.0	89.0	9.70	10	5968607
A1209.8	–	9.80	.3858	43.0	89.0	9.80	10	5968615
A1209.9	–	9.90	.3898	43.0	89.0	9.90	10	5968619
A12010.0	–	10.00	.3937	43.0	89.0	10.00	10	5968498
A12010.1	–	10.10	.3976	43.0	89.0	10.10	5	5968503
A12010.2	–	10.20	.4016	43.0	89.0	10.20	5	5968505
A12010.3	–	10.30	.4055	43.0	89.0	10.30	5	5968511
A12010.5	–	10.50	.4134	43.0	89.0	10.50	5	5968520
A12010.8	–	10.80	.4252	47.0	95.0	10.80	5	5968538
A12011.0	–	11.00	.4331	47.0	95.0	11.00	5	5968553
A1207/16	7/16	11.11	.4375	47.0	95.0	11.11	5	5968675
A12011.3	–	11.30	.4449	47.0	95.0	11.30	5	5968566
A12011.5	–	11.50	.4528	47.0	95.0	11.50	5	5968571
A12011.7	–	11.70	.4606	47.0	95.0	11.70	5	5968581
A12011.8	–	11.80	.4646	47.0	95.0	11.80	5	5968586
A12012.0	–	12.00	.4724	51.0	102.0	12.00	5	5968010
A12012.1	–	12.10	.4764	51.0	102.0	12.10	5	5968051
A12012.2	–	12.20	.4803	51.0	102.0	12.20	5	5968104
A12012.5	–	12.50	.4921	51.0	102.0	12.50	5	5968111
A1201/2	1/2	12.70	.5000	51.0	102.0	12.70	5	5968481
A12013.0	–	13.00	.5118	51.0	102.0	13.00	5	5968114
A12013.5	–	13.50	.5315	54.0	107.0	13.50	1	5968117
A12014.0	–	14.00	.5512	54.0	107.0	14.00	1	5967949
A1209/16	9/16	14.29	.5625	56.0	111.0	14.29	1	5968623
A12014.5	–	14.50	.5709	56.0	111.0	14.50	1	5967953
A12015.0	–	15.00	.5906	56.0	111.0	15.00	1	5967957
A12015.5	–	15.50	.6102	58.0	115.0	15.50	1	5967960
A1205/8	5/8	15.88	.6250	58.0	115.0	15.88	1	5968506
A12016.0	–	16.00	.6299	58.0	115.0	16.00	1	5967971
A12016.5	–	16.50	.6496	60.0	119.0	16.50	1	5967974
A12017.0	–	17.00	.6693	60.0	119.0	17.00	1	5967980
A12011/16	11/16	17.46	.6875	62.0	123.0	17.46	1	5968604
A12017.5	–	17.50	.6890	62.0	123.0	17.50	1	5967983
A12018.0	–	18.00	.7087	62.0	123.0	18.00	1	5967986
A12018.5	–	18.50	.7283	64.0	127.0	18.50	1	5967989
A12019.0	–	19.00	.7480	64.0	127.0	19.00	1	5967991
A12020.0	–	20.00	.7874	66.0	131.0	20.00	1	5968041
A12020.5	–	20.50	.8071	68.0	136.0	20.50	1	5968046
A12013/16	13/16	20.64	.8125	68.0	136.0	20.64	1	5968120
A12021.0	–	21.00	.8268	68.0	136.0	21.00	1	5968055
A12022.0	–	22.00	.8661	70.0	141.0	22.00	1	5968060
A12025.0	–	25.00	.9843	75.0	151.0	25.00	1	5968074



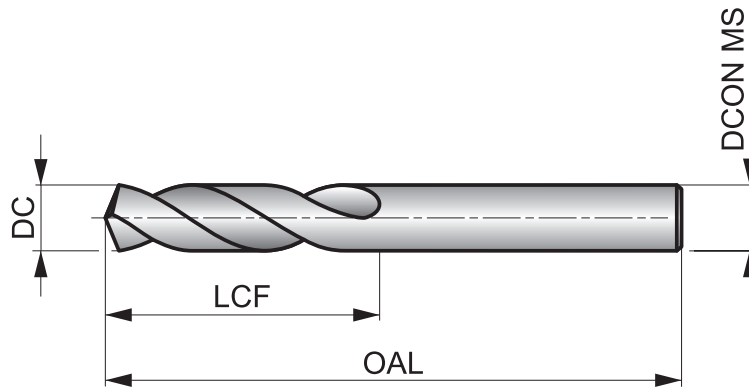
A022



HSS Stub Drill, TiN-Tip Coated

Versatile drill with a specially designed 135° split point which helps self-centering when drilling by hand and in machines provides a more accurate hole with a better quality of finish. Suitable for drilling many materials. TiN-Tip coating improves performance and extends the tool life.

HSS	DIN ANSI	2.5×D
135°	TiN-Tip	
λ 20-35°	R	DC h8



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 108 K	P1.2 ■ 121 K	P1.3 ■ 125 K	P2.1 ■ 92 K	P2.2 ■ 82 I	P2.3 ■ 72 G	P3.1 ■ 79 H	P3.2 ■ 62 H	P3.3 ■ 52 G	P4.1 ■ 46 H	P4.2 ■ 39 G	P4.3 ■ 33 E	M1.1 ■ 69 G	M1.2 ■ 56 G
M2.1 ■ 59 G	M2.2 ■ 49 G	M3.1 ■ 30 I	M3.2 ■ 26 I	M3.3 ■ 23 I	M4.1 ■ 30 E	K1.1 ■ 105 K	K1.2 ■ 79 I	K1.3 ■ 59 I	K2.1 ■ 82 G	K2.2 ■ 66 G	K2.3 ■ 52 G	K3.1 ■ 72 G	K3.2 ■ 56 G
K3.3 ■ 43 G	K4.1 ■ 66 G	K4.2 ■ 49 G	K4.3 ■ 36 G	K4.4 ■ 33 G	K4.5 ■ 26 G	K5.1 ■ 75 G	K5.2 ■ 56 G	K5.3 ■ 43 G	N1.1 ■ 131 F	N1.2 ■ 98 F	N1.3 ■ 66 K	N2.1 ■ 161 J	N2.2 ■ 144 J
N2.3 ■ 105 J	N3.1 ■ 210 I	N3.2 ■ 125 K	N3.3 ■ 62 H	N4.1 ■ 98 K	N4.2 ■ 115 I	N4.3 ■ 56 G	S1.1 ■ 82 I	S1.2 ■ 46 F	S1.3 ■ 26 C	S2.1 ■ 36 F	S2.2 ■ 20 B	S3.1 ■ 26 F	S3.2 ■ 13 B
S4.1 ■ 20 F	S4.2 ■ 10 B												

DC < 2mm Bright; DC >= 2mm TiN Tipped and Split Point.
Products from this series are also available in set. Please see A088.

Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A022.5	—	0.50	.0197	3.0	20.0	0.50	10	5966728
A022.6	—	0.60	.0236	3.5	21.0	0.60	10	5966732
A022.7	—	0.70	.0276	4.5	23.0	0.70	10	5966736
A0221/32	1/32	0.79	.0313	13.0	35.0	0.79	10	5967183
A022.8	—	0.80	.0315	5.0	24.0	0.80	10	5966743
A022.9	—	0.90	.0354	5.5	25.0	0.90	10	5967157
A0221.0	—	1.00	.0394	6.0	26.0	1.00	10	5967213
A0221.1	—	1.10	.0433	7.0	28.0	1.10	10	5967253
A0223/64	3/64	1.19	.0469	13.0	35.0	1.19	10	5967112
A0221.2	—	1.20	.0472	8.0	30.0	1.20	10	5967286
A0221.3	—	1.30	.0512	8.0	30.0	1.30	10	5967324
A0221.4	—	1.40	.0551	9.0	32.0	1.40	10	5967333
A0221.5	—	1.50	.0591	9.0	32.0	1.50	10	5967335
A0221/16	1/16	1.59	.0625	16.0	41.0	1.59	10	5967173
A0221.6	—	1.60	.0630	10.0	34.0	1.60	10	5967339
A0221.7	—	1.70	.0669	10.0	34.0	1.70	10	5967343
A0221.8	—	1.80	.0709	11.0	36.0	1.80	10	5967166
A0221.9	—	1.90	.0748	11.0	36.0	1.90	10	5967169
A0225/64	5/64	1.98	.0781	17.0	43.0	1.98	10	5966840
A0222.0	—	2.00	.0787	12.0	38.0	2.00	10	5967096
A0222.1	—	2.10	.0827	12.0	38.0	2.10	10	5967118
A0222.2	—	2.20	.0866	13.0	40.0	2.20	10	5967140
A0222.25	—	2.25	.0886	13.0	40.0	2.25	10	5967179

Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A0222.3	—	2.30	.0906	13.0	40.0	2.30	10	5967189
A0223/32	3/32	2.38	.0938	20.0	45.0	2.38	10	5967110
A0222.4	—	2.40	.0945	14.0	43.0	2.40	10	5967194
A0222.5	—	2.50	.0984	14.0	43.0	2.50	10	5967200
A0222.6	—	2.60	.1024	14.0	43.0	2.60	10	5967206
A0222.65	—	2.65	.1043	14.0	43.0	2.65	10	5967064
A0222.7	—	2.70	.1063	16.0	46.0	2.70	10	5967068
A0227/64	7/64	2.78	.1094	22.0	47.0	2.78	10	5966875
A0222.8	—	2.80	.1102	16.0	46.0	2.80	10	5967073
A0222.9	—	2.90	.1142	16.0	46.0	2.90	10	5967076
A0223.0	—	3.00	.1181	16.0	46.0	3.00	10	5967079
A0223.1	—	3.10	.1220	18.0	49.0	3.10	10	5967081
A0221/8	1/8	3.18	.1250	23.0	49.0	3.18	10	5967193
A0223.2	—	3.20	.1260	18.0	49.0	3.20	10	5967083
A0223.25	—	3.25	.1280	18.0	49.0	3.25	10	5967087
A0223.3	—	3.30	.1299	18.0	49.0	3.30	10	5967090
A0223.4	—	3.40	.1339	20.0	52.0	3.40	10	5967093
A0223.5	—	3.50	.1378	20.0	52.0	3.50	10	5967098
A0229/64	9/64	3.57	.1406	25.0	50.0	3.57	10	5966963
A0223.6	—	3.60	.1417	20.0	52.0	3.60	10	5967100
A0223.7	—	3.70	.1457	20.0	52.0	3.70	10	5967102
A0223.8	—	3.80	.1496	22.0	55.0	3.80	10	5967104
A0223.9	—	3.90	.1535	22.0	55.0	3.90	10	5967106



Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A0225/32	5/32	3.97	.1563	26.0	53.0	3.97	10	5967184
A0224.0	–	4.00	.1575	22.0	55.0	4.00	10	5967116
A0224.1	–	4.10	.1614	22.0	55.0	4.10	10	5967120
A0224.2	–	4.20	.1654	22.0	55.0	4.20	10	5967122
A0224.3	–	4.30	.1693	24.0	58.0	4.30	10	5967124
A02211/64	11/64	4.37	.1719	28.0	55.0	4.37	10	5967277
A0224.4	–	4.40	.1732	24.0	58.0	4.40	10	5967126
A0224.5	–	4.50	.1772	24.0	58.0	4.50	10	5967128
A0224.6	–	4.60	.1811	24.0	58.0	4.60	10	5967130
A0224.7	–	4.70	.1850	24.0	58.0	4.70	10	5967132
A0223/16	3/16	4.76	.1875	30.0	57.0	4.76	10	5967108
A0224.8	–	4.80	.1890	26.0	62.0	4.80	10	5967134
A0224.9	–	4.90	.1929	26.0	62.0	4.90	10	5967136
A0225.0	–	5.00	.1969	26.0	62.0	5.00	10	5967138
A0225.1	–	5.10	.2008	26.0	62.0	5.10	10	5967142
A02213/64	13/64	5.16	.2031	31.0	58.0	5.16	10	5967305
A0225.2	–	5.20	.2047	26.0	62.0	5.20	10	5967144
A0225.3	–	5.30	.2087	26.0	62.0	5.30	10	5967147
A0225.4	–	5.40	.2126	28.0	66.0	5.40	10	5967149
A0225.5	–	5.50	.2165	28.0	66.0	5.50	10	5967153
A0227/32	7/32	5.56	.2188	33.0	61.0	5.56	10	5966873
A0225.6	–	5.60	.2205	28.0	66.0	5.60	10	5967158
A0225.7	–	5.70	.2244	28.0	66.0	5.70	10	5967162
A0225.8	–	5.80	.2283	28.0	66.0	5.80	10	5967167
A0225.9	–	5.90	.2323	28.0	66.0	5.90	10	5967170
A02215/64	15/64	5.95	.2344	34.0	63.0	5.95	10	5967329
A0226.0	–	6.00	.2362	28.0	66.0	6.00	10	5966885
A0226.1	–	6.10	.2402	31.0	70.0	6.10	10	5966921
A0226.2	–	6.20	.2441	31.0	70.0	6.20	10	5966972
A0226.3	–	6.30	.2480	31.0	70.0	6.30	10	5966981
A0221/4	1/4	6.35	.2500	36.0	65.0	6.35	10	5967188
A0226.4	–	6.40	.2520	31.0	70.0	6.40	10	5966985
A0226.5	–	6.50	.2559	31.0	70.0	6.50	10	5966989
A0226.6	–	6.60	.2598	31.0	70.0	6.60	10	5966993
A0226.7	–	6.70	.2638	31.0	70.0	6.70	10	5966843
A0226.8	–	6.80	.2677	34.0	74.0	6.80	10	5966845
A0226.9	–	6.90	.2717	34.0	74.0	6.90	10	5966847
A0227.0	–	7.00	.2756	34.0	74.0	7.00	10	5966849
A0227.1	–	7.10	.2795	34.0	74.0	7.10	10	5966851
A0229/32	9/32	7.14	.2813	40.0	70.0	7.14	10	5966960
A0227.2	–	7.20	.2835	34.0	74.0	7.20	10	5966853
A0227.3	–	7.30	.2874	34.0	74.0	7.30	10	5966855
A0227.4	–	7.40	.2913	34.0	74.0	7.40	10	5966857
A0227.5	–	7.50	.2953	34.0	74.0	7.50	10	5966859
A0227.6	–	7.60	.2992	37.0	79.0	7.60	10	5966861
A0227.7	–	7.70	.3031	37.0	79.0	7.70	10	5966865
A0227.8	–	7.80	.3071	37.0	79.0	7.80	10	5966867
A0227.9	–	7.90	.3110	37.0	79.0	7.90	10	5966869
A0225/16	5/16	7.94	.3125	43.0	73.0	7.94	10	5967176
A0228.0	–	8.00	.3150	37.0	79.0	8.00	10	5966877
A0228.1	–	8.10	.3189	37.0	79.0	8.10	10	5966879
A0228.2	–	8.20	.3228	37.0	79.0	8.20	10	5966881

Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A0228.3	–	8.30	.3268	37.0	79.0	8.30	10	5966883
A0228.4	–	8.40	.3307	37.0	79.0	8.40	10	5966887
A0228.5	–	8.50	.3346	37.0	79.0	8.50	10	5966889
A0228.6	–	8.60	.3386	40.0	84.0	8.60	10	5966891
A0228.7	–	8.70	.3425	40.0	84.0	8.70	10	5966893
A02211/32	11/32	8.73	.3438	45.0	78.0	8.73	10	5967274
A0228.8	–	8.80	.3465	40.0	84.0	8.80	10	5966896
A0228.9	–	8.90	.3504	40.0	84.0	8.90	10	5966899
A0229.0	–	9.00	.3543	40.0	84.0	9.00	10	5966902
A0229.1	–	9.10	.3583	40.0	84.0	9.10	10	5966906
A0229.2	–	9.20	.3622	40.0	84.0	9.20	10	5966911
A0229.3	–	9.30	.3661	40.0	84.0	9.30	10	5966916
A0229.4	–	9.40	.3701	40.0	84.0	9.40	10	5966926
A0229.5	–	9.50	.3740	40.0	84.0	9.50	10	5966931
A0223/8	3/8	9.52	.3750	48.0	81.0	9.52	10	5967114
A0229.6	–	9.60	.3780	43.0	89.0	9.60	10	5966934
A0229.7	–	9.70	.3819	43.0	89.0	9.70	10	5966939
A0229.8	–	9.80	.3858	43.0	89.0	9.80	10	5966944
A0229.9	–	9.90	.3898	43.0	89.0	9.90	10	5966949
A02210.0	–	10.00	.3937	43.0	89.0	10.00	10	5967198
A02210.1	–	10.10	.3976	43.0	89.0	10.10	5	5967207
A02210.2	–	10.20	.4016	43.0	89.0	10.20	5	5967211
A02210.3	–	10.30	.4055	43.0	89.0	10.30	5	5967217
A02213/32	13/32	10.32	.4063	51.0	86.0	10.32	5	5967302
A02210.4	–	10.40	.4094	43.0	89.0	10.40	5	5967221
A02210.5	–	10.50	.4134	43.0	89.0	10.50	5	5967224
A02210.6	–	10.60	.4173	43.0	89.0	10.60	5	5967228
A02210.8	–	10.80	.4252	47.0	95.0	10.80	5	5967238
A02211.0	–	11.00	.4331	47.0	95.0	11.00	5	5967244
A02211.1	–	11.10	.4370	47.0	95.0	11.10	5	5967248
A0227/16	7/16	11.11	.4375	54.0	89.0	11.11	5	5966871
A02211.2	–	11.20	.4409	47.0	95.0	11.20	5	5967250
A02211.3	–	11.30	.4449	47.0	95.0	11.30	5	5967256
A02211.5	–	11.50	.4528	47.0	95.0	11.50	5	5967259
A02211.7	–	11.70	.4606	47.0	95.0	11.70	5	5967265
A02211.8	–	11.80	.4646	47.0	95.0	11.80	5	5967268
A02211.9	–	11.90	.4685	51.0	102.0	11.90	5	5967271
A02212.0	–	12.00	.4724	51.0	102.0	12.00	5	5967280
A02212.1	–	12.10	.4764	51.0	102.0	12.10	5	5967283
A02212.2	–	12.20	.4803	51.0	102.0	12.20	5	5967289
A02212.5	–	12.50	.4921	51.0	102.0	12.50	5	5967292
A0221/2	1/2	12.70	.5000	60.0	98.0	12.70	5	5967178
A02213.0	–	13.00	.5118	51.0	102.0	13.00	5	5967295
A02213.5	–	13.50	.5315	54.0	107.0	13.50	1	5967298
A02214.0	–	14.00	.5512	54.0	107.0	14.00	1	5967309
A0229/16	9/16	14.29	.5625	67.0	105.0	14.29	1	5966956
A02214.5	–	14.50	.5709	56.0	111.0	14.50	1	5967313
A02215.0	–	15.00	.5906	56.0	111.0	15.00	1	5967316
A02215.5	–	15.50	.6102	58.0	115.0	15.50	1	5967319
A0225/8	5/8	15.88	.6250	73.0	111.0	15.88	1	5966863
A02216.0	–	16.00	.6299	58.0	115.0	16.00	1	5967059

A=Styles in Set, B=No. in Set, C=Diameters in Set.



Product	Nr.	A	B	C	Pack Qty	MID
A0882005	2005	A022	24	1.0 mm - 10.5 mm x 0.5 mm + 3.3 mm, 4.2 mm, 6.8 mm, 10.2 mm	1	5966976



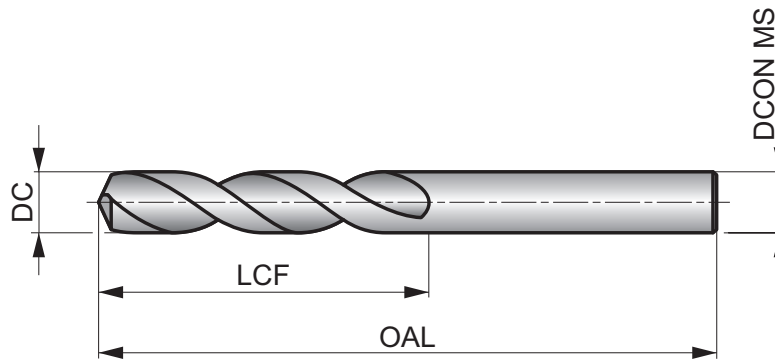
A520



ADX HSS Stub Drill, TiN Coated

High performance drill, able to produce high quality and accurate holes at high speeds and feeds (H9 hole tolerance). A 130° thinned point which helps with self-centering and reduces cutting forces. This drill should be used in machines with constant feed only. TiN coating extends the tool life.

ADX



HSS	DIN 1897	2.5xD
130°	TiN	
λ 32-40°	R	DC h8

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 174 M	P1.2 ■ 194 M	P1.3 ■ 200 M	P2.1 ■ 148 M	P2.2 ■ 131 K	P2.3 ■ 115 G	P3.1 ■ 102 I	P3.2 ■ 82 I	P3.3 ■ 69 G	P4.1 ■ 62 I	P4.2 ■ 52 G	P4.3 ■ 43 E	M1.1 ■ 135 I	M1.2 ■ 115 I
M2.1 ■ 121 I	M2.2 ■ 98 I	M3.1 ■ 62 I	M3.2 ■ 52 I	M3.3 ■ 46 I	M4.1 ■ 66 G	K1.1 ■ 157 M	K1.2 ■ 118 K	K1.3 ■ 89 K	K2.1 ■ 121 J	K2.2 ■ 98 J	K2.3 ■ 79 F	K3.1 ■ 108 J	K3.2 ■ 82 J
K3.3 ■ 66 F	K4.1 ■ 98 J	K4.2 ■ 75 J	K4.3 ■ 56 F	K4.4 ■ 46 F	K4.5 ■ 39 F	K5.1 ■ 112 J	K5.2 ■ 85 J	K5.3 ■ 66 F	N1.1 ■ 180 I	N1.2 ■ 135 I	N1.3 ■ 92 M	N2.1 ■ 187 K	N2.2 ■ 167 K
N2.3 ■ 121 K	N3.1 ■ 279 K	N3.2 ■ 164 I	N3.3 ■ 82 E	N4.1 ■ 213 G	N4.2 ■ 164 G	N4.3 ■ 115 F	S1.1 ■ 112 I	S1.2 ■ 66 G	S1.3 ■ 13 B	S2.1 ■ 49 G	S2.2 ■ 33 E	S3.1 ■ 36 G	S3.2 ■ 23 E
S4.1 ■ 30 G	S4.2 ■ 20 E												

Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A5203.0	-	3.00	.1181	16.0	46.0	3.00	1	5970286
A5203.1	-	3.10	.1220	18.0	49.0	3.10	1	5970447
A5201/8	1/8	3.18	.1250	18.0	49.0	3.18	1	5970282
A5203.2	-	3.20	.1260	18.0	49.0	3.20	1	5970483
A5203.3	-	3.30	.1299	18.0	49.0	3.30	1	5970513
A5203.4	-	3.40	.1339	20.0	52.0	3.40	1	5970545
A5203.5	-	3.50	.1378	20.0	52.0	3.50	1	5970567
A5203.6	-	3.60	.1417	20.0	52.0	3.60	1	5970571
A5203.7	-	3.70	.1457	20.0	52.0	3.70	1	5970574
A5203.8	-	3.80	.1496	22.0	55.0	3.80	1	5970576
A5203.9	-	3.90	.1535	22.0	55.0	3.90	1	5970578
A5204.0	-	4.00	.1575	22.0	55.0	4.00	1	5970462
A5204.1	-	4.10	.1614	22.0	55.0	4.10	1	5970466
A5204.2	-	4.20	.1654	22.0	55.0	4.20	1	5970469
A5204.3	-	4.30	.1693	24.0	58.0	4.30	1	5970471
A52011/64	11/64	4.37	.1719	24.0	58.0	4.37	1	5970200
A5204.4	-	4.40	.1732	24.0	58.0	4.40	1	5970474
A5204.5	-	4.50	.1772	24.0	58.0	4.50	1	5970477
A5204.6	-	4.60	.1811	24.0	58.0	4.60	1	5970480

Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A5204.7	-	4.70	.1850	24.0	58.0	4.70	1	5970485
A5203/16	3/16	4.76	.1875	26.0	62.0	4.76	1	5970451
A5204.8	-	4.80	.1890	26.0	62.0	4.80	1	5970488
A5204.9	-	4.90	.1929	26.0	62.0	4.90	1	5970490
A5205.0	-	5.00	.1969	26.0	62.0	5.00	1	5970493
A5205.1	-	5.10	.2008	26.0	62.0	5.10	1	5970496
A5205.2	-	5.20	.2047	26.0	62.0	5.20	1	5970499
A5205.3	-	5.30	.2087	26.0	62.0	5.30	1	5970502
A5205.4	-	5.40	.2126	28.0	66.0	5.40	1	5970505
A5205.5	-	5.50	.2165	28.0	66.0	5.50	1	5970508
A5207/32	7/32	5.56	.2188	28.0	66.0	5.56	1	5970139
A5205.6	-	5.60	.2205	28.0	66.0	5.60	1	5970511
A5205.7	-	5.70	.2244	28.0	66.0	5.70	1	5970516
A5205.8	-	5.80	.2283	28.0	66.0	5.80	1	5970519
A5205.9	-	5.90	.2323	28.0	66.0	5.90	1	5970521
A5206.0	-	6.00	.2362	28.0	66.0	6.00	1	5970532
A5206.1	-	6.10	.2402	31.0	70.0	6.10	1	5970537
A5206.2	-	6.20	.2441	31.0	70.0	6.20	1	5970539
A5206.3	-	6.30	.2480	31.0	70.0	6.30	1	5970541



Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A5201/4	1/4	6.35	.2500	31.0	70.0	6.35	1	5970236
A5206.4	–	6.40	.2520	31.0	70.0	6.40	1	5970543
A5206.5	–	6.50	.2559	31.0	70.0	6.50	1	5970547
A5206.6	–	6.60	.2598	31.0	70.0	6.60	1	5970549
A5206.7	–	6.70	.2638	31.0	70.0	6.70	1	5970551
A52017/64	17/64	6.75	.2656	34.0	74.0	6.75	1	5970254
A5206.8	–	6.80	.2677	34.0	74.0	6.80	1	5970553
A5206.9	–	6.90	.2717	34.0	74.0	6.90	1	5970555
A5207.0	–	7.00	.2756	34.0	74.0	7.00	1	5970557
A5207.1	–	7.10	.2795	34.0	74.0	7.10	1	5970559
A5209/32	9/32	7.14	.2813	34.0	74.0	7.14	1	5970027
A5207.2	–	7.20	.2835	34.0	74.0	7.20	1	5970561
A5207.4	–	7.40	.2913	34.0	74.0	7.40	1	5970565
A5207.5	–	7.50	.2953	34.0	74.0	7.50	1	5970569
A5207.8	–	7.80	.3071	37.0	79.0	7.80	1	5970042
A5207.9	–	7.90	.3110	37.0	79.0	7.90	1	5970092
A5205/16	5/16	7.94	.3125	37.0	79.0	7.94	1	5970524
A5208.0	–	8.00	.3150	37.0	79.0	8.00	1	5970143
A5208.1	–	8.10	.3189	37.0	79.0	8.10	1	5970147
A5208.2	–	8.20	.3228	37.0	79.0	8.20	1	5970152
A5208.3	–	8.30	.3268	37.0	79.0	8.30	1	5969954
A5208.4	–	8.40	.3307	37.0	79.0	8.40	1	5969957
A5208.5	–	8.50	.3346	37.0	79.0	8.50	1	5969960
A5208.6	–	8.60	.3386	40.0	84.0	8.60	1	5969963
A5208.7	–	8.70	.3425	40.0	84.0	8.70	1	5969966
A52011/32	11/32	8.73	.3438	40.0	84.0	8.73	1	5970199
A5208.8	–	8.80	.3465	40.0	84.0	8.80	1	5969969
A5209.0	–	9.00	.3543	40.0	84.0	9.00	1	5969975
A5209.1	–	9.10	.3583	40.0	84.0	9.10	1	5969979

Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A5209.5	–	9.50	.3740	40.0	84.0	9.50	1	5970004
A5203/8	3/8	9.52	.3750	43.0	89.0	9.52	1	5970455
A5209.6	–	9.60	.3780	43.0	89.0	9.60	1	5970009
A5209.7	–	9.70	.3819	43.0	89.0	9.70	1	5970014
A52025/64	25/64	9.92	.3906	43.0	89.0	9.92	1	5970269
A52010.0	–	10.00	.3937	43.0	89.0	10.00	1	5970290
A52010.1	–	10.10	.3976	43.0	89.0	10.10	1	5970294
A52010.2	–	10.20	.4016	43.0	89.0	10.20	1	5970298
A52010.3	–	10.30	.4055	43.0	89.0	10.30	1	5970302
A52013/32	13/32	10.32	.4063	43.0	89.0	10.32	1	5970232
A52010.5	–	10.50	.4134	43.0	89.0	10.50	1	5970178
A52027/64	27/64	10.72	.4219	47.0	95.0	10.72	1	5970274
A52010.8	–	10.80	.4252	47.0	95.0	10.80	1	5970184
A52011.0	–	11.00	.4331	47.0	95.0	11.00	1	5970188
A52011.1	–	11.10	.4370	47.0	95.0	11.10	1	5970189
A5207/16	7/16	11.11	.4375	47.0	95.0	11.11	1	5970132
A52011.3	–	11.30	.4449	47.0	95.0	11.30	1	5970191
A52011.5	–	11.50	.4528	47.0	95.0	11.50	1	5970194
A52011.7	–	11.70	.4606	47.0	95.0	11.70	1	5970196
A52011.8	–	11.80	.4646	47.0	95.0	11.80	1	5970197
A52012.0	–	12.00	.4724	51.0	102.0	12.00	1	5970201
A52012.1	–	12.10	.4764	51.0	102.0	12.10	1	5970202
A52012.2	–	12.20	.4803	51.0	102.0	12.20	1	5970205
A52031/64	31/64	12.30	.4844	51.0	102.0	12.30	1	5970458
A52012.5	–	12.50	.4921	51.0	102.0	12.50	1	5970213
A5201/2	1/2	12.70	.5000	51.0	102.0	12.70	1	5970203
A52012.8	–	12.80	.5039	51.0	102.0	12.80	1	5970222
A52013.0	–	13.00	.5118	51.0	102.0	13.00	1	5970228

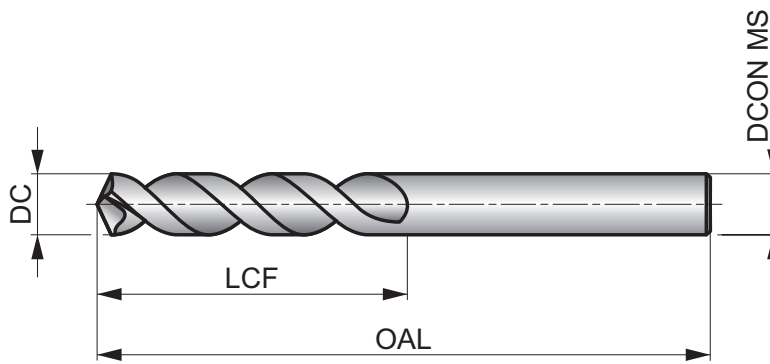


QC41P



HSS Parabolic Flute Stub Length Drill, Bright Finish Inch Sizes

Unique combination of a parabolic flute and short length for long chipping materials. The self-centering 135° split point allows for good location and easier penetration with low thrust force. Bright finish makes it suitable for soft or non-ferrous materials. Not recommended for hand drilling sheet metal.



HSS	ANSI	3×D
135°	Bright	
λ>35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 89 F	P1.2 ■ 98 F	P1.3 ■ 102 F	P2.1 ■ 75 F	P2.2 ■ 66 H	P2.3 ■ 59 D	P3.1 ■ 69 F	P3.2 ■ 56 F	P3.3 ■ 46 D	P4.1 ■ 39 F	P4.2 ■ 33 D	M1.1 ■ 121 H	M1.2 ■ 102 H	M2.1 ■ 108 H
M2.2 ■ 89 H	M3.1 ■ 56 F	M3.2 ■ 49 F	M3.3 ■ 46 D	M4.1 ■ 49 D	K1.1 ■ 151 H	K1.2 ■ 112 H	K1.3 ■ 85 H	K2.1 ■ 98 F	K2.2 ■ 79 F	K3.1 ■ 85 F	K3.2 ■ 66 F	K4.1 ■ 79 F	K4.2 ■ 59 F
K5.1 ■ 89 F	K5.2 ■ 69 F	N1.1 ■ 351 H	N1.2 ■ 262 H	N1.3 ■ 177 H	N2.1 ■ 325 H	N2.2 ■ 325 H	N3.1 ■ 135 H	N3.2 ■ 79 H	N3.3 ■ 39 I	S1.1 ■ 89 H	S1.2 ■ 49 F		

Product	DC (inch)	DC (Wire gauge size)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
QC41P1/16	1/16	—	.0625	5/8	1.5/8	.063	12	5997255
QC41P5/64	5/64	—	.0781	11/16	1.11/16	.078	12	5997589
QC41P3/32	3/32	—	.0938	3/4	1.3/4	.094	12	5997553
QC41PN40	—	N40	.0980	13/16	1.13/16	.098	12	5997238
QC41PN39	—	N39	.0995	13/16	1.13/16	.100	12	5997234
QC41PN38	—	N38	.1015	13/16	1.13/16	.102	12	5997231
QC41PN36	—	N36	.1065	13/16	1.13/16	.106	12	5997226
QC41P7/64	7/64	—	.1094	13/16	1.13/16	.109	12	5997602
QC41PN35	—	N35	.1100	7/8	1.7/8	.110	12	5997224
QC41PN34	—	N34	.1110	7/8	1.7/8	.111	12	5997220
QC41PN33	—	N33	.1130	7/8	1.7/8	.113	12	5997218
QC41PN32	—	N32	.1160	7/8	1.7/8	.116	12	5997216
QC41PN31	—	N31	.1200	7/8	1.7/8	.120	12	5997214
QC41P1/8	1/8	—	.1250	7/8	1.7/8	.125	12	5997265
QC41PN30	—	N30	.1285	15/16	1.15/16	.129	12	5997212
QC41PN29	—	N29	.1360	15/16	1.15/16	.136	12	5997208
QC41PN28	—	N28	.1405	15/16	1.15/16	.141	12	5997206
QC41P9/64	9/64	—	.1406	15/16	1.15/16	.141	12	5997618
QC41PN27	—	N27	.1440	1"	2.1/16	.144	12	5997203
QC41PN26	—	N26	.1470	1"	2.1/16	.147	12	5997200
QC41PN25	—	N25	.1495	1"	2.1/16	.149	12	5997194
QC41PN24	—	N24	.1520	1"	2.1/16	.152	12	5997191
QC41P5/32	5/32	—	.1563	1"	2.1/16	.156	12	5997586

Product	DC (inch)	DC (Wire gauge size)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
QC41PN22	—	N22	.1570	1.1/16	2.1/8	.157	12	5997185
QC41PN21	—	N21	.1590	1.1/16	2.1/8	.159	12	5997182
QC41PN20	—	N20	.1610	1.1/16	2.1/8	.161	12	5997178
QC41PN19	—	N19	.1660	1.1/16	2.1/8	.166	12	5997168
QC41PN18	—	N18	.1695	1.1/16	2.1/8	.170	12	5997163
QC41P11/64	11/64	—	.1719	1.1/16	2.1/8	.172	12	5997274
QC41PN16	—	N16	.1770	1.1/8	2.3/16	.177	12	5997304
QC41PN15	—	N15	.1800	1.1/8	2.3/16	.180	12	5997300
QC41P3/16	3/16	—	.1875	1.1/8	2.3/16	.188	12	5997550
QC41PN12	—	N12	.1890	1.3/16	2.1/4	.189	12	5997282
QC41PN11	—	N11	.1910	1.3/16	2.1/4	.191	12	5997247
QC41PN10	—	N10	.1935	1.3/16	2.1/4	.194	12	5997222
QC41PN9	—	N9	.1960	1.3/16	2.1/4	.196	12	5997252
QC41PN8	—	N8	.1990	1.3/16	2.1/4	.199	12	5997249
QC41PN7	—	N7	.2010	1.3/16	2.1/4	.201	12	5997245
QC41P13/64	13/64	—	.2031	1.3/16	2.1/4	.203	12	5997286
QC41PN6	—	N6	.2040	1.1/4	2.3/8	.204	12	5997243
QC41PN4	—	N4	.2090	1.1/4	2.3/8	.209	12	5997236
QC41P7/32	7/32	—	.2188	1.1/4	2.3/8	.219	12	5997599
QC41PN1	—	N1	.2280	1.5/16	2.7/16	.228	12	5997197
QC41P1/4	1/4	—	.2500	1.3/8	2.1/2	.250	12	5997262
QC41P17/64	17/64	—	.2656	1.7/16	2.5/8	.266	12	5997651
QC41P9/32	9/32	—	.2813	1.1/2	2.11/16	.281	12	5997615



Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(inch)	(inch)	(inch)	(inch)		
QC41P19/64	19/64	—	.2969	1.9/16	2.3/4	.297	12	5997699
QC41P5/16	5/16	—	.3125	1.5/8	2.13/16	.313	6	5997583
QC41P11/32	11/32	—	.3438	1.11/16	3"	.344	6	5997271
QC41P23/64	23/64	—	.3594	1.3/4	3.1/16	.359	6	5997707
QC41P3/8	3/8	—	.3750	1.13/16	3.1/8	.375	6	5997556
QC41P25/64	25/64	—	.3906	1.7/8	3.1/4	.391	6	5997539
QC41P13/32	13/32	—	.4063	1.15/16	3.5/16	.406	6	5997278
QC41P27/64	27/64	—	.4219	2"	3.3/8	.422	6	5997543
QC41P7/16	7/16	—	.4375	2.1/16	3.7/16	.438	6	5997595
QC41P29/64	29/64	—	.4531	2.1/8	3.9/16	.453	6	5997546

Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(inch)	(inch)	(inch)	(inch)		
QC41P15/32	15/32	—	.4688	2.1/8	3.5/8	.469	6	5997535
QC41P31/64	31/64	—	.4844	2.3/16	3.3/4	.484	6	5997559
QC41P1/2	1/2	—	.5000	2.1/4	3.3/4	.500	6	5997259
QC41P33/64	33/64	—	.5156	2.3/8	3.7/8	.516	1	5997562
QC41P17/32	17/32	—	.5313	2.3/8	3.7/8	.531	1	5997606
QC41P9/16	9/16	—	.5625	2.1/2	4"	.563	1	5997610
QC41P37/64	37/64	—	.5781	2.5/8	4.1/8	.578	1	5997567
QC41P5/8	5/8	—	.6250	2.3/4	4.1/4	.625	1	5997592
QC41P11/16	11/16	—	.6875	2.7/8	4.5/8	.688	1	5997268



A920

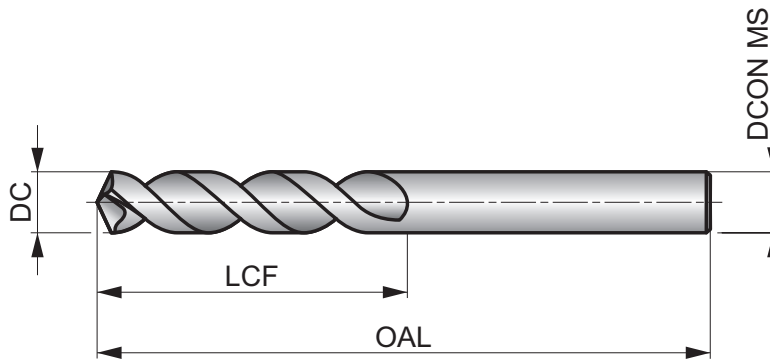


PFX HSS-E (5% Cobalt) Stub Drill, Bright Finish

High performance drill, able to produce high quality and accurate holes at high speeds and feeds (H10 hole tolerance). Self-centering 130° point angle and special parabolic flute design help to drill deep holes in a single pass. Suitable for many materials.



PFX



HSS-E	DIN ANSI	3xD
130°	Bright	
$\lambda > 35^\circ$	R	DC h8

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 138 J	P1.2 ■ 154 J	P1.3 ■ 161 J	P2.1 ■ 118 J	P2.2 ■ 105 I	P2.3 ■ 92 E	P3.1 ■ 112 I	P3.2 ■ 89 I	P3.3 ■ 75 E	P4.1 ■ 66 I	P4.2 ■ 56 E	P4.3 ■ 46 E	M1.1 ■ 69 F	M1.2 ■ 56 F
M2.1 ■ 59 F	M2.2 ■ 49 F	M3.1 ■ 26 F	M3.2 ■ 23 F	M3.3 ■ 20 F	M4.1 ■ 30 D	K1.1 ■ 112 L	K1.2 ■ 82 L	K1.3 ■ 62 L	K2.1 ■ 105 L	K2.2 ■ 85 L	K2.3 ■ 69 J	K3.1 ■ 92 L	K3.2 ■ 72 L
K3.3 ■ 56 J	K4.1 ■ 85 L	K4.2 ■ 66 L	K4.3 ■ 46 J	K4.4 ■ 39 J	K4.5 ■ 33 J	K5.1 ■ 98 L	K5.2 ■ 72 L	K5.3 ■ 56 J	N1.1 ■ 246 L	N1.2 ■ 184 L	N1.3 ■ 125 N	N2.1 ■ 203 N	N2.2 ■ 180 N
N2.3 ■ 131 N	N3.1 ■ 367 J	N3.2 ■ 217 J	N3.3 ■ 108 H	N4.1 ■ 180 J	N4.2 ■ 131 H	S1.1 ■ 98 G	S1.2 ■ 59 G	S1.3 ■ 33 C	S2.1 ■ 39 G	S2.2 ■ 26 E	S3.1 ■ 30 G	S3.2 ■ 20 E	S4.1 ■ 23 G
S4.2 ■ 16 E													

Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A9201.0	—	1.00	.0394	6.0	26.0	1.00	1	5972252
A9203/64	3/64	1.19	.0469	13.0	35.0	1.19	1	5972320
A9201.2	—	1.20	.0472	8.0	30.0	1.20	1	5972261
A9201.25	—	1.25	.0492	8.0	30.0	1.25	1	5972265
A9201.3	—	1.30	.0512	8.0	30.0	1.30	1	5972269
A9201.35	—	1.35	.0531	9.0	32.0	1.35	1	5972273
A9201.4	—	1.40	.0551	9.0	32.0	1.40	1	5972277
A9201.5	—	1.50	.0591	9.0	32.0	1.50	1	5972292
A9201.55	—	1.55	.0610	10.0	34.0	1.55	1	5972352
A9201/16	1/16	1.59	.0625	16.0	41.0	1.59	1	5972536
A9201.6	—	1.60	.0630	10.0	34.0	1.60	1	5972389
A9201.7	—	1.70	.0669	10.0	34.0	1.70	1	5972434
A9201.8	—	1.80	.0709	11.0	36.0	1.80	1	5972524
A9201.9	—	1.90	.0748	11.0	36.0	1.90	1	5972532
A9205/64	5/64	1.98	.0781	17.0	43.0	1.98	1	5972343
A9202.0	—	2.00	.0787	12.0	38.0	2.00	1	5972340
A9202.1	—	2.10	.0827	12.0	38.0	2.10	1	5972344
A9202.15	—	2.15	.0846	13.0	40.0	2.15	1	5972346
A9202.2	—	2.20	.0866	13.0	40.0	2.20	1	5972348

Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A9202.3	—	2.30	.0906	13.0	40.0	2.30	1	5972350
A9202.35	—	2.35	.0925	14.0	43.0	2.35	1	5972208
A9203/32	3/32	2.38	.0938	19.0	41.0	2.38	1	5972313
A9202.4	—	2.40	.0945	14.0	43.0	2.40	1	5972212
A9202.5	—	2.50	.0984	14.0	43.0	2.50	1	5972216
A9202.6	—	2.60	.1024	14.0	43.0	2.60	1	5972220
A9202.7	—	2.70	.1063	16.0	46.0	2.70	1	5972229
A9207/64	7/64	2.78	.1094	21.0	46.0	2.78	1	5972429
A9202.8	—	2.80	.1102	16.0	46.0	2.80	1	5972233
A9202.9	—	2.90	.1142	16.0	46.0	2.90	1	5972236
A9203.0	—	3.00	.1181	16.0	46.0	3.00	1	5972279
A9203.1	—	3.10	.1220	18.0	49.0	3.10	1	5972282
A9201/8	1/8	3.18	.1250	22.0	48.0	3.18	1	5972355
A9203.2	—	3.20	.1260	18.0	49.0	3.20	1	5972286
A9203.3	—	3.30	.1299	18.0	49.0	3.30	1	5972294
A9203.4	—	3.40	.1339	20.0	52.0	3.40	1	5972297
A9203.5	—	3.50	.1378	20.0	52.0	3.50	1	5972301
A9209/64	9/64	3.57	.1406	24.0	49.0	3.57	1	5971669
A9203.6	—	3.60	.1417	20.0	52.0	3.60	1	5972304



Product	DC	DC	DC	LCF	OAL	DCON	Pack	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	MS	Qty	
A9203.7	—	3.70	.1457	20.0	52.0	3.70	1	5972306
A9203.8	—	3.80	.1496	22.0	55.0	3.80	1	5972308
A9205/32	5/32	3.97	.1563	25.0	52.0	3.97	1	5972341
A9204.0	—	4.00	.1575	22.0	55.0	4.00	1	5972334
A9204.1	—	4.10	.1614	22.0	55.0	4.10	1	5972336
A9204.2	—	4.20	.1654	22.0	55.0	4.20	1	5972338
A9204.3	—	4.30	.1693	24.0	58.0	4.30	1	5972342
A92011/64	11/64	4.37	.1719	27.0	54.0	4.37	1	5972413
A9204.4	—	4.40	.1732	24.0	58.0	4.40	1	5972311
A9204.5	—	4.50	.1772	24.0	58.0	4.50	1	5972333
A9204.6	—	4.60	.1811	24.0	58.0	4.60	1	5972354
A9203/16	3/16	4.76	.1875	29.0	56.0	4.76	1	5972312
A9204.8	—	4.80	.1890	26.0	62.0	4.80	1	5972436
A9204.9	—	4.90	.1929	26.0	62.0	4.90	1	5972446
A9205.0	—	5.00	.1969	26.0	62.0	5.00	1	5972317
A9205.1	—	5.10	.2008	26.0	62.0	5.10	1	5972319
A92013/64	13/64	5.16	.2031	30.0	57.0	5.16	1	5972459
A9205.2	—	5.20	.2047	26.0	62.0	5.20	1	5972321
A9205.3	—	5.30	.2087	26.0	62.0	5.30	1	5972323
A9205.4	—	5.40	.2126	28.0	66.0	5.40	1	5972325
A9205.5	—	5.50	.2165	28.0	66.0	5.50	1	5972327
A9207/32	7/32	5.56	.2188	32.0	60.0	5.56	1	5972425
A9205.6	—	5.60	.2205	28.0	66.0	5.60	1	5972329
A9205.7	—	5.70	.2244	28.0	66.0	5.70	1	5972331
A9205.9	—	5.90	.2323	28.0	66.0	5.90	1	5972337
A9206.0	—	6.00	.2362	28.0	66.0	6.00	1	5972347
A9206.2	—	6.20	.2441	31.0	70.0	6.20	1	5972351
A9201/4	1/4	6.35	.2500	35.0	64.0	6.35	1	5972544
A9206.4	—	6.40	.2520	31.0	70.0	6.40	1	5972356
A9206.5	—	6.50	.2559	31.0	70.0	6.50	1	5972359
A9206.6	—	6.60	.2598	31.0	70.0	6.60	1	5972362
A9206.7	—	6.70	.2638	31.0	70.0	6.70	1	5972366
A92017/64	17/64	6.75	.2656	37.0	67.0	6.75	1	5972516
A9206.8	—	6.80	.2677	34.0	74.0	6.80	1	5972369
A9206.9	—	6.90	.2717	34.0	74.0	6.90	1	5972373
A9207.0	—	7.00	.2756	34.0	74.0	7.00	1	5972377
A9207.1	—	7.10	.2795	34.0	74.0	7.10	1	5972381
A9209/32	9/32	7.14	.2813	38.0	68.0	7.14	1	5971666
A9207.5	—	7.50	.2953	34.0	74.0	7.50	1	5972399

Product	DC	DC	DC	LCF	OAL	DCON	Pack	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	MS	Qty	
A92019/64	19/64	7.54	.2969	40.0	70.0	7.54	1	5972318
A9207.8	—	7.80	.3071	37.0	79.0	7.80	1	5972411
A9205/16	5/16	7.94	.3125	41.0	71.0	7.94	1	5972339
A9208.0	—	8.00	.3150	37.0	79.0	8.00	1	5972433
A9208.3	—	8.30	.3268	37.0	79.0	8.30	1	5971662
A9208.4	—	8.40	.3307	37.0	79.0	8.40	1	5971709
A9208.5	—	8.50	.3346	37.0	79.0	8.50	1	5971753
A9208.6	—	8.60	.3386	40.0	84.0	8.60	1	5971796
A9208.7	—	8.70	.3425	40.0	84.0	8.70	1	5971803
A9209.0	—	9.00	.3543	40.0	84.0	9.00	1	5971809
A9209.5	—	9.50	.3740	40.0	84.0	9.50	1	5971638
A9203/8	3/8	9.52	.3750	46.0	79.0	9.52	1	5972322
A92025/64	25/64	9.92	.3906	48.0	83.0	9.92	1	5972267
A92010.0	—	10.00	.3937	43.0	89.0	10.00	1	5972357
A92010.2	—	10.20	.4016	43.0	89.0	10.20	1	5972360
A92010.3	—	10.30	.4055	43.0	89.0	10.30	1	5972361
A92010.5	—	10.50	.4134	43.0	89.0	10.50	1	5972367
A92027/64	27/64	10.72	.4219	51.0	86.0	10.72	1	5972271
A92010.8	—	10.80	.4252	47.0	95.0	10.80	1	5972374
A92011.0	—	11.00	.4331	47.0	95.0	11.00	1	5972378
A9207/16	7/16	11.11	.4375	52.0	87.0	11.11	1	5972421
A92011.5	—	11.50	.4528	47.0	95.0	11.50	1	5972395
A92011.8	—	11.80	.4646	47.0	95.0	11.80	1	5972401
A92012.0	—	12.00	.4724	51.0	102.0	12.00	1	5972415
A92012.5	—	12.50	.4921	51.0	102.0	12.50	1	5972426
A9201/2	1/2	12.70	.5000	57.0	95.0	12.70	1	5972540
A92013.0	—	13.00	.5118	51.0	102.0	13.00	1	5972444
A92014.0	—	14.00	.5512	54.0	107.0	14.00	1	5972464
A92014.5	—	14.50	.5709	56.0	111.0	14.50	1	5972468
A92016.0	—	16.00	.6299	58.0	115.0	16.00	1	5972496
A92016.5	—	16.50	.6496	60.0	119.0	16.50	1	5972500
A92021/32	21/32	16.67	.6563	73.0	114.0	16.67	1	5972245
A92017.0	—	17.00	.6693	60.0	119.0	17.00	1	5972508
A92017.5	—	17.50	.6890	62.0	123.0	17.50	1	5972512
A92018.0	—	18.00	.7087	62.0	123.0	18.00	1	5972520
A92023/32	23/32	18.26	.7188	76.0	121.0	18.26	1	5972256
A92019.0	—	19.00	.7480	64.0	127.0	19.00	1	5972202
A92025/32	25/32	19.84	.7813	83.0	130.0	19.84	1	5972264
A92020.0	—	20.00	.7874	66.0	131.0	20.00	1	5972241

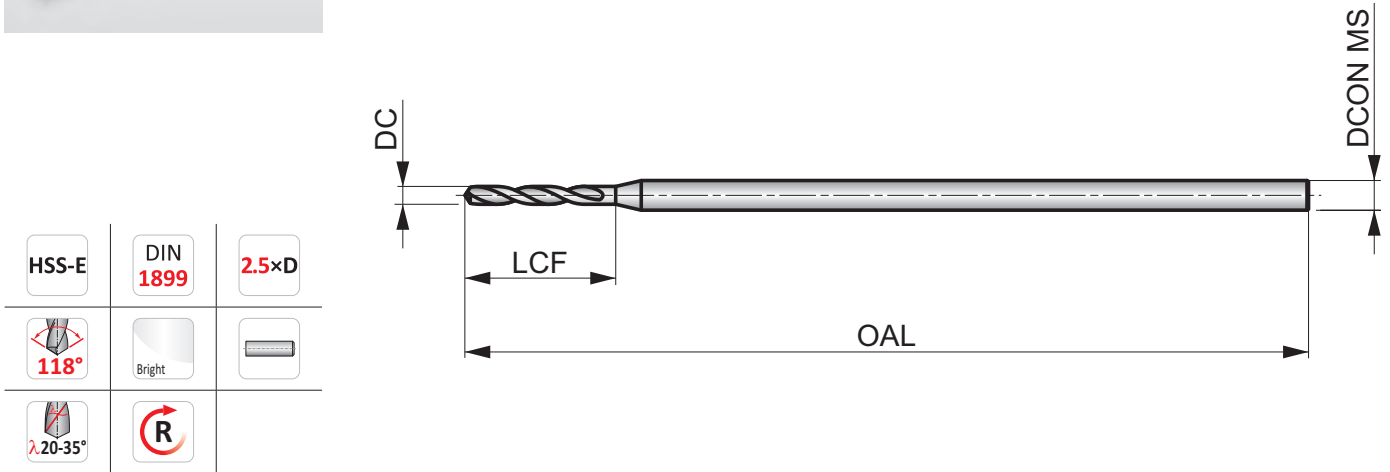


A720



HSS-E (5% Cobalt) Micro Drill, Bright Finish

Micro drill in very small diameters ranging from 0.15 mm to 1.40 mm. To make tool holding easier, all drills have either a 1.00 mm or 1.50 mm shank diameter. The drills all have a 118°, 4-facet point which is a great aid to self-centering and reduces the cutting forces.



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 118 A	P1.2 ■ 131 A	P1.3 ■ 135 A	P2.1 ■ 102 A	P2.2 ■ 89 A	P2.3 ▣ 79 A	P3.1 ■ 82 A	P3.2 ■ 66 A	P3.3 ▣ 56 A	P4.1 ■ 49 A	P4.2 ▣ 43 A	P4.3 ▣ 33 A	M1.1 ▣ 98 A	M1.2 ▣ 85 A
M2.1 ▣ 89 A	M2.2 ▣ 72 A	M3.1 ▣ 39 A	M3.2 ▣ 33 A	M3.3 ▣ 30 A	M4.1 ▣ 49 A	K1.1 ■ 98 A	K1.2 ■ 72 A	K1.3 ■ 56 A	K2.1 ▣ 82 A	K2.2 ▣ 66 A	K2.3 ▣ 52 A	K3.1 ▣ 72 A	K3.2 ▣ 56 A
K3.3 ▣ 43 A	K4.1 ▣ 66 A	K4.2 ▣ 49 A	K4.3 ▣ 36 A	K4.4 ▣ 33 A	K4.5 ▣ 26 A	K5.1 ▣ 75 A	K5.2 ▣ 56 A	K5.3 ▣ 43 A	N1.1 ▣ 115 A	N1.2 ▣ 85 A	N1.3 ▣ 59 A	N2.1 ▣ 138 A	N2.2 ▣ 121 A
N2.3 ▣ 89 A	N3.1 ▣ 223 A	N3.2 ▣ 131 A	N3.3 ▣ 66 A	N4.1 ▣ 157 A	N4.2 ▣ 82 A	S1.1 ▣ 75 A	S1.2 ▣ 56 A	S1.3 ▣ 26 A	S2.1 ▣ 30 A	S2.2 ▣ 20 A	S3.1 ▣ 23 A	S3.2 ▣ 13 A	S4.1 ▣ 16 A
S4.2 ▣ 10 A													

Product	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A720.15	0.15	.0059	1.0	25.0	1.00	10	5971007
A720.18	0.18	.0070	1.4	25.0	1.00	10	5971205
A720.2	0.20	.0079	1.8	25.0	1.00	10	5971249
A720.22	0.22	.0087	1.8	25.0	1.00	10	5971292
A720.25	0.25	.0098	2.2	25.0	1.00	10	5971298
A720.27	0.27	.0106	2.2	25.0	1.00	10	5971301
A720.28	0.28	.0110	2.2	25.0	1.00	10	5971303
A720.3	0.30	.0118	2.2	25.0	1.00	10	5971306
A720.35	0.35	.0138	2.8	25.0	1.00	10	5971122
A720.4	0.40	.0157	3.6	25.0	1.00	10	5971131
A720.45	0.45	.0177	3.6	25.0	1.00	10	5971135
A720.5	0.50	.0197	4.0	25.0	1.00	10	5971139
A720.55	0.55	.0217	4.5	25.0	1.00	10	5971143

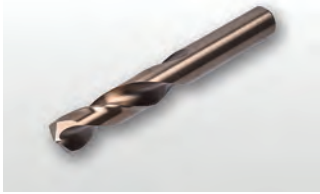
Product	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A720.6	0.60	.0236	4.5	25.0	1.00	10	5971148
A720.62	0.62	.0244	5.0	25.0	1.00	10	5971150
A720.65	0.65	.0256	5.0	25.0	1.00	10	5971154
A720.7	0.70	.0276	5.6	25.0	1.00	10	5971160
A720.75	0.75	.0295	5.6	25.0	1.00	10	5971163
A720.8	0.80	.0315	6.3	25.0	1.50	10	5971167
A720.85	0.85	.0335	6.3	25.0	1.50	10	5971171
A720.9	0.90	.0354	7.1	25.0	1.50	10	5971176
A720.95	0.95	.0374	7.1	25.0	1.50	10	5971181
A720.1.0	1.00	.0394	8.0	25.0	1.50	10	5971186
A720.1.05	1.05	.0413	8.0	25.0	1.50	10	5971191
A720.1.3	1.30	.0512	10.0	25.0	1.50	10	5971210
A720.1.4	1.40	.0551	11.2	25.0	1.50	10	5971214



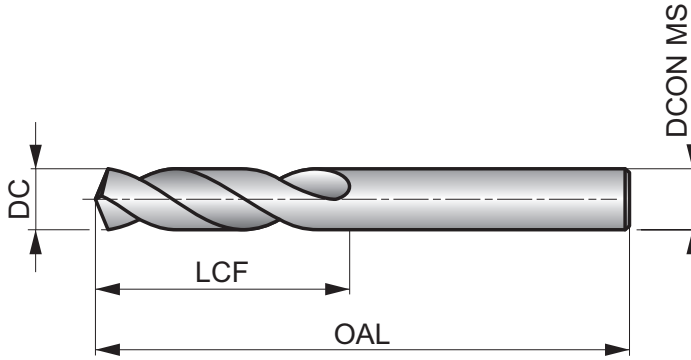
M40CO / M41CO / M42CO

HSS-E Screw Machine Length Drill, Bronze Tempered Surface Finish

Heavy duty bronze tempered stub drill. A 135° self-centering split point reduces cutting forces and prevents the drill from walking when contacting the workpiece. The high speed cobalt tool material with a thicker web greatly improves tool life in tough applications or harder materials.



HSS-E	ANSI	2.5×D
135°	Bronze	
λ 20-35°	R	



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 131 H	P1.2 ■ 148 H	P1.3 ■ 151 H	P2.1 ■ 112 H	P2.2 ■ 98 G	P2.3 ■ 89 F	P3.1 ■ 89 G	P3.2 ■ 69 G	P3.3 ■ 59 F	P4.1 ■ 52 G	P4.2 ■ 43 F	P4.3 ■ 36 E	M1.1 ■ 98 F	M1.2 ■ 85 F
M2.1 ■ 89 F	M2.2 ■ 72 F	M3.1 ■ 43 H	M3.2 ■ 36 H	M3.3 ■ 33 D	M4.1 ■ 49 D	K1.1 ■ 112 K	K1.2 ■ 82 F	K1.3 ■ 62 F	K2.1 ■ 89 F	K2.2 ■ 72 F	K2.3 ■ 59 F	K3.1 ■ 79 F	K3.2 ■ 59 F
K3.3 ■ 49 F	K4.1 ■ 72 F	K4.2 ■ 56 F	K4.3 ■ 39 F	K4.4 ■ 36 F	K4.5 ■ 30 F	K5.1 ■ 82 F	K5.2 ■ 62 F	K5.3 ■ 49 F	N1.1 ■ 115 K	N1.2 ■ 85 K	N1.3 ■ 59 J	N2.1 ■ 157 I	N2.2 ■ 141 I
N2.3 ■ 102 I	N3.1 ■ 223 J	N3.2 ■ 131 K	N3.3 ■ 66 I	N4.1 ■ 115 M	N4.2 ■ 92 K	N4.3 ■ 56 I	S1.1 ■ 98 G	S1.2 ■ 59 F	S1.3 ■ 33 C	S2.1 ■ 39 F	S2.2 ■ 26 C	S3.1 ■ 30 F	S3.2 ■ 20 C
S4.1 ■ 23 F	S4.2 ■ 16 C												

Product	DC (inch)	DC (Wire gauge size)	DC (Letter size)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
M41CON60	—	N60	—	.0400	.500	1.375	.040	12	5996169 1)
M41CON59	—	N59	—	.0410	.500	1.375	.041	12	5996164 1)
M41CON58	—	N58	—	.0420	.500	1.375	.042	12	5996162 1)
M41CON57	—	N57	—	.0430	.500	1.375	.043	12	5996158 1)
M41CON56	—	N56	—	.0465	.500	1.375	.046	12	5996154 1)
M41CON55	—	N55	—	.0520	.625	1.625	.052	12	5996150 1)
M41CON54	—	N54	—	.0550	.625	1.625	.055	12	5996146 1)
M41CON53	—	N53	—	.0595	.625	1.625	.059	12	5996142 1)
M40CO1/16	1/16	—	—	.0625	.625	1.625	.063	12	5996129
M41CON52	—	N52	—	.0635	.688	1.688	.064	12	5996134
M41CON51	—	N51	—	.0670	.688	1.688	.067	12	5996130
M41CON50	—	N50	—	.0700	.688	1.688	.070	12	5996126
M41CON49	—	N49	—	.0730	.688	1.688	.073	12	5996118
M41CON48	—	N48	—	.0760	.688	1.688	.076	12	5996114
M40CO5/64	5/64	—	—	.0781	.688	1.688	.078	12	5995991
M41CON47	—	N47	—	.0785	.688	1.688	.079	12	5996109
M41CON46	—	N46	—	.0810	.750	1.750	.081	12	5996106
M41CON45	—	N45	—	.0820	.750	1.750	.082	12	5996103
M41CON44	—	N44	—	.0860	.750	1.750	.086	12	5996101
M41CON43	—	N43	—	.0890	.750	1.750	.089	12	5996095
M41CON42	—	N42	—	.0935	.750	1.750	.093	12	5996091
M40CO3/32	3/32	—	—	.0938	.750	1.750	.094	12	5995958
M41CON41	—	N41	—	.0960	.813	1.813	.096	12	5996089
M41CON40	—	N40	—	.0980	.813	1.813	.098	12	5996085
M41CON39	—	N39	—	.0995	.813	1.813	.100	12	5996079

1) No Split Point



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
M41CON38	—	N38	—	.1015	.813	1.813	.102	12	5996076
M41CON37	—	N37	—	.1040	.813	1.813	.104	12	5996073
M41CON36	—	N36	—	.1065	.813	1.813	.106	12	5996069
M40C07/64	7/64	—	—	.1094	.813	1.813	.109	12	5996005
M41CON35	—	N35	—	.1100	.875	1.875	.110	12	5996065
M41CON34	—	N34	—	.1110	.875	1.875	.111	12	5996057
M41CON33	—	N33	—	.1130	.875	1.875	.113	12	5996052
M41CON32	—	N32	—	.1160	.875	1.875	.116	12	5996049
M41CON31	—	N31	—	.1200	.875	1.875	.120	12	5996045
M40C01/8	1/8	—	—	.1250	.875	1.875	.125	12	5996145
M41CON30	—	N30	—	.1285	.938	1.938	.129	12	5996041
M41CON29	—	N29	—	.1360	.938	1.938	.136	12	5996031
M41CON28	—	N28	—	.1405	.938	1.938	.141	12	5996027
M40C09/64	9/64	—	—	.1406	.938	1.938	.141	12	5996019
M41CON27	—	N27	—	.1440	1.000	2.063	.144	12	5996021
M41CON26	—	N26	—	.1470	1.000	2.063	.147	12	5996017
M41CON25	—	N25	—	.1495	1.000	2.063	.149	12	5996188
M41CON24	—	N24	—	.1520	1.000	2.063	.152	12	5996185
M41CON23	—	N23	—	.1540	1.000	2.063	.154	12	5996183
M40C05/32	5/32	—	—	.1563	1.000	2.063	.156	12	5995987
M41CON22	—	N22	—	.1570	1.063	2.125	.157	12	5996181
M41CON21	—	N21	—	.1590	1.063	2.125	.159	12	5996175
M41CON20	—	N20	—	.1610	1.063	2.125	.161	12	5996138
M41CON19	—	N19	—	.1660	1.063	2.125	.166	12	5996061
M41CON18	—	N18	—	.1695	1.063	2.125	.170	12	5996012
M40C011/64	11/64	—	—	.1719	1.063	2.125	.172	12	5995976
M41CON17	—	N17	—	.1730	1.125	2.188	.173	12	5996058
M41CON16	—	N16	—	.1770	1.125	2.188	.177	12	5996050
M41CON15	—	N15	—	.1800	1.125	2.188	.180	12	5996046
M41CON14	—	N14	—	.1820	1.125	2.188	.182	12	5996042
M41CON13	—	N13	—	.1850	1.125	2.188	.185	12	5996038
M40C03/16	3/16	—	—	.1875	1.125	2.188	.188	12	5995954
M41CON12	—	N12	—	.1890	1.188	2.250	.189	12	5996034
M41CON11	—	N11	—	.1910	1.188	2.250	.191	12	5996030
M41CON10	—	N10	—	.1935	1.188	2.250	.194	12	5996026
M41CON9	—	N9	—	.1960	1.188	2.250	.196	12	5996489
M41CON8	—	N8	—	.1990	1.188	2.250	.199	12	5996178
M41CON7	—	N7	—	.2010	1.188	2.250	.201	12	5996172
M40C013/64	13/64	—	—	.2031	1.188	2.250	.203	12	5996054
M41CON6	—	N6	—	.2040	1.250	2.375	.204	12	5996166
M41CON5	—	N5	—	.2055	1.250	2.375	.205	12	5996122
M41CON4	—	N4	—	.2090	1.250	2.375	.209	12	5996081
M41CON3	—	N3	—	.2130	1.250	2.375	.213	12	5996035
M40C07/32	7/32	—	—	.2188	1.250	2.375	.219	12	5996002
M41CON2	—	N2	—	.2210	1.313	2.438	.221	12	5996098
M41CON1	—	N1	—	.2280	1.313	2.438	.228	12	5996023
M42COA	—	—	A	.2340	1.313	2.438	.234	12	5996525
M40C015/64	15/64	—	—	.2344	1.313	2.438	.234	12	5996068
M42COB	—	—	B	.2380	1.375	2.500	.238	12	5996569
M42COC	—	—	C	.2420	1.375	2.500	.242	12	5996603
M42COD	—	—	D	.2460	1.375	2.500	.246	12	5996646
M40C01/4	1/4	—	—	.2500	1.375	2.500	.250	12	5996137
M42COF	—	—	F	.2570	1.438	2.625	.257	12	5996657
M42COG	—	—	G	.2610	1.438	2.625	.261	12	5996661
M40C017/64	17/64	—	—	.2656	1.438	2.625	.266	12	5996075
M42COH	—	—	H	.2660	1.500	2.688	.266	12	5996664
M42COI	—	—	I	.2720	1.500	2.688	.272	12	5996493
M42COJ	—	—	J	.2770	1.500	2.688	.277	12	5996497



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
M42COK	—	—	K	.2810	1.500	2.688	.281	12	5996500
M40C09/32	9/32	—	—	.2813	1.500	2.688	.281	12	5996015
M42COL	—	—	L	.2900	1.563	2.750	.290	12	5996503
M42COM	—	—	M	.2950	1.563	2.750	.295	12	5996506
M40C019/64	19/64	—	—	.2969	1.563	2.750	.297	12	5995938
M42CON	—	—	N	.3020	1.625	2.813	.302	12	5996509
M40C05/16	5/16	—	—	.3125	1.625	2.813	.313	6	5995983
M42C00	—	—	O	.3160	1.688	2.938	.316	6	5996512
M42COP	—	—	P	.3230	1.688	2.938	.323	6	5996515
M40C021/64	21/64	—	—	.3281	1.688	2.938	.328	6	5995942
M42COQ	—	—	Q	.3320	1.688	3.000	.332	6	5996518
M42COR	—	—	R	.3390	1.688	3.000	.339	6	5996521
M40C011/32	11/32	—	—	.3438	1.688	3.000	.344	6	5995956
M42COS	—	—	S	.3480	1.750	3.063	.348	6	5996529
M42COT	—	—	T	.3580	1.750	3.063	.358	6	5996532
M40C023/64	23/64	—	—	.3594	1.750	3.063	.359	6	5995946
M42COU	—	—	U	.3680	1.813	3.125	.368	6	5996536
M40C03/8	3/8	—	—	.3750	1.813	3.125	.375	6	5995962
M42COV	—	—	V	.3770	1.875	3.250	.377	6	5996540
M42COW	—	—	W	.3860	1.875	3.250	.386	6	5996544
M40C025/64	25/64	—	—	.3906	1.875	3.250	.391	6	5995948
M42COX	—	—	X	.3970	1.938	3.313	.397	6	5996548
M42COY	—	—	Y	.4040	1.938	3.313	.404	6	5996553
M40C013/32	13/32	—	—	.4063	1.938	3.313	.406	6	5996011
M42COZ	—	—	Z	.4130	2.000	3.375	.413	6	5996557
M40C027/64	27/64	—	—	.4219	2.000	3.375	.422	6	5995950
M40C07/16	7/16	—	—	.4375	2.063	3.438	.438	6	5995998
M40C029/64	29/64	—	—	.4531	2.125	3.563	.453	6	5995952
M40C015/32	15/32	—	—	.4688	2.125	3.625	.469	6	5996063
M40C031/64	31/64	—	—	.4844	2.188	3.688	.484	6	5995964
M40C01/2	1/2	—	—	.5000	2.250	3.750	.500	6	5996133
M40C033/64	33/64	—	—	.5156	2.375	3.875	.516	1	5995966
M40C017/32	17/32	—	—	.5313	2.375	3.875	.531	1	5996071
M40C035/64	35/64	—	—	.5469	2.500	4.000	.547	1	5995968
M40C09/16	9/16	—	—	.5625	2.500	4.000	.563	1	5996008
M40C037/64	37/64	—	—	.5781	2.625	4.125	.578	1	5995969
M40C019/32	19/32	—	—	.5938	2.625	4.125	.594	1	5995936
M40C039/64	39/64	—	—	.6094	2.750	4.250	.609	1	5995970
M40C05/8	5/8	—	—	.6250	2.750	4.250	.625	1	5995994
M40C041/64	41/64	—	—	.6406	2.875	4.500	.641	1	5995972
M40C021/32	21/32	—	—	.6563	2.875	4.500	.656	1	5995940
M40C043/64	43/64	—	—	.6719	2.875	4.625	.672	1	5995974
M40C011/16	11/16	—	—	.6875	2.875	4.625	.688	1	5995934
M40C045/64	45/64	—	—	.7031	3.000	4.750	.703	1	5995978
M40C023/32	23/32	—	—	.7188	3.000	4.750	.719	1	5995944
M40C047/64	47/64	—	—	.7344	3.125	5.000	.734	1	5995981
M40C03/4	3/4	—	—	.7500	3.125	5.000	.750	1	5995960

A=Styles in Set, B=No. in Set, C=Diameters in Set.



Product	A	B	C	Pack Qty	MID
C29M40C0SET	M40CO	29	1/16 - 1/2 x 64ths	1	5995616



Product	A	B	C	Pack Qty	MID
C60M41C0SET	M41CO	60	N1 - N60	1	5995667



Product	A	B	C	Pack Qty	MID
C26M42C0SET	M42CO	26	A - Z, 1/4	1	5995585

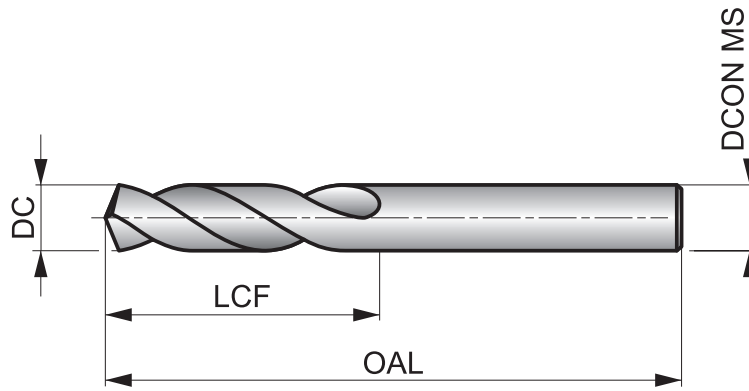


A117



HSS-E (8% Cobalt) Stub Drill, Bronze Tempered Surface Finish

Drill recommended for use in difficult materials and applications. A 135° split point makes self-centering easier and also reduces the cutting forces. Can be relied on to produce a precise hole and quality finish. The bronze finish is a thin oxide layer and it is an indication for Cobalt.



HSS-E	DIN 1897	2.5×D
135°	Bronze	
λ 20-35°	R	DC h8

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 131 H	P1.2 ■ 148 H	P1.3 ■ 151 H	P2.1 ■ 112 H	P2.2 ■ 98 G	P2.3 ■ 89 F	P3.1 ■ 89 G	P3.2 ■ 69 G	P3.3 ■ 59 F	P4.1 ■ 152 G	P4.2 ■ 43 F	P4.3 ■ 36 E	M1.1 ■ 98 F	M1.2 ■ 85 F
M2.1 ■ 89 F	M2.2 ■ 72 F	M3.1 ■ 43 H	M3.2 ■ 36 H	M3.3 ■ 33 H	M4.1 ■ 49 D	K1.1 ■ 112 K	K1.2 ■ 82 F	K1.3 ■ 62 F	K2.1 ■ 89 F	K2.2 ■ 72 F	K2.3 ■ 59 F	K3.1 ■ 79 F	K3.2 ■ 59 F
K3.3 ■ 49 F	K4.1 ■ 72 F	K4.2 ■ 56 F	K4.3 ■ 39 F	K4.4 ■ 36 F	K4.5 ■ 30 F	K5.1 ■ 82 F	K5.2 ■ 62 F	K5.3 ■ 49 F	N1.1 ■ 115 K	N1.2 ■ 85 K	N1.3 ■ 59 J	N2.1 ■ 157 I	N2.2 ■ 141 I
N2.3 ■ 102 I	N3.1 ■ 223 J	N3.2 ■ 131 K	N3.3 ■ 66 I	N4.1 ■ 115 M	N4.2 ■ 92 K	N4.3 ■ 56 I	S1.1 ■ 98 G	S1.2 ■ 59 F	S1.3 ■ 33 C	S2.1 ■ 39 F	S2.2 ■ 26 C	S3.1 ■ 30 F	S3.2 ■ 20 C
S4.1 ■ 23 F	S4.2 ■ 16 C												

DC <= 1.5mm 118° point; DC < 3.00mm 5% cobalt.

Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A1171.0	-	1.00	.0394	6.0	26.0	1.00	10	5967942
A1171.1	-	1.10	.0433	7.0	28.0	1.10	10	5967947
A1171.2	-	1.20	.0472	8.0	30.0	1.20	10	5967951
A1171.3	-	1.30	.0512	8.0	30.0	1.30	10	5967805
A1171.4	-	1.40	.0551	9.0	32.0	1.40	10	5967809
A1171.5	-	1.50	.0591	9.0	32.0	1.50	10	5967815
A1171.6	-	1.60	.0630	10.0	34.0	1.60	10	5967820
A1171.7	-	1.70	.0669	10.0	34.0	1.70	10	5967825
A1171.8	-	1.80	.0709	11.0	36.0	1.80	10	5967829
A1171.9	-	1.90	.0748	11.0	36.0	1.90	10	5967834
A1172.0	-	2.00	.0787	12.0	38.0	2.00	10	5967870
A1172.1	-	2.10	.0827	12.0	38.0	2.10	10	5967872
A1172.2	-	2.20	.0866	13.0	40.0	2.20	10	5967874
A1172.3	-	2.30	.0906	13.0	40.0	2.30	10	5967878
A1172.4	-	2.40	.0945	14.0	43.0	2.40	10	5967880
A1172.5	-	2.50	.0984	14.0	43.0	2.50	10	5967882
A1172.6	-	2.60	.1024	14.0	43.0	2.60	10	5967884
A1172.7	-	2.70	.1063	16.0	46.0	2.70	10	5967886

Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A1172.8	-	2.80	.1102	16.0	46.0	2.80	10	5967888
A1172.9	-	2.90	.1142	16.0	46.0	2.90	10	5967890
A1173.0	-	3.00	.1181	16.0	46.0	3.00	10	5967892
A1173.1	-	3.10	.1220	18.0	49.0	3.10	10	5967894
A1171/8	1/8	3.18	.1250	18.0	49.0	3.18	10	5967848
A1173.2	-	3.20	.1260	18.0	49.0	3.20	10	5967896
A1173.3	-	3.30	.1299	18.0	49.0	3.30	10	5967900
A1173.4	-	3.40	.1339	20.0	52.0	3.40	10	5967902
A1173.5	-	3.50	.1378	20.0	52.0	3.50	10	5967904
A1173.6	-	3.60	.1417	20.0	52.0	3.60	10	5967906
A1173.7	-	3.70	.1457	20.0	52.0	3.70	10	5967909
A1173.8	-	3.80	.1496	22.0	55.0	3.80	10	5967911
A1173.9	-	3.90	.1535	22.0	55.0	3.90	10	5967914
A1175/32	5/32	3.97	.1563	22.0	55.0	3.97	10	5968092
A1174.0	-	4.00	.1575	22.0	55.0	4.00	10	5967923
A1174.1	-	4.10	.1614	22.0	55.0	4.10	10	5967931
A1174.2	-	4.20	.1654	22.0	55.0	4.20	10	5968034
A1174.3	-	4.30	.1693	24.0	58.0	4.30	10	5968088



Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A1174.4	–	4.40	.1732	24.0	58.0	4.40	10	5968126
A1174.5	–	4.50	.1772	24.0	58.0	4.50	10	5968149
A1174.6	–	4.60	.1811	24.0	58.0	4.60	10	5968177
A1174.7	–	4.70	.1850	24.0	58.0	4.70	10	5968185
A1173/16	3/16	4.76	.1875	26.0	62.0	4.76	10	5967916
A1174.8	–	4.80	.1890	26.0	62.0	4.80	10	5968190
A1174.9	–	4.90	.1929	26.0	62.0	4.90	10	5968194
A1175.0	–	5.00	.1969	26.0	62.0	5.00	10	5968198
A1175.1	–	5.10	.2008	26.0	62.0	5.10	10	5968039
A1175.2	–	5.20	.2047	26.0	62.0	5.20	10	5968044
A1175.3	–	5.30	.2087	26.0	62.0	5.30	10	5968049
A1175.4	–	5.40	.2126	28.0	66.0	5.40	10	5968054
A1175.5	–	5.50	.2165	28.0	66.0	5.50	10	5968058
A1175.6	–	5.60	.2205	28.0	66.0	5.60	10	5968063
A1175.7	–	5.70	.2244	28.0	66.0	5.70	10	5968068
A1175.8	–	5.80	.2283	28.0	66.0	5.80	10	5968073
A1175.9	–	5.90	.2323	28.0	66.0	5.90	10	5968078
A1176.0	–	6.00	.2362	28.0	66.0	6.00	10	5968096
A1176.1	–	6.10	.2402	31.0	70.0	6.10	10	5968103
A1176.2	–	6.20	.2441	31.0	70.0	6.20	10	5968106
A1176.3	–	6.30	.2480	31.0	70.0	6.30	10	5968109
A1171/4	1/4	6.35	.2500	31.0	70.0	6.35	10	5967844
A1176.4	–	6.40	.2520	31.0	70.0	6.40	10	5968112
A1176.5	–	6.50	.2559	31.0	70.0	6.50	10	5968115
A1176.6	–	6.60	.2598	31.0	70.0	6.60	10	5968118
A1176.7	–	6.70	.2638	31.0	70.0	6.70	10	5968121
A1176.8	–	6.80	.2677	34.0	74.0	6.80	10	5968124
A1176.9	–	6.90	.2717	34.0	74.0	6.90	10	5968128
A1177.0	–	7.00	.2756	34.0	74.0	7.00	10	5968131
A1177.1	–	7.10	.2795	34.0	74.0	7.10	10	5968133
A1177.2	–	7.20	.2835	34.0	74.0	7.20	10	5968135
A1177.3	–	7.30	.2874	34.0	74.0	7.30	10	5968137

Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A1177.4	–	7.40	.2913	34.0	74.0	7.40	10	5968139
A1177.5	–	7.50	.2953	34.0	74.0	7.50	10	5968141
A1177.6	–	7.60	.2992	37.0	79.0	7.60	10	5968143
A1177.7	–	7.70	.3031	37.0	79.0	7.70	10	5968145
A1177.8	–	7.80	.3071	37.0	79.0	7.80	10	5968147
A1177.9	–	7.90	.3110	37.0	79.0	7.90	10	5968150
A1175/16	5/16	7.94	.3125	37.0	79.0	7.94	10	5968083
A1178.0	–	8.00	.3150	37.0	79.0	8.00	10	5968152
A1178.1	–	8.10	.3189	37.0	79.0	8.10	10	5968155
A1178.2	–	8.20	.3228	37.0	79.0	8.20	10	5968157
A1178.3	–	8.30	.3268	37.0	79.0	8.30	10	5968159
A1178.4	–	8.40	.3307	37.0	79.0	8.40	10	5968161
A1178.5	–	8.50	.3346	37.0	79.0	8.50	10	5968163
A1178.6	–	8.60	.3386	40.0	84.0	8.60	10	5968165
A1178.7	–	8.70	.3425	40.0	84.0	8.70	10	5968168
A1178.8	–	8.80	.3465	40.0	84.0	8.80	10	5968173
A1178.9	–	8.90	.3504	40.0	84.0	8.90	10	5968180
A1179.0	–	9.00	.3543	40.0	84.0	9.00	10	5968429
A1179.1	–	9.10	.3583	40.0	84.0	9.10	10	5968454
A1179.2	–	9.20	.3622	40.0	84.0	9.20	10	5968491
A1179.3	–	9.30	.3661	40.0	84.0	9.30	10	5968544
A1179.5	–	9.50	.3740	40.0	84.0	9.50	10	5968609
A1179.9	–	9.90	.3898	43.0	89.0	9.90	10	5968432
A11710.0	–	10.00	.3937	43.0	89.0	10.00	10	5967856
A11710.2	–	10.20	.4016	43.0	89.0	10.20	5	5967858
A11710.5	–	10.50	.4134	43.0	89.0	10.50	5	5967860
A11711.0	–	11.00	.4331	47.0	95.0	11.00	5	5967862
A11711.5	–	11.50	.4528	47.0	95.0	11.50	5	5967864
A11712.0	–	12.00	.4724	51.0	102.0	12.00	5	5967866
A1171/2	1/2	12.70	.5000	51.0	102.0	12.70	5	5967839
A11713.0	–	13.00	.5118	51.0	102.0	13.00	5	5967868



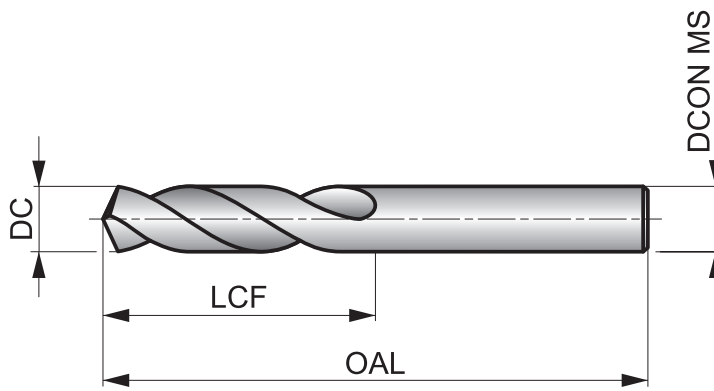
A620



HSS-E (5% Cobalt) Stub Drill, Bronze Tempered Surface Finish

Drill with 130° point angle which helps self-centering and reduces the cutting forces. The bronze finish is a thin oxide layer and it is an indication for Cobalt. Suitable for drilling in many materials. Should not be used in hand-held devices.

HSS-E	DIN 1897	2.5×D
130°	Bronze	
λ20-35°	R	DC h8



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 131 H	P1.2 148 H	P1.3 151 H	P2.1 112 H	P2.2 98 G	P2.3 89 F	P3.1 89 G	P3.2 69 G	P3.3 59 F	P4.1 52 G	P4.2 43 F	P4.3 36 E	M1.1 98 F	M1.2 85 F
M2.1 89 F	M2.2 72 F	M3.1 43 H	M3.2 36 H	M3.3 33 H	M4.1 49 D	K1.1 112 K	K1.2 82 F	K1.3 62 F	K2.1 89 F	K2.2 72 F	K2.3 59 F	K3.1 79 F	K3.2 59 F
K3.3 49 F	K4.1 72 F	K4.2 56 F	K4.3 39 F	K4.4 36 F	K4.5 30 F	K5.1 82 F	K5.2 62 F	K5.3 49 F	N1.1 131 K	N1.2 98 K	N1.3 66 J	N2.1 161 I	N2.2 144 I
N2.3 105 I	N3.1 223 J	N3.2 131 K	N3.3 66 I	N4.1 131 L	N4.2 105 K	N4.3 59 I	S1.1 98 G	S1.2 59 F	S1.3 33 C	S2.1 39 F	S2.2 26 C	S3.1 30 F	S3.2 20 C
S4.1 23 F	S4.2 16 C												

Product	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A6202.5	2.50	.0984	14.0	43.0	2.50	10	6499854
A6202.6	2.60	.1024	14.0	43.0	2.60	10	6499855
A6202.7	2.70	.1063	16.0	46.0	2.70	10	6499856
A6202.8	2.80	.1102	16.0	46.0	2.80	10	6499857
A6202.9	2.90	.1142	16.0	46.0	2.90	10	6499858
A6203.0	3.00	.1181	16.0	46.0	3.00	10	6499859
A6203.1	3.10	.1220	18.0	49.0	3.10	10	6499880
A6203.2	3.20	.1260	18.0	49.0	3.20	10	6499881
A6203.3	3.30	.1299	18.0	49.0	3.30	10	6499882
A6203.4	3.40	.1339	20.0	52.0	3.40	10	6499883
A6203.5	3.50	.1378	20.0	52.0	3.50	10	6499884
A6204.0	4.00	.1575	22.0	55.0	4.00	10	6499889
A6204.1	4.10	.1614	22.0	55.0	4.10	10	6499890
A6204.2	4.20	.1654	22.0	55.0	4.20	10	6499891
A6204.3	4.30	.1693	24.0	58.0	4.30	10	6499892
A6204.5	4.50	.1772	24.0	58.0	4.50	10	6499894
A6204.7	4.70	.1850	24.0	58.0	4.70	10	6499896
A6204.9	4.90	.1929	26.0	62.0	4.90	10	6499898
A6205.0	5.00	.1969	26.0	62.0	5.00	10	6499899

Product	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A6205.1	5.10	.2008	26.0	62.0	5.10	10	6499900
A6205.2	5.20	.2047	26.0	62.0	5.20	10	6499901
A6205.3	5.30	.2087	26.0	62.0	5.30	10	6499902
A6205.5	5.50	.2165	28.0	66.0	5.50	10	6499904
A6205.6	5.60	.2205	28.0	66.0	5.60	10	6499905
A6206.0	6.00	.2362	28.0	66.0	6.00	10	6499909
A6206.2	6.20	.2441	31.0	70.0	6.20	10	6499911
A6206.3	6.30	.2480	31.0	70.0	6.30	10	6499912
A6206.5	6.50	.2559	31.0	70.0	6.50	10	6499914
A6206.8	6.80	.2677	34.0	74.0	6.80	10	6499917
A6206.9	6.90	.2717	34.0	74.0	6.90	10	6499918
A6207.0	7.00	.2756	34.0	74.0	7.00	10	6499919
A6207.5	7.50	.2953	34.0	74.0	7.50	10	6499924
A6207.8	7.80	.3071	37.0	79.0	7.80	10	6499927
A6208.0	8.00	.3150	37.0	79.0	8.00	10	6499929
A6208.2	8.20	.3228	37.0	79.0	8.20	10	6499931
A6208.5	8.50	.3346	37.0	79.0	8.50	10	6499934
A6208.7	8.70	.3425	40.0	84.0	8.70	10	6499936
A6209.0	9.00	.3543	40.0	84.0	9.00	10	6499939



Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(mm)	(inch)	(mm)	(mm)	(mm)		
A6209.5	9.50	.3740	40.0	84.0	9.50	10	6499944
A62010.0	10.00	.3937	43.0	89.0	10.00	10	6499949
A62010.2	10.20	.4016	43.0	89.0	10.20	5	6499950
A62010.3	10.30	.4055	43.0	89.0	10.30	5	6590108
A62010.5	10.50	.4134	43.0	89.0	10.50	5	6499951
A62010.8	10.80	.4252	47.0	95.0	10.80	5	6499952

Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(mm)	(inch)	(mm)	(mm)	(mm)		
A62011.0	11.00	.4331	47.0	95.0	11.00	5	6499953
A62011.5	11.50	.4528	47.0	95.0	11.50	5	6499954
A62012.0	12.00	.4724	51.0	102.0	12.00	5	6499955
A62012.5	12.50	.4921	51.0	102.0	12.50	5	6499957
A62013.0	13.00	.5118	51.0	102.0	13.00	5	6499959

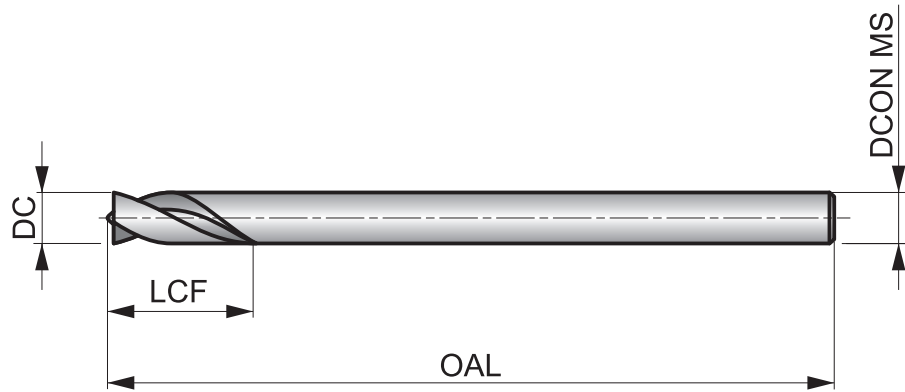


A723



HSS-E (5% Cobalt) Spot Weld Drill, Bronze Tempered Surface Finish

Drill with specially designed lip and spur point to remove or "drill out" spot welded areas, commonly for removing welds in a vehicle repair shop. Short flute length makes it more sturdy and less prone to shattering when being used in a hand-held device. The bronze finish is a thin oxide layer and an indication for Cobalt.



HSS-E	DORMER	1×D
Bronze		λ20-35°
R	DC h8	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1	P1.2	P1.3	P2.1	P2.2	P3.1	P3.2	P4.1
■ 108 D	■ 121 D	■ 125 D	■ 92 D	■ 82 C	■ 66 C	■ 66 C	■ 66 C

Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(mm)	(inch)					
A7236.0X66	6.00	.2362	18.0	66.0	6.00	10	7189822
A7236.0X93	6.00	.2362	18.0	93.0	6.00	10	7189823
A7238.0X79	8.00	.3150	24.0	79.0	8.00	10	7189824
A7238.0X117	8.00	.3150	24.0	117.0	8.00	10	7189825



		HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	
Material code (BMC)		HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	
Basic standard group (BSG)		ANSI	DIN 338	ANSI	ANSI	ANSI	DIN 338	DIN 338	NAS 907	ANSI	DIN 338	DIN 338	NAS 907	DIN 338
Usable length (ULDR)		4xD	4xD	4xD	4xD	4xD	4xD	4xD	4xD	4xD	4xD	4xD	4xD	
Application angle														
Coating		Bright	Bright	Bright	Bright	ST	ST	ST	ST	TIN-Tip	TIN-Tip	TIN-Tip	ST	ST
Shank														
Spiral form														
Hand (Cutting direction)														
Cooling (CSP)														
Product Family Code		R10P R15P R18P	2A	L10	R10H R18H	R10 R15 R18	A100	A101	R10A R15A R18A	A012	A002	A002S	R10B R15B R18B	A108
PSF cutting diameters range		N97 - 11/16	0.15 - 15.00	1/32 - 1/2	N80 - 1/2	N80 - 11/16	0.20 - 20.00	1.00 - 12.00	1/16 - 1/2	N80 - 3/4	1.00 - 16.00	2.00 - 13.00	1/16 - 1/2	1.00 - 16.00
P	P1	■	■	■	■	■	■	■	■	■	■	■	■	■
	P2	■	■	■	■	■	■	■	■	■	■	■	■	■
	P3	■	■	■	■	■	■	■	■	■	■	■	■	■
	P4	■	■	■	■	■	■	■	■	■	■	■	■	■
M	M1	■	■	■	■	■	■	■	■	■	■	■	■	■
	M2	■	■	■	■	■	■	■	■	■	■	■	■	■
	M3	■	■	■	■	■	■	■	■	■	■	■	■	■
	M4	■	■	■	■	■	■	■	■	■	■	■	■	■
K	K1	■	■	■	■	■	■	■	■	■	■	■	■	■
	K2	■	■	■	■	■	■	■	■	■	■	■	■	■
	K3	■	■	■	■	■	■	■	■	■	■	■	■	■
	K4	■	■	■	■	■	■	■	■	■	■	■	■	■
	K5	■	■	■	■	■	■	■	■	■	■	■	■	■
N	N1	■	■	■	■	■	■	■	■	■	■	■	■	■
	N2	■	■	■	■	■	■	■	■	■	■	■	■	■
	N3	■	■	■	■	■	■	■	■	■	■	■	■	■
	N4	■	■	■	■	■	■	■	■	■	■	■	■	■
	N5	■	■	■	■	■	■	■	■	■	■	■	■	■
S	S1	■	■	■	■	■	■	■	■	■	■	■	■	■
	S2	■	■	■	■	■	■	■	■	■	■	■	■	■
	S3	■	■	■	■	■	■	■	■	■	■	■	■	■
	S4	■	■	■	■	■	■	■	■	■	■	■	■	■
H	H1													
	H2													
	H3													
	H4													

■ Primary use ■ Possible use

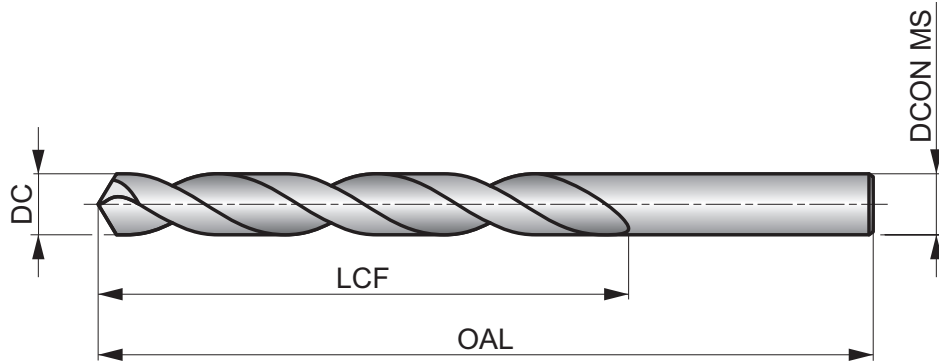


R10P / R15P / R18P



HSS General Purpose Jobber Drill, Bright Finish

A general duty cost effective drill with conventional flute design and 118° point. Bright finish improves chip flow in soft or non-ferrous materials.



HSS	ANSI	4×D
118°	Bright	
λ20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 108 H	P1.2 ■ 121 H	P1.3 ■ 125 H	P2.1 ■ 92 H	P2.2 ■ 82 F	P2.3 ▣ 72 E	P3.1 ▣ 62 F	P3.2 ▣ 49 F	P3.3 ▣ 43 E	P4.1 ▣ 36 F	P4.2 ▣ 33 E	P4.3 ▣ 26 D	M1.1 ▣ 69 E	M1.2 ▣ 56 E
M2.1 ▣ 59 E	M2.2 ▣ 49 E	M3.1 ▣ 30 G	M3.2 ▣ 26 G	M3.3 ▣ 23 C	M4.1 ▣ 30 C	K1.1 ■ 98 H	K1.2 ■ 72 F	K1.3 ■ 56 F	K2.1 ■ 82 E	K2.2 ■ 66 E	K2.3 ■ 52 E	K3.1 ▣ 72 E	K3.2 ▣ 56 E
K3.3 ▣ 43 E	K4.1 ▣ 66 E	K4.2 ▣ 49 E	K4.3 ▣ 36 E	K4.4 ▣ 33 E	K4.5 ▣ 26 E	K5.1 ▣ 75 E	K5.2 ▣ 56 E	K5.3 ▣ 43 E	N1.1 ■ 108 J	N1.2 ■ 82 J	N1.3 ■ 56 I	N2.1 ■ 138 H	N2.2 ■ 121 H
N2.3 ■ 89 H	N3.1 ▣ 194 H	N3.2 ▣ 115 I	N3.3 ▣ 59 G	N4.1 ■ 98 J	N4.2 ■ 92 H	N4.3 ▣ 46 F	S1.1 ■ 75 E	S1.2 ▣ 39 D	S1.3 ▣ 20 B	S2.1 ▣ 26 E	S2.2 ▣ 13 A	S3.1 ▣ 20 E	S3.2 ▣ 10 A
S4.1 ▣ 16 E	S4.2 ▣ 7 A												

Product	DC (inch)	DC (Wire gauge size)	DC (Letter size)	DC (inch)	LCF (inch)	OAL (inch)	Pack Qty	MID
R18PN97	—	N97	—	.0059	1/16	3/4	12	5999308
R18PN96	—	N96	—	.0063	1/16	3/4	12	5999303
R18PN95	—	N95	—	.0067	1/16	3/4	12	5999300
R18PN94	—	N94	—	.0071	1/16	3/4	12	5999296
R18PN93	—	N93	—	.0075	1/16	3/4	12	5999292
R18PN92	—	N92	—	.0079	1/16	3/4	12	5999288
R18PN91	—	N91	—	.0083	5/64	3/4	12	5999280
R18PN90	—	N90	—	.0087	5/64	3/4	12	5999276
R18PN89	—	N89	—	.0091	5/64	3/4	12	5999269
R18PN88	—	N88	—	.0095	5/64	3/4	12	5999265
R18PN87	—	N87	—	.0100	5/64	3/4	12	5999261
R18PN86	—	N86	—	.0105	3/32	3/4	12	5999258
R18PN85	—	N85	—	.0110	3/32	3/4	12	5999254
R18PN84	—	N84	—	.0115	3/32	3/4	12	5999250
R18PN83	—	N83	—	.0120	3/32	3/4	12	5999247
R18PN82	—	N82	—	.0125	3/32	3/4	12	5999238
R18PN81	—	N81	—	.0130	3/32	3/4	12	5999234
R18PN80	—	N80	—	.0135	1/8	3/4	12	5999230
R18PN79	—	N79	—	.0145	1/8	3/4	12	5999223



Product	DC (inch)	DC (Wire gauge size)	DC (Letter size)	DC (inch)	LCF (inch)	OAL (inch)	Pack Qty	MID
R10P1/64	1/64	–	–	.0156	3/16	3/4	12	5998515
R18PN78	–	N78	–	.0160	3/16	7/8	12	5999220
R18PN77	–	N77	–	.0180	3/16	7/8	12	5999217
R18PN76	–	N76	–	.0200	3/16	7/8	12	5999214
R18PN75	–	N75	–	.0210	1/4	1"	12	5999212
R18PN74	–	N74	–	.0225	1/4	1"	12	5999209
R18PN73	–	N73	–	.0240	5/16	1.1/8	12	5999393
R18PN72	–	N72	–	.0250	5/16	1.1/8	12	5999389
R18PN71	–	N71	–	.0260	3/8	1.1/4	12	5999385
R18PN70	–	N70	–	.0280	3/8	1.1/4	12	5999382
R18PN69	–	N69	–	.0292	1/2	1.3/8	12	5999328
R18PN68	–	N68	–	.0310	1/2	1.3/8	12	5999284
R10P1/32	1/32	–	–	.0313	1/2	1.3/8	12	5998506
R18PN67	–	N67	–	.0320	1/2	1.3/8	12	5999242
R18PN66	–	N66	–	.0330	1/2	1.3/8	12	5999205
R18PN65	–	N65	–	.0350	5/8	1.1/2	12	5999154
R18PN64	–	N64	–	.0360	5/8	1.1/2	12	5999148
R18PN63	–	N63	–	.0370	5/8	1.1/2	12	5999145
R18PN62	–	N62	–	.0380	5/8	1.1/2	12	5999143
R18PN61	–	N61	–	.0390	11/16	1.5/8	12	5999141
R18PN60	–	N60	–	.0400	11/16	1.5/8	12	5999137
R18PN59	–	N59	–	.0410	11/16	1.5/8	12	5999128
R18PN58	–	N58	–	.0420	11/16	1.5/8	12	5999124
R18PN57	–	N57	–	.0430	3/4	1.3/4	12	5999120
R18PN56	–	N56	–	.0465	3/4	1.3/4	12	5999116
R10P3/64	3/64	–	–	.0469	3/4	1.3/4	12	5998282
R18PN55	–	N55	–	.0520	7/8	1.7/8	12	5999109
R18PN54	–	N54	–	.0550	7/8	1.7/8	12	5999106
R18PN53	–	N53	–	.0595	7/8	1.7/8	12	5999103
R10P1/16	1/16	–	–	.0625	7/8	1.7/8	12	5998498
R18PN52	–	N52	–	.0635	7/8	1.7/8	12	5999100
R18PN51	–	N51	–	.0670	1"	2"	12	5999097
R18PN50	–	N50	–	.0700	1"	2"	12	5999094
R18PN49	–	N49	–	.0730	1"	2"	12	5999088
R18PN48	–	N48	–	.0760	1"	2"	12	5999086
R10P5/64	5/64	–	–	.0781	1"	2"	12	5998325
R18PN47	–	N47	–	.0785	1"	2"	12	5999083
R18PN46	–	N46	–	.0810	1.1/8	2.1/8	12	5999077
R18PN45	–	N45	–	.0820	1.1/8	2.1/8	12	5999073
R18PN44	–	N44	–	.0860	1.1/8	2.1/8	12	5999070
R18PN43	–	N43	–	.0890	1.1/4	2.1/4	12	5999067
R18PN42	–	N42	–	.0935	1.1/4	2.1/4	12	5999064
R10P3/32	3/32	–	–	.0938	1.1/4	2.1/4	12	5998275
R18PN41	–	N41	–	.0960	1.3/8	2.3/8	12	5999061
R18PN40	–	N40	–	.0980	1.3/8	2.3/8	12	5999057
R18PN39	–	N39	–	.0995	1.3/8	2.3/8	12	5999049
R18PN38	–	N38	–	.1015	1.7/16	2.1/2	12	5999045
R18PN37	–	N37	–	.1040	1.7/16	2.1/2	12	5999037
R18PN36	–	N36	–	.1065	1.7/16	2.1/2	12	5999032
R10P7/64	7/64	–	–	.1094	1.1/2	2.5/8	12	5998340
R18PN35	–	N35	–	.1100	1.1/2	2.5/8	12	5999028
R18PN34	–	N34	–	.1110	1.1/2	2.5/8	12	5999024
R18PN33	–	N33	–	.1130	1.1/2	2.5/8	12	5999021
R18PN32	–	N32	–	.1160	1.5/8	2.3/4	12	5999018
R18PN31	–	N31	–	.1200	1.5/8	2.3/4	12	5999014
R10P1/8	1/8	–	–	.1250	1.5/8	2.3/4	12	5998519
R18PN30	–	N30	–	.1285	1.5/8	2.3/4	12	5999010
R18PN29	–	N29	–	.1360	1.3/4	2.7/8	12	5999001



Product	DC	DC	DC	DC	LCF	OAL	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)		
R18PN28	–	N28	–	.1405	1.3/4	2.7/8	12	5999167
R10P9/64	9/64	–	–	.1406	1.3/4	2.7/8	12	5998350
R18PN27	–	N27	–	.1440	1.7/8	3"	12	5999163
R18PN26	–	N26	–	.1470	1.7/8	3"	12	5999160
R18PN25	–	N25	–	.1495	1.7/8	3"	12	5999157
R18PN24	–	N24	–	.1520	2"	3.1/8	12	5999151
R18PN23	–	N23	–	.1540	2"	3.1/8	12	5999112
R10P5/32	5/32	–	–	.1563	2"	3.1/8	12	5998323
R18PN22	–	N22	–	.1570	2"	3.1/8	12	5999080
R18PN21	–	N21	–	.1590	2.1/8	3.1/4	12	5999041
R18PN20	–	N20	–	.1610	2.1/8	3.1/4	12	5998996
R18PN19	–	N19	–	.1660	2.1/8	3.1/4	12	5999228
R18PN18	–	N18	–	.1695	2.1/8	3.1/4	12	5999224
R10P11/64	11/64	–	–	.1719	2.1/8	3.1/4	12	5998539
R18PN17	–	N17	–	.1730	2.3/16	3.3/8	12	5999221
R18PN16	–	N16	–	.1770	2.3/16	3.3/8	12	5999218
R18PN15	–	N15	–	.1800	2.3/16	3.3/8	12	5999215
R18PN14	–	N14	–	.1820	2.3/16	3.3/8	12	5999211
R18PN13	–	N13	–	.1850	2.5/16	3.1/2	12	5999208
R10P3/16	3/16	–	–	.1875	2.5/16	3.1/2	12	5998272
R18PN12	–	N12	–	.1890	2.5/16	3.1/2	12	5999206
R18PN11	–	N11	–	.1910	2.5/16	3.1/2	12	5999203
R18PN10	–	N10	–	.1935	2.7/16	3.5/8	12	5999201
R18PN9	–	N9	–	.1960	2.7/16	3.5/8	12	5999272
R18PN8	–	N8	–	.1990	2.7/16	3.5/8	12	5999226
R18PN7	–	N7	–	.2010	2.7/16	3.5/8	12	5999374
R10P13/64	13/64	–	–	.2031	2.7/16	3.5/8	12	5998296
R18PN6	–	N6	–	.2040	2.1/2	3.3/4	12	5999132
R18PN5	–	N5	–	.2055	2.1/2	3.3/4	12	5999091
R18PN4	–	N4	–	.2090	2.1/2	3.3/4	12	5999053
R18PN3	–	N3	–	.2130	2.1/2	3.3/4	12	5999005
R10P7/32	7/32	–	–	.2188	2.1/2	3.3/4	12	5998337
R18PN2	–	N2	–	.2210	2.5/8	3.7/8	12	5999235
R18PN1	–	N1	–	.2280	2.5/8	3.7/8	12	5999197
R15PA	–	–	A	.2340	2.5/8	3.7/8	12	5998837
R10P15/64	15/64	–	–	.2344	2.5/8	3.7/8	12	5998365
R15PB	–	–	B	.2380	2.3/4	4"	12	5998840
R15PC	–	–	C	.2420	2.3/4	4"	12	5998843
R15PD	–	–	D	.2460	2.3/4	4"	12	5998845
R10P1/4	1/4	–	–	.2500	2.3/4	4"	12	5998511
R15PF	–	–	F	.2570	2.7/8	4.1/8	12	5998854
R15PG	–	–	G	.2610	2.7/8	4.1/8	12	5998857
R10P17/64	17/64	–	–	.2656	2.7/8	4.1/8	12	5998417
R15PH	–	–	H	.2660	2.7/8	4.1/8	12	5998860
R15PI	–	–	I	.2720	2.7/8	4.1/8	12	5998863
R15PJ	–	–	J	.2770	2.7/8	4.1/8	12	5998866
R15PK	–	–	K	.2810	2.15/16	4.1/4	12	5998869
R10P9/32	9/32	–	–	.2813	2.15/16	4.1/4	12	5998347
R15PL	–	–	L	.2900	2.15/16	4.1/4	12	5998873
R15PM	–	–	M	.2950	3.1/16	4.3/8	12	5998876
R10P19/64	19/64	–	–	.2969	3.1/16	4.3/8	12	5998425
R15PN	–	–	N	.3020	3.1/16	4.3/8	12	5998882
R10P5/16	5/16	–	–	.3125	3.3/16	4.1/2	6	5998320
R15PO	–	–	O	.3160	3.3/16	4.1/2	6	5998889
R15PP	–	–	P	.3230	3.5/16	4.5/8	6	5998893
R10P21/64	21/64	–	–	.3281	3.5/16	4.5/8	6	5998252
R15PQ	–	–	Q	.3320	3.7/16	4.3/4	6	5998899
R15PR	–	–	R	.3390	3.7/16	4.3/4	6	5998902



Product	DC (inch)	DC (Wire gauge size)	DC (Letter size)	DC (inch)	LCF (inch)	OAL (inch)	Pack Qty	MID
R10P11/32	11/32	—	—	.3438	3.7/16	4.3/4	6	5998530
R15PS	—	—	S	.3480	3.1/2	4.7/8	6	5998906
R15PT	—	—	T	.3580	3.1/2	4.7/8	6	5998912
R10P23/64	23/64	—	—	.3594	3.1/2	4.7/8	6	5998255
R15PU	—	—	U	.3680	3.5/8	5"	6	5998916
R10P3/8	3/8	—	—	.3750	3.5/8	5"	6	5998287
R15PV	—	—	V	.3770	3.5/8	5"	6	5998922
R15PW	—	—	W	.3860	3.3/4	5.1/8	6	5998926
R10P25/64	25/64	—	—	.3906	3.3/4	5.1/8	6	5998259
R15PX	—	—	X	.3970	3.3/4	5.1/8	6	5998929
R15PY	—	—	Y	.4040	3.7/8	5.1/4	6	5998934
R10P13/32	13/32	—	—	.4063	3.7/8	5.1/4	6	5998248
R15PZ	—	—	Z	.4130	3.7/8	5.1/4	6	5999257
R10P27/64	27/64	—	—	.4219	3.15/16	5.3/8	6	5998264
R10P7/16	7/16	—	—	.4375	4.1/16	5.1/2	6	5998334
R10P29/64	29/64	—	—	.4531	4.3/16	5.5/8	6	5998268
R10P15/32	15/32	—	—	.4688	4.5/16	5.3/4	6	5998331
R10P31/64	31/64	—	—	.4844	4.3/8	5.7/8	6	5998292
R10P1/2	1/2	—	—	.5000	4.1/2	6"	6	5998502
R10P33/64	33/64	—	—	.5156	4.13/16	6.5/8	1	5998300
R10P17/32	17/32	—	—	.5313	4.13/16	6.5/8	1	5998409
R10P35/64	35/64	—	—	.5469	4.13/16	6.5/8	1	5998303
R10P9/16	9/16	—	—	.5625	4.13/16	6.5/8	1	5998343
R10P37/64	37/64	—	—	.5781	4.13/16	6.5/8	1	5998307
R10P19/32	19/32	—	—	.5938	5.3/16	7.1/8	1	5998421
R10P39/64	39/64	—	—	.6094	5.3/16	7.1/8	1	5998310
R10P5/8	5/8	—	—	.6250	5.3/16	7.1/8	1	5998328
R10P41/64	41/64	—	—	.6406	5.3/16	7.1/8	1	5998313
R10P21/32	21/32	—	—	.6563	5.3/16	7.1/8	1	5998429
R10P43/64	43/64	—	—	.6719	5.5/8	7.5/8	1	5998316
R10P11/16	11/16	—	—	.6875	5.5/8	7.5/8	1	5998525

A=Styles in Set, B=No. in Set, C=Diameters in Set.



Product	A	B	C	Pack Qty	MID
C15R10PSET	R10P	15	1/16-1/2 x 32nds	1	5995528



Product	A	B	C	Pack Qty	MID
C29R10PSET	R10P	29	1/16 - 1/2 x 64ths	1	5995624



Product	A	B	C	Pack Qty	MID
C20R18PSET	R18P	20	N61 - N80	1	5995547



Product	A	B	C	Pack Qty	MID
C60R18PSET	R18P	60	N1 - N60	1	5995672



Product	A	B	C	Pack Qty	MID
C26R15PSET	R15P	26	A - Z	1	5995593



Product	A	B	C	Pack Qty	MID
C115COMBPSET	R10P, R18P, R15P	115	1/16-1/2 x 64ths, N1-N60, A-Z	1	5995681



Product	A	B	C	Pack Qty	MID
C114COMBPSET	R10P, R18P, 2A	114	1/16-1/2 x 64ths, N1-N60, 1-13mm x 0.5 mm	1	5995643

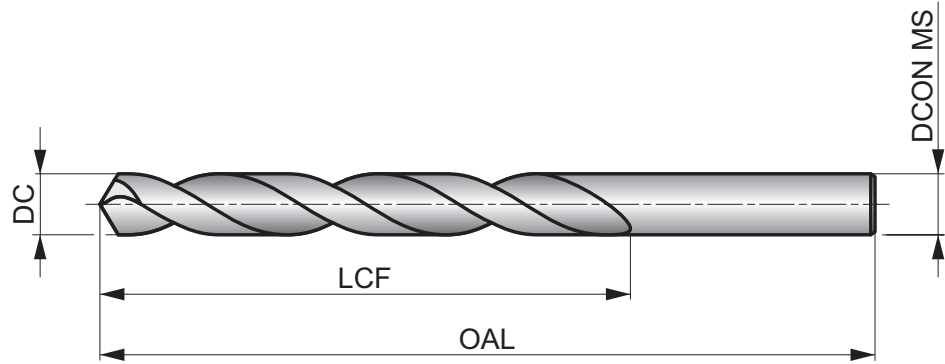


2A



HSS General Purpose Jobber Drill, Bright Finish Metric Sizes

HSS drill with conventional flute design and 118° point. Bright finish improves chip flow in soft or non-ferrous materials.



HSS	DIN 338	4×D
118°	Bright	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 108 H	P1.2 ■ 121 H	P1.3 ■ 125 H	P2.1 ■ 92 H	P2.2 ■ 82 F	P2.3 ■ 72 E	P3.1 ■ 62 F	P3.2 ■ 49 F	P3.3 ■ 43 E	P4.1 ■ 36 F	P4.2 ■ 33 E	P4.3 ■ 26 D	M1.1 ■ 69 E	M1.2 ■ 56 E
M2.1 ■ 59 E	M2.2 ■ 49 E	M3.1 ■ 30 G	M3.2 ■ 26 G	M3.3 ■ 23 C	M4.1 ■ 30 C	K1.1 ■ 98 H	K1.2 ■ 72 F	K1.3 ■ 56 F	K2.1 ■ 82 E	K2.2 ■ 66 E	K2.3 ■ 52 E	K3.1 ■ 72 E	K3.2 ■ 56 E
K3.3 ■ 43 E	K4.1 ■ 66 E	K4.2 ■ 49 E	K4.3 ■ 36 E	K4.4 ■ 33 E	K4.5 ■ 26 E	K5.1 ■ 75 E	K5.2 ■ 56 E	K5.3 ■ 43 E	N1.1 ■ 108 J	N1.2 ■ 82 J	N1.3 ■ 56 I	N2.1 ■ 138 H	N2.2 ■ 121 H
N2.3 ■ 89 H	N3.1 ■ 194 H	N3.2 ■ 115 I	N3.3 ■ 59 G	N4.1 ■ 98 J	N4.2 ■ 92 H	N4.3 ■ 46 F	S1.1 ■ 75 E	S1.2 ■ 39 D	S1.3 ■ 20 B	S2.1 ■ 26 E	S2.2 ■ 13 A	S3.1 ■ 20 E	S3.2 ■ 10 A
S4.1 ■ 16 E	S4.2 ■ 7 A												

Product	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
2A.15	0.15	.0059	1.5	19.0	0.15	12	6000290
2A.17	0.17	.0067	1.5	19.0	0.17	12	6000294
2A.18	0.18	.0071	1.5	19.0	0.18	12	6000297
2A.19	0.19	.0075	1.5	19.0	0.19	12	6000300
2A.2	0.20	.0079	2.5	19.0	0.20	12	6000303
2A.21	0.21	.0083	2.5	19.0	0.21	12	6000308
2A.22	0.22	.0087	2.5	19.0	0.22	12	6000311
2A.23	0.23	.0091	2.5	19.0	0.23	12	6000314
2A.24	0.24	.0094	2.5	19.0	0.24	12	6000317
2A.25	0.25	.0098	3.0	19.0	0.25	12	6000320
2A.26	0.26	.0102	3.0	19.0	0.26	12	6000323
2A.27	0.27	.0106	3.0	19.0	0.27	12	6000326
2A.28	0.28	.0110	3.0	19.0	0.28	12	6000329
2A.29	0.29	.0114	3.0	19.0	0.29	12	6000332
2A.3	0.30	.0118	3.0	19.0	0.30	12	6000335
2A.32	0.32	.0126	4.0	19.0	0.32	12	6000339
2A.34	0.34	.0134	4.0	19.0	0.34	12	6000342
2A.35	0.35	.0138	4.0	19.0	0.35	12	6000345
2A.36	0.36	.0142	4.0	19.0	0.36	12	6000348

Product	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
2A.38	0.38	.0150	4.0	19.0	0.38	12	6000351
2A.4	0.40	.0157	5.0	20.0	0.40	12	6000354
2A.42	0.42	.0165	5.0	20.0	0.42	12	6000357
2A.44	0.44	.0173	5.0	20.0	0.44	12	6000361
2A.45	0.45	.0177	5.0	20.0	0.45	12	6000365
2A.46	0.46	.0181	5.0	20.0	0.46	12	6000370
2A.48	0.48	.0189	5.0	20.0	0.48	12	6000380
2A.5	0.50	.0197	6.0	22.0	0.50	12	6000385
2A.55	0.55	.0217	7.0	24.0	0.55	12	6000389
2A.6	0.60	.0236	7.0	24.0	0.60	12	6000393
2A.65	0.65	.0256	8.0	26.0	0.65	12	6000397
2A.7	0.70	.0276	9.0	28.0	0.70	12	6000401
2A.75	0.75	.0295	9.0	28.0	0.75	12	6000404
2A.8	0.80	.0315	10.0	30.0	0.80	12	6000408
2A.85	0.85	.0335	10.0	30.0	0.85	12	6000412
2A.9	0.90	.0354	11.0	32.0	0.90	12	6000416
2A.95	0.95	.0374	11.0	32.0	0.95	12	6000423
2A1.00	1.00	.0394	12.0	34.0	1.00	12	6000604
2A1.1	1.10	.0433	14.0	36.0	1.10	12	6000607



Product	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
2A1.15	1.15	.0453	14.0	36.0	1.15	12	6000610
2A1.2	1.20	.0472	16.0	38.0	1.20	12	6000613
2A1.25	1.25	.0492	16.0	38.0	1.25	12	6000616
2A1.3	1.30	.0512	16.0	38.0	1.30	12	6000620
2A1.35	1.35	.0531	18.0	40.0	1.35	12	6000625
2A1.4	1.40	.0551	18.0	40.0	1.40	12	6000630
2A1.45	1.45	.0571	18.0	40.0	1.45	12	6000634
2A1.5	1.50	.0591	18.0	40.0	1.50	12	6000637
2A1.55	1.55	.0610	20.0	43.0	1.55	12	6000647
2A1.6	1.60	.0630	20.0	43.0	1.60	12	6000652
2A1.65	1.65	.0650	20.0	43.0	1.65	12	6000655
2A1.7	1.70	.0669	20.0	43.0	1.70	12	6000659
2A1.75	1.75	.0689	22.0	46.0	1.75	12	6000663
2A1.8	1.80	.0709	22.0	46.0	1.80	12	6000667
2A1.9	1.90	.0748	22.0	46.0	1.90	12	6000671
2A2.0	2.00	.0787	24.0	49.0	2.00	12	6000694
2A2.1	2.10	.0827	24.0	49.0	2.10	12	6000697
2A2.15	2.15	.0846	27.0	53.0	2.15	12	6000700
2A2.2	2.20	.0866	27.0	53.0	2.20	12	6000703
2A2.25	2.25	.0886	27.0	53.0	2.25	12	6000705
2A2.3	2.30	.0906	27.0	53.0	2.30	12	6000707
2A2.35	2.35	.0925	27.0	53.0	2.35	12	6000711
2A2.4	2.40	.0945	30.0	57.0	2.40	12	6000713
2A2.5	2.50	.0984	30.0	57.0	2.50	12	6000716
2A2.6	2.60	.1024	30.0	57.0	2.60	12	6000718
2A2.7	2.70	.1063	33.0	61.0	2.70	12	6000719
2A2.75	2.75	.1083	33.0	61.0	2.75	12	6000722
2A2.9	2.90	.1142	33.0	61.0	2.90	12	6000725
2A3.0	3.00	.1181	33.0	61.0	3.00	12	6000728
2A3.1	3.10	.1220	36.0	65.0	3.10	12	6000730
2A3.2	3.20	.1260	36.0	65.0	3.20	12	6000732
2A3.25	3.25	.1280	36.0	65.0	3.25	12	6000736
2A3.3	3.30	.1299	36.0	65.0	3.30	12	6000738
2A3.4	3.40	.1339	39.0	70.0	3.40	12	6000740
2A3.5	3.50	.1378	39.0	70.0	3.50	12	6000742
2A3.6	3.60	.1417	39.0	70.0	3.60	12	6000744
2A3.7	3.70	.1457	39.0	70.0	3.70	12	6000746
2A4.0	4.00	.1575	43.0	75.0	4.00	12	6000749
2A4.1	4.10	.1614	43.0	75.0	4.10	12	6000751
2A4.2	4.20	.1654	43.0	75.0	4.20	12	6000754
2A4.3	4.30	.1693	47.0	80.0	4.30	12	6000757
2A4.4	4.40	.1732	47.0	80.0	4.40	12	6000764
2A4.5	4.50	.1772	47.0	80.0	4.50	12	6000747
2A4.6	4.60	.1811	47.0	80.0	4.60	12	6000790
2A4.8	4.80	.1890	52.0	86.0	4.80	12	6000824
2A5.0	5.00	.1969	52.0	86.0	5.00	12	6000861
2A5.1	5.10	.2008	52.0	86.0	5.10	12	6000915
2A5.2	5.20	.2047	52.0	86.0	5.20	12	6000922
2A5.3	5.30	.2087	52.0	86.0	5.30	12	6000927
2A5.4	5.40	.2126	57.0	93.0	5.40	12	6000932
2A5.5	5.50	.2165	57.0	93.0	5.50	12	6000936
2A5.6	5.60	.2205	57.0	93.0	5.60	12	6000752

Product	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
2A5.7	5.70	.2244	57.0	93.0	5.70	12	6000755
2A5.75	5.75	.2264	57.0	93.0	5.75	12	6000758
2A5.8	5.80	.2283	57.0	93.0	5.80	12	6000761
2A6.0	6.00	.2362	57.0	93.0	6.00	12	6000765
2A6.1	6.10	.2402	63.0	101.0	6.10	12	6000770
2A6.2	6.20	.2441	63.0	101.0	6.20	12	6000775
2A6.3	6.30	.2480	63.0	101.0	6.30	12	6000780
2A6.4	6.40	.2520	63.0	101.0	6.40	12	6000784
2A6.5	6.50	.2559	63.0	101.0	6.50	12	6000787
2A6.6	6.60	.2598	63.0	101.0	6.60	12	6000793
2A6.7	6.70	.2638	63.0	101.0	6.70	12	6000796
2A6.75	6.75	.2657	69.0	109.0	6.75	12	6000801
2A6.8	6.80	.2677	69.0	109.0	6.80	12	6000804
2A7.0	7.00	.2756	69.0	109.0	7.00	12	6000807
2A7.2	7.20	.2835	69.0	109.0	7.20	12	6000809
2A7.25	7.25	.2854	69.0	109.0	7.25	12	6000812
2A7.3	7.30	.2874	69.0	109.0	7.30	12	6000815
2A7.4	7.40	.2913	69.0	109.0	7.40	12	6000818
2A7.5	7.50	.2953	69.0	109.0	7.50	12	6000821
2A7.6	7.60	.2992	75.0	117.0	7.60	12	6000827
2A7.8	7.80	.3071	75.0	117.0	7.80	12	6000831
2A7.9	7.90	.3110	75.0	117.0	7.90	12	6000833
2A8.0	8.00	.3150	75.0	117.0	8.00	6	6000836
2A8.1	8.10	.3189	75.0	117.0	8.10	6	6000839
2A8.2	8.20	.3228	75.0	117.0	8.20	6	6000842
2A8.4	8.40	.3307	75.0	117.0	8.40	6	6000850
2A8.5	8.50	.3346	75.0	117.0	8.50	6	6000853
2A8.6	8.60	.3386	81.0	125.0	8.60	6	6000857
2A8.7	8.70	.3425	81.0	125.0	8.70	6	6000864
2A8.8	8.80	.3465	81.0	125.0	8.80	6	6000872
2A8.9	8.90	.3504	81.0	125.0	8.90	6	6000877
2A9.0	9.00	.3543	81.0	125.0	9.00	6	6000881
2A9.3	9.30	.3661	81.0	125.0	9.30	6	6000890
2A9.4	9.40	.3701	81.0	125.0	9.40	6	6000895
2A9.5	9.50	.3740	81.0	125.0	9.50	6	6000900
2A9.6	9.60	.3780	87.0	133.0	9.60	6	6000905
2A9.7	9.70	.3819	87.0	133.0	9.70	6	6000910
2A10.0	10.00	.3937	87.0	133.0	10.00	6	6000678
2A10.2	10.20	.4016	87.0	133.0	10.20	6	6000682
2A10.3	10.30	.4055	87.0	133.0	10.30	6	6000689
2A10.5	10.50	.4134	87.0	133.0	10.50	6	6000621
2A10.8	10.80	.4252	94.0	142.0	10.80	6	6000709
2A11.0	11.00	.4331	94.0	142.0	11.00	6	6000760
2A11.5	11.50	.4528	94.0	142.0	11.50	6	6000782
2A11.8	11.80	.4646	94.0	142.0	11.80	6	6000635
2A12.0	12.00	.4724	101.0	151.0	12.00	6	6000640
2A12.5	12.50	.4921	101.0	151.0	12.50	6	6000651
2A13.0	13.00	.5118	101.0	151.0	13.00	1	6000670
2A13.5	13.50	.5315	108.0	160.0	13.50	1	6000679
2A14.0	14.00	.5512	108.0	160.0	14.00	1	6000683
2A14.5	14.50	.5709	114.0	169.0	14.50	1	6000687
2A15.0	15.00	.5906	114.0	169.0	15.00	1	6000691

A=Styles in Set, B=No. in Set, C=Diameters in Set.



Product	A	B	C	Pack Qty	MID
C114COMBPSET	R10P, R18P, 2A	114	1/16-1/2 x 64ths, N1-N60, 1-13mm x 0.5 mm	1	5995643



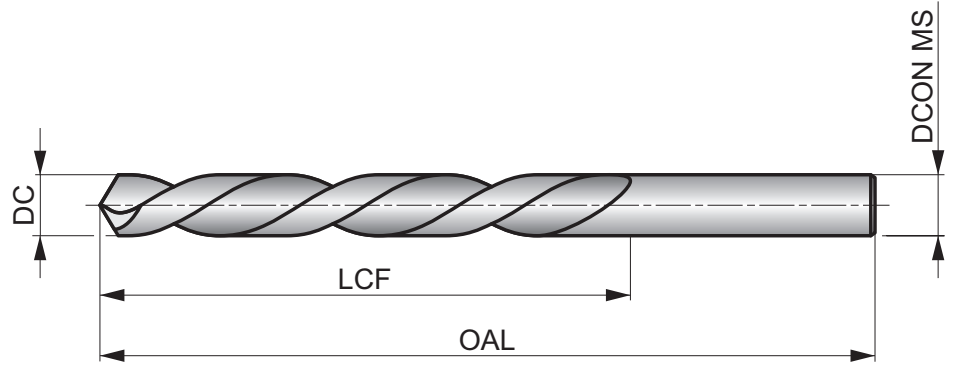
L10



HSS General Purpose Left Hand Jobber Drill, Bright Finish Fractional Sizes

HSS left hand drill with 118° point and conventional flute. Used in machine spindles and chucks with counter-clockwise rotation. Can be used on broken bolts as the opposite rotation can catch and unscrew the bolt without damaging the threads. Bright finish improves chip flow in soft or non-ferrous materials.

HSS	ANSI	4xD
118°	Bright	
λ 20-35°	L	



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 108 H	P1.2 ■ 121 H	P1.3 ■ 125 H	P2.1 ■ 92 H	P2.2 ■ 82 F	P2.3 ■ 72 E	P3.1 ■ 62 F	P3.2 ■ 49 F	P3.3 ■ 43 E	P4.1 ■ 36 F	P4.2 ■ 33 E	P4.3 ■ 26 D	M1.1 ■ 69 E	M1.2 ■ 56 E
M2.1 ■ 59 E	M2.2 ■ 49 E	M3.1 ■ 30 G	M3.2 ■ 26 G	M3.3 ■ 23 C	M4.1 ■ 30 C	K1.1 ■ 98 H	K1.2 ■ 72 F	K1.3 ■ 56 F	K2.1 ■ 82 E	K2.2 ■ 66 E	K2.3 ■ 52 E	K3.1 ■ 72 E	K3.2 ■ 56 E
K3.3 ■ 43 E	K4.1 ■ 66 E	K4.2 ■ 49 E	K4.3 ■ 36 E	K4.4 ■ 33 E	K4.5 ■ 26 E	K5.1 ■ 75 E	K5.2 ■ 56 E	K5.3 ■ 43 E	N1.1 ■ 108 J	N1.2 ■ 82 J	N1.3 ■ 56 I	N2.1 ■ 138 H	N2.2 ■ 121 H
N2.3 ■ 89 H	N3.1 ■ 194 H	N3.2 ■ 115 I	N3.3 ■ 59 G	N4.1 ■ 98 J	N4.2 ■ 92 H	N4.3 ■ 46 F	S1.1 ■ 75 E	S1.2 ■ 39 D	S1.3 ■ 20 B	S2.1 ■ 26 E	S2.2 ■ 13 A	S3.1 ■ 20 E	S3.2 ■ 10 A
S4.1 ■ 16 E	S4.2 ■ 7 A												

Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)	(inch)		
L101/32	1/32	.0313	1/2	1.3/8	.031	12	5995605
L103/64	3/64	.0469	3/4	1.3/4	.047	12	5995489
L101/16	1/16	.0625	7/8	1.7/8	.063	12	5995596
L105/64	5/64	.0781	1"	2"	.078	12	5995508
L103/32	3/32	.0938	1.1/4	2.1/4	.094	12	5995486
L107/64	7/64	.1094	1.1/2	2.5/8	.109	12	5995519
L101/8	1/8	.1250	1.5/8	2.3/4	.125	12	5995464
L109/64	9/64	.1406	1.3/4	2.7/8	.141	12	5995527
L105/32	5/32	.1563	2"	3.1/8	.156	12	5995504
L1011/64	11/64	.1719	2.1/8	3.1/4	.172	12	5995466
L103/16	3/16	.1875	2.5/16	3.1/2	.188	12	5995484
L1013/64	13/64	.2031	2.7/16	3.5/8	.203	12	5995468
L107/32	7/32	.2188	2.1/2	3.3/4	.219	12	5995515
L1015/64	15/64	.2344	2.5/8	3.7/8	.234	12	5995470
L101/4	1/4	.2500	2.3/4	4"	.250	12	5995463
L1017/64	17/64	.2656	2.7/8	4.1/8	.266	12	5995471

Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)	(inch)		
L109/32	9/32	.2813	2.15/16	4.1/4	.281	12	5995523
L1019/64	19/64	.2969	3.1/16	4.3/8	.297	12	5995472
L105/16	5/16	.3125	3.3/16	4.1/2	.313	6	5995501
L1021/64	21/64	.3281	3.5/16	4.5/8	.328	6	5995475
L1011/32	11/32	.3438	3.7/16	4.3/4	.344	6	5995465
L1023/64	23/64	.3594	3.1/2	4.7/8	.359	6	5995477
L103/8	3/8	.3750	3.5/8	5"	.375	6	5995492
L1025/64	25/64	.3906	3.3/4	5.1/8	.391	6	5995478
L1013/32	13/32	.4063	3.7/8	5.1/4	.406	6	5995467
L1027/64	27/64	.4219	3.15/16	5.3/8	.422	6	5995480
L107/16	7/16	.4375	4.1/16	5.1/2	.438	6	5995511
L1029/64	29/64	.4531	4.3/16	5.5/8	.453	6	5995482
L1015/32	15/32	.4688	4.5/16	5.3/4	.469	6	5995469
L1031/64	31/64	.4844	4.3/8	5.7/8	.484	6	5995495
L101/2	1/2	.5000	4.1/2	6"	.500	6	5995602

A=Styles in Set, B=No. in Set, C=Diameters in Set.



Product	A	B	C	Pack Qty	MID
C15L10SET	L10	15	1/16-1/2 x 32nds, Left Hand	1	5995520
Product	A	B	C	Pack Qty	MID
C29L10SET	L10	29	1/16 - 1/2 x 64ths, Left Hand	1	5995612



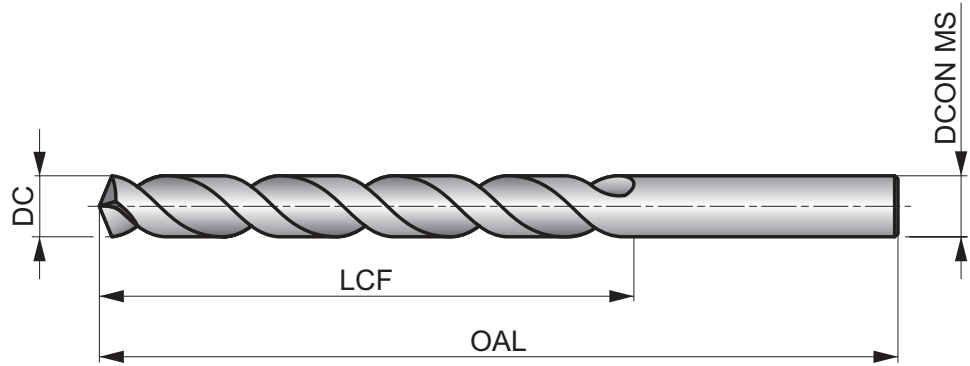
R10H / R18H



HSS High Helix Jobber Drill, Bright Finish

Fast spiral HSS jobber drill with 118° conventional point. The high helix design with bright finish makes this drill exceptional for achieving better chip evacuation in softer or non-ferrous materials.

HSS	ANSI	4xD
118°	Bright	
λ > 35°		



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 108 I	P1.2 ■ 108 I	P1.3 ■ 92 I	P2.1 ■ 92 I	K1.1 ■ 82 F	K1.2 ■ 62 D	K1.3 ■ 46 D	K2.1 ■ 66 C	K2.2 ■ 52 C	K2.3 ■ 43 C	K3.1 ■ 56 C	K3.2 ■ 43 C	K3.3 ■ 36 C	K4.1 ■ 52 C
K4.2 ■ 39 C	K4.3 ■ 30 C	K4.4 ■ 26 C	K4.5 ■ 20 C	K5.1 ■ 59 C	K5.2 ■ 46 C	K5.3 ■ 36 C	N1.1 ■ 148 J	N1.2 ■ 112 J	N1.3 ■ 75 J	N2.1 ■ 151 G	N2.2 ■ 138 G	N2.3 ■ 98 G	N3.1 ■ 200
N3.2 ■ 118 G	N3.3 ■ 59 H	N4.1 ■ 138 J	N4.2 ■ 131 I	N4.3 ■ 66 G	S1.1 ■ 49 C								

Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(mm)	(inch)	(inch)	(inch)	(inch)		
R18HN80	—	N80	0.34	.0135	1/8	3/4	.013	12	5998444
R18HN78	—	N78	0.41	.0160	3/16	7/8	.016	12	5998392
R18HN77	—	N77	0.46	.0180	3/16	7/8	.018	12	5998354
R18HN76	—	N76	0.51	.0200	3/16	7/8	.020	12	5998321
R18HN75	—	N75	0.53	.0210	1/4	1"	.021	12	5998278
R18HN74	—	N74	0.57	.0225	1/4	1"	.022	12	5998119
R18HN73	—	N73	0.61	.0240	5/16	1.1/8	.024	12	5998112
R18HN72	—	N72	0.64	.0250	5/16	1.1/8	.025	12	5998109
R18HN71	—	N71	0.66	.0260	3/8	1.1/4	.026	12	5998106
R18HN70	—	N70	0.71	.0280	3/8	1.1/4	.028	12	5998103
R18HN69	—	N69	0.74	.0292	1/2	1.3/8	.029	12	5998097
R18HN68	—	N68	0.79	.0310	1/2	1.3/8	.031	12	5998094
R10H1/32	1/32	—	0.80	.0313	1/2	1.3/8	.031	12	5998353
R18HN67	—	N67	0.81	.0320	1/2	1.3/8	.032	12	5998090
R18HN66	—	N66	0.84	.0330	1/2	1.3/8	.033	12	5998087
R18HN65	—	N65	0.89	.0350	5/8	1.1/2	.035	12	5998084
R18HN64	—	N64	0.91	.0360	5/8	1.1/2	.036	12	5998078
R18HN63	—	N63	0.94	.0370	5/8	1.1/2	.037	12	5998075
R18HN62	—	N62	0.97	.0380	5/8	1.1/2	.038	12	5998072
R18HN61	—	N61	0.99	.0390	11/16	1.5/8	.039	12	5998069
R18HN60	—	N60	1.02	.0400	11/16	1.5/8	.040	12	5998066
R18HN59	—	N59	1.04	.0410	11/16	1.5/8	.041	12	5998060
R18HN58	—	N58	1.07	.0420	11/16	1.5/8	.042	12	5998057



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(mm)	(inch)	(inch)	(inch)	(inch)		
R18HN57	–	N57	1.09	.0430	3/4	1.3/4	.043	12	5998055
R18HN56	–	N56	1.18	.0465	3/4	1.3/4	.046	12	5998051
R10H3/64	3/64	–	1.19	.0469	3/4	1.3/4	.047	12	5998386
R18HN55	–	N55	1.32	.0520	7/8	1.7/8	.052	12	5998043
R18HN54	–	N54	1.40	.0550	7/8	1.7/8	.055	12	5998039
R18HN53	–	N53	1.51	.0595	7/8	1.7/8	.059	12	5998035
R10H1/16	1/16	–	1.59	.0625	7/8	1.7/8	.063	12	5998346
R18HN52	–	N52	1.61	.0635	7/8	1.7/8	.064	12	5998032
R18HN51	–	N51	1.70	.0670	1"	2"	.067	12	5998028
R18HN50	–	N50	1.78	.0700	1"	2"	.070	12	5998024
R18HN49	–	N49	1.85	.0730	1"	2"	.073	12	5998015
R18HN48	–	N48	1.93	.0760	1"	2"	.076	12	5998012
R10H5/64	5/64	–	1.98	.0781	1"	2"	.078	12	5998406
R18HN47	–	N47	1.99	.0785	1"	2"	.079	12	5998008
R18HN46	–	N46	2.06	.0810	1.1/8	2.1/8	.081	12	5998000
R18HN45	–	N45	2.08	.0820	1.1/8	2.1/8	.082	12	5997997
R18HN44	–	N44	2.18	.0860	1.1/8	2.1/8	.086	12	5997994
R18HN43	–	N43	2.26	.0890	1.1/4	2.1/4	.089	12	5997991
R18HN42	–	N42	2.37	.0935	1.1/4	2.1/4	.093	12	5997988
R10H3/32	3/32	–	2.38	.0938	1.1/4	2.1/4	.094	12	5998382
R18HN41	–	N41	2.44	.0960	1.3/8	2.3/8	.096	12	5997985
R18HN40	–	N40	2.49	.0980	1.3/8	2.3/8	.098	12	5997982
R18HN39	–	N39	2.53	.0995	1.3/8	2.3/8	.100	12	5997978
R18HN38	–	N38	2.58	.1015	1.7/16	2.1/2	.102	12	5997975
R18HN37	–	N37	2.64	.1040	1.7/16	2.1/2	.104	12	5998135
R18HN36	–	N36	2.71	.1065	1.7/16	2.1/2	.106	12	5998131
R10H7/64	7/64	–	2.78	.1094	1.1/2	2.5/8	.109	12	5998422
R18HN35	–	N35	2.79	.1100	1.1/2	2.5/8	.110	12	5998127
R18HN34	–	N34	2.82	.1110	1.1/2	2.5/8	.111	12	5998123
R18HN33	–	N33	2.87	.1130	1.1/2	2.5/8	.113	12	5998116
R18HN32	–	N32	2.95	.1160	1.5/8	2.3/4	.116	12	5998081
R18HN31	–	N31	3.05	.1200	1.5/8	2.3/4	.120	12	5998047
R10H1/8	1/8	–	3.18	.1250	1.5/8	2.3/4	.125	12	5998358
R18HN30	–	N30	3.26	.1285	1.5/8	2.3/4	.129	12	5998004
R18HN29	–	N29	3.45	.1360	1.3/4	2.7/8	.136	12	5998265
R18HN28	–	N28	3.57	.1405	1.3/4	2.7/8	.141	12	5998257
R10H9/64	9/64	–	3.57	.1406	1.3/4	2.7/8	.141	12	5998430
R18HN27	–	N27	3.66	.1440	1.7/8	3"	.144	12	5998253
R18HN26	–	N26	3.73	.1470	1.7/8	3"	.147	12	5998249
R18HN25	–	N25	3.80	.1495	1.7/8	3"	.149	12	5998245
R18HN24	–	N24	3.86	.1520	2"	3.1/8	.152	12	5998242
R18HN23	–	N23	3.91	.1540	2"	3.1/8	.154	12	5998239
R10H5/32	5/32	–	3.97	.1563	2"	3.1/8	.156	12	5998402
R18HN22	–	N22	3.99	.1570	2"	3.1/8	.157	12	5998236
R18HN21	–	N21	4.04	.1590	2.1/8	3.1/4	.159	12	5998233
R18HN20	–	N20	4.09	.1610	2.1/8	3.1/4	.161	12	5998229
R18HN19	–	N19	4.22	.1660	2.1/8	3.1/4	.166	12	5998221
R18HN18	–	N18	4.31	.1695	2.1/8	3.1/4	.170	12	5998219
R10H11/64	11/64	–	4.37	.1719	2.1/8	3.1/4	.172	12	5998364
R18HN17	–	N17	4.39	.1730	2.3/16	3.3/8	.173	12	5998216
R18HN16	–	N16	4.50	.1770	2.3/16	3.3/8	.177	12	5998214
R18HN15	–	N15	4.57	.1800	2.3/16	3.3/8	.180	12	5998212
R18HN14	–	N14	4.62	.1820	2.3/16	3.3/8	.182	12	5998210
R18HN13	–	N13	4.70	.1850	2.5/16	3.1/2	.185	12	5998208
R10H3/16	3/16	–	4.76	.1875	2.5/16	3.1/2	.188	12	5998378
R18HN12	–	N12	4.80	.1890	2.5/16	3.1/2	.189	12	5998206
R18HN11	–	N11	4.85	.1910	2.5/16	3.1/2	.191	12	5998204
R18HN10	–	N10	4.91	.1935	2.7/16	3.5/8	.194	12	5998202



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(mm)	(inch)	(inch)	(inch)	(inch)		
R18HN9	—	N9	4.98	.1960	2.7/16	3.5/8	.196	12	5998447
R18HN8	—	N8	5.05	.1990	2.7/16	3.5/8	.199	12	5998440
R18HN7	—	N7	5.11	.2010	2.7/16	3.5/8	.201	12	5998100
R10H13/64	13/64	—	5.16	.2031	2.7/16	3.5/8	.203	12	5998369
R18HN6	—	N6	5.18	.2040	2.1/2	3.3/4	.204	12	5998063
R18HN5	—	N5	5.22	.2055	2.1/2	3.3/4	.205	12	5998019
R18HN4	—	N4	5.31	.2090	2.1/2	3.3/4	.209	12	5997980
R18HN3	—	N3	5.41	.2130	2.1/2	3.3/4	.213	12	5997970
R10H7/32	7/32	—	5.56	.2188	2.1/2	3.3/4	.219	12	5998419
R18HN2	—	N2	5.61	.2210	2.5/8	3.7/8	.221	12	5998226
R18HN1	—	N1	5.79	.2280	2.5/8	3.7/8	.228	12	5998197
R10H15/64	15/64	—	5.95	.2344	2.5/8	3.7/8	.234	12	5998451
R10H1/4	1/4	—	6.35	.2500	2.3/4	4"	.250	12	5998356
R10H17/64	17/64	—	6.75	.2656	2.7/8	4.1/8	.266	12	5998476
R10H9/32	9/32	—	7.15	.2813	2.15/16	4.1/4	.281	12	5998426
R10H19/64	19/64	—	7.54	.2969	3.1/16	4.3/8	.297	12	5998512
R10H5/16	5/16	—	7.94	.3125	3.3/16	4.1/2	.313	6	5998398
R10H21/64	21/64	—	8.33	.3281	3.5/16	4.5/8	.328	6	5998520
R10H11/32	11/32	—	8.73	.3438	3.7/16	4.3/4	.344	6	5998361
R10H23/64	23/64	—	9.13	.3594	3.1/2	4.7/8	.359	6	5998524
R10H3/8	3/8	—	9.53	.3750	3.5/8	5"	.375	6	5998391
R10H25/64	25/64	—	9.92	.3906	3.3/4	5.1/8	.391	6	5998529
R10H13/32	13/32	—	10.32	.4063	3.7/8	5.1/4	.406	6	5998371
R10H27/64	27/64	—	10.72	.4219	3.15/16	5.3/8	.422	6	5998534
R10H7/16	7/16	—	11.11	.4375	4.1/16	5.1/2	.438	6	5998410
R10H29/64	29/64	—	11.51	.4531	4.3/16	5.5/8	.453	6	5998374
R10H15/32	15/32	—	11.91	.4688	4.5/16	5.3/4	.469	6	5998415
R10H31/64	31/64	—	12.30	.4844	4.3/8	5.7/8	.484	6	5998394
R10H1/2	1/2	—	12.70	.5000	4.1/2	6"	.500	6	5998349

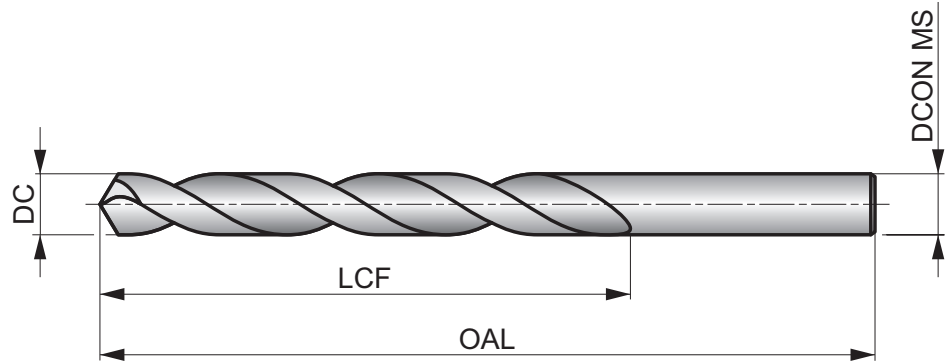


R10 / R15 / R18



HSS General Purpose Jobber Drill, Steam Tempered Finish

A versatile general purpose drill with a conventional flute design and 118° point provides strength and makes it easy to regrind. Steam Tempered finish for increased wear resistance can add lubricity making it suitable for drilling most materials.



HSS	ANSI	4×D
118°	ST	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 108 H	P1.2 ■ 121 H	P1.3 ■ 125 H	P2.1 ■ 92 H	P2.2 ■ 82 F	P2.3 ■ 72 E	P3.1 ■ 62 F	P3.2 ■ 49 F	P3.3 ■ 43 E	P4.1 ■ 36 F	P4.2 ■ 33 E	P4.3 ■ 26 D	M1.1 ■ 69 E	M1.2 ■ 56 E
M2.1 ■ 59 E	M2.2 ■ 49 E	M3.1 ■ 30 G	M3.2 ■ 26 G	M3.3 ■ 23 C	M4.1 ■ 30 C	K1.1 ■ 98 H	K1.2 ■ 72 F	K1.3 ■ 56 F	K2.1 ■ 82 E	K2.2 ■ 66 E	K2.3 ■ 52 E	K3.1 ■ 72 E	K3.2 ■ 56 E
K3.3 ■ 43 E	K4.1 ■ 66 E	K4.2 ■ 49 E	K4.3 ■ 36 E	K4.4 ■ 33 E	K4.5 ■ 26 E	K5.1 ■ 75 E	K5.2 ■ 56 E	K5.3 ■ 43 E	N1.1 ■ 108 J	N1.2 ■ 82 J	N1.3 ■ 56 I	N2.1 ■ 138 H	N2.2 ■ 121 H
N2.3 ■ 89 H	N3.1 ■ 194 H	N3.2 ■ 115 I	N3.3 ■ 59 G	N4.1 ■ 98 J	N4.2 ■ 92 H	N4.3 ■ 46 F	S1.1 ■ 75 E	S1.2 ■ 39 D	S1.3 ■ 20 B	S2.1 ■ 26 E	S2.2 ■ 13 A	S3.1 ■ 20 E	S3.2 ■ 10 A
S4.1 ■ 16 E	S4.2 ■ 7 A												

Product	DC (inch)	DC (Wire gauge size)	DC (Letter size)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
R18N80	—	N80	—	.0135	1/8	3/4	.013	12	5999193
R18N79	—	N79	—	.0145	1/8	3/4	.015	12	5999190
R101/64	1/64	—	—	.0156	3/16	3/4	.016	12	5998664
R18N78	—	N78	—	.0160	3/16	7/8	.016	12	5999189
R18N77	—	N77	—	.0180	3/16	7/8	.018	12	5999188
R18N76	—	N76	—	.0200	3/16	7/8	.020	12	5999187
R18N75	—	N75	—	.0210	1/4	1"	.021	12	5999186
R18N74	—	N74	—	.0225	1/4	1"	.022	12	5999184
R18N73	—	N73	—	.0240	5/16	1.1/8	.024	12	5999180
R18N72	—	N72	—	.0250	5/16	1.1/8	.025	12	5999178
R18N71	—	N71	—	.0260	3/8	1.1/4	.026	12	5999176
R18N70	—	N70	—	.0280	3/8	1.1/4	.028	12	5999174
R18N69	—	N69	—	.0292	1/2	1.3/8	.029	12	5999170
R18N68	—	N68	—	.0310	1/2	1.3/8	.031	12	5999166
R101/32	1/32	—	—	.0313	1/2	1.3/8	.031	12	5998656
R18N67	—	N67	—	.0320	1/2	1.3/8	.032	12	5999164
R18N66	—	N66	—	.0330	1/2	1.3/8	.033	12	5999161
R18N65	—	N65	—	.0350	5/8	1.1/2	.035	12	5999158
R18N64	—	N64	—	.0360	5/8	1.1/2	.036	12	5999153



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
R18N63	—	N63	—	.0370	5/8	1.1/2	.037	12	5999150
R18N62	—	N62	—	.0380	5/8	1.1/2	.038	12	5999147
R18N61	—	N61	—	.0390	11/16	1.5/8	.039	12	5999144
R18N60	—	N60	—	.0400	11/16	1.5/8	.040	12	5999138
R18N59	—	N59	—	.0410	11/16	1.5/8	.041	12	5999131
R18N58	—	N58	—	.0420	11/16	1.5/8	.042	12	5999127
R18N57	—	N57	—	.0430	3/4	1.3/4	.043	12	5999123
R18N56	—	N56	—	.0465	3/4	1.3/4	.046	12	5999119
R103/64	3/64	—	—	.0469	3/4	1.3/4	.047	12	5998725
R18N55	—	N55	—	.0520	7/8	1.7/8	.052	12	5999251
R18N54	—	N54	—	.0550	7/8	1.7/8	.055	12	5999246
R18N53	—	N53	—	.0595	7/8	1.7/8	.059	12	5999243
R101/16	1/16	—	—	.0625	7/8	1.7/8	.063	12	5998648
R18N52	—	N52	—	.0635	7/8	1.7/8	.064	12	5999239
R18N51	—	N51	—	.0670	1"	2"	.067	12	5999231
R18N50	—	N50	—	.0700	1"	2"	.070	12	5999199
R18N49	—	N49	—	.0730	1"	2"	.073	12	5999155
R18N48	—	N48	—	.0760	1"	2"	.076	12	5999115
R105/64	5/64	—	—	.0781	1"	2"	.078	12	5998646
R18N47	—	N47	—	.0785	1"	2"	.079	12	5998437
R18N46	—	N46	—	.0810	1.1/8	2.1/8	.081	12	5998432
R18N45	—	N45	—	.0820	1.1/8	2.1/8	.082	12	5998428
R18N44	—	N44	—	.0860	1.1/8	2.1/8	.086	12	5998424
R18N43	—	N43	—	.0890	1.1/4	2.1/4	.089	12	5998418
R18N42	—	N42	—	.0935	1.1/4	2.1/4	.093	12	5998414
R103/32	3/32	—	—	.0938	1.1/4	2.1/4	.094	12	5998720
R18N41	—	N41	—	.0960	1.3/8	2.3/8	.096	12	5998411
R18N40	—	N40	—	.0980	1.3/8	2.3/8	.098	12	5998408
R18N39	—	N39	—	.0995	1.3/8	2.3/8	.100	12	5998400
R18N38	—	N38	—	.1015	1.7/16	2.1/2	.102	12	5998396
R18N37	—	N37	—	.1040	1.7/16	2.1/2	.104	12	5998389
R18N36	—	N36	—	.1065	1.7/16	2.1/2	.106	12	5998385
R107/64	7/64	—	—	.1094	1.1/2	2.5/8	.109	12	5998791
R18N35	—	N35	—	.1100	1.1/2	2.5/8	.110	12	5998381
R18N34	—	N34	—	.1110	1.1/2	2.5/8	.111	12	5998377
R18N33	—	N33	—	.1130	1.1/2	2.5/8	.113	12	5998373
R18N32	—	N32	—	.1160	1.5/8	2.3/4	.116	12	5998370
R18N31	—	N31	—	.1200	1.5/8	2.3/4	.120	12	5998366
R101/8	1/8	—	—	.1250	1.5/8	2.3/4	.125	12	5998672
R101/8-T ¹⁾	1/8	—	—	.1250	1.5/8	2.3/4	.125	12	7652421
R18N30	—	N30	—	.1285	1.5/8	2.3/4	.129	12	5998363
R18N29	—	N29	—	.1360	1.3/4	2.7/8	.136	12	5998357
R18N28	—	N28	—	.1405	1.3/4	2.7/8	.141	12	5998351
R109/64	9/64	—	—	.1406	1.3/4	2.7/8	.141	12	5998809
R18N27	—	N27	—	.1440	1.7/8	3"	.144	12	5998348
R18N26	—	N26	—	.1470	1.7/8	3"	.147	12	5998345
R18N25	—	N25	—	.1495	1.7/8	3"	.149	12	5998342
R18N24	—	N24	—	.1520	2"	3.1/8	.152	12	5998339
R18N23	—	N23	—	.1540	2"	3.1/8	.154	12	5998336
R105/32	5/32	—	—	.1563	2"	3.1/8	.156	12	5998764
R105/32-T ¹⁾	5/32	—	—	.1563	2"	3.1/8	.156	12	7652425
R18N22	—	N22	—	.1570	2"	3.1/8	.157	12	5998333
R18N21	—	N21	—	.1590	2.1/8	3.1/4	.159	12	5998330
R18N20	—	N20	—	.1610	2.1/8	3.1/4	.161	12	5998327
R18N19	—	N19	—	.1660	2.1/8	3.1/4	.166	12	5998318
R18N18	—	N18	—	.1695	2.1/8	3.1/4	.170	12	5998315
R1011/64	11/64	—	—	.1719	2.1/8	3.1/4	.172	12	5998681
R18N17	—	N17	—	.1730	2.3/16	3.3/8	.173	12	5998312



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
R18N16	–	N16	–	.1770	2.3/16	3.3/8	.177	12	5998309
R18N15	–	N15	–	.1800	2.3/16	3.3/8	.180	12	5998306
R18N14	–	N14	–	.1820	2.3/16	3.3/8	.182	12	5998302
R18N13	–	N13	–	.1850	2.5/16	3.1/2	.185	12	5998297
R103/16	3/16	–	–	.1875	2.5/16	3.1/2	.188	12	5998718
R103/16-T ¹⁾	3/16	–	–	.1875	2.5/16	3.1/2	.188	12	7652423
R18N12	–	N12	–	.1890	2.5/16	3.1/2	.189	12	5998293
R18N11	–	N11	–	.1910	2.5/16	3.1/2	.191	12	5998288
R18N10	–	N10	–	.1935	2.7/16	3.5/8	.194	12	5998285
R18N9	–	N9	–	.1960	2.7/16	3.5/8	.196	12	5999195
R18N8	–	N8	–	.1990	2.7/16	3.5/8	.199	12	5999192
R18N7	–	N7	–	.2010	2.7/16	3.5/8	.201	12	5999172
R18N7-T ¹⁾	–	N7	–	.2010	2.7/16	3.5/8	.201	12	7652433
R1013/64	13/64	–	–	.2031	2.7/16	3.5/8	.203	12	5998687
R18N6	–	N6	–	.2040	2.1/2	3.3/4	.204	12	5999134
R18N5	–	N5	–	.2055	2.1/2	3.3/4	.205	12	5999182
R18N4	–	N4	–	.2090	2.1/2	3.3/4	.209	12	5998404
R18N3	–	N3	–	.2130	2.1/2	3.3/4	.213	12	5998360
R107/32	7/32	–	–	.2188	2.1/2	3.3/4	.219	12	5998745
R107/32-T ¹⁾	7/32	–	–	.2188	2.1/2	3.3/4	.219	12	7652426
R18N2	–	N2	–	.2210	2.5/8	3.7/8	.221	12	5998324
R18N1	–	N1	–	.2280	2.5/8	3.7/8	.228	12	5998450
R15A	–	–	A	.2340	2.5/8	3.7/8	.234	12	5998811
R1015/64	15/64	–	–	.2344	2.5/8	3.7/8	.234	12	5998693
R15B	–	–	B	.2380	2.3/4	4"	.238	12	5998732
R15C	–	–	C	.2420	2.3/4	4"	.242	12	5998988
R15D	–	–	D	.2460	2.3/4	4"	.246	12	5999093
R101/4	1/4	–	–	.2500	2.3/4	4"	.250	12	5998660
R101/4-T ¹⁾	1/4	–	–	.2500	2.3/4	4"	.250	12	7652420
R15F	–	–	F	.2570	2.7/8	4.1/8	.257	12	5999099
R15F-T ¹⁾	–	–	F	.2570	2.7/8	4.1/8	.257	12	7652430
R15G	–	–	G	.2610	2.7/8	4.1/8	.261	12	5999102
R1017/64	17/64	–	–	.2656	2.7/8	4.1/8	.266	12	5998699
R1017/64-T ¹⁾	17/64	–	–	.2656	2.7/8	4.1/8	.266	12	7652422
R15H	–	–	H	.2660	2.7/8	4.1/8	.266	12	5999105
R15I	–	–	I	.2720	2.7/8	4.1/8	.272	12	5998810
R15J	–	–	J	.2770	2.7/8	4.1/8	.277	12	5998814
R15K	–	–	K	.2810	2.15/16	4.1/4	.281	12	5998819
R109/32	9/32	–	–	.2813	2.15/16	4.1/4	.281	12	5998805
R109/32-T ¹⁾	9/32	–	–	.2813	2.15/16	4.1/4	.281	12	7652427
R15L	–	–	L	.2900	2.15/16	4.1/4	.290	12	5998822
R15M	–	–	M	.2950	3.1/16	4.3/8	.295	12	5998825
R1019/64	19/64	–	–	.2969	3.1/16	4.3/8	.297	12	5998704
R15N	–	–	N	.3020	3.1/16	4.3/8	.302	12	5998828
R105/16	5/16	–	–	.3125	3.3/16	4.1/2	.313	6	5998756
R15O	–	–	O	.3160	3.3/16	4.1/2	.316	6	5998831
R15P	–	–	P	.3230	3.5/16	4.5/8	.323	6	5998834
R1021/64	21/64	–	–	.3281	3.5/16	4.5/8	.328	6	5998708
R15Q	–	–	Q	.3320	3.7/16	4.3/4	.332	6	5999304
R15R	–	–	R	.3390	3.7/16	4.3/4	.339	6	5999347
R1011/32	11/32	–	–	.3438	3.7/16	4.3/4	.344	6	5998678
R15S	–	–	S	.3480	3.1/2	4.7/8	.348	6	5999396
R15T	–	–	T	.3580	3.1/2	4.7/8	.358	6	5999426
R1023/64	23/64	–	–	.3594	3.1/2	4.7/8	.359	6	5998710
R15U	–	–	U	.3680	3.5/8	5"	.368	6	5999430
R103/8	3/8	–	–	.3750	3.5/8	5"	.375	6	5998728
R103/8-T ¹⁾	3/8	–	–	.3750	3.5/8	5"	.375	6	7652424
R15V	–	–	V	.3770	3.5/8	5"	.377	6	5999432



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
R15W	—	—	W	.3860	3.3/4	5.1/8	.386	6	5999434
R1025/64	25/64	—	—	.3906	3.3/4	5.1/8	.391	6	5998712
R15X	—	—	X	.3970	3.3/4	5.1/8	.397	6	5999436
R15Y	—	—	Y	.4040	3.7/8	5.1/4	.404	6	5999263
R1013/32	13/32	—	—	.4063	3.7/8	5.1/4	.406	6	5998684
R15Z	—	—	Z	.4130	3.7/8	5.1/4	.413	6	5999267
R1027/64	27/64	—	—	.4219	3.15/16	5.3/8	.422	6	5998714
R107/16	7/16	—	—	.4375	4.1/16	5.1/2	.438	6	5998713
R1029/64	29/64	—	—	.4531	4.3/16	5.5/8	.453	6	5998716
R1015/32	15/32	—	—	.4688	4.5/16	5.3/4	.469	6	5998690
R1031/64	31/64	—	—	.4844	4.3/8	5.7/8	.484	6	5998731
R101/2	1/2	—	—	.5000	4.1/2	6"	.500	6	5998653
R1033/64	33/64	—	—	.5156	4.13/16	6.5/8	.516	1	5998735
R1017/32	17/32	—	—	.5313	4.13/16	6.5/8	.531	1	5998696
R1035/64	35/64	—	—	.5469	4.13/16	6.5/8	.547	1	5998736
R109/16	9/16	—	—	.5625	4.13/16	6.5/8	.563	1	5998800
R1037/64	37/64	—	—	.5781	4.13/16	6.5/8	.578	1	5998740
R1019/32	19/32	—	—	.5938	5.3/16	7.1/8	.594	1	5998703
R1039/64	39/64	—	—	.6094	5.3/16	7.1/8	.609	1	5998744
R105/8	5/8	—	—	.6250	5.3/16	7.1/8	.625	1	5998686
R1041/64	41/64	—	—	.6406	5.3/16	7.1/8	.641	1	5998749
R1021/32	21/32	—	—	.6563	5.3/16	7.1/8	.656	1	5998706
R1043/64	43/64	—	—	.6719	5.5/8	7.5/8	.672	1	5998752
R1011/16	11/16	—	—	.6875	5.5/8	7.5/8	.688	1	5998675

¹⁾ With Tang.



A=Styles in Set, B=No. in Set, C=Diameters in Set.

Product	A	B	C	Pack Qty	MID
C15R10SET	R10	15	1/16 - 1/2 x 32nds	1	5995533



Product	A	B	C	Pack Qty	MID
C29R10SET	R10	29	1/16 - 1/2 x 64ths	1	5995628



Product	A	B	C	Pack Qty	MID
C20R18SET	R18	20	N61 - N80	1	5995552



Product	A	B	C	Pack Qty	MID
C60R18SET	R18	60	N1 - N60	1	5995674



Product	A	B	C	Pack Qty	MID
C26R15SET	R15	26	A - Z	1	5995597



Product	A	B	C	Pack Qty	MID
C115COMBSET	R10, R18, R15	115	1/16-1/2 x 64ths, N1-N60, A-Z	1	5995683

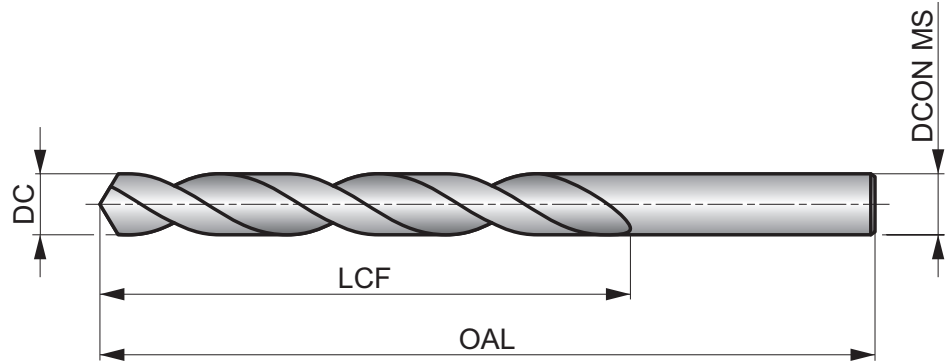


A100



HSS Jobber Drill, Steam Tempered Finish

A great and versatile all-around drill with a 118° conventional point, which provides strength and is easy to regrind, making it very cost-effective. Usable for hand-held and machine drilling. Steam tempered finish retains cutting fluid and prevents chip tool welding. Suitable for many materials.



HSS	DIN 338	4xD
118°	ST	
λ 20-35°	R	DC h8

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 108 H	P1.2 ■ 121 H	P1.3 ■ 125 H	P2.1 ■ 92 H	P2.2 ■ 82 F	P2.3 ■ 72 E	P3.1 ■ 62 F	P3.2 ■ 49 F	P3.3 ■ 43 E	P4.1 ■ 36 F	P4.2 ■ 33 E	P4.3 ■ 26 D	M1.1 ■ 69 E	M1.2 ■ 56 E
M2.1 ■ 59 E	M2.2 ■ 49 E	M3.1 ■ 30 G	M3.2 ■ 26 G	M3.3 ■ 23 G	M4.1 ■ 30 C	K1.1 ■ 98 H	K1.2 ■ 72 F	K1.3 ■ 56 F	K2.1 ■ 82 E	K2.2 ■ 66 E	K2.3 ■ 52 E	K3.1 ■ 72 E	K3.2 ■ 56 E
K3.3 ■ 43 E	K4.1 ■ 66 E	K4.2 ■ 49 E	K4.3 ■ 36 E	K4.4 ■ 33 E	K4.5 ■ 26 E	K5.1 ■ 75 E	K5.2 ■ 56 E	K5.3 ■ 43 E	N1.1 ■ 108 J	N1.2 ■ 82 J	N1.3 ■ 56 I	N2.1 ■ 138 H	N2.2 ■ 121 H
N2.3 ■ 89 H	N3.1 ■ 194 H	N3.2 ■ 115 I	N3.3 ■ 59 G	N4.1 ■ 98 J	N4.2 ■ 92 H	N4.3 ■ 46 F	S1.1 ■ 75 E	S1.2 ■ 39 D	S1.3 ■ 20 B	S2.1 ■ 26 E	S2.2 ■ 13 A	S3.1 ■ 20 E	S3.2 ■ 10 A
S4.1 ■ 16 E	S4.2 ■ 7 A												

DC ≤ 1mm; 3/64"; N60, Bright.

Products from this series are also available in set. Please see A190 or A191.

Product	DC	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(mm)	(inch)						(mm)	(mm)
A100.2	—	—	—	0.20	.0079	2.5	19.0	0.20	10	5967598
A100.25	—	—	—	0.25	.0098	3.0	19.0	0.25	10	5967601
A100.3	—	—	—	0.30	.0118	3.0	19.0	0.30	10	5967603
A100.32	—	—	—	0.32	.0126	4.0	19.0	0.32	10	5967605
A100N80	—	N80	—	0.34	.0135	4.0	19.0	0.34	10	5966767
A100.35	—	—	—	0.35	.0138	4.0	19.0	0.35	10	5967609
A100N79	—	N79	—	0.37	.0145	4.0	19.0	0.37	10	5966761
A100.38	—	—	—	0.38	.0150	4.0	19.0	0.38	10	5967611
A1001/64	1/64	—	—	0.40	.0156	5.0	20.0	0.40	10	5966604
A100.4	—	—	—	0.40	.0157	5.0	20.0	0.40	10	5967613
A100N78	—	N78	—	0.41	.0160	5.0	20.0	0.41	10	5966757
A100.42	—	—	—	0.42	.0165	5.0	20.0	0.42	10	5967614
A100.45	—	—	—	0.45	.0177	5.0	20.0	0.45	10	5967616
A100N77	—	N77	—	0.46	.0180	5.0	20.0	0.46	10	5966753
A100.48	—	—	—	0.48	.0189	5.0	20.0	0.48	10	5967618
A100.5	—	—	—	0.50	.0197	6.0	22.0	0.50	10	5967619
A100N76	—	N76	—	0.51	.0200	6.0	22.0	0.51	10	5966750
A100.52	—	—	—	0.52	.0205	6.0	22.0	0.52	10	5967621



Product	DC	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(mm)	(inch)	(mm)	(mm)	(mm)		
A100N75	–	N75	–	0.53	.0210	6.0	22.0	0.53	10	5966745
A100.55	–	–	–	0.55	.0217	7.0	24.0	0.55	10	5967623
A100N74	–	N74	–	0.57	.0225	7.0	24.0	0.57	10	5966742
A100.58	–	–	–	0.58	.0228	7.0	24.0	0.58	10	5967625
A100.6	–	–	–	0.60	.0236	7.0	24.0	0.60	10	5967628
A100N73	–	N73	–	0.61	.0240	8.0	26.0	0.61	10	5966738
A100.62	–	–	–	0.62	.0244	8.0	26.0	0.62	10	5967631
A100N72	–	N72	–	0.64	.0250	8.0	26.0	0.64	10	5966730
A100.65	–	–	–	0.65	.0256	8.0	26.0	0.65	10	5967633
A100N71	–	N71	–	0.66	.0260	8.0	26.0	0.66	10	5966726
A100.68	–	–	–	0.68	.0268	9.0	28.0	0.68	10	5967635
A100.7	–	–	–	0.70	.0276	9.0	28.0	0.70	10	5967637
A100N70	–	N70	–	0.71	.0280	9.0	28.0	0.71	10	5966722
A100.72	–	–	–	0.72	.0283	9.0	28.0	0.72	10	5967639
A100N69	–	N69	–	0.74	.0292	9.0	28.0	0.74	10	5966714
A100.75	–	–	–	0.75	.0295	9.0	28.0	0.75	10	5967641
A100.78	–	–	–	0.78	.0307	10.0	30.0	0.78	10	5967643
A1001/32	1/32	–	–	0.79	.0313	10.0	30.0	0.79	10	5966600
A100N68	–	N68	–	0.79	.0310	10.0	30.0	0.79	10	5966710
A100.8	–	–	–	0.80	.0315	10.0	30.0	0.80	10	5967645
A100N67	–	N67	–	0.81	.0320	10.0	30.0	0.81	10	5966706
A100.82	–	–	–	0.82	.0323	10.0	30.0	0.82	10	5967647
A100N66	–	N66	–	0.84	.0330	10.0	30.0	0.84	10	5966702
A100.85	–	–	–	0.85	.0335	10.0	30.0	0.85	10	5967651
A100.88	–	–	–	0.88	.0346	11.0	32.0	0.88	10	5967654
A100N65	–	N65	–	0.89	.0350	11.0	32.0	0.89	10	5966698
A100.9	–	–	–	0.90	.0354	11.0	32.0	0.90	10	5967655
A100N64	–	N64	–	0.91	.0360	11.0	32.0	0.91	10	5966694
A100.92	–	–	–	0.92	.0362	11.0	32.0	0.92	10	5967659
A100N63	–	N63	–	0.94	.0370	11.0	32.0	0.94	10	5966683
A100.95	–	–	–	0.95	.0374	11.0	32.0	0.95	10	5967662
A100N62	–	N62	–	0.97	.0380	12.0	34.0	0.97	10	5966678
A100.98	–	–	–	0.98	.0386	12.0	34.0	0.98	10	5967667
A100N61	–	N61	–	0.99	.0390	12.0	34.0	0.99	10	5966673
A1001.0	–	–	–	1.00	.0394	12.0	34.0	1.00	10	5966592
A100N60	–	N60	–	1.02	.0400	12.0	34.0	1.02	10	5966669
A100N59	–	N59	–	1.04	.0410	12.0	34.0	1.04	10	5966661
A1001.05	–	–	–	1.05	.0413	12.0	34.0	1.05	10	5966612
A100N58	–	N58	–	1.07	.0420	14.0	36.0	1.07	10	5966657
A100N57	–	N57	–	1.09	.0430	14.0	36.0	1.09	10	5966653
A1001.1	–	–	–	1.10	.0433	14.0	36.0	1.10	10	5966634
A1001.15	–	–	–	1.15	.0453	14.0	36.0	1.15	10	5966674
A100N56	–	N56	–	1.18	.0465	14.0	36.0	1.18	10	5966649
A1003/64	3/64	–	–	1.19	.0469	16.0	38.0	1.19	10	5967048
A1001.2	–	–	–	1.20	.0472	16.0	38.0	1.20	10	5966686
A1001.25	–	–	–	1.25	.0492	16.0	38.0	1.25	10	5966691
A1001.3	–	–	–	1.30	.0512	16.0	38.0	1.30	10	5966696
A100N55	–	N55	–	1.32	.0520	16.0	38.0	1.32	10	5966646
A1001.35	–	–	–	1.35	.0531	18.0	40.0	1.35	10	5966701
A1001.4	–	–	–	1.40	.0551	18.0	40.0	1.40	10	5966572
A100N54	–	N54	–	1.40	.0550	18.0	40.0	1.40	10	5966820
A1001.45	–	–	–	1.45	.0571	18.0	40.0	1.45	10	5966573
A1001.5	–	–	–	1.50	.0591	18.0	40.0	1.50	10	5966574
A100N53	–	N53	–	1.51	.0595	20.0	43.0	1.51	10	5966817
A1001.55	–	–	–	1.55	.0610	20.0	43.0	1.55	10	5966575
A1001/16	1/16	–	–	1.59	.0625	20.0	43.0	1.59	10	5966596
A1001.6	–	–	–	1.60	.0630	20.0	43.0	1.60	10	5966576
A100N52	–	N52	–	1.61	.0635	20.0	43.0	1.61	10	5966813



Product	DC	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(mm)	(inch)	(mm)	(mm)	(mm)		
A1001.65	—	—	—	1.65	.0650	20.0	43.0	1.65	10	5966577
A1001.7	—	—	—	1.70	.0669	20.0	43.0	1.70	10	5966578
A100N51	—	N51	—	1.70	.0670	22.0	46.0	1.70	10	5966810
A1001.75	—	—	—	1.75	.0689	22.0	46.0	1.75	10	5966579
A100N50	—	N50	—	1.78	.0700	22.0	46.0	1.78	10	5966805
A1001.8	—	—	—	1.80	.0709	22.0	46.0	1.80	10	5966590
A1001.85	—	—	—	1.85	.0728	22.0	46.0	1.85	10	5966591
A100N49	—	N49	—	1.85	.0730	22.0	46.0	1.85	10	5966734
A1001.9	—	—	—	1.90	.0748	22.0	46.0	1.90	10	5966593
A100N48	—	N48	—	1.93	.0760	24.0	49.0	1.93	10	5966689
A1001.95	—	—	—	1.95	.0768	24.0	49.0	1.95	10	5966595
A1005/64	5/64	—	—	1.98	.0781	24.0	49.0	1.98	10	5966763
A100N47	—	N47	—	1.99	.0785	24.0	49.0	1.99	10	5966640
A1002.0	—	—	—	2.00	.0787	24.0	49.0	2.00	10	5967000
A1002.05	—	—	—	2.05	.0807	24.0	49.0	2.05	10	5967030
A100N46	—	N46	—	2.06	.0810	24.0	49.0	2.06	10	5967060
A100N45	—	N45	—	2.08	.0820	24.0	49.0	2.08	10	5967055
A1002.1	—	—	—	2.10	.0827	24.0	49.0	2.10	10	5967066
A1002.15	—	—	—	2.15	.0846	27.0	53.0	2.15	10	5967075
A100N44	—	N44	—	2.18	.0860	27.0	53.0	2.18	10	5967052
A1002.2	—	—	—	2.20	.0866	27.0	53.0	2.20	10	5967078
A1002.25	—	—	—	2.25	.0886	27.0	53.0	2.25	10	5967080
A100N43	—	N43	—	2.26	.0890	27.0	53.0	2.26	10	5967050
A1002.3	—	—	—	2.30	.0906	27.0	53.0	2.30	10	5967084
A1002.35	—	—	—	2.35	.0925	27.0	53.0	2.35	10	5966904
A1003/32	3/32	—	—	2.38	.0938	30.0	57.0	2.38	10	5967046
A100N42	—	N42	—	2.38	.0935	30.0	57.0	2.38	10	5967047
A1002.4	—	—	—	2.40	.0945	30.0	57.0	2.40	10	5966908
A100N41	—	N41	—	2.44	.0960	30.0	57.0	2.44	10	5967044
A1002.45	—	—	—	2.45	.0965	30.0	57.0	2.45	10	5966912
A100N40	—	N40	—	2.49	.0980	30.0	57.0	2.49	10	5967041
A1002.5	—	—	—	2.50	.0984	30.0	57.0	2.50	10	5966920
A100N39	—	N39	—	2.53	.0995	30.0	57.0	2.53	10	5967035
A1002.55	—	—	—	2.55	.1004	30.0	57.0	2.55	10	5966925
A100N38	—	N38	—	2.58	.1015	30.0	57.0	2.58	10	5967032
A1002.6	—	—	—	2.60	.1024	30.0	57.0	2.60	10	5966929
A100N37	—	N37	—	2.64	.1040	30.0	57.0	2.64	10	5967027
A1002.65	—	—	—	2.65	.1043	30.0	57.0	2.65	10	5966935
A1002.7	—	—	—	2.70	.1063	33.0	61.0	2.70	10	5966941
A100N36	—	N36	—	2.71	.1065	33.0	61.0	2.71	10	5967021
A1002.75	—	—	—	2.75	.1083	33.0	61.0	2.75	10	5966946
A1007/64	7/64	—	—	2.78	.1094	33.0	61.0	2.78	10	5968101
A100N35	—	N35	—	2.79	.1100	33.0	61.0	2.79	10	5967019
A1002.8	—	—	—	2.80	.1102	33.0	61.0	2.80	10	5966951
A100N34	—	N34	—	2.82	.1110	33.0	61.0	2.82	10	5967016
A1002.85	—	—	—	2.85	.1122	33.0	61.0	2.85	10	5966961
A100N33	—	N33	—	2.87	.1130	33.0	61.0	2.87	10	5967013
A1002.9	—	—	—	2.90	.1142	33.0	61.0	2.90	10	5966965
A1002.95	—	—	—	2.95	.1161	33.0	61.0	2.95	10	5966968
A100N32	—	N32	—	2.95	.1160	33.0	61.0	2.95	10	5967010
A1003.0	—	—	—	3.00	.1181	33.0	61.0	3.00	10	5967003
A100N31	—	N31	—	3.05	.1200	36.0	65.0	3.05	10	5967007
A1003.1	—	—	—	3.10	.1220	36.0	65.0	3.10	10	5967006
A1003.15	—	—	—	3.15	.1240	36.0	65.0	3.15	10	5967009
A1001/8	1/8	—	—	3.18	.1250	36.0	65.0	3.18	10	5966606
A1003.2	—	—	—	3.20	.1260	36.0	65.0	3.20	10	5967012
A1003.25	—	—	—	3.25	.1280	36.0	65.0	3.25	10	5967015
A100N30	—	N30	—	3.26	.1285	36.0	65.0	3.26	10	5967004



Product	DC	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(mm)	(inch)	(mm)	(mm)	(mm)		
A1003.3	–	–	–	3.30	.1299	36.0	65.0	3.30	10	5967018
A1003.4	–	–	–	3.40	.1339	39.0	70.0	3.40	10	5967020
A100N29	–	N29	–	3.45	.1360	39.0	70.0	3.45	10	5966998
A1003.5	–	–	–	3.50	.1378	39.0	70.0	3.50	10	5967022
A1009/64	9/64	–	–	3.57	.1406	39.0	70.0	3.57	10	5968015
A100N28	–	N28	–	3.57	.1405	39.0	70.0	3.57	10	5966995
A1003.6	–	–	–	3.60	.1417	39.0	70.0	3.60	10	5967025
A100N27	–	N27	–	3.66	.1440	39.0	70.0	3.66	10	5966988
A1003.7	–	–	–	3.70	.1457	39.0	70.0	3.70	10	5967028
A100N26	–	N26	–	3.73	.1470	39.0	70.0	3.73	10	5966984
A1003.75	–	–	–	3.75	.1476	39.0	70.0	3.75	10	5967033
A1003.8	–	–	–	3.80	.1496	43.0	75.0	3.80	10	5967036
A100N25	–	N25	–	3.80	.1495	43.0	75.0	3.80	10	5966980
A100N24	–	N24	–	3.86	.1520	43.0	75.0	3.86	10	5966977
A1003.9	–	–	–	3.90	.1535	43.0	75.0	3.90	10	5967039
A100N23	–	N23	–	3.91	.1540	43.0	75.0	3.91	10	5966973
A1005/32	5/32	–	–	3.97	.1563	43.0	75.0	3.97	10	5966756
A100N22	–	N22	–	3.99	.1570	43.0	75.0	3.99	10	5966970
A1004.0	–	–	–	4.00	.1575	43.0	75.0	4.00	10	5966715
A100N21	–	N21	–	4.04	.1590	43.0	75.0	4.04	10	5966966
A100N20	–	N20	–	4.09	.1610	43.0	75.0	4.09	10	5966962
A1004.1	–	–	–	4.10	.1614	43.0	75.0	4.10	10	5966760
A1004.2	–	–	–	4.20	.1654	43.0	75.0	4.20	10	5966791
A100N19	–	N19	–	4.22	.1660	43.0	75.0	4.22	10	5966953
A1004.25	–	–	–	4.25	.1673	43.0	75.0	4.25	10	5966827
A1004.3	–	–	–	4.30	.1693	47.0	80.0	4.30	10	5966832
A100N18	–	N18	–	4.31	.1695	47.0	80.0	4.31	10	5966942
A10011/64	11/64	–	–	4.37	.1719	47.0	80.0	4.37	10	5967389
A100N17	–	N17	–	4.39	.1730	47.0	80.0	4.39	10	5966937
A1004.4	–	–	–	4.40	.1732	47.0	80.0	4.40	10	5966834
A1004.5	–	–	–	4.50	.1772	47.0	80.0	4.50	10	5966836
A100N16	–	N16	–	4.50	.1770	47.0	80.0	4.50	10	5966932
A100N15	–	N15	–	4.57	.1800	47.0	80.0	4.57	10	5966927
A1004.6	–	–	–	4.60	.1811	47.0	80.0	4.60	10	5966838
A100N14	–	N14	–	4.62	.1820	47.0	80.0	4.62	10	5966922
A1004.7	–	–	–	4.70	.1850	47.0	80.0	4.70	10	5966671
A100N13	–	N13	–	4.70	.1850	47.0	80.0	4.70	10	5966918
A1004.75	–	–	–	4.75	.1870	47.0	80.0	4.75	10	5966675
A1003/16	3/16	–	–	4.76	.1875	52.0	86.0	4.76	10	5967042
A1004.8	–	–	–	4.80	.1890	52.0	86.0	4.80	10	5966679
A100N12	–	N12	–	4.80	.1890	52.0	86.0	4.80	10	5966914
A100N11	–	N11	–	4.85	.1910	52.0	86.0	4.85	10	5966909
A1004.9	–	–	–	4.90	.1929	52.0	86.0	4.90	10	5966685
A100N10	–	N10	–	4.92	.1935	52.0	86.0	4.92	10	5966905
A100N9	–	N9	–	4.98	.1960	52.0	86.0	4.98	10	5966770
A1005.0	–	–	–	5.00	.1969	52.0	86.0	5.00	10	5966700
A100N8	–	N8	–	5.06	.1990	52.0	86.0	5.06	10	5966764
A1005.1	–	–	–	5.10	.2008	52.0	86.0	5.10	10	5966705
A100N7	–	N7	–	5.11	.2010	52.0	86.0	5.11	10	5966719
A10013/64	13/64	–	–	5.16	.2031	52.0	86.0	5.16	10	5967369
A100N6	–	N6	–	5.18	.2040	52.0	86.0	5.18	10	5966666
A1005.2	–	–	–	5.20	.2047	52.0	86.0	5.20	10	5966709
A100N5	–	N5	–	5.22	.2055	52.0	86.0	5.22	10	5966773
A1005.25	–	–	–	5.25	.2067	52.0	86.0	5.25	10	5966712
A1005.3	–	–	–	5.30	.2087	52.0	86.0	5.30	10	5966718
A100N4	–	N4	–	5.31	.2090	57.0	93.0	5.31	10	5967038
A1005.4	–	–	–	5.40	.2126	57.0	93.0	5.40	10	5966721
A100N3	–	N3	–	5.41	.2130	57.0	93.0	5.41	10	5967001



Product	DC	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(mm)	(inch)	(mm)	(mm)	(mm)		
A1005.5	—	—	—	5.50	.2165	57.0	93.0	5.50	10	5966725
A1007/32	7/32	—	—	5.56	.2188	57.0	93.0	5.56	10	5968097
A1005.6	—	—	—	5.60	.2205	57.0	93.0	5.60	10	5966729
A100N2	—	N2	—	5.61	.2210	57.0	93.0	5.61	10	5966957
A1005.7	—	—	—	5.70	.2244	57.0	93.0	5.70	10	5966733
A1005.75	—	—	—	5.75	.2264	57.0	93.0	5.75	10	5966737
A100N1	—	N1	—	5.79	.2280	57.0	93.0	5.79	10	5966900
A1005.8	—	—	—	5.80	.2283	57.0	93.0	5.80	10	5966744
A1005.9	—	—	—	5.90	.2323	57.0	93.0	5.90	10	5966748
A100A	—	—	A	5.94	.2340	57.0	93.0	5.94	10	5967671
A10015/64	15/64	—	—	5.95	.2344	57.0	93.0	5.95	10	5967391
A1006.0	—	—	—	6.00	.2362	57.0	93.0	6.00	10	5966769
A100B	—	—	B	6.03	.2380	63.0	101.0	6.03	10	5967676
A1006.1	—	—	—	6.10	.2402	63.0	101.0	6.10	10	5966772
A100C	—	—	C	6.15	.2420	63.0	101.0	6.15	10	5967680
A1006.2	—	—	—	6.20	.2441	63.0	101.0	6.20	10	5966775
A1006.25	—	—	—	6.25	.2461	63.0	101.0	6.25	10	5966777
A100D	—	—	D	6.25	.2460	63.0	101.0	6.25	10	5967685
A1006.3	—	—	—	6.30	.2480	63.0	101.0	6.30	10	5966780
A1001/4	1/4	—	—	6.35	.2500	63.0	101.0	6.35	10	5966602
A100E	—	—	E	6.35	.2500	63.0	101.0	6.35	10	5967694
A1006.4	—	—	—	6.40	.2520	63.0	101.0	6.40	10	5966783
A1006.5	—	—	—	6.50	.2559	63.0	101.0	6.50	10	5966786
A100F	—	—	F	6.53	.2570	63.0	101.0	6.53	10	5966895
A1006.6	—	—	—	6.60	.2598	63.0	101.0	6.60	10	5966789
A100G	—	—	G	6.63	.2610	63.0	101.0	6.63	10	5966947
A1006.7	—	—	—	6.70	.2638	63.0	101.0	6.70	10	5966794
A10017/64	17/64	—	—	6.75	.2656	69.0	109.0	6.75	10	5967404
A1006.75	—	—	—	6.75	.2657	69.0	109.0	6.75	10	5966798
A100H	—	—	H	6.76	.2660	69.0	109.0	6.76	10	5966991
A1006.8	—	—	—	6.80	.2677	69.0	109.0	6.80	10	5966801
A1006.9	—	—	—	6.90	.2717	69.0	109.0	6.90	10	5966804
A100I	—	—	I	6.91	.2720	69.0	109.0	6.91	10	5967024
A1007.0	—	—	—	7.00	.2756	69.0	109.0	7.00	10	5966807
A100J	—	—	J	7.04	.2770	69.0	109.0	7.04	10	5967057
A1007.1	—	—	—	7.10	.2795	69.0	109.0	7.10	10	5966811
A1009/32	9/32	—	—	7.14	.2813	69.0	109.0	7.14	10	5968012
A1007.2	—	—	—	7.20	.2835	69.0	109.0	7.20	10	5966815
A1007.25	—	—	—	7.25	.2854	69.0	109.0	7.25	10	5966818
A1007.3	—	—	—	7.30	.2874	69.0	109.0	7.30	10	5966821
A100L	—	—	L	7.37	.2900	69.0	109.0	7.37	10	5967069
A1007.4	—	—	—	7.40	.2913	69.0	109.0	7.40	10	5966824
A1007.5	—	—	—	7.50	.2953	69.0	109.0	7.50	10	5966830
A10019/64	19/64	—	—	7.54	.2969	75.0	117.0	7.54	10	5966955
A1007.6	—	—	—	7.60	.2992	75.0	117.0	7.60	10	5967921
A100N	—	—	N	7.67	.3020	75.0	117.0	7.67	10	5967074
A1007.7	—	—	—	7.70	.3031	75.0	117.0	7.70	10	5967965
A1007.75	—	—	—	7.75	.3051	75.0	117.0	7.75	10	5967999
A1007.8	—	—	—	7.80	.3071	75.0	117.0	7.80	10	5968028
A1007.9	—	—	—	7.90	.3110	75.0	117.0	7.90	10	5968081
A1005/16	5/16	—	—	7.94	.3125	75.0	117.0	7.94	10	5966752
A1008.0	—	—	—	8.00	.3150	75.0	117.0	8.00	10	5968105
A1000	—	—	O	8.03	.3160	75.0	117.0	8.03	10	5966776
A1008.1	—	—	—	8.10	.3189	75.0	117.0	8.10	10	5967926
A1008.2	—	—	—	8.20	.3228	75.0	117.0	8.20	10	5967932
A1008.25	—	—	—	8.25	.3248	75.0	117.0	8.25	10	5967935
A1008.3	—	—	—	8.30	.3268	75.0	117.0	8.30	10	5967940
A10021/64	21/64	—	—	8.33	.3281	75.0	117.0	8.33	10	5966982



Product	DC	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(mm)	(inch)	(mm)	(mm)	(mm)		
A1008.4	–	–	–	8.40	.3307	75.0	117.0	8.40	10	5967944
A100Q	–	–	Q	8.43	.3320	75.0	117.0	8.43	10	5966781
A1008.5	–	–	–	8.50	.3346	75.0	117.0	8.50	10	5967950
A1008.6	–	–	–	8.60	.3386	81.0	125.0	8.60	10	5967954
A1008.7	–	–	–	8.70	.3425	81.0	125.0	8.70	10	5967956
A10011/32	11/32	–	–	8.73	.3438	81.0	125.0	8.73	10	5967367
A1008.75	–	–	–	8.75	.3445	81.0	125.0	8.75	10	5967959
A1008.8	–	–	–	8.80	.3465	81.0	125.0	8.80	10	5967962
A1008.9	–	–	–	8.90	.3504	81.0	125.0	8.90	10	5967967
A1009.0	–	–	–	9.00	.3543	81.0	125.0	9.00	10	5967970
A1009.1	–	–	–	9.10	.3583	81.0	125.0	9.10	10	5967973
A10023/64	23/64	–	–	9.13	.3594	81.0	125.0	9.13	10	5966986
A1009.2	–	–	–	9.20	.3622	81.0	125.0	9.20	10	5967976
A1009.25	–	–	–	9.25	.3642	81.0	125.0	9.25	10	5967979
A1009.3	–	–	–	9.30	.3661	81.0	125.0	9.30	10	5967982
A100U	–	–	U	9.35	.3680	81.0	125.0	9.35	10	5966793
A1009.4	–	–	–	9.40	.3701	81.0	125.0	9.40	10	5967985
A1009.5	–	–	–	9.50	.3740	81.0	125.0	9.50	10	5967988
A1003/8	3/8	–	–	9.52	.3750	87.0	133.0	9.52	10	5967051
A1009.6	–	–	–	9.60	.3780	87.0	133.0	9.60	10	5967993
A1009.7	–	–	–	9.70	.3819	87.0	133.0	9.70	10	5967996
A1009.75	–	–	–	9.75	.3839	87.0	133.0	9.75	10	5968001
A1009.8	–	–	–	9.80	.3858	87.0	133.0	9.80	10	5968004
A1009.9	–	–	–	9.90	.3898	87.0	133.0	9.90	10	5968007
A10025/64	25/64	–	–	9.92	.3906	87.0	133.0	9.92	10	5966990
A10010.0	–	–	–	10.00	.3937	87.0	133.0	10.00	10	5966608
A10010.1	–	–	–	10.10	.3976	87.0	133.0	10.10	5	5966611
A10010.2	–	–	–	10.20	.4016	87.0	133.0	10.20	5	5966614
A10010.25	–	–	–	10.25	.4035	87.0	133.0	10.25	5	5966616
A10010.3	–	–	–	10.30	.4055	87.0	133.0	10.30	5	5966618
A10013/32	13/32	–	–	10.32	.4063	87.0	133.0	10.32	5	5967365
A10010.4	–	–	–	10.40	.4094	87.0	133.0	10.40	5	5966620
A10010.5	–	–	–	10.50	.4134	87.0	133.0	10.50	5	5966622
A10010.6	–	–	–	10.60	.4173	87.0	133.0	10.60	5	5966624
A10010.7	–	–	–	10.70	.4213	94.0	142.0	10.70	5	5966626
A10027/64	27/64	–	–	10.72	.4219	94.0	142.0	10.72	5	5966994
A10010.75	–	–	–	10.75	.4232	94.0	142.0	10.75	5	5966628
A10010.8	–	–	–	10.80	.4252	94.0	142.0	10.80	5	5966630
A10010.9	–	–	–	10.90	.4291	94.0	142.0	10.90	5	5966632
A10011.0	–	–	–	11.00	.4331	94.0	142.0	11.00	5	5966636
A10011.1	–	–	–	11.10	.4370	94.0	142.0	11.10	5	5966638
A1007/16	7/16	–	–	11.11	.4375	94.0	142.0	11.11	5	5968091
A10011.2	–	–	–	11.20	.4409	94.0	142.0	11.20	5	5966641
A10011.25	–	–	–	11.25	.4429	94.0	142.0	11.25	5	5966644
A10011.3	–	–	–	11.30	.4449	94.0	142.0	11.30	5	5966648
A10011.4	–	–	–	11.40	.4488	94.0	142.0	11.40	5	5966652
A10011.5	–	–	–	11.50	.4528	94.0	142.0	11.50	5	5966656
A10029/64	29/64	–	–	11.51	.4531	94.0	142.0	11.51	5	5966997
A10011.6	–	–	–	11.60	.4567	94.0	142.0	11.60	5	5966659
A10011.7	–	–	–	11.70	.4606	94.0	142.0	11.70	5	5966665
A10011.75	–	–	–	11.75	.4626	94.0	142.0	11.75	5	5966670
A10011.8	–	–	–	11.80	.4646	94.0	142.0	11.80	5	5966681
A10011.9	–	–	–	11.90	.4685	101.0	151.0	11.90	5	5967300
A10015/32	15/32	–	–	11.91	.4688	101.0	151.0	11.91	5	5967387
A10012.0	–	–	–	12.00	.4724	101.0	151.0	12.00	5	5967421
A10012.1	–	–	–	12.10	.4764	101.0	151.0	12.10	5	5967431
A10012.2	–	–	–	12.20	.4803	101.0	151.0	12.20	5	5967436
A10012.25	–	–	–	12.25	.4823	101.0	151.0	12.25	5	5967441



Product	DC	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(mm)	(inch)	(mm)	(mm)	(mm)		
A10012.3	—	—	—	12.30	.4843	101.0	151.0	12.30	5	5967445
A10031/64	31/64	—	—	12.30	.4844	101.0	151.0	12.30	5	5967054
A10012.4	—	—	—	12.40	.4882	101.0	151.0	12.40	5	5967306
A10012.5	—	—	—	12.50	.4921	101.0	151.0	12.50	5	5967310
A10012.6	—	—	—	12.60	.4961	101.0	151.0	12.60	5	5967314
A10012.7	—	—	—	12.70	.5000	101.0	151.0	12.70	5	5967318
A1001/2	1/2	—	—	12.70	.5000	101.0	151.0	12.70	5	5966597
A10012.75	—	—	—	12.75	.5020	101.0	151.0	12.75	5	5967322
A10012.8	—	—	—	12.80	.5039	101.0	151.0	12.80	5	5967326
A10012.9	—	—	—	12.90	.5079	101.0	151.0	12.90	5	5967330
A10013.0	—	—	—	13.00	.5118	101.0	151.0	13.00	5	5967334
A10033/64	33/64	—	—	13.10	.5156	101.0	151.0	13.10	1	5967058
A10013.1	—	—	—	13.10	.5157	101.0	151.0	13.10	1	5967338
A10013.2	—	—	—	13.20	.5197	101.0	151.0	13.20	1	5967341
A10013.25	—	—	—	13.25	.5217	108.0	160.0	13.25	1	5967347
A10013.3	—	—	—	13.30	.5236	108.0	160.0	13.30	1	5967349
A10013.4	—	—	—	13.40	.5276	108.0	160.0	13.40	1	5967351
A10017/32	17/32	—	—	13.49	.5313	108.0	160.0	13.49	1	5967402
A10013.5	—	—	—	13.50	.5315	108.0	160.0	13.50	1	5967353
A10013.6	—	—	—	13.60	.5354	108.0	160.0	13.60	1	5967355
A10013.7	—	—	—	13.70	.5394	108.0	160.0	13.70	1	5967357
A10013.75	—	—	—	13.75	.5413	108.0	160.0	13.75	1	5967359
A10013.8	—	—	—	13.80	.5433	108.0	160.0	13.80	1	5967361
A10035/64	35/64	—	—	13.89	.5469	108.0	160.0	13.89	1	5967062
A10013.9	—	—	—	13.90	.5472	108.0	160.0	13.90	1	5967363
A10014.0	—	—	—	14.00	.5512	108.0	160.0	14.00	1	5967371
A10014.25	—	—	—	14.25	.5610	114.0	169.0	14.25	1	5967373
A1009/16	9/16	—	—	14.29	.5625	114.0	169.0	14.29	1	5968009
A10014.5	—	—	—	14.50	.5709	114.0	169.0	14.50	1	5967375
A10037/64	37/64	—	—	14.68	.5781	114.0	169.0	14.68	1	5967072
A10014.75	—	—	—	14.75	.5807	114.0	169.0	14.75	1	5967377
A10015.0	—	—	—	15.00	.5906	114.0	169.0	15.00	1	5967379
A10019/32	19/32	—	—	15.08	.5938	120.0	178.0	15.08	1	5966897
A10015.25	—	—	—	15.25	.6004	120.0	178.0	15.25	1	5967381
A10015.5	—	—	—	15.50	.6102	120.0	178.0	15.50	1	5967383
A10015.75	—	—	—	15.75	.6201	120.0	178.0	15.75	1	5967385
A1005/8	5/8	—	—	15.88	.6250	120.0	178.0	15.88	1	5966766
A10016.0	—	—	—	16.00	.6299	120.0	178.0	16.00	1	5967393
A10041/64	41/64	—	—	16.27	.6406	125.0	184.0	16.27	1	5966690
A10016.5	—	—	—	16.50	.6496	125.0	184.0	16.50	1	5967395
A10021/32	21/32	—	—	16.67	.6563	125.0	184.0	16.67	1	5966978
A10017.0	—	—	—	17.00	.6693	125.0	184.0	17.00	1	5967397
A10011/16	11/16	—	—	17.46	.6875	130.0	191.0	17.46	1	5967344
A10017.5	—	—	—	17.50	.6890	130.0	191.0	17.50	1	5967399
A10018.0	—	—	—	18.00	.7087	130.0	191.0	18.00	1	5967408
A10018.5	—	—	—	18.50	.7283	135.0	198.0	18.50	1	5967412
A10019.0	—	—	—	19.00	.7480	135.0	198.0	19.00	1	5967417
A10019.5	—	—	—	19.50	.7677	140.0	205.0	19.50	1	5967426
A10020.0	—	—	—	20.00	.7874	140.0	205.0	20.00	1	5966974



A=Styles in Set, B=No. in Set, C=Diameters in Set. DC <= 1mm; 3/64"; N60 Bright.

	Nr.	A	B	C	Pack Qty	MID
A1903	3	A100	21	1/16 inch - 3/8 inch x 1/64 inch	1	5969754
A19012	12	A100	60	No.1 - No.60	1	5969705
A19018	18	A100	29	1/16 inch - 1/2 inch x 1/64 inch	1	5969712
A19020	20	A100	15	1/16 inch - 1/2 inch x 1/32 inch	1	5969715
A190201	201	A100	19	1.0 mm - 10.0 mm x 0.5 mm	1	5969724
A190202	202	A100	51	1.0 mm - 6.0 mm x 0.1 mm	1	5969728
A190203	203	A100	41	6.0 mm - 10.0 mm x 0.1 mm	1	5969732
A190204	204	A100	25	1.0 mm - 13.0 mm x 0.5 mm	1	5969738
A190206	206	A100	29	1.0 mm - 13.0 mm x 0.5 mm + 3.3 mm, 4.2 mm, 6.8 mm, 10.2 mm	1	5969747
A190209 ¹⁾	209	A100	91	1.0 mm - 10.0 mm x 0.1 mm	1	5969752

¹⁾ Sold in 2 boxes: box 1 contains sizes (1.0-5.9 x 0.1mm); box 2 contains sizes (6.0-10.0 x 0.1mm).



A=Styles in Set, B=No. in Set, C=Diameters in Set. DC <= 1mm; 3/64"; N60 Bright.

Product	Nr.	A	B	C	Pack Qty	MID
A19131M	31M	A100	20	0.3 mm - 1.0 mm x 0.05 mm + 0.38 mm, 0.52 mm, 0.58 mm, 0.78 mm, 0.82 mm	1	5969762



A=Styles in Set, B=No. in Set, C=Diameters in Set. DC <= 1mm; 3/64"; N60 Bright.

Product	A	B	C	Pack Qty	MID
A191413	A100	13	1.5 mm - 6.5 mm x 0.5 mm + 3.3 mm, 4.2 mm	1	5969772
A191419	A100	19	1.0 mm - 10.0 mm x 0.5 mm	1	5969777



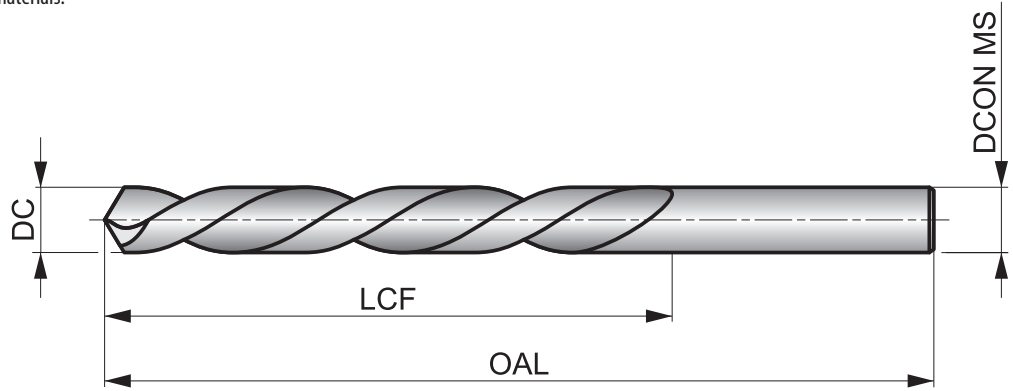
A101



HSS Left-Hand Jobber Drill, Steam Tempered Finish

Versatile left-handed drill with steam tempered finish for hand-held and machine drilling. Conventional 118° point provides strength and is easy to regrind, making it very cost-effective. Steam tempered finish retains cutting fluid and prevents chip to tool welding. Suitable for drilling many materials.

HSS	DIN 338	4xD
118°	ST	
λ 20-35°	L	DC h8



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 108 H	P1.2 ■ 121 H	P1.3 ■ 125 H	P2.1 ■ 92 H	P2.2 ■ 82 F	P2.3 ■ 72 E	P3.1 ■ 62 F	P3.2 ■ 49 F	P3.3 ■ 43 E	P4.1 ■ 36 F	P4.2 ■ 33 E	P4.3 ■ 26 D	M1.1 ■ 69 E	M1.2 ■ 56 E
M2.1 ■ 59 E	M2.2 ■ 49 E	M3.1 ■ 30 G	M3.2 ■ 26 G	M3.3 ■ 23 G	M4.1 ■ 30 C	K1.1 ■ 98 H	K1.2 ■ 72 F	K1.3 ■ 56 F	K2.1 ■ 82 E	K2.2 ■ 66 E	K2.3 ■ 52 E	K3.1 ■ 72 E	K3.2 ■ 56 E
K3.3 ■ 43 E	K4.1 ■ 66 E	K4.2 ■ 49 E	K4.3 ■ 36 E	K4.4 ■ 33 E	K4.5 ■ 26 E	K5.1 ■ 75 E	K5.2 ■ 56 E	K5.3 ■ 43 E	N1.1 ■ 108 J	N1.2 ■ 82 J	N1.3 ■ 56 I	N2.1 ■ 138 H	N2.2 ■ 121 H
N2.3 ■ 89 H	N3.1 ■ 194 H	N3.2 ■ 115 I	N3.3 ■ 59 G	N4.1 ■ 98 J	N4.2 ■ 92 H	N4.3 ■ 46 F	S1.1 ■ 75 E	S1.2 ■ 39 D	S1.3 ■ 20 B	S2.1 ■ 26 E	S2.2 ■ 13 A	S3.1 ■ 20 E	S3.2 ■ 10 A
S4.1 ■ 16 E	S4.2 ■ 7 A												

DC <= 3mm Bright.

Product	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A1011.0	1.00	.0394	12.0	34.0	1.00	10	5968016
A1011.1	1.10	.0433	14.0	36.0	1.10	10	5968019
A1011.2	1.20	.0472	16.0	38.0	1.20	10	5968022
A1011.25	1.25	.0492	16.0	38.0	1.25	10	5968025
A1011.3	1.30	.0512	16.0	38.0	1.30	10	5968032
A1011.4	1.40	.0551	18.0	40.0	1.40	10	5968037
A1011.5	1.50	.0591	18.0	40.0	1.50	10	5968042
A1011.6	1.60	.0630	20.0	43.0	1.60	10	5968047
A1011.7	1.70	.0669	20.0	43.0	1.70	10	5968052
A1011.8	1.80	.0709	22.0	46.0	1.80	10	5968062
A1011.9	1.90	.0748	22.0	46.0	1.90	10	5968067
A1012.0	2.00	.0787	24.0	49.0	2.00	10	5967908
A1012.1	2.10	.0827	24.0	49.0	2.10	10	5967955
A1012.2	2.20	.0866	27.0	53.0	2.20	10	5967987
A1012.4	2.40	.0945	30.0	57.0	2.40	10	5968069
A1012.5	2.50	.0984	30.0	57.0	2.50	10	5968082
A1012.6	2.60	.1024	30.0	57.0	2.60	10	5968087
A1012.7	2.70	.1063	33.0	61.0	2.70	10	5968093
A1012.8	2.80	.1102	33.0	61.0	2.80	10	5968098
A1012.9	2.90	.1142	33.0	61.0	2.90	10	5967912
A1013.0	3.00	.1181	33.0	61.0	3.00	10	5967917
A1013.2	3.20	.1260	36.0	65.0	3.20	10	5967920

Product	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A1013.3	3.30	.1299	36.0	65.0	3.30	10	5967924
A1013.5	3.50	.1378	39.0	70.0	3.50	10	5967928
A1013.8	3.80	.1496	43.0	75.0	3.80	10	5967933
A1014.0	4.00	.1575	43.0	75.0	4.00	10	5967939
A1014.2	4.20	.1654	43.0	75.0	4.20	10	5967943
A1014.5	4.50	.1772	47.0	80.0	4.50	10	5967948
A1014.8	4.80	.1890	52.0	86.0	4.80	10	5967952
A1015.0	5.00	.1969	52.0	86.0	5.00	10	5967958
A1015.1	5.10	.2008	52.0	86.0	5.10	10	5967961
A1015.2	5.20	.2047	52.0	86.0	5.20	10	5967964
A1015.5	5.50	.2165	57.0	93.0	5.50	10	5967966
A1016.0	6.00	.2362	57.0	93.0	6.00	10	5967969
A1016.5	6.50	.2559	63.0	101.0	6.50	10	5967972
A1017.0	7.00	.2756	69.0	109.0	7.00	10	5967975
A1017.5	7.50	.2953	69.0	109.0	7.50	10	5967978
A1018.0	8.00	.3150	75.0	117.0	8.00	10	5967981
A1018.5	8.50	.3346	75.0	117.0	8.50	10	5967984
A1019.0	9.00	.3543	81.0	125.0	9.00	10	5967990
A10110.0	10.00	.3937	87.0	133.0	10.00	10	5968072
A10111.0	11.00	.4331	94.0	142.0	11.00	5	5968077
A10112.0	12.00	.4724	101.0	151.0	12.00	5	5968086



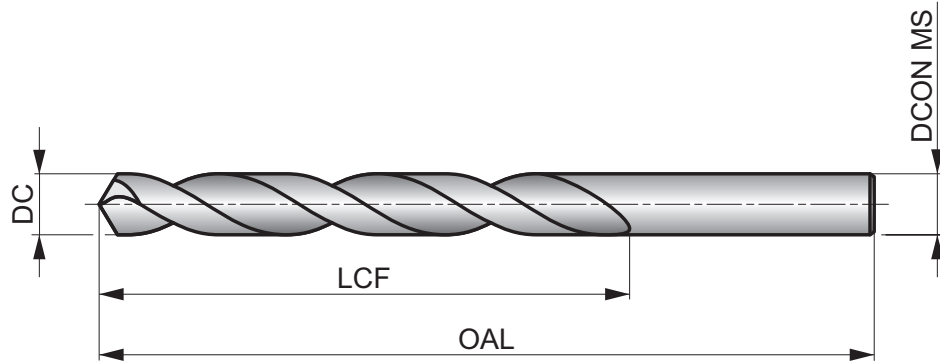
R10A / R15A / R18A



NAS 907 Type A HSS Jobber Drill, Steam Tempered Finish

A very good performing drill with 118° self-centering split point for easier penetration and low thrust. Steam tempered finish for increased wear resistance and lubricity. Made to NAS 907 Type A Aerospace Standards.

HSS	NAS 907	4xD
118°	ST	
λ20-35°	R	



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 118 H	P1.2 ■ 131 H	P1.3 ■ 135 H	P2.1 ■ 102 H	P2.2 ■ 89 G	P2.3 ■ 79 E	P3.1 ■ 82 F	P3.2 ■ 66 F	P3.3 ■ 56 E	P4.1 ■ 49 F	P4.2 ■ 43 E	P4.3 ■ 33 D	M1.1 ■ 98 E	M1.2 ■ 85 E
M2.1 ■ 89 E	M2.2 ■ 72 E	M2.3 ■ 59 C	M3.1 ■ 43 G	M3.2 ■ 36 G	M3.3 ■ 33 C	M4.1 ■ 49 C	M4.2 ■ 43 C	K1.1 ■ 115 H	K1.2 ■ 85 D	K1.3 ■ 62 D	K2.1 ■ 89 E	K2.2 ■ 72 E	K2.3 ■ 59 E
K3.1 ■ 79 E	K3.2 ■ 59 E	K3.3 ■ 49 E	K4.1 ■ 72 E	K4.2 ■ 56 E	K4.3 ■ 39 E	K4.4 ■ 36 E	K4.5 ■ 30 E	K5.1 ■ 82 E	K5.2 ■ 62 E	K5.3 ■ 49 E	N1.1 ■ 108 J	N1.2 ■ 82 J	N1.3 ■ 56 I
N2.1 ■ 151 H	N2.2 ■ 138 H	N2.3 ■ 98 H	N3.1 ■ 223 H	N3.2 ■ 131 F	N3.3 ■ 66 H	S1.1 ■ 92 F	S1.2 ■ 66 D	S1.3 ■ 36 C	S2.1 ■ 30 E	S2.2 ■ 26 B	S3.1 ■ 23 E	S3.2 ■ 20 B	S4.1 ■ 16 E
S4.2 ■ 16 B													

Product	DC (inch)	DC (Wire gauge size)	DC (Letter size)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
R10A1/16	1/16	-	-	.0625	7/8	1.7/8	.063	12	5997500
R18AN52	-	N52	-	.0635	7/8	1.7/8	.064	12	5999185
R18AN51	-	N51	-	.0670	1"	2"	.067	12	5999183
R18AN50	-	N50	-	.0700	1"	2"	.070	12	5999181
R18AN49	-	N49	-	.0730	1"	2"	.073	12	5999175
R18AN48	-	N48	-	.0760	1"	2"	.076	12	5999146
R10A5/64	5/64	-	-	.0781	1"	2"	.078	12	5997578
R18AN47	-	N47	-	.0785	1"	2"	.079	12	5999101
R18AN46	-	N46	-	.0810	1.1/8	2.1/8	.081	12	5999068
R18AN45	-	N45	-	.0820	1.1/8	2.1/8	.082	12	5999026
R18AN44	-	N44	-	.0860	1.1/8	2.1/8	.086	12	5999428
R18AN43	-	N43	-	.0890	1.1/4	2.1/4	.089	12	5999424
R18AN42	-	N42	-	.0935	1.1/4	2.1/4	.093	12	5999422
R10A3/32	3/32	-	-	.0938	1.1/4	2.1/4	.094	12	5997565
R18AN41	-	N41	-	.0960	1.3/8	2.3/8	.096	12	5999419
R18AN40	-	N40	-	.0980	1.3/8	2.3/8	.098	12	5999416
R18AN39	-	N39	-	.0995	1.3/8	2.3/8	.100	12	5999410
R18AN38	-	N38	-	.1015	1.7/16	2.1/2	.102	12	5999407
R18AN37	-	N37	-	.1040	1.7/16	2.1/2	.104	12	5999404



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
R18AN36	–	N36	–	.1065	1.7/16	2.1/2	.106	12	5999401
R10A7/64	7/64	–	–	.1094	1.1/2	2.5/8	.109	12	5997587
R18AN35	–	N35	–	.1100	1.1/2	2.5/8	.110	12	5999399
R18AN34	–	N34	–	.1110	1.1/2	2.5/8	.111	12	5999392
R18AN33	–	N33	–	.1130	1.1/2	2.5/8	.113	12	5999388
R18AN32	–	N32	–	.1160	1.5/8	2.3/4	.116	12	5999384
R18AN31	–	N31	–	.1200	1.5/8	2.3/4	.120	12	5999380
R10A1/8	1/8	–	–	.1250	1.5/8	2.3/4	.125	12	5997510
R18AN30	–	N30	–	.1285	1.5/8	2.3/4	.129	12	5999376
R18AN29	–	N29	–	.1360	1.3/4	2.7/8	.136	12	5999368
R18AN28	–	N28	–	.1405	1.3/4	2.7/8	.141	12	5999363
R10A9/64	9/64	–	–	.1406	1.3/4	2.7/8	.141	12	5997596
R18AN27	–	N27	–	.1440	1.7/8	3"	.144	12	5999359
R18AN26	–	N26	–	.1470	1.7/8	3"	.147	12	5999352
R18AN25	–	N25	–	.1495	1.7/8	3"	.149	12	5999343
R18AN24	–	N24	–	.1520	2"	3.1/8	.152	12	5999339
R18AN23	–	N23	–	.1540	2"	3.1/8	.154	12	5999335
R10A5/32	5/32	–	–	.1563	2"	3.1/8	.156	12	5997576
R18AN22	–	N22	–	.1570	2"	3.1/8	.157	12	5999331
R18AN21	–	N21	–	.1590	2.1/8	3.1/4	.159	12	5999327
R18AN20	–	N20	–	.1610	2.1/8	3.1/4	.161	12	5999323
R18AN19	–	N19	–	.1660	2.1/8	3.1/4	.166	12	5999313
R18AN18	–	N18	–	.1695	2.1/8	3.1/4	.170	12	5999311
R10A11/64	11/64	–	–	.1719	2.1/8	3.1/4	.172	12	5997514
R18AN17	–	N17	–	.1730	2.3/16	3.3/8	.173	12	5999307
R18AN16	–	N16	–	.1770	2.3/16	3.3/8	.177	12	5999298
R18AN15	–	N15	–	.1800	2.3/16	3.3/8	.180	12	5999294
R18AN14	–	N14	–	.1820	2.3/16	3.3/8	.182	12	5999290
R18AN13	–	N13	–	.1850	2.5/16	3.1/2	.185	12	5999286
R10A3/16	3/16	–	–	.1875	2.5/16	3.1/2	.188	12	5997560
R18AN12	–	N12	–	.1890	2.5/16	3.1/2	.189	12	5999282
R18AN11	–	N11	–	.1910	2.5/16	3.1/2	.191	12	5999278
R18AN10	–	N10	–	.1935	2.7/16	3.5/8	.194	12	5999275
R18AN9	–	N9	–	.1960	2.7/16	3.5/8	.196	12	5999042
R18AN8	–	N8	–	.1990	2.7/16	3.5/8	.199	12	5999039
R18AN7	–	N7	–	.2010	2.7/16	3.5/8	.201	12	5999035
R10A13/64	13/64	–	–	.2031	2.7/16	3.5/8	.203	12	5997523
R18AN6	–	N6	–	.2040	2.1/2	3.3/4	.204	12	5999031
R18AN5	–	N5	–	.2055	2.1/2	3.3/4	.205	12	5999179
R18AN4	–	N4	–	.2090	2.1/2	3.3/4	.209	12	5999413
R18AN3	–	N3	–	.2130	2.1/2	3.3/4	.213	12	5999372
R10A7/32	7/32	–	–	.2188	2.1/2	3.3/4	.219	12	5997584
R18AN2	–	N2	–	.2210	2.5/8	3.7/8	.221	12	5999317
R18AN1	–	N1	–	.2280	2.5/8	3.7/8	.228	12	5999271
R15AA	–	–	A	.2340	2.5/8	3.7/8	.234	12	5998650
R10A15/64	15/64	–	–	.2344	2.5/8	3.7/8	.234	12	5997530
R15AB	–	–	B	.2380	2.3/4	4"	.238	12	5998654
R15AC	–	–	C	.2420	2.3/4	4"	.242	12	5998658
R15AD	–	–	D	.2460	2.3/4	4"	.246	12	5998662
R10A1/4	1/4	–	–	.2500	2.3/4	4"	.250	12	5997506
R15AF	–	–	F	.2570	2.7/8	4.1/8	.257	12	5998670
R15AG	–	–	G	.2610	2.7/8	4.1/8	.261	12	5998674
R10A17/64	17/64	–	–	.2656	2.7/8	4.1/8	.266	12	5997533
R15AH	–	–	H	.2660	2.7/8	4.1/8	.266	12	5998677
R15AI	–	–	I	.2720	2.7/8	4.1/8	.272	12	5998680
R15AJ	–	–	J	.2770	2.7/8	4.1/8	.277	12	5998683
R15AK	–	–	K	.2810	2.15/16	4.1/4	.281	12	5998689
R10A9/32	9/32	–	–	.2813	2.15/16	4.1/4	.281	12	5997593



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
R15AL	–	–	L	.2900	2.15/16	4.1/4	.290	12	5998692
R15AM	–	–	M	.2950	3.1/16	4.3/8	.295	12	5998695
R10A19/64	19/64	–	–	.2969	3.1/16	4.3/8	.297	12	5997536
R15AN	–	–	N	.3020	3.1/16	4.3/8	.302	12	5998698
R10A5/16	5/16	–	–	.3125	3.3/16	4.1/2	.313	6	5997573
R15AO	–	–	O	.3160	3.3/16	4.1/2	.316	6	5998700
R15AP	–	–	P	.3230	3.5/16	4.5/8	.323	6	5998702
R10A21/64	21/64	–	–	.3281	3.5/16	4.5/8	.328	6	5997540
R15AQ	–	–	Q	.3320	3.7/16	4.3/4	.332	6	5998705
R15AR	–	–	R	.3390	3.7/16	4.3/4	.339	6	5998707
R10A11/32	11/32	–	–	.3438	3.7/16	4.3/4	.344	6	5997512
R15AS	–	–	S	.3480	3.1/2	4.7/8	.348	6	5998709
R15AT	–	–	T	.3580	3.1/2	4.7/8	.358	6	5998711
R10A23/64	23/64	–	–	.3594	3.1/2	4.7/8	.359	6	5997544
R15AU	–	–	U	.3680	3.5/8	5"	.368	6	5998715
R10A3/8	3/8	–	–	.3750	3.5/8	5"	.375	6	5997568
R15AV	–	–	V	.3770	3.5/8	5"	.377	6	5998717
R15AW	–	–	W	.3860	3.3/4	5.1/8	.386	6	5998719
R10A25/64	25/64	–	–	.3906	3.3/4	5.1/8	.391	6	5997548
R15AX	–	–	X	.3970	3.3/4	5.1/8	.397	6	5998722
R15AY	–	–	Y	.4040	3.7/8	5.1/4	.404	6	5998726
R10A13/32	13/32	–	–	.4063	3.7/8	5.1/4	.406	6	5997517
R15AZ	–	–	Z	.4130	3.7/8	5.1/4	.413	6	5998729
R10A27/64	27/64	–	–	.4219	3.15/16	5.3/8	.422	6	5997552
R10A7/16	7/16	–	–	.4375	4.1/16	5.1/2	.438	6	5997581
R10A29/64	29/64	–	–	.4531	4.3/16	5.5/8	.453	6	5997555
R10A15/32	15/32	–	–	.4688	4.5/16	5.3/4	.469	6	5997526
R10A31/64	31/64	–	–	.4844	4.3/8	5.7/8	.484	6	5997571
R10A1/2	1/2	–	–	.5000	4.1/2	6"	.500	6	5997503

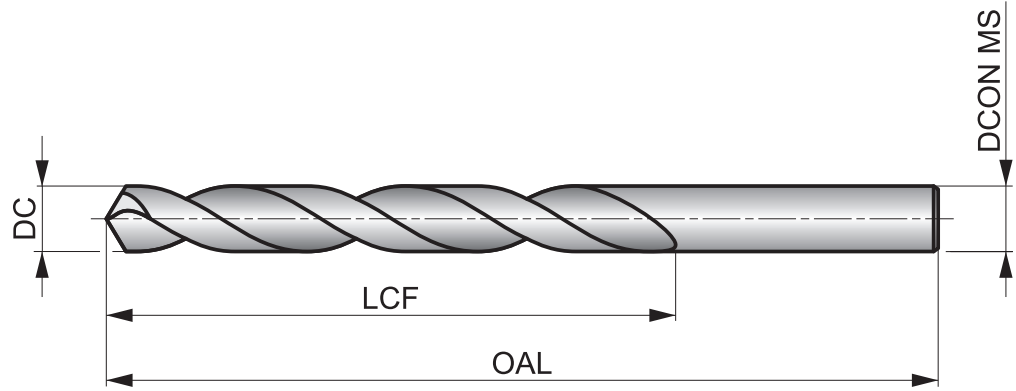


A012



HSS Jobber Drill, ANSI Standard, TiN-Tip Coated

ANSI length version of the A002 drills for portable and machine applications. The specially designed 118° split point helps to self-center the drill when drilling by hand and provides more accurate sized holes. Suitable for drilling most materials.



HSS	ANSI	4×D
118°	TiN-Tip	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 151 J	P1.2 ■ 171 J	P1.3 ■ 177 J	P2.1 ■ 131 J	P2.2 ■ 115 F	P2.3 ■ 102 F	P3.1 ■ 89 F	P3.2 ■ 69 F	P3.3 ■ 59 F	P4.1 ■ 52 F	P4.2 ■ 43 F	P4.3 ■ 36 E	M1.1 ■ 89 F	M1.2 ■ 75 F
M2.1 ■ 79 F	M2.2 ■ 66 F	M3.1 ■ 46 G	M3.2 ■ 39 G	M3.3 ■ 36 G	M4.1 ■ 52 C	K1.1 ■ 131 J	K1.2 ■ 98 E	K1.3 ■ 72 E	K2.1 ■ 112 E	K2.2 ■ 92 E	K2.3 ■ 72 E	K3.1 ■ 98 E	K3.2 ■ 75 E
K3.3 ■ 62 E	K4.1 ■ 92 E	K4.2 ■ 69 E	K4.3 ■ 52 E	K4.4 ■ 43 E	K4.5 ■ 36 E	K5.1 ■ 105 E	K5.2 ■ 79 E	K5.3 ■ 62 E	N1.1 ■ 135 K	N1.2 ■ 102 K	N1.3 ■ 69 J	N2.1 ■ 167 I	N2.2 ■ 151 I
N2.3 ■ 108 I	N3.1 ■ 184 H	N3.2 ■ 108 I	N3.3 ■ 56 G	N4.1 ■ 98 I	N4.2 ■ 164 H	N4.3 ■ 115 F	S1.1 ■ 75 F	S1.2 ■ 43 D	S1.3 ■ 23 B	S2.1 ■ 30 E	S2.2 ■ 13 A	S3.1 ■ 23 E	S3.2 ■ 10 A
S4.1 ■ 16 E	S4.2 ■ 7 A												

DC < N46mm Bright; DC >= N46 TiN Tipped and Split Point.

Product	DC (inch)	DC (Wire gauge size)	DC (Letter size)	DC (mm)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
A012N80	–	N80	–	0.34	.0135	1/8	3/4	.013	10	5966768 (1)
A012N79	–	N79	–	0.37	.0145	1/8	3/4	.015	10	5966762 (1)
A0121/64	1/64	–	–	0.40	.0156	3/16	3/4	.016	10	5966740 (1)
A012N78	–	N78	–	0.41	.0160	3/16	7/8	.016	10	5966758 (1)
A012N77	–	N77	–	0.46	.0180	3/16	7/8	.018	10	5966754 (1)
A012N76	–	N76	–	0.51	.0200	3/16	7/8	.020	10	5966749 (1)
A012N75	–	N75	–	0.53	.0210	1/4	1"	.021	10	5966746 (1)
A012N74	–	N74	–	0.57	.0225	1/4	1"	.022	10	5966741 (1)
A012N73	–	N73	–	0.61	.0240	5/16	1.1/8	.024	10	5966735 (1)
A012N72	–	N72	–	0.64	.0250	5/16	1.1/8	.025	10	5966731 (1)
A012N71	–	N71	–	0.66	.0260	3/8	1.1/4	.026	10	5966727 (1)
A012N70	–	N70	–	0.71	.0280	3/8	1.1/4	.028	10	5966723 (1)
A012N69	–	N69	–	0.74	.0292	1/2	1.3/8	.029	10	5966716 (1)
A012N68	–	N68	–	0.79	.0310	1/2	1.3/8	.031	10	5966711 (1)
A0121/32	1/32	–	–	0.79	.0313	1/2	1.3/8	.031	10	5966639 (1)
A012N67	–	N67	–	0.81	.0320	1/2	1.3/8	.032	10	5966708 (1)
A012N66	–	N66	–	0.84	.0330	1/2	1.3/8	.033	10	5966703 (1)
A012N65	–	N65	–	0.89	.0350	5/8	1.1/2	.035	10	5966697 (1)

1) No Split Point



Product	DC	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(mm)	(inch)	(inch)	(inch)	(inch)		
A012N64	–	N64	–	0.91	.0360	5/8	1.1/2	.036	10	5966687 (1)
A012N63	–	N63	–	0.94	.0370	5/8	1.1/2	.037	10	5966682 (1)
A012N62	–	N62	–	0.97	.0380	5/8	1.1/2	.038	10	5966677 (1)
A012N61	–	N61	–	0.99	.0390	11/16	1.5/8	.039	10	5966672 (1)
A012N60	–	N60	–	1.02	.0400	11/16	1.5/8	.040	10	5966668 (1)
A012N59	–	N59	–	1.04	.0410	11/16	1.5/8	.041	10	5966662 (1)
A012N58	–	N58	–	1.07	.0420	11/16	1.5/8	.042	10	5966658 (1)
A012N57	–	N57	–	1.09	.0430	3/4	1.3/4	.043	10	5966654 (1)
A012N56	–	N56	–	1.18	.0465	3/4	1.3/4	.046	10	5966650 (1)
A0123/64	3/64	–	–	1.19	.0469	3/4	1.3/4	.047	10	5966635 (1)
A012N55	–	N55	–	1.32	.0520	7/8	1.7/8	.052	10	5966828 (1)
A012N54	–	N54	–	1.40	.0550	7/8	1.7/8	.055	10	5966825 (1)
A012N53	–	N53	–	1.51	.0595	7/8	1.7/8	.059	10	5966822 (1)
A0121/16	1/16	–	–	1.59	.0625	7/8	1.7/8	.063	10	5966594 (1)
A012N52	–	N52	–	1.61	.0635	7/8	1.7/8	.064	10	5966819 (1)
A012N51	–	N51	–	1.70	.0670	1"	2"	.067	10	5966812 (1)
A012N50	–	N50	–	1.78	.0700	1"	2"	.070	10	5966778 (1)
A012N49	–	N49	–	1.85	.0730	1"	2"	.073	10	5966692 (1)
A012N48	–	N48	–	1.93	.0760	1"	2"	.076	10	5966642 (1)
A0125/64	5/64	–	–	1.98	.0781	1"	2"	.078	10	5966684 (1)
A012N47	–	N47	–	1.99	.0785	1"	2"	.079	10	5967082 (1)
A012N46	–	N46	–	2.06	.0810	1.1/8	2.1/8	.081	10	5967070
A012N45	–	N45	–	2.08	.0820	1.1/8	2.1/8	.082	10	5967067
A012N44	–	N44	–	2.18	.0860	1.1/8	2.1/8	.086	10	5967063
A012N43	–	N43	–	2.26	.0890	1.1/4	2.1/4	.089	10	5967061
A012N42	–	N42	–	2.38	.0935	1.1/4	2.1/4	.093	10	5967056
A0123/32	3/32	–	–	2.38	.0938	1.1/4	2.1/4	.094	10	5966631
A012N41	–	N41	–	2.44	.0960	1.3/8	2.3/8	.096	10	5967053
A012N40	–	N40	–	2.49	.0980	1.3/8	2.3/8	.098	10	5967049
A012N39	–	N39	–	2.53	.0995	1.3/8	2.3/8	.100	10	5967043
A012N38	–	N38	–	2.58	.1015	1.7/16	2.1/2	.102	10	5967040
A012N37	–	N37	–	2.64	.1040	1.7/16	2.1/2	.104	10	5967034
A012N36	–	N36	–	2.71	.1065	1.7/16	2.1/2	.106	10	5967031
A0127/64	7/64	–	–	2.78	.1094	1.1/2	2.5/8	.109	10	5966707
A012N35	–	N35	–	2.79	.1100	1.1/2	2.5/8	.110	10	5967029
A012N34	–	N34	–	2.82	.1110	1.1/2	2.5/8	.111	10	5967026
A012N33	–	N33	–	2.87	.1130	1.1/2	2.5/8	.113	10	5967023
A012N32	–	N32	–	2.95	.1160	1.5/8	2.3/4	.116	10	5967017
A012N31	–	N31	–	3.05	.1200	1.5/8	2.3/4	.120	10	5967014
A0121/8	1/8	–	–	3.18	.1250	1.5/8	2.3/4	.125	10	5966747
A012N30	–	N30	–	3.26	.1285	1.5/8	2.3/4	.129	10	5967011
A012N29	–	N29	–	3.45	.1360	1.3/4	2.7/8	.136	10	5967005
A012N28	–	N28	–	3.57	.1405	1.3/4	2.7/8	.141	10	5966999
A0129/64	9/64	–	–	3.57	.1406	1.3/4	2.7/8	.141	10	5966724
A012N27	–	N27	–	3.66	.1440	1.7/8	3"	.144	10	5966996
A012N26	–	N26	–	3.73	.1470	1.7/8	3"	.147	10	5966992
A012N25	–	N25	–	3.80	.1495	1.7/8	3"	.149	10	5966987
A012N24	–	N24	–	3.86	.1520	2"	3.1/8	.152	10	5966983
A012N23	–	N23	–	3.91	.1540	2"	3.1/8	.154	10	5966979
A0125/32	5/32	–	–	3.97	.1563	2"	3.1/8	.156	10	5966680
A012N22	–	N22	–	3.99	.1570	2"	3.1/8	.157	10	5966975
A012N21	–	N21	–	4.04	.1590	2.1/8	3.1/4	.159	10	5966971
A012N20	–	N20	–	4.09	.1610	2.1/8	3.1/4	.161	10	5966969
A012N19	–	N19	–	4.22	.1660	2.1/8	3.1/4	.166	10	5966952
A012N18	–	N18	–	4.31	.1695	2.1/8	3.1/4	.170	10	5966948
A01211/64	11/64	–	–	4.37	.1719	2.1/8	3.1/4	.172	10	5966759
A012N17	–	N17	–	4.39	.1730	2.3/16	3.3/8	.173	10	5966943
A012N16	–	N16	–	4.50	.1770	2.3/16	3.3/8	.177	10	5966938



Product	DC	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(mm)	(inch)	(inch)	(inch)	(inch)		
A012N15	—	N15	—	4.57	.1800	2.3/16	3.3/8	.180	10	5966933
A012N14	—	N14	—	4.62	.1820	2.3/16	3.3/8	.182	10	5966928
A012N13	—	N13	—	4.70	.1850	2.5/16	3.1/2	.185	10	5966923
A0123/16	3/16	—	—	4.76	.1875	2.5/16	3.1/2	.188	10	5966629
A012N12	—	N12	—	4.80	.1890	2.5/16	3.1/2	.189	10	5966919
A012N11	—	N11	—	4.85	.1910	2.5/16	3.1/2	.191	10	5966915
A012N10	—	N10	—	4.92	.1935	2.7/16	3.5/8	.194	10	5966910
A012N9	—	N9	—	4.98	.1960	2.7/16	3.5/8	.196	10	5966771
A012N8	—	N8	—	5.06	.1990	2.7/16	3.5/8	.199	10	5966765
A012N7	—	N7	—	5.11	.2010	2.7/16	3.5/8	.201	10	5966720
A01213/64	13/64	—	—	5.16	.2031	2.7/16	3.5/8	.203	10	5966599
A012N6	—	N6	—	5.18	.2040	2.1/2	3.3/4	.204	10	5966667
A012N5	—	N5	—	5.22	.2055	2.1/2	3.3/4	.205	10	5966739
A012N4	—	N4	—	5.31	.2090	2.1/2	3.3/4	.209	10	5967045
A012N3	—	N3	—	5.41	.2130	2.1/2	3.3/4	.213	10	5967008
A0127/32	7/32	—	—	5.56	.2188	2.1/2	3.3/4	.219	10	5966704
A012N2	—	N2	—	5.61	.2210	2.5/8	3.7/8	.221	10	5966964
A012N1	—	N1	—	5.79	.2280	2.5/8	3.7/8	.228	10	5967094
A012A	—	—	A	5.94	.2340	2.5/8	3.7/8	.234	10	5967301
A01215/64	15/64	—	—	5.95	.2344	2.5/8	3.7/8	.234	10	5966603
A012B	—	—	B	6.03	.2380	2.3/4	4"	.238	10	5967304
A012C	—	—	C	6.15	.2420	2.3/4	4"	.242	10	5967308
A012D	—	—	D	6.25	.2460	2.3/4	4"	.246	10	5967312
A0121/4	1/4	—	—	6.35	.2500	2.3/4	4"	.250	10	5966688
A012E	—	—	E	6.35	.2500	2.3/4	4"	.250	10	5967317
A012F	—	—	F	6.53	.2570	2.7/8	4.1/8	.257	10	5967323
A012G	—	—	G	6.63	.2610	2.7/8	4.1/8	.261	10	5966901
A01217/64	17/64	—	—	6.75	.2656	2.7/8	4.1/8	.266	10	5966607
A012H	—	—	H	6.76	.2660	2.7/8	4.1/8	.266	10	5966958
A012I	—	—	I	6.91	.2720	2.7/8	4.1/8	.272	10	5967002
A012J	—	—	J	7.04	.2770	2.7/8	4.1/8	.277	10	5967037
A012K	—	—	K	7.14	.2810	2.15/16	4.1/4	.281	10	5967077
A0129/32	9/32	—	—	7.14	.2813	2.15/16	4.1/4	.281	10	5966717
A012L	—	—	L	7.37	.2900	2.15/16	4.1/4	.290	10	5967086
A012M	—	—	M	7.49	.2949	3.1/16	4.3/8	.295	10	5967088
A01219/64	19/64	—	—	7.54	.2969	3.1/16	4.3/8	.297	10	5966610
A012N	—	—	N	7.67	.3020	3.1/16	4.3/8	.302	10	5967091
A0125/16	5/16	—	—	7.94	.3125	3.3/16	4.1/2	.313	10	5966676
A012O	—	—	O	8.03	.3160	3.3/16	4.1/2	.316	10	5966774
A012P	—	—	P	8.20	.3230	3.5/16	4.5/8	.323	10	5966782
A01221/64	21/64	—	—	8.33	.3281	3.5/16	4.5/8	.328	10	5966615
A012Q	—	—	Q	8.43	.3320	3.7/16	4.3/4	.332	10	5966785
A012R	—	—	R	8.61	.3390	3.7/16	4.3/4	.339	10	5966788
A01211/32	11/32	—	—	8.73	.3438	3.7/16	4.3/4	.344	10	5966755
A012S	—	—	S	8.84	.3480	3.1/2	4.7/8	.348	10	5966792
A012T	—	—	T	9.09	.3580	3.1/2	4.7/8	.358	10	5966795
A01223/64	23/64	—	—	9.13	.3594	3.1/2	4.7/8	.359	10	5966621
A012U	—	—	U	9.35	.3680	3.5/8	5"	.368	10	5966797
A0123/8	3/8	—	—	9.52	.3750	3.5/8	5"	.375	10	5966637
A012V	—	—	V	9.58	.3770	3.5/8	5"	.377	10	5966800
A012W	—	—	W	9.80	.3860	3.3/4	5.1/8	.386	10	5966803
A01225/64	25/64	—	—	9.92	.3906	3.3/4	5.1/8	.391	10	5966623
A012X	—	—	X	10.08	.3970	3.3/4	5.1/8	.397	5	5966806
A012Y	—	—	Y	10.26	.4040	3.7/8	5.1/4	.404	5	5966809
A01213/32	13/32	—	—	10.32	.4063	3.7/8	5.1/4	.406	5	5966598
A012Z	—	—	Z	10.49	.4130	3.7/8	5.1/4	.413	5	5966814
A01227/64	27/64	—	—	10.72	.4219	3.15/16	5.3/8	.422	5	5966625
A0127/16	7/16	—	—	11.11	.4375	4.1/16	5.1/2	.438	5	5966699



Product	DC	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(mm)	(inch)	(inch)	(inch)	(inch)		
A01229/64	29/64	–	–	11.51	.4531	4.3/16	5.5/8	.453	5	5966627
A01215/32	15/32	–	–	11.91	.4688	4.5/16	5.3/4	.469	5	5966601
A01231/64	31/64	–	–	12.30	.4844	4.3/8	5.7/8	.484	5	5966643
A0121/2	1/2	–	–	12.70	.5000	4.1/2	6"	.500	5	5966617
A01233/64	33/64	–	–	13.10	.5156	4.13/16	6.5/8	.516	1	5966645
A01217/32	17/32	–	–	13.49	.5313	4.13/16	6.5/8	.531	1	5966605
A01235/64	35/64	–	–	13.89	.5469	4.13/16	6.5/8	.547	1	5966647
A0129/16	9/16	–	–	14.29	.5625	4.13/16	6.5/8	.563	1	5966713
A01237/64	37/64	–	–	14.68	.5781	4.13/16	6.5/8	.578	1	5966651
A01219/32	19/32	–	–	15.08	.5938	5.3/16	7.1/8	.594	1	5966609
A0125/8	5/8	–	–	15.88	.6250	5.3/16	7.1/8	.625	1	5966693
A01221/32	21/32	–	–	16.67	.6563	5.3/16	7.1/8	.656	1	5966613
A01211/16	11/16	–	–	17.46	.6875	5.5/8	7.5/8	.688	1	5966751
A01245/64	45/64	–	–	17.86	.7031	5.5/8	7.5/8	.703	1	5966660
A01223/32	23/32	–	–	18.26	.7188	5.5/8	7.5/8	.719	1	5966619
A01247/64	47/64	–	–	18.65	.7344	6"	8"	.734	1	5966664
A0123/4	3/4	–	–	19.05	.7500	6"	8"	.750	1	5966633

A=Styles in Set, B=No. in Set, C=Diameters in Set.



Product	A	B	C	Pack Qty	MID
A09712	A012	60	Nr.1 - Nr.60	1	5967709
A09714	A012	26	A - Z	1	5967714
A09718	A012	29	1/16 - 1/2 x 1/64	1	5967571



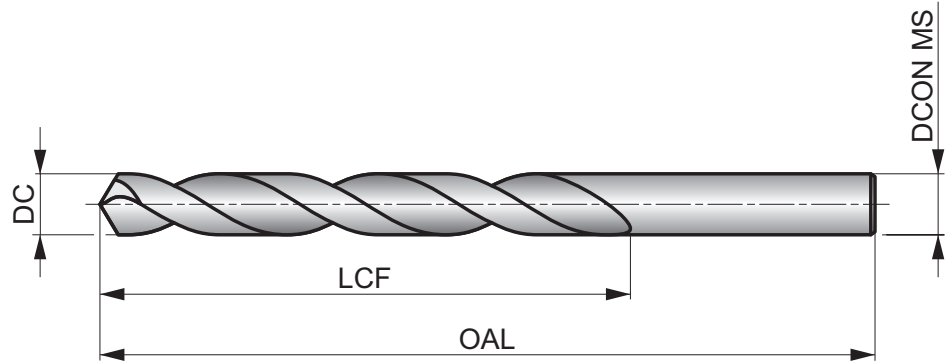
A002



HSS Jobber Drill, TiN-Tip Coated

Versatile drill for both hand-held and machine drilling. A specially designed 118° split point which helps to self-center the drill when drilling by hand and provides more accurate sized holes. Suitable for many materials. TiN-Tip coating improves performance and extends tool life.

HSS	DIN 338	4xD
118°	TiN-Tip	
λ 20-35°	R	DC h8



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 151 J	P1.2 ■ 171 J	P1.3 ■ 177 J	P2.1 ■ 131 J	P2.2 ■ 115 F	P2.3 ■ 102 F	P3.1 ■ 89 F	P3.2 ■ 69 F	P3.3 ■ 59 F	P4.1 ■ 52 F	P4.2 ■ 43 F	P4.3 ■ 36 E	M1.1 ■ 89 F	M1.2 ■ 75 F
M2.1 ■ 79 F	M2.2 ■ 66 F	M3.1 ■ 46 G	M3.2 ■ 39 G	M3.3 ■ 36 G	M4.1 ■ 52 C	K1.1 ■ 131 J	K1.2 ■ 98 E	K1.3 ■ 72 E	K2.1 ■ 112 E	K2.2 ■ 92 E	K2.3 ■ 72 E	K3.1 ■ 98 E	K3.2 ■ 75 E
K3.3 ■ 62 E	K4.1 ■ 92 E	K4.2 ■ 69 E	K4.3 ■ 52 E	K4.4 ■ 43 E	K4.5 ■ 36 E	K5.1 ■ 105 E	K5.2 ■ 79 E	K5.3 ■ 62 E	N1.1 ■ 135 K	N1.2 ■ 102 K	N1.3 ■ 69 J	N2.1 ■ 167 I	N2.2 ■ 151 I
N2.3 ■ 108 I	N3.1 ■ 184 H	N3.2 ■ 108 I	N3.3 ■ 56 G	N4.1 ■ 98 I	N4.2 ■ 164 H	N4.3 ■ 115 F	S1.1 ■ 75 F	S1.2 ■ 43 D	S1.3 ■ 23 B	S2.1 ■ 30 E	S2.2 ■ 13 A	S3.1 ■ 23 E	S3.2 ■ 10 A
S4.1 ■ 16 E	S4.2 ■ 7 A												

DC < 2mm Bright; DC >= 2mm TiN Tipped and Split Point.
Products from this series are also available in set. Please see A087, A089 A094, A095 or A099.

Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A0021.0	—	1.00	.0394	12.0	34.0	1.00	10	5966835 (1)
A0021.1	—	1.10	.0433	14.0	36.0	1.10	10	5966837 (1)
A0023/64	3/64	1.19	.0469	16.0	38.0	1.19	10	5967192 (1)
A0021.2	—	1.20	.0472	16.0	38.0	1.20	10	5966839 (1)
A0021.3	—	1.30	.0512	16.0	38.0	1.30	10	5966841 (1)
A0021.4	—	1.40	.0551	18.0	40.0	1.40	10	5966842 (1)
A0021.5	—	1.50	.0591	18.0	40.0	1.50	10	5966846 (1)
A0021/16	1/16	1.59	.0625	20.0	43.0	1.59	10	5966856 (1)
A0021.6	—	1.60	.0630	20.0	43.0	1.60	10	5966848 (1)
A0021.7	—	1.70	.0669	20.0	43.0	1.70	10	5966850 (1)
A0021.8	—	1.80	.0709	22.0	46.0	1.80	10	5966852 (1)
A0021.9	—	1.90	.0748	22.0	46.0	1.90	10	5966854 (1)
A0025/64	5/64	1.98	.0781	24.0	49.0	1.98	10	5967299 (1)
A0022.0	—	2.00	.0787	24.0	49.0	2.00	10	5967411
A0022.1	—	2.10	.0827	24.0	49.0	2.10	10	5967415
A0022.2	—	2.20	.0866	27.0	53.0	2.20	10	5967419
A0022.3	—	2.30	.0906	27.0	53.0	2.30	10	5967424
A0023/32	3/32	2.38	.0938	30.0	57.0	2.38	10	5967187

Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A0022.4	—	2.40	.0945	30.0	57.0	2.40	10	5967429
A0022.5	—	2.50	.0984	30.0	57.0	2.50	10	5967434
A0022.6	—	2.60	.1024	30.0	57.0	2.60	10	5967439
A0022.7	—	2.70	.1063	33.0	61.0	2.70	10	5967444
A0027/64	7/64	2.78	.1094	33.0	61.0	2.78	10	5967216
A0022.8	—	2.80	.1102	33.0	61.0	2.80	10	5967449
A0022.9	—	2.90	.1142	33.0	61.0	2.90	10	5967453
A0023.0	—	3.00	.1181	33.0	61.0	3.00	10	5967311
A0023.1	—	3.10	.1220	36.0	65.0	3.10	10	5967320
A0021/8	1/8	3.18	.1250	36.0	65.0	3.18	10	5966862
A0023.2	—	3.20	.1260	36.0	65.0	3.20	10	5967325
A0023.25	—	3.25	.1280	36.0	65.0	3.25	10	5967327
A0023.3	—	3.30	.1299	36.0	65.0	3.30	10	5967331
A0023.4	—	3.40	.1339	39.0	70.0	3.40	10	5967150
A0023.5	—	3.50	.1378	39.0	70.0	3.50	10	5967154
A0029/64	9/64	3.57	.1406	39.0	70.0	3.57	10	5967297
A0023.6	—	3.60	.1417	39.0	70.0	3.60	10	5967160
A0023.7	—	3.70	.1457	39.0	70.0	3.70	10	5967165

1) No Split Point



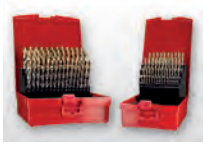
Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A0023.8	–	3.80	.1496	43.0	75.0	3.80	10	5967171
A0023.9	–	3.90	.1535	43.0	75.0	3.90	10	5967175
A0025/32	5/32	3.97	.1563	43.0	75.0	3.97	10	5967296
A0024.0	–	4.00	.1575	43.0	75.0	4.00	10	5967226
A0024.1	–	4.10	.1614	43.0	75.0	4.10	10	5967230
A0024.2	–	4.20	.1654	43.0	75.0	4.20	10	5967234
A0024.3	–	4.30	.1693	47.0	80.0	4.30	10	5967237
A00211/64	11/64	4.37	.1719	47.0	80.0	4.37	10	5966940
A0024.4	–	4.40	.1732	47.0	80.0	4.40	10	5967240
A0024.5	–	4.50	.1772	47.0	80.0	4.50	10	5967246
A0024.6	–	4.60	.1811	47.0	80.0	4.60	10	5967249
A0024.7	–	4.70	.1850	47.0	80.0	4.70	10	5967251
A0023/16	3/16	4.76	.1875	52.0	86.0	4.76	10	5967180
A0024.8	–	4.80	.1890	52.0	86.0	4.80	10	5967254
A0024.9	–	4.90	.1929	52.0	86.0	4.90	10	5967257
A0025.0	–	5.00	.1969	52.0	86.0	5.00	10	5967260
A0025.1	–	5.10	.2008	52.0	86.0	5.10	10	5967263
A00213/64	13/64	5.16	.2031	52.0	86.0	5.16	10	5967372
A0025.2	–	5.20	.2047	52.0	86.0	5.20	10	5967266
A0025.3	–	5.30	.2087	52.0	86.0	5.30	10	5967269
A0025.4	–	5.40	.2126	57.0	93.0	5.40	10	5967272
A0025.5	–	5.50	.2165	57.0	93.0	5.50	10	5967278
A0027/32	7/32	5.56	.2188	57.0	93.0	5.56	10	5967212
A0025.6	–	5.60	.2205	57.0	93.0	5.60	10	5967281
A0025.7	–	5.70	.2244	57.0	93.0	5.70	10	5967285
A0025.8	–	5.80	.2283	57.0	93.0	5.80	10	5967288
A0025.9	–	5.90	.2323	57.0	93.0	5.90	10	5967290
A00215/64	15/64	5.95	.2344	57.0	93.0	5.95	10	5967394
A0026.0	–	6.00	.2362	57.0	93.0	6.00	10	5967307
A0026.1	–	6.10	.2402	63.0	101.0	6.10	10	5967315
A0026.2	–	6.20	.2441	63.0	101.0	6.20	10	5967151
A0026.3	–	6.30	.2480	63.0	101.0	6.30	10	5967208
A0021/4	1/4	6.35	.2500	63.0	101.0	6.35	10	5966860
A0026.4	–	6.40	.2520	63.0	101.0	6.40	10	5967247
A0026.5	–	6.50	.2559	63.0	101.0	6.50	10	5967282
A0026.6	–	6.60	.2598	63.0	101.0	6.60	10	5967321
A0026.7	–	6.70	.2638	63.0	101.0	6.70	10	5967328
A00217/64	17/64	6.75	.2656	69.0	109.0	6.75	10	5967400
A0026.8	–	6.80	.2677	69.0	109.0	6.80	10	5967332
A0026.9	–	6.90	.2717	69.0	109.0	6.90	10	5967336
A0027.0	–	7.00	.2756	69.0	109.0	7.00	10	5967340
A0027.1	–	7.10	.2795	69.0	109.0	7.10	10	5967156
A0029/32	9/32	7.14	.2813	69.0	109.0	7.14	10	5967293
A0027.2	–	7.20	.2835	69.0	109.0	7.20	10	5967161
A0027.3	–	7.30	.2874	69.0	109.0	7.30	10	5967164
A0027.4	–	7.40	.2913	69.0	109.0	7.40	10	5967174
A0027.5	–	7.50	.2953	69.0	109.0	7.50	10	5967181
A00219/64	19/64	7.54	.2969	75.0	117.0	7.54	10	5967406
A0027.6	–	7.60	.2992	75.0	117.0	7.60	10	5967186
A0027.7	–	7.70	.3031	75.0	117.0	7.70	10	5967191
A0027.8	–	7.80	.3071	75.0	117.0	7.80	10	5967196
A0027.9	–	7.90	.3110	75.0	117.0	7.90	10	5967201
A0025/16	5/16	7.94	.3125	75.0	117.0	7.94	10	5967294
A0028.0	–	8.00	.3150	75.0	117.0	8.00	10	5967219
A0028.1	–	8.10	.3189	75.0	117.0	8.10	10	5967222
A0028.2	–	8.20	.3228	75.0	117.0	8.20	10	5967227
A0028.3	–	8.30	.3268	75.0	117.0	8.30	10	5967231
A00221/64	21/64	8.33	.3281	75.0	117.0	8.33	10	5967460

Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A0028.4	–	8.40	.3307	75.0	117.0	8.40	10	5967235
A0028.5	–	8.50	.3346	75.0	117.0	8.50	10	5967239
A0028.6	–	8.60	.3386	81.0	125.0	8.60	10	5967242
A0028.7	–	8.70	.3425	81.0	125.0	8.70	10	5967245
A00211/32	11/32	8.73	.3438	81.0	125.0	8.73	10	5966930
A0028.8	–	8.80	.3465	81.0	125.0	8.80	10	5967252
A0028.9	–	8.90	.3504	81.0	125.0	8.90	10	5967255
A0029.0	–	9.00	.3543	81.0	125.0	9.00	10	5967258
A0029.1	–	9.10	.3583	81.0	125.0	9.10	10	5967261
A00223/64	23/64	9.13	.3594	81.0	125.0	9.13	10	5967145
A0029.2	–	9.20	.3622	81.0	125.0	9.20	10	5967264
A0029.3	–	9.30	.3661	81.0	125.0	9.30	10	5967267
A0029.4	–	9.40	.3701	81.0	125.0	9.40	10	5967270
A0029.5	–	9.50	.3740	81.0	125.0	9.50	10	5967273
A0023/8	3/8	9.52	.3750	87.0	133.0	9.52	10	5967197
A0029.6	–	9.60	.3780	87.0	133.0	9.60	10	5967276
A0029.7	–	9.70	.3819	87.0	133.0	9.70	10	5967279
A0029.8	–	9.80	.3858	87.0	133.0	9.80	10	5967284
A0029.9	–	9.90	.3898	87.0	133.0	9.90	10	5967287
A00225/64	25/64	9.92	.3906	87.0	133.0	9.92	10	5967199
A00210.0	–	10.00	.3937	87.0	133.0	10.00	10	5966864
A00210.1	–	10.10	.3976	87.0	133.0	10.10	5	5966868
A00210.2	–	10.20	.4016	87.0	133.0	10.20	5	5966870
A00210.3	–	10.30	.4055	87.0	133.0	10.30	5	5966872
A00213/32	13/32	10.32	.4063	87.0	133.0	10.32	5	5967370
A00210.4	–	10.40	.4094	87.0	133.0	10.40	5	5966874
A00210.5	–	10.50	.4134	87.0	133.0	10.50	5	5966876
A00210.6	–	10.60	.4173	87.0	133.0	10.60	5	5966878
A00210.7	–	10.70	.4213	94.0	142.0	10.70	5	5966880
A00227/64	27/64	10.72	.4219	94.0	142.0	10.72	5	5967243
A00210.8	–	10.80	.4252	94.0	142.0	10.80	5	5966882
A00210.9	–	10.90	.4291	94.0	142.0	10.90	5	5966884
A00211.0	–	11.00	.4331	94.0	142.0	11.00	5	5966886
A00211.1	–	11.10	.4370	94.0	142.0	11.10	5	5966890
A0027/16	7/16	11.11	.4375	94.0	142.0	11.11	5	5967205
A00211.2	–	11.20	.4409	94.0	142.0	11.20	5	5966892
A00211.3	–	11.30	.4449	94.0	142.0	11.30	5	5966894
A00211.4	–	11.40	.4488	94.0	142.0	11.40	5	5966898
A00211.5	–	11.50	.4528	94.0	142.0	11.50	5	5966903
A00229/64	29/64	11.51	.4531	94.0	142.0	11.51	5	5967275
A00211.6	–	11.60	.4567	94.0	142.0	11.60	5	5966907
A00211.7	–	11.70	.4606	94.0	142.0	11.70	5	5966913
A00211.8	–	11.80	.4646	94.0	142.0	11.80	5	5966917
A00211.9	–	11.90	.4685	101.0	151.0	11.90	5	5966924
A00215/32	15/32	11.91	.4688	101.0	151.0	11.91	5	5967392
A00212.0	–	12.00	.4724	101.0	151.0	12.00	5	5967337
A00212.1	–	12.10	.4764	101.0	151.0	12.10	5	5967362
A00212.2	–	12.20	.4803	101.0	151.0	12.20	5	5967384
A00212.3	–	12.30	.4843	101.0	151.0	12.30	5	5967409
A00231/64	31/64	12.30	.4844	101.0	151.0	12.30	5	5967203
A00212.4	–	12.40	.4882	101.0	151.0	12.40	5	5967457
A00212.5	–	12.50	.4921	101.0	151.0	12.50	5	5967464
A00212.6	–	12.60	.4961	101.0	151.0	12.60	5	5967469
A00212.7	–	12.70	.5000	101.0	151.0	12.70	5	5967473
A0021/2	1/2	12.70	.5000	101.0	151.0	12.70	5	5966858
A00212.8	–	12.80	.5039	101.0	151.0	12.80	5	5967476
A00212.9	–	12.90	.5079	101.0	151.0	12.90	5	5967342
A00213.0	–	13.00	.5118	101.0	151.0	13.00	5	5967345



Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A00233/64	33/64	13.10	.5156	101.0	151.0	13.10	1	5967209
A00213.1	—	13.10	.5157	101.0	151.0	13.10	1	5967346
A00213.2	—	13.20	.5197	101.0	151.0	13.20	1	5967348
A00213.25	—	13.25	.5217	108.0	160.0	13.25	1	5967350
A00213.3	—	13.30	.5236	108.0	160.0	13.30	1	5967352
A00213.4	—	13.40	.5276	108.0	160.0	13.40	1	5967354
A00217/32	17/32	13.49	.5313	108.0	160.0	13.49	1	5967398
A00213.5	—	13.50	.5315	108.0	160.0	13.50	1	5967356
A00213.6	—	13.60	.5354	108.0	160.0	13.60	1	5967358
A00213.7	—	13.70	.5394	108.0	160.0	13.70	1	5967360
A00213.75	—	13.75	.5413	108.0	160.0	13.75	1	5967364
A00213.8	—	13.80	.5433	108.0	160.0	13.80	1	5967366
A00213.9	—	13.90	.5472	108.0	160.0	13.90	1	5967368

Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A00214.0	—	14.00	.5512	108.0	160.0	14.00	1	5967374
A00214.25	—	14.25	.5610	114.0	169.0	14.25	1	5967376
A0029/16	9/16	14.29	.5625	114.0	169.0	14.29	1	5967291
A00214.5	—	14.50	.5709	114.0	169.0	14.50	1	5967378
A00214.75	—	14.75	.5807	114.0	169.0	14.75	1	5967380
A00215.0	—	15.00	.5906	114.0	169.0	15.00	1	5967382
A00219/32	19/32	15.08	.5938	120.0	178.0	15.08	1	5967403
A00215.25	—	15.25	.6004	120.0	178.0	15.25	1	5967386
A00215.5	—	15.50	.6102	120.0	178.0	15.50	1	5967388
A00215.75	—	15.75	.6201	120.0	178.0	15.75	1	5967390
A0025/8	5/8	15.88	.6250	120.0	178.0	15.88	1	5967303
A00216.0	—	16.00	.6299	120.0	178.0	16.00	1	5967396



1.0mm =< DC >= 2.9mm 118° 4 Facet Point. A=Styles in Set, B=No. in Set, C=Diameters in Set.

Product	Nr.	A	B	C	Pack Qty	MID
A09518	18	A002	29	1/16 inch - 1/2 inch x 1/64 inch	1	5967564
A095200	200	A002	24	1.0 mm - 10.5 mm x 0.5 mm + 3.3 mm, 4.2 mm, 6.8 mm, 10.2 mm	1	6610306
A095201	201	A002	19	1.0 mm - 10.0 mm x 0.5 mm	1	5967607
A095202	202	A002	51	1.0 mm - 6.0 mm x 0.1 mm	1	5967627
A095203	203	A002	41	6.0 mm - 10.0 mm x 0.1 mm	1	5967649
A095204	204	A002	25	1.0 mm - 13.0 mm x 0.5 mm	1	5967689
A095206	206	A002	29	1.0 mm - 13.0 mm x 0.5 mm + 3.3 mm, 4.2 mm, 6.8 mm, 10.2 mm	1	5967699
A095209	209	A002	91	1.0 mm - 10.0 mm x 0.1 mm	1	5967704



A=Styles in Set, B=No. in Set, C=Diameters in Set. 1.0mm =< DC >= 2.9mm 118° 4 Facet Point.

Product	Nr.	A	B	C	Pack Qty	MID
A094413	413	A002	13	1.5 mm - 6.5 mm x 0.5 mm + 3.3 mm, 4.2 mm	1	6610302
A094419	419	A002	19	1.0 mm - 10.0 mm x 0.5 mm	1	6610303



1.0mm =< DC >= 2.9mm 118° 4 Facet Point. A=Styles in Set, B=No. in Set, C=Diameters in Set.

Product	Nr.	A	B	C	Pack Qty	MID
A099DRILLBOYXL	DRILLBOY	A002	55	3 x (1.0, 1.5, 2.0, 2.5, 3.0, 3.3, 3.5, 4.0) + 2 x (4.2, 4.5, 5.0, 5.5, 6.0, 6.5, 6.8, 7.0, 7.5, 8.0) + 8.5, 9.0, 9.5, 10.0, 10.2, 10.5, 11.0, 11.5, 12.0, 12.5, 13.0 mm	1	8189991
A099DRILLBOYXLEMPY	—	—	—	—	1	8189990



A=Styles in Set, B=No. in Set, C=Diameters in Set.

Product	Nr.	A	B	C	Pack Qty	MID
A08910	10	A002	5	A0024.0, A0025.0, A0026.0, A0028.0, A00210.0	1	7145877



A=Styles in Set, B=No. in Set, C=Diameters in Set. 1.0mm =< DC >= 2.9mm 118° 4 Facet Point.

Product	Nr.	A	B	C	Pack Qty	MID
A087201	201	A002	19	1.0 mm - 10.0 mm x 0.5 mm	1	7168484

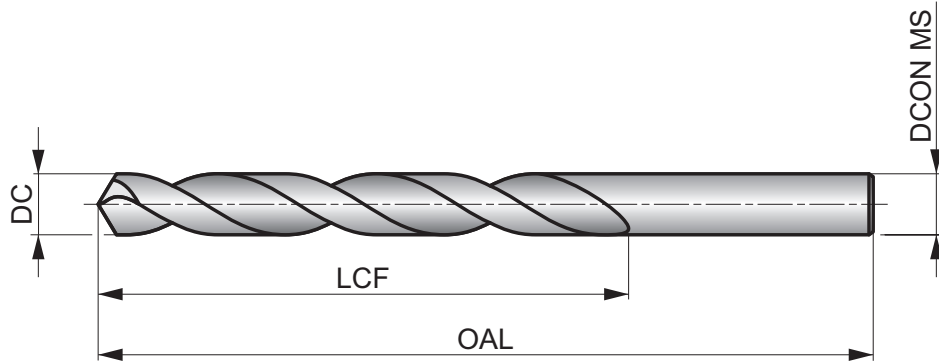


A002S



HSS Jobber Drill, TiN-Tip Coated

Versatile drill for both hand-held and machine drilling. A specially designed 118° split point which helps to self-center the drill when drilling by hand and provides more accurate sized hole. Suitable for many materials. TiN-Tip coating improves performance and extends tool life.



HSS	DIN 338	4xD
118°	TiN-Tip	
λ 20-35°	R	DC h8

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 151 J	P1.2 ■ 171 J	P1.3 ■ 177 J	P2.1 ■ 131 J	P2.2 ■ 115 F	P2.3 ▣ 102 F	P3.1 ■ 89 F	P3.2 ■ 69 F	P3.3 ▣ 59 F	P4.1 ■ 52 F	P4.2 ▣ 43 F	P4.3 ▣ 36 E	M1.1 ▣ 189 F	M1.2 ▣ 175 F
M2.1 ▣ 79 F	M2.2 ▣ 66 F	M3.1 ▣ 46 G	M3.2 ▣ 39 G	M3.3 ▣ 36 G	M4.1 ▣ 52 C	K1.1 ■ 131 J	K1.2 ■ 98 E	K1.3 ■ 72 E	K2.1 ▣ 112 E	K2.2 ▣ 92 E	K2.3 ▣ 72 E	K3.1 ▣ 98 E	K3.2 ▣ 75 E
K3.3 ▣ 62 E	K4.1 ▣ 92 E	K4.2 ▣ 69 E	K4.3 ▣ 52 E	K4.4 ▣ 43 E	K4.5 ▣ 36 E	K5.1 ▣ 105 E	K5.2 ▣ 79 E	K5.3 ▣ 62 E	N1.1 ■ 135 K	N1.2 ■ 102 K	N1.3 ■ 69 J	N2.1 ▣ 167 I	N2.2 ▣ 151 I
N2.3 ▣ 108 I	N3.1 ▣ 184 H	N3.2 ▣ 108 I	N3.3 ▣ 56 G	N4.1 ■ 98 I	N4.2 ■ 164 H	N4.3 ▣ 115 F	S1.1 ▣ 75 F	S1.2 ▣ 43 D	S1.3 ▣ 23 B	S2.1 ▣ 30 E	S2.2 ▣ 13 A	S3.1 ▣ 23 E	S3.2 ▣ 10 A
S4.1 ▣ 16 E	S4.2 ▣ 7 A												

DC <= 5mm Sold in packs of 2.

Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A002S2.0	—	2.00	.0787	24.0	49.0	2.00	1	6524831
A002S2.5	—	2.50	.0984	30.0	57.0	2.50	1	6524832
A002S3.0	—	3.00	.1181	33.0	61.0	3.00	1	6524833
A002S1/8	1/8	3.18	.1250	36.0	65.0	3.18	1	6524834
A002S3.2	—	3.20	.1260	36.0	65.0	3.20	1	6524835
A002S3.3	—	3.30	.1299	36.0	65.0	3.30	1	6524836
A002S3.5	—	3.50	.1378	39.0	70.0	3.50	1	6524837
A002S5/32	5/32	3.97	.1563	43.0	75.0	3.97	1	6524838
A002S4.0	—	4.00	.1575	43.0	75.0	4.00	1	6524839
A002S4.1	—	4.10	.1614	43.0	75.0	4.10	1	6524860
A002S4.2	—	4.20	.1654	43.0	75.0	4.20	1	6524861
A002S4.5	—	4.50	.1772	47.0	80.0	4.50	1	6524862
A002S3/16	3/16	4.76	.1875	52.0	86.0	4.76	1	6524863
A002S5.0	—	5.00	.1969	52.0	86.0	5.00	1	6524864
A002S13/64	13/64	5.16	.2031	52.0	86.0	5.16	1	6524865
A002S5.5	—	5.50	.2165	57.0	93.0	5.50	1	6524866
A002S7/32	7/32	5.56	.2188	57.0	93.0	5.56	1	6524867
A002S6.0	—	6.00	.2362	57.0	93.0	6.00	1	6524868

Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A002S1/4	1/4	6.35	.2500	63.0	101.0	6.35	1	6524869
A002S6.5	—	6.50	.2559	63.0	101.0	6.50	1	6524870
A002S6.8	—	6.80	.2677	69.0	109.0	6.80	1	6524872
A002S7.0	—	7.00	.2756	69.0	109.0	7.00	1	6524873
A002S7.5	—	7.50	.2953	69.0	109.0	7.50	1	6524874
A002S5/16	5/16	7.94	.3125	75.0	117.0	7.94	1	6524875
A002S8.0	—	8.00	.3150	75.0	117.0	8.00	1	6524876
A002S8.2	—	8.20	.3228	75.0	117.0	8.20	1	6524877
A002S8.5	—	8.50	.3346	75.0	117.0	8.50	1	6524878
A002S9.0	—	9.00	.3543	81.0	125.0	9.00	1	6524879
A002S9.5	—	9.50	.3740	81.0	125.0	9.50	1	6524880
A002S3/8	3/8	9.52	.3750	87.0	133.0	9.52	1	6524881
A002S10.0	—	10.00	.3937	87.0	133.0	10.00	1	6524882
A002S10.2	—	10.20	.4016	87.0	133.0	10.20	1	6524883
A002S10.5	—	10.50	.4134	87.0	133.0	10.50	1	6524884
A002S11.0	—	11.00	.4331	94.0	142.0	11.00	1	6524885
A002S11.5	—	11.50	.4528	94.0	142.0	11.50	1	6524886
A002S12.0	—	12.00	.4724	101.0	151.0	12.00	1	6524887



Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A002S12.5	–	12.50	.4921	101.0	151.0	12.50	1	6524888
A002S1/2	1/2	12.70	.5000	101.0	151.0	12.70	1	6524889

Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A002S13.0	–	13.00	.5118	101.0	151.0	13.00	1	6524890



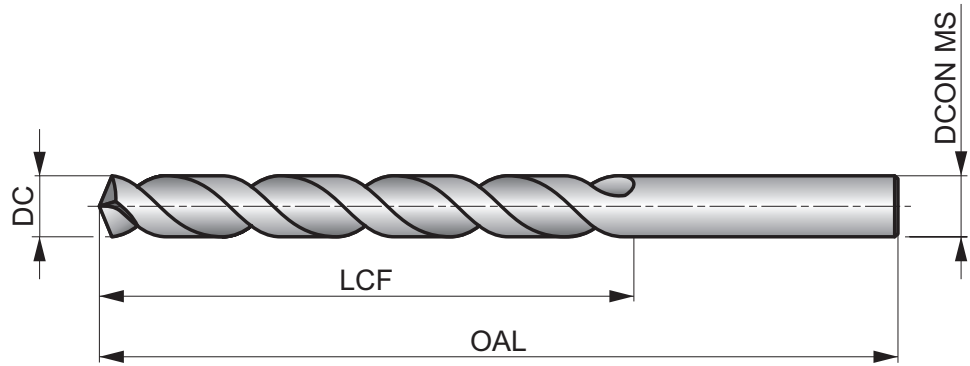
R10B / R15B / R18B



NAS 907 Type B HSS Jobber Drill, Steam Tempered

Heavy duty jobber drill with Low Thrust 135° self-centering split point for easier penetration. Steam tempered finish for increased wear resistance and lubricity. Made to NAS 907 Type B Aerospace Standards.

HSS	NAS 907	4xD
135°	ST	
λ20-35°	R	



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 118 H	P1.2 131 H	P1.3 135 H	P2.1 102 H	P2.2 89 G	P2.3 79 E	P3.1 82 F	P3.2 66 F	P3.3 56 E	P4.1 49 F	P4.2 43 E	P4.3 33 D	M1.1 98 E	M1.2 85 E
M2.1 89 E	M2.2 72 E	M2.3 59 C	M3.1 43 G	M3.2 36 G	M3.3 33 C	M4.1 49 C	M4.2 43 C	K1.1 115 H	K1.2 85 D	K1.3 62 D	K2.1 89 E	K2.2 72 E	K2.3 59 E
K3.1 79 E	K3.2 59 E	K3.3 49 E	K4.1 72 E	K4.2 56 E	K4.3 39 E	K4.4 36 E	K4.5 30 E	K5.1 82 E	K5.2 62 E	K5.3 49 E	N1.1 108 J	N1.2 82 J	N1.3 56 I
N2.1 151 H	N2.2 138 H	N2.3 98 H	N3.1 223 H	N3.2 131 F	N3.3 66 H	S1.1 92 F	S1.2 66 D	S1.3 36 C	S2.1 30 E	S2.2 26 B	S3.1 23 E	S3.2 20 B	S4.1 16 E
S4.2 16 B													

Product	DC (inch)	DC (Wire gauge size)	DC (Letter size)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
R10B1/16	1/16	—	—	.0625	7/8	1.7/8	.063	12	5997600
R18BN52	—	N52	—	.0635	7/8	1.7/8	.064	12	5997656
R18BN51	—	N51	—	.0670	1"	2"	.067	12	5997649
R18BN50	—	N50	—	.0700	1"	2"	.070	12	5997801
R18BN49	—	N49	—	.0730	1"	2"	.073	12	5997792
R18BN48	—	N48	—	.0760	1"	2"	.076	12	5997788
R10B5/64	5/64	—	—	.0781	1"	2"	.078	12	5998027
R18BN47	—	N47	—	.0785	1"	2"	.079	12	5997778
R18BN46	—	N46	—	.0810	1.1/8	2.1/8	.081	12	5997739
R18BN45	—	N45	—	.0820	1.1/8	2.1/8	.082	12	5997715
R18BN44	—	N44	—	.0860	1.1/8	2.1/8	.086	12	5997686
R18BN43	—	N43	—	.0890	1.1/4	2.1/4	.089	12	5997643
R18BN42	—	N42	—	.0935	1.1/4	2.1/4	.093	12	5999177
R10B3/32	3/32	—	—	.0938	1.1/4	2.1/4	.094	12	5998007
R18BN41	—	N41	—	.0960	1.3/8	2.3/8	.096	12	5999173
R18BN40	—	N40	—	.0980	1.3/8	2.3/8	.098	12	5999171
R18BN39	—	N39	—	.0995	1.3/8	2.3/8	.100	12	5999168
R18BN38	—	N38	—	.1015	1.7/16	2.1/2	.102	12	5999165
R18BN37	—	N37	—	.1040	1.7/16	2.1/2	.104	12	5999162



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
R18BN36	–	N36	–	.1065	1.7/16	2.1/2	.106	12	5999159
R10B7/64	7/64	–	–	.1094	1.1/2	2.5/8	.109	12	5998037
R18BN35	–	N35	–	.1100	1.1/2	2.5/8	.110	12	5999156
R18BN34	–	N34	–	.1110	1.1/2	2.5/8	.111	12	5999152
R18BN33	–	N33	–	.1130	1.1/2	2.5/8	.113	12	5999149
R18BN33-T ¹⁾	–	N33	–	.1130	1.1/2	2.5/8	.113	12	7652431
R18BN32	–	N32	–	.1160	1.5/8	2.3/4	.116	12	5999139
R18BN31	–	N31	–	.1200	1.5/8	2.3/4	.120	12	5999135
R10B1/8	1/8	–	–	.1250	1.5/8	2.3/4	.125	12	5997612
R18BN30	–	N30	–	.1285	1.5/8	2.3/4	.129	12	5999130
R18BN29	–	N29	–	.1360	1.3/4	2.7/8	.136	12	5999122
R18BN28	–	N28	–	.1405	1.3/4	2.7/8	.141	12	5999118
R10B9/64	9/64	–	–	.1406	1.3/4	2.7/8	.141	12	5998049
R18BN27	–	N27	–	.1440	1.7/8	3"	.144	12	5999113
R18BN26	–	N26	–	.1470	1.7/8	3"	.147	12	5999110
R18BN25	–	N25	–	.1495	1.7/8	3"	.149	12	5999107
R18BN24	–	N24	–	.1520	2"	3.1/8	.152	12	5999104
R18BN23	–	N23	–	.1540	2"	3.1/8	.154	12	5999098
R10B5/32	5/32	–	–	.1563	2"	3.1/8	.156	12	5998023
R18BN22	–	N22	–	.1570	2"	3.1/8	.157	12	5999095
R18BN21	–	N21	–	.1590	2.1/8	3.1/4	.159	12	5999092
R18BN20	–	N20	–	.1610	2.1/8	3.1/4	.161	12	5999089
R18BN19	–	N19	–	.1660	2.1/8	3.1/4	.166	12	5999082
R18BN18	–	N18	–	.1695	2.1/8	3.1/4	.170	12	5999079
R10B11/64	11/64	–	–	.1719	2.1/8	3.1/4	.172	12	5997620
R18BN17	–	N17	–	.1730	2.3/16	3.3/8	.173	12	5999076
R18BN16	–	N16	–	.1770	2.3/16	3.3/8	.177	12	5999074
R18BN15	–	N15	–	.1800	2.3/16	3.3/8	.180	12	5999071
R18BN14	–	N14	–	.1820	2.3/16	3.3/8	.182	12	5999065
R18BN13	–	N13	–	.1850	2.5/16	3.1/2	.185	12	5999062
R10B3/16	3/16	–	–	.1875	2.5/16	3.1/2	.188	12	5998174
R18BN12	–	N12	–	.1890	2.5/16	3.1/2	.189	12	5999058
R18BN11	–	N11	–	.1910	2.5/16	3.1/2	.191	12	5999054
R18BN10	–	N10	–	.1935	2.7/16	3.5/8	.194	12	5999050
R18BN9	–	N9	–	.1960	2.7/16	3.5/8	.196	12	5997670
R18BN8	–	N8	–	.1990	2.7/16	3.5/8	.199	12	5997666
R18BN7	–	N7	–	.2010	2.7/16	3.5/8	.201	12	5997663
R10B13/64	13/64	–	–	.2031	2.7/16	3.5/8	.203	12	5997625
R18BN6	–	N6	–	.2040	2.1/2	3.3/4	.204	12	5997660
R18BN5	–	N5	–	.2055	2.1/2	3.3/4	.205	12	5997796
R18BN4	–	N4	–	.2090	2.1/2	3.3/4	.209	12	5999169
R18BN3	–	N3	–	.2130	2.1/2	3.3/4	.213	12	5999126
R10B7/32	7/32	–	–	.2188	2.1/2	3.3/4	.219	12	5998034
R18BN2	–	N2	–	.2210	2.5/8	3.7/8	.221	12	5999085
R18BN1	–	N1	–	.2280	2.5/8	3.7/8	.228	12	5999046
R15BA	–	–	A	.2340	2.5/8	3.7/8	.234	12	5998734
R10B15/64	15/64	–	–	.2344	2.5/8	3.7/8	.234	12	5998001
R15BB	–	–	B	.2380	2.3/4	4"	.238	12	5998737
R15BC	–	–	C	.2420	2.3/4	4"	.242	12	5998741
R15BD	–	–	D	.2460	2.3/4	4"	.246	12	5998748
R10B1/4	1/4	–	–	.2500	2.3/4	4"	.250	12	5997608
R15BF	–	–	F	.2570	2.7/8	4.1/8	.257	12	5998757
R15BF-T ¹⁾	–	–	F	.2570	2.7/8	4.1/8	.257	12	7652429
R15BG	–	–	G	.2610	2.7/8	4.1/8	.261	12	5998761
R10B17/64	17/64	–	–	.2656	2.7/8	4.1/8	.266	12	5998045
R15BH	–	–	H	.2660	2.7/8	4.1/8	.266	12	5998765
R15BI	–	–	I	.2720	2.7/8	4.1/8	.272	12	5998768



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
R15BJ	–	–	J	.2770	2.7/8	4.1/8	.277	12	5998773
R15BK	–	–	K	.2810	2.15/16	4.1/4	.281	12	5998777
R10B9/32	9/32	–	–	.2813	2.15/16	4.1/4	.281	12	5998041
R15BL	–	–	L	.2900	2.15/16	4.1/4	.290	12	5998782
R15BM	–	–	M	.2950	3.1/16	4.3/8	.295	12	5998787
R10B19/64	19/64	–	–	.2969	3.1/16	4.3/8	.297	12	5998080
R15BN	–	–	N	.3020	3.1/16	4.3/8	.302	12	5998795
R10B5/16	5/16	–	–	.3125	3.3/16	4.1/2	.313	6	5998020
R15BO	–	–	O	.3160	3.3/16	4.1/2	.316	6	5998975
R15BP	–	–	P	.3230	3.5/16	4.5/8	.323	6	5999015
R10B21/64	21/64	–	–	.3281	3.5/16	4.5/8	.328	6	5998114
R15BQ	–	–	Q	.3320	3.7/16	4.3/4	.332	6	5999055
R15BR	–	–	R	.3390	3.7/16	4.3/4	.339	6	5999090
R10B11/32	11/32	–	–	.3438	3.7/16	4.3/4	.344	6	5997616
R15BS	–	–	S	.3480	3.1/2	4.7/8	.348	6	5999125
R15BT	–	–	T	.3580	3.1/2	4.7/8	.358	6	5999133
R10B23/64	23/64	–	–	.3594	3.1/2	4.7/8	.359	6	5998154
R15BU	–	–	U	.3680	3.5/8	5"	.368	6	5999136
R10B3/8	3/8	–	–	.3750	3.5/8	5"	.375	6	5998011
R15BV	–	–	V	.3770	3.5/8	5"	.377	6	5999140
R15BW	–	–	W	.3860	3.3/4	5.1/8	.386	6	5999142
R10B25/64	25/64	–	–	.3906	3.3/4	5.1/8	.391	6	5998162
R15BX	–	–	X	.3970	3.3/4	5.1/8	.397	6	5998979
R15BY	–	–	Y	.4040	3.7/8	5.1/4	.404	6	5998983
R10B13/32	13/32	–	–	.4063	3.7/8	5.1/4	.406	6	5997622
R15BZ	–	–	Z	.4130	3.7/8	5.1/4	.413	6	5998986
R10B27/64	27/64	–	–	.4219	3.15/16	5.3/8	.422	6	5998166
R10B7/16	7/16	–	–	.4375	4.1/16	5.1/2	.438	6	5998031
R10B29/64	29/64	–	–	.4531	4.3/16	5.5/8	.453	6	5998170
R10B15/32	15/32	–	–	.4688	4.5/16	5.3/4	.469	6	5997632
R10B31/64	31/64	–	–	.4844	4.3/8	5.7/8	.484	6	5998016
R10B1/2	1/2	–	–	.5000	4.1/2	6"	.500	6	5997604

¹⁾ With Tang.



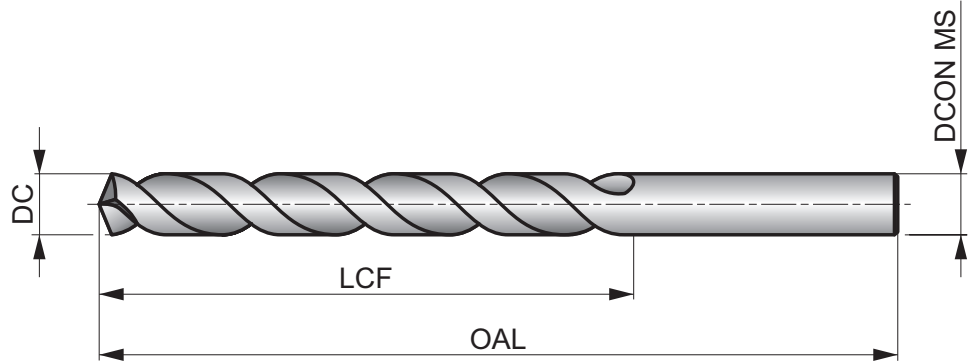
A108



HSS Jobber Drill, Steam Tempered Finish (Designed for Stainless Steel)

First choice when drilling stainless steel with hand-held applications, but can also be used effectively in machines. The 135° split point helps to self-center and reduces the cutting forces. Steam tempered finish helps stop workpiece material from sticking to the cutting edge.

HSS	DIN 338	4xD
135°	ST	
$\lambda > 35^\circ$	R	DC h8



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 108 I	P1.2 121 I	P1.3 125 I	P2.1 92 I	P2.2 82 G	P2.3 72 E	P3.1 62 F	P3.2 49 F	P3.3 43 E	P4.1 36 F	P4.2 33 E	P4.3 26 D	M1.1 69 E	M1.2 56 E
M2.1 59 E	M2.2 49 E	M3.1 33 G	M3.2 30 G	M3.3 26 G	M4.1 33 D	K1.1 98 H	K1.2 72 F	K1.3 56 F	K2.1 82 E	K2.2 66 E	K2.3 52 E	K3.1 72 E	K3.2 56 E
K3.3 43 E	K4.1 66 E	K4.2 49 E	K4.3 36 E	K4.4 33 E	K4.5 26 E	K5.1 75 E	K5.2 56 E	K5.3 43 E	N1.1 108 J	N1.2 82 J	N1.3 56 I	N2.1 138 H	N2.2 121 H
N2.3 89 H	N3.1 194 H	N3.2 115 I	N3.3 59 G	N4.1 98 J	N4.2 92 H	N4.3 46 F	S1.1 82 G	S1.2 52 E	S1.3 23 B	S2.1 30 G	S2.2 26 E	S3.1 23 G	S3.2 20 E
S4.1 16 G	S4.2 16 E												

DC > 1.5mm (1/16") Split Point.

Products from this series are also available in set. Please see A188.

Product	DC (inch)	DC (Wire gauge size)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A1081.0	-	-	1.00	.0394	12.0	34.0	1.00	10	5968323
A1081.1	-	-	1.10	.0433	14.0	36.0	1.10	10	5968333
A1081.2	-	-	1.20	.0472	16.0	38.0	1.20	10	5968338
A1081.3	-	-	1.30	.0512	16.0	38.0	1.30	10	5968343
A1081.4	-	-	1.40	.0551	18.0	40.0	1.40	10	5968351
A1081.5	-	-	1.50	.0591	18.0	40.0	1.50	10	5968176
A1081/16	1/16	-	1.59	.0625	20.0	43.0	1.59	10	5968200
A1081.6	-	-	1.60	.0630	20.0	43.0	1.60	10	5968184
A1081.7	-	-	1.70	.0669	20.0	43.0	1.70	10	5968188
A1081.8	-	-	1.80	.0709	22.0	46.0	1.80	10	5968192
A1081.9	-	-	1.90	.0748	22.0	46.0	1.90	10	5968196
A1085/64	5/64	-	1.98	.0781	24.0	49.0	1.98	10	5968398
A1082.0	-	-	2.00	.0787	24.0	49.0	2.00	10	5968295
A1082.1	-	-	2.10	.0827	24.0	49.0	2.10	10	5968302
A1082.2	-	-	2.20	.0866	27.0	53.0	2.20	10	5968307
A1082.3	-	-	2.30	.0906	27.0	53.0	2.30	10	5968311
A1083/32	3/32	-	2.38	.0938	30.0	57.0	2.38	10	5968314
A1082.4	-	-	2.40	.0945	30.0	57.0	2.40	10	5968315



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(mm)	(inch)	(mm)	(mm)	(mm)		
A1082.5	—	—	2.50	.0984	30.0	57.0	2.50	10	5968318
A1082.6	—	—	2.60	.1024	30.0	57.0	2.60	10	5968328
A1082.7	—	—	2.70	.1063	33.0	61.0	2.70	10	5968280
A1087/64	7/64	—	2.78	.1094	33.0	61.0	2.78	10	5968179
A1082.8	—	—	2.80	.1102	33.0	61.0	2.80	10	5968341
A1082.9	—	—	2.90	.1142	33.0	61.0	2.90	10	5968376
A1083.0	—	—	3.00	.1181	33.0	61.0	3.00	10	5968400
A1083.1	—	—	3.10	.1220	36.0	65.0	3.10	10	5968423
A1081/8	1/8	—	3.18	.1250	36.0	65.0	3.18	10	5968209
A1083.2	—	—	3.20	.1260	36.0	65.0	3.20	10	5968427
A1083.3	—	—	3.30	.1299	36.0	65.0	3.30	10	5968428
A1083.4	—	—	3.40	.1339	39.0	70.0	3.40	10	5968430
A1083.5	—	—	3.50	.1378	39.0	70.0	3.50	10	5968433
A1089/64	9/64	—	3.57	.1406	39.0	70.0	3.57	10	5968256
A1083.6	—	—	3.60	.1417	39.0	70.0	3.60	10	5968289
A1083.7	—	—	3.70	.1457	39.0	70.0	3.70	10	5968294
A1083.8	—	—	3.80	.1496	43.0	75.0	3.80	10	5968299
A1083.9	—	—	3.90	.1535	43.0	75.0	3.90	10	5968304
A1085/32	5/32	—	3.97	.1563	43.0	75.0	3.97	10	5968396
A1084.0	—	—	4.00	.1575	43.0	75.0	4.00	10	5968322
A1084.1	—	—	4.10	.1614	43.0	75.0	4.10	10	5968331
A1084.2	—	—	4.20	.1654	43.0	75.0	4.20	10	5968336
A1084.3	—	—	4.30	.1693	47.0	80.0	4.30	10	5968346
A10811/64	11/64	—	4.37	.1719	47.0	80.0	4.37	10	5968238
A1084.4	—	—	4.40	.1732	47.0	80.0	4.40	10	5968350
A1084.5	—	—	4.50	.1772	47.0	80.0	4.50	10	5968353
A1084.6	—	—	4.60	.1811	47.0	80.0	4.60	10	5968357
A1084.7	—	—	4.70	.1850	47.0	80.0	4.70	10	5968360
A1083/16	3/16	—	4.76	.1875	52.0	86.0	4.76	10	5968310
A1084.8	—	—	4.80	.1890	52.0	86.0	4.80	10	5968363
A1084.9	—	—	4.90	.1929	52.0	86.0	4.90	10	5968366
A108N10	—	N10	4.92	.1935	52.0	86.0	4.92	10	6305901
A1085.0	—	—	5.00	.1969	52.0	86.0	5.00	10	5968369
A1085.1	—	—	5.10	.2008	52.0	86.0	5.10	10	5968371
A10813/64	13/64	—	5.16	.2031	52.0	86.0	5.16	10	5968266
A1085.2	—	—	5.20	.2047	52.0	86.0	5.20	10	5968374
A1085.3	—	—	5.30	.2087	52.0	86.0	5.30	10	5968379
A1085.4	—	—	5.40	.2126	57.0	93.0	5.40	10	5968382
A1085.5	—	—	5.50	.2165	57.0	93.0	5.50	10	5968384
A1087/32	7/32	—	5.56	.2188	57.0	93.0	5.56	10	5968175
A1085.6	—	—	5.60	.2205	57.0	93.0	5.60	10	5968386
A1085.7	—	—	5.70	.2244	57.0	93.0	5.70	10	5968388
A1085.8	—	—	5.80	.2283	57.0	93.0	5.80	10	5968390
A1085.9	—	—	5.90	.2323	57.0	93.0	5.90	10	5968392
A10815/64	15/64	—	5.95	.2344	57.0	93.0	5.95	10	6305902
A1086.0	—	—	6.00	.2362	57.0	93.0	6.00	10	5968402
A1086.1	—	—	6.10	.2402	63.0	101.0	6.10	10	5968405
A1086.2	—	—	6.20	.2441	63.0	101.0	6.20	10	5968406
A1086.3	—	—	6.30	.2480	63.0	101.0	6.30	10	5968409
A1081/4	1/4	—	6.35	.2500	63.0	101.0	6.35	10	5968206
A1086.4	—	—	6.40	.2520	63.0	101.0	6.40	10	5968411
A1086.5	—	—	6.50	.2559	63.0	101.0	6.50	10	5968412
A1086.6	—	—	6.60	.2598	63.0	101.0	6.60	10	5968414
A1086.7	—	—	6.70	.2638	63.0	101.0	6.70	10	5968417
A10817/64	17/64	—	6.75	.2656	69.0	109.0	6.75	10	6305903
A1086.8	—	—	6.80	.2677	69.0	109.0	6.80	10	5968419
A1086.9	—	—	6.90	.2717	69.0	109.0	6.90	10	5968421
A1087.0	—	—	7.00	.2756	69.0	109.0	7.00	10	5968425



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(mm)	(inch)	(mm)	(mm)	(mm)		
A1087.1	–	–	7.10	.2795	69.0	109.0	7.10	10	5968167
A1089/32	9/32	–	7.14	.2813	69.0	109.0	7.14	10	5968253
A1087.2	–	–	7.20	.2835	69.0	109.0	7.20	10	5968208
A1087.3	–	–	7.30	.2874	69.0	109.0	7.30	10	5968239
A1087.4	–	–	7.40	.2913	69.0	109.0	7.40	10	5968278
A1087.5	–	–	7.50	.2953	69.0	109.0	7.50	10	5968330
A10819/64	19/64	–	7.54	.2969	75.0	117.0	7.54	10	6305904
A1087.6	–	–	7.60	.2992	75.0	117.0	7.60	10	5968340
A1087.7	–	–	7.70	.3031	75.0	117.0	7.70	10	5968345
A1087.8	–	–	7.80	.3071	75.0	117.0	7.80	10	5968349
A1087.9	–	–	7.90	.3110	75.0	117.0	7.90	10	5968354
A1085/16	5/16	–	7.94	.3125	75.0	117.0	7.94	10	5968394
A1088.0	–	–	8.00	.3150	75.0	117.0	8.00	10	5968182
A1088.1	–	–	8.10	.3189	75.0	117.0	8.10	10	5968187
A1088.2	–	–	8.20	.3228	75.0	117.0	8.20	10	5968191
A1088.3	–	–	8.30	.3268	75.0	117.0	8.30	10	5968195
A10821/64	21/64	–	8.33	.3281	75.0	117.0	8.33	10	6305905
A1088.4	–	–	8.40	.3307	75.0	117.0	8.40	10	5968199
A1088.5	–	–	8.50	.3346	75.0	117.0	8.50	10	5968202
A1088.6	–	–	8.60	.3386	81.0	125.0	8.60	10	5968205
A1088.7	–	–	8.70	.3425	81.0	125.0	8.70	10	5968211
A10811/32	11/32	–	8.73	.3438	81.0	125.0	8.73	10	5968235
A1088.8	–	–	8.80	.3465	81.0	125.0	8.80	10	5968214
A1088.9	–	–	8.90	.3504	81.0	125.0	8.90	10	5968216
A1089.0	–	–	9.00	.3543	81.0	125.0	9.00	10	5968219
A1089.1	–	–	9.10	.3583	81.0	125.0	9.10	10	5968221
A10823/64	23/64	–	9.13	.3594	81.0	125.0	9.13	10	6305906
A1089.2	–	–	9.20	.3622	81.0	125.0	9.20	10	5968224
A1089.3	–	–	9.30	.3661	81.0	125.0	9.30	10	5968227
A1089.4	–	–	9.40	.3701	81.0	125.0	9.40	10	5968230
A1089.5	–	–	9.50	.3740	81.0	125.0	9.50	10	5968233
A1083/8	3/8	–	9.52	.3750	87.0	133.0	9.52	10	5968317
A1089.6	–	–	9.60	.3780	87.0	133.0	9.60	10	5968236
A1089.7	–	–	9.70	.3819	87.0	133.0	9.70	10	5968242
A1089.8	–	–	9.80	.3858	87.0	133.0	9.80	10	5968245
A1089.9	–	–	9.90	.3898	87.0	133.0	9.90	10	5968250
A10825/64	25/64	–	9.92	.3906	87.0	133.0	9.92	10	6305907
A10810.0	–	–	10.00	.3937	87.0	133.0	10.00	10	5968213
A10810.2	–	–	10.20	.4016	87.0	133.0	10.20	5	5968217
A10813/32	13/32	–	10.32	.4063	87.0	133.0	10.32	5	5968263
A10810.5	–	–	10.50	.4134	87.0	133.0	10.50	5	5968220
A10827/64	27/64	–	10.72	.4219	94.0	142.0	10.72	5	6305908
A10810.8	–	–	10.80	.4252	94.0	142.0	10.80	5	5968223
A10811.0	–	–	11.00	.4331	94.0	142.0	11.00	5	5968226
A1087/16	7/16	–	11.11	.4375	94.0	142.0	11.11	5	5968172
A10811.5	–	–	11.50	.4528	94.0	142.0	11.50	5	5968229
A10829/64	29/64	–	11.51	.4531	94.0	142.0	11.51	5	6305909
A10811.8	–	–	11.80	.4646	94.0	142.0	11.80	5	5968232
A10815/32	15/32	–	11.91	.4688	101.0	151.0	11.91	5	5968285
A10812.0	–	–	12.00	.4724	101.0	151.0	12.00	5	5968241
A10812.2	–	–	12.20	.4803	101.0	151.0	12.20	5	5968244
A10831/64	31/64	–	12.30	.4844	101.0	151.0	12.30	5	6305920
A10812.5	–	–	12.50	.4921	101.0	151.0	12.50	5	5968248
A1081/2	1/2	–	12.70	.5000	101.0	151.0	12.70	5	5968203
A10812.8	–	–	12.80	.5039	101.0	151.0	12.80	5	5968251
A10813.0	–	–	13.00	.5118	101.0	151.0	13.00	5	5968257
A10813.5	–	–	13.50	.5315	108.0	160.0	13.50	1	5968260
A10814.0	–	–	14.00	.5512	108.0	160.0	14.00	1	5968269



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(mm)	(inch)	(mm)	(mm)	(mm)		
A10814.5	—	—	14.50	.5709	114.0	169.0	14.50	1	5968271
A10815.0	—	—	15.00	.5906	114.0	169.0	15.00	1	5968273
A10815.25	—	—	15.25	.6004	120.0	178.0	15.25	1	5968279
A10816.0	—	—	16.00	.6299	120.0	178.0	16.00	1	5968290



A=Styles in Set, B=No. in Set, C=Diameters in Set.

Product	A	B	C	Pack Qty	MID
A28718	A108	29	1/16 - 1/2 x 1/64	1	5969853



A=Styles in Set, B=No. in Set, C=Diameters in Set. DC > 1.5mm; 1/16" Split Point

Product	Nr.	A	B	C	Pack Qty	MID
A188201	201	A108	19	1.0 mm - 10.0 mm x 0.5 mm	1	7145932
A188204	204	A108	25	1.0 mm - 13.0 mm x 0.5 mm	1	7145933

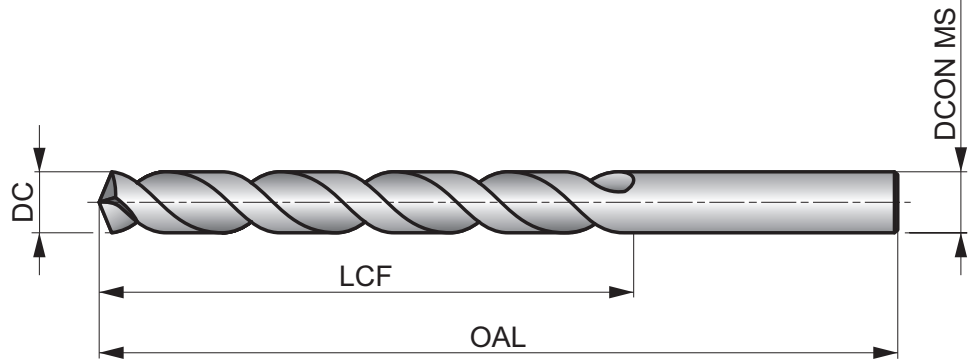


239TBT



HSS Jobber Drill (Trailer Bit) Bulk Packages, Steam Tempered

Designed for hand drilling or pneumatic feed type gantry drilling through stacked materials typically found in truck trailer and bus manufacturing applications. Steam Tempered for increased wear resistance. Also conforms to NAS 907 Type B Aerospace Standards.



HSS	ANSI	4×D
135°	ST	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 118 H	P1.2 131 H	P1.3 135 H	P2.1 102 H	P2.2 89 G	P2.3 79 E	P3.1 82 F	P3.2 66 F	P3.3 56 E	P4.1 49 F	P4.2 43 E	P4.3 33 D	M1.1 98 E	M1.2 85 E
M2.1 89 E	M2.2 72 E	M3.1 43 G	M3.2 36 G	M3.3 33 C	M4.1 49 C	K1.1 115 H	K1.2 85 D	K1.3 62 D	K2.1 89 E	K2.2 72 E	K2.3 59 E	K3.1 79 E	K3.2 59 E
K3.3 49 E	K4.1 72 E	K4.2 56 E	K4.3 39 E	K4.4 36 E	K4.5 30 E	K5.1 82 E	K5.2 62 E	K5.3 49 E	N1.1 108 J	N1.2 82 J	N1.3 56 I	N2.1 151 H	N2.2 138 H
N2.3 98 H	N3.1 223 H	N3.2 131 F	N3.3 66 H										

Product	DC (inch)	DC (Wire gauge size)	DC (Letter size)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
239TBT1/8	1/8	–	–	.1250	1.5/8	2.3/4	.125	288	6001083
239TBT11/64	11/64	–	–	.1719	2.1/8	3.1/4	.172	288	6001089
239TBTN11	–	N11	–	.1910	2.5/16	3.1/2	.191	288	6001077
239TBT7/32	7/32	–	–	.2188	2.1/2	3.3/4	.219	288	6001100
239TBT1/4	1/4	–	–	.2500	2.3/4	4"	.250	288	6001080
239TBT F	–	–	F	.2570	2.7/8	4.1/8	.257	144	6001071
239TBT17/64	17/64	–	–	.2656	2.7/8	4.1/8	.266	144	6001092
239TBT9/32	9/32	–	–	.2813	2.15/16	4.1/4	.281	144	6001103
239TBT9/32-T ¹⁾	9/32	–	–	.2813	2.15/16	4.1/4	.281	144	7652366
239TBT5/16	5/16	–	–	.3125	3.3/16	4.1/2	.313	144	6001094

¹⁾ With Tang.



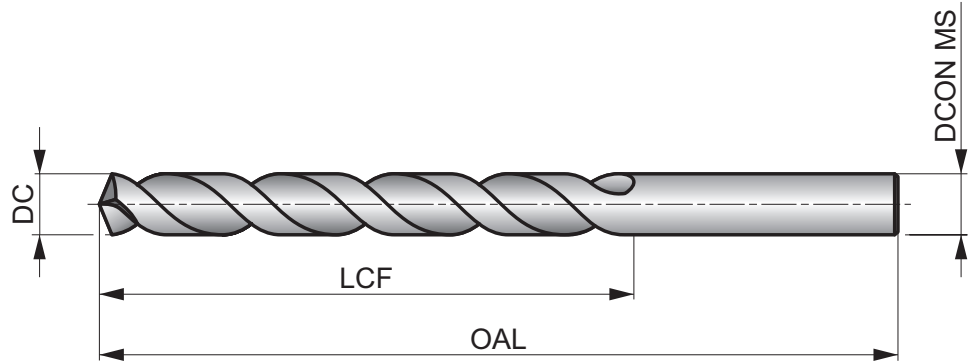
A176



NAS 907 Type B HSS Jobber Drill, Steam Tempered, Fractional Sizes

Heavy duty jobber drill with Low Thrust 135° self-centering split point for easier penetration. Steam tempered finish for increased wear resistance and lubricity. Made to NAS 907 Type B Aerospace Standards.

HSS	ANSI	4×D
135°	ST	
λ20-35°	R	DC h8



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1	P1.2	P1.3	P2.1	P2.2	P2.3	P3.1	P3.2	P3.3	P4.1	P4.2	P4.3	M1.1	M1.2
118 H	131 H	135 H	102 H	89 G	79 E	82 F	66 F	56 E	49 F	43 E	33 D	98 E	85 E
M2.1	M2.2	M3.1	M3.2	M3.3	M4.1	K1.1	K1.2	K1.3	K2.1	K2.2	K2.3	K3.1	K3.2
89 E	72 E	43 G	36 G	33 G	49 C	115 H	85 D	62 D	89 E	72 E	59 E	79 E	59 E
K3.3	K4.1	K4.2	K4.3	K4.4	K4.5	K5.1	K5.2	K5.3	N1.1	N1.2	N1.3	N2.1	N2.2
49 E	72 E	56 E	39 E	36 E	30 E	82 E	62 E	49 E	108 J	82 J	56 I	151 H	138 H
N2.3	N3.1	N3.2	N3.3	S1.1	S1.2	S1.3	S2.1	S2.2	S3.1	S3.2	S4.1	S4.2	
98 H	223 H	131 F	66 H	92 F	66 D	36 C	30 E	26 B	23 E	20 B	16 E	16 B	

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
A17613/64	13/64	.2031	2.7/16	3.5/8	.203	10	5969900
A1769/32F	9/32	.2813	2.15/16	4.1/4	.281	10	5969908
A1769/32T	9/32	.2813	2.15/16	4.1/4	.281	10	5969910



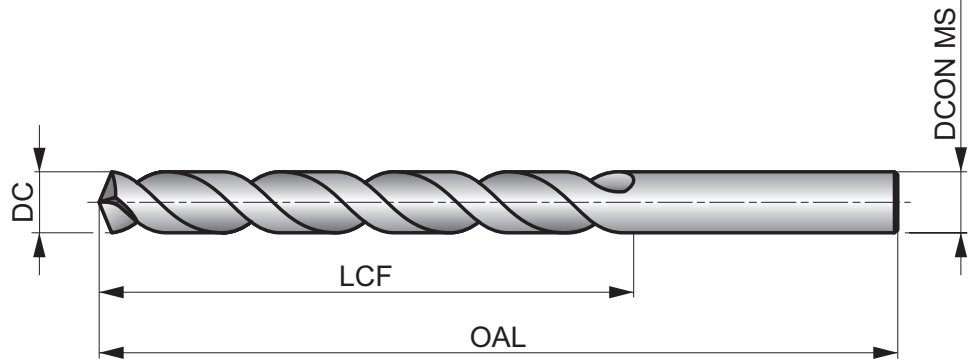
HX10 / HX15 / HX18



HSS Heavy Duty Jobber Drill, Purple & Bronze Tempered

Unique heavy duty jobber drill with thicker web, stronger flute design and dual tempered surface finish for improved wear resistance and lubricity. The 135° self-centering split point eliminates walking when the drill contacts the workpiece in hand drilling applications. Also used effectively in machine applications.

HSS	ANSI	4×D
135°	Purple Bronze	
λ 20-35°		



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 102 H	P1.2 ■ 112 H	P1.3 ■ 115 H	P2.1 ■ 85 H	P2.2 ■ 75 I	P2.3 ■ 66 F	P3.1 ■ 82 H	P3.2 ■ 66 H	P3.3 ■ 56 F	P4.1 ■ 49 H	P4.2 ■ 43 F	P4.3 ■ 33 E	M1.1 ■ 144 I	M1.2 ■ 121 I
M2.1 ■ 128 I	M2.2 ■ 105 I	M2.3 ■ 89 G	M3.1 ■ 69 H	M3.2 ■ 59 H	M3.3 ■ 52 F	M4.1 ■ 56 F	M4.2 ■ 49 D	K1.1 ■ 171 L	K1.2 ■ 128 I	K1.3 ■ 95 I	K2.1 ■ 118 H	K2.2 ■ 95 H	K2.3 ■ 75 F
K3.1 ■ 105 H	K3.2 ■ 79 H	K3.3 ■ 66 F	K4.1 ■ 95 H	K4.2 ■ 72 H	K4.3 ■ 52 F	K4.4 ■ 46 F	K4.5 ■ 39 F	K5.1 ■ 108 H	K5.2 ■ 82 H	K5.3 ■ 62 F	S1.1 ■ 95 H	S1.2 ■ 75 H	

Product	DC (inch)	DC (Wire gauge size)	DC (Letter size)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
HX101/16	1/16	-	-	.0625	7/8	1.7/8	.063	12	5996242
HX18N52	-	N52	-	.0635	7/8	1.7/8	.064	12	5995473
HX18N51	-	N51	-	.0670	1"	2"	.067	12	5995462
HX18N50	-	N50	-	.0700	1"	2"	.070	12	5995923
HX18N49	-	N49	-	.0730	1"	2"	.073	12	5995914
HX18N48	-	N48	-	.0760	1"	2"	.076	12	5995910
HX105/64	5/64	-	-	.0781	1"	2"	.078	12	5996298
HX18N47	-	N47	-	.0785	1"	2"	.079	12	5995907
HX18N46	-	N46	-	.0810	1.1/8	2.1/8	.081	12	5995903
HX18N45	-	N45	-	.0820	1.1/8	2.1/8	.082	12	5995897
HX18N44	-	N44	-	.0860	1.1/8	2.1/8	.086	12	5995894
HX18N43	-	N43	-	.0890	1.1/4	2.1/4	.089	12	5995890
HX18N42	-	N42	-	.0935	1.1/4	2.1/4	.093	12	5995886
HX103/32	3/32	-	-	.0938	1.1/4	2.1/4	.094	12	5996274
HX18N41	-	N41	-	.0960	1.3/8	2.3/8	.096	12	5995881
HX18N40	-	N40	-	.0980	1.3/8	2.3/8	.098	12	5995872
HX18N39	-	N39	-	.0995	1.3/8	2.3/8	.100	12	5995864
HX18N38	-	N38	-	.1015	1.7/16	2.1/2	.102	12	5995860
HX18N37	-	N37	-	.1040	1.7/16	2.1/2	.104	12	5995857
HX18N36	-	N36	-	.1065	1.7/16	2.1/2	.106	12	5995853
HX107/64	7/64	-	-	.1094	1.1/2	2.5/8	.109	12	5996310
HX18N35	-	N35	-	.1100	1.1/2	2.5/8	.110	12	5995850
HX18N34	-	N34	-	.1110	1.1/2	2.5/8	.111	12	5995846



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
HX18N33	—	N33	—	.1130	1.1/2	2.5/8	.113	12	5995843
HX18N32	—	N32	—	.1160	1.5/8	2.3/4	.116	12	5995841
HX18N31	—	N31	—	.1200	1.5/8	2.3/4	.120	12	5995833
HX101/8	1/8	—	—	.1250	1.5/8	2.3/4	.125	12	5996326
HX18N30	—	N30	—	.1285	1.5/8	2.3/4	.129	12	5995829
HX18N29	—	N29	—	.1360	1.3/4	2.7/8	.136	12	5995823
HX18N28	—	N28	—	.1405	1.3/4	2.7/8	.141	12	5995819
HX109/64	9/64	—	—	.1406	1.3/4	2.7/8	.141	12	5996318
HX18N27	—	N27	—	.1440	1.7/8	3"	.144	12	5995815
HX18N26	—	N26	—	.1470	1.7/8	3"	.147	12	5995811
HX18N25	—	N25	—	.1495	1.7/8	3"	.149	12	5995807
HX18N24	—	N24	—	.1520	2"	3.1/8	.152	12	5995804
HX18N23	—	N23	—	.1540	2"	3.1/8	.154	12	5995800
HX105/32	5/32	—	—	.1563	2"	3.1/8	.156	12	5996295
HX18N22	—	N22	—	.1570	2"	3.1/8	.157	12	5995791
HX18N21	—	N21	—	.1590	2.1/8	3.1/4	.159	12	5995788
HX18N20	—	N20	—	.1610	2.1/8	3.1/4	.161	12	5995784
HX18N19	—	N19	—	.1660	2.1/8	3.1/4	.166	12	5995777
HX18N18	—	N18	—	.1695	2.1/8	3.1/4	.170	12	5995772
HX1011/64	11/64	—	—	.1719	2.1/8	3.1/4	.172	12	5996397
HX18N17	—	N17	—	.1730	2.3/16	3.3/8	.173	12	5995768
HX18N16	—	N16	—	.1770	2.3/16	3.3/8	.177	12	5995765
HX18N15	—	N15	—	.1800	2.3/16	3.3/8	.180	12	5995760
HX18N14	—	N14	—	.1820	2.3/16	3.3/8	.182	12	5995756
HX18N13	—	N13	—	.1850	2.5/16	3.1/2	.185	12	5995932
HX103/16	3/16	—	—	.1875	2.5/16	3.1/2	.188	12	5996270
HX18N12	—	N12	—	.1890	2.5/16	3.1/2	.189	12	5995930
HX18N11	—	N11	—	.1910	2.5/16	3.1/2	.191	12	5995929
HX18N10	—	N10	—	.1935	2.7/16	3.5/8	.194	12	5995926
HX18N9	—	N9	—	.1960	2.7/16	3.5/8	.196	12	5995922
HX18N8	—	N8	—	.1990	2.7/16	3.5/8	.199	12	5995920
HX18N7	—	N7	—	.2010	2.7/16	3.5/8	.201	12	5995920
HX1013/64	13/64	—	—	.2031	2.7/16	3.5/8	.203	12	5996407
HX18N6	—	N6	—	.2040	2.1/2	3.3/4	.204	12	5995498
HX18N5	—	N5	—	.2055	2.1/2	3.3/4	.205	12	5995917
HX18N4	—	N4	—	.2090	2.1/2	3.3/4	.209	12	5995868
HX18N3	—	N3	—	.2130	2.1/2	3.3/4	.213	12	5995825
HX107/32	7/32	—	—	.2188	2.1/2	3.3/4	.219	12	5996307
HX18N2	—	N2	—	.2210	2.5/8	3.7/8	.221	12	5995780
HX18N1	—	N1	—	.2280	2.5/8	3.7/8	.228	12	5995920
HX15A	—	—	A	.2340	2.5/8	3.7/8	.234	12	5996320
HX1015/64	15/64	—	—	.2344	2.5/8	3.7/8	.234	12	5996413
HX15B	—	—	B	.2380	2.3/4	4"	.238	12	5996329
HX15C	—	—	C	.2420	2.3/4	4"	.242	12	5996332
HX15D	—	—	D	.2460	2.3/4	4"	.246	12	5996334
HX101/4	1/4	—	—	.2500	2.3/4	4"	.250	12	5996282
HX15F	—	—	F	.2570	2.7/8	4.1/8	.257	12	5996340
HX15G	—	—	G	.2610	2.7/8	4.1/8	.261	12	5996342
HX1017/64	17/64	—	—	.2656	2.7/8	4.1/8	.266	12	5996241
HX15H	—	—	H	.2660	2.7/8	4.1/8	.266	12	5996345
HX15I	—	—	I	.2720	2.7/8	4.1/8	.272	12	5996346
HX15J	—	—	J	.2770	2.7/8	4.1/8	.277	12	5996349
HX15K	—	—	K	.2810	2.15/16	4.1/4	.281	12	5996352
HX109/32	9/32	—	—	.2813	2.15/16	4.1/4	.281	12	5996314
HX15L	—	—	L	.2900	2.15/16	4.1/4	.290	12	5996359
HX15M	—	—	M	.2950	3.1/16	4.3/8	.295	12	5996362
HX1019/64	19/64	—	—	.2969	3.1/16	4.3/8	.297	12	5996247
HX15N	—	—	N	.3020	3.1/16	4.3/8	.302	12	5996366



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
HX105/16	5/16	–	–	.3125	3.3/16	4.1/2	.313	6	5996290
HX150	–	–	O	.3160	3.3/16	4.1/2	.316	6	5996370
HX15P	–	–	P	.3230	3.5/16	4.5/8	.323	6	5996374
HX1021/64	21/64	–	–	.3281	3.5/16	4.5/8	.328	6	5996251
HX15Q	–	–	Q	.3320	3.7/16	4.3/4	.332	6	5996378
HX15R	–	–	R	.3390	3.7/16	4.3/4	.339	6	5996381
HX1011/32	11/32	–	–	.3438	3.7/16	4.3/4	.344	6	5996356
HX15S	–	–	S	.3480	3.1/2	4.7/8	.348	6	5996386
HX15T	–	–	T	.3580	3.1/2	4.7/8	.358	6	5996390
HX1023/64	23/64	–	–	.3594	3.1/2	4.7/8	.359	6	5996254
HX15U	–	–	U	.3680	3.5/8	5"	.368	6	5996394
HX103/8	3/8	–	–	.3750	3.5/8	5"	.375	6	5996278
HX15V	–	–	V	.3770	3.5/8	5"	.377	6	5996399
HX15W	–	–	W	.3860	3.3/4	5.1/8	.386	6	5995751
HX1025/64	25/64	–	–	.3906	3.3/4	5.1/8	.391	6	5996258
HX15X	–	–	X	.3970	3.3/4	5.1/8	.397	6	5995795
HX15Y	–	–	Y	.4040	3.7/8	5.1/4	.404	6	5995837
HX1013/32	13/32	–	–	.4063	3.7/8	5.1/4	.406	6	5996403
HX15Z	–	–	Z	.4130	3.7/8	5.1/4	.413	6	5995876
HX1027/64	27/64	–	–	.4219	3.15/16	5.3/8	.422	6	5996262
HX107/16	7/16	–	–	.4375	4.1/16	5.1/2	.438	6	5996303
HX1029/64	29/64	–	–	.4531	4.3/16	5.5/8	.453	6	5996267
HX1015/32	15/32	–	–	.4688	4.5/16	5.3/4	.469	6	5996410
HX1031/64	31/64	–	–	.4844	4.3/8	5.7/8	.484	6	5996286
HX101/2	1/2	–	–	.5000	4.1/2	6"	.500	6	5996236



A=Styles in Set, B=No. in Set, C=Diameters in Set.

Product	Nr.	A	B	C	Pack Qty
C29HX10SET	HX10	29	1/16 -1/2 x 64ths	1	5995609



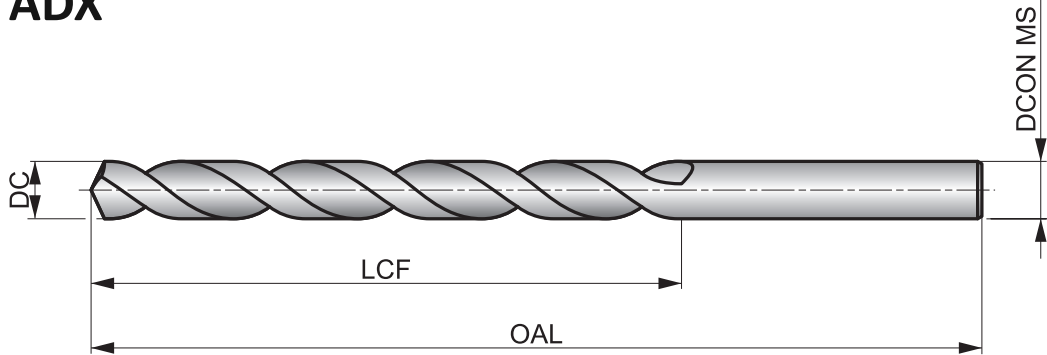
A510



ADX HSS Jobber Drill, TiN Coated

High performance drill, able to produce high quality and accurate holes at high speeds and feeds (H9 hole tolerance). A 130° thinned point aids self-centering. This drill should be used in machines with constant feed only. TiN coating improves performance and extends the tool life. Suitable for drilling many materials.

ADX



HSS	DIN 338	4xD
130°	TiN	
λ 32-40°	R	DC h8

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 174 M	P1.2 ■ 194 M	P1.3 ■ 200 M	P2.1 ■ 148 M	P2.2 ■ 131 K	P2.3 ■ 115 F	P3.1 ■ 102 H	P3.2 ■ 82 H	P3.3 ■ 69 F	P4.1 ■ 62 H	P4.2 ■ 52 F	P4.3 ■ 43 D	M1.1 ■ 125 G	M1.2 ■ 105 G
M2.1 ■ 112 G	M2.2 ■ 92 G	M3.1 ■ 52 I	M3.2 ■ 46 I	M3.3 ■ 43 I	M4.1 ■ 62 G	K1.1 ■ 138 K	K1.2 ■ 102 J	K1.3 ■ 75 J	K2.1 ■ 112 J	K2.2 ■ 92 J	K2.3 ■ 72 F	K3.1 ■ 98 J	K3.2 ■ 75 J
K3.3 ■ 62 F	K4.1 ■ 92 J	K4.2 ■ 69 J	K4.3 ■ 52 F	K4.4 ■ 43 F	K4.5 ■ 36 F	K5.1 ■ 105 J	K5.2 ■ 79 J	K5.3 ■ 62 F	N1.1 ■ 164 G	N1.2 ■ 125 G	N1.3 ■ 82 M	N2.1 ■ 157 I	N2.2 ■ 141 I
N2.3 ■ 102 I	N3.1 ■ 279 I	N3.2 ■ 164 I	N3.3 ■ 82 D	N4.1 ■ 213 G	N4.2 ■ 164 G	N4.3 ■ 115 F	S1.1 ■ 105 G	S1.2 ■ 66 H	S1.3 ■ 13 B	S2.1 ■ 39 E	S2.2 ■ 26 E	S3.1 ■ 30 E	S3.2 ■ 20 E
S4.1 ■ 23 E	S4.2 ■ 16 E												

Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A5103.0	-	3.00	.1181	33.0	61.0	3.00	1	5970433
A5103.1	-	3.10	.1220	36.0	65.0	3.10	1	5970435
A5101/8	1/8	3.18	.1250	36.0	65.0	3.18	1	5970041
A5103.2	-	3.20	.1260	36.0	65.0	3.20	1	5970437
A5103.3	-	3.30	.1299	36.0	65.0	3.30	1	5970439
A5103.4	-	3.40	.1339	39.0	70.0	3.40	1	5970441
A5103.5	-	3.50	.1378	39.0	70.0	3.50	1	5970443
A5109/64	9/64	3.57	.1406	39.0	70.0	3.57	1	5970449
A5103.6	-	3.60	.1417	39.0	70.0	3.60	1	5970445
A5103.7	-	3.70	.1457	39.0	70.0	3.70	1	5970448
A5103.8	-	3.80	.1496	43.0	75.0	3.80	1	5970453
A5103.9	-	3.90	.1535	43.0	75.0	3.90	1	5970457
A5105/32	5/32	3.97	.1563	43.0	75.0	3.97	1	5970452
A5104.0	-	4.00	.1575	43.0	75.0	4.00	1	5970472
A5104.1	-	4.10	.1614	43.0	75.0	4.10	1	5970475
A5104.2	-	4.20	.1654	43.0	75.0	4.20	1	5970478
A5104.3	-	4.30	.1693	47.0	80.0	4.30	1	5970481
A5104.4	-	4.40	.1732	47.0	80.0	4.40	1	5970486
A5104.5	-	4.50	.1772	47.0	80.0	4.50	1	5970491

Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A5104.6	-	4.60	.1811	47.0	80.0	4.60	1	5970494
A5104.7	-	4.70	.1850	47.0	80.0	4.70	1	5970497
A5103/16	3/16	4.76	.1875	52.0	86.0	4.76	1	5970461
A5104.8	-	4.80	.1890	52.0	86.0	4.80	1	5970500
A5104.9	-	4.90	.1929	52.0	86.0	4.90	1	5970504
A5105.0	-	5.00	.1969	52.0	86.0	5.00	1	5970507
A5105.1	-	5.10	.2008	52.0	86.0	5.10	1	5970509
A51013/64	13/64	5.16	.2031	52.0	86.0	5.16	1	5970403
A5105.2	-	5.20	.2047	52.0	86.0	5.20	1	5970512
A5105.3	-	5.30	.2087	52.0	86.0	5.30	1	5970515
A5105.4	-	5.40	.2126	57.0	93.0	5.40	1	5970518
A5105.5	-	5.50	.2165	57.0	93.0	5.50	1	5970525
A5107/32	7/32	5.56	.2188	57.0	93.0	5.56	1	5970389
A5105.6	-	5.60	.2205	57.0	93.0	5.60	1	5970307
A5105.7	-	5.70	.2244	57.0	93.0	5.70	1	5970354
A5105.8	-	5.80	.2283	57.0	93.0	5.80	1	5970393
A5105.9	-	5.90	.2323	57.0	93.0	5.90	1	5970424
A51015/64	15/64	5.95	.2344	57.0	93.0	5.95	1	5970412
A5106.0	-	6.00	.2362	57.0	93.0	6.00	1	5970456



Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A5106.1	–	6.10	.2402	63.0	101.0	6.10	1	5970459
A5106.2	–	6.20	.2441	63.0	101.0	6.20	1	5970463
A5106.3	–	6.30	.2480	63.0	101.0	6.30	1	5970313
A5101/4	1/4	6.35	.2500	63.0	101.0	6.35	1	5970034
A5106.4	–	6.40	.2520	63.0	101.0	6.40	1	5970317
A5106.5	–	6.50	.2559	63.0	101.0	6.50	1	5970321
A5106.6	–	6.60	.2598	63.0	101.0	6.60	1	5970325
A5106.7	–	6.70	.2638	63.0	101.0	6.70	1	5970329
A51017/64	17/64	6.75	.2656	69.0	109.0	6.75	1	5970415
A5106.8	–	6.80	.2677	69.0	109.0	6.80	1	5970332
A5106.9	–	6.90	.2717	69.0	109.0	6.90	1	5970336
A5107.0	–	7.00	.2756	69.0	109.0	7.00	1	5970340
A5107.1	–	7.10	.2795	69.0	109.0	7.10	1	5970345
A5109/32	9/32	7.14	.2813	69.0	109.0	7.14	1	5970444
A5107.2	–	7.20	.2835	69.0	109.0	7.20	1	5970350
A5107.3	–	7.30	.2874	69.0	109.0	7.30	1	5970359
A5107.4	–	7.40	.2913	69.0	109.0	7.40	1	5970362
A5107.5	–	7.50	.2953	69.0	109.0	7.50	1	5970365
A51019/64	19/64	7.54	.2969	75.0	117.0	7.54	1	5970418
A5107.6	–	7.60	.2992	75.0	117.0	7.60	1	5970369
A5107.8	–	7.80	.3071	75.0	117.0	7.80	1	5970379
A5105/16	5/16	7.94	.3125	75.0	117.0	7.94	1	5970446
A5108.0	–	8.00	.3150	75.0	117.0	8.00	1	5970391
A5108.1	–	8.10	.3189	75.0	117.0	8.10	1	5970395
A5108.2	–	8.20	.3228	75.0	117.0	8.20	1	5970398
A5108.3	–	8.30	.3268	75.0	117.0	8.30	1	5970400
A5108.5	–	8.50	.3346	75.0	117.0	8.50	1	5970406
A5108.6	–	8.60	.3386	81.0	125.0	8.60	1	5970410
A5108.7	–	8.70	.3425	81.0	125.0	8.70	1	5970413
A51011/32	11/32	8.73	.3438	81.0	125.0	8.73	1	5970136
A5108.8	–	8.80	.3465	81.0	125.0	8.80	1	5970416
A5108.9	–	8.90	.3504	81.0	125.0	8.90	1	5970419
A5109.0	–	9.00	.3543	81.0	125.0	9.00	1	5970422
A5109.1	–	9.10	.3583	81.0	125.0	9.10	1	5970425

Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A5109.2	–	9.20	.3622	81.0	125.0	9.20	1	5970428
A5109.3	–	9.30	.3661	81.0	125.0	9.30	1	5970430
A5109.4	–	9.40	.3701	81.0	125.0	9.40	1	5970432
A5109.5	–	9.50	.3740	81.0	125.0	9.50	1	5970434
A5103/8	3/8	9.52	.3750	87.0	133.0	9.52	1	5970465
A5109.6	–	9.60	.3780	87.0	133.0	9.60	1	5970436
A5109.7	–	9.70	.3819	87.0	133.0	9.70	1	5970438
A5109.8	–	9.80	.3858	87.0	133.0	9.80	1	5970440
A5109.9	–	9.90	.3898	87.0	133.0	9.90	1	5970442
A51025/64	25/64	9.92	.3906	87.0	133.0	9.92	1	5970426
A51010.0	–	10.00	.3937	87.0	133.0	10.00	1	5970046
A51010.1	–	10.10	.3976	87.0	133.0	10.10	1	5970051
A51010.2	–	10.20	.4016	87.0	133.0	10.20	1	5970055
A51010.3	–	10.30	.4055	87.0	133.0	10.30	1	5970066
A51013/32	13/32	10.32	.4063	87.0	133.0	10.32	1	5970401
A51010.4	–	10.40	.4094	87.0	133.0	10.40	1	5970069
A51010.5	–	10.50	.4134	87.0	133.0	10.50	1	5970073
A51027/64	27/64	10.72	.4219	94.0	142.0	10.72	1	5970429
A51010.8	–	10.80	.4252	94.0	142.0	10.80	1	5970085
A51011.0	–	11.00	.4331	94.0	142.0	11.00	1	5970093
A51011.1	–	11.10	.4370	94.0	142.0	11.10	1	5970097
A5107/16	7/16	11.11	.4375	94.0	142.0	11.11	1	5970386
A51011.5	–	11.50	.4528	94.0	142.0	11.50	1	5970115
A51011.7	–	11.70	.4606	94.0	142.0	11.70	1	5970124
A51011.8	–	11.80	.4646	94.0	142.0	11.80	1	5970128
A51015/32	15/32	11.91	.4688	101.0	151.0	11.91	1	5970409
A51012.0	–	12.00	.4724	101.0	151.0	12.00	1	5970142
A51012.3	–	12.30	.4843	101.0	151.0	12.30	1	5970427
A51031/64	31/64	12.30	.4844	101.0	151.0	12.30	1	5970467
A51012.5	–	12.50	.4921	101.0	151.0	12.50	1	5970489
A5101/2	1/2	12.70	.5000	101.0	151.0	12.70	1	5970029
A51013.0	–	13.00	.5118	101.0	151.0	13.00	1	5970535
A51014.0	–	14.00	.5512	108.0	160.0	14.00	1	5970407



A553

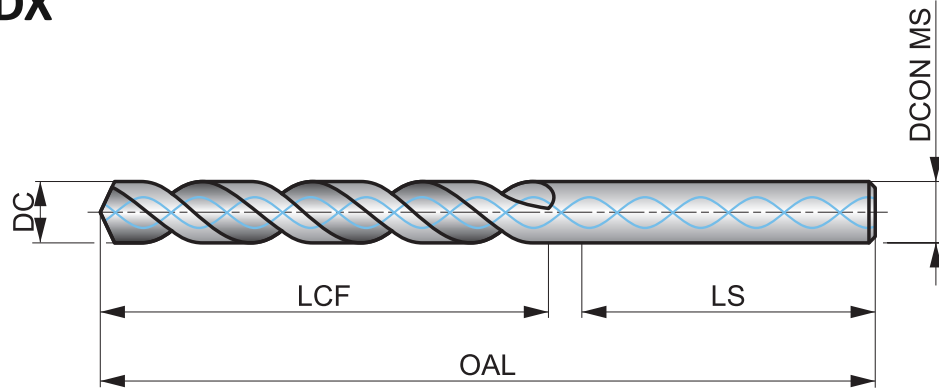


ADX HSS-E (5% Cobalt) Jobber Drill, TiAlN Top Coated with Coolant Feed

High performance drill, able to produce high quality, accurate holes at high speeds and feeds (H9 hole tolerance). A 130° thinned point and TiAlN Top coating improves performance and extends the tool life. This drill should be used in CNC machines only. Suitable for drilling many materials.

ADX

HSS-E	DORMER	5xD
130°	TiAlN Top	DIN 6535HA
λ>35°	R	Image of coolant feed
DC h8		



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 262 L	P1.2 ■ 292 L	P1.3 ■ 302 L	P2.1 ■ 223 L	P2.2 ■ 197 L	P2.3 ■ 174 F	P3.1 ■ 135 H	P3.2 ■ 108 H	P3.3 ■ 92 F	P4.1 ■ 82 H	P4.2 ■ 69 F	P4.3 ■ 56 D	M1.1 ■ 180 G	M1.2 ■ 151 G
M2.1 ■ 161 G	M2.2 ■ 131 G	M3.1 ■ 72 I	M3.2 ■ 62 I	M3.3 ■ 56 I	M4.1 ■ 89 G	K1.1 ■ 230 K	K1.2 ■ 171 J	K1.3 ■ 128 J	K2.1 ■ 180 J	K2.2 ■ 148 J	K2.3 ■ 118 F	K3.1 ■ 161 J	K3.2 ■ 121 J
K3.3 ■ 98 F	K4.1 ■ 148 J	K4.2 ■ 112 J	K4.3 ■ 82 F	K4.4 ■ 72 F	K4.5 ■ 59 F	K5.1 ■ 167 J	K5.2 ■ 128 J	K5.3 ■ 98 F	N1.1 ■ 230 H	N1.2 ■ 174 H	N1.3 ■ 115 M	N2.1 ■ 279 I	N2.2 ■ 249 I
N2.3 ■ 180 I	N3.1 ■ 472 I	N3.2 ■ 279 I	N3.3 ■ 141 G	N4.1 ■ 295 G	S1.1 ■ 148 G	S1.2 ■ 98 E	S1.3 ■ 26 C	S2.1 ■ 66 E	S2.2 ■ 46 G	S3.1 ■ 49 E	S3.2 ■ 33 G	S4.1 ■ 39 E	S4.2 ■ 26 G

DCON MS tolerance h6.

Product	DC	DC	LCF	OAL	LS	DCON MS	Pack Qty	MID
	(mm)	(inch)	(mm)	(mm)	(mm)	(mm)		
A5535.0	5.00	.1969	36.0	79.0	36.0	6.00	1	5971370
A5535.5	5.50	.2165	40.0	79.0	36.0	6.00	1	5971554
A5536.0	6.00	.2362	43.0	79.0	36.0	6.00	1	5971566
A5538.0	8.00	.3150	58.0	94.0	36.0	8.00	1	5971424
A5538.5	8.50	.3346	75.0	130.0	40.0	10.00	1	5971428
A5539.0	9.00	.3543	75.0	130.0	40.0	10.00	1	5971434
A5539.5	9.50	.3740	75.0	130.0	40.0	10.00	1	5971443
A55310.3	10.30	.4055	87.0	150.0	45.0	12.00	1	5969993
A55311.0	11.00	.4331	94.0	150.0	45.0	12.00	1	5970005

Product	DC	DC	LCF	OAL	LS	DCON MS	Pack Qty	MID
	(mm)	(inch)	(mm)	(mm)	(mm)	(mm)		
A55311.3	11.30	.4449	94.0	150.0	45.0	12.00	1	5970011
A55311.5	11.50	.4528	94.0	150.0	45.0	12.00	1	5970017
A55312.0	12.00	.4724	94.0	150.0	45.0	12.00	1	5970020
A55312.5	12.50	.4921	101.0	160.0	45.0	14.00	1	5970030
A55313.0	13.00	.5118	101.0	160.0	45.0	14.00	1	5970035
A55313.5	13.50	.5315	101.0	160.0	45.0	14.00	1	5970048
A55314.0	14.00	.5512	101.0	160.0	45.0	14.00	1	5970058
A55315.0	15.00	.5906	108.0	170.0	48.0	16.00	1	5970080
A55318.0	18.00	.7087	130.0	190.0	48.0	18.00	1	5970137



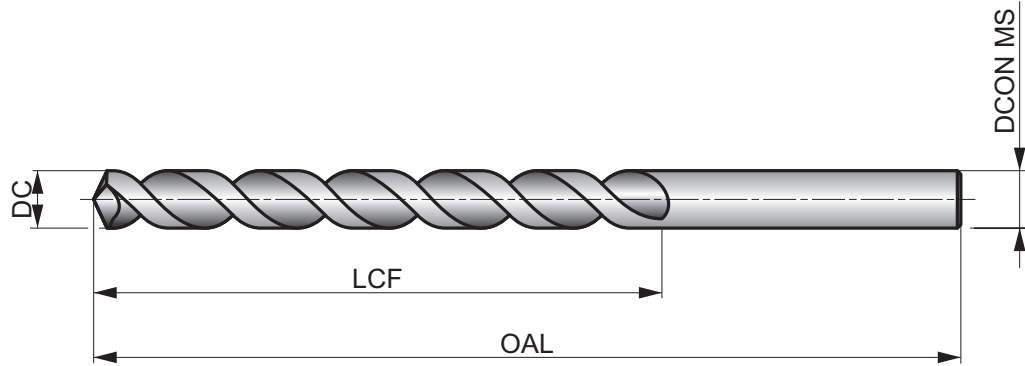
QC21P



HSS Parabolic Flute Jobber Drill, Bright Finish Inch Sizes

Open parabolic flute design makes this the best jobber drill for long chipping materials. The self-centering 135° split point allows for good location and easier penetration with low thrust force. Bright finish makes it suitable for soft or non-ferrous materials. Not suitable for hand-held drilling or thin materials.

HSS	ANSI	4×D
135°	Bright	
λ > 35°		



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 89 F	P1.2 ■ 98 F	P1.3 ■ 102 F	P2.1 ■ 75 F	P2.2 ■ 66 H	P2.3 ■ 59 D	P3.1 ■ 69 F	P3.2 ■ 56 F	P3.3 ■ 46 D	P4.1 ■ 39 F	P4.2 ■ 33 D	M1.1 ■ 121 H	M1.2 ■ 102 H	M2.1 ■ 108 H
M2.2 ■ 89 H	M2.3 ■ 75 F	M3.1 ■ 56 F	M3.2 ■ 49 F	M3.3 ■ 46 D	M4.1 ■ 49 D	K1.1 ■ 151 H	K1.2 ■ 112 H	K1.3 ■ 85 H	K2.1 ■ 98 F	K2.2 ■ 79 F	K3.1 ■ 85 F	K3.2 ■ 66 F	K4.1 ■ 79 F
K4.2 ■ 59 F	K5.1 ■ 89 F	K5.2 ■ 69 F	N1.1 ■ 351 H	N1.2 ■ 262 H	N1.3 ■ 177 H	N2.1 ■ 325 H	N2.2 ■ 325 H	N3.1 ■ 135 H	N3.2 ■ 79 H	N3.3 ■ 39 I	S1.1 ■ 89 H	S1.2 ■ 49 F	

Product	DC (inch)	DC (Wire gauge size)	DC (Letter size)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
QC21P1/16	1/16	—	—	.0625	7/8	1.7/8	.063	12	5997086
QC21PN52	—	N52	—	.0635	7/8	1.7/8	.064	12	5997021
QC21PN51	—	N51	—	.0670	1"	2"	.067	12	5997017
QC21PN50	—	N50	—	.0700	1"	2"	.070	12	5997013
QC21PN49	—	N49	—	.0730	1"	2"	.073	12	5997008
QC21PN48	—	N48	—	.0760	1"	2"	.076	12	5997005
QC21P5/64	5/64	—	—	.0781	1"	2"	.078	12	5996799
QC21PN47	—	N47	—	.0785	1"	2"	.079	12	5997002
QC21PN46	—	N46	—	.0810	1.1/8	2.1/8	.081	12	5996999
QC21PN45	—	N45	—	.0820	1.1/8	2.1/8	.082	12	5997179
QC21PN44	—	N44	—	.0860	1.1/8	2.1/8	.086	12	5997175
QC21PN43	—	N43	—	.0890	1.1/4	2.1/4	.089	12	5997170
QC21PN42	—	N42	—	.0935	1.1/4	2.1/4	.093	12	5997166
QC21P3/32	3/32	—	—	.0938	1.1/4	2.1/4	.094	12	5996944
QC21PN41	—	N41	—	.0960	1.3/8	2.3/8	.096	12	5997155
QC21PN40	—	N40	—	.0980	1.3/8	2.3/8	.098	12	5997108
QC21PN39	—	N39	—	.0995	1.3/8	2.3/8	.100	12	5997032
QC21PN38	—	N38	—	.1015	1.7/16	2.1/2	.102	12	5996993
QC21PN37	—	N37	—	.1040	1.7/16	2.1/2	.104	12	5997040
QC21PN36	—	N36	—	.1065	1.7/16	2.1/2	.106	12	5997033
QC21P7/64	7/64	—	—	.1094	1.1/2	2.5/8	.109	12	5996818
QC21PN35	—	N35	—	.1100	1.1/2	2.5/8	.110	12	5997029
QC21PN34	—	N34	—	.1110	1.1/2	2.5/8	.111	12	5997025



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
QC21PN33	—	N33	—	.1130	1.1/2	2.5/8	.113	12	5997020
QC21PN32	—	N32	—	.1160	1.5/8	2.3/4	.116	12	5997016
QC21PN31	—	N31	—	.1200	1.5/8	2.3/4	.120	12	5997014
QC21P1/8	1/8	—	—	.1250	1.5/8	2.3/4	.125	12	5997097
QC21PN30	—	N30	—	.1285	1.5/8	2.3/4	.129	12	5997010
QC21PN29	—	N29	—	.1360	1.3/4	2.7/8	.136	12	5997004
QC21PN28	—	N28	—	.1405	1.3/4	2.7/8	.141	12	5997000
QC21P9/64	9/64	—	—	.1406	1.3/4	2.7/8	.141	12	5996829
QC21PN27	—	N27	—	.1440	1.7/8	3"	.144	12	5996995
QC21PN26	—	N26	—	.1470	1.7/8	3"	.147	12	5996992
QC21PN25	—	N25	—	.1495	1.7/8	3"	.149	12	5996990
QC21PN24	—	N24	—	.1520	2"	3.1/8	.152	12	5996988
QC21PN23	—	N23	—	.1540	2"	3.1/8	.154	12	5996986
QC21P5/32	5/32	—	—	.1563	2"	3.1/8	.156	12	5996795
QC21PN22	—	N22	—	.1570	2"	3.1/8	.157	12	5996984
QC21PN21	—	N21	—	.1590	2.1/8	3.1/4	.159	12	5996982
QC21PN20	—	N20	—	.1610	2.1/8	3.1/4	.161	12	5996980
QC21PN19	—	N19	—	.1660	2.1/8	3.1/4	.166	12	5996976
QC21PN18	—	N18	—	.1695	2.1/8	3.1/4	.170	12	5996972
QC21P11/64	11/64	—	—	.1719	2.1/8	3.1/4	.172	12	5997112
QC21PN17	—	N17	—	.1730	2.3/16	3.3/8	.173	12	5996970
QC21PN16	—	N16	—	.1770	2.3/16	3.3/8	.177	12	5996968
QC21PN15	—	N15	—	.1800	2.3/16	3.3/8	.180	12	5996966
QC21PN14	—	N14	—	.1820	2.3/16	3.3/8	.182	12	5996964
QC21PN13	—	N13	—	.1850	2.5/16	3.1/2	.185	12	5996962
QC21P3/16	3/16	—	—	.1875	2.5/16	3.1/2	.188	12	5996938
QC21PN12	—	N12	—	.1890	2.5/16	3.1/2	.189	12	5996960
QC21PN11	—	N11	—	.1910	2.5/16	3.1/2	.191	12	5996958
QC21PN10	—	N10	—	.1935	2.7/16	3.5/8	.194	12	5996955
QC21PN9	—	N9	—	.1960	2.7/16	3.5/8	.196	12	5997039
QC21PN8	—	N8	—	.1990	2.7/16	3.5/8	.199	12	5997035
QC21PN7	—	N7	—	.2010	2.7/16	3.5/8	.201	12	5997028
QC21P13/64	13/64	—	—	.2031	2.7/16	3.5/8	.203	12	5997120
QC21PN6	—	N6	—	.2040	2.1/2	3.3/4	.204	12	5997024
QC21PN5	—	N5	—	.2055	2.1/2	3.3/4	.205	12	5997011
QC21PN4	—	N4	—	.2090	2.1/2	3.3/4	.209	12	5997071
QC21PN3	—	N3	—	.2130	2.1/2	3.3/4	.213	12	5997006
QC21P7/32	7/32	—	—	.2188	2.1/2	3.3/4	.219	12	5996814
QC21PN2	—	N2	—	.2210	2.5/8	3.7/8	.221	12	5996978
QC21PN1	—	N1	—	.2280	2.5/8	3.7/8	.228	12	5996952
QC21PA	—	—	A	.2340	2.5/8	3.7/8	.234	12	5996520
QC21P15/64	15/64	—	—	.2344	2.5/8	3.7/8	.234	12	5997128
QC21PB	—	—	B	.2380	2.3/4	4"	.238	12	5996524
QC21PC	—	—	C	.2420	2.3/4	4"	.242	12	5996531
QC21PD	—	—	D	.2460	2.3/4	4"	.246	12	5996535
QC21P1/4	1/4	—	—	.2500	2.3/4	4"	.250	12	5997093
QC21PF	—	—	F	.2570	2.7/8	4.1/8	.257	12	5996543
QC21PG	—	—	G	.2610	2.7/8	4.1/8	.261	12	5996547
QC21P17/64	17/64	—	—	.2656	2.7/8	4.1/8	.266	12	5997134
QC21PH	—	—	H	.2660	2.7/8	4.1/8	.266	12	5996551
QC21PI	—	—	I	.2720	2.7/8	4.1/8	.272	12	5996555
QC21PJ	—	—	J	.2770	2.7/8	4.1/8	.277	12	5996559
QC21PK	—	—	K	.2810	2.15/16	4.1/4	.281	12	5996563
QC21P9/32	9/32	—	—	.2813	2.15/16	4.1/4	.281	12	5996825
QC21PL	—	—	L	.2900	2.15/16	4.1/4	.290	12	5996566
QC21PM	—	—	M	.2950	3.1/16	4.3/8	.295	12	5996571
QC21P19/64	19/64	—	—	.2969	3.1/16	4.3/8	.297	12	5997147
QC21PN	—	—	N	.3020	3.1/16	4.3/8	.302	12	5996946



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
QC21P5/16	5/16	–	–	.3125	3.3/16	4.1/2	.313	6	5996792
QC21P0	–	–	O	.3160	3.3/16	4.1/2	.316	6	5997043
QC21PP	–	–	P	.3230	3.5/16	4.5/8	.323	6	5997047
QC21P21/64	21/64	–	–	.3281	3.5/16	4.5/8	.328	6	5997161
QC21PQ	–	–	Q	.3320	3.7/16	4.3/4	.332	6	5997051
QC21PR	–	–	R	.3390	3.7/16	4.3/4	.339	6	5997055
QC21P11/32	11/32	–	–	.3438	3.7/16	4.3/4	.344	6	5997105
QC21PS	–	–	S	.3480	3.1/2	4.7/8	.348	6	5997059
QC21PT	–	–	T	.3580	3.1/2	4.7/8	.358	6	5997062
QC21P23/64	23/64	–	–	.3594	3.1/2	4.7/8	.359	6	5996766
QC21PU	–	–	U	.3680	3.5/8	5"	.368	6	5997065
QC21P3/8	3/8	–	–	.3750	3.5/8	5"	.375	6	5996947
QC21PV	–	–	V	.3770	3.5/8	5"	.377	6	5997068
QC21PW	–	–	W	.3860	3.3/4	5.1/8	.386	6	5997074
QC21P25/64	25/64	–	–	.3906	3.3/4	5.1/8	.391	6	5996811
QC21PX	–	–	X	.3970	3.3/4	5.1/8	.397	6	5997077
QC21PY	–	–	Y	.4040	3.7/8	5.1/4	.404	6	5997080
QC21P13/32	13/32	–	–	.4063	3.7/8	5.1/4	.406	6	5997116
QC21PZ	–	–	Z	.4130	3.7/8	5.1/4	.413	6	5997083
QC21P27/64	27/64	–	–	.4219	3.15/16	5.3/8	.422	6	5996848
QC21P7/16	7/16	–	–	.4375	4.1/16	5.1/2	.438	6	5996806
QC21P29/64	29/64	–	–	.4531	4.3/16	5.5/8	.453	6	5996893
QC21P15/32	15/32	–	–	.4688	4.5/16	5.3/4	.469	6	5997124
QC21P31/64	31/64	–	–	.4844	4.3/8	5.7/8	.484	6	5996950
QC21P1/2	1/2	–	–	.5000	4.1/2	6"	.500	6	5997090
QC21P33/64	33/64	–	–	.5156	4.13/16	6.5/8	.516	1	5996953
QC21P17/32	17/32	–	–	.5313	4.13/16	6.5/8	.531	1	5997131
QC21P35/64	35/64	–	–	.5469	4.13/16	6.5/8	.547	1	5996771
QC21P9/16	9/16	–	–	.5625	4.13/16	6.5/8	.563	1	5996822
QC21P37/64	37/64	–	–	.5781	4.13/16	6.5/8	.578	1	5996775
QC21P19/32	19/32	–	–	.5938	5.3/16	7.1/8	.594	1	5997141
QC21P39/64	39/64	–	–	.6094	5.3/16	7.1/8	.609	1	5996778
QC21P5/8	5/8	–	–	.6250	5.3/16	7.1/8	.625	1	5996802
QC21P41/64	41/64	–	–	.6406	5.3/16	7.1/8	.641	1	5996782
QC21P21/32	21/32	–	–	.6563	5.3/16	7.1/8	.656	1	5997151
QC21P11/16	11/16	–	–	.6875	5.5/8	7.5/8	.688	1	5997101



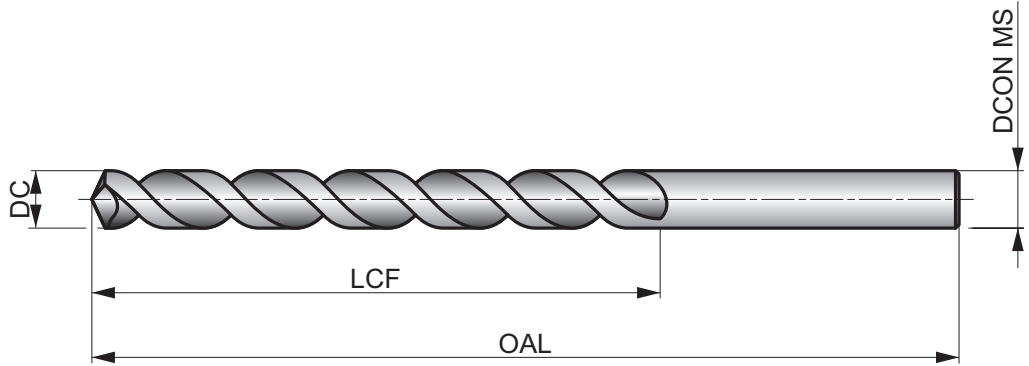
QC21PM



HSS Parabolic Flute Jobber Drill, Bright Finish Metric Sizes

Open parabolic flute design makes this the best jobber drill for long chipping materials. The self-centering 135° split point allows for good location and easier penetration with low thrust force. Bright finish makes it suitable for soft or non-ferrous materials. Not suitable for hand-held drilling or thin materials.

HSS	DIN 338	4×D
135°	Bright	
λ>35°	R	



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 89 F	P1.2 ■ 98 F	P1.3 ■ 102 F	P2.1 ■ 75 F	P2.2 ■ 66 H	P2.3 ■ 59 D	P3.1 ■ 69 F	P3.2 ■ 56 F	P3.3 ■ 46 D	P4.1 ■ 39 F	P4.2 ■ 33 D	M1.1 ■ 121 H	M1.2 ■ 102 H	M2.1 ■ 108 H
M2.2 ■ 89 H	M2.3 ■ 75 F	M3.1 ■ 56 F	M3.2 ■ 49 F	M3.3 ■ 46 D	M4.1 ■ 49 D	K1.1 ■ 151 H	K1.2 ■ 112 H	K1.3 ■ 85 H	K2.1 ■ 98 F	K2.2 ■ 79 F	K3.1 ■ 85 F	K3.2 ■ 66 F	K4.1 ■ 79 F
K4.2 ■ 59 F	K5.1 ■ 89 F	K5.2 ■ 69 F	N1.1 ■ 351 H	N1.2 ■ 262 H	N1.3 ■ 177 H	N2.1 ■ 325 H	N2.2 ■ 325 H	N3.1 ■ 135 H	N3.2 ■ 79 H	N3.3 ■ 39 I	S1.1 ■ 89 H	S1.2 ■ 49 F	

Product	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
QC21PM1.5	1.50	.0591	18.0	40.0	1.50	12	5996576
QC21PM2.0	2.00	.0787	24.0	49.0	2.00	12	5996644
QC21PM2.5	2.50	.0984	30.0	57.0	2.50	12	5996648
QC21PM3.0	3.00	.1181	33.0	61.0	3.00	12	5996655
QC21PM3.5	3.50	.1378	39.0	70.0	3.50	12	5996908
QC21PM4.0	4.00	.1575	43.0	75.0	4.00	12	5996949
QC21PM4.5	4.50	.1772	47.0	80.0	4.50	12	5996974
QC21PM5.0	5.00	.1969	52.0	86.0	5.00	12	5996997
QC21PM5.2	5.20	.2047	52.0	86.0	5.20	12	5997036
QC21PM5.5	5.50	.2165	57.0	93.0	5.50	12	5997044
QC21PM5.6	5.60	.2205	57.0	93.0	5.60	12	5997048
QC21PM6.0	6.00	.2362	57.0	93.0	6.00	12	5997052
QC21PM6.5	6.50	.2559	63.0	101.0	6.50	12	5997056
QC21PM6.8	6.80	.2677	69.0	109.0	6.80	12	5996914
QC21PM7.0	7.00	.2756	69.0	109.0	7.00	12	5996923
QC21PM7.5	7.50	.2953	69.0	109.0	7.50	12	5996926
QC21PM8.0	8.00	.3150	75.0	117.0	8.00	6	5996929
QC21PM8.2	8.20	.3228	75.0	117.0	8.20	6	5996931
QC21PM8.5	8.50	.3346	75.0	117.0	8.50	6	5996934

Product	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
QC21PM8.6	8.60	.3386	81.0	125.0	8.60	6	5996937
QC21PM9.0	9.00	.3543	81.0	125.0	9.00	6	5996940
QC21PM9.5	9.50	.3740	81.0	125.0	9.50	6	5996943
QC21PM10.0	10.00	.3937	87.0	133.0	10.00	6	5996579
QC21PM10.5	10.50	.4134	87.0	133.0	10.50	6	5996582
QC21PM11.0	11.00	.4331	94.0	142.0	11.00	6	5996585
QC21PM11.5	11.50	.4528	94.0	142.0	11.50	6	5996588
QC21PM12.0	12.00	.4724	101.0	151.0	12.00	6	5996591
QC21PM12.5	12.50	.4921	101.0	151.0	12.50	6	5996594
QC21PM13.0	13.00	.5118	101.0	151.0	13.00	1	5996597
QC21PM13.5	13.50	.5315	108.0	160.0	13.50	1	5996601
QC21PM14.0	14.00	.5512	108.0	160.0	14.00	1	5996610
QC21PM14.5	14.50	.5709	114.0	169.0	14.50	1	5996615
QC21PM15.0	15.00	.5906	114.0	169.0	15.00	1	5996619
QC21PM16.0	16.00	.6299	120.0	178.0	16.00	1	5996627
QC21PM16.5	16.50	.6496	125.0	184.0	16.50	1	5996631
QC21PM17.0	17.00	.6693	125.0	184.0	17.00	1	5996635
QC21PM17.5	17.50	.6890	130.0	191.0	17.50	1	5996640



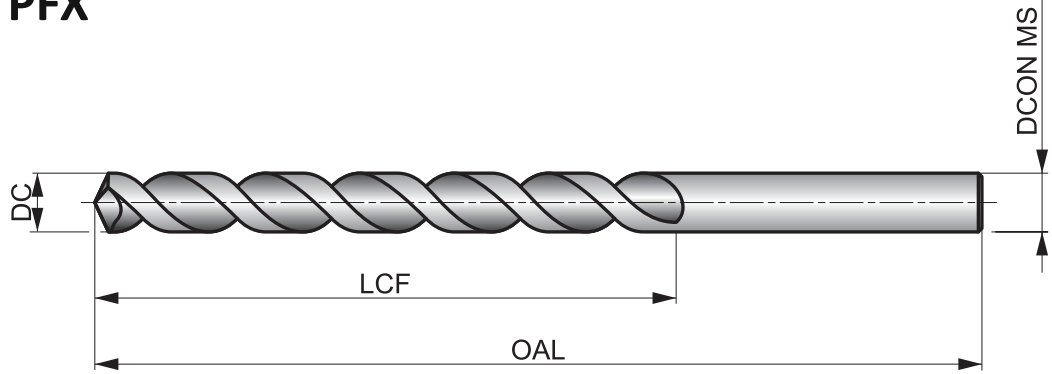
A900



PFX HSS-E (5% Cobalt) Jobber Drill, Bright Finish

High performance drill, able to produce high quality and accurate holes at high speeds and feeds (H10 hole tolerance). Self-centering 130° point angle and special parabolic flute design help to drill deep holes in a single pass. Suitable for many materials.

PFX



HSS-E	DIN ANSI	6×D
130°	Bright	
λ>35°	R	DC h8

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 112 H	P1.2 ■ 128 H	P1.3 ■ 131 H	P2.1 ■ 98 H	P2.2 ■ 85 H	P2.3 ■ 75 E	P3.1 ■ 102 H	P3.2 ■ 82 H	P3.3 ■ 69 E	P4.1 ■ 62 H	P4.2 ■ 52 E	P4.3 ■ 43 E	M1.1 ■ 69 E	M1.2 ■ 56 E
M2.1 ■ 59 E	M2.2 ■ 49 E	M3.1 ■ 26 E	M3.2 ■ 23 E	M3.3 ■ 20 E	M4.1 ■ 30 C	K1.1 ■ 79 J	K1.2 ■ 59 J	K1.3 ■ 43 J	K2.1 ■ 75 J	K2.2 ■ 62 J	K2.3 ■ 49 I	K3.1 ■ 69 J	K3.2 ■ 52 J
K3.3 ■ 43 I	K4.1 ■ 62 J	K4.2 ■ 46 J	K4.3 ■ 36 I	K4.4 ■ 30 I	K4.5 ■ 26 I	K5.1 ■ 72 J	K5.2 ■ 52 J	K5.3 ■ 43 I	N1.1 ■ 197 J	N1.2 ■ 148 J	N1.3 ■ 98 N	N2.1 ■ 203 N	N2.2 ■ 180 N
N2.3 ■ 131 N	N3.1 ■ 295 H	N3.2 ■ 174 I	N3.3 ■ 89 G	N4.1 ■ 180 I	N4.2 ■ 131 G	S1.1 ■ 72 E	S1.2 ■ 49 E	S1.3 ■ 20 C	S2.1 ■ 30 G	S2.2 ■ 26 C	S3.1 ■ 23 G	S3.2 ■ 20 C	S4.1 ■ 16 G
S4.2 ■ 16 C													

Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID	Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A9001.0	—	1.00	.0394	12.0	34.0	1.00	1	5970610	A9003/32	3/32	2.38	.0937	32.0	57.0	2.38	1	5971289
A9001.1	—	1.10	.0433	14.0	36.0	1.10	1	5970612	A9002.4	—	2.40	.0945	30.0	57.0	2.40	1	5971442
A9001.2	—	1.20	.0472	16.0	38.0	1.20	1	5970614	A9002.5	—	2.50	.0984	30.0	57.0	2.50	1	5971445
A9001.25	—	1.25	.0492	16.0	36.0	1.25	1	5970615	A9002.6	—	2.60	.1024	30.0	57.0	2.60	1	5971450
A9001.3	—	1.30	.0512	16.0	38.0	1.30	1	5970617	A9002.7	—	2.70	.1063	33.0	61.0	2.70	1	5971455
A9001.4	—	1.40	.0551	18.0	40.0	1.40	1	5970621	A9007/64	7/64	2.78	.1094	38.0	67.0	2.78	1	5970898
A9001.5	—	1.50	.0591	18.0	40.0	1.50	1	5970627	A9002.8	—	2.80	.1102	33.0	61.0	2.80	1	5971460
A9001.55	—	1.55	.0610	20.0	43.0	1.55	1	5970628	A9002.9	—	2.90	.1142	33.0	61.0	2.90	1	5971466
A9001/16	1/16	1.59	.0625	22.0	48.0	1.59	1	5970644	A9003.0	—	3.00	.1181	33.0	61.0	3.00	1	5971513
A9001.6	—	1.60	.0630	20.0	43.0	1.60	1	5970630	A9003.1	—	3.10	.1220	36.0	65.0	3.10	1	5971517
A9001.7	—	1.70	.0669	20.0	43.0	1.70	1	5970633	A9001/8	1/8	3.18	.1250	41.0	70.0	3.18	1	5970659
A9001.75	—	1.75	.0689	22.0	46.0	1.75	1	5970635	A9003.2	—	3.20	.1260	36.0	65.0	3.20	1	5971521
A9001.8	—	1.80	.0709	22.0	46.0	1.80	1	5970638	A9003.3	—	3.30	.1299	36.0	65.0	3.30	1	5971529
A9001.9	—	1.90	.0748	22.0	46.0	1.90	1	5970641	A9003.4	—	3.40	.1339	39.0	70.0	3.40	1	5971098
A9005/64	5/64	1.98	.0781	25.0	51.0	1.98	1	5971244	A9003.5	—	3.50	.1378	39.0	70.0	3.50	1	5971123
A9002.0	—	2.00	.0787	24.0	49.0	2.00	1	5971407	A9009/64	9/64	3.57	.1406	44.0	73.0	3.57	1	5971016
A9002.1	—	2.10	.0827	24.0	49.0	2.10	1	5971410	A9003.6	—	3.60	.1417	39.0	70.0	3.60	1	5971164
A9002.2	—	2.20	.0866	27.0	53.0	2.20	1	5971421	A9003.7	—	3.70	.1457	39.0	70.0	3.70	1	5971223
A9002.3	—	2.30	.0906	27.0	53.0	2.30	1	5971432	A9003.8	—	3.80	.1496	43.0	75.0	3.80	1	5971273



Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A9003.9	–	3.90	.1535	43.0	75.0	3.90	1	5971281
A9005/32	5/32	3.97	.1563	51.0	79.0	3.97	1	5971240
A9004.0	–	4.00	.1575	43.0	75.0	4.00	1	5971115
A9004.1	–	4.10	.1614	43.0	75.0	4.10	1	5971117
A9004.2	–	4.20	.1654	43.0	75.0	4.20	1	5971120
A9004.3	–	4.30	.1693	47.0	80.0	4.30	1	5971126
A90011/64	11/64	4.37	.1719	54.0	83.0	4.37	1	5970728
A9004.5	–	4.50	.1772	47.0	80.0	4.50	1	5971132
A9004.6	–	4.60	.1811	47.0	80.0	4.60	1	5971136
A9004.7	–	4.70	.1850	47.0	80.0	4.70	1	5971140
A9003/16	3/16	4.76	.1875	59.0	89.0	4.76	1	5971285
A9004.9	–	4.90	.1929	52.0	86.0	4.90	1	5971147
A9005.0	–	5.00	.1969	52.0	86.0	5.00	1	5971183
A9005.1	–	5.10	.2008	52.0	86.0	5.10	1	5971188
A90013/64	13/64	5.16	.2031	62.0	92.0	5.16	1	5971534
A9005.2	–	5.20	.2047	52.0	86.0	5.20	1	5971192
A9005.3	–	5.30	.2087	52.0	86.0	5.30	1	5971197
A9005.4	–	5.40	.2126	57.0	93.0	5.40	1	5971202
A9005.5	–	5.50	.2165	57.0	93.0	5.50	1	5971207
A9007/32	7/32	5.56	.2188	64.0	95.0	5.56	1	5970891
A9005.6	–	5.60	.2205	57.0	93.0	5.60	1	5971212
A9005.7	–	5.70	.2244	57.0	93.0	5.70	1	5971218
A9005.8	–	5.80	.2283	57.0	93.0	5.80	1	5971227
A9005.9	–	5.90	.2323	57.0	93.0	5.90	1	5971231
A9006.0	–	6.00	.2362	57.0	93.0	6.00	1	5971253
A9006.1	–	6.10	.2402	63.0	101.0	6.10	1	5971256
A9006.2	–	6.20	.2441	63.0	101.0	6.20	1	5971260
A9006.3	–	6.30	.2480	63.0	101.0	6.30	1	5971264
A9001/4	1/4	6.35	.2500	70.0	102.0	6.35	1	5970655
A9006.4	–	6.40	.2520	63.0	101.0	6.40	1	5971277
A9006.5	–	6.50	.2559	63.0	101.0	6.50	1	5970865
A9006.6	–	6.60	.2598	63.0	101.0	6.60	1	5970907
A9006.7	–	6.70	.2638	63.0	101.0	6.70	1	5970963
A90017/64	17/64	6.75	.2656	73.0	105.0	6.75	1	5971377
A9006.8	–	6.80	.2677	69.0	109.0	6.80	1	5971005
A9006.9	–	6.90	.2717	69.0	109.0	6.90	1	5971044
A9007.0	–	7.00	.2756	69.0	109.0	7.00	1	5971050
A9007.1	–	7.10	.2795	69.0	109.0	7.10	1	5971053
A9007.2	–	7.20	.2835	69.0	109.0	7.20	1	5971056
A9007.4	–	7.40	.2913	69.0	109.0	7.40	1	5970869

Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A9007.5	–	7.50	.2953	69.0	109.0	7.50	1	5970872
A9005/16	5/16	7.94	.3125	81.0	114.0	7.94	1	5971234
A9008.0	–	8.00	.3150	75.0	117.0	8.00	1	5970902
A9008.1	–	8.10	.3189	75.0	117.0	8.10	1	5970914
A9008.5	–	8.50	.3346	75.0	117.0	8.50	1	5970932
A9008.7	–	8.70	.3425	81.0	125.0	8.70	1	5970942
A90011/32	11/32	8.73	.3438	87.0	121.0	8.73	1	5970723
A9008.8	–	8.80	.3465	81.0	125.0	8.80	1	5970949
A9009.0	–	9.00	.3543	81.0	125.0	9.00	1	5970958
A9009.5	–	9.50	.3740	81.0	125.0	9.50	1	5970981
A9003/8	3/8	9.52	.3750	92.0	127.0	9.52	1	5971102
A90010.0	–	10.00	.3937	87.0	133.0	10.00	1	5970663
A90010.2	–	10.20	.4016	87.0	133.0	10.20	1	5970667
A90010.3	–	10.30	.4055	87.0	133.0	10.30	1	5970671
A90010.5	–	10.50	.4134	87.0	133.0	10.50	1	5970679
A90011.0	–	11.00	.4331	94.0	142.0	11.00	1	5970692
A90011.5	–	11.50	.4528	94.0	142.0	11.50	1	5970709
A90011.8	–	11.80	.4646	94.0	142.0	11.80	1	5970713
A90015/32	15/32	11.91	.4688	110.0	146.0	11.91	1	5971358
A90012.0	–	12.00	.4724	101.0	151.0	12.00	1	5970732
A90031/64	31/64	12.30	.4844	111.0	149.0	12.30	1	5971104
A90012.5	–	12.50	.4921	101.0	151.0	12.50	1	5970741
A9001/2	1/2	12.70	.5000	101.0	151.0	12.70	1	5970648
A90013.0	–	13.00	.5118	101.0	151.0	13.00	1	5971429
A90013.5	–	13.50	.5315	108.0	160.0	13.50	1	5971479
A90014.0	–	14.00	.5512	108.0	160.0	14.00	1	5971537
A9009/16	9/16	14.29	.5625	122.0	168.0	14.29	1	5971001
A90015.0	–	15.00	.5906	114.0	169.0	15.00	1	5971354
A90016.0	–	16.00	.6299	120.0	178.0	16.00	1	5971362
A90017.0	–	17.00	.6693	125.0	184.0	17.00	1	5971369
A90011/16	11/16	17.46	.6875	143.0	194.0	17.46	1	5970717
A90018.0	–	18.00	.7087	130.0	191.0	18.00	1	5971385
A90023/32	23/32	18.26	.7188	130.0	191.0	18.26	1	5971490
A90018.5	–	18.50	.7283	135.0	198.0	18.50	1	5971389
A90047/64	47/64	18.65	.7344	135.0	198.0	18.65	1	5971169
A9003/4	3/4	19.05	.7500	135.0	198.0	19.05	1	5971293
A90049/64	49/64	19.45	.7656	135.0	198.0	19.45	1	5971177
A90019.5	–	19.50	.7677	140.0	205.0	19.50	1	5971397
A90025/32	25/32	19.84	.7813	140.0	205.0	19.84	1	5971496
A90020.0	–	20.00	.7874	140.0	205.0	20.00	1	5971472



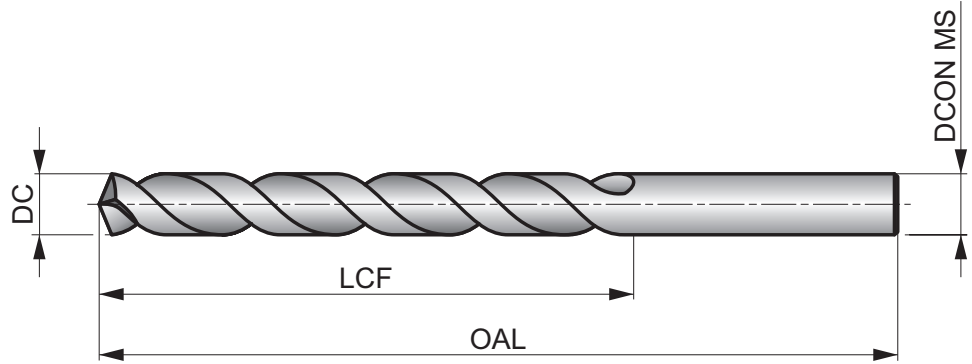
A147



HSS-E (5% Cobalt) Jobber Drill, Bright Finish (Designed for Stainless Steel)

Versatile and hard-working drill which satisfies all machine drilling requirements in stainless steels, but can also be used for hand-held operations. A 130° split point helps to self-center the drill and reduces the cutting forces. Bright finish.

HSS-E	DIN 338	4×D
130°	Bright	
VA	R	DC h8



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 108 I	P1.2 121 I	P1.3 125 I	P2.1 92 I	P2.2 82 G	P2.3 72 E	P3.1 62 F	P3.2 49 F	P3.3 43 E	P4.1 36 F	P4.2 33 E	P4.3 26 D	M1.1 69 E	M1.2 56 E
M2.1 59 E	M2.2 49 E	M2.3 43 B	M3.1 33 G	M3.2 30 G	M3.3 26 G	M4.1 33 D	M4.2 30 B	K1.1 98 H	K1.2 72 F	K1.3 56 F	K2.1 82 E	K2.2 66 E	K2.3 52 E
K3.1 72 E	K3.2 56 E	K3.3 43 E	K4.1 66 E	K4.2 49 E	K4.3 36 E	K4.4 33 E	K4.5 26 E	K5.1 75 E	K5.2 56 E	K5.3 43 E	N1.1 108 J	N1.2 82 J	N1.3 56 I
N2.1 138 H	N2.2 121 H	N2.3 89 H	N3.1 194 H	N3.2 115 I	N3.3 59 G	N4.1 98 J	N4.2 92 H	N4.3 46 F	S1.1 82 G	S1.2 52 E	S1.3 23 B	S2.1 30 G	S2.2 26 E
S3.1 23 G	S3.2 20 E	S4.1 16 G	S4.2 16 E										

Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A147.3	–	0.30	.0118	3.0	19.0	0.30	10	7146702
A147.4	–	0.40	.0157	5.0	20.0	0.40	10	7146703
A147.5	–	0.50	.0197	6.0	22.0	0.50	10	7146704
A147.6	–	0.60	.0236	7.0	24.0	0.60	10	7146705
A147.7	–	0.70	.0276	9.0	28.0	0.70	10	7146706
A147.8	–	0.80	.0315	10.0	30.0	0.80	10	7146707
A147.9	–	0.90	.0354	11.0	32.0	0.90	10	7146708
A1471.0	–	1.00	.0394	12.0	34.0	1.00	10	7022357
A1471.1	–	1.10	.0433	14.0	36.0	1.10	10	7022358
A1471.2	–	1.20	.0472	16.0	38.0	1.20	10	7022359
A1471.3	–	1.30	.0512	16.0	38.0	1.30	10	7022400
A1471.4	–	1.40	.0551	18.0	40.0	1.40	10	7022401
A1471.5	–	1.50	.0591	18.0	40.0	1.50	10	7022402
A1471/16	1/16	1.59	.0625	20.0	43.0	1.59	10	7146709
A1471.6	–	1.60	.0630	20.0	43.0	1.60	10	7022403
A1471.7	–	1.70	.0669	20.0	43.0	1.70	10	7022404
A1471.8	–	1.80	.0709	22.0	46.0	1.80	10	7022405
A1471.9	–	1.90	.0748	22.0	46.0	1.90	10	7022406
A1472.0	–	2.00	.0787	24.0	49.0	2.00	10	7022407

Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A1472.1	–	2.10	.0827	24.0	49.0	2.10	10	7022408
A1472.2	–	2.20	.0866	27.0	53.0	2.20	10	7022409
A1472.3	–	2.30	.0906	27.0	53.0	2.30	10	7022410
A1473/32	3/32	2.38	.0938	30.0	57.0	2.38	10	7146720
A1472.4	–	2.40	.0945	30.0	57.0	2.40	10	7022411
A1472.5	–	2.50	.0984	30.0	57.0	2.50	10	7022412
A1472.6	–	2.60	.1024	30.0	57.0	2.60	10	7022413
A1472.7	–	2.70	.1063	33.0	61.0	2.70	10	7022414
A1472.8	–	2.80	.1102	33.0	61.0	2.80	10	7022415
A1472.9	–	2.90	.1142	33.0	61.0	2.90	10	7022416
A1473.0	–	3.00	.1181	33.0	61.0	3.00	10	7022417
A1473.1	–	3.10	.1220	36.0	65.0	3.10	10	7022418
A1471/8	1/8	3.18	.1250	36.0	65.0	3.18	10	7146721
A1473.2	–	3.20	.1260	36.0	65.0	3.20	10	7022419
A1473.3	–	3.30	.1299	36.0	65.0	3.30	10	7022420
A1473.4	–	3.40	.1339	39.0	70.0	3.40	10	7022421
A1473.5	–	3.50	.1378	39.0	70.0	3.50	10	7022422
A1473.6	–	3.60	.1417	39.0	70.0	3.60	10	7022423
A1473.7	–	3.70	.1457	39.0	70.0	3.70	10	7022424



Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A1473.8	–	3.80	.1496	43.0	75.0	3.80	10	7022425
A1473.9	–	3.90	.1535	43.0	75.0	3.90	10	7022426
A1475/32	5/32	3.97	.1563	43.0	75.0	3.97	10	7146722
A1474.0	–	4.00	.1575	43.0	75.0	4.00	10	7022427
A1474.1	–	4.10	.1614	43.0	75.0	4.10	10	7022428
A1474.2	–	4.20	.1654	43.0	75.0	4.20	10	7022429
A1474.3	–	4.30	.1693	47.0	80.0	4.30	10	7022430
A1474.4	–	4.40	.1732	47.0	80.0	4.40	10	7022431
A1474.5	–	4.50	.1772	47.0	80.0	4.50	10	7022432
A1474.6	–	4.60	.1811	47.0	80.0	4.60	10	7022433
A1474.7	–	4.70	.1850	47.0	80.0	4.70	10	7022434
A1473/16	3/16	4.76	.1875	52.0	86.0	4.76	10	7146723
A1474.8	–	4.80	.1890	52.0	86.0	4.80	10	7022435
A1474.9	–	4.90	.1929	52.0	86.0	4.90	10	7022436
A1475.0	–	5.00	.1969	52.0	86.0	5.00	10	7022437
A1475.1	–	5.10	.2008	52.0	86.0	5.10	5	7022438
A1475.2	–	5.20	.2047	52.0	86.0	5.20	5	7022439
A1475.3	–	5.30	.2087	52.0	86.0	5.30	5	7022440
A1475.4	–	5.40	.2126	57.0	93.0	5.40	5	7022441
A1475.5	–	5.50	.2165	57.0	93.0	5.50	5	7022442
A1475.6	–	5.60	.2205	57.0	93.0	5.60	5	7022443
A1475.7	–	5.70	.2244	57.0	93.0	5.70	5	7022444
A1475.8	–	5.80	.2283	57.0	93.0	5.80	5	7022445
A1475.9	–	5.90	.2323	57.0	93.0	5.90	5	7022446
A1476.0	–	6.00	.2362	57.0	93.0	6.00	5	7022447
A1476.1	–	6.10	.2402	63.0	101.0	6.10	5	7022448
A1476.2	–	6.20	.2441	63.0	101.0	6.20	5	7022449
A1476.3	–	6.30	.2480	63.0	101.0	6.30	5	7022450
A1471/4	1/4	6.35	.2500	63.0	101.0	6.35	5	7146724
A1476.4	–	6.40	.2520	63.0	101.0	6.40	5	7022451
A1476.5	–	6.50	.2559	63.0	101.0	6.50	5	7022452
A1476.6	–	6.60	.2598	63.0	101.0	6.60	5	7022453
A1476.7	–	6.70	.2638	63.0	101.0	6.70	5	7022454
A1476.8	–	6.80	.2677	69.0	109.0	6.80	5	7022455
A1476.9	–	6.90	.2717	69.0	109.0	6.90	5	7022456
A1477.0	–	7.00	.2756	69.0	109.0	7.00	5	7022457

Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A1477.1	–	7.10	.2795	69.0	109.0	7.10	5	7022458
A1477.2	–	7.20	.2835	69.0	109.0	7.20	5	7022459
A1477.3	–	7.30	.2874	69.0	109.0	7.30	5	7022460
A1477.4	–	7.40	.2913	69.0	109.0	7.40	5	7022461
A1477.5	–	7.50	.2953	69.0	109.0	7.50	5	7022462
A1477.7	–	7.70	.3031	75.0	117.0	7.70	5	7022464
A1477.8	–	7.80	.3071	75.0	117.0	7.80	5	7022465
A1477.9	–	7.90	.3110	75.0	117.0	7.90	5	7022466
A1478.0	–	8.00	.3150	75.0	117.0	8.00	5	7022467
A1478.1	–	8.10	.3189	75.0	117.0	8.10	5	7022468
A1478.2	–	8.20	.3228	75.0	117.0	8.20	5	7022469
A1478.3	–	8.30	.3268	75.0	117.0	8.30	5	7022470
A1478.4	–	8.40	.3307	75.0	117.0	8.40	5	7022471
A1478.5	–	8.50	.3346	75.0	117.0	8.50	5	7022472
A1478.6	–	8.60	.3386	81.0	125.0	8.60	5	7022473
A1478.7	–	8.70	.3425	81.0	125.0	8.70	5	7022474
A1478.8	–	8.80	.3465	81.0	125.0	8.80	5	7022475
A1478.9	–	8.90	.3504	81.0	125.0	8.90	5	7022476
A1479.0	–	9.00	.3543	81.0	125.0	9.00	5	7022477
A1479.1	–	9.10	.3583	81.0	125.0	9.10	5	7022478
A1479.2	–	9.20	.3622	81.0	125.0	9.20	5	7022479
A1479.5	–	9.50	.3740	81.0	125.0	9.50	5	7022482
A1479.7	–	9.70	.3819	87.0	133.0	9.70	5	7022484
A1479.8	–	9.80	.3858	87.0	133.0	9.80	5	7022485
A14710.0	–	10.00	.3937	87.0	133.0	10.00	5	7022487
A14710.2	–	10.20	.4016	87.0	133.0	10.20	1	7022488
A14710.5	–	10.50	.4134	87.0	133.0	10.50	1	7022489
A14711.0	–	11.00	.4331	94.0	142.0	11.00	1	7022490
A14711.5	–	11.50	.4528	94.0	142.0	11.50	1	7022492
A14712.0	–	12.00	.4724	101.0	151.0	12.00	1	7022493
A14712.5	–	12.50	.4921	101.0	151.0	12.50	1	7146725
A14713.0	–	13.00	.5118	101.0	151.0	13.00	1	7146726
A14713.5	–	13.50	.5315	108.0	160.0	13.50	1	7146727
A14714.0	–	14.00	.5512	108.0	160.0	14.00	1	7146728
A14715.0	–	15.00	.5906	114.0	169.0	15.00	1	7146730



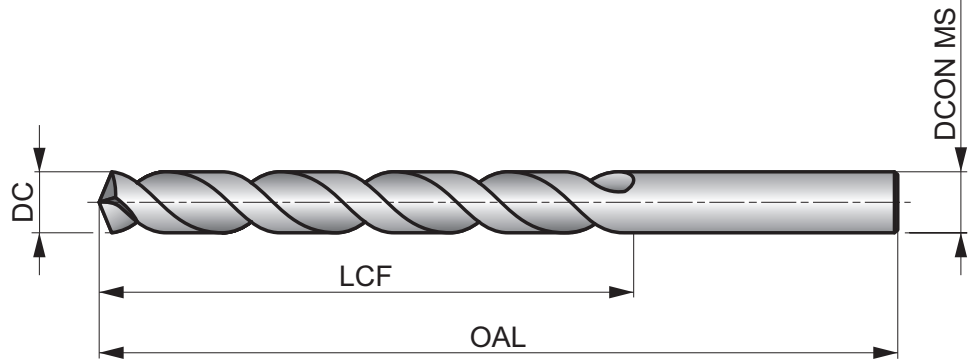
R10CO / R15CO / R18CO



NAS 907 Type J HSS-E (8%) Cobalt Heavy Duty Jobber Drill

A really great performer, producing accurate sized holes with a better finish. Low thrust 135° self-centering split point for easier penetration. Bronze tempered surface finish helps stop work piece material from sticking to the cutting edges of the drill. Made to NAS 907 Type J Aerospace Standards.

HSS-E	NAS 907	4×D
135°	Bronze	
λ 20-35°	R	



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 118 H	P1.2 ■ 131 H	P1.3 ■ 135 H	P2.1 ■ 102 H	P2.2 ■ 89 G	P2.3 ■ 79 E	P3.1 ■ 82 F	P3.2 ■ 66 F	P3.3 ■ 56 E	P4.1 ■ 49 F	P4.2 ■ 43 E	P4.3 ■ 33 D	M1.1 ■ 98 E	M1.2 ■ 85 E
M2.1 ■ 89 E	M2.2 ■ 72 E	M2.3 ■ 59 C	M3.1 ■ 43 G	M3.2 ■ 36 G	M3.3 ■ 33 C	M4.1 ■ 49 C	K1.1 ■ 115 H	K1.2 ■ 85 D	K1.3 ■ 62 D	K2.1 ■ 89 E	K2.2 ■ 72 E	K2.3 ■ 59 E	K3.1 ■ 79 E
K3.2 ■ 59 E	K3.3 ■ 49 E	K4.1 ■ 72 E	K4.2 ■ 56 E	K4.3 ■ 39 E	K4.4 ■ 36 E	K4.5 ■ 30 E	K5.1 ■ 82 E	K5.2 ■ 62 E	K5.3 ■ 49 E	N1.1 ■ 108 J	N1.2 ■ 82 J	N1.3 ■ 56 I	N2.1 ■ 151 H
N2.2 ■ 138 H	N2.3 ■ 98 H	N3.1 ■ 223 H	N3.2 ■ 131 F	N3.3 ■ 66 H	S1.1 ■ 92 F	S1.2 ■ 66 D	S1.3 ■ 36 C	S2.1 ■ 30 E	S2.2 ■ 26 B	S3.1 ■ 23 E	S3.2 ■ 20 B	S4.1 ■ 16 E	S4.2 ■ 16 B

Product	DC (inch)	DC (Wire gauge size)	DC (Letter size)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
R18CON80	—	N80	—	.0135	1/8	3/4	.013	12	5997848 1)
R18CON79	—	N79	—	.0145	1/8	3/4	.015	12	5997842 1)
R10CO1/64	1/64	—	—	.0156	3/16	3/4	.016	12	5998146 1)
R18CON78	—	N78	—	.0160	3/16	7/8	.016	12	5997840 1)
R18CON77	—	N77	—	.0180	3/16	7/8	.018	12	5997837 1)
R18CON76	—	N76	—	.0200	3/16	7/8	.020	12	5997831 1)
R18CON75	—	N75	—	.0210	1/4	1"	.021	12	5997828 1)
R18CON74	—	N74	—	.0225	1/4	1"	.022	12	5997825 1)
R18CON73	—	N73	—	.0240	5/16	1.1/8	.024	12	5997822 1)
R18CON72	—	N72	—	.0250	5/16	1.1/8	.025	12	5997819 1)
R18CON71	—	N71	—	.0260	3/8	1.1/4	.026	12	5997816 1)
R18CON70	—	N70	—	.0280	3/8	1.1/4	.028	12	5997813 1)
R18CON69	—	N69	—	.0292	1/2	1.3/8	.029	12	5997807 1)
R18CON68	—	N68	—	.0310	1/2	1.3/8	.031	12	5997804 1)
R10CO1/32	1/32	—	—	.0313	1/2	1.3/8	.031	12	5998139 1)
R18CON67	—	N67	—	.0320	1/2	1.3/8	.032	12	5997798 1)
R18CON66	—	N66	—	.0330	1/2	1.3/8	.033	12	5997794 1)
R18CON65	—	N65	—	.0350	5/8	1.1/2	.035	12	5997791 1)
R18CON64	—	N64	—	.0360	5/8	1.1/2	.036	12	5997787 1)
R18CON63	—	N63	—	.0370	5/8	1.1/2	.037	12	5997783 1)
R18CON62	—	N62	—	.0380	5/8	1.1/2	.038	12	5997781 1)

1) No Split Point



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
R18CON61	—	N61	—	.0390	11/16	1.5/8	.039	12	5997779 1)
R18CON60	—	N60	—	.0400	11/16	1.5/8	.040	12	5997776
R18CON59	—	N59	—	.0410	11/16	1.5/8	.041	12	5997768
R18CON58	—	N58	—	.0420	11/16	1.5/8	.042	12	5997762
R18CON57	—	N57	—	.0430	3/4	1.3/4	.043	12	5997758
R18CON56	—	N56	—	.0465	3/4	1.3/4	.046	12	5997753
R10C03/64	3/64	—	—	.0469	3/4	1.3/4	.047	12	5998182
R18CON55	—	N55	—	.0520	7/8	1.7/8	.052	12	5997752
R18CON54	—	N54	—	.0550	7/8	1.7/8	.055	12	5997749
R18CON53	—	N53	—	.0595	7/8	1.7/8	.059	12	5997745
R10C01/16	1/16	—	—	.0625	7/8	1.7/8	.063	12	5998132
R18CON52	—	N52	—	.0635	7/8	1.7/8	.064	12	5997743
R18CON51	—	N51	—	.0670	1"	2"	.067	12	5997740
R18CON50	—	N50	—	.0700	1"	2"	.070	12	5997737
R18CON49	—	N49	—	.0730	1"	2"	.073	12	5997888
R18CON48	—	N48	—	.0760	1"	2"	.076	12	5997883
R10C05/64	5/64	—	—	.0781	1"	2"	.078	12	5998215
R18CON47	—	N47	—	.0785	1"	2"	.079	12	5997879
R18CON46	—	N46	—	.0810	1.1/8	2.1/8	.081	12	5997875
R18CON45	—	N45	—	.0820	1.1/8	2.1/8	.082	12	5997868
R18CON44	—	N44	—	.0860	1.1/8	2.1/8	.086	12	5997835
R18CON43	—	N43	—	.0890	1.1/4	2.1/4	.089	12	5997802
R18CON42	—	N42	—	.0935	1.1/4	2.1/4	.093	12	5997764
R10C03/32	3/32	—	—	.0938	1.1/4	2.1/4	.094	12	5998179
R18CON41	—	N41	—	.0960	1.3/8	2.3/8	.096	12	5997730
R18CON40	—	N40	—	.0980	1.3/8	2.3/8	.098	12	5997784
R18CON39	—	N39	—	.0995	1.3/8	2.3/8	.100	12	5997772
R18CON38	—	N38	—	.1015	1.7/16	2.1/2	.102	12	5997770
R18CON37	—	N37	—	.1040	1.7/16	2.1/2	.104	12	5997767
R18CON36	—	N36	—	.1065	1.7/16	2.1/2	.106	12	5997763
R10C07/64	7/64	—	—	.1094	1.1/2	2.5/8	.109	12	5998225
R18CON35	—	N35	—	.1100	1.1/2	2.5/8	.110	12	5997759
R18CON34	—	N34	—	.1110	1.1/2	2.5/8	.111	12	5997755
R18CON33	—	N33	—	.1130	1.1/2	2.5/8	.113	12	5997751
R18CON32	—	N32	—	.1160	1.5/8	2.3/4	.116	12	5997748
R18CON31	—	N31	—	.1200	1.5/8	2.3/4	.120	12	5997746
R10C01/8	1/8	—	—	.1250	1.5/8	2.3/4	.125	12	5998150
R18CON30	—	N30	—	.1285	1.5/8	2.3/4	.129	12	5997736
R18CON29	—	N29	—	.1360	1.3/4	2.7/8	.136	12	5997731
R18CON28	—	N28	—	.1405	1.3/4	2.7/8	.141	12	5997729
R10C09/64	9/64	—	—	.1406	1.3/4	2.7/8	.141	12	5998234
R18CON27	—	N27	—	.1440	1.7/8	3"	.144	12	5997727
R18CON26	—	N26	—	.1470	1.7/8	3"	.147	12	5997725
R18CON25	—	N25	—	.1495	1.7/8	3"	.149	12	5997723
R18CON24	—	N24	—	.1520	2"	3.1/8	.152	12	5997721
R18CON23	—	N23	—	.1540	2"	3.1/8	.154	12	5997719
R10C05/32	5/32	—	—	.1563	2"	3.1/8	.156	12	5998211
R18CON22	—	N22	—	.1570	2"	3.1/8	.157	12	5997717
R18CON21	—	N21	—	.1590	2.1/8	3.1/4	.159	12	5997713
R18CON20	—	N20	—	.1610	2.1/8	3.1/4	.161	12	5997711
R18CON19	—	N19	—	.1660	2.1/8	3.1/4	.166	12	5997706
R18CON18	—	N18	—	.1695	2.1/8	3.1/4	.170	12	5997703
R10C011/64	11/64	—	—	.1719	2.1/8	3.1/4	.172	12	5998185
R18CON17	—	N17	—	.1730	2.3/16	3.3/8	.173	12	5997700
R18CON16	—	N16	—	.1770	2.3/16	3.3/8	.177	12	5997697
R18CON15	—	N15	—	.1800	2.3/16	3.3/8	.180	12	5997695
R18CON14	—	N14	—	.1820	2.3/16	3.3/8	.182	12	5997692
R18CON13	—	N13	—	.1850	2.5/16	3.1/2	.185	12	5997689



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
R10C03/16	3/16	–	–	.1875	2.5/16	3.1/2	.188	12	5998176
R18CON12	–	N12	–	.1890	2.5/16	3.1/2	.189	12	5997683
R18CON11	–	N11	–	.1910	2.5/16	3.1/2	.191	12	5997680
R18CON10	–	N10	–	.1935	2.7/16	3.5/8	.194	12	5997678
R18CON9	–	N9	–	.1960	2.7/16	3.5/8	.196	12	5997851
R18CON8	–	N8	–	.1990	2.7/16	3.5/8	.199	12	5997845
R18CON7	–	N7	–	.2010	2.7/16	3.5/8	.201	12	5997810
R10C013/64	13/64	–	–	.2031	2.7/16	3.5/8	.203	12	5998243
R18CON6	–	N6	–	.2040	2.1/2	3.3/4	.204	12	5997773
R18CON5	–	N5	–	.2055	2.1/2	3.3/4	.205	12	5997735
R18CON4	–	N4	–	.2090	2.1/2	3.3/4	.209	12	5997775
R18CON3	–	N3	–	.2130	2.1/2	3.3/4	.213	12	5997733
R10C07/32	7/32	–	–	.2188	2.1/2	3.3/4	.219	12	5998222
R18CON2	–	N2	–	.2210	2.5/8	3.7/8	.221	12	5997709
R18CON1	–	N1	–	.2280	2.5/8	3.7/8	.228	12	5997674
R15COA	–	–	A	.2340	2.5/8	3.7/8	.234	12	5998992
R10C015/64	15/64	–	–	.2344	2.5/8	3.7/8	.234	12	5998294
R15COB	–	–	B	.2380	2.3/4	4"	.238	12	5998995
R15COC	–	–	C	.2420	2.3/4	4"	.242	12	5998999
R15COD	–	–	D	.2460	2.3/4	4"	.246	12	5999003
R10C01/4	1/4	–	–	.2500	2.3/4	4"	.250	12	5998143
R10C01/4-T ¹⁾	1/4	–	–	.2500	2.3/4	4"	.250	12	7652428
R15COF	–	–	F	.2570	2.7/8	4.1/8	.257	12	5999011
R15COG	–	–	G	.2610	2.7/8	4.1/8	.261	12	5999019
R10C017/64	17/64	–	–	.2656	2.7/8	4.1/8	.266	12	5998301
R15COH	–	–	H	.2660	2.7/8	4.1/8	.266	12	5999022
R15COI	–	–	I	.2720	2.7/8	4.1/8	.272	12	5999025
R15COJ	–	–	J	.2770	2.7/8	4.1/8	.277	12	5999029
R15COK	–	–	K	.2810	2.15/16	4.1/4	.281	12	5999033
R10C09/32	9/32	–	–	.2813	2.15/16	4.1/4	.281	12	5998231
R15COL	–	–	L	.2900	2.15/16	4.1/4	.290	12	5999036
R15COM	–	–	M	.2950	3.1/16	4.3/8	.295	12	5999040
R10C019/64	19/64	–	–	.2969	3.1/16	4.3/8	.297	12	5998148
R15CON	–	–	N	.3020	3.1/16	4.3/8	.302	12	5999044
R10C05/16	5/16	–	–	.3125	3.3/16	4.1/2	.313	6	5998209
R15COO	–	–	O	.3160	3.3/16	4.1/2	.316	6	5999048
R15COP	–	–	P	.3230	3.5/16	4.5/8	.323	6	5999051
R10C021/64	21/64	–	–	.3281	3.5/16	4.5/8	.328	6	5998156
R15COQ	–	–	Q	.3320	3.7/16	4.3/4	.332	6	5999059
R15COR	–	–	R	.3390	3.7/16	4.3/4	.339	6	5999063
R10C011/32	11/32	–	–	.3438	3.7/16	4.3/4	.344	6	5998141
R15COS	–	–	S	.3480	3.1/2	4.7/8	.348	6	5999066
R15COT	–	–	T	.3580	3.1/2	4.7/8	.358	6	5999069
R10C023/64	23/64	–	–	.3594	3.1/2	4.7/8	.359	6	5998160
R15COU	–	–	U	.3680	3.5/8	5"	.368	6	5999072
R10C03/8	3/8	–	–	.3750	3.5/8	5"	.375	6	5998188
R15COV	–	–	V	.3770	3.5/8	5"	.377	6	5999075
R15COW	–	–	W	.3860	3.3/4	5.1/8	.386	6	5999078
R10C025/64	25/64	–	–	.3906	3.3/4	5.1/8	.391	6	5998164
R15COX	–	–	X	.3970	3.3/4	5.1/8	.397	6	5999081
R15COY	–	–	Y	.4040	3.7/8	5.1/4	.404	6	5999084
R10C013/32	13/32	–	–	.4063	3.7/8	5.1/4	.406	6	5998213
R15COZ	–	–	Z	.4130	3.7/8	5.1/4	.413	6	5999087
R10C027/64	27/64	–	–	.4219	3.15/16	5.3/8	.422	6	5998168
R10C07/16	7/16	–	–	.4375	4.1/16	5.1/2	.438	6	5998220
R10C029/64	29/64	–	–	.4531	4.3/16	5.5/8	.453	6	5998172
R10C015/32	15/32	–	–	.4688	4.5/16	5.3/4	.469	6	5998286
R10C031/64	31/64	–	–	.4844	4.3/8	5.7/8	.484	6	5998191



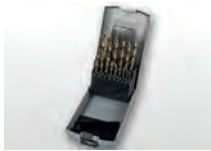
Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
R10C01/2	1/2	—	—	.5000	4.1/2	6"	.500	6	5998136
R10C033/64	33/64	—	—	.5156	4.13/16	6.5/8	.516	1	5998195
R10C017/32	17/32	—	—	.5313	4.13/16	6.5/8	.531	1	5998298
R10C035/64	35/64	—	—	.5469	4.13/16	6.5/8	.547	1	5998198
R10C09/16	9/16	—	—	.5625	4.13/16	6.5/8	.563	1	5998228
R10C037/64	37/64	—	—	.5781	4.13/16	6.5/8	.578	1	5998201
R10C019/32	19/32	—	—	.5938	5.3/16	7.1/8	.594	1	5998305
R10C039/64	39/64	—	—	.6094	5.3/16	7.1/8	.609	1	5998203
R10C05/8	5/8	—	—	.6250	5.3/16	7.1/8	.625	1	5998217
R10C041/64	41/64	—	—	.6406	5.3/16	7.1/8	.641	1	5998205
R10C021/32	21/32	—	—	.6563	5.3/16	7.1/8	.656	1	5998152
R10C043/64	43/64	—	—	.6719	5.5/8	7.5/8	.672	1	5998207
R10C011/16	11/16	—	—	.6875	5.5/8	7.5/8	.688	1	5998158

¹⁾ With Tang.



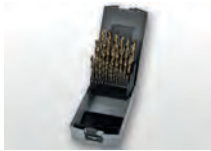
A=Styles in Set, B=No. in Set, C=Diameters in Set.

Product	A	B	C	Pack Qty	MID
C13R10COSET	R10CO	13	1/16-1/4x 64ths	1	5995685



A=Styles in Set, B=No. in Set, C=Diameters in Set.

Product	A	B	C	Pack Qty	MID
C15R10COSET	R10CO	15	1/16-1/2 x 32nds	1	5995524



A=Styles in Set, B=No. in Set, C=Diameters in Set.

Product	A	B	C	Pack Qty	MID
C29R10COSET	R10CO	29	1/16 - 1/2 x 64ths	1	5995620



A=Styles in Set, B=No. in Set, C=Diameters in Set.

Product	A	B	C	Pack Qty	MID
C60R18COSET	R18CO	60	N1 - N60	1	5995670



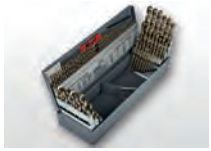
A=Styles in Set, B=No. in Set, C=Diameters in Set.

Product	A	B	C	Pack Qty	MID
C26R15COSET	R15CO	26	A - Z, 1/4	1	5995589



A=Styles in Set, B=No. in Set, C=Diameters in Set.

Product	A	B	C	Pack Qty	MID
C115COMBCSET	R10CO, R18CO, R15CO	115	1/16-1/2 x 64ths, N1-N60, A-Z	1	5995679



Product	A	B	C	Pack Qty	MID
C114COMBCSET	R10CO, R18CO, 2ACO	114	1/16-1/2 x 64ths, N1-N60, 1-13mm x .5 mm	1	5995600



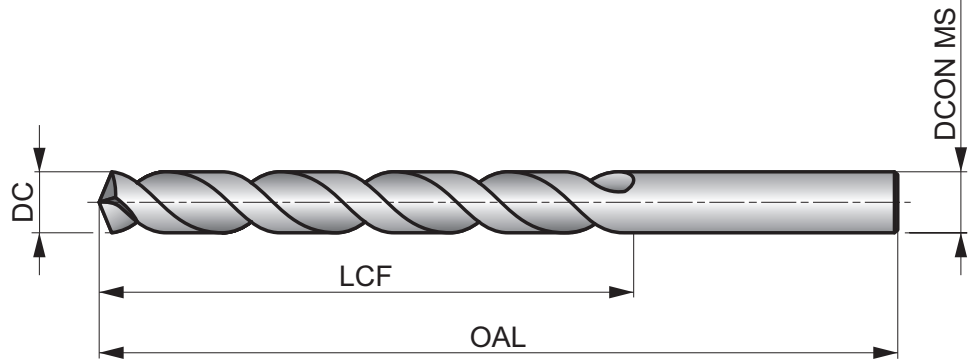
2ACO



NAS 907 Type J HSS-E Heavy Duty Jobber Drill, Bronze Tempered Surface Finish, Metric Sizes

A really great performer, producing accurate sized holes with a better finish. Low thrust 135° self-centering split point for easier penetration. Bronze tempered surface finish helps stop work piece material from sticking to the cutting edges of the drill. Made to NAS 907 Type J Aerospace Standards.

HSS-E	DIN 338	4×D
135°	Bronze	
λ 20-35°	R	



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■118 H	P1.2 ■131 H	P1.3 ■135 H	P2.1 ■102 H	P2.2 ■89 G	P2.3 ■79 E	P3.1 ■82 F	P3.2 ■66 F	P3.3 ■56 E	P4.1 ■49 F	P4.2 ■43 E	P4.3 ■33 D	M1.1 ■98 E	M1.2 ■85 E
M2.1 ■89 E	M2.2 ■72 E	M2.3 ■59 C	M3.1 ■43 G	M3.2 ■36 G	M3.3 ■33 C	M4.1 ■49 C	K1.1 ■115 H	K1.2 ■85 D	K1.3 ■62 D	K2.1 ■89 E	K2.2 ■72 E	K2.3 ■59 E	K3.1 ■79 E
K3.2 ■59 E	K3.3 ■49 E	K4.1 ■72 E	K4.2 ■56 E	K4.3 ■39 E	K4.4 ■36 E	K4.5 ■30 E	K5.1 ■82 E	K5.2 ■62 E	K5.3 ■49 E	N1.1 ■108 J	N1.2 ■82 J	N1.3 ■56 I	N2.1 ■151 H
N2.2 ■138 H	N2.3 ■98 H	N3.1 ■223 H	N3.2 ■131 F	N3.3 ■66 H	S1.1 ■92 F	S1.2 ■66 D	S1.3 ■36 C	S2.1 ■30 E	S2.2 ■26 B	S3.1 ■23 E	S3.2 ■20 B	S4.1 ■16 E	S4.2 ■16 B

Product	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
2AC01.0	1.00	.0394	12.0	34.0	1.00	12	5999612
2AC01.05	1.05	.0413	12.0	34.0	1.05	12	5999614
2AC01.1	1.10	.0433	14.0	36.0	1.10	12	5999618
2AC01.15	1.15	.0453	14.0	36.0	1.15	12	5999621
2AC01.2	1.20	.0472	16.0	38.0	1.20	12	5999625
2AC01.25	1.25	.0492	16.0	38.0	1.25	12	5999629
2AC01.3	1.30	.0512	16.0	38.0	1.30	12	5999635
2AC01.35	1.35	.0531	18.0	40.0	1.35	12	5999639
2AC01.4	1.40	.0551	18.0	40.0	1.40	12	5999643
2AC01.45	1.45	.0571	18.0	40.0	1.45	12	5999648
2AC01.5	1.50	.0591	18.0	40.0	1.50	12	5999652
2AC01.55	1.55	.0610	20.0	43.0	1.55	12	5999656
2AC01.6	1.60	.0630	20.0	43.0	1.60	12	5999660
2AC01.65	1.65	.0650	20.0	43.0	1.65	12	5999666
2AC01.7	1.70	.0669	20.0	43.0	1.70	12	5999671
2AC01.75	1.75	.0689	22.0	46.0	1.75	12	5999674
2AC01.8	1.80	.0709	22.0	46.0	1.80	12	5999682
2AC01.85	1.85	.0728	22.0	46.0	1.85	12	5999686
2AC01.9	1.90	.0748	22.0	46.0	1.90	12	5999689
2AC01.95	1.95	.0768	24.0	49.0	1.95	12	5999694
2AC02.0	2.00	.0787	24.0	49.0	2.00	12	6000762

Product	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
2AC02.05	2.05	.0807	24.0	49.0	2.05	12	6000766
2AC02.1	2.10	.0827	24.0	49.0	2.10	12	6000771
2AC02.2	2.20	.0866	27.0	53.0	2.20	12	6000776
2AC02.3	2.30	.0906	27.0	53.0	2.30	12	6000622
2AC02.35	2.35	.0925	27.0	53.0	2.35	12	6000627
2AC02.4	2.40	.0945	30.0	57.0	2.40	12	6000632
2AC02.5	2.50	.0984	30.0	57.0	2.50	12	6000639
2AC02.6	2.60	.1024	30.0	57.0	2.60	12	6000642
2AC02.7	2.70	.1063	33.0	61.0	2.70	12	6000646
2AC02.8	2.80	.1102	33.0	61.0	2.80	12	6000650
2AC02.9	2.90	.1142	33.0	61.0	2.90	12	6000654
2AC03.0	3.00	.1181	33.0	61.0	3.00	12	6000658
2AC03.1	3.10	.1220	36.0	65.0	3.10	12	6000662
2AC03.2	3.20	.1260	36.0	65.0	3.20	12	6000669
2AC03.25	3.25	.1280	36.0	65.0	3.25	12	6000673
2AC03.3	3.30	.1299	36.0	65.0	3.30	12	6000676
2AC03.4	3.40	.1339	39.0	70.0	3.40	12	6000680
2AC03.5	3.50	.1378	39.0	70.0	3.50	12	6000684
2AC03.6	3.60	.1417	39.0	70.0	3.60	12	6000688
2AC03.7	3.70	.1457	39.0	70.0	3.70	12	6000692
2AC03.75	3.75	.1476	39.0	70.0	3.75	12	6000695



Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(mm)	(inch)	(mm)	(mm)	(mm)		
2AC03.8	3.80	.1496	43.0	75.0	3.80	12	6000698
2AC04.0	4.00	.1575	43.0	75.0	4.00	12	6000701
2AC04.1	4.10	.1614	43.0	75.0	4.10	12	6000706
2AC04.2	4.20	.1654	43.0	75.0	4.20	12	6000708
2AC04.25	4.25	.1673	43.0	75.0	4.25	12	6000710
2AC04.3	4.30	.1693	47.0	80.0	4.30	12	6000712
2AC04.4	4.40	.1732	47.0	80.0	4.40	12	6000714
2AC04.5	4.50	.1772	47.0	80.0	4.50	12	6000717
2AC04.7	4.70	.1850	47.0	80.0	4.70	12	6000720
2AC04.8	4.80	.1890	52.0	86.0	4.80	12	6000723
2AC05.0	5.00	.1969	52.0	86.0	5.00	12	6000726
2AC05.1	5.10	.2008	52.0	86.0	5.10	12	6000729
2AC05.2	5.20	.2047	52.0	86.0	5.20	12	6000733
2AC05.25	5.25	.2067	52.0	86.0	5.25	12	6000735
2AC05.3	5.30	.2087	52.0	86.0	5.30	12	6000737
2AC05.5	5.50	.2165	57.0	93.0	5.50	12	6000739
2AC05.6	5.60	.2205	57.0	93.0	5.60	12	6000741
2AC05.7	5.70	.2244	57.0	93.0	5.70	12	6000743
2AC05.9	5.90	.2323	57.0	93.0	5.90	12	6000745
2AC06.0	6.00	.2362	57.0	93.0	6.00	12	6000748
2AC06.1	6.10	.2402	63.0	101.0	6.10	12	6000750
2AC06.2	6.20	.2441	63.0	101.0	6.20	12	6000753
2AC06.3	6.30	.2480	63.0	101.0	6.30	12	6000759
2AC06.4	6.40	.2520	63.0	101.0	6.40	12	6000538
2AC06.5	6.50	.2559	63.0	101.0	6.50	12	6000570
2AC06.6	6.60	.2598	63.0	101.0	6.60	12	6000601
2AC06.7	6.70	.2638	63.0	101.0	6.70	12	6000643
2AC06.8	6.80	.2677	69.0	109.0	6.80	12	6000685
2AC06.9	6.90	.2717	69.0	109.0	6.90	12	6000693
2AC07.0	7.00	.2756	69.0	109.0	7.00	12	6000696
2AC07.1	7.10	.2795	69.0	109.0	7.10	12	6000699
2AC07.2	7.20	.2835	69.0	109.0	7.20	12	6000702

Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(mm)	(inch)	(mm)	(mm)	(mm)		
2AC07.25	7.25	.2854	69.0	109.0	7.25	12	6000542
2AC07.3	7.30	.2874	69.0	109.0	7.30	12	6000545
2AC07.5	7.50	.2953	69.0	109.0	7.50	12	6000548
2AC07.8	7.80	.3071	75.0	117.0	7.80	12	6000551
2AC07.9	7.90	.3110	75.0	117.0	7.90	12	6000553
2AC08.0	8.00	.3150	75.0	117.0	8.00	6	6000556
2AC08.2	8.20	.3228	75.0	117.0	8.20	6	6000559
2AC08.4	8.40	.3307	75.0	117.0	8.40	6	6000562
2AC08.5	8.50	.3346	75.0	117.0	8.50	6	6000564
2AC08.8	8.80	.3465	81.0	125.0	8.80	6	6000567
2AC08.9	8.90	.3504	81.0	125.0	8.90	6	6000573
2AC09.0	9.00	.3543	81.0	125.0	9.00	6	6000576
2AC09.1	9.10	.3583	81.0	125.0	9.10	6	6000577
2AC09.2	9.20	.3622	81.0	125.0	9.20	6	6000581
2AC09.3	9.30	.3661	81.0	125.0	9.30	6	6000583
2AC09.4	9.40	.3701	81.0	125.0	9.40	6	6000586
2AC09.5	9.50	.3740	81.0	125.0	9.50	6	6000589
2AC09.6	9.60	.3780	87.0	133.0	9.60	6	6000592
2AC09.7	9.70	.3819	87.0	133.0	9.70	6	6000595
2AC09.8	9.80	.3858	87.0	133.0	9.80	6	6000598
2AC10.0	10.00	.3937	87.0	133.0	10.00	6	5999696
2AC10.2	10.20	.4016	87.0	133.0	10.20	6	5999699
2AC10.5	10.50	.4134	87.0	133.0	10.50	6	5999705
2AC10.8	10.80	.4252	94.0	142.0	10.80	6	5999708
2AC11.0	11.00	.4331	94.0	142.0	11.00	6	5999711
2AC11.2	11.20	.4409	94.0	142.0	11.20	6	5999714
2AC11.5	11.50	.4528	94.0	142.0	11.50	6	5999721
2AC11.8	11.80	.4646	94.0	142.0	11.80	6	6000617
2AC12.0	12.00	.4724	101.0	151.0	12.00	6	6000665
2AC12.2	12.20	.4803	101.0	151.0	12.20	6	6000704
2AC12.5	12.50	.4921	101.0	151.0	12.50	6	6000731
2AC13.0	13.00	.5118	101.0	151.0	13.00	1	6000756



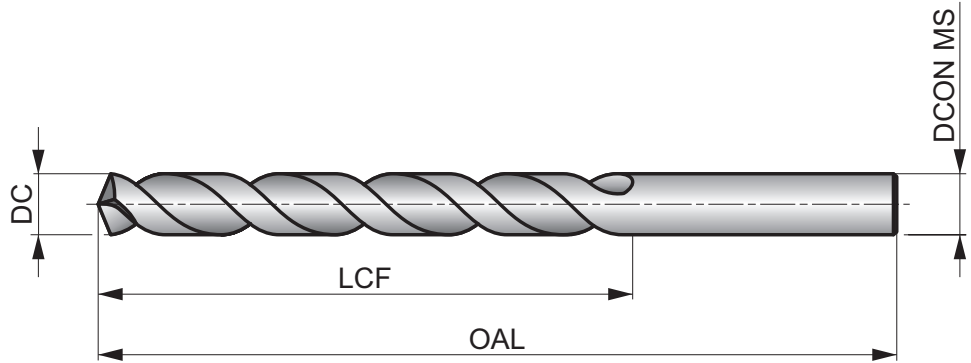
A777



HSS-E (8% Cobalt) Jobber Drill, Bronze Tempered Surface Finish

A top performer, producing accurate sized holes with a quality finish in high strength materials. The 135° split point helps to self-center. The bronze finish is a thin oxide layer formed on the tool surface and is an indication for 8% Cobalt HSS-E Drill.

HSS-E	DIN 338	4×D
135°	Bronze	
λ20-35°	R	DC h8



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 118 H	P1.2 131 H	P1.3 135 H	P2.1 102 H	P2.2 89 G	P2.3 79 E	P3.1 82 F	P3.2 66 F	P3.3 56 E	P4.1 49 F	P4.2 43 E	P4.3 33 D	M1.1 98 E	M1.2 85 E
M2.1 89 E	M2.2 72 E	M3.1 43 G	M3.2 36 G	M3.3 33 G	M4.1 49 C	K1.1 115 H	K1.2 85 D	K1.3 62 D	K2.1 89 E	K2.2 72 E	K2.3 59 E	K3.1 79 E	K3.2 59 E
K3.3 49 E	K4.1 72 E	K4.2 56 E	K4.3 39 E	K4.4 36 E	K4.5 30 E	K5.1 82 E	K5.2 62 E	K5.3 49 E	N1.1 108 J	N1.2 82 J	N1.3 56 I	N2.1 151 H	N2.2 138 H
N2.3 98 H	N3.1 223 H	N3.2 131 F	N3.3 66 H	S1.1 92 F	S1.2 66 D	S1.3 36 C	S2.1 30 E	S2.2 26 B	S3.1 23 E	S3.2 20 B	S4.1 16 E	S4.2 16 B	

NAS907J. DC ≤ 1.4mm 4 Facet Point.

Products from this series are also available in set. Please see A295.

Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A777.3	–	0.30	.0118	3.0	19.0	0.30	10	5970896
A777.35	–	0.35	.0138	4.0	19.0	0.35	10	5970903
A777.4	–	0.40	.0157	5.0	20.0	0.40	10	5970906
A777.45	–	0.45	.0177	5.0	20.0	0.45	10	5970910
A777.5	–	0.50	.0197	6.0	22.0	0.50	10	5970913
A777.55	–	0.55	.0217	7.0	24.0	0.55	10	5970917
A777.6	–	0.60	.0236	7.0	24.0	0.60	10	5970922
A777.65	–	0.65	.0256	8.0	26.0	0.65	10	5970927
A777.7	–	0.70	.0276	9.0	28.0	0.70	10	5970936
A777.8	–	0.80	.0315	10.0	30.0	0.80	10	5970941
A777.9	–	0.90	.0354	11.0	32.0	0.90	10	5970946
A777.95	–	0.95	.0374	11.0	32.0	0.95	10	5970951
A7771.0	–	1.00	.0394	12.0	34.0	1.00	10	5970956
A7771.1	–	1.10	.0433	14.0	36.0	1.10	10	5970960
A7771.2	–	1.20	.0472	16.0	38.0	1.20	10	5970964
A7771.3	–	1.30	.0512	16.0	38.0	1.30	10	5970969
A7771.4	–	1.40	.0551	18.0	40.0	1.40	10	5970976
A7771.5	–	1.50	.0591	18.0	40.0	1.50	10	5970980
A7771/16	1/16	1.59	.0625	20.0	43.0	1.59	10	5971004
A7771.6	–	1.60	.0630	20.0	43.0	1.60	10	5970988
A7771.7	–	1.70	.0669	20.0	43.0	1.70	10	5970992
A7771.8	–	1.80	.0709	22.0	46.0	1.80	10	5970996
A7771.9	–	1.90	.0748	22.0	46.0	1.90	10	5971000
A7775/64	5/64	1.98	.0781	24.0	49.0	1.98	10	5971168
A7772.0	–	2.00	.0787	24.0	49.0	2.00	10	5970961
A7772.1	–	2.10	.0827	24.0	49.0	2.10	10	5970966
A7772.2	–	2.20	.0866	27.0	53.0	2.20	10	5970971
A7772.3	–	2.30	.0906	27.0	53.0	2.30	10	5970974
A7773/32	3/32	2.38	.0938	30.0	57.0	2.38	10	5971062
A7772.4	–	2.40	.0945	30.0	57.0	2.40	10	5970983
A7772.5	–	2.50	.0984	30.0	57.0	2.50	10	5970987
A7772.6	–	2.60	.1024	30.0	57.0	2.60	10	5970991
A7772.7	–	2.70	.1063	33.0	61.0	2.70	10	5970995
A7777/64	7/64	2.78	.1094	33.0	61.0	2.78	10	5971278
A7772.8	–	2.80	.1102	33.0	61.0	2.80	10	5970998
A7772.9	–	2.90	.1142	33.0	61.0	2.90	10	5971002
A7773.0	–	3.00	.1181	33.0	61.0	3.00	10	5971029
A7773.1	–	3.10	.1220	36.0	65.0	3.10	10	5971031
A7771/8	1/8	3.18	.1250	36.0	65.0	3.18	10	5971015
A7773.2	–	3.20	.1260	36.0	65.0	3.20	10	5971034
A7773.3	–	3.30	.1299	36.0	65.0	3.30	10	5971038
A7773.4	–	3.40	.1339	39.0	70.0	3.40	10	5971040
A7773.5	–	3.50	.1378	39.0	70.0	3.50	10	5971043
A7779/64	9/64	3.57	.1406	39.0	70.0	3.57	10	5970828
A7773.6	–	3.60	.1417	39.0	70.0	3.60	10	5971046
A7773.7	–	3.70	.1457	39.0	70.0	3.70	10	5971048
A7773.8	–	3.80	.1496	43.0	75.0	3.80	10	5971051
A7773.9	–	3.90	.1535	43.0	75.0	3.90	10	5971057
A7775/32	5/32	3.97	.1563	43.0	75.0	3.97	10	5971162
A7774.0	–	4.00	.1575	43.0	75.0	4.00	10	5971070
A7774.1	–	4.10	.1614	43.0	75.0	4.10	10	5971073
A7774.2	–	4.20	.1654	43.0	75.0	4.20	10	5971076



Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A7774.3	—	4.30	.1693	47.0	80.0	4.30	10	5971078
A77711/64	11/64	4.37	.1719	47.0	80.0	4.37	10	5971055
A7774.4	—	4.40	.1732	47.0	80.0	4.40	10	5971080
A7774.5	—	4.50	.1772	47.0	80.0	4.50	10	5971084
A7774.6	—	4.60	.1811	47.0	80.0	4.60	10	5971134
A7774.7	—	4.70	.1850	47.0	80.0	4.70	10	5971180
A7773/16	3/16	4.76	.1875	52.0	86.0	4.76	10	5971060
A7774.8	—	4.80	.1890	52.0	86.0	4.80	10	5971232
A7774.9	—	4.90	.1929	52.0	86.0	4.90	10	5971274
A7775.0	—	5.00	.1969	52.0	86.0	5.00	10	5971311
A7775.1	—	5.10	.2008	52.0	86.0	5.10	10	5971315
A77713/64	13/64	5.16	.2031	52.0	86.0	5.16	10	5971086
A7775.2	—	5.20	.2047	52.0	86.0	5.20	10	5971318
A7775.3	—	5.30	.2087	52.0	86.0	5.30	10	5971321
A7775.4	—	5.40	.2126	57.0	93.0	5.40	10	5971324
A7775.5	—	5.50	.2165	57.0	93.0	5.50	10	5971138
A7777/32	7/32	5.56	.2188	57.0	93.0	5.56	10	5971270
A7775.6	—	5.60	.2205	57.0	93.0	5.60	10	5971142
A7775.7	—	5.70	.2244	57.0	93.0	5.70	10	5971146
A7775.8	—	5.80	.2283	57.0	93.0	5.80	10	5971151
A7775.9	—	5.90	.2323	57.0	93.0	5.90	10	5971155
A77715/64	15/64	5.95	.2344	57.0	93.0	5.95	10	5970939
A7776.0	—	6.00	.2362	57.0	93.0	6.00	10	5971172
A7776.1	—	6.10	.2402	63.0	101.0	6.10	10	5971175
A7776.2	—	6.20	.2441	63.0	101.0	6.20	10	5971185
A7776.3	—	6.30	.2480	63.0	101.0	6.30	10	5971189
A7771/4	1/4	6.35	.2500	63.0	101.0	6.35	10	5971012
A7776.4	—	6.40	.2520	63.0	101.0	6.40	10	5971193
A7776.5	—	6.50	.2559	63.0	101.0	6.50	10	5971198
A7776.6	—	6.60	.2598	63.0	101.0	6.60	10	5971204
A7776.7	—	6.70	.2638	63.0	101.0	6.70	10	5971209
A77717/64	17/64	6.75	.2656	69.0	109.0	6.75	10	5970948
A7776.8	—	6.80	.2677	69.0	109.0	6.80	10	5971216
A7776.9	—	6.90	.2717	69.0	109.0	6.90	10	5971220
A7777.0	—	7.00	.2756	69.0	109.0	7.00	10	5971224
A7777.1	—	7.10	.2795	69.0	109.0	7.10	10	5971228
A7779/32	9/32	7.14	.2813	69.0	109.0	7.14	10	5970826
A7777.2	—	7.20	.2835	69.0	109.0	7.20	10	5971236
A7777.3	—	7.30	.2874	69.0	109.0	7.30	10	5971239
A7777.4	—	7.40	.2913	69.0	109.0	7.40	10	5971243
A7777.5	—	7.50	.2953	69.0	109.0	7.50	10	5971247
A77719/64	19/64	7.54	.2969	75.0	117.0	7.54	10	5970954
A7777.6	—	7.60	.2992	75.0	117.0	7.60	10	5971251
A7777.7	—	7.70	.3031	75.0	117.0	7.70	10	5971255
A7777.8	—	7.80	.3071	75.0	117.0	7.80	10	5971259
A7777.9	—	7.90	.3110	75.0	117.0	7.90	10	5971263
A7775/16	5/16	7.94	.3125	75.0	117.0	7.94	10	5971159
A7778.0	—	8.00	.3150	75.0	117.0	8.00	10	5971282
A7778.1	—	8.10	.3189	75.0	117.0	8.10	10	5971287
A7778.2	—	8.20	.3228	75.0	117.0	8.20	10	5971291

Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A7778.3	—	8.30	.3268	75.0	117.0	8.30	10	5971295
A77721/64	21/64	8.33	.3281	75.0	117.0	8.33	10	5971006
A7778.4	—	8.40	.3307	75.0	117.0	8.40	10	5971297
A7778.5	—	8.50	.3346	75.0	117.0	8.50	10	5971300
A7778.6	—	8.60	.3386	81.0	125.0	8.60	10	5971304
A7778.7	—	8.70	.3425	81.0	125.0	8.70	10	5971307
A77711/32	11/32	8.73	.3438	81.0	125.0	8.73	10	5971052
A7778.8	—	8.80	.3465	81.0	125.0	8.80	10	5971309
A7778.9	—	8.90	.3504	81.0	125.0	8.90	10	5971313
A7779.0	—	9.00	.3543	81.0	125.0	9.00	10	5970821
A7779.1	—	9.10	.3583	81.0	125.0	9.10	10	5970843
A77723/64	23/64	9.13	.3594	81.0	125.0	9.13	10	5971010
A7779.2	—	9.20	.3622	81.0	125.0	9.20	10	5970864
A7779.3	—	9.30	.3661	81.0	125.0	9.30	10	5970899
A7779.4	—	9.40	.3701	81.0	125.0	9.40	10	5970944
A7779.5	—	9.50	.3740	81.0	125.0	9.50	10	5970952
A7773/8	3/8	9.52	.3750	87.0	133.0	9.52	10	5971064
A7779.6	—	9.60	.3780	87.0	133.0	9.60	10	5970957
A7779.7	—	9.70	.3819	87.0	133.0	9.70	10	5970962
A7779.8	—	9.80	.3858	87.0	133.0	9.80	10	5970968
A7779.9	—	9.90	.3898	87.0	133.0	9.90	10	5970824
A77725/64	25/64	9.92	.3906	87.0	133.0	9.92	10	5971013
A77710.0	—	10.00	.3937	87.0	133.0	10.00	10	5971019
A77710.1	—	10.10	.3976	87.0	133.0	10.10	5	5971023
A77710.2	—	10.20	.4016	87.0	133.0	10.20	5	5971027
A77713/32	13/32	10.32	.4063	87.0	133.0	10.32	5	5971082
A77710.5	—	10.50	.4134	87.0	133.0	10.50	5	5971033
A77727/64	27/64	10.72	.4219	94.0	142.0	10.72	5	5971017
A77710.8	—	10.80	.4252	94.0	142.0	10.80	5	5971036
A77711.0	—	11.00	.4331	94.0	142.0	11.00	5	5971039
A7777/16	7/16	11.11	.4375	94.0	142.0	11.11	5	5971267
A77711.2	—	11.20	.4409	94.0	142.0	11.20	5	5971042
A77711.5	—	11.50	.4528	94.0	142.0	11.50	5	5971045
A77729/64	29/64	11.51	.4531	94.0	142.0	11.51	5	5971026
A77711.8	—	11.80	.4646	94.0	142.0	11.80	5	5971049
A77715/32	15/32	11.91	.4688	101.0	151.0	11.91	5	5970934
A77712.0	—	12.00	.4724	101.0	151.0	12.00	5	5971058
A77712.2	—	12.20	.4803	101.0	151.0	12.20	5	5971063
A77731/64	31/64	12.30	.4844	101.0	151.0	12.30	5	5971067
A77712.5	—	12.50	.4921	101.0	151.0	12.50	5	5970921
A7771/2	1/2	12.70	.5000	101.0	151.0	12.70	5	5971008
A77712.8	—	12.80	.5039	101.0	151.0	12.80	5	5970979
A77713.0	—	13.00	.5118	101.0	151.0	13.00	5	5971021
A77713.5	—	13.50	.5315	108.0	160.0	13.50	1	5971054
A77714.0	—	14.00	.5512	108.0	160.0	14.00	1	5971088
A77714.5	—	14.50	.5709	114.0	169.0	14.50	1	5971090
A77715.0	—	15.00	.5906	114.0	169.0	15.00	1	5971092
A77715.5	—	15.50	.6102	120.0	178.0	15.50	1	5970930
A77716.0	—	16.00	.6299	120.0	178.0	16.00	1	5970943



A=Styles in Set, B=No. in Set, C=Diameters in Set.

Product	Nr.	A	B	C	Pack Qty	MID
A295219	219	A777	19	1.0 mm - 10.0 mm x 0.5 mm	1	5969872
A295225	225	A777	25	1.0 mm - 13.0 mm x 0.5 mm	1	5969876



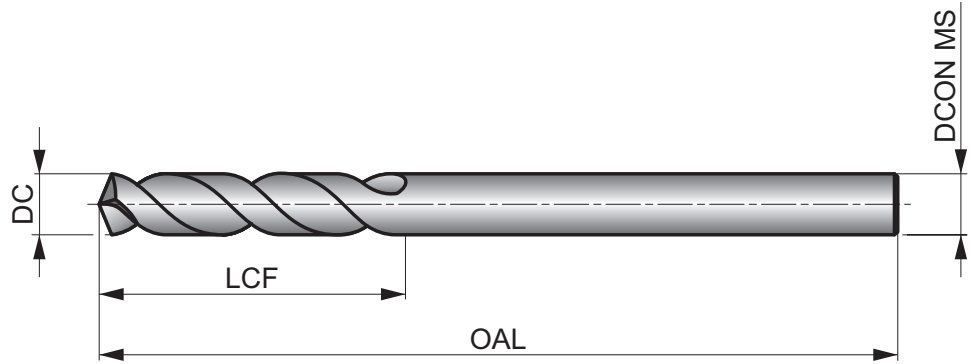
R88CO / R89CO



NAS 907 Type D HSS-E (8%) Cobalt Heavy Duty Jobber Drill

A jobber drill with shorter flute length and longer shank for more rigidity. Great drill when more reach is required for drilling shallow holes or thinner materials. Bronze tempered surface finish with low thrust 135° self-centering split point for easier penetration. Made to NAS 907 Type D Aerospace Standards.

HSS-E	NAS 907	3×D
135°	Bronze	
λ 20-35°	R	



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 118 H	P1.2 131 H	P1.3 135 H	P2.1 102 H	P2.2 89 G	P2.3 79 E	P3.1 82 F	P3.2 66 F	P3.3 56 E	P4.1 49 F	P4.2 43 E	P4.3 33 D	M1.1 98 E	M1.2 85 E
M2.1 89 E	M2.2 72 E	M2.3 59 C	M3.1 43 G	M3.2 36 G	M3.3 33 C	M4.1 49 C	K1.1 115 H	K1.2 85 D	K1.3 62 D	K2.1 89 E	K2.2 72 E	K2.3 59 E	K3.1 79 E
K3.2 59 E	K3.3 49 E	K4.1 72 E	K4.2 56 E	K4.3 39 E	K4.4 36 E	K4.5 30 E	K5.1 82 E	K5.2 62 E	K5.3 49 E	N1.1 108 J	N1.2 82 J	N1.3 56 I	N2.1 151 H
N2.2 138 H	N2.3 98 H	N3.1 223 H	N3.2 131 F	N3.3 66 H	S1.1 92 F	S1.2 66 D	S1.3 36 C	S2.1 30 E	S2.2 26 B	S3.1 23 E	S3.2 20 B	S4.1 16 E	S4.2 16 B

Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(inch)	(inch)	(inch)	(inch)		
R88C01/16	1/16	—	.0625	7/16	1.7/8	.063	12	6000151
R89CON52	—	N52	.0635	7/16	1.7/8	.064	12	6000044
R89CON51	—	N51	.0670	1/2	2"	.067	12	6000011
R89CON50	—	N50	.0700	1/2	2"	.070	12	5999977
R89CON49	—	N49	.0730	1/2	2"	.073	12	5999855
R88C05/64	5/64	—	.0781	1/2	2"	.078	12	5999756
R89CON46	—	N46	.0810	9/16	2.1/8	.081	12	5999850
R89CON45	—	N45	.0820	9/16	2.1/8	.082	12	5999846
R89CON44	—	N44	.0860	9/16	2.1/8	.086	12	5999844
R89CON43	—	N43	.0890	5/8	2.1/4	.089	12	5999839
R89CON42	—	N42	.0935	5/8	2.1/4	.093	12	5999836
R88C03/32	3/32	—	.0938	5/8	2.1/4	.094	12	5999740
R89CON41	—	N41	.0960	5/8	2.3/8	.096	12	5999832
R89CON40	—	N40	.0980	13/16	2.3/8	.098	12	5999829
R89CON39	—	N39	.0995	13/16	2.3/8	.100	12	5999826
R89CON36	—	N36	.1065	13/16	2.1/2	.106	12	5999824
R88C07/64	7/64	—	.1094	13/16	2.5/8	.109	12	5999767
R89CON31	—	N31	.1200	7/8	2.3/4	.120	12	5999818
R88C01/8	1/8	—	.1250	7/8	2.3/4	.125	12	6000163
R89CON30	—	N30	.1285	15/16	2.3/4	.129	12	5999815
R89CON29	—	N29	.1360	15/16	2.7/8	.136	12	5999808

Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(inch)	(inch)	(inch)	(inch)		
R88C09/64	9/64	—	.1406	15/16	2.7/8	.141	12	5999774
R89CON27	—	N27	.1440	1"	3"	.144	12	5999806
R89CON26	—	N26	.1470	1"	3"	.147	12	5999803
R89CON25	—	N25	.1495	1"	3"	.149	12	5999801
R89CON24	—	N24	.1520	1"	3.1/8	.152	12	5999799
R88C05/32	5/32	—	.1563	1"	3.1/8	.156	12	5999752
R89CON22	—	N22	.1570	1.1/16	3.1/8	.157	12	5999797
R89CON21	—	N21	.1590	1.1/16	3.1/4	.159	12	5999795
R89CON20	—	N20	.1610	1.1/16	3.1/4	.161	12	5999790
R88C011/64	11/64	—	.1719	1.1/16	3.1/4	.172	12	6000176
R89CON16	—	N16	.1770	1.1/8	3.3/8	.177	12	5999788
R89CON13	—	N13	.1850	1.1/8	3.1/2	.185	12	5999785
R88C03/16	3/16	—	.1875	1.1/8	3.1/2	.188	12	5999738
R89CON12	—	N12	.1890	1.1/8	3.1/2	.189	12	5999782
R89CON11	—	N11	.1910	1.3/16	3.1/2	.191	12	5999779
R89CON10	—	N10	.1935	1.3/16	3.5/8	.194	12	5999775
R89CON9	—	N9	.1960	1.3/16	3.5/8	.196	12	6000120
R89CON8	—	N8	.1990	1.3/16	3.5/8	.199	12	6000115
R89CON7	—	N7	.2010	1.3/16	3.5/8	.201	12	6000109
R88C013/64	13/64	—	.2031	1.3/16	3.5/8	.203	12	5999763
R89CON6	—	N6	.2040	1.1/4	3.3/4	.204	12	6000073



Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(inch)	(inch)	(inch)	(inch)		
R89CON5	—	N5	.2055	1.1/4	3.3/4	.205	12	5999863
R89CON3	—	N3	.2130	1.1/4	3.3/4	.213	12	5999812
R88C07/32	7/32	—	.2188	1.1/4	3.3/4	.219	12	5999765
R88C015/64	15/64	—	.2344	1.5/16	3.7/8	.234	12	5999821
R88C01/4	1/4	—	.2500	1.3/8	4"	.250	12	6000159
R88C017/64	17/64	—	.2656	1.7/16	4.1/8	.266	12	5999859
R88C09/32	9/32	—	.2813	1.1/2	4.1/4	.281	12	5999771
R88C019/64	19/64	—	.2969	1.9/16	4.3/8	.297	12	5999867
R88C05/16	5/16	—	.3125	1.5/8	4.1/2	.313	6	5999749
R88C021/64	21/64	—	.3281	1.11/16	4.5/8	.328	6	5999874
R88C011/32	11/32	—	.3438	1.11/16	4.3/4	.344	6	6000167

Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(inch)	(inch)	(inch)	(inch)		
R88C023/64	23/64	—	.3594	1.3/4	4.7/8	.359	6	5999879
R88C03/8	3/8	—	.3750	1.13/16	5"	.375	6	5999744
R88C025/64	25/64	—	.3906	1.7/8	5.1/8	.391	6	5999883
R88C013/32	13/32	—	.4063	1.15/16	5.1/4	.406	6	5999720
R88C027/64	27/64	—	.4219	2"	5.3/8	.422	6	5999727
R88C07/16	7/16	—	.4375	2.1/16	5.1/2	.438	6	5999762
R88C029/64	29/64	—	.4531	2.1/8	5.5/8	.453	6	5999731
R88C015/32	15/32	—	.4688	2.1/8	5.3/4	.469	6	5999792
R88C031/64	31/64	—	.4844	2.3/16	5.7/8	.484	6	5999746
R88C01/2	1/2	—	.5000	2.1/4	6"	.500	6	6000155

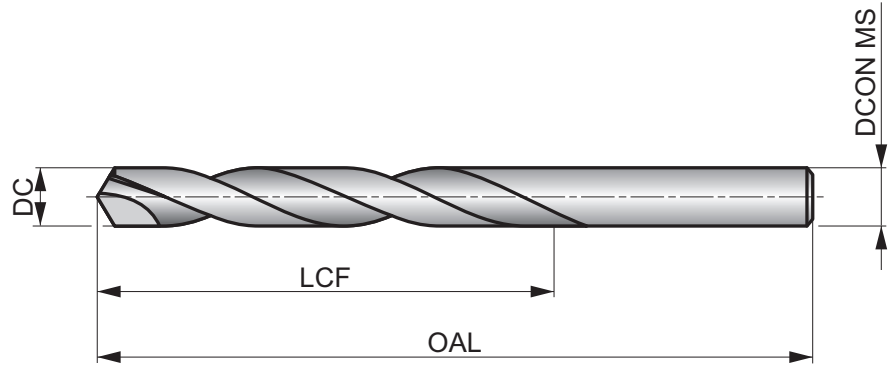


D444



Brazed Carbide Tipped HSS Heavy Duty Jobber Drill, Bright Finish

Heavy duty brazed carbide tipped drill available in fractional, wire gauge or letter sizes. Hard brazed on carbide tips can provide more heat resistance and improve tool life in stable or rigid applications. Good for drilling cast iron and other abrasive materials.



HSS HM	PRECISION	4×D
118°	Bright	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 197 E	P1.2 197 E	P1.3 197 E	P2.1 197 D	P2.2 180 D	P2.3 180 D	P3.1 164 D	P3.2 164 D	P3.3 131 C	P4.1 131 B	P4.2 121 B	P4.3 121 A	M1.1 164 B	M1.2 164 B
M2.1 164 B	M2.2 131 B	M2.3 98 A	M3.1 131 C	M3.2 115 C	M3.3 98 C	M4.1 115 B	M4.2 98 A	K1.1 299 H	K1.2 220 H	K1.3 167 H	K2.1 279 F	K2.2 226 F	K2.3 180 D
K3.1 246 F	K3.2 187 F	K3.3 151 D	K4.1 230 F	K4.2 174 F	K4.3 125 D	K4.4 108 D	K4.5 89 D	K5.1 259 F	K5.2 194 F	K5.3 151 D	N1.1 164 I	N1.2 164 I	N1.3 148 H
N2.1 148 H	N2.2 148 G	N2.3 131 G	N3.1 180 D	N3.2 230 G	N3.3 197 F	N4.2 197 E	S1.1 115 A	S1.2 115 A	S1.3 82 A	S2.1 115 B	S2.2 82 B	S3.1 82 A	S3.2 66 A
S4.1 66 A	S4.2 66 A												

Product	DC (inch)	DC (Wire gauge size)	DC (Letter size)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
D4441/8	1/8	—	—	.1250	1.5/8	2.3/4	.125	1	6001948
D444N30	—	N30	—	.1285	1.5/8	2.3/4	.129	1	6001912
D444N29	—	N29	—	.1360	1.3/4	2.7/8	.136	1	6001904
D4449/64	9/64	—	—	.1406	1.3/4	2.7/8	.141	1	6001721
D4445/32	5/32	—	—	.1563	2"	3.1/8	.156	1	6001707
D444N21	—	N21	—	.1590	2.1/8	3.1/4	.159	1	6001898
D444N20	—	N20	—	.1610	2.1/8	3.1/4	.161	1	6001895
D44411/64	11/64	—	—	.1719	2.1/8	3.1/4	.172	1	6001953
D4443/16	3/16	—	—	.1875	2.5/16	3.1/2	.188	1	6001853
D444N11	—	N11	—	.1910	2.5/16	3.1/2	.191	1	6001861
D444N10	—	N10	—	.1935	2.7/16	3.5/8	.194	1	6001856
D444N9	—	N9	—	.1960	2.7/16	3.5/8	.196	1	6001920
D444N7	—	N7	—	.2010	2.7/16	3.5/8	.201	1	6001918
D44413/64	13/64	—	—	.2031	2.7/16	3.5/8	.203	1	6001959
D4447/32	7/32	—	—	.2188	2.1/2	3.3/4	.219	1	6001714
D44415/64	15/64	—	—	.2344	2.5/8	3.7/8	.234	1	6001969
D4441/4	1/4	—	—	.2500	2.3/4	4"	.250	1	6001945
D444F	—	—	F	.2570	2.7/8	4.1/8	.257	1	6001978
D44417/64	17/64	—	—	.2656	2.7/8	4.1/8	.266	1	6001697



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
D4449/32	9/32	–	–	.2813	2.15/16	4.1/4	.281	1	6001718
D4445/16	5/16	–	–	.3125	3.3/16	4.1/2	.313	1	6001703
D44421/64	21/64	–	–	.3281	3.5/16	4.5/8	.328	1	6001756
D444Q	–	–	Q	.3320	3.7/16	4.3/4	.332	1	6001928
D44411/32	11/32	–	–	.3438	3.7/16	4.3/4	.344	1	6001950
D4443/8	3/8	–	–	.3750	3.5/8	5"	.375	1	6001859
D44413/32	13/32	–	–	.4063	3.7/8	5.1/4	.406	1	6001956
D44427/64	27/64	–	–	.4219	3.15/16	5.3/8	.422	1	6001843
D4447/16	7/16	–	–	.4375	4.1/16	5.1/2	.438	1	6001711
D4441/2	1/2	–	–	.5000	4.1/2	6"	.500	1	6001942



		HSS	HSS	HSS	HSS	HSS	HSS	HSS-E	HSS-E	HSS	HSS	HSS	HSS	HSS	
Material code (BMC)		HSS	HSS	HSS	HSS	HSS	HSS	HSS-E	HSS-E	HSS	HSS	HSS	HSS	HSS	
Basic standard group (BSG)		ANSI	DIN 340	ANSI	DIN 340	ANSI	DIN 340	DIN ANSI	ANSI	ANSI	ANSI	ANSI	ANSI	ANSI	BS 328
Usable length (ULDR)		6×D	6×D	6×D	6×D	6×D	6×D	10×D	6×D	12×D	12×D	15×D	15×D	10×D	
Application angle		118°	118°	118°	118°	135°	135°	130°	135°	118°	118°	118°	118°	118°	
Coating		Bright	Bright	Bright	ST	Bright	Bright	Bright	Bronze	Bright	Bright	Bright	Bright	ST	
Shank															
Spiral form		λ>20-35°	λ>20-35°	λ>35°	λ>20-35°	λ>35°	λ>35°	λ>35°	λ>35°	λ>20-35°	λ>20-35°	λ>20-35°	λ>20-35°	λ>20-35°	
Hand (Cutting direction)															
Cooling (CSP)															
		PFX													
Product Family Code		R51 R52 R55	5ATL	R51FS	A110	QC91P	QC91PM	A940	M51CO M52CO	0860	1290	1511	1813	A125	
PSF cutting diameters range		N80 - 1"	1.00 - 21.00	1/16 - 7/16	0.50 - 1"	1/16 - 21/32	2.00 - 14.00	1.00 - 19.00	1/16 - 1"	1/8 - 1/2	1/8 - 3/4	3/16 - 1"	1/4 - 1"	1.40 - 3/4	
P	P1	■	■		■	■	■	■	■	■	■	■	■	■	■
	P2	■	■		■	■	■	■	■	■	■	■	■	■	■
	P3	■	■		■	■	■	■	■	■	■	■	■	■	■
	P4	■	■		■	■	■	■	■	■	■	■	■	■	■
M	M1	■	■		■	■	■	■	■	■	■	■	■	■	■
	M2	■	■		■	■	■	■	■	■	■	■	■	■	■
	M3	■	■		■	■	■	■	■	■	■	■	■	■	■
	M4	■	■		■	■	■	■	■	■	■	■	■	■	■
K	K1	■	■		■	■	■	■	■	■	■	■	■	■	■
	K2	■	■		■	■	■	■	■	■	■	■	■	■	■
	K3	■	■		■	■	■	■	■	■	■	■	■	■	■
	K4	■	■		■	■	■	■	■	■	■	■	■	■	■
	K5	■	■		■	■	■	■	■	■	■	■	■	■	■
N	N1	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	N2	■	■		■	■	■	■	■	■	■	■	■	■	■
	N3	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	N4	■	■		■	■	■	■	■	■	■	■	■	■	■
	N5	■	■		■	■	■	■	■	■	■	■	■	■	■
S	S1	■	■		■	■	■	■	■	■	■	■	■	■	■
	S2	■	■		■	■	■	■	■	■	■	■	■	■	■
	S3	■	■		■	■	■	■	■	■	■	■	■	■	■
	S4	■	■		■	■	■	■	■	■	■	■	■	■	■
H	H1														
	H2														
	H3														
	H4														

■ Primary use ■ Possible use



	HSS	HSS	HSS-E	HSS-E	HSS-E													
	ANSI	ANSI	DIN 1869-1	DIN 1869-2	DIN 1869-3													
	10×D	10×D	15×D	20×D	25×D													
	135°	135°	130°	130°	130°													
	Bright	Bright	Bright	Bright	Bright													
	$\lambda > 35^\circ$	$\lambda > 35^\circ$	$\lambda > 35^\circ$	$\lambda > 35^\circ$	$\lambda > 35^\circ$													
	R	R	R	R	R													
			PFX	PFX	PFX													
	QC0860P	QC1290P	A976	A977	A978													
	1/8 - 1/2	1/8 - 1/2	1.50 - 14.00	1.50 - 14.00	3.00 - 10.00													
	209	210	211	213	214													
P1	■	■	☑	☑	☑													
P2	■	■	■	■	■													
P3	☑	☑	■	■	■													
P4	☑	☑	■	■	■													
M1	☑	☑	■	☑	☑													
M2	☑	☑	☑	☑	☑													
M3	☑	☑	☑	☑	☑													
M4	☑	☑	☑	☑	☑													
K1	■	■	■	■	■													
K2	■	■	☑	☑	☑													
K3	☑	☑	☑	☑	☑													
K4	☑	☑	☑	☑	☑													
K5	☑	☑	☑	☑	☑													
N1	☑	☑																
N2																		
N3	☑	☑	☑	☑	☑													
N4	☑	☑																
N5																		
S1			☑	☑	☑													
S2																		
S3																		
S4																		
H1																		
H2																		
H3																		
H4																		

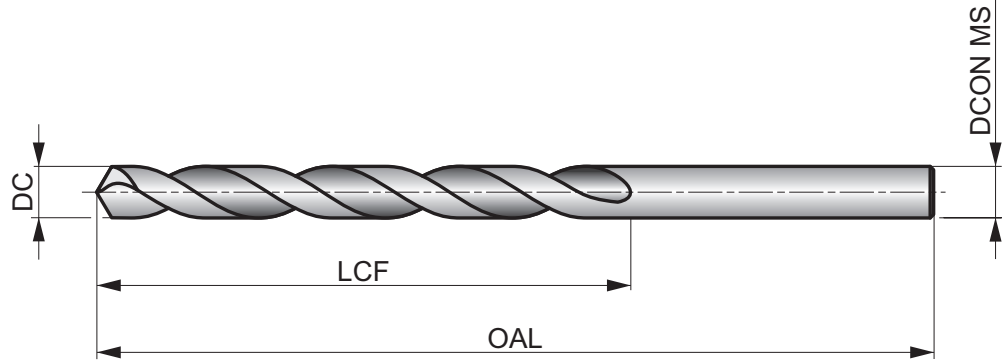


R51 / R52 / R55



HSS General Purpose Taper Length Drill, Bright Finish

Longer general duty cost effective HSS drill with conventional flute design and easy to regrind 118° point. Bright finish improves chip flow in soft or non-ferrous materials.



HSS	ANSI	6×D
118°	Bright	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 89 G	P1.2 ■ 98 G	P1.3 ■ 102 G	P2.1 ■ 75 G	P2.2 ■ 66 E	P2.3 ■ 59 D	P3.1 ■ 43 E	P3.2 ■ 36 E	P3.3 ■ 30 D	P4.1 ■ 26 E	P4.2 ■ 23 D	P4.3 ■ 16 B	M1.1 ■ 46 D	M1.2 ■ 39 D
M2.1 ■ 39 D	M2.2 ■ 33 D	M3.1 ■ 23 F	M3.2 ■ 20 F	M3.3 ■ 16 B	M4.1 ■ 13 B	K1.1 ■ 92 H	K1.2 ■ 69 E	K1.3 ■ 52 E	K2.1 ■ 59 D	K2.2 ■ 49 D	K2.3 ■ 39 D	K3.1 ■ 52 D	K3.2 ■ 39 D
K3.3 ■ 33 D	K4.1 ■ 49 D	K4.2 ■ 36 D	K4.3 ■ 26 D	K4.4 ■ 23 D	K4.5 ■ 20 D	K5.1 ■ 56 D	K5.2 ■ 43 D	K5.3 ■ 33 D	N1.1 ■ 105 I	N1.2 ■ 79 I	N1.3 ■ 52 H	N2.1 ■ 138 G	N2.2 ■ 121 G
N2.3 ■ 89 G	N3.1 ■ 177 G	N3.2 ■ 105 H	N3.3 ■ 52 E	N4.1 ■ 115 I	N4.2 ■ 85 G	N4.3 ■ 39 E	S1.1 ■ 56 E	S1.2 ■ 30 C	S1.3 ■ 13 A	S2.1 ■ 16 D	S2.2 ■ 13 A	S3.1 ■ 13 D	S3.2 ■ 10 A
S4.1 ■ 10 D	S4.2 ■ 7 A												

Product	DC (inch)	DC (Wire gauge size)	DC (Letter size)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
R52N80	–	N80	–	.0135	5/16	1.1/2	.013	12	5999626
R52N79	–	N79	–	.0145	5/16	1.1/2	.015	12	5999617
R511/64	1/64	–	–	.0156	5/16	1.1/2	.016	12	5999668
R52N78	–	N78	–	.0160	5/16	1.1/2	.016	12	5999613
R52N77	–	N77	–	.0180	5/16	1.1/2	.018	12	5999607
R52N76	–	N76	–	.0200	5/16	1.1/2	.020	12	5999567
R52N75	–	N75	–	.0210	5/16	1.1/2	.021	12	5999541
R52N74	–	N74	–	.0225	5/16	1.1/2	.022	12	5999519
R52N73	–	N73	–	.0240	5/16	1.1/2	.024	12	5999496
R52N72	–	N72	–	.0250	5/16	1.1/2	.025	12	6000270
R52N71	–	N71	–	.0260	3/4	2"	.026	12	6000264
R52N70	–	N70	–	.0280	3/4	2"	.028	12	6000262
R52N69	–	N69	–	.0292	3/4	2"	.029	12	6000257
R52N68	–	N68	–	.0310	3/4	2"	.031	12	6000254
R511/32	1/32	–	–	.0313	3/4	2"	.031	12	5999661
R52N67	–	N67	–	.0320	3/4	2"	.032	12	6000250
R52N66	–	N66	–	.0330	3/4	2"	.033	12	6000248
R52N65	–	N65	–	.0350	3/4	2"	.035	12	6000245
R52N64	–	N64	–	.0360	3/4	2"	.036	12	6000242



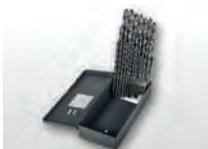
Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
R52N63	–	N63	–	.0370	3/4	2"	.037	12	6000239
R52N62	–	N62	–	.0380	3/4	2"	.038	12	6000232
R52N61	–	N61	–	.0390	1.1/8	2.1/4	.039	12	6000229
R52N60	–	N60	–	.0400	1.1/8	2.1/4	.040	12	6000226
R52N59	–	N59	–	.0410	1.1/8	2.1/4	.041	12	6000221
R52N58	–	N58	–	.0420	1.1/8	2.1/4	.042	12	6000218
R52N57	–	N57	–	.0430	1.1/8	2.1/4	.043	12	6000215
R52N56	–	N56	–	.0465	1.1/8	2.1/4	.046	12	6000212
R513/64	3/64	–	–	.0469	1.1/8	2.1/4	.047	12	5999764
R52N55	–	N55	–	.0520	1.3/4	3"	.052	12	6000209
R52N54	–	N54	–	.0550	1.3/4	3"	.055	12	6000206
R52N53	–	N53	–	.0595	1.3/4	3"	.059	12	6000200
R511/16	1/16	–	–	.0625	1.3/4	3"	.063	12	5999654
R52N52	–	N52	–	.0635	2"	3.3/4	.064	12	6000197
R52N51	–	N51	–	.0670	2"	3.3/4	.067	12	6000194
R52N50	–	N50	–	.0700	2"	3.3/4	.070	12	6000191
R52N49	–	N49	–	.0730	2"	3.3/4	.073	12	6000183
R52N48	–	N48	–	.0760	2"	3.3/4	.076	12	6000179
R515/64	5/64	–	–	.0781	2"	3.3/4	.078	12	6000231
R52N47	–	N47	–	.0785	2.1/4	4.1/4	.079	12	6000177
R52N46	–	N46	–	.0810	2.1/4	4.1/4	.081	12	6000173
R52N45	–	N45	–	.0820	2.1/4	4.1/4	.082	12	6000170
R52N44	–	N44	–	.0860	2.1/4	4.1/4	.086	12	6000164
R52N43	–	N43	–	.0890	2.1/4	4.1/4	.089	12	6000160
R52N42	–	N42	–	.0935	2.1/4	4.1/4	.093	12	6000157
R513/32	3/32	–	–	.0938	2.1/4	4.1/4	.094	12	5999759
R52N41	–	N41	–	.0960	2.1/2	4.5/8	.096	12	6000153
R52N40	–	N40	–	.0980	2.1/2	4.5/8	.098	12	6000149
R52N39	–	N39	–	.0995	2.1/2	4.5/8	.100	12	6000141
R52N38	–	N38	–	.1015	2.1/2	4.5/8	.102	12	6000136
R52N37	–	N37	–	.1040	2.1/2	4.5/8	.104	12	6000132
R52N36	–	N36	–	.1065	2.1/2	4.5/8	.106	12	6000128
R517/64	7/64	–	–	.1094	2.1/2	4.5/8	.109	12	6000266
R52N35	–	N35	–	.1100	2.3/4	5.1/8	.110	12	6000283
R52N34	–	N34	–	.1110	2.3/4	5.1/8	.111	12	6000280
R52N33	–	N33	–	.1130	2.3/4	5.1/8	.113	12	6000277
R52N32	–	N32	–	.1160	2.3/4	5.1/8	.116	12	6000273
R52N31	–	N31	–	.1200	2.3/4	5.1/8	.120	12	6000267
R511/8	1/8	–	–	.1250	2.3/4	5.1/8	.125	12	5999672
R52N30	–	N30	–	.1285	3"	5.3/8	.129	12	6000235
R52N29	–	N29	–	.1360	3"	5.3/8	.136	12	6000168
R52N28	–	N28	–	.1405	3"	5.3/8	.141	12	6000121
R519/64	9/64	–	–	.1406	3"	5.3/8	.141	12	6000279
R52N27	–	N27	–	.1440	3"	5.3/8	.144	12	5999750
R52N26	–	N26	–	.1470	3"	5.3/8	.147	12	5999743
R52N25	–	N25	–	.1495	3"	5.3/8	.149	12	5999741
R52N24	–	N24	–	.1520	3"	5.3/8	.152	12	5999737
R52N23	–	N23	–	.1540	3"	5.3/8	.154	12	5999734
R515/32	5/32	–	–	.1563	3"	5.3/8	.156	12	6000228
R52N22	–	N22	–	.1570	3.3/8	5.3/4	.157	12	5999730
R52N21	–	N21	–	.1590	3.3/8	5.3/4	.159	12	5999726
R52N20	–	N20	–	.1610	3.3/8	5.3/4	.161	12	5999723
R52N19	–	N19	–	.1660	3.3/8	5.3/4	.166	12	5999716
R52N18	–	N18	–	.1695	3.3/8	5.3/4	.170	12	5999712
R5111/64	11/64	–	–	.1719	3.3/8	5.3/4	.172	12	5999688
R52N17	–	N17	–	.1730	3.3/8	5.3/4	.173	12	5999706
R52N16	–	N16	–	.1770	3.3/8	5.3/4	.177	12	5999703
R52N15	–	N15	–	.1800	3.3/8	5.3/4	.180	12	5999701



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
R52N14	—	N14	—	.1820	3.3/8	5.3/4	.182	12	5999697
R52N13	—	N13	—	.1850	3.3/8	5.3/4	.185	12	5999693
R513/16	3/16	—	—	.1875	3.3/8	5.3/4	.188	12	5999757
R52N12	—	N12	—	.1890	3.5/8	6"	.189	12	5999691
R52N11	—	N11	—	.1910	3.5/8	6"	.191	12	5999687
R52N10	—	N10	—	.1935	3.5/8	6"	.194	12	5999683
R52N9	—	N9	—	.1960	3.5/8	6"	.196	12	5999499
R52N8	—	N8	—	.1990	3.5/8	6"	.199	12	5999622
R52N7	—	N7	—	.2010	3.5/8	6"	.201	12	6000259
R5113/64	13/64	—	—	.2031	3.5/8	6"	.203	12	5999698
R52N6	—	N6	—	.2040	3.5/8	6"	.204	12	6000223
R52N5	—	N5	—	.2055	3.5/8	6"	.205	12	6000187
R52N4	—	N4	—	.2090	3.5/8	6"	.209	12	6000145
R52N3	—	N3	—	.2130	3.5/8	6"	.213	12	6000203
R517/32	7/32	—	—	.2188	3.5/8	6"	.219	12	6000263
R52N2	—	N2	—	.2210	3.3/4	6.1/8	.221	12	5999719
R52N1	—	N1	—	.2280	3.3/4	6.1/8	.228	12	5999679
R55A	—	—	A	.2340	3.3/4	6.1/8	.234	12	5999547
R5115/64	15/64	—	—	.2344	3.3/4	6.1/8	.234	12	5999704
R55B	—	—	B	.2380	3.3/4	6.1/8	.238	12	5999549
R55C	—	—	C	.2420	3.3/4	6.1/8	.242	12	5999551
R55D	—	—	D	.2460	3.3/4	6.1/8	.246	12	5999553
R511/4	1/4	—	—	.2500	3.3/4	6.1/8	.250	12	5999664
R55F	—	—	F	.2570	3.7/8	6.1/4	.257	12	5999558
R55G	—	—	G	.2610	3.7/8	6.1/4	.261	6	6000451
R5117/64	17/64	—	—	.2656	3.7/8	6.1/4	.266	6	5999713
R55H	—	—	H	.2660	3.7/8	6.1/4	.266	6	6000454
R55I	—	—	I	.2720	3.7/8	6.1/4	.272	6	6000457
R55J	—	—	J	.2770	3.7/8	6.1/4	.277	6	6000459
R55K	—	—	K	.2810	3.7/8	6.1/4	.281	6	6000298
R519/32	9/32	—	—	.2813	3.7/8	6.1/4	.281	6	6000276
R55M	—	—	M	.2950	4"	6.3/8	.295	6	6000304
R5119/64	19/64	—	—	.2969	4"	6.3/8	.297	6	5999718
R55L	—	—	L	.2990	4"	6.3/8	.299	6	6000301
R55N	—	—	N	.3020	4"	6.3/8	.302	6	6000307
R515/16	5/16	—	—	.3125	4"	6.3/8	.313	6	6000381
R55O	—	—	O	.3160	4.1/8	6.1/2	.316	6	6000310
R55P	—	—	P	.3230	4.1/8	6.1/2	.323	6	6000313
R5121/64	21/64	—	—	.3281	4.1/8	6.1/2	.328	6	5999725
R55Q	—	—	Q	.3320	4.1/8	6.1/2	.332	6	6000316
R55R	—	—	R	.3390	4.1/8	6.1/2	.339	6	6000319
R5111/32	11/32	—	—	.3438	4.1/8	6.1/2	.344	6	5999684
R55S	—	—	S	.3480	4.1/4	6.3/4	.348	6	6000322
R55T	—	—	T	.3580	4.1/4	6.3/4	.358	6	6000325
R5123/64	23/64	—	—	.3594	4.1/4	6.3/4	.359	6	5999733
R55U	—	—	U	.3680	4.1/4	6.3/4	.368	6	6000331
R513/8	3/8	—	—	.3750	4.1/4	6.3/4	.375	6	5999766
R55V	—	—	V	.3770	4.3/8	7"	.377	6	6000333
R55W	—	—	W	.3860	4.3/8	7"	.386	6	6000336
R5125/64	25/64	—	—	.3906	4.3/8	7"	.391	6	5999739
R55X	—	—	X	.3970	4.3/8	7"	.397	6	6000338
R55Y	—	—	Y	.4040	4.3/8	7"	.404	6	6000341
R5113/32	13/32	—	—	.4063	4.3/8	7"	.406	6	5999695
R55Z	—	—	Z	.4130	4.5/8	7.1/4	.413	6	6000344
R5127/64	27/64	—	—	.4219	4.5/8	7.1/4	.422	6	5999748
R517/16	7/16	—	—	.4375	4.5/8	7.1/4	.438	6	6000261
R5129/64	29/64	—	—	.4531	4.3/4	7.1/2	.453	6	5999754
R5115/32	15/32	—	—	.4688	4.3/4	7.1/2	.469	6	5999702



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
R5131/64	31/64	—	—	.4844	4.3/4	7.3/4	.484	6	5999770
R511/2	1/2	—	—	.5000	4.3/4	7.3/4	.500	6	5999657
R5133/64	33/64	—	—	.5156	4.3/4	8"	.516	1	5999776
R5117/32	17/32	—	—	.5313	4.3/4	8"	.531	1	5999707
R5135/64	35/64	—	—	.5469	4.7/8	8.1/4	.547	1	6000225
R519/16	9/16	—	—	.5625	4.7/8	8.1/4	.563	1	6000272
R5137/64	37/64	—	—	.5781	4.7/8	8.3/4	.578	1	6000258
R5119/32	19/32	—	—	.5938	4.7/8	8.3/4	.594	1	5999715
R5139/64	39/64	—	—	.6094	4.7/8	8.3/4	.609	1	6000289
R515/8	5/8	—	—	.6250	4.7/8	8.3/4	.625	1	6000234
R5141/64	41/64	—	—	.6406	5.1/8	9"	.641	1	6000321
R5121/32	21/32	—	—	.6563	5.1/8	9"	.656	1	5999722
R5143/64	43/64	—	—	.6719	5.3/8	9.1/4	.672	1	6000358
R5111/16	11/16	—	—	.6875	5.3/8	9.1/4	.688	1	5999680
R5145/64	45/64	—	—	.7031	5.5/8	9.1/2	.703	1	6000366
R5123/32	23/32	—	—	.7188	5.5/8	9.1/2	.719	1	5999729
R5147/64	47/64	—	—	.7344	5.7/8	9.3/4	.734	1	6000371
R513/4	3/4	—	—	.7500	5.7/8	9.3/4	.750	1	5999761
R5149/64	49/64	—	—	.7656	6"	9.7/8	.766	1	6000376
R5125/32	25/32	—	—	.7813	6"	9.7/8	.781	1	5999736
R5151/64	51/64	—	—	.7969	6.1/8	10"	.797	1	6000237
R5113/16	13/16	—	—	.8125	6.1/8	10"	.813	1	5999692
R5153/64	53/64	—	—	.8281	6.1/8	10"	.828	1	6000240
R5127/32	27/32	—	—	.8438	6.1/8	10"	.844	1	5999742
R5155/64	55/64	—	—	.8594	6.1/8	10"	.859	1	6000243
R517/8	7/8	—	—	.8750	6.1/8	10"	.875	1	6000269
R5157/64	57/64	—	—	.8906	6.1/8	10"	.891	1	6000246
R5129/32	29/32	—	—	.9063	6.1/8	10"	.906	1	5999751
R5159/64	59/64	—	—	.9219	6.1/8	10.3/4	.922	1	6000251
R5115/16	15/16	—	—	.9375	6.1/8	10.3/4	.938	1	5999700
R5131/32	31/32	—	—	.9688	6.3/8	11"	.969	1	5999768
R5163/64	63/64	—	—	.9844	6.3/8	11"	.984	1	6000255
R511	1"	—	—	1.0000	6.3/8	11"	1.000	1	5998971
R511.1/32	1.1/32	—	—	1.0313	6.1/2	11.1/8	1.031	1	5998978
R511.1/16	1.1/16	—	—	1.0625	6.5/8	11.1/4	1.063	1	5998973
R511.1/8	1.1/8	—	—	1.1250	7.1/8	11.3/4	1.125	1	5998987
R511.3/16	1.3/16	—	—	1.1875	7.3/8	12"	1.188	1	5999004
R511.1/4	1.1/4	—	—	1.2500	7.7/8	12.1/2	1.250	1	5998981



A=Styles in Set, B=No. in Set, C=Diameters in Set.

Product	A	B	C	Pack Qty	MID
C29R51SET	R51	29	1/16 - 1/2 x 64ths	1	5995639

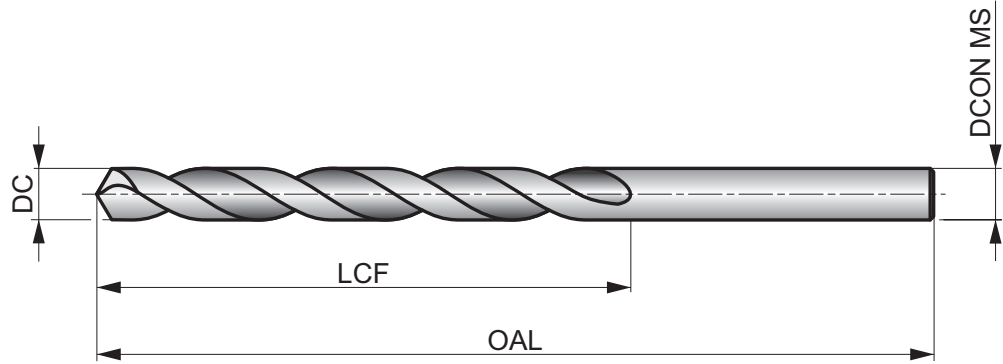


5ATL



HSS General Purpose Taper Length Drill, Metric Sizes

Longer, taper length drills provide extra drilling depth or extra reach where a jobber drill just isn't quite long enough. Easy to regrind 118° point is combined with conventional flute form, bright surface finish improves chip flow in soft or non-ferrous materials.



HSS	DIN 340	6×D
118°	Bright	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 89 G	P1.2 ■ 98 G	P1.3 ■ 102 G	P2.1 ■ 75 G	P2.2 ■ 66 E	P2.3 ■ 59 D	P3.1 ■ 43 E	P3.2 ■ 36 E	P3.3 ■ 30 D	P4.1 ■ 26 E	P4.2 ■ 23 D	P4.3 ■ 16 B	M1.1 ■ 46 D	M1.2 ■ 39 D
M2.1 ■ 39 D	M2.2 ■ 33 D	M3.1 ■ 23 F	M3.2 ■ 20 F	M3.3 ■ 16 B	M4.1 ■ 13 B	K1.1 ■ 92 H	K1.2 ■ 69 E	K1.3 ■ 52 E	K2.1 ■ 59 D	K2.2 ■ 49 D	K2.3 ■ 39 D	K3.1 ■ 52 D	K3.2 ■ 39 D
K3.3 ■ 33 D	K4.1 ■ 49 D	K4.2 ■ 36 D	K4.3 ■ 26 D	K4.4 ■ 23 D	K4.5 ■ 20 D	K5.1 ■ 56 D	K5.2 ■ 43 D	K5.3 ■ 33 D	N1.1 ■ 105 I	N1.2 ■ 79 I	N1.3 ■ 52 H	N2.1 ■ 138 G	N2.2 ■ 121 G
N2.3 ■ 89 G	N3.1 ■ 177 G	N3.2 ■ 105 H	N3.3 ■ 52 E	N4.1 ■ 115 I	N4.2 ■ 85 G	N4.3 ■ 39 E	S1.1 ■ 56 E	S1.2 ■ 30 C	S1.3 ■ 13 A	S2.1 ■ 16 D	S2.2 ■ 13 A	S3.1 ■ 13 D	S3.2 ■ 10 A
S4.1 ■ 10 D	S4.2 ■ 7 A												

DC >= 18mm, Steam tempered

Product	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
5ATL1.0	1.00	.0394	33.0	56.0	1.00	12	6000480
5ATL1.2	1.20	.0472	41.0	65.0	1.20	12	6000486
5ATL1.25	1.25	.0492	41.0	65.0	1.25	12	6000489
5ATL1.3	1.30	.0512	41.0	65.0	1.30	12	6000492
5ATL1.4	1.40	.0551	45.0	70.0	1.40	12	6000494
5ATL1.5	1.50	.0591	45.0	70.0	1.50	12	6000496
5ATL1.6	1.60	.0630	50.0	76.0	1.60	12	6000499
5ATL1.7	1.70	.0669	50.0	76.0	1.70	12	6000502
5ATL1.8	1.80	.0709	53.0	80.0	1.80	12	6000505
5ATL2.0	2.00	.0787	56.0	85.0	2.00	12	6000810
5ATL2.1	2.10	.0827	56.0	85.0	2.10	12	6000813
5ATL2.3	2.30	.0906	59.0	90.0	2.30	12	6000822
5ATL2.4	2.40	.0945	62.0	95.0	2.40	12	6000825
5ATL2.5	2.50	.0984	62.0	95.0	2.50	12	6000828
5ATL3.0	3.00	.1181	66.0	100.0	3.00	12	6000912
5ATL3.1	3.10	.1220	69.0	106.0	3.10	12	6000917
5ATL3.2	3.20	.1260	69.0	106.0	3.20	12	6000926
5ATL3.3	3.30	.1299	69.0	106.0	3.30	12	6001365

Product	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
5ATL3.4	3.40	.1339	73.0	112.0	3.40	12	6001416
5ATL3.5	3.50	.1378	73.0	112.0	3.50	12	6001458
5ATL3.7	3.70	.1457	73.0	112.0	3.70	12	6001504
5ATL3.8	3.80	.1496	78.0	119.0	3.80	12	6001508
5ATL4.0	4.00	.1575	78.0	119.0	4.00	12	6001370
5ATL4.2	4.20	.1654	78.0	119.0	4.20	12	6001374
5ATL4.5	4.50	.1772	82.0	126.0	4.50	12	6001384
5ATL4.6	4.60	.1811	82.0	126.0	4.60	12	6001389
5ATL5.0	5.00	.1969	87.0	132.0	5.00	12	6001399
5ATL5.5	5.50	.2165	91.0	139.0	5.50	12	6001404
5ATL5.7	5.70	.2244	91.0	139.0	5.70	12	6001411
5ATL6.0	6.00	.2362	91.0	139.0	6.00	12	6001421
5ATL6.4	6.40	.2520	97.0	148.0	6.40	6	6001426
5ATL6.5	6.50	.2559	97.0	148.0	6.50	6	6001431
5ATL6.8	6.80	.2677	102.0	156.0	6.80	6	6001435
5ATL7.0	7.00	.2756	102.0	156.0	7.00	6	6001440
5ATL7.2	7.20	.2835	102.0	156.0	7.20	6	6001444
5ATL7.8	7.80	.3071	109.0	165.0	7.80	6	6001452



Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(mm)	(inch)	(mm)	(mm)	(mm)		
5ATL8.0	8.00	.3150	109.0	165.0	8.00	6	6001454
5ATL8.5	8.50	.3346	109.0	165.0	8.50	6	6001460
5ATL9.0	9.00	.3543	115.0	175.0	9.00	6	6001462
5ATL10.0	10.00	.3937	121.0	184.0	10.00	6	6000511
5ATL10.2	10.20	.4016	121.0	184.0	10.20	6	6000518
5ATL10.5	10.50	.4134	121.0	184.0	10.50	6	6000763
5ATL11.0	11.00	.4331	128.0	195.0	11.00	6	6000802
5ATL12.0	12.00	.4724	134.0	205.0	12.00	6	6000921
5ATL13.0	13.00	.5118	134.0	205.0	13.00	1	6000939

Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(mm)	(inch)	(mm)	(mm)	(mm)		
5ATL14.0	14.00	.5512	140.0	214.0	14.00	1	6000769
5ATL14.5	14.50	.5709	144.0	220.0	14.50	1	6000773
5ATL15.0	15.00	.5906	144.0	220.0	15.00	1	6000777
5ATL16.0	16.00	.6299	149.0	227.0	16.00	1	6000785
5ATL18.0	18.00	.7087	158.0	241.0	18.00	1	6000797
5ATL20.0	20.00	.7874	166.0	254.0	20.00	1	6000830
5ATL20.5	20.50	.8071	171.0	261.0	20.50	1	6000837
5ATL21.0	21.00	.8268	171.0	261.0	21.00	1	6000840



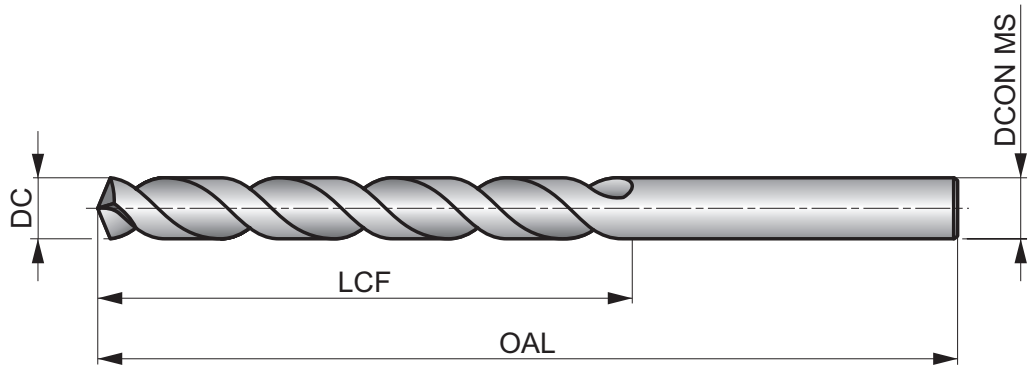
R51FS



HSS High Helix Taper Length Drill, Bright Finish Fractional Sizes

Long length drill with a high spiral flute design and bright finish. Excellent for better chip evacuation from deeper holes in soft or non-ferrous materials. Longer flute and over-all length can do the job where a jobber drill can't. Conventional 118° point makes it easy to regrind.

HSS	ANSI	6×D
118°	Bright	
λ>35°		



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

N1.1	N1.2	N1.3	N3.3
■ 348 H	■ 262 H	■ 174 H	■ 89 I

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
R51FS1/16	1/16	.0625	1.3/4	3"	.063	12	5998977
R51FS5/64	5/64	.0781	2"	3.3/4	.078	12	5998917
R51FS3/32	3/32	.0938	2.1/4	4.1/4	.094	12	5998788
R51FS7/64	7/64	.1094	2.1/2	4.5/8	.109	12	5998747
R51FS1/8	1/8	.1250	2.3/4	5.1/8	.125	12	5998985
R51FS5/32	5/32	.1563	3"	5.3/8	.156	12	5998913
R51FS3/16	3/16	.1875	3.3/8	5.3/4	.188	12	5998743
R51FS13/64	13/64	.2031	3.5/8	6"	.203	12	5999002
R51FS7/32	7/32	.2188	3.5/8	6"	.219	12	5998924
R51FS15/64	15/64	.2344	3.3/4	6.1/8	.234	12	5999009

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
R51FS1/4	1/4	.2500	3.3/4	6.1/8	.250	12	5998982
R51FS9/32	9/32	.2813	3.7/8	6.1/4	.281	6	5998751
R51FS19/64	19/64	.2969	4"	6.3/8	.297	6	5999017
R51FS5/16	5/16	.3125	4"	6.3/8	.313	6	5998905
R51FS11/32	11/32	.3438	4.1/8	6.1/2	.344	6	5998989
R51FS23/64	23/64	.3594	4.1/4	6.3/4	.359	6	5999027
R51FS3/8	3/8	.3750	4.1/4	6.3/4	.375	6	5998829
R51FS27/64	27/64	.4219	4.5/8	7.1/4	.422	6	5999034
R51FS7/16	7/16	.4375	4.5/8	7.1/4	.438	6	5998920



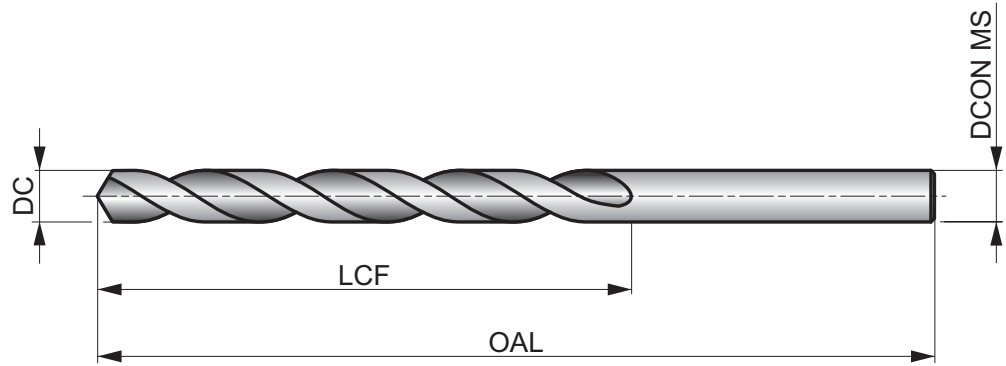
A110



HSS Long Series Drill, Steam Tempered Finish

For drilling deeper holes. Conventional 118° point provides strength and means an easy point to regrind, making it very cost-effective. Suitable for drilling many materials. Steam tempered finish retains cutting fluid and prevents chip to tool welding. For hand-held and machine drilling.

HSS	DIN 340	6×D
118°	ST	
λ 20-35°	R	DC h8



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 89 G	P1.2 ■ 98 G	P1.3 ■ 102 G	P2.1 ■ 75 G	P2.2 ■ 66 E	P2.3 ■ 59 D	P3.1 ■ 43 E	P3.2 ■ 36 E	P3.3 ■ 30 D	P4.1 ■ 26 E	P4.2 ■ 23 D	P4.3 ■ 16 B	M1.1 ■ 46 D	M1.2 ■ 39 D
M2.1 ■ 39 D	M2.2 ■ 33 D	M3.1 ■ 23 F	M3.2 ■ 20 F	M3.3 ■ 16 F	M4.1 ■ 13 B	K1.1 ■ 92 H	K1.2 ■ 69 E	K1.3 ■ 52 E	K2.1 ■ 59 D	K2.2 ■ 49 D	K2.3 ■ 39 D	K3.1 ■ 52 D	K3.2 ■ 39 D
K3.3 ■ 33 D	K4.1 ■ 49 D	K4.2 ■ 36 D	K4.3 ■ 26 D	K4.4 ■ 23 D	K4.5 ■ 20 D	K5.1 ■ 56 D	K5.2 ■ 43 D	K5.3 ■ 33 D	N1.1 ■ 105 I	N1.2 ■ 79 I	N1.3 ■ 52 H	N2.1 ■ 138 G	N2.2 ■ 121 G
N2.3 ■ 89 G	N3.1 ■ 177 G	N3.2 ■ 105 H	N3.3 ■ 52 E	N4.1 ■ 115 I	N4.2 ■ 85 G	N4.3 ■ 39 E	S1.1 ■ 56 E	S1.2 ■ 30 C	S1.3 ■ 13 A	S2.1 ■ 16 D	S2.2 ■ 13 A	S3.1 ■ 13 D	S3.2 ■ 10 A
S4.1 ■ 10 D	S4.2 ■ 7 A												

DC <= 1mm; 1/16" Bright.

Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A110.5	-	0.50	.0197	12.0	32.0	0.50	10	5968259
A110.6	-	0.60	.0236	15.0	35.0	0.60	10	5968262
A110.7	-	0.70	.0276	21.0	42.0	0.70	10	5968265
A1101/32	1/32	0.79	.0313	25.0	46.0	0.79	10	5967897
A110.8	-	0.80	.0315	25.0	46.0	0.80	10	5968268
A110.9	-	0.90	.0354	29.0	51.0	0.90	10	5968272
A1101.0	-	1.00	.0394	33.0	56.0	1.00	10	5968288
A1101.1	-	1.10	.0433	37.0	60.0	1.10	10	5968293
A1101.2	-	1.20	.0472	41.0	65.0	1.20	10	5968298
A1101.3	-	1.30	.0512	41.0	65.0	1.30	10	5968303
A1101.4	-	1.40	.0551	45.0	70.0	1.40	10	5968308
A1101.5	-	1.50	.0591	45.0	70.0	1.50	10	5968312
A1101/16	1/16	1.59	.0625	50.0	76.0	1.59	10	5967849
A1101.6	-	1.60	.0630	50.0	76.0	1.60	10	5968316
A1101.7	-	1.70	.0669	50.0	76.0	1.70	10	5968321
A1101.75	-	1.75	.0689	53.0	80.0	1.75	10	5968326
A1101.8	-	1.80	.0709	53.0	80.0	1.80	10	5968335
A1101.9	-	1.90	.0748	53.0	80.0	1.90	10	5967793
A1105/64	5/64	1.98	.0781	56.0	85.0	1.98	10	5968305
A1102.0	-	2.00	.0787	56.0	85.0	2.00	10	5967915
A1102.05	-	2.05	.0807	56.0	85.0	2.05	10	5967918
A1102.1	-	2.10	.0827	56.0	85.0	2.10	10	5967922
A1102.2	-	2.20	.0866	59.0	90.0	2.20	10	5967929
A1102.25	-	2.25	.0886	59.0	90.0	2.25	10	5967660
A1102.3	-	2.30	.0906	59.0	90.0	2.30	10	5967712
A1103/32	3/32	2.38	.0938	62.0	95.0	2.38	10	5967732
A1102.4	-	2.40	.0945	62.0	95.0	2.40	10	5967748
A1102.5	-	2.50	.0984	62.0	95.0	2.50	10	5967781
A1102.6	-	2.60	.1024	62.0	95.0	2.60	10	5967830
A1102.7	-	2.70	.1063	66.0	100.0	2.70	10	5967840
A1107/64	7/64	2.78	.1094	66.0	100.0	2.78	10	5968267
A1102.8	-	2.80	.1102	66.0	100.0	2.80	10	5967845
A1102.9	-	2.90	.1142	66.0	100.0	2.90	10	5967850
A1103.0	-	3.00	.1181	66.0	100.0	3.00	10	5967674
A1103.1	-	3.10	.1220	69.0	106.0	3.10	10	5967678
A1101/8	1/8	3.18	.1250	69.0	106.0	3.18	10	5967934



Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A1103.2	—	3.20	.1260	69.0	106.0	3.20	10	5967682
A1103.25	—	3.25	.1280	69.0	106.0	3.25	10	5967688
A1103.3	—	3.30	.1299	69.0	106.0	3.30	10	5967693
A1103.4	—	3.40	.1339	73.0	112.0	3.40	10	5967698
A1103.5	—	3.50	.1378	73.0	112.0	3.50	10	5967702
A1109/64	9/64	3.57	.1406	73.0	112.0	3.57	10	5967673
A1103.6	—	3.60	.1417	73.0	112.0	3.60	10	5967707
A1103.7	—	3.70	.1457	73.0	112.0	3.70	10	5967719
A1103.75	—	3.75	.1476	73.0	112.0	3.75	10	5967722
A1103.8	—	3.80	.1496	78.0	119.0	3.80	10	5967724
A1103.9	—	3.90	.1535	78.0	119.0	3.90	10	5967726
A1105/32	5/32	3.97	.1563	78.0	119.0	3.97	10	5968258
A1104.0	—	4.00	.1575	78.0	119.0	4.00	10	5967742
A1104.1	—	4.10	.1614	78.0	119.0	4.10	10	5967745
A1104.2	—	4.20	.1654	78.0	119.0	4.20	10	5967751
A1104.25	—	4.25	.1673	78.0	119.0	4.25	10	5967754
A1104.3	—	4.30	.1693	82.0	126.0	4.30	10	5967757
A11011/64	11/64	4.37	.1719	82.0	126.0	4.37	10	5967859
A1104.4	—	4.40	.1732	82.0	126.0	4.40	10	5967761
A1104.5	—	4.50	.1772	82.0	126.0	4.50	10	5967763
A1104.6	—	4.60	.1811	82.0	126.0	4.60	10	5967767
A1104.7	—	4.70	.1850	82.0	126.0	4.70	10	5967770
A1104.75	—	4.75	.1870	82.0	126.0	4.75	10	5967773
A1103/16	3/16	4.76	.1875	87.0	132.0	4.76	10	5967729
A1104.8	—	4.80	.1890	87.0	132.0	4.80	10	5967776
A1104.9	—	4.90	.1929	87.0	132.0	4.90	10	5967779
A1105.0	—	5.00	.1969	87.0	132.0	5.00	10	5967784
A1105.1	—	5.10	.2008	87.0	132.0	5.10	10	5967787
A11013/64	13/64	5.16	.2031	87.0	132.0	5.16	10	5967877
A1105.2	—	5.20	.2047	87.0	132.0	5.20	10	5967790
A1105.25	—	5.25	.2067	87.0	132.0	5.25	10	5967794
A1105.3	—	5.30	.2087	87.0	132.0	5.30	10	5967798
A1105.4	—	5.40	.2126	91.0	139.0	5.40	10	5967802
A1105.5	—	5.50	.2165	91.0	139.0	5.50	10	5967812
A1107/32	7/32	5.56	.2188	91.0	139.0	5.56	10	5968264
A1105.6	—	5.60	.2205	91.0	139.0	5.60	10	5967817
A1105.7	—	5.70	.2244	91.0	139.0	5.70	10	5967821
A1105.75	—	5.75	.2264	91.0	139.0	5.75	10	5967826
A1105.8	—	5.80	.2283	91.0	139.0	5.80	10	5967835
A1105.9	—	5.90	.2323	91.0	139.0	5.90	10	5968183
A11015/64	15/64	5.95	.2344	91.0	139.0	5.95	10	5967889
A1106.0	—	6.00	.2362	91.0	139.0	6.00	10	5968367
A1106.1	—	6.10	.2402	97.0	148.0	6.10	10	5968372
A1106.2	—	6.20	.2441	97.0	148.0	6.20	10	5968378
A1106.25	—	6.25	.2461	97.0	148.0	6.25	10	5968381
A1106.3	—	6.30	.2480	97.0	148.0	6.30	10	5968189
A1101/4	1/4	6.35	.2500	97.0	148.0	6.35	10	5967925
A1106.4	—	6.40	.2520	97.0	148.0	6.40	10	5968193
A1106.5	—	6.50	.2559	97.0	148.0	6.50	10	5968197
A1106.6	—	6.60	.2598	97.0	148.0	6.60	10	5968201
A1106.7	—	6.70	.2638	97.0	148.0	6.70	10	5968204
A11017/64	17/64	6.75	.2656	102.0	156.0	6.75	10	5967903
A1106.75	—	6.75	.2657	102.0	156.0	6.75	10	5968207
A1106.8	—	6.80	.2677	102.0	156.0	6.80	10	5968210
A1106.9	—	6.90	.2717	102.0	156.0	6.90	5	5968212
A1107.0	—	7.00	.2756	102.0	156.0	7.00	5	5968218
A1107.1	—	7.10	.2795	102.0	156.0	7.10	5	5968222
A1109/32	9/32	7.14	.2813	102.0	156.0	7.14	5	5967855

Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A1107.2	—	7.20	.2835	102.0	156.0	7.20	5	5968228
A1107.25	—	7.25	.2854	102.0	156.0	7.25	5	5968231
A1107.3	—	7.30	.2874	102.0	156.0	7.30	5	5968234
A1107.4	—	7.40	.2913	102.0	156.0	7.40	5	5968237
A1107.5	—	7.50	.2953	102.0	156.0	7.50	5	5968240
A1107.6	—	7.60	.2992	109.0	165.0	7.60	5	5968243
A1107.7	—	7.70	.3031	109.0	165.0	7.70	5	5968246
A1107.75	—	7.75	.3051	109.0	165.0	7.75	5	5968249
A1107.8	—	7.80	.3071	109.0	165.0	7.80	5	5968252
A1107.9	—	7.90	.3110	109.0	165.0	7.90	5	5968255
A1105/16	5/16	7.94	.3125	109.0	165.0	7.94	5	5968225
A1108.0	—	8.00	.3150	109.0	165.0	8.00	5	5968277
A1108.1	—	8.10	.3189	109.0	165.0	8.10	5	5968281
A1108.2	—	8.20	.3228	109.0	165.0	8.20	5	5968286
A1108.25	—	8.25	.3248	109.0	165.0	8.25	5	5968291
A1108.3	—	8.30	.3268	109.0	165.0	8.30	5	5968296
A1108.4	—	8.40	.3307	109.0	165.0	8.40	5	5968300
A1108.5	—	8.50	.3346	109.0	165.0	8.50	5	5968309
A1108.6	—	8.60	.3386	115.0	175.0	8.60	5	5968320
A1108.7	—	8.70	.3425	115.0	175.0	8.70	5	5968325
A11011/32	11/32	8.73	.3438	115.0	175.0	8.73	5	5967857
A1108.75	—	8.75	.3445	115.0	175.0	8.75	5	5968329
A1108.8	—	8.80	.3465	115.0	175.0	8.80	5	5968334
A1109.0	—	9.00	.3543	115.0	175.0	9.00	5	5968344
A1109.1	—	9.10	.3583	115.0	175.0	9.10	5	5968348
A1109.2	—	9.20	.3622	115.0	175.0	9.20	5	5968352
A1109.3	—	9.30	.3661	115.0	175.0	9.30	5	5968364
A1109.5	—	9.50	.3740	115.0	175.0	9.50	5	5967721
A1103/8	3/8	9.52	.3750	121.0	184.0	9.52	5	5967737
A1109.6	—	9.60	.3780	121.0	184.0	9.60	5	5967753
A1109.7	—	9.70	.3819	121.0	184.0	9.70	5	5967786
A1109.8	—	9.80	.3858	121.0	184.0	9.80	5	5967843
A1109.9	—	9.90	.3898	121.0	184.0	9.90	5	5967847
A11010.0	—	10.00	.3937	121.0	184.0	10.00	5	5967938
A11010.1	—	10.10	.3976	121.0	184.0	10.10	1	5967941
A11010.2	—	10.20	.4016	121.0	184.0	10.20	1	5967946
A11010.25	—	10.25	.4035	121.0	184.0	10.25	1	5967801
A11010.3	—	10.30	.4055	121.0	184.0	10.30	1	5967806
A11013/32	13/32	10.32	.4063	121.0	184.0	10.32	1	5967873
A11010.5	—	10.50	.4134	121.0	184.0	10.50	1	5967808
A11010.75	—	10.75	.4232	128.0	195.0	10.75	1	5967811
A11010.8	—	10.80	.4252	128.0	195.0	10.80	1	5967816
A11011.0	—	11.00	.4331	128.0	195.0	11.00	1	5967824
A1107/16	7/16	11.11	.4375	128.0	195.0	11.11	1	5968261
A11011.5	—	11.50	.4528	128.0	195.0	11.50	1	5967841
A11011.75	—	11.75	.4626	128.0	195.0	11.75	1	5967846
A11012.0	—	12.00	.4724	134.0	205.0	12.00	1	5967861
A11012.1	—	12.10	.4764	134.0	205.0	12.10	1	5967863
A11012.25	—	12.25	.4823	134.0	205.0	12.25	1	5967865
A11012.5	—	12.50	.4921	134.0	205.0	12.50	1	5967867
A1101/2	1/2	12.70	.5000	134.0	205.0	12.70	1	5967875
A11013.0	—	13.00	.5118	134.0	205.0	13.00	1	5967869
A11017/32	17/32	13.49	.5313	140.0	214.0	13.49	1	5967901
A11013.5	—	13.50	.5315	140.0	214.0	13.50	1	5967871
A11014.0	—	14.00	.5512	140.0	214.0	14.00	1	5967879
A1109/16	9/16	14.29	.5625	144.0	220.0	14.29	1	5967851
A11014.5	—	14.50	.5709	144.0	220.0	14.50	1	5967881
A11015.0	—	15.00	.5906	144.0	220.0	15.00	1	5967883



Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A11015.5	–	15.50	.6102	149.0	227.0	15.50	1	5967885
A1105/8	5/8	15.88	.6250	149.0	227.0	15.88	1	5968361
A11016.0	–	16.00	.6299	149.0	227.0	16.00	1	5967891
A11016.5	–	16.50	.6496	154.0	235.0	16.50	1	5967893
A11017.0	–	17.00	.6693	154.0	235.0	17.00	1	5967895
A11017.5	–	17.50	.6890	158.0	241.0	17.50	1	5967899
A11018.0	–	18.00	.7087	158.0	241.0	18.00	1	5967905
A11018.5	–	18.50	.7283	162.0	247.0	18.50	1	5967907

Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A11019.0	–	19.00	.7480	162.0	247.0	19.00	1	5967910
A1103/4	3/4	19.05	.7500	166.0	254.0	19.05	1	5967735
A11019.5	–	19.50	.7677	166.0	254.0	19.50	1	5967913
A11020.0	–	20.00	.7874	166.0	254.0	20.00	1	5967853
A11021.0	–	21.00	.8268	171.0	261.0	21.00	1	5967665
A11022.0	–	22.00	.8661	176.0	268.0	22.00	1	5967669
A1107/8	7/8	22.22	.8750	176.0	268.0	22.22	1	5968270
A1101	1"	25.40	1.0000	190.0	290.0	25.40	1	5968282

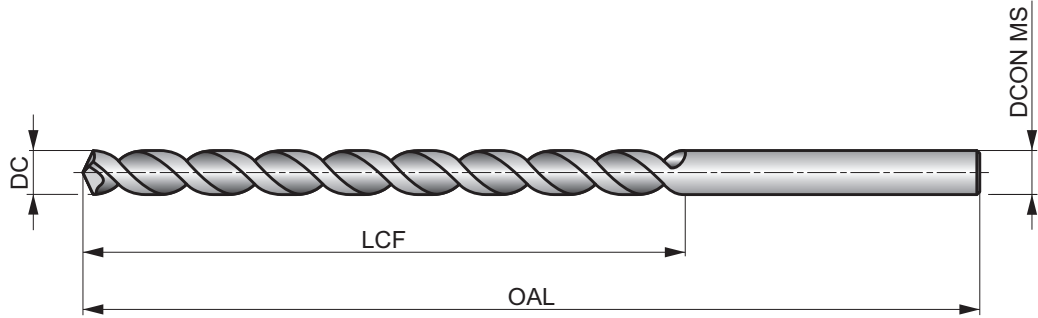


QC91P



HSS Parabolic Flute Taper Length Drill, Bright Finish Inch Sizes

Long length parabolic flute form for deeper holes in long chipping materials. The self-centering 135° split point allows for easier penetration with low thrust force. Bright finish makes it suitable for soft or non-ferrous materials. Not suitable for hand-held drilling or thin materials.



HSS	ANSI	6×D
135°	Bright	
λ>35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 89 F	P1.2 ■ 98 F	P1.3 ■ 102 F	P2.1 ■ 75 F	P2.2 ■ 66 H	P2.3 ■ 59 D	P3.1 ■ 69 F	P3.2 ■ 56 F	P3.3 ■ 46 D	P4.1 ■ 39 F	P4.2 ■ 33 D	M1.1 ■ 121 H	M1.2 ■ 102 H	M2.1 ■ 108 H
M2.2 ■ 89 H	M3.1 ■ 56 F	M3.2 ■ 49 F	M3.3 ■ 46 D	M4.1 ■ 49 D	K1.1 ■ 151 H	K1.2 ■ 112 H	K1.3 ■ 85 H	K2.1 ■ 98 F	K2.2 ■ 79 F	K3.1 ■ 85 F	K3.2 ■ 66 F	K4.1 ■ 79 F	K4.2 ■ 59 F
K5.1 ■ 89 F	K5.2 ■ 69 F	N1.1 ■ 351 H	N1.2 ■ 262 H	N1.3 ■ 177 H	N2.1 ■ 325 H	N2.2 ■ 325 H	N3.1 ■ 135 H	N3.2 ■ 79 H	N3.3 ■ 39 I	S1.1 ■ 89 H	S1.2 ■ 49 F		

Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(inch)	(inch)	(inch)	(inch)		
QC91P1/16	1/16	—	.0625	1.3/4	3"	.063	12	5997190
QC91PN52	—	N52	.0635	2"	3.3/4	.064	12	5997169
QC91PN51	—	N51	.0670	2"	3.3/4	.067	12	5997164
QC91PN50	—	N50	.0700	2"	3.3/4	.070	12	5997159
QC91PN49	—	N49	.0730	2"	3.3/4	.073	12	5997149
QC91PN48	—	N48	.0760	2"	3.3/4	.076	12	5997145
QC91P5/64	5/64	—	.0781	2"	3.3/4	.078	12	5997426
QC91PN47	—	N47	.0785	2.1/4	4.1/4	.079	12	5997142
QC91PN46	—	N46	.0810	2.1/4	4.1/4	.081	12	5997135
QC91PN45	—	N45	.0820	2.1/4	4.1/4	.082	12	5997132
QC91PN44	—	N44	.0860	2.1/4	4.1/4	.086	12	5997126
QC91PN43	—	N43	.0890	2.1/4	4.1/4	.089	12	5997122
QC91PN42	—	N42	.0935	2.1/4	4.1/4	.093	12	5997118
QC91P3/32	3/32	—	.0938	2.1/4	4.1/4	.094	12	5997472
QC91PN41	—	N41	.0960	2.1/2	4.5/8	.096	12	5997114
QC91PN40	—	N40	.0980	2.1/2	4.5/8	.098	12	5997109
QC91PN39	—	N39	.0995	2.1/2	4.5/8	.100	12	5997099
QC91PN38	—	N38	.1015	2.1/2	4.5/8	.102	12	5997095
QC91PN37	—	N37	.1040	2.1/2	4.5/8	.104	12	5997242
QC91PN36	—	N36	.1065	2.1/2	4.5/8	.106	12	5997240
QC91P7/64	7/64	—	.1094	2.1/2	4.5/8	.109	12	5997439
QC91PN35	—	N35	.1100	2.3/4	5.1/8	.110	12	5997239
QC91PN34	—	N34	.1110	2.3/4	5.1/8	.111	12	5997237

Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(inch)	(inch)	(inch)	(inch)		
QC91PN33	—	N33	.1130	2.3/4	5.1/8	.113	12	5997233
QC91PN32	—	N32	.1160	2.3/4	5.1/8	.116	12	5997213
QC91PN31	—	N31	.1200	2.3/4	5.1/8	.120	12	5997184
QC91P1/8	1/8	—	.1250	2.3/4	5.1/8	.125	12	5997199
QC91PN30	—	N30	.1285	3"	5.3/8	.129	12	5997138
QC91PN29	—	N29	.1360	3"	5.3/8	.136	12	5998036
QC91PN28	—	N28	.1405	3"	5.3/8	.141	12	5998029
QC91P9/64	9/64	—	.1406	3"	5.3/8	.141	12	5997451
QC91PN27	—	N27	.1440	3"	5.3/8	.144	12	5998026
QC91PN26	—	N26	.1470	3"	5.3/8	.147	12	5998021
QC91PN25	—	N25	.1495	3"	5.3/8	.149	12	5998017
QC91PN24	—	N24	.1520	3"	5.3/8	.152	12	5998013
QC91P5/32	5/32	—	.1563	3"	5.3/8	.156	12	5997421
QC91PN21	—	N21	.1590	3.3/8	5.3/4	.159	12	5998002
QC91PN19	—	N19	.1660	3.3/8	5.3/4	.166	12	5997989
QC91PN18	—	N18	.1695	3.3/8	5.3/4	.170	12	5997986
QC91PN17	—	N17	.1730	3.3/8	5.3/4	.173	12	5997983
QC91PN16	—	N16	.1770	3.3/8	5.3/4	.177	12	5997979
QC91PN15	—	N15	.1800	3.3/8	5.3/4	.180	12	5997976
QC91PN14	—	N14	.1820	3.3/8	5.3/4	.182	12	5997973
QC91P3/16	3/16	—	.1875	3.3/8	5.3/4	.188	12	5997445
QC91PN12	—	N12	.1890	3.5/8	6"	.189	12	5997968
QC91PN11	—	N11	.1910	3.5/8	6"	.191	12	5997966



Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(inch)	(inch)	(inch)	(inch)		
QC91PN10	—	N10	.1935	3.5/8	6"	.194	12	5997964
QC91PN9	—	N9	.1960	3.5/8	6"	.196	12	5997187
QC91PN8	—	N8	.1990	3.5/8	6"	.199	12	5997181
QC91PN7	—	N7	.2010	3.5/8	6"	.201	12	5997177
QC91P13/64	13/64	—	.2031	3.5/8	6"	.203	12	5997211
QC91PN5	—	N5	.2055	3.5/8	6"	.205	12	5997154
QC91PN3	—	N3	.2130	3.5/8	6"	.213	12	5997089
QC91P7/32	7/32	—	.2188	3.5/8	6"	.219	12	5997435
QC91PN1	—	N1	.2280	3.3/4	6.1/8	.228	12	5997960
QC91P15/64	15/64	—	.2344	3.3/4	6.1/8	.234	12	5997217
QC91P1/4	1/4	—	.2500	3.3/4	6.1/8	.250	12	5997196
QC91P17/64	17/64	—	.2656	3.7/8	6.1/4	.266	6	5997221
QC91P9/32	9/32	—	.2813	3.7/8	6.1/4	.281	6	5997448
QC91P19/64	19/64	—	.2969	4"	6.3/8	.297	6	5997225
QC91P5/16	5/16	—	.3125	4"	6.3/8	.313	6	5997416
QC91P21/64	21/64	—	.3281	4.1/8	6.1/2	.328	6	5997229

Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(inch)	(inch)	(inch)	(inch)		
QC91P11/32	11/32	—	.3438	4.1/8	6.1/2	.344	6	5997205
QC91P23/64	23/64	—	.3594	4.1/4	6.3/4	.359	6	5997230
QC91P3/8	3/8	—	.3750	4.1/4	6.3/4	.375	6	5997497
QC91P25/64	25/64	—	.3906	4.3/8	7"	.391	6	5997232
QC91P13/32	13/32	—	.4063	4.3/8	7"	.406	6	5997209
QC91P27/64	27/64	—	.4219	4.5/8	7.1/4	.422	6	5997235
QC91P7/16	7/16	—	.4375	4.5/8	7.1/4	.438	6	5997432
QC91P15/32	15/32	—	.4688	4.3/4	7.1/2	.469	6	5997215
QC91P1/2	1/2	—	.5000	4.3/4	7.3/4	.500	6	5997193
QC91P33/64	33/64	—	.5156	4.3/4	8"	.516	1	5997538
QC91P17/32	17/32	—	.5313	4.3/4	8"	.531	1	5997219
QC91P35/64	35/64	—	.5469	4.7/8	8.1/4	.547	1	5997541
QC91P9/16	9/16	—	.5625	4.7/8	8.1/4	.563	1	5997442
QC91P19/32	19/32	—	.5938	4.7/8	8.3/4	.594	1	5997223
QC91P5/8	5/8	—	.6250	4.7/8	8.3/4	.625	1	5997429
QC91P21/32	21/32	—	.6563	5.1/8	9"	.656	1	5997227

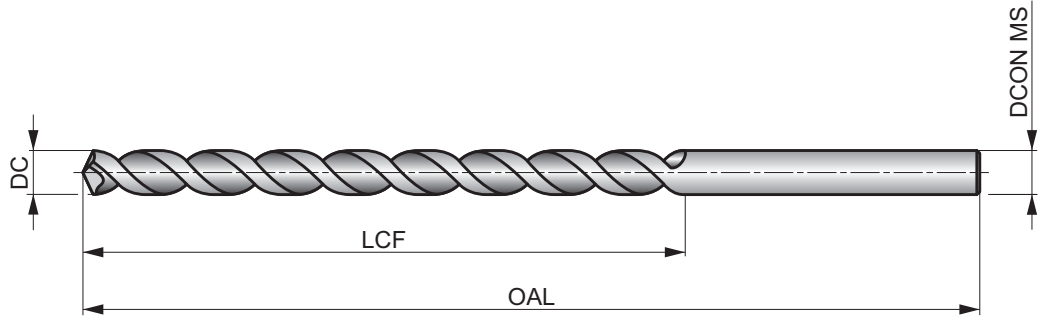


QC91PM



HSS Parabolic Flute Taper Length Drill, Bright Finish Metric Sizes

Long length parabolic flute form for deeper holes in long chipping materials. The self-centering 135° split point allows for easier penetration with low thrust force. Bright finish makes it suitable for soft or non-ferrous materials. Not suitable for hand-held drilling or thin materials.



HSS	DIN 340	6×D
135°	Bright	
λ>35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 89 F	P1.2 ■ 98 F	P1.3 ■ 102 F	P2.1 ■ 75 F	P2.2 ■ 66 H	P2.3 ▣ 59 D	P3.1 ■ 69 F	P3.2 ■ 56 F	P3.3 ▣ 46 D	P4.1 ■ 39 F	P4.2 ▣ 33 D	M1.1 ▣ 121 H	M1.2 ▣ 102 H	M2.1 ▣ 108 H
M2.2 ▣ 89 H	M3.1 ▣ 56 F	M3.2 ▣ 49 F	M3.3 ▣ 46 D	M4.1 ▣ 49 D	K1.1 ■ 151 H	K1.2 ■ 112 H	K1.3 ■ 85 H	K2.1 ▣ 98 F	K2.2 ▣ 79 F	K3.1 ▣ 85 F	K3.2 ▣ 66 F	K4.1 ▣ 79 F	K4.2 ▣ 59 F
K5.1 ▣ 89 F	K5.2 ▣ 69 F	N1.1 ■ 351 H	N1.2 ■ 262 H	N1.3 ■ 177 H	N2.1 ■ 325 H	N2.2 ■ 325 H	N3.1 ▣ 135 H	N3.2 ▣ 79 H	N3.3 ▣ 39 I	S1.1 ▣ 89 H	S1.2 ▣ 49 F		

Product	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
QC91PM2.0	2.00	.0787	56.0	85.0	2.00	12	5998048
QC91PM2.5	2.50	.0984	62.0	95.0	2.50	12	5998052
QC91PM3.0	3.00	.1181	66.0	100.0	3.00	12	5997892
QC91PM4.0	4.00	.1575	78.0	119.0	4.00	12	5997899
QC91PM5.0	5.00	.1969	87.0	132.0	5.00	12	5997907
QC91PM5.2	5.20	.2047	87.0	132.0	5.20	12	5997911
QC91PM6.0	6.00	.2362	91.0	139.0	6.00	12	5997921
QC91PM7.0	7.00	.2756	102.0	156.0	7.00	6	5997936
QC91PM8.0	8.00	.3150	109.0	165.0	8.00	6	5997941

Product	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
QC91PM8.5	8.50	.3346	109.0	165.0	8.50	6	5997948
QC91PM8.6	8.60	.3386	115.0	175.0	8.60	6	5997952
QC91PM10.0	10.00	.3937	121.0	184.0	10.00	6	5997417
QC91PM11.0	11.00	.4331	128.0	195.0	11.00	6	5997425
QC91PM12.0	12.00	.4724	134.0	205.0	12.00	6	5997433
QC91PM12.5	12.50	.4921	134.0	205.0	12.50	6	5997436
QC91PM13.5	13.50	.5315	140.0	214.0	13.50	1	5997441
QC91PM14.0	14.00	.5512	140.0	214.0	14.00	1	5997447



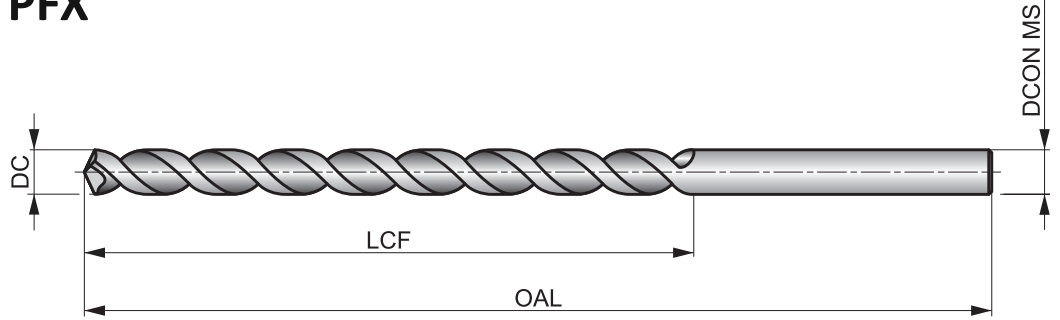
A940



PFX HSS-E (5% Cobalt) Long Series Drill, Bright Finish

High performance drill, able to produce high quality and accurate holes at high speeds and feeds (H10 hole tolerance). Self-centering 130° point angle and special parabolic flute design help to drill extra deep holes in a single pass. Suitable for many materials.

PFX



HSS-E	DIN ANSI	10×D
130°	Bright	
λ>35°	R	DC h8

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 95 F	P1.2 ■ 108 F	P1.3 ■ 112 F	P2.1 ■ 82 F	P2.2 ■ 72 G	P2.3 ■ 62 C	P3.1 ■ 82 G	P3.2 ■ 66 G	P3.3 ■ 56 C	P4.1 ■ 49 G	P4.2 ■ 43 C	P4.3 ■ 33 C	M1.1 ■ 69 C	M1.2 ■ 56 C
M2.1 ■ 59 C	M2.2 ■ 49 C	M3.1 ■ 26 E	M3.2 ■ 23 E	M3.3 ■ 20 E	M4.1 ■ 30 B	K2.1 ■ 66 I	K2.2 ■ 52 I	K2.3 ■ 43 H	K3.1 ■ 56 I	K3.2 ■ 43 I	K3.3 ■ 36 H	K4.1 ■ 52 I	K4.2 ■ 39 I
K4.3 ■ 30 H	K4.4 ■ 26 H	K4.5 ■ 20 H	K5.1 ■ 59 I	K5.2 ■ 46 I	K5.3 ■ 36 H	N1.1 ■ 174 H	N1.2 ■ 131 H	N1.3 ■ 89 N	N2.1 ■ 203 N	N2.2 ■ 180 N	N2.3 ■ 131 N	N3.1 ■ 390 G	N3.2 ■ 230 F
N3.3 ■ 115 F	N4.1 ■ 180 H	N4.2 ■ 131 F	S1.1 ■ 59 E	S1.2 ■ 43 C	S1.3 ■ 20 C								

DC >= 9.6mm less than 10xD.

Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A9401.0	—	1.00	.0394	33.0	56.0	1.00	1	5973055
A9401.1	—	1.10	.0433	37.0	60.0	1.10	1	5973058
A9403/64	3/64	1.19	.0469	29.0	57.0	1.19	1	5973218
A9401.2	—	1.20	.0472	41.0	65.0	1.20	1	5973059
A9401.3	—	1.30	.0512	41.0	65.0	1.30	1	5973060
A9401.4	—	1.40	.0551	45.0	70.0	1.40	1	5973062
A9401.5	—	1.50	.0591	45.0	70.0	1.50	1	5972881
A9401/16	1/16	1.59	.0625	44.0	76.0	1.59	1	5972905
A9401.6	—	1.60	.0630	50.0	76.0	1.60	1	5972885
A9401.7	—	1.70	.0669	50.0	76.0	1.70	1	5972890
A9401.8	—	1.80	.0709	53.0	80.0	1.80	1	5972895
A9401.9	—	1.90	.0748	53.0	80.0	1.90	1	5972900
A9405/64	5/64	1.98	.0781	51.0	95.0	1.98	1	5972177
A9402.0	—	2.00	.0787	56.0	85.0	2.00	1	5973278
A9402.1	—	2.10	.0827	56.0	85.0	2.10	1	5973282
A9402.2	—	2.20	.0866	59.0	90.0	2.20	1	5973286
A9402.3	—	2.30	.0906	59.0	90.0	2.30	1	5973289
A9403/32	3/32	2.38	.0938	57.0	108.0	2.38	1	5973207
A9402.4	—	2.40	.0945	62.0	95.0	2.40	1	5973084
A9402.5	—	2.50	.0984	62.0	95.0	2.50	1	5973087
A9402.6	—	2.60	.1024	62.0	95.0	2.60	1	5973090

Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A9402.7	—	2.70	.1063	66.0	100.0	2.70	1	5973092
A9407/64	7/64	2.78	.1094	64.0	117.0	2.78	1	5972281
A9402.8	—	2.80	.1102	66.0	100.0	2.80	1	5973095
A9402.9	—	2.90	.1142	66.0	100.0	2.90	1	5973098
A9403.0	—	3.00	.1181	66.0	100.0	3.00	1	5973142
A9403.1	—	3.10	.1220	69.0	106.0	3.10	1	5973146
A9401/8	1/8	3.18	.1250	70.0	130.0	3.18	1	5972921
A9403.2	—	3.20	.1260	69.0	106.0	3.20	1	5973151
A9403.3	—	3.30	.1299	69.0	106.0	3.30	1	5973156
A9403.4	—	3.40	.1339	73.0	112.0	3.40	1	5973161
A9403.5	—	3.50	.1378	73.0	112.0	3.50	1	5973170
A9409/64	9/64	3.57	.1406	76.0	137.0	3.57	1	5972865
A9403.6	—	3.60	.1417	73.0	112.0	3.60	1	5973175
A9403.7	—	3.70	.1457	73.0	112.0	3.70	1	5973183
A9403.8	—	3.80	.1496	78.0	119.0	3.80	1	5973187
A9403.9	—	3.90	.1535	78.0	119.0	3.90	1	5973195
A9405/32	5/32	3.97	.1563	76.0	137.0	3.97	1	5972173
A9404.0	—	4.00	.1575	78.0	119.0	4.00	1	5973252
A9404.1	—	4.10	.1614	78.0	119.0	4.10	1	5973256
A9404.2	—	4.20	.1654	78.0	119.0	4.20	1	5973259
A9404.3	—	4.30	.1693	82.0	126.0	4.30	1	5973263



Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A9404.4	–	4.40	.1732	82.0	126.0	4.40	1	5973266
A9404.5	–	4.50	.1772	82.0	126.0	4.50	1	5973274
A9404.6	–	4.60	.1811	82.0	126.0	4.60	1	5972119
A9403/16	3/16	4.76	.1875	86.0	146.0	4.76	1	5973202
A9404.8	–	4.80	.1890	87.0	132.0	4.80	1	5972210
A9404.9	–	4.90	.1929	87.0	132.0	4.90	1	5972254
A9405.0	–	5.00	.1969	87.0	132.0	5.00	1	5972125
A9405.1	–	5.10	.2008	87.0	132.0	5.10	1	5972129
A9405.2	–	5.20	.2047	87.0	132.0	5.20	1	5972133
A9405.3	–	5.30	.2087	87.0	132.0	5.30	1	5972137
A9405.4	–	5.40	.2126	91.0	139.0	5.40	1	5972141
A9405.5	–	5.50	.2165	91.0	139.0	5.50	1	5972145
A9405.8	–	5.80	.2283	91.0	139.0	5.80	1	5972156
A9405.9	–	5.90	.2323	91.0	139.0	5.90	1	5972160
A9406.0	–	6.00	.2362	91.0	139.0	6.00	1	5972185
A9406.1	–	6.10	.2402	97.0	148.0	6.10	1	5972189
A9406.2	–	6.20	.2441	97.0	148.0	6.20	1	5972193
A9401/4	1/4	6.35	.2500	95.0	156.0	6.35	1	5972916
A9406.4	–	6.40	.2520	97.0	148.0	6.40	1	5972203
A9406.5	–	6.50	.2559	97.0	148.0	6.50	1	5972206
A9406.6	–	6.60	.2598	97.0	148.0	6.60	1	5972214
A9406.7	–	6.70	.2638	97.0	148.0	6.70	1	5972218
A94017/64	17/64	6.75	.2656	98.0	159.0	6.75	1	5973080
A9406.8	–	6.80	.2677	102.0	156.0	6.80	1	5972222
A9406.9	–	6.90	.2717	102.0	156.0	6.90	1	5972226
A9407.0	–	7.00	.2756	102.0	156.0	7.00	1	5972230
A9407.2	–	7.20	.2835	102.0	156.0	7.20	1	5972238
A9407.3	–	7.30	.2874	102.0	156.0	7.30	1	5972243
A9407.5	–	7.50	.2953	102.0	156.0	7.50	1	5972250
A9407.8	–	7.80	.3071	109.0	165.0	7.80	1	5972266
A9405/16	5/16	7.94	.3125	102.0	162.0	7.94	1	5972167
A9408.0	–	8.00	.3150	109.0	165.0	8.00	1	5972285
A9408.2	–	8.20	.3228	109.0	165.0	8.20	1	5972293
A9408.3	–	8.30	.3268	109.0	165.0	8.30	1	5972299

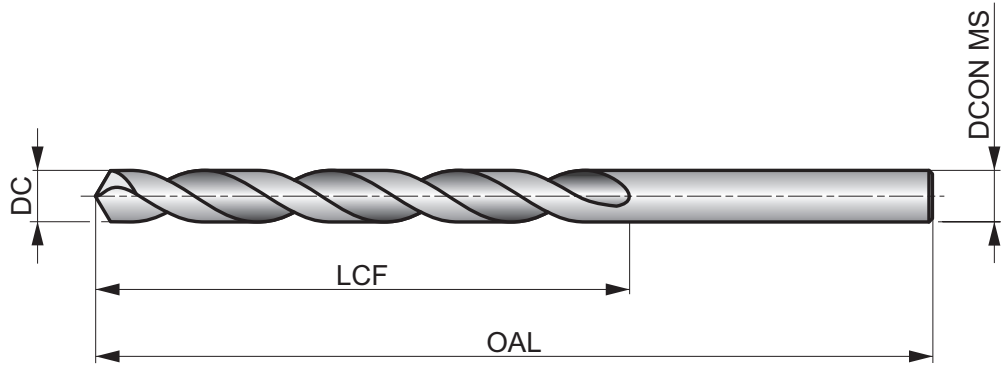
Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A9408.5	–	8.50	.3346	109.0	165.0	8.50	1	5972869
A9408.6	–	8.60	.3386	115.0	175.0	8.60	1	5972922
A9408.7	–	8.70	.3425	115.0	175.0	8.70	1	5972974
A94011/32	11/32	8.73	.3438	105.0	165.0	8.73	1	5972986
A9409.0	–	9.00	.3543	115.0	175.0	9.00	1	5973031
A9409.5	–	9.50	.3740	115.0	175.0	9.50	1	5972840
A9409.8	–	9.80	.3858	121.0	184.0	9.80	1	5972849
A94010.0	–	10.00	.3937	121.0	184.0	10.00	1	5972926
A94010.2	–	10.20	.4016	121.0	184.0	10.20	1	5972936
A94010.3	–	10.30	.4055	121.0	184.0	10.30	1	5972941
A94013/32	13/32	10.32	.4063	111.0	178.0	10.32	1	5973018
A94010.5	–	10.50	.4134	121.0	184.0	10.50	1	5972954
A94027/64	27/64	10.72	.4219	117.0	184.0	10.72	1	5973133
A94011.0	–	11.00	.4331	128.0	195.0	11.00	1	5972964
A9407/16	7/16	11.11	.4375	117.0	184.0	11.11	1	5972274
A94011.5	–	11.50	.4528	128.0	195.0	11.50	1	5972971
A94029/64	29/64	11.51	.4531	121.0	190.0	11.51	1	5973138
A94011.8	–	11.80	.4646	128.0	195.0	11.80	1	5972975
A94012.0	–	12.00	.4724	134.0	205.0	12.00	1	5972994
A94012.2	–	12.20	.4803	134.0	205.0	12.20	1	5972998
A94031/64	31/64	12.30	.4844	121.0	197.0	12.30	1	5973233
A94012.5	–	12.50	.4921	134.0	205.0	12.50	1	5973002
A94013.0	–	13.00	.5118	134.0	205.0	13.00	1	5973010
A94017/32	17/32	13.49	.5313	121.0	203.0	13.49	1	5973057
A94014.0	–	14.00	.5512	140.0	214.0	14.00	1	5973029
A9409/16	9/16	14.29	.5625	124.0	210.0	14.29	1	5972857
A94014.5	–	14.50	.5709	144.0	220.0	14.50	1	5973033
A94015.0	–	15.00	.5906	144.0	220.0	15.00	1	5973037
A94015.5	–	15.50	.6102	149.0	227.0	15.50	1	5973042
A94016.0	–	16.00	.6299	149.0	227.0	16.00	1	5973048
A94021/32	21/32	16.67	.6563	130.0	229.0	16.67	1	5973106
A94017.0	–	17.00	.6693	154.0	235.0	17.00	1	5973052
A94011/16	11/16	17.46	.6875	137.0	235.0	17.46	1	5972979
A94019.0	–	19.00	.7480	162.0	247.0	19.00	1	5973165



M51CO / M52CO

HSS-E Heavy Duty Taper Length Drill, Bronze Tempered Surface Finish

Longer length heavy duty cobalt drill with self-centering 135° split point for easier penetration and better accuracy in drilling deeper holes in most materials. Bronze tempered surface finish for increased heat resistance and longer tool life also helps to stop work piece material from sticking to the cutting edges.



HSS-E	ANSI	6×D
135°	Bronze	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 118 G	P1.2 ■ 131 G	P1.3 ■ 135 G	P2.1 ■ 102 G	P2.2 ■ 89 E	P2.3 ■ 79 D	P3.1 ■ 82 E	P3.2 ■ 66 E	P3.3 ■ 56 D	P4.1 ■ 49 E	P4.2 ■ 43 D	P4.3 ■ 33 B	M1.1 ■ 98 D	M1.2 ■ 85 D
M2.1 ■ 89 D	M2.2 ■ 72 D	M3.1 ■ 43 F	M3.2 ■ 36 F	M3.3 ■ 33 B	M4.1 ■ 49 B	K1.1 ■ 115 H	K1.2 ■ 85 E	K1.3 ■ 62 E	K2.1 ■ 89 D	K2.2 ■ 72 D	K2.3 ■ 59 D	K3.1 ■ 79 D	K3.2 ■ 59 D
K3.3 ■ 49 D	K4.1 ■ 72 D	K4.2 ■ 56 D	K4.3 ■ 39 D	K4.4 ■ 36 D	K4.5 ■ 30 D	K5.1 ■ 82 D	K5.2 ■ 62 D	K5.3 ■ 49 D	N1.1 ■ 105 I	N1.2 ■ 79 I	N1.3 ■ 52 H	N2.1 ■ 138 G	N2.2 ■ 121 G
N2.3 ■ 89 G	N3.1 ■ 177 G	N3.2 ■ 105 H	N3.3 ■ 52 E	N4.1 ■ 115 I	N4.2 ■ 85 G	N4.3 ■ 39 E	S1.1 ■ 92 E	S1.2 ■ 66 C	S1.3 ■ 36 A	S2.1 ■ 30 D	S2.2 ■ 26 A	S3.1 ■ 23 D	S3.2 ■ 20 A
S4.1 ■ 16 D	S4.2 ■ 16 A												

Product	DC (inch)	DC (Wire gauge size)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
M51C01/16	1/16	—	.0625	1.3/4	3"	.063	12	5996565
M51C05/64	5/64	—	.0781	2"	3.3/4	.078	12	5996328
M51C03/32	3/32	—	.0938	2.1/4	4.1/4	.094	12	5996444
M52CON40	—	N40	.0980	2.1/2	4.5/8	.098	12	5995712
M52CON39	—	N39	.0995	2.1/2	4.5/8	.100	12	5995706
M52CON36	—	N36	.1065	2.1/2	4.5/8	.106	12	5995704
M51C07/64	7/64	—	.1094	2.1/2	4.5/8	.109	12	5996373
M52CON35	—	N35	.1100	2.3/4	5.1/8	.110	12	5995702
M52CON34	—	N34	.1110	2.3/4	5.1/8	.111	12	5995701
M52CON33	—	N33	.1130	2.3/4	5.1/8	.113	12	5995699
M52CON32	—	N32	.1160	2.3/4	5.1/8	.116	12	5995697
M52CON31	—	N31	.1200	2.3/4	5.1/8	.120	12	5995695
M51C01/8	1/8	—	.1250	2.3/4	5.1/8	.125	12	5996577
M52CON30	—	N30	.1285	3"	5.3/8	.129	12	5995693
M52CON29	—	N29	.1360	3"	5.3/8	.136	12	5995838
M52CON28	—	N28	.1405	3"	5.3/8	.141	12	5995834
M51C09/64	9/64	—	.1406	3"	5.3/8	.141	12	5996391
M52CON27	—	N27	.1440	3"	5.3/8	.144	12	5995830
M52CON26	—	N26	.1470	3"	5.3/8	.147	12	5995827

Product	DC (inch)	DC (Wire gauge size)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
M52CON25	—	N25	.1495	3"	5.3/8	.149	12	5995817
M52CON24	—	N24	.1520	3"	5.3/8	.152	12	5995774
M51C05/32	5/32	—	.1563	3"	5.3/8	.156	12	5996324
M52CON22	—	N22	.1570	3.3/8	5.3/4	.157	12	5995737
M52CON21	—	N21	.1590	3.3/8	5.3/4	.159	12	5995710
M52CON20	—	N20	.1610	3.3/8	5.3/4	.161	12	5995688
M52CON19	—	N19	.1660	3.3/8	5.3/4	.166	12	5996431
M52CON18	—	N18	.1695	3.3/8	5.3/4	.170	12	5996427
M51C011/64	11/64	—	.1719	3.3/8	5.3/4	.172	12	5996586
M52CON17	—	N17	.1730	3.3/8	5.3/4	.173	12	5996425
M52CON16	—	N16	.1770	3.3/8	5.3/4	.177	12	5996421
M52CON15	—	N15	.1800	3.3/8	5.3/4	.180	12	5996419
M52CON14	—	N14	.1820	3.3/8	5.3/4	.182	12	5996416
M52CON13	—	N13	.1850	3.3/8	5.3/4	.185	12	5996414
M51C03/16	3/16	—	.1875	3.3/8	5.3/4	.188	12	5996440
M52CON12	—	N12	.1890	3.5/8	6"	.189	12	5996411
M52CON11	—	N11	.1910	3.5/8	6"	.191	12	5996408
M52CON10	—	N10	.1935	3.5/8	6"	.194	12	5996404
M52CON9	—	N9	.1960	3.5/8	6"	.196	12	5995720



Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(inch)	(inch)	(inch)	(inch)		
M52CON8	—	N8	.1990	3.5/8	6"	.199	12	5995718
M52CON7	—	N7	.2010	3.5/8	6"	.201	12	5995716
M51C013/64	13/64	—	.2031	3.5/8	6"	.203	12	5996596
M52CON5	—	N5	.2055	3.5/8	6"	.205	12	5995714
M52CON4	—	N4	.2090	3.5/8	6"	.209	12	5995708
M52CON3	—	N3	.2130	3.5/8	6"	.213	12	5995691
M51C07/32	7/32	—	.2188	3.5/8	6"	.219	12	5996369
M52CON2	—	N2	.2210	3.3/4	6.1/8	.221	12	5996437
M52CON1	—	N1	.2280	3.3/4	6.1/8	.228	12	5996395
M51C015/64	15/64	—	.2344	3.3/4	6.1/8	.234	12	5996609
M51C01/4	1/4	—	.2500	3.3/4	6.1/8	.250	12	5996574
M51C017/64	17/64	—	.2656	3.7/8	6.1/4	.266	6	5996618
M51C09/32	9/32	—	.2813	3.7/8	6.1/4	.281	6	5996387
M51C019/64	19/64	—	.2969	4"	6.3/8	.297	6	5996626
M51C05/16	5/16	—	.3125	4"	6.3/8	.313	6	5996323
M51C021/64	21/64	—	.3281	4.1/8	6.1/2	.328	6	5996634
M51C011/32	11/32	—	.3438	4.1/8	6.1/2	.344	6	5996583
M51C023/64	23/64	—	.3594	4.1/4	6.3/4	.359	6	5996642
M51C03/8	3/8	—	.3750	4.1/4	6.3/4	.375	6	5996449
M51C025/64	25/64	—	.3906	4.3/8	7"	.391	6	5996266
M51C013/32	13/32	—	.4063	4.3/8	7"	.406	6	5996592
M51C027/64	27/64	—	.4219	4.5/8	7.1/4	.422	6	5996354
M51C07/16	7/16	—	.4375	4.5/8	7.1/4	.438	6	5996365
M51C029/64	29/64	—	.4531	4.3/4	7.1/2	.453	6	5996434

Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(inch)	(inch)	(inch)	(inch)		
M51C015/32	15/32	—	.4688	4.3/4	7.1/2	.469	6	5996607
M51C031/64	31/64	—	.4844	4.3/4	7.3/4	.484	6	5996275
M51C01/2	1/2	—	.5000	4.3/4	7.3/4	.500	6	5996572
M51C033/64	33/64	—	.5156	4.3/4	8"	.516	1	5996280
M51C017/32	17/32	—	.5313	4.3/4	8"	.531	1	5996613
M51C035/64	35/64	—	.5469	4.7/8	8.1/4	.547	1	5996284
M51C09/16	9/16	—	.5625	4.7/8	8.1/4	.563	1	5996383
M51C037/64	37/64	—	.5781	4.7/8	8.3/4	.578	1	5996288
M51C019/32	19/32	—	.5938	4.7/8	8.3/4	.594	1	5996621
M51C039/64	39/64	—	.6094	4.7/8	8.3/4	.609	1	5996292
M51C05/8	5/8	—	.6250	4.7/8	8.3/4	.625	1	5996331
M51C041/64	41/64	—	.6406	5.1/8	9"	.641	1	5996299
M51C021/32	21/32	—	.6563	5.1/8	9"	.656	1	5996630
M51C011/16	11/16	—	.6875	5.3/8	9.1/4	.688	1	5996580
M51C045/64	45/64	—	.7031	5.5/8	9.1/2	.703	1	5996306
M51C023/32	23/32	—	.7188	5.5/8	9.1/2	.719	1	5996638
M51C047/64	47/64	—	.7344	5.7/8	9.3/4	.734	1	5996312
M51C03/4	3/4	—	.7500	5.7/8	9.3/4	.750	1	5996446
M51C049/64	49/64	—	.7656	6"	9.7/8	.766	1	5996321
M51C025/32	25/32	—	.7813	6"	9.7/8	.781	1	5996650
M51C013/16	13/16	—	.8125	6.1/8	10"	.813	1	5996589
M51C07/8	7/8	—	.8750	6.1/8	10"	.875	1	5996377
M51C01	1"	—	1.0000	6.3/8	11"	1.000	1	5996560



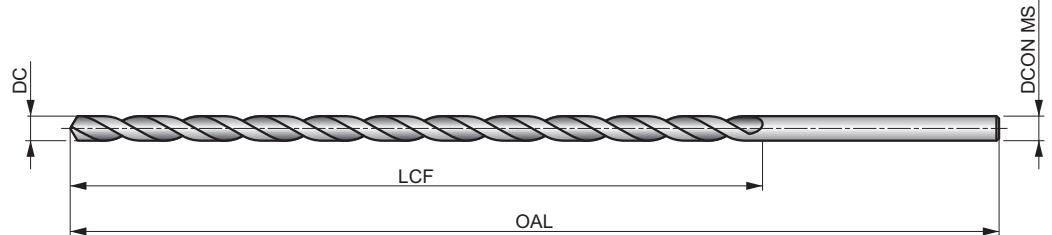
0860

PRECISION



HSS Extra Long Series Drill, 8" Overall Length, Bright Fractional Sizes

With conventional flutes and recommended for very deep holes or where the hole to be drilled is difficult to reach. A conventional 118° point, providing strength and saving money on easy regrinds. Bright finish makes it suitable for soft or non-ferrous materials. Less suitable for hand-held drilling.



HSS	ANSI	12×D
118°	Bright	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 69 E	P1.2 ■ 79 E	P1.3 ■ 82 E	P2.1 ■ 59 E	P2.2 ■ 52 C	P2.3 ■ 46 A	P3.1 ■ 30 C	P3.2 ■ 23 C	P3.3 ■ 20 A	P4.1 ■ 16 C	P4.2 ■ 13 A	P4.3 ■ 13 A	M1.1 ■ 39 C	M1.2 ■ 33 C
M2.1 ■ 36 C	M2.2 ■ 30 C	M3.1 ■ 16 E	M3.2 ■ 13 E	M3.3 ■ 13 A	M4.1 ■ 26 A	K1.1 ■ 72 G	K1.2 ■ 52 D	K1.3 ■ 39 D	K2.1 ■ 52 C	K2.2 ■ 43 C	K2.3 ■ 33 C	K3.1 ■ 46 C	K3.2 ■ 36 C
K3.3 ■ 30 C	K4.1 ■ 43 C	K4.2 ■ 33 C	K4.3 ■ 23 C	K4.4 ■ 20 C	K4.5 ■ 16 C	K5.1 ■ 49 C	K5.2 ■ 36 C	K5.3 ■ 30 C	N1.1 ■ 79 H	N1.2 ■ 59 H	N1.3 ■ 39 G	N2.1 ■ 112 F	N2.2 ■ 98 F
N2.3 ■ 72 F	N3.1 ■ 184 F	N3.2 ■ 108 G	N3.3 ■ 56 D	N4.1 ■ 98 H	N4.2 ■ 85 F	N4.3 ■ 33 D	S1.1 ■ 36 D	S1.2 ■ 30 B	S1.3 ■ 16 A	S2.1 ■ 16 C	S2.2 ■ 13 A	S3.1 ■ 13 C	S3.2 ■ 10 A
S4.1 ■ 10 C	S4.2 ■ 7 A												

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
08601/8	1/8	.1250	6"	8"	.125	1	6000278
08605/32	5/32	.1563	6"	8"	.156	1	6000129
08603/16	3/16	.1875	6"	8"	.188	1	6000117
08607/32	7/32	.2188	6"	8"	.219	1	6000137
08601/4	1/4	.2500	6"	8"	.250	1	6000274
08609/32	9/32	.2813	6"	8"	.281	1	6000140
08605/16	5/16	.3125	6"	8"	.313	1	6000124
086011/32	11/32	.3438	6"	8"	.344	1	6000099
08603/8	3/8	.3750	6"	8"	.375	1	6000119
086013/32	13/32	.4063	6"	8"	.406	1	6000103
08607/16	7/16	.4375	6"	8"	.438	1	6000134
086015/32	15/32	.4688	6"	8"	.469	1	6000106
08601/2	1/2	.5000	6"	8"	.500	1	6000271



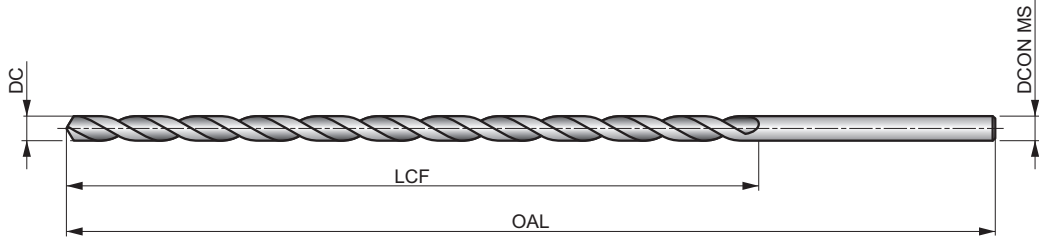
1290

PRECISION



HSS Extra Long Series Drill, 12" Overall Length, Bright Fractional Sizes

With conventional flutes and recommended for very deep holes or where the hole to be drilled is difficult to reach. A conventional 118° point, providing strength and saving money on easy regrinds. Bright finish makes it suitable for soft or non-ferrous materials. Less suitable for hand-held drilling.



HSS	ANSI	12×D
118°	Bright	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 69 E	P1.2 ■ 79 E	P1.3 ■ 82 E	P2.1 ■ 59 E	P2.2 ■ 52 C	P2.3 ■ 46 A	P3.1 ■ 30 C	P3.2 ■ 23 C	P3.3 ■ 20 A	P4.1 ■ 16 C	P4.2 ■ 13 A	P4.3 ■ 13 A	M1.1 ■ 39 C	M1.2 ■ 33 C
M2.1 ■ 36 C	M2.2 ■ 30 C	M3.1 ■ 16 E	M3.2 ■ 13 E	M3.3 ■ 13 A	M4.1 ■ 26 A	K1.1 ■ 72 G	K1.2 ■ 52 D	K1.3 ■ 39 D	K2.1 ■ 52 C	K2.2 ■ 43 C	K2.3 ■ 33 C	K3.1 ■ 46 C	K3.2 ■ 36 C
K3.3 ■ 30 C	K4.1 ■ 43 C	K4.2 ■ 33 C	K4.3 ■ 23 C	K4.4 ■ 20 C	K4.5 ■ 16 C	K5.1 ■ 49 C	K5.2 ■ 36 C	K5.3 ■ 30 C	N1.1 ■ 79 H	N1.2 ■ 59 H	N1.3 ■ 39 G	N2.1 ■ 112 F	N2.2 ■ 98 F
N2.3 ■ 72 F	N3.1 ■ 184 F	N3.2 ■ 108 G	N3.3 ■ 56 D	N4.1 ■ 98 H	N4.2 ■ 85 F	N4.3 ■ 33 D	S1.1 ■ 36 D	S1.2 ■ 30 B	S1.3 ■ 16 A	S2.1 ■ 16 C	S2.2 ■ 13 A	S3.1 ■ 13 C	S3.2 ■ 10 A
S4.1 ■ 10 C	S4.2 ■ 7 A												

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
12901/8	1/8	.1250	9"	12"	.125	1	6000178
12909/64	9/64	.1406	9"	12"	.141	1	5999809
12905/32	5/32	.1563	9"	12"	.156	1	5999924
129011/64	11/64	.1719	9"	12"	.172	1	6000189
12903/16	3/16	.1875	9"	12"	.188	1	6000244
129013/64	13/64	.2031	9"	12"	.203	1	6000199
12907/32	7/32	.2188	9"	12"	.219	1	5999971
129015/64	15/64	.2344	9"	12"	.234	1	6000205
12901/4	1/4	.2500	9"	12"	.250	1	6000174
129017/64	17/64	.2656	9"	12"	.266	1	6000211
12909/32	9/32	.2813	9"	12"	.281	1	5999978
129019/64	19/64	.2969	9"	12"	.297	1	6000217
12905/16	5/16	.3125	9"	12"	.313	1	5999880
129021/64	21/64	.3281	9"	12"	.328	1	6000224
129011/32	11/32	.3438	9"	12"	.344	1	6000186
129023/64	23/64	.3594	9"	12"	.359	1	6000233
12903/8	3/8	.3750	9"	12"	.375	1	6000249
129025/64	25/64	.3906	9"	12"	.391	1	6000236
129013/32	13/32	.4063	9"	12"	.406	1	6000196

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
129027/64	27/64	.4219	9"	12"	.422	1	6000238
12907/16	7/16	.4375	9"	12"	.438	1	5999969
129029/64	29/64	.4531	9"	12"	.453	1	6000241
129015/32	15/32	.4688	9"	12"	.469	1	6000202
129031/64	31/64	.4844	9"	12"	.484	1	6000252
12901/2	1/2	.5000	9"	12"	.500	1	6000165
129033/64	33/64	.5156	9"	12"	.516	1	6000256
129017/32	17/32	.5313	9"	12"	.531	1	6000208
129035/64	35/64	.5469	9"	12"	.547	1	6000265
12909/16	9/16	.5625	9"	12"	.563	1	5999974
129037/64	37/64	.5781	9"	12"	.578	1	5999804
129019/32	19/32	.5938	9"	12"	.594	1	6000214
129039/64	39/64	.6094	9"	12"	.609	1	5999840
12905/8	5/8	.6250	9"	12"	.625	1	5999964
129021/32	21/32	.6563	9"	12"	.656	1	6000220
129011/16	11/16	.6875	9"	12"	.688	1	6000181
129023/32	23/32	.7188	9"	12"	.719	1	6000230
12903/4	3/4	.7500	9"	12"	.750	1	6000247

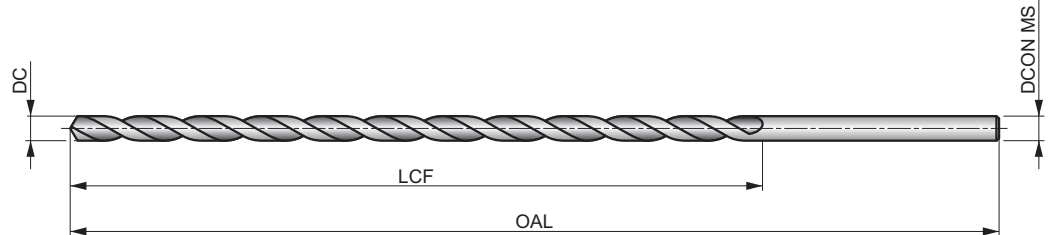


1511



HSS Extra Long Series Drill, 15" Overall Length

With conventional flutes and recommended for very deep holes or where the hole to be drilled is difficult to reach. A conventional 118° point, providing strength and saving money on easy regrinds. Bright finish makes it suitable for soft or non-ferrous materials. Less suitable for hand-held drilling.



HSS	ANSI	15×D
118°	Bright	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 69 E	P1.2 ■ 79 E	P1.3 ■ 82 E	P2.1 ■ 59 E	P2.2 ■ 52 C	P2.3 ■ 46 A	P3.1 ■ 30 C	P3.2 ■ 23 C	P3.3 ■ 20 A	P4.1 ■ 16 C	P4.2 ■ 13 A	P4.3 ■ 13 A	M1.1 ■ 39 C	M1.2 ■ 33 C
M2.1 ■ 36 C	M2.2 ■ 30 C	M3.1 ■ 16 E	M3.2 ■ 13 E	M3.3 ■ 13 A	M4.1 ■ 26 A	K1.1 ■ 72 G	K1.2 ■ 52 D	K1.3 ■ 39 D	K2.1 ■ 52 C	K2.2 ■ 43 C	K2.3 ■ 33 C	K3.1 ■ 46 C	K3.2 ■ 36 C
K3.3 ■ 30 C	K4.1 ■ 43 C	K4.2 ■ 33 C	K4.3 ■ 23 C	K4.4 ■ 20 C	K4.5 ■ 16 C	K5.1 ■ 49 C	K5.2 ■ 36 C	K5.3 ■ 30 C	N1.1 ■ 79 H	N1.2 ■ 59 H	N1.3 ■ 39 G	N2.1 ■ 112 F	N2.2 ■ 98 F
N2.3 ■ 72 F	N3.1 ■ 184 F	N3.2 ■ 108 G	N3.3 ■ 56 D	N4.1 ■ 98 H	N4.2 ■ 85 F	N4.3 ■ 33 D	S1.1 ■ 36 D	S1.2 ■ 30 B	S1.3 ■ 16 A	S2.1 ■ 16 C	S2.2 ■ 13 A	S3.1 ■ 13 C	S3.2 ■ 10 A
S4.1 ■ 10 C	S4.2 ■ 7 A												

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
15113/16	3/16	.1875	11"	15"	.188	1	5999851
15111/4	1/4	.2500	11"	15"	.250	1	5999817
15115/16	5/16	.3125	11"	15"	.313	1	5999862
151111/32	11/32	.3438	11"	15"	.344	1	5999823
15113/8	3/8	.3750	11"	15"	.375	1	5999858
15117/16	7/16	.4375	11"	15"	.438	1	5999869
15111/2	1/2	.5000	11"	15"	.500	1	5999814

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
151117/32	17/32	.5313	11"	15"	.531	1	5999833
15119/16	9/16	.5625	11"	15"	.563	1	5999875
15115/8	5/8	.6250	11"	15"	.625	1	5999865
151111/16	11/16	.6875	11"	15"	.688	1	5999820
15113/4	3/4	.7500	11"	15"	.750	1	5999854
151113/16	13/16	.8125	11"	15"	.813	1	5999827
15111	1"	1.0000	11"	15"	1.000	1	5999811



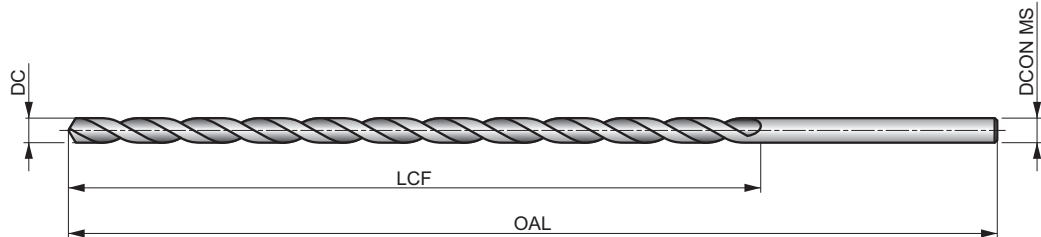
1813

PRECISION



HSS Extra Long Series Drill, 18" Overall Length

With conventional flutes and recommended for very deep holes or where the hole to be drilled is difficult to reach. A conventional 118° point, providing strength and saving money on easy regrinds. Bright finish makes it suitable for soft or non-ferrous materials. Less suitable for hand-held drilling.



HSS	ANSI	15×D
118°	Bright	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 69 E	P1.2 ■ 79 E	P1.3 ■ 82 E	P2.1 ■ 59 E	P2.2 ■ 52 C	P2.3 ■ 46 A	P3.1 ■ 30 C	P3.2 ■ 23 C	P3.3 ■ 20 A	P4.1 ■ 16 C	P4.2 ■ 13 A	P4.3 ■ 13 A	M1.1 ■ 139 C	M1.2 ■ 33 C
M2.1 ■ 36 C	M2.2 ■ 30 C	M3.1 ■ 16 E	M3.2 ■ 13 E	M3.3 ■ 13 A	M4.1 ■ 26 A	K1.1 ■ 72 G	K1.2 ■ 52 D	K1.3 ■ 39 D	K2.1 ■ 52 C	K2.2 ■ 43 C	K2.3 ■ 33 C	K3.1 ■ 46 C	K3.2 ■ 36 C
K3.3 ■ 30 C	K4.1 ■ 43 C	K4.2 ■ 33 C	K4.3 ■ 23 C	K4.4 ■ 20 C	K4.5 ■ 16 C	K5.1 ■ 49 C	K5.2 ■ 36 C	K5.3 ■ 30 C	N1.1 ■ 79 H	N1.2 ■ 59 H	N1.3 ■ 39 G	N2.1 ■ 112 F	N2.2 ■ 98 F
N2.3 ■ 72 F	N3.1 ■ 184 F	N3.2 ■ 108 G	N3.3 ■ 56 D	N4.1 ■ 98 H	N4.2 ■ 85 F	N4.3 ■ 33 D	S1.1 ■ 36 D	S1.2 ■ 30 B	S1.3 ■ 16 A	S2.1 ■ 16 C	S2.2 ■ 13 A	S3.1 ■ 13 C	S3.2 ■ 10 A
S4.1 ■ 10 C	S4.2 ■ 7 A												

Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)	(inch)		
18131/4	1/4	.2500	13"	18"	.250	1	5999892
181317/64	17/64	.2656	13"	18"	.266	1	5999928
18139/32	9/32	.2813	13"	18"	.281	1	6000288
18135/16	5/16	.3125	13"	18"	.313	1	6000434
181321/64	21/64	.3281	13"	18"	.328	1	5999945
181311/32	11/32	.3438	13"	18"	.344	1	5999900
181323/64	23/64	.3594	13"	18"	.359	1	5999951
18133/8	3/8	.3750	13"	18"	.375	1	6000306
181325/64	25/64	.3906	13"	18"	.391	1	5999957
181313/32	13/32	.4063	13"	18"	.406	1	5999909
181327/64	27/64	.4219	13"	18"	.422	1	5999960
18137/16	7/16	.4375	13"	18"	.438	1	6000281

Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)	(inch)		
181329/64	29/64	.4531	13"	18"	.453	1	5999967
181331/64	31/64	.4844	13"	18"	.484	1	6000337
18131/2	1/2	.5000	13"	18"	.500	1	5999888
181333/64	33/64	.5156	13"	18"	.516	1	6000375
181317/32	17/32	.5313	13"	18"	.531	1	5999920
18139/16	9/16	.5625	13"	18"	.563	1	6000286
18135/8	5/8	.6250	13"	18"	.625	1	6000438
181311/16	11/16	.6875	13"	18"	.688	1	5999896
18133/4	3/4	.7500	13"	18"	.750	1	6000275
181313/16	13/16	.8125	13"	18"	.813	1	5999904
18137/8	7/8	.8750	13"	18"	.875	1	6000284
18131	1"	1.0000	13"	18"	1.000	1	5999885

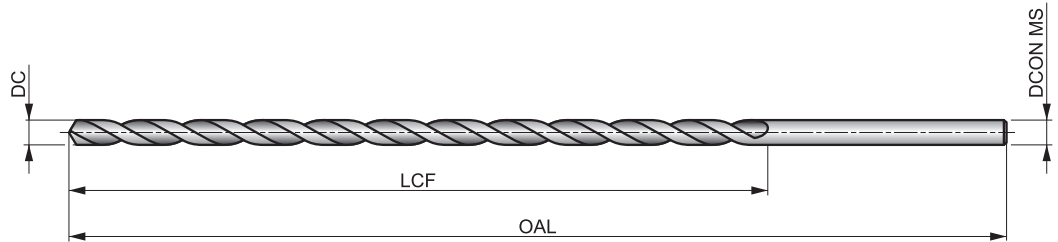


A125



HSS Extra Long Series Drill, Steam Tempered Finish

With Steam tempered finish and recommended for very deep or difficult to reach holes. Conventional 118° point, providing strength and saving money on easy regrinds. Suitable for many materials. Steam tempered finish retains cutting fluid and prevents chip to tool welding. Less suitable for hand-held drilling.



HSS	BS 328	10×D
118°	ST	
λ20-35°	R	DC h8

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 69 E	P1.2 ■ 79 E	P1.3 ■ 82 E	P2.1 ■ 59 E	P2.2 ■ 52 C	P2.3 ■ 46 A	P3.1 ■ 30 C	P3.2 ■ 23 C	P3.3 ■ 20 A	P4.1 ■ 16 C	P4.2 ■ 13 A	P4.3 ■ 13 A	M1.1 ■ 39 C	M1.2 ■ 33 C
M2.1 ■ 36 C	M2.2 ■ 30 C	M3.1 ■ 16 E	M3.2 ■ 13 E	M3.3 ■ 13 E	M4.1 ■ 26 A	K1.1 ■ 72 G	K1.2 ■ 52 D	K1.3 ■ 39 D	K2.1 ■ 52 C	K2.2 ■ 43 C	K2.3 ■ 33 C	K3.1 ■ 46 C	K3.2 ■ 36 C
K3.3 ■ 30 C	K4.1 ■ 43 C	K4.2 ■ 33 C	K4.3 ■ 23 C	K4.4 ■ 20 C	K4.5 ■ 16 C	K5.1 ■ 49 C	K5.2 ■ 36 C	K5.3 ■ 30 C	N1.1 ■ 79 H	N1.2 ■ 59 H	N1.3 ■ 39 G	N2.1 ■ 112 F	N2.2 ■ 98 F
N2.3 ■ 72 F	N3.1 ■ 184 F	N3.2 ■ 108 G	N3.3 ■ 56 D	N4.1 ■ 98 H	N4.2 ■ 85 F	N4.3 ■ 33 D	S1.1 ■ 36 D	S1.2 ■ 30 B	S1.3 ■ 16 A	S2.1 ■ 16 C	S2.2 ■ 13 A	S3.1 ■ 13 C	S3.2 ■ 10 A
S4.1 ■ 10 C	S4.2 ■ 7 A												

DC ≤ 2.2mm; 5/64" Bright.

Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A1251.4X160	—	1.40	.0551	100.0	160.0	1.40	1	5968821
A1251.5X125	—	1.50	.0591	80.0	125.0	1.50	1	5968826
A1251.5X160	—	1.50	.0591	100.0	160.0	1.50	1	5968831
A1251.16X125	1/16	1.59	.0625	80.0	125.0	1.59	1	5968843
A1251.16X160	1/16	1.59	.0625	100.0	160.0	1.59	1	5968847
A1251.8X160	—	1.80	.0709	100.0	160.0	1.80	1	5968837
A1255/64X125	5/64	1.98	.0781	80.0	125.0	1.98	1	5968854
A1255/64X160	5/64	1.98	.0781	100.0	160.0	1.98	1	5968859
A1252.0X125	—	2.00	.0787	80.0	125.0	2.00	1	5968514
A1252.0X160	—	2.00	.0787	100.0	160.0	2.00	1	5968519
A1252.2X160	—	2.20	.0866	100.0	160.0	2.20	1	5968523
A1253/32X125	3/32	2.38	.0938	80.0	125.0	2.38	1	5968649
A1253/32X160	3/32	2.38	.0938	100.0	160.0	2.38	1	5968651
A1252.5X125	—	2.50	.0984	80.0	125.0	2.50	1	5968528
A1252.5X160	—	2.50	.0984	100.0	160.0	2.50	1	5968533
A1257/64X125	7/64	2.78	.1094	80.0	125.0	2.78	1	5969172
A1257/64X160	7/64	2.78	.1094	100.0	160.0	2.78	1	5968960
A1253.0X160	—	3.00	.1181	100.0	160.0	3.00	1	5968611
A1253.0X200	—	3.00	.1181	150.0	200.0	3.00	1	5968616
A1253.0X250	—	3.00	.1181	200.0	250.0	3.00	1	5968620
A1251/8X160	1/8	3.18	.1250	100.0	160.0	3.18	1	5968186
A1251/8X200	1/8	3.18	.1250	150.0	200.0	3.18	1	5968038
A1251/8X250	1/8	3.18	.1250	200.0	250.0	3.18	1	5968043
A1251/8X315	1/8	3.18	.1250	250.0	310.0	3.18	1	5968048
A1253.3X160	—	3.30	.1299	100.0	160.0	3.30	1	5968624
A1253.5X160	—	3.50	.1378	100.0	160.0	3.50	1	5968627
A1253.5X200	—	3.50	.1378	150.0	200.0	3.50	1	5968630
A1253.5X250	—	3.50	.1378	200.0	250.0	3.50	1	5968633
A1259/64X160	9/64	3.57	.1406	100.0	160.0	3.57	1	5969048
A1259/64X200	9/64	3.57	.1406	150.0	200.0	3.57	1	5969052
A1259/64X315	9/64	3.57	.1406	250.0	310.0	3.57	1	5969063
A1255/32X160	5/32	3.97	.1563	100.0	160.0	3.97	1	5968834
A1255/32X200	5/32	3.97	.1563	150.0	200.0	3.97	1	5968839
A1255/32X250	5/32	3.97	.1563	200.0	250.0	3.97	1	5968844
A1255/32X315	5/32	3.97	.1563	250.0	310.0	3.97	1	5968849
A1254.0X160	—	4.00	.1575	100.0	160.0	4.00	1	5968727



Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A1254.0X200	—	4.00	.1575	150.0	200.0	4.00	1	5968731
A1254.0X250	—	4.00	.1575	200.0	250.0	4.00	1	5968737
A1254.0X315	—	4.00	.1575	250.0	310.0	4.00	1	5968740
A12511/64X160	11/64	4.37	.1719	100.0	160.0	4.37	1	5968123
A12511/64X200	11/64	4.37	.1719	150.0	200.0	4.37	1	5968127
A12511/64X315	11/64	4.37	.1719	250.0	310.0	4.37	1	5968129
A1254.5X160	—	4.50	.1772	100.0	160.0	4.50	1	5968743
A1254.5X200	—	4.50	.1772	150.0	200.0	4.50	1	5968747
A1254.5X250	—	4.50	.1772	200.0	250.0	4.50	1	5968751
A1254.5X315	—	4.50	.1772	250.0	310.0	4.50	1	5968756
A1253/16X160	3/16	4.76	.1875	100.0	160.0	4.76	1	5968636
A1253/16X200	3/16	4.76	.1875	150.0	200.0	4.76	1	5968638
A1253/16X250	3/16	4.76	.1875	200.0	250.0	4.76	1	5968643
A1253/16X315	3/16	4.76	.1875	250.0	310.0	4.76	1	5968645
A1253/16X400	3/16	4.76	.1875	300.0	400.0	4.76	1	5968647
A1255.0X160	—	5.00	.1969	100.0	160.0	5.00	1	5968762
A1255.0X200	—	5.00	.1969	150.0	200.0	5.00	1	5968767
A1255.0X250	—	5.00	.1969	200.0	250.0	5.00	1	5968777
A1255.0X315	—	5.00	.1969	250.0	310.0	5.00	1	5968781
A1255.0X400	—	5.00	.1969	300.0	400.0	5.00	1	5968786
A12513/64X200	13/64	5.16	.2031	150.0	200.0	5.16	1	5968151
A12513/64X250	13/64	5.16	.2031	200.0	250.0	5.16	1	5968153
A12513/64X315	13/64	5.16	.2031	250.0	310.0	5.16	1	5968154
A1255.5X200	—	5.50	.2165	150.0	200.0	5.50	1	5968791
A1255.5X250	—	5.50	.2165	200.0	250.0	5.50	1	5968797
A1255.5X315	—	5.50	.2165	250.0	310.0	5.50	1	5968802
A1257/32X200	7/32	5.56	.2188	150.0	200.0	5.56	1	5969164
A1257/32X250	7/32	5.56	.2188	200.0	250.0	5.56	1	5969167
A12515/64X200	15/64	5.95	.2344	150.0	200.0	5.95	1	5968170
A12515/64X315	15/64	5.95	.2344	250.0	310.0	5.95	1	5968546
A1256.0X200	—	6.00	.2362	150.0	200.0	6.00	1	5968874
A1256.0X250	—	6.00	.2362	200.0	250.0	6.00	1	5968883
A1256.0X315	—	6.00	.2362	250.0	310.0	6.00	1	5968886
A1256.0X400	—	6.00	.2362	300.0	400.0	6.00	1	5968890
A1251/4X200	1/4	6.35	.2500	150.0	200.0	6.35	1	5968146
A1251/4X250	1/4	6.35	.2500	200.0	250.0	6.35	1	5968169
A1251/4X315	1/4	6.35	.2500	250.0	310.0	6.35	1	5968174
A1251/4X400	1/4	6.35	.2500	300.0	400.0	6.35	1	5968178
A1251/4X500	1/4	6.35	.2500	400.0	460.0	6.35	1	5968181
A1256.5X200	—	6.50	.2559	150.0	200.0	6.50	1	5968894
A1256.5X250	—	6.50	.2559	200.0	250.0	6.50	1	5968897
A1256.5X315	—	6.50	.2559	250.0	310.0	6.50	1	5968899
A12517/64X200	17/64	6.75	.2656	150.0	200.0	6.75	1	5968660
A12517/64X250	17/64	6.75	.2656	200.0	250.0	6.75	1	5968665
A12517/64X500	17/64	6.75	.2656	400.0	460.0	6.75	1	5968667
A1257.0X200	—	7.00	.2756	150.0	200.0	7.00	1	5968902
A1257.0X250	—	7.00	.2756	200.0	250.0	7.00	1	5968904
A1257.0X315	—	7.00	.2756	250.0	310.0	7.00	1	5968906
A1257.5X200	—	7.50	.2953	150.0	200.0	7.50	1	5968908
A1257.5X250	—	7.50	.2953	200.0	250.0	7.50	1	5968912
A1257.5X315	—	7.50	.2953	250.0	310.0	7.50	1	5968954
A1255/16X200	5/16	7.94	.3125	150.0	200.0	7.94	1	5968807
A1255/16X250	5/16	7.94	.3125	200.0	250.0	7.94	1	5968811
A1255/16X315	5/16	7.94	.3125	250.0	310.0	7.94	1	5968815
A1255/16X500	5/16	7.94	.3125	400.0	460.0	7.94	1	5968829

Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A1258.0X250	—	8.00	.3150	200.0	250.0	8.00	1	5968970
A1258.0X315	—	8.00	.3150	250.0	310.0	8.00	1	5968974
A1258.0X400	—	8.00	.3150	300.0	400.0	8.00	1	5968977
A12521/64X315	21/64	8.33	.3281	250.0	310.0	8.33	1	5968542
A1258.5X250	—	8.50	.3346	200.0	250.0	8.50	1	5968981
A1258.5X315	—	8.50	.3346	250.0	310.0	8.50	1	5968985
A12511/32X250	11/32	8.73	.3438	200.0	250.0	8.73	1	5968113
A12511/32X315	11/32	8.73	.3438	250.0	310.0	8.73	1	5968116
A12511/32X400	11/32	8.73	.3438	300.0	400.0	8.73	1	5968119
A12511/32X500	11/32	8.73	.3438	400.0	460.0	8.73	1	5968122
A1259.0X250	—	9.00	.3543	200.0	250.0	9.00	1	5968990
A1259.0X315	—	9.00	.3543	250.0	310.0	9.00	1	5968995
A1259.0X400	—	9.00	.3543	300.0	400.0	9.00	1	5969000
A1259.5X250	—	9.50	.3740	200.0	250.0	9.50	1	5969010
A1259.5X315	—	9.50	.3740	250.0	310.0	9.50	1	5969015
A1253/8X250	3/8	9.52	.3750	200.0	250.0	9.52	1	5968657
A1253/8X315	3/8	9.52	.3750	250.0	310.0	9.52	1	5968658
A1253/8X400	3/8	9.52	.3750	300.0	400.0	9.52	1	5968659
A1253/8X500	3/8	9.52	.3750	400.0	460.0	9.52	1	5968662
A12510.0X250	—	10.00	.3937	200.0	250.0	10.00	1	5968061
A12510.0X315	—	10.00	.3937	250.0	310.0	10.00	1	5968066
A12510.0X400	—	10.00	.3937	300.0	400.0	10.00	1	5968071
A12513/32X250	13/32	10.32	.4063	200.0	250.0	10.32	1	5968142
A12513/32X315	13/32	10.32	.4063	250.0	310.0	10.32	1	5968144
A12510.5X250	—	10.50	.4134	200.0	250.0	10.50	1	5968076
A12510.5X315	—	10.50	.4134	250.0	310.0	10.50	1	5968080
A12510.5X400	—	10.50	.4134	300.0	400.0	10.50	1	5968085
A12511.0X250	—	11.00	.4331	200.0	250.0	11.00	1	5968094
A12511.0X315	—	11.00	.4331	250.0	310.0	11.00	1	5968099
A12511.0X400	—	11.00	.4331	300.0	400.0	11.00	1	5968102
A1257/16X250	7/16	11.11	.4375	200.0	250.0	11.11	1	5969004
A1257/16X315	7/16	11.11	.4375	250.0	310.0	11.11	1	5969057
A1257/16X400	7/16	11.11	.4375	300.0	400.0	11.11	1	5969113
A12529/64X315	29/64	11.51	.4531	250.0	310.0	11.51	1	5968597
A12512.0X250	—	12.00	.4724	200.0	250.0	12.00	1	5968130
A12512.0X315	—	12.00	.4724	250.0	310.0	12.00	1	5968132
A12512.0X400	—	12.00	.4724	300.0	400.0	12.00	1	5968134
A12531/64X315	31/64	12.30	.4844	250.0	310.0	12.30	1	5968720
A1251/2X250	1/2	12.70	.5000	200.0	250.0	12.70	1	5968857
A1251/2X315	1/2	12.70	.5000	250.0	310.0	12.70	1	5968030
A1251/2X400	1/2	12.70	.5000	300.0	400.0	12.70	1	5968089
A12513.0X315	—	13.00	.5118	250.0	310.0	13.00	1	5968136
A12513.0X400	—	13.00	.5118	300.0	400.0	13.00	1	5968138
A12517/32X315	17/32	13.49	.5313	250.0	310.0	13.49	1	5968603
A12514.0X315	—	14.00	.5512	250.0	310.0	14.00	1	5968156
A12514.0X400	—	14.00	.5512	300.0	400.0	14.00	1	5968158
A1259/16X315	9/16	14.29	.5625	250.0	310.0	14.29	1	5969020
A12537/64X315	37/64	14.68	.5781	250.0	310.0	14.68	1	5968916
A12519/32X315	19/32	15.08	.5938	250.0	310.0	15.08	1	5968669
A12519/32X500	19/32	15.08	.5938	400.0	460.0	15.08	1	5968671
A1255/8X315	5/8	15.88	.6250	250.0	310.0	15.88	1	5968864
A1255/8X500	5/8	15.88	.6250	400.0	460.0	15.88	1	5968869
A12511/16X315	11/16	17.46	.6875	250.0	310.0	17.46	1	5968107
A1253/4X315	3/4	19.05	.7500	250.0	310.0	19.05	1	5968653
A1253/4X500	3/4	19.05	.7500	400.0	460.0	19.05	1	5968655

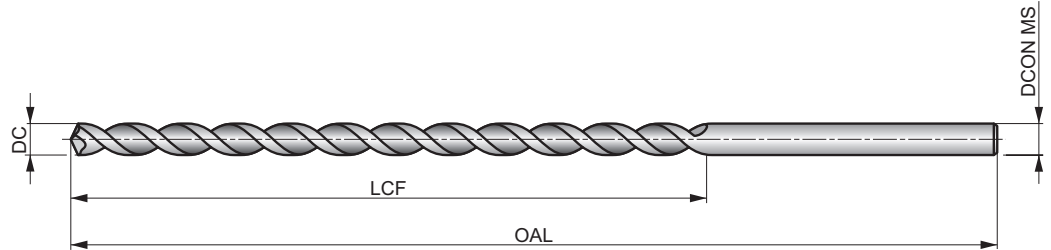


QC0860P



HSS Extra Long Series Parabolic Drill, 8" Overall Length, Bright Fractional

The extra-long parabolic flute form makes this an excellent choice for deeper holes in long chipping materials. The self-centering 135° split point allows for easier penetration with low thrust force. Bright finish makes it suitable for soft or non-ferrous materials. Not suitable for hand-held drilling or thin materials.



HSS	ANSI	10×D
135°	Bright	
λ > 35°		

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 89 F	P1.2 ■ 98 F	P1.3 ■ 102 F	P2.1 ■ 75 F	P2.2 ■ 66 H	P2.3 ■ 59 D	P3.1 ■ 69 F	P3.2 ■ 56 F	P3.3 ■ 46 D	P4.1 ■ 39 F	P4.2 ■ 33 D	M1.1 ■ 121 H	M1.2 ■ 102 H	M2.1 ■ 108 H
M2.2 ■ 89 H	M3.1 ■ 56 F	M3.2 ■ 49 F	M3.3 ■ 46 D	M4.1 ■ 49 D	K1.1 ■ 151 H	K1.2 ■ 112 H	K1.3 ■ 85 H	K2.1 ■ 98 F	K2.2 ■ 79 F	K3.1 ■ 85 F	K3.2 ■ 66 F	K4.1 ■ 79 F	K4.2 ■ 59 F
K5.1 ■ 89 F	K5.2 ■ 69 F	N1.1 ■ 348 H	N1.2 ■ 262 H	N1.3 ■ 174 H	N3.1 ■ 135 H	N3.2 ■ 79 H	N4.1 ■ 151 D	N4.2 ■ 125 D					

Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)	(inch)		
QC0860P1/8	1/8	.1250	6"	8"	.125	1	5995727
QC0860P9/64	9/64	.1406	6"	8"	.141	1	5995814
QC0860P5/32	5/32	.1563	6"	8"	.156	1	5995797
QC0860P11/64	11/64	.1719	6"	8"	.172	1	5995734
QC0860P3/16	3/16	.1875	6"	8"	.188	1	5995781
QC0860P13/64	13/64	.2031	6"	8"	.203	1	5995744
QC0860P7/32	7/32	.2188	6"	8"	.219	1	5995806
QC0860P15/64	15/64	.2344	6"	8"	.234	1	5995748
QC0860P1/4	1/4	.2500	6"	8"	.250	1	5995725
QC0860P17/64	17/64	.2656	6"	8"	.266	1	5995752
QC0860P9/32	9/32	.2813	6"	8"	.281	1	5995810

Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)	(inch)		
QC0860P5/16	5/16	.3125	6"	8"	.313	1	5995794
QC0860P21/64	21/64	.3281	6"	8"	.328	1	5995758
QC0860P11/32	11/32	.3438	6"	8"	.344	1	5995730
QC0860P23/64	23/64	.3594	6"	8"	.359	1	5995762
QC0860P3/8	3/8	.3750	6"	8"	.375	1	5995786
QC0860P25/64	25/64	.3906	6"	8"	.391	1	5995766
QC0860P13/32	13/32	.4063	6"	8"	.406	1	5995740
QC0860P7/16	7/16	.4375	6"	8"	.438	1	5995803
QC0860P15/32	15/32	.4688	6"	8"	.469	1	5995746
QC0860P31/64	31/64	.4844	6"	8"	.484	1	5995790
QC0860P1/2	1/2	.5000	6"	8"	.500	1	5995722

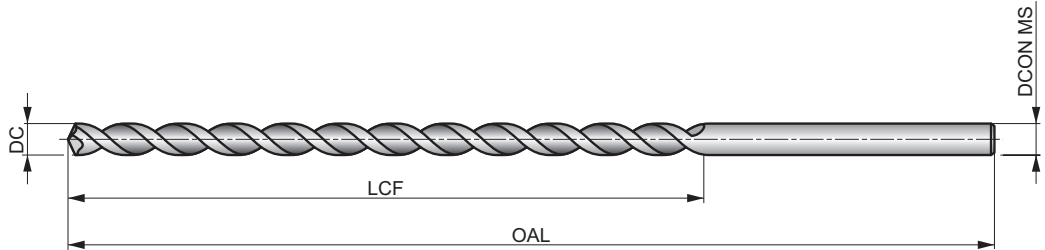


QC1290P



HSS Extra Long Series Parabolic Drill, 12" Overall Length, Bright Fractional

The extra-long parabolic flute form makes this an excellent choice for deeper holes in long chipping materials. The self-centering 135° split point allows for easier penetration with low thrust force. Bright finish makes it suitable for soft or non-ferrous materials. Not suitable for hand-held drilling or thin materials.



HSS	ANSI	10×D
135°	Bright	
λ>35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 89 F	P1.2 ■ 98 F	P1.3 ■ 102 F	P2.1 ■ 75 F	P2.2 ■ 66 H	P2.3 ■ 59 D	P3.1 ■ 69 F	P3.2 ■ 56 F	P3.3 ■ 46 D	P4.1 ■ 39 F	P4.2 ■ 33 D	M1.1 ■ 121 H	M1.2 ■ 102 H	M2.1 ■ 108 H
M2.2 ■ 89 H	M3.1 ■ 56 F	M3.2 ■ 49 F	M3.3 ■ 46 D	M4.1 ■ 49 D	K1.1 ■ 151 H	K1.2 ■ 112 H	K1.3 ■ 85 H	K2.1 ■ 98 F	K2.2 ■ 79 F	K3.1 ■ 85 F	K3.2 ■ 66 F	K4.1 ■ 79 F	K4.2 ■ 59 F
K5.1 ■ 89 F	K5.2 ■ 69 F	N1.1 ■ 348 H	N1.2 ■ 262 H	N1.3 ■ 174 H	N3.1 ■ 135 H	N3.2 ■ 79 H	N4.1 ■ 151 D	N4.2 ■ 125 D					

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
QC1290P1/8	1/8	.1250	9"	12"	.125	1	5996453
QC1290P5/32	5/32	.1563	9"	12"	.156	1	5996456
QC1290P11/64	11/64	.1719	9"	12"	.172	1	5996504
QC1290P3/16	3/16	.1875	9"	12"	.188	1	5996441
QC1290P13/64	13/64	.2031	9"	12"	.203	1	5996550
QC1290P7/32	7/32	.2188	9"	12"	.219	1	5996460
QC1290P15/64	15/64	.2344	9"	12"	.234	1	5996558
QC1290P1/4	1/4	.2500	9"	12"	.250	1	5996417
QC1290P17/64	17/64	.2656	9"	12"	.266	1	5996562
QC1290P9/32	9/32	.2813	9"	12"	.281	1	5996462
QC1290P5/16	5/16	.3125	9"	12"	.313	1	5996451
QC1290P21/64	21/64	.3281	9"	12"	.328	1	5996426
QC1290P11/32	11/32	.3438	9"	12"	.344	1	5996476
QC1290P23/64	23/64	.3594	9"	12"	.359	1	5996429
QC1290P3/8	3/8	.3750	9"	12"	.375	1	5996445
QC1290P25/64	25/64	.3906	9"	12"	.391	1	5996430
QC1290P13/32	13/32	.4063	9"	12"	.406	1	5996542
QC1290P7/16	7/16	.4375	9"	12"	.438	1	5996458
QC1290P15/32	15/32	.4688	9"	12"	.469	1	5996554
QC1290P1/2	1/2	.5000	9"	12"	.500	1	5995821



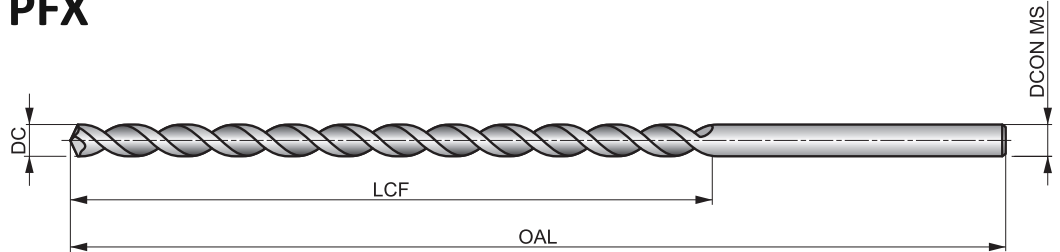
A976



PFX HSS-E (5% Cobalt) Extra Long Series Drill (DIN 1869 Series 1), Bright Finish

Recommended for drilling very deep holes or for applications where extra reach is needed. Specially designed parabolic flutes eliminate the need to drill deep holes in short steps (pecking). A 130° point. Centering with a short 3xD PFX drill is recommended (to keep same DC tolerance). Suitable for drilling many materials.

PFX



HSS-E	DIN 1869-1	15×D
130°	Bright	
λ>35°	R	DC h8

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■95 C	P1.2 ■108 C	P1.3 ■112 C	P2.1 ■82 C	P2.2 ■72 C	P2.3 ■62 A	P3.1 ■59 C	P3.2 ■46 C	P3.3 ■39 A	P4.1 ■36 C	P4.2 ■30 A	P4.3 ■23 A	M1.1 ■52 B	M1.2 ■46 B
M2.1 ■49 B	M2.2 ■39 B	M3.1 ■26 C	M3.2 ■23 C	M3.3 ■20 C	M4.1 ■26 A	K2.1 ■66 C	K2.2 ■52 C	K2.3 ■43 A	K3.1 ■56 C	K3.2 ■43 C	K3.3 ■36 A	K4.1 ■52 C	K4.2 ■39 C
K4.3 ■30 A	K4.4 ■26 A	K4.5 ■20 A	K5.1 ■59 C	K5.2 ■46 C	K5.3 ■36 A	N3.1 ■198 D	S1.1 ■49 C	S1.2 ■36 A	S1.3 ■16 A				

Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A9761.5	—	1.50	.0591	75.0	115.0	1.50	1	5972589
A9762.0X125	—	2.00	.0787	85.0	125.0	2.00	1	5972618
A9762.1X125	—	2.10	.0827	85.0	125.0	2.10	1	5972622
A9762.2X135	—	2.20	.0866	90.0	135.0	2.20	1	5972625
A9762.3X135	—	2.30	.0906	90.0	135.0	2.30	1	5972629
A9762.4X140	—	2.40	.0945	95.0	140.0	2.40	1	5972633
A9762.5X140	—	2.50	.0984	95.0	140.0	2.50	1	5972642
A9762.6X140	—	2.60	.1024	95.0	140.0	2.60	1	5972646
A9762.7X150	—	2.70	.1063	100.0	150.0	2.70	1	5972650
A9762.8X150	—	2.80	.1102	100.0	150.0	2.80	1	5972654
A9762.9X150	—	2.90	.1142	100.0	150.0	2.90	1	5972658
A9763.0X150	—	3.00	.1181	100.0	150.0	3.00	1	5972662
A9763.1X155	—	3.10	.1220	105.0	155.0	3.10	1	5972666
A9761/8	1/8	3.18	.1250	105.0	155.0	3.18	1	5972595
A9763.2X155	—	3.20	.1260	105.0	155.0	3.20	1	5972670
A9763.3X155	—	3.30	.1299	105.0	155.0	3.30	1	5972674
A9763.4X165	—	3.40	.1339	115.0	165.0	3.40	1	5972676
A9763.5X165	—	3.50	.1378	115.0	165.0	3.50	1	5972686
A9763.6X165	—	3.60	.1417	115.0	165.0	3.60	1	5973077
A9763.7X165	—	3.70	.1457	115.0	165.0	3.70	1	5973111
A9763.8X175	—	3.80	.1496	120.0	175.0	3.80	1	5973167
A9763.9X175	—	3.90	.1535	120.0	175.0	3.90	1	5973215
A9765/32	5/32	3.97	.1563	120.0	175.0	3.97	1	5973155

Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A9764.0X175	—	4.00	.1575	120.0	175.0	4.00	1	5973276
A9764.1X175	—	4.10	.1614	120.0	175.0	4.10	1	5973279
A9764.2X175	—	4.20	.1654	120.0	175.0	4.20	1	5973284
A9764.3X185	—	4.30	.1693	125.0	185.0	4.30	1	5973081
A9764.5X185	—	4.50	.1772	125.0	185.0	4.50	1	5973086
A9764.6X185	—	4.60	.1811	125.0	185.0	4.60	1	5973089
A9764.7X185	—	4.70	.1850	125.0	185.0	4.70	1	5973093
A9763/16	3/16	4.76	.1875	135.0	195.0	4.76	1	5973264
A9764.8X195	—	4.80	.1890	135.0	195.0	4.80	1	5973096
A9765.0X195	—	5.00	.1969	135.0	195.0	5.00	1	5973102
A9765.1X195	—	5.10	.2008	135.0	195.0	5.10	1	5973104
A9765.2X195	—	5.20	.2047	135.0	195.0	5.20	1	5973107
A9765.3X195	—	5.30	.2087	135.0	195.0	5.30	1	5973115
A9765.5X205	—	5.50	.2165	140.0	205.0	5.50	1	5973124
A9765.7X205	—	5.70	.2244	140.0	205.0	5.70	1	5973135
A9765.8X205	—	5.80	.2283	140.0	205.0	5.80	1	5973140
A9765.9X205	—	5.90	.2323	140.0	205.0	5.90	1	5973145
A9766.0X205	—	6.00	.2362	140.0	205.0	6.00	1	5973160
A9766.1X215	—	6.10	.2402	150.0	215.0	6.10	1	5973171
A9766.2X215	—	6.20	.2441	150.0	215.0	6.20	1	5973176
A9761/4	1/4	6.35	.2500	150.0	215.0	6.35	1	5972593
A9766.4X215	—	6.40	.2520	150.0	215.0	6.40	1	5973185
A9766.5X215	—	6.50	.2559	150.0	215.0	6.50	1	5973190



Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A9766.7X215	—	6.70	.2638	150.0	215.0	6.70	1	5973197
A9766.8X225	—	6.80	.2677	155.0	225.0	6.80	1	5973201
A9767.0X225	—	7.00	.2756	155.0	225.0	7.00	1	5973210
A9767.5X225	—	7.50	.2953	155.0	225.0	7.50	1	5973220
A9765/16	5/16	7.94	.3125	165.0	240.0	7.94	1	5973150
A9768.0X240	—	8.00	.3150	165.0	240.0	8.00	1	5973230
A9768.5X240	—	8.50	.3346	165.0	240.0	8.50	1	5973235
A97611/32	11/32	8.73	.3438	175.0	250.0	8.73	1	5972606
A9769.0X250	—	9.00	.3543	175.0	250.0	9.00	1	5973239
A9769.5X250	—	9.50	.3740	175.0	250.0	9.50	1	5973243

¹⁾ Dormer Standard.

Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)	(mm)		
A9763/8	3/8	9.52	.3750	185.0	265.0	9.52	1	5973272
A97610.0X265	—	10.00	.3937	185.0	265.0	10.00	1	5972597
A97610.5	—	10.50	.4134	185.0	265.0	10.50	1	5972599
A97611.0	—	11.00	.4331	195.0	280.0	11.00	1	5972601
A9767/16	7/16	11.11	.4375	195.0	280.0	11.11	1	5973225
A97611.5	—	11.50	.4528	195.0	280.0	11.50	1	5972602
A97612.0	—	12.00	.4724	205.0	295.0	12.00	1	5972608
A97612.5	—	12.50	.4921	205.0	295.0	12.50	1	5972610
A97613.0	—	13.00	.5118	205.0	295.0	13.00	1	5972613
A97614.0 ¹⁾	—	14.00	.5512	215.0	310.0	14.00	1	5972615



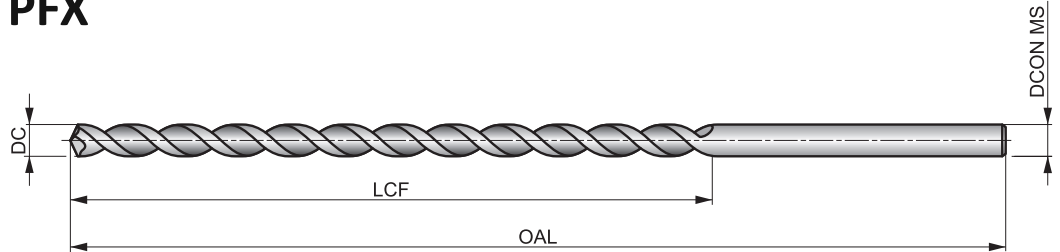
A977



PFX HSS-E (5% Cobalt) Extra Long Drill (DIN 1869 Series 2), Bright Finish

Recommended for drilling very deep holes and in applications where extra reach is needed. Specially designed parabolic flutes eliminate the need to drill deep holes in short steps (pecking). A 130° point. Centering with a short 3xD PFX drill is recommended (to keep same DC tolerance). Suitable for drilling many materials.

PFX



HSS-E	DIN 1869-2	20xD
130°	Bright	
$\lambda > 35^\circ$	R	DC h8

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ▣95 B	P1.2 ▣108 B	P1.3 ▣112 B	P2.1 ▣82 B	P2.2 ▣72 B	P2.3 ▣62 A	P3.1 ▣59 B	P3.2 ▣46 B	P3.3 ▣39 A	P4.1 ▣36 B	P4.2 ▣30 A	P4.3 ▣23 A	M1.1 ▣52 B	M1.2 ▣46 B
M2.1 ▣49 B	M2.2 ▣39 B	M3.1 ▣26 B	M3.2 ▣23 B	M3.3 ▣20 B	M4.1 ▣26 A	K2.1 ▣66 B	K2.2 ▣52 B	K2.3 ▣43 A	K3.1 ▣56 B	K3.2 ▣43 B	K3.3 ▣36 A	K4.1 ▣52 B	K4.2 ▣39 B
K4.3 ▣30 A	K4.4 ▣26 A	K4.5 ▣20 A	K5.1 ▣59 B	K5.2 ▣46 B	K5.3 ▣36 A	N3.1 ▣98 C	S1.1 ▣49 B	S1.2 ▣36 A	S1.3 ▣16 A				

Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A9771.5 ¹⁾	—	1.50	.0591	100.0	150.0	1.50	1	5973247
A9771/16 ¹⁾	1/16	1.59	.0625	100.0	150.0	1.59	1	5973251
A9772.0 ¹⁾	—	2.00	.0787	110.0	160.0	2.00	1	5973305
A9773/32 ¹⁾	3/32	2.38	.0938	115.0	170.0	2.38	1	5973122
A9773.0X190	—	3.00	.1181	130.0	190.0	3.00	1	5973110
A9771/8	1/8	3.18	.1250	135.0	200.0	3.18	1	5973260
A9773.5X210	—	3.50	.1378	145.0	210.0	3.50	1	5973114
A9774.0X220	—	4.00	.1575	150.0	220.0	4.00	1	5973127
A9774.5X235	—	4.50	.1772	160.0	235.0	4.50	1	5973132
A9773/16	3/16	4.76	.1875	170.0	245.0	4.76	1	5973118
A9775.0X245	—	5.00	.1969	170.0	245.0	5.00	1	5973136
A9775.5X260	—	5.50	.2165	180.0	260.0	5.50	1	5973141
A9776.0X260	—	6.00	.2362	180.0	260.0	6.00	1	5973148
A9771/4	1/4	6.35	.2500	190.0	275.0	6.35	1	5973255

Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A9776.5X275	—	6.50	.2559	190.0	275.0	6.50	1	5973153
A9777.0X290	—	7.00	.2756	200.0	290.0	7.00	1	5973163
A9778.0X305	—	8.00	.3150	210.0	305.0	8.00	1	5973172
A9778.5X305	—	8.50	.3346	210.0	305.0	8.50	1	5973177
A9779.0X320	—	9.00	.3543	220.0	320.0	9.00	1	5973181
A9779.5X320	—	9.50	.3740	220.0	320.0	9.50	1	5973186
A97710.0X340	—	10.00	.3937	235.0	340.0	10.00	1	5973268
A97710.5	—	10.50	.4134	235.0	340.0	10.50	1	5973103
A97711.0	—	11.00	.4331	250.0	365.0	11.00	1	5973158
A97711.5	—	11.50	.4528	250.0	365.0	11.50	1	5973209
A97712.0	—	12.00	.4724	260.0	375.0	12.00	1	5973295
A97712.5	—	12.50	.4921	260.0	375.0	12.50	1	5973299
A97713.0	—	13.00	.5118	260.0	375.0	13.00	1	5973300
A97714.0 ¹⁾	—	14.00	.5512	270.0	390.0	14.00	1	5973303

¹⁾ Dormer Standard.



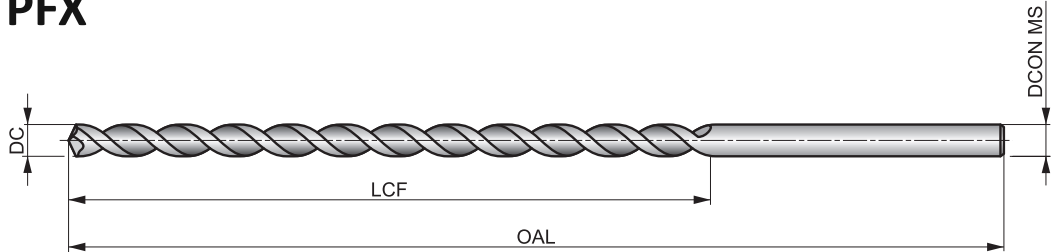
A978



PFX HSS-E (5% Cobalt) Extra Long Drill (DIN 1869 Series 3), Bright Finish

Recommended for extra deep holes and in applications where extra reach is needed. Specially designed parabolic flutes eliminate the need to drill deep holes in short steps (pecking). A 130° point. Centering with a short 3xD PFX drill is recommended (to keep same DC tolerance). Suitable for drilling many materials.

PFX



HSS-E	DIN 1869-3	25×D
130°	Bright	
λ>35°	R	DC h8

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 195 A	P1.2 108 A	P1.3 112 A	P2.1 82 A	P2.2 72 A	P2.3 62 A	P3.1 59 A	P3.2 46 A	P3.3 39 A	P4.1 36 A	P4.2 30 A	P4.3 23 A	M1.1 52 A	M1.2 46 A
M2.1 49 A	M2.2 39 A	M3.1 26 A	M3.2 23 A	M3.3 20 A	M4.1 26 A	K2.1 66 A	K2.2 52 A	K2.3 43 A	K3.1 56 A	K3.2 43 A	K3.3 36 A	K4.1 52 A	K4.2 39 A
K4.3 30 A	K4.4 26 A	K4.5 20 A	K5.1 59 A	K5.2 46 A	K5.3 36 A	N3.1 98 B	S1.1 49 A	S1.2 36 A	S1.3 16 A				

Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A9783.0 ¹⁾	—	3.00	.1181	160.0	240.0	3.00	1	5973199
A9783.5X265	—	3.50	.1378	180.0	265.0	3.50	1	5973204
A9784.0X280	—	4.00	.1575	190.0	280.0	4.00	1	5973212
A9784.5X295	—	4.50	.1772	200.0	295.0	4.50	1	5973216
A9785.0X315	—	5.00	.1969	210.0	315.0	5.00	1	5973221
A9786.0X330	—	6.00	.2362	225.0	330.0	6.00	1	5973231
A9781/4	1/4	6.35	.2500	235.0	350.0	6.35	1	5973191
A9786.5X350	—	6.50	.2559	235.0	350.0	6.50	1	5973238
A9787.0X370	—	7.00	.2756	250.0	370.0	7.00	1	5973242
A9788.0X390	—	8.00	.3150	265.0	390.0	8.00	1	5973250
A9788.5X390	—	8.50	.3346	265.0	390.0	8.50	1	5973254
A9789.0X410	—	9.00	.3543	280.0	410.0	9.00	1	5973262
A9789.5X410	—	9.50	.3740	280.0	410.0	9.50	1	5973265
A97810.0X430	—	10.00	.3937	295.0	430.0	10.00	1	5973194

¹⁾ Dormer Standard.



Material code (BMC)	HSS	HSS	HSS	HSS-E	HSS														
Basic standard group (BSG)	ANSI	DORNER	ANSI	ANSI	ANSI														
Usable length (ULDR)	4xD	4xD	4xD	4xD	4xD														
Application angle	118°	118°	118°	118°	118°														
Coating	Bright ST	ST	Bright ST	ST bronze	Bright ST														
Shank																			
Spiral form	λ 20-35°	λ 20-35°	λ 20-35°	λ 20-35°	λ 20-35°														
Hand (Cutting direction)	R	R	R	R	R														
Cooling (CSP)																			
Product Family Code	R56	A170	R57	R56CO	R58														
PSF cutting diameters range	33/64 - 1.1/2	13.00 - 1.1/4	33/64 - 1.1/2	33/64 - 1"	1.1/32 - 2"														
	216	218	220	222	223														
P	P1	■	■	■	■	■													
	P2	■	■	■	■	■													
	P3	■	■	■	■	■													
	P4	■	■	■	■	■													
M	M1	■	■	■	■	■													
	M2	■	■	■	■	■													
	M3	■	■	■	■	■													
	M4	■	■	■	■	■													
K	K1	■	■	■	■	■													
	K2	■	■	■	■	■													
	K3	■	■	■	■	■													
	K4	■	■	■	■	■													
	K5	■	■	■	■	■													
N	N1	■	■	■	■	■													
	N2	■	■	■	■	■													
	N3	■	■	■	■	■													
	N4	■	■	■	■	■													
	N5	■	■	■	■	■													
S	S1	■	■	■	■	■													
	S2	■	■	■	■	■													
	S3	■	■	■	■	■													
	S4	■	■	■	■	■													
H	H1																		
	H2																		
	H3																		
	H4																		

■ Primary use □ Possible use

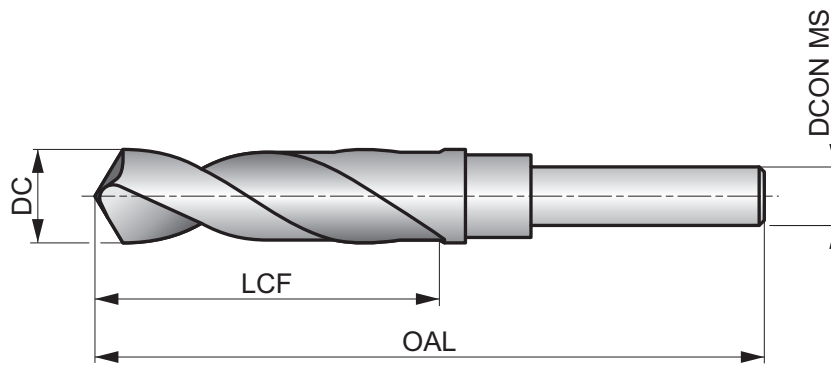


R56



HSS General Purpose S&D Reduced 1/2" Shank Drill, Steam and Bright Finish

General duty Silver & Deming (S&D) drill with 1/2" reduced shank for drilling larger diameters with limited chucking capacity. A standard easy to regrind 118° point and conventional flute form with steam tempered and bright finish make it suitable for drilling most materials.



HSS	ANSI	4xD
118°	Bright ST	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 108 H	P1.2 121 H	P1.3 125 H	P2.1 92 H	P2.2 82 F	P2.3 72 D	P3.1 62 E	P3.2 49 E	P3.3 43 D	P4.1 36 E	P4.2 33 D	P4.3 26 C	M1.1 69 D	M1.2 56 D
M2.1 59 D	M2.2 49 D	M3.1 26 F	M3.2 23 F	M3.3 20 B	M4.1 23 B	K1.1 89 H	K1.2 66 E	K1.3 49 E	K2.1 75 D	K2.2 62 D	K2.3 49 D	K3.1 69 D	K3.2 52 D
K3.3 43 D	K4.1 62 D	K4.2 46 D	K4.3 36 D	K4.4 30 D	K4.5 26 D	K5.1 72 D	K5.2 52 D	K5.3 43 D	N1.1 108 I	N1.2 82 I	N1.3 56 H	N2.1 138 G	N2.2 121 G
N2.3 89 G	N3.1 184 G	N3.2 108 H	N3.3 56 F	N4.1 98 I	N4.2 92 G	N4.3 46 E	S1.1 56 E	S1.2 30 C	S1.3 16 A	S2.1 16 D	S2.2 13 A	S3.1 13 D	S3.2 10 A
S4.1 10 D	S4.2 7 A												

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
R5633/64	33/64	.5156	3"	6"	1/2	1	5999983
R5617/32	17/32	.5313	3"	6"	1/2	1	5999953
R5635/64	35/64	.5469	3"	6"	1/2	1	5999986
R569/16	9/16	.5625	3"	6"	1/2	1	5999536
R5637/64	37/64	.5781	3"	6"	1/2	1	5999989
R5619/32	19/32	.5938	3"	6"	1/2	1	5999956
R5639/64	39/64	.6094	3"	6"	1/2	1	5999992
R565/8	5/8	.6250	3"	6"	1/2	1	5999628
R5641/64	41/64	.6406	3"	6"	1/2	1	5999995
R5621/32	21/32	.6563	3"	6"	1/2	1	5999959
R5643/64	43/64	.6719	3"	6"	1/2	1	6000001
R5611/16	11/16	.6875	3"	6"	1/2	1	5999944
R5645/64	45/64	.7031	3"	6"	1/2	1	5999527
R5623/32	23/32	.7188	3"	6"	1/2	1	5999962
R5647/64	47/64	.7344	3"	6"	1/2	1	5999550
R563/4	3/4	.7500	3"	6"	1/2	1	5999976
R5649/64	49/64	.7656	3"	6"	1/2	1	5999584
R5625/32	25/32	.7813	3"	6"	1/2	1	5999968
R5651/64	51/64	.7969	3"	6"	1/2	1	5999670

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
R5613/16	13/16	.8125	3"	6"	1/2	1	5999947
R5653/64	53/64	.8281	3"	6"	1/2	1	5999677
R5627/32	27/32	.8438	3"	6"	1/2	1	5999970
R5655/64	55/64	.8594	3"	6"	1/2	1	5999681
R567/8	7/8	.8750	3"	6"	1/2	1	5999534
R5657/64	57/64	.8906	3"	6"	1/2	1	5999685
R5629/32	29/32	.9063	3"	6"	1/2	1	5999973
R5659/64	59/64	.9219	3"	6"	1/2	1	5999690
R5615/16	15/16	.9375	3"	6"	1/2	1	5999950
R5661/64	61/64	.9531	3"	6"	1/2	1	5999530
R5631/32	31/32	.9688	3"	6"	1/2	1	5999980
R5663/64	63/64	.9844	3"	6"	1/2	1	5999532
R561	1"	1.0000	3"	6"	1/2	1	6000010
R561.1/64	1.1/64	1.0156	3"	6"	1/2	1	5999856
R561.1/32	1.1/32	1.0313	3"	6"	1/2	1	5999847
R561.3/64	1.3/64	1.0469	3"	6"	1/2	1	5999903
R561.1/16	1.1/16	1.0625	3"	6"	1/2	1	6000013
R561.5/64	1.5/64	1.0781	3"	6"	1/2	1	5999919
R561.3/32	1.3/32	1.0938	3"	6"	1/2	1	5999899



Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
R561.7/64	1.7/64	1.1094	3"	6"	1/2	1	5999935
R561.1/8	1.1/8	1.1250	3"	6"	1/2	1	5999860
R561.9/64	1.9/64	1.1406	3"	6"	1/2	1	5999941
R561.5/32	1.5/32	1.1563	3"	6"	1/2	1	5999915
R561.11/64	1.11/64	1.1719	3"	6"	1/2	1	5999868
R561.3/16	1.3/16	1.1875	3"	6"	1/2	1	5999895
R561.13/64	1.13/64	1.2031	3"	6"	1/2	1	5999876
R561.7/32	1.7/32	1.2188	3"	6"	1/2	1	5999927
R561.15/64	1.15/64	1.2344	3"	6"	1/2	1	5999891

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
R561.1/4	1.1/4	1.2500	3"	6"	1/2	1	5999852
R561.9/32	1.9/32	1.2813	3"	6"	1/2	1	5999938
R561.5/16	1.5/16	1.3125	3"	6"	1/2	1	5999911
R561.11/32	1.11/32	1.3438	3"	6"	1/2	1	5999864
R561.3/8	1.3/8	1.3750	3"	6"	1/2	1	5999908
R561.13/32	1.13/32	1.4063	3"	6"	1/2	1	5999871
R561.7/16	1.7/16	1.4375	3"	6"	1/2	1	5999923
R561.15/32	1.15/32	1.4688	3"	6"	1/2	1	5999881
R561.1/2	1.1/2	1.5000	3"	6"	1/2	1	5999842



A=Styles in Set, B=No. in Set, C=Diameters in Set.

Product	A	B	C	Pack Qty	MID
C8R56SET	R56	8	1/2" Reduced Shank, 9/16 - 1" x 16ths, S&D	1	5995703



A=Styles in Set, B=No. in Set, C=Diameters in Set.

Product	A	B	C	Pack Qty	MID
C33R56SET ¹⁾	R56	33	1/2" Reduced Shank, 1/2 - 1" x 64ths, S&D	1	5995647

¹⁾ 1/2" R56 drill is a straight shank, not a reduced shank

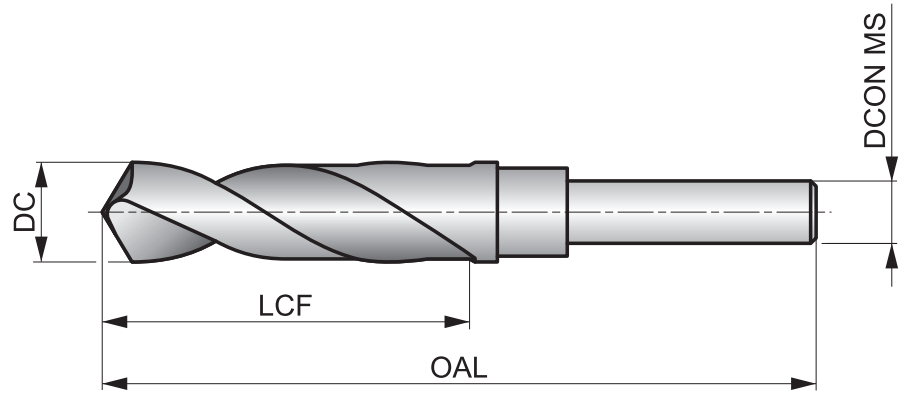


A170



HSS Reduced Shank Drill, Steam Tempered Finish

A 1/2 inch parallel shank allows this drill, even with a large cutting diameter, to be clamped in conventional, hand-held power tools. A 118° point makes regrinding easy. Steam tempered finish retains cutting fluid and prevents chip to tool welding. Suitable for drilling many materials.



HSS	DORMER	4xD
118°	ST	
λ 20-35°	R	DC h8

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 108 H	P1.2 ■ 121 H	P1.3 ■ 125 H	P2.1 ■ 92 H	P2.2 ■ 82 F	P2.3 ■ 72 D	P3.1 ■ 62 E	P3.2 ■ 49 E	P3.3 ■ 43 D	P4.1 ■ 36 E	P4.2 ■ 33 D	P4.3 ■ 26 C	M1.1 ■ 69 D	M1.2 ■ 56 D
M2.1 ■ 59 D	M2.2 ■ 49 D	M3.1 ■ 26 F	M3.2 ■ 23 F	M3.3 ■ 20 F	M4.1 ■ 23 B	K1.1 ■ 89 H	K1.2 ■ 66 E	K1.3 ■ 49 E	K2.1 ■ 75 D	K2.2 ■ 62 D	K2.3 ■ 49 D	K3.1 ■ 69 D	K3.2 ■ 52 D
K3.3 ■ 43 D	K4.1 ■ 62 D	K4.2 ■ 46 D	K4.3 ■ 36 D	K4.4 ■ 30 D	K4.5 ■ 26 D	K5.1 ■ 72 D	K5.2 ■ 52 D	K5.3 ■ 43 D	N1.1 ■ 108 I	N1.2 ■ 82 I	N1.3 ■ 56 H	N2.1 ■ 138 G	N2.2 ■ 121 G
N2.3 ■ 89 G	N3.1 ■ 184 G	N3.2 ■ 108 H	N3.3 ■ 56 F	N4.1 ■ 98 I	N4.2 ■ 92 G	N4.3 ■ 46 E	S1.1 ■ 56 E	S1.2 ■ 30 C	S1.3 ■ 16 A	S2.1 ■ 16 D	S2.2 ■ 13 A	S3.1 ■ 13 D	S3.2 ■ 10 A
S4.1 ■ 10 D	S4.2 ■ 7 A												

Product	DC	DC	DC	LCF	OAL	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(inch)	(inch)	(mm)	(mm)			
A17013.0	—	13.00	.5118	—	—	83.0	156.0	12.70	1	5968873
A17033/64	33/64	13.10	.5156	3.1/8	6"	79.4	152.4	12.70	1	5968798
A17017/32	17/32	13.49	.5313	3.1/8	6"	79.4	152.4	12.70	1	5968708
A17013.5	—	13.50	.5315	—	—	83.0	156.0	12.70	1	5968882
A17035/64	35/64	13.89	.5469	3.1/8	6"	79.4	152.4	12.70	1	5968804
A17014.0	—	14.00	.5512	—	—	83.0	156.0	12.70	1	5968889
A1709/16	9/16	14.29	.5625	3.1/8	6"	79.4	152.4	12.70	1	5969849
A17014.5	—	14.50	.5709	—	—	83.0	156.0	12.70	1	5968893
A17037/64	37/64	14.68	.5781	3.1/8	6"	79.4	152.4	12.70	1	5968809
A17015.0	—	15.00	.5906	—	—	83.0	156.0	12.70	1	5968688
A17019/32	19/32	15.08	.5938	3.1/8	6"	79.4	152.4	12.70	1	5968725
A17039/64	39/64	15.48	.6094	3.1/8	6"	79.4	152.4	12.70	1	5968814
A17015.5	—	15.50	.6102	—	—	83.0	156.0	12.70	1	5968690
A1705/8	5/8	15.88	.6250	3.1/8	6"	79.4	152.4	12.70	1	5968848
A17016.0	—	16.00	.6299	—	—	84.0	157.0	12.70	1	5968695
A17041/64	41/64	16.27	.6406	3.1/8	6"	79.4	152.4	12.70	1	5968823
A17016.5	—	16.50	.6496	—	—	84.0	157.0	12.70	1	5968699
A17021/32	21/32	16.67	.6563	3.1/8	6"	79.4	152.4	12.70	1	5968738
A17017.0	—	17.00	.6693	—	—	84.0	157.0	12.70	1	5968702



Product	DC	DC	DC	LCF	OAL	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(inch)	(inch)	(mm)	(mm)	(mm)		
A17043/64	43/64	17.07	.6719	3.1/8	6"	79.4	152.4	12.70	1	5968828
A17011/16	11/16	17.46	.6875	3.1/8	6"	79.4	152.4	12.70	1	5968819
A17017.5	—	17.50	.6890	—	—	84.0	157.0	12.70	1	5968705
A17045/64	45/64	17.86	.7031	3.1/8	6"	79.4	152.4	12.70	1	5968833
A17018.0	—	18.00	.7087	—	—	84.0	157.0	12.70	1	5968711
A17023/32	23/32	18.26	.7188	3.1/8	6"	79.4	152.4	12.70	1	5968754
A17018.5	—	18.50	.7283	—	—	84.0	157.0	12.70	1	5968713
A17047/64	47/64	18.65	.7344	3.1/8	6"	79.4	152.4	12.70	1	5968838
A17019.0	—	19.00	.7480	—	—	84.0	157.0	12.70	1	5968719
A1703/4	3/4	19.05	.7500	3.1/8	6"	79.4	152.4	12.70	1	5968788
A17049/64	49/64	19.45	.7656	3"	6"	76.2	152.4	12.70	1	5968842
A17019.5	—	19.50	.7677	—	—	81.0	158.0	12.70	1	5968722
A17025/32	25/32	19.84	.7813	3"	6"	76.2	152.4	12.70	1	5968771
A17020.0	—	20.00	.7874	—	—	81.0	158.0	12.70	1	5968729
A17051/64	51/64	20.24	.7969	3"	6"	76.2	152.4	12.70	1	5968853
A17013/16	13/16	20.64	.8125	3"	6"	76.2	152.4	12.70	1	5968885
A17021.0	—	21.00	.8268	—	—	82.0	158.0	12.70	1	5968733
A17053/64	53/64	21.03	.8281	3"	6"	76.2	152.4	12.70	1	5968858
A17027/32	27/32	21.43	.8437	3"	6"	76.2	152.4	12.70	1	5968776
A17055/64	55/64	21.83	.8594	3"	6"	76.2	152.4	12.70	1	5968862
A17022.0	—	22.00	.8661	—	—	82.0	158.0	12.70	1	5968745
A1707/8	7/8	22.22	.8750	3"	6"	76.2	152.4	12.70	1	5969793
A17023.0	—	23.00	.9055	—	—	82.0	158.0	12.70	1	5968749
A17029/32	29/32	23.02	.9063	3"	6"	76.2	152.4	12.70	1	5968783
A17059/64	59/64	23.42	.9219	3"	6"	76.2	152.4	12.70	1	5968878
A17015/16	15/16	23.81	.9375	3"	6"	76.2	152.4	12.70	1	5968692
A17024.0	—	24.00	.9449	—	—	83.0	159.0	12.70	1	5968758
A17031/32	31/32	24.61	.9688	3"	6"	76.2	152.4	12.70	1	5968793
A17025.0	—	25.00	.9843	—	—	83.0	159.0	12.70	1	5968766
A1701	1"	25.40	1.0000	3"	6"	76.2	152.4	12.70	1	5969709
A1701.1/32	1.1/32	26.19	1.0313	3"	6"	76.2	152.4	12.70	1	5969721
A1701.1/16	1.1/16	26.99	1.0625	3"	6"	76.2	152.4	12.70	1	5969714
A1701.1/8	1.1/8	28.58	1.1250	3"	6"	76.2	152.4	12.70	1	5969733
A1701.3/16	1.3/16	30.16	1.1875	3"	6"	76.2	152.4	12.70	1	5969769
A1701.1/4	1.1/4	31.75	1.2500	3"	6"	76.2	152.4	12.70	1	5969725



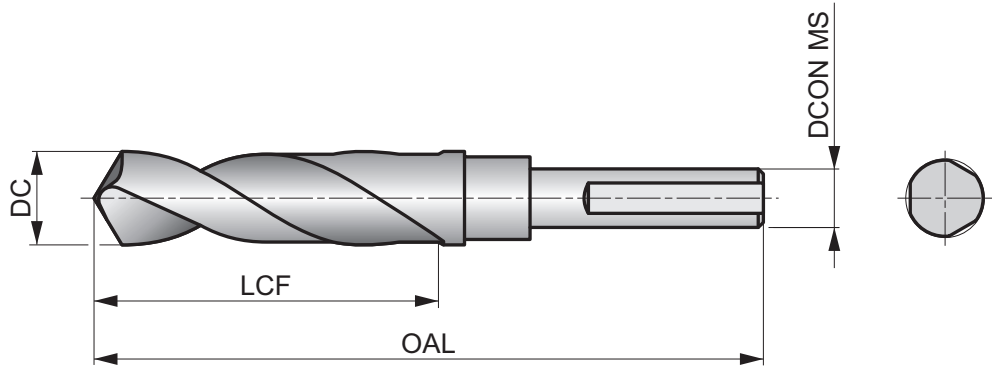
R57



HSS General Purpose S&D Tri-Flat Reduced 1/2" Shank Drill, Steam and Bright

Silver & Deming 1/2" reduced shank diameter for drilling larger diameters (up to 1-1/2"), ideal for portable drilling and drill presses that have a maximum chuck capacity of 1/2". The 3 flats on the shank allows for non-slip chucking. Conventional flute form with steam tempered finish and 118° point.

HSS	ANSI	4xD
118°	Bright ST	
λ 20-35°	R	



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 108 H	P1.2 121 H	P1.3 125 H	P2.1 92 H	P2.2 82 F	P2.3 72 D	P3.1 62 E	P3.2 49 E	P3.3 43 D	P4.1 36 E	P4.2 33 D	P4.3 26 C	M1.1 69 D	M1.2 56 D
M2.1 59 D	M2.2 49 D	M3.1 26 F	M3.2 23 F	M3.3 20 B	M4.1 23 B	K1.1 89 H	K1.2 66 E	K1.3 49 E	K2.1 75 D	K2.2 62 D	K2.3 49 D	K3.1 69 D	K3.2 52 D
K3.3 43 D	K4.1 62 D	K4.2 46 D	K4.3 36 D	K4.4 30 D	K4.5 26 D	K5.1 72 D	K5.2 52 D	K5.3 43 D	N1.1 108 I	N1.2 82 I	N1.3 56 H	N2.1 138 G	N2.2 121 G
N2.3 89 G	N3.1 184 G	N3.2 108 H	N3.3 56 F	N4.1 98 I	N4.2 92 G	N4.3 46 E	S1.1 56 E	S1.2 30 C	S1.3 16 A	S2.1 16 D	S2.2 13 A	S3.1 13 D	S3.2 10 A
S4.1 10 D	S4.2 7 A												

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
R5733/64	33/64	.5156	3"	6"	1/2	1	6000017
R5717/32	17/32	.5313	3"	6"	1/2	1	5999640
R5735/64	35/64	.5469	3"	6"	1/2	1	6000047
R579/16	9/16	.5625	3"	6"	1/2	1	6000045
R5737/64	37/64	.5781	3"	6"	1/2	1	6000080
R5719/32	19/32	.5938	3"	6"	1/2	1	5999644
R5739/64	39/64	.6094	3"	6"	1/2	1	6000123
R575/8	5/8	.6250	3"	6"	1/2	1	6000021
R5741/64	41/64	.6406	3"	6"	1/2	1	6000171
R5721/32	21/32	.6563	3"	6"	1/2	1	5999647
R5743/64	43/64	.6719	3"	6"	1/2	1	6000180
R5711/16	11/16	.6875	3"	6"	1/2	1	5999624
R5745/64	45/64	.7031	3"	6"	1/2	1	6000184
R5723/32	23/32	.7188	3"	6"	1/2	1	5999651
R5747/64	47/64	.7344	3"	6"	1/2	1	6000188
R573/4	3/4	.7500	3"	6"	1/2	1	5999667
R5749/64	49/64	.7656	3"	6"	1/2	1	6000192
R5725/32	25/32	.7813	3"	6"	1/2	1	5999655
R5751/64	51/64	.7969	3"	6"	1/2	1	6000023

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
R5713/16	13/16	.8125	3"	6"	1/2	1	5999631
R5753/64	53/64	.8281	3"	6"	1/2	1	6000026
R5727/32	27/32	.8438	3"	6"	1/2	1	5999659
R5755/64	55/64	.8594	3"	6"	1/2	1	6000029
R577/8	7/8	.8750	3"	6"	1/2	1	6000043
R5757/64	57/64	.8906	3"	6"	1/2	1	6000032
R5729/32	29/32	.9063	3"	6"	1/2	1	5999663
R5759/64	59/64	.9219	3"	6"	1/2	1	6000035
R5715/16	15/16	.9375	3"	6"	1/2	1	5999636
R5761/64	61/64	.9531	3"	6"	1/2	1	6000038
R5731/32	31/32	.9688	3"	6"	1/2	1	5999675
R5763/64	63/64	.9844	3"	6"	1/2	1	6000041
R571	1"	1.0000	3"	6"	1/2	1	5999538
R571.1/64	1.1/64	1.0156	3"	6"	1/2	1	5999548
R571.1/32	1.1/32	1.0313	3"	6"	1/2	1	5999545
R571.3/64	1.3/64	1.0469	3"	6"	1/2	1	5999580
R571.1/16	1.1/16	1.0625	3"	6"	1/2	1	5999540
R571.5/64	1.5/64	1.0781	3"	6"	1/2	1	5999598
R571.3/32	1.3/32	1.0938	3"	6"	1/2	1	5999577



Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
R571.7/64	1.7/64	1.1094	3"	6"	1/2	1	5999610
R571.1/8	1.1/8	1.1250	3"	6"	1/2	1	5999552
R571.9/64	1.9/64	1.1406	3"	6"	1/2	1	5999620
R571.5/32	1.5/32	1.1563	3"	6"	1/2	1	5999594
R571.11/64	1.11/64	1.1719	3"	6"	1/2	1	5999557
R571.3/16	1.3/16	1.1875	3"	6"	1/2	1	5999573
R571.13/64	1.13/64	1.2031	3"	6"	1/2	1	5999562
R571.7/32	1.7/32	1.2188	3"	6"	1/2	1	5999606
R571.15/64	1.15/64	1.2344	3"	6"	1/2	1	5999570

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
R571.1/4	1.1/4	1.2500	3"	6"	1/2	1	5999546
R571.9/32	1.9/32	1.2813	3"	6"	1/2	1	5999616
R571.5/16	1.5/16	1.3125	3"	6"	1/2	1	5999590
R571.11/32	1.11/32	1.3438	3"	6"	1/2	1	5999554
R571.3/8	1.3/8	1.3750	3"	6"	1/2	1	5999588
R571.13/32	1.13/32	1.4063	3"	6"	1/2	1	5999559
R571.7/16	1.7/16	1.4375	3"	6"	1/2	1	5999602
R571.15/32	1.15/32	1.4688	3"	6"	1/2	1	5999566
R571.1/2	1.1/2	1.5000	3"	6"	1/2	1	5999543



A=Styles in Set, B=No. in Set, C=Diameters in Set.

Product	A	B	C	Pack Qty	MID
C8R57SET	R57	8	1/2" Reduced Shank, 9/16 - 1" x 16ths, S&D	1	5995726



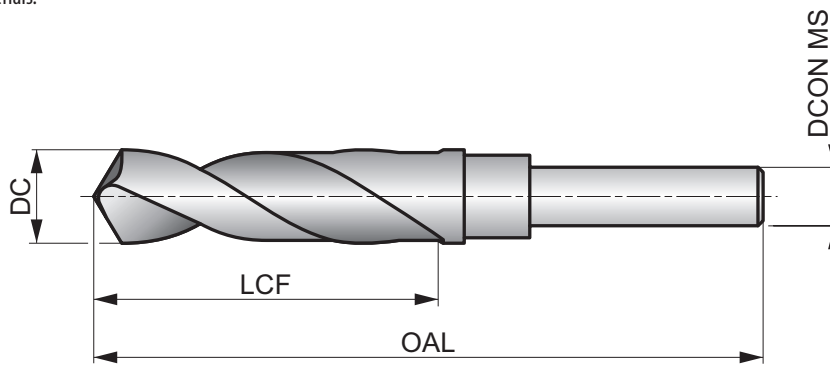
R56CO



HSS-E HD S&D Reduced 1/2" Shank Drill, Steam and Bronze Tempered Surface Finish

Heavy duty cobalt Silver & Deming (S&D) drill with 1/2" reduced shank for drilling a larger diameter with limited chucking capacity. A 118° split point makes it self-centering while a dual steam and bronze tempered finish coupled with the cobalt substrate greatly improves tool life making it suitable for most materials.

HSS-E	ANSI	4xD
118°	ST Bronze	
20-35°	R	



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 108 H	P1.2 121 H	P1.3 125 H	P2.1 92 H	P2.2 82 F	P2.3 72 D	P3.1 62 E	P3.2 49 E	P3.3 43 D	P4.1 36 E	P4.2 33 D	P4.3 26 C	M1.1 69 D	M1.2 56 D
M2.1 159 D	M2.2 49 D	M3.1 26 F	M3.2 23 F	M3.3 20 B	M4.1 23 B	K1.1 89 H	K1.2 66 E	K1.3 49 E	K2.1 75 D	K2.2 62 D	K2.3 49 D	K3.1 69 D	K3.2 52 D
K3.3 43 D	K4.1 62 D	K4.2 46 D	K4.3 36 D	K4.4 30 D	K4.5 26 D	K5.1 72 D	K5.2 52 D	K5.3 43 D	N1.1 108 I	N1.2 82 I	N1.3 56 H	N2.1 138 G	N2.2 121 G
N2.3 89 G	N3.1 184 G	N3.2 108 H	N3.3 56 F	N4.1 98 I	N4.2 92 G	N4.3 46 E	S1.1 56 E	S1.2 30 C	S1.3 16 A	S2.1 16 D	S2.2 13 A	S3.1 13 D	S3.2 10 A
S4.1 10 D	S4.2 7 A												

Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)	(inch)		
R56C033/64	33/64	.5156	3"	6"	1/2	1	6000402
R56C017/32	17/32	.5313	3"	6"	1/2	1	6000364
R56C035/64	35/64	.5469	3"	6"	1/2	1	6000409
R56C09/16	9/16	.5625	3"	6"	1/2	1	6000007
R56C037/64	37/64	.5781	3"	6"	1/2	1	6000413
R56C019/32	19/32	.5938	3"	6"	1/2	1	6000367
R56C039/64	39/64	.6094	3"	6"	1/2	1	6000417
R56C05/8	5/8	.6250	3"	6"	1/2	1	6000439
R56C041/64	41/64	.6406	3"	6"	1/2	1	6000420
R56C021/32	21/32	.6563	3"	6"	1/2	1	6000372
R56C043/64	43/64	.6719	3"	6"	1/2	1	6000424
R56C011/16	11/16	.6875	3"	6"	1/2	1	6000350
R56C045/64	45/64	.7031	3"	6"	1/2	1	6000428
R56C023/32	23/32	.7188	3"	6"	1/2	1	6000377
R56C047/64	47/64	.7344	3"	6"	1/2	1	6000432
R56C03/4	3/4	.7500	3"	6"	1/2	1	6000394

Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)	(inch)		
R56C049/64	49/64	.7656	3"	6"	1/2	1	6000435
R56C025/32	25/32	.7813	3"	6"	1/2	1	6000382
R56C051/64	51/64	.7969	3"	6"	1/2	1	6000442
R56C013/16	13/16	.8125	3"	6"	1/2	1	6000353
R56C053/64	53/64	.8281	3"	6"	1/2	1	6000448
R56C027/32	27/32	.8438	3"	6"	1/2	1	6000386
R56C055/64	55/64	.8594	3"	6"	1/2	1	5999837
R56C07/8	7/8	.8750	3"	6"	1/2	1	6000004
R56C057/64	57/64	.8906	3"	6"	1/2	1	5999886
R56C029/32	29/32	.9063	3"	6"	1/2	1	6000390
R56C059/64	59/64	.9219	3"	6"	1/2	1	5999931
R56C015/16	15/16	.9375	3"	6"	1/2	1	6000356
R56C061/64	61/64	.9531	3"	6"	1/2	1	5999965
R56C031/32	31/32	.9688	3"	6"	1/2	1	6000398
R56C063/64	63/64	.9844	3"	6"	1/2	1	5999998
R56C01	1"	1.0000	3"	6"	1/2	1	6000347

A=Styles in Set, B=No. in Set, C=Diameters in Set.



Product	A	B	C	Pack Qty	MID
C8R56COSET	R56CO	8	1/2" Reduced Shank, 9/16 - 1" x 16ths, S&D	1	5995682

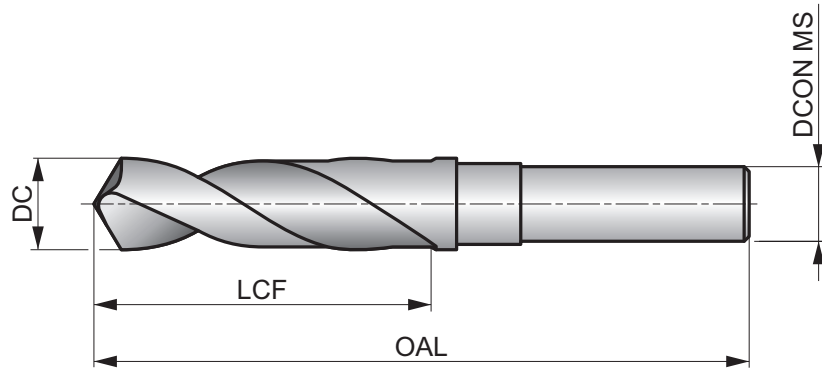


R58



HSS General Purpose S&D Reduced 3/4" Shank Drill, Steam and Bright Finish

A more rigid Silver & Deming drill with larger 3/4" reduced shank diameter for drilling diameters up to 2" with a maximum chuck capacity of 3/4". Conventional flute form with steam tempered finish and 118° point makes this drill suitable for most materials.



HSS	ANSI	4×D
118°	Bright ST	
λ20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 189 F	P1.2 198 F	P1.3 102 F	P2.1 75 F	P2.2 66 H	P2.3 59 D	P3.1 69 F	P3.2 56 F	P3.3 46 D	P4.1 39 F	P4.2 33 D	P4.3 30 C	M1.1 121 H	M1.2 102 H
M2.1 108 H	M2.2 89 H	M3.1 56 F	M3.2 49 F	M3.3 46 D	M4.1 49 D	K1.1 151 H	K1.2 112 H	K1.3 85 H	K2.1 98 F	K2.2 79 F	K2.3 62 E	K3.1 85 F	K3.2 66 F
K3.3 52 E	K4.1 79 F	K4.2 59 F	K4.3 43 E	K4.4 36 E	K4.5 33 E	K5.1 89 F	K5.2 69 F	K5.3 52 E	N1.1 85 I	N1.2 66 I	N1.3 43 H	N2.1 141 H	N2.2 128 H
N2.3 92 H	N3.1 194 H	N3.2 115 H	N3.3 59 F	N4.1 98 I	N4.2 92 I	N4.3 46 H	S1.1 89 H	S1.2 49 F	S2.1 30 F	S2.2 20 B	S3.1 23 F	S3.2 13 B	S4.1 16 F
S4.2 10 B													

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
R581	1"	1.0000	3"	6"	3/4	1	6000049
R581.1/32	1.1/32	1.0313	3"	6"	3/4	1	6000058
R581.1/16	1.1/16	1.0625	3"	6"	3/4	1	6000052
R581.3/32	1.3/32	1.0938	3"	6"	3/4	1	6000092
R581.1/8	1.1/8	1.1250	3"	6"	3/4	1	6000064
R581.5/32	1.5/32	1.1563	3"	6"	3/4	1	6000111
R581.3/16	1.3/16	1.1875	3"	6"	3/4	1	6000089
R581.7/32	1.7/32	1.2188	3"	6"	3/4	1	6000126
R581.1/4	1.1/4	1.2500	3"	6"	3/4	1	6000061
R581.9/32	1.9/32	1.2813	3"	6"	3/4	1	6000143
R581.5/16	1.5/16	1.3125	3"	6"	3/4	1	6000107
R581.11/32	1.11/32	1.3438	3"	6"	3/4	1	6000070

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
R581.3/8	1.3/8	1.3750	3"	6"	3/4	1	6000102
R581.7/16	1.7/16	1.4375	3"	6"	3/4	1	6000118
R581.15/32	1.15/32	1.4688	3"	6"	3/4	1	6000086
R581.1/2	1.1/2	1.5000	3"	6"	3/4	1	6000054
R581.9/16	1.9/16	1.5625	3"	6"	3/4	1	6000138
R581.5/8	1.5/8	1.6250	3"	6"	3/4	1	6000114
R581.11/16	1.11/16	1.6875	3"	6"	3/4	1	6000067
R581.3/4	1.3/4	1.7500	3"	6"	3/4	1	6000096
R581.13/16	1.13/16	1.8125	3"	6"	3/4	1	6000074
R581.7/8	1.7/8	1.8750	3"	6"	3/4	1	6000131
R581.15/16	1.15/16	1.9375	3"	6"	3/4	1	6000083
R582	2"	2.0000	3"	6"	3/4	1	6000147



		HSS	HSS	HSS	HSS	HSS	HSS-E										
Material code (BMC)		HSS	HSS	HSS	HSS	HSS	HSS-E										
Basic standard group (BSG)		ANSI	ANSI	DIN 345	DIN 345	DIN 1870(2)	ANSI										
Usable length (ULDR)		4xD	4xD	4xD	4xD	20xD	4xD										
Application angle																	
Coating																	
Shank																	
Spiral form																	
Hand (Cutting direction)																	
Cooling (CSP)																	
Product Family Code		209	S209	5ATS	A130	A952	209CO										
PSF cutting diameters range		1/8 - 1.3/4	1/2 - 1.5/8	5.00 - 32.00	3.00 - 2"	8.00 - 30.00	1/4 - 1.3/8										
P	P1	■	■	■	■	■	■										
	P2	■	■	■	■	■	■										
	P3	■	■	■	■	■	■										
	P4	■	■	■	■	■	■										
M	M1	■	■	■	■	■	■										
	M2	■	■	■	■	■	■										
	M3	■	■	■	■	■	■										
	M4	■	■	■	■	■	■										
K	K1	■	■	■	■	■	■										
	K2	■	■	■	■	■	■										
	K3	■	■	■	■	■	■										
	K4	■	■	■	■	■	■										
	K5	■	■	■	■	■	■										
N	N1	■	■	■	■	■	■										
	N2	■	■	■	■	■	■										
	N3	■	■	■	■	■	■										
	N4	■	■	■	■	■	■										
	N5	■	■	■	■	■	■										
S	S1	■	■	■	■	■	■										
	S2	■	■	■	■	■	■										
	S3	■	■	■	■	■	■										
	S4	■	■	■	■	■	■										
H	H1																
	H2																
	H3																
	H4																

■ Primary use ■ Possible use

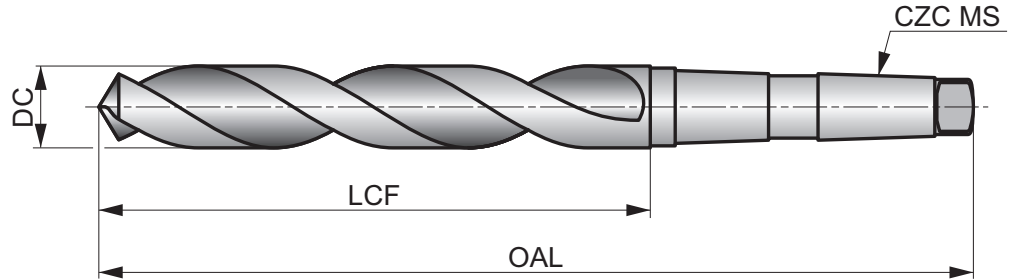


209

PRECISION

HSS Morse Taper Shank Drill, Standard Size Shank, Steam Tempered

A versatile standard size Morse Taper shank drill with large range of diameters - up to 2 inches. The larger size tapered shank and conventional 118° point provides strength and makes it easy to regrind. Steam Tempered finish can add lubricity making it suitable for drilling most materials.



HSS	ANSI	4×D
118°	ST	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 108 I	P1.2 ■ 121 I	P1.3 ■ 125 I	P2.1 ■ 92 I	P2.2 ■ 82 F	P2.3 ■ 72 E	P3.1 ■ 59 F	P3.2 ■ 46 F	P3.3 ■ 39 E	P4.1 ■ 36 F	P4.2 ■ 30 E	P4.3 ■ 23 D	M1.1 ■ 69 E	M1.2 ■ 56 E
M2.1 ■ 59 E	M2.2 ■ 49 E	M3.1 ■ 33 G	M3.2 ■ 30 G	M3.3 ■ 26 C	M4.1 ■ 33 C	K1.1 ■ 98 I	K1.2 ■ 72 E	K1.3 ■ 56 E	K2.1 ■ 82 E	K2.2 ■ 66 E	K2.3 ■ 52 E	K3.1 ■ 72 E	K3.2 ■ 56 E
K3.3 ■ 43 E	K4.1 ■ 66 E	K4.2 ■ 49 E	K4.3 ■ 36 E	K4.4 ■ 33 E	K4.5 ■ 26 E	K5.1 ■ 75 E	K5.2 ■ 56 E	K5.3 ■ 43 E	N1.1 ■ 85 J	N1.2 ■ 66 J	N1.3 ■ 43 I	N2.1 ■ 141 H	N2.2 ■ 128 H
N2.3 ■ 92 H	N3.1 ■ 194 H	N3.2 ■ 115 I	N3.3 ■ 59 F	N4.1 ■ 98 K	N4.2 ■ 92 J	N4.3 ■ 46 H	S1.1 ■ 75 F	S1.2 ■ 43 D	S1.3 ■ 23 B	S2.1 ■ 30 E	S2.2 ■ 20 A	S3.1 ■ 23 E	S3.2 ■ 13 A
S4.1 ■ 16 E	S4.2 ■ 10 A												

Product	DC	DC	LCF	OAL	CZC MS	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)			
2091/8	1/8	.1250	1.7/8	5.1/8	1	1	6001003
2099/64	9/64	.1406	2.1/8	5.3/8	1	1	6001068
2095/32	5/32	.1563	2.1/8	5.3/8	1	1	6001011
20911/64	11/64	.1719	2.1/2	5.3/4	1	1	6001018
2093/16	3/16	.1875	2.1/2	5.3/4	1	1	6001135
20913/64	13/64	.2031	2.3/4	6"	1	1	6001032
2097/32	7/32	.2188	2.3/4	6"	1	1	6001056
20915/64	15/64	.2344	2.7/8	6.1/8	1	1	6001048
2091/4	1/4	.2500	2.7/8	6.1/8	1	1	6001000
20917/64	17/64	.2656	3"	6.1/4	1	1	6001054
2099/32	9/32	.2813	3"	6.1/4	1	1	6001065
20919/64	19/64	.2969	3.1/8	6.3/8	1	1	6001060
2095/16	5/16	.3125	3.1/8	6.3/8	1	1	6001196
20921/64	21/64	.3281	3.1/4	6.1/2	1	1	6001095
20911/32	11/32	.3438	3.1/4	6.1/2	1	1	6001012
20923/64	23/64	.3594	3.1/2	6.3/4	1	1	6001101
2093/8	3/8	.3750	3.1/2	6.3/4	1	1	6001144
20925/64	25/64	.3906	3.5/8	7"	1	1	6001112
20913/32	13/32	.4063	3.5/8	7"	1	1	6001027

Product	DC	DC	LCF	OAL	CZC MS	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)			
20927/64	27/64	.4219	3.7/8	7.1/4	1	1	6001118
2097/16	7/16	.4375	3.7/8	7.1/4	1	1	6001050
20929/64	29/64	.4531	4.1/8	7.1/2	1	1	6001125
20915/32	15/32	.4688	4.1/8	7.1/2	1	1	6001046
20931/64	31/64	.4844	4.3/8	8.1/4	2	1	6001152
2091/2	1/2	.5000	4.3/8	8.1/4	2	1	6000998
20933/64	33/64	.5156	4.5/8	8.1/2	2	1	6001161
20917/32	17/32	.5313	4.5/8	8.1/2	2	1	6001051
20935/64	35/64	.5469	4.7/8	8.3/4	2	1	6001005
2099/16	9/16	.5625	4.7/8	8.3/4	2	1	6001062
20937/64	37/64	.5781	4.7/8	8.3/4	2	1	6001053
20919/32	19/32	.5938	4.7/8	8.3/4	2	1	6001057
20939/64	39/64	.6094	4.7/8	8.3/4	2	1	6001086
2095/8	5/8	.6250	4.7/8	8.3/4	2	1	6001015
20941/64	41/64	.6406	5.1/8	9"	2	1	6001120
20921/32	21/32	.6563	5.1/8	9"	2	1	6001093
20943/64	43/64	.6719	5.3/8	9.1/4	2	1	6001175
20911/16	11/16	.6875	5.3/8	9.1/4	2	1	6001008
20945/64	45/64	.7031	5.5/8	9.1/2	2	1	6001186



Product	DC	DC	LCF	OAL	CZC MS	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)			
20923/32	23/32	.7188	5.5/8	9.1/2	2	1	6001098
20947/64	47/64	.7344	5.7/8	9.3/4	2	1	6001190
2093/4	3/4	.7500	5.7/8	9.3/4	2	1	6001139
20949/64	49/64	.7656	6"	9.7/8	2	1	6001193
20925/32	25/32	.7813	6"	9.7/8	2	1	6001104
20951/64	51/64	.7969	6.1/8	10.3/4	3	1	6001021
20913/16	13/16	.8125	6.1/8	10.3/4	3	1	6001023
20953/64	53/64	.8281	6.1/8	10.3/4	3	1	6001025
20927/32	27/32	.8438	6.1/8	10.3/4	3	1	6001115
20955/64	55/64	.8594	6.1/8	10.3/4	3	1	6001031
2097/8	7/8	.8750	6.1/8	10.3/4	3	1	6001059
20957/64	57/64	.8906	6.1/8	10.3/4	3	1	6001035
20929/32	29/32	.9063	6.1/8	10.3/4	3	1	6001122
20959/64	59/64	.9219	6.1/8	10.3/4	3	1	6001039
20915/16	15/16	.9375	6.1/8	10.3/4	3	1	6001037
20961/64	61/64	.9531	6.3/8	11"	3	1	6001043
20931/32	31/32	.9688	6.3/8	11"	3	1	6001148
20963/64	63/64	.9844	6.3/8	11"	3	1	6001047
2091	1"	1.0000	6.3/8	11"	3	1	5999465

Product	DC	DC	LCF	OAL	CZC MS	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)			
2091.1/64	1.1/64	1.0156	6.1/2	11.1/8	3	1	5999470
2091.1/32	1.1/32	1.0313	6.1/2	11.1/8	3	1	5999468
2091.3/64	1.3/64	1.0469	6.5/8	11.1/4	3	1	5999506
2091.1/16	1.1/16	1.0625	6.5/8	11.1/4	3	1	5999466
2091.7/64	1.7/64	1.1094	7.1/8	12.3/4	4	1	6001157
2091.1/8	1.1/8	1.1250	7.1/8	12.3/4	4	1	5999471
2091.5/32	1.5/32	1.1563	7.1/4	12.7/8	4	1	5999518
2091.11/64	1.11/64	1.1719	7.3/8	13"	4	1	5999475
2091.3/16	1.3/16	1.1875	7.3/8	13"	4	1	5999500
2091.7/32	1.7/32	1.2188	7.1/2	13.1/8	4	1	6001109
2091.1/4	1.1/4	1.2500	7.7/8	13.1/2	4	1	5999469
2091.17/64	1.17/64	1.2656	8.1/2	14.1/8	4	1	5999483
2091.9/32	1.9/32	1.2813	8.1/2	14.1/8	4	1	6001178
2091.5/16	1.5/16	1.3125	8.5/8	14.1/4	4	1	5999514
2091.11/32	1.11/32	1.3438	8.3/4	14.3/8	4	1	5999474
2091.3/8	1.3/8	1.3750	8.7/8	14.1/2	4	1	5999508
2091.7/16	1.7/16	1.4375	9.1/8	14.3/4	4	1	6001075
2091.1/2	1.1/2	1.5000	9.3/8	15"	4	1	5999467
2091.3/4	1.3/4	1.7500	10.1/8	17.1/8	5	1	5999504

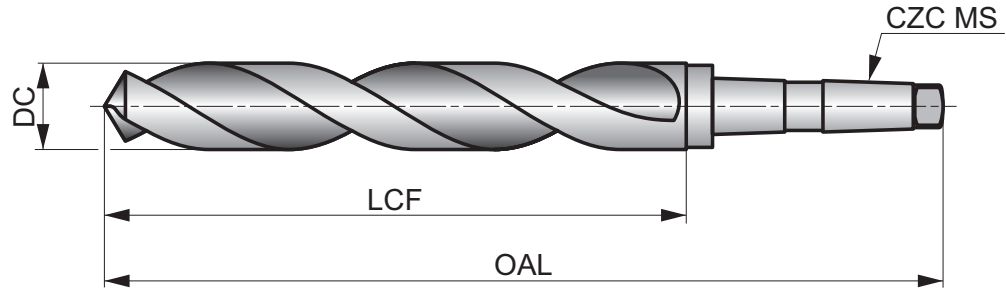


S209



HSS Small Taper Size Morse Taper Shank Drill, Steam Tempered

A versatile small taper size Morse Taper shank drill with large range of diameters - up to 2 inches. The smaller size tapered shank makes it applicable to smaller spindles and conventional 118° point makes it easy to regrind. Steam Tempered finish can add lubricity making it suitable for drilling most materials.



HSS	ANSI	4×D
118°	ST	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 108 I	P1.2 ■ 121 I	P1.3 ■ 125 I	P2.1 ■ 92 I	P2.2 ■ 82 F	P2.3 ■ 72 E	P3.1 ■ 59 F	P3.2 ■ 46 F	P3.3 ■ 39 E	P4.1 ■ 36 F	P4.2 ■ 30 E	P4.3 ■ 23 D	M1.1 ■ 69 E	M1.2 ■ 56 E
M2.1 ■ 59 E	M2.2 ■ 49 E	M3.1 ■ 33 G	M3.2 ■ 30 G	M3.3 ■ 26 C	M4.1 ■ 33 C	K1.1 ■ 98 I	K1.2 ■ 72 E	K1.3 ■ 56 E	K2.1 ■ 82 E	K2.2 ■ 66 E	K2.3 ■ 52 E	K3.1 ■ 72 E	K3.2 ■ 56 E
K3.3 ■ 43 E	K4.1 ■ 66 E	K4.2 ■ 49 E	K4.3 ■ 36 E	K4.4 ■ 33 E	K4.5 ■ 26 E	K5.1 ■ 75 E	K5.2 ■ 56 E	K5.3 ■ 43 E	N1.1 ■ 85 J	N1.2 ■ 66 J	N1.3 ■ 43 I	N2.1 ■ 141 H	N2.2 ■ 128 H
N2.3 ■ 92 H	N3.1 ■ 194 H	N3.2 ■ 115 I	N3.3 ■ 59 F	N4.1 ■ 98 K	N4.2 ■ 92 J	N4.3 ■ 46 H	S1.1 ■ 75 F	S1.2 ■ 43 D	S1.3 ■ 23 B	S2.1 ■ 30 E	S2.2 ■ 20 A	S3.1 ■ 23 E	S3.2 ■ 13 A
S4.1 ■ 16 E	S4.2 ■ 10 A												

Product	DC	DC	LCF	OAL	CZC MS	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)			
S2091/2	1/2	.5000	4.3/8	7.3/4	1	1	5999934
S20917/32	17/32	.5313	4.5/8	8"	1	1	5999777
S20913/16	13/16	.8125	6.1/8	10"	2	1	5999772
S2097/8	7/8	.8750	6.1/8	10"	2	1	5999805
S2091.7/64	1.7/64	1.1094	7.1/8	11.3/4	3	1	5999914

Product	DC	DC	LCF	OAL	CZC MS	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)			
S2091.1/8	1.1/8	1.1250	7.1/8	11.3/4	3	1	6000436
S2091.3/16	1.3/16	1.1875	7.3/8	12"	3	1	6000476
S2091.1/4	1.1/4	1.2500	7.7/8	12.1/2	3	1	6000433
S2091.9/16	1.9/16	1.5625	9.5/8	15.1/4	4	1	5999926
S2091.5/8	1.5/8	1.6250	10"	15.5/8	4	1	5999828

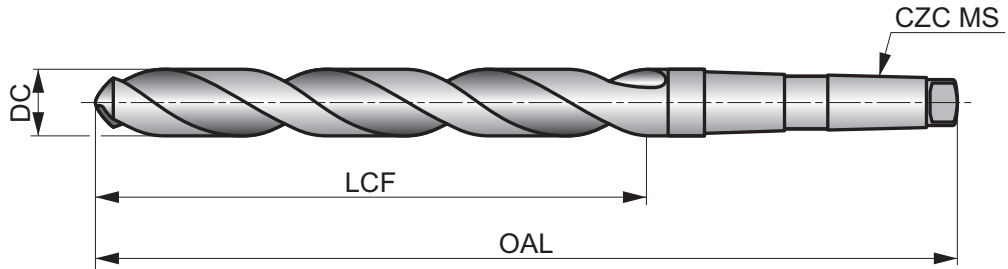


5ATS



HSS Morse Taper Shank Drill, Steam Tempered Finish, Metric Sizes

Versatile Morse Taper shank drill with large diameter availability (up to 50.0mm). Conventional easy to regrind 118° point and steam tempered finish makes it suitable for most materials. Tapered shank direct connection to the machine provides better grip and rigidity in the operation.



HSS	DIN 345	4xD
118°	ST	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 108 I	P1.2 ■ 121 I	P1.3 ■ 125 I	P2.1 ■ 92 I	P2.2 ■ 82 F	P2.3 ■ 72 E	P3.1 ■ 59 F	P3.2 ■ 46 F	P3.3 ■ 39 E	P4.1 ■ 36 F	P4.2 ■ 30 E	P4.3 ■ 23 D	M1.1 ■ 69 E	M1.2 ■ 56 E
M2.1 ■ 59 E	M2.2 ■ 49 E	M3.1 ■ 33 G	M3.2 ■ 30 G	M3.3 ■ 26 C	M4.1 ■ 33 C	K1.1 ■ 98 I	K1.2 ■ 72 E	K1.3 ■ 56 E	K2.1 ■ 82 E	K2.2 ■ 66 E	K2.3 ■ 52 E	K3.1 ■ 72 E	K3.2 ■ 56 E
K3.3 ■ 43 E	K4.1 ■ 66 E	K4.2 ■ 49 E	K4.3 ■ 36 E	K4.4 ■ 33 E	K4.5 ■ 26 E	K5.1 ■ 75 E	K5.2 ■ 56 E	K5.3 ■ 43 E	N1.1 ■ 85 J	N1.2 ■ 66 J	N1.3 ■ 43 I	N2.1 ■ 141 H	N2.2 ■ 128 H
N2.3 ■ 92 H	N3.1 ■ 194 H	N3.2 ■ 115 I	N3.3 ■ 59 F	N4.1 ■ 98 K	N4.2 ■ 92 J	N4.3 ■ 46 H	S1.1 ■ 75 F	S1.2 ■ 43 D	S1.3 ■ 23 B	S2.1 ■ 30 E	S2.2 ■ 20 A	S3.1 ■ 23 E	S3.2 ■ 13 A
S4.1 ■ 16 E	S4.2 ■ 10 A												

Product	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	CZC MS	Pack Qty	MID
5ATS5.0	5.00	.1969	52.0	133.0	1	1	6001263
5ATS5.5	5.50	.2165	57.0	138.0	1	1	6001267
5ATS6.0	6.00	.2362	57.0	138.0	1	1	6001278
5ATS6.8	6.80	.2677	69.0	150.0	1	1	6001287
5ATS7.0	7.00	.2756	69.0	150.0	1	1	6001291
5ATS7.5	7.50	.2953	69.0	150.0	1	1	6001298
5ATS8.5	8.50	.3346	75.0	156.0	1	1	6001304
5ATS9.0	9.00	.3543	81.0	162.0	1	1	6001307
5ATS9.5	9.50	.3740	81.0	162.0	1	1	6001312
5ATS10.0	10.00	.3937	87.0	168.0	1	1	6001470
5ATS10.2	10.20	.4016	87.0	168.0	1	1	6001472
5ATS11.0	11.00	.4331	94.0	175.0	1	1	6001476
5ATS11.5	11.50	.4528	94.0	175.0	1	1	6001478
5ATS12.0	12.00	.4724	101.0	182.0	1	1	6001482
5ATS12.5	12.50	.4921	101.0	182.0	1	1	6001486
5ATS12.8	12.80	.5039	101.0	182.0	1	1	6001488
5ATS13.0	13.00	.5118	101.0	182.0	1	1	6001491
5ATS13.5	13.50	.5315	108.0	189.0	1	1	6001493
5ATS14.0	14.00	.5512	108.0	189.0	1	1	6001497

Product	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	CZC MS	Pack Qty	MID
5ATS14.5	14.50	.5709	114.0	212.0	2	1	6001501
5ATS15.0	15.00	.5906	114.0	212.0	2	1	6001009
5ATS15.5	15.50	.6102	120.0	218.0	2	1	6001088
5ATS16.0	16.00	.6299	120.0	218.0	2	1	6001165
5ATS16.5	16.50	.6496	125.0	223.0	2	1	6001179
5ATS17.0	17.00	.6693	125.0	223.0	2	1	6001187
5ATS17.5	17.50	.6890	130.0	228.0	2	1	6001020
5ATS18.0	18.00	.7087	130.0	228.0	2	1	6001026
5ATS18.5	18.50	.7283	135.0	233.0	2	1	6001029
5ATS19.0	19.00	.7480	135.0	233.0	2	1	6001034
5ATS19.5	19.50	.7677	140.0	238.0	2	1	6001038
5ATS20.0	20.00	.7874	140.0	238.0	2	1	6001041
5ATS20.5	20.50	.8071	145.0	243.0	2	1	6001045
5ATS21.0	21.00	.8268	145.0	243.0	2	1	6001049
5ATS22.0	22.00	.8661	150.0	248.0	2	1	6001058
5ATS24.0	24.00	.9449	160.0	281.0	3	1	6001070
5ATS24.5	24.50	.9646	160.0	281.0	3	1	6001073
5ATS25.0	25.00	.9843	160.0	281.0	3	1	6001076
5ATS26.0	26.00	1.0236	165.0	286.0	3	1	6001082



Product	DC	DC	LCF	OAL	CZC MS	Pack Qty	MID
	(mm)	(inch)	(mm)	(mm)			
5ATS26.5	26.50	1.0433	165.0	286.0	3	1	6001085
5ATS28.0	28.00	1.1024	170.0	291.0	3	1	6001099

Product	DC	DC	LCF	OAL	CZC MS	Pack Qty	MID
	(mm)	(inch)	(mm)	(mm)			
5ATS30.0	30.00	1.1811	175.0	296.0	3	1	6001107
5ATS32.0	32.00	1.2598	185.0	334.0	4	1	6001123

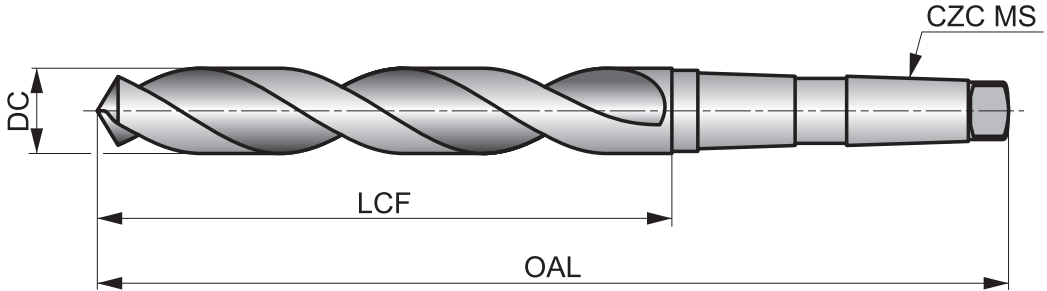


A130



HSS Taper Shank Drill, Steam Tempered Finish

Versatile drill with larger diameters - up to 50.80mm (2 inches). Tapered shank provides a better grip for holding it in the machine. Conventional 118° point provides strength and makes it easy to regrind. Steam tempered finish retains cutting fluid and prevents chip to tool welding. Suitable for drilling many materials.



HSS	DIN 345	4xD
118°	ST	
λ 20-35°	R	DC h8

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 108 I	P1.2 ■ 121 I	P1.3 ■ 125 I	P2.1 ■ 92 I	P2.2 ■ 82 F	P2.3 ■ 72 E	P3.1 ■ 59 F	P3.2 ■ 46 F	P3.3 ■ 39 E	P4.1 ■ 36 F	P4.2 ■ 30 E	P4.3 ■ 23 D	M1.1 ■ 69 E	M1.2 ■ 56 E
M2.1 ■ 59 E	M2.2 ■ 49 E	M3.1 ■ 33 G	M3.2 ■ 30 G	M3.3 ■ 26 G	M4.1 ■ 33 C	K1.1 ■ 98 I	K1.2 ■ 72 E	K1.3 ■ 56 E	K2.1 ■ 82 E	K2.2 ■ 66 E	K2.3 ■ 52 E	K3.1 ■ 72 E	K3.2 ■ 56 E
K3.3 ■ 43 E	K4.1 ■ 66 E	K4.2 ■ 49 E	K4.3 ■ 36 E	K4.4 ■ 33 E	K4.5 ■ 26 E	K5.1 ■ 75 E	K5.2 ■ 56 E	K5.3 ■ 43 E	N1.1 ■ 85 J	N1.2 ■ 66 J	N1.3 ■ 43 I	N2.1 ■ 141 H	N2.2 ■ 128 H
N2.3 ■ 92 H	N3.1 ■ 194 H	N3.2 ■ 115 I	N3.3 ■ 59 F	N4.1 ■ 98 K	N4.2 ■ 92 J	N4.3 ■ 46 H	S1.1 ■ 75 F	S1.2 ■ 43 D	S1.3 ■ 23 B	S2.1 ■ 30 E	S2.2 ■ 20 A	S3.1 ■ 23 E	S3.2 ■ 13 A
S4.1 ■ 16 E	S4.2 ■ 10 A												

DC > 14mm Point Thinned.

Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	CZC MS	Pack Qty	MID
A1303.0	—	3.00	.1181	33.0	114.0	MK 1	1	5969471
A1301/8	1/8	3.18	.1250	36.0	117.0	MK 1	1	5969021
A1303.3	—	3.30	.1299	36.0	117.0	MK 1	1	5969482
A1303.5	—	3.50	.1378	39.0	120.0	MK 1	1	5969485
A1304.0	—	4.00	.1575	43.0	124.0	MK 1	1	5969330
A1304.2	—	4.20	.1654	43.0	124.0	MK 1	1	5969391
A1304.25	—	4.25	.1673	43.0	124.0	MK 1	1	5969394
A1304.5	—	4.50	.1772	47.0	128.0	MK 1	1	5969397
A1303/16	3/16	4.76	.1875	52.0	133.0	MK 1	1	5969499
A1305.0	—	5.00	.1969	52.0	133.0	MK 1	1	5969315
A1305.1	—	5.10	.2008	52.0	133.0	MK 1	1	5969320
A13013/64	13/64	5.16	.2031	52.0	133.0	MK 1	1	5969102
A1305.2	—	5.20	.2047	52.0	133.0	MK 1	1	5969325
A1305.5	—	5.50	.2165	57.0	138.0	MK 1	1	5969346
A1306.0	—	6.00	.2362	57.0	138.0	MK 1	1	5969459
A1301/4	1/4	6.35	.2500	63.0	144.0	MK 1	1	5968968
A1306.5	—	6.50	.2559	63.0	144.0	MK 1	1	5969484
A1306.7	—	6.70	.2638	63.0	144.0	MK 1	1	5969492

Product	DC (inch)	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	CZC MS	Pack Qty	MID
A13017/64	17/64	6.75	.2656	69.0	150.0	MK 1	1	5969061
A1306.75	—	6.75	.2657	69.0	150.0	MK 1	1	5969497
A1306.8	—	6.80	.2677	69.0	150.0	MK 1	1	5969501
A1307.0	—	7.00	.2756	69.0	150.0	MK 1	1	5969577
A1309/32	9/32	7.14	.2813	69.0	150.0	MK 1	1	5968832
A1307.5	—	7.50	.2953	69.0	150.0	MK 1	1	5969607
A1305/16	5/16	7.94	.3125	75.0	156.0	MK 1	1	5969371
A1308.0	—	8.00	.3150	75.0	156.0	MK 1	1	5968703
A1308.2	—	8.20	.3228	75.0	156.0	MK 1	1	5968709
A1308.5	—	8.50	.3346	75.0	156.0	MK 1	1	5968723
A1308.6	—	8.60	.3386	81.0	162.0	MK 1	1	5968724
A1308.7	—	8.70	.3425	81.0	162.0	MK 1	1	5968732
A13011/32	11/32	8.73	.3438	81.0	162.0	MK 1	1	5969026
A1308.75	—	8.75	.3445	81.0	162.0	MK 1	1	5968735
A1309.0	—	9.00	.3543	81.0	162.0	MK 1	1	5968765
A1309.5	—	9.50	.3740	81.0	162.0	MK 1	1	5968792
A1303/8	3/8	9.52	.3750	87.0	168.0	MK 1	1	5969509
A13010.0	—	10.00	.3937	87.0	168.0	MK 1	1	5969077



Product	DC	DC	DC	LCF	OAL	CZC MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)			
A13010.2	—	10.20	.4016	87.0	168.0	MK 1	1	5969137
A13010.25	—	10.25	.4035	87.0	168.0	MK 1	1	5969142
A13010.3	—	10.30	.4055	87.0	168.0	MK 1	1	5969146
A13013/32	13/32	10.32	.4063	87.0	168.0	MK 1	1	5969049
A13010.5	—	10.50	.4134	87.0	168.0	MK 1	1	5968939
A13027/64	27/64	10.72	.4219	94.0	175.0	MK 1	1	5969539
A13010.75	—	10.75	.4232	94.0	175.0	MK 1	1	5968944
A13010.8	—	10.80	.4252	94.0	175.0	MK 1	1	5968947
A13011.0	—	11.00	.4331	94.0	175.0	MK 1	1	5968957
A1307/16	7/16	11.11	.4375	94.0	175.0	MK 1	1	5969627
A13011.2	—	11.20	.4409	94.0	175.0	MK 1	1	5968964
A13011.5	—	11.50	.4528	94.0	175.0	MK 1	1	5968987
A13011.75	—	11.75	.4626	94.0	175.0	MK 1	1	5969001
A13011.8	—	11.80	.4646	94.0	175.0	MK 1	1	5969006
A13012.0	—	12.00	.4724	101.0	182.0	MK 1	1	5969037
A13012.2	—	12.20	.4803	101.0	182.0	MK 1	1	5969047
A13012.25	—	12.25	.4823	101.0	182.0	MK 1	1	5969055
A13031/64	31/64	12.30	.4844	101.0	182.0	MK 1	1	5969557
A13012.5	—	12.50	.4921	101.0	182.0	MK 1	1	5969069
A13012.7	—	12.70	.5000	101.0	182.0	MK 1	1	5969081
A1301/2	1/2	12.70	.5000	101.0	182.0	MK 1	1	5968936
A13012.75	—	12.75	.5020	101.0	182.0	MK 1	1	5969086
A13012.8	—	12.80	.5039	101.0	182.0	MK 1	1	5969091
A13013.0	—	13.00	.5118	101.0	182.0	MK 1	1	5969100
A13033/64	33/64	13.10	.5156	101.0	182.0	MK 1	1	5969588
A13013.2	—	13.20	.5197	101.0	182.0	MK 1	1	5969106
A13013.25	—	13.25	.5217	108.0	189.0	MK 1	1	5969111
A13017/32	17/32	13.49	.5313	108.0	189.0	MK 1	1	5969058
A13013.5	—	13.50	.5315	108.0	189.0	MK 1	1	5969116
A13013.75	—	13.75	.5413	108.0	189.0	MK 1	1	5969134
A13013.8	—	13.80	.5433	108.0	189.0	MK 1	1	5968931
A13013.9	—	13.90	.5472	108.0	189.0	MK 1	1	5968951
A13014.0	—	14.00	.5512	108.0	189.0	MK 1	1	5969112
A13014.1	—	14.10	.5551	114.0	212.0	MK 2	1	5969117
A13014.2	—	14.20	.5591	114.0	212.0	MK 2	1	5969122
A13014.25	—	14.25	.5610	114.0	212.0	MK 2	1	5969129
A1309/16	9/16	14.29	.5625	114.0	212.0	MK 2	1	5968824
A13014.3	—	14.30	.5630	114.0	212.0	MK 2	1	5968932
A13014.5	—	14.50	.5709	114.0	212.0	MK 2	1	5968934
A13037/64	37/64	14.68	.5781	114.0	212.0	MK 2	1	5969633
A13014.75	—	14.75	.5807	114.0	212.0	MK 2	1	5968938
A13014.8	—	14.80	.5827	114.0	212.0	MK 2	1	5968940
A13014.9	—	14.90	.5866	114.0	212.0	MK 2	1	5968943
A13015.0	—	15.00	.5906	114.0	212.0	MK 2	1	5968946
A13015.1	—	15.10	.5945	120.0	218.0	MK 2	1	5968948
A13015.2	—	15.20	.5984	120.0	218.0	MK 2	1	5968955
A13015.25	—	15.25	.6004	120.0	218.0	MK 2	1	5968958
A13039/64	39/64	15.48	.6094	120.0	218.0	MK 2	1	5969276
A13015.5	—	15.50	.6102	120.0	218.0	MK 2	1	5968962
A13015.7	—	15.70	.6181	120.0	218.0	MK 2	1	5968966
A13015.75	—	15.75	.6201	120.0	218.0	MK 2	1	5968969
A13015.8	—	15.80	.6220	120.0	218.0	MK 2	1	5968973
A1305/8	5/8	15.88	.6250	120.0	218.0	MK 2	1	5969379
A13015.9	—	15.90	.6260	120.0	218.0	MK 2	1	5968978
A13016.0	—	16.00	.6299	120.0	218.0	MK 2	1	5968999
A13016.1	—	16.10	.6339	125.0	223.0	MK 2	1	5969005
A13016.2	—	16.20	.6378	125.0	223.0	MK 2	1	5969009
A13016.25	—	16.25	.6398	125.0	223.0	MK 2	1	5969014

Product	DC	DC	DC	LCF	OAL	CZC MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)			
A13041/64	41/64	16.27	.6406	125.0	223.0	MK 2	1	5969206
A13016.5	—	16.50	.6496	125.0	223.0	MK 2	1	5969019
A13021/32	21/32	16.67	.6563	125.0	223.0	MK 2	1	5969204
A13016.75	—	16.75	.6594	125.0	223.0	MK 2	1	5969024
A13017.0	—	17.00	.6693	125.0	223.0	MK 2	1	5969029
A13043/64	43/64	17.07	.6719	130.0	228.0	MK 2	1	5969230
A13017.25	—	17.25	.6791	130.0	228.0	MK 2	1	5969035
A13011/16	11/16	17.46	.6875	130.0	228.0	MK 2	1	5969016
A13017.5	—	17.50	.6890	130.0	228.0	MK 2	1	5969040
A13017.75	—	17.75	.6988	130.0	228.0	MK 2	1	5969053
A13045/64	45/64	17.86	.7031	130.0	228.0	MK 2	1	5969255
A13018.0	—	18.00	.7087	130.0	228.0	MK 2	1	5969066
A13018.25	—	18.25	.7185	135.0	233.0	MK 2	1	5969070
A13023/32	23/32	18.26	.7188	135.0	233.0	MK 2	1	5969253
A13018.5	—	18.50	.7283	135.0	233.0	MK 2	1	5969078
A13047/64	47/64	18.65	.7344	135.0	233.0	MK 2	1	5969285
A13018.75	—	18.75	.7382	135.0	233.0	MK 2	1	5969083
A13019.0	—	19.00	.7480	135.0	233.0	MK 2	1	5969087
A1303/4	3/4	19.05	.7500	140.0	238.0	MK 2	1	5969504
A13019.25	—	19.25	.7579	140.0	238.0	MK 2	1	5969097
A13019.5	—	19.50	.7677	140.0	238.0	MK 2	1	5969107
A13019.75	—	19.75	.7776	140.0	238.0	MK 2	1	5969181
A13025/32	25/32	19.84	.7813	140.0	238.0	MK 2	1	5969301
A13020.0	—	20.00	.7874	140.0	238.0	MK 2	1	5969183
A13020.25	—	20.25	.7972	145.0	243.0	MK 2	1	5969184
A13020.5	—	20.50	.8071	145.0	243.0	MK 2	1	5969186
A13013/16	13/16	20.64	.8125	145.0	243.0	MK 2	1	5968994
A13020.75	—	20.75	.8169	145.0	243.0	MK 2	1	5969187
A13021.0	—	21.00	.8268	145.0	243.0	MK 2	1	5969189
A13021.25	—	21.25	.8366	150.0	248.0	MK 2	1	5969193
A13021.5	—	21.50	.8465	150.0	248.0	MK 2	1	5969195
A13021.75	—	21.75	.8563	150.0	248.0	MK 2	1	5969200
A13022.0	—	22.00	.8661	150.0	248.0	MK 2	1	5969211
A1307/8	7/8	22.22	.8750	150.0	248.0	MK 2	1	5968693
A13022.25	—	22.25	.8760	150.0	248.0	MK 2	1	5969214
A13022.5	—	22.50	.8858	155.0	253.0	MK 2	1	5969218
A13057/64	57/64	22.62	.8906	155.0	253.0	MK 2	1	5969448
A13022.75	—	22.75	.8957	155.0	253.0	MK 2	1	5969226
A13023.0	—	23.00	.9055	155.0	253.0	MK 2	1	5969229
A13029/32	29/32	23.02	.9063	155.0	253.0	MK 2	1	5969460
A13023.25	—	23.25	.9154	155.0	276.0	MK 3	1	5969234
A13023.5	—	23.50	.9252	155.0	276.0	MK 3	1	5969243
A13023.75	—	23.75	.9350	160.0	281.0	MK 3	1	5969248
A13015/16	15/16	23.81	.9375	160.0	281.0	MK 3	1	5968982
A13024.0	—	24.00	.9449	160.0	281.0	MK 3	1	5969259
A13061/64	61/64	24.21	.9531	160.0	281.0	MK 3	1	5969523
A13024.5	—	24.50	.9646	160.0	281.0	MK 3	1	5969269
A13024.75	—	24.75	.9744	160.0	281.0	MK 3	1	5969272
A13025.0	—	25.00	.9843	160.0	281.0	MK 3	1	5969277
A13025.25	—	25.25	.9941	165.0	286.0	MK 3	1	5969281
A1301	1"	25.40	1.0000	165.0	286.0	MK 3	1	5969068
A13025.5	—	25.50	1.0039	165.0	286.0	MK 3	1	5969291
A13025.75	—	25.75	1.0138	165.0	286.0	MK 3	1	5969297
A13026.0	—	26.00	1.0236	165.0	286.0	MK 3	1	5969311
A13026.25	—	26.25	1.0335	165.0	286.0	MK 3	1	5969319
A13026.5	—	26.50	1.0433	165.0	286.0	MK 3	1	5969324
A1301.1/16	1.1/16	26.99	1.0625	170.0	291.0	MK 3	1	5969072
A13027.0	—	27.00	1.0630	170.0	291.0	MK 3	1	5969334



Product	DC	DC	DC	LCF	OAL	CZC MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)			
A13027.5	—	27.50	1.0827	170.0	291.0	MK 3	1	5969348
A13028.0	—	28.00	1.1024	170.0	291.0	MK 3	1	5969597
A13028.5	—	28.50	1.1220	175.0	296.0	MK 3	1	5969649
A1301.1/8	1.1/8	28.58	1.1250	175.0	296.0	MK 3	1	5969088
A13029.0	—	29.00	1.1417	175.0	296.0	MK 3	1	5969656
A13029.5	—	29.50	1.1614	175.0	296.0	MK 3	1	5969454
A13030.0	—	30.00	1.1811	175.0	296.0	MK 3	1	5969512
A1301.3/16	1.3/16	30.16	1.1875	180.0	301.0	MK 3	1	5969118
A13030.5	—	30.50	1.2008	180.0	301.0	MK 3	1	5969521
A13031.0	—	31.00	1.2205	180.0	301.0	MK 3	1	5969530
A13031.5	—	31.50	1.2402	180.0	301.0	MK 3	1	5969544
A1301.1/4	1.1/4	31.75	1.2500	185.0	306.0	MK 3	1	5969084
A13032.0	—	32.00	1.2598	185.0	334.0	MK 4	1	5969562
A13032.5	—	32.50	1.2795	185.0	334.0	MK 4	1	5969570
A13033.0	—	33.00	1.2992	185.0	334.0	MK 4	1	5969576
A13033.5	—	33.50	1.3189	185.0	334.0	MK 4	1	5969580
A13034.0	—	34.00	1.3386	190.0	339.0	MK 4	1	5969592
A13034.5	—	34.50	1.3583	190.0	339.0	MK 4	1	5969601
A1301.3/8	1.3/8	34.93	1.3750	190.0	339.0	MK 4	1	5969131
A13035.0	—	35.00	1.3780	190.0	339.0	MK 4	1	5969606
A13035.5	—	35.50	1.3976	190.0	339.0	MK 4	1	5969610

Product	DC	DC	DC	LCF	OAL	CZC MS	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)	(mm)			
A13036.0	—	36.00	1.4173	195.0	344.0	MK 4	1	5969618
A13037.0	—	37.00	1.4567	195.0	344.0	MK 4	1	5969626
A13037.5	—	37.50	1.4764	195.0	344.0	MK 4	1	5969629
A13038.0	—	38.00	1.4961	200.0	349.0	MK 4	1	5969637
A1301.1/2	1.1/2	38.10	1.5000	200.0	349.0	MK 4	1	5969080
A13038.5	—	38.50	1.5157	200.0	349.0	MK 4	1	5969645
A13039.0	—	39.00	1.5354	200.0	349.0	MK 4	1	5969188
A13039.5	—	39.50	1.5551	200.0	349.0	MK 4	1	5969222
A13040.0	—	40.00	1.5748	200.0	349.0	MK 4	1	5969194
A13041.0	—	41.00	1.6142	205.0	354.0	MK 4	1	5969199
A13042.0	—	42.00	1.6535	205.0	354.0	MK 4	1	5969210
A13043.0	—	43.00	1.6929	210.0	359.0	MK 4	1	5969217
A13044.0	—	44.00	1.7323	210.0	359.0	MK 4	1	5969235
A1301.3/4	1.3/4	44.45	1.7500	210.0	359.0	MK 4	1	5969127
A13045.0	—	45.00	1.7717	210.0	359.0	MK 4	1	5969244
A13046.0	—	46.00	1.8110	215.0	364.0	MK 4	1	5969261
A13048.0	—	48.00	1.8898	220.0	369.0	MK 4	1	5969290
A13049.0	—	49.00	1.9291	220.0	369.0	MK 4	1	5969300
A13050.0	—	50.00	1.9685	220.0	369.0	MK 4	1	5969388
A1302	2"	50.80	2.0000	225.0	374.0	MK 4	1	5969286

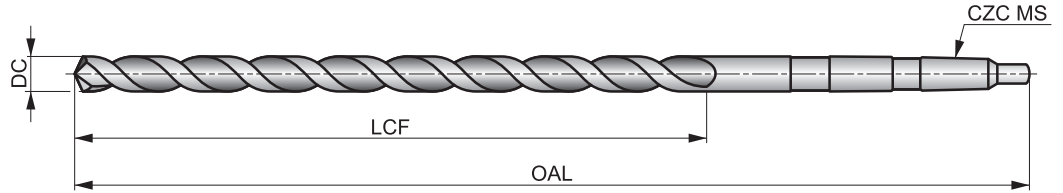


A952



HSS PFX Extra Long Series Taper Shank Drill (DIN 1870 Series 2), Bright Finish

A versatile drill with a special parabolic flute design for drilling deep holes in a single pass. The drill has a self-centering 130° point (centering with a short PFX Drill is recommended) so the force needed to drill the hole is reduced. Suitable for drilling many materials.



HSS	DIN 1870(2)	20xD
130°	Bright ST	
$\lambda > 35^\circ$	R	DC h8

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 82 G	P1.2 ■ 92 G	P1.3 ■ 95 G	P2.1 ■ 72 G	P2.2 ■ 62 E	P2.3 ■ 56 C	P3.1 ■ 39 D	P3.2 ■ 30 D	P3.3 ■ 26 C	P4.1 ■ 23 D	P4.2 ■ 20 C	P4.3 ■ 16 B	M1.1 ■ 52 C	M1.2 ■ 46 C
M2.1 ■ 49 C	M2.2 ■ 39 C	M3.1 ■ 23 E	M3.2 ■ 20 E	M3.3 ■ 16 E	M4.1 ■ 39 A	K1.1 ■ 72 G	K1.2 ■ 52 D	K1.3 ■ 39 D	K2.1 ■ 52 C	K2.2 ■ 43 C	K2.3 ■ 33 C	K3.1 ■ 46 C	K3.2 ■ 36 C
K3.3 ■ 30 C	K4.1 ■ 43 C	K4.2 ■ 33 C	K4.3 ■ 23 C	K4.4 ■ 20 C	K4.5 ■ 16 C	K5.1 ■ 49 C	K5.2 ■ 36 C	K5.3 ■ 30 C	N1.1 ■ 98 H	N1.2 ■ 75 H	N1.3 ■ 49 G	N2.1 ■ 121 F	N2.2 ■ 108 F
N2.3 ■ 79 F	N3.1 ■ 184 F	N3.2 ■ 108 G	N3.3 ■ 56 D	N4.1 ■ 98 J	N4.2 ■ 98 H	N4.3 ■ 33 F	S1.1 ■ 59 D	S1.2 ■ 33 B	S1.3 ■ 20 A	S2.1 ■ 23 C	S2.2 ■ 13 A	S3.1 ■ 16 C	S3.2 ■ 10 A
S4.1 ■ 13 C	S4.2 ■ 7 A												

DC >= 14.5mm less than 20xD; DC > 23mm Bright.

Product	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	CZC MS	Pack Qty	MID
A9528.0	8.00	.3150	210.0	330.0	MK 1	1	5972581
A9529.0	9.00	.3543	220.0	345.0	MK 1	1	5972587
A95210.0	10.00	.3937	235.0	360.0	MK 1	1	5972462
A95211.0	11.00	.4331	250.0	375.0	MK 1	1	5972470
A95213.0	13.00	.5118	260.0	395.0	MK 1	1	5972488
A95214.0	14.00	.5512	275.0	410.0	MK 1	1	5972495
A95215.0	15.00	.5906	275.0	425.0	MK 2	1	5972507
A95216.0	16.00	.6299	295.0	445.0	MK 2	1	5972515
A95217.0	17.00	.6693	295.0	445.0	MK 2	1	5972522
A95219.0	19.00	.7480	310.0	465.0	MK 2	1	5972538

Product	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	CZC MS	Pack Qty	MID
A95220.0	20.00	.7874	325.0	490.0	MK 2	1	5972560
A95221.0	21.00	.8268	325.0	490.0	MK 2	1	5972583
A95223.0	23.00	.9055	345.0	515.0	MK 2	1	5972638
A95224.0	24.00	.9449	365.0	555.0	MK 3	1	5972681
A95225.0	25.00	.9843	365.0	555.0	MK 3	1	5972690
A95226.0	26.00	1.0236	365.0	555.0	MK 3	1	5972695
A95227.0	27.00	1.0630	385.0	580.0	MK 3	1	5972699
A95228.0	28.00	1.1024	385.0	580.0	MK 3	1	5972705
A95229.0	29.00	1.1417	385.0	580.0	MK 3	1	5972563
A95230.0	30.00	1.1811	385.0	580.0	MK 3	1	5972565

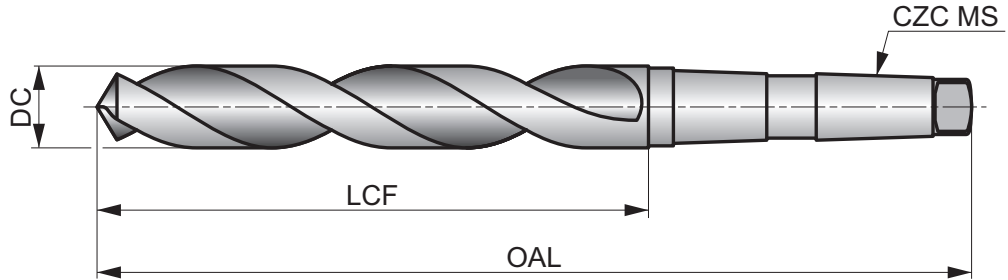


209CO



HSS-E Morse Taper Shank Drill, Standard Size Shank, Bronze Tempered Surface Finish

A versatile Cobalt HSS Morse Taper shank drill with large range of diameters - up to 2 inches. The larger size tapered shank and conventional 118° point provides strength and makes it easy to regrind. Steam Tempered finish can add lubricity making it suitable for drilling most materials.



HSS-E	ANSI	4×D
135°	Bronze	
λ20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 118 H	P1.2 131 H	P1.3 135 H	P2.1 102 H	P2.2 89 G	P2.3 79 E	P3.1 82 F	P3.2 66 F	P3.3 56 E	P4.1 49 F	P4.2 43 E	P4.3 33 D	M1.1 108 E	M1.2 92 E
M2.1 95 E	M2.2 79 E	M3.1 43 G	M3.2 36 G	M3.3 33 C	M4.1 56 C	K1.1 115 J	K1.2 85 G	K1.3 62 G	K2.1 89 E	K2.2 72 E	K2.3 59 E	K3.1 79 E	K3.2 59 E
K3.3 49 E	K4.1 72 E	K4.2 56 E	K4.3 39 E	K4.4 36 E	K4.5 30 E	K5.1 82 E	K5.2 62 E	K5.3 49 E	N1.1 108 J	N1.2 82 J	N1.3 56 I	N2.1 151 H	N2.2 138 H
N2.3 98 H	N3.1 223 H	N3.2 131 J	N3.3 66 L	N4.1 115 K	N4.2 92 J	N4.3 66 H	S1.1 92 G	S1.2 66 D	S1.3 36 C	S2.1 30 E	S2.2 26 B	S3.1 23 E	S3.2 20 B
S4.1 16 E	S4.2 16 B												

Product	DC	DC	LCF	OAL	CZC MS	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)			
209C01/4	1/4	.2500	2.7/8	6.1/8	1	1	6000767
209C05/16	5/16	.3125	3.1/8	6.3/8	1	1	6000843
209C03/8	3/8	.3750	3.1/2	7.3/8	2	1	6000800
209C013/32	13/32	.4063	3.5/8	7.1/2	2	1	6000929
209C027/64	27/64	.4219	3.7/8	7.3/4	2	1	6000789
209C07/16	7/16	.4375	3.7/8	7.3/4	2	1	6000869
209C029/64	29/64	.4531	4.1/8	8"	2	1	6000795
209C015/32	15/32	.4688	4.1/8	8"	2	1	6000942
209C031/64	31/64	.4844	4.3/8	8.1/4	2	1	6000811
209C01/2	1/2	.5000	4.3/8	8.1/4	2	1	6001028
209C033/64	33/64	.5156	4.5/8	8.1/2	2	1	6000814
209C017/32	17/32	.5313	4.5/8	8.1/2	2	1	6000948
209C035/64	35/64	.5469	4.7/8	8.3/4	2	1	6000817
209C09/16	9/16	.5625	4.7/8	8.3/4	2	1	6000882

Product	DC	DC	LCF	OAL	CZC MS	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)			
209C05/8	5/8	.6250	4.7/8	8.3/4	2	1	6000847
209C041/64	41/64	.6406	5.1/8	9"	2	1	6000826
209C021/32	21/32	.6563	5.1/8	9.3/4	3	1	6000774
209C011/16	11/16	.6875	5.3/8	10"	3	1	6000806
209C023/32	23/32	.7188	5.5/8	10.1/4	3	1	6000779
209C03/4	3/4	.7500	5.7/8	10.1/2	3	1	6000798
209C049/64	49/64	.7656	6"	10.5/8	3	1	6000838
209C025/32	25/32	.7813	6"	10.5/8	3	1	6000783
209C013/16	13/16	.8125	6.1/8	10.3/4	3	1	6000873
209C07/8	7/8	.8750	6.1/8	10.3/4	3	1	6000878
209C015/16	15/16	.9375	6.1/8	10.3/4	3	1	6000938
209C01	1"	1.0000	6.3/8	11"	3	1	6000952
209C01.1/16	1.1/16	1.0625	6.5/8	12.1/4	4	1	6000954
209C01.3/8	1.3/8	1.3750	8.7/8	14.1/2	4	1	6000991



		HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	
Material code (BMC)		HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	
Basic standard group (BSG)		DORMER	DORMER	DIN 8374	DIN 8376	PRECISION	PRECISION	PRECISION	PRECISION	PRECISION	PRECISION	PRECISION	PRECISION	
Usable length (ULDR)		2.5xD	2.5xD	4xD	4xD	1xD	1xD	1xD	1xD	1xD	1xD	1xD	1xD	
Application angle		90°	180°	90°	180°	90°	90°	120°	120°	90°	90°	120°	120°	
Coating		ST	ST	ST	ST	Bright	TIN	Bright	TIN	Bright	TIN	Bright	TIN	
Shank														
Spiral form				λ20-35°	λ20-35°	λ20-35°	λ20-35°	λ20-35°	λ20-35°	λ20-35°	λ20-35°	λ20-35°	λ20-35°	
Hand (Cutting direction)		R	R	R	R	R	R	R	R	R	R	R	R	
Cooling (CSP)														
Product Family Code		A412	A413	A400	A402	SPS-90	SPSG-90	SPS-120	SPSG-120	SPR-90	SPRG-90	SPR-120	SPRG-120	SPL-90
PSF cutting diameters range		M3 - M10	M3 - M10	M3 - M8	M3 - M10	1/4 - 1"	1/4 - 1"	1/4 - 3/4	1/4 - 3/4	1/4 - 1"	1/4 - 1"	1/4 - 1"	1/4 - 1/2	1/4 - 1"
		237	238	239	240	241	242	243	244	245	246	247	248	249
P	P1	■	■	■	■	■	■	■	■	■	■	■	■	■
	P2	■	■	■	■	■	■	■	■	■	■	■	■	■
	P3	■	■	■	■	■	■	■	■	■	■	■	■	■
	P4	■	■	■	■	■	■	■	■	■	■	■	■	■
M	M1	■	■	■	■	■	■	■	■	■	■	■	■	■
	M2	■	■	■	■	■	■	■	■	■	■	■	■	■
	M3	■	■	■	■	■	■	■	■	■	■	■	■	■
	M4	■	■	■	■	■	■	■	■	■	■	■	■	■
K	K1	■	■	■	■	■	■	■	■	■	■	■	■	■
	K2	■	■	■	■	■	■	■	■	■	■	■	■	■
	K3	■	■	■	■	■	■	■	■	■	■	■	■	■
	K4	■	■	■	■	■	■	■	■	■	■	■	■	■
	K5	■	■	■	■	■	■	■	■	■	■	■	■	■
N	N1	■	■	■	■	■	■	■	■	■	■	■	■	■
	N2	■	■	■	■	■	■	■	■	■	■	■	■	■
	N3	■	■	■	■	■	■	■	■	■	■	■	■	■
	N4	■	■	■	■	■	■	■	■	■	■	■	■	■
	N5	■	■	■	■	■	■	■	■	■	■	■	■	■
S	S1	■	■	■	■	■	■	■	■	■	■	■	■	■
	S2	■	■	■	■	■	■	■	■	■	■	■	■	■
	S3	■	■	■	■	■	■	■	■	■	■	■	■	■
	S4	■	■	■	■	■	■	■	■	■	■	■	■	■
H	H1													
	H2													
	H3													
	H4													

■ Primary use ■ Possible use



	HSS	HSS	HSS	HSS	HSS-E	HSS	HSS	HSS	HSS	HSS	HSS	HSS-E	HSS-E	HSS	HSS-E
	PRECISION	PRECISION	PRECISION	DIN 1897	ANSI	ANSI	ANSI	BS 328	DORMER	DIN 333A	DIN 333A	DIN 333A	DIN 333A	DIN 333R	DORMER
	1xD	1xD	1xD	1xD	1.5xD	1xD	1xD	1xD	1xD	1xD	1xD	1xD	1xD	1xD	1xD
	90°	120°	120°	90°/120°	60°	82°	90°	60°	60°	60°	60°	60°	60°	R	60°
	TIN	Bright	TIN	Bright	Bright	Bright	Bright	Bright	Bright	Bright	Bright	TIN	Bright	TAIN	Bright
	λ20-35°	λ20-35°	λ20-35°	λ20-35°											
	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
	SPLG-90	SPL-120	SPLG-120	A122	A221	A217	A218	A225	A201	A200	A205	A206	A266	A210	A242
	1/4 - 1/2	1/4 - 1/2	1/4	6.00 - 20.00	N000 - N8	N1 - N7	N1 - N8	3/64 - 5/16	0.63 - 6.00	0.50 - 12.50	1.00 - 5.00	1.00 - 5.00	1.00 - 5.00	0.50 - 8.00	1.00 - 5.00
	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264
P1	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
P2	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
P3	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
P4	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
M1	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
M2	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
M3	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
M4	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
K1	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
K2	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
K3	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
K4	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
K5	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
N1	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
N2	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
N3	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
N4	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
N5	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
S1	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
S2	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
S3	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
S4	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
H1															
H2															
H3															
H4															

■ Primary use ■ Possible use

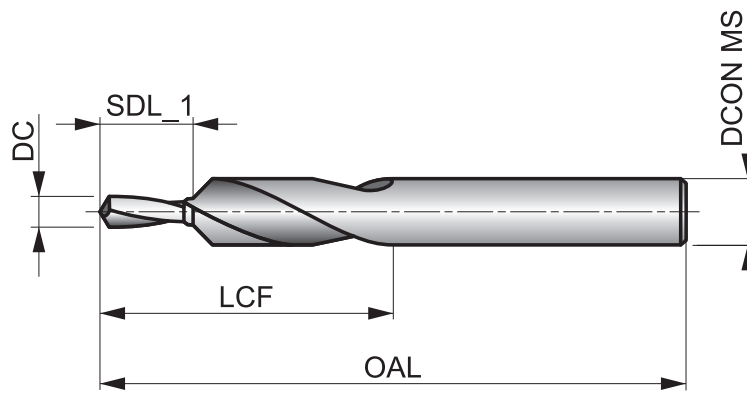


A412



HSS Step Drill, Steam Tempered Finish

Designed to drill chamfered clearance holes for standard metric screws. A 118° point angle on the drill Pilot with a 90° chamfer. Steam tempered finish retains cutting fluid and prevents chip to tool welding. Suitable for drilling many materials. It is suitable for both CNC and conventional machines.



HSS	DORMER	2.5×D
90°	ST	
R	118°	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 95 I	P1.2 ■ 108 I	P1.3 ■ 112 I	P2.1 ■ 82 I	P2.2 ■ 72 G	P2.3 ■ 62 E	P3.1 ■ 49 G	P3.2 ■ 39 G	P3.3 ■ 33 E	P4.1 ■ 30 G	P4.2 ■ 23 E	P4.3 ■ 20 C	M1.1 ■ 72 G	M1.2 ■ 62 G
M2.1 ■ 66 G	M2.2 ■ 52 G	M3.1 ■ 33 I	M3.2 ■ 30 I	M3.3 ■ 26 I	M4.1 ■ 39 E	K1.1 ■ 98 G	K1.2 ■ 72 E	K1.3 ■ 56 E	K2.1 ■ 75 E	K2.2 ■ 62 E	K2.3 ■ 49 E	K3.1 ■ 69 E	K3.2 ■ 52 E
K3.3 ■ 43 E	K4.1 ■ 62 E	K4.2 ■ 46 E	K4.3 ■ 36 E	K4.4 ■ 30 E	K4.5 ■ 26 E	K5.1 ■ 72 E	K5.2 ■ 52 E	K5.3 ■ 43 E	N1.1 ■ 148 G	N1.2 ■ 112 G	N1.3 ■ 75 G	N2.1 ■ 138 G	N2.2 ■ 121 G
N2.3 ■ 89 G	N3.1 ■ 223 G	N3.2 ■ 131 G	N3.3 ■ 66 G	N4.1 ■ 98 I	S1.1 ■ 89 G	S1.2 ■ 52 E	S1.3 ■ 26 C	S2.1 ■ 36 G	S2.2 ■ 20 C	S3.1 ■ 26 G	S3.2 ■ 13 C	S4.1 ■ 20 G	S4.2 ■ 10 C

Product	TDZ	DC	DC	LCF	OAL	SDL_1	DCON MS	Pack Qty	MID
		(mm)	(inch)						
A412M3	M3	3.40	.1339	31.0	70.0	9.00	6.60	1	5970341
A412M4	M4	4.50	.1772	40.0	84.0	11.00	9.00	1	5970344
A412M5	M5	5.50	.2165	47.0	95.0	13.00	11.00	1	5970348
A412M6	M6	6.60	.2598	51.0	102.0	15.00	13.00	1	5970352
A412M8	M8	9.00	.3543	62.0	123.0	19.00	17.20	1	5970356
A412M10	M10	11.00	.4331	70.0	141.0	23.00	21.50	1	5970338

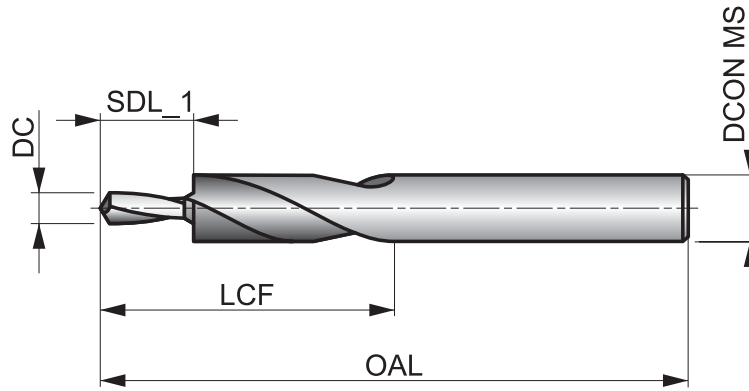


A413



HSS Step Drill, Steam Tempered Finish

A versatile tool recommended for creating counterbored clearance holes for standard metric screws. A 118° Pilot and 180° counterbore. Steam tempered finish retains cutting fluid and prevents chip to tool welding. Suitable for both CNC and conventional machines. Suitable for drilling many materials.



HSS	DORMER	2.5×D
180°	ST	
R	118°	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 95 I	P1.2 ■ 108 I	P1.3 ■ 112 I	P2.1 ■ 82 I	P2.2 ■ 72 G	P2.3 ▣ 62 E	P3.1 ■ 49 G	P3.2 ■ 39 G	P3.3 ▣ 33 E	P4.1 ■ 30 G	P4.2 ▣ 23 E	P4.3 ▣ 20 C	M1.1 ■ 72 G	M1.2 ■ 62 G
M2.1 ■ 66 G	M2.2 ■ 52 G	M3.1 ▣ 33 I	M3.2 ▣ 30 I	M3.3 ▣ 26 I	M4.1 ▣ 39 E	K1.1 ■ 98 G	K1.2 ■ 72 E	K1.3 ■ 56 E	K2.1 ▣ 75 E	K2.2 ▣ 62 E	K2.3 ▣ 49 E	K3.1 ▣ 69 E	K3.2 ▣ 52 E
K3.3 ▣ 43 E	K4.1 ▣ 62 E	K4.2 ▣ 46 E	K4.3 ▣ 36 E	K4.4 ▣ 30 E	K4.5 ▣ 26 E	K5.1 ▣ 72 E	K5.2 ▣ 52 E	K5.3 ▣ 43 E	N1.1 ▣ 148 G	N1.2 ▣ 112 G	N1.3 ▣ 75 G	N2.1 ▣ 138 G	N2.2 ▣ 121 G
N2.3 ▣ 89 G	N3.1 ▣ 223 G	N3.2 ▣ 131 G	N3.3 ▣ 66 G	N4.1 ▣ 98 I	S1.1 ▣ 89 G	S1.2 ▣ 52 E	S1.3 ▣ 26 C	S2.1 ▣ 36 G	S2.2 ▣ 20 C	S3.1 ▣ 26 G	S3.2 ▣ 13 C	S4.1 ▣ 20 G	S4.2 ▣ 10 C

Product	TDZ	DC	DC	LCF	OAL	SDL_1	DCON MS	Pack Qty	MID
		(mm)	(inch)						
A413M3	M3	3.40	.1339	28.0	66.0	9.00	6.00	1	5970367
A413M4	M4	4.50	.1772	37.0	79.0	11.00	8.00	1	5969991
A413M5	M5	5.50	.2165	43.0	89.0	13.00	10.00	1	5970050
A413M6	M6	6.60	.2598	47.0	95.0	15.00	11.00	1	5970102
A413M8	M8	9.00	.3543	56.0	111.0	19.00	15.00	1	5970145
A413M10	M10	11.00	.4331	62.0	123.0	23.00	18.00	1	5970360

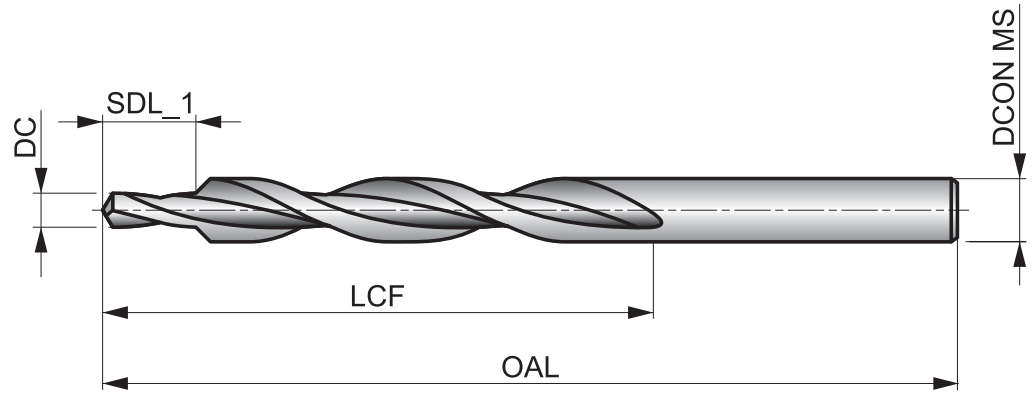


A400



HSS Subland Drill, Steam Tempered Finish

A versatile tool, designed to drill chamfered clearance holes for standard metric screws. A 118° point angle on the drill Pilot and a 90° Countersink. Suitable for both CNC and conventional machines. Steam tempered finish retains cutting fluid and prevents chip to tool welding. Suitable for drilling many materials.



HSS	DIN 8374	4xD
90°	ST	
λ 20-35°	R	118°

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1	P1.2	P1.3	P2.1	P2.2	P2.3	P3.1	P3.2	P3.3	P4.1	P4.2	P4.3	M1.1	M1.2
■ 95 G	■ 108 G	■ 112 G	■ 82 G	■ 72 E	■ 62 C	■ 49 E	■ 39 E	■ 33 C	■ 30 E	■ 23 C	■ 20 C	■ 72 E	■ 62 E
M2.1	M2.2	M3.1	M3.2	M3.3	M4.1	K1.1	K1.2	K1.3	K2.1	K2.2	K2.3	K3.1	K3.2
■ 66 E	■ 52 E	■ 33 G	■ 30 G	■ 26 G	■ 39 C	■ 98 G	■ 72 E	■ 56 E	■ 75 E	■ 62 E	■ 49 C	■ 69 E	■ 52 E
K3.3	K4.1	K4.2	K4.3	K4.4	K4.5	K5.1	K5.2	K5.3	N1.1	N1.2	N1.3	N2.1	N2.2
■ 43 C	■ 62 E	■ 46 E	■ 36 C	■ 30 C	■ 26 C	■ 72 E	■ 52 E	■ 43 C	■ 148 E	■ 112 E	■ 75 E	■ 161 E	■ 144 E
N2.3	N3.1	N3.2	N3.3	N4.1	S1.1	S1.2	S1.3	S2.1	S2.2	S3.1	S3.2	S4.1	S4.2
■ 105 E	■ 223 E	■ 131 E	■ 66 E	■ 98 I	■ 75 E	■ 46 C	■ 26 A	■ 26 C	■ 20 A	■ 20 C	■ 13 A	■ 16 C	■ 10 A

Product	TDZ	DC	DC	LCF	OAL	SDL_1	DCON MS	Pack Qty	MID
		(mm)	(inch)							(mm)	(mm)
A400M3	M3	3.20	.1260	57.0	93.0	9.00	6.00	1	5970234
A400M4	M4	4.30	.1693	75.0	117.0	11.00	8.00	1	5970241
A400M5	M5	5.30	.2087	87.0	133.0	13.00	10.00	1	5970245
A400M6	M6	6.40	.2520	94.0	142.0	15.00	11.50	1	5970249
A400M8	M8	8.40	.3307	114.0	169.0	19.00	15.00	1	5970252

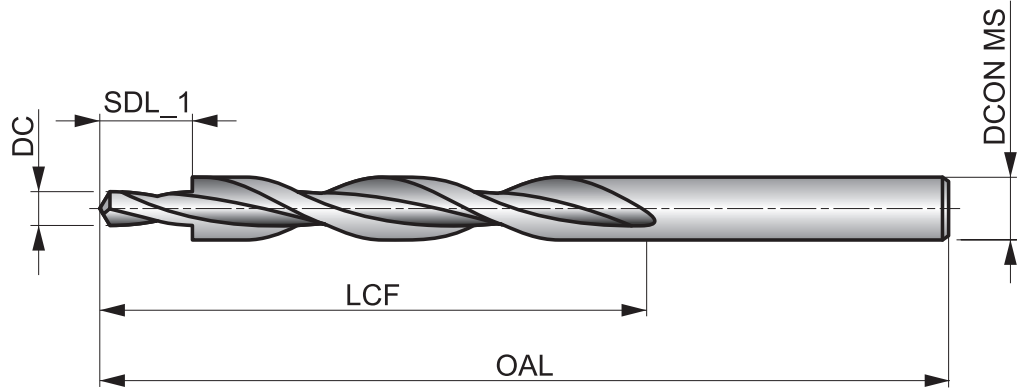


A402



HSS Subland Drill, Steam Tempered Finish

Includes a 118° Pilot and 180° counterbore with specific Pilot diameter and length, recommended for creating counterbored clearance holes for standard metric screws. Steam tempered finish retains cutting fluid and prevents chip to tool welding. Suitable for drilling many materials.



HSS	DIN 8376	4xD
180°	ST	
λ 20-35°	R	118°

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 95 G	P1.2 ■ 108 G	P1.3 ■ 112 G	P2.1 ■ 82 G	P2.2 ■ 72 E	P2.3 ■ 62 C	P3.1 ■ 49 E	P3.2 ■ 39 E	P3.3 ■ 33 C	P4.1 ■ 30 E	P4.2 ■ 23 C	P4.3 ■ 20 C	M1.1 ■ 72 E	M1.2 ■ 62 E
M2.1 ■ 66 E	M2.2 ■ 52 E	M3.1 ■ 33 G	M3.2 ■ 30 G	M3.3 ■ 26 G	M4.1 ■ 39 C	K1.1 ■ 98 G	K1.2 ■ 72 E	K1.3 ■ 56 E	K2.1 ■ 75 E	K2.2 ■ 62 E	K2.3 ■ 49 C	K3.1 ■ 69 E	K3.2 ■ 52 E
K3.3 ■ 43 C	K4.1 ■ 62 E	K4.2 ■ 46 E	K4.3 ■ 36 C	K4.4 ■ 30 C	K4.5 ■ 26 C	K5.1 ■ 72 E	K5.2 ■ 52 E	K5.3 ■ 43 C	N1.1 ■ 148 E	N1.2 ■ 112 E	N1.3 ■ 75 E	N2.1 ■ 161 E	N2.2 ■ 144 E
N2.3 ■ 105 E	N3.1 ■ 223 E	N3.2 ■ 131 E	N3.3 ■ 66 E	N4.1 ■ 98 I	S1.1 ■ 75 E	S1.2 ■ 46 C	S1.3 ■ 26 A	S2.1 ■ 26 C	S2.2 ■ 20 A	S3.1 ■ 20 C	S3.2 ■ 13 A	S4.1 ■ 16 C	S4.2 ■ 10 A

Product	TDZ	DC	DC	LCF	OAL	SDL_1	DCON MS	Pack Qty	MID
		(mm)	(inch)						
A402M3	M3	3.40	.1339	57.0	93.0	9.00	6.00	1	5970276
A402M4	M4	4.50	.1772	75.0	117.0	11.00	8.00	1	5970283
A402M5	M5	5.50	.2165	87.0	133.0	13.00	10.00	1	5970287
A402M6	M6	6.60	.2598	94.0	142.0	15.00	11.00	1	5970291
A402M8	M8	9.00	.3543	114.0	169.0	19.00	15.00	1	5970296
A402M10	M10	11.00	.4331	130.0	191.0	23.00	18.00	1	5970272

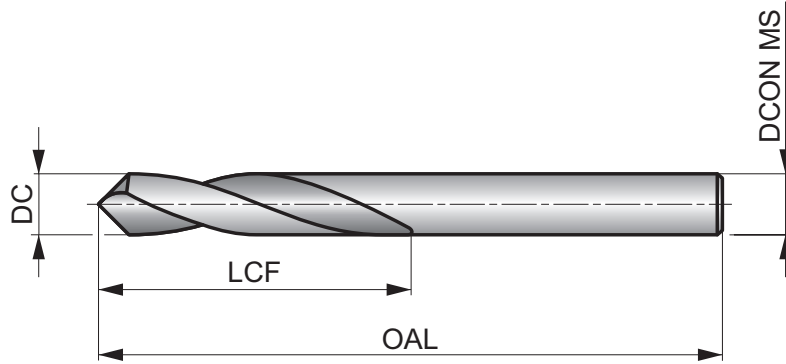


SPS-90



HSS 90° Spotting Drill, Short Length Bright Finish

Shorter stub length spotting drill creates a 90° point in the material to ensure accurate location for drilling as a secondary operation. Can also be used to chamfer existing holes. Bright surface finish improves chip flow in soft or non-ferrous materials.



HSS	PRECISION	1×D
90°	Bright	
λ 20-35°	R	

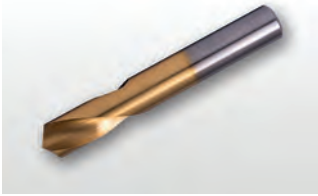
Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 118 E	P1.2 ■ 131 E	P1.3 ■ 135 E	P2.1 ■ 102 E	P2.2 ■ 89 C	P2.3 ▣ 79 C	P3.1 ▣ 69 C	P3.2 ▣ 56 C	P3.3 ▣ 46 C	P4.1 ▣ 39 C	P4.2 ▣ 33 C	P4.3 ▣ 30 B	M1.1 ▣ 72 C	M1.2 ▣ 62 C
M2.1 ▣ 66 C	M2.2 ▣ 52 C	M3.1 ▣ 33 D	M3.2 ▣ 30 D	M3.3 ▣ 26 B	M4.1 ▣ 33 B	K1.1 ▣ 105 E	K1.2 ▣ 79 C	K1.3 ▣ 59 C	K2.1 ▣ 82 C	K2.2 ▣ 66 C	K2.3 ▣ 52 B	K3.1 ▣ 72 C	K3.2 ▣ 56 C
K3.3 ▣ 43 B	K4.1 ▣ 66 C	K4.2 ▣ 49 C	K4.3 ▣ 36 B	K4.4 ▣ 33 B	K4.5 ▣ 26 B	K5.1 ▣ 75 C	K5.2 ▣ 56 C	K5.3 ▣ 43 B	N1.1 ■ 108 E	N1.2 ■ 82 E	N1.3 ■ 56 E	N2.1 ▣ 151 D	N2.2 ▣ 138 D
N2.3 ▣ 98 D	N3.1 ■ 184 D	N3.2 ■ 108 E	N3.3 ■ 56 D	N4.1 ▣ 98 F	N4.2 ▣ 115 E	N4.3 ▣ 56 D	S1.1 ▣ 89 C	S1.2 ▣ 39 B	S1.3 ▣ 23 A	S2.1 ▣ 36 C	S2.2 ▣ 20 A	S3.1 ▣ 26 C	S3.2 ▣ 13 A
S4.1 ▣ 20 C	S4.2 ▣ 10 A												

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
SPS-901/4	1/4	.2500	3/4	2.1/2	1/4	1	6000094
SPS-903/8	3/8	.3750	1.1/8	3.1/8	3/8	1	6000100
SPS-901/2	1/2	.5000	1.3/8	3.3/4	1/2	1	6000090
SPS-905/8	5/8	.6250	1.5/8	4.3/8	5/8	1	6000104
SPS-903/4	3/4	.7500	1.7/8	5"	3/4	1	6000097
SPS-901	1"	1.0000	2.1/4	6"	1"	1	6000087



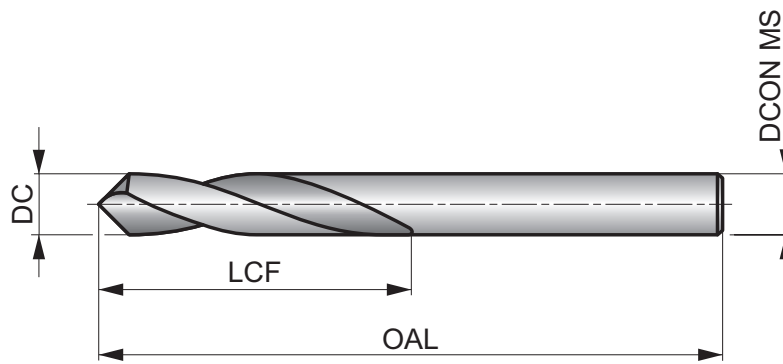
SPSG-90



HSS 90° Spotting Drill, Short Length TiN Coated

Shorter stub length spotting drill creates a 90° point in the material to ensure accurate location for drilling as a secondary operation. Can also be used to chamfer existing holes. TiN coating increases wear resistance and improves tool life, can be used on most materials.

HSS	PRECISION	1×D
90°	TiN	
λ 20-35°	R	



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 118 E	P1.2 ■ 131 E	P1.3 ■ 135 E	P2.1 ■ 102 E	P2.2 ■ 89 C	P2.3 ▣ 79 C	P3.1 ▣ 69 C	P3.2 ▣ 56 C	P3.3 ▣ 46 C	P4.1 ▣ 39 C	P4.2 ▣ 33 C	P4.3 ▣ 30 B	M1.1 ▣ 72 C	M1.2 ▣ 62 C
M2.1 ▣ 66 C	M2.2 ▣ 52 C	M3.1 ▣ 33 D	M3.2 ▣ 30 D	M3.3 ▣ 26 B	M4.1 ▣ 33 B	K1.1 ▣ 105 E	K1.2 ▣ 79 C	K1.3 ▣ 59 C	K2.1 ▣ 82 C	K2.2 ▣ 66 C	K2.3 ▣ 52 B	K3.1 ▣ 72 C	K3.2 ▣ 56 C
K3.3 ▣ 43 B	K4.1 ▣ 66 C	K4.2 ▣ 49 C	K4.3 ▣ 36 B	K4.4 ▣ 33 B	K4.5 ▣ 26 B	K5.1 ▣ 75 C	K5.2 ▣ 56 C	K5.3 ▣ 43 B	N1.1 ■ 108 E	N1.2 ■ 82 E	N1.3 ■ 56 E	N2.1 ▣ 151 D	N2.2 ▣ 138 D
N2.3 ▣ 98 D	N3.1 ■ 184 D	N3.2 ■ 108 E	N3.3 ■ 56 D	N4.1 ▣ 98 F	N4.2 ▣ 115 E	N4.3 ▣ 56 D	S1.1 ▣ 89 C	S1.2 ▣ 39 B	S1.3 ▣ 23 A	S2.1 ▣ 36 C	S2.2 ▣ 20 A	S3.1 ▣ 26 C	S3.2 ▣ 13 A
S4.1 ▣ 20 C	S4.2 ▣ 10 A												

Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)	(inch)		
SPSG-901/4	1/4	.2500	3/4	2.1/2	1/4	1	6000142
SPSG-903/8	3/8	.3750	1.1/8	3.1/8	3/8	1	6000150
SPSG-901/2	1/2	.5000	1.3/8	3.3/4	1/2	1	6000139
SPSG-905/8	5/8	.6250	1.5/8	4.3/8	5/8	1	6000154
SPSG-903/4	3/4	.7500	1.7/8	5"	3/4	1	6000146
SPSG-901	1"	1.0000	2.1/4	6"	1"	1	6000135

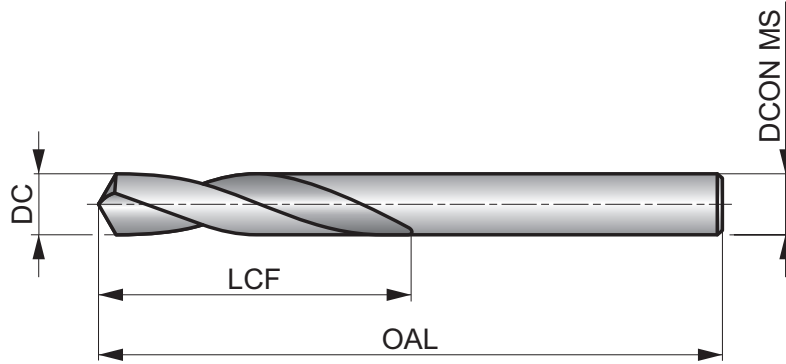


SPS-120



HSS 120° Spotting Drill, Short Length Bright Finish

Shorter stub length spotting drill creates a 120° point in the material to ensure accurate location for drilling as a secondary operation. Can also be used to chamfer existing holes. Bright surface finish improves chip flow in soft or non-ferrous materials.



HSS	PRECISION	1×D
120°	Bright	
λ 20-35°	R	

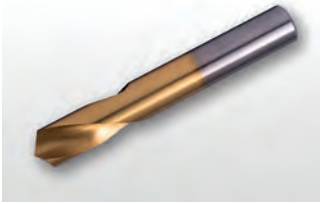
Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 118 E	P1.2 ■ 131 E	P1.3 ■ 135 E	P2.1 ■ 102 E	P2.2 ■ 89 C	P2.3 ■ 79 C	P3.1 ■ 69 C	P3.2 ■ 56 C	P3.3 ■ 46 C	P4.1 ■ 39 C	P4.2 ■ 33 C	P4.3 ■ 30 B	M1.1 ■ 72 C	M1.2 ■ 62 C
M2.1 ■ 66 C	M2.2 ■ 52 C	M3.1 ■ 33 D	M3.2 ■ 30 D	M3.3 ■ 26 B	M4.1 ■ 33 B	K1.1 ■ 105 E	K1.2 ■ 79 C	K1.3 ■ 59 C	K2.1 ■ 82 C	K2.2 ■ 66 C	K2.3 ■ 52 B	K3.1 ■ 72 C	K3.2 ■ 56 C
K3.3 ■ 43 B	K4.1 ■ 66 C	K4.2 ■ 49 C	K4.3 ■ 36 B	K4.4 ■ 33 B	K4.5 ■ 26 B	K5.1 ■ 75 C	K5.2 ■ 56 C	K5.3 ■ 43 B	N1.1 ■ 108 E	N1.2 ■ 82 E	N1.3 ■ 56 E	N2.1 ■ 151 D	N2.2 ■ 138 D
N2.3 ■ 98 D	N3.1 ■ 184 D	N3.2 ■ 108 E	N3.3 ■ 56 D	N4.1 ■ 98 F	N4.2 ■ 115 E	N4.3 ■ 56 D	S1.1 ■ 89 C	S1.2 ■ 39 B	S1.3 ■ 23 A	S2.1 ■ 36 C	S2.2 ■ 20 A	S3.1 ■ 26 C	S3.2 ■ 13 A
S4.1 ■ 20 C	S4.2 ■ 10 A												

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
SPS-1201/4	1/4	.2500	3/4	2.1/2	1/4	1	6000072
SPS-1203/8	3/8	.3750	1.1/8	3.1/8	3/8	1	6000078
SPS-1201/2	1/2	.5000	1.3/8	3.3/4	1/2	1	6000069
SPS-1205/8	5/8	.6250	1.5/8	4.3/8	5/8	1	6000081
SPS-1203/4	3/4	.7500	1.7/8	5"	3/4	1	6000075



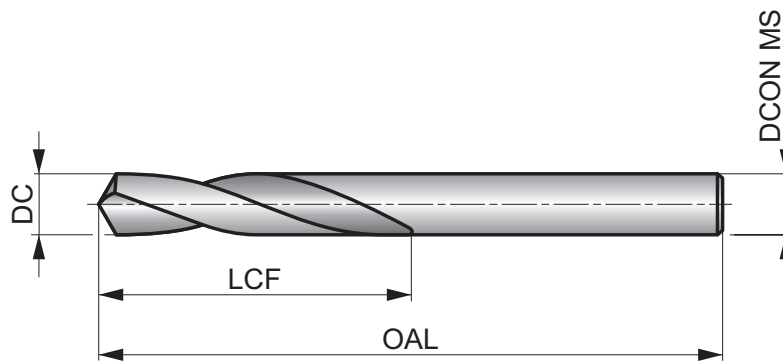
SPSG-120



HSS 120° Spotting Drill, Short Length TiN Coated

Shorter stub length spotting drill creates a 120° point in the material to ensure accurate location for drilling as a secondary operation. Can also be used to chamfer existing holes. TiN coating increases wear resistance and improves tool life, can be used on most materials.

HSS	PRECISION	1×D
120°	TiN	
λ 20-35°	R	



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 118 E	P1.2 ■ 131 E	P1.3 ■ 135 E	P2.1 ■ 102 E	P2.2 ■ 89 C	P2.3 ▣ 79 C	P3.1 ▣ 69 C	P3.2 ▣ 56 C	P3.3 ▣ 46 C	P4.1 ▣ 39 C	P4.2 ▣ 33 C	P4.3 ▣ 30 B	M1.1 ▣ 72 C	M1.2 ▣ 62 C
M2.1 ▣ 66 C	M2.2 ▣ 52 C	M3.1 ▣ 33 D	M3.2 ▣ 30 D	M3.3 ▣ 26 B	M4.1 ▣ 33 B	K1.1 ▣ 105 E	K1.2 ▣ 79 C	K1.3 ▣ 59 C	K2.1 ▣ 82 C	K2.2 ▣ 66 C	K2.3 ▣ 52 B	K3.1 ▣ 72 C	K3.2 ▣ 56 C
K3.3 ▣ 43 B	K4.1 ▣ 66 C	K4.2 ▣ 49 C	K4.3 ▣ 36 B	K4.4 ▣ 33 B	K4.5 ▣ 26 B	K5.1 ▣ 75 C	K5.2 ▣ 56 C	K5.3 ▣ 43 B	N1.1 ■ 108 E	N1.2 ■ 82 E	N1.3 ■ 56 E	N2.1 ▣ 151 D	N2.2 ▣ 138 D
N2.3 ▣ 98 D	N3.1 ■ 184 D	N3.2 ■ 108 E	N3.3 ■ 56 D	N4.1 ▣ 98 F	N4.2 ▣ 115 E	N4.3 ▣ 56 D	S1.1 ▣ 89 C	S1.2 ▣ 39 B	S1.3 ▣ 23 A	S2.1 ▣ 36 C	S2.2 ▣ 20 A	S3.1 ▣ 26 C	S3.2 ▣ 13 A
S4.1 ▣ 20 C	S4.2 ▣ 10 A												

Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)	(inch)		
SPSG-1201/4	1/4	.2500	3/4	2.1/2	1/4	1	6000113
SPSG-1203/8	3/8	.3750	1.1/8	3.1/8	3/8	1	6000127
SPSG-1201/2	1/2	.5000	1.3/8	3.3/4	1/2	1	6000110
SPSG-1203/4	3/4	.7500	1.7/8	5"	3/4	1	6000116

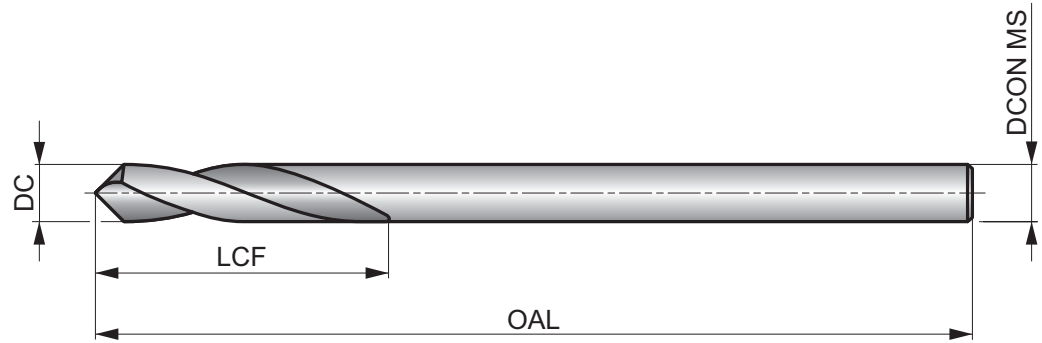


SPR-90



HSS 90° Spotting Drill, Regular Length Bright Finish

Standard length spotting drill creates a 90° point in the material to ensure accurate location for drilling as a secondary operation. Can also be used to chamfer existing holes. Bright surface finish improves chip flow in soft or non-ferrous materials.



HSS	PRECISION	1×D
90°	Bright	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 118 E	P1.2 ■ 131 E	P1.3 ■ 135 E	P2.1 ■ 102 E	P2.2 ■ 89 C	P2.3 ■ 79 C	P3.1 ■ 69 C	P3.2 ■ 56 C	P3.3 ■ 46 C	P4.1 ■ 39 C	P4.2 ■ 33 C	P4.3 ■ 30 B	M1.1 ■ 72 C	M1.2 ■ 62 C
M2.1 ■ 66 C	M2.2 ■ 52 C	M3.1 ■ 33 D	M3.2 ■ 30 D	M3.3 ■ 26 B	M4.1 ■ 33 B	K1.1 ■ 105 E	K1.2 ■ 79 C	K1.3 ■ 59 C	K2.1 ■ 82 C	K2.2 ■ 66 C	K2.3 ■ 52 B	K3.1 ■ 72 C	K3.2 ■ 56 C
K3.3 ■ 43 B	K4.1 ■ 66 C	K4.2 ■ 49 C	K4.3 ■ 36 B	K4.4 ■ 33 B	K4.5 ■ 26 B	K5.1 ■ 75 C	K5.2 ■ 56 C	K5.3 ■ 43 B	N1.1 ■ 108 E	N1.2 ■ 82 E	N1.3 ■ 56 E	N2.1 ■ 151 D	N2.2 ■ 138 D
N2.3 ■ 98 D	N3.1 ■ 184 D	N3.2 ■ 108 E	N3.3 ■ 56 D	N4.1 ■ 98 F	N4.2 ■ 115 E	N4.3 ■ 56 D	S1.1 ■ 89 C	S1.2 ■ 39 B	S1.3 ■ 23 A	S2.1 ■ 36 C	S2.2 ■ 20 A	S3.1 ■ 26 C	S3.2 ■ 13 A
S4.1 ■ 20 C	S4.2 ■ 10 A												

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
SPR-901/4	1/4	.2500	3/4	4"	1/4	1	6000101
SPR-903/8	3/8	.3750	1.1/8	5"	3/8	1	6000112
SPR-901/2	1/2	.5000	1.3/8	6"	1/2	1	6000098
SPR-905/8	5/8	.6250	1.5/8	7"	5/8	1	6000050
SPR-903/4	3/4	.7500	1.7/8	8"	3/4	1	6000105
SPR-901	1"	1.0000	2.1/4	8"	1"	1	6000095

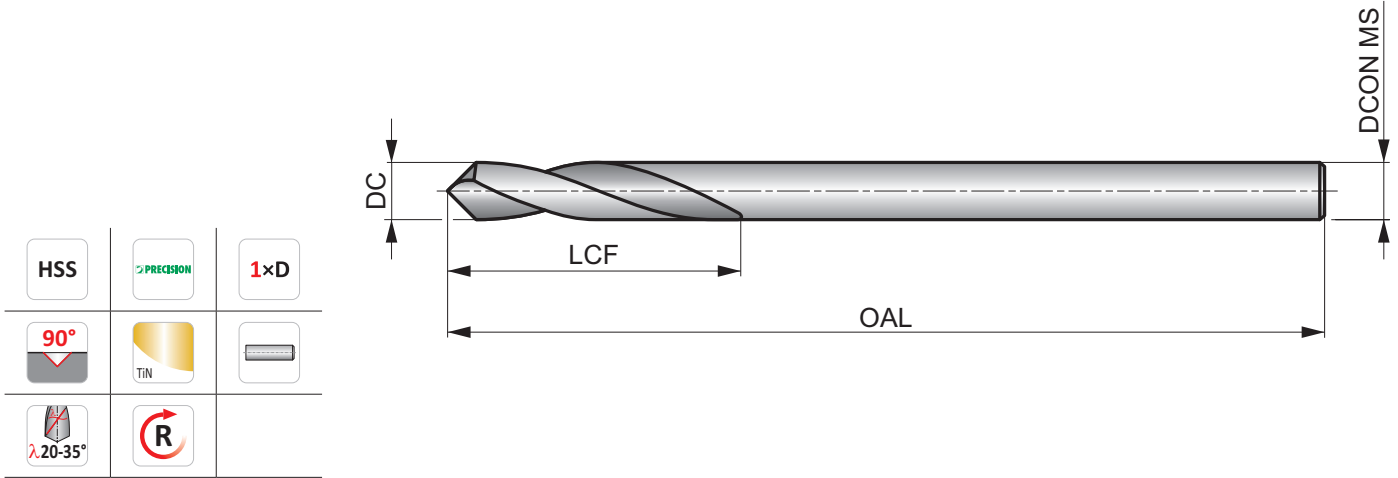


SPRG-90



HSS 90° Spotting Drill, Regular Length TiN Coated

Standard length spotting drill creates a 90° point in the material to ensure accurate location for drilling as a secondary operation. Can also be used to chamfer existing holes. TiN coating increases wear resistance and improves tool life, can be used on most materials.



HSS	PRECISION	1×D
90°	TiN	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 118 E	P1.2 ■ 131 E	P1.3 ■ 135 E	P2.1 ■ 102 E	P2.2 ■ 89 C	P2.3 ▣ 79 C	P3.1 ▣ 69 C	P3.2 ▣ 56 C	P3.3 ▣ 46 C	P4.1 ▣ 39 C	P4.2 ▣ 33 C	P4.3 ▣ 30 B	M1.1 ▣ 72 C	M1.2 ▣ 62 C
M2.1 ▣ 66 C	M2.2 ▣ 52 C	M3.1 ▣ 33 D	M3.2 ▣ 30 D	M3.3 ▣ 26 B	M4.1 ▣ 33 B	K1.1 ▣ 105 E	K1.2 ▣ 79 C	K1.3 ▣ 59 C	K2.1 ▣ 82 C	K2.2 ▣ 66 C	K2.3 ▣ 52 B	K3.1 ▣ 72 C	K3.2 ▣ 56 C
K3.3 ▣ 43 B	K4.1 ▣ 66 C	K4.2 ▣ 49 C	K4.3 ▣ 36 B	K4.4 ▣ 33 B	K4.5 ▣ 26 B	K5.1 ▣ 75 C	K5.2 ▣ 56 C	K5.3 ▣ 43 B	N1.1 ■ 108 E	N1.2 ■ 82 E	N1.3 ■ 56 E	N2.1 ▣ 151 D	N2.2 ▣ 138 D
N2.3 ▣ 98 D	N3.1 ■ 184 D	N3.2 ■ 108 E	N3.3 ■ 56 D	N4.1 ▣ 98 F	N4.2 ▣ 115 E	N4.3 ▣ 56 D	S1.1 ▣ 89 C	S1.2 ▣ 39 B	S1.3 ▣ 23 A	S2.1 ▣ 36 C	S2.2 ▣ 20 A	S3.1 ▣ 26 C	S3.2 ▣ 13 A
S4.1 ▣ 20 C	S4.2 ▣ 10 A												

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
SPRG-901/4	1/4	.2500	3/4	4"	1/4	1	6000055
SPRG-903/8	3/8	.3750	1.1/8	5"	3/8	1	6000060
SPRG-901/2	1/2	.5000	1.3/8	6"	1/2	1	6000222
SPRG-903/4	3/4	.7500	1.7/8	8"	3/4	1	6000057
SPRG-901	1"	1.0000	2.1/4	8"	1"	1	6000219

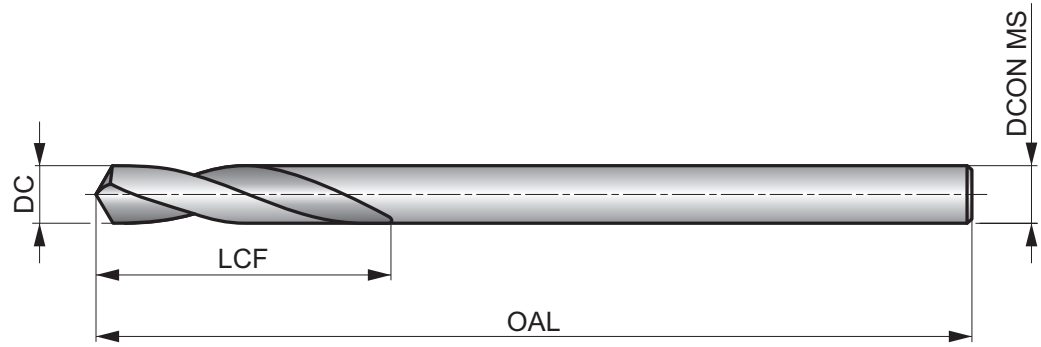


SPR-120



HSS 120° Spotting Drill, Regular Length Bright Finish

Standard length spotting drill creates a 120° point in the material to ensure accurate location for drilling as a secondary operation. Can also be used to chamfer existing holes. Bright surface finish improves chip flow in soft or non-ferrous materials.



HSS	PRECISION	1×D
120°	Bright	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 118 E	P1.2 ■ 131 E	P1.3 ■ 135 E	P2.1 ■ 102 E	P2.2 ■ 89 C	P2.3 ■ 79 C	P3.1 ■ 69 C	P3.2 ■ 56 C	P3.3 ■ 46 C	P4.1 ■ 39 C	P4.2 ■ 33 C	P4.3 ■ 30 B	M1.1 ■ 72 C	M1.2 ■ 62 C
M2.1 ■ 66 C	M2.2 ■ 52 C	M3.1 ■ 33 D	M3.2 ■ 30 D	M3.3 ■ 26 B	M4.1 ■ 33 B	K1.1 ■ 105 E	K1.2 ■ 79 C	K1.3 ■ 59 C	K2.1 ■ 82 C	K2.2 ■ 66 C	K2.3 ■ 52 B	K3.1 ■ 72 C	K3.2 ■ 56 C
K3.3 ■ 43 B	K4.1 ■ 66 C	K4.2 ■ 49 C	K4.3 ■ 36 B	K4.4 ■ 33 B	K4.5 ■ 26 B	K5.1 ■ 75 C	K5.2 ■ 56 C	K5.3 ■ 43 B	N1.1 ■ 108 E	N1.2 ■ 82 E	N1.3 ■ 56 E	N2.1 ■ 151 D	N2.2 ■ 138 D
N2.3 ■ 98 D	N3.1 ■ 184 D	N3.2 ■ 108 E	N3.3 ■ 56 D	N4.1 ■ 98 F	N4.2 ■ 115 E	N4.3 ■ 56 D	S1.1 ■ 89 C	S1.2 ■ 39 B	S1.3 ■ 23 A	S2.1 ■ 36 C	S2.2 ■ 20 A	S3.1 ■ 26 C	S3.2 ■ 13 A
S4.1 ■ 20 C	S4.2 ■ 10 A												

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
SPR-1201/4	1/4	.2500	3/4	4"	1/4	1	6000082
SPR-1203/8	3/8	.3750	1.1/8	5"	3/8	1	6000088
SPR-1201/2	1/2	.5000	1.3/8	6"	1/2	1	6000079
SPR-1201	1"	1.0000	2.1/4	8"	1"	1	6000076

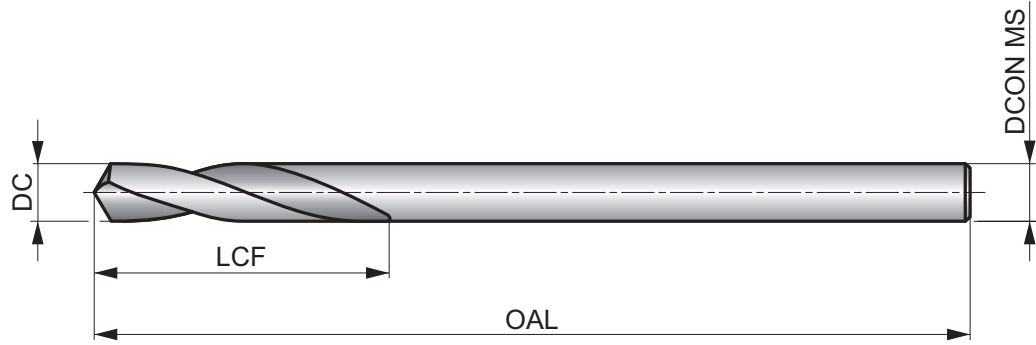


SPRG-120



HSS 120° Spotting Drill, Regular Length TiN Coated

Standard length spotting drill creates a 120° point in the material to ensure accurate location for drilling as a secondary operation. Can also be used to chamfer existing holes. TiN coating increases wear resistance and improves tool life, can be used on most materials.



HSS	PRECISION	1×D
120°	TiN	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 118 E	P1.2 ■ 131 E	P1.3 ■ 135 E	P2.1 ■ 102 E	P2.2 ■ 89 C	P2.3 ▣ 79 C	P3.1 ▣ 69 C	P3.2 ▣ 56 C	P3.3 ▣ 46 C	P4.1 ▣ 39 C	P4.2 ▣ 33 C	P4.3 ▣ 30 B	M1.1 ▣ 72 C	M1.2 ▣ 62 C
M2.1 ▣ 66 C	M2.2 ▣ 52 C	M3.1 ▣ 33 D	M3.2 ▣ 30 D	M3.3 ▣ 26 B	M4.1 ▣ 33 B	K1.1 ▣ 105 E	K1.2 ▣ 79 C	K1.3 ▣ 59 C	K2.1 ▣ 82 C	K2.2 ▣ 66 C	K2.3 ▣ 52 B	K3.1 ▣ 72 C	K3.2 ▣ 56 C
K3.3 ▣ 43 B	K4.1 ▣ 66 C	K4.2 ▣ 49 C	K4.3 ▣ 36 B	K4.4 ▣ 33 B	K4.5 ▣ 26 B	K5.1 ▣ 75 C	K5.2 ▣ 56 C	K5.3 ▣ 43 B	N1.1 ■ 108 E	N1.2 ■ 82 E	N1.3 ■ 56 E	N2.1 ▣ 151 D	N2.2 ▣ 138 D
N2.3 ▣ 98 D	N3.1 ■ 184 D	N3.2 ■ 108 E	N3.3 ■ 56 D	N4.1 ▣ 98 F	N4.2 ▣ 115 E	N4.3 ▣ 56 D	S1.1 ▣ 89 C	S1.2 ▣ 39 B	S1.3 ▣ 23 A	S2.1 ▣ 36 C	S2.2 ▣ 20 A	S3.1 ▣ 26 C	S3.2 ▣ 13 A
S4.1 ▣ 20 C	S4.2 ▣ 10 A												

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
SPRG-1201/4	1/4	.2500	3/4	4"	1/4	1	6000166
SPRG-1203/8	3/8	.3750	1.1/8	5"	3/8	1	6000213
SPRG-1201/2	1/2	.5000	1.3/8	6"	1/2	1	6000122

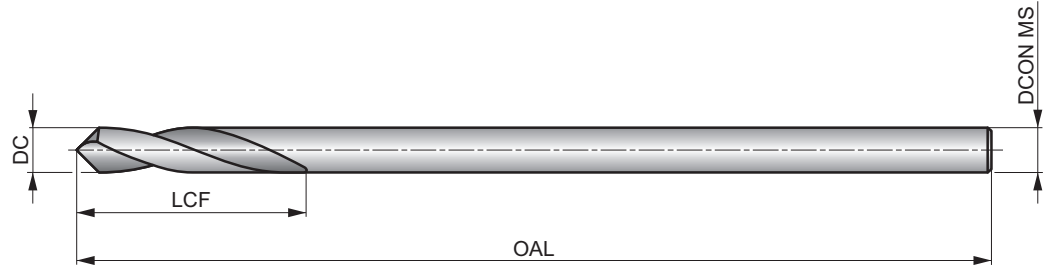


SPL-90



HSS 90° Spotting Drill, Long Length Bright Finish

Spotting drill with longer shank creates a 90° point in the material to ensure accurate location for drilling as a secondary operation. Can also be used to chamfer existing holes. To be used where longer reach is needed. Bright surface finish improves chip flow in soft or non-ferrous materials.



HSS	PRECISION	1×D
90°	Bright	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 118 E	P1.2 ■ 131 E	P1.3 ■ 135 E	P2.1 ■ 102 E	P2.2 ■ 89 C	P2.3 ▣ 79 C	P3.1 ▣ 69 C	P3.2 ▣ 56 C	P3.3 ▣ 46 C	P4.1 ▣ 39 C	P4.2 ▣ 33 C	P4.3 ▣ 30 B	M1.1 ▣ 72 C	M1.2 ▣ 62 C
M2.1 ▣ 66 C	M2.2 ▣ 52 C	M3.1 ▣ 33 D	M3.2 ▣ 30 D	M3.3 ▣ 26 B	M4.1 ▣ 33 B	K1.1 ▣ 105 E	K1.2 ▣ 79 C	K1.3 ▣ 59 C	K2.1 ▣ 82 C	K2.2 ▣ 66 C	K2.3 ▣ 52 B	K3.1 ▣ 72 C	K3.2 ▣ 56 C
K3.3 ▣ 43 B	K4.1 ▣ 66 C	K4.2 ▣ 49 C	K4.3 ▣ 36 B	K4.4 ▣ 33 B	K4.5 ▣ 26 B	K5.1 ▣ 75 C	K5.2 ▣ 56 C	K5.3 ▣ 43 B	N1.1 ■ 108 E	N1.2 ■ 82 E	N1.3 ■ 56 E	N2.1 ▣ 151 D	N2.2 ▣ 138 D
N2.3 ▣ 98 D	N3.1 ■ 184 D	N3.2 ■ 108 E	N3.3 ■ 56 D	N4.1 ▣ 98 F	N4.2 ▣ 115 E	N4.3 ▣ 56 D	S1.1 ▣ 89 C	S1.2 ▣ 39 B	S1.3 ▣ 23 A	S2.1 ▣ 36 C	S2.2 ▣ 20 A	S3.1 ▣ 26 C	S3.2 ▣ 13 A
S4.1 ▣ 20 C	S4.2 ▣ 10 A												

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
SPL-901/4	1/4	.2500	3/4	6"	1/4	1	6000025
SPL-903/8	3/8	.3750	1.1/8	7"	3/8	1	6000031
SPL-901/2	1/2	.5000	1.3/8	8"	1/2	1	6000022
SPL-905/8	5/8	.6250	1.5/8	9"	5/8	1	6000034
SPL-903/4	3/4	.7500	1.7/8	10"	3/4	1	6000028
SPL-901	1"	1.0000	2.1/4	10"	1"	1	6000019

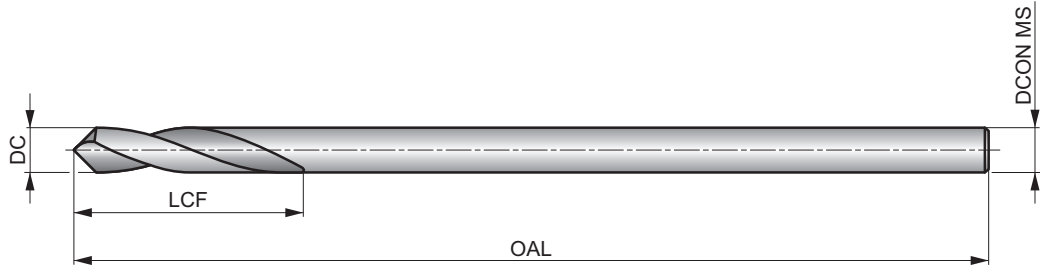


SPLG-90



HSS 90° Spotting Drill, Long Length TiN Coated

Spotting drill with longer shank creates a 90° point in the material to ensure accurate location for drilling as a secondary operation. Can also be used to chamfer existing holes. To be used where longer reach is needed. TiN coating increases wear resistance and improves tool life, can be used on most materials.



HSS	PRECISION	1×D
90°	TiN	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 118 E	P1.2 ■ 131 E	P1.3 ■ 135 E	P2.1 ■ 102 E	P2.2 ■ 89 C	P2.3 ▣ 79 C	P3.1 ▣ 69 C	P3.2 ▣ 56 C	P3.3 ▣ 46 C	P4.1 ▣ 39 C	P4.2 ▣ 33 C	P4.3 ▣ 30 B	M1.1 ▣ 72 C	M1.2 ▣ 62 C
M2.1 ▣ 66 C	M2.2 ▣ 52 C	M3.1 ▣ 33 D	M3.2 ▣ 30 D	M3.3 ▣ 26 B	M4.1 ▣ 33 B	K1.1 ▣ 105 E	K1.2 ▣ 79 C	K1.3 ▣ 59 C	K2.1 ▣ 82 C	K2.2 ▣ 66 C	K2.3 ▣ 52 B	K3.1 ▣ 72 C	K3.2 ▣ 56 C
K3.3 ▣ 43 B	K4.1 ▣ 66 C	K4.2 ▣ 49 C	K4.3 ▣ 36 B	K4.4 ▣ 33 B	K4.5 ▣ 26 B	K5.1 ▣ 75 C	K5.2 ▣ 56 C	K5.3 ▣ 43 B	N1.1 ■ 108 E	N1.2 ■ 82 E	N1.3 ■ 56 E	N2.1 ▣ 151 D	N2.2 ▣ 138 D
N2.3 ▣ 98 D	N3.1 ■ 184 D	N3.2 ■ 108 E	N3.3 ■ 56 D	N4.1 ▣ 98 F	N4.2 ▣ 115 E	N4.3 ▣ 56 D	S1.1 ▣ 89 C	S1.2 ▣ 39 B	S1.3 ▣ 23 A	S2.1 ▣ 36 C	S2.2 ▣ 20 A	S3.1 ▣ 26 C	S3.2 ▣ 13 A
S4.1 ▣ 20 C	S4.2 ▣ 10 A												

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
SPLG-901/4	1/4	.2500	3/4	6"	1/4	1	6000062
SPLG-903/8	3/8	.3750	1.1/8	7"	3/8	1	6000068
SPLG-901/2	1/2	.5000	1.3/8	8"	1/2	1	6000059

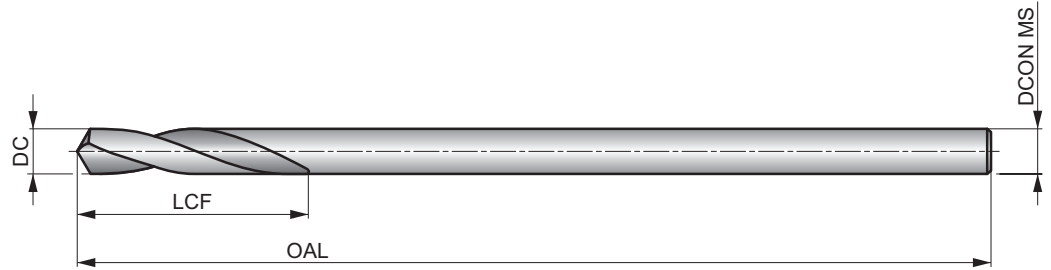


SPL-120



HSS 120° Spotting Drill, Long Length Bright Finish

Spotting drill with longer shank creates a 120° point in the material to ensure accurate location for drilling as a secondary operation. Can also be used to chamfer existing holes. To be used where longer reach is needed. Bright surface finish improves chip flow in soft or non-ferrous materials.



HSS	PRECISION	1×D
120°	Bright	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 118 E	P1.2 ■ 131 E	P1.3 ■ 135 E	P2.1 ■ 102 E	P2.2 ■ 89 C	P2.3 ▣ 79 C	P3.1 ▣ 69 C	P3.2 ▣ 56 C	P3.3 ▣ 46 C	P4.1 ▣ 39 C	P4.2 ▣ 33 C	P4.3 ▣ 30 B	M1.1 ▣ 72 C	M1.2 ▣ 62 C
M2.1 ▣ 66 C	M2.2 ▣ 52 C	M3.1 ▣ 33 D	M3.2 ▣ 30 D	M3.3 ▣ 26 B	M4.1 ▣ 33 B	K1.1 ▣ 105 E	K1.2 ▣ 79 C	K1.3 ▣ 59 C	K2.1 ▣ 82 C	K2.2 ▣ 66 C	K2.3 ▣ 52 B	K3.1 ▣ 72 C	K3.2 ▣ 56 C
K3.3 ▣ 43 B	K4.1 ▣ 66 C	K4.2 ▣ 49 C	K4.3 ▣ 36 B	K4.4 ▣ 33 B	K4.5 ▣ 26 B	K5.1 ▣ 75 C	K5.2 ▣ 56 C	K5.3 ▣ 43 B	N1.1 ■ 108 E	N1.2 ■ 82 E	N1.3 ■ 56 E	N2.1 ▣ 151 D	N2.2 ▣ 138 D
N2.3 ▣ 98 D	N3.1 ■ 184 D	N3.2 ■ 108 E	N3.3 ■ 56 D	N4.1 ▣ 98 F	N4.2 ▣ 115 E	N4.3 ▣ 56 D	S1.1 ▣ 89 C	S1.2 ▣ 39 B	S1.3 ▣ 23 A	S2.1 ▣ 36 C	S2.2 ▣ 20 A	S3.1 ▣ 26 C	S3.2 ▣ 13 A
S4.1 ▣ 20 C	S4.2 ▣ 10 A												

Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)	(inch)		
SPL-1201/4	1/4	.2500	3/4	6"	1/4	1	6000005
SPL-1203/8	3/8	.3750	1.1/8	7"	3/8	1	6000014
SPL-1201/2	1/2	.5000	1.3/8	8"	1/2	1	6000002

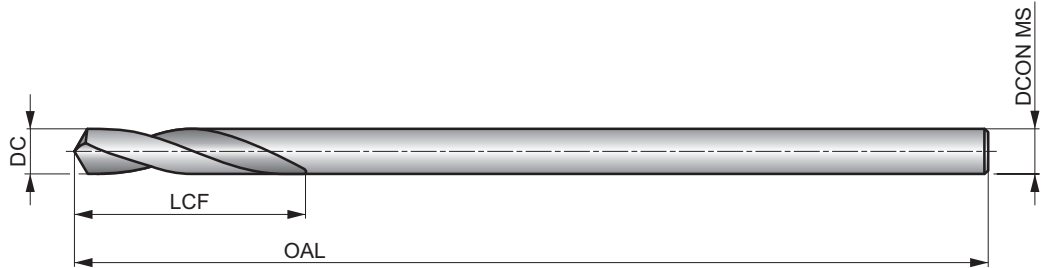


SPLG-120



HSS 120° Spotting Drill, Long Length TiN Coated

Spotting drill with longer shank creates a 120° point in the material to ensure accurate location for drilling as a secondary operation. Can also be used to chamfer existing holes. To be used where longer reach is needed. TiN coating increases wear resistance and improves tool life, can be used on most materials.



HSS	PRECISION	1×D
120°	TiN	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 118 E	P1.2 ■ 131 E	P1.3 ■ 135 E	P2.1 ■ 102 E	P2.2 ■ 89 C	P2.3 ▣ 79 C	P3.1 ▣ 69 C	P3.2 ▣ 56 C	P3.3 ▣ 46 C	P4.1 ▣ 39 C	P4.2 ▣ 33 C	P4.3 ▣ 30 B	M1.1 ▣ 72 C	M1.2 ▣ 62 C
M2.1 ▣ 66 C	M2.2 ▣ 52 C	M3.1 ▣ 33 D	M3.2 ▣ 30 D	M3.3 ▣ 26 B	M4.1 ▣ 33 B	K1.1 ▣ 105 E	K1.2 ▣ 79 C	K1.3 ▣ 59 C	K2.1 ▣ 82 C	K2.2 ▣ 66 C	K2.3 ▣ 52 B	K3.1 ▣ 72 C	K3.2 ▣ 56 C
K3.3 ▣ 43 B	K4.1 ▣ 66 C	K4.2 ▣ 49 C	K4.3 ▣ 36 B	K4.4 ▣ 33 B	K4.5 ▣ 26 B	K5.1 ▣ 75 C	K5.2 ▣ 56 C	K5.3 ▣ 43 B	N1.1 ■ 108 E	N1.2 ■ 82 E	N1.3 ■ 56 E	N2.1 ▣ 151 D	N2.2 ▣ 138 D
N2.3 ▣ 98 D	N3.1 ■ 184 D	N3.2 ■ 108 E	N3.3 ■ 56 D	N4.1 ▣ 98 F	N4.2 ▣ 115 E	N4.3 ▣ 56 D	S1.1 ▣ 89 C	S1.2 ▣ 39 B	S1.3 ▣ 23 A	S2.1 ▣ 36 C	S2.2 ▣ 20 A	S3.1 ▣ 26 C	S3.2 ▣ 13 A
S4.1 ▣ 20 C	S4.2 ▣ 10 A												

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
SPLG-1201/4	1/4	.2500	3/4	6"	1/4	1	6000046



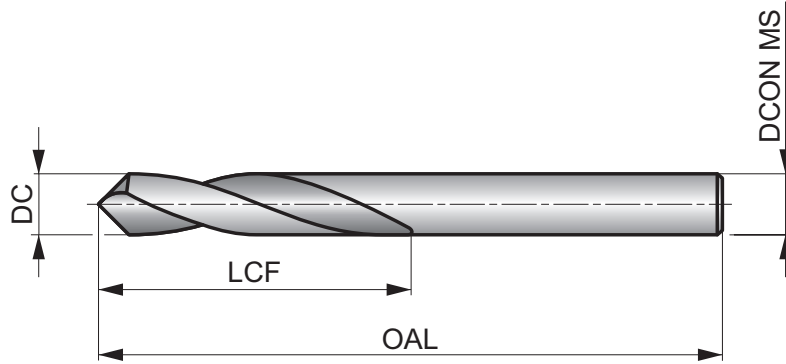
A122



HSS Spotting Drill, Bright Finish

Used to create a hole in the material to be drilled to ensure the start point is accurate. Comes with either a 90° or 120° point angle, giving you two options of countersink. Bright surface finish. Suitable for drilling in many materials.

HSS	DIN 1897	1xD
90°/120°	Bright	
λ 20-35°	R	DC h8



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 118 E	P1.2 ■ 131 E	P1.3 ■ 135 E	P2.1 ■ 102 E	P2.2 ■ 89 C	P2.3 ▣ 79 C	P3.1 ▣ 69 C	P3.2 ▣ 56 C	P3.3 ▣ 46 C	P4.1 ▣ 39 C	P4.2 ▣ 33 C	P4.3 ▣ 30 B	M1.1 ▣ 72 C	M1.2 ▣ 62 C
M2.1 ▣ 66 C	M2.2 ▣ 52 C	M3.1 ▣ 33 D	M3.2 ▣ 30 D	M3.3 ▣ 26 D	M4.1 ▣ 33 B	K1.1 ▣ 105 E	K1.2 ▣ 79 C	K1.3 ▣ 59 C	K2.1 ▣ 82 C	K2.2 ▣ 66 C	K2.3 ▣ 52 B	K3.1 ▣ 72 C	K3.2 ▣ 56 C
K3.3 ▣ 43 B	K4.1 ▣ 66 C	K4.2 ▣ 49 C	K4.3 ▣ 36 B	K4.4 ▣ 33 B	K4.5 ▣ 26 B	K5.1 ▣ 75 C	K5.2 ▣ 56 C	K5.3 ▣ 43 B	N1.1 ■ 108 E	N1.2 ■ 82 E	N1.3 ■ 56 E	N2.1 ▣ 151 D	N2.2 ▣ 138 D
N2.3 ▣ 98 D	N3.1 ■ 184 D	N3.2 ■ 108 E	N3.3 ■ 56 D	N4.1 ▣ 98 F	N4.2 ▣ 115 E	N4.3 ▣ 56 D	S1.1 ▣ 89 C	S1.2 ▣ 39 B	S1.3 ▣ 23 A	S2.1 ▣ 36 C	S2.2 ▣ 20 A	S3.1 ▣ 26 C	S3.2 ▣ 13 A
S4.1 ▣ 20 C	S4.2 ▣ 10 A												

Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(mm)	(inch)					
A1226.0X90	6.00	.2362	30.0	66.0	6.00	10	5968661
A1226.0X120	6.00	.2362	30.0	66.0	6.00	10	5968656
A1228.0X90	8.00	.3150	33.0	79.0	8.00	10	5968664
A1228.0X120	8.00	.3150	33.0	79.0	8.00	10	5968663
A12210.0X90	10.00	.3937	35.0	89.0	10.00	10	5968639
A12210.0X120	10.00	.3937	35.0	89.0	10.00	10	5968635
A12212.0X90	12.00	.4724	40.0	102.0	12.00	5	5968644
A12212.0X120	12.00	.4724	40.0	102.0	12.00	5	5968642
A12216.0X90	16.00	.6299	40.0	115.0	16.00	1	5968648
A12216.0X120	16.00	.6299	40.0	115.0	16.00	1	5968646
A12220.0X90	20.00	.7874	55.0	131.0	20.00	1	5968652



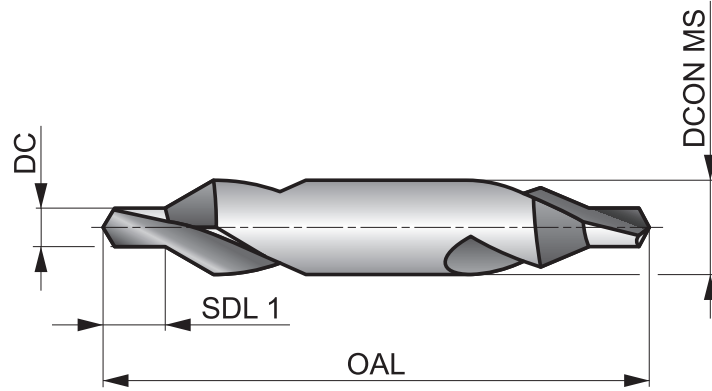
A221



HSS-E Center Drill with 60° Countersink and Standard Pilot, Bright Finish

Designed to start a precise hole in the end of a shaft so the shaft can then be securely held between centers during subsequent machining operations. Double ended tool increases productivity. Cobalt tool material increases tool life. Suitable for drilling many materials.

HSS-E	ANSI	1.5×D
60°	Bright	
R		



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 108 I	P1.2 ■ 121 I	P1.3 ■ 125 I	P2.1 ■ 92 I	P2.2 ■ 82 G	P2.3 ▣ 72 E	P3.1 ■ 62 F	P3.2 ■ 49 F	P3.3 ▣ 43 E	P4.1 ■ 36 F	P4.2 ▣ 33 E	P4.3 ▣ 26 D	M1.1 ▣ 169 E	M1.2 ▣ 56 E
M2.1 ▣ 59 E	M2.2 ▣ 49 E	M3.1 ▣ 30 G	M3.2 ▣ 26 G	M3.3 ▣ 23 G	M4.1 ▣ 33 C	K1.1 ■ 98 I	K1.2 ■ 72 F	K1.3 ■ 56 F	K2.1 ▣ 82 E	K2.2 ▣ 66 E	K2.3 ▣ 52 E	K3.1 ▣ 72 E	K3.2 ▣ 56 E
K3.3 ▣ 43 E	K4.1 ▣ 66 E	K4.2 ▣ 49 E	K4.3 ▣ 36 E	K4.4 ▣ 33 E	K4.5 ▣ 26 E	K5.1 ▣ 75 E	K5.2 ▣ 56 E	K5.3 ▣ 43 E	N1.1 ▣ 108 J	N1.2 ▣ 82 J	N1.3 ▣ 56 I	N2.1 ▣ 138 H	N2.2 ▣ 121 H
N2.3 ▣ 89 H	N3.1 ▣ 184 H	N3.2 ▣ 108 I	N3.3 ▣ 56 G	N4.1 ▣ 98 J	N4.2 ▣ 92 H	N4.3 ▣ 46 F	S1.1 ▣ 79 F	S1.2 ▣ 43 D	S1.3 ▣ 23 B	S2.1 ▣ 23 E	S2.2 ▣ 20 A	S3.1 ▣ 16 E	S3.2 ▣ 13 A
S4.1 ▣ 13 E	S4.2 ▣ 10 A												

Product	Nr.	DC (inch)	SDL_1 (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
A221N000 ¹⁾	000	.0200	.0300	1.1/4	1/8	1	8442329
A221N00 ¹⁾	00	.0250	.0300	1.1/8	1/8	1	5969071
A221N0 ¹⁾	0	.0313	.0313	1.1/8	1/8	1	5969065
A221N1	1	.0469	.0469	1.1/4	1/8	1	5969075
A221N2	2	.0781	.0781	1.7/8	3/16	1	5969079
A221N3	3	.1094	.1094	2"	1/4	1	5969085
A221N4	4	.1250	.1250	2.1/8	5/16	1	5969089
A221N5	5	.1875	.1875	2.3/4	7/16	1	5969094
A221N6	6	.2188	.2188	3"	1/2	1	5969104
A221N7	7	.2500	.2500	3.1/4	5/8	1	5969109
A221N8	8	.3125	.3125	3.1/2	3/4	1	5969115

¹⁾ Single Ended Only.

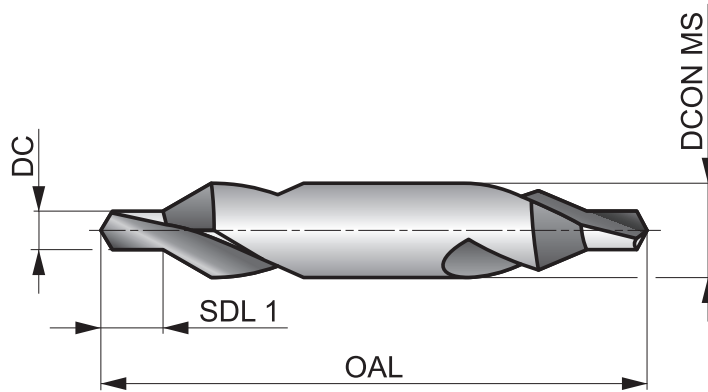


A217



HSS Center Drill with 82° Countersink and Standard Pilot, Bright Finish

Used for predrilling holes for socket head cap screws and for 82° centers in the ends of shafts so the shaft can then be securely held between centers during subsequent machining operations. Double ended tool increases productivity. Suitable for many materials.



HSS	ANSI	1×D
82°	Bright	
R		

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 108 I	P1.2 ■ 121 I	P1.3 ■ 125 I	P2.1 ■ 92 I	P2.2 ■ 82 G	P2.3 ▣ 72 E	P3.1 ■ 62 F	P3.2 ■ 49 F	P3.3 ▣ 43 E	P4.1 ■ 36 F	P4.2 ▣ 33 E	P4.3 ▣ 26 D	M1.1 ▣ 69 E	M1.2 ▣ 56 E
M2.1 ▣ 59 E	M2.2 ▣ 49 E	M3.1 ▣ 30 G	M3.2 ▣ 26 G	M3.3 ▣ 23 G	M4.1 ▣ 33 C	K1.1 ■ 98 I	K1.2 ■ 72 F	K1.3 ■ 56 F	K2.1 ▣ 82 E	K2.2 ▣ 66 E	K2.3 ▣ 52 E	K3.1 ▣ 72 E	K3.2 ▣ 56 E
K3.3 ▣ 43 E	K4.1 ▣ 66 E	K4.2 ▣ 49 E	K4.3 ▣ 36 E	K4.4 ▣ 33 E	K4.5 ▣ 26 E	K5.1 ▣ 75 E	K5.2 ▣ 56 E	K5.3 ▣ 43 E	N1.1 ▣ 108 J	N1.2 ▣ 82 J	N1.3 ▣ 56 I	N2.1 ▣ 138 H	N2.2 ▣ 121 H
N2.3 ▣ 89 H	N3.1 ▣ 184 H	N3.2 ▣ 108 I	N3.3 ▣ 56 G	N4.1 ▣ 98 J	N4.2 ▣ 92 H	N4.3 ▣ 46 F	S1.1 ▣ 79 F	S1.2 ▣ 43 D	S1.3 ▣ 23 B	S2.1 ▣ 23 E	S2.2 ▣ 20 A	S3.1 ▣ 16 E	S3.2 ▣ 13 A
S4.1 ▣ 13 E	S4.2 ▣ 10 A												

Product	Nr.	DC (inch)	SDL_1 (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
A217N1	1	.0469	.055-.067	1.1/4	1/8	1	5969408
A217N2	2	.0781	.094-.106	1.7/8	3/16	1	5969412
A217N3	3	.1094	.130-.154	2"	1/4	1	5969415
A217N4	4	.1250	.150-.173	2.1/8	5/16	1	5969418
A217N5	5	.1875	.232-.256	2.3/4	7/16	1	5969420
A217N6	6	.2188	.272-.295	3"	1/2	1	5969422
A217N7	7	.2500	.315-.339	3.1/4	5/8	1	5969423

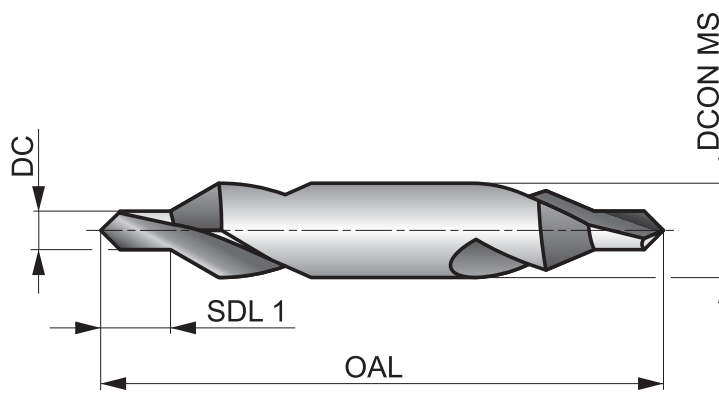


A218



HSS Center Drill with 90° Countersink and Standard Pilot, Bright Finish

Used for predrilling holes with chamfers and for 90° centers in the ends of shafts so the shaft can then be securely held between centers during subsequent machining operations. Double ended tool increases productivity. Suitable for many materials.



HSS	ANSI	1×D
90°	Bright	
R		

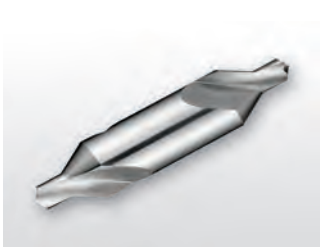
Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 108 I	P1.2 ■ 121 I	P1.3 ■ 125 I	P2.1 ■ 92 I	P2.2 ■ 82 G	P2.3 ▣ 72 E	P3.1 ■ 62 F	P3.2 ■ 49 F	P3.3 ▣ 43 E	P4.1 ■ 36 F	P4.2 ▣ 33 E	P4.3 ▣ 26 D	M1.1 ▣ 169 E	M1.2 ▣ 56 E
M2.1 ▣ 59 E	M2.2 ▣ 49 E	M3.1 ▣ 30 G	M3.2 ▣ 26 G	M3.3 ▣ 23 G	M4.1 ▣ 33 C	K1.1 ■ 98 I	K1.2 ■ 72 F	K1.3 ■ 56 F	K2.1 ▣ 82 E	K2.2 ▣ 66 E	K2.3 ▣ 52 E	K3.1 ▣ 72 E	K3.2 ▣ 56 E
K3.3 ▣ 43 E	K4.1 ▣ 66 E	K4.2 ▣ 49 E	K4.3 ▣ 36 E	K4.4 ▣ 33 E	K4.5 ▣ 26 E	K5.1 ▣ 75 E	K5.2 ▣ 56 E	K5.3 ▣ 43 E	N1.1 ▣ 108 J	N1.2 ▣ 82 J	N1.3 ▣ 56 I	N2.1 ▣ 138 H	N2.2 ▣ 121 H
N2.3 ▣ 89 H	N3.1 ▣ 184 H	N3.2 ▣ 108 I	N3.3 ▣ 56 G	N4.1 ▣ 98 J	N4.2 ▣ 92 H	N4.3 ▣ 46 F	S1.1 ▣ 79 F	S1.2 ▣ 43 D	S1.3 ▣ 23 B	S2.1 ▣ 23 E	S2.2 ▣ 20 A	S3.1 ▣ 16 E	S3.2 ▣ 13 A
S4.1 ▣ 13 E	S4.2 ▣ 10 A												

Product	Nr.	DC (inch)	SDL_1 (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
A218N1	1	.0469	.055-.067	1.1/4	1/8	1	5968986
A218N2	2	.0781	.094-.106	1.7/8	3/16	1	5969045
A218N3	3	.1094	.130-.154	2"	1/4	1	5969099
A218N4	4	.1250	.150-.173	2.1/8	5/16	1	5969147
A218N5	5	.1875	.232-.256	2.3/4	7/16	1	5969175
A218N6	6	.2188	.272-.295	3"	1/2	1	5969177
A218N7	7	.2500	.315-.339	3.1/4	5/8	1	5969178
A218N8	8	.3125	.394-.417	3.1/2	3/4	1	5969179



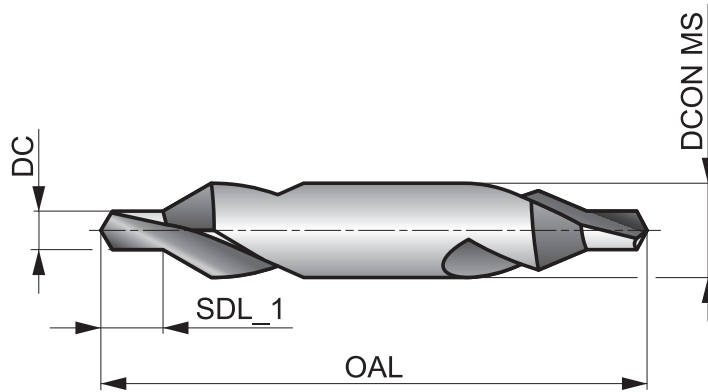
A225



HSS Centre Drill with 120° Point angle and 60° Countersink, Bright Finish

Recommended for starting a precise hole in the end of a shaft so it can be securely held prior to machining. British Standard 328. The two drilling ends give increased productivity per tool. Suitable for drilling many materials.

HSS	BS 328	1×D
60°	Bright	
R	120°	



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 108 I	P1.2 ■ 121 I	P1.3 ■ 125 I	P2.1 ■ 92 I	P2.2 ■ 82 G	P2.3 ▣ 72 E	P3.1 ■ 62 F	P3.2 ■ 49 F	P3.3 ▣ 43 E	P4.1 ■ 36 F	P4.2 ▣ 33 E	P4.3 ▣ 26 D	M1.1 ▣ 69 E	M1.2 ▣ 56 E
M2.1 ▣ 59 E	M2.2 ▣ 49 E	M3.1 ▣ 30 G	M3.2 ▣ 26 G	M3.3 ▣ 23 G	M4.1 ▣ 33 C	K1.1 ■ 98 I	K1.2 ■ 72 F	K1.3 ■ 56 F	K2.1 ▣ 82 E	K2.2 ▣ 66 E	K2.3 ▣ 52 E	K3.1 ▣ 72 E	K3.2 ▣ 56 E
K3.3 ▣ 43 E	K4.1 ▣ 66 E	K4.2 ▣ 49 E	K4.3 ▣ 36 E	K4.4 ▣ 33 E	K4.5 ▣ 26 E	K5.1 ▣ 75 E	K5.2 ▣ 56 E	K5.3 ▣ 43 E	N1.1 ▣ 108 J	N1.2 ▣ 82 J	N1.3 ▣ 56 I	N2.1 ▣ 138 H	N2.2 ▣ 121 H
N2.3 ▣ 89 H	N3.1 ▣ 184 H	N3.2 ▣ 108 I	N3.3 ▣ 56 G	N4.1 ▣ 98 J	N4.2 ▣ 92 H	N4.3 ▣ 46 F	S1.1 ▣ 79 F	S1.2 ▣ 43 D	S1.3 ▣ 23 B	S2.1 ▣ 23 E	S2.2 ▣ 20 A	S3.1 ▣ 16 E	S3.2 ▣ 13 A
S4.1 ▣ 13 E	S4.2 ▣ 10 A												

Products from this series are also available in set. Please see A296.

Product	Nr.	DC	DC	SDL_1	OAL	DCON MS	Pack Qty	MID
		(inch)	(inch)	(inch)	(inch)	(inch)		
A225BS1	BS1	3/64	.0469	5/64 - 1/16	1.1/2	1/8	1	5969157
A225BS2	BS2	1/16	.0625	3/32 - 5/64	1.3/4	3/16	1	5969160
A225BS3	BS3	3/32	.0938	5/32 - 1/8	2"	1/4	1	5969163
A225BS4	BS4	1/8	.1250	3/16 - 5/32	2.1/4	5/16	1	5969166
A225BS5	BS5	3/16	.1875	9/32 - 1/4	2.1/2	7/16	1	5969169
A225BS5A	B55A	7/32	.2188	5/16 - 9/32	2.3/4	1/2	1	5969171
A225BS6	BS6	1/4	.2500	3/8 - 5/16	3"	5/8	1	5969173
A225BS7	BS7	5/16	.3125	15/32 - 13/32	3.1/2	3/4	1	5969174



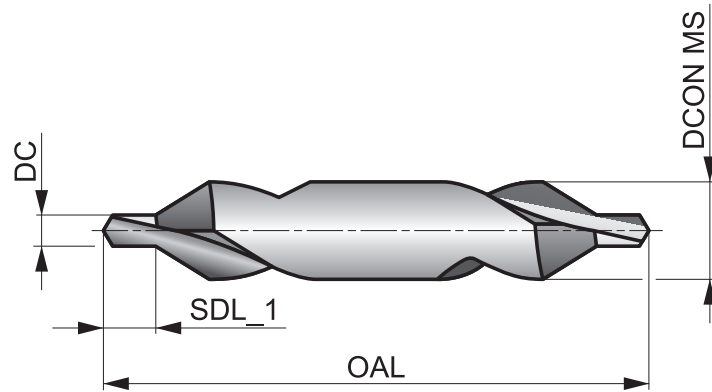
A201



HSS Centre Drill with 122° Point angle and 60° Countersink, Bright Finish

Recommended for starting a precise hole in the end of a shaft so it can be securely held prior to machining. The two drilling ends give increased productivity per tool. Suitable for drilling many materials.

HSS	DORMER	1xD
60°	Bright	
R	122°	



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 108 I	P1.2 ■ 121 I	P1.3 ■ 125 I	P2.1 ■ 92 I	P2.2 ■ 82 G	P2.3 ▣ 72 E	P3.1 ■ 62 F	P3.2 ■ 49 F	P3.3 ▣ 43 E	P4.1 ■ 36 F	P4.2 ▣ 33 E	P4.3 ▣ 26 D	M1.1 ▣ 169 E	M1.2 ▣ 56 E
M2.1 ▣ 59 E	M2.2 ▣ 49 E	M3.1 ▣ 30 G	M3.2 ▣ 26 G	M3.3 ▣ 23 G	M4.1 ▣ 33 C	K1.1 ■ 98 I	K1.2 ■ 72 F	K1.3 ■ 56 F	K2.1 ▣ 82 E	K2.2 ▣ 66 E	K2.3 ▣ 52 E	K3.1 ▣ 72 E	K3.2 ▣ 56 E
K3.3 ▣ 43 E	K4.1 ▣ 66 E	K4.2 ▣ 49 E	K4.3 ▣ 36 E	K4.4 ▣ 33 E	K4.5 ▣ 26 E	K5.1 ▣ 75 E	K5.2 ▣ 56 E	K5.3 ▣ 43 E	N1.1 ▣ 108 J	N1.2 ▣ 82 J	N1.3 ▣ 56 I	N2.1 ▣ 138 H	N2.2 ▣ 121 H
N2.3 ▣ 89 H	N3.1 ▣ 184 H	N3.2 ▣ 108 I	N3.3 ▣ 56 G	N4.1 ▣ 98 J	N4.2 ▣ 92 H	N4.3 ▣ 46 F	S1.1 ▣ 79 F	S1.2 ▣ 43 D	S1.3 ▣ 23 B	S2.1 ▣ 23 E	S2.2 ▣ 20 A	S3.1 ▣ 16 E	S3.2 ▣ 13 A
S4.1 ▣ 13 E	S4.2 ▣ 10 A												

Product	DC	DC	SDL_1	OAL	DCON MS	Pack Qty	MID
	(mm)	(inch)					
A201.63X3.15 ¹⁾	0.63	.0248	1.2 - 0.9	20.0	3.15	1	5969881
A201.75X3.5	0.75	.0295	1.3 - 1.0	35.0	3.50	1	5969885
A2011.0X4.0	1.00	.0394	2.1 - 1.5	35.0	4.00	1	5969888
A2011.5X5.0	1.50	.0591	2.8 - 2.0	40.0	5.00	1	5969896
A2011.6X5.0	1.60	.0630	2.4 - 2.0	40.0	5.00	1	5969233
A2012.0X6.0	2.00	.0787	4.0 - 3.0	45.0	6.00	1	5969294
A2012.0X6.3	2.00	.0787	2.9 - 2.5	45.0	6.30	1	5969347
A2012.5X8.0	2.50	.0984	4.5 - 3.5	50.0	8.00	1	5969399
A2013.0X8.0	3.00	.1181	4.4 - 3.9	50.0	8.00	1	5969427
A2013.0X10.0	3.00	.1181	5.0 - 4.0	56.0	10.00	1	5969425
A2013.15X10.0	3.15	.1240	4.4 - 3.9	56.0	10.00	1	5969428
A2014.0X12.0	4.00	.1575	6.2 - 5.0	66.0	12.00	1	5969429
A2015.0X14.0	5.00	.1969	7.7 - 6.5	78.0	14.00	1	5969430
A2016.0X18.0	6.00	.2362	9.2 - 8.0	90.0	18.00	1	5969240

¹⁾ Single Ended Only.

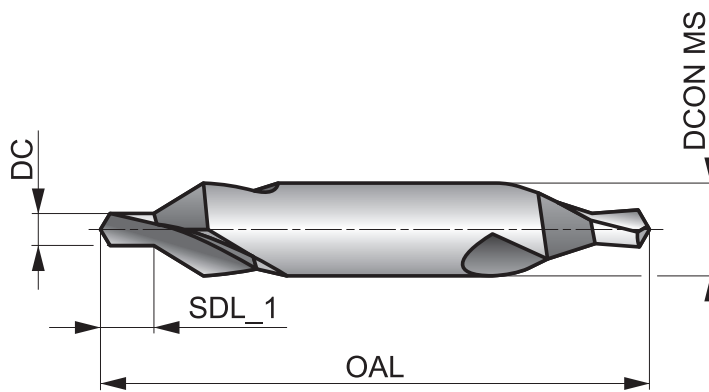


A200



HSS Centre Drill with 118° Point angle and 60° Countersink, Bright Finish

Recommended for starting a precise hole in the end of a shaft so it can be securely held prior to machining. The two drilling ends give increased productivity per tool. Suitable for many materials.



HSS	DIN 333A	1×D
60°	Bright	
R	118°	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 108 I	P1.2 ■ 121 I	P1.3 ■ 125 I	P2.1 ■ 92 I	P2.2 ■ 82 G	P2.3 ■ 72 E	P3.1 ■ 62 F	P3.2 ■ 49 F	P3.3 ■ 43 E	P4.1 ■ 36 F	P4.2 ■ 33 E	P4.3 ■ 26 D	M1.1 ■ 69 E	M1.2 ■ 56 E
M2.1 ■ 59 E	M2.2 ■ 49 E	M3.1 ■ 30 G	M3.2 ■ 26 G	M3.3 ■ 23 G	M4.1 ■ 33 C	K1.1 ■ 98 I	K1.2 ■ 72 F	K1.3 ■ 56 F	K2.1 ■ 82 E	K2.2 ■ 66 E	K2.3 ■ 52 E	K3.1 ■ 72 E	K3.2 ■ 56 E
K3.3 ■ 43 E	K4.1 ■ 66 E	K4.2 ■ 49 E	K4.3 ■ 36 E	K4.4 ■ 33 E	K4.5 ■ 26 E	K5.1 ■ 75 E	K5.2 ■ 56 E	K5.3 ■ 43 E	N1.1 ■ 108 J	N1.2 ■ 82 J	N1.3 ■ 56 I	N2.1 ■ 138 H	N2.2 ■ 121 H
N2.3 ■ 89 H	N3.1 ■ 184 H	N3.2 ■ 108 I	N3.3 ■ 56 G	N4.1 ■ 98 J	N4.2 ■ 92 H	N4.3 ■ 46 F	S1.1 ■ 79 F	S1.2 ■ 43 D	S1.3 ■ 23 B	S2.1 ■ 23 E	S2.2 ■ 20 A	S3.1 ■ 16 E	S3.2 ■ 13 A
S4.1 ■ 13 E	S4.2 ■ 10 A												

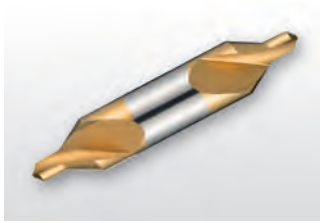
Products from this series are also available in set. Please see A296.

Product	DC (mm)	DC (inch)	SDL_1 (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A200.5X3.15 ¹⁾	0.50	.0197	0.9 - 0.6	25.0	3.15	1	5969819
A200.8X3.15 ¹⁾	0.80	.0315	1.3 - 1.0	25.0	3.15	1	5969822
A2001.0X3.15	1.00	.0394	1.7 - 1.3	31.0	3.15	1	5969827
A2001.25X3.15	1.25	.0492	2.0 - 1.6	31.0	3.15	1	5969831
A2001.6X4.0	1.60	.0630	2.6 - 2.0	35.0	4.00	1	5969836
A2002.0X5.0	2.00	.0787	3.1 - 2.5	40.0	5.00	1	5969854
A2002.5X6.3	2.50	.0984	3.8 - 3.1	45.0	6.30	1	5969858
A2003.15X8.0	3.15	.1240	4.6 - 3.9	50.0	8.00	1	5969862
A2004.0X10.0	4.00	.1575	5.9 - 5.0	55.0	10.00	1	5969866
A2005.0X12.5	5.00	.1969	7.2 - 6.3	63.0	12.50	1	5969870
A2006.3X16.0	6.30	.2480	8.9 - 8.0	71.0	16.00	1	5969873
A2008.0X20.0	8.00	.3150	11.1 - 10.1	80.0	20.00	1	5969877
A20010.0X25.0	10.00	.3937	13.8 - 12.8	100.0	25.00	1	5969841
A20012.5X31.5	12.50	.4921	17.5 - 16.5	125.0	31.50	1	5969845

¹⁾ Single Ended Only.



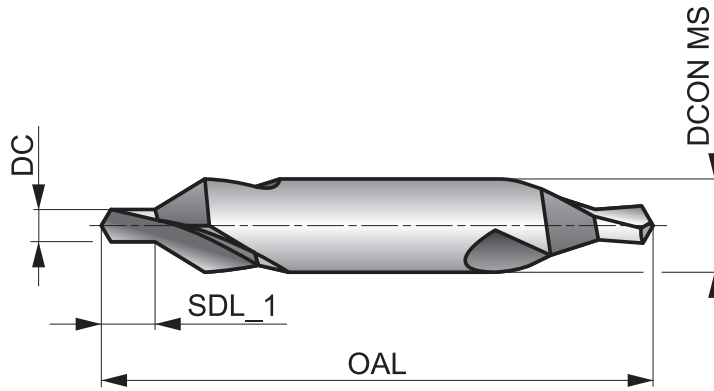
A205



HSS Centre Drill with 118° Point angle and 60° Countersink, TiN Coated

Recommended for starting a precise hole in the end of a shaft so it can be securely held prior to machining. The two drilling ends give increased productivity per tool. TiN coating improves performance and extends tool life. Suitable for drilling many materials.

HSS	DIN 333A	1xD
60°	TiN	
R	118°	



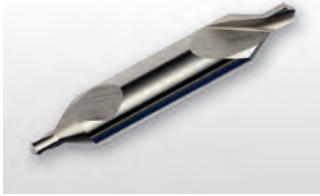
Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 131 I	P1.2 ■ 148 I	P1.3 ■ 151 I	P2.1 ■ 112 I	P2.2 ■ 98 G	P2.3 ■ 89 E	P3.1 ■ 79 F	P3.2 ■ 62 F	P3.3 ■ 52 E	P4.1 ■ 46 F	P4.2 ■ 39 E	P4.3 ■ 33 D	M1.1 ■ 82 E	M1.2 ■ 69 E
M2.1 ■ 72 E	M2.2 ■ 59 E	M3.1 ■ 39 G	M3.2 ■ 33 G	M3.3 ■ 30 G	M4.1 ■ 39 C	K1.1 ■ 118 I	K1.2 ■ 89 F	K1.3 ■ 66 F	K2.1 ■ 98 E	K2.2 ■ 79 E	K2.3 ■ 62 E	K3.1 ■ 85 E	K3.2 ■ 66 E
K3.3 ■ 52 E	K4.1 ■ 79 E	K4.2 ■ 59 E	K4.3 ■ 43 E	K4.4 ■ 36 E	K4.5 ■ 33 E	K5.1 ■ 89 E	K5.2 ■ 69 E	K5.3 ■ 52 E	N1.1 ■ 131 J	N1.2 ■ 98 J	N1.3 ■ 66 I	N2.1 ■ 161 H	N2.2 ■ 144 H
N2.3 ■ 105 H	N3.1 ■ 223 H	N3.2 ■ 131 I	N3.3 ■ 66 G	N4.1 ■ 118 J	N4.2 ■ 112 H	N4.3 ■ 56 F	S1.1 ■ 95 F	S1.2 ■ 52 D	S1.3 ■ 26 B	S2.1 ■ 26 E	S2.2 ■ 23 A	S3.1 ■ 20 E	S3.2 ■ 16 A
S4.1 ■ 16 E	S4.2 ■ 13 A												

Product	DC	DC	SDL_1	OAL	DCON MS	Pack Qty	MID
	(mm)	(inch)					
A2051.0X3.15	1.00	.0394	1.7 - 1.3	31.0	3.15	1	5969278
A2051.25X3.15	1.25	.0492	2.0 - 1.6	31.0	3.15	1	5969283
A2051.6X4.0	1.60	.0630	2.6 - 2.0	35.0	4.00	1	5969289
A2052.0X5.0	2.00	.0787	3.1 - 2.5	40.0	5.00	1	5969299
A2052.5X6.3	2.50	.0984	3.8 - 3.1	45.0	6.30	1	5969304
A2053.15X8.0	3.15	.1240	4.6 - 3.9	50.0	8.00	1	5969309
A2054.0X10.0	4.00	.1575	5.9 - 5.0	55.0	10.00	1	5969314
A2055.0X12.5	5.00	.1969	7.2 - 6.3	63.0	12.50	1	5969318

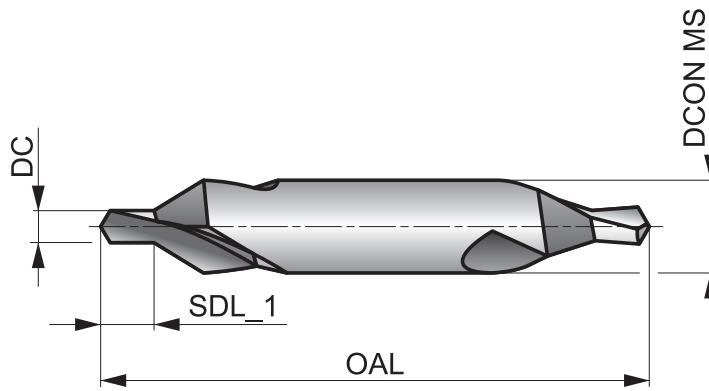


A206



HSS-E Centre Drill with 118° Point angle and 60° Countersink, Bright Finish

Recommended for starting a precise hole in the end of a shaft so it can be securely held prior to machining. The two drilling ends give increased productivity per tool. Suitable for drilling many materials.



HSS-E	DIN 333A	1×D
60°	Bright	
R	118°	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 131 I	P1.2 ■ 148 I	P1.3 ■ 151 I	P2.1 ■ 112 I	P2.2 ■ 98 G	P2.3 ▣ 89 E	P3.1 ■ 79 F	P3.2 ■ 62 F	P3.3 ▣ 52 E	P4.1 ■ 46 F	P4.2 ▣ 39 E	P4.3 ▣ 33 D	M1.1 ▣ 82 E	M1.2 ▣ 69 E
M2.1 ▣ 72 E	M2.2 ▣ 59 E	M3.1 ▣ 39 G	M3.2 ▣ 33 G	M3.3 ▣ 30 G	M4.1 ▣ 39 C	K1.1 ■ 118 I	K1.2 ■ 89 F	K1.3 ■ 66 F	K2.1 ▣ 98 E	K2.2 ▣ 79 E	K2.3 ▣ 62 E	K3.1 ▣ 85 E	K3.2 ▣ 66 E
K3.3 ▣ 52 E	K4.1 ▣ 79 E	K4.2 ▣ 59 E	K4.3 ▣ 43 E	K4.4 ▣ 36 E	K4.5 ▣ 33 E	K5.1 ▣ 89 E	K5.2 ▣ 69 E	K5.3 ▣ 52 E	N1.1 ▣ 131 J	N1.2 ▣ 98 J	N1.3 ▣ 66 I	N2.1 ▣ 161 H	N2.2 ▣ 144 H
N2.3 ▣ 105 H	N3.1 ▣ 223 H	N3.2 ▣ 131 I	N3.3 ▣ 66 G	N4.1 ▣ 118 J	N4.2 ▣ 112 H	N4.3 ▣ 56 F	S1.1 ▣ 95 F	S1.2 ▣ 52 D	S1.3 ▣ 26 B	S2.1 ▣ 26 E	S2.2 ▣ 23 A	S3.1 ▣ 20 E	S3.2 ▣ 16 A
S4.1 ▣ 16 E	S4.2 ▣ 13 A												

Product	DC	DC	SDL_1	OAL	DCON MS	Pack Qty	MID
	(mm)	(inch)					
A2061.0X3.15	1.00	.0394	1.7 - 1.3	31.0	3.15	1	7191807
A2061.25X3.15	1.25	.0492	2.0 - 1.6	31.0	3.15	1	7191808
A2061.6X4.0	1.60	.0630	2.6 - 2.0	35.0	4.00	1	7191809
A2062.0X5.0	2.00	.0787	3.1 - 2.5	40.0	5.00	1	7191810
A2062.5X6.3	2.50	.0984	3.8 - 3.1	45.0	6.30	1	7191811
A2063.15X8.0	3.15	.1240	4.6 - 3.9	50.0	8.00	1	7191812
A2064.0X10.0	4.00	.1575	5.9 - 5.0	55.0	10.00	1	7191813
A2065.0X12.5	5.00	.1969	7.2 - 6.3	63.0	12.50	1	7191814



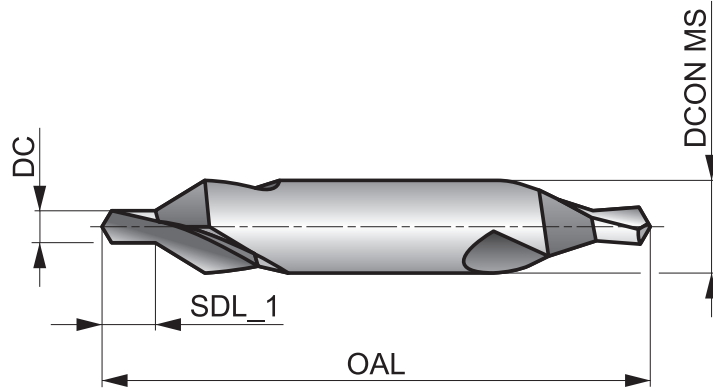
A266



HSS-E Centre Drill with 118° Pilot and 60° Countersink, TiAlN Coated

Recommended for starting a precise hole in the end of a shaft so it can be securely held prior to machining. The two drilling ends give increased productivity per tool. TiAlN coating improves performance and extends tool life. Suitable for drilling many materials.

HSS-E	DIN 333A	1xD
60°	TiAlN	
R	118°	



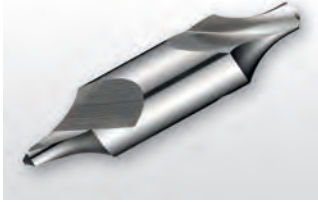
Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 131 I	P1.2 ■ 148 I	P1.3 ■ 151 I	P2.1 ■ 112 I	P2.2 ■ 98 G	P2.3 ■ 89 E	P3.1 ■ 79 F	P3.2 ■ 62 F	P3.3 ■ 52 E	P4.1 ■ 46 F	P4.2 ■ 39 E	P4.3 ■ 33 D	M1.1 ■ 82 E	M1.2 ■ 69 E
M2.1 ■ 72 E	M2.2 ■ 59 E	M3.1 ■ 39 G	M3.2 ■ 33 G	M3.3 ■ 30 G	M4.1 ■ 39 C	K1.1 ■ 118 I	K1.2 ■ 89 F	K1.3 ■ 66 F	K2.1 ■ 98 E	K2.2 ■ 79 E	K2.3 ■ 62 E	K3.1 ■ 85 E	K3.2 ■ 66 E
K3.3 ■ 52 E	K4.1 ■ 79 E	K4.2 ■ 59 E	K4.3 ■ 43 E	K4.4 ■ 36 E	K4.5 ■ 33 E	K5.1 ■ 89 E	K5.2 ■ 69 E	K5.3 ■ 52 E	N1.1 ■ 131 J	N1.2 ■ 98 J	N1.3 ■ 66 I	N2.1 ■ 161 H	N2.2 ■ 144 H
N2.3 ■ 105 H	N3.1 ■ 223 H	N3.2 ■ 131 I	N3.3 ■ 66 G	N4.1 ■ 118 J	N4.2 ■ 112 H	N4.3 ■ 56 F	S1.1 ■ 95 F	S1.2 ■ 52 D	S1.3 ■ 26 B	S2.1 ■ 26 E	S2.2 ■ 23 A	S3.1 ■ 20 E	S3.2 ■ 16 A
S4.1 ■ 16 E	S4.2 ■ 13 A												

Product	DC	DC	SDL_1	OAL	DCON MS	Pack Qty	MID
	(mm)	(inch)					
A2661.0X3.15	1.00	.0394	1.7 - 1.3	31.0	3.15	1	7191762
A2661.25X3.15	1.25	.0492	2.0 - 1.6	31.0	3.15	1	7191763
A2661.6X4.0	1.60	.0630	2.6 - 2.0	35.0	4.00	1	7191764
A2662.0X5.0	2.00	.0787	3.1 - 2.5	40.0	5.00	1	7191765
A2662.5X6.3	2.50	.0984	3.8 - 3.1	45.0	6.30	1	7191766
A2663.15X8.0	3.15	.1240	4.6 - 3.9	50.0	8.00	1	7191767
A2664.0X10.0	4.00	.1575	5.9 - 5.0	55.0	10.00	1	7191768
A2665.0X12.5	5.00	.1969	7.2 - 6.3	63.0	12.50	1	7191769

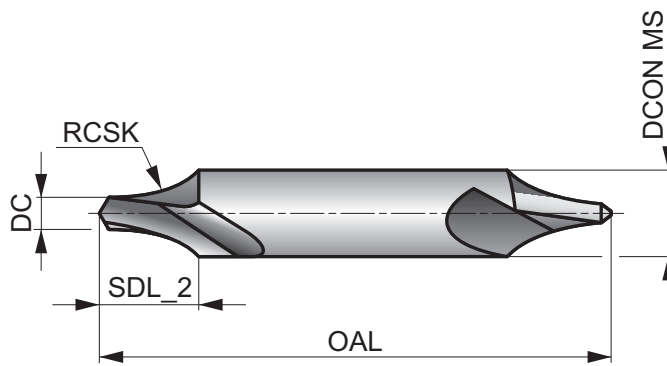


A210



HSS Center Drill, 118° Point angle and Concave Countersink, Bright Finish

Recommended for starting a precise hole in the end of a shaft so it can be securely held prior to machining. The two drilling ends give increased productivity per tool. Can be used to machine a number of materials.



HSS	DIN 333R	1xD
R	Bright	
R	118°	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 108 I	P1.2 ■ 121 I	P1.3 ■ 125 I	P2.1 ■ 92 I	P2.2 ■ 82 G	P2.3 ■ 72 E	P3.1 ■ 62 F	P3.2 ■ 49 F	P3.3 ■ 43 E	P4.1 ■ 36 F	P4.2 ■ 33 E	P4.3 ■ 26 D	M1.1 ■ 69 E	M1.2 ■ 56 E
M2.1 ■ 59 E	M2.2 ■ 49 E	M3.1 ■ 30 G	M3.2 ■ 26 G	M3.3 ■ 23 G	M4.1 ■ 33 C	K1.1 ■ 98 I	K1.2 ■ 72 F	K1.3 ■ 56 F	K2.1 ■ 82 E	K2.2 ■ 66 E	K2.3 ■ 52 E	K3.1 ■ 72 E	K3.2 ■ 56 E
K3.3 ■ 43 E	K4.1 ■ 66 E	K4.2 ■ 49 E	K4.3 ■ 36 E	K4.4 ■ 33 E	K4.5 ■ 26 E	K5.1 ■ 75 E	K5.2 ■ 56 E	K5.3 ■ 43 E	N1.1 ■ 108 J	N1.2 ■ 82 J	N1.3 ■ 56 I	N2.1 ■ 138 H	N2.2 ■ 121 H
N2.3 ■ 89 H	N3.1 ■ 184 H	N3.2 ■ 108 I	N3.3 ■ 56 G	N4.1 ■ 98 J	N4.2 ■ 92 H	N4.3 ■ 46 F	S1.1 ■ 79 F	S1.2 ■ 43 D	S1.3 ■ 23 B	S2.1 ■ 23 E	S2.2 ■ 20 A	S3.1 ■ 16 E	S3.2 ■ 13 A
S4.1 ■ 13 E	S4.2 ■ 10 A												

Product	DC	DC	SDL_2	OAL	RCSK	DCON MS	Pack Qty	MID
	(mm)	(inch)						
A210.5X3.15 ¹⁾	0.50	.0197	2.6 - 2.3	25.0	2.50 - 2.00	3.15	1	5969323
A210.8X3.15 ¹⁾	0.80	.0315	2.9 - 2.6	25.0	3.15 - 2.50	3.15	1	5969328
A2101.0X3.15	1.00	.0394	3.3 - 3.0	31.0	3.65 - 2.90	3.15	1	5969333
A2101.25X3.15	1.25	.0492	3.6 - 3.3	31.0	3.95 - 3.15	3.15	1	5969337
A2101.6X4.0	1.60	.0630	4.7 - 4.2	35.0	5.00 - 4.00	4.00	1	5969342
A2102.0X5.0	2.00	.0787	5.4 - 5.0	40.0	6.25 - 5.00	5.00	1	5969364
A2102.5X6.3	2.50	.0984	6.8 - 6.3	45.0	7.88 - 6.30	6.30	1	5969369
A2103.15X8.0	3.15	.1240	8.5 - 8.0	50.0	10.00 - 8.00	8.00	1	5969373
A2104.0X10.0	4.00	.1575	10.6 - 10.0	55.0	12.50 - 10.00	10.00	1	5969377
A2105.0X12.5	5.00	.1969	13.1 - 12.5	63.0	15.63 - 12.50	12.50	1	5969381
A2106.3X16.0	6.30	.2480	16.6 - 16.0	71.0	20.00 - 16.00	16.00	1	5969384
A2108.0X20.0	8.00	.3150	20.7 - 20.0	80.0	25.00 - 20.00	20.00	1	5969389

¹⁾ Single Ended Only.



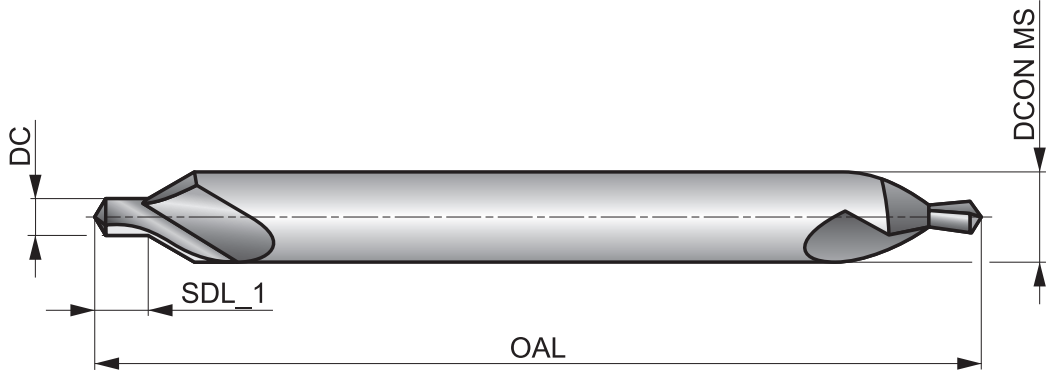
A242



HSS-E (5% Co) Long Center Drill, 118° Point, 60° Countersink, Bright Finish

Designed to start a precise hole in the end of a shaft so it can be securely held prior to machining. The two drilling ends give increased productivity per tool. Suitable for drilling many materials.

HSS-E	DORMER	1xD
60°	Bright	
R	118°	



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 108 I	P1.2 ■ 121 I	P1.3 ■ 125 I	P2.1 ■ 92 I	P2.2 ■ 82 G	P2.3 ■ 72 E	P3.1 ■ 62 F	P3.2 ■ 49 F	P3.3 ■ 43 E	P4.1 ■ 36 F	P4.2 ■ 33 E	P4.3 ■ 26 D	M1.1 ■ 69 E	M1.2 ■ 56 E
M2.1 ■ 59 E	M2.2 ■ 49 E	M3.1 ■ 30 G	M3.2 ■ 26 G	M3.3 ■ 23 G	M4.1 ■ 33 C	K1.1 ■ 98 I	K1.2 ■ 72 F	K1.3 ■ 56 F	K2.1 ■ 82 E	K2.2 ■ 66 E	K2.3 ■ 52 E	K3.1 ■ 72 E	K3.2 ■ 56 E
K3.3 ■ 43 E	K4.1 ■ 66 E	K4.2 ■ 49 E	K4.3 ■ 36 E	K4.4 ■ 33 E	K4.5 ■ 26 E	K5.1 ■ 75 E	K5.2 ■ 56 E	K5.3 ■ 43 E	N1.1 ■ 108 J	N1.2 ■ 82 J	N1.3 ■ 56 I	N2.1 ■ 138 H	N2.2 ■ 121 H
N2.3 ■ 89 H	N3.1 ■ 184 H	N3.2 ■ 108 I	N3.3 ■ 56 G	N4.1 ■ 98 J	N4.2 ■ 92 H	N4.3 ■ 46 F	S1.1 ■ 79 F	S1.2 ■ 43 D	S1.3 ■ 23 B	S2.1 ■ 23 E	S2.2 ■ 20 A	S3.1 ■ 16 E	S3.2 ■ 13 A
S4.1 ■ 13 E	S4.2 ■ 10 A												

Product	DC	DC	SDL_1	OAL	DCON MS	Pack Qty	MID
	(mm)	(inch)					
A2421.0X4.0	1.00	.0394	1.7 - 1.3	100.0	4.00	1	7191815
A2421.5X5.0	1.50	.0591	2.6 - 2.0	100.0	5.00	1	7191816
A2422.0X6.0	2.00	.0787	3.1 - 2.5	100.0	6.00	1	7191817
A2422.5X8.0	2.50	.0984	3.8 - 3.1	100.0	8.00	1	7191818
A2423.0X8.0	3.00	.1181	4.6 - 3.9	100.0	8.00	1	7191819
A2423.0X10.0	3.00	.1181	4.6 - 3.9	100.0	10.00	1	7191820
A2424.0X10.0	4.00	.1575	5.9 - 5.0	100.0	10.00	1	7191821
A2424.0X12.0	4.00	.1575	5.9 - 5.0	100.0	12.00	1	7191822
A2425.0X12.0	5.00	.1969	7.2 - 6.3	100.0	12.00	1	7191823



		HSS	HSS-E	HSS	HSS-E	HSS												
Material code (BMC)		HSS	HSS-E	HSS	HSS-E	HSS												
Basic standard group (BSG)		NAS 907	NAS 907	NAS 907	NAS 907	PRECISION												
Usable length (ULDR)		4xD	4xD	4xD	4xD	4xD												
Application angle																		
Coating		ST	Bronze	ST	Bronze	Bright												
Shank																		
Spiral form																		
Hand (Cutting direction)																		
Cooling (CSP)																		
Product Family Code		500-6 501-6 502-6	CO500-6 CO501-6	500-12 501-12 502-12	CO500-12 CO501-12	ATR41												
PSF cutting diameters range		N60 - 1/2	1/16 - 1/4	3/64 - 1/2	1/16 - 1/4	N1 - N4												
		266	268	270	272	273												
P	P1		■		■													
	P2	■	■	■	■	■												
	P3	■	■	■	■	■												
	P4	■	■	■	■	■												
M	M1	■	■	■	■	■												
	M2	■	■	■	■	■												
	M3	■	■	■	■	■												
	M4	■	■	■	■	■												
K	K1	■	■	■	■	■												
	K2	■	■	■	■	■												
	K3	■	■	■	■	■												
	K4	■	■	■	■	■												
	K5	■	■	■	■	■												
N	N1		■		■													
	N2	■	■	■	■	■												
	N3	■	■	■	■	■												
	N4		■		■													
	N5																	
S	S1	■		■		■												
	S2	■	■	■	■	■												
	S3	■	■	■	■	■												
	S4	■	■	■	■	■												
H	H1																	
	H2																	
	H3																	
	H4																	

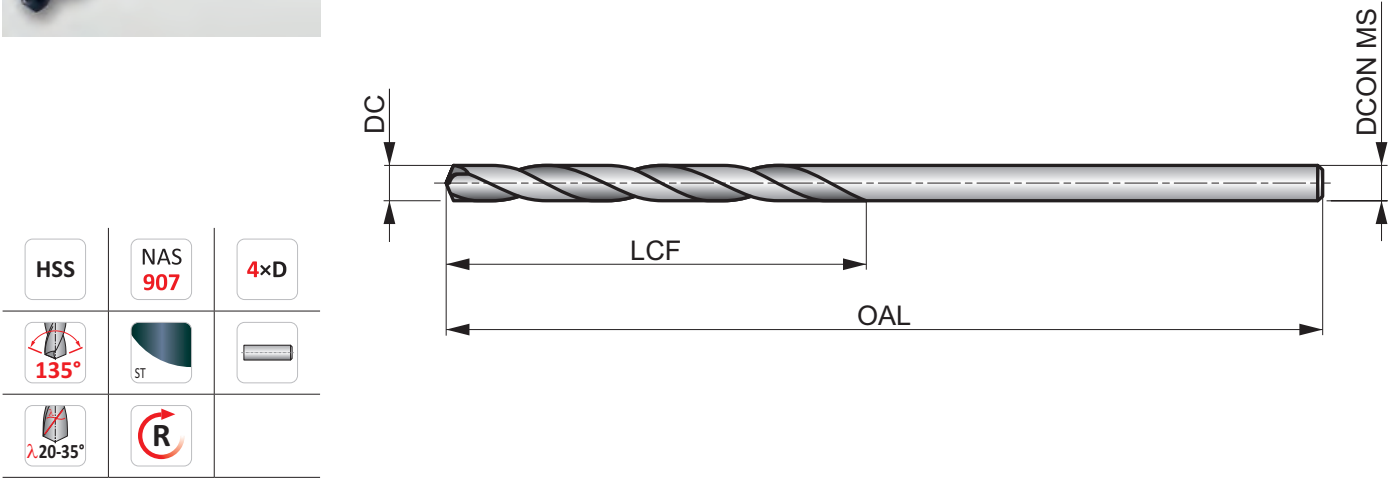


500-6 / 501-6 / 502-6



NAS 907 Type B HSS Aircraft Extension Drill, 6" OAL

Long series drills made according to National Aerospace Standards with long over-all length combined with short flute length makes it ideal for drilling in difficult to reach areas. The 135° self-centering split point and steam tempered surface finish makes it suitable for drilling most materials.



HSS	NAS 907	4xD
135°	ST	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P2.2 ■82 F	P2.3 ■72 E	P3.1 ■62 F	P3.2 ■49 F	P3.3 ■43 E	P4.1 ■36 F	P4.2 ■33 E	P4.3 ■26 D	M1.1 ■69 E	M1.2 ■56 E	M2.1 ■59 E	M2.2 ■49 E	M3.1 ■30 G	M3.2 ■26 G
M3.3 ■23 C	M4.1 ■30 C	K1.1 ■98 I	K1.2 ■72 F	K1.3 ■56 F	K2.1 ■82 E	K2.2 ■66 E	K2.3 ■52 E	K3.1 ■72 E	K3.2 ■56 E	K3.3 ■43 E	K4.1 ■66 E	K4.2 ■49 E	K4.3 ■36 E
K4.4 ■33 E	K4.5 ■26 E	K5.1 ■75 E	K5.2 ■56 E	K5.3 ■43 E	N2.2 ■89 G	N2.3 ■79 F	N3.1 ■89 H	N3.2 ■69 H	N3.3 ■52 G	S1.1 ■75 F	S1.2 ■39 D	S1.3 ■20 B	S2.1 ■26 E
S2.2 ■13 A	S3.1 ■20 E	S3.2 ■10 A	S4.1 ■16 E	S4.2 ■7 A									

Product	DC (inch)	DC (Wire gauge size)	DC (Letter size)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
501-6N60	-	N60	-	.0400	11/16	6"	.040	12	6001340 1)
501-6N59	-	N59	-	.0410	11/16	6"	.041	12	6001332 1)
501-6N58	-	N58	-	.0420	11/16	6"	.042	12	6001329 1)
501-6N57	-	N57	-	.0430	3/4	6"	.043	12	6001326 1)
501-6N56	-	N56	-	.0465	3/4	6"	.046	12	6001323 1)
500-63/64	3/64	-	-	.0469	3/4	6"	.047	12	6001203 1)
501-6N55	-	N55	-	.0520	7/8	6"	.052	12	6001320 1)
501-6N54	-	N54	-	.0550	7/8	6"	.055	12	6001317 1)
501-6N53	-	N53	-	.0595	7/8	6"	.059	12	6001314 1)
500-61/16	1/16	-	-	.0625	7/8	6"	.063	12	6001270
501-6N52	-	N52	-	.0635	7/8	6"	.064	12	6001311
501-6N51	-	N51	-	.0670	1"	6"	.067	12	6001309
501-6N50	-	N50	-	.0700	1"	6"	.070	12	6001302
501-6N49	-	N49	-	.0730	1"	6"	.073	12	6001296
501-6N48	-	N48	-	.0760	1"	6"	.076	12	6001293
500-65/64	5/64	-	-	.0781	1"	6"	.078	12	6001212
501-6N47	-	N47	-	.0785	1"	6"	.079	12	6001289
501-6N46	-	N46	-	.0810	1.1/8	6"	.081	12	6001285
501-6N45	-	N45	-	.0820	1.1/8	6"	.082	12	6001282
501-6N44	-	N44	-	.0860	1.1/8	6"	.086	12	6001276
501-6N43	-	N43	-	.0890	1.1/4	6"	.089	12	6001271

Product	DC (inch)	DC (Wire gauge size)	DC (Letter size)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
501-6N42	-	N42	-	.0935	1.1/4	6"	.093	12	6001268
500-63/32	3/32	-	-	.0938	1.1/4	6"	.094	12	6001201
501-6N41	-	N41	-	.0960	1.3/8	6"	.096	12	6001448
501-6N40	-	N40	-	.0980	1.3/8	6"	.098	12	6001446
501-6N39	-	N39	-	.0995	1.3/8	6"	.100	12	6001439
501-6N38	-	N38	-	.1015	1.7/16	6"	.102	12	6001427
501-6N37	-	N37	-	.1040	1.7/16	6"	.104	12	6001371
501-6N36	-	N36	-	.1065	1.7/16	6"	.106	12	6001337
500-67/64	7/64	-	-	.1094	1.1/2	6"	.109	12	6001220
501-6N35	-	N35	-	.1100	1.1/2	6"	.110	12	6001305
501-6N34	-	N34	-	.1110	1.1/2	6"	.111	12	6001261
501-6N33	-	N33	-	.1130	1.1/2	6"	.113	12	6001507
501-6N32	-	N32	-	.1160	1.5/8	6"	.116	12	6001503
501-6N31	-	N31	-	.1200	1.5/8	6"	.120	12	6001502
500-61/8	1/8	-	-	.1250	1.5/8	6"	.125	12	6001288
501-6N30	-	N30	-	.1285	1.5/8	6"	.129	12	6001500
501-6N29	-	N29	-	.1360	1.3/4	6"	.136	12	6001496
501-6N28	-	N28	-	.1405	1.3/4	6"	.141	12	6001494
500-69/64	9/64	-	-	.1406	1.3/4	6"	.141	12	6001224
501-6N27	-	N27	-	.1440	1.7/8	6"	.144	12	6001492
501-6N26	-	N26	-	.1470	1.7/8	6"	.147	12	6001490

1) No Split Point



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
501-6N25	-	N25	-	.1495	1.7/8	6"	.149	12	6001489
501-6N24	-	N24	-	.1520	2"	6"	.152	12	6001487
501-6N23	-	N23	-	.1540	2"	6"	.154	12	6001483
500-65/32	5/32	-	-	.1563	2"	6"	.156	12	6001211
501-6N22	-	N22	-	.1570	2"	6"	.157	12	6001481
501-6N21	-	N21	-	.1590	2.1/8	6"	.159	12	6001479
501-6N20	-	N20	-	.1610	2.1/8	6"	.161	12	6001477
501-6N19	-	N19	-	.1660	2.1/8	6"	.166	12	6001473
501-6N18	-	N18	-	.1695	2.1/8	6"	.170	12	6001471
500-611/64	11/64	-	-	.1719	2.1/8	6"	.172	12	6001142
501-6N17	-	N17	-	.1730	2.3/16	6"	.173	12	6001469
501-6N16	-	N16	-	.1770	2.3/16	6"	.177	12	6001467
501-6N15	-	N15	-	.1800	2.3/16	6"	.180	12	6001465
501-6N14	-	N14	-	.1820	2.3/16	6"	.182	12	6001461
501-6N13	-	N13	-	.1850	2.5/16	6"	.185	12	6001459
500-63/16	3/16	-	-	.1875	2.5/16	6"	.188	12	6001199
501-6N12	-	N12	-	.1890	2.5/16	6"	.189	12	6001457
501-6N11	-	N11	-	.1910	2.5/16	6"	.191	12	6001455
501-6N10	-	N10	-	.1935	2.7/16	6"	.194	12	6001453
501-6N9	-	N9	-	.1960	2.7/16	6"	.196	12	6001349
501-6N8	-	N8	-	.1990	2.7/16	6"	.199	12	6001346
501-6N7	-	N7	-	.2010	2.7/16	6"	.201	12	6001343
500-613/64	13/64	-	-	.2031	2.7/16	6"	.203	12	6001150
501-6N6	-	N6	-	.2040	2.1/2	6"	.204	12	6001334
501-6N5	-	N5	-	.2055	2.1/2	6"	.205	12	6001299
501-6N4	-	N4	-	.2090	2.1/2	6"	.209	12	6001443
501-6N3	-	N3	-	.2130	2.1/2	6"	.213	12	6001498
500-67/32	7/32	-	-	.2188	2.1/2	6"	.219	12	6001218
501-6N2	-	N2	-	.2210	2.5/8	6"	.221	12	6001475
501-6N1	-	N1	-	.2280	2.5/8	6"	.228	12	6001451
502-6A	-	-	A	.2340	2.5/8	6"	.234	12	6001257
500-615/64	15/64	-	-	.2344	2.5/8	6"	.234	12	6001160
502-6B	-	-	B	.2380	2.3/4	6"	.238	12	6001260
502-6C	-	-	C	.2420	2.3/4	6"	.242	12	6001265
502-6D	-	-	D	.2460	2.3/4	6"	.246	12	6001272
500-61/4	1/4	-	-	.2500	2.3/4	6"	.250	12	6001284
502-6F	-	-	F	.2570	2.7/8	6"	.257	12	6001281

Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
502-6G	-	-	G	.2610	2.7/8	6"	.261	6	6001286
500-617/64	17/64	-	-	.2656	2.7/8	6"	.266	6	6001167
502-6H	-	-	H	.2660	2.7/8	6"	.266	6	6001290
502-6I	-	-	I	.2720	2.7/8	6"	.272	6	6001294
502-6J	-	-	J	.2770	2.7/8	6"	.277	6	6001297
502-6K	-	-	K	.2810	2.15/16	6"	.281	6	6001303
500-69/32	9/32	-	-	.2813	2.15/16	6"	.281	6	6001222
502-6L	-	-	L	.2900	2.15/16	6"	.290	6	6001306
502-6M	-	-	M	.2950	3.1/16	6"	.295	6	6001308
500-619/64	19/64	-	-	.2969	3.1/16	6"	.297	6	6001172
502-6N	-	-	N	.3020	3.1/16	6"	.302	6	6001310
500-65/16	5/16	-	-	.3125	3.3/16	6"	.313	6	6001209
502-6O	-	-	O	.3160	3.3/16	6"	.316	6	6001313
502-6P	-	-	P	.3230	3.5/16	6"	.323	6	6001316
500-621/64	21/64	-	-	.3281	3.5/16	6"	.328	6	6001177
502-6Q	-	-	Q	.3320	3.7/16	6"	.332	6	6001319
502-6R	-	-	R	.3390	3.7/16	6"	.339	6	6001322
500-611/32	11/32	-	-	.3438	3.7/16	6"	.344	6	6001292
502-6S	-	-	S	.3480	3.1/2	6"	.348	6	6001325
502-6T	-	-	T	.3580	3.1/2	6"	.358	6	6001328
500-623/64	23/64	-	-	.3594	3.1/2	6"	.359	6	6001180
502-6U	-	-	U	.3680	3.5/8	6"	.368	6	6001336
500-63/8	3/8	-	-	.3750	3.5/8	6"	.375	6	6001204
502-6V	-	-	V	.3772	3.5/8	6"	.377	6	6001339
502-6W	-	-	W	.3860	3.3/4	6"	.386	6	6001342
500-625/64	25/64	-	-	.3906	3.3/4	6"	.391	6	6001185
502-6X	-	-	X	.3970	3.3/4	6"	.397	6	6001345
502-6Y	-	-	Y	.4040	3.7/8	6"	.404	6	6001348
500-613/32	13/32	-	-	.4063	3.7/8	6"	.406	6	6001146
502-6Z	-	-	Z	.4130	3.7/8	6"	.413	6	6001351
500-627/64	27/64	-	-	.4219	3.15/16	6"	.422	6	6001192
500-67/16	7/16	-	-	.4375	4.1/16	6"	.438	6	6001216
500-629/64	29/64	-	-	.4531	4.3/16	6"	.453	6	6001195
500-615/32	15/32	-	-	.4688	4.5/16	6"	.469	6	6001155
500-631/64	31/64	-	-	.4844	4.3/8	6"	.484	6	6001207
500-61/2	1/2	-	-	.5000	4.1/2	6"	.500	6	6001280

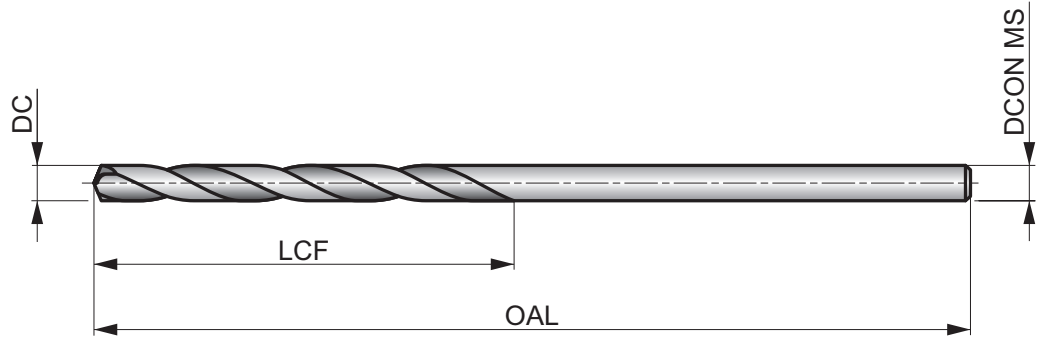


CO500-6 / CO501-6



NAS 907 Type B HSS-E Aircraft Extension Drill, 6" OAL

Long series drills made according to National Aerospace Standards with long over-all length combined with short flute length makes it ideal for drilling in difficult to reach areas. The cobalt material, 135° split point and bronze tempered surface finish improves tool life when drilling most materials.



HSS-E	NAS 907	4xD
135°	Bronze	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 118 G	P1.2 ■ 131 G	P1.3 ■ 135 G	P2.1 ■ 102 G	P2.2 ■ 89 E	P2.3 ■ 79 D	P3.1 ■ 82 E	P3.2 ■ 66 E	P3.3 ■ 56 D	P4.1 ■ 49 E	P4.2 ■ 43 D	P4.3 ■ 33 B	M1.1 ■ 98 H	M1.2 ■ 85 H
M2.1 ■ 89 H	M2.2 ■ 72 H	M2.3 ■ 59 D	M3.1 ■ 43 F	M3.2 ■ 36 F	M3.3 ■ 33 D	M4.1 ■ 49 D	M4.2 ■ 43 D	K1.1 ■ 115 H	K1.2 ■ 85 H	K1.3 ■ 62 H	K2.1 ■ 89 F	K2.2 ■ 72 F	K2.3 ■ 59 D
K3.1 ■ 79 F	K3.2 ■ 59 F	K3.3 ■ 49 D	K4.1 ■ 72 F	K4.2 ■ 56 F	K4.3 ■ 39 D	K4.4 ■ 36 D	K4.5 ■ 30 D	K5.1 ■ 82 F	K5.2 ■ 62 F	K5.3 ■ 49 D	N1.1 ■ 105 I	N1.2 ■ 79 I	N1.3 ■ 52 H
N2.1 ■ 138 G	N2.2 ■ 121 G	N2.3 ■ 89 G	N3.1 ■ 177 G	N3.2 ■ 105 H	N3.3 ■ 52 E	N4.1 ■ 115 I	N4.2 ■ 85 G	N4.3 ■ 39 E	S1.3 ■ 20 D	S2.1 ■ 26 B	S2.2 ■ 23 B	S3.1 ■ 20 B	S3.2 ■ 16 B
S4.1 ■ 16 B	S4.2 ■ 13 B												

Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(inch)	(inch)	(inch)	(inch)		
CO500-61/16	1/16	—	.0625	7/8	6"	.063	12	5995809
CO501-6N52	—	N52	.0635	7/8	6"	.064	12	5996131
CO501-6N51	—	N51	.0670	1"	6"	.067	12	5996127
CO501-6N50	—	N50	.0700	1"	6"	.070	12	5996123
CO501-6N49	—	N49	.0730	1"	6"	.073	12	5996116
CO501-6N48	—	N48	.0760	1"	6"	.076	12	5996113
CO500-65/64	5/64	—	.0781	1"	6"	.078	12	5995848
CO501-6N47	—	N47	.0785	1"	6"	.079	12	5996110
CO501-6N46	—	N46	.0810	1.1/8	6"	.081	12	5996107
CO501-6N45	—	N45	.0820	1.1/8	6"	.082	12	5996104
CO501-6N44	—	N44	.0860	1.1/8	6"	.086	12	5996097
CO501-6N43	—	N43	.0890	1.1/4	6"	.089	12	5996094
CO501-6N42	—	N42	.0935	1.1/4	6"	.093	12	5996092
CO500-63/32	3/32	—	.0938	1.1/4	6"	.094	12	5995842
CO501-6N41	—	N41	.0960	1.3/8	6"	.096	12	5996088
CO501-6N40	—	N40	.0980	1.3/8	6"	.098	12	5996086
CO501-6N39	—	N39	.0995	1.3/8	6"	.100	12	5996080
CO501-6N38	—	N38	.1015	1.7/16	6"	.102	12	5996077
CO501-6N37	—	N37	.1040	1.7/16	6"	.104	12	5996072

Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(inch)	(inch)	(inch)	(inch)		
CO501-6N36	—	N36	.1065	1.7/16	6"	.106	12	5996067
CO500-67/64	7/64	—	.1094	1.1/2	6"	.109	12	5995854
CO501-6N35	—	N35	.1100	1.1/2	6"	.110	12	5996060
CO501-6N34	—	N34	.1110	1.1/2	6"	.111	12	5996056
CO501-6N33	—	N33	.1130	1.1/2	6"	.113	12	5996053
CO501-6N32	—	N32	.1160	1.5/8	6"	.116	12	5996047
CO501-6N31	—	N31	.1200	1.5/8	6"	.120	12	5996044
CO500-61/8	1/8	—	.1250	1.5/8	6"	.125	12	5995818
CO501-6N30	—	N30	.1285	1.5/8	6"	.129	12	5996040
CO501-6N29	—	N29	.1360	1.3/4	6"	.136	12	5996033
CO501-6N28	—	N28	.1405	1.3/4	6"	.141	12	5996029
CO500-69/64	9/64	—	.1406	1.3/4	6"	.141	12	5995858
CO501-6N27	—	N27	.1440	1.7/8	6"	.144	12	5996024
CO501-6N26	—	N26	.1470	1.7/8	6"	.147	12	5996018
CO501-6N25	—	N25	.1495	1.7/8	6"	.149	12	5996014
CO501-6N24	—	N24	.1520	2"	6"	.152	12	5996010
CO501-6N23	—	N23	.1540	2"	6"	.154	12	5996007
CO500-65/32	5/32	—	.1563	2"	6"	.156	12	5995845
CO501-6N22	—	N22	.1570	2"	6"	.157	12	5996004



Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(inch)	(inch)	(inch)	(inch)		
C0501-6N21	–	N21	.1590	2.1/8	6"	.159	12	5996000
C0501-6N20	–	N20	.1610	2.1/8	6"	.161	12	5995996
C0501-6N19	–	N19	.1660	2.1/8	6"	.166	12	5995988
C0501-6N18	–	N18	.1695	2.1/8	6"	.170	12	5995984
C0500-611/64	11/64	–	.1719	2.1/8	6"	.172	12	5995822
C0501-6N17	–	N17	.1730	2.3/16	6"	.173	12	5996159
C0501-6N16	–	N16	.1770	2.3/16	6"	.177	12	5996155
C0501-6N15	–	N15	.1800	2.3/16	6"	.180	12	5996151
C0501-6N14	–	N14	.1820	2.3/16	6"	.182	12	5996147
C0501-6N13	–	N13	.1850	2.5/16	6"	.185	12	5996139
C0500-63/16	3/16	–	.1875	2.5/16	6"	.188	12	5995839
C0501-6N12	–	N12	.1890	2.5/16	6"	.189	12	5996100
C0501-6N11	–	N11	.1910	2.5/16	6"	.191	12	5996064
C0501-6N10	–	N10	.1935	2.7/16	6"	.194	12	5996022

Product	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(inch)	(inch)	(inch)	(inch)		
C0501-6N9	–	N9	.1960	2.7/16	6"	.196	12	5995556
C0501-6N8	–	N8	.1990	2.7/16	6"	.199	12	5995507
C0501-6N7	–	N7	.2010	2.7/16	6"	.201	12	5996143
C0500-613/64	13/64	–	.2031	2.7/16	6"	.203	12	5995831
C0501-6N6	–	N6	.2040	2.1/2	6"	.204	12	5996135
C0501-6N5	–	N5	.2055	2.1/2	6"	.205	12	5996119
C0501-6N4	–	N4	.2090	2.1/2	6"	.209	12	5996083
C0501-6N3	–	N3	.2130	2.1/2	6"	.213	12	5996037
C0500-67/32	7/32	–	.2188	2.1/2	6"	.219	12	5995851
C0501-6N2	–	N2	.2210	2.5/8	6"	.221	12	5995992
C0501-6N1	–	N1	.2280	2.5/8	6"	.228	12	5995980
C0500-615/64	15/64	–	.2344	2.5/8	6"	.234	12	5995835
C0500-61/4	1/4	–	.2500	2.3/4	6"	.250	12	5995813

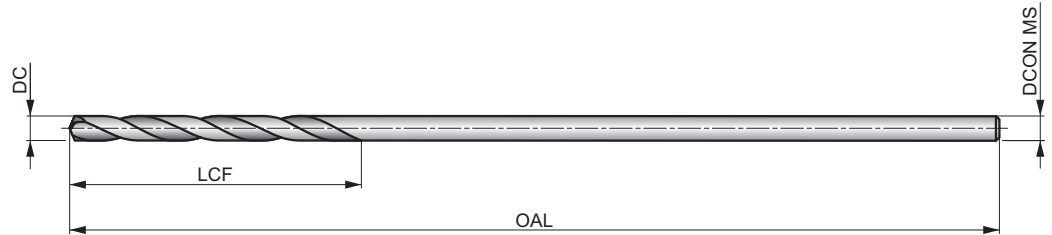


500-12 / 501-12 / 502-12



NAS 907 Type B HSS Aircraft Extension Drill, 12" OAL

Extra-long series drills made according to National Aerospace Standards with extra-long over-all length combined with short flute length makes it ideal for drilling in difficult to reach areas. The 135° self-centering split point and steam tempered surface finish makes it suitable for drilling most materials.



HSS	NAS 907	4xD
135°	ST	
λ20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P2.2 ■82 F	P2.3 ■72 E	P3.1 ■62 F	P3.2 ■49 F	P3.3 ■43 E	P4.1 ■36 F	P4.2 ■33 E	P4.3 ■26 D	M1.1 ■69 E	M1.2 ■56 E	M2.1 ■59 E	M2.2 ■49 E	M3.1 ■30 G	M3.2 ■26 G
M3.3 ■23 C	M4.1 ■30 C	K1.1 ■98 I	K1.2 ■72 F	K1.3 ■56 F	K2.1 ■82 E	K2.2 ■66 E	K2.3 ■52 E	K3.1 ■72 E	K3.2 ■56 E	K3.3 ■43 E	K4.1 ■66 E	K4.2 ■49 E	K4.3 ■36 E
K4.4 ■33 E	K4.5 ■26 E	K5.1 ■75 E	K5.2 ■56 E	K5.3 ■43 E	N2.2 ■89 G	N2.3 ■79 F	N3.1 ■89 H	N3.2 ■69 H	N3.3 ■52 G	S1.1 ■75 F	S1.2 ■39 D	S1.3 ■20 B	S2.1 ■26 E
S2.2 ■13 A	S3.1 ■20 E	S3.2 ■10 A	S4.1 ■16 E	S4.2 ■7 A									

Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
500-123/64	3/64	—	—	.0469	3/4	12"	.047	12	6001382 1)
500-121/16	1/16	—	—	.0625	7/8	12"	.063	12	6001315
501-12N50	—	N50	—	.0700	1"	12"	.070	12	6001441
501-12N49	—	N49	—	.0730	1"	12"	.073	12	6001425
500-125/64	5/64	—	—	.0781	1"	12"	.078	12	6001408
501-12N47	—	N47	—	.0785	1"	12"	.079	12	6001415
501-12N46	—	N46	—	.0810	1.1/8	12"	.081	12	6001410
501-12N45	—	N45	—	.0820	1.1/8	12"	.082	12	6001406
501-12N44	—	N44	—	.0860	1.1/8	12"	.086	12	6001401
501-12N43	—	N43	—	.0890	1.1/4	12"	.089	12	6001396
501-12N42	—	N42	—	.0935	1.1/4	12"	.093	12	6001394
500-123/32	3/32	—	—	.0938	1.1/4	12"	.094	12	6001377
501-12N41	—	N41	—	.0960	1.3/8	12"	.096	12	6001386
501-12N40	—	N40	—	.0980	1.3/8	12"	.098	12	6001381
501-12N37	—	N37	—	.1040	1.7/16	12"	.104	12	6001509
501-12N36	—	N36	—	.1065	1.7/16	12"	.106	12	6001506
500-127/64	7/64	—	—	.1094	1.1/2	12"	.109	12	6001189
501-12N31	—	N31	—	.1200	1.5/8	12"	.120	12	6001485
500-121/8	1/8	—	—	.1250	1.5/8	12"	.125	12	6001324
501-12N30	—	N30	—	.1285	1.5/8	12"	.129	12	6001463
501-12N29	—	N29	—	.1360	1.3/4	12"	.136	12	6001375

Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
500-129/64	9/64	—	—	.1406	1.3/4	12"	.141	12	6001236
501-12N27	—	N27	—	.1440	1.7/8	12"	.144	12	6001275
501-12N26	—	N26	—	.1470	1.7/8	12"	.147	12	6001266
501-12N25	—	N25	—	.1495	1.7/8	12"	.149	12	6001262
501-12N23	—	N23	—	.1540	2"	12"	.154	12	6001258
500-125/32	5/32	—	—	.1563	2"	12"	.156	12	6001402
501-12N22	—	N22	—	.1570	2"	12"	.157	12	6001254
501-12N21	—	N21	—	.1590	2.1/8	12"	.159	12	6001250
501-12N20	—	N20	—	.1610	2.1/8	12"	.161	12	6001247
501-12N19	—	N19	—	.1660	2.1/8	12"	.166	12	6001245
501-12N18	—	N18	—	.1695	2.1/8	12"	.170	12	6001242
500-1211/64	11/64	—	—	.1719	2.1/8	12"	.172	12	6001333
501-12N17	—	N17	—	.1730	2.3/16	12"	.173	12	6001240
501-12N16	—	N16	—	.1770	2.3/16	12"	.177	12	6001238
501-12N13	—	N13	—	.1850	2.5/16	12"	.185	12	6001234
500-123/16	3/16	—	—	.1875	2.5/16	12"	.188	6	6001372
501-12N12	—	N12	—	.1890	2.5/16	12"	.189	6	6001232
501-12N11	—	N11	—	.1910	2.5/16	12"	.191	6	6001231
501-12N10	—	N10	—	.1935	2.7/16	12"	.194	6	6001229
501-12N9	—	N9	—	.1960	2.7/16	12"	.196	6	6001449
501-12N7	—	N7	—	.2010	2.7/16	12"	.201	6	6001445

1) No Split Point



Product	DC (inch)	DC (Wire gauge size)	DC (Letter size)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
500-1213/64	13/64	—	—	.2031	2.7/16	12"	.203	6	6001338
501-12N5	—	N5	—	.2055	2.1/2	12"	.205	6	6001436
501-12N4	—	N4	—	.2090	2.1/2	12"	.209	6	6001515
501-12N3	—	N3	—	.2130	2.1/2	12"	.213	6	6001430
500-127/32	7/32	—	—	.2188	2.1/2	12"	.219	6	6001134
501-12N1	—	N1	—	.2280	2.5/8	12"	.228	6	6001226
502-12A	—	—	A	.2340	2.5/8	12"	.234	6	6001352
500-1215/64	15/64	—	—	.2344	2.5/8	12"	.234	6	6001344
502-12B	—	—	B	.2380	2.3/4	12"	.238	6	6001355
502-12C	—	—	C	.2420	2.3/4	12"	.242	6	6001358
502-12D	—	—	D	.2460	2.3/4	12"	.246	6	6001361
500-121/4	1/4	—	—	.2500	2.3/4	12"	.250	6	6001321
502-12F	—	—	F	.2570	2.7/8	12"	.257	6	6001368
502-12G	—	—	G	.2610	2.7/8	12"	.261	6	6001376
500-1217/64	17/64	—	—	.2656	2.7/8	12"	.266	6	6001347
502-12H	—	—	H	.2660	2.7/8	12"	.266	6	6001380
502-12I	—	—	I	.2720	2.7/8	12"	.272	6	6001385
502-12J	—	—	J	.2770	2.7/8	12"	.277	6	6001390
502-12K	—	—	K	.2810	2.15/16	12"	.281	6	6001395
500-129/32	9/32	—	—	.2813	2.15/16	12"	.281	6	6001214
502-12L	—	—	L	.2900	2.15/16	12"	.290	6	6001400
502-12M	—	—	M	.2950	3.1/16	12"	.295	6	6001405
500-1219/64	19/64	—	—	.2969	3.1/16	12"	.297	6	6001350
502-12N	—	—	N	.3020	3.1/16	12"	.302	6	6001414
500-125/16	5/16	—	—	.3125	3.3/16	12"	.313	6	6001397

Product	DC (inch)	DC (Wire gauge size)	DC (Letter size)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
502-12O	—	—	O	.3160	3.3/16	12"	.316	6	6001419
502-12P	—	—	P	.3230	3.5/16	12"	.323	6	6001424
500-1221/64	21/64	—	—	.3281	3.5/16	12"	.328	6	6001353
502-12Q	—	—	Q	.3320	3.7/16	12"	.332	6	6001434
502-12R	—	—	R	.3390	3.7/16	12"	.339	6	6001251
500-1211/32	11/32	—	—	.3438	3.7/16	12"	.344	6	6001327
502-12S	—	—	S	.3480	3.1/2	12"	.348	3	6001300
502-12T	—	—	T	.3580	3.1/2	12"	.358	3	6001331
500-1223/64	23/64	—	—	.3594	3.1/2	12"	.359	3	6001356
502-12U	—	—	U	.3680	3.5/8	12"	.368	3	6001367
500-123/8	3/8	—	—	.3750	3.5/8	12"	.375	3	6001388
502-12V	—	—	V	.3770	3.5/8	12"	.377	3	6001423
502-12W	—	—	W	.3860	3.3/4	12"	.386	3	6001432
500-1225/64	25/64	—	—	.3906	3.3/4	12"	.391	3	6001359
502-12X	—	—	X	.3970	3.3/4	12"	.397	3	6001438
502-12Y	—	—	Y	.4040	3.7/8	12"	.404	3	6001442
500-1213/32	13/32	—	—	.4063	3.7/8	12"	.406	3	6001335
502-12Z	—	—	Z	.4130	3.7/8	12"	.413	3	6001447
500-1227/64	27/64	—	—	.4219	3.15/16	12"	.422	3	6001366
500-127/16	7/16	—	—	.4375	4.1/16	12"	.438	3	6001417
500-1229/64	29/64	—	—	.4531	4.3/16	12"	.453	3	6001369
500-1215/32	15/32	—	—	.4688	4.5/16	12"	.469	3	6001341
500-1231/64	31/64	—	—	.4844	4.3/8	12"	.484	3	6001393
500-121/2	1/2	—	—	.5000	4.1/2	12"	.500	3	6001318

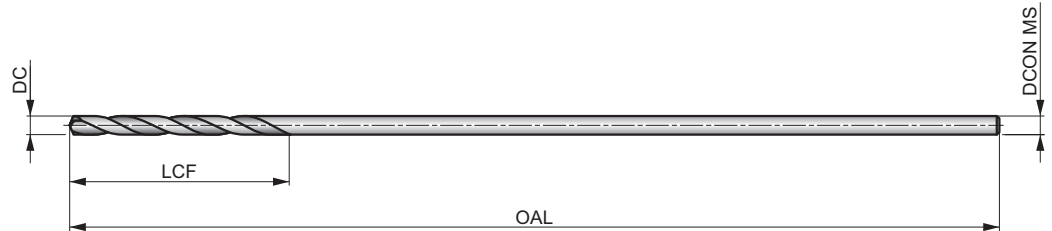


CO500-12 / CO501-12



NAS 907 Type B HSS-E Aircraft Extension Drill, 12" OAL

Extra-long series drills made according to National Aerospace Standards with extra-long over-all length combined with short flute length makes it ideal for drilling in difficult to reach areas. The cobalt material, 135° split point and bronze tempered surface finish improves tool life when drilling most materials.



HSS-E	NAS 907	4×D
135°	Bronze	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 118 G	P1.2 ■ 131 G	P1.3 ■ 135 G	P2.1 ■ 102 G	P2.2 ■ 89 E	P2.3 ■ 79 D	P3.1 ■ 82 E	P3.2 ■ 66 E	P3.3 ■ 56 D	P4.1 ■ 49 E	P4.2 ■ 43 D	P4.3 ■ 33 B	M1.1 ■ 98 H	M1.2 ■ 85 H
M2.1 ■ 89 H	M2.2 ■ 72 H	M2.3 ■ 59 D	M3.1 ■ 43 F	M3.2 ■ 36 F	M3.3 ■ 33 D	M4.1 ■ 49 D	M4.2 ■ 43 D	K1.1 ■ 115 H	K1.2 ■ 85 H	K1.3 ■ 62 H	K2.1 ■ 89 F	K2.2 ■ 72 F	K2.3 ■ 59 D
K3.1 ■ 79 F	K3.2 ■ 59 F	K3.3 ■ 49 D	K4.1 ■ 72 F	K4.2 ■ 56 F	K4.3 ■ 39 D	K4.4 ■ 36 D	K4.5 ■ 30 D	K5.1 ■ 82 F	K5.2 ■ 62 F	K5.3 ■ 49 D	N1.1 ■ 105 I	N1.2 ■ 79 I	N1.3 ■ 52 H
N2.1 ■ 138 G	N2.2 ■ 121 G	N2.3 ■ 89 G	N3.1 ■ 177 G	N3.2 ■ 105 H	N3.3 ■ 52 E	N4.1 ■ 115 I	N4.2 ■ 85 G	N4.3 ■ 39 E	S1.3 ■ 20 D	S2.1 ■ 26 B	S2.2 ■ 23 B	S3.1 ■ 20 B	S3.2 ■ 16 B
S4.1 ■ 16 B	S4.2 ■ 13 B												

Product	DC (inch)	DC (Wire gauge size)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
CO500-121/16	1/16	—	.0625	7/8	12"	.063	12	5995755
CO500-125/64	5/64	—	.0781	1"	12"	.078	12	5995796
CO500-123/32	3/32	—	.0938	1.1/4	12"	.094	12	5995787
CO501-12N40	—	N40	.0980	1.3/8	12"	.098	12	5995909
CO500-127/64	7/64	—	.1094	1.1/2	12"	.109	12	5995802
CO500-121/8	1/8	—	.1250	1.5/8	12"	.125	12	5995763
CO501-12N30	—	N30	.1285	1.5/8	12"	.129	12	5995899
CO501-12N29	—	N29	.1360	1.3/4	12"	.136	12	5995895
CO500-129/64	9/64	—	.1406	1.3/4	12"	.141	12	5995805
CO500-125/32	5/32	—	.1563	2"	12"	.156	12	5995792
CO501-12N21	—	N21	.1590	2.1/8	12"	.159	12	5995887

Product	DC (inch)	DC (Wire gauge size)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
CO501-12N20	—	N20	.1610	2.1/8	12"	.161	12	5995883
CO500-1211/64	11/64	—	.1719	2.1/8	12"	.172	12	5995767
CO501-12N16	—	N16	.1770	2.3/16	12"	.177	12	5995873
CO500-123/16	3/16	—	.1875	2.5/16	12"	.188	6	5995779
CO501-12N11	—	N11	.1910	2.5/16	12"	.191	12	5995869
CO501-12N10	—	N10	.1935	2.7/16	12"	.194	6	5995861
CO500-1213/64	13/64	—	.2031	2.7/16	12"	.203	6	5995771
CO500-127/32	7/32	—	.2188	2.1/2	12"	.219	6	5995799
CO501-12N2	—	N2	.2210	2.5/8	12"	.221	6	5995880
CO500-1215/64	15/64	—	.2344	2.5/8	12"	.234	6	5995775
CO500-121/4	1/4	—	.2500	2.3/4	12"	.250	6	5995759

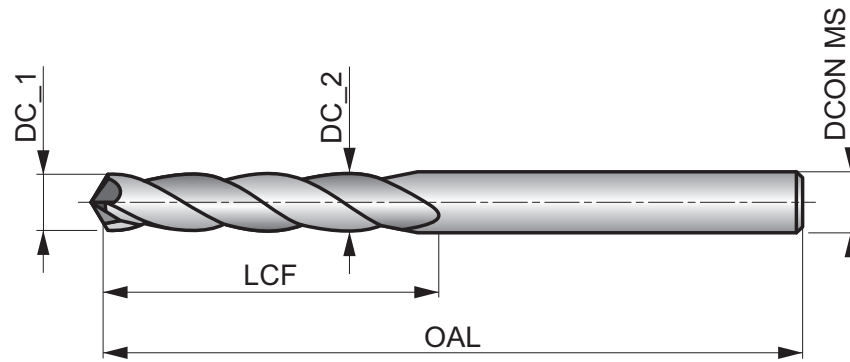


ATR41



HSS 3-Flute Tapered Aircraft Router

Used for drilling, routing and trimming with one tool and without pre-drilling. Taper is 1/4" per foot on usable length. Bright finish improves chip flow in softer or non-ferrous materials.



HSS	PRECISION	4xD
118°	Bright	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P2.2 ■82 F	P2.3 ■72 E	P3.1 ■62 F	P3.2 ■49 F	P3.3 ■43 E	P4.1 ■36 F	P4.2 ■33 E	P4.3 ■26 D	M1.1 ■69 E	M1.2 ■56 E	M2.1 ■59 E	M2.2 ■49 E	M3.1 ■30 G	M3.2 ■26 G
M3.3 ■23 C	M4.1 ■30 C	K1.1 ■98 I	K1.2 ■72 F	K1.3 ■56 F	K2.1 ■82 E	K2.2 ■66 E	K2.3 ■52 E	K3.1 ■72 E	K3.2 ■56 E	K3.3 ■43 E	K4.1 ■66 E	K4.2 ■49 E	K4.3 ■36 E
K4.4 ■33 E	K4.5 ■26 E	K5.1 ■75 E	K5.2 ■56 E	K5.3 ■43 E	N3.1 ■89 H	N3.2 ■69 F	N3.3 ■52 G	S1.1 ■75 F	S1.2 ■39 D	S1.3 ■20 B	S2.1 ■26 E	S2.2 ■13 A	S3.1 ■20 E
S3.2 ■10 A	S4.1 ■16 E	S4.2 ■7 A											

Product	Router Nr.	DC_1 (inch)	DC_2 (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	NOF	Pack Qty	MID
ATR41N1	1	.0810	.0980	13/16	2"	.098	3	12	5989076
ATR41N2	2	.1100	.1280	7/8	2.1/4	.128	3	12	5995742
ATR41N3	3	.1650	.1875	1.1/16	2.1/2	.188	3	12	5995783
ATR41N4	4	.2240	.2500	1.1/4	2.3/4	.250	4	12	5995826



Material code (BMC)	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS
Basic standard group (BSG)	ANSI	ANSI	ANSI	DORNER	ANSI	ANSI	ANSI	ANSI	ANSI	ANSI	ANSI
Usable length (ULDR)	2.5xD	2.5xD	4xD	3.5xD	4xD	4xD	4xD	4xD	4xD	4xD	2.5xD
Application angle	135°	135°	135°	135°	118°	135°	135°	135°	118°	118°	135°
Coating	ST	ST Bronze	ST Bronze	ST Bronze	ST	ST	ST Bronze	TIN	Bright ST	ST Bronze	ST Bronze
Shank											
Spiral form	λ 20-35°	λ 20-35°	λ 20-35°		λ 20-35°	λ 20-35°	λ 20-35°	λ 20-35°	λ 20-35°	λ 20-35°	λ 20-35°
Hand (Cutting direction)	R	R	R	R	R	R	R	R	R	R	R
Cooling (CSP)											
Product Family Code	311SM	312SM	321MD	A321	301JD	331HD	332HD	333HD	341SD	342SDT	321MDSET
PSF cutting diameters range	N54 - 1/2	3/32 - 1/2	1/16 - 1/2	3.0 - 13.0	N60 - 1/2	N52 - W	N33 - 1/2	1/16 - 1/2	33/64 - 1.1/2	33/64 - 1"	Set
P	P1	■	■	■	■	■	■	■	■	■	
	P2	■	■	■	■	■	■	■	■	■	
	P3	■	■	■	■	■	■	■	■	■	
	P4	■	■	■	■	■	■	■	■	■	
M	M1	■	■	■	■	■	■	■	■	■	
	M2	■	■	■	■	■	■	■	■	■	
	M3	■	■	■	■	■	■	■	■	■	
	M4	■	■	■	■	■	■	■	■	■	
K	K1	■	■	■	■	■	■	■	■	■	
	K2	■	■	■	■	■	■	■	■	■	
	K3	■	■	■	■	■	■	■	■	■	
	K4	■	■	■	■	■	■	■	■	■	
	K5	■	■	■	■	■	■	■	■	■	
N	N1	■	■	■	■	■	■	■	■	■	
	N2	■	■	■	■	■	■	■	■	■	
	N3	■	■	■	■	■	■	■	■	■	
	N4	■	■	■	■	■	■	■	■	■	
	N5	■	■	■	■	■	■	■	■	■	
S	S1				■						
	S2				■						
	S3				■						
	S4				■						
H	H1										
	H2										
	H3										
	H4										

■ Primary use ■ Possible use



301JDSET

331HDSET

332HDSET

Set

Set

283

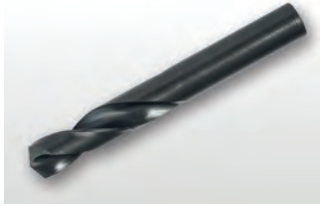
285

288

- P1
- P2
- P3
- P4
- M1
- M2
- M3
- M4
- K1
- K2
- K3
- K4
- K5
- N1
- N2
- N3
- N4
- N5
- S1
- S2
- S3
- S4
- H1
- H2
- H3
- H4



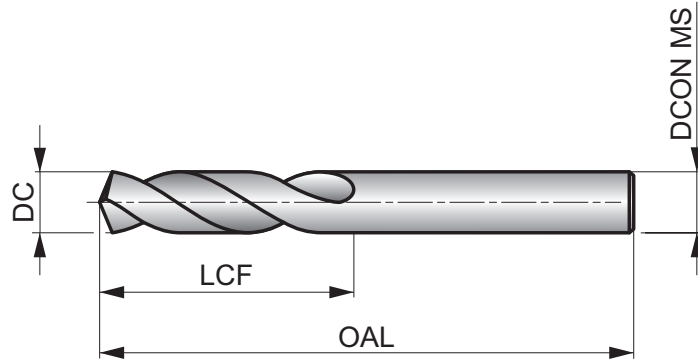
311SM



HSS MRO Heavy Duty Stub Drill, Steam Tempered

Heavy duty cost effective solution for shallow holes. Designed with shorter flute length and overall length for increased rigidity. The 135° self-centering split point minimizes 'walking' and reduces the thrust force required which helps to improve hole accuracy.

HSS	ANSI	2.5×D
135°	ST	
λ 20-35°	R	



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 118 H	P1.2 ■ 131 H	P1.3 ■ 135 H	P2.1 ■ 102 H	P2.2 ■ 89 G	P2.3 ▣ 79 E	P3.1 ■ 69 F	P3.2 ■ 56 F	P3.3 ▣ 46 E	P4.1 ■ 39 F	P4.2 ▣ 33 E	P4.3 ▣ 30 D	M1.1 ■ 72 E	M1.2 ■ 62 E
M2.1 ■ 66 E	M2.2 ■ 52 E	M3.1 ▣ 33 G	M3.2 ▣ 30 G	M3.3 ▣ 26 C	M4.1 ▣ 33 C	K1.1 ■ 105 H	K1.2 ■ 79 D	K1.3 ■ 59 D	K2.1 ■ 82 E	K2.2 ■ 66 E	K2.3 ▣ 52 E	K3.1 ■ 72 E	K3.2 ■ 56 E
K3.3 ▣ 43 E	K4.1 ■ 66 E	K4.2 ■ 49 E	K4.3 ▣ 36 E	K4.4 ▣ 33 E	K4.5 ▣ 26 E	K5.1 ■ 75 E	K5.2 ■ 56 E	K5.3 ▣ 43 E	N1.1 ▣ 108 J	N1.2 ▣ 82 J	N1.3 ▣ 56 I	N2.1 ▣ 151 H	N2.2 ▣ 138 H
N2.3 ▣ 98 H	N3.1 ▣ 210 H	N3.2 ▣ 125 F	N3.3 ▣ 62 H	N4.1 ▣ 98	N4.2 ▣ 115	N4.3 ▣ 56							

Product	DC (inch)	DC (Wire gauge size)	DC (Letter size)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
311SMN54	—	N54	—	.0550	5/8	1.5/8	.055	12	6480861 ¹⁾
311SMN53	—	N53	—	.0595	5/8	1.5/8	.059	12	6480862 ¹⁾
311SM1/16	1/16	—	—	.0625	5/8	1.5/8	.063	12	6480863
311SM5/64	5/64	—	—	.0781	11/16	1.11/16	.078	12	6480869
311SMN44	—	N44	—	.0860	3/4	1.3/4	.086	12	6480873
311SMN43	—	N43	—	.0890	3/4	1.3/4	.089	12	6480874
311SM3/32	3/32	—	—	.0938	3/4	1.3/4	.094	12	6480876
311SMN40	—	N40	—	.0980	13/16	1.13/16	.098	12	6480878
311SMN39	—	N39	—	.0995	13/16	1.13/16	.100	12	6480879
311SMN36	—	N36	—	.1065	13/16	1.13/16	.106	12	6480882
311SM7/64	7/64	—	—	.1094	13/16	1.13/16	.109	12	6480883
311SMN35	—	N35	—	.1100	7/8	1.7/8	.110	12	6480884
311SM1/8	1/8	—	—	.1250	7/8	1.7/8	.125	12	6480889
311SMN30	—	N30	—	.1285	15/16	1.15/16	.129	12	6480890
311SMN29	—	N29	—	.1360	15/16	1.15/16	.136	12	6480891
311SMN28	—	N28	—	.1405	15/16	1.15/16	.141	12	6480892
311SM9/64	9/64	—	—	.1406	15/16	1.15/16	.141	12	6480893
311SMN26	—	N26	—	.1470	1"	2.1/16	.147	12	6480895
311SMN25	—	N25	—	.1495	1"	2.1/16	.149	12	6480896
311SM5/32	5/32	—	—	.1563	1"	2.1/16	.156	12	6480899
311SMN22	—	N22	—	.1570	1.1/16	2.1/8	.157	12	6480900

1) No Split Point



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
311SMN21	—	N21	—	.1590	1.1/16	2.1/8	.159	12	6480901
311SMN20	—	N20	—	.1610	1.1/16	2.1/8	.161	12	6480902
311SMN19	—	N19	—	.1660	1.1/16	2.1/8	.166	12	6480903
311SMN18	—	N18	—	.1695	1.1/16	2.1/8	.170	12	6480904
311SM11/64	11/64	—	—	.1719	1.1/16	2.1/8	.172	12	6480905
311SMN17	—	N17	—	.1730	1.1/8	2.3/16	.173	12	6480906
311SMN16	—	N16	—	.1770	1.1/8	2.3/16	.177	12	6480907
311SMN15	—	N15	—	.1800	1.1/8	2.3/16	.180	12	6480908
311SMN13	—	N13	—	.1850	1.1/8	2.3/16	.185	12	6480910
311SM3/16	3/16	—	—	.1875	1.1/8	2.3/16	.188	12	6480911
311SMN11	—	N11	—	.1910	1.3/16	2.1/4	.191	12	6480913
311SMN10	—	N10	—	.1935	1.3/16	2.1/4	.194	12	6480914
311SMN9	—	N9	—	.1960	1.3/16	2.1/4	.196	12	6480915
311SMN8	—	N8	—	.1990	1.3/16	2.1/4	.199	12	6480916
311SMN7	—	N7	—	.2010	1.3/16	2.1/4	.201	12	6480917
311SM13/64	13/64	—	—	.2031	1.3/16	2.1/4	.203	12	6480918
311SMN6	—	N6	—	.2040	1.1/4	2.3/8	.204	12	6480919
311SMN4	—	N4	—	.2090	1.1/4	2.3/8	.209	12	6480921
311SMN3	—	N3	—	.2130	1.1/4	2.3/8	.213	12	6480922
311SM7/32	7/32	—	—	.2188	1.1/4	2.3/8	.219	12	6480923
311SMN2	—	N2	—	.2210	1.5/16	2.7/16	.221	12	6480924
311SMN1	—	N1	—	.2280	1.5/16	2.7/16	.228	12	6480925
311SM15/64	15/64	—	—	.2344	1.5/16	2.7/16	.234	12	6480927
311SMB	—	—	B	.2380	1.3/8	2.1/2	.238	12	6480928
311SM1/4	1/4	—	—	.2500	1.3/8	2.1/2	.250	12	6480931
311SMF	—	—	F	.2570	1.7/16	2.5/8	.257	12	6480933
311SMG	—	—	G	.2610	1.7/16	2.5/8	.261	12	6480934
311SM17/64	17/64	—	—	.2656	1.7/16	2.5/8	.266	12	6480935
311SMH	—	—	H	.2660	1.1/2	2.11/16	.266	12	6480936
311SMI	—	—	I	.2720	1.1/2	2.11/16	.272	12	6480937
311SMK	—	—	K	.2810	1.1/2	2.11/16	.281	12	6480939
311SM9/32	9/32	—	—	.2813	1.1/2	2.11/16	.281	12	6480940
311SM19/64	19/64	—	—	.2969	1.9/16	2.3/4	.297	12	6480943
311SMN	—	—	N	.3020	1.5/8	2.13/16	.302	12	6480944
311SM5/16	5/16	—	—	.3125	1.5/8	2.13/16	.313	6	6480945
311SMO	—	—	O	.3160	1.11/16	2.15/16	.316	6	6480946
311SM21/64	21/64	—	—	.3281	1.11/16	2.15/16	.328	6	6480948
311SMQ	—	—	Q	.3320	1.11/16	3"	.332	6	6480949
311SMR	—	—	R	.3390	1.11/16	3"	.339	6	6480950
311SM11/32	11/32	—	—	.3438	1.11/16	3"	.344	6	6480951
311SMS	—	—	S	.3480	1.3/4	3.1/16	.348	6	6480952
311SM23/64	23/64	—	—	.3594	1.3/4	3.1/16	.359	6	6480954
311SMU	—	—	U	.3680	1.13/16	3.1/8	.368	6	6480955
311SM3/8	3/8	—	—	.3750	1.13/16	3.1/8	.375	6	6480956
311SM25/64	25/64	—	—	.3906	1.7/8	3.1/4	.391	6	6480959
311SM13/32	13/32	—	—	.4063	1.15/16	3.5/16	.406	6	6480962
311SM27/64	27/64	—	—	.4219	2"	3.3/8	.422	6	6480964
311SM7/16	7/16	—	—	.4375	2.1/16	3.7/16	.438	6	6480965
311SM29/64	29/64	—	—	.4531	2.1/8	3.9/16	.453	6	6480966
311SM15/32	15/32	—	—	.4688	2.1/8	3.5/8	.469	6	6480967
311SM1/2	1/2	—	—	.5000	2.1/4	3.3/4	.500	6	6480969

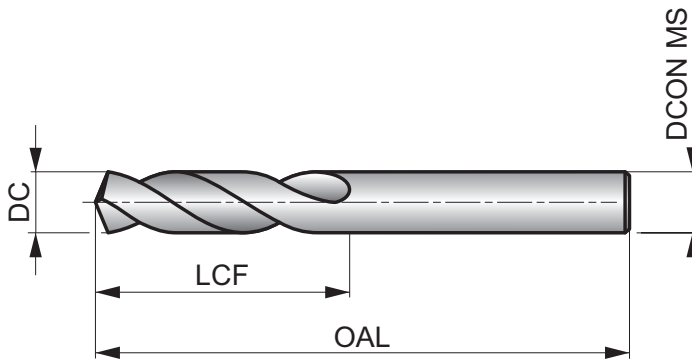


312SM



HSS MRO Heavy Duty Stub Drill, Steam and Bronze Tempered Surface Finish

Heavy duty cost effective solution for shallow holes. Shorter flute length and overall length increases rigidity. The 135° self-centering split point minimizes 'walking' and reduces the thrust force required. Steam and bronze tempered surface finish for improved lubricity and abrasion resistance.



HSS	ANSI	2.5×D
135°	ST Bronze	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 118 H	P1.2 ■ 131 H	P1.3 ■ 135 H	P2.1 ■ 102 H	P2.2 ■ 89 G	P2.3 ■ 79 E	P3.1 ■ 69 F	P3.2 ■ 56 F	P3.3 ■ 46 E	P4.1 ■ 39 F	P4.2 ■ 33 E	P4.3 ■ 30 D	M1.1 ■ 72 E	M1.2 ■ 62 E
M2.1 ■ 66 E	M2.2 ■ 52 E	M3.1 ■ 33 G	M3.2 ■ 30 G	M3.3 ■ 26 C	M4.1 ■ 33 C	K1.1 ■ 105 H	K1.2 ■ 79 D	K1.3 ■ 59 D	K2.1 ■ 82 E	K2.2 ■ 66 E	K2.3 ■ 52 E	K3.1 ■ 72 E	K3.2 ■ 56 E
K3.3 ■ 43 E	K4.1 ■ 66 E	K4.2 ■ 49 E	K4.3 ■ 36 E	K4.4 ■ 33 E	K4.5 ■ 26 E	K5.1 ■ 75 E	K5.2 ■ 56 E	K5.3 ■ 43 E	N1.1 ■ 108 J	N1.2 ■ 82 J	N1.3 ■ 56 I	N2.1 ■ 151 H	N2.2 ■ 138 H
N2.3 ■ 98 H	N3.1 ■ 210 H	N3.2 ■ 125 F	N3.3 ■ 62 H	N4.1 ■ 98	N4.2 ■ 115	N4.3 ■ 56							

Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)	(inch)		
312SM3/32	3/32	.0938	3/4	1.3/4	.094	12	7233781
312SM7/64	7/64	.1094	13/16	1.13/16	.109	12	7233782
312SM1/8	1/8	.1250	7/8	1.7/8	.125	12	7233783
312SM9/64	9/64	.1406	15/16	1.15/16	.141	12	7233784
312SM5/32	5/32	.1563	1"	2.1/16	.156	12	7233785
312SM11/64	11/64	.1719	1.1/16	2.1/8	.172	12	7233786
312SM3/16	3/16	.1875	1.1/8	2.3/16	.188	12	7233787
312SM13/64	13/64	.2031	1.3/16	2.1/4	.203	12	7233788
312SM7/32	7/32	.2188	1.1/4	2.3/8	.219	12	7233789

Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)	(inch)		
312SM1/4	1/4	.2500	1.3/8	2.1/2	.250	12	7233791
312SM17/64	17/64	.2656	1.7/16	2.5/8	.266	12	7233792
312SM9/32	9/32	.2813	1.1/2	2.11/16	.281	12	7233793
312SM5/16	5/16	.3125	1.5/8	2.13/16	.313	6	7233795
312SM3/8	3/8	.3750	1.13/16	3.1/8	.375	6	7233799
312SM13/32	13/32	.4063	1.15/16	3.5/16	.406	6	7233801
312SM7/16	7/16	.4375	2.1/16	3.7/16	.438	6	7233803
312SM1/2	1/2	.5000	2.1/4	3.3/4	.500	6	7233807

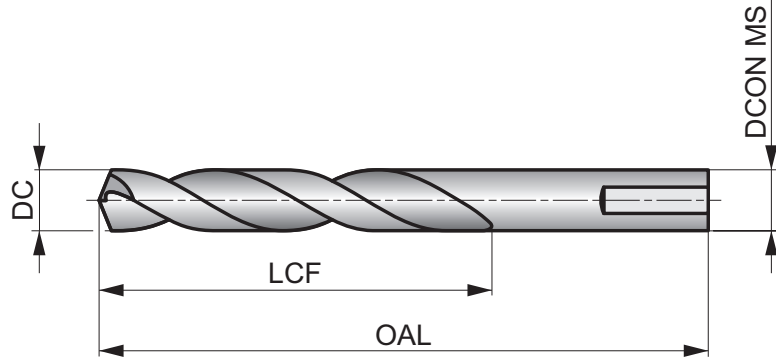


321MD



HSS HD MRO Mechanics Length Drill, Steam and Bronze Tempered Surface Finish

Heavy duty hand drill with tri-flat shanks for medium depth holes. Mechanics length option falls in between jobber and stub lengths. The 3 flats on the shank allows for non-slip chucking. The self-centering 135° split point reduces thrust force and the steam and bronze tempered surface finish improves lubricity.



HSS	ANSI	4xD
135°	ST Bronze	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 118 H	P1.2 131 H	P1.3 135 H	P2.1 102 H	P2.2 89 G	P2.3 79 E	P3.1 82 F	P3.2 66 F	P3.3 56 E	P4.1 49 F	P4.2 43 E	P4.3 33 D	M1.1 98 E	M1.2 85 E
M2.1 89 E	M2.2 72 E	M3.1 43 G	M3.2 36 G	M3.3 33 C	M4.1 49 C	K1.1 115 H	K1.2 85 D	K1.3 62 D	K2.1 89 E	K2.2 72 E	K2.3 59 E	K3.1 79 E	K3.2 59 E
K3.3 49 E	K4.1 72 E	K4.2 56 E	K4.3 39 E	K4.4 36 E	K4.5 30 E	K5.1 82 E	K5.2 62 E	K5.3 49 E	N1.1 108 J	N1.2 82 J	N1.3 56 I	N2.1 151 H	N2.2 138 H
N2.3 98 H	N3.1 223 H	N3.2 131 F	N3.3 66 H										

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
321MD1/16	1/16	.0625	7/8	1.7/8	.063	12	6480970 1)
321MD5/64	5/64	.0781	1"	2"	.078	12	6480971 1)
321MD3/32	3/32	.0938	1.1/4	2.1/4	.094	12	6480972 1)
321MD7/64	7/64	.1094	1.5/16	2.3/8	.109	12	6480973 1)
321MD1/8	1/8	.1250	1.7/16	2.1/2	.125	12	6480974 1)
321MD9/64	9/64	.1406	1.9/16	2.5/8	.141	12	6480975 1)
321MD5/32	5/32	.1563	1.11/16	2.3/4	.156	12	6480976 1)
321MD11/64	11/64	.1719	1.13/16	2.7/8	.172	12	6480977 1)
321MD3/16	3/16	.1875	1.7/8	3"	.188	12	6480978
321MD13/64	13/64	.2031	1.15/16	3.1/8	.203	12	6480979
321MD7/32	7/32	.2188	2"	3.1/4	.219	12	6480980
321MD15/64	15/64	.2344	2.1/16	3.3/8	.234	12	6480981
321MD1/4	1/4	.2500	2"	3.1/2	.250	12	6480982
321MD17/64	17/64	.2656	2.1/8	3.5/8	.266	12	6480983
321MD9/32	9/32	.2813	2.1/4	3.3/4	.281	12	6480984

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
321MD19/64	19/64	.2969	2.3/8	3.7/8	.297	12	6480985
321MD5/16	5/16	.3125	2.1/2	4"	.313	6	6480986
321MD21/64	21/64	.3281	2.9/16	4.1/16	.328	6	6480987
321MD11/32	11/32	.3438	2.5/8	4.1/8	.344	6	6480988
321MD23/64	23/64	.3594	2.11/16	4.3/16	.359	6	6480989
321MD3/8	3/8	.3750	2.11/16	4.1/4	.375	6	6480990
321MD25/64	25/64	.3906	2.3/4	4.5/16	.391	6	6480991
321MD13/32	13/32	.4063	2.13/16	4.3/8	.406	6	6480992
321MD27/64	27/64	.4219	2.7/8	4.7/16	.422	6	6480993
321MD7/16	7/16	.4375	2.15/16	4.1/2	.438	6	6480994
321MD29/64	29/64	.4531	3"	4.5/8	.453	6	6480995
321MD15/32	15/32	.4688	3.1/8	4.3/4	.469	6	6480996
321MD31/64	31/64	.4844	3.1/4	4.7/8	.484	6	6480997
321MD1/2	1/2	.5000	3.3/8	5"	.500	6	6480998

1) No Tri Flats on Shank / No Split Point



Product	Styles in Set	Pieces in Set	Diameters in Set	Pack Qty	MID
321MDSET29	321MD	29	1/16 - 1/2 x 64ths	1	6481073

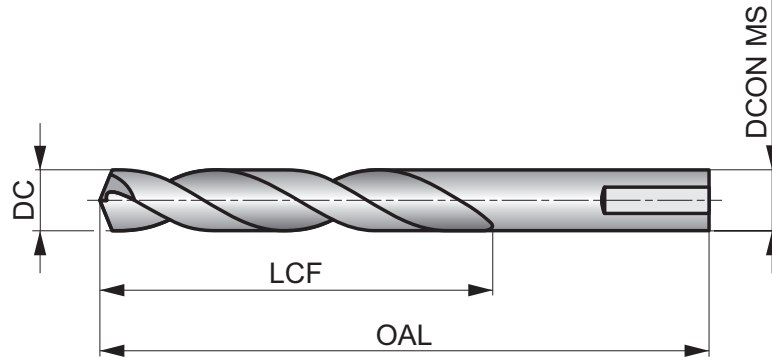


A321



HSS Intermediate Length Drill, Steam and Bronze Tempered Surface Finish

Heavy duty design drill with three-flat shanks for medium depth holes. Primarily suited for hand-held operations and pillar drill machines. Three flats on the shank allow for non-slip chucking. The self-centering 135° split point reduces thrust force and the steam and bronze tempered surface finish improves lubricity.



HSS	DORMER	3.5×D
135°	ST Bronze	
R	DC h8	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 108 H	P1.2 ■ 121 H	P1.3 ■ 125 H	P2.1 ■ 92 H	P2.2 ■ 82 F	P2.3 ▣ 72 E	P3.1 ■ 62 F	P3.2 ■ 49 F	P3.3 ▣ 43 E	P4.1 ■ 36 F	P4.2 ▣ 33 E	P4.3 ▣ 26 D	M1.1 ■ 69 E	M1.2 ■ 56 E
M2.1 ▣ 59 E	M2.2 ▣ 49 E	M3.1 ▣ 30 G	M3.2 ▣ 26 G	M3.3 ▣ 23 G	M4.1 ▣ 30 C	K1.1 ■ 98 H	K1.2 ■ 72 F	K1.3 ■ 56 F	K2.1 ▣ 82 E	K2.2 ▣ 66 E	K2.3 ▣ 52 E	K3.1 ▣ 72 E	K3.2 ▣ 56 E
K3.3 ▣ 43 E	K4.1 ▣ 66 E	K4.2 ▣ 49 E	K4.3 ▣ 36 E	K4.4 ▣ 33 E	K4.5 ▣ 26 E	K5.1 ▣ 75 E	K5.2 ▣ 56 E	K5.3 ▣ 43 E	N1.1 ▣ 108 J	N1.2 ▣ 82 J	N1.3 ▣ 56 I	N2.1 ▣ 138 H	N2.2 ▣ 121 H
N2.3 ▣ 89 H	N3.1 ▣ 194 H	N3.2 ▣ 115 I	N3.3 ▣ 59 G	N4.1 ▣ 98 J	N4.2 ▣ 92 H	N4.3 ▣ 46 F	S1.1 ▣ 75 E	S1.2 ▣ 39 D	S1.3 ▣ 20 B	S2.1 ▣ 26 E	S2.2 ▣ 13 A	S3.1 ▣ 20 E	S3.2 ▣ 10 A
S4.1 ▣ 16 E	S4.2 ▣ 7 A												

Product	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A3213.0	3.00	.1180	37.0	64.0	3.00	10	8349599
A3213.3	3.30	.1300	40.0	67.0	3.30	10	8349650
A3213.4	3.40	.1340	40.0	67.0	3.40	10	8349651
A3213.5	3.50	.1380	40.0	67.0	3.50	10	8349652
A3214.0	4.00	.1580	47.0	74.0	4.00	10	8349653
A3214.1	4.10	.1610	47.0	74.0	4.10	10	8349654
A3214.2	4.20	.1650	47.0	74.0	4.20	10	8349655
A3214.3	4.30	.1690	47.0	74.0	4.30	10	8349656
A3214.5	4.50	.1770	49.0	77.0	4.50	10	8349657
A3214.9	4.90	.1930	50.0	80.0	4.90	10	8349658
A3215.0	5.00	.1970	50.0	80.0	5.00	10	8349659
A3215.1	5.10	.2010	50.0	80.0	5.10	10	8349660
A3215.3	5.30	.2090	52.0	84.0	5.30	10	8349661
A3215.5	5.50	.2170	52.0	84.0	5.50	10	8349662
A3216.0	6.00	.2360	52.0	90.0	6.00	10	8349663
A3216.3	6.30	.2480	52.0	90.0	6.30	10	8349664
A3216.5	6.50	.2560	55.0	93.0	6.50	10	8349665

Product	DC (mm)	DC (inch)	LCF (mm)	OAL (mm)	DCON MS (mm)	Pack Qty	MID
A3216.8	6.80	.2680	59.0	97.0	6.80	10	8349666
A3217.0	7.00	.2760	59.0	97.0	7.00	10	8349667
A3217.3	7.30	.2870	62.0	100.0	7.30	10	8349668
A3217.5	7.50	.2950	62.0	100.0	7.50	10	8349669
A3218.0	8.00	.3150	67.0	105.0	8.00	10	8349670
A3218.5	8.50	.3350	68.0	107.0	8.50	10	8349671
A3219.0	9.00	.3540	70.0	108.0	9.00	10	8349672
A3219.5	9.50	.3740	70.0	110.0	9.50	10	8349673
A32110.0	10.00	.3940	74.0	113.0	10.00	10	8349674
A32110.3	10.30	.4060	74.0	113.0	10.30	5	8349675
A32110.5	10.50	.4130	75.0	115.0	10.50	5	8349676
A32111.0	11.00	.4330	77.0	117.0	11.00	5	8349677
A32111.5	11.50	.4530	79.0	120.0	11.50	5	8349678
A32112.0	12.00	.4720	85.0	126.0	12.00	5	8349679
A32112.5	12.50	.4920	88.0	130.0	12.50	5	8349680
A32113.0	13.00	.5120	88.0	130.0	13.00	5	8349681



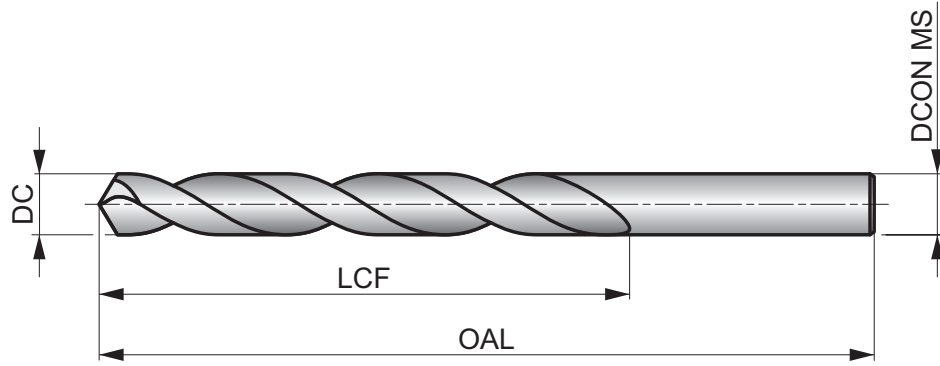
301JD



HSS MRO Jobber Drill, Steam Tempered

A versatile cost effective drill for portable hand and machine drilling with a conventional flute design. The 118° conventional point makes it easy to regrind. Steam tempered finish for increased wear resistance can add lubricity by pulling cutting fluids into the hole making it suitable for drilling most materials.

HSS	ANSI	4×D



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 108 H	P1.2 ■ 121 H	P1.3 ■ 125 H	P2.1 ■ 92 H	P2.2 ■ 82 F	P2.3 ■ 72 E	P3.1 ■ 62 F	P3.2 ■ 49 F	P3.3 ■ 43 E	P4.1 ■ 36 F	P4.2 ■ 33 E	P4.3 ■ 26 D	M1.1 ■ 69 E	M1.2 ■ 56 E
M2.1 ■ 59 E	M2.2 ■ 49 E	M3.1 ■ 30 G	M3.2 ■ 26 G	M3.3 ■ 23 C	M4.1 ■ 30 C	K1.1 ■ 98 H	K1.2 ■ 72 F	K1.3 ■ 56 F	K2.1 ■ 82 E	K2.2 ■ 66 E	K2.3 ■ 52 E	K3.1 ■ 72 E	K3.2 ■ 56 E
K3.3 ■ 43 E	K4.1 ■ 66 E	K4.2 ■ 49 E	K4.3 ■ 36 E	K4.4 ■ 33 E	K4.5 ■ 26 E	K5.1 ■ 75 E	K5.2 ■ 56 E	K5.3 ■ 43 E	N1.1 ■ 108 J	N1.2 ■ 82 J	N1.3 ■ 56 I	N2.1 ■ 138 H	N2.2 ■ 121 H
N2.3 ■ 89 H	N3.1 ■ 194 H	N3.2 ■ 115 I	N3.3 ■ 59 G	N4.1 ■ 98 J	N4.2 ■ 92 H	N4.3 ■ 46 F							

Product	DC (inch)	DC (Wire gauge size)	DC (Letter size)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
301JDN60	—	N60	—	.0400	11/16	1.5/8	.040	12	6480740
301JDN59	—	N59	—	.0410	11/16	1.5/8	.041	12	6480741
301JDN58	—	N58	—	.0420	11/16	1.5/8	.042	12	6480742
301JDN57	—	N57	—	.0430	3/4	1.3/4	.043	12	6480743
301JDN56	—	N56	—	.0465	3/4	1.3/4	.046	12	6480744
301JDN55	—	N55	—	.0520	7/8	1.7/8	.052	12	6480745
301JDN54	—	N54	—	.0550	7/8	1.7/8	.055	12	6480746
301JDN53	—	N53	—	.0595	7/8	1.7/8	.059	12	6480747
301JD1/16	1/16	—	—	.0625	7/8	1.7/8	.063	12	6480748
301JDN52	—	N52	—	.0635	7/8	1.7/8	.064	12	6480749
301JDN51	—	N51	—	.0670	1"	2"	.067	12	6480750
301JDN50	—	N50	—	.0700	1"	2"	.070	12	6480751
301JDN49	—	N49	—	.0730	1"	2"	.073	12	6480752
301JDN48	—	N48	—	.0760	1"	2"	.076	12	6480753
301JD5/64	5/64	—	—	.0781	1"	2"	.078	12	6480754
301JDN47	—	N47	—	.0785	1"	2"	.079	12	6480755
301JDN46	—	N46	—	.0810	1.1/8	2.1/8	.081	12	6480756
301JDN45	—	N45	—	.0820	1.1/8	2.1/8	.082	12	6480757
301JDN44	—	N44	—	.0860	1.1/8	2.1/8	.086	12	6480758
301JDN43	—	N43	—	.0890	1.1/4	2.1/4	.089	12	6480759
301JDN42	—	N42	—	.0935	1.1/4	2.1/4	.093	12	6480760



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
301JD3/32	3/32	–	–	.0938	1.1/4	2.1/4	.094	12	6480761
301JDN41	–	N41	–	.0960	1.3/8	2.3/8	.096	12	6480762
301JDN40	–	N40	–	.0980	1.3/8	2.3/8	.098	12	6480763
301JDN39	–	N39	–	.0995	1.3/8	2.3/8	.100	12	6480764
301JDN38	–	N38	–	.1015	1.7/16	2.1/2	.102	12	6480765
301JDN37	–	N37	–	.1040	1.7/16	2.1/2	.104	12	6480766
301JDN36	–	N36	–	.1065	1.7/16	2.1/2	.106	12	6480767
301JD7/64	7/64	–	–	.1094	1.1/2	2.5/8	.109	12	6480768
301JDN35	–	N35	–	.1100	1.1/2	2.5/8	.110	12	6480769
301JDN34	–	N34	–	.1110	1.1/2	2.5/8	.111	12	6480770
301JDN33	–	N33	–	.1130	1.1/2	2.5/8	.113	12	6480771
301JDN32	–	N32	–	.1160	1.5/8	2.3/4	.116	12	6480772
301JDN31	–	N31	–	.1200	1.5/8	2.3/4	.120	12	6480773
301JD1/8	1/8	–	–	.1250	1.5/8	2.3/4	.125	12	6480774
301JDN30	–	N30	–	.1285	1.5/8	2.3/4	.129	12	6480775
301JDN29	–	N29	–	.1360	1.3/4	2.7/8	.136	12	6480776
301JDN28	–	N28	–	.1405	1.3/4	2.7/8	.141	12	6480777
301JD9/64	9/64	–	–	.1406	1.3/4	2.7/8	.141	12	6480778
301JDN27	–	N27	–	.1440	1.7/8	3"	.144	12	6480779
301JDN26	–	N26	–	.1470	1.7/8	3"	.147	12	6480780
301JDN25	–	N25	–	.1495	1.7/8	3"	.149	12	6480781
301JDN24	–	N24	–	.1520	2"	3.1/8	.152	12	6480782
301JDN23	–	N23	–	.1540	2"	3.1/8	.154	12	6480783
301JD5/32	5/32	–	–	.1563	2"	3.1/8	.156	12	6480784
301JDN22	–	N22	–	.1570	2"	3.1/8	.157	12	6480785
301JDN21	–	N21	–	.1590	2.1/8	3.1/4	.159	12	6480786
301JDN20	–	N20	–	.1610	2.1/8	3.1/4	.161	12	6480787
301JDN19	–	N19	–	.1660	2.1/8	3.1/4	.166	12	6480788
301JDN18	–	N18	–	.1695	2.1/8	3.1/4	.170	12	6480789
301JD11/64	11/64	–	–	.1719	2.1/8	3.1/4	.172	12	6480790
301JDN17	–	N17	–	.1730	2.3/16	3.3/8	.173	12	6480791
301JDN16	–	N16	–	.1770	2.3/16	3.3/8	.177	12	6480792
301JDN15	–	N15	–	.1800	2.3/16	3.3/8	.180	12	6480793
301JDN14	–	N14	–	.1820	2.3/16	3.3/8	.182	12	6480794
301JDN13	–	N13	–	.1850	2.5/16	3.1/2	.185	12	6480795
301JD3/16	3/16	–	–	.1875	2.5/16	3.1/2	.188	12	6480796
301JDN12	–	N12	–	.1890	2.5/16	3.1/2	.189	12	6480797
301JDN11	–	N11	–	.1910	2.5/16	3.1/2	.191	12	6480798
301JDN10	–	N10	–	.1935	2.7/16	3.5/8	.194	12	6480799
301JDN9	–	N9	–	.1960	2.7/16	3.5/8	.196	12	6480800
301JDN8	–	N8	–	.1990	2.7/16	3.5/8	.199	12	6480801
301JDN7	–	N7	–	.2010	2.7/16	3.5/8	.201	12	6480802
301JD13/64	13/64	–	–	.2031	2.7/16	3.5/8	.203	12	6480803
301JDN6	–	N6	–	.2040	2.1/2	3.3/4	.204	12	6480804
301JDN5	–	N5	–	.2055	2.1/2	3.3/4	.205	12	6480805
301JDN4	–	N4	–	.2090	2.1/2	3.3/4	.209	12	6480806
301JDN3	–	N3	–	.2130	2.1/2	3.3/4	.213	12	6480807
301JD7/32	7/32	–	–	.2188	2.1/2	3.3/4	.219	12	6480808
301JDN2	–	N2	–	.2210	2.5/8	3.7/8	.221	12	6480809
301JDN1	–	N1	–	.2280	2.5/8	3.7/8	.228	12	6480810
301JDA	–	–	A	.2340	2.5/8	3.7/8	.234	12	6480811
301JD15/64	15/64	–	–	.2344	2.5/8	3.7/8	.234	12	6480812
301JDB	–	–	B	.2380	2.3/4	4"	.238	12	6480813
301JDC	–	–	C	.2420	2.3/4	4"	.242	12	6480814
301JDD	–	–	D	.2460	2.3/4	4"	.246	12	6480815
301JD1/4	1/4	–	–	.2500	2.3/4	4"	.250	12	6480816
301JDF	–	–	F	.2570	2.7/8	4.1/8	.257	12	6480818
301JDG	–	–	G	.2610	2.7/8	4.1/8	.261	12	6480819



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
301JD17/64	17/64	—	—	.2656	2.7/8	4.1/8	.266	12	6480820
301JDH	—	—	H	.2660	2.7/8	4.1/8	.266	12	6480821
301JDI	—	—	I	.2720	2.7/8	4.1/8	.272	12	6480822
301JDJ	—	—	J	.2770	2.7/8	4.1/8	.277	12	6480823
301JDK	—	—	K	.2810	2.15/16	4.1/4	.281	12	6480824
301JD9/32	9/32	—	—	.2813	2.15/16	4.1/4	.281	12	6480825
301JDL	—	—	L	.2900	2.15/16	4.1/4	.290	12	6480826
301JDM	—	—	M	.2950	3.1/16	4.3/8	.295	12	6480827
301JD19/64	19/64	—	—	.2969	3.1/16	4.3/8	.297	12	6480828
301JDN	—	—	N	.3020	3.1/16	4.3/8	.302	12	6480829
301JD5/16	5/16	—	—	.3125	3.3/16	4.1/2	.313	6	6480830
301JDO	—	—	O	.3160	3.3/16	4.1/2	.316	6	6480831
301JDP	—	—	P	.3230	3.5/16	4.5/8	.323	6	6480832
301JD21/64	21/64	—	—	.3281	3.5/16	4.5/8	.328	6	6480833
301JDQ	—	—	Q	.3320	3.7/16	4.3/4	.332	6	6480834
301JDR	—	—	R	.3390	3.7/16	4.3/4	.339	6	6480835
301JD11/32	11/32	—	—	.3438	3.7/16	4.3/4	.344	6	6480836
301JDS	—	—	S	.3480	3.1/2	4.7/8	.348	6	6480837
301JDT	—	—	T	.3580	3.1/2	4.7/8	.358	6	6480838
301JD23/64	23/64	—	—	.3594	3.1/2	4.7/8	.359	6	6480839
301JDU	—	—	U	.3680	3.5/8	5"	.368	6	6480840
301JD3/8	3/8	—	—	.3750	3.5/8	5"	.375	6	6480841
301JDV	—	—	V	.3770	3.5/8	5"	.377	6	6480842
301JDW	—	—	W	.3860	3.3/4	5.1/8	.386	6	6480843
301JD25/64	25/64	—	—	.3906	3.3/4	5.1/8	.391	6	6480844
301JDX	—	—	X	.3970	3.3/4	5.1/8	.397	6	6480845
301JDY	—	—	Y	.4040	3.7/8	5.1/4	.404	6	6480846
301JD13/32	13/32	—	—	.4063	3.7/8	5.1/4	.406	6	6480847
301JDZ	—	—	Z	.4130	3.7/8	5.1/4	.413	6	6480848
301JD27/64	27/64	—	—	.4219	3.15/16	5.3/8	.422	6	6480849
301JD7/16	7/16	—	—	.4375	4.1/16	5.1/2	.438	6	6480850
301JD29/64	29/64	—	—	.4531	4.3/16	5.5/8	.453	6	6480851
301JD15/32	15/32	—	—	.4688	4.5/16	5.3/4	.469	6	6480852
301JD31/64	31/64	—	—	.4844	4.3/8	5.7/8	.484	6	6480853
301JD1/2	1/2	—	—	.5000	4.1/2	6"	.500	6	6480854



Product	Styles in Set	Pieces in Set	Diameters in Set	Pack Qty	MID
301JDSET29	301JD	29	1/16 - 1/2 x 64ths	1	6481072



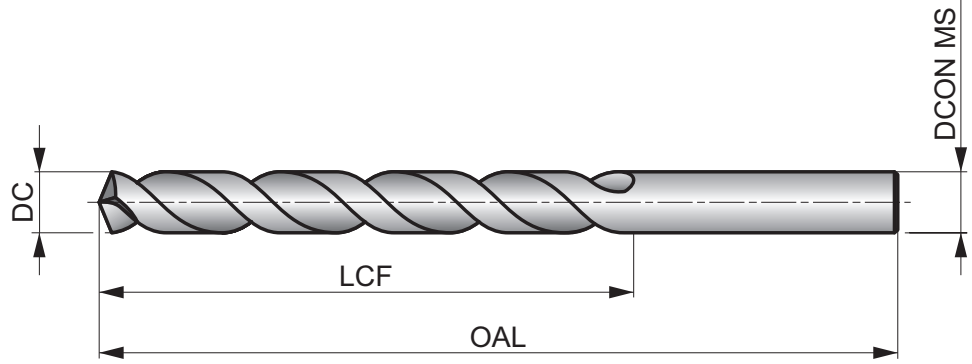
331HD



HSS MRO Heavy Duty Jobber Drill, Steam Tempered

Heavy duty cost effective jobber drill with a 135° self-centering split point minimizes 'walking' and reduces thrust force. Especially beneficial when hand drilling harder materials or less rigid applications. Steam tempered surface finish for improved abrasion resistance.

HSS	ANSI	4×D
135°	ST	
λ20-35°	R	



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ▣118 H	P1.2 ▣131 H	P1.3 ▣135 H	P2.1 ▣102 H	P2.2 ▣89 G	P2.3 ▣79 E	P3.1 ▣82 F	P3.2 ▣66 F	P3.3 ▣56 E	P4.1 ▣49 F	P4.2 ▣43 E	P4.3 ▣33 D	M1.1 ▣98 E	M1.2 ▣85 E
M2.1 ▣89 E	M2.2 ▣72 E	M3.1 ▣43 G	M3.2 ▣36 G	M3.3 ▣33 C	M4.1 ▣49 C	K1.1 ▣115 H	K1.2 ▣85 D	K1.3 ▣62 D	K2.1 ▣89 E	K2.2 ▣72 E	K2.3 ▣59 E	K3.1 ▣79 E	K3.2 ▣59 E
K3.3 ▣49 E	K4.1 ▣72 E	K4.2 ▣56 E	K4.3 ▣39 E	K4.4 ▣36 E	K4.5 ▣30 E	K5.1 ▣82 E	K5.2 ▣62 E	K5.3 ▣49 E	N1.1 ▣108 J	N1.2 ▣82 J	N1.3 ▣56 I	N2.1 ▣151 H	N2.2 ▣138 H
N2.3 ▣98 H	N3.1 ▣223 H	N3.2 ▣131 F	N3.3 ▣66 H										

Product	DC (inch)	DC (Wire gauge size)	DC (Letter size)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
331HD1/16	1/16	—	—	.0625	7/8	1.7/8	.063	12	6480999
331HDN52	—	N52	—	.0635	7/8	1.7/8	.064	12	7233620
331HDN51	—	N51	—	.0670	1"	2"	.067	12	7233619
331HDN50	—	N50	—	.0700	1"	2"	.070	12	7233618
331HDN48	—	N48	—	.0760	1"	2"	.076	12	7233616
331HD5/64	5/64	—	—	.0781	1"	2"	.078	12	6481000
331HDN47	—	N47	—	.0785	1"	2"	.079	12	7233615
331HDN46	—	N46	—	.0810	1.1/8	2.1/8	.081	12	7233614
331HDN45	—	N45	—	.0820	1.1/8	2.1/8	.082	12	7233613
331HDN42	—	N42	—	.0935	1.1/4	2.1/4	.093	12	7233610
331HD3/32	3/32	—	—	.0938	1.1/4	2.1/4	.094	12	6481001
331HDN40	—	N40	—	.0980	1.3/8	2.3/8	.098	12	7233608
331HDN39	—	N39	—	.0995	1.3/8	2.3/8	.100	12	7233607
331HDN38	—	N38	—	.1015	1.7/16	2.1/2	.102	12	7233606
331HDN37	—	N37	—	.1040	1.7/16	2.1/2	.104	12	7233605
331HDN36	—	N36	—	.1065	1.7/16	2.1/2	.106	12	7233604
331HD7/64	7/64	—	—	.1094	1.1/2	2.5/8	.109	12	6481002
331HDN32	—	N32	—	.1160	1.5/8	2.3/4	.116	12	7233600
331HD1/8	1/8	—	—	.1250	1.5/8	2.3/4	.125	12	6481003
331HDN30	—	N30	—	.1285	1.5/8	2.3/4	.129	12	7233598
331HDN29	—	N29	—	.1360	1.3/4	2.7/8	.136	12	7233597



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
331HD9/64	9/64	—	—	.1406	1.3/4	2.7/8	.141	12	6481004
331HDN27	—	N27	—	.1440	1.7/8	3"	.144	12	7233595
331HDN26	—	N26	—	.1470	1.7/8	3"	.147	12	7233594
331HDN25	—	N25	—	.1495	1.7/8	3"	.149	12	7233593
331HD5/32	5/32	—	—	.1563	2"	3.1/8	.156	12	6481005
331HDN21	—	N21	—	.1590	2.1/8	3.1/4	.159	12	7233589
331HDN20	—	N20	—	.1610	2.1/8	3.1/4	.161	12	7233588
331HDN19	—	N19	—	.1660	2.1/8	3.1/4	.166	12	7233587
331HD11/64	11/64	—	—	.1719	2.1/8	3.1/4	.172	12	6481006
331HDN16	—	N16	—	.1770	2.3/16	3.3/8	.177	12	7233584
331HD3/16	3/16	—	—	.1875	2.5/16	3.1/2	.188	12	6481007
331HDN11	—	N11	—	.1910	2.5/16	3.1/2	.191	12	7233579
331HDN10	—	N10	—	.1935	2.7/16	3.5/8	.194	12	7233578
331HDN9	—	N9	—	.1960	2.7/16	3.5/8	.196	12	7233577
331HDN8	—	N8	—	.1990	2.7/16	3.5/8	.199	12	7233576
331HDN7	—	N7	—	.2010	2.7/16	3.5/8	.201	12	7233575
331HD13/64	13/64	—	—	.2031	2.7/16	3.5/8	.203	12	6481008
331HDN5	—	N5	—	.2055	2.1/2	3.3/4	.205	12	7233573
331HDN3	—	N3	—	.2130	2.1/2	3.3/4	.213	12	7233571
331HD7/32	7/32	—	—	.2188	2.1/2	3.3/4	.219	12	6481009
331HDN2	—	N2	—	.2210	2.5/8	3.7/8	.221	12	7233570
331HDA	—	—	A	.2340	2.5/8	3.7/8	.234	12	7233503
331HD15/64	15/64	—	—	.2344	2.5/8	3.7/8	.234	12	6481010
331HDC	—	—	C	.2420	2.3/4	4"	.242	12	7233505
331HD1/4	1/4	—	—	.2500	2.3/4	4"	.250	12	6481011
331HDF	—	—	F	.2570	2.7/8	4.1/8	.257	12	7233508
331HDG	—	—	G	.2610	2.7/8	4.1/8	.261	12	7233509
331HD17/64	17/64	—	—	.2656	2.7/8	4.1/8	.266	12	6481012
331HDH	—	—	H	.2660	2.7/8	4.1/8	.266	12	7233550
331HDI	—	—	I	.2720	2.7/8	4.1/8	.272	12	7233551
331HDJ	—	—	J	.2770	2.7/8	4.1/8	.277	12	7233552
331HD9/32	9/32	—	—	.2813	2.15/16	4.1/4	.281	12	6481013
331HD19/64	19/64	—	—	.2969	3.1/16	4.3/8	.297	12	6481014
331HDN	—	—	N	.3020	3.1/16	4.3/8	.302	12	7233556
331HD5/16	5/16	—	—	.3125	3.3/16	4.1/2	.313	6	6481015
331HDO	—	—	O	.3160	3.3/16	4.1/2	.316	6	7233557
331HD21/64	21/64	—	—	.3281	3.5/16	4.5/8	.328	6	6481016
331HDQ	—	—	Q	.3320	3.7/16	4.3/4	.332	6	7233559
331HDR	—	—	R	.3390	3.7/16	4.3/4	.339	6	7233560
331HD11/32	11/32	—	—	.3438	3.7/16	4.3/4	.344	6	6481017
331HD23/64	23/64	—	—	.3594	3.1/2	4.7/8	.359	6	6481018
331HD3/8	3/8	—	—	.3750	3.5/8	5"	.375	6	6481019
331HDW	—	—	W	.3860	3.3/4	5.1/8	.386	6	7233565
331HD25/64	25/64	—	—	.3906	3.3/4	5.1/8	.391	6	6481020
331HD13/32	13/32	—	—	.4063	3.7/8	5.1/4	.406	6	6481021
331HD27/64	27/64	—	—	.4219	3.15/16	5.3/8	.422	6	6481022
331HD7/16	7/16	—	—	.4375	4.1/16	5.1/2	.438	6	6481023
331HD29/64	29/64	—	—	.4531	4.3/16	5.5/8	.453	6	6481024
331HD15/32	15/32	—	—	.4688	4.5/16	5.3/4	.469	6	6481025
331HD31/64	31/64	—	—	.4844	4.3/8	5.7/8	.484	6	6481026
331HD1/2	1/2	—	—	.5000	4.1/2	6"	.500	6	6481027



Product	Styles in Set	Pieces in Set	Diameters in Set	Pack Qty	MID
331HDSET29	331HD	29	1/16 - 1/2 x 64ths	1	7233629



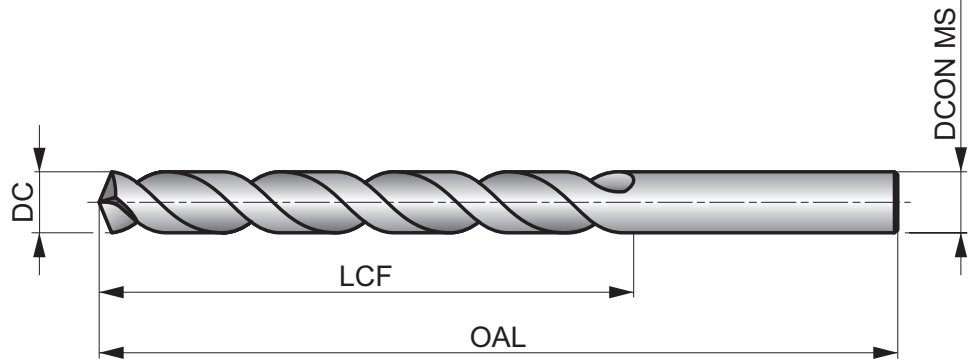
332HD



HSS MRO HD Jobber Drill, Steam and Bronze Tempered Surface Finish

Heavy duty cost effective jobber drill with steam and bronze tempered surface finish. The 135° self-centering split point design minimizes 'walking' and reduces the thrust force required when drilling by hand. Steam and bronze tempered surface finish for improved lubricity and abrasion resistance.

HSS	ANSI	4×D
135°	ST Bronze	
λ 20-35°	R	



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 118 H	P1.2 131 H	P1.3 135 H	P2.1 102 H	P2.2 89 G	P2.3 79 E	P3.1 82 F	P3.2 66 F	P3.3 56 E	P4.1 49 F	P4.2 43 E	P4.3 33 D	M1.1 98 E	M1.2 85 E
M2.1 89 E	M2.2 72 E	M3.1 43 G	M3.2 36 G	M3.3 33 C	M4.1 49 C	K1.1 115 H	K1.2 85 D	K1.3 62 D	K2.1 89 E	K2.2 72 E	K2.3 59 E	K3.1 79 E	K3.2 59 E
K3.3 49 E	K4.1 72 E	K4.2 56 E	K4.3 39 E	K4.4 36 E	K4.5 30 E	K5.1 82 E	K5.2 62 E	K5.3 49 E	N1.1 108 J	N1.2 82 J	N1.3 56 I	N2.1 151 H	N2.2 138 H
N2.3 98 H	N3.1 223 H	N3.2 131 F	N3.3 66 H										

Product	DC (inch)	DC (Wire gauge size)	DC (Letter size)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
332HDN60	—	N60	—	.4000	11/16	1.5/8	.400	12	7233745 (1)
332HDN59	—	N59	—	.0410	11/16	1.5/8	.041	12	7233744 (1)
332HDN58	—	N58	—	.0420	11/16	1.5/8	.042	12	7233743 (1)
332HDN57	—	N57	—	.0430	3/4	1.3/4	.043	12	7233742 (1)
332HDN56	—	N56	—	.0465	3/4	1.3/4	.046	12	7233741 (1)
332HDN55	—	N55	—	.0520	7/8	1.7/8	.052	12	7233740 (1)
332HDN54	—	N54	—	.0550	7/8	1.7/8	.055	12	7233739 (1)
332HDN53	—	N53	—	.0595	7/8	1.7/8	.059	12	7233738 (1)
332HD1/16	1/16	—	—	.0625	7/8	1.7/8	.063	12	7233631
332HDN52	—	N52	—	.0635	7/8	1.7/8	.064	12	7233737
332HDN51	—	N51	—	.0670	1"	2"	.067	12	7233736
332HDN50	—	N50	—	.0700	1"	2"	.070	12	7233735
332HDN49	—	N49	—	.0730	1"	2"	.073	12	7233734
332HDN48	—	N48	—	.0760	1"	2"	.076	12	7233733
332HD5/64	5/64	—	—	.0781	1"	2"	.078	12	7233632
332HDN47	—	N47	—	.0785	1"	2"	.079	12	7233732
332HDN46	—	N46	—	.0810	1.1/8	2.1/8	.081	12	7233731
332HDN45	—	N45	—	.0820	1.1/8	2.1/8	.082	12	7233730
332HDN44	—	N44	—	.0860	1.1/8	2.1/8	.086	12	7233729
332HDN43	—	N43	—	.0890	1.1/4	2.1/4	.089	12	7233728
332HDN42	—	N42	—	.0935	1.1/4	2.1/4	.093	12	7233727

1) No Split Point



Product	DC	DC	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(Wire gauge size)	(Letter size)	(inch)	(inch)	(inch)	(inch)		
332HD3/32	3/32	—	—	.0937	1.1/4	2.1/4	.094	12	7233633
332HDN41	—	N41	—	.0960	1.3/8	2.3/8	.096	12	7233726
332HDN40	—	N40	—	.0980	1.3/8	2.3/8	.098	12	7233725
332HDN39	—	N39	—	.0995	1.3/8	2.3/8	.100	12	7233724
332HDN38	—	N38	—	.1015	1.7/16	2.1/2	.102	12	7233723
332HDN37	—	N37	—	.1040	1.7/16	2.1/2	.104	12	7233722
332HDN36	—	N36	—	.1065	1.7/16	2.1/2	.106	12	7233721
332HD7/64	7/64	—	—	.1094	1.1/2	2.5/8	.109	12	7233634
332HDN35	—	N35	—	.1100	1.1/2	2.5/8	.110	12	7233720
332HDN34	—	N34	—	.1110	1.1/2	2.5/8	.111	12	7233719
332HDN33	—	N33	—	.0113	1.1/2	2.5/8	.011	12	7233718
332HDN32	—	N32	—	.1160	1.5/8	2.3/4	.116	12	7233717
332HDN31	—	N31	—	.1200	1.5/8	2.3/4	.120	12	7233716
332HD1/8	1/8	—	—	.1250	1.5/8	2.3/4	.125	12	7233635
332HDN30	—	N30	—	.1285	1.5/8	2.3/4	.129	12	7233715
332HDN29	—	N29	—	.1360	1.3/4	2.7/8	.136	12	7233714
332HDN28	—	N28	—	.1405	1.3/4	2.7/8	.141	12	7233713
332HD9/64	9/64	—	—	.1406	1.3/4	2.7/8	.141	12	7233636
332HDN27	—	N27	—	.1440	1.7/8	3"	.144	12	7233712
332HDN26	—	N26	—	.1470	1.7/8	3"	.147	12	7233711
332HDN25	—	N25	—	.1495	1.7/8	3"	.149	12	7233710
332HDN24	—	N24	—	.1520	2"	3.1/8	.152	12	7233709
332HDN23	—	N23	—	.1540	2"	3.1/8	.154	12	7233708
332HD5/32	5/32	—	—	.1563	2"	3.1/8	.156	12	7233637
332HDN22	—	N22	—	.1570	2"	3.1/8	.157	12	7233707
332HDN21	—	N21	—	.1590	2.1/8	3.1/4	.159	12	7233706
332HDN20	—	N20	—	.1610	2.1/8	3.1/4	.161	12	7233705
332HDN19	—	N19	—	.1660	2.1/8	3.1/4	.166	12	7233704
332HDN18	—	N18	—	.1695	2.1/8	3.1/4	.170	12	7233703
332HD11/64	11/34	—	—	.1719	2.1/8	3.1/4	.172	12	7233638
332HDN17	—	N17	—	.1730	2.3/16	3.3/8	.173	12	7233702
332HDN16	—	N16	—	.1770	2.3/16	3.3/8	.177	12	7233701
332HDN15	—	N15	—	.1800	2.3/16	3.3/8	.180	12	7233700
332HDN14	—	N14	—	.1820	2.3/16	3.3/8	.182	12	7233699
332HDN13	—	N13	—	.1850	2.5/16	3.1/2	.185	12	7233698
332HD3/16	3/16	—	—	.1875	2.5/16	3.1/2	.188	12	7233639
332HDN12	—	N12	—	.1890	2.5/16	3.1/2	.189	12	7233697
332HDN11	—	N11	—	.1910	2.5/16	3.1/2	.191	12	7233696
332HDN10	—	N10	—	.1935	2.7/16	3.5/8	.194	12	7233695
332HDN9	—	N9	—	.1960	2.7/16	3.5/8	.196	12	7233694
332HDN8	—	N8	—	.1990	2.7/16	3.5/8	.199	12	7233693
332HDN7	—	N7	—	.2010	2.7/16	3.5/8	.201	12	7233692
332HD13/64	13/64	—	—	.2031	2.7/16	3.5/8	.203	12	7233640
332HDN6	—	N6	—	.2040	2.1/2	3.3/4	.204	12	7233691
332HDN5	—	N5	—	.2055	2.1/2	3.3/4	.205	12	7233690
332HDN4	—	N4	—	.2090	2.1/2	3.3/4	.209	12	7233689
332HDN3	—	N3	—	.2130	2.1/2	3.3/4	.213	12	7233688
332HD7/32	7/32	—	—	.2187	2.1/2	3.3/4	.219	12	7233641
332HDN2	—	N2	—	.2210	2.5/8	3.7/8	.221	12	7233687
332HDN1	—	N1	—	.2280	2.5/8	3.7/8	.228	12	7233686
332HDA	—	—	A	.2340	2.5/8	3.7/8	.234	12	7233660
332HD15/64	15/64	—	—	.2344	2.5/8	3.7/8	.234	12	7233642
332HDB	—	—	B	.2380	2.3/4	4"	.238	12	7233661
332HDC	—	—	C	.2420	2.3/4	4"	.242	12	7233662
332HDD	—	—	D	.2460	2.3/4	4"	.246	12	7233663
332HD1/4	1/4	—	—	.2500	2.3/4	4"	.250	12	7233643
332HDF	—	—	F	.2570	2.7/8	4.1/8	.257	12	7233665
332HDG	—	—	G	.2610	2.7/8	4.1/8	.261	12	7233666



Product	DC (inch)	DC (Wire gauge size)	DC (Letter size)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
332HD17/64	17/64	–	–	.2656	2.7/8	4.1/8	.266	12	7233644
332HDH	–	–	H	.2660	2.7/8	4.1/8	.266	12	7233667
332HDI	–	–	I	.2720	2.7/8	4.1/8	.272	12	7233668
332HDJ	–	–	J	.2770	2.7/8	4.1/8	.277	12	7233669
332HDK	–	–	K	.2810	2.15/16	4.1/4	.281	12	7233670
332HD9/32	9/32	–	–	.2813	2.15/16	4.1/4	.281	12	7233645
332HDM	–	–	M	.2950	3.1/16	4.3/8	.295	12	7233672
332HD19/64	19/64	–	–	.2969	3.1/16	4.3/8	.297	12	7233646
332HDN	–	–	N	.3020	3.1/16	4.3/8	.302	12	7233673
332HD5/16	5/16	–	–	.3125	3.3/16	4.1/2	.313	6	7233647
332HDO	–	–	O	.3160	3.3/16	4.1/2	.316	6	7233674
332HDP	–	–	P	.3230	3.5/16	4.5/8	.323	6	7233675
332HD21/64	21/64	–	–	.3281	3.5/16	4.5/8	.328	6	7233648
332HDQ	–	–	Q	.3320	3.7/16	4.3/4	.332	6	7233676
332HDR	–	–	R	.3390	3.7/16	4.3/4	.339	6	7233677
332HD11/32	11/32	–	–	.3438	3.7/16	4.3/4	.344	6	7233649
332HDS	–	–	S	.3480	3.1/2	4.7/8	.348	6	7233678
332HD23/64	23/64	–	–	.3594	3.1/2	4.7/8	.359	6	7233650
332HDU	–	–	U	.3680	3.5/8	5"	.368	6	7233680
332HD3/8	3/8	–	–	.3750	3.5/8	5"	.375	6	7233651
332HDV	–	–	V	.3770	3.5/8	5"	.377	6	7233681
332HDW	–	–	W	.3860	3.3/4	5.1/8	.386	6	7233682
332HD25/64	25/64	–	–	.3906	3.3/4	5.1/8	.391	6	7233652
332HDX	–	–	X	.3790	3.3/4	5.1/8	.379	6	7233683
332HDY	–	–	Y	.4040	3.7/8	5.1/4	.404	6	7233684
332HD13/32	13/32	–	–	.4063	3.7/8	5.1/4	.406	6	7233653
332HDZ	–	–	Z	.4130	3.7/8	5.1/4	.413	6	7233685
332HD27/64	27/64	–	–	.4219	3.15/16	5.3/8	.422	6	7233654
332HD7/16	7/16	–	–	.4375	4.1/16	5.1/2	.438	6	7233655
332HD29/64	29/64	–	–	.4531	4.3/16	5.5/8	.453	6	7233656
332HD15/32	15/32	–	–	.4687	4.5/16	5.3/4	.469	6	7233657
332HD31/64	31/64	–	–	.4844	4.3/8	5.7/8	.484	6	7233658
332HD1/2	1/2	–	–	.5000	4.1/2	6"	.500	6	7233659



Product	Styles in Set	Pieces in Set	Diameters in Set	Pack Qty	MID
332HDSET29	332HD	29	1/16 - 1/2 x 64ths	1	7233746

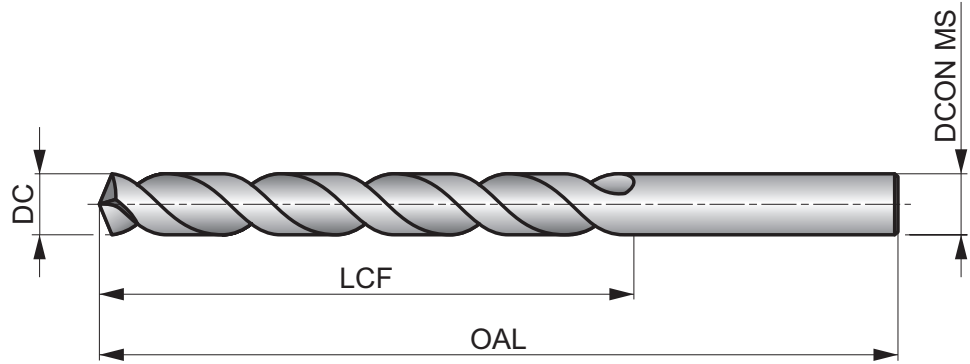


333HD



HSS MRO Heavy Duty Jobber Drill, TiN Coated

Heavy duty titanium nitride (TiN) coated jobber drill with 135° self-centering split point design which minimizes 'walking' and reduces thrust force. The titanium nitride coating increases surface hardness, improves lubricity and abrasion resistance.



HSS	ANSI	4xD

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 151 J	P1.2 ■ 171 J	P1.3 ■ 177 J	P2.1 ■ 131 J	P2.2 ■ 115 F	P2.3 ■ 102 F	P3.1 ■ 89 F	P3.2 ■ 69 F	P3.3 ■ 59 F	P4.1 ■ 52 F	P4.2 ■ 43 F	P4.3 ■ 36 E	M1.1 ■ 189 F	M1.2 ■ 175 F
M2.1 ■ 79 F	M2.2 ■ 66 F	M3.1 ■ 46 G	M3.2 ■ 39 G	M3.3 ■ 36 G	M4.1 ■ 52 C	K1.1 ■ 131 J	K1.2 ■ 98 E	K1.3 ■ 72 E	K2.1 ■ 112 E	K2.2 ■ 92 E	K2.3 ■ 72 E	K3.1 ■ 98 E	K3.2 ■ 75 E
K3.3 ■ 62 E	K4.1 ■ 92 E	K4.2 ■ 69 E	K4.3 ■ 52 E	K4.4 ■ 43 E	K4.5 ■ 36 E	K5.1 ■ 105 E	K5.2 ■ 79 E	K5.3 ■ 62 E	N1.1 ■ 135 K	N1.2 ■ 102 K	N1.3 ■ 69 J	N2.1 ■ 167 I	N2.2 ■ 151 I
N2.3 ■ 108 I	N3.1 ■ 184 H	N3.2 ■ 108 I	N3.3 ■ 56 G	N4.1 ■ 98 I	N4.2 ■ 164 H	N4.3 ■ 115 F							

Product	DC (inch)	DC (inch)	DCON MS (inch)	Pack Qty	MID
333HD1/16	1/16	.0625	.063	12	7233748
333HD7/64	7/64	.1094	.109	12	7233751
333HD1/8	1/8	.1250	.125	12	7233752
333HD9/64	9/64	.1406	.141	12	7233753
333HD5/32	5/32	.1563	.156	12	7233754
333HD11/64	11/64	.1719	.172	12	7233755
333HD3/16	3/16	.1875	.188	12	7233756
333HD13/64	13/64	.2031	.203	12	7233757
333HD7/32	7/32	.2188	.219	12	7233758
333HD15/64	15/64	.2344	.234	12	7233759
333HD1/4	1/4	.2500	.250	12	7233760
333HD17/64	17/64	.2656	.266	12	7233761
333HD9/32	9/32	.2813	.281	12	7233762

Product	DC (inch)	DC (inch)	DCON MS (inch)	Pack Qty	MID
333HD19/64	19/64	.2969	.297	12	7233763
333HD5/16	5/16	.3125	.313	6	7233764
333HD21/64	21/64	.3281	.328	6	7233765
333HD11/32	11/32	.3438	.344	6	7233766
333HD23/64	23/64	.3594	.359	6	7233767
333HD3/8	3/8	.3750	.375	6	7233768
333HD25/64	25/64	.3906	.391	6	7233769
333HD13/32	13/32	.4063	.406	6	7233770
333HD7/16	7/16	.4375	.438	6	7233772
333HD15/32	15/32	.4688	.469	6	7233774
333HD31/64	31/64	.4844	.484	6	7233775
333HD1/2	1/2	.5000	.500	6	7233776

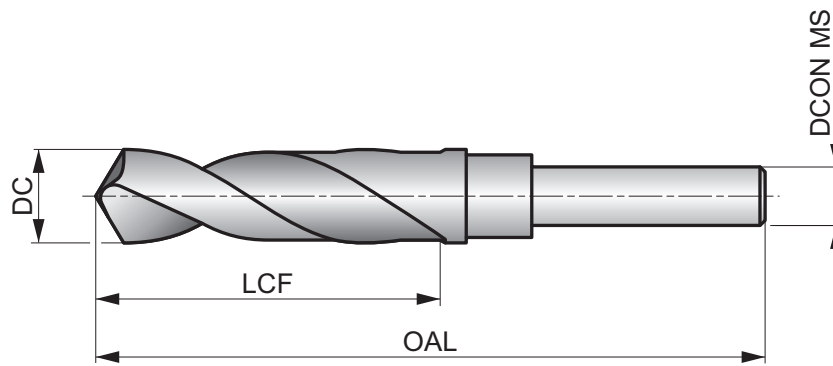


341SD



HSS MRO S&D Reduced 1/2" Shank Drill, Steam and Bright Finish

Silver & Deming reduced 1/2" diameter shank on larger drilling diameters (up to 1-1/2") for portable drilling and drill presses that have a maximum chuck capacity of 1/2". Combined steam tempered and bright surface finish with easy to regrind 118° point.



HSS	ANSI	4×D
118°	Bright ST	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 108 H	P1.2 ■ 121 H	P1.3 ■ 125 H	P2.1 ■ 92 H	P2.2 ■ 82 F	P2.3 ■ 72 D	P3.1 ■ 62 E	P3.2 ■ 49 E	P3.3 ■ 43 D	P4.1 ■ 36 E	P4.2 ■ 33 D	P4.3 ■ 26 C	M1.1 ■ 69 D	M1.2 ■ 56 D
M2.1 ■ 59 D	M2.2 ■ 49 D	M3.1 ■ 26 F	M3.2 ■ 23 F	M3.3 ■ 20 B	M4.1 ■ 23 B	K1.1 ■ 89 H	K1.2 ■ 66 E	K1.3 ■ 49 E	K2.1 ■ 75 D	K2.2 ■ 62 D	K2.3 ■ 49 D	K3.1 ■ 69 D	K3.2 ■ 52 D
K3.3 ■ 43 D	K4.1 ■ 62 D	K4.2 ■ 46 D	K4.3 ■ 36 D	K4.4 ■ 30 D	K4.5 ■ 26 D	K5.1 ■ 72 D	K5.2 ■ 52 D	K5.3 ■ 43 D	N1.1 ■ 108 I	N1.2 ■ 82 I	N1.3 ■ 56 H	N2.1 ■ 138 G	N2.2 ■ 121 G
N2.3 ■ 89 G	N3.1 ■ 184 G	N3.2 ■ 108 H	N3.3 ■ 56 F	N4.1 ■ 98 I	N4.2 ■ 92 G	N4.3 ■ 46 E							

Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)	(inch)		
341SD33/64	33/64	.5156	3"	6"	1/2	1	6481031
341SD17/32	17/32	.5313	3"	6"	1/2	1	6481032
341SD9/16	9/16	.5625	3"	6"	1/2	1	6481034
341SD37/64	37/64	.5781	3"	6"	1/2	1	6481035
341SD19/32	19/32	.5938	3"	6"	1/2	1	6481036
341SD5/8	5/8	.6250	3"	6"	1/2	1	6481037
341SD21/32	21/32	.6563	3"	6"	1/2	1	6481039
341SD11/16	11/16	.6875	3"	6"	1/2	1	6481041
341SD23/32	23/32	.7188	3"	6"	1/2	1	6481043
341SD47/64	47/64	.7344	3"	6"	1/2	1	6481044
341SD3/4	3/4	.7500	3"	6"	1/2	1	6481045

Product	DC	DC	LCF	OAL	DCON MS	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)	(inch)		
341SD49/64	49/64	.7656	3"	6"	1/2	1	6481046
341SD25/32	25/32	.7813	3"	6"	1/2	1	6481047
341SD13/16	13/16	.8125	3"	6"	1/2	1	6481049
341SD7/8	7/8	.8750	3"	6"	1/2	1	6481053
341SD29/32	29/32	.9063	3"	6"	1/2	1	6481054
341SD15/16	15/16	.9375	3"	6"	1/2	1	6481056
341SD1	1"	1.0000	3"	6"	1/2	1	6481059
341SD1.1/16	1.1/16	1.0625	3"	6"	1/2	1	6481061
341SD1.1/8	1.1/8	1.1250	3"	6"	1/2	1	6481063
341SD1.1/4	1.1/4	1.2500	3"	6"	1/2	1	6481067

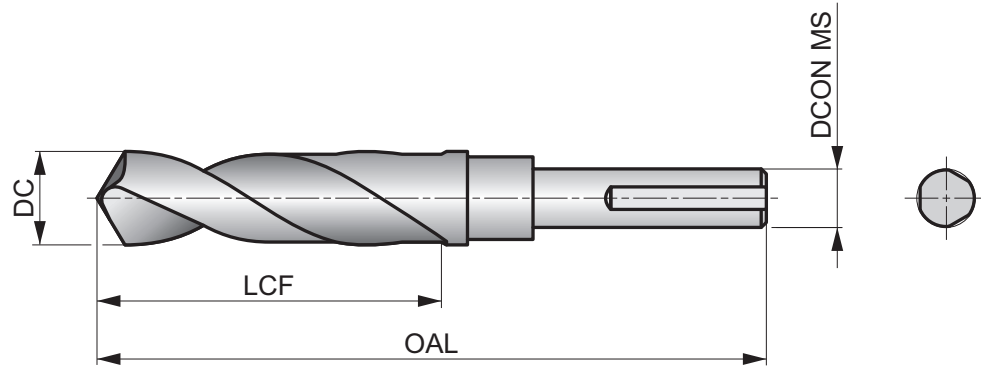


342SDT



HSS MRO S&D Tri-Flat Reduced 1/2" Shank Drill, Steam and Bronze Tempered Surface Finish

Silver & Deming 1/2" diameter reduced tri-flat shanks on larger drilling diameters (up to 1-1/2") ideal for portable drilling and drill presses that have a maximum chuck capacity of 1/2". The 3 flats on the shank allows for non-slip chucking. Combined steam and bronze tempered surface finish with 118° split point design.



HSS	ANSI	4xD
118°	ST Bronze	
λ 20-35°	R	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 296.

P1.1 ■ 108 H	P1.2 ■ 121 H	P1.3 ■ 125 H	P2.1 ■ 92 H	P2.2 ■ 82 F	P2.3 ■ 72 D	P3.1 ■ 62 E	P3.2 ■ 49 E	P3.3 ■ 43 D	P4.1 ■ 36 E	P4.2 ■ 33 D	P4.3 ■ 26 C	M1.1 ■ 69 D	M1.2 ■ 56 D
M2.1 ■ 59 D	M2.2 ■ 49 D	M3.1 ■ 26 F	M3.2 ■ 23 F	M3.3 ■ 20 B	M4.1 ■ 23 B	K1.1 ■ 89 H	K1.2 ■ 66 E	K1.3 ■ 49 E	K2.1 ■ 75 D	K2.2 ■ 62 D	K2.3 ■ 49 D	K3.1 ■ 69 D	K3.2 ■ 52 D
K3.3 ■ 43 D	K4.1 ■ 62 D	K4.2 ■ 46 D	K4.3 ■ 36 D	K4.4 ■ 30 D	K4.5 ■ 26 D	K5.1 ■ 72 D	K5.2 ■ 52 D	K5.3 ■ 43 D	N1.1 ■ 108 I	N1.2 ■ 82 I	N1.3 ■ 56 H	N2.1 ■ 138 G	N2.2 ■ 121 G
N2.3 ■ 89 G	N3.1 ■ 184 G	N3.2 ■ 108 H	N3.3 ■ 56 F	N4.1 ■ 98 I	N4.2 ■ 92 G	N4.3 ■ 46 E							

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
342SDT33/64	33/64	.5156	3"	6"	1/2	1	7233817
342SDT17/32	17/32	.5313	3"	6"	1/2	1	7233818
342SDT35/64	35/64	.5469	3"	6"	1/2	1	7233819
342SDT9/16	9/16	.5625	3"	6"	1/2	1	7233820
342SDT37/64	37/64	.5781	3"	6"	1/2	1	7233821
342SDT19/32	19/32	.5938	3"	6"	1/2	1	7233822
342SDT39/64	39/64	.6094	3"	6"	1/2	1	7233823
342SDT5/8	5/8	.6250	3"	6"	1/2	1	7233824
342SDT41/64	41/64	.6406	3"	6"	1/2	1	7233825
342SDT21/32	21/32	.6563	3"	6"	1/2	1	7233826

Product	DC (inch)	DC (inch)	LCF (inch)	OAL (inch)	DCON MS (inch)	Pack Qty	MID
342SDT11/16	11/16	.6875	3"	6"	1/2	1	7233828
342SDT23/32	23/32	.7188	3"	6"	1/2	1	7233830
342SDT3/4	3/4	.7500	3"	6"	1/2	1	7233832
342SDT49/64	49/64	.7656	3"	6"	1/2	1	7233833
342SDT25/32	25/32	.7813	3"	6"	1/2	1	7233834
342SDT13/16	13/16	.8125	3"	6"	1/2	1	7233836
342SDT27/32	27/32	.8438	3"	6"	1/2	1	7233838
342SDT7/8	7/8	.8750	3"	6"	1/2	1	7233840
342SDT15/16	15/16	.9375	3"	6"	1/2	1	7233844
342SDT1	1"	1.0000	3"	6"	1/2	1	7233848



Material code (BMC)		Cr steel													
		Hand (Cutting direction)		L											
				M900		M901		M902							
				Size 1 - 9		Set		Set							
Product Family Code		PSF cutting diameters range		293	294	295									
P	P1	■													
	P2	■													
	P3	■													
	P4	■													
M	M1	■													
	M2	■													
	M3	▣													
	M4	■													
K	K1	■													
	K2	■													
	K3	■													
	K4	■													
	K5	■													
N	N1	■													
	N2	■													
	N3	■													
	N4	■													
	N5	■													
S	S1	■													
	S2	■													
	S3	■													
	S4	■													
H	H1	■													
	H2	■													
	H3	■													
	H4	■													

■ Primary use ▣ Possible use

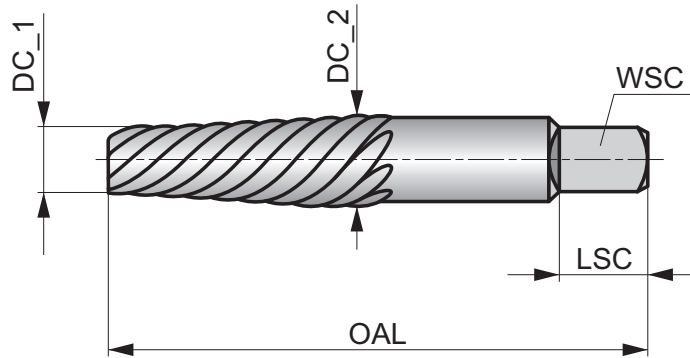


M900



Screw Extractor

Screw extractor is used counter-clockwise to remove broken right-handed bolts from threaded holes without damaging threads. It's necessary to drill guide hole of proper size before using the extractor.



Drill Size A: To be used on low or medium tensile strength screws. B: To be used on high tensile strength screws

Product							DC_1	DC_2	WSC	LSC	OAL	MID
		(mm)	(mm)	(inch)	(inch)	(inch)						
M9001	M5 - M6	2	2	3/16" - 1/4"	5/64	5/64	1.37	3.20	2.60	5.1	51.1	8430192
M9002	M6 - M8	2.8	3	1/4" - 5/16"	7/64	1/8	2.18	4.80	3.90	6.7	61.1	8430193
M9003	M8 - M12	4	4.2	5/16" - 7/16"	5/32	11/64	3.18	6.40	4.80	7.5	68.7	8430194
M9004	M12 - M14	5.5	6	7/16" - 9/16"	7/32	15/64	4.37	8.00	6.00	8.0	76.7	8430195
M9005	M14 - M20	7.2	8	9/16" - 3/4"	9/32	5/16	6.35	11.10	8.30	11.5	86.1	8430196
M9006	M20 - M30	10.5	11	3/4" - 1"	13/32	7/16	9.53	15.90	11.90	13.1	94.4	8430197
M9007	M30 - M42	13.5	14.5	1" - 1.3/8"	17/32	9/16	12.30	19.10	14.30	17.9	107.4	8430198
M9008	M42 - M45	20.5	21.5	1.3/8" - 1.3/4"	13/16	27/32	18.65	25.10	19.80	19.4	114.3	8430199
M9009	M45 - M50	27	28	1.3/4" - 2.1/8"	1.1/16	1.3/32	24.61	32.30	24.60	22.6	121.3	8430220



M901



Screw Extractor Set

Set of Screw Extractor sizes M9001 - M9005 or M9001 - M9006.

A=Styles in Set, B=No. in Set, C=Diameters in Set.

Product	Nr.	A	B	C	MID
M901A	A	M900	5	M9001-M9005	8430221
M901B	B	M900	6	M9001-M9006	8430222



M902



Bolt Removal Kit

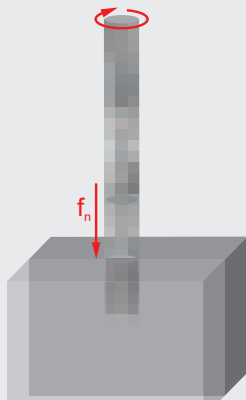
Tools for removing broken right-handed bolts come in a set of four. First, use the P100 burr to flatten the bolt. Second, use the P101 burr to create a starting cone. Third, use the HSS-E stub drill A117 to drill a hole for the extractor. Finally, use the screw extractor in a counter-clockwise motion to remove the broken bolt without damaging the threads.

A=Styles in Set, B=No. in Set, C=Diameters in Set.

Product	Nr.	A	C	MID
M902M6-M8	M6-M8	M900, P100, P101, A117	P1004.9, P1014.9, A1173.0, M9002	8430223
M902M8-M10	M8-M10	M900, P100, P101, A117	P1006.4, P1016.4, A1174.0, M9003	8430224
M902M10-M12	M10-M12	M900, P100, P101, A117	P1007.8, P1017.8, A1174.2, M9003	8430225
M902M12-M14	M12-M14	M900, P100, P101, A117	P1009.3, P1019.3, A1176.0, M9004	8430226
M902M14-M16	M14-M16	M900, P100, P101, A117	P10010.7, P10110.7, A1178.0, M9005	8430227



DRILLING FEED RATE CHART



Feed per revolution (f_n)
Depending on the working conditions it
might be necessary to adjust these values
 $\pm 25\%$.

How to use this table to find the feed per revolution (f_n):

1. Find your Alpha Code on the product page (example: 46J, "J" is the Alpha Code).
2. Find the closest diameter for your cutting application in the top row of the table.
3. Find your Alpha Code in the left column of the table.
4. The intersection (cell) of the Diameter and Alpha Code is the feed per revolution (f_n).

		ϕ DC															
		1mm/ 1/32"	2mm/ 3/32"	3mm/ 1/8"	4mm/ 5/32"	5mm/ 3/16"	6mm/ 1/4"	8mm/ 5/16"	10mm/ 3/8"	12mm/ 1/2"	15mm/ 9/16"	16mm/ 5/8"	20mm/ 3/4"	25mm/ 1"	30mm/ 1.1/8"	40mm/ 1.5/8"	50mm/ 2"
Feed rates	A	0.0004	0.0009	0.0011	0.0013	0.0014	0.0017	0.0021	0.0024	0.0027	0.0032	0.0034	0.0043	0.0049	0.0053	0.0061	0.0069
	B	0.0006	0.0011	0.0015	0.0016	0.0018	0.0021	0.0026	0.0031	0.0035	0.0041	0.0043	0.0053	0.0060	0.0065	0.0074	0.0082
	C	0.0006	0.0013	0.0017	0.0020	0.0022	0.0025	0.0031	0.0039	0.0043	0.0049	0.0051	0.0063	0.0071	0.0077	0.0087	0.0094
	D	0.0006	0.0015	0.0021	0.0024	0.0027	0.0031	0.0039	0.0047	0.0051	0.0059	0.0061	0.0074	0.0083	0.0090	0.0100	0.0108
	E	0.0007	0.0017	0.0024	0.0028	0.0031	0.0037	0.0045	0.0055	0.0059	0.0068	0.0071	0.0085	0.0094	0.0102	0.0112	0.0122
	F	0.0007	0.0020	0.0029	0.0033	0.0037	0.0043	0.0054	0.0065	0.0070	0.0080	0.0083	0.0098	0.0108	0.0116	0.0126	0.0135
	G	0.0007	0.0022	0.0033	0.0038	0.0043	0.0050	0.0063	0.0075	0.0081	0.0091	0.0094	0.0110	0.0122	0.0130	0.0140	0.0148
	H	0.0008	0.0026	0.0040	0.0046	0.0051	0.0059	0.0075	0.0090	0.0096	0.0107	0.0110	0.0126	0.0140	0.0148	0.0157	0.0165
	I	0.0008	0.0030	0.0047	0.0053	0.0059	0.0068	0.0087	0.0104	0.0110	0.0122	0.0126	0.0142	0.0157	0.0165	0.0173	0.0181
	J	0.0009	0.0033	0.0053	0.0060	0.0067	0.0078	0.0098	0.0117	0.0124	0.0137	0.0142	0.0159	0.0175	0.0183	0.0191	0.0198
	K	0.0010	0.0036	0.0059	0.0067	0.0075	0.0087	0.0110	0.0130	0.0138	0.0153	0.0157	0.0177	0.0193	0.0201	0.0209	0.0215
	L	0.0011	0.0040	0.0065	0.0073	0.0082	0.0094	0.0120	0.0142	0.0152	0.0165	0.0169	0.0191	0.0207	0.0215	0.0224	0.0231
	M	0.0012	0.0043	0.0071	0.0080	0.0089	0.0102	0.0130	0.0154	0.0165	0.0177	0.0181	0.0205	0.0220	0.0228	0.0238	0.0248
	N	0.0013	0.0047	0.0077	0.0086	0.0095	0.0110	0.0140	0.0165	0.0179	0.0189	0.0193	0.0219	0.0234	0.0242	0.0253	0.0265
	S	0.0003	0.0006	0.0008	0.0010	0.0012	0.0015	0.0020	0.0031	0.0039	0.0048	0.0051	0.0059	0.0070	0.0070	0.0090	–
	T	0.0006	0.0011	0.0016	0.0020	0.0024	0.0028	0.0035	0.0043	0.0051	0.0063	0.0067	0.0075	0.0080	0.0090	0.0100	–
	U	0.0010	0.0019	0.0028	0.0031	0.0035	0.0042	0.0055	0.0067	0.0079	0.0088	0.0091	0.0094	0.0110	0.0120	0.0140	–
	V	0.0015	0.0027	0.0039	0.0045	0.0051	0.0060	0.0079	0.0098	0.0110	0.0122	0.0126	0.0134	0.0160	0.0170	0.0200	–
	W	0.0019	0.0035	0.0051	0.0059	0.0067	0.0079	0.0102	0.0130	0.0150	0.0165	0.0169	0.0177	0.0190	0.0190	0.0200	–
	X	0.0022	0.0041	0.0059	0.0071	0.0083	0.0098	0.0130	0.0165	0.0189	0.0210	0.0217	0.0228	–	–	–	–
Y	0.0027	0.0049	0.0071	0.0087	0.0102	0.0125	0.0169	0.0217	0.0276	0.0276	0.0276	0.0291	–	–	–	–	
Z	0.0037	0.0068	0.0098	0.0128	0.0157	0.0210	0.0315	0.0394	0.0433	0.0463	0.0472	0.0472	–	–	–	–	



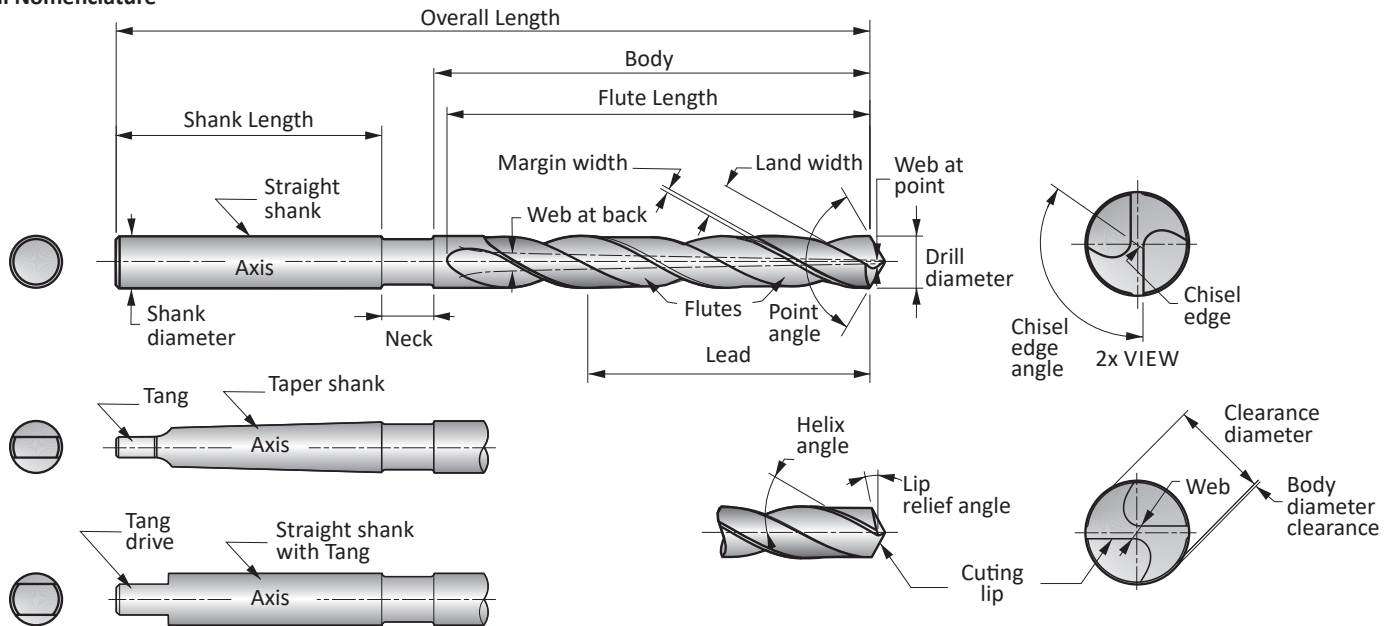
DRILLS

TECHNICAL INFORMATION

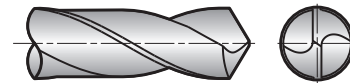


SOLID CARBIDE & HSS DRILLS – TECHNICAL INFO

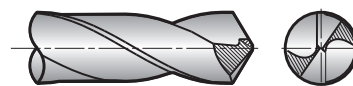
Drill Nomenclature



- **Axis** — The imaginary straight line which forms the longitudinal center line of a drill.
- **Backtaper** — A slight decrease in diameter from front to back in the body of a drill.
- **Body** — The portion of a drill extending from the shank or neck to the outer corners of the cutting lips.
- **Body Clearance Diameter** — The portion of the land that has been cut away so it will not bind against the walls of the hole.
- **Chisel-Edge** — The edge at the end of the web that connects the cutting lips.
- **Chisel-Edge Angle** — The included angle between the chisel-edge and cutting lip, as viewed from the end of a drill.
- **Clearance Diameter** — The diameter over the cut away portion of the drill lands.
- **Drill** — A rotary end cutting tool having one or more cutting lips, and having one or more helical or straight flutes for the passage of chips and the admission of a cutting fluid.
- **Drill Diameter** — The diameter over the margins of a drill measured at the point.
- **Flute Length** — The length from the outer corners of the cutting lips to the extreme back of the flutes. Includes the sweep of the tool used to generate the flutes and therefore does not indicate the usable length of flutes.
- **Flutes** — Helical or straight grooves cut or formed in the body of a drill to provide cutting lips, permit removal of chips, and allow cutting fluid to reach the cutting lips.
- **Helix Angle** — The angle formed by the leading edge of the land with a plane containing the axis of a drill.
- **Land** — The peripheral portion of the body between adjacent flutes.
- **Land Width** — The distance between the leading edge and heel of the land; measured at a right angle to the leading edge.
- **Lead** — The axial advance of a leading edge of the land in one turn around the circumference.
- **Lip Relief Angle** — The axial relief angle at the outer corner of the lip; measured by projection to a plane tangent to the periphery at the outer corner of the lip.
- **Lips** — The cutting edges of a two flute drill extending from the chisel-edge to the periphery.
- **Margin** — The cylindrical portion of the land, which is not cut away, to provide clearance.
- **Neck** — The section of reduced diameter between the body and the shank of a drill.
- **Overall Length** — The length from the extreme end of the shank to the outer corners of the cutting lip. It does not include the conical shank end often used on straight shank drills, nor the conical cutting point used on both straight and taper shank drills.
- **Point** — The cutting end of a drill, made up of the ends of the lands and the web. In form, it resembles a cone, but departs from a true cone to furnish clearance behind the cutting lips.
- **Conventional** — Conventional Points with 118° included point angles are the most commonly used because they provide satisfactory results in a wide variety of materials. A possible limitation is that the straight chisel edge contributes to wandering at the drill point, often making it necessary to spot the hole for improved accuracy.



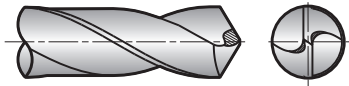
- **Split** — Split-Points (commonly called Crankshaft Points) were originally developed for use on drills designed for deep oil holes in automotive crankshafts. Since its inception, the split-point has gained widespread use and is applied to both 118° and 135° included point angles. Its main advantages are the ability to reduce thrust and eliminate wandering at the drill point. This is a distinct advantage when the drill is used in a portable drill or in drilling applications where bushings cannot be used. The split-point also has two positive rake cutting edges extending to the center of the drill, which can assist as a chipbreaker to produce small chips which can readily be ejected.





SOLID CARBIDE & HSS DRILLS – TECHNICAL INFO

- **Notched** — Notched Points were developed for drilling tough alloys. Commonly incorporated on heavy web drills, which allow the point to withstand the higher thrust loads required in drilling these materials. As with the split-point, the Notched Point contains two additional positive rake cutting edges extending toward the center of the drill. These secondary cutting lips, which extend no further than half the original cutting lip, can assist in chip control and reduce the torque required in drilling tough materials. Notched Points can be incorporated on both 118° and 135° included point angles, making them suitable for drilling a wide variety of materials.



-

General hints on drilling

1. Select the most appropriate drill for the application, bearing in mind the material to be machined, the capability of the machine tool and the coolant to be used.
2. Flexibility within the component and machine tool spindle can cause damage to the drill as well as the component and machine - ensure maximum stability at all times. This can be improved by selecting the shortest possible drill for the application.
3. Tool holding is an important aspect of the drilling operation and the drill cannot be allowed to slip or move in the tool holder.
4. The correct use of Morse Taper Shank drills relies on an efficient fit

- **Point Angle** — The included angle between the cutting lips projected upon a plane parallel to the drill axis and parallel to the two cutting lips.
- **Relative Lip Height** — The difference in indicator reading between the cutting lips of a drill. Measured at a right angle to the cutting lip at a specific distance from the axis of the tool.
- **Shank** — The part of a drill by which it is held and driven.
- **Tang** — The flattened end of a taper shank, intended to fit into a driving slot in a socket.
- **Tang Drive** — Two opposite parallel driving flats on the extreme end of a straight shank.
- **Taper Shank** — Drills having conical shanks suitable for direct fitting in machine spindles, driving sleeves, or sockets. Tapered shanks generally have a tang.
- **Web** — The central portion of the body that joins the lands. The extreme end of the web forms the chisel-edge on a two flute drill.
- **Web Thickness** — The thickness of the web at the point, unless another specific location is indicated.

between the taper surfaces of the tool and the tool holder. The use of a soft-faced hammer should be used to drive the drill into the holder.

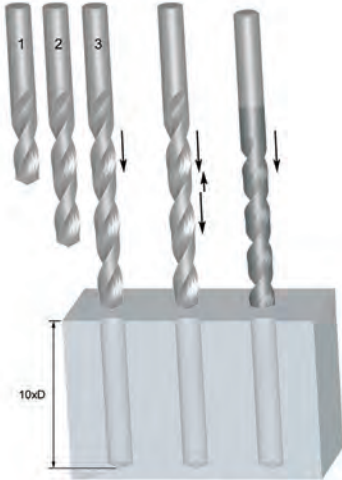
5. The use of suitable coolants and lubricants are recommended as required by the particular drilling operation. When using coolants and lubricants, ensure a copious supply, especially at the drill point.
6. Swarf evacuation whilst drilling is essential in ensuring the correct drilling procedure. Never allow the swarf to become stationary in the flute.
7. When regrinding a drill, always make sure that the correct point geometry is produced and that any wear has been removed.



SOLID CARBIDE & HSS DRILLS – TECHNICAL INFO

Deep hole drilling strategy

When drilling deep holes, several methods can be adopted to achieve the depth required. The example below shows four ways of drilling a hole with 10× the diameter of the drill.



	Series Drilling	Series Drilling
No of drills	3 (2.5×D, 6×D, 10×D)	2 (2.5×D, 10×D)
Type of drill	Standard geometry, general purpose	Standard geometry, general purpose
+ / -	Expensive Time consuming	More cost effective Quick

	Peck Drilling	Single Pass Drilling
No of drills	1 (10×D)	1 (10×D)
Type of drill	Standard geometry, general purpose	Purpose specific tools
+ / -	Time consuming	Cost effective Fast

Trouble shooting when drilling

Problem	Cause	Remedy
Broken or twisted tangs	Bad fit between shank and socket	Ensure the shank and socket are clean and free from damage
Splitting of the web	Feed too high	Reduce feed to optimum rate
	Insufficient initial clearance	Regrind to correct specification
	Excessive web thinning	Regrind to correct specification
	Heavy impact at point of drill	Avoid impact at the point of drill. Take care with taper shank drills when inserting/ejecting from spindle
Worn outer corner	Excessive speed	Reduce speed to optimum - may be able to increase feed
Broken outer corners	Unstable component set up	Reduce movement in the component
Chipped cutting lips	Excessive initial clearance	Regrind to correct specification
Breakage at flute run out	Choking of flutes	Adopt a peck/series drilling concept
	Drill slipping	Ensure the drill is held securely in the chuck and spindle
Spiral finish in hole	Insufficient feed	Increase feed
	Bad positional accuracy	Use a spot drill before drilling
Hole size too large	Incorrect point geometry	Check point geometry
	Ineffective swarf clearance	Adjust speed, feed and peck length to achieve more manageable swarf



SOLID CARBIDE & HSS DRILLS – TECHNICAL INFO

Hole Size / Achievable Hole Tolerances

As geometric, substrate and coating configurations become more advanced, the ability of a drill to produce a more accurate hole size increases. In general, a standard geometry tool will achieve a hole size to

H12. However as the configuration of the drill becomes more complex the achievable hole size, under favorable conditions, can be as good as H8.

To offer a better insight, listed below are the product types and their achievable hole tolerances:

HSS General Purpose drills – H12

HSS / HSCo Parabolic Flute Deep Hole Drills (PFX) – H10

HSS / HSCo High performance TiN/ TiALN coated (ADX) – H10

Solid Carbide High Performance TiN / TiALN coated (CDX, Force) – H8/H9

Nominal Hole Diameter (mm)

Ø (mm)	H8	H9	H10	H12
≤ 3	0 / +0.014	0 / +0.025	0 / +0.040	0 / +0.100
> 3 ≤ 6	0 / +0.018	0 / +0.030	0 / +0.048	0 / +0.120
> 6 ≤ 10	0 / +0.022	0 / +0.036	0 / +0.058	0 / +0.150
> 10 ≤ 18	0 / +0.027	0 / +0.043	0 / +0.070	0 / +0.180
> 18 ≤ 30	0 / +0.033	0 / +0.052	0 / +0.084	0 / +0.210

Nominal Hole Diameter (inches)

Ø (inch)	H8	H9	H10	H12
≤ .1181	0 / +0.0006"	0 / +0.0010"	0 / +0.0016"	0 / +0.0040"
>.1181≤.2362	0 / +0.0007"	0 / +0.0012"	0 / +0.0019"	0 / +0.0048"
>.2362≤.3937	0 / +0.0009"	0 / +0.0015"	0 / +0.0023"	0 / +0.0059"
>.3937≤.7087	0 / +0.0011"	0 / +0.0017"	0 / +0.0028"	0 / +0.0071"
>.7087≤1.1811	0 / +0.0013"	0 / +0.0021"	0 / +0.0033"	0 / +0.0083"

In view of the ability of some drills to produce a much tighter hole tolerance, due consideration should be given to drilled holes which are subject to secondary operations, eg. tapping, reaming. The diameter of the

drill will need to be increased from what is recommended to account for the fact that the hole size produced will be smaller.

Optimizing the Drilling Operation / Troubleshooting

Drill Selection

Use the shortest drill the application will permit in order to achieve maximum tool rigidity.

Holders

Tool holders and collets must provide good concentricity between the drill and the machine spindle. Use a positive back stop to prevent the tool from backing up into the holder. Never clamp the tool over the flutes or over-tighten the holder. Static runout in the tool assembly must be accurately checked and maintained.

Workpiece

A secure and rigid workpiece to minimize deflection is needed, particu-

larly on through-hole applications.

Coolants

Coolants are recommended when drilling mild steel and high temperature alloys. The purpose of the coolant media is to direct the chips away from the cutting tool and workpiece. Excessive coolant pressure and/or too much volume can negatively affect performance. When using coolant fed drills, the coolant pressure that is required should be higher than normal. Suggested pressure for coolant fed drills is minimally 10.3 bar or 150 PSI. As the diameter of the drill is reduced, the higher the pressure. This is to assist the chip in evacuating from a more confined area.



SOLID CARBIDE & HSS DRILLS – TECHNICAL INFO

Drilling Troubleshooting Guide

Problem	Solution
Wear on Outer Corners	Reduce cutting speed
	Increase feed (IPR)
	Improve direction of coolant flow
	Increase coolant pressure
	Add corner break
Chipping of Chisel Edge	Check accuracy of drill runout
	Check workpiece clamping accuracy and movement
	Check point centrality and lip height
	Increase feed rate
Chipping of Cutting Lips	Check accuracy of drill runout
	Check workpiece clamping accuracy and movement
	Reduce speed
	Reduce point clearance
	Increase hone
Cracking of Lands	Check movement of workpiece
	Increase back taper
	Check accuracy of drill runout
	Chip packing; increase flute form opening or peck drill (HSS or HSCO only)
	Slow down helix, horizontal drilling
	Increase feed
	When spot drilling, reduce feed
	Improve direction of coolant flow
Increase coolant pressure	
Oversize Hole	Increase speed, reduce feed
	Check workpiece clamping accuracy and movement
	Check accuracy of drill runout
	Chip packing, increase flute form opening or peck drill (HSS or HSCO only)
	Check point centrality and lip height
Undersize Hole	Improve direction of coolant flow
	Reduce cutting speed, increase feed
	Check drill diameter
Hole Not Round	Check accuracy of drill runout
	Check workpiece clamping accuracy and movement
	Check point centrality and lip height
	Chip packing, increase flute form opening or peck drill (HSS or HSCO only)
Drill Breakage	Chip packing, increase flute form opening or peck drill (HSS or HSCO only)
	Check workpiece clamping accuracy and movement
	Check accuracy of drill runout
	Reduce feed rate, increase feed rate
	Improve direction of coolant flow
	Increase coolant pressure



GENERAL – TECHNICAL INFO

	Grade	Hardness (HV10)	C %	W %	Mo %	Cr %	V %	Co %	Tool Material
HSS	M2	810 – 850	0.9	6.4	5.0	4.2	1.8	–	HSS
HSS-E	M35	830 – 870	0.93	6.4	5.0	4.2	1.8	4.8	HSCo
	M42	870 – 960	1.08	1.5	9.4	3.9	1.2	8.0	


Properties	HSS materials	Carbide materials	K10/30F (often used for solid tools)
Hardness (HV30)	800-950	1300 – 1800	1600
Density (g/cm ³)	8.0 – 9.0	7.2 – 15	14.45
Compressive strength (N/mm ²)	3000 – 4000	3000 – 8000	6250
Flexural strength, (bending) (N/mm ²)	2500 – 4000	1000 – 4700	4300
Heat resistance (°C)	550	1000	900
E-module (KN/mm ²)	260 – 300	460 – 630	580
Grain size (µm)	–	0.2 – 10	0.8

The combination of hard particle (WC) and binder metal (Co) give the following changes in characteristics.

Characteristic	Higher WC content give	Higher Co content give
Hardness	Higher hardness	Lower hardness
Compressive strength (CS)	Higher CS	Lower CS
Bending strength (BS)	Lower BS	Higher BS

Grain size also influences the material properties. Small grain sizes means higher hardness and coarse grains give more toughness.

Surface treatment / Coating properties examples

Surface Treatments	Colour	Coating material	Hardness (HV)	Thickness (µm)	Coating structure	Frict. coeff. against steel	Max. appl. temp. (°C)
	Dark grey	Fe ₃ O ₄	400	Max. 5	Conversion into the surface	–	550
	Bronze	Fe ₃ O ₄	400	Max. 5	Conversion into the surface	–	550
	Gold	TiN	2300	1 – 4	Mono-layer	0.4	600
	Black grey	TiAlN	3300	3	Nano structured	0.3 – 0.35	900



GENERAL – TECHNICAL INFO

Industry Standard tolerances For Shafts & Holes

Tolerance values are shown in Microns (μm)

Formula for Microns ...1 μm = 0.001 mm / 0.000039"

Tolerance	Diameter (mm)							
	> 1 ≤ 3	> 3 ≤ 6	> 6 ≤ 10	> 10 ≤ 18	> 18 ≤ 30	> 30 ≤ 50	> 50 ≤ 80	> 80 ≤ 120
	Diameter (inch)							
	> 0.039" ≤ 0.118"	> 0.118" ≤ 0.236"	> 0.236" ≤ 0.394"	> 0.394" ≤ 0.709"	> 0.709" ≤ 1.181"	> 1.181" ≤ 1.968"	> 1.968" ≤ 3.149"	> 3.149" ≤ 4.724"
Tolerance values (μm)								
e8	-14 / -28	-20 / -38	-25 / -47	-32 / -59	-40 / -73	-50 / -89	-60 / -106	-72 / -126
f6	-6 / -12	-10 / -18	-13 / -22	-16 / -27	-20 / -33	-25 / -41	-30 / -49	-36 / -58
f7	-6 / -16	-10 / -22	-13 / -28	-16 / -34	-20 / -41	-25 / -50	-30 / -60	-36 / -71
h6	0 / -6	0 / -8	0 / -9	0 / -11	0 / -13	0 / -16	0 / -19	0 / -22
h7	0 / -10	0 / -12	0 / -15	0 / -18	0 / -21	0 / -25	0 / -30	0 / -35
h8	0 / -14	0 / -18	0 / -22	0 / -27	0 / -33	0 / -39	0 / -46	0 / -54
h9	0 / -25	0 / -30	0 / -36	0 / -43	0 / -52	0 / -62	0 / -74	0 / -87
h10	0 / -40	0 / -48	0 / -58	0 / -70	0 / -84	0 / -100	0 / -120	0 / -140
h11	0 / -60	0 / -75	0 / -90	0 / -110	0 / -130	0 / -160	0 / -190	0 / -220
h12	0 / -100	0 / -120	0 / -150	0 / -180	0 / -210	0 / -250	0 / -300	0 / -350
k10	+40 / 0	+48 / 0	+58 / 0	+70 / 0	+84 / 0	+100 / 0	+120 / 0	+140 / 0
k12	+100 / 0	+120 / 0	+150 / 0	+180 / 0	+210 / 0	+250 / 0	+300 / 0	+350 / 0
m7	+2 / +12	+4 / +16	+6 / +21	+7 / +25	+8 / +29	+9 / +34	+11 / +41	+13 / +48
js14	+ / -125	+ / -150	+ / -180	+ / -215	+ / -260	+ / -310	+ / -370	+ / -435
js16	+ / -300	+ / -375	+ / -450	+ / -550	+ / -650	+ / -800	+ / -950	+ / -1100
H7	+10 / 0	+12 / 0	+15 / 0	+18 / 0	+21 / 0	+25 / 0	+30 / 0	+35 / 0
H8	+14 / 0	+18 / 0	+22 / 0	+27 / 0	+33 / 0	+39 / 0	+46 / 0	+54 / 0
H9	+25 / 0	+30 / 0	+36 / 0	+43 / 0	+52 / 0	+62 / 0	+74 / 0	+87 / 0
H12	+100 / 0	+120 / 0	+150 / 0	+180 / 0	+210 / 0	+250 / 0	+300 / 0	+350 / 0
P9	-6 / -31	-12 / -42	-15 / -51	-18 / -61	-22 / -74	-26 / -86	-32 / -106	-37 / -124
S7	-13 / -22	-15 / -27	-17 / -32	-21 / -39	-27 / -48	-34 / -59	-42 / -72	-58 / -93



GENERAL – TECHNICAL INFO

Table of Cutting Speeds

		Vc															
m/min.		5	8	10	15	20	25	30	40	50	60	70	80	90	100	110	150
SFM (feet/min.)		16	26	32	50	66	82	98	130	165	197	230	262	296	330	362	495
Ø		RPM															
mm	inch																
1.00	–	1592	2546	3183	4775	6366	7958	9549	12732	15916	19099	22282	25465	28648	31831	35014	47747
1.50	–	1061	1698	2122	3183	4244	5305	6366	8488	10610	12732	14854	16977	19099	21221	23343	31831
2.00	–	796	1273	1592	2387	3183	3979	4775	6366	7958	9549	11141	12732	14324	15916	17507	23873
2.50	–	637	1019	1273	1910	2546	3183	3820	5093	6366	7639	8913	10186	11459	12732	14006	19099
3.00	–	531	849	1061	1592	2122	2653	3183	4244	5305	6366	7427	8488	9549	10610	11671	15916
3.18	1/8	500	801	1001	1501	2002	2502	3003	4004	5005	6006	7007	8008	9009	10010	11011	15015
3.50	–	455	728	909	1364	1819	2274	2728	3638	4547	5457	6366	7276	8185	9095	10004	13642
4.00	–	398	637	796	1194	1592	1989	2387	3183	3979	4775	5570	6366	7162	7958	8754	11937
4.50	–	354	566	707	1061	1415	1768	2122	2829	3537	4244	4951	5659	6366	7074	7781	10610
4.76	3/16	334	535	669	1003	1337	1672	2006	2675	3344	4012	4681	5350	6018	6687	7356	10031
5.00	–	318	509	637	955	1273	1592	1910	2546	3183	3820	4456	5093	5730	6366	7003	9549
6.00	–	265	424	531	796	1061	1326	1592	2122	2653	3183	3714	4244	4775	5305	5836	7958
6.35	1/4	251	401	501	752	1003	1253	1504	2005	2506	3008	3509	4010	4511	5013	5514	7519
7.00	–	227	364	455	682	909	1137	1364	1819	2274	2728	3183	3638	4093	4547	5002	6821
7.94	5/16	200	321	401	601	802	1002	1203	1604	2004	2405	2806	3207	3608	4009	4410	6013
8.00	–	199	318	398	597	796	995	1194	1592	1989	2387	2785	3183	3581	3979	4377	5968
9.00	–	177	283	354	531	707	884	1061	1415	1768	2122	2476	2829	3183	3537	3890	5305
9.53	3/8	167	267	334	501	668	835	1002	1336	1670	2004	2338	2672	3006	3340	3674	5010
10.00		159	255	318	477	637	796	955	1273	1592	1910	2228	2546	2865	3183	3501	4775
11.11	7/16	143	229	287	430	573	716	860	1146	1433	1719	2006	2292	2579	2865	3152	4298
12.00		133	212	265	398	531	663	796	1061	1326	1592	1857	2122	2387	2653	2918	3979
12.70	1/2	125	201	251	376	501	627	752	1003	1253	1504	1754	2005	2256	2506	2757	3760
14.00		114	182	227	341	455	568	682	909	1137	1364	1592	1819	2046	2274	2501	3410
14.29	9/16	111	178	223	334	446	557	668	891	1114	1337	1559	1782	2005	2228	2450	3341
15.00	–	106	170	212	318	424	531	637	849	1061	1273	1485	1698	1910	2122	2334	3183
15.88	5/8	100	160	200	301	401	501	601	802	1002	1203	1403	1604	1804	2004	2205	3007
16.00	–	99	159	199	298	398	497	597	796	995	1194	1393	1592	1790	1989	2188	2984
17.46	11/16	91	146	182	273	365	456	547	729	912	1094	1276	1458	1641	1823	2005	2735
18.00	–	88	141	177	265	354	442	531	707	884	1061	1238	1415	1592	1768	1945	2653
19.05	3/4	84	134	167	251	334	418	501	668	835	1003	1170	1337	1504	1671	1838	2506
20.00	–	80	127	159	239	318	398	477	637	796	955	1114	1273	1432	1592	1751	2387
24.00	–	66	106	133	199	265	332	398	531	663	796	928	1061	1194	1326	1459	1989
25.00	–	64	102	127	191	255	318	382	509	637	764	891	1019	1146	1273	1401	1910
27.00	–	59	94	118	177	236	295	354	472	589	707	825	943	1061	1179	1297	1768
30.00	–	53	85	106	159	212	265	318	424	531	637	743	849	955	1061	1167	1592
32.00	–	50	80	99	149	199	249	298	398	497	597	696	796	895	995	1094	1492
36.00	–	44	71	88	133	177	221	265	354	442	531	619	707	796	884	973	1326
40.00	–	40	64	80	119	159	199	239	318	398	477	557	637	716	796	875	1194
50.00	–	32	51	64	95	127	159	191	255	318	382	446	509	573	637	700	955



GENERAL – TECHNICAL INFO

Hardness and Tensile Strength

HV	HRC	HB	Tensile Strength	
			(N/mm ²)	(Tons/sq. in.)
940	68	–	–	–
900	67	–	–	–
864	66	–	–	–
829	65	–	–	–
800	64	–	–	–
773	63	–	–	–
745	62	–	–	–
720	61	–	–	–
698	60	–	–	–
675	59	–	–	–
655	58	–	2200	142
650	–	618	2180	141
640	–	608	2145	139
639	57	607	2140	138
630	–	599	2105	136
620	–	589	2070	134
615	56	584	2050	133
610	–	580	2030	131
600	–	570	1995	129
596	55	567	1980	128
590	–	561	1955	126
580	–	551	1920	124
578	54	549	1910	124
570	–	542	1880	122
560	53	532	1845	119
550	–	523	1810	117
544	52	517	1790	116
540	–	513	1775	115
530	–	504	1740	113
527	51	501	1730	112
520	–	494	1700	110
514	50	488	1680	109
510	–	485	1665	108
500	–	475	1630	105
497	49	472	1620	105
490	–	466	1595	103
484	48	460	1570	102
480	–	456	1555	101
473	47	449	1530	99
470	–	447	1520	98
460	–	437	1485	96
458	46	435	1480	96
450	–	428	1455	94
446	45	424	1440	93
440	–	418	1420	92

HV	HRC	HB	Tensile Strength	
			(N/mm ²)	(Tons/sq. in.)
434	44	413	1400	91
423	43	402	1360	88
413	42	393	1330	86
403	41	383	1300	84
392	40	372	1260	82
382	39	363	1230	80
373	38	354	1200	78
364	37	346	1170	76
355	36	337	1140	74
350	–	333	1125	73
345	35	328	1110	72
340	–	323	1095	71
336	34	319	1080	70
330	–	314	1060	69
327	33	311	1050	68
320	–	304	1030	67
317	32	301	1020	66
310	31	295	995	64
302	30	287	970	63
300	–	285	965	62
295	–	280	950	61
293	29	278	940	61
290	–	276	930	60
287	28	273	920	60
285	–	271	915	59
280	27	266	900	58
275	–	261	880	57
272	26	258	870	56
270	–	257	865	56
268	25	255	860	56
265	–	252	850	55
260	24	247	835	54
255	23	242	820	53
250	22	238	800	52
245	–	233	785	51
243	21	231	780	50
240	–	228	770	50
235	–	223	755	49
230	–	219	740	48
225	–	214	720	47
220	–	209	705	46
215	–	204	690	45
210	–	199	675	44
205	–	195	660	43
200	–	190	640	41

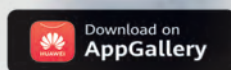
DORMER PRAMET



REACH FOR THE SKIES

We've added hundreds of new products to our global assortment of cutting tools, with a specific focus on airframe and assembly applications. All are featured in a new publication, which is now available to download.

Simply Reliable.



**REAMERS
AND COUNTERSINKS**





HOLEMAKING – GENERAL CONTENT

6		WMG & ISO 13399
10	DRILLS	INSTRUCTIONS
15		SOLID CARBIDE DRILLS
80		HSS DRILLS
82		HSS STUB DRILLS
112		HSS JOBBER LENGTH DRILLS
184		HSS LONG LENGTH
215		HSS REDUCED SHANK
224		HSS TAPER SHANK
235		HSS CENTER DRILLS
265		AEROSPACE
274		MRO
292		SCREW EXTRACTORS
297		TECHNICAL INFORMATION
308			REAMERS AND COUNTERSINKS
393	INDEXABLE DRILLS	INSTRUCTIONS
402		HYDRA DRILLS
427		TECHNICAL INFORMATION
436		INDEXABLE DRILLS
463		TECHNICAL INFORMATION



REAMERS AND COUNTERSINKS – PAGE OVERVIEW



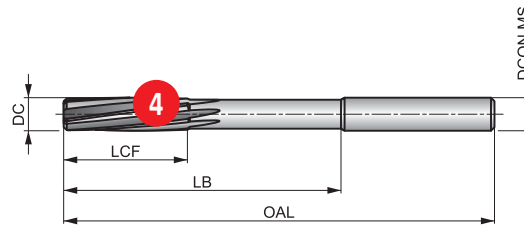
1 B400



Carbide Straight Shank Machine Reamer with H7 Accuracy, Bright Finish

Designed to provide a finish within the limits of H7 hole tolerance. For superior performance and extended tool life when reaming hard and abrasive materials. The spiral flute design, with extremely unequal spacing between the flutes, reduces vibration and improves hole roundness, size and surface finish.

2



HM	Bright	DIN 8093
R		B
H7		

Workpiece material group suitability, starting values for cutting speed (m/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 382.

P1.1	P1.2	P1.3	P2.1	P2.2	P2.3	P3.1	P3.2	P3.3	P4.1	P4.2	P4.3	M1.1	M1.2
23 B	26 B	27 B	20 B	18 B	16 C	16 B	13 B	11 C	10 B	8 C	7 C	10 C	8 C
M2.1	M2.2	M2.3	K1.1	K1.2	K1.3	K2.1	K2.2	K2.3	K3.1	K3.2	K3.3	K5.1	K5.2
9 C	7 C	6 B	20 D	15 D	11 D	21	17 D	14 D	18 D	14 D	11 D	19 D	15 D
K5.3	N1.1	N1.2	N1.3	N2.1	N2.2	N2.3	N3.1	N3.2	N3.3	N4.1	N4.2		
11 D	60 D	45 D	30 D	38 D	35 D	25 D	64 E	38 E	19 E	35 C	30 C		

DCON MS tolerance h6; DC >= 14 mm Carbide Tipped.

Product	DC	OAL	LCF	LB	NOF	DCON MS
	[mm]	[mm]	[mm]	[mm]		[mm]
B4001.0	1.00	34.0	5.5	15.00	3	1.00
B4001.2	1.20	38.0	7.5	16.50	3	1.20
B4001.4	1.40	40.0	8.0	18.00	3	1.50
B4001.5	1.50	40.0	8.0	18.00	3	1.50
B4001.6	1.60	43.0	9.0	20.00	3	1.60
B4001.8	1.80	46.0	10.0	22.00	4	1.80
B4002.0	2.00	49.0	11.0	24.00	4	2.00
B4002.2	2.20	53.0	12.0	25.00	4	2.20
B4002.5	2.50	57.0	14.0	27.00	4	2.50
B4002.8	2.80	61.0	15.0	33.00	6	3.00
B4003.0	3.00	61.0	15.0	33.00	6	3.00
B4003.2	3.20	65.0	16.0	37.00	6	3.20

Product	DC	OAL	LCF	LB	NOF	DCON MS
	[mm]	[mm]	[mm]	[mm]		[mm]
B4004.5	4.50	80.0	21.0	52.00	6	4.50
B4005.0	5.00	86.0	23.0	58.00	6	5.00
B4005.5	5.50	93.0	26.0	57.00	6	5.60
B4006.0	6.00	93.0	26.0	57.00	6	5.60
B4006.5	6.50	101.0	28.0	65.00	6	6.30
B4007.0	7.00	109.0	31.0	73.00	6	7.10
B4008.0	8.00	117.0	33.0	81.00	6	8.00
B4009.0	9.00	125.0	36.0	85.00	6	9.00
B40010.0	10.00	133.0	38.0	93.00	6	10.00
B40012.0	12.00	151.0	44.0	111.00	6	10.00
B40014.0	14.00	160.0	47.0	115.00	6	12.50
B40016.0	16.00	170.0	50.0	125.00	6	12.50

Pos.	Description
1	Designation of drill
2	Product description
3	Illustrative picture
4	Schematic drawing of tool

Pos.	Description
5	Product features
6	Material group recommendations incl. speed and feed guidance
7	Product code
8	Product dimensions

Typical page with reamers/countersinks displayed – specific page details will differ.



REAMERS AND COUNTERSINKS – ICONS OVERVIEW

GENERAL ICONS

	Primary use
	Possible use

ACHIEVABLE HOLE TOLERANCE ZONE (TCHA)

	H7 – Industry Standard Hole Tolerance Zone (based on diameter range)		k11 – Industry Standard Tool Tolerance Zone (based on diameter range)
	High Precision Hole Tolerance Zone (based on diameter range)		

Application Angle

	100° Countersink		20° Conical Drill		82° Countersink
	180° Counterbore		60° Countersink		90° Countersink

BASIC STANDARD GROUP (BSG)

	ANSI – Tap Standards		DIN 219 – Shell Reamer Standards		DIN 8050 – Parallel Shank Reamer Standards
	BS 328 – Drills and Reamers Standards		DIN 311 – Morse Taper Shank Bridge Reamer Standards		DIN 8051 – Morse Taper Shank Reamer Standards
	DIN 206 – Hand Reamer Standards		DIN 334 C – Straight Shank Countersink Standards		DIN 8093 – Straight Shank Reamer Standards
	DIN 208 – Morse Taper Shank Chucking Reamer Standards		DIN 334 D – Morse Taper Shank Countersink Standards		DIN 8094 – Morse Taper Shank Reamer Standards
	DIN 212 – Machine Reamer Standards		DIN 335 A – Straight Shank Countersink Standards		DIN 9 – Taper Pin Reamer Standards
	DIN 217 – Shell Reamer Arbor Standards		DIN 335 C – Straight Shank Countersink Standards		Dormer Standards
	DIN 2179 – Parallel Shank Taper Pin Reamer Standards		DIN 335 D – Morse Taper Shank Countersink Standards		
	DIN 2180 – Morse Taper Shank Taper Pin Reamer Standards		DIN 373 – Counterbore Standards		

COATING

	Aluminum Titanium Carbon Nitride Coating		Combination Bright and Steam Oxide		Titanium Aluminum Nitride Coating
	Bright (uncoated)		Steam and Bronze Oxide Surface Treatment		Titanium Nitride Coated

CUTTING DIRECTION

	Right Hand Rotation / Cutting
--	-------------------------------

MATERIAL CODE (BMC)

	Hard Material (Solid Carbide)		High Speed Steel Tool Material
	High Speed Cobalt Steel Tool Material		









REAMERS AND COUNTERSINKS – ICONS OVERVIEW


REAMER FORM


A	DIN Form A – Straight Flute $\leq \varnothing 3.5\text{mm}$
B	DIN Form B – Spiral Flute $\leq \varnothing 3.5\text{mm}$
E	DIN Form C – Straight Flute $\geq \varnothing 4.0\text{mm}$

SHANK

	Cylindrical Shank / Straight Shank		Cylindrical Shank with Tang
	Cylindrical Shank with 3flat		DIN 6535 HA Cylindrical Shank
	Cylindrical Shank with Hex		Morse Taper Shank
	Cylindrical Shank with Square		

TAPER GRADIENT (RATE OF TAPER)

1:48 	Taper Gradient (1/4" per foot taper)
---	--------------------------------------

1:50 	Taper Gradient (1 mm per 50 mm taper)
--	---------------------------------------



REAMERS AND COUNTERSINKS – NAVIGATOR TOOL MATERIALS

Tool materials

High Speed Steel		A medium-alloyed high speed steel that has good machinability and good performance. HSS exhibits hardness, toughness and wear resistance characteristics that make it attractive in a wide range of applications, for example in drills and taps.
Cobalt High Speed Steel		This high speed steel contains cobalt for increased hot hardness. The composition of HSCo is a good combination of toughness and hardness. It has good machinability and good wear resistance, which makes it usable for drills, taps, milling cutters and reamers.

Carbide materials

Carbide Materials (or Hard Materials)		<p>A sintered powder metallurgy substrate, consisting of a metallic carbide composite with binder metal. The most central raw material is tungsten carbide (WC). Tungsten carbide contributes to the hardness of the material. Tantalum carbide (TaC), titanium carbide (TiC) and niobium carbide (NbC) complements WC and adjusts the properties to what is desired. These three materials are called cubic carbides. Cobalt (Co) acts as a binder and keeps the material together.</p> <p>Carbide materials are often characterised by high compression strength, high hardness and therefore high wear resistance, but also by limited flexural strength and toughness. Carbide is used in taps, reamers, milling cutters, drills and thread milling cutters.</p>
--	--	--

Surface Coatings

Titanium Nitride (TiN)		Titanium Nitride is a gold colored ceramic coating applied by physical vapour deposition (PVD). High hardness combined with low friction properties ensures considerably longer tool life, or alternatively, better cutting performance from tools which have not been coated. TiN coating is used mainly for drills and taps.
Aluminum Titanium Carbon Nitride (AlTiCN)		Aluminum Titanium Carbon-Nitride (AlTiCN) is a PVD coating which was specifically engineered to meet the rigorous requirements of the medical device industry. It is however equally applicable to certain cutting tool operations due to a high quality thin-film technology, with excellent micro-hardness and adhesion characteristics.
Titanium Aluminum Nitride coatings (TiAlN)		Titanium Aluminum Nitride is a multi layer ceramic coating applied by PVD coating technology, which exhibits high toughness and oxidation stability. These properties make it ideal for higher speeds and feeds, while at the same time improving tool life. TiAlN is used in drilling, tapping, and milling applications and can be suitable for use when machining without coolant.
Bright (uncoated)		Bright finish (uncoated surface) improves chip flow in soft or non-ferrous materials while maintaining sharp cutting edges.
Combination Bright and Steam Tempered		Combination of bright and steam tempering can be effective, as the blue oxide more porous surface acts to retain and pull cutting fluid into the hole while the bright surface assists in chip evacuation. This combination is achieved by grinding the bright surface after tempering.
Combination Steam and Bronze Tempered Surface Treatment		Combination of steam and bronze tempering can be effective, as the blue oxide more porous surface acts to retain and pull cutting fluid into the hole while the bronze surface assists in chip evacuation. Both surface treatments add a degree of surface protection to the tool. These combinations are achieved by using two different tempering cycles.



Material code (BMC)		HM	HM	HM	HM	HM	HSS-E	HSS-E	HSS-E	HSS	HSS	HSS-E	HSS	HSS
Coating		Bright	Bright	Bright	Bright	Bright	Bright	Bright	Bright ST	Bright	Bright	Bright	Bright	ST Bronze
Basic standard group (BSG)		DIN 8093	DIN 8093	DIN 8051	DIN 8094	DIN 8050	DIN 212	DIN 212	BS 328	ANSI	ANSI	DIN 2179	ANSI	ANSI
Hand (Cutting direction)		R	R	R	R	R	R	R	R	R	R	R	R	R
Shank														
Application angle														
Reamer form		B	B	A	B	A	B	B	B					
Achievable hole tolerance (TCHA)		H7	⌀ 95.5.5 +0.004 ⌀ 5.51-12 +0.005	H7	H7	H7	⌀ 95.5.5 +0.004 ⌀ 5.51-12 +0.005	H7	H7					
Taper gradient - millimeter (Rate of taper)											1:50	1:48		
Product Family Code		B400	B481	B442	B411	B441	B170	B180	B901	B610	B620	B953	B630	B122
PSF cutting diameters range		1.00 - 20.00	0.98 - 12.05	10.00 - 20.00	5.00 - 30.00	10.00 - 20.00	1.00 - 12.00	1.50 - 20.00	1.50 - 1/2	N60 - 1-1/2	1/16 - 1"	2.00 - 12.00	7/0 - N10	3/8 - 1"
P	P1	■	■	■	■	■	■	■	■	■	■	■	■	■
	P2	■	■	■	■	■	■	■	■	■	■	■	■	■
	P3	■	■	■	■	■	■	■	■	■	■	■	■	■
	P4	■	■	■	■	■	■	■	■	■	■	■	■	■
M	M1	■	■	■	■	■	■	■	■	■	■	■	■	■
	M2	■	■	■	■	■	■	■	■	■	■	■	■	■
	M3													
	M4													
K	K1	■	■	■	■	■	■	■	■	■	■	■	■	■
	K2	■	■	■	■	■	■	■	■	■	■	■	■	■
	K3	■	■	■	■	■	■	■	■	■	■	■	■	■
	K4													
	K5	■	■	■	■	■	■	■	■	■	■	■	■	■
N	N1	■	■	■	■	■	■	■	■	■	■	■	■	■
	N2	■	■	■	■	■	■	■	■	■	■	■	■	■
	N3	■	■	■	■	■	■	■	■	■	■	■	■	■
	N4	■	■	■	■	■	■	■	■	■	■	■	■	■
	N5	■	■	■	■	■	■	■	■	■	■	■	■	■
S	S1													
	S2													
	S3													
	S4													
H	H1													
	H2													
	H3													
	H4													

■ Primary use ■ Possible use



	HSS	HSS-E	HSS-E	HSS	HSS	HSS-E	HSS	HSS	HSS	HSS	HSS	HSS	HSS	
	Bright	Bright ST	Bright	ST	Bright ST	Bright	Bright ST	Bright	Bright ST	Bright	Bright ST	Bright	Bright	
	ANSI	BS 328	DIN 208	ANSI	DIN 311	DIN 2180	DIN 206	ANSI	BS 328	ANSI	DIN 9	ANSI	DIN 9	
	R	R	R	R	R	R	R	R	R	R	R	R	R	
	60-100°													
		B	B				B		A		A		B	
		H7	H7		k11		H7							
						1:50			1:48	1:48	1:50	1:48	1:50	
	B690	B101	B161	B640	B121	B954	B100	B650	B301	B660	B903	B670	B952	B680
	1/4 - 1"	3.00 - 50.00	3.00 - 50.00	7/16 - 1.1/16	12.00 - 25.00	8.00 - 30.00	1.50 - 40.00	1/8 - 1"	3/32 - 1/2	N0 - N10	1.50 - 20.00	N0 - N10	1.20 - 40.00	1/8 - 1"
P1	■	■	■	■	■	■	■	■	■	■	■	■	■	■
P2	■	■	■	■	■	■	■	■	■	■	■	■	■	■
P3	■	■	■	■	■	■	■	■	■	■	■	■	■	■
P4	■	■	■	■	■	■	■	■	■	■	■	■	■	■
M1	■	■	■	■	■	■	■	■	■	■	■	■	■	■
M2	■	■	■	■	■	■	■	■	■	■	■	■	■	■
M3	■	■	■	■	■	■	■	■	■	■	■	■	■	■
M4	■	■	■	■	■	■	■	■	■	■	■	■	■	■
K1	■	■	■	■	■	■	■	■	■	■	■	■	■	■
K2	■	■	■	■	■	■	■	■	■	■	■	■	■	■
K3	■	■	■	■	■	■	■	■	■	■	■	■	■	■
K4	■	■	■	■	■	■	■	■	■	■	■	■	■	■
K5	■	■	■	■	■	■	■	■	■	■	■	■	■	■
N1	■	■	■	■	■	■	■	■	■	■	■	■	■	■
N2	■	■	■	■	■	■	■	■	■	■	■	■	■	■
N3	■	■	■	■	■	■	■	■	■	■	■	■	■	■
N4	■	■	■	■	■	■	■	■	■	■	■	■	■	■
N5	■	■	■	■	■	■	■	■	■	■	■	■	■	■
S1	■	■	■	■	■	■	■	■	■	■	■	■	■	■
S2	■	■	■	■	■	■	■	■	■	■	■	■	■	■
S3	■	■	■	■	■	■	■	■	■	■	■	■	■	■
S4	■	■	■	■	■	■	■	■	■	■	■	■	■	■
H1	■	■	■	■	■	■	■	■	■	■	■	■	■	■
H2	■	■	■	■	■	■	■	■	■	■	■	■	■	■
H3	■	■	■	■	■	■	■	■	■	■	■	■	■	■
H4	■	■	■	■	■	■	■	■	■	■	■	■	■	■

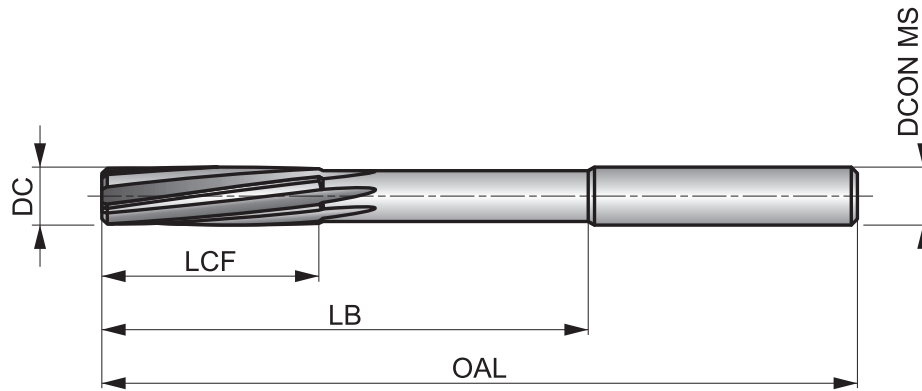


B400



Carbide Straight Shank Machine Reamer with H7 Accuracy, Bright Finish

Designed to provide a finish within the limits of H7 hole tolerance. For superior performance and extended tool life when reaming hard and abrasive materials. The spiral flute design, with extremely unequal spacing between the flutes, reduces vibration and improves hole roundness, size and surface finish.



HM	Bright	DIN 8093
R		B
H7		

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 382.

P1.1 ■ 75 B	P1.2 ■ 85 B	P1.3 ■ 89 B	P2.1 ■ 66 B	P2.2 ■ 59 B	P2.3 ■ 52 C	P3.1 ■ 52 B	P3.2 ■ 43 B	P3.3 ■ 36 C	P4.1 ■ 33 B	P4.2 ■ 26 C	P4.3 ■ 23 C	M1.1 ■ 133 C	M1.2 ■ 126 C
M2.1 ■ 130 C	M2.2 ■ 123 C	M2.3 ■ 120 B	K1.1 ■ 66 D	K1.2 ■ 49 D	K1.3 ■ 36 D	K2.1 ■ 69 D	K2.2 ■ 56 D	K2.3 ■ 46 D	K3.1 ■ 59 D	K3.2 ■ 46 D	K3.3 ■ 36 D	K5.1 ■ 62 D	K5.2 ■ 49 D
K5.3 ■ 36 D	N1.1 ■ 197 D	N1.2 ■ 148 D	N1.3 ■ 98 D	N2.1 ■ 125 D	N2.2 ■ 115 D	N2.3 ■ 82 D	N3.1 ■ 210 E	N3.2 ■ 125 E	N3.3 ■ 162 E	N4.1 ■ 115 C	N4.2 ■ 98 C		

DCON MS tolerance h6; DC >= 14 mm Carbide Tipped.

Product	DC	OAL	LCF	LB	NOF	DCON MS	Pack Qty	MID
	(mm)	(mm)	(mm)	(mm)		(mm)		
B4001.0	1.00	34.0	5.5	15.00	3	1.00	1	5987088
B4001.2	1.20	38.0	7.5	16.50	3	1.20	1	5987126
B4001.4	1.40	40.0	8.0	18.00	3	1.50	1	5987163
B4001.5	1.50	40.0	8.0	18.00	3	1.50	1	5987198
B4001.6	1.60	43.0	9.0	20.00	3	1.60	1	5987237
B4001.8	1.80	46.0	10.0	22.00	4	1.80	1	5987244
B4002.0	2.00	49.0	11.0	24.00	4	2.00	1	5987100
B4002.2	2.20	53.0	12.0	25.00	4	2.20	1	5987103
B4002.5	2.50	57.0	14.0	29.00	4	2.50	1	5987107
B4002.8	2.80	61.0	15.0	33.00	6	3.00	1	5987111
B4003.0	3.00	61.0	15.0	33.00	6	3.00	1	5987117
B4003.2	3.20	65.0	16.0	37.00	6	3.20	1	5987120
B4003.5	3.50	70.0	18.0	42.00	6	3.50	1	5987123
B4004.0	4.00	75.0	19.0	47.00	6	4.00	1	5987129

Product	DC	OAL	LCF	LB	NOF	DCON MS	Pack Qty	MID
	(mm)	(mm)	(mm)	(mm)		(mm)		
B4004.5	4.50	80.0	21.0	52.00	6	4.50	1	5987132
B4005.0	5.00	86.0	23.0	58.00	6	5.00	1	5987134
B4005.5	5.50	93.0	26.0	57.00	6	5.60	1	5987137
B4006.0	6.00	93.0	26.0	57.00	6	5.60	1	5987141
B4006.5	6.50	101.0	28.0	65.00	6	6.30	1	5987144
B4007.0	7.00	109.0	31.0	73.00	6	7.10	1	5987148
B4008.0	8.00	117.0	33.0	81.00	6	8.00	1	5987152
B4009.0	9.00	125.0	36.0	85.00	6	9.00	1	5987155
B40010.0	10.00	133.0	38.0	93.00	6	10.00	1	5987247
B40012.0	12.00	151.0	44.0	111.00	6	10.00	1	5987250
B40014.0	14.00	160.0	47.0	115.00	6	12.50	1	5987253
B40016.0	16.00	170.0	52.0	125.00	6	12.50	1	5987094
B40018.0	18.00	182.0	56.0	137.00	6	14.00	1	5987097
B40020.0	20.00	195.0	60.0	147.00	6	16.00	1	5987114

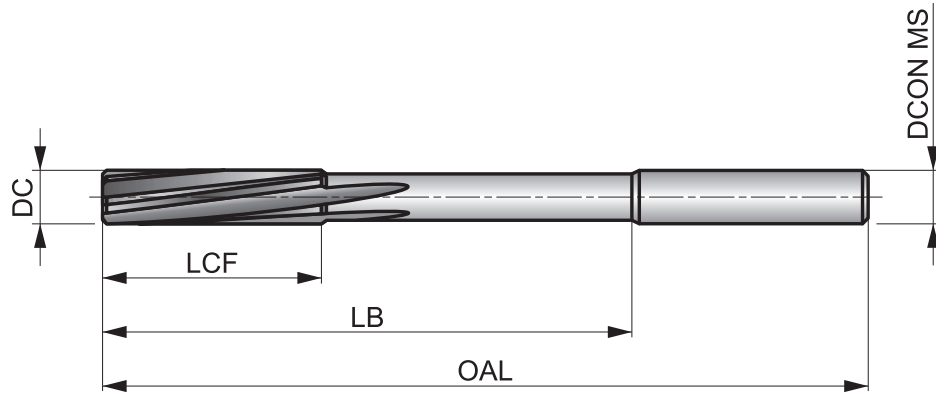


B481



Carbide Straight Shank Machine Reamer - 0.01 mm Increments, Bright Finish

Straight shank for high performance on CNC machining. Different increment sizes allows to produce accurate hole sizes and tolerances. Premium carbide tips gives greatly improved performance and extended tool life when reaming hard and abrasive materials. Extremely unequal spacing on the flutes to reduce vibration.



HM	Bright	DIN 8093
R	DIN 6535HA	B
$\phi 95.5-5$ $+0.004$ $\phi 5.51-12$ $+0.005$		

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 382.

P1.1 ■ 75 B	P1.2 ■ 85 B	P1.3 ■ 89 B	P2.1 ■ 66 B	P2.2 ■ 59 B	P2.3 ■ 52 C	P3.1 ■ 52 B	P3.2 ■ 43 B	P3.3 ■ 36 C	P4.1 ■ 33 B	P4.2 ■ 26 C	P4.3 ■ 23 C	M1.1 ■ 133 C	M1.2 ■ 126 C
M2.1 ■ 30 C	M2.2 ■ 23 C	M2.3 ■ 20 B	K1.1 ■ 66 D	K1.2 ■ 49 D	K1.3 ■ 36 D	K2.1 ■ 69 D	K2.2 ■ 56 D	K2.3 ■ 46 D	K3.1 ■ 59 D	K3.2 ■ 46 D	K3.3 ■ 36 D	K5.1 ■ 62 D	K5.2 ■ 49 D
K5.3 ■ 36 D	N1.1 ■ 197 D	N1.2 ■ 148 D	N1.3 ■ 98 D	N2.1 ■ 125 D	N2.2 ■ 115 D	N2.3 ■ 82 D	N3.1 ■ 210 E	N3.2 ■ 125 E	N3.3 ■ 162 E	N4.1 ■ 115 C	N4.2 ■ 98 C		

DCON MS tolerance h6.

Product	DC (mm)	OAL (mm)	LCF (mm)	LB (mm)	NOF	DCON MS (mm)	Pack Qty	MID
B4810.98	0.98	50.0	6.0	22.00	3	3.00	1	5987462
B4810.99	0.99	50.0	6.0	22.00	3	3.00	1	5987467
B4811.03	1.03	50.0	6.0	22.00	3	3.00	1	5987485
B4811.50	1.50	50.0	9.0	22.00	3	3.00	1	5987494
B4811.51	1.51	50.0	10.0	22.00	3	3.00	1	5987497
B4811.52	1.52	50.0	10.0	22.00	3	3.00	1	5987499
B4811.53	1.53	50.0	10.0	22.00	3	3.00	1	5987501
B4811.98	1.98	50.0	12.0	22.00	4	3.00	1	5987506
B4811.99	1.99	50.0	12.0	22.00	4	3.00	1	5987509
B4812.00	2.00	50.0	12.0	22.00	4	3.00	1	5987602
B4812.01	2.01	50.0	12.0	22.00	4	3.00	1	5987603
B4812.02	2.02	50.0	12.0	22.00	4	3.00	1	5987604
B4812.03	2.03	50.0	12.0	22.00	4	3.00	1	5987507
B4812.48	2.48	60.0	16.0	32.00	4	3.00	1	5987510
B4812.49	2.49	60.0	16.0	32.00	4	3.00	1	5987513
B4812.50	2.50	60.0	16.0	32.00	4	3.00	1	5987516
B4812.51	2.51	60.0	16.0	32.00	4	3.00	1	5987519
B4812.52	2.52	60.0	16.0	32.00	4	3.00	1	5987522
B4812.53	2.53	60.0	16.0	32.00	4	3.00	1	5987524
B4812.97	2.97	65.0	17.0	37.00	6	4.00	1	5987526
B4812.98	2.98	65.0	17.0	37.00	6	4.00	1	5987529
B4812.99	2.99	65.0	17.0	37.00	6	4.00	1	5987534
B4813.00	3.00	65.0	17.0	37.00	6	4.00	1	5987540

Product	DC (mm)	OAL (mm)	LCF (mm)	LB (mm)	NOF	DCON MS (mm)	Pack Qty	MID
B4813.01	3.01	65.0	17.0	37.00	6	4.00	1	5987543
B4813.02	3.02	65.0	17.0	37.00	6	4.00	1	5987546
B4813.03	3.03	65.0	17.0	37.00	6	4.00	1	5987549
B4813.97	3.97	75.0	19.0	47.00	6	4.00	1	5987551
B4813.98	3.98	75.0	19.0	47.00	6	4.00	1	5987553
B4813.99	3.99	75.0	19.0	47.00	6	4.00	1	5987556
B4814.00	4.00	75.0	19.0	47.00	6	4.00	1	5987558
B4814.01	4.01	75.0	19.0	47.00	6	4.00	1	5987560
B4814.02	4.02	75.0	19.0	47.00	6	4.00	1	5987562
B4814.03	4.03	75.0	19.0	47.00	6	4.00	1	5987565
B4814.97	4.97	93.0	23.0	57.00	6	6.00	1	5987567
B4814.98	4.98	93.0	23.0	57.00	6	6.00	1	5987569
B4814.99	4.99	93.0	23.0	57.00	6	6.00	1	5987571
B4815.00	5.00	93.0	23.0	57.00	6	6.00	1	5987573
B4815.01	5.01	93.0	23.0	57.00	6	6.00	1	5987575
B4815.02	5.02	93.0	23.0	57.00	6	6.00	1	5987577
B4815.03	5.03	93.0	23.0	57.00	6	6.00	1	5987578
B4815.97	5.97	93.0	26.0	57.00	6	6.00	1	5987580
B4815.98	5.98	93.0	26.0	57.00	6	6.00	1	5987582
B4815.99	5.99	93.0	26.0	57.00	6	6.00	1	5987586
B4816.00	6.00	93.0	26.0	57.00	6	6.00	1	5987588
B4816.01	6.01	93.0	26.0	57.00	6	6.00	1	5987590
B4816.02	6.02	93.0	26.0	57.00	6	6.00	1	5987592



Product	DC	OAL	LCF	LB	NOF	DCON MS	Pack Qty	MID
	(mm)	(mm)	(mm)	(mm)		(mm)		
B4816.03	6.03	93.0	26.0	57.00	6	6.00	1	5987593
B4817.97	7.97	117.0	33.0	81.00	6	8.00	1	5987594
B4817.98	7.98	117.0	33.0	81.00	6	8.00	1	5987595
B4817.99	7.99	117.0	33.0	81.00	6	8.00	1	5987596
B4818.00	8.00	117.0	33.0	81.00	6	8.00	1	5987597
B4818.01	8.01	117.0	33.0	81.00	6	8.00	1	5987598
B4818.02	8.02	117.0	33.0	81.00	6	8.00	1	5987600
B4818.03	8.03	117.0	33.0	81.00	6	8.00	1	5986965
B4818.04	8.04	117.0	33.0	81.00	6	8.00	1	5986973
B4819.97	9.97	133.0	38.0	93.00	6	10.00	1	5986978
B4819.98	9.98	133.0	38.0	93.00	6	10.00	1	5986981
B4819.99	9.99	133.0	38.0	93.00	6	10.00	1	5986985
B48110.00	10.00	133.0	38.0	93.00	6	10.00	1	5987511

Product	DC	OAL	LCF	LB	NOF	DCON MS	Pack Qty	MID
	(mm)	(mm)	(mm)	(mm)		(mm)		
B48110.01	10.01	133.0	38.0	93.00	6	10.00	1	5987514
B48110.02	10.02	133.0	38.0	93.00	6	10.00	1	5987517
B48110.03	10.03	133.0	38.0	93.00	6	10.00	1	5987520
B48110.04	10.04	133.0	38.0	93.00	6	10.00	1	5987525
B48110.05	10.05	133.0	38.0	93.00	6	10.00	1	5987528
B48111.98	11.98	151.0	44.0	106.00	6	12.00	1	5987533
B48111.99	11.99	151.0	44.0	106.00	6	12.00	1	5987538
B48112.00	12.00	151.0	44.0	106.00	6	12.00	1	5987503
B48112.01	12.01	151.0	44.0	106.00	6	12.00	1	5987537
B48112.02	12.02	151.0	44.0	106.00	6	12.00	1	5987563
B48112.03	12.03	151.0	44.0	106.00	6	12.00	1	5987584
B48112.04	12.04	151.0	44.0	106.00	6	12.00	1	5987599
B48112.05	12.05	151.0	44.0	106.00	6	12.00	1	5987601

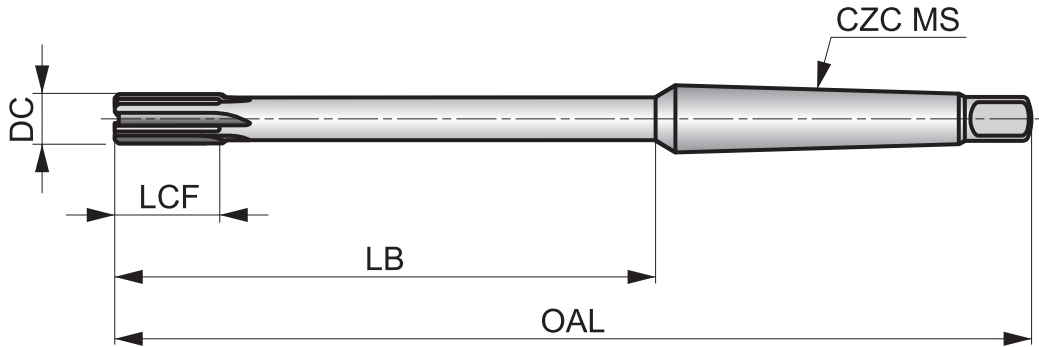


B442



Carbide Tipped Taper Shank Machine Reamer with H7 Accuracy, Bright Finish

Designed with extremely unequal flutes to reduce vibration and improve hole size, roundness and surface finish. The 45° bevel lead ensures accurate location and centering to give you improved hole quality and performance. The brazed carbide tip provides extended tool life and a superior performance.



HM	Bright	DIN 8051
R		A
H7		

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 382.

P1.1 ■ 75 B	P1.2 ■ 85 B	P1.3 ■ 89 B	P2.1 ■ 66 B	P2.2 ■ 59 B	P2.3 ■ 52 C	P3.1 ■ 52 B	P3.2 ■ 43 B	P3.3 ■ 36 C	P4.1 ■ 33 B	P4.2 ■ 26 C	P4.3 ■ 23 C	M1.1 ■ 133 C	M1.2 ■ 26 C
M2.1 ■ 30 C	M2.2 ■ 23 C	M2.3 ■ 20 B	K1.1 ■ 66 D	K1.2 ■ 49 D	K1.3 ■ 36 D	K2.1 ■ 69 D	K2.2 ■ 56 D	K2.3 ■ 46 D	K3.1 ■ 59 D	K3.2 ■ 46 D	K3.3 ■ 36 D	K5.1 ■ 62 D	K5.2 ■ 49 D
K5.3 ■ 36 D	N1.1 ■ 197 D	N1.2 ■ 148 D	N1.3 ■ 98 D	N2.1 ■ 125 D	N2.2 ■ 115 D	N2.3 ■ 82 D	N3.1 ■ 210 E	N3.2 ■ 125 E	N3.3 ■ 62 E	N4.1 ■ 115 C	N4.2 ■ 98 C		

Product	DC (mm)	OAL (mm)	LCF (mm)	LB (mm)	NOF	CZC MS	Pack Qty	MID
B44210.0	10.00	168.0	19.0	102.50	6	MK 1	1	5987200
B44212.0	12.00	182.0	19.0	116.50	6	MK 1	1	5987204
B44214.0	14.00	189.0	19.0	123.50	6	MK 1	1	5987208
B44215.0	15.00	204.0	19.0	124.00	6	MK 2	1	5987212
B44216.0	16.00	210.0	22.0	130.00	6	MK 2	1	5987216
B44217.0	17.00	214.0	22.0	134.00	6	MK 2	1	5987220
B44218.0	18.00	219.0	22.0	139.00	6	MK 2	1	5987228
B44219.0	19.00	223.0	22.0	143.00	6	MK 2	1	5987230
B44220.0	20.00	228.0	22.0	148.00	6	MK 2	1	5987233

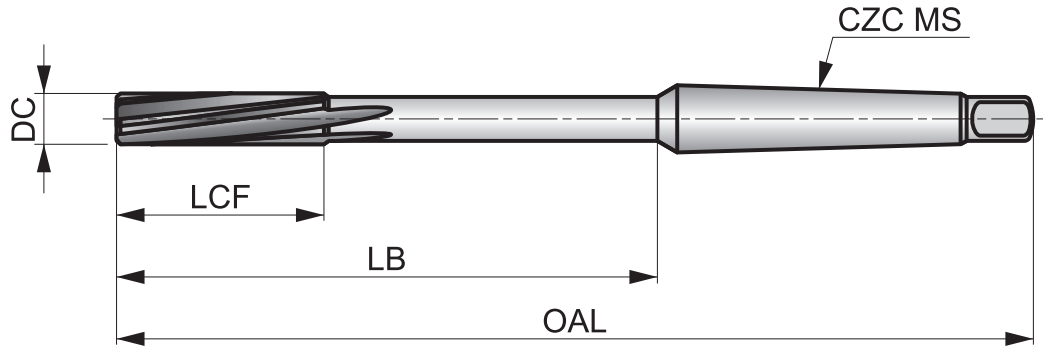


B411



Carbide Tipped Taper Shank Machine Reamer with H7 Accuracy, Bright Finish

The brazed carbide tips gives significant improvements in performance and a longer tool life when you are reaming hard and abrasive materials. The spiral flutes have unequal spacing between them which effectively reduces vibration and improves hole symmetry, size and finish.



HM	Bright	DIN 8094
R		B
H7		

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 382.

P1.1 ■ 75 B	P1.2 ■ 85 B	P1.3 ■ 89 B	P2.1 ■ 66 B	P2.2 ■ 59 B	P2.3 ■ 52 C	P3.1 ■ 52 B	P3.2 ■ 43 B	P3.3 ■ 36 C	P4.1 ■ 33 B	P4.2 ■ 26 C	P4.3 ■ 23 C	M1.1 ■ 33 C	M1.2 ■ 26 C
M2.1 ■ 30 C	M2.2 ■ 23 C	M2.3 ■ 20 B	K1.1 ■ 66 D	K1.2 ■ 49 D	K1.3 ■ 36 D	K2.1 ■ 69 D	K2.2 ■ 56 D	K2.3 ■ 46 D	K3.1 ■ 59 D	K3.2 ■ 46 D	K3.3 ■ 36 D	K5.1 ■ 62 D	K5.2 ■ 49 D
K5.3 ■ 36 D	N1.1 ■ 197 D	N1.2 ■ 148 D	N1.3 ■ 98 D	N2.1 ■ 125 D	N2.2 ■ 115 D	N2.3 ■ 82 D	N3.1 ■ 210 E	N3.2 ■ 125 E	N3.3 ■ 62 E	N4.1 ■ 115 C	N4.2 ■ 98 C		

DC <= 16mm Carbide head; DC > 16mm Carbide Tipped.

Product	DC	OAL	LCF	LB	NOF	CZC MS	Pack Qty	MID
	(mm)	(mm)	(mm)	(mm)				
B4115.0	5.00	133.0	23.0	67.50	6	MK 1	1	5987213
B4116.0	6.00	138.0	26.0	72.50	6	MK 1	1	5987217
B4117.0	7.00	150.0	31.0	84.50	6	MK 1	1	5987221
B4118.0	8.00	156.0	33.0	90.50	6	MK 1	1	5987226
B4119.0	9.00	162.0	36.0	96.50	6	MK 1	1	5987229
B41110.0	10.00	168.0	38.0	102.50	6	MK 1	1	5987159
B41112.0	12.00	182.0	44.0	116.50	6	MK 1	1	5987166
B41114.0	14.00	189.0	47.0	123.50	8	MK 1	1	5987169
B41115.0	15.00	204.0	50.0	124.00	8	MK 2	1	5987172
B41116.0	16.00	210.0	52.0	130.00	8	MK 2	1	5987175

Product	DC	OAL	LCF	LB	NOF	CZC MS	Pack Qty	MID
	(mm)	(mm)	(mm)	(mm)				
B41117.0	17.00	214.0	54.0	134.00	6	MK 2	1	5987178
B41118.0	18.00	219.0	56.0	139.00	6	MK 2	1	5987181
B41119.0	19.00	223.0	58.0	143.00	6	MK 2	1	5987184
B41120.0	20.00	228.0	60.0	148.00	6	MK 2	1	5987187
B41122.0	22.00	237.0	64.0	157.00	6	MK 2	1	5987190
B41124.0	24.00	268.0	68.0	169.00	8	MK 3	1	5987194
B41125.0	25.00	268.0	68.0	169.00	8	MK 3	1	5987202
B41126.0	26.00	273.0	70.0	174.00	8	MK 3	1	5987206
B41130.0	30.00	281.0	73.0	182.00	8	MK 3	1	5987209

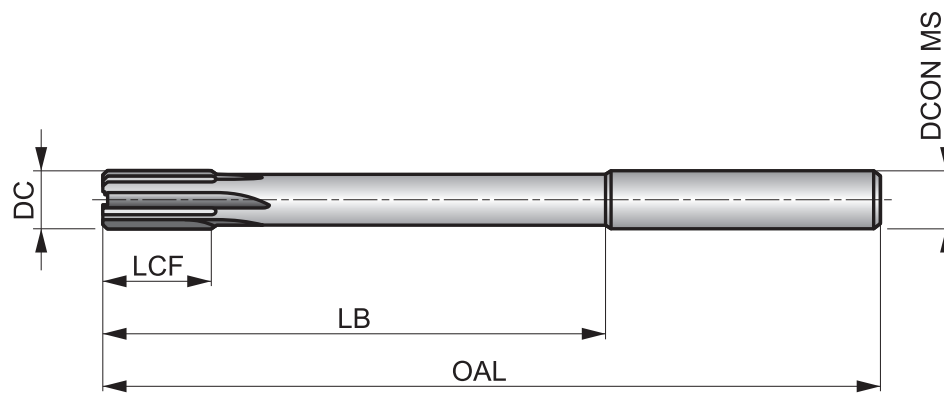


B441



Carbide Tipped Straight Shank Machine Reamer, H7 Accuracy, Bright Finish

The brazed carbide tip will give extended tool life and a superior performance, when reaming holes within the limits of H7 hole tolerance. The extremely unequal design of the flutes reduces vibration and improves hole roundness, surface finish and size. The tool offers great performance in CNC machines.



HM	Bright	DIN 8050
R		A
H7		

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 382.

P1.1 ■ 75 B	P1.2 ■ 85 B	P1.3 ■ 89 B	P2.1 ■ 66 B	P2.2 ■ 59 B	P2.3 ■ 52 C	P3.1 ■ 52 B	P3.2 ■ 43 B	P3.3 ■ 36 C	P4.1 ■ 33 B	P4.2 ■ 26 C	P4.3 ■ 23 C	M1.1 ■ 133 C	M1.2 ■ 126 C
M2.1 ■ 130 C	M2.2 ■ 123 C	M2.3 ■ 120 B	K1.1 ■ 66 D	K1.2 ■ 49 D	K1.3 ■ 36 D	K2.1 ■ 69 D	K2.2 ■ 56 D	K2.3 ■ 46 D	K3.1 ■ 59 D	K3.2 ■ 46 D	K3.3 ■ 36 D	K5.1 ■ 62 D	K5.2 ■ 49 D
K5.3 ■ 36 D	N1.1 ■ 197 D	N1.2 ■ 148 D	N1.3 ■ 98 D	N2.1 ■ 125 D	N2.2 ■ 115 D	N2.3 ■ 82 D	N3.1 ■ 210 E	N3.2 ■ 125 E	N3.3 ■ 162 E	N4.1 ■ 115 C	N4.2 ■ 98 C		

DCON MS tolerance h9; Carbide Tipped.

Product	DC (mm)	OAL (mm)	LCF (mm)	LB (mm)	NOF	DCON MS (mm)	Pack Qty	MID
B44110.0	10.00	133.0	19.0	87.00	6	10.00	1	5987160
B44111.0	11.00	142.0	19.0	96.00	6	10.00	1	5987164
B44112.0	12.00	151.0	19.0	105.00	6	10.00	1	5987167
B44113.0	13.00	151.0	19.0	105.00	6	10.00	1	5987170
B44114.0	14.00	160.0	19.0	110.00	6	12.50	1	5987173
B44115.0	15.00	162.0	19.0	112.00	6	12.50	1	5987176
B44116.0	16.00	170.0	22.0	120.00	6	12.50	1	5987179
B44117.0	17.00	175.0	22.0	123.00	6	14.00	1	5987185
B44118.0	18.00	182.0	22.0	130.00	6	14.00	1	5987189
B44119.0	19.00	189.0	22.0	131.00	6	16.00	1	5987193
B44120.0	20.00	195.0	22.0	137.00	6	16.00	1	5987196

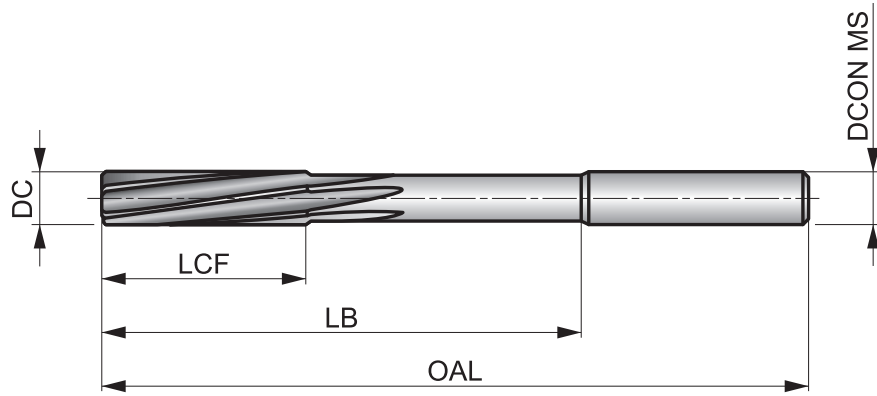


B170



HSS-E Straight Shank Machine Reamer - 0.01mm Increments, Bright Finish

Different increment sizes allows you to produce accurate hole sizes and additional hole tolerances. With a left-hand helix and right-hand cutting action, the precision ground geometry provides smooth reaming and improves hole size and surface finish. Suitable for reaming in many materials.



HSS-E	Bright	DIN 212
R		B
$\phi .95-5.5$ $+0.004$ $\phi 5.51-12$ $+0.005$		

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 382.

P1.1 ■ 69 C	P1.2 ■ 79 C	P1.3 ■ 82 C	P2.1 ■ 59 C	P2.2 ■ 52 C	P2.3 ■ 46 B	P3.1 ■ 43 B	P3.2 ■ 36 B	P3.3 ■ 30 B	P4.1 ■ 26 B	P4.2 ■ 23 B	P4.3 ■ 16 A	M1.1 ■ 36 C	M1.2 ■ 33 B
M2.1 ■ 30 B	K1.1 ■ 52 E	K1.2 ■ 39 D	K1.3 ■ 30 D	K2.1 ■ 52 C	K2.2 ■ 43 C	K2.3 ■ 33 C	K3.1 ■ 46 C	K3.2 ■ 36 C	N1.1 ■ 79 D	N1.2 ■ 59 F	N1.3 ■ 36 F	N2.1 ■ 89 E	N2.2 ■ 79 E
N2.3 ■ 52 E	N3.1 ■ 154 D	N3.2 ■ 92 E	N3.3 ■ 46 D	N4.1 ■ 98 B									

DCON MS tolerance h9.

Product	DC	OAL	LCF	LB	NOF	DCON MS	Pack Qty	MID
	(mm)	(mm)	(mm)	(mm)		(mm)		
B1701.0	1.00	34.0	5.5	15.00	3	1.00	1	5986214
B1701.05	1.05	34.0	5.5	15.00	3	1.00	1	5986221
B1701.49	1.49	40.0	8.0	18.00	3	1.50	1	5986223
B1701.5	1.50	40.0	8.0	18.00	3	1.50	1	5986225
B1701.52	1.52	43.0	9.0	20.00	3	1.60	1	5986232
B1701.98	1.98	49.0	11.0	24.00	4	2.00	1	5986235
B1701.99	1.99	49.0	11.0	24.00	4	2.00	1	5986238
B1702.0	2.00	49.0	11.0	24.00	4	2.00	1	5986940
B1702.01	2.01	49.0	11.0	24.00	4	2.00	1	5986795
B1702.02	2.02	49.0	11.0	24.00	4	2.00	1	5986798
B1702.03	2.03	49.0	11.0	24.00	4	2.00	1	5986801
B1702.05	2.05	49.0	11.0	24.00	4	2.00	1	5986809
B1702.5	2.50	57.0	14.0	28.00	4	2.50	1	5986817
B1702.51	2.51	57.0	14.0	28.00	4	2.50	1	5986821
B1702.98	2.98	61.0	15.0	32.00	6	3.00	1	5986829
B1702.99	2.99	61.0	15.0	32.00	6	3.00	1	5986836
B1703.0	3.00	61.0	15.0	32.00	6	3.00	1	5986839
B1703.01	3.01	65.0	16.0	35.00	6	3.20	1	5986842
B1703.02	3.02	65.0	16.0	35.00	6	3.20	1	5986845
B1703.03	3.03	65.0	16.0	35.00	6	3.20	1	5986848
B1703.05	3.05	65.0	16.0	35.00	6	3.20	1	5986852
B1703.98	3.98	75.0	19.0	43.00	6	4.00	1	5986867
B1703.99	3.99	75.0	19.0	43.00	6	4.00	1	5986872

Product	DC	OAL	LCF	LB	NOF	DCON MS	Pack Qty	MID
	(mm)	(mm)	(mm)	(mm)		(mm)		
B1704.0	4.00	75.0	19.0	43.00	6	4.00	1	5986875
B1704.01	4.01	75.0	19.0	43.00	6	4.00	1	5986878
B1704.02	4.02	75.0	19.0	43.00	6	4.00	1	5986881
B1704.03	4.03	75.0	19.0	43.00	6	4.00	1	5986884
B1704.04	4.04	75.0	19.0	43.00	6	4.00	1	5986887
B1704.05	4.05	75.0	19.0	43.00	6	4.00	1	5986890
B1704.98	4.98	86.0	23.0	52.00	6	5.00	1	5986903
B1704.99	4.99	86.0	23.0	52.00	6	5.00	1	5986906
B1705.0	5.00	86.0	23.0	52.00	6	5.00	1	5986909
B1705.01	5.01	86.0	23.0	52.00	6	5.00	1	5986912
B1705.02	5.02	86.0	23.0	52.00	6	5.00	1	5986915
B1705.03	5.03	86.0	23.0	52.00	6	5.00	1	5986918
B1705.04	5.04	86.0	23.0	52.00	6	5.00	1	5986921
B1705.05	5.05	86.0	23.0	52.00	6	5.00	1	5986927
B1705.5	5.50	93.0	26.0	57.00	6	5.60	1	5986586
B1705.98	5.98	93.0	26.0	57.00	6	5.60	1	5986682
B1705.99	5.99	93.0	26.0	57.00	6	5.60	1	5986689
B1706.0	6.00	93.0	26.0	57.00	6	5.60	1	5986693
B1706.01	6.01	101.0	28.0	63.00	6	6.30	1	5986696
B1706.02	6.02	101.0	28.0	63.00	6	6.30	1	5986700
B1706.03	6.03	101.0	28.0	63.00	6	6.30	1	5986550
B1706.04	6.04	101.0	28.0	63.00	6	6.30	1	5986554
B1706.05	6.05	101.0	28.0	63.00	6	6.30	1	5986558



Product	DC	OAL	LCF	LB	NOF	DCON MS	Pack Qty	MID
	(mm)	(mm)	(mm)	(mm)		(mm)		
B1706.51	6.51	101.0	28.0	63.00	6	6.30	1	5986570
B1706.98	6.98	109.0	31.0	69.00	6	7.10	1	5986578
B1706.99	6.99	109.0	31.0	69.00	6	7.10	1	5986581
B1707.0	7.00	109.0	31.0	69.00	6	7.10	1	5986584
B1707.01	7.01	109.0	31.0	69.00	6	7.10	1	5986590
B1707.02	7.02	109.0	31.0	69.00	6	7.10	1	5986593
B1707.05	7.05	109.0	31.0	69.00	6	7.10	1	5986602
B1707.98	7.98	117.0	33.0	75.00	6	8.00	1	5986614
B1707.99	7.99	117.0	33.0	75.00	6	8.00	1	5986620
B1708.0	8.00	117.0	33.0	75.00	6	8.00	1	5986622
B1708.01	8.01	117.0	33.0	75.00	6	8.00	1	5986626
B1708.02	8.02	117.0	33.0	75.00	6	8.00	1	5986629
B1708.03	8.03	117.0	33.0	75.00	6	8.00	1	5986632
B1708.04	8.04	117.0	33.0	75.00	6	8.00	1	5986637
B1708.05	8.05	117.0	33.0	75.00	6	8.00	1	5986639
B1708.98	8.98	125.0	36.0	81.00	6	9.00	1	5986652
B1709.0	9.00	125.0	36.0	81.00	6	9.00	1	5986658
B1709.01	9.01	125.0	36.0	81.00	6	9.00	1	5986663

Product	DC	OAL	LCF	LB	NOF	DCON MS	Pack Qty	MID
	(mm)	(mm)	(mm)	(mm)		(mm)		
B1709.02	9.02	125.0	36.0	81.00	6	9.00	1	5986666
B1709.05	9.05	125.0	36.0	81.00	6	9.00	1	5986675
B1709.5	9.50	125.0	36.0	81.00	6	9.00	1	5986685
B1709.51	9.51	133.0	38.0	87.00	6	10.00	1	5986611
B1709.52	9.52	133.0	38.0	87.00	6	10.00	1	5986642
B1709.98	9.98	133.0	38.0	87.00	6	10.00	1	5986671
B1709.99	9.99	133.0	38.0	87.00	6	10.00	1	5986709
B17010.0	10.00	133.0	38.0	87.00	6	10.00	1	5986241
B17010.01	10.01	133.0	38.0	87.00	6	10.00	1	5986244
B17010.02	10.02	133.0	38.0	87.00	6	10.00	1	5986246
B17010.03	10.03	133.0	38.0	87.00	6	10.00	1	5986249
B17010.04	10.04	133.0	38.0	87.00	6	10.00	1	5986253
B17010.05	10.05	133.0	38.0	87.00	6	10.00	1	5986256
B17010.98	10.98	142.0	41.0	96.00	6	10.00	1	5986273
B17011.98	11.98	151.0	44.0	105.00	6	10.00	1	5986930
B17011.99	11.99	151.0	44.0	105.00	6	10.00	1	5986933
B17012.0	12.00	151.0	44.0	105.00	6	10.00	1	5986937

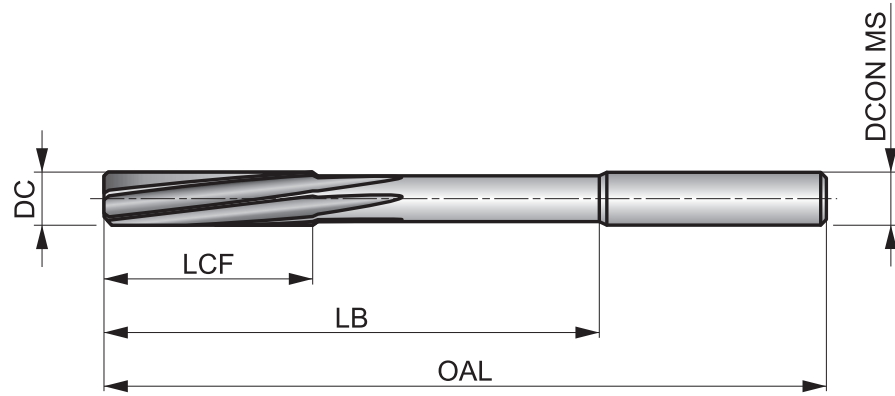


B180



HSS-E Straight Shank Machine Reamer with H7 Accuracy, Bright Finish

High performance reamer for CNC machines and held in high accuracy tool holders or chucks. The precision ground left-hand helix and right-hand cutting action ensures smooth reaming and improved surface finish and hole size. Suitable for reaming in many materials.



HSS-E	Bright	DIN 212
R	DIN 6535HA	B
H7		

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 382.

P1.1 ■ 69 C	P1.2 ■ 79 C	P1.3 ■ 82 C	P2.1 ■ 59 C	P2.2 ■ 52 C	P2.3 ■ 46 B	P3.1 ■ 43 B	P3.2 ■ 36 B	P3.3 ■ 30 B	P4.1 ■ 26 B	P4.2 ■ 23 B	P4.3 ■ 16 A	M1.1 ■ 36 C	M1.2 ■ 33 B
M2.1 ■ 30 B	K1.1 ■ 52 E	K1.2 ■ 39 D	K1.3 ■ 30 D	K2.1 ■ 52 C	K2.2 ■ 43 C	K2.3 ■ 33 C	K3.1 ■ 46 C	K3.2 ■ 36 C	N1.1 ■ 79 F	N1.2 ■ 59 F	N1.3 ■ 36 F	N2.1 ■ 89 E	N2.2 ■ 79 E
N2.3 ■ 52 E	N3.1 ■ 154 D	N3.2 ■ 92 E	N3.3 ■ 46 D	N4.1 ■ 98 B									

DCON MS tolerance h6.

Product	DC	OAL	LCF	LB	NOF	DCON MS	Pack Qty	MID
	(mm)	(mm)	(mm)	(mm)		(mm)		
B1801.5	1.50	40.0	8.0	18.00	3	2.00	1	5986750
B1801.6	1.60	43.0	9.0	20.00	3	2.00	1	5986757
B1801.7	1.70	43.0	9.0	20.00	3	2.00	1	5986763
B1801.8	1.80	46.0	10.0	22.00	4	2.00	1	5986767
B1801.9	1.90	46.0	10.0	22.00	4	2.00	1	5986771
B1802.0	2.00	49.0	11.0	24.00	4	2.00	1	5986644
B1802.1	2.10	49.0	11.0	24.00	4	2.00	1	5986646
B1802.2	2.20	53.0	12.0	26.00	4	3.00	1	5986648
B1802.3	2.30	53.0	12.0	26.00	4	3.00	1	5986651
B1802.4	2.40	57.0	14.0	28.00	4	3.00	1	5986654
B1802.5	2.50	57.0	14.0	28.00	4	3.00	1	5986657
B1802.6	2.60	57.0	14.0	28.00	4	3.00	1	5986660
B1802.7	2.70	61.0	15.0	32.00	6	3.00	1	5986662
B1802.8	2.80	61.0	15.0	32.00	6	3.00	1	5986665
B1802.9	2.90	61.0	15.0	32.00	6	3.00	1	5986668
B1803.0	3.00	61.0	15.0	32.00	6	3.00	1	5986677
B1803.1	3.10	65.0	16.0	35.00	6	4.00	1	5986680
B1803.2	3.20	65.0	16.0	35.00	6	4.00	1	5986683
B1803.3	3.30	65.0	16.0	35.00	6	4.00	1	5986687
B1803.4	3.40	70.0	18.0	40.00	6	4.00	1	5986691
B1803.5	3.50	70.0	18.0	40.00	6	4.00	1	5986695
B1803.6	3.60	70.0	18.0	40.00	6	4.00	1	5986698
B1803.9	3.90	75.0	19.0	43.00	6	4.00	1	5986713

Product	DC	OAL	LCF	LB	NOF	DCON MS	Pack Qty	MID
	(mm)	(mm)	(mm)	(mm)		(mm)		
B1804.0	4.00	75.0	19.0	43.00	6	4.00	1	5986716
B1804.1	4.10	75.0	19.0	43.00	6	4.00	1	5986720
B1804.2	4.20	75.0	19.0	43.00	6	4.00	1	5986722
B1804.3	4.30	80.0	21.0	47.00	6	5.00	1	5986726
B1804.5	4.50	80.0	21.0	47.00	6	5.00	1	5986734
B1804.6	4.60	80.0	21.0	47.00	6	5.00	1	5986738
B1804.7	4.70	80.0	21.0	47.00	6	5.00	1	5986742
B1804.8	4.80	86.0	23.0	52.00	6	5.00	1	5986746
B1804.9	4.90	86.0	23.0	52.00	6	5.00	1	5986753
B1805.0	5.00	86.0	23.0	52.00	6	5.00	1	5986900
B1805.1	5.10	86.0	23.0	52.00	6	5.00	1	5986935
B1805.2	5.20	86.0	23.0	52.00	6	5.00	1	5986969
B1805.3	5.30	86.0	23.0	52.00	6	5.00	1	5987005
B1805.4	5.40	93.0	26.0	57.00	6	6.00	1	5987037
B1805.5	5.50	93.0	26.0	57.00	6	6.00	1	5987042
B1805.6	5.60	93.0	26.0	57.00	6	6.00	1	5987045
B1805.7	5.70	93.0	26.0	57.00	6	6.00	1	5987048
B1805.9	5.90	93.0	26.0	57.00	6	6.00	1	5986904
B1806.0	6.00	93.0	26.0	57.00	6	6.00	1	5986907
B1806.1	6.10	101.0	28.0	63.00	6	6.00	1	5986910
B1806.2	6.20	101.0	28.0	63.00	6	6.00	1	5986913
B1806.3	6.30	101.0	28.0	63.00	6	6.00	1	5986916
B1806.4	6.40	101.0	28.0	63.00	6	6.00	1	5986920



Product	DC	OAL	LCF	LB	NOF	DCON MS	Pack Qty	MID
	(mm)	(mm)	(mm)	(mm)		(mm)		
B1806.5	6.50	101.0	28.0	63.00	6	6.00	1	5986923
B1806.6	6.60	101.0	28.0	63.00	6	6.00	1	5986926
B1806.7	6.70	101.0	28.0	63.00	6	6.00	1	5986929
B1806.8	6.80	109.0	31.0	69.00	6	8.00	1	5986932
B1807.0	7.00	109.0	31.0	69.00	6	8.00	1	5986942
B1807.1	7.10	109.0	31.0	69.00	6	8.00	1	5986945
B1807.2	7.20	109.0	31.0	69.00	6	8.00	1	5986948
B1807.5	7.50	109.0	31.0	69.00	6	8.00	1	5986957
B1807.8	7.80	117.0	33.0	75.00	6	8.00	1	5986966
B1807.9	7.90	117.0	33.0	75.00	6	8.00	1	5986971
B1808.0	8.00	117.0	33.0	75.00	6	8.00	1	5986976
B1808.1	8.10	117.0	33.0	75.00	6	8.00	1	5986980
B1808.2	8.20	117.0	33.0	75.00	6	8.00	1	5986984
B1808.3	8.30	117.0	33.0	75.00	6	8.00	1	5986988
B1808.4	8.40	117.0	33.0	75.00	6	8.00	1	5986991
B1808.5	8.50	117.0	33.0	75.00	6	8.00	1	5986994

Product	DC	OAL	LCF	LB	NOF	DCON MS	Pack Qty	MID
	(mm)	(mm)	(mm)	(mm)		(mm)		
B1808.7	8.70	125.0	36.0	81.00	6	10.00	1	5986999
B1808.8	8.80	125.0	36.0	81.00	6	10.00	1	5987002
B1809.0	9.00	125.0	36.0	81.00	6	10.00	1	5987011
B1809.5	9.50	125.0	36.0	81.00	6	10.00	1	5987025
B1809.6	9.60	133.0	38.0	87.00	6	10.00	1	5987028
B18010.0	10.00	133.0	38.0	87.00	6	10.00	1	5986617
B18011.0	11.00	142.0	41.0	96.00	6	10.00	1	5986619
B18012.0	12.00	151.0	44.0	105.00	6	10.00	1	5986623
B18013.0	13.00	151.0	44.0	105.00	6	10.00	1	5986625
B18014.0	14.00	160.0	47.0	110.00	8	14.00	1	5986628
B18015.0	15.00	162.0	50.0	112.00	8	14.00	1	5986631
B18016.0	16.00	170.0	52.0	120.00	8	14.00	1	5986634
B18017.0	17.00	175.0	54.0	123.00	8	14.00	1	5986636
B18018.0	18.00	182.0	56.0	130.00	8	14.00	1	5986638
B18019.0	19.00	189.0	58.0	131.00	8	16.00	1	5986640
B18020.0	20.00	195.0	60.0	137.00	8	16.00	1	5986674



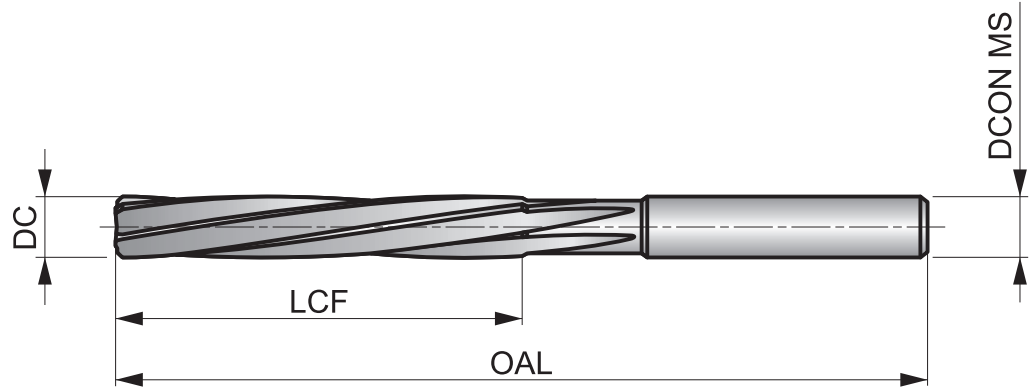
B901



HSS-E Straight Shank Machine Reamer, H7 Accuracy, Bright and ST Finish

The precision ground geometry, with left-hand helix and right-hand cutting, improves hole size and surface finish. The reamer has a straight shank for high performance machine reaming. Suitable for reaming in many materials.

HSS-E	Bright ST	BS 328
R		B
H7		



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 382.

P1.1 ■ 49 C	P1.2 ■ 52 C	P1.3 ■ 56 C	P2.1 ■ 43 C	P2.2 ■ 36 C	P2.3 ▣ 33 B	P3.1 ■ 23 B	P3.2 ■ 20 B	P3.3 ▣ 16 B	P4.1 ■ 13 B	P4.2 ▣ 13 B	P4.3 ▣ 10 A	M1.1 ▣ 33 C	M1.2 ▣ 26 C
M2.1 ▣ 30 C	K1.1 ■ 46 E	K1.2 ■ 33 D	K1.3 ▣ 26 D	K2.1 ■ 39 C	K2.2 ■ 33 C	K2.3 ▣ 26 C	K3.1 ▣ 36 C	K3.2 ▣ 26 C	N1.1 ▣ 75 F	N1.2 ■ 56 F	N1.3 ■ 39 F	N2.1 ■ 82 E	N2.2 ■ 72 E
N2.3 ▣ 46 E	N3.1 ■ 112 D	N3.2 ■ 66 E	N3.3 ■ 33 D	N4.1 ▣ 72 B	N4.2 ▣ 69 B								

Product	DC (inch)	DC (mm)	OAL (mm)	LCF (mm)	NOF	DCON MS (mm)	Pack Qty	MID
B9011.5	—	1.50	44.0	21.0	4	1.50	1	5986427
B9012.0	—	2.00	50.0	25.0	4	2.00	1	5986481
B9013/32	3/32	2.38	58.0	29.0	4	2.38	1	5986504
B9012.5	—	2.50	58.0	29.0	4	2.50	1	5986485
B9013.0	—	3.00	62.0	31.0	4	3.00	1	5986489
B9011/8	1/8	3.18	66.0	33.0	4	3.18	1	5986444
B9015/32	5/32	3.97	76.0	38.0	6	3.97	1	5986528
B9014.0	—	4.00	76.0	38.0	6	4.00	1	5986512
B9013/16	3/16	4.76	87.0	44.0	6	4.76	1	5986500
B9015.0	—	5.00	87.0	44.0	6	5.00	1	5986520
B90115/64	15/64	5.95	93.0	47.0	6	5.95	1	5986477
B9016.0	—	6.00	93.0	47.0	6	6.00	1	5986531

Product	DC (inch)	DC (mm)	OAL (mm)	LCF (mm)	NOF	DCON MS (mm)	Pack Qty	MID
B9011/4	1/4	6.35	100.0	50.0	6	6.35	1	5986440
B9017.0	—	7.00	107.0	54.0	6	7.00	1	5986534
B9019/32	9/32	7.14	107.0	54.0	6	7.14	1	5986555
B9015/16	5/16	7.94	115.0	58.0	6	7.94	1	5986525
B9018.0	—	8.00	115.0	58.0	6	8.00	1	5986543
B9019.0	—	9.00	124.0	62.0	6	9.00	1	5986547
B9013/8	3/8	9.52	133.0	66.0	6	9.52	1	5986508
B90110.0	—	10.00	133.0	66.0	6	10.00	1	5986448
B90111.0	—	11.00	142.0	71.0	6	11.00	1	5986453
B9017/16	7/16	11.11	142.0	71.0	6	11.11	1	5986537
B90112.0	—	12.00	152.0	76.0	6	12.00	1	5986461
B9011/2	1/2	12.70	152.0	76.0	6	12.70	1	5986437

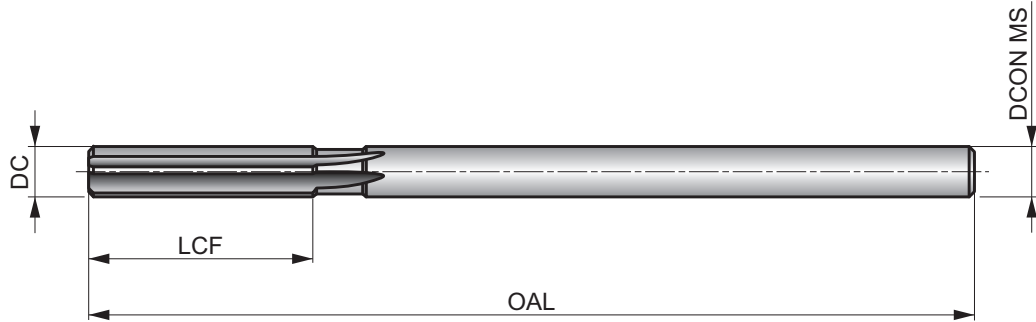


B610



HSS Straight Shank Straight Flute Chucking Reamer, Bright Finish

Versatile general purpose chucking reamers have shorter and deeper flutes than hand reamers and are designed for efficient machine reaming of most materials. A huge size range available including fractional, wire gauge, letter, and including incremental decimal sizes produced per ANSI B94.2-1983 (R1988).



HSS	Bright	ANSI
R		

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 382.

P1.1 ▣62 C	P1.2 ▣72 C	P1.3 ▣75 C	P2.1 ▣52 C	P2.2 ▣46 C	P2.3 ▣39 B	P3.1 ▣36 B	P3.2 ▣30 B	P3.3 ▣23 A	P4.1 ▣16 B	P4.2 ▣13 A	P4.3 ▣	M1.1 ▣30 C	M1.2 ▣26 B
M2.1 ▣23 B	K1.1 ▣46 E	K1.2 ▣33 D	K1.3 ▣23 D	K2.1 ▣46 C	K2.2 ▣36 C	K2.3 ▣30 C	K3.1 ▣39 C	K3.2 ▣30 C	N1.1 ▣72 F	N1.2 ▣52 F	N1.3 ▣30 F	N2.1 ▣82 E	N2.2 ▣72 E
N2.3 ▣46 E	N3.1 ▣148 D	N3.2 ▣85 E	N3.3 ▣39 D	N4.1 ▣92 B									

Product	DC	DC	DC	DCON MS	LCF	OAL	NOF	Pack Qty	MID
	(inch)	(Wire gauge size)	(inch)	(inch)	(inch)	(inch)			
B610N60	—	N60	.0400	.039	1/2	2.1/2	4	1	8157149
B610N59	—	N59	.0410	.039	1/2	2.1/2	4	1	8157150
B610N58	—	N58	.0420	.039	1/2	2.1/2	4	1	8157151
B610N57	—	N57	.0430	.039	1/2	2.1/2	4	1	8157152
B610N56	—	N56	.0465	.045	1/2	2.1/2	4	1	8157153
B6103/64	3/64	—	.0469	.045	1/2	2.1/2	4	1	8157154
B610N55	—	N55	.0520	.051	1/2	2.1/2	4	1	8157155
B610N54	—	N54	.0550	.051	1/2	2.1/2	4	1	8157156
B610N53	—	N53	.0595	.059	1/2	2.1/2	4	1	8157157
B6101/16	1/16	—	.0625	.059	1/2	2.1/2	4	1	8157158
B610N52	—	N52	.0635	.059	1/2	2.1/2	4	1	8157159
B610N51	—	N51	.0670	.066	3/4	3"	4	1	8157160
B610N50	—	N50	.0700	.066	3/4	3"	4	1	8157161
B610N49	—	N49	.0730	.066	3/4	3"	4	1	8157162
B610N48	—	N48	.0760	.072	3/4	3"	4	1	8157163
B6105/64	5/64	—	.0781	.072	3/4	3"	4	1	8157164
B610N47	—	N47	.0785	.072	3/4	3"	4	1	8157165
B610N46	—	N46	.0810	.077	3/4	3"	4	1	8157166
B610N45	—	N45	.0820	.077	3/4	3"	4	1	8157167
B610N44	—	N44	.0860	.081	3/4	3"	4	1	8157168
B610N43	—	N43	.0890	.081	3/4	3"	4	1	8157169
B610N42	—	N42	.0935	.088	3/4	3"	4	1	8157170
B6103/32	3/32	—	.0938	.088	3/4	3"	4	1	8157171

Product	DC	DC	DC	DCON MS	LCF	OAL	NOF	Pack Qty	MID
	(inch)	(Wire gauge size)	(inch)	(inch)	(inch)	(inch)			
B610N41	—	N41	.0960	.093	7/8	3.1/2	4	1	8157172
B610N40	—	N40	.0980	.093	7/8	3.1/2	4	1	8157173
B610N39	—	N39	.0995	.093	7/8	3.1/2	4	1	8157174
B610N38	—	N38	.1015	.095	7/8	3.1/2	4	1	8157175
B610N37	—	N37	.1040	.095	7/8	3.1/2	4	1	8157176
B610N36	—	N36	.1065	.103	7/8	3.1/2	4	1	8157177
B6107/64	7/64	—	.1094	.103	7/8	3.1/2	4	1	8157178
B610N35	—	N35	.1100	.103	7/8	3.1/2	4	1	8157179
B610N34	—	N34	.1110	.105	7/8	3.1/2	4	1	8157180
B610N33	—	N33	.1130	.105	7/8	3.1/2	4	1	8157181
B610N32	—	N32	.1160	.112	7/8	3.1/2	4	1	8157182
B610N31	—	N31	.1200	.112	7/8	3.1/2	4	1	8157183
B610.1230	—	—	.1230	.112	7/8	3.1/2	4	1	8157184
B610.1240	—	—	.1240	.119	7/8	3.1/2	4	1	8157185
B610.1247	—	—	.1247	.119	7/8	3.1/2	4	1	8157186
B6101/8	1/8	—	.1250	.119	7/8	3.1/2	4	1	8157187
B610.1260	—	—	.1260	.119	7/8	3.1/2	4	1	8157188
B610N30	—	N30	.1285	.119	7/8	3.1/2	4	1	8157189
B610N29	—	N29	.1360	.128	1"	4"	4	1	8157190
B610N28	—	N28	.1400	.135	1"	4"	4	1	8157191
B6109/64	9/64	—	.1410	.135	1"	4"	4	1	8157192
B610N27	—	N27	.1440	.135	1"	4"	4	1	8157193
B610N26	—	N26	.1470	.143	1"	4"	4	1	8157194



Product	DC	DC	DC	DCON MS	LCF	OAL	NOF	Pack Qty	MID
	(inch)	(Wire gauge size)	(inch)	(inch)	(inch)	(inch)			
B610N25	—	N25	.1495	.143	1"	4"	4	1	8157195
B610N24	—	N24	.1520	.146	1"	4"	4	1	8157196
B610N23	—	N23	.1540	.146	1"	4"	4	1	8157197
B6105/32	5/32	—	.1562	.151	1"	4"	6	1	8157198
B610N22	—	N22	.1570	.151	1"	4"	6	1	8157199
B610N21	—	N21	.1590	.153	1.1/8	4.1/2	6	1	8157200
B610N20	—	N20	.1610	.153	1.1/8	4.1/2	6	1	8157201
B610N19	—	N19	.1660	.160	1.1/8	4.1/2	6	1	8157202
B610N18	—	N18	.1695	.160	1.1/8	4.1/2	6	1	8157203
B61011/64	11/64	—	.1719	.165	1.1/8	4.1/2	6	1	8157204
B610N17	—	N17	.1730	.165	1.1/8	4.1/2	6	1	8157205
B610N16	—	N16	.1770	.170	1.1/8	4.1/2	6	1	8157206
B610N15	—	N15	.1800	.175	1.1/8	4.1/2	6	1	8157207
B610N14	—	N14	.1820	.175	1.1/8	4.1/2	6	1	8157208
B610N13	—	N13	.1850	.180	1.1/8	4.1/2	6	1	8157209
B610.1855	—	—	.1855	.180	1.1/8	4.1/2	6	1	8157210
B610.1865	—	—	.1865	.180	1.1/8	4.1/2	6	1	8157211
B610.1870	—	—	.1870	.180	1.1/8	4.1/2	6	1	8157212
B6103/16	3/16	—	.1875	.180	1.1/8	4.1/2	6	1	8157213
B610.1885	—	—	.1885	.180	1.1/8	4.1/2	6	1	8157214
B610N12	—	N12	.1890	.180	1.1/8	4.1/2	6	1	8157215
B610N11	—	N11	.1910	.186	1.1/4	5"	6	1	8157216
B610N10	—	N10	.1935	.186	1.1/4	5"	6	1	8157217
B610N9	—	N9	.1960	.190	1.1/4	5"	6	1	8157218
B610N8	—	N8	.1990	.190	1.1/4	5"	6	1	8157219
B610N7	—	N7	.2010	.195	1.1/4	5"	6	1	8157220
B61013/64	13/64	—	.2031	.195	1.1/4	5"	6	1	8157221
B610N6	—	N6	.2040	.195	1.1/4	5"	6	1	8157222
B610N5	—	N5	.2055	.202	1.1/4	5"	6	1	8157223
B610N4	—	N4	.2090	.202	1.1/4	5"	6	1	8157224
B610N3	—	N3	.2130	.207	1.1/4	5"	6	1	8157225
B6107/32	7/32	—	.2188	.207	1.1/4	5"	6	1	8157226
B610N2	—	N2	.2210	.217	1.1/2	6"	6	1	8157227
B610N1	—	N1	.2280	.217	1.1/2	6"	6	1	8157228
B610A	—	—	.2340	.227	1.1/2	6"	6	1	8157229
B61015/64	15/64	—	.2344	.227	1.1/2	6"	6	1	8157230
B610B	—	—	.2380	.233	1.1/2	6"	6	1	8157231
B610C	—	—	.2420	.233	1.1/2	6"	6	1	8157232
B610D	—	—	.2460	.233	1.1/2	6"	6	1	8157233
B610.2480	—	—	.2480	.233	1.1/2	6"	6	1	8157234
B610.2490	—	—	.2490	.240	1.1/2	6"	6	1	8157235
B610.2495	—	—	.2495	.240	1.1/2	6"	6	1	8157236
B6101/4	1/4	—	.2500	.240	1.1/2	6"	6	1	8157237
B610.2510	—	—	.2510	.240	1.1/2	6"	6	1	8157238
B610F	—	—	.2570	.248	1.1/2	6"	6	1	8157239
B610G	—	—	.2610	.248	1.1/2	6"	6	1	8157240
B61017/64	17/64	—	.2656	.248	1.1/2	6"	6	1	8157241
B610H	—	—	.2660	.248	1.1/2	6"	6	1	8157242
B610LETTERI	—	—	.2720	.248	1.1/2	6"	6	1	8157243
B610J	—	—	.2770	.248	1.1/2	6"	6	1	8157244
B610K	—	—	.2810	.248	1.1/2	6"	6	1	8157245
B6109/32	9/32	—	.2812	.248	1.1/2	6"	6	1	8157246
B610L	—	—	.2900	.279	1.1/2	6"	6	1	8157247
B610M	—	—	.2950	.279	1.1/2	6"	6	1	8157248
B61019/64	19/64	—	.2969	.279	1.1/2	6"	6	1	8157249
B610N	—	—	.3020	.279	1.1/2	6"	6	1	8157250
B610.3105	—	—	.3105	.279	1.1/2	6"	6	1	8157251

Product	DC	DC	DC	DCON MS	LCF	OAL	NOF	Pack Qty	MID
	(inch)	(Wire gauge size)	(inch)	(inch)	(inch)	(inch)			
B610.3115	—	—	.3115	.279	1.1/2	6"	6	1	8157252
B610.3120	—	—	.3120	.279	1.1/2	6"	6	1	8157253
B6105/16	5/16	—	.3125	.279	1.1/2	6"	6	1	8157254
B610.3135	—	—	.3135	.279	1.1/2	6"	6	1	8157255
B6100	—	—	.3160	.279	1.1/2	6"	6	1	8157256
B610P	—	—	.3230	.279	1.1/2	6"	6	1	8157257
B61021/64	21/64	—	.3281	.279	1.1/2	6"	6	1	8157258
B610Q	—	—	.3320	.279	1.1/2	6"	6	1	8157259
B610R	—	—	.3390	.279	1.1/2	6"	6	1	8157260
B61011/32	11/32	—	.3438	.279	1.1/2	6"	6	1	8157261
B610S	—	—	.3480	.310	1.3/4	7"	6	1	8157262
B610T	—	—	.3580	.310	1.3/4	7"	6	1	8157263
B61023/64	23/64	—	.3594	.310	1.3/4	7"	6	1	8157264
B610U	—	—	.3680	.310	1.3/4	7"	6	1	8157265
B610.3730	—	—	.3730	.310	1.3/4	7"	6	1	8157266
B610.3740	—	—	.3740	.310	1.3/4	7"	6	1	8157267
B610.3745	—	—	.3745	.310	1.3/4	7"	6	1	8157268
B6103/8	3/8	—	.3750	.310	1.3/4	7"	6	1	8157269
B610.3760	—	—	.3760	.310	1.3/4	7"	6	1	8157270
B610V	—	—	.3770	.310	1.3/4	7"	6	1	8157271
B610W	—	—	.3860	.310	1.3/4	7"	6	1	8157272
B61025/64	25/64	—	.3910	.310	1.3/4	7"	6	1	8157273
B610X	—	—	.3970	.310	1.3/4	7"	6	1	8157274
B610Y	—	—	.4040	.310	1.3/4	7"	6	1	8157275
B61013/32	13/32	—	.4062	.310	1.3/4	7"	6	1	8157276
B610Z	—	—	.4130	.373	1.3/4	7"	6	1	8157277
B61027/64	27/64	—	.4219	.373	1.3/4	7"	6	1	8157278
B610.4355	—	—	.4355	.373	1.3/4	7"	6	1	8157279
B610.4365	—	—	.4365	.373	1.3/4	7"	6	1	8157280
B610.4370	—	—	.4370	.373	1.3/4	7"	6	1	8157281
B6107/16	7/16	—	.4375	.373	1.3/4	7"	6	1	8157282
B610.4385	—	—	.4385	.373	1.3/4	7"	6	1	8157283
B61029/64	29/64	—	.4531	.373	1.3/4	7"	6	1	8157284
B61015/32	15/32	—	.4688	.373	1.3/4	7"	6	1	8157285
B61031/64	31/64	—	.4844	.435	2"	8"	6	1	8157286
B610.4980	—	—	.4980	.435	2"	8"	6	1	8157287
B610.4990	—	—	.4990	.435	2"	8"	6	1	8157288
B610.4995	—	—	.4995	.435	2"	8"	6	1	8157289
B6101/2	1/2	—	.5000	.435	2"	8"	6	1	8157290
B610.5010	—	—	.5010	.435	2"	8"	6	1	8157291
B61033/64	33/64	—	.5156	.435	2"	8"	6	1	8157292
B61017/32	17/32	—	.5312	.435	2"	8"	6	1	8157293
B61035/64	35/64	—	.5469	.435	2"	8"	8	1	8157294
B6109/16	9/16	—	.5625	.435	2"	8"	8	1	8157295
B61037/64	37/64	—	.5781	.435	2"	8"	8	1	8157296
B61019/32	19/32	—	.5938	.435	2"	8"	8	1	8157297
B61039/64	39/64	—	.6094	.562	2.1/4	9"	8	1	8157298
B6105/8	5/8	—	.6250	.562	2.1/4	9"	8	1	8157299
B61041/64	41/64	—	.6410	.562	2.1/4	9"	8	1	8157300
B61021/32	21/32	—	.6562	.562	2.1/4	9"	8	1	8157301
B61043/64	43/64	—	.6719	.562	2.1/4	9"	8	1	8157302
B61011/16	11/16	—	.6875	.562	2.1/4	9"	8	1	8157303
B61045/64	45/64	—	.7031	.562	2.1/4	9"	8	1	8157304
B61023/32	23/32	—	.7188	.562	2.1/4	9"	8	1	8157305
B61047/64	47/64	—	.7344	.625	2.1/2	9.1/2	8	1	8157306
B6103/4	3/4	—	.7500	.625	2.1/2	9.1/2	8	1	8157307
B61049/64	49/64	—	.7656	.625	2.1/2	9.1/2	8	1	8157308



Product	DC	DC	DC	DCON MS	LCF	OAL	NOF	Pack Qty	MID
	(inch)	(Wire gauge size)	(inch)	(inch)	(inch)	(inch)			
B61025/32	25/32	—	.7812	.625	2.1/2	9.1/2	8	1	8157309
B61051/64	51/64	—	.7969	.625	2.1/2	9.1/2	8	1	8157310
B61013/16	13/16	—	.8125	.625	2.1/2	9.1/2	8	1	8157311
B61053/64	53/64	—	.8281	.625	2.1/2	9.1/2	8	1	8157312
B61027/32	27/32	—	.8438	.625	2.1/2	9.1/2	8	1	8157313
B61055/64	55/64	—	.8594	.750	2.5/8	10"	8	1	8157314
B6107/8	7/8	—	.8750	.750	2.5/8	10"	8	1	8157315
B61057/64	57/64	—	.8910	.750	2.5/8	10"	8	1	8157316
B61029/32	29/32	—	.9062	.750	2.5/8	10"	8	1	8157317
B61059/64	59/64	—	.9219	.750	2.5/8	10"	8	1	8157318
B61015/16	15/16	—	.9375	.750	2.5/8	10"	8	1	8157319

Product	DC	DC	DC	DCON MS	LCF	OAL	NOF	Pack Qty	MID
	(inch)	(Wire gauge size)	(inch)	(inch)	(inch)	(inch)			
B61061/64	61/64	—	.9531	.750	2.5/8	10"	8	1	8157320
B61031/32	31/32	—	.9688	.750	2.5/8	10"	8	1	8157321
B61063/64	63/64	—	.9844	.875	2.3/4	10.1/2	8	1	8157322
B6101	1"	—	1.0000	.875	2.3/4	10.1/2	8	1	8157323
B6101.1/16	1.1/16	—	1.0625	.875	2.3/4	10.1/2	8	1	8157324
B6101.1/8	1.1/8	—	1.1250	.875	2.7/8	11"	8	1	8157325
B6101.3/16	1.3/16	—	1.1875	1.000	2.7/8	11"	8	1	8157326
B6101.1/4	1.1/4	—	1.2500	1.000	3"	11.1/2	8	1	8157327
B6101.3/8	1.3/8	—	1.3750	1.000	3.1/4	12"	8	1	8157328
B6101.1/2	1.1/2	—	1.5000	1.250	3.1/2	12.1/2	8	1	8157329

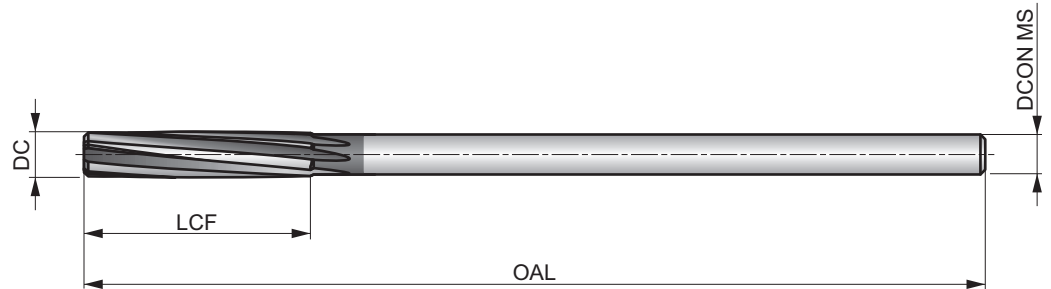


B620



HSS Straight Shank Slow Spiral Flute Chucking Reamer, Bright Finish

Versatile general purpose chucking reamers have shorter and deeper straight flutes than hand reamers and are designed for efficient machine reaming of most materials. A huge size range available including fractional, wire gauge, letter, and including incremental decimal sizes. Produced per ANSI B94.2-1983 (R1988).



HSS	Bright	ANSI
R		

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 382.

P1.1 ■ 69 C	P1.2 ■ 79 C	P1.3 ■ 82 C	P2.1 ■ 59 C	P2.2 ■ 52 C	P2.3 ▣ 46 B	P3.1 ■ 43 B	P3.2 ▣ 36 B	P3.3 ▣ 30 B	P4.1 ■ 26 B	P4.2 ▣ 23 B	P4.3 ▣ 16 A	M1.1 ▣ 36 C	M1.2 ▣ 33 B
M2.1 ▣ 30 B	M2.2 ▣ 26 B	K1.1 ■ 52 E	K1.2 ▣ 39 D	K1.3 ▣ 30 D	K2.1 ■ 52 C	K2.2 ▣ 43 C	K2.3 ▣ 33 C	K3.1 ▣ 46 C	K3.2 ▣ 36 C	N1.1 ▣ 79 F	N1.2 ■ 59 F	N1.3 ▣ 36 F	N2.1 ■ 89 E
N2.2 ▣ 79 E	N2.3 ▣ 52 E	N3.1 ■ 154 D	N3.2 ■ 92 E	N3.3 ▣ 46 D									

Product	DC	DC	D CON MS	LCF	OAL	NOF	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)	(inch)			
B6201/16	1/16	.0625	.059	1/2	2.1/2	4	1	8157330
B6205/64	5/64	.0781	.072	3/4	3"	4	1	8157331
B6203/32	3/32	.0938	.088	3/4	3"	4	1	8157332
B6207/64	7/64	.1094	.103	7/8	3.1/2	4	1	8157333
B6201/8	1/8	.1250	.119	7/8	3.1/2	4	1	8157334
B6205/32	5/32	.1562	.151	1"	4"	6	1	8157335
B62011/64	11/64	.1719	.165	1.1/8	4.1/2	6	1	8157336
B6203/16	3/16	.1875	.180	1.1/8	4.1/2	6	1	8157337
B62013/64	13/64	.2031	.195	1.1/4	5"	6	1	8157338
B6207/32	7/32	.2188	.207	1.1/4	5"	6	1	8157339
B6201/4	1/4	.2500	.240	1.1/2	6"	6	1	8157340
B62017/64	17/64	.2656	.248	1.1/2	6"	6	1	8157341
B6209/32	9/32	.2812	.248	1.1/2	6"	6	1	8157342
B6205/16	5/16	.3125	.279	1.1/2	6"	6	1	8157343

Product	DC	DC	D CON MS	LCF	OAL	NOF	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)	(inch)			
B62011/32	11/32	.3438	.279	1.1/2	6"	6	1	8157344
B6203/8	3/8	.3750	.310	1.3/4	7"	6	1	8157345
B62025/64	25/64	.3910	.310	1.3/4	7"	6	1	8157346
B62013/32	13/32	.4062	.310	1.3/4	7"	6	1	8157347
B6207/16	7/16	.4375	.373	1.3/4	7"	6	1	8157348
B62031/64	31/64	.4844	.435	2"	8"	6	1	8157349
B6201/2	1/2	.5000	.435	2"	8"	6	1	8157350
B62017/32	17/32	.5312	.435	2"	8"	6	1	8157351
B6209/16	9/16	.5625	.435	2"	8"	8	1	8157352
B6205/8	5/8	.6250	.562	2.1/4	9"	8	1	8157353
B62011/16	11/16	.6875	.562	2.1/4	9"	8	1	8157354
B6203/4	3/4	.7500	.625	2.1/2	9.1/2	8	1	8157355
B6207/8	7/8	.8750	.750	2.5/8	10"	8	1	8157356
B6201	1"	1.0000	.875	2.3/4	10.1/2	8	1	8157357

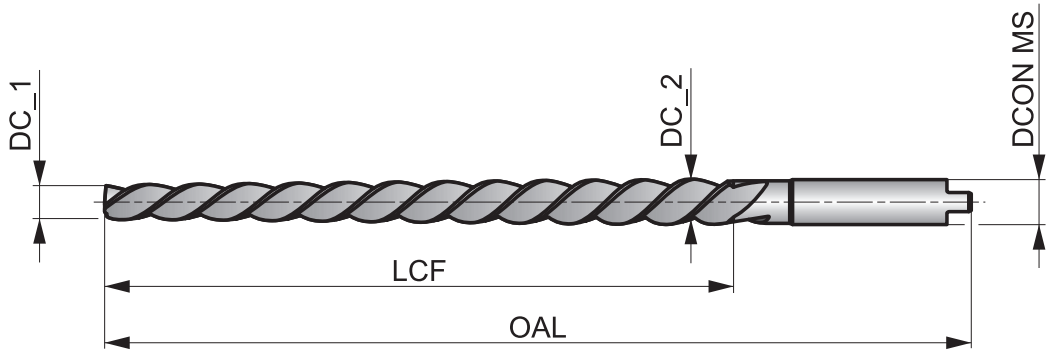


B953



HSS-E Straight Shank Taper Pin Hand Reamer 1:50 Taper, Bright Finish

With a high spiral, left-hand helix and right-hand cutting. The taper on the reamer is designed to finish tapered holes to take standard 1 to 50 ratio metric taper pins, while the taper point has a reduced diameter to improve performance. Suitable for reaming in many materials.



HSS-E	Bright	DIN 2179
R	1:50	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 382.

P1.1 ■ 33 B	P1.2 ■ 39 B	P1.3 ■ 43 B	P2.1 ■ 30 B	P2.2 ■ 26 B	P2.3 ▧ 20 A	P3.1 ■ 23 A	P3.2 ▧ 20 A	P3.3 ▧ 10 A	P4.1 ■ 13 A	P4.2 ▧ 10 A	P4.3 ▧ 7 A	M1.1 ▧ 136 C	M1.2 ▧ 33 B
M2.1 ▧ 30 B	M2.2 ▧ 26 B	K1.1 ■ 33 C	K1.2 ■ 20 B	K1.3 ▧ 13 B	K2.1 ■ 26 A	K2.2 ■ 20 A	K2.3 ▧ 13 A	K3.1 ■ 23 A	K3.2 ▧ 13 A	N1.1 ▧ 46 D	N1.2 ■ 39 D	N1.3 ■ 30 D	N2.1 ■ 52 C
N2.2 ■ 46 C	N2.3 ▧ 33 C	N3.1 ■ 72 B	N3.2 ■ 46 C	N3.3 ▧ 20 B	N4.1 ▧ 72 B								

DCON MS tolerance h9.

Product	nom d	DC_1	DC_2	OAL	LCF	NOF	DCON MS	Pack Qty	MID
		(mm)	(mm)	(mm)	(mm)		(mm)		
B9532.0	2.0	1.90	2.86	86.0	48.0	3	3.15	1	5986686
B9532.5	2.5	2.40	3.36	86.0	48.0	3	3.15	1	5986718
B9533.0	3.0	2.90	4.06	100.0	58.0	3	4.00	1	5986762
B9534.0	4.0	3.90	5.26	112.0	68.0	3	5.00	1	5986802
B9535.0	5.0	4.90	6.36	122.0	73.0	3	6.30	1	5986843
B9536.0	6.0	5.90	8.00	160.0	105.0	3	8.00	1	5986849
B9536.5	6.5	6.40	8.78	188.0	119.0	3	8.50	1	5986853
B9538.0	8.0	7.90	10.80	207.0	145.0	3	10.00	1	5986856
B95310.0	10.0	9.90	13.40	245.0	175.0	3	12.50	1	5986992
B95312.0	12.0	11.80	16.00	290.0	210.0	3	16.00	1	5986998

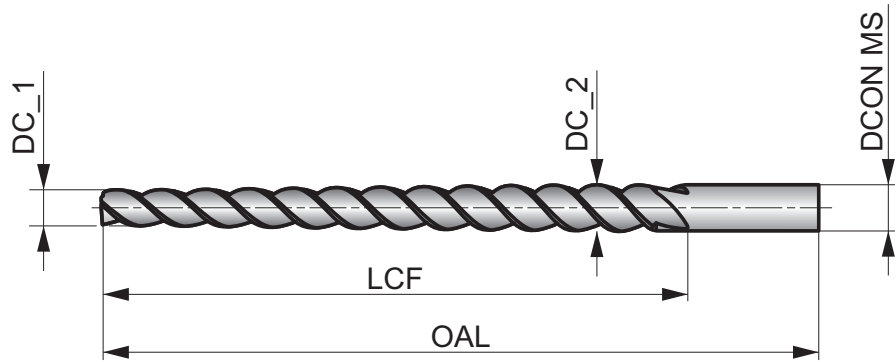


B630



HSS Straight Shank Machine Reamer, Taper Pin Type, Bright Finish

Slow right hand spiral allows these reamers to perform smoother chatter-free operation than straight flute reamers. Recommended for more difficult to ream materials, produces better surface finishes, great for interruptions and can aid in chip evacuation from blind holes. Produced per ANSI B94.2-1983 (R1988).



HSS	Bright	ANSI
R		1:48

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 382.

P1.1 ■ 33 B	P1.2 ■ 39 B	P1.3 ■ 43 B	P2.1 ■ 30 B	P2.2 ■ 26 B	P2.3 ▣ 20 A	P3.1 ■ 23 A	P3.2 ▣ 20 A	P3.3 ▣ 10 A	P4.1 ■ 13 A	P4.2 ▣ 10 A	P4.3 ▣ 7 A	M1.1 ▣ 36 C	M1.2 ▣ 33 B
M2.1 ▣ 30 B	M2.2 ▣ 26 B	K1.1 ■ 33 C	K1.2 ■ 20 B	K1.3 ▣ 13 B	K2.1 ■ 26 A	K2.2 ■ 20 A	K2.3 ▣ 13 A	K3.1 ■ 23 A	K3.2 ▣ 13 A	N1.1 ▣ 46 D	N1.2 ■ 39 D	N1.3 ■ 30 D	N2.1 ■ 52 C
N2.2 ■ 46 C	N2.3 ▣ 33 C	N3.1 ■ 72 B	N3.2 ■ 46 C	N3.3 ▣ 20 B	N4.1 ▣ 72 B								

Product	nom d	DC_1	DC_2	DCON MS	LCF	OAL	NOF	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)			
B6307/0	7/0	.0497	.0666	5/64	13/16	1.13/16	2	1	8157380
B6306/0	6/0	.0611	.0810	3/32	15/16	1.15/16	2	1	8157381
B6305/0	5/0	.0719	.0966	7/64	1.3/16	2.3/16	2	1	8157382
B6304/0	4/0	.0869	.1142	1/8	1.5/16	2.5/16	2	1	8157383
B6303/0	3/0	.1029	.1300	9/64	1.5/16	5.5/16	2	1	8157384
B6302/0	2/0	.1137	.1462	5/32	1.9/16	2.9/16	3	1	8157385
B630N1	1	.1447	.1798	3/16	1.11/16	2.15/16	3	1	8157386
B630N2	2	.1600	.2010	13/64	1.15/16	3.3/16	3	1	8157387

Product	nom d	DC_1	DC_2	DCON MS	LCF	OAL	NOF	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)			
B630N3	3	.1813	.2294	15/64	2.5/16	3.11/16	3	1	8157388
B630N4	4	.2071	.2600	17/64	2.9/16	4.1/16	3	1	8157389
B630N5	5	.2410	.2994	5/16	2.13/16	4.5/16	3	1	8157390
B630N6	6	.2773	.3540	23/64	3.11/16	5.7/16	3	1	8157391
B630N7	7	.3297	.4220	13/32	4.7/16	6.5/16	3	1	8157392
B630N8	8	.3971	.5050	7/16	5.3/16	7.3/16	3	1	8157393
B630N9	9	.4800	.6066	9/16	6.1/16	8.5/16	4	1	8157394
B630N10	10	.5799	.7216	5/8	6.13/16	9.5/16	4	1	8157395

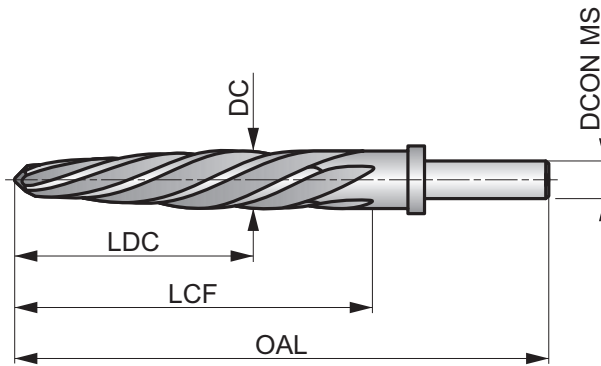


B122



HSS Reduced Shank Hand Car Reamer, Steam and Bronze Tempered Surface Finish

Designed to re-align holes in thin walled sheets of steel, prior to bolting or riveting them together. It is designed to be used by hand. The small Pilot diameter makes it easy to locate and align the tool into pre-drilled holes. Suitable in many materials.



HSS	ST Bronze	ANSI
R		

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 382.

P1.1 ■ 49 C	P1.2 ■ 52 C	P1.3 ■ 56 C	P2.1 ■ 43 C	P2.2 ■ 36 C	P3.1 ■ 23 B	M1.1 ■ 36 C	M1.2 ■ 33 B	M2.1 ■ 30 B	N1.1 ■ 75 F	N1.2 ■ 56 F	N2.1 ■ 75 E	N2.2 ■ 69 E	N3.1 ■ 112 D
N3.2 ■ 66 E	N4.1 ■ 72 B	N4.2 ■ 69 B											

Product	DC (inch)	DC (inch)	OAL (inch)	LCF (inch)	NOF	DCON MS (inch)	Pack Qty	MID
B1223/8	3/8	.3750	4.5/8	2.1/2	4	3/8	1	5986460
B1221/2	1/2	.5000	5.7/8	3.3/4	5	1/2	1	5986446
B1229/16	9/16	.5625	5.7/8	3.3/4	5	1/2	1	5986471
B1225/8	5/8	.6250	6.3/8	4.1/4	5	1/2	1	5986463
B12211/16	11/16	.6875	6.3/8	4.1/4	5	1/2	1	5986449
B1223/4	3/4	.7500	6.7/8	4.1/2	5	1/2	1	5986457
B12213/16	13/16	.8125	6.7/8	4.1/2	5	1/2	1	5986451
B1227/8	7/8	.8750	6.7/8	4.1/2	5	1/2	1	5986467
B12215/16	15/16	.9375	6.7/8	4.1/2	5	1/2	1	5986454
B1221	1"	1.0000	6.7/8	4.1/2	5	1/2	1	5986605

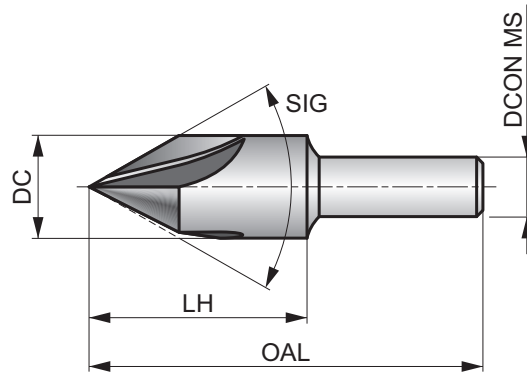


B690



HSS Straight Shank Center Reamer, 60°, 82°, 90° or 100° Countersink Angles

Primarily used for reaming center-drilled holes, lathe centers in shafts and countersink angles for screw heads and rivets. Available in 60°, 82°, 90° or 100° countersink angles. The uneven number of flutes promotes smooth finishes by eliminating chatter while improving accuracy.



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 382.

P1.1 ■ 69 D	P1.2 ■ 79 D	P1.3 ■ 82 D	P2.1 ■ 59 D	P2.2 ■ 52 C	P2.3 ■ 46 A	P3.1 ■ 43 B	P3.2 ■ 36 B	M1.1 ■ 126 B	M1.2 ■ 120 B	M2.1 ■ 23 B	K1.1 ■ 59 D	K1.2 ■ 43 C	K2.1 ■ 62 A
K2.2 ■ 49 A	K3.1 ■ 52 A	K3.2 ■ 39 A	N1.1 ■ 112 D	N1.2 ■ 82 D	N1.3 ■ 52 C	N2.1 ■ 52 C	N2.2 ■ 46 C	N3.1 ■ 56 C	N3.2 ■ 30 C	N3.3 ■ 16 B	N4.1 ■ 115 D	N4.2 ■ 98 D	

Product	DC (inch)	DC (inch)	SIG (°)	DCON MS (inch)	OAL (inch)	NOF	Pack Qty	MID
B6901/4X60	1/4	.2500	60	3/16	1.1/2	3	1	8157413
B6901/4X82	1/4	.2500	82	3/16	1.1/2	3	1	8157414
B6901/4X90	1/4	.2500	90	3/16	1.1/2	3	1	8157415
B6901/4X100	1/4	.2500	100	3/16	1.1/2	3	1	8157416
B6903/8X60	3/8	.3750	60	1/4	1.3/4	3	1	8157417
B6903/8X82	3/8	.3750	82	1/4	1.3/4	3	1	8157418
B6903/8X90	3/8	.3750	90	1/4	1.3/4	3	1	8157419
B6903/8X100	3/8	.3750	100	1/4	1.3/4	3	1	8157420
B6901/2X60	1/2	.5000	60	3/8	2"	3	1	8157421
B6901/2X82	1/2	.5000	82	3/8	2"	3	1	8157422
B6901/2X90	1/2	.5000	90	3/8	2"	3	1	8157423
B6901/2X100	1/2	.5000	100	3/8	2"	3	1	8157424

Product	DC (inch)	DC (inch)	SIG (°)	DCON MS (inch)	OAL (inch)	NOF	Pack Qty	MID
B6905/8X60	5/8	.6250	60	3/8	2.1/4	3	1	8157425
B6905/8X82	5/8	.6250	82	3/8	2.1/4	3	1	8157426
B6905/8X90	5/8	.6250	90	3/8	2.1/4	3	1	8157427
B6905/8X100	5/8	.6250	100	3/8	2.1/4	3	1	8157428
B6903/4X60	3/4	.7500	60	1/2	2.5/8	3	1	8157429
B6903/4X82	3/4	.7500	82	1/2	2.5/8	3	1	8157430
B6903/4X90	3/4	.7500	90	1/2	2.5/8	3	1	8157431
B6903/4X100	3/4	.7500	100	1/2	2.5/8	3	1	8157432
B6901X60	1"	1.0000	60	1/2	3"	3	1	8157433
B6901X82	1"	1.0000	82	1/2	3"	3	1	8157434
B6901X90	1"	1.0000	90	1/2	3"	3	1	8157435
B6901X100	1"	1.0000	100	1/2	3"	3	1	8157436

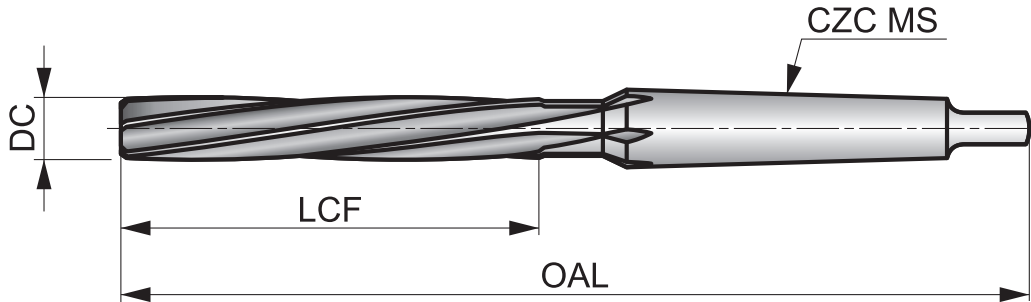


B101



HSS-E Taper Shank Machine Reamer with H7 Accuracy

Taper Shank machine reamer according to BS 328. The precision ground left-hand helix and right-hand cutting action, ensures smooth reaming and improved surface finish and hole size. Suitable for reaming in many materials.



HSS-E	Bright ST	BS 328
R		B
H7		

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 382.

P1.1 ■ 49 C	P1.2 ■ 52 C	P1.3 ■ 56 C	P2.1 ■ 43 C	P2.2 ■ 36 C	P2.3 ■ 33 B	P3.1 ■ 23 B	P3.2 ■ 20 B	P3.3 ■ 16 B	P4.1 ■ 13 B	P4.2 ■ 13 B	P4.3 ■ 10 A	M1.1 ■ 23 B	M1.2 ■ 20 A
K1.1 ■ 46 E	K1.2 ■ 33 D	K1.3 ■ 26 D	K2.1 ■ 39 C	K2.2 ■ 33 C	K2.3 ■ 26 C	K3.1 ■ 36 C	K3.2 ■ 26 C	N1.1 ■ 75 F	N1.2 ■ 56 F	N1.3 ■ 30 F	N2.1 ■ 82 E	N2.2 ■ 59 E	N2.3 ■ 46 E
N3.1 ■ 112 D	N3.2 ■ 66 E	N3.3 ■ 33 D	N4.1 ■ 72 B										

Product	DC (inch)	DC (mm)	OAL (mm)	LCF (mm)	NOF	CZC MS	Pack Qty	MID
B1013.0	—	3.00	112.0	33.0	4	MK 1	1	5986595
B1014.0	—	4.00	117.0	38.0	6	MK 1	1	5986814
B1013/16	3/16	4.76	124.0	44.0	6	MK 1	1	5986601
B1015.0	—	5.00	124.0	44.0	6	MK 1	1	5986673
B1016.0	—	6.00	127.0	47.0	6	MK 1	1	5986699
B1011/4	1/4	6.35	130.0	50.0	6	MK 1	1	5986548
B1015/16	5/16	7.94	138.0	58.0	6	MK 1	1	5986679
B1018.0	—	8.00	138.0	58.0	6	MK 1	1	5986727
B1013/8	3/8	9.52	146.0	66.0	6	MK 1	1	5986607
B10110.0	—	10.00	146.0	66.0	6	MK 1	1	5986621
B10111.0	—	11.00	151.0	71.0	6	MK 1	1	5986630
B1017/16	7/16	11.11	151.0	71.0	6	MK 1	1	5986711
B10112.0	—	12.00	156.0	76.0	6	MK 1	1	5986479
B1011/2	1/2	12.70	156.0	76.0	6	MK 1	1	5986513
B10113.0	—	13.00	156.0	76.0	6	MK 1	1	5986486
B10114.0	—	14.00	161.0	81.0	8	MK 1	1	5986501
B1019/16	9/16	14.29	181.0	81.0	8	MK 2	1	5986744
B10115.0	—	15.00	181.0	81.0	8	MK 2	1	5986509
B1015/8	5/8	15.88	187.0	87.0	8	MK 2	1	5986688
B10116.0	—	16.00	187.0	87.0	8	MK 2	1	5986526
B10116.5	—	16.50	187.0	87.0	8	MK 2	1	5986529
B10117.0	—	17.00	187.0	87.0	8	MK 2	1	5986532

Product	DC (inch)	DC (mm)	OAL (mm)	LCF (mm)	NOF	CZC MS	Pack Qty	MID
B10118.0	—	18.00	193.0	93.0	8	MK 2	1	5986538
B10119.0	—	19.00	193.0	93.0	8	MK 2	1	5986541
B1013/4	3/4	19.05	200.0	100.0	8	MK 2	1	5986604
B10120.0	—	20.00	200.0	100.0	8	MK 2	1	5986556
B10121.0	—	21.00	200.0	100.0	8	MK 2	1	5986560
B10122.0	—	22.00	207.0	107.0	8	MK 2	1	5986564
B1017/8	7/8	22.22	207.0	107.0	8	MK 2	1	5986719
B10123.0	—	23.00	207.0	107.0	8	MK 2	1	5986568
B10124.0	—	24.00	242.0	115.0	8	MK 3	1	5986574
B10125.0	—	25.00	242.0	115.0	10	MK 3	1	5986576
B1011	1"	25.40	242.0	115.0	10	MK 3	1	5986328
B10126.0	—	26.00	242.0	115.0	10	MK 3	1	5986579
B10128.0	—	28.00	251.0	124.0	10	MK 3	1	5986585
B10129.0	—	29.00	251.0	124.0	10	MK 3	1	5986592
B10130.0	—	30.00	251.0	124.0	10	MK 3	1	5986610
B1011.1/4	1.1/4	31.75	260.0	133.0	10	MK 3	1	5986336
B10135.0	—	35.00	302.0	142.0	10	MK 4	1	5986649
B10140.0	—	40.00	312.0	152.0	10	MK 4	1	5986823
B10141.0	—	41.00	312.0	152.0	10	MK 4	1	5986827
B10144.0	—	44.00	323.0	163.0	10	MK 4	1	5986659
B10150.0	—	50.00	334.0	174.0	12	MK 4	1	5986692

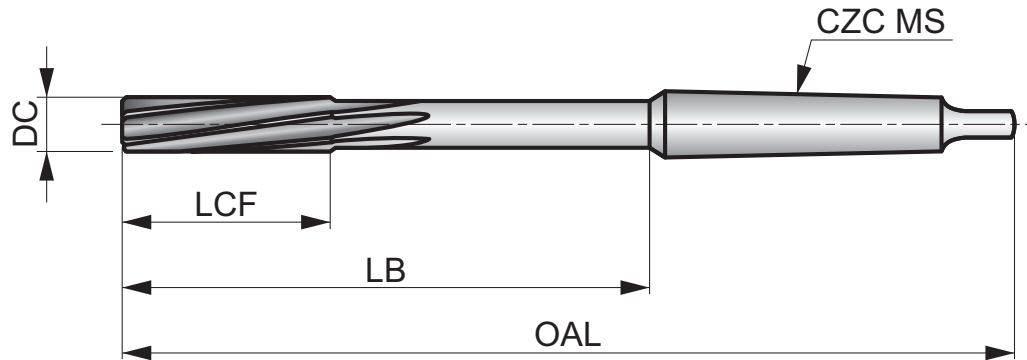


B161



HSS-E Taper Shank Machine Reamer with H7 Accuracy, Bright Finish

The precision ground left-hand helix and right-hand cutting action, ensures smooth reaming and improved surface finish and hole size. Suitable for reaming in many materials.



HSS-E	Bright	DIN 208
R		B
H7		

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 382.

P1.1 ■ 69 C	P1.2 ■ 79 C	P1.3 ■ 82 C	P2.1 ■ 59 C	P2.2 ■ 52 C	P2.3 ■ 46 B	P3.1 ■ 43 B	P3.2 ■ 36 B	P3.3 ■ 30 B	P4.1 ■ 26 B	P4.2 ■ 23 B	P4.3 ■ 16 A	M1.1 ■ 36 C	M1.2 ■ 33 B
M2.1 ■ 30 B	K1.1 ■ 52 E	K1.2 ■ 39 D	K1.3 ■ 30 D	K2.1 ■ 52 C	K2.2 ■ 43 C	K2.3 ■ 33 C	K3.1 ■ 46 C	K3.2 ■ 36 C	N1.1 ■ 79 F	N1.2 ■ 59 F	N1.3 ■ 36 F	N2.1 ■ 89 E	N2.2 ■ 79 E
N2.3 ■ 52 E	N3.1 ■ 154 D	N3.2 ■ 92 E	N3.3 ■ 46 D	N4.1 ■ 98 B									

Product	DC (mm)	OAL (mm)	LCF (mm)	LB (mm)	NOF	CZC MS	Pack Qty	MID
B1613.0	3.00	113.0	15.0	47.50	6	MK 1	1	5986835
B1614.0	4.00	124.0	19.0	58.50	6	MK 1	1	5986866
B1615.0	5.00	133.0	23.0	67.50	6	MK 1	1	5986290
B1616.0	6.00	138.0	26.0	72.50	6	MK 1	1	5986298
B1617.0	7.00	150.0	31.0	84.50	6	MK 1	1	5986302
B1618.0	8.00	156.0	33.0	90.50	6	MK 1	1	5986305
B1619.0	9.00	162.0	36.0	96.50	6	MK 1	1	5986201
B16110.0	10.00	168.0	38.0	102.50	6	MK 1	1	5986759
B16111.0	11.00	175.0	41.0	109.50	6	MK 1	1	5986761
B16112.0	12.00	182.0	44.0	116.50	6	MK 1	1	5986769
B16113.0	13.00	182.0	44.0	116.50	6	MK 1	1	5986773
B16114.0	14.00	189.0	47.0	123.50	8	MK 1	1	5986776
B16115.0	15.00	204.0	50.0	124.00	8	MK 2	1	5986779
B16116.0	16.00	210.0	52.0	130.00	8	MK 2	1	5986782
B16117.0	17.00	214.0	54.0	134.00	8	MK 2	1	5986785
B16118.0	18.00	219.0	56.0	139.00	8	MK 2	1	5986788
B16119.0	19.00	223.0	58.0	143.00	8	MK 2	1	5986792
B16120.0	20.00	228.0	60.0	148.00	8	MK 2	1	5986796

Product	DC (mm)	OAL (mm)	LCF (mm)	LB (mm)	NOF	CZC MS	Pack Qty	MID
B16121.0	21.00	232.0	62.0	152.00	8	MK 2	1	5986800
B16122.0	22.00	237.0	64.0	157.00	8	MK 2	1	5986808
B16123.0	23.00	241.0	66.0	161.00	8	MK 2	1	5986811
B16124.0	24.00	268.0	68.0	169.00	8	MK 3	1	5986815
B16125.0	25.00	268.0	68.0	169.00	8	MK 3	1	5986819
B16126.0	26.00	273.0	70.0	174.00	8	MK 3	1	5986822
B16127.0	27.00	277.0	71.0	178.00	10	MK 3	1	5986826
B16128.0	28.00	277.0	71.0	178.00	10	MK 3	1	5986830
B16130.0	30.00	281.0	73.0	182.00	10	MK 3	1	5986838
B16132.0	32.00	317.0	77.0	193.00	10	MK 4	1	5986847
B16134.0	34.00	321.0	78.0	197.00	10	MK 4	1	5986854
B16135.0	35.00	321.0	78.0	197.00	10	MK 4	1	5986857
B16138.0	38.00	329.0	81.0	205.00	10	MK 4	1	5986863
B16140.0	40.00	329.0	81.0	205.00	10	MK 4	1	5986869
B16142.0	42.00	333.0	82.0	209.00	12	MK 4	1	5986871
B16145.0	45.00	336.0	83.0	212.00	12	MK 4	1	5986200
B16150.0	50.00	344.0	86.0	220.00	12	MK 4	1	5986295

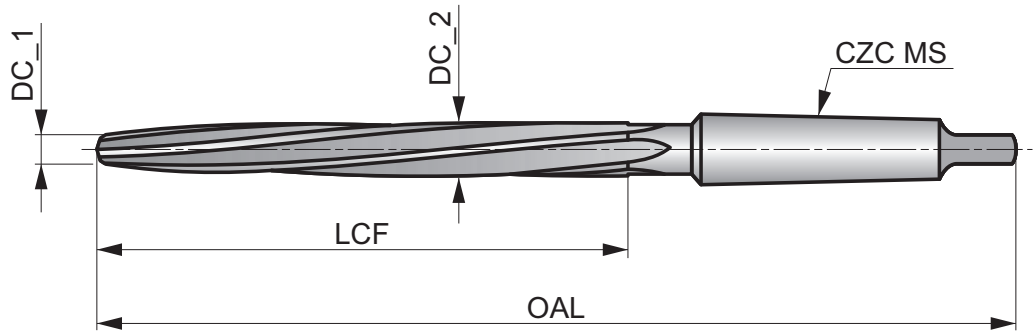


B640



HSS Taper Shank Bridge Reamer, Steam Tempered

Used for re-aligning holes in large fabrications such as I-beams, where two or more workpieces are to be joined by bolting or riveting. The smaller starting end with long taper lead allows the operator to align the mismatched pre-drilled holes by reaming away the mismatch. Produced per ANSI B94.2-1983 (R1988).



HSS	ST	ANSI
R		

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 382.

P1.1 ■ 49 C	P1.2 ■ 52 C	P1.3 ■ 56 C	P2.1 ■ 43 C	P2.2 ■ 36 C	P2.3 ▣ 33 B	P3.1 ■ 23 B	P3.2 ■ 20 B	P3.3 ▣ 16 B	P4.1 ■ 13 B	P4.2 ▣ 13 B	P4.3 ▣ 10 A	K1.1 ■ 46 E	K1.2 ■ 33 D
K1.3 ▣ 26 D	K2.1 ■ 39 C	K2.2 ■ 33 C	K2.3 ▣ 26 C	K3.1 ▣ 36 C	K3.2 ▣ 26 C	N1.1 ▣ 75 F	N1.2 ■ 56 F	N1.3 ■ 30 F	N2.1 ▣ 69 E	N2.2 ■ 59 E	N2.3 ▣ 46 E	N3.1 ■ 112 D	N3.2 ■ 66 E
N3.3 ▣ 33 D	N4.1 ▣ 69 B												

Product	nom d	DC_1 (inch)	DC_2 (inch)	CZC MS	LCF (inch)	OAL (inch)	NOF	Pack Qty	MID
B6407/16	7/16	.2500	.4375	2	4.3/8	8.1/4	5	1	8157358
B6401/2	1/2	.2813	.5000	2	5.1/8	9"	5	1	8157359
B6409/16	9/16	.3438	.5625	2	5.1/8	9"	5	1	8157360
B6405/8	5/8	.3750	.6250	2	6.1/8	10"	5	1	8157361
B64011/16	11/16	.3906	.6875	3	7.1/8	11.3/4	5	1	8157362
B6403/4	3/4	.4375	.7500	3	7.3/8	12"	5	1	8157363
B64013/16	13/16	.5000	.8125	3	7.3/8	12"	5	1	8157364
B6407/8	7/8	.5625	.8750	3	7.3/8	12"	5	1	8157365
B64015/16	15/16	.6250	.9375	3	7.3/8	12"	5	1	8157366
B6401	1"	.6875	1.0000	3	7.3/8	12"	5	1	8157367
B6401.1/16	1.1/16	.7500	1.0625	3	7.3/8	12"	5	1	8157368

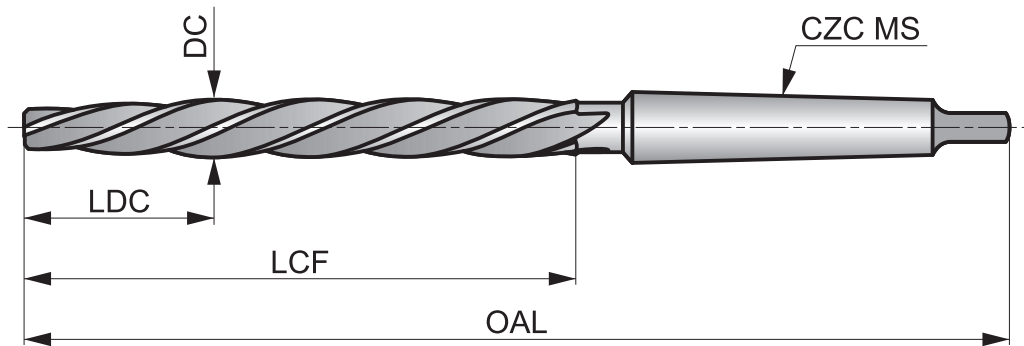


B121



HSS Taper Shank Machine Bridge Reamer

Designed to re-align holes in large fabrications, where two or more workpieces are joined, before bolting or riveting them. The small Pilot diameter from the 1 to 10 ratio taper lead simplifies the need to locate and align the tool in pre-drilled holes. Suitable for reaming in many materials.



HSS	Bright ST	DIN 311
R		k11

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 382.

P1.1 ■ 49 C	P1.2 ■ 52 C	P1.3 ■ 56 C	P2.1 ■ 43 C	P2.2 ■ 36 C	P2.3 ■ 33 B	P3.1 ■ 23 B	P3.2 ■ 20 B	P3.3 ■ 16 B	P4.1 ■ 13 B	P4.2 ■ 13 B	P4.3 ■ 10 A	K1.1 ■ 46 E	K1.2 ■ 33 D
K1.3 ■ 26 D	K2.1 ■ 39 C	K2.2 ■ 33 C	K2.3 ■ 26 C	K3.1 ■ 36 C	K3.2 ■ 26 C	N1.1 ■ 75 F	N1.2 ■ 56 F	N1.3 ■ 30 F	N2.1 ■ 69 E	N2.2 ■ 59 E	N2.3 ■ 46 E	N3.1 ■ 112 D	N3.2 ■ 66 E
N3.3 ■ 33 D	N4.1 ■ 69 B												

With 1:10 starting taper (LDC).

Product	DC (mm)	OAL (mm)	LCF (mm)	LDC (mm)	NOF	CZC MS	Pack Qty	MID
B12112.0	12.00	199.0	105.0	39.00	4	MK 2	1	5986775
B12114.0	14.00	209.0	115.0	42.00	4	MK 2	1	5986781
B12116.0	16.00	229.0	135.0	48.00	4	MK 2	1	5986787
B12117.0	17.00	251.0	135.0	51.00	4	MK 3	1	5986791
B12118.0	18.00	261.0	145.0	58.00	4	MK 3	1	5986794
B12120.0	20.00	271.0	155.0	62.00	4	MK 3	1	5986803
B12121.0	21.00	271.0	155.0	62.00	4	MK 3	1	5986810
B12122.0	22.00	281.0	165.0	66.00	4	MK 3	1	5986442
B12124.0	24.00	296.0	180.0	72.00	4	MK 3	1	5986521
B12125.0	25.00	296.0	180.0	72.00	4	MK 3	1	5986557

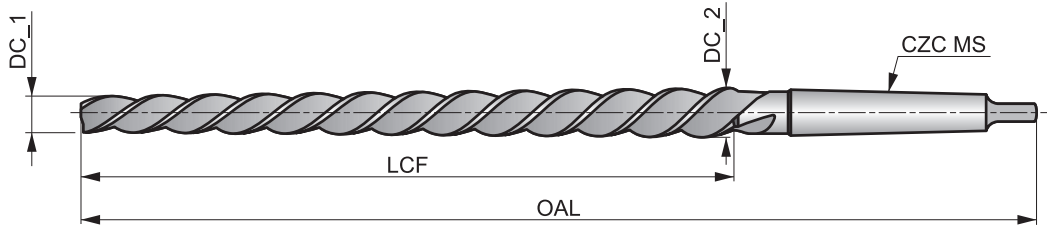


B954



HSS-E Taper Shank Taper Pin Machine Reamer 1:50 Taper

Smooth reaming with improved accuracy and performance is achieved through the specially designed high spiral left-hand helix and right-hand cutting. Designed to finish tapered holes and accepts standard 1 to 50 ratio metric taper pins. Suitable for reaming in many materials.



HSS-E	Bright	DIN 2180
R		1:50

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 382.

P1.1 ■ 33 B	P1.2 ■ 39 B	P1.3 ■ 43 B	P2.1 ■ 30 B	P2.2 ■ 26 B	P2.3 ▧ 20 A	P3.1 ■ 23 A	P3.2 ■ 20 A	P3.3 ▧ 10 A	P4.1 ■ 13 A	P4.2 ▧ 10 A	P4.3 ▧ 7 A	M1.1 ▧ 136 C	M1.2 ▧ 33 B
M2.1 ▧ 30 B	M2.2 ▧ 26 B	K1.1 ■ 33 C	K1.2 ■ 20 B	K1.3 ▧ 13 B	K2.1 ■ 26 A	K2.2 ■ 20 A	K2.3 ▧ 13 A	K3.1 ■ 36 A	K3.2 ▧ 26 A	N1.1 ▧ 46 F	N1.2 ■ 39 F	N1.3 ■ 30 F	N2.1 ■ 52 E
N2.2 ■ 46 E	N2.3 ▧ 33 E	N3.1 ■ 72 D	N3.2 ■ 46 E	N3.3 ▧ 20 D	N4.1 ▧ 72 B								

Product	nom d	DC_1 (mm)	DC_2 (mm)	OAL (mm)	LCF (mm)	NOF	CZC MS	Pack Qty	MID
B9548.0	8.0	7.90	10.80	227.0	145.0	3	MK 1	1	5986715
B95410.0	10.0	9.90	13.40	257.0	175.0	3	MK 1	1	5986859
B95412.0	12.0	11.80	16.00	315.0	210.0	3	MK 2	1	5986690
B95413.0	13.0	12.86	16.74	295.0	194.0	3	MK 2	1	5986694
B95414.0	14.0	13.86	17.74	295.0	194.0	3	MK 2	1	5986697
B95416.0	16.0	15.80	20.40	335.0	230.0	3	MK 2	1	5986701
B95420.0	20.0	19.80	24.80	377.0	250.0	3	MK 3	1	5986704
B95425.0	25.0	24.70	30.70	427.0	300.0	3	MK 3	1	5986707
B95430.0	30.0	29.70	36.10	475.0	320.0	4	MK 4	1	5986710

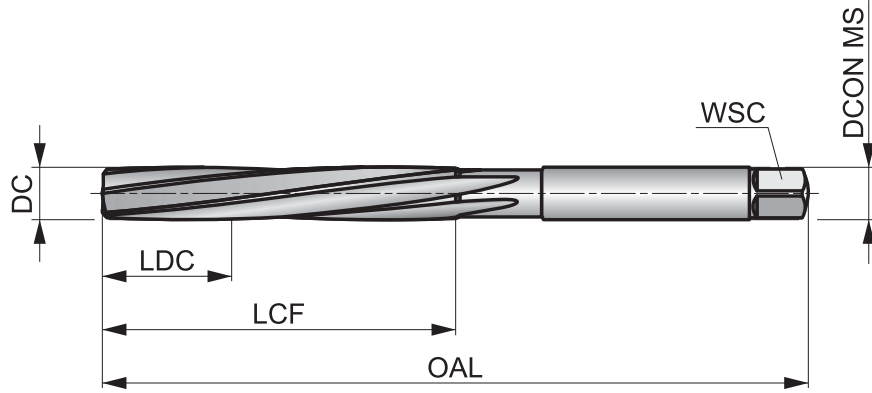


B100



HSS Straight Shank Hand Reamer with H7 Accuracy, Bright and ST Finish

Primarily designed for reaming by hand. It has a precision ground, left-hand helix with right-hand (clockwise) cutting for smooth reaming, creating a more accurate hole size and good surface finish. Suitable for reaming many materials, including steels.



HSS	Bright ST	DIN 206
R		B
H7		

P1.1	P1.2	P1.3	P2.1	P2.2	P2.3	P3.1	P3.2	P3.3	P4.1	P4.2	P4.3	M1.1	M1.2
■	■	■	■	■	■	■	■	■	■	■	■	■	■
M2.1	K1.1	K1.2	K1.3	K2.1	K2.2	K2.3	K3.1	K3.2	N1.1	N1.2	N1.3	N2.1	N2.2
■	■	■	■	■	■	■	■	■	■	■	■	■	■
N2.3	N3.1	N3.2	N3.3	N4.1	N4.2								
■	■	■	■	■	■								

DCON MS tolerance e9.

Product	DC (inch)	DC (mm)	OAL (mm)	LCF (mm)	LDC (mm)	NOF	WSC (mm)	DCON MS (mm)	Pack Qty	MID
B1001.5	—	1.50	41.0	20.0	5.00	3	1.12	1.50	1	5986266
B1002.0	—	2.00	50.0	25.0	6.00	4	1.60	2.00	1	5986320
B1003/32	3/32	2.38	54.0	27.0	7.00	4	1.80	2.38	1	5986312
B1002.5	—	2.50	58.0	29.0	7.00	4	2.10	2.50	1	5986323
B1003.0	—	3.00	62.0	31.0	8.00	6	2.40	3.00	1	5986378
B1001/8	1/8	3.18	66.0	33.0	8.00	6	2.40	3.18	1	5986385
B1003.2	—	3.20	66.0	33.0	8.00	6	2.40	3.20	1	5986218
B1003.5	—	3.50	71.0	35.0	9.00	6	2.70	3.50	1	5986245
B1005/32	5/32	3.97	76.0	38.0	10.00	6	3.00	3.97	1	5986263
B1004.0	—	4.00	76.0	38.0	10.00	6	3.00	4.00	1	5986236
B1004.5	—	4.50	81.0	41.0	10.00	6	3.40	4.50	1	5986239
B1003/16	3/16	4.76	87.0	44.0	11.00	6	3.80	4.76	1	5986277
B1005.0	—	5.00	87.0	44.0	11.00	6	3.80	5.00	1	5986254
B1005.5	—	5.50	93.0	47.0	12.00	6	4.30	5.50	1	5986257
B1007/32	7/32	5.56	93.0	47.0	12.00	6	4.30	5.56	1	5986293
B1006.0	—	6.00	93.0	47.0	12.00	6	4.90	6.00	1	5986274
B1001/4	1/4	6.35	100.0	50.0	13.00	6	4.90	6.35	1	5986381
B1006.5	—	6.50	100.0	50.0	13.00	6	4.90	6.50	1	5986280
B10017/64	17/64	6.75	107.0	54.0	14.00	6	5.50	6.75	1	5986304
B1007.0	—	7.00	107.0	54.0	14.00	6	5.50	7.00	1	5986284
B1009/32	9/32	7.14	107.0	54.0	14.00	6	6.20	7.14	1	5986321
B1007.5	—	7.50	107.0	54.0	14.00	6	6.20	7.50	1	5986286
B1005/16	5/16	7.94	115.0	58.0	15.00	6	6.20	7.94	1	5986260



Product	DC	DC	OAL	LCF	LDC	NOF	WSC	DCON MS	Pack Qty	MID
	(inch)	(mm)	(mm)	(mm)	(mm)		(mm)	(mm)		
B1008.0	–	8.00	115.0	58.0	15.00	6	6.20	8.00	1	5986303
B10021/64	21/64	8.33	115.0	58.0	15.00	6	7.00	8.33	1	5986334
B1008.5	–	8.50	115.0	58.0	15.00	6	7.00	8.50	1	5986307
B10011/32	11/32	8.73	124.0	62.0	16.00	6	7.00	8.73	1	5986243
B1009.0	–	9.00	124.0	62.0	16.00	6	7.00	9.00	1	5986310
B1009.5	–	9.50	124.0	62.0	16.00	6	8.00	9.50	1	5986315
B1003/8	3/8	9.52	124.0	62.0	17.00	6	8.00	9.52	1	5986351
B10010.0	–	10.00	133.0	66.0	17.00	6	8.00	10.00	1	5986388
B10013/32	13/32	10.32	133.0	66.0	17.00	6	8.00	10.32	1	5986268
B10010.5	–	10.50	133.0	66.0	17.00	6	8.00	10.50	1	5986391
B10011.0	–	11.00	142.0	71.0	18.00	6	9.00	11.00	1	5986234
B1007/16	7/16	11.11	142.0	71.0	18.00	6	9.00	11.11	1	5986289
B10011.5	–	11.50	142.0	71.0	18.00	6	9.00	11.50	1	5986237
B10012.0	–	12.00	152.0	76.0	19.00	6	9.00	12.00	1	5986250
B10012.5	–	12.50	152.0	76.0	19.00	6	10.00	12.50	1	5986252
B1001/2	1/2	12.70	152.0	76.0	19.00	6	10.00	12.70	1	5986375
B10013.0	–	13.00	152.0	76.0	19.00	6	10.00	13.00	1	5986255
B10013.5	–	13.50	163.0	81.0	20.00	8	11.00	13.50	1	5986259
B10014.0	–	14.00	163.0	81.0	20.00	8	11.00	14.00	1	5986275
B1009/16	9/16	14.29	163.0	81.0	20.00	8	11.00	14.29	1	5986318
B10014.5	–	14.50	163.0	81.0	20.00	8	11.00	14.50	1	5986278
B10015.0	–	15.00	163.0	81.0	20.00	8	12.00	15.00	1	5986281
B1005/8	5/8	15.88	175.0	87.0	22.00	8	12.00	15.88	1	5986269
B10016.0	–	16.00	175.0	87.0	22.00	8	12.00	16.00	1	5986291
B10017.0	–	17.00	175.0	87.0	22.00	8	13.00	17.00	1	5986294
B10018.0	–	18.00	188.0	93.0	23.00	8	14.50	18.00	1	5986308
B10019.0	–	19.00	188.0	93.0	23.00	8	14.50	19.00	1	5986311
B1003/4	3/4	19.05	188.0	93.0	25.00	8	14.50	19.05	1	5986345
B10020.0	–	20.00	201.0	100.0	25.00	8	16.00	20.00	1	5986327
B10021.0	–	21.00	201.0	100.0	25.00	8	16.00	21.00	1	5986330
B10022.0	–	22.00	215.0	107.0	27.00	8	18.00	22.00	1	5986341
B1007/8	7/8	22.22	215.0	107.0	27.00	8	18.00	22.22	1	5986299
B10023.0	–	23.00	215.0	107.0	27.00	8	18.00	23.00	1	5986344
B10024.0	–	24.00	231.0	115.0	29.00	8	18.00	24.00	1	5986349
B10025.0	–	25.00	231.0	115.0	29.00	8	20.00	25.00	1	5986353
B1001	1"	25.40	231.0	115.0	29.00	8	20.00	25.40	1	5986230
B10026.0	–	26.00	231.0	115.0	29.00	8	20.00	26.00	1	5986360
B10028.0	–	28.00	247.0	124.0	31.00	10	22.00	28.00	1	5986367
B10030.0	–	30.00	247.0	124.0	31.00	10	24.00	30.00	1	5986355
B10032.0	–	32.00	265.0	133.0	33.00	10	24.00	32.00	1	5986362
B10035.0	–	35.00	284.0	142.0	36.00	10	29.00	35.00	1	5986224
B10040.0	–	40.00	305.0	152.0	38.00	10	32.00	40.00	1	5986242

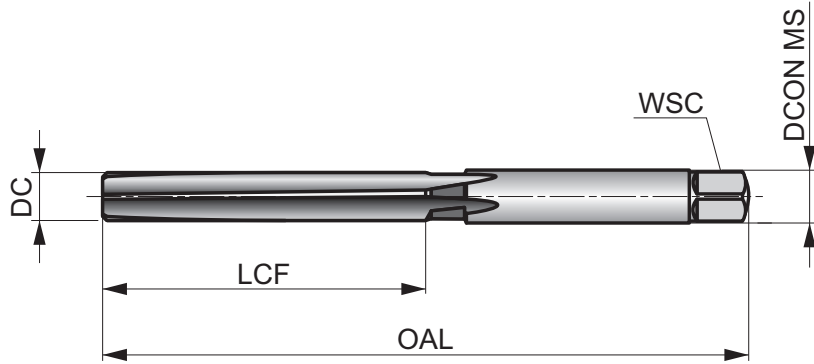


B650



HSS Straight Flute Hand Reamer, Bright Finish

Heavy duty hand reamer with straight flutes used for finishing drilled holes by hand. Square drive allows rotating the tool using a wrench or mounting the tool stationary for rotating parts. Suitable for reaming most materials, including steels. Produced per ANSI B94.2-1983 (R1988).



HSS	Bright	ANSI
R		

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 382.

P1.1	P1.2	P1.3	P2.1	P2.2	P2.3	P3.1	P3.2	P3.3	P4.1	P4.2	P4.3	M1.1	M1.2
■	■	■	■	■	■	■	■	■	■	■	■	■	■
M2.1	K1.1	K1.2	K1.3	K2.1	K2.2	K2.3	K3.1	K3.2	N1.1	N1.2	N1.3	N2.1	N2.2
■	■	■	■	■	■	■	■	■	■	■	■	■	■
N2.3	N3.1	N3.2	N3.3	N4.1	N4.2								
■	■	■	■	■	■								

Product	DC	DC	LCF	OAL	NOF	Pack Qty	MID
	(inch)	(inch)					
B6501/8	1/8	.1250	1.1/2	3"	6	1	8157057
B6503/16	3/16	.1875	1.3/4	3.1/2	6	1	8157058
B6501/4	1/4	.2500	2"	4"	6	1	8157059
B6505/16	5/16	.3125	2.1/4	4.1/2	6	1	8157140
B6503/8	3/8	.3750	2.1/2	5"	6	1	8157141
B6507/16	7/16	.4375	2.3/4	5.1/2	6	1	8157142
B6501/2	1/2	.5000	3"	6"	6	1	8157143
B6509/16	9/16	.5625	3.1/4	6.1/2	8	1	8157144
B6505/8	5/8	.6250	3.1/2	7"	8	1	8157145
B6503/4	3/4	.7500	4.3/16	8.3/8	8	1	8157146
B6507/8	7/8	.8750	4.7/8	9.3/4	8	1	8157147
B6501	1"	1.0000	5.7/16	10.7/8	8	1	8157148

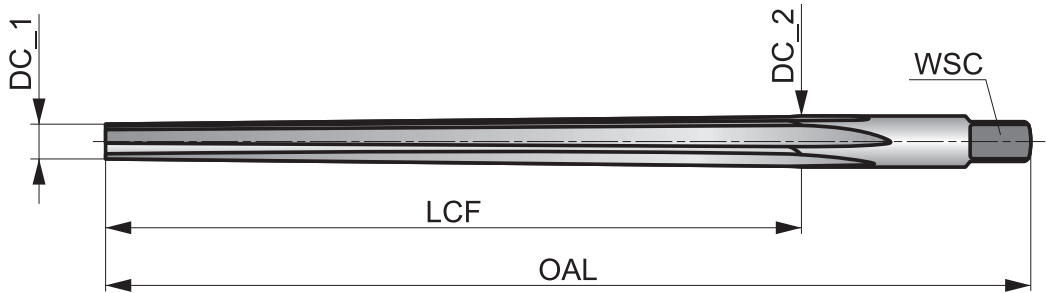


B301



HSS Straight Shank Taper Pin Hand Reamer 1:48 Taper, Bright and ST Finish

Designed to finish tapered holes to accept standard 1 to 48 ratio imperial taper pins. With a reduced small diameter, the tool easily locates and centers in the pre-drilled hole to improve accuracy and performance. Suitable for reaming in many materials.



HSS	Bright ST	BS 328
R		A
1:48		

P1.1	P1.2	P1.3	P2.1	P2.2	P2.3	P3.1	P3.2	P3.3	P4.1	P4.2	P4.3	M1.1	M1.2
■	■	■	■	■	■	■	■	■	■	■	■	■	■
M2.1	K1.1	K1.2	K1.3	K2.1	K2.2	K2.3	K3.1	K3.2	N1.1	N1.2	N1.3	N2.1	N2.2
■	■	■	■	■	■	■	■	■	■	■	■	■	■
N2.3	N3.1	N3.2	N3.3	N4.1	N4.2								
■	■	■	■	■	■								

DC ≤ 1/4 limit of tolerance +0.0030; DC ≥ 9/32 limit of tolerance +0.0050.

Product	nom d	DC_1	DC_2	OAL	LCF	NOF	WSC	DCON MS	Pack Qty	MID
		(mm)	(mm)	(mm)	(mm)		(mm)	(mm)		
B3013/32	3/32	1.75	2.41	57.0	32.0	4	2.00	2.41	1	5986397
B3011/8	1/8	2.30	3.23	70.0	44.0	4	2.50	3.23	1	5986384
B3015/32	5/32	2.95	4.01	76.0	51.0	4	3.10	4.01	1	5986409
B3013/16	3/16	3.50	4.95	102.0	70.0	4	4.00	4.95	1	5986395
B3011/4	1/4	4.64	6.43	117.0	86.0	6	5.00	6.43	1	5986382
B3015/16	5/16	5.84	8.03	143.0	105.0	6	6.30	8.03	1	5986406
B3013/8	3/8	7.03	9.68	165.0	127.0	6	8.00	9.68	1	5986404
B3011/2	1/2	9.41	12.85	210.0	165.0	6	10.00	12.85	1	5986379

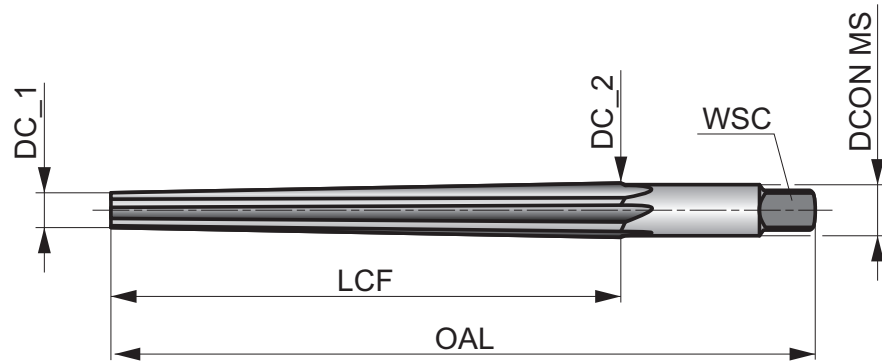


B660



HSS Straight Flute Hand Reamer, Taper Pin Type, Bright Finish

Designed to convert a straight drilled hole into a tapered hole (1/4" per foot) for standard taper pins (ASA B5.20-1958). Square drive allows rotating the tool using a wrench or mounting the tool stationary for rotating parts. Suitable for reaming most materials, including steels. Produced per ANSI B94.2-1983 (R1988).



HSS	Bright	ANSI
R		1:48

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 382.

P1.1	P1.2	P1.3	P2.1	P2.2	P2.3	P3.1	P3.2	P3.3	P4.1	P4.2	P4.3	M1.1	M1.2
■	■	■	■	■	■	■	■	■	■	■	■	■	■
M2.1	K1.1	K1.2	K1.3	K2.1	K2.2	K2.3	K3.1	K3.2	N1.1	N1.2	N1.3	N2.1	N2.2
■	■	■	■	■	■	■	■	■	■	■	■	■	■
N2.3	N3.1	N3.2	N3.3	N4.1	N4.2								
■	■	■	■	■	■								

Product	nom d	DC_1 (inch)	DC_2 (inch)	DCON MS (inch)	LCF (inch)	OAL (inch)	WSC (inch)	NOF	Pack Qty	MID
B660N0	0	.1287	.1638	11/64	1.11/16	2.15/16	.130	6	1	8157369
B660N1	1	.1447	.1798	3/16	1.11/16	2.15/16	.140	6	1	8157370
B660N2	2	.1600	.2010	13/64	1.15/16	3.3/16	.150	6	1	8157371
B660N3	3	.1813	.2294	15/64	2.5/16	3.11/16	.175	6	1	8157372
B660N4	4	.2071	.2600	17/64	2.9/16	4.1/16	.200	6	1	8157373
B660N5	5	.2410	.2994	5/16	2.13/16	4.5/16	.235	6	1	8157374
B660N6	6	.2773	.3540	23/64	3.11/16	5.7/16	.270	6	1	8157375
B660N7	7	.3297	.4220	13/32	4.7/16	6.5/16	.305	6	1	8157376
B660N8	8	.3971	.5050	7/16	5.3/16	7.3/16	.330	6	1	8157377
B660N9	9	.4800	.6066	9/16	6.1/16	8.5/16	.420	8	1	8157378
B660N10	10	.5799	.7216	5/8	6.13/16	9.5/16	.470	8	1	8157379

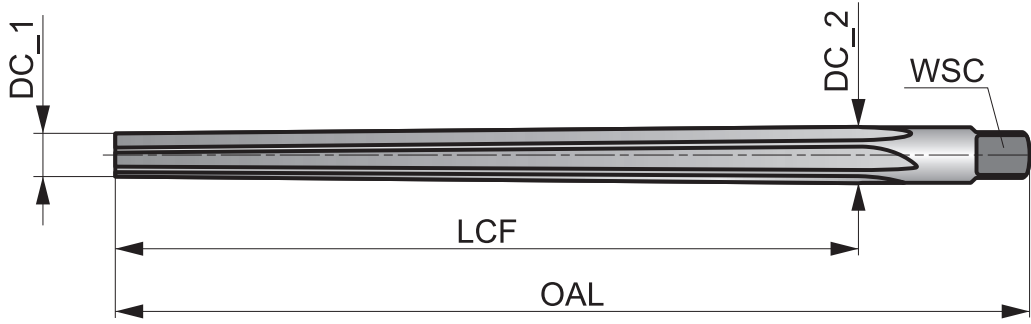


B903



HSS Straight Shank Taper Pin Hand Reamer 1:50 Taper, Bright and ST Finish

Designed to finish tapered holes to accept standard 1 to 50 ratio metric taper pins. The diameter of the small end is reduced to make it easier to locate and center the reamer in the hole. Suitable for reaming in many materials.



HSS	Bright ST	DIN 9
R		A
1:50		

P1.1	P1.2	P1.3	P2.1	P2.2	P2.3	P3.1	P3.2	P3.3	P4.1	P4.2	P4.3	M1.1	M1.2
■	■	■	■	■	■	■	■	■	■	■	■	■	■
M2.1	K1.1	K1.2	K1.3	K2.1	K2.2	K2.3	K3.1	K3.2	N1.1	N1.2	N1.3	N2.1	N2.2
■	■	■	■	■	■	■	■	■	■	■	■	■	■
N2.3	N3.1	N3.2	N3.3	N4.1	N4.2								
■	■	■	■	■	■								

DCON MS tolerance h11; DC ≤ 5mm limit of tolerance +0.0750; DC < 5mm limit of tolerance +0.1250.

Product	nom d	DC_1	DC_2	OAL	LCF	NOF	WSC	DCON MS	Pack Qty	MID
		(mm)	(mm)	(mm)	(mm)		(mm)	(mm)		
B9031.5	1.5	1.40	2.14	57.0	37.0	4	1.80	2.14	1	5986895
B9032.0	2.0	1.90	2.86	68.0	48.0	4	2.24	2.86	1	5987007
B9032.5	2.5	2.40	3.36	68.0	48.0	4	2.80	3.36	1	5987010
B9033.0	3.0	2.90	4.06	80.0	58.0	4	3.15	4.00	1	5986870
B9034.0	4.0	3.90	5.26	93.0	68.0	4	4.00	5.00	1	5986873
B9035.0	5.0	4.90	6.36	100.0	73.0	4	5.00	6.30	1	5986876
B9036.0	6.0	5.90	8.00	135.0	105.0	6	6.30	7.90	1	5986879
B9038.0	8.0	7.90	10.80	180.0	145.0	6	8.00	10.50	1	5986882
B90310.0	10.0	9.90	13.40	215.0	175.0	6	10.00	13.30	1	5986925
B90312.0	12.0	11.80	16.00	255.0	210.0	8	11.20	16.00	1	5986959
B90313.0	13.0	12.86	16.74	255.0	210.0	8	12.50	16.74	1	5986995
B90314.0	14.0	13.86	17.74	255.0	210.0	8	12.50	17.74	1	5987001
B90316.0	16.0	15.80	20.40	280.0	230.0	8	14.00	20.40	1	5987004
B90320.0	20.0	19.80	24.80	310.0	250.0	8	18.00	24.80	1	5986868

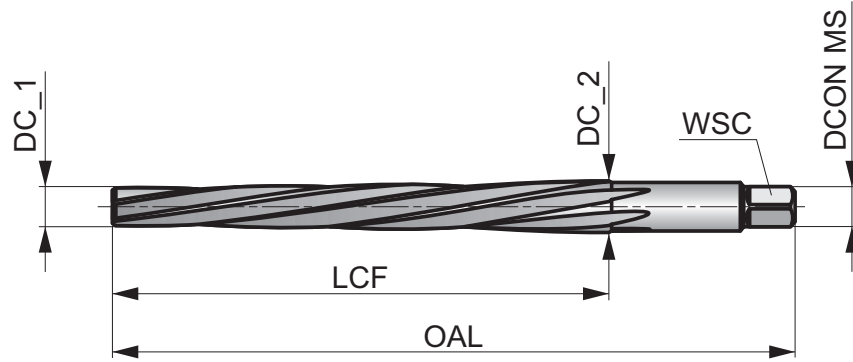


B670



HSS Spiral Flute Hand Reamer, Taper Pin Type, Bright Finish

Right hand cut with left hand slow spiral to ream a tapered hole (1/4" per foot) for standard taper pins (ASA B5.20-1958). Square drive allows rotating the tool or mounting the tool static for rotating parts. Spiral flute improves surface finish by assisting in chip evacuation. Produced per ANSI B94.2-1983 (R1988).



HSS	Bright	ANSI
R		1:48

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 382.

P1.1	P1.2	P1.3	P2.1	P2.2	P2.3	P3.1	P3.2	P3.3	P4.1	P4.2	P4.3	M1.1	M1.2
■	■	■	■	■	■	■	■	■	■	■	■	■	■
M2.1	K1.1	K1.2	K1.3	K2.1	K2.2	K2.3	K3.1	K3.2	N1.1	N1.2	N1.3	N2.1	N2.2
■	■	■	■	■	■	■	■	■	■	■	■	■	■
N2.3	N3.1	N3.2	N3.3	N4.1	N4.2								
■	■	■	■	■	■								

Nom d is the Taper Pin number per American Standard Taper Pin Specification (ASA B5.20-1958)

Product	nom d	DC_1 (inch)	DC_2 (inch)	DCON MS (inch)	LCF (inch)	OAL (inch)	WSC (inch)	NOF	Pack Qty	MID
B670N0	0	.1287	.1638	11/64	1.11/16	2.15/16	.130	6	1	8157396
B670N1	1	.1447	.1798	3/16	1.11/16	2.15/16	.140	6	1	8157397
B670N2	2	.1600	.2010	13/64	1.15/16	3.3/16	.150	6	1	8157398
B670N3	3	.1813	.2294	15/64	2.5/16	3.11/16	.175	6	1	8157399
B670N4	4	.2071	.2600	17/64	2.9/16	4.1/16	.200	6	1	8157400
B670N5	5	.2410	.2994	5/16	2.13/16	4.5/16	.235	6	1	8157401
B670N6	6	.2773	.3540	23/64	3.11/16	5.7/16	.270	6	1	8157402
B670N7	7	.3297	.4220	13/32	4.7/16	6.5/16	.305	6	1	8157403
B670N8	8	.3971	.5050	7/16	5.3/16	7.3/16	.330	6	1	8157404
B670N9	9	.4800	.6066	9/16	6.1/16	8.5/16	.420	8	1	8157405
B670N10	10	.5799	.7216	5/8	6.13/16	9.5/16	.470	8	1	8157406

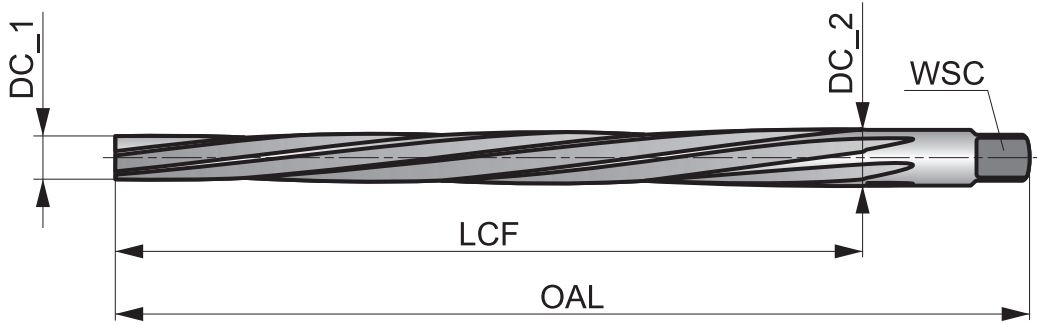


B952



HSS Straight Shank Taper Pin Hand Reamer 1:50 Taper, Bright Finish

With left-hand helix and right-hand cutting, gives smooth reaming for a more accurate hole size and better finish. The small end diameter has been reduced, making it easier to locate and center the reamer in the hole. Suitable for reaming in many materials.



HSS	Bright	DIN 9
R		B
1:50		

P1.1	P1.2	P1.3	P2.1	P2.2	P2.3	P3.1	P3.2	P3.3	P4.1	P4.2	P4.3	M1.1	M1.2
■	■	■	■	■	■	■	■	■	■	■	■	■	■
M2.1	K1.1	K1.2	K1.3	K2.1	K2.2	K2.3	K3.1	K3.2	N1.1	N1.2	N1.3	N2.1	N2.2
■	■	■	■	■	■	■	■	■	■	■	■	■	■
N2.3	N3.1	N3.2	N3.3	N4.1	N4.2								
■	■	■	■	■	■								

DCON MS tolerance h11; DC <= 2.5mm Straight flute, form A.

Product	nom d	DC_1	DC_2	OAL	LCF	NOF	WSC	DCON MS	Pack Qty	MID
		(mm)	(mm)	(mm)	(mm)		(mm)	(mm)		
B9521.2	1.2	1.10	1.74	50.0	32.0	3	2.40	3.15	1	5986902
B9521.5	1.5	1.40	2.14	57.0	37.0	3	2.40	3.15	1	5986905
B9522.0	2.0	1.90	2.86	68.0	48.0	3	2.40	3.15	1	5986922
B9522.5	2.5	2.40	3.36	68.0	48.0	4	2.40	3.15	1	5986928
B9523.0	3.0	2.90	4.06	80.0	58.0	5	3.00	4.00	1	5986938
B9523.5	3.5	3.40	4.66	87.0	63.0	5	3.40	4.50	1	5986941
B9524.0	4.0	3.90	5.26	93.0	68.0	5	3.80	5.00	1	5986947
B9525.0	5.0	4.90	6.36	100.0	73.0	5	4.90	6.30	1	5986956
B9526.0	6.0	5.90	8.00	135.0	105.0	6	6.20	8.00	1	5986967
B9527.0	7.0	6.90	9.40	160.0	125.0	6	7.00	9.00	1	5986974
B9528.0	8.0	7.90	10.80	180.0	145.0	6	8.00	10.00	1	5986977
B9529.0	9.0	8.90	12.10	195.0	160.0	6	9.00	11.20	1	5986982
B95210.0	10.0	9.90	13.40	215.0	175.0	6	10.00	12.50	1	5986908
B95212.0	12.0	11.80	16.00	255.0	210.0	8	11.00	14.00	1	5986911
B95213.0	13.0	12.80	17.00	255.0	210.0	8	12.00	16.00	1	5986914
B95214.0	14.0	13.80	18.00	255.0	210.0	8	12.00	16.00	1	5986917
B95216.0	16.0	15.80	20.40	280.0	230.0	8	14.50	18.00	1	5986919
B95220.0	20.0	19.80	24.80	310.0	250.0	8	18.00	22.40	1	5986931
B95225.0	25.0	24.70	30.70	370.0	300.0	10	22.00	28.00	1	5986934
B95230.0	30.0	29.70	36.10	400.0	320.0	10	24.00	31.50	1	5986944
B95240.0	40.0	39.70	46.50	430.0	340.0	12	32.00	40.00	1	5986953

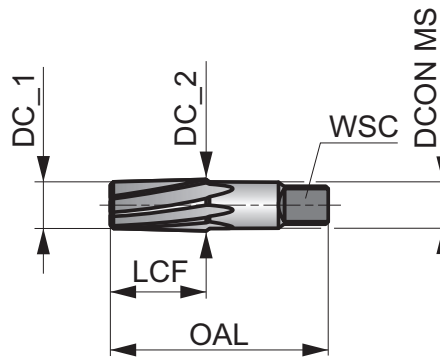


B680



HSS Spiral Flute Hand Reamer, NPT Taper Pipe Type, Bright Finish

Right hand cut with left hand spiral to ream a tapered hole (3/4" per foot) prior to NPT tapping. Square drive allows rotating the tool or mounting the tool static for rotating parts. Spiral flute improves surface finish by assisting in chip evacuation. Produced per ANSI B94.2-1983 (R1988).



HSS	Bright	ANSI
R		

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 382.

P1.1	P1.2	P1.3	P2.1	P2.2	P2.3	P3.1	P3.2	P3.3	P4.1	P4.2	P4.3	M1.1	M1.2
■	■	■	■	■	■	■	■	■	■	■	■	■	■
M2.1	K1.1	K1.2	K1.3	K2.1	K2.2	K2.3	K3.1	K3.2	N1.1	N1.2	N1.3	N2.1	N2.2
■	■	■	■	■	■	■	■	■	■	■	■	■	■
N2.3	N3.1	N3.2	N3.3	N4.1	N4.2								
■	■	■	■	■	■								

Nom d is the NPT pipe thread size.

Product	nom d	DC_1 (inch)	DC_2 (inch)	DCON MS (inch)	LCF (inch)	OAL (inch)	WSC (inch)	NOF	Pack Qty	MID
B6801/8	1/8	.3160	.3620	.438	3/4	2.1/8	.328	6	1	8157407
B6801/4	1/4	.4060	.4720	.563	1.1/16	2.7/16	.421	6	1	8157408
B6803/8	3/8	.5400	.6060	.700	1.1/16	2.9/16	.531	8	1	8157409
B6801/2	1/2	.6650	.7510	.688	1.3/8	3.1/8	.575	8	1	8157410
B6803/4	3/4	.8760	.9620	.906	1.3/8	3.1/4	.679	10	1	8157411
B6801	1"	1.1030	1.2120	1.125	1.3/4	3.3/4	.843	10	1	8157412



		HM	HSS-E	HSS-E	HSS-E	HSS	HSS	HSS	HSS	HSS	HSS	HSS
Material code (BMC)		HM	HSS-E	HSS-E	HSS-E	HSS	HSS	HSS	HSS	HSS	HSS	HSS
Coating		Bright	Bright	Bright	ALTiN	Bright	Bright	Bright	Bright	TiN	Bright	Bright
Basic standard group (BSG)		DIN 335C	DORMER	DORMER	DIN 335C	DORMER	ANSI	DORMER	DIN 334C	DIN 334C	DIN 335C	DIN 335C
Hand (Cutting direction)		R	R	R	R	R	R	R	R	R	R	R
Shank		Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Application angle		90°	90°	90°	90°	20°	60-90°	90°	60°	60°	82°	90°
Product Family Code		G400	G149	G107	G570	G314	4603	G129	G135	G335	G154	G142
PSF cutting diameters range		6.30 - 31.00	5.00 - 25.00	6.30 - 20.50	6.30 - 31.00	4.00 - 9.00	1/4 - 1.1/2	6.00 - 31.50	6.30 - 25.00	6.30 - 25.00	6.30 - 25.00	5.00 - 31.00
P	P1	■	■	■	■	■	■	■	■	■	■	■
	P2	■	■	■	■	■	■	■	■	■	■	■
	P3	■	■	■	■	■	■	■	■	■	■	■
	P4	■	■	■	■	■	■	■	■	■	■	■
M	M1	■	■	■	■	■	■	■	■	■	■	■
	M2	■	■	■	■	■	■	■	■	■	■	■
	M3	■	■	■	■	■	■	■	■	■	■	■
	M4	■	■	■	■	■	■	■	■	■	■	■
K	K1	■	■	■	■	■	■	■	■	■	■	■
	K2	■	■	■	■	■	■	■	■	■	■	■
	K3	■	■	■	■	■	■	■	■	■	■	■
	K4	■	■	■	■	■	■	■	■	■	■	■
	K5	■	■	■	■	■	■	■	■	■	■	■
N	N1	■	■	■	■	■	■	■	■	■	■	■
	N2	■	■	■	■	■	■	■	■	■	■	■
	N3	■	■	■	■	■	■	■	■	■	■	■
	N4	■	■	■	■	■	■	■	■	■	■	■
	N5	■	■	■	■	■	■	■	■	■	■	■
S	S1	■	■	■	■	■	■	■	■	■	■	■
	S2	■	■	■	■	■	■	■	■	■	■	■
	S3	■	■	■	■	■	■	■	■	■	■	■
	S4	■	■	■	■	■	■	■	■	■	■	■
H	H1	■	■	■	■	■	■	■	■	■	■	■
	H2	■	■	■	■	■	■	■	■	■	■	■
	H3	■	■	■	■	■	■	■	■	■	■	■
	H4	■	■	■	■	■	■	■	■	■	■	■

■ Primary use ■ Possible use



	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	
	Bright	TiAIN	Bright	TiAIN	Bright	TiAIN	Bright	Bright	Bright	Bright	TiN	Bright	Bright	
	DIN 335C	DIN 335C	DIN 335C	DIN 335C	DORNER	DIN 335C	ANSI	DIN 335A	DIN 334D	DIN 335D	DIN 335D	DIN 373	ANSI	
	R	R	R	R	R	R	R	R	R	R	R	R	R	
	90°	90°	90°	90°	90°	100°	60-82°	90°	60°	90°	90°	90°	180°	
	G136	G560	G106	G506	G600	G171	4602	G132	G137	G138	G338	G236	G125	G705
	4.30 - 31.00	6.30 - 31.00	6.30 - 50.00	6.30 - 50.00	6.30 - 25.00	6.30 - 25.00	1/2 - 1"	8.00 - 20.00	31.50 - 50.00	25.00 - 63.00	25.00 - 50.00	Set	6.50 - 20.00	1/4 - 15/16
	363	364	365	366	367	368	369	370	371	372	373	374	375	376
P1	■	■	■	■	■	■	■	■	■	■	■		■	■
P2	■	■	■	■	■	■	■	■	■	■	■		■	■
P3	■	■	■	■	■	■	■	■	■	■	■		■	■
P4	■	■	■	■	■	■	■	■	■	■	■		■	■
M1	■	■	■	■	■	■	■	■	■	■	■		■	■
M2	■	■	■	■	■	■	■	■	■	■	■		■	■
M3								■						
M4								■						
K1	■	■	■	■	■	■	■	■	■	■	■		■	■
K2	■	■	■	■	■	■	■	■	■	■	■		■	■
K3	■	■	■	■	■	■	■	■	■	■	■		■	■
K4	■	■	■	■	■	■	■	■	■	■	■		■	■
K5	■	■	■	■	■	■	■	■	■	■	■		■	■
N1	■	■	■	■	■	■	■	■	■	■	■		■	■
N2	■	■	■	■	■	■	■	■	■	■	■		■	■
N3	■	■	■	■	■	■	■	■	■	■	■		■	■
N4	■	■	■	■	■	■	■	■	■	■	■		■	■
N5														
S1														
S2														
S3														
S4														
H1														
H2														
H3														
H4														



Material code (BMC)	HSS	HSS	HSS	HSS															
Coating	Bright	Bright	Bright	Bright															
Basic standard group (BSG)	ANSI	ANSI	ANSI	ANSI															
Hand (Cutting direction)	R	R	R																
Shank																			
Application angle																			
Product Family Code	G706	G702	G703	G704															
PSF cutting diameters range	1/4 - 1"	1/4 - 2"	1/2 - 2.1/8	1/8 - 1.1/2															
P	P1	■	■	■															
	P2	■	■	■															
	P3	■	■	■															
	P4	☑	☑	☑															
M	M1	☑	☑	☑															
	M2	☑	☑	☑															
	M3																		
	M4																		
K	K1	■	■	■															
	K2	■	■	■															
	K3	☑	☑	☑															
	K4	☑	☑	☑															
	K5	■	■	■															
N	N1	■	■	■															
	N2	☑	☑	☑															
	N3	■	■	■															
	N4	■	■	■															
	N5																		
S	S1																		
	S2																		
	S3																		
	S4																		
H	H1																		
	H2																		
	H3																		
	H4																		

■ Primary use ☑ Possible use

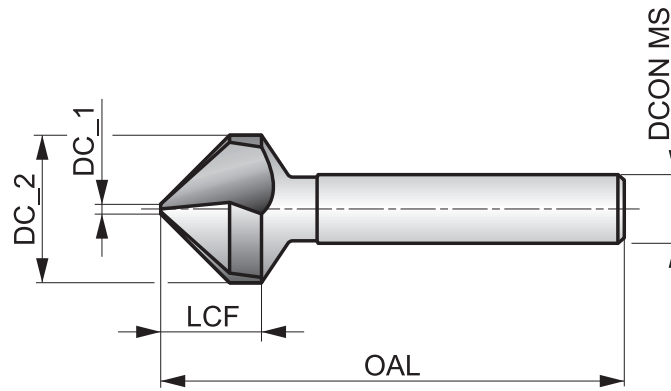


G400



Carbide Straight Shank 90° Countersink, Bright Finish

High performance 90° countersink with bright finish, designed for use with CNC machines where high productivity and quality are required. Can be used for chamfering holes in hard and abrasive materials. A 90° angle is designed to chamfer holes for standard fasteners with 90° heads.



HM	Bright	DIN 335C
R		90°

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 383.

P1.1 ■ 210 E	P1.2 ■ 236 E	P1.3 ■ 243 E	P2.1 ■ 180 E	P2.2 ■ 157 D	P2.3 ■ 141 B	P3.1 ■ 148 D	P3.2 ■ 118 D	P3.3 ■ 98 B	P4.1 ■ 85 D	P4.2 ■ 75 B	P4.3 ■ 59 A	M1.1 ■ 79 C	M1.2 ■ 69 C
M2.1 ■ 72 C	M2.2 ▣ 59 C	M2.3 ▣ 49 B	M3.1 ■ 66 B	M3.2 ▣ 56 B	M3.3 ▣ 49 B	M4.1 ▣ 49 A	M4.2 ▣ 43 A	K1.1 ■ 148 F	K1.2 ■ 108 D	K1.3 ■ 82 D	K2.1 ■ 151 C	K2.2 ■ 121 C	K2.3 ▣ 98 C
K3.1 ■ 135 C	K3.2 ■ 102 C	K3.3 ▣ 82 C	K4.1 ■ 125 C	K4.2 ■ 92 C	K4.3 ■ 69 C	K4.4 ▣ 59 C	K4.5 ▣ 49 C	K5.1 ■ 141 C	K5.2 ■ 105 C	K5.3 ■ 82 C	N1.1 ▣ 246 G	N1.2 ■ 180 G	N1.3 ■ 131 F
N2.1 ■ 131 F	N2.2 ■ 118 F	N2.3 ■ 85 F	N3.1 ■ 138 F	N3.2 ■ 82 F	N3.3 ▣ 43 D	N4.3 ■ 56 E	S1.1 ■ 39 C	S1.2 ■ 33 A	S1.3 ▣ 30 A	S2.1 ■ 26 B	S2.2 ▣ 23 A	S3.1 ■ 20 B	S3.2 ▣ 16 A
S4.1 ■ 16 B	S4.2 ▣ 13 A	H1.1 ■ 39 A	H2.1 ■ 23 A	H2.2 ▣ 20 B	H3.1 ■ 26 A	H3.2 ▣ 23 B	H4.1 ■ 16 A	H4.2 ▣ 13 B					

DCON MS tolerance h6.

Product	DC_2 (mm)	DC_1 (mm)	LCF (mm)	OAL (mm)	DCON MS (mm)	NOF	Pack Qty	MID
G4006.3	6.30	1.50	5.0	45.0	5.00	3	1	5979252
G4008.3	8.30	2.00	6.0	50.0	6.00	3	1	5979084
G40010.4	10.40	2.50	7.1	50.0	6.00	3	1	5979159
G40012.4	12.40	2.80	8.0	56.0	8.00	3	1	5979199
G40016.5	16.50	3.20	10.0	60.0	10.00	3	1	5979234
G40020.5	20.50	3.50	12.5	63.0	10.00	3	1	5979242
G40025.0	25.00	3.80	15.0	67.0	10.00	3	1	5979245
G40031.0	31.00	4.20	18.0	71.0	12.00	3	1	5979248

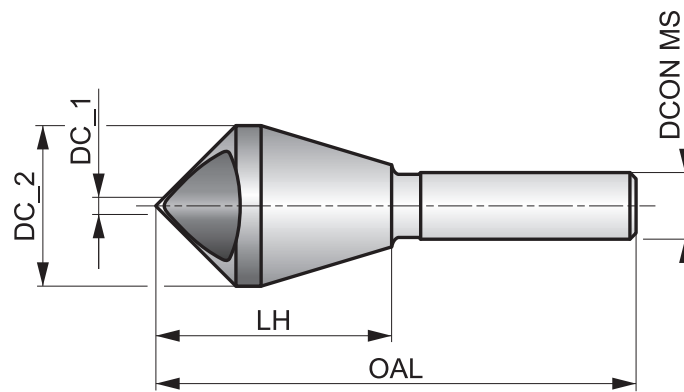


G149



HSS-E Straight Shank Cross-Hole 90° Countersink, Bright Finish

A 90° Countersink designed to chamfer holes and for removing burrs from drilled holes. The special cross-hole design directs chips away from the cutting edge to give a smooth chamfering operation. Suitable to chamfer holes in many materials.



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 383.

P1.1 ▣69 D	P1.2 ▣79 D	P1.3 ▣82 D	P2.1 ▣59 D	P2.2 ▣52 C	P2.3 ▣46 A	P3.1 ▣52 B	P3.2 ▣43 B	M1.1 ▣26 B	M1.2 ▣20 B	M2.1 ▣23 B	K1.1 ▣59 D	K2.1 ▣62 A	K3.1 ▣52 A
K5.1 ▣46 A	N1.1 ▣112 D	N1.2 ▣82 D	N1.3 ▣52 C	N2.1 ▣52 C	N2.2 ▣46 C	N3.1 ▣56 C	N3.2 ▣30 C	N3.3 ▣16 B	N4.1 ▣56 D	N4.2 ▣16 D			

Product	DC_2 (mm)	DC_1 (mm)	LH (mm)	OAL (mm)	DCON MS (mm)	DC (mm)	NOF	Pack Qty	MID
G1495	5.00	2.00	19.0	45.0	6.00	10.00	1	1	5972702
G14910	10.00	5.00	23.0	48.0	8.00	14.00	1	1	5973182
G14915	15.00	10.00	34.0	65.0	10.00	21.00	1	1	5973188
G14920	20.00	15.00	43.0	84.0	12.00	28.00	1	1	5973198
G14925	25.00	20.00	48.0	102.0	15.00	35.00	1	1	5973203

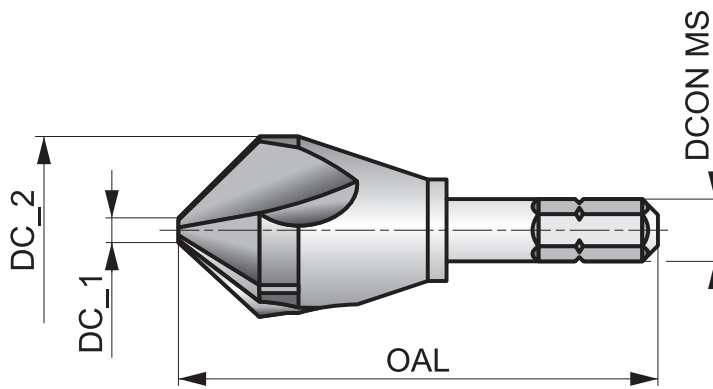


G107



HSS-E Hexagon Drive 90° Countersink, Bright Finish

A versatile countersink with a hexagonal shank which makes it easier to hold with electric screwdriver adaptors. The 90° countersink produces chamfers for standard fasteners and clean burrs from drilled holes. Suitable to chamfer holes in many materials.



HSS-E	Bright	DORMER
R	Hexagon Drive	90°

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 383.

P1.1 ■ 75 E	P1.2 ■ 85 E	P1.3 ■ 89 E	P2.1 ■ 66 E	P2.2 ■ 59 D	P2.3 ■ 52 B	P3.1 ■ 52 D	P3.2 ■ 43 D	P3.3 ■ 36 B	P4.1 ■ 33 D	P4.2 ■ 26 B	M1.1 ■ 36 C	M1.2 ■ 30 C	M2.1 ■ 33 C
M2.2 ■ 30 C	M2.3 ■ 26 B	K1.1 ■ 66 F	K1.2 ■ 49 D	K2.1 ■ 69 C	K2.2 ■ 56 C	K3.1 ■ 59 C	K3.2 ■ 46 C	K4.1 ■ 49 C	K5.1 ■ 62 C	K5.2 ■ 49 C	N1.1 ■ 131 G	N1.2 ■ 98 G	N1.3 ■ 66 F
N2.1 ■ 66 F	N2.2 ■ 59 F	N2.3 ■ 66 F	N3.1 ■ 69 F	N3.2 ■ 39 F	N3.3 ■ 20 D	N4.1 ■ 131 G	N4.2 ■ 115 G						

6.35; 1/4" hex shank; DIN 74.

Product	DC_2 (mm)	DC_1 (mm)	OAL (mm)	DCON MS (inch)	CZC MS	NOF	Pack Qty	MID
G1076.3	6.30	1.50	50.0	1/4"	M2-M3	3	1	7147806
G10710.4	10.40	2.50	50.0	1/4"	M5	3	1	7147808
G10712.4	12.40	2.80	50.0	1/4"	M6	3	1	7147809
G10716.5	16.50	3.20	50.0	1/4"	M8	3	1	7147810
G10720.5	20.50	3.50	50.0	1/4"	M10	3	1	7147811

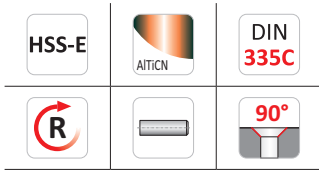
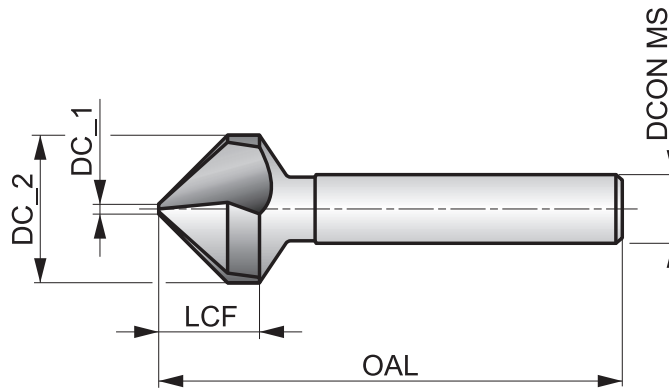


G570



HSS-E Straight Shank 90° Countersink, AlTiCN Coated

A 90° Countersink designed for chamfering holes to accommodate standard fasteners and clean burrs from drilled holes. Can be used in machine and hand-held applications. Particularly suited to chamfering holes in hard and abrasive materials. AlTiCN coating improves performance and extends tool life.



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 383.

P1.1 ■131 E	P1.2 ■148 E	P1.3 ■151 E	P2.1 ■112 E	P2.2 ■98 D	P2.3 ■89 B	P3.1 ■92 D	P3.2 ■72 D	P3.3 ■62 B	P4.1 ■52 D	P4.2 ■46 B	P4.3 ■36 B	M1.1 ■75 C	M1.2 ■66 C
M2.1 ■69 C	M2.2 ■56 C	M2.3 ■46 A	M3.1 ■46 B	M3.2 ■39 B	M3.3 ■36 B	M4.1 ■49 A	M4.2 ■43 A	K1.1 ■135 C	K1.2 ■98 C	K1.3 ■75 C	K2.1 ■138 C	K2.2 ■112 C	K2.3 ■89 C
K3.1 ■121 C	K3.2 ■92 C	K3.3 ■75 C	K4.1 ■112 C	K4.2 ■85 C	K4.3 ■62 C	K5.1 ■128 C	K5.2 ■95 C	K5.3 ■75 C	N1.1 ■197 G	N1.2 ■148 G	N1.3 ■98 F	N2.1 ■98 F	N2.2 ■89 F
N2.3 ■62 F	N3.1 ■105 F	N3.2 ■59 F	N3.3 ■30 D										

DCON MS tolerance h9.

Product	DC_2 (mm)	DC_1 (mm)	LCF (mm)	OAL (mm)	DCON MS (mm)	NOF	Pack Qty	MID
G5706.3	6.30	1.50	6.5	45.0	5.00	3	1	6381760
G5708.3	8.30	2.00	8.2	50.0	6.00	3	1	6381761
G57010.4	10.40	2.50	9.7	50.0	6.00	3	1	6381762
G57012.4	12.40	2.80	10.6	56.0	8.00	3	1	6381763
G57016.5	16.50	3.20	13.9	60.0	10.00	3	1	6381764
G57020.5	20.50	3.50	17.1	63.0	10.00	3	1	6381765
G57025.0	25.00	3.80	21.4	67.0	10.00	3	1	6381766
G57031.0	31.00	4.20	24.4	71.0	12.00	3	1	6381767

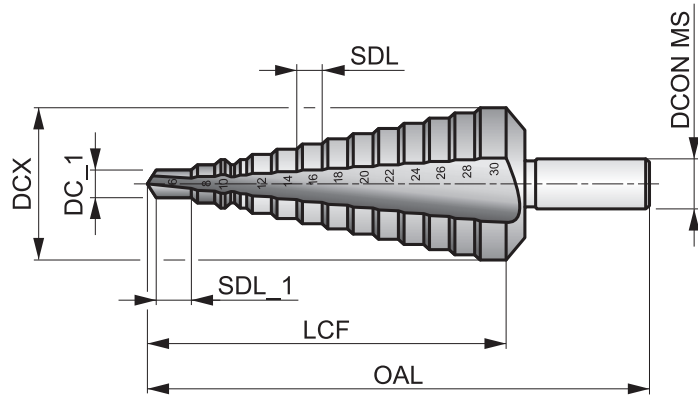


G314



HSS Cone Cut Step Drill for Thin Sheet Materials, Bright Finish

Cone cut step drills have a multi-step design which allows for gradual enlargement of holes to the diameter required. The reduced plain shank means all diameters can be held in a standard chuck and holder. Suitable to enlarge holes in many materials.



HSS	Bright	DORMER
R		20°

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 383.

P1.1 ■ 66	P1.2 ■ 72	P1.3 ■ 75	P2.1 ■ 56	P2.2 ▧ 49	P2.3 ▧ 43	P3.1 ■ 39	P3.2 ▧ 30	M1.1 ▧ 26	M1.2 ▧ 20	M2.1 ▧ 23	K1.1 ▧ 56	N1.1 ■ 98	N1.2 ■ 75
N1.3 ▧ 49	N2.1 ▧ 102	N2.2 ▧ 92	N3.1 ■ 112	N3.2 ■ 66	N3.3 ▧ 33	N4.1 ■ 98	N4.2 ■ 66						

SDI = Step diameter increments.

Product	Nr.	DC_1	DCX	SDL	SDI	SDL_1	LCF	OAL	DCON MS	Pack Qty	MID
		(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)		
G314412	412	4.00	12.00	5.00	4 - 5 - 6 - 7 - 8 - 9 - 10 - 11 - 12	5.00	61.0	80.0	6.00	1	5972748
G3141220	1220	12.00	20.00	4.00	12 - 13 - 14 - 15 - 16 - 17 - 18 - 19 - 20	4.00	55.0	76.0	9.00	1	5972732
G3142030	2030	20.00	30.00	4.00	20 - 21 - 22 - 23 - 24 - 25 - 26 - 27 - 28 - 29 - 30	4.00	67.0	88.0	12.00	1	5972736
G3143040	3040	30.00	40.00	4.00	30 - 31 - 32 - 33 - 34 - 35 - 36 - 37 - 38 - 39 - 40	4.00	74.0	98.0	13.00	1	5972740
G314420	420	4.00	20.00	4.00	4 - 6 - 8 - 10 - 12 - 14 - 16 - 18 - 20	4.00	48.0	76.0	8.00	1	5972752
G314630	630	6.00	30.00	4.00	6 - 8 - 10 - 12 - 14 - 16 - 18 - 20 - 22 - 24 - 26 - 28 - 30	4.00	73.0	98.0	10.00	1	5972755
G314M	M	9.00	36.00	3.00	9 - 12 - 15 - 18 - 21 - 24 - 27 - 30 - 33 - 36	3.00	57.0	86.0	12.00	1	5972728

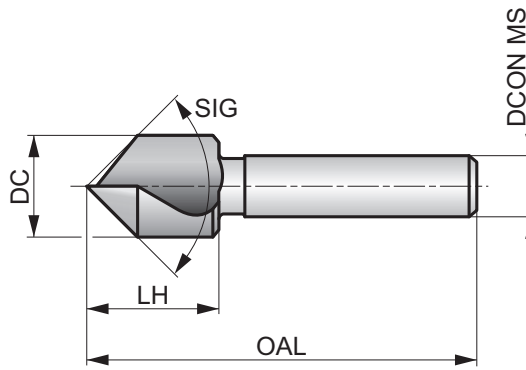


4603



HSS Straight Shank Countersink, Single Flute

Available in three countersink angles (60°, 82° or 90°) used for creating chamfers on holes or countersinks for flat head socket cap screws. Single-flute design with straight shanks and maximum countersink diameters up to 1-1/2". Use on predrilled holes that are greater than 10% of the countersink diameter.



HSS	Bright	ANSI
R		60-90°

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 383.

P1.1 ■ 69 D	P1.2 ■ 79 D	P1.3 ■ 82 D	P2.1 ■ 59 D	P2.2 ■ 52 C	P2.3 ▣ 46 A	P3.1 ■ 43 B	P3.2 ▣ 36 B	P3.3 ■	P4.1 ■	P4.2 ■	P4.3 ▣	M1.1 ▣ 26 B	M1.2 ▣ 20 B
M2.1 ▣ 23 B	K1.1 ▣ 59 D	K1.2 ▣ 43 C	K2.1 ▣ 62 A	K2.2 ▣ 49 A	K3.1 ▣ 52 A	K3.2 ▣ 39 A	N1.1 ■ 112 D	N1.2 ■ 82 D	N1.3 ▣ 52 C	N2.1 ▣ 52 C	N2.2 ▣ 46 C	N3.1 ■ 56 C	N3.2 ■ 30 C
N3.3 ▣ 16 B	N4.1 ▣ 115 D	N4.2 ▣ 98 D											

Product	DC (inch)	DC (inch)	SIG (°)	DCON MS (inch)	LH (inch)	OAL (inch)	NOF	Pack Qty	MID
46031/4X82	1/4	.2500	82	3/16	11/16	1.7/16	1	1	6005665
46033/8X82	3/8	.3750	82	1/4	25/32	1.21/32	1	1	6005702
46031/2X60	1/2	.5000	60	1/4	1"	2"	1	1	6005655
46031/2X82	1/2	.5000	82	1/4	27/32	1.27/32	1	1	6005659
46031/2X90	1/2	.5000	90	1/4	13/32	1.13/16	1	1	6005662
46035/8X82	5/8	.6250	82	3/8	1.3/32	2.3/32	1	1	6005708
46035/8X90	5/8	.6250	90	3/8	1"	2"	1	1	6005711
46033/4X82	3/4	.7500	82	3/8	1.5/32	2.13/32	1	1	6005685
46033/4X90	3/4	.7500	90	3/8	1.1/16	2.5/16	1	1	6005694
46031X82	1"	1.0000	82	1/2	1.1/4	2.13/16	1	1	6005677
46031X90	1"	1.0000	90	1/2	1.1/4	2.13/16	1	1	6005679
46031.1/4X82	1.1/4	1.2500	82	1/2	1.1/2	3.1/2	1	1	6005644
46031.1/2X82	1.1/2	1.5000	82	1/2	1.15/16	3.7/8	1	1	6005629
46031.1/2X90	1.1/2	1.5000	90	1/2	1.13/16	3.3/4	1	1	6005634

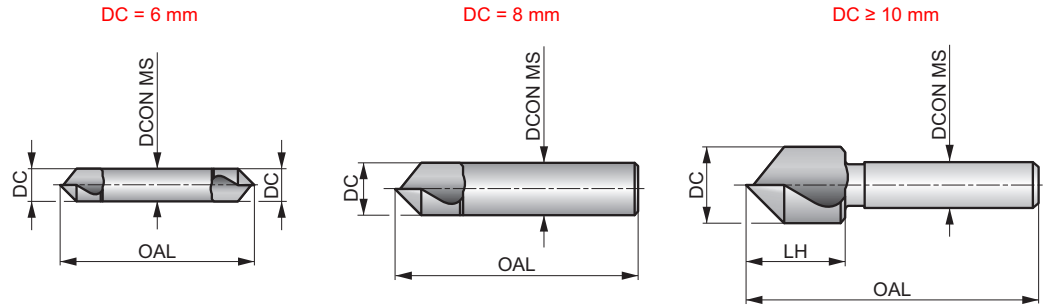


G129



HSS Straight Shank Single Flute 90° Countersink, Bright Finish

A 90° Countersink with bright finish to chamfer and for removing burrs from drilled holes. The single-flute design reduces vibration and chatter for a smooth chamfering operation. Suitable to chamfer holes in mild steels and medium strength non-ferrous materials, such as aluminium.



HSS	Bright	DORMER
R		90°

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 383.

P1.1 ■ 69 D	P1.2 ■ 79 D	P1.3 ■ 82 D	P2.1 ■ 59 D	P2.2 ■ 52 C	P2.3 ▣ 46 A	P3.1 ■ 43 B	P3.2 ▣ 36 B	M1.1 ▣ 126 B	M1.2 ▣ 120 B	M2.1 ▣ 123 B	K1.1 ▣ 59 D	K1.2 ▣ 43 C	K2.1 ▣ 62 A
K2.2 ▣ 49 A	K3.1 ▣ 52 A	K3.2 ▣ 39 A	N1.1 ■ 112 D	N1.2 ■ 82 D	N1.3 ▣ 52 C	N2.1 ▣ 52 C	N2.2 ▣ 46 C	N3.1 ■ 56 C	N3.2 ■ 30 C	N3.3 ▣ 16 B	N4.1 ▣ 115 D	N4.2 ▣ 98 D	

DCON MS tolerance h9.

Product	DC (mm)	LH (mm)	OAL (mm)	DCON MS (mm)	NOF	Pack Qty	MID
G1296.0	6.00	—	45.0	6.00	1	1	5973328
G1298.0	8.00	—	50.0	8.00	1	1	5973330
G12910.0	10.00	17.0	49.0	8.00	1	1	5973391
G12912.5	12.50	17.0	49.0	8.00	1	1	5973406
G12916.0	16.00	20.0	56.0	10.00	1	1	5973408
G12920.0	20.00	24.0	60.0	10.00	1	1	5973409
G12925.0	25.00	25.0	75.0	12.00	1	1	5973410
G12931.5	31.50	29.0	80.0	12.00	1	1	5973411

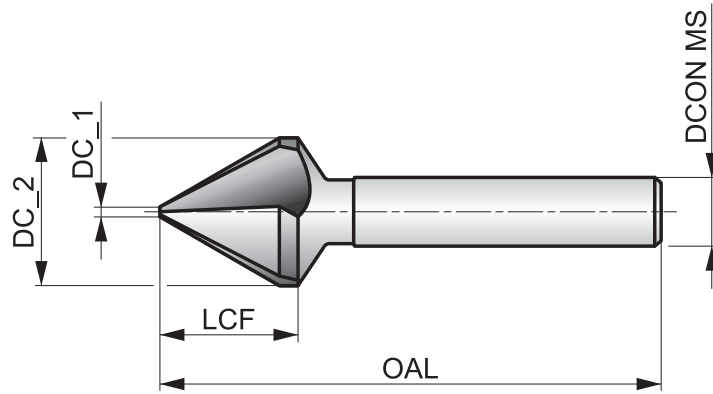


G135



HSS Straight Shank 60° Countersink, Bright Finish

With a 60° angle to chamfer holes for special fasteners and removing burrs from drilled holes in diameters up to 25.0 mm. For use in both machine and hand-held operations. Suitable to chamfer holes in many materials.



HSS	Bright	DIN 334C
R		60°

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 383.

P1.1 ■ 75 E	P1.2 ■ 85 E	P1.3 ■ 89 E	P2.1 ■ 66 E	P2.2 ■ 59 D	P2.3 ■ 52 B	P3.1 ■ 52 D	P3.2 ■ 43 D	P3.3 ■ 36 B	P4.1 ■ 33 D	P4.2 ■ 26 B	M1.1 ■ 26 C	M1.2 ■ 20 C	M2.1 ■ 23 C
M2.2 ■ 20 C	K1.1 ■ 66 F	K1.2 ■ 49 D	K2.1 ■ 69 C	K2.2 ■ 56 C	K3.1 ■ 59 C	K3.2 ■ 46 C	K5.1 ■ 62 C	K5.2 ■ 49 C	N1.1 ■ 131 G	N1.2 ■ 98 G	N1.3 ■ 66 F	N2.1 ■ 66 F	N2.2 ■ 59 F
N3.1 ■ 69 F	N3.2 ■ 39 F	N3.3 ■ 20 D	N4.1 ■ 131 G	N4.2 ■ 115 G									

DCON MS tolerance h9.

Product	DC_2 (mm)	DC_1 (mm)	LCF (mm)	OAL (mm)	DCON MS (mm)	NOF	Pack Qty	MID
G1356.3	6.30	1.60	6.8	45.0	5.00	3	1	5973354
G1358.0	8.00	2.00	8.5	50.0	6.00	3	1	5973356
G13510.0	10.00	2.50	7.6	50.0	6.00	3	1	5973342
G13512.5	12.50	3.20	11.7	56.0	8.00	3	1	5973344
G13516.0	16.00	4.00	14.5	63.0	10.00	3	1	5973346
G13520.0	20.00	5.00	17.5	67.0	10.00	3	1	5973350
G13525.0	25.00	6.30	20.5	71.0	10.00	3	1	5973352

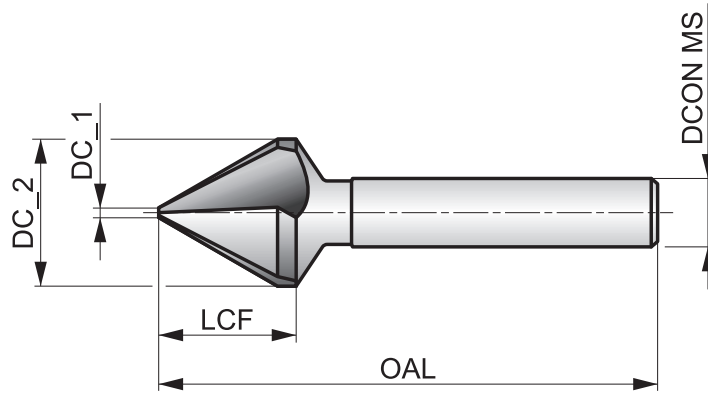


G335



HSS Straight Shank 60° Countersink, TiN Coated

For 60° countersink chamfer holes to accommodate special fasteners and removing burrs from drilled holes. TiN coating improves performance and extends tool life. Versatile tool that can be used in both hand-held and machine applications. Suitable to chamfer holes in many materials.



HSS	TiN	DIN 334C
R		60°

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 383.

P1.1 ■ 108 E	P1.2 ■ 121 E	P1.3 ■ 125 E	P2.1 ■ 92 E	P2.2 ■ 82 D	P2.3 ■ 72 B	P3.1 ■ 75 D	P3.2 ■ 59 D	P3.3 ■ 49 B	P4.1 ■ 43 D	P4.2 ■ 36 B	P4.3 ▣ 30 B	M1.1 ▣ 33 C	M1.2 ▣ 26 C
M2.1 ▣ 30 C	M3.1 ▣ 26 B	K1.1 ■ 112 F	K1.2 ■ 82 D	K1.3 ▣ 62 D	K2.1 ■ 115 C	K2.2 ■ 92 C	K2.3 ▣ 75 C	K3.1 ■ 102 C	K3.2 ■ 79 C	K3.3 ▣ 62 C	K4.1 ▣ 95 C	K4.2 ▣ 72 C	K4.3 ▣ 52 C
K5.1 ■ 105 C	K5.2 ■ 79 C	K5.3 ▣ 62 C	N1.1 ■ 174 G	N1.2 ■ 131 G	N1.3 ■ 89 F	N2.1 ■ 89 F	N2.2 ■ 79 F	N2.3 ■ 56 F	N3.1 ■ 92 F	N3.2 ■ 52 F	N3.3 ▣ 26 D	N4.1 ▣ 190 G	N4.2 ▣ 164 G

DCON MS tolerance h9.

Product	DC_2 (mm)	DC_1 (mm)	LCF (mm)	OAL (mm)	DCON MS (mm)	NOF	Pack Qty	MID
G3356.3	6.30	1.60	6.8	45.0	5.00	3	1	5972779
G3358.0	8.00	2.00	8.5	50.0	6.00	3	1	5972782
G33510.0	10.00	2.50	7.6	50.0	6.00	3	1	5972759
G33512.5	12.50	3.20	11.7	56.0	8.00	3	1	5972763
G33516.0	16.00	4.00	14.5	63.0	10.00	3	1	5972767
G33520.0	20.00	5.00	17.5	67.0	10.00	3	1	5972771
G33525.0	25.00	6.30	20.5	71.0	10.00	3	1	5972775

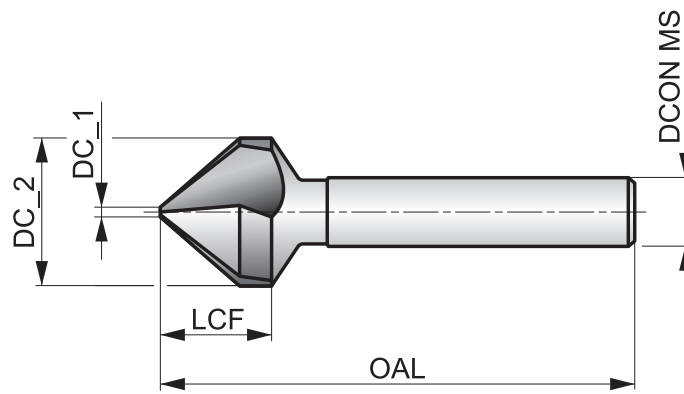


G154



HSS Straight Shank 82° Countersink, Bright Finish

An 82° Countersink for flat head cap screws and to chamfer holes. Versatile tool that can be used in both hand-held and machine applications. Suitable to chamfer holes in many materials.



HSS	Bright	DIN 335C
R		82°

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 383.

P1.1 ■ 75 E	P1.2 ■ 85 E	P1.3 ■ 89 E	P2.1 ■ 66 E	P2.2 ■ 59 D	P2.3 ▣ 52 B	P3.1 ■ 52 D	P3.2 ■ 43 D	P3.3 ▣ 36 B	P4.1 ■ 33 D	P4.2 ▣ 26 B	M1.1 ▣ 26 C	M1.2 ▣ 20 C	M2.1 ▣ 23 C
M2.2 ▣ 20 C	K1.1 ▣ 66 F	K1.2 ▣ 49 D	K2.1 ▣ 69 C	K2.2 ▣ 56 C	K3.1 ▣ 59 C	K3.2 ▣ 46 C	K5.1 ▣ 46 C	K5.2 ▣ 33 C	N1.1 ▣ 131 G	N1.2 ■ 98 G	N1.3 ▣ 66 F	N2.1 ■ 66 F	N2.2 ▣ 59 F
N3.1 ■ 69 F	N3.2 ■ 39 F	N3.3 ▣ 20 D	N4.1 ▣ 131 G	N4.2 ▣ 115 G									

DCON MS tolerance h9.

Product	DC_2 (mm)	DC_1 (mm)	LCF (mm)	OAL (mm)	DCON MS (mm)	NOF	Pack Qty	MID
G1546.3	6.30	1.50	5.5	45.0	5.00	3	1	5972617
G1548.3	8.30	2.00	6.5	50.0	6.00	3	1	5972621
G15410.4	10.40	2.50	7.6	50.0	6.00	3	1	5972788
G15412.4	12.40	2.80	8.5	56.0	8.00	3	1	5972795
G15416.5	16.50	3.20	10.5	60.0	10.00	3	1	5972798
G15420.5	20.50	3.50	13.0	63.0	10.00	3	1	5972801
G15425.0	25.00	3.80	15.5	67.0	10.00	3	1	5972804

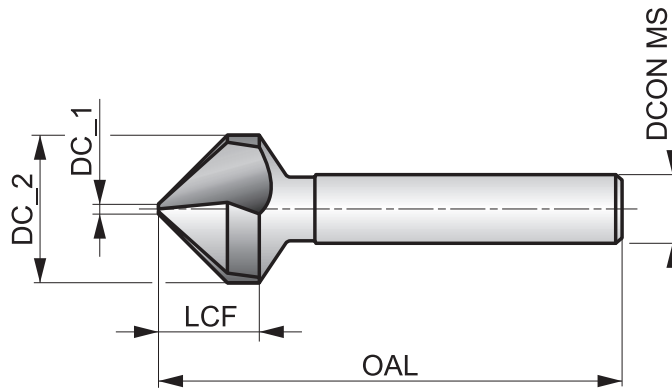


G142



HSS Straight Shank, 90° Countersink, Bright Finish, for Stainless Steel

A 90° Countersink designed for chamfering holes for standard fasteners and to clean burrs from drilled holes. Increased relief to provide a sharper edge, which improves performance when machining sticky materials, such as stainless steels and non-ferrous materials. Can be used in hand-held and machine applications.



HSS	Bright	DIN 335C
R		90°

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 383.

P1.1 ■ 75 E	P1.2 ■ 85 E	P1.3 ■ 89 E	P2.1 ■ 66 E	P2.2 ■ 59 D	P2.3 ▣ 52 B	P3.1 ■ 52 D	P3.2 ■ 43 D	P3.3 ▣ 36 B	P4.1 ■ 33 D	P4.2 ▣ 26 B	M1.1 ■ 36 C	M1.2 ■ 30 C	M2.1 ■ 33 C
M2.2 ▣ 26 C	M3.1 ■ 23 B	M3.2 ▣ 20 B	M4.1 ▣ 13 A	N1.1 ■ 131 G	N1.2 ■ 98 G	N1.3 ▣ 66 F	N2.1 ▣ 66 F	N2.2 ▣ 59 F	N2.3 ▣ 66 F	N3.1 ■ 112 F	N3.2 ■ 66 F	N3.3 ■ 33 D	N4.1 ■ 131 G
N4.2 ■ 115 G													

DCON MS tolerance h9.

Product	DC_2 (mm)	DC_1 (mm)	LCF (mm)	OAL (mm)	DCON MS (mm)	NOF	Pack Qty	MID
G1425.0	5.00	1.50	4.5	40.0	4.00	3	1	5973143
G1426.3	6.30	1.50	5.5	45.0	5.00	3	1	5973157
G1428.0	8.00	2.00	6.1	50.0	6.00	3	1	5973173
G1428.3	8.30	2.00	6.5	50.0	6.00	3	1	5973178
G14210.0	10.00	2.50	7.6	50.0	6.00	3	1	5973088
G14210.4	10.40	2.50	7.6	50.0	6.00	3	1	5973091
G14212.4	12.40	2.80	8.5	56.0	8.00	3	1	5973100
G14215.0	15.00	3.20	9.5	60.0	10.00	3	1	5973105
G14216.5	16.50	3.20	10.5	60.0	10.00	3	1	5973108
G14220.5	20.50	3.50	13.0	63.0	10.00	3	1	5973117
G14223.0	23.00	3.80	13.7	67.0	10.00	3	1	5973121
G14225.0	25.00	3.80	15.5	67.0	10.00	3	1	5973126
G14231.0	31.00	4.20	18.5	71.0	12.00	3	1	5973131

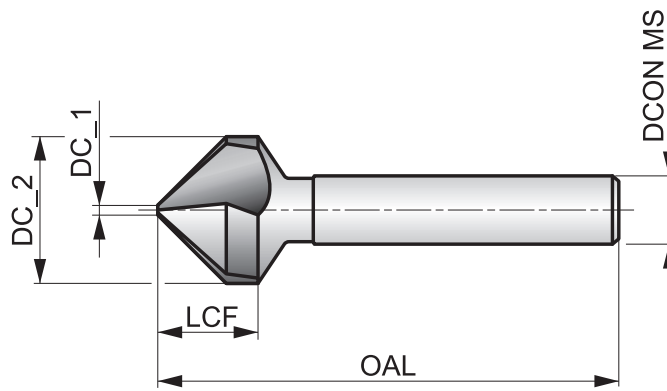


G136



HSS Straight Shank 90° Countersink, Bright Finish

A 90° Countersink designed to chamfer holes and for removing burrs from drilled holes. Reduced shank allows larger diameter countersinks in standard holders and chucks. Versatile tool, which can be used in hand-held and machine applications. Suitable to chamfer holes in many materials.



HSS	Bright	DIN 335C
R		90°

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 383.

P1.1 ■ 75 E	P1.2 ■ 85 E	P1.3 ■ 89 E	P2.1 ■ 66 E	P2.2 ■ 59 D	P2.3 ▣ 52 B	P3.1 ■ 52 D	P3.2 ■ 43 D	P3.3 ▣ 36 B	P4.1 ■ 33 D	P4.2 ▣ 26 B	M1.1 ▣ 26 C	M1.2 ▣ 20 C	M2.1 ▣ 23 C
M2.2 ▣ 20 C	K1.1 ▣ 66 F	K1.2 ▣ 49 D	K2.1 ▣ 69 C	K2.2 ▣ 56 C	K3.1 ▣ 59 C	K3.2 ▣ 46 C	K5.1 ▣ 62 C	K5.2 ▣ 49 C	N1.1 ▣ 131 G	N1.2 ■ 98 G	N1.3 ▣ 66 F	N2.1 ■ 66 F	N2.2 ▣ 59 F
N3.1 ■ 69 F	N3.2 ■ 39 F	N3.3 ▣ 20 D	N4.1 ▣ 131 G	N4.2 ▣ 115 G									

DCON MS tolerance h9.

Products from this series are also available in set. Please see G236.

Product	DC_2	DC_1	LCF	OAL	DCON MS	NOF	Pack Qty	MID
	(mm)	(mm)	(mm)	(mm)	(mm)			
G1364.3	4.30	1.30	4.0	40.0	4.00	3	1	5973389
G1365.0	5.00	1.50	4.5	40.0	4.00	3	1	5973393
G1365.3	5.30	1.50	4.5	40.0	4.00	3	1	5973395
G1365.8	5.80	1.50	5.0	45.0	5.00	3	1	5973398
G1366.0	6.00	1.50	5.0	45.0	5.00	3	1	5973399
G1366.3	6.30	1.50	5.5	45.0	5.00	3	1	5973400
G1367.0	7.00	1.80	5.5	50.0	6.00	3	1	5973401
G1367.3	7.30	1.80	6.1	50.0	6.00	3	1	5973402
G1368.0	8.00	2.00	6.1	50.0	6.00	3	1	5973403
G1368.3	8.30	2.00	6.5	50.0	6.00	3	1	5973404
G1369.4	9.40	2.20	7.2	50.0	6.00	3	1	5973405
G13610.0	10.00	2.50	7.6	50.0	6.00	3	1	5973358
G13610.4	10.40	2.50	7.6	50.0	6.00	3	1	5973360

Product	DC_2	DC_1	LCF	OAL	DCON MS	NOF	Pack Qty	MID
	(mm)	(mm)	(mm)	(mm)	(mm)			
G13611.5	11.50	2.80	8.0	56.0	8.00	3	1	5973362
G13612.4	12.40	2.80	8.5	56.0	8.00	3	1	5973364
G13613.4	13.40	2.90	9.0	56.0	8.00	3	1	5973366
G13615.0	15.00	3.20	9.5	60.0	10.00	3	1	5973368
G13616.5	16.50	3.20	10.5	60.0	10.00	3	1	5973371
G13619.0	19.00	3.50	11.7	63.0	10.00	3	1	5973373
G13620.5	20.50	3.50	13.0	63.0	10.00	3	1	5973375
G13623.0	23.00	3.80	13.7	67.0	10.00	3	1	5973377
G13625.0	25.00	3.80	15.5	67.0	10.00	3	1	5973379
G13626.0	26.00	3.80	15.5	67.0	10.00	3	1	5973381
G13628.0	28.00	4.00	16.5	71.0	12.00	3	1	5973383
G13630.0	30.00	4.20	18.5	71.0	12.00	3	1	5973386
G13631.0	31.00	4.20	18.5	71.0	12.00	3	1	5973387

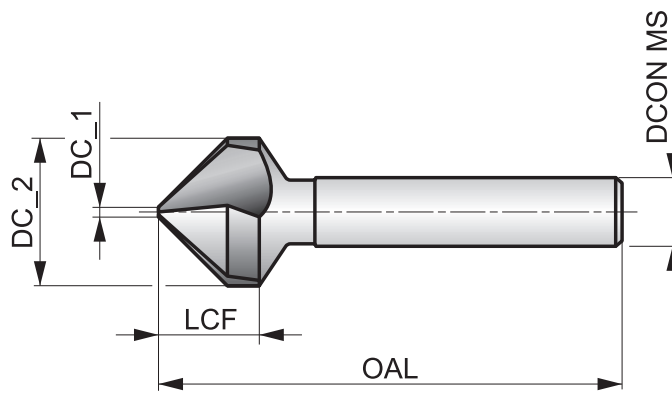


G560



HSS Straight Shank 90° Countersink, TiAIN Coated

A 90° Countersink designed for chamfering standard fastener holes and removing burrs from drilled holes. Reduced shank allows larger diameter countersinks in standard holders and chucks. Versatile tool, which can be used in hand-held and machine applications. TiAIN coating improves performance and extends tool life.



HSS	TiAIN	DIN 335C
R	90°	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 383.

P1.1 ■ 131 E	P1.2 ■ 148 E	P1.3 ■ 151 E	P2.1 ■ 112 E	P2.2 ■ 98 D	P2.3 ■ 89 B	P3.1 ■ 92 D	P3.2 ■ 72 D	P3.3 ■ 62 B	P4.1 ■ 52 D	P4.2 ■ 46 B	P4.3 ▧ 36 B	M1.1 ▧ 36 C	M1.2 ▧ 30 C
M2.1 ▧ 33 C	M2.2 ▧ 30 C	M2.3 ▧ 26 B	K1.1 ■ 135 F	K1.2 ■ 98 D	K1.3 ▧ 75 D	K2.1 ■ 138 C	K2.2 ■ 112 C	K2.3 ▧ 89 C	K3.1 ■ 121 C	K3.2 ■ 92 C	K3.3 ▧ 75 C	K4.1 ▧ 112 C	K4.2 ▧ 85 C
K4.3 ▧ 62 C	K5.1 ■ 128 C	K5.2 ■ 95 C	K5.3 ▧ 75 C	N1.1 ▧ 197 G	N1.2 ▧ 148 G	N1.3 ■ 98 F	N2.1 ■ 98 F	N2.2 ■ 89 F	N2.3 ■ 62 F	N3.1 ■ 105 F	N3.2 ■ 59 F	N3.3 ▧ 30 D	N4.1 ▧ 203 G
N4.2 ▧ 180 G													

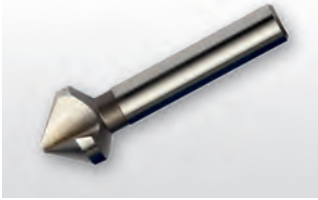
DCON MS tolerance h9.

Products from this series are also available in set. Please see G236.

Product	DC_2	DC_1	LCF	OAL	DCON MS	NOF	Pack Qty	MID
	(mm)	(mm)	(mm)	(mm)	(mm)			
G5606.3	6.30	1.50	5.5	45.0	5.00	3	1	5973351
G5608.0	8.00	2.00	6.1	50.0	6.00	3	1	5973353
G5608.3	8.30	2.00	6.5	50.0	6.00	3	1	5973355
G56010.0	10.00	2.50	7.6	50.0	6.00	3	1	5973336
G56010.4	10.40	2.50	7.6	50.0	6.00	3	1	5973337
G56012.4	12.40	2.80	8.5	56.0	8.00	3	1	5973339
G56016.5	16.50	3.20	10.5	60.0	10.00	3	1	5973341
G56020.5	20.50	3.50	13.0	63.0	10.00	3	1	5973345
G56025.0	25.00	3.80	15.5	67.0	10.00	3	1	5973347
G56031.0	31.00	4.20	18.5	71.0	12.00	3	1	5973349

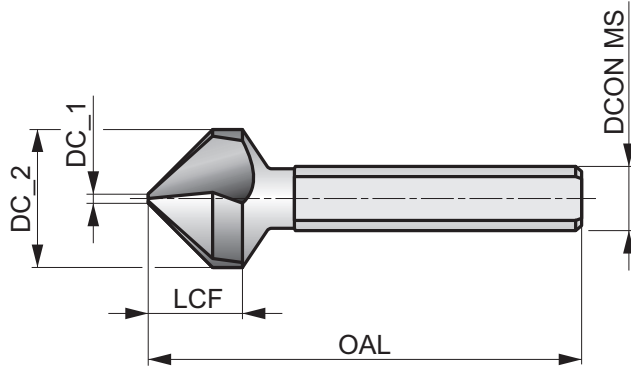


G106



HSS Tri-Flat Straight Shank 90° Countersink, Bright Finish

A 90° Countersink designed for chamfering standard fastener holes and removing burrs from drilled holes. Shank with three ground flats gives improved holding in three jaw chucks. Suitable to chamfer holes in many materials.



HSS	Bright	DIN 335C
R		90°

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 383.

P1.1 ■ 75 E	P1.2 ■ 85 E	P1.3 ■ 89 E	P2.1 ■ 66 E	P2.2 ■ 59 D	P2.3 ▧ 52 B	P3.1 ■ 52 D	P3.2 ■ 43 D	P3.3 ▧ 36 B	P4.1 ■ 33 D	P4.2 ▧ 26 B	M1.1 ▧ 26 C	M1.2 ▧ 20 C	M2.1 ▧ 23 C
M2.2 ▧ 20 C	K1.1 ■ 66 F	K1.2 ■ 49 D	K2.1 ▧ 69 C	K2.2 ▧ 56 C	K3.1 ▧ 59 C	K3.2 ▧ 46 C	K5.1 ▧ 62 C	K5.2 ▧ 49 C	N1.1 ▧ 131 G	N1.2 ■ 98 G	N1.3 ▧ 66 F	N2.1 ▧ 66 F	N2.2 ▧ 59 F
N3.1 ■ 69 F	N3.2 ▧ 39 F	N3.3 ▧ 20 D	N4.1 ▧ 131 G	N4.2 ▧ 115 G									

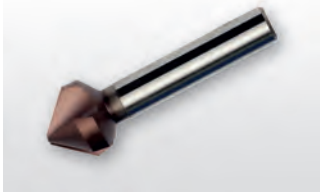
DCON MS tolerance h9.

Products from this series are also available in set. Please see G236.

Product	DC_2	DC_1	LCF	OAL	DCON MS	NOF	Pack Qty	MID
	(mm)	(mm)	(mm)	(mm)	(mm)			
G1066.3	6.30	1.50	5.6	45.0	5.00	3	1	7147780
G1068.3	8.30	2.00	6.9	50.0	6.00	3	1	7147781
G10610.4	10.40	2.50	7.8	50.0	6.00	3	1	7147782
G10612.4	12.40	2.80	8.6	56.0	8.00	3	1	7147783
G10616.5	16.50	3.20	11.1	60.0	10.00	3	1	7147784
G10620.5	20.50	3.50	12.9	63.0	10.00	3	1	7147785
G10625.0	25.00	3.80	15.7	67.0	10.00	3	1	7147786
G10631.0	31.00	4.20	18.5	71.0	12.00	3	1	7147787
G10634.0	34.00	4.50	19.0	103.0	16.00	3	1	7147788
G10637.0	37.00	4.50	21.2	118.0	16.00	3	1	7147789
G10640.0	40.00	4.50	20.0	118.0	16.00	3	1	7147790
G10650.0	50.00	5.00	23.6	126.0	16.00	3	1	7147791

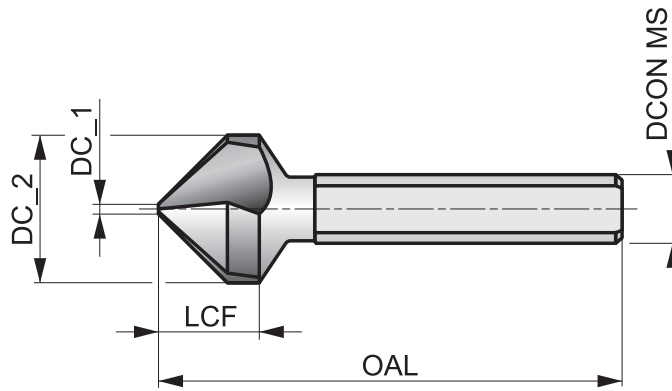


G506



HSS Tri-Flat Straight Shank 90° Countersink, TiAlN Coated

A 90° Countersink designed for chamfering standard fastener holes and removing burrs from drilled holes. Shank with three ground flats gives improved holding in three jaw chucks, especially when using in hand-held power tools. TiAlN coating extends tool life. Suitable to chamfer holes in many materials.



HSS	TiAlN	DIN 335C
R	90°	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 383.

P1.1 ■ 131 E	P1.2 ■ 148 E	P1.3 ■ 151 E	P2.1 ■ 112 E	P2.2 ■ 98 D	P2.3 ■ 89 B	P3.1 ■ 92 D	P3.2 ■ 72 D	P3.3 ■ 62 B	P4.1 ■ 52 D	P4.2 ■ 46 B	P4.3 ▧ 36 B	M1.1 ▧ 36 C	M1.2 ▧ 30 C
M2.1 ▧ 33 C	M2.2 ▧ 30 C	M2.3 ▧ 26 B	K1.1 ■ 135 F	K1.2 ■ 98 D	K1.3 ▧ 75 D	K2.1 ■ 138 C	K2.2 ■ 112 C	K2.3 ▧ 89 C	K3.1 ■ 121 C	K3.2 ■ 92 C	K3.3 ▧ 75 C	K4.1 ▧ 112 C	K4.2 ▧ 85 C
K4.3 ▧ 62 C	K5.1 ■ 128 C	K5.2 ■ 95 C	K5.3 ▧ 75 C	N1.1 ▧ 197 G	N1.2 ▧ 148 G	N1.3 ■ 98 F	N2.1 ■ 98 F	N2.2 ■ 89 F	N2.3 ■ 62 F	N3.1 ■ 105 F	N3.2 ■ 59 F	N3.3 ▧ 30 D	N4.1 ▧ 203 G
N4.2 ▧ 180 G													

DCON MS tolerance h9.

Products from this series are also available in set. Please see G236.

Product	DC_2	DC_1	LCF	OAL	DCON MS	NOF	Pack Qty	MID
	(mm)	(mm)	(mm)	(mm)	(mm)			
G5066.3	6.30	1.50	5.6	45.0	5.00	3	1	7147793
G5068.3	8.30	2.00	6.9	50.0	6.00	3	1	7147794
G50610.4	10.40	2.50	7.8	50.0	6.00	3	1	7147795
G50612.4	12.40	2.80	8.6	56.0	8.00	3	1	7147796
G50616.5	16.50	3.20	11.1	60.0	10.00	3	1	7147797
G50620.5	20.50	3.50	12.9	63.0	10.00	3	1	7147798
G50625.0	25.00	3.80	15.7	67.0	10.00	3	1	7147799
G50631.0	31.00	4.20	18.5	71.0	12.00	3	1	7147800
G50637.0	37.00	4.50	21.2	118.0	16.00	3	1	7147802
G50640.0	40.00	4.50	20.0	118.0	16.00	3	1	7147803
G50650.0	50.00	5.00	23.6	126.0	16.00	3	1	7147804

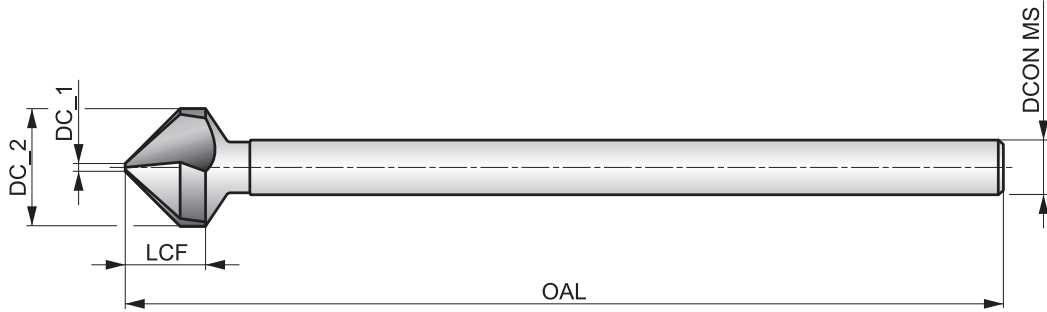


G600



HSS Straight Shank Long Reach 90° Countersink, Bright Finish

The extended shank gives the ability to chamfer holes in areas which are difficult to reach. The 90° countersink produces chamfers for standard fasteners and clean burrs from drilled holes. Suitable to chamfer holes in many materials.



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 383.

P1.1 ■ 66 E	P1.2 ■ 72 E	P1.3 ■ 75 E	P2.1 ■ 56 E	P2.2 ■ 49 D	P2.3 ▧ 43 B	P3.1 ■ 39 D	P3.2 ■ 30 D	P3.3 ▧ 26 B	P4.1 ■ 23 D	P4.2 ▧ 20 B	M1.1 ▧ 26 C	M1.2 ▧ 20 C	M2.1 ▧ 23 C
M2.2 ▧ 20 C	K1.1 ■ 56 E	K1.2 ▧ 39 C	K2.1 ▧ 59 B	K2.2 ▧ 46 B	K3.1 ▧ 49 B	K3.2 ▧ 36 B	K5.1 ▧ 52 B	K5.2 ▧ 39 B	N1.1 ▧ 115 G	N1.2 ▧ 82 G	N1.3 ▧ 49 F	N2.1 ▧ 49 F	N2.2 ▧ 43 F
N3.1 ■ 52 E	N3.2 ▧ 33 E	N3.3 ▧ 16 C											

DCON MS tolerance h9.

Product	DC_2 (mm)	DC_1 (mm)	LCF (mm)	OAL (mm)	DCON MS (mm)	NOF	Pack Qty	MID
G6006.3	6.30	1.30	5.6	154.0	5.00	3	1	6381768
G6008.3	8.30	1.80	6.9	155.0	6.00	3	1	6381769
G60010.4	10.40	2.20	7.8	157.0	6.00	3	1	6381770
G60012.4	12.40	2.50	8.6	158.0	8.00	3	1	6381771
G60015.0	15.00	2.80	10.3	159.0	10.00	3	1	6381772
G60016.5	16.50	2.80	11.1	161.0	10.00	3	1	6381773
G60020.5	20.50	3.00	12.9	164.0	10.00	3	1	6381774
G60025.0	25.00	3.20	15.7	168.0	10.00	3	1	6381775

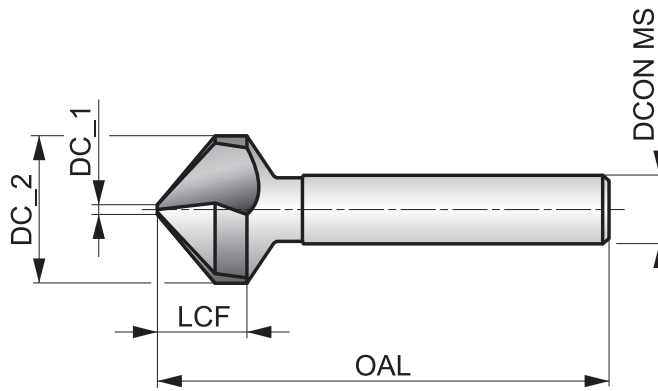


G171



HSS Straight Shank 100° Countersink, TiAlN Coated

A 100° Countersink designed for chamfering standard fastener holes and removing burrs. A versatile tool with a TiAlN coating which improves performance and extends tool life. Versatile tool that can be used in both hand-held and machine applications. Suitable to chamfer holes in many materials.



HSS	TiAlN	DIN 335C
R	100°	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 383.

P1.1 ■ 131 E	P1.2 ■ 148 E	P1.3 ■ 151 E	P2.1 ■ 112 E	P2.2 ■ 98 D	P2.3 ■ 89 B	P3.1 ■ 92 D	P3.2 ■ 72 D	P3.3 ■ 62 B	P4.1 ■ 52 D	P4.2 ■ 46 B	P4.3 ▣ 36 B	M1.1 ▣ 36 C	M1.2 ▣ 30 C
M2.1 ▣ 33 C	K1.1 ■ 135 F	K1.2 ■ 98 D	K1.3 ▣ 75 D	K2.1 ■ 138 C	K2.2 ■ 112 C	K2.3 ▣ 89 C	K3.1 ■ 121 C	K3.2 ■ 92 C	K3.3 ▣ 75 C	K4.1 ▣ 112 C	K4.2 ▣ 85 C	K4.3 ▣ 62 C	K5.1 ■ 128 C
K5.2 ■ 95 C	K5.3 ▣ 75 C	N1.1 ▣ 197 G	N1.2 ▣ 148 G	N1.3 ■ 98 F	N2.1 ■ 98 F	N2.2 ■ 89 F	N2.3 ■ 62 F	N3.1 ■ 105 F	N3.2 ■ 59 F	N3.3 ▣ 30 D	N4.1 ▣ 203 G	N4.2 ▣ 180 G	

DCON MS tolerance h9.

Product	DC_2 (mm)	DC_1 (mm)	LCF (mm)	OAL (mm)	DCON MS (mm)	NOF	Pack Qty	MID
G1716.3	6.30	1.50	4.5	44.0	5.00	3	1	5972697
G1718.3	8.30	2.00	5.5	49.0	6.00	3	1	5972706
G17110.4	10.40	2.50	6.6	49.0	6.00	3	1	5972677
G17112.4	12.40	2.80	7.0	53.0	8.00	3	1	5972680
G17116.5	16.50	3.20	9.0	56.0	10.00	3	1	5972684
G17120.5	20.50	3.50	11.0	61.0	10.00	3	1	5972689
G17125.0	25.00	3.80	13.5	65.0	10.00	3	1	5972693

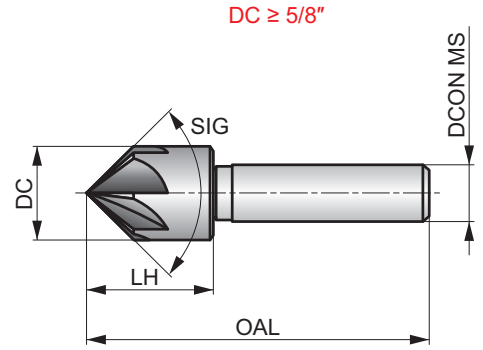
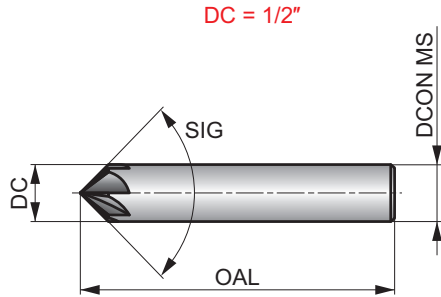


4602



HSS Straight Shank Countersink, 4-Flute

Available in two countersink angles (60° or 82°) used for creating chamfers on holes or countersinks for flat head socket cap screws. 4-flute design with straight 1/2" shanks and maximum countersink diameters up to 1". Can be used in machine and hand held operations.



HSS	Bright	ANSI
R		60-82°

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 383.

P1.1 ■ 69 D	P1.2 ■ 79 D	P1.3 ■ 82 D	P2.1 ■ 59 D	P2.2 ■ 52 C	P2.3 ▣ 46 A	P3.1 ■ 43 B	P3.2 ▣ 36 B	P3.3 ■	P4.1 ■	P4.2 ■	P4.3 ▣	M1.1 ▣ 26 B	M1.2 ▣ 20 B
M2.1 ▣ 23 B	K1.1 ▣ 59 D	K1.2 ▣ 43 C	K2.1 ▣ 62 A	K2.2 ▣ 49 A	K3.1 ▣ 52 A	K3.2 ▣ 39 A	N1.1 ■ 112 D	N1.2 ■ 82 D	N1.3 ■ 52 C	N2.1 ▣ 52 C	N2.2 ▣ 46 C	N3.1 ■ 56 C	N3.2 ■ 30 C
N3.3 ▣ 16 B	N4.1 ▣ 115 D	N4.2 ▣ 98 D											

Product	DC	DC	SIG	DCON MS	LH	OAL	NOF	Pack Qty	MID
	(inch)	(inch)	(°)	(inch)	(inch)	(inch)			
46021/2X82	1/2	.5000	82	1/2	1.5/8	3.7/8	4	1	6005571
46023/4X82	3/4	.7500	82	1/2	1.7/8	4.1/8	4	1	6005591
46027/8X82	7/8	.8750	82	1/2	2"	4.1/4	4	1	6005619
46021X82	1"	1.0000	82	1/2	2.1/8	4.3/8	4	1	6005581

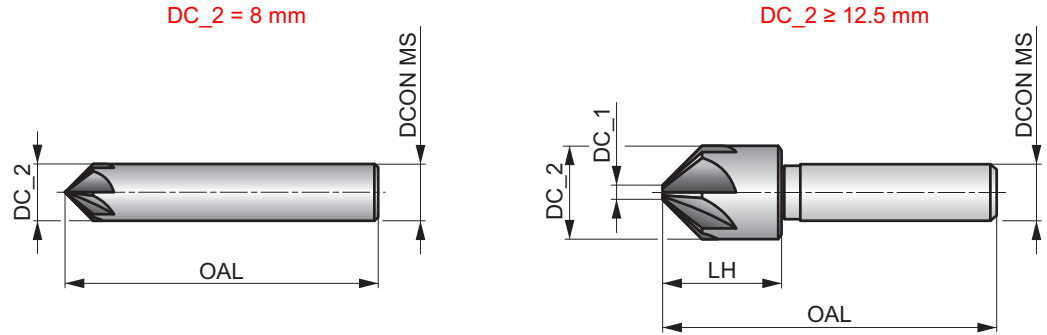


G132



HSS Straight Shank Multi-Flute 90° Countersink, Bright Finish

A 90° Countersink designed for chamfering holes to accommodate standard fasteners and clean burrs from drilled holes. Multiple flutes to reduce chatter and vibration, giving a smooth chamfering operation. Versatile tool for use in hand-held and machine applications. Suitable to chamfer holes in many materials.



HSS	Bright	DIN 335A
R		90°

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 383.

P2.2 ▣ 59 E	P2.3 ▣ 52 D	P3.2 ▣ 43 D	P3.3 ▣ 36 B	P4.1 ▣ 33 D	P4.2 ▣ 26 C	P4.3 ▣ 23 B	M3.3 ▣ 10 A	M4.1 ▣ 13 A	K1.1 ▣ 66 F	K1.2 ▣ 49 D	K1.3 ▣ 36 D	K2.2 ▣ 56 C	K2.3 ▣ 46 D
K3.1 ▣ 59 E	K3.2 ▣ 46 E	K3.3 ▣ 36 D	K4.1 ▣ 56 C	K4.2 ▣ 43 C	K5.1 ▣ 62	K5.2 ▣ 49	K5.3 ▣ 36 D	N1.3 ▣ 66 F	N2.3 ▣ 43 F	N3.2 ▣ 39 F	N4.3 ▣ 16 G		

DCON MS tolerance h9.

Product	DC_2 (mm)	DC_1 (mm)	LH (mm)	OAL (mm)	DCON MS (mm)	NOF	Pack Qty	MID
G1328.0	8.00	–	–	48.0	8.00	5	1	5973340
G13212.5	12.50	2.00	15.5	48.0	8.00	5	1	5973334
G13216.0	16.00	3.20	19.5	56.0	10.00	7	1	5973335
G13220.0	20.00	5.00	23.0	60.0	10.00	7	1	5973338

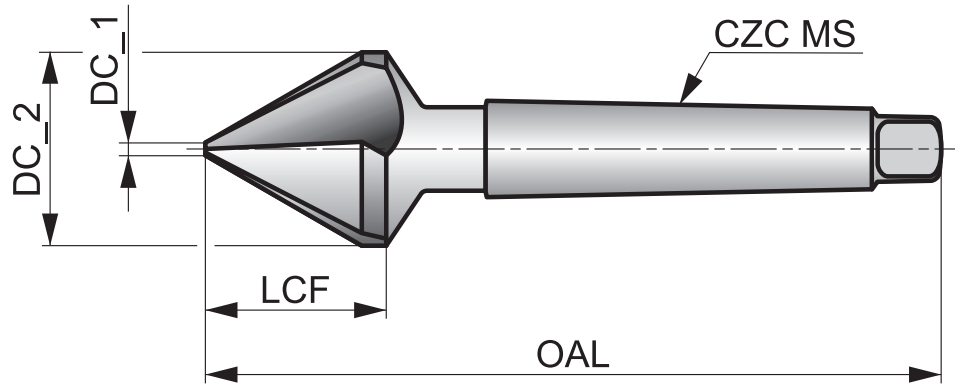


G137



HSS Taper Shank 60° Countersink, Bright Finish

Countersinks with bright finish and a 60° angle to chamfer holes for special fasteners and removing burrs from drilled holes. Taper shank design allows the tool to be used in machine applications where it is held directly in the spindle. Suitable to chamfer holes in many materials.



HSS	Bright	DIN 334D
R		60°

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 383.

P1.1 ■ 75 E	P1.2 ■ 85 E	P1.3 ■ 89 E	P2.1 ■ 66 E	P2.2 ■ 59 D	P2.3 ▧ 52 B	P3.1 ■ 52 D	P3.2 ▧ 43 D	P3.3 ▧ 36 B	P4.1 ■ 33 D	P4.2 ▧ 26 B	M1.1 ▧ 26 C	M1.2 ▧ 20 C	M2.1 ▧ 23 C
M2.2 ▧ 20 C	K1.1 ▧ 66 F	K1.2 ▧ 49 D	K2.1 ▧ 69 C	K2.2 ▧ 56 C	K3.1 ▧ 59 C	K3.2 ▧ 46 C	K5.1 ▧ 62 C	K5.2 ▧ 49 C	N1.1 ▧ 131 G	N1.2 ■ 98 G	N1.3 ▧ 66 F	N2.1 ■ 66 F	N2.2 ▧ 59 F
N3.1 ■ 69 F	N3.2 ■ 39 F	N3.3 ▧ 20 D	N4.1 ▧ 131 G	N4.2 ▧ 115 G									

Product	DC_2 (mm)	DC_1 (mm)	LCF (mm)	OAL (mm)	CZC MS	NOF	Pack Qty	MID
G13731.5	31.50	10.00	23.0	118.0	MK 2	3	1	5973099
G13740.0	40.00	12.50	28.5	150.0	MK 3	3	1	5973147
G13750.0	50.00	16.00	36.0	160.0	MK 3	3	1	5973208

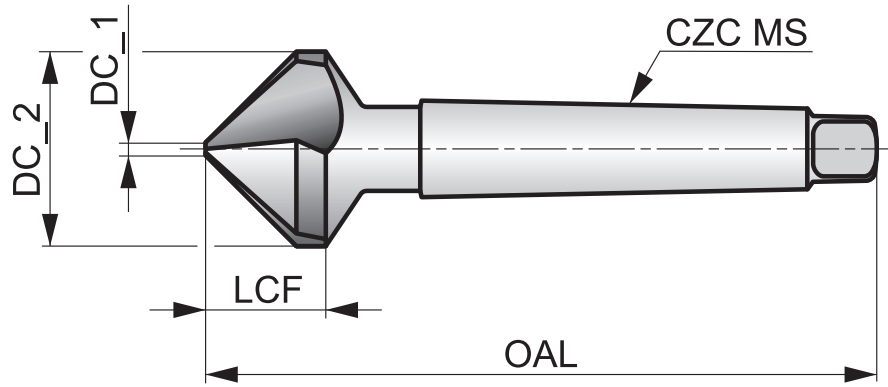


G138



HSS Taper Shank 90° Countersink, Bright Finish

A 90° Countersink designed for chamfering standard fastener holes and removing burrs from drilled holes. Taper shank design allows the tool to be used in machine applications where it is held directly in the spindle. Suitable to chamfer holes in many materials.



HSS	Bright	DIN 335D
R		90°

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 383.

P1.1 ■ 75 E	P1.2 ■ 85 E	P1.3 ■ 89 E	P2.1 ■ 66 E	P2.2 ■ 59 D	P2.3 ■ 52 B	P3.1 ■ 52 D	P3.2 ■ 43 D	P3.3 ■ 36 B	P4.1 ■ 33 D	P4.2 ■ 26 B	M1.1 ■ 26	M1.2 ■ 20	M2.1 ■ 23
M2.2 ■ 20	K1.1 ■ 66 F	K1.2 ■ 49 D	K2.1 ■ 69 C	K2.2 ■ 56 C	K3.1 ■ 59 C	K3.2 ■ 46 C	K5.1 ■ 62 C	K5.2 ■ 49 C	N1.1 ■ 131 G	N1.2 ■ 98 G	N1.3 ■ 66 F	N2.1 ■ 66 F	N2.2 ■ 59 F
N3.1 ■ 69 F	N3.2 ■ 39 F	N3.3 ■ 20 D	N4.1 ■ 131 G	N4.2 ■ 115 G									

Product	DC_2 (mm)	DC_1 (mm)	LCF (mm)	OAL (mm)	CZC MS	NOF	Pack Qty	MID
G13825.0	25.00	3.80	15.5	106.0	MK 2	3	1	5973066
G13830.0	30.00	4.20	18.5	112.0	MK 2	3	1	5973069
G13831.0	31.00	4.20	20.0	112.0	MK 2	3	1	5973070
G13834.0	34.00	4.50	19.5	118.0	MK 2	3	1	5973071
G13837.0	37.00	4.80	21.7	118.0	MK 2	3	1	5973072
G13840.0	40.00	10.00	20.5	140.0	MK 3	3	1	5973074
G13850.0	50.00	14.00	24.1	150.0	MK 3	3	1	5973075
G13863.0	63.00	16.00	28.5	180.0	MK 4	3	1	5973076

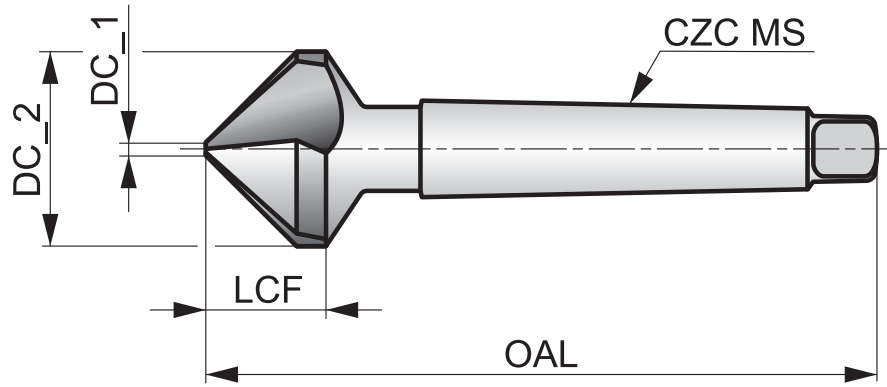


G338



HSS Taper Shank 90° Countersink, TiN Coated

A 90° Countersink designed for chamfering standard fastener holes and removing burrs. Improved performance when machining for long periods at high speed. Taper shank design allows it to be held directly in the spindle. TiN Coating improves performance and extends tool life. Suitable for many materials.



HSS	TiN	DIN 335D
R	90°	

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 383.

P1.1 ■ 108 E	P1.2 ■ 121 E	P1.3 ■ 125 E	P2.1 ■ 92 E	P2.2 ■ 82 D	P2.3 ■ 72 B	P3.1 ■ 75 D	P3.2 ■ 59 D	P3.3 ■ 49 B	P4.1 ■ 43 D	P4.2 ■ 36 B	P4.3 ▣ 30 B	M1.1 ▣ 36 C	M1.2 ▣ 30 C
M2.1 ▣ 33 C	M2.2 ▣ 30 C	M2.3 ▣ 26 B	K1.1 ■ 112 F	K1.2 ■ 82 D	K1.3 ▣ 62 D	K2.1 ■ 115 C	K2.2 ■ 92 C	K2.3 ▣ 75 C	K3.1 ■ 102 C	K3.2 ■ 79 C	K3.3 ▣ 62 C	K4.1 ▣ 95 C	K4.2 ▣ 72 C
K4.3 ▣ 52 C	K5.1 ■ 105 C	K5.2 ■ 79 C	K5.3 ▣ 62 C	N1.1 ■ 174 G	N1.2 ■ 131 G	N1.3 ■ 89 F	N2.1 ■ 89 F	N2.2 ■ 79 F	N2.3 ■ 56 F	N3.1 ■ 92 F	N3.2 ■ 52 F	N3.3 ▣ 26 D	N4.1 ▣ 190 G
N4.2 ▣ 164 G													

Product	DC_2 (mm)	DC_1 (mm)	LCF (mm)	OAL (mm)	CZC MS	NOF	Pack Qty	MID
G33825.0	25.00	3.80	15.5	106.0	MK 2	3	1	5973321
G33831.0	31.00	4.20	20.0	112.0	MK 2	3	1	5973322
G33837.0	37.00	4.80	21.7	118.0	MK 2	3	1	5973324
G33840.0	40.00	10.00	20.5	140.0	MK 3	3	1	5973326
G33850.0	50.00	14.00	24.1	150.0	MK 3	3	1	5973327

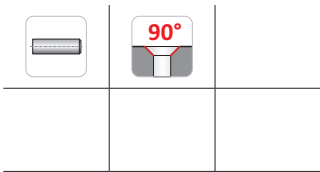


G236



Sets of Countersink in a Cylindrical Plastic Drum

Sets containing a variety of sizes of different 90° countersinks. There are 5 different sets filled either with G106, G136 or G560 available. Suitable for many materials.



Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 383.

A=Styles in Set, B=No. in Set, C=Diameters in Set.

Product	Nr.	A	B	C	Pack Qty	MID
G2361	1	G136	6	6.30 mm, 8.30 mm, 10.40 mm, 12.40 mm, 16.50 mm, 20.50 mm	1	5972710
G2362	2	G136	4	6.30 mm, 10.40 mm, 16.50 mm, 20.50 mm	1	5972714
G2363	3	G560	6	6.30 mm, 8.30 mm, 10.40 mm, 12.40 mm, 16.50 mm, 20.50 mm	1	6521338
G2364	4	G106	6	6.30 mm, 8.30 mm, 10.40 mm, 12.40 mm, 16.50 mm, 20.50 mm	1	7147792
G2365	5	G506	6	6.30 mm, 8.30 mm, 10.40 mm, 12.40 mm, 16.50 mm, 20.50 mm	1	7147805

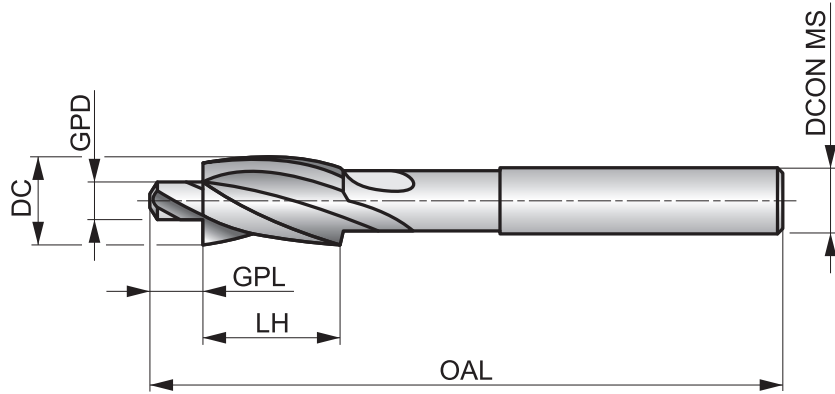


G125



HSS Straight Shank 180° Counterbore, Bright Finish

Counterbore with a 180° angle designed to create holes for standard socket head and cap screws. It has a solid Pilot (available for different pre-machined hole size tolerances), which helps to accurately guide the counterbore in standard metric sized holes. Suitable to counterbore holes in many materials.



HSS	Bright	DIN 373
R		180°

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 383.

P1.1 ■ 66 E	P1.2 ■ 72 E	P1.3 ■ 75 E	P2.1 ■ 56 E	P2.2 ■ 49 D	P2.3 ▧ 43 C	P3.1 ■ 39 D	P3.2 ▧ 30 D	P3.3 ▧ 26 C	P4.1 ▧ 23 D	P4.2 ▧ 20 C	M1.1 ▧ 26 D	M1.2 ▧ 20 D	M2.1 ▧ 23 D
M2.2 ▧ 20 D	M2.3 ▧ 16 C	K1.1 ■ 56 E	K1.2 ▧ 39 E	K1.3 ▧ 36 E	K2.1 ■ 49 D	K2.2 ▧ 39 D	K2.3 ▧ 33 C	K3.1 ▧ 43 D	K3.2 ▧ 33 D	K4.1 ▧ 39 D	K4.2 ▧ 30 D	K5.1 ■ 46 D	K5.2 ▧ 33 D
N1.1 ▧ 98 G	N1.2 ■ 75 G	N1.3 ■ 49 G	N2.1 ▧ 102 G	N2.2 ▧ 92 G	N2.3 ▧ 66 G	N3.1 ■ 112 C	N3.2 ■ 66 C	N3.3 ▧ 33 C	N4.1 ■ 98 C	N4.2 ▧ 66 C			

DCON MS tolerance h9.

Product	DC (mm)	GPD (mm)	CZC MS	GPL (mm)	OAL (mm)	LH (mm)	DCON MS (mm)	NOF	Pack Qty	MID
G1256.5X3.2 ¹⁾	6.50	3.20	M 3 f	4.50	71.0	14.0	5.00	3	1	5973200
G1256.5X3.4 ²⁾	6.50	3.40	M 3 m	4.50	71.0	14.0	5.00	3	1	5973206
G1258.0X3.3 ³⁾	8.00	3.30	M 4 t	5.00	71.0	14.0	5.00	3	1	5973214
G1258.0X4.3 ¹⁾	8.00	4.30	M 4 f	5.00	71.0	14.0	5.00	3	1	5973219
G1258.0X4.5 ²⁾	8.00	4.50	M 4 m	5.00	71.0	14.0	5.00	3	1	5973224
G12510.0X4.2 ³⁾	10.00	4.20	M 5 t	5.50	80.0	18.0	8.00	3	1	5973310
G12510.0X5.3 ¹⁾	10.00	5.30	M 5 f	5.50	80.0	18.0	8.00	3	1	5973311
G12510.0X5.5 ²⁾	10.00	5.50	M 5 m	5.50	80.0	18.0	8.00	3	1	5973130
G12511.0X5.0 ³⁾	11.00	5.00	M 6 t	6.00	80.0	18.0	8.00	3	1	5973134
G12511.0X6.4 ¹⁾	11.00	6.40	M 6 f	6.00	80.0	18.0	8.00	3	1	5973139
G12511.0X6.6 ²⁾	11.00	6.60	M 6 m	6.00	80.0	18.0	8.00	3	1	5973144
G12515.0X6.8 ³⁾	15.00	6.80	M 8 t	8.00	100.0	22.0	12.50	3	1	5973149
G12515.0X8.4 ¹⁾	15.00	8.40	M 8 f	8.00	100.0	22.0	12.50	3	1	5973154
G12515.0X9.0 ²⁾	15.00	9.00	M 8 m	8.00	100.0	22.0	12.50	3	1	5973159
G12518.0X8.5 ³⁾	18.00	8.50	M 10 t	10.00	100.0	22.0	12.50	3	1	5973174
G12518.0X10.5 ¹⁾	18.00	10.50	M 10 f	10.00	100.0	22.0	12.50	3	1	5973164
G12518.0X11.0 ²⁾	18.00	11.00	M 10 m	10.00	100.0	22.0	12.50	3	1	5973169
G12520.0X10.2 ³⁾	20.00	10.20	M 12 t	10.00	100.0	22.0	12.50	3	1	5973184
G12520.0X13.0 ¹⁾	20.00	13.00	M 12 f	10.00	100.0	22.0	12.50	3	1	5973189
G12520.0X13.5 ²⁾	20.00	13.50	M 12 m	10.00	100.0	22.0	12.50	3	1	5973192

¹⁾ f= for through hole fine.

²⁾ m= for through hole medium.

³⁾ t= for tap hole.

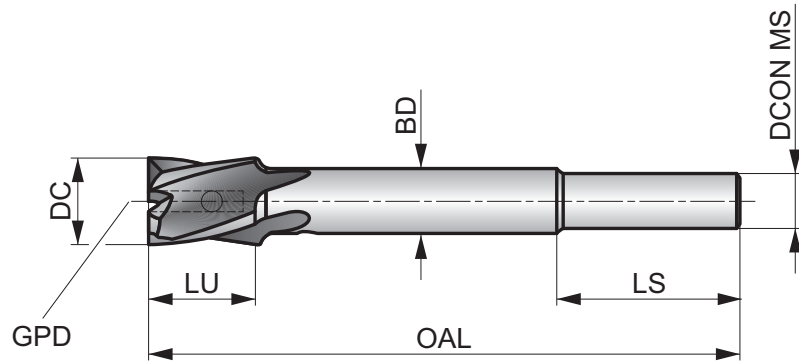


G705



HSS Counterbore Body, Aircraft Long Series, Interchangeable Pilot Type

Cylindrical shank aircraft long series counterbore body used in conjunction with detachable pilots to enlarge the top of a preformed hole by cutting a flat bottom counterbore. A non-cutting detachable pilot G704 is mounted in the body which follows the existing hole to guide and center the counterbore cutting operation.



HSS	Bright	ANSI
R		

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 383.

P1.1 ■ 66 E	P1.2 ■ 72 E	P1.3 ■ 75 E	P2.1 ■ 56 E	P2.2 ■ 49 D	P2.3 ▧ 43 C	P3.1 ■ 39 D	P3.2 ▧ 30 D	P3.3 ▧ 26 C	P4.1 ▧ 23 D	P4.2 ▧ 20 C	P4.3 ▧	M1.1 ▧ 26 D	M1.2 ▧ 20 D
M2.1 ▧ 23 D	M2.2 ▧ 20 D	M2.3 ▧ 16 C	K1.1 ■ 56 E	K1.2 ▧ 39 E	K1.3 ▧ 36 E	K2.1 ■ 49 D	K2.2 ▧ 39 D	K2.3 ▧ 33 C	K3.1 ▧ 43 D	K3.2 ▧ 33 D	K4.1 ▧ 39 D	K4.2 ▧ 30 D	K5.1 ■ 46 D
K5.2 ▧ 33 D	N1.1 ▧ 98 G	N1.2 ■ 75 G	N1.3 ■ 49 G	N2.1 ▧ 102 G	N2.2 ▧ 92 G	N2.3 ▧ 66 G	N3.1 ■ 112 C	N3.2 ■ 66 C	N3.3 ▧ 33 C	N4.1 ■ 98 C	N4.2 ▧ 66 C		

Product	DC	DC	LU	OAL	DCON MS	LS	BD	NOF	GPD	GPDN	GPDN	GPDN	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)		(inch)	(inch)	(inch)			
G7051/4	1/4	.2500	1/2	4	15/64	15/64	15/64	4	3/32	1/8	3/16	1	8203291	
G7055/16	5/16	.3125	1/2	4	19/64	19/64	19/64	4	3/32	1/8	1/4	1	8203292	
G7053/8	3/8	.3750	5/8	4	5/16	5/16	5/16	4	3/32	1/8	5/16	1	8203293	
G7057/16	7/16	.4375	5/8	4	3/8	3/8	3/8	4	1/8	3/16	3/8	1	8203294	
G7051/2	1/2	.5000	5/8	4.1/4	7/16	7/16	7/16	4	1/8	1/8	7/16	1	8203295	
G70517/32	17/32	.5313	5/8	4.1/4	1/2	1/2	1/2	4	1/8	1/8	1/2	1	8203296	
G7059/16	9/16	.5625	5/8	4.1/4	1/2	1/2	1/2	4	1/8	1/8	1/2	1	8203297	
G70519/32	19/32	.5938	5/8	4.1/4	1/2	9/16	9/16	4	1/8	1/8	1/2	1	8203298	
G7055/8	5/8	.6250	5/8	4.1/4	1/2	9/16	9/16	4	1/8	1/8	1/2	1	8203299	
G70521/32	21/32	.6563	5/8	5.3/8	1/2	9/16	9/16	4	3/16	3/16	5/8	1	8203300	
G70511/16	11/16	.6875	5/8	5.3/8	1/2	5/8	5/8	4	3/16	3/16	5/8	1	8203301	
G7053/4	3/4	.7500	3/4	5.3/8	1/2	11/16	11/16	4	3/16	3/16	5/8	1	8203302	
G70525/32	25/32	.7813	3/4	5.3/8	1/2	11/16	11/16	4	3/16	3/16	5/8	1	8203303	
G70513/16	13/16	.8125	3/4	5.3/8	1/2	3/4	3/4	4	3/16	3/16	5/8	1	8203304	
G7057/8	7/8	.8750	15/16	5.3/8	1/2	3/4	3/4	4	3/16	3/16	13/16	1	8203305	
G70515/16	15/16	.9375	15/16	5.3/8	1/2	3/4	3/4	4	3/16	3/16	7/8	1	8203306	

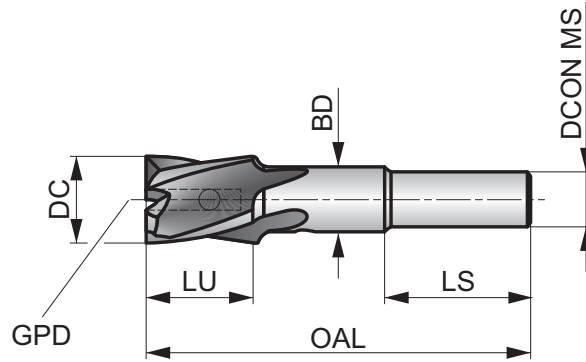


G706



HSS Counterbore Body, Aircraft Short Series, Interchangeable Pilot Type

Cylindrical shank aircraft short series counterbore body used in conjunction with detachable pilots to enlarge the top of a preformed hole by cutting a flat bottom counterbore. A non-cutting detachable pilot G704 is mounted in the body which follows the existing hole to guide and center the counterbore cutting operation.



HSS	Bright	ANSI
R		

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 383.

P1.1 ■ 66 E	P1.2 ■ 72 E	P1.3 ■ 75 E	P2.1 ■ 56 E	P2.2 ■ 49 D	P2.3 ▣ 43 C	P3.1 ■ 39 D	P3.2 ▣ 30 D	P3.3 ▣ 26 C	P4.1 ▣ 23 D	P4.2 ▣ 20 C	P4.3 ▣	M1.1 ▣ 26 D	M1.2 ▣ 20 D
M2.1 ▣ 23 D	M2.2 ▣ 20 D	M2.3 ▣ 16 C	K1.1 ■ 56 E	K1.2 ▣ 39 E	K1.3 ▣ 36 E	K2.1 ■ 49 D	K2.2 ▣ 39 D	K2.3 ▣ 33 C	K3.1 ▣ 43 D	K3.2 ▣ 33 D	K4.1 ▣ 39 D	K4.2 ▣ 30 D	K5.1 ■ 46 D
K5.2 ▣ 33 D	N1.1 ▣ 98 G	N1.2 ■ 75 G	N1.3 ■ 49 G	N2.1 ▣ 102 G	N2.2 ▣ 92 G	N2.3 ▣ 66 G	N3.1 ■ 112 C	N3.2 ■ 66 C	N3.3 ▣ 33 C	N4.1 ■ 98 C	N4.2 ▣ 66 C		

Product	DC (inch)	DC (inch)	LU (inch)	OAL (inch)	DCON MS (inch)	LS (inch)	BD (inch)	NOF	GPD (inch)	GPDN (inch)	GPDX (inch)	Pack Qty	MID
G7061/4	1/4	.2500	1/2	2.3/8	1/4	1.1/8	15/64	4	3/32	1/8	3/16	1	8203307
G7065/16	5/16	.3125	1/2	2.3/8	1/4	7/8	17/64	4	3/32	1/8	1/4	1	8203308
G70611/32	11/32	.3438	1/2	2.3/8	1/4	7/8	19/64	4	3/32	1/8	9/32	1	8203309
G7063/8	3/8	.3750	1/2	2.3/8	1/4	7/8	5/16	4	3/32	3/16	5/16	1	8203310
G70613/32	13/32	.4063	1/2	2.13/16	1/4	7/8	5/16	4	1/8	3/16	11/32	1	8203311
G7067/16	7/16	.4375	1/2	2.13/16	1/4	7/8	5/16	4	1/8	3/16	3/8	1	8203312
G70615/32	15/32	.4688	1/2	2.13/16	1/4	7/8	5/16	4	1/8	1/4	13/32	1	8203313
G7061/2	1/2	.5000	1/2	2.13/16	1/4	7/8	3/8	4	1/8	1/4	7/16	1	8203314
G70617/32	17/32	.5313	1/2	2.13/16	1/4	7/8	3/8	4	1/8	1/4	15/32	1	8203315
G7069/16	9/16	.5625	1/2	2.13/16	1/4	7/8	3/8	4	1/8	1/4	1/2	1	8203316
G70611/16	11/16	.6875	1/2	2.13/16	1/4	7/8	1/2	4	1/8	1/4	5/8	1	8203317
G7063/4	3/4	.7500	1/2	2.13/16	1/4	7/8	1/2	4	3/16	5/16	11/16	1	8203318
G70613/16	13/16	.8125	1/2	2.13/16	1/4	7/8	1/2	4	3/16	5/16	3/4	1	8203319
G7067/8	7/8	.8750	1/2	2.13/16	1/4	7/8	1/2	4	3/16	5/16	13/16	1	8203320
G7061	1"	1.0000	1/2	2.13/16	1/4	7/8	1/2	4	3/16	3/8	15/16	1	8203321

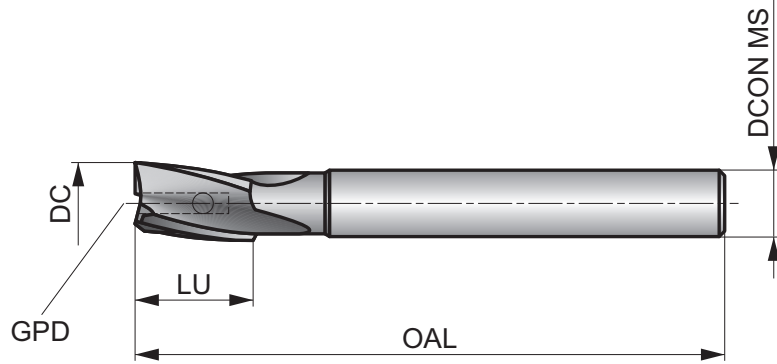


G702



HSS Counterbore Body with Reduced Shank, Interchangeable Pilot Type

Cylindrical shank counterbore body used in conjunction with detachable pilots to enlarge the top of a preformed hole by cutting a flat bottom counterbore. A non-cutting detachable pilot G704 is mounted in the body which follows the existing hole to guide and center the counterbore cutting operation.



HSS	Bright	ANSI
R		

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 383.

P1.1 ■ 66 E	P1.2 ■ 72 E	P1.3 ■ 75 E	P2.1 ■ 56 E	P2.2 ■ 49 D	P2.3 ▣ 43 C	P3.1 ■ 39 D	P3.2 ▣ 30 D	P3.3 ▣ 26 C	P4.1 ▣ 23 D	P4.2 ▣ 20 C	P4.3 ▣	M1.1 ▣ 26 D	M1.2 ▣ 20 D
M2.1 ▣ 23 D	M2.2 ▣ 20 D	M2.3 ▣ 16 C	K1.1 ■ 56 E	K1.2 ▣ 39 E	K1.3 ▣ 36 E	K2.1 ■ 49 D	K2.2 ▣ 39 D	K2.3 ▣ 33 C	K3.1 ▣ 43 D	K3.2 ▣ 33 D	K4.1 ▣ 39 D	K4.2 ▣ 30 D	K5.1 ■ 46 D
K5.2 ▣ 33 D	N1.1 ▣ 98 G	N1.2 ■ 75 G	N1.3 ■ 49 G	N2.1 ▣ 102 G	N2.2 ▣ 92 G	N2.3 ▣ 66 G	N3.1 ■ 112 C	N3.2 ■ 66 C	N3.3 ▣ 33 C	N4.1 ■ 98 C	N4.2 ▣ 66 C		

Product	DC	DC	LU	OAL	DCON MS	NOF	GPD	GPDN	GPDx	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)	(inch)		(inch)	(inch)	(inch)		
G7021/4	1/4	.2500	3/4	3.13/16	15/64	3	3/32	1/8	3/16	1	8203127
G7029/32	9/32	.2813	3/4	3.13/16	17/64	3	3/32	1/8	7/32	1	8203128
G7025/16	5/16	.3125	3/4	3.13/16	19/64	3	3/32	1/8	1/4	1	8203129
G70211/32	11/32	.3438	3/4	3.13/16	5/16	3	3/32	1/8	9/32	1	8203180
G7023/8	3/8	.3750	1"	4.1/16	5/16	3	5/32	3/16	5/16	1	8203181
G70213/32	13/32	.4063	1"	4.1/16	3/8	3	5/32	3/16	11/32	1	8203182
G7027/16	7/16	.4375	1"	4.1/16	3/8	3	5/32	3/16	3/8	1	8203183
G70215/32	15/32	.4688	1.1/4	4.5/16	7/16	3	3/16	3/16	13/32	1	8203184
G7021/2	1/2	.5000	1.1/4	4.5/16	7/16	3	3/16	3/16	7/16	1	8203185
G7029/16	9/16	.5625	1.1/4	4.5/16	1/2	3	3/16	3/16	1/2	1	8203186
G70219/32	19/32	.5938	1.1/4	5.1/8	1/2	3	3/16	3/16	17/32	1	8203187
G7025/8	5/8	.6250	1.1/4	5.1/8	1/2	3	3/16	3/16	9/16	1	8203188
G70211/16	11/16	.6875	1.1/4	5.1/8	1/2	3	3/16	3/16	5/8	1	8203189
G7023/4	3/4	.7500	1.1/2	5.3/8	1/2	3	1/4	5/16	11/16	1	8203190
G70225/32	25/32	.7813	1.1/2	5.3/8	5/8	3	1/4	5/16	23/32	1	8203191
G70213/16	13/16	.8125	1.1/2	5.3/8	5/8	3	1/4	5/16	3/4	1	8203192
G70227/32	27/32	.8438	1.1/2	5.3/8	3/4	3	1/4	5/16	25/32	1	8203193
G7027/8	7/8	.8750	1.1/2	5.3/8	3/4	3	1/4	5/16	13/16	1	8203194
G7021	1"	1.0000	1.3/4	6.3/8	3/4	3	5/16	3/8	15/16	1	8203195
G7022	2"	2.0000	2.1/2	8.3/8	1.1/2	5	1/2	9/16	1.15/16	1	8203196

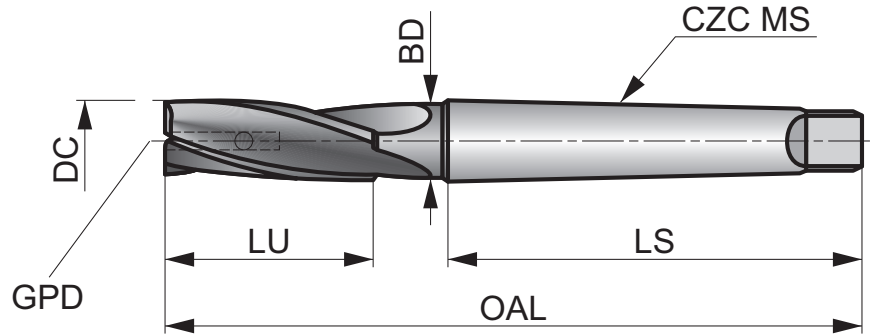


G703



HSS Counterbore Body with Taper Shank, Interchangeable Pilot Type

Counterbore body with Morse Taper shank used in conjunction with detachable pilots to enlarge the top of a preformed hole by cutting a flat bottom counterbore. A non-cutting detachable pilot G704 is mounted in the body which follows the existing hole to guide and center the counterbore cutting operation.



HSS	Bright	ANSI
R		

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 383.

P1.1 ■ 66 E	P1.2 ■ 72 E	P1.3 ■ 75 E	P2.1 ■ 56 E	P2.2 ■ 49 D	P2.3 ▣ 43 C	P3.1 ■ 39 D	P3.2 ▣ 30 D	P3.3 ▣ 26 C	P4.1 ▣ 23 D	P4.2 ▣ 20 C	P4.3 ▣	M1.1 ▣ 26 D	M1.2 ▣ 20 D
M2.1 ▣ 23 D	M2.2 ▣ 20 D	M2.3 ▣ 16 C	K1.1 ■ 56 E	K1.2 ▣ 39 E	K1.3 ▣ 36 E	K2.1 ■ 49 D	K2.2 ▣ 39 D	K2.3 ▣ 33 C	K3.1 ▣ 43 D	K3.2 ▣ 33 D	K4.1 ▣ 39 D	K4.2 ▣ 30 D	K5.1 ■ 46 D
K5.2 ▣ 33 D	N1.1 ▣ 98 G	N1.2 ■ 75 G	N1.3 ■ 49 G	N2.1 ▣ 102 G	N2.2 ▣ 92 G	N2.3 ▣ 66 G	N3.1 ■ 112 C	N3.2 ■ 66 C	N3.3 ▣ 33 C	N4.1 ■ 98 C	N4.2 ▣ 66 C		

Product	DC (inch)	DC (inch)	LU (inch)	OAL (inch)	CZC MS	BD (inch)	LS (inch)	NOF	GPD (inch)	GPDN (inch)	GPDX (inch)	Pack Qty	MID
G7031/2	1/2	.5000	1.1/4	4.5/16	1	29/64	2.9/16	3	3/16	1/4	7/16	1	8203197
G70311/16	11/16	.6875	1.1/4	5.1/8	2	5/8	3.1/8	3	3/16	1/4	5/8	1	8203198
G7033/4	3/4	.7500	1.1/2	5.3/8	2	21/32	3.1/8	3	1/4	5/16	11/16	1	8203199
G70313/16	13/16	.8125	1.1/2	5.3/8	2	21/32	3.1/8	3	1/4	5/16	3/4	1	8203200
G7037/8	7/8	.8750	1.1/2	5.3/8	2	21/32	3.1/8	3	1/4	5/16	13/16	1	8203201
G70315/16	15/16	.9375	1.1/2	6.1/8	3	7/8	3.7/8	3	1/4	5/16	7/8	1	8203202
G7031	1"	1.0000	1.3/4	6.3/8	3	7/8	3.7/8	3	5/16	3/8	15/16	1	8203203
G7031.1/16	1.1/16	1.0625	1.3/4	6.3/8	3	7/8	3.7/8	3	5/16	3/8	1"	1	8203204
G7031.1/8	1.1/8	1.1250	1.3/4	6.3/8	3	7/8	3.7/8	3	5/16	3/8	1.1/16	1	8203205
G7031.3/16	1.3/16	1.1875	1.3/4	6.3/8	3	7/8	3.7/8	3	5/16	3/8	1.1/8	1	8203206
G7031.1/4	1.1/4	1.2500	2"	6.5/8	3	7/8	3.7/8	5	3/8	7/16	1.3/16	1	8203207
G7031.3/8	1.3/8	1.3750	2"	6.5/8	3	7/8	3.7/8	5	3/8	7/16	1.5/16	1	8203208
G7031.1/2	1.1/2	1.5000	2"	7.7/8	4	1.3/16	4.7/8	5	3/8	7/16	1.7/16	1	8203209
G7031.5/8	1.5/8	1.6250	2.1/4	8.1/8	4	1.3/8	4.7/8	5	7/16	1/2	1.9/16	1	8203210
G7032	2"	2.0000	2.1/2	8.3/8	4	1.1/2	4.7/8	5	1/2	9/16	1.5/16	1	8203211
G7032.1/8	2.1/8	2.1250	2.1/2	9.7/8	5	1.3/4	6.1/8	5	1/2	9/16	2.1/16	1	8203212

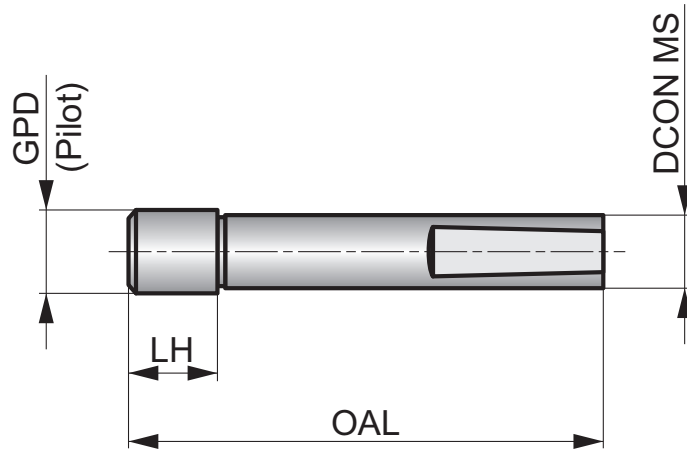


G704



HSS Counterbore Pilot, Detachable

Non-cutting detachable pilots for use with counterbore bodies to follow existing hole in the workpiece. Several pilots with the same mounting (shank) diameter will fit the mounting diameter in the counterbore body. Be sure the pilot mounting diameter is matched properly to the body's mounting diameter



Product	GPD	DCON MS	LH	OAL	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)		
G7041/8X3/32	1/8	3/32	.125	1.1/4	1	8203213
G7045/32X3/32	5/32	3/32	.188	1.5/16	1	8203214
G7043/16X3/32	3/16	3/32	.188	1.5/16	1	8203215
G7047/32X3/32	7/32	3/32	.250	1.3/8	1	8203216
G7041/4X3/32	1/4	3/32	.250	1.3/8	1	8203217
G7041/8X1/8	1/8	1/8	.125	1.7/16	1	8203218
G7045/32X1/8	5/32	1/8	.188	1.1/2	1	8203219
G7043/16X1/8	3/16	1/8	.188	1.1/2	1	8203220
G7047/32X1/8	7/32	1/8	.250	1.9/16	1	8203221
G7041/4X1/8	1/4	1/8	.250	1.9/16	1	8203222
G7049/32X1/8	9/32	1/8	.313	1.5/8	1	8203223
G7045/16X1/8	5/16	1/8	.313	1.5/8	1	8203224
G7043/8X1/8	3/8	1/8	.375	1.11/16	1	8203225
G7047/16X1/8	7/16	1/8	.438	1.3/4	1	8203226
G7041/2X1/8	1/2	1/8	.500	1.13/16	1	8203227
G7043/16X5/32	3/16	5/32	.188	1.9/16	1	8203228
G7047/32X5/32	7/32	5/32	.250	1.5/8	1	8203229
G7041/4X5/32	1/4	5/32	.250	1.5/8	1	8203230
G7049/32X5/32	9/32	5/32	.313	1.11/16	1	8203231
G7045/16X5/32	5/16	5/32	.313	1.11/16	1	8203232
G7043/8X5/32	3/8	5/32	.375	1.3/4	1	8203233
G7043/16X3/16	3/16	3/16	.250	1.7/8	1	8203234
G7047/32X3/16	7/32	3/16	.250	1.7/8	1	8203235
G7041/4X3/16	1/4	3/16	.250	1.7/8	1	8203236
G7049/32X3/16	9/32	3/16	.313	1.15/16	1	8203237
G7045/16X3/16	5/16	3/16	.313	1.15/16	1	8203238
G70411/32X3/16	11/32	3/16	.375	2"	1	8203239
G7043/8X3/16	3/8	3/16	.375	2"	1	8203240
G70413/32X3/16	13/32	3/16	.438	2.1/16	1	8203241
G7047/16X3/16	7/16	3/16	.438	2.1/16	1	8203242

Product	GPD	DCON MS	LH	OAL	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)		
G70415/32X3/16	15/32	3/16	.500	2.1/8	1	8203243
G7041/2X3/16	1/2	3/16	.500	2.1/8	1	8203244
G7049/16X3/16	9/16	3/16	.563	2.3/16	1	8203245
G7045/8X3/16	5/8	3/16	.563	2.3/16	1	8203246
G70413/16X3/16	13/16	3/16	.813	2.7/16	1	8203247
G7047/8X3/16	7/8	3/16	.875	2.1/2	1	8203248
G7041/4X1/4	1/4	1/4	.250	1.11/16	1	8203249
G7049/32X1/4	9/32	1/4	.313	1.3/4	1	8203250
G7045/16X1/4	5/16	1/4	.313	1.3/4	1	8203251
G7043/8X1/4	3/8	1/4	.375	1.13/16	1	8203252
G7047/16X1/4	7/16	1/4	.438	1.7/8	1	8203253
G7041/2X1/4	1/2	1/4	.500	1.15/16	1	8203254
G70417/32X1/4	17/32	1/4	.563	2"	1	8203255
G7049/16X1/4	9/16	1/4	.563	2"	1	8203256
G7045/8X1/4	5/8	1/4	.625	2.1/16	1	8203257
G70411/16X1/4	11/16	1/4	.688	2.1/8	1	8203258
G7043/4X1/4	3/4	1/4	.750	2.3/16	1	8203259
G70413/16X1/4	13/16	1/4	.875	2.5/16	1	8203260
G7041X1/4	1"	1/4	1.000	2.7/16	1	8203261
G7043/8X5/16	3/8	5/16	.375	2"	1	8203262
G7047/16X5/16	7/16	5/16	.438	2.1/16	1	8203263
G7041/2X5/16	1/2	5/16	.500	2.1/8	1	8203264
G7049/16X5/16	9/16	5/16	.563	2.3/16	1	8203265
G7045/8X5/16	5/8	5/16	.625	2.1/4	1	8203266
G70411/16X5/16	11/16	5/16	.688	2.5/16	1	8203267
G7043/4X5/16	3/4	5/16	.750	2.3/8	1	8203268
G70413/16X5/16	13/16	5/16	.875	2.1/2	1	8203269
G70415/16X5/16	15/16	5/16	1.000	2.5/8	1	8203270
G7041X5/16	1"	5/16	1.000	2.5/8	1	8203271
G7047/16X3/8	7/16	3/8	.438	2.5/16	1	8203272

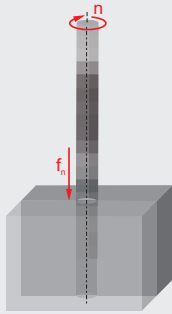


Product	GPD	DCON MS	LH	OAL	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)		
G7041/2X3/8	1/2	3/8	.500	2.3/8	1	8203273
G7049/16X3/8	9/16	3/8	.563	2.7/16	1	8203274
G7045/8X3/8	5/8	3/8	.625	2.1/2	1	8203275
G70411/16X3/8	11/16	3/8	.688	2.9/16	1	8203276
G7043/4X3/8	3/4	3/8	.750	2.5/8	1	8203277
G70413/16X3/8	13/16	3/8	.875	2.3/4	1	8203278
G7047/8X3/8	7/8	3/8	.875	2.3/4	1	8203279
G70415/16X3/8	15/16	3/8	1.000	2.5/8	1	8203280
G7049/16X7/16	9/16	7/16	.625	2.7/8	1	8203281

Product	GPD	DCON MS	LH	OAL	Pack Qty	MID
	(inch)	(inch)	(inch)	(inch)		
G70411/16X7/16	11/16	7/16	.750	3"	1	8203282
G7043/4X7/16	3/4	7/16	.750	3"	1	8203283
G70413/16X7/16	13/16	7/16	.875	3.1/8	1	8203284
G7047/8X7/16	7/8	7/16	.875	3.1/8	1	8203285
G70415/16X7/16	15/16	7/16	1.000	3.1/4	1	8203286
G7041X7/16	1"	7/16	1.000	3.1/4	1	8203287
G7049/16X1/2	9/16	1/2	.625	3.1/8	1	8203288
G7041X1/2	1"	1/2	1.000	3.1/2	1	8203289
G7041.1/2X1/2	1.1/2	1/2	1.500	4"	1	8203290



REAMERS FEED RATE CHART

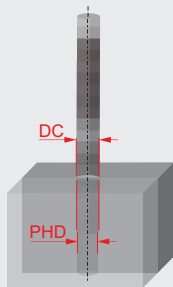


Feed per revolution (f_r inch/rev)
Depending on the working conditions
it might be necessary to adjust these
values $\pm 15\%$.

How to use this table to find the feed per revolution (f_r):

1. Find your Alpha Code on the product page (example: 21C, "C" is the Alpha Code).
2. Find the closest diameter for your cutting application in the top row of the table.
3. Find your Alpha Code in the left column of the table.
4. The intersection (cell) of the Diameter and Alpha Code is the feed per revolution (f_r).

		\varnothing DC (inch)												
		1/16	5/64	1/8	3/16	5/16	25/64	1/2	5/8	25/32	1"	1-13/16	1-1/2	2"
Feed rates	A	0.002	0.002	0.003	0.004	0.006	0.007	0.007	0.009	0.010	0.011	0.013	0.015	0.017
	B	0.002	0.003	0.004	0.006	0.007	0.008	0.009	0.011	0.012	0.014	0.016	0.020	0.022
	C	0.003	0.003	0.005	0.007	0.009	0.010	0.011	0.013	0.015	0.017	0.019	0.024	0.027
	D	0.031	0.004	0.006	0.008	0.011	0.013	0.014	0.016	0.019	0.021	0.024	0.029	0.033
	E	0.004	0.006	0.007	0.010	0.014	0.015	0.017	0.020	0.021	0.025	0.030	0.036	0.043
	F	0.006	0.007	0.010	0.014	0.017	0.020	0.022	0.025	0.028	0.031	0.037	0.047	0.059



Machining allowance when using a **machine reamer** (MA in inch)
Premachined hole diameter
 $PHD = DC - MA$.

How to use this table to get to the right premachined hole diameter (PHD):

1. Find the diameter range for your cutting application in the top row of the table.
2. Find your ISO Group Code in the left column of the table (example: For Stainless Steel the ISO Group Code is "M")
3. The intersection (cell) of the Diameter Range and ISO Group Code is the Machining Allowance (MA)
4. Subtract the Machining Allowance from the reaming diameter to get to the premachined hole diameter (PHD).

(example: for a 6mm hole in steel (P) the PHD is 5.85mm)

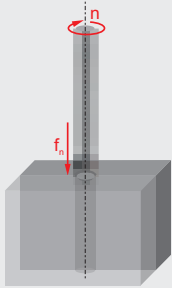
		\varnothing DC (inch)											
		1.00	5.00	5.00	8.00	8.00	12.00	12.00	16.00	16.00	30.00	30.00	80.00
ISO group	P	0.10		0.15		0.20		0.20		0.30		0.30	
	M	0.08		0.10		0.10		0.20		0.20		0.30	
	K	0.10		0.15		0.20		0.20		0.30		0.30	
	N	0.10		0.15		0.20		0.20		0.30		0.30	
	S	0.05		0.10		0.10		0.15		0.20		0.20	
	H	0.05		0.05		0.10		0.10		0.15		0.20	

Be cautious with the machining tolerances of drills, the tool diameter is not the same as the hole diameter produced!

Note: The recommended allowance when using a hand reamer is 0.05 to 0.10 mm.



COUNTERSINKS FEED RATE CHART



Feed per revolution (f_n in mm/rev)
Depending on the working conditions it
might be necessary to adjust these values
 $\pm 15\%$.

How to use this table to find the feed per revolution (f_n):

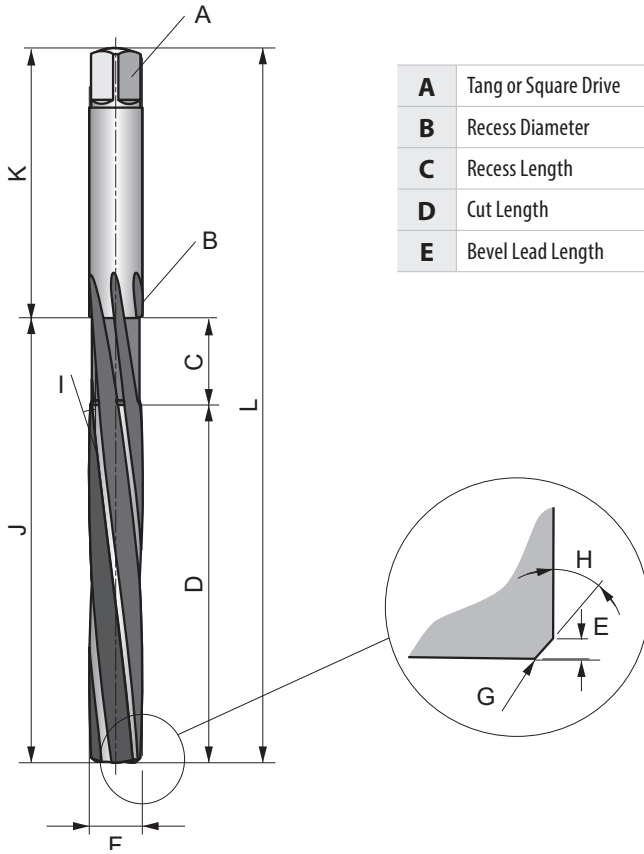
1. Find your Alpha Code on the product page (example: 23E, "E" is the Alpha Code).
2. Find the closest diameter for your cutting application in the top row of the table.
3. Find your Alpha Code in the left column of the table.
4. The intersection (cell) of the Diameter and Alpha Code is the feed per revolution (f_n).

		\varnothing DC (mm)									
		6.00	8.00	10.00	16.00	20.00	25.00	32.00	40.00	60.00	80.00
Feed rates	A	0.030	0.040	0.050	0.060	0.080	0.090	0.100	0.120	0.140	0.160
	B	0.040	0.050	0.060	0.080	0.100	0.120	0.140	0.160	0.180	0.200
	C	0.050	0.060	0.080	0.100	0.120	0.140	0.160	0.180	0.200	0.220
	D	0.060	0.080	0.100	0.120	0.150	0.180	0.200	0.220	0.250	0.280
	E	0.080	0.100	0.120	0.150	0.180	0.200	0.250	0.270	0.300	0.320
	F	0.090	0.110	0.130	0.160	0.190	0.210	0.260	0.290	0.330	0.360
	G	0.100	0.120	0.150	0.180	0.200	0.220	0.280	0.320	0.360	0.400
	H	0.120	0.150	0.180	0.200	0.220	0.250	0.300	0.350	0.400	0.450



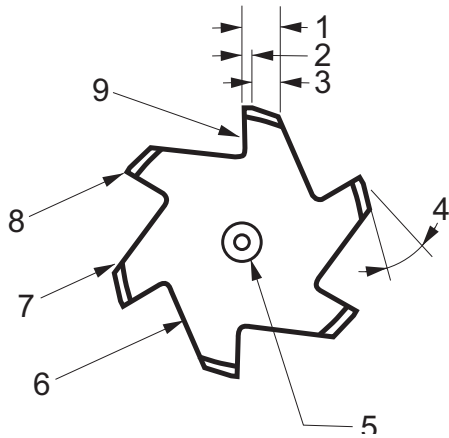
REAMING – TECHNICAL INFO

Reamer Definitions / Nomenclature

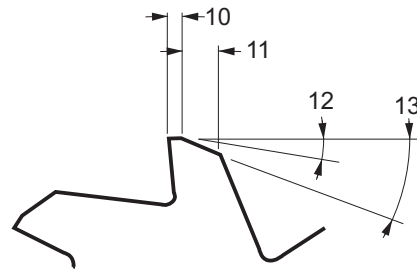


A	Tang or Square Drive
B	Recess Diameter
C	Recess Length
D	Cut Length
E	Bevel Lead Length

F	Diameter
G	Bevel Lead
H	Bevel Lead Angle
I	Helix Angle
J	Body Length
K	Shank Length
L	Overall Length



1	Width of Land
2	Circular Land
3	Clearance
4	Clearance Angle
5	Centre Hole
6	Flute
7	Heel
8	Cutting Edge
9	Face



10	Width of Primary Clearance
11	Width of Secondary Clearance
12	Primary Clearance Angle
13	Secondary Clearance Angle



REAMING – TECHNICAL INFO

Reaming

To obtain the best results when using reamers it is essential to make them 'work'. It is a common fault to prepare holes for reaming with too little stock left in the starting hole diameter. If insufficient stock is left in the hole before reaming, the reamer will rub, quickly show wear and will result in loss of diameter. It is equally important for performance not to leave too much stock in the hole. (See Stock removal below).

1. Select the optimum type of reamer and the optimum speeds and feeds for the application. Ensure that pre-drilled holes are the correct diameter.
2. The workpiece must be held rigid and the machine spindle should have no play.
3. The chuck for straight shank reamers must be of good quality and in good working condition. If the reamer slips in the chuck and the feed is automatic, breakage of the reamer may occur.
4. Keep tool overhang from machine spindle to a minimum.
5. Use recommended lubricants to enhance the life of the reamer and ensure the fluid reaches the cutting edges. As reaming is not a heavy cutting operation, soluble oil 40:1 dilution is normally satisfactory. Air blasting may be used with grey cast iron, if dry machining.
6. Do not allow the flutes of a reamer to become blocked with chips. Retract if necessary to empty the flutes, this can help to prevent poor hole quality and breakage of the tool.
7. Before the reamer is reground, check concentricity between centres. In most instances only the bevel lead will need regrinding.
8. Keep reamers sharp. Frequent regrinding is good economy, but it is important to understand that reamers cut only on the bevel and taper leads and not on the lands. Consequently only these leads need regrinding. Accuracy of regrinding is important to hole quality and tool life.

Stock removal

The recommended stock removal in reaming is dependent on the application material and the surface finish of the pre-drilled hole. General guidelines for stock removal are shown in the following tables:

Size of reamed hole (mm)	When pre-drilled	When pre-core-drilled
Below 4	0.1	0.1
Over 4 to 11	0.2	0.15
Over 11 to 39	0.3	0.2
Over 39 to 50	0.4	0.3

Size of reamed hole (inches)	When pre-drilled	When pre-core-drilled
Below 3/16"	0.004"	0.004"
3/16" to 1/2"	0.008"	0.006"
1/2" to 1.1/2"	0.010"	0.008"
1.1/2" to 2"	0.016"	0.010"

Hand/Machine reaming

Although both hand and machine reamers offer the same capability regarding finished hole size, the use of each must be considered according to the application. A hand reamer, for reasons of alignment, has a long taper lead, whereas a machine reamer has only a 45 degree bevel lead. A machine reamer cuts only on the bevel lead while a hand reamer cuts on the bevel lead as well as the taper lead.



REAMING – TOLERANCE LIMITS – TECHNICAL INFO

Tolerance limits



1. On the cutting diameter of standard reamers

The diameter (DC) is measured across the circular land immediately behind the bevel or taper lead. The tolerance is in accordance with DIN 1420 and is intended to produce H7 holes.

Reamer tolerance			
Diameter (mm)		Tolerance Limit (mm)	
Over	Up to and including	High +	Low +
–	3	0.008	0.004
3	6	0.010	0.005
6	10	0.012	0.006
10	18	0.015	0.008

Reamer tolerance			
Diameter (mm)		Tolerance Limit (mm)	
Over	Up to and including	High +	Low +
18	30	0.017	0.009
30	50	0.021	0.012
50	80	0.025	0.014

2. H7 hole tolerance

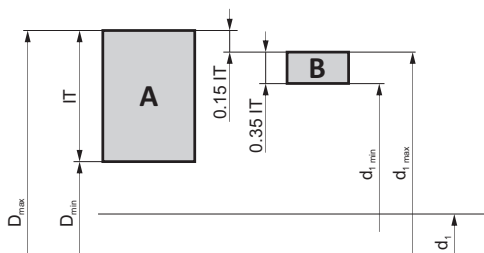
The most common tolerance on a finished hole is H7 (see table below). For any other tolerance the figure and table below (in Note 3) can be used to calculate the reamers tolerance location and width

Hole tolerance			
Diameter (mm)		Tolerance Limit (mm)	
Over	Up to and including	High +	Low +
–	3	0.010	0
3	6	0.012	0
6	10	0.015	0
10	18	0.018	0

Hole tolerance			
Diameter (mm)		Tolerance Limit (mm)	
Over	Up to and including	High +	Low +
18	30	0.021	0
30	50	0.025	0
50	80	0.030	0

3. Other hole tolerances when it is necessary to define the dimensions of a special reamer intended to cut to a specific tolerance, e.g. D8, this well proven guide can be used.

Diameter tolerance width (µm)								
Tolerance width (microns)	over 1 incl. 3	over 3 incl. 6	over 6 incl. 10	over 10 incl. 18	over 18 incl. 30	over 30 incl. 50	over 50 incl. 80	over 80 incl. 120
IT5	4	5	6	8	9	11	13	15
IT6	6	8	9	11	13	16	19	22
IT7	10	12	15	18	21	25	30	35
IT8	14	18	22	27	33	39	46	54
IT9	25	30	36	43	52	62	74	87
IT10	40	48	58	70	84	100	120	140
IT11	60	75	90	110	130	160	190	220
IT12	100	120	150	180	210	250	300	350



A = Hole tolerance
B = Reamer tolerance
IT = Tolerance width
D_{max} = Max. diameter of hole

D_{min} = Min. diameter of hole
d_i = Nominal diameter
d_{I_max} = Max. diameter of reamer
d_{I_min} = Min. diameter of reamer

e.g. 10 mm hole with tolerance D8, Max dia = 10.062, Min dia = 10.040, Hole tolerance (IT8) = 0.022

Maximum limit: $0.15 \times \text{hole tolerance (IT8)} = 0.0033$, rounded up = 0.004

Minimum limit: $0.35 \times \text{hole tolerance (IT8)} = 0.0077$, rounded up = 0.008

Maximum limit for reamer = $10.062 - 0.004 = 10.058$

Minimum limit for reamer = $10.058 - 0.008 = 10.050$



Applications – Reamer Selection

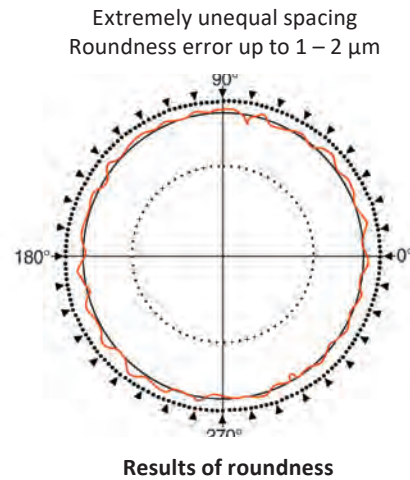
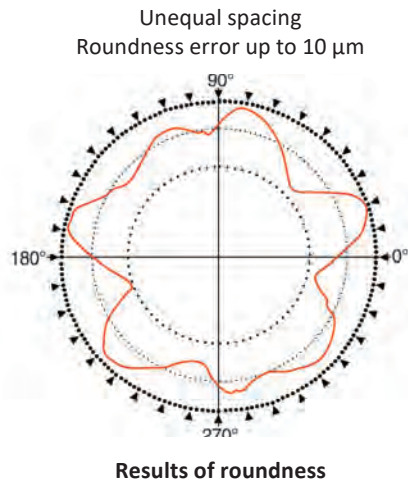
The most common types of reamers have a left-hand spiral because the main applications involve through holes requiring chips to be pushed forward. For blind holes, reamers with straight flutes or right hand spirals are recommended.

The most efficient reaming conditions depend on the application, material, quality of hole required, stock removal, lubrication and other factors. A general guide to surface speeds and feeds for machine

reamers is shown in the reamer WMG and feed charts (see Product Selector) and stock removal tables.

Extremely unequal spacing on reamers means that the divide is not the same for each tooth. As there are no two teeth diametrically opposite each other, the reamer produces a hole with a roundness variance of between 1 and 2 μm . This compared with a variance of up to 10 μm with conventional unequal spacing.

Carbide Reamers – Comparison spacing / EU spacing





REAMING – GENERAL HINTS – TECHNICAL INFO

Trouble shooting when reaming

Problem	Cause	Remedy
Broken or twisted tangs	Incorrect fit between shank and socket	Ensure the shank and socket are clean and free from damage
Rapid tool wear	Insufficient stock to remove	Increase the amount of stock to be removed (smaller hole)
Oversize hole	Excessive lip height variation	Regrind to correct specification
	Displacement in the machine spindle	Repair and rectify spindle displacement
	Defects on the tool holder	Replace tool holder
	Tool shank is damaged	Replace or regrind the shank
	Ovality of the tool	Replace or regrind the tool
	Asymmetric bevel lead angle	Regrind to correct specification
	Too high feed or cutting speed	Adjust cutting conditions in accordance with Catalog
Undersize hole	Insufficient stock to remove	Increase the amount of stock to be removed (smaller hole)
	Too much heat generated while reaming. The hole widens and shrinks	Increase coolant flow
	The tool diameter is worn and is undersize	Regrind to correct specification or replace tool
	Too low feed or cutting speed	Adjust cutting conditions in accordance with the Catalog
	Pre-drilled hole is too small	Decrease the amount of stock to be removed (larger hole)
Oval and conical holes	Displacement in the machine spindle	Repair and rectify spindle displacement
	Misalignment between tool and hole	Use a bridge reamer
	Asymmetric bevel lead angle	Regrind to correct specification
Bad hole finish	Excessive stock to remove	Decrease the amount of stock to be removed (larger hole)
	Worn out tool	Regind to correct specification
	Undersize cutting rake angle	Regind to correct specification
	Too diluted emulsion or cutting oil	Increase % concentration
	Feed and/or speed too low	Adjust cutting conditions in accordance with Catalog
	Cutting speed too high	Adjust cutting conditions in accordance with Catalog
The tool clamps and breaks	Worn out tool	Regind to correct specification
	Back taper of the tool is too small	Check and replace/modify the tool
	The width of the land is too wide	Check and replace/modify the tool
	Workpiece material tend to squeeze	Use an adjustable reamer to compensate for the displacement
	Pre-drilled hole is too small	Decrease the amount of stock to be removed (larger hole)
	Heterogeneous material with hard inclusions	Use solid carbide reamer



GENERAL – TECHNICAL INFO

	Grade	Hardness (HV10)	C %	W %	Mo %	Cr %	V %	Co %	Tool Material
	M2	810 – 850	0.9	6.4	5.0	4.2	1.8	–	HSS
	M35	830 – 870	0.93	6.4	5.0	4.2	1.8	4.8	HSCO
	M42	870 – 960	1.08	1.5	9.4	3.9	1.2	8.0	

Properties	HSS materials	Carbide materials	K10/30F (often used for solid tools)
Hardness (HV30)	800-950	1300 – 1800	1600
Density (g/cm ³)	8.0 – 9.0	7.2 – 15	14.45
Compressive strength (N/mm ²)	3000 – 4000	3000 – 8000	6250
Flexural strength, (bending) (N/mm ²)	2500 – 4000	1000 – 4700	4300
Heat resistance (°C)	550	1000	900
E-module (KN/mm ²)	260 – 300	460 – 630	580
Grain size (µm)	–	0.2 – 10	0.8

The combination of hard particle (WC) and binder metal (Co) give the following changes in characteristics.

Characteristic	Higher WC content give	Higher Co content give
Hardness	Higher hardness	Lower hardness
Compressive strength (CS)	Higher CS	Lower CS
Bending strength (BS)	Lower BS	Higher BS

Grain size also influences the material properties. Small grain sizes means higher hardness and coarse grains give more toughness.

Surface treatment / Coating properties examples

Surface Treatments	Colour	Coating material	Hardness (HV)	Thickness (µm)	Coating structure	Frict. coeff. against steel	Max. appl. temp. (°C)
	Gold	TiN	2300	1-4	Mono-layer	0.4	600
	Black grey	TiAlN	3300	3	Nano structured	0.3-0.35	900



GENERAL – TECHNICAL INFO

Industry Standard tolerances For Shafts & Holes

Tolerance values are shown in Microns (μm)

Formula for Microns ...1 $\mu\text{m} = 0.001 \text{ mm} / 0.000039''$

Tolerance	Diameter (mm)							
	> 1 ≤ 3	> 3 ≤ 6	> 6 ≤ 10	> 10 ≤ 18	> 18 ≤ 30	> 30 ≤ 50	> 50 ≤ 80	> 80 ≤ 120
	Diameter (inch)							
	> 0.039" ≤ 0.118"	> 0.118" ≤ 0.236"	> 0.236" ≤ 0.394"	> 0.394" ≤ 0.709"	> 0.709" ≤ 1.181"	> 1.181" ≤ 1.968"	> 1.968" ≤ 3.149"	> 3.149" ≤ 4.724"
Tolerance values (μm)								
e8	-14 / -28	-20 / -38	-25 / -47	-32 / -59	-40 / -73	-50 / -89	-60 / -106	-72 / -126
f6	-6 / -12	-10 / -18	-13 / -22	-16 / -27	-20 / -33	-25 / -41	-30 / -49	-36 / -58
f7	-6 / -16	-10 / -22	-13 / -28	-16 / -34	-20 / -41	-25 / -50	-30 / -60	-36 / -71
h6	0 / -6	0 / -8	0 / -9	0 / -11	0 / -13	0 / -16	0 / -19	0 / -22
h7	0 / -10	0 / -12	0 / -15	0 / -18	0 / -21	0 / -25	0 / -30	0 / -35
h8	0 / -14	0 / -18	0 / -22	0 / -27	0 / -33	0 / -39	0 / -46	0 / -54
h9	0 / -25	0 / -30	0 / -36	0 / -43	0 / -52	0 / -62	0 / -74	0 / -87
h10	0 / -40	0 / -48	0 / -58	0 / -70	0 / -84	0 / -100	0 / -120	0 / -140
h11	0 / -60	0 / -75	0 / -90	0 / -110	0 / -130	0 / -160	0 / -190	0 / -220
h12	0 / -100	0 / -120	0 / -150	0 / -180	0 / -210	0 / -250	0 / -300	0 / -350
k10	+ 40 / 0	+ 48 / 0	+ 58 / 0	+ 70 / 0	+ 84 / 0	+ 100 / 0	+ 120 / 0	+ 140 / 0
k12	+ 100 / 0	+ 120 / 0	+ 150 / 0	+ 180 / 0	+ 210 / 0	+ 250 / 0	+ 300 / 0	+ 350 / 0
m7	+ 2 / + 12	+ 4 / + 16	+ 6 / + 21	+ 7 / + 25	+ 8 / + 29	+ 9 / + 34	+ 11 / + 41	+ 13 / + 48
js14	+ / -125	+ / -150	+ / -180	+ / -215	+ / -260	+ / -310	+ / -370	+ / -435
js16	+ / -300	+ / -375	+ / -450	+ / -550	+ / -650	+ / -800	+ / -950	+ / -1100
H7	+ 10 / 0	+ 12 / 0	+ 15 / 0	+ 18 / 0	+ 21 / 0	+ 25 / 0	+ 30 / 0	+ 35 / 0
H8	+ 14 / 0	+ 18 / 0	+ 22 / 0	+ 27 / 0	+ 33 / 0	+ 39 / 0	+ 46 / 0	+ 54 / 0
H9	+ 25 / 0	+ 30 / 0	+ 36 / 0	+ 43 / 0	+ 52 / 0	+ 62 / 0	+ 74 / 0	+ 87 / 0
H12	+ 100 / 0	+ 120 / 0	+ 150 / 0	+ 180 / 0	+ 210 / 0	+ 250 / 0	+ 300 / 0	+ 350 / 0
P9	-6 / -31	-12 / -42	-15 / -51	-18 / -61	-22 / -74	-26 / -86	-32 / -106	-37 / -124
S7	-13 / -22	-15 / -27	-17 / -32	-21 / -39	-27 / -48	-34 / -59	-42 / -72	-58 / -93



GENERAL – TECHNICAL INFO

Table of Cutting Speeds

		Vc															
m/min.		5	8	10	15	20	25	30	40	50	60	70	80	90	100	110	150
SFM (feet/min.)		16	26	32	50	66	82	98	130	165	197	230	262	296	330	362	495
Ø		RPM															
mm	inch																
1.00	–	1592	2546	3183	4775	6366	7958	9549	12732	15916	19099	22282	25465	28648	31831	35014	47747
1.50	–	1061	1698	2122	3183	4244	5305	6366	8488	10610	12732	14854	16977	19099	21221	23343	31831
2.00	–	796	1273	1592	2387	3183	3979	4775	6366	7958	9549	11141	12732	14324	15916	17507	23873
2.50	–	637	1019	1273	1910	2546	3183	3820	5093	6366	7639	8913	10186	11459	12732	14006	19099
3.00	–	531	849	1061	1592	2122	2653	3183	4244	5305	6366	7427	8488	9549	10610	11671	15916
3.18	1/8	500	801	1001	1501	2002	2502	3003	4004	5005	6006	7007	8008	9009	10010	11011	15015
3.50	–	455	728	909	1364	1819	2274	2728	3638	4547	5457	6366	7276	8185	9095	10004	13642
4.00	–	398	637	796	1194	1592	1989	2387	3183	3979	4775	5570	6366	7162	7958	8754	11937
4.50	–	354	566	707	1061	1415	1768	2122	2829	3537	4244	4951	5659	6366	7074	7781	10610
4.76	3/16	334	535	669	1003	1337	1672	2006	2675	3344	4012	4681	5350	6018	6687	7356	10031
5.00	–	318	509	637	955	1273	1592	1910	2546	3183	3820	4456	5093	5730	6366	7003	9549
6.00	–	265	424	531	796	1061	1326	1592	2122	2653	3183	3714	4244	4775	5305	5836	7958
6.35	1/4	251	401	501	752	1003	1253	1504	2005	2506	3008	3509	4010	4511	5013	5514	7519
7.00	–	227	364	455	682	909	1137	1364	1819	2274	2728	3183	3638	4093	4547	5002	6821
7.94	5/16	200	321	401	601	802	1002	1203	1604	2004	2405	2806	3207	3608	4009	4410	6013
8.00	–	199	318	398	597	796	995	1194	1592	1989	2387	2785	3183	3581	3979	4377	5968
9.00	–	177	283	354	531	707	884	1061	1415	1768	2122	2476	2829	3183	3537	3890	5305
9.53	3/8	167	267	334	501	668	835	1002	1336	1670	2004	2338	2672	3006	3340	3674	5010
10.00		159	255	318	477	637	796	955	1273	1592	1910	2228	2546	2865	3183	3501	4775
11.11	7/16	143	229	287	430	573	716	860	1146	1433	1719	2006	2292	2579	2865	3152	4298
12.00		133	212	265	398	531	663	796	1061	1326	1592	1857	2122	2387	2653	2918	3979
12.70	1/2	125	201	251	376	501	627	752	1003	1253	1504	1754	2005	2256	2506	2757	3760
14.00		114	182	227	341	455	568	682	909	1137	1364	1592	1819	2046	2274	2501	3410
14.29	9/16	111	178	223	334	446	557	668	891	1114	1337	1559	1782	2005	2228	2450	3341
15.00	–	106	170	212	318	424	531	637	849	1061	1273	1485	1698	1910	2122	2334	3183
15.88	5/8	100	160	200	301	401	501	601	802	1002	1203	1403	1604	1804	2004	2205	3007
16.00	–	99	159	199	298	398	497	597	796	995	1194	1393	1592	1790	1989	2188	2984
17.46	11/16	91	146	182	273	365	456	547	729	912	1094	1276	1458	1641	1823	2005	2735
18.00	–	88	141	177	265	354	442	531	707	884	1061	1238	1415	1592	1768	1945	2653
19.05	3/4	84	134	167	251	334	418	501	668	835	1003	1170	1337	1504	1671	1838	2506
20.00	–	80	127	159	239	318	398	477	637	796	955	1114	1273	1432	1592	1751	2387
24.00	–	66	106	133	199	265	332	398	531	663	796	928	1061	1194	1326	1459	1989
25.00	–	64	102	127	191	255	318	382	509	637	764	891	1019	1146	1273	1401	1910
27.00	–	59	94	118	177	236	295	354	472	589	707	825	943	1061	1179	1297	1768
30.00	–	53	85	106	159	212	265	318	424	531	637	743	849	955	1061	1167	1592
32.00	–	50	80	99	149	199	249	298	398	497	597	696	796	895	995	1094	1492
36.00	–	44	71	88	133	177	221	265	354	442	531	619	707	796	884	973	1326
40.00	–	40	64	80	119	159	199	239	318	398	477	557	637	716	796	875	1194
50.00	–	32	51	64	95	127	159	191	255	318	382	446	509	573	637	700	955



GENERAL – TECHNICAL INFO

Hardness and Tensile Strength

HV	HRC	HB	Tensile Strength	
			(N/mm ²)	(Tons/sq. in.)
940	68	–	–	–
900	67	–	–	–
864	66	–	–	–
829	65	–	–	–
800	64	–	–	–
773	63	–	–	–
745	62	–	–	–
720	61	–	–	–
698	60	–	–	–
675	59	–	–	–
655	58	–	2200	142
650	–	618	2180	141
640	–	608	2145	139
639	57	607	2140	138
630	–	599	2105	136
620	–	589	2070	134
615	56	584	2050	133
610	–	580	2030	131
600	–	570	1995	129
596	55	567	1980	128
590	–	561	1955	126
580	–	551	1920	124
578	54	549	1910	124
570	–	542	1880	122
560	53	532	1845	119
550	–	523	1810	117
544	52	517	1790	116
540	–	513	1775	115
530	–	504	1740	113
527	51	501	1730	112
520	–	494	1700	110
514	50	488	1680	109
510	–	485	1665	108
500	–	475	1630	105
497	49	472	1620	105
490	–	466	1595	103
484	48	460	1570	102
480	–	456	1555	101
473	47	449	1530	99
470	–	447	1520	98
460	–	437	1485	96
458	46	435	1480	96
450	–	428	1455	94
446	45	424	1440	93
440	–	418	1420	92

HV	HRC	HB	Tensile Strength	
			(N/mm ²)	(Tons/sq. in.)
434	44	413	1400	91
423	43	402	1360	88
413	42	393	1330	86
403	41	383	1300	84
392	40	372	1260	82
382	39	363	1230	80
373	38	354	1200	78
364	37	346	1170	76
355	36	337	1140	74
350	–	333	1125	73
345	35	328	1110	72
340	–	323	1095	71
336	34	319	1080	70
330	–	314	1060	69
327	33	311	1050	68
320	–	304	1030	67
317	32	301	1020	66
310	31	295	995	64
302	30	287	970	63
300	–	285	965	62
295	–	280	950	61
293	29	278	940	61
290	–	276	930	60
287	28	273	920	60
285	–	271	915	59
280	27	266	900	58
275	–	261	880	57
272	26	258	870	56
270	–	257	865	56
268	25	255	860	56
265	–	252	850	55
260	24	247	835	54
255	23	242	820	53
250	22	238	800	52
245	–	233	785	51
243	21	231	780	50
240	–	228	770	50
235	–	223	755	49
230	–	219	740	48
225	–	214	720	47
220	–	209	705	46
215	–	204	690	45
210	–	199	675	44
205	–	195	660	43
200	–	190	640	41

**EXCHANGEABLE HEAD
INDEXABLE DRILLS**



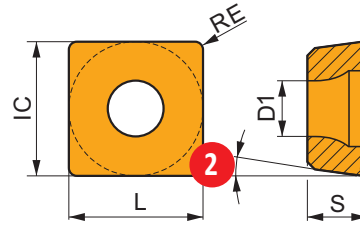


HOLEMAKING – GENERAL CONTENT

6		WMG & ISO 13399
10	DRILLS	INSTRUCTIONS
15		SOLID CARBIDE DRILLS
80		HSS DRILLS
82		HSS STUB DRILLS
112		HSS JOBBER LENGTH DRILLS
184		HSS LONG LENGTH
215		HSS REDUCED SHANK
224		HSS TAPER SHANK
235		HSS CENTER DRILLS
265		AEROSPACE
274		MRO
292		SCREW EXTRACTORS
297		TECHNICAL INFORMATION
308			REAMERS AND COUNTERSINKS
393	INDEXABLE DRILLS	INSTRUCTIONS
402		HYDRA DRILLS
427		TECHNICAL INFORMATION
436		INDEXABLE DRILLS
463		TECHNICAL INFORMATION

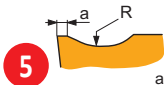


	IC	D1	L	S
	[mm]	[mm]	[mm]	[mm]
0502	5.556	2.40	5.56	2.38
0602	6.350	2.90	6.35	2.38
0703	7.937	3.50	7.94	3.18
09T3	9.525	4.50	9.53	3.97
1204	12.700	5.60	12.70	4.76
1505	15.875	5.60	15.88	5.56



Suitability and starting values for cutting speed (vc), feed (f) and depth of cut (ap). Refer to our Machining Calculator app for further calculations.

Product	RE	P			M			K			N			S			H		
		vc	f	ap	vc	f	ap	vc	f	ap	vc	f	ap	vc	f	ap			
	[mm]	[m/min]	[mm/rev]	[mm]	[m/min]	[mm/rev]	[mm]	[m/min]	[mm/rev]	[mm]	[m/min]	[mm/rev]	[mm]	[m/min]	[mm/rev]	[mm]	[m/min]	[mm/rev]	[mm]



UD geometry with universal design for periphery inserts.

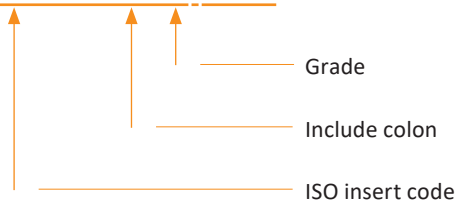
SCET 050204-UD	0,12
SCET 060204-UD	0,15
SCET 070308-UD	0,15
SCET 09T308-UD	0,15
SCET 120408-UD	0,20
SCET 150512-UD	0,20



SCET 050204-UD	D8330	0.4	165	0.08	-	-	-	-	155	0.08	-	-	-	-	-	-	-	-	-
	D9335	0.4	240	0.08	-	-	-	-	225	0.08	-	-	-	-	-	-	-	-	-
SCET 060204-UD	D8330	0.4	165	0.11	-	-	-	-	155	0.11	-	-	-	-	-	-	-	-	-
	D9335	0.4	240	0.11	-	-	-	-	225	0.11	-	-	-	-	-	-	-	-	-
SCET 070308-UD	D8330	0.8	165	0.13	-	-	-	-	155	0.13	-	-	-	-	-	-	-	-	-
	D9335	0.8	240	0.13	-	-	-	-	225	0.13	-	-	-	-	-	-	-	-	-
SCET 09T308-UD	D8330	0.8	165	0.14	-	-	-	-	155	0.14	-	-	-	-	-	-	-	-	-
	D9335	0.8	240	0.14	-	-	-	-	225	0.14	-	-	-	-	-	-	-	-	-
SCET 120408-UD	D8330	0.8	165	0.16	-	-	-	-	155	0.16	-	-	-	-	-	-	-	-	-
	D9335	0.8	240	0.16	-	-	-	-	225	0.16	-	-	-	-	-	-	-	-	-
SCET 150512-UD	D8330	1.2	165	0.18	-	-	-	-	155	0.18	-	-	-	-	-	-	-	-	-

SCET120408-UD:D9335

Use full insert specification code when ordering!





INSERTS – PAGE OVERVIEW

Pos.	Description	Pos.	Description
1	Designation of insert	7	ISO insert code
2	Schematic drawing of insert	8	Grade
3	Table with insert sizes (mm)	9	Insert radii (mm)
4	Picture of representative insert	10	Geometry description
5	Profile of main cutting edge	11	Application area of insert
6	Icons – specific features and cutting edge type		



1 **802D**

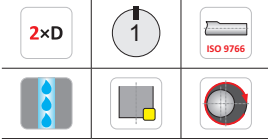
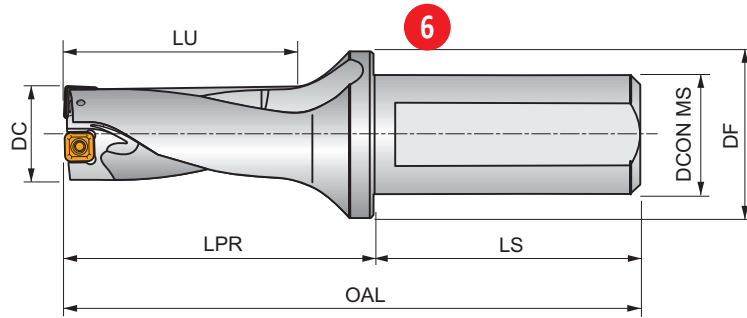


PRAMET 3 **S**



2xD 802D Indexable Insert Drill body with Internal Coolant Feed

High performance indexable insert drill body for drilling blind and through holes. Also, potentially cross hole, off center and stack drilling, helical interpolation, plunging, drilling on concave or angled surfaces, drilling with interrupted cuts, chamfer drilling and boring. Available from Ø15 up to Ø40 mm in 2xD. 4



Product	DC	APMX	OAL	LPR	LS	LU	DCON MS	DF	D ⁻	D ⁺	12	13	14	15	16
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]					
802D-15-30-S25	15	30.00	121	65	56	34.5	25	35	0.25	0.35	EP253253	GI300	GI313	0.30	HM001
802D-16-32-S25	16	32.00	123	67	56	37	25	35	0.15	0.45	EP253253	GI300	GI313	0.30	HM001

Product	Material	Material
GI300	XPET 0502AP	SCET 050204-UD
GI301	XPET 0602AP	SCET 050204-UD
GI302	XPET 0602AP	SCET 060204-UD
GI303	XPET 0703AP	SCET 060204-UD
GI304	XPET 0703AP	SCET 070308-UD
GI305	XPET 0903AP	SCET 070308-UD
GI306	XPET 0903AP	SCET 09T308-UD
GI307	XPET 11T3AP	SCET 09T308-UD
GI308	XPET 11T3AP	SCET 120408-UD
GI309	XPET 12T3AP	SCET 120408-UD
GI313	XPET 0502AP-SD	SCET 050204-SD
GI314	XPET 0602AP-SD	SCET 050204-SD
GI315	XPET 0602AP-SD	SCET 060204-SD
GI316	XPET 0703AP-SD	SCET 060204-SD
GI317	XPET 0703AP-SD	SCET 070308-SD
GI318	XPET 0903AP-SD	SCET 070308-SD
GI319	XPET 0903AP-SD	SCET 09T308-SD
GI320	XPET 11T3AP-SD	SCET 09T308-SD
GI321	XPET 11T3AP-SD	SCET 120408-SD

Product	Material	Material
GI300	XPET 0502AP	SCET 050204-UD
GI301	XPET 0602AP	SCET 050204-UD
GI302	XPET 0602AP	SCET 060204-UD
GI303	XPET 0703AP	SCET 060204-UD

Typical page with drilling holder displayed – specific page details will differ.



INDEXABLE DRILLS – PAGE OVERVIEW

Pos.	Description	Pos.	Description
1	Designation of drill	11	Radial setting
2	Material group recommendations	12	Adjustable sleeve
3	Clamping system of insert	13	Group of compatible inserts with chip breaker UD ^{1),2)}
4	Tool description	14	Group of compatible inserts with chip breaker SD ^{1),2)}
5	Illustrative picture	15	Weight (kg)
6	Schematic drawing of tool	16	Group of spare parts ¹⁾
7	Product features	17	Compatible inserts with chip breaker UD
8	Product applications	18	Compatible inserts with chip breaker SD
9	Tool code	19	Spare parts
10	Tool dimensions		

¹⁾ Code of Group of compatible inserts and spare parts is used only for purposes of this catalogue. It cannot be used for orders.

²⁾ External (SCET) and internal (XPET) inserts must always have the same chip breaker (please note: UD chip breaker is not visibly included in designation of XPET inserts – e.g. XPET 0502AP); info needed for correct choice of chip breaker (UD vs SD) can be found on the insert packaging.

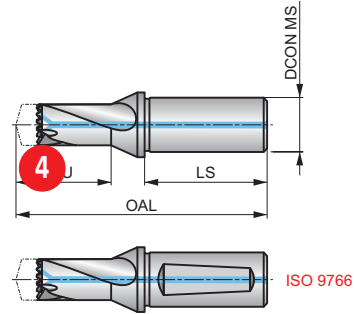


HYDRA Body 1.5XD, with Coolant Feed, Bright Nickel Plating

Used with R950, R960 and R970 HYDRA heads. A range of head diameters can be used with the same body. Coolant holes aligned with the heads offer efficient cooling. Flanged shank prevents the drill from wandering in the holder. Nickel Plated surface protects from rust and corrosion, and improves chip evacuation.

HYDRA

HSS	DORNER	1.5×D
Bright Ni	ISO 9766	R



Four (4) screws and one (1) screwdriver are included with a drill body, DCON MS tolerance h6.

Product	DCONMS	DCON MS	LU	OAL	LS	ADINTMS
	[inch]	[mm]	[mm]	[mm]	[mm]	
H85131/64	5/8	15.88	25.50	88.5	47.6	Cylindrical
H8511/2	5/8	15.88	25.80	88.8	47.6	Cylindrical
H85117/32	5/8	15.88	30.90	93.9	47.6	Cylindrical
H85112.0	–	16.00	25.50	88.5	48.0	ISO 9766
H85112.5	–	16.00	25.80	88.8	48.0	ISO 9766
H85113.0	–	16.00	27.00	90.0	48.0	ISO 9766
H85114.0	–	16.00	30.90	93.9	48.0	ISO 9766
H8519/16	3/4	19.05	34.90	93.9	50.8	Cylindrical
H85141/64	3/4	19.05	34.90	97.3	50.8	Cylindrical
H85141/64	3/4	19.05	34.90	99.9	50.8	Cylindrical
H85111/16	3/4	19.05	36.40	101.4	50.8	Cylindrical
H85123/32	3/4	19.05	39.00	104.0	50.8	Cylindrical
H85115.0	–	20.00	32.30	97.3	50.0	ISO 9766
H85116.0	–	20.00	34.90	99.9	50.0	ISO 9766
H85117.0	–	20.00	36.40	101.4	50.0	ISO 9766
H85118.0	–	20.00	39.00	104.0	50.0	ISO 9766

Pos.	Description
1	Designation of drill
2	Product description
3	Illustrative picture
4	Schematic drawing of tool

Pos.	Description
5	Product features
6	Product code
7	Product dimensions

Typical page with drilling holder displayed – specific page details will differ.




EXCHANGEABLE HEAD & INDEXABLE DRILLS – ICONS OVERVIEW

GENERAL ICONS


 Primary use

 Possible use


BASIC STANDARD GROUP (BSG)

 Dormer Standards


CLAMPING DESIGNATION


 S – Screw clamp

APPLICATION ANGLE

 Drill Point 140°

COATING

 Bright Nickel Plating

 Special TiAlN Coating (+ Silicon + Chromium)

COOLANT SUPPLY PROPERTY (CSP)

 Through Tool Coolant

CUTTING DIAMETER TOLERANCE ZONE CLASS (TCDC)

 h7 – Industry Standard Tool Tolerance Zone (based on diameter range)

CUTTING DIRECTION

 Right Hand Rotation / Cutting

GENERAL FEATURES OF TOOLS

 1 effective tooth per revolution

 Monoblock design

 Possibility of use for eccentric machining

 Universal shank

INSERT CUTTING EDGE

 Rounded edge with facet

INSERT FEATURES

 For tough machined materials (long chip)

 Heavy working conditions

 Universal wide range option

MATERIAL CODE (BMC)


 HM Hard Material (Solid Carbide)

 HSS High Speed Steel Tool Material

OPERATIONS DRILLING

 Blind hole boring

 Blind hole drilling

 Boring


 Boring through cross holes

 Boring up to a shoulder

 Drill exit on inclined surface

 Drilling across an existing hole

 Drilling of stacked materials


 Drilling onto curved surface


 Drilling onto inclined surface

 Helical interpolation boring

 Helical interpolation drilling

 Chamfering (beveling)

 Interrupted cut

 Through hole boring

 Through hole drilling

 Welded joint drilling



EXCHANGEABLE HEAD & INDEXABLE DRILLS – ICONS OVERVIEW

OTHER ICONS



Clamping torque of screw (Nm)

SHANK



Cylindrical Shank with Flange



DIN 6535 – HB (Weldon) or HE (Whistle Notch) Shank



ISO 9766 Cylindrical Shanks (with or without Flat)

TECHNICAL PAGES



Feed



High cutting speed, high system rigidity (stable working conditions)



Medium cutting speed, system rigidity limited (slightly interrupted cut)



Very high cutting speed, excellent system rigidity (stable working conditions)



High cutting speed, system rigidity slightly limited (depth of cut changing)



Low cutting speed, low system rigidity (interrupted cut)



Very low cutting speed, very low system rigidity (very unstable working conditions)

USABLE LENGTH DIAMETER RATIO (ULDR)

1.5×D

1.5×D Usable Tool Depth to Diameter Ratio

3×D

3×D Usable Tool Depth to Diameter Ratio

5×D

5×D Usable Tool Depth to Diameter Ratio

12×D

12×D Usable Tool Depth to Diameter Ratio

8×D

8×D Usable Tool Depth to Diameter Ratio

2×D

2×D Usable Tool Depth to Diameter Ratio

4×D

4×D Usable Tool Depth to Diameter Ratio



HYDRA DRILLS



HYDRA

HIGH PERFORMANCE REPLACEABLE HEAD DRILLS

Interchangeable solid carbide head drills for high performance machining of steels, stainless steels and cast iron. Fail-safe head location can be changed without ejecting the drill from the machine. Available with coolant feed and a choice of HSS bodies from 1.5xD for improved rigidity in shallow hole and plate drilling, through to 12xD for deeper hole applications.

FEATURES AND BENEFITS

- **Consistently high performance**, even after numerous head changes.
- **Reduction in inventory costs** – one body can fit multiple solid carbide head sizes.
- **Versatile** – cylindrical shank with flat allows use in multiple types of holder.
- **Easy and quick head changes** with minimal interruptions to the production process. Heads can be changed without removing the body from the machine.
- Exact fit of head to body maximises tool rigidity for **superior hole accuracy** and precise tolerances.

MATERIAL

PREMIUM MICROGRAIN CARBIDE (Heads)

- Micrograin carbide provides an excellent combination of hardness and toughness, resulting in high wear resistance and longer tool life.

HARDENED STEEL (Body)

- Hardened steel with high gloss nickel plating for high resistance to wear and corrosion.

COATING

TITANIUM ALUMINUM NITRIDE BASED COATING PROVIDES:

- High toughness and oxidisation resistance.
- Outstanding wear protection in abrasive materials like Cast Iron.
- High hardness at high temperatures created when drilling Cast Irons.
- Increased tool life and productivity.

HEAD TYPES



R950

STEEL



R960

STAINLESS STEEL



HYDRA

HIGH PERFORMANCE REPLACEABLE HEAD DRILLS

GEOMETRY

CORNER DESIGN

- A strong corner design increases stability during drilling and reduces the forces encountered during breakthrough of the exit surface.
- This improves the quality of the exit surface and helps prevent “exit burst” which can occur when drilling granular materials.

POINT GEOMETRY

- 140 degree split point geometry provides good centering capabilities and low thrust forces when drilling most materials.

A COMPLETE RANGE

- Available in 1.5xD, 3xD, 5xD, 8xD and 12xD lengths incorporating coolant holes to improve cutting efficiency and chips evacuation, resulting in higher productivity.
- Metric: 12.00 mm to 42.00 mm.
- Fractional: 15/32 inch to 1.5/8 inch.
- Best results are obtained using hydraulic holders. Can also be held in ER and Weldon type toolholders.



BODY LENGTHS

1.5xD



3xD



5xD



8xD




12xD






HYDRA DRILLS – NAVIGATOR TOOL MATERIALS



Tool materials

High Speed Steel		A medium-alloyed high speed steel that has good machinability and good performance. HSS exhibits hardness, toughness and wear resistance characteristics that make it attractive in a wide range of applications, for example in drills and taps.
-------------------------	---	---

Carbide materials

Carbide Materials (or Hard Materials)		<p>A sintered powder metallurgy substrate, consisting of a metallic carbide composite with binder metal. The most central raw material is tungsten carbide (WC). Tungsten carbide contributes to the hardness of the material. Tantalum carbide (TaC), titanium carbide (TiC) and niobium carbide (NbC) complements WC and adjusts the properties to what is desired. These three materials are called cubic carbides. Cobalt (Co) acts as a binder and keeps the material together.</p> <p>Carbide materials are often characterised by high compression strength, high hardness and therefore high wear resistance, but also by limited flexural strength and toughness. Carbide is used in taps, reamers, milling cutters, drills and thread milling cutters.</p>
--	---	--

Surface Coatings

Bright Nickel Plating		Bright Nickel Plated surface protects hardened steel body from rust, corrosion and also improves chip evacuation.
Ti-phon (TiAlCrSiN)		Ti-phon Coating is a coating similar to TiAlN but with the addition of Chromium (Cr) and Silicon (Si) which is specially formulated for Hydra Heads to prevent edge build-up and greatly improve chip flow. This coating exhibits high hot hardness, high oxidation resistance and superior lubricity when used on tools for machining applications involving heavy mechanical and thermal stresses, high speeds and high feed rates. These coating properties translate into superior wear resistance and edge strength.

DORMER PRAMET

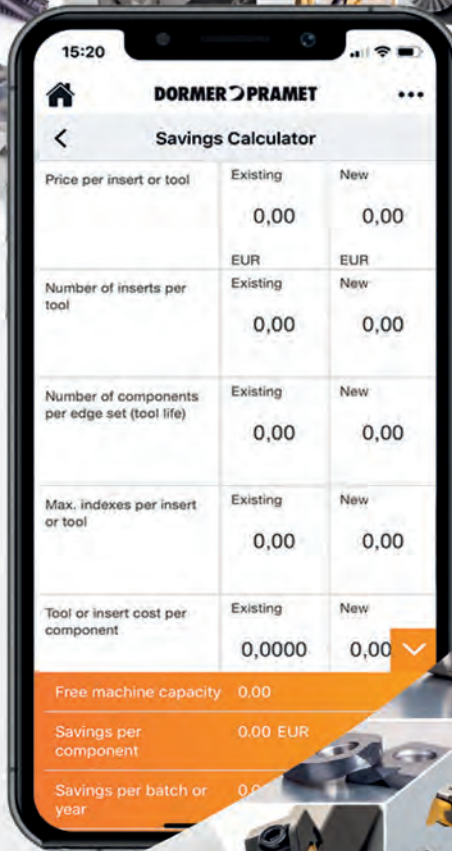


ALL TOOLS TOGETHER

Our entire assortment of rounds tools and indexables is included within the machining calculator app. That's more than **40,000** items!

Whatever your machining we're likely to have something for it.

Simply Reliable.





		HM	HM	HSS	HSS	HSS	HSS	HSS						
Material code (BMC)		HM	HM	HSS	HSS	HSS	HSS	HSS						
Basic standard group (BSG)		DORMER	DORMER	DORMER	DORMER	DORMER	DORMER	DORMER						
Usable length (ULDR)				1.5xD	3xD	5xD	8xD	12xD						
Application angle		140°	140°											
Coating		Ti-phon	Ti-phon	Bright Ni	Bright Ni	Bright Ni	Bright Ni	Bright Ni						
Shank				ISO 9766	DIN 6535HB DIN 6535HE	DIN 6535HB DIN 6535HE	DIN 6535HB DIN 6535HE	DIN 6535HB DIN 6535HE						
Hand (Cutting direction)		R	R	R	R	R	R	R						
Cooling (CSP)														
		HYDRA	HYDRA	HYDRA	HYDRA	HYDRA	HYDRA	HYDRA	HYDRA	HYDRA	HYDRA	HYDRA	HYDRA	HYDRA
Product Family Code		R950	R960	H851	H853	H855	H858	H8512	H860	H861				
PSF cutting diameters range		15/32 - 42.00	15/32 - 30.50	31/64 - 30.00	12.00 - 42.50	12.00 - 42.50	14.00 - 42.50	14.00 - 25.00	N1 - N7	N1 - N5				
		412	414	416	418	420	422	423	424	425				
P	P1	■	■											
	P2	■	■											
	P3	■												
	P4	■												
M	M1		■											
	M2		■											
	M3		■											
	M4		■											
K	K1		■											
	K2	■	■											
	K3	■	■											
	K4	■	■											
	K5	■	■											
N	N1													
	N2													
	N3													
	N4													
	N5													
S	S1		■											
	S2		■											
	S3		■											
	S4		■											
H	H1													
	H2													
	H3													
	H4													

■ Primary use ■ Possible use



HIGH PERFORMANCE REPLACEABLE HEAD DRILLS

SetUp									
	DC	H851 1.5xD	H853 3xD	H855 5xD	H858 8xD	H8512 12xD	R950	R960	H860	H861
Range	12.00 – 30.50 15/32" – 1.3/16"	12.00 – 42.50 15/32" – 1.5/8"	12.00 – 42.50 15/32" – 1.5/8"	13.50 – 42.50 35/64" – 1.5/8"	13.50 – 25.65 35/64" – 1.1/64"	12.00 – 42.00 15/32" – 1.5/8"	12.00 – 30.50 15/32" – 1.3/16"	N1 – N7	N1 – N6
Pages	416	418	420	422	423	412	414	424	425

DC	H851 1.5xD	H853 3xD	H855 5xD	H858 8xD	H8512 12xD	R950	R960	H860	H861
15/32"						R95015/32	R96015/32	H860N1	H861N1
12.0						R95012.0	R96012.0		
12.1	H85112.0	H85312.0	H85512.0	-	-	R95012.1	R96012.1		
12.2	H85131/64	H85331/64	H85531/64			R95012.2	R96012.2		
31/64"						R95031/64	R96031/64		
12.5						R95012.5	R96012.5		
12.6						R95012.6	R96012.6		
1/2"	H85112.5	H85312.5	H85512.5	-	-	R9501/2	R9601/2		
12.8		H8531/2	H8551/2			R95012.8	R96012.8		
12.9						R95012.9	R96012.9		
13.0						R95013.0	R96013.0		
33/64"	H85113.0	H85313.0	H85513.0	-	-	R95033/64	R96033/64		
13.2	H85117/32	H85317/32	H85517/32			R95013.2	R96013.2		
17/32"						R95017/32	R96017/32		
13.5						R95013.5	R96013.5		
13.6						R95013.6	R96013.6		
13.7						R95013.7	R96013.7		
13.8						R95013.8	R96013.8		
35/64"	H85114.0	H85314.0	H85514.0	H85814.0	H851214.0	R95035/64	R96035/64		
14.0		H8539/16	H8559/16			R95014.0	R96014.0		
14.1						R95014.1	R96014.1		
14.2						R95014.2	R96014.2		
9/16"						R9509/16	R9609/16		
14.5						R95014.5	R96014.5		
14.6						R95014.6	R96014.6		
37/64"						R95037/64	R96037/64		
14.7						R95014.7	R96014.7		
14.8						R95014.8	R96014.8		
15.0						R95015.0	R96015.0		
19/32"	H85115.0	H85315.0	H85515.0	H85815.0	H851215.0	R95019/32	R96019/32		
15.1	H85139/64	H85339/64	H85539/64			R95015.1	R96015.1		
15.2						R95015.2	R96015.2		
15.24						R95015.24	R96015.24		
39/64"						R95039/64	R96039/64		
15.5						R95015.5	R96015.5		



HIGH PERFORMANCE REPLACEABLE HEAD DRILLS

DC	H851 1.5xD	H853 3xD	H855 5xD	H858 8xD	H8512 12xD	R950	R960	H860	H861							
15.6	H85116.0	H85316.0	H85516.0	H85816.0	H851216.0	R95015.6	R96015.6	H860N2	H861N2							
15.7						R95015.7	R96015.7									
5/8"						R9505/8	R9605/8									
16.0						R95016.0	R96016.0									
16.08						R95016.08	R96016.08									
16.1						R95016.1	R96016.1									
16.2						R95016.2	R96016.2									
16.3						R95016.3	R96016.3									
41/64"						R95041/64	R96041/64									
16.5						R95016.5	R96016.5									
16.6	H85117.0	H85317.0	H85517.0	H85817.0	H851217.0	R95016.6	R96016.6	H860N2	H861N2							
21/32"						R95021/32	R96021/32									
16.7						R95016.7	R96016.7									
17.0						R95017.0	R96017.0									
43/64"						R95043/64	R96043/64									
17.1						R95017.1	R96017.1									
17.2						R95017.2	R96017.2									
11/16"						R95011/16	R96011/16									
17.5						R95017.5	R96017.5									
17.6						H85118.0	H85318.0			H85518.0	H85818.0	H851218.0	R95017.6	R96017.6	H860N2	H861N2
17.7	R95017.7	R96017.7														
45/64"	R95045/64	R96045/64														
18.0	R95018.0	R96018.0														
18.1	R95018.1	R96018.1														
18.2	R95018.2	R96018.2														
23/32"	R95023/32	R96023/32														
18.5	R95018.5	R96018.5														
18.6	H85119.0	H85319.0	H85519.0	H85819.0	H851219.0			R95018.6	R96018.6				H860N3	H861N3		
47/64"								R95047/64	R96047/64							
18.7						R95018.7	R96018.7									
18.9						R95018.9	R96018.9									
19.0						R95019.0	R96019.0									
3/4"						R9503/4	R9603/4									
19.1						R95019.1	R96019.1									
19.2						R95019.2	R96019.2									
19.25						R95019.25	R96019.25									
19.3						R95019.3	R96019.3									
19.35	R95019.35	R96019.35														
49/64"	R95049/64	R96049/64														
19.5	R95019.5	R96019.5														
19.6	H85120.0	H85320.0	H85520.0	H85820.0	H851220.0	R95019.6	R96019.6	H860N3	H861N3							
19.7						R95019.7	R96019.7									
25/32"						R95025/32	R96025/32									
20.0						R95020.0	R96020.0									
51/64"						R95051/64	R96051/64									
20.5						R95020.5	R96020.5									
13/16"						R95013/16	R96013/16									
21.0						R95021.0	R96021.0									
53/64"						R95053/64	R96053/64									
27/32"						R95027/32	R96027/32									
21.5	R95021.5	R96021.5														
55/64"	H85122.0	H85322.0	H85522.0	H85822.0	H851222.0	R95055/64	R96055/64	H860N4	H861N3							
22.0						R95022.0	R96022.0									
7/8"						R9507/8	R9607/8									
22.5						R95022.5	R96022.5									
57/64"						R95057/64	R96057/64									
22.7						R95022.7	R96022.7									
23.0						R95023.0	R96023.0									
29/32"						R95029/32	R96029/32									
59/64"						R95059/64	R96059/64									
23.5						R95023.5	R96023.5									



HIGH PERFORMANCE REPLACEABLE HEAD DRILLS

DC	H851 1.5xD	H853 3xD	H855 5xD	H858 8xD	H8512 12xD	R950	R960	H860	H861
15/16	H85124.0 H85131/32	H85324.0 H85331/32	H85524.0 H85531/32	H85824.0	H851224.0	R95015/16	R96015/16	H860N4	H861N3
24.0						R95024.0	R96024.0		
61/64						R95061/64	R96061/64		
24.5						R95024.5	R96024.5		
31/32"						R95031/32	R96031/32		
25.0	H85125.0 H8511.1/64	H85325.0 H8531.1/64	H85525.0 H8551.1/64	H85825.0	H851225.0	R95025.0	R96025.0	H860N5	H861N4
63/64"						R95063/64	R96063/64		
1"						R9501	R9601		
25.5						R95025.5	R96025.5		
25.6						R95025.6	-		
25.65						R95025.65	R96025.65		
1.1/64"						R9501.1/64	R9601.1/64		
26.0	H85126.0 H8511.3/64	H85326.0 H8531.3/64	H85526.0 H8551.3/64	H85826.0	-	R95026.0	R96026.0	H860N5	H861N4
1.1/32"						R9501.1/32	R9601.1/32		
26.5						R95026.5	R96026.5		
1.3/64						R9501.3/64	R9601.3/64		
1.1/16"	H85127.0 H8511.3/32	H85327.0 H8531.3/32	H85527.0 H8551.3/32	H85827.0	-	R9501.1/16	R9601.1/16	H860N5	H861N4
27.0						R95027.0	R96027.0		
1.5/64"						R9501.5/64	R9601.5/64		
27.5						R95027.5	R96027.5		
1.3/32"	R9501.3/32	R9601.3/32							
28.0	H85128.0	H85328.0 H8531.1/8	H85528.0 H8551.1/8	H85828.0	-	R95028.0	R96028.0	H860N5	H861N4
1.7/64"						R9501.7/64	R9601.7/64		
28.5						R95028.5	R96028.5		
1.1/8"						R9501.1/8	R9601.1/8		
1.9/64"	H85129.0	H85329.0 H8531.11/64	H85529.0 H8551.11/64	H85829.0	-	R9501.9/64	R9601.9/64	H860N5	H861N4
29.0						R95029.0	R96029.0		
1.5/32"						R9501.5/32	R9601.5/32		
29.5						R95029.5	R96029.5		
1.11/64"						R9501.11/64	R9601.11/64		
30.0	H85130.0 H8511.3/16	H85330.0 H8531.3/16	H85530.0 H8551.3/16	H85830.0	-	R95030.0	R96030.0	H860N6	H861N5
1.3/16"						R9501.3/16	R9601.3/16		
30.5						R95030.5	R96030.5		
1.7/32"	-	H85332.0	H85532.0	H85832.0	-	R9501.7/32	-	H860N6	H861N5
31.0						R95031.0	-		
1.1/4"						R9501.1/4	-		
32.0						R95032.0	-		
32.5	-	H85333.5	H85533.5	H85833.5	-	R95032.5	-	H860N6	H861N5
1.19/64"						R9501.19/64	-		
33.0						R95033.0	-		
33.5						R95033.5	-		
34.0	-	H85335.0	H85535.0	H85835.0	-	R95034.0	-	H860N7	-
1.11/32"						R9501.11/32	-		
34.5						R95034.5	-		
1.3/8"						R9501.3/8	-		
35.0	-	H85336.5	H85536.5	H85836.5	-	R95035.0	-	H860N7	-
36.0						R95036.0	-		
1.27/64"						R9501.27/64	-		
36.5						R95036.5	-		
37.0	-	H85338.0	H85538.0	H85838.0	-	R95037.0	-	H860N7	-
1.15/32"						R9501.15/32	-		
37.5						R95037.5	-		
38.0						R95038.0	-		
1.1/2"	-	H85339.5	H85539.5	H85839.5	-	R9501.1/2	-	H860N7	-
38.5						R95038.5	-		
1.17/32"						R9501.17/32	-		
39.0						R95039.0	-		
39.5	-	H85341.0	H85541.0	H85841.0	-	R95039.5	-	H860N7	-
1.9/16"						R9501.9/16	-		
40.0						R95040.0	-		
41.0	-	H85341.0	H85541.0	H85841.0	-	R95041.0	-	H860N7	-
41.0						R95041.0	-		



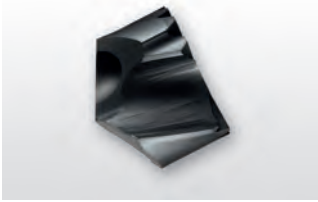
HIGH PERFORMANCE REPLACEABLE HEAD DRILLS

DC	H851 1.5×D	H853 3×D	H855 5×D	H858 8×D	H8512 12×D	R950	R960	H860	H861
1.5/8"	–	H85342.5	H85542.5	H85842.5	–	R9501.5/8	–	H860N7	–
42.0	–					R95042.0	–		

Accessories

H860	H861	Hydra Head DC range			Wrench Size / Bit
		Metric (min. – max.)	Fractional (min. – max.)	Decimal (min. – max.)	
H860N1	H861N1	12.0 mm – 15.5 mm	15/32" – 39/64"	0.4688" – 0.6102"	8IP
H860N2	H861N2	15.6 mm – 18.5 mm	5/8" – 23/32"	0.6142" – 0.7283"	10IP
H860N3	H861N3	18.6 mm – 21.5 mm	47/64" – 27/32"	0.7323" – 0.8465"	15IP
H860N4	H861N3	22.0 mm – 24.5 mm	55/64" – 31/32"	0.8594" – 0.9688"	15IP
H860N5	H861N4	25.0 mm – 27.5 mm	63/64" – 1-3/32"	0.9843" – 1.0938"	20IP
H860N6	H861N5	28.0 mm – 33.5 mm	1-7/64" – 1-19/64"	1.1024" – 1.3189"	25IP
H860N7	–	34.0 mm – 42.0 mm	1-11/32" – 1-5/8"	1.3386" – 1.6535"	4 mm Hex

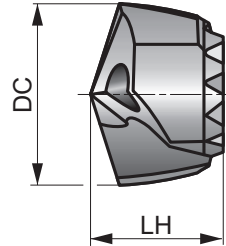
R950



HYDRA Solid Carbide Drill Head for Steels, Ti-phon Coated

Highly cost-effective and accurately designed replaceable carbide head for high performance in steels and harder materials. A 140° split point helps with self-centering and reduces cutting forces. Ti-phon coating prevents edge build-up and greatly improves chip flow, with superior wear resistance and edge strength.

HYDRA



HM	DORMER	140°
Ti-phon	R	
DC h7		

H851	Apply starting values for speed and feed with a corrections factor of 1.10
H853	Apply starting values for speed and feed with a corrections factor of 1.00
H855	Apply starting values for speed and feed with a corrections factor of 0.80
H858	Apply starting values for speed and feed with a corrections factor of 0.60
H8512	Apply starting values for speed and feed with a corrections factor of 0.50

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 433.

P1.1 ■ 436W	P1.2 ■ 486W	P1.3 ■ 505W	P2.1 ■ 374W	P2.2 ■ 328W	P2.3 ■ 289W	P3.1 ■ 410W	P3.2 ■ 331W	P3.3 ■ 279W	P4.1 ■ 246W	P4.2 ■ 207W	P4.3 ■ 171T	M2.3 ■ 135T	M4.2 ■ 115T
K2.1 ■ 354V	K2.2 ■ 289V	K2.3 ■ 230V	K3.1 ■ 315V	K3.2 ■ 240V	K3.3 ■ 194V	K4.1 ■ 292V	K4.2 ■ 220V	K4.3 ■ 161V	K4.4 ■ 138V	K4.5 ■ 115V	K5.1 ■ 328V	K5.2 ■ 249V	K5.3 ■ 190V

Product	DC (inch)	DC (mm)	DC (inch)	LH (mm)	Pack Qty	MID
R95015/32	15/32	11.91	.4688	9.1	1	5988695
R95012.0	–	12.00	.4724	9.1	1	5988624
R95012.1	–	12.10	.4764	9.1	1	5988627
R95012.2	–	12.20	.4803	9.1	1	5988630
R95031/64	31/64	12.30	.4844	9.1	1	5988936
R95012.5	–	12.50	.4921	9.4	1	5988633
R95012.6	–	12.60	.4961	9.4	1	5988640
R9501/2	1/2	12.70	.5000	9.4	1	5988620
R95012.8	–	12.80	.5039	9.4	1	5988641
R95012.9	–	12.90	.5079	9.4	1	5988642
R95013.0	–	13.00	.5118	9.7	1	5988643
R95033/64	33/64	13.10	.5156	9.7	1	5988850
R95013.2	–	13.20	.5197	9.7	1	5988644
R95017/32	17/32	13.49	.5313	9.7	1	5988697
R95013.5	–	13.50	.5315	10.3	1	5988645
R95013.6	–	13.60	.5354	10.3	1	5988646
R95013.7	–	13.70	.5394	10.3	1	5988647
R95013.8	–	13.80	.5433	10.3	1	5988648
R95035/64	35/64	13.89	.5469	10.3	1	5988854
R95014.0	–	14.00	.5512	10.3	1	5988652
R95014.1	–	14.10	.5551	10.3	1	5988655
R95014.2	–	14.20	.5591	10.3	1	5988657
R9509/16	9/16	14.29	.5625	10.3	1	5988904
R95014.5	–	14.50	.5709	10.3	1	5988660
R95014.6	–	14.60	.5748	11.0	1	5988663
R95037/64	37/64	14.68	.5781	11.0	1	5988857

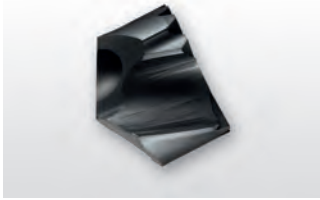
Product	DC (inch)	DC (mm)	DC (inch)	LH (mm)	Pack Qty	MID
R95014.7	–	14.70	.5787	11.0	1	5988666
R95014.8	–	14.80	.5827	11.0	1	5988668
R95015.0	–	15.00	.5906	11.0	1	5988670
R95019/32	19/32	15.08	.5938	11.0	1	5988779
R95015.1	–	15.10	.5945	11.0	1	5988672
R95015.2	–	15.20	.5984	11.0	1	5988674
R95015.24	–	15.24	.6000	11.0	1	5988678
R95039/64	39/64	15.48	.6094	11.0	1	5988860
R95015.5	–	15.50	.6102	11.0	1	5988680
R95015.6	–	15.60	.6142	11.6	1	5988683
R95015.7	–	15.70	.6181	11.6	1	5988687
R9505/8	5/8	15.88	.6250	11.6	1	5988884
R95016.0	–	16.00	.6299	11.6	1	5988698
R95016.08	–	16.08	.6331	11.6	1	5988702
R95016.1	–	16.10	.6339	11.6	1	5988710
R95016.2	–	16.20	.6378	11.6	1	5988715
R95041/64	41/64	16.27	.6406	11.6	1	5988864
R95016.3	–	16.30	.6417	11.6	1	5988725
R95016.5	–	16.50	.6496	11.6	1	5988690
R95016.6	–	16.60	.6535	12.2	1	5988749
R95021/32	21/32	16.67	.6563	12.2	1	5988802
R95016.7	–	16.70	.6575	12.2	1	5988790
R95017.0	–	17.00	.6693	12.2	1	5988833
R95043/64	43/64	17.07	.6719	12.2	1	5988867
R95017.1	–	17.10	.6732	12.2	1	5988873
R95017.2	–	17.20	.6772	12.2	1	5988881



Product	DC	DC	DC	LH	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)		
R95011/16	11/16	17.46	.6875	12.2	1	5988623
R95017.5	–	17.50	.6890	12.2	1	5988885
R95017.6	–	17.60	.6929	12.9	1	5988891
R95017.7	–	17.70	.6969	12.9	1	5988894
R95045/64	45/64	17.86	.7031	12.9	1	5988872
R95018.0	–	18.00	.7087	12.9	1	5988701
R95018.1	–	18.10	.7126	12.9	1	5988706
R95018.2	–	18.20	.7165	12.9	1	5988713
R95023/32	23/32	18.26	.7188	12.9	1	5988824
R95018.5	–	18.50	.7283	12.9	1	5988718
R95018.6	–	18.60	.7323	13.5	1	5988723
R95047/64	47/64	18.65	.7344	13.5	1	5988877
R95018.7	–	18.70	.7362	13.5	1	5988728
R95018.9	–	18.90	.7441	13.5	1	5988733
R95019.0	–	19.00	.7480	13.5	1	5988740
R9503/4	3/4	19.05	.7500	13.5	1	5988928
R95019.1	–	19.10	.7520	13.5	1	5988745
R95019.2	–	19.20	.7559	13.5	1	5988752
R95019.25	–	19.25	.7579	13.5	1	5988756
R95019.3	–	19.30	.7598	13.5	1	5988760
R95019.35	–	19.35	.7618	13.5	1	5988764
R95049/64	49/64	19.45	.7656	13.5	1	5988880
R95019.5	–	19.50	.7677	13.5	1	5988767
R95019.6	–	19.60	.7717	14.1	1	5988771
R95019.7	–	19.70	.7756	14.1	1	5988775
R95025/32	25/32	19.84	.7813	14.1	1	5988851
R95020.0	–	20.00	.7874	14.1	1	5988782
R95051/64	51/64	20.24	.7969	14.1	1	5988892
R95020.5	–	20.50	.8071	14.1	1	5988786
R95013/16	13/16	20.64	.8125	14.8	1	5988649
R95021.0	–	21.00	.8268	14.8	1	5988794
R95053/64	53/64	21.03	.8281	14.8	1	5988896
R95027/32	27/32	21.43	.8438	14.8	1	5988869
R95021.5	–	21.50	.8465	14.8	1	5988798
R95055/64	55/64	21.83	.8594	15.0	1	5988898
R95022.0	–	22.00	.8661	15.0	1	5988806
R9507/8	7/8	22.22	.8750	15.0	1	5988903
R95022.5	–	22.50	.8858	15.0	1	5988810
R95057/64	57/64	22.62	.8906	15.0	1	5988899
R95022.7	–	22.70	.8937	15.0	1	5988814
R95023.0	–	23.00	.9055	15.1	1	5988816
R95029/32	29/32	23.02	.9063	15.1	1	5988917
R95059/64	59/64	23.42	.9219	15.1	1	5988900
R95023.5	–	23.50	.9252	15.1	1	5988820
R95015/16	15/16	23.81	.9375	15.4	1	5988691
R95024.0	–	24.00	.9449	15.4	1	5988828
R95061/64	61/64	24.21	.9531	15.4	1	5988901
R95024.5	–	24.50	.9646	15.4	1	5988837
R95031/32	31/32	24.61	.9688	15.4	1	5988934
R95025.0	–	25.00	.9844	15.8	1	5988840
R95063/64	63/64	25.00	.9844	15.8	1	5988902
R9501	1"	25.40	1.0000	15.8	1	5988604
R95025.5	–	25.50	1.0039	15.8	1	5988843
R95025.6	–	25.60	1.0079	15.8	1	7573297

Product	DC	DC	DC	LH	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)		
R95025.65	–	25.65	1.0098	15.8	1	5988847
R9501.1/64	1.1/64	25.80	1.0156	15.8	1	5988676
R95026.0	–	26.00	1.0236	16.4	1	5988855
R9501.1/32	1.1/32	26.19	1.0313	16.4	1	5988650
R95026.5	–	26.50	1.0433	16.4	1	5988858
R9501.3/64	1.3/64	26.59	1.0469	16.4	1	5988744
R9501.1/16	1.1/16	26.99	1.0625	17.1	1	5988637
R95027.0	–	27.00	1.0630	17.1	1	5988861
R9501.5/64	1.5/64	27.38	1.0781	17.1	1	5988611
R95027.5	–	27.50	1.0827	17.1	1	5988865
R9501.3/32	1.3/32	27.78	1.0938	17.1	1	5988739
R95028.0	–	28.00	1.1024	17.7	1	5988876
R9501.7/64	1.7/64	28.18	1.1094	17.7	1	5988614
R95028.5	–	28.50	1.1220	17.7	1	5988844
R9501.1/8	1.1/8	28.58	1.1250	17.7	1	5988720
R9501.9/64	1.9/64	28.97	1.1406	18.3	1	5988617
R95029.0	–	29.00	1.1417	18.3	1	5988888
R9501.5/32	1.5/32	29.37	1.1563	18.3	1	5988608
R95029.5	–	29.50	1.1614	18.3	1	5988906
R9501.11/64	1.11/64	29.77	1.1719	18.3	1	5988730
R95030.0	–	30.00	1.1811	19.0	1	5988930
R9501.3/16	1.3/16	30.16	1.1875	19.0	1	5988735
R95030.5	–	30.50	1.2008	19.0	1	5988932
R9501.7/32	1.7/32	30.96	1.2188	21.0	1	6104481
R95031.0	–	31.00	1.2205	21.0	1	6104482
R9501.1/4	1.1/4	31.75	1.2500	21.0	1	6104483
R95032.0	–	32.00	1.2598	21.0	1	6104484
R95032.5	–	32.50	1.2795	21.0	1	6104485
R9501.19/64	1.19/64	32.94	1.2969	21.0	1	6104486
R95033.0	–	33.00	1.2992	21.0	1	6104487
R95033.5	–	33.50	1.3189	21.0	1	6104488
R95034.0	–	34.00	1.3386	23.0	1	6104489
R9501.11/32	1.11/32	34.13	1.3438	23.0	1	6104530
R95034.5	–	34.50	1.3583	23.0	1	6104531
R9501.3/8	1.3/8	34.93	1.3750	23.0	1	6104532
R95035.0	–	35.00	1.3780	23.0	1	6104533
R95036.0	–	36.00	1.4173	23.0	1	6104534
R9501.27/64	1.27/64	36.12	1.4219	23.0	1	6104535
R95036.5	–	36.50	1.4370	23.0	1	6104536
R95037.0	–	37.00	1.4567	25.0	1	6104537
R9501.15/32	1.15/32	37.31	1.4688	25.0	1	6104538
R95037.5	–	37.50	1.4764	25.0	1	6104539
R95038.0	–	38.00	1.4961	25.0	1	6104540
R9501.1/2	1.1/2	38.10	1.5000	25.0	1	6104541
R95038.5	–	38.50	1.5157	25.0	1	6104542
R9501.17/32	1.17/32	38.89	1.5313	25.0	1	6104543
R95039.0	–	39.00	1.5354	25.0	1	6104544
R95039.5	–	39.50	1.5551	25.0	1	6104545
R9501.9/16	1.9/16	39.69	1.5625	27.0	1	6104546
R95040.0	–	40.00	1.5748	27.0	1	6104547
R95041.0	–	41.00	1.6142	27.0	1	6104548
R9501.5/8	1.5/8	41.28	1.6250	27.0	1	6104549
R95042.0	–	42.00	1.6535	27.0	1	6104550

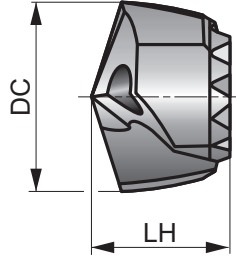
R960



HYDRA Solid Carbide Drill Head for Stainless Steels, Ti-phon Coated

Highly cost-effective and accurately designed replaceable carbide head for high performance in stainless steels. A 140° split point helps with self-centering and reduces cutting forces. Ti-phon coating prevents edge build-up and greatly improves chip flow, with superior wear resistance and edge strength.

HYDRA



HM	DORMER	140°
Ti-phon	R	
DC h7		

H851	Apply starting values for speed and feed with a corrections factor of 1.10
H853	Apply starting values for speed and feed with a corrections factor of 1.00
H855	Apply starting values for speed and feed with a corrections factor of 0.80
H858	Apply starting values for speed and feed with a corrections factor of 0.60
H8512	Apply starting values for speed and feed with a corrections factor of 0.50

Workpiece material group suitability, starting values for cutting speed (ft/min) and feed Alpha Code. Tables with feed per revolution can be found starting from page 433.

P1.1 ■ 436W	P1.2 ■ 486W	P1.3 ■ 505W	P2.1 ■ 374W	M1.1 ■ 269V	M1.2 ■ 230V	M2.1 ■ 240V	M2.2 ■ 197V	M2.3 ■ 164T	M3.1 ■ 190T	M3.2 ■ 164T	M3.3 ■ 148T	M4.1 ■ 131T	M4.2 ■ 112T
K1.1 ■ 394V	K1.2 ■ 292V	K1.3 ■ 220V	K2.1 ■ 354V	K2.2 ■ 289V	K2.3 ■ 230V	K3.1 ■ 315V	K3.2 ■ 240V	K3.3 ■ 194V	K4.1 ■ 292V	K4.2 ■ 220V	K4.3 ■ 161V	K4.4 ■ 138V	K4.5 ■ 115V
K5.1 ■ 328V	K5.2 ■ 249V	K5.3 ■ 190V	S1.1 ■ 148T	S1.2 ■ 115T	S1.3 ■ 98S	S2.1 ■ 131S	S2.2 ■ 115S	S3.1 ■ 98S	S3.2 ■ 82S	S4.1 ■ 75S	S4.2 ■ 66S		

Product	DC (inch)	DC (mm)	DC (inch)	LH (mm)	Pack Qty	MID
R96015/32	15/32	11.91	.4688	9.1	1	5988758
R96012.0	—	12.00	.4724	9.1	1	5988922
R96012.1	—	12.10	.4764	9.1	1	5988923
R96012.2	—	12.20	.4803	9.1	1	5988924
R96031/64	31/64	12.30	.4844	9.1	1	5988575
R96012.5	—	12.50	.4921	9.4	1	5988925
R96012.6	—	12.60	.4961	9.4	1	5988926
R9601/2	1/2	12.70	.5000	9.4	1	5988920
R96012.8	—	12.80	.5039	9.4	1	5988927
R96012.9	—	12.90	.5079	9.4	1	5988929
R96013.0	—	13.00	.5118	9.7	1	5988685
R96033/64	33/64	13.10	.5156	9.7	1	5988579
R96013.2	—	13.20	.5197	9.7	1	5988737
R96017/32	17/32	13.49	.5313	9.7	1	5988831
R96013.5	—	13.50	.5315	10.3	1	5988791
R96013.6	—	13.60	.5354	10.3	1	5988839
R96013.7	—	13.70	.5394	10.3	1	5988883
R96013.8	—	13.80	.5433	10.3	1	5988889
R96035/64	35/64	13.89	.5469	10.3	1	5988583
R96014.0	—	14.00	.5512	10.3	1	5988895
R96014.1	—	14.10	.5551	10.3	1	5988897
R96014.2	—	14.20	.5591	10.3	1	5988692
R9609/16	9/16	14.29	.5625	10.3	1	5988664

Product	DC (inch)	DC (mm)	DC (inch)	LH (mm)	Pack Qty	MID
R96014.5	—	14.50	.5709	10.3	1	5988696
R96014.6	—	14.60	.5748	11.0	1	5988700
R96037/64	37/64	14.68	.5781	11.0	1	5988591
R96014.7	—	14.70	.5787	11.0	1	5988705
R96014.8	—	14.80	.5827	11.0	1	5988709
R96015.0	—	15.00	.5906	11.0	1	5988714
R96019/32	19/32	15.08	.5938	11.0	1	5988621
R96015.1	—	15.10	.5945	11.0	1	5988719
R96015.2	—	15.20	.5984	11.0	1	5988724
R96015.24	—	15.24	.6000	11.0	1	5988729
R96039/64	39/64	15.48	.6094	11.0	1	5988595
R96015.5	—	15.50	.6102	11.0	1	5988734
R96015.6	—	15.60	.6142	11.6	1	5988742
R96015.7	—	15.70	.6181	11.6	1	5988747
R9605/8	5/8	15.88	.6250	11.6	1	5988612
R96016.0	—	16.00	.6299	11.6	1	5988763
R96016.08	—	16.08	.6331	11.6	1	5988769
R96016.1	—	16.10	.6339	11.6	1	5988773
R96016.2	—	16.20	.6378	11.6	1	5988777
R96041/64	41/64	16.27	.6406	11.6	1	5988599
R96016.3	—	16.30	.6417	11.6	1	5988783
R96016.5	—	16.50	.6496	11.6	1	5988787
R96016.6	—	16.60	.6535	12.2	1	5988795



Product	DC	DC	DC	LH	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)		
R96021/32	21/32	16.67	.6563	12.2	1	5988443
R96016.7	–	16.70	.6575	12.2	1	5988799
R96017.0	–	17.00	.6693	12.2	1	5988803
R96043/64	43/64	17.07	.6719	12.2	1	5988601
R96017.1	–	17.10	.6732	12.2	1	5988807
R96017.2	–	17.20	.6772	12.2	1	5988811
R96011/16	11/16	17.46	.6875	12.2	1	5988921
R96017.5	–	17.50	.6890	12.2	1	5988818
R96017.6	–	17.60	.6929	12.9	1	5988823
R96017.7	–	17.70	.6969	12.9	1	5988827
R96045/64	45/64	17.86	.7031	12.9	1	5988603
R96018.0	–	18.00	.7087	12.9	1	5988835
R96018.1	–	18.10	.7126	12.9	1	5988841
R96018.2	–	18.20	.7165	12.9	1	5988845
R96023/32	23/32	18.26	.7188	12.9	1	5988471
R96018.5	–	18.50	.7283	12.9	1	5988848
R96018.6	–	18.60	.7323	13.5	1	5988853
R96047/64	47/64	18.65	.7344	13.5	1	5988606
R96018.7	–	18.70	.7362	13.5	1	5988856
R96018.9	–	18.90	.7441	13.5	1	5988863
R96019.0	–	19.00	.7480	13.5	1	5988868
R9603/4	3/4	19.05	.7500	13.5	1	5988559
R96019.1	–	19.10	.7520	13.5	1	5988871
R96019.2	–	19.20	.7559	13.5	1	5988875
R96019.25	–	19.25	.7579	13.5	1	5988879
R96019.3	–	19.30	.7598	13.5	1	5988887
R96019.35	–	19.35	.7618	13.5	1	5988438
R96049/64	49/64	19.45	.7656	13.5	1	5988609
R96019.5	–	19.50	.7677	13.5	1	5988495
R96019.6	–	19.60	.7717	14.1	1	5988544
R96019.7	–	19.70	.7756	14.1	1	5988587
R96025/32	25/32	19.84	.7813	14.1	1	5988511
R96020.0	–	20.00	.7874	14.1	1	5988629
R96051/64	51/64	20.24	.7969	14.1	1	5988615
R96020.5	–	20.50	.8071	14.1	1	5988632
R96013/16	13/16	20.64	.8125	14.8	1	5988893
R96021.0	–	21.00	.8268	14.8	1	5988635
R96053/64	53/64	21.03	.8281	14.8	1	5988618
R96027/32	27/32	21.43	.8438	14.8	1	5988531
R96021.5	–	21.50	.8465	14.8	1	5988638
R96055/64	55/64	21.83	.8594	15.0	1	5988626

Product	DC	DC	DC	LH	Pack Qty	MID
	(inch)	(mm)	(inch)	(mm)		
R96022.0	–	22.00	.8661	15.0	1	5988448
R9607/8	7/8	22.22	.8750	15.0	1	5988661
R96022.5	–	22.50	.8858	15.0	1	5988453
R96057/64	57/64	22.62	.8906	15.0	1	5988651
R96022.7	–	22.70	.8937	15.0	1	5988458
R96023.0	–	23.00	.9055	15.1	1	5988462
R96029/32	29/32	23.02	.9063	15.1	1	5988556
R96059/64	59/64	23.42	.9219	15.1	1	5988653
R96023.5	–	23.50	.9252	15.1	1	5988466
R96015/16	15/16	23.81	.9375	15.4	1	5988754
R96024.0	–	24.00	.9449	15.4	1	5988476
R96061/64	61/64	24.21	.9531	15.4	1	5988656
R96024.5	–	24.50	.9646	15.4	1	5988483
R96031/32	31/32	24.61	.9688	15.4	1	5988572
R96025.0	–	25.00	.9844	15.8	1	5988488
R96063/64	63/64	25.00	.9844	15.8	1	5988658
R9601	1"	25.40	1.0000	15.8	1	5988905
R96025.5	–	25.50	1.0039	15.8	1	5988499
R96025.65	–	25.65	1.0098	15.8	1	5988506
R9601.1/64	1.1/64	25.80	1.0156	15.8	1	5988909
R96026.0	–	26.00	1.0236	16.4	1	5988516
R9601.1/32	1.1/32	26.19	1.0313	16.4	1	5988908
R96026.5	–	26.50	1.0433	16.4	1	5988519
R9601.3/64	1.3/64	26.59	1.0469	16.4	1	5988914
R9601.1/16	1.1/16	26.99	1.0625	17.1	1	5988907
R96027.0	–	27.00	1.0630	17.1	1	5988523
R9601.5/64	1.5/64	27.38	1.0781	17.1	1	5988916
R96027.5	–	27.50	1.0827	17.1	1	5988528
R9601.3/32	1.3/32	27.78	1.0938	17.1	1	5988913
R96028.0	–	28.00	1.1024	17.7	1	5988535
R9601.7/64	1.7/64	28.18	1.1094	17.7	1	5988918
R96028.5	–	28.50	1.1220	17.7	1	5988540
R9601.1/8	1.1/8	28.58	1.1250	17.7	1	5988910
R9601.9/64	1.9/64	28.97	1.1406	18.3	1	5988919
R96029.0	–	29.00	1.1417	18.3	1	5988548
R9601.5/32	1.5/32	29.37	1.1563	18.3	1	5988915
R96029.5	–	29.50	1.1614	18.3	1	5988552
R9601.11/64	1.11/64	29.77	1.1719	18.3	1	5988911
R96030.0	–	30.00	1.1811	19.0	1	5988564
R9601.3/16	1.3/16	30.16	1.1875	19.0	1	5988912
R96030.5	–	30.50	1.2008	19.0	1	5988568



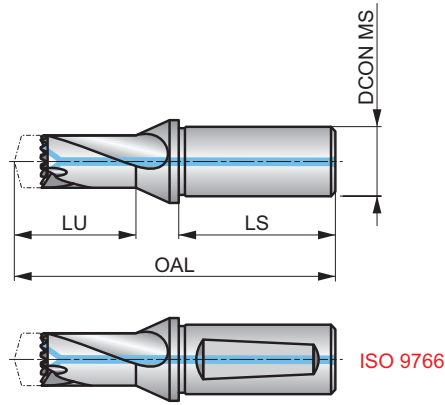
H851



HYDRA Body 1.5XD, with Coolant Feed, Bright Nickel Plating

Used with R950, R960 and R970 HYDRA heads. A range of head diameters can be used with the same body. Coolant holes aligned with the heads offer efficient cooling. Flanged shank prevents the drill from wandering in the holder. Nickel plated surface protects from rust and corrosion, and improves chip evacuation.

HYDRA



HSS	DORMER	1.5×D
Bright Ni	ISO 9766	R

Four (4) screws and one (1) screwdriver are included with a drill body, DCON MS tolerance h6.

Product	DCON MS		LU	OAL	LS	ADINTMS	Pack Qty	MID
	(inch)	(mm)						
H85131/64	5/8	15.88	25.50	88.5	47.6	Cylindrical	1	7833294
H85117/32	5/8	15.88	30.90	93.9	47.6	Cylindrical	1	7833296
H85112.0	—	16.00	25.50	88.5	48.0	ISO 9766	1	7833297
H85112.5	—	16.00	25.80	88.8	48.0	ISO 9766	1	7833298
H85113.0	—	16.00	27.00	90.0	48.0	ISO 9766	1	7833299
H85114.0	—	16.00	30.90	93.9	48.0	ISO 9766	1	7833330
H85139/64	3/4	19.05	32.30	97.3	50.8	Cylindrical	1	7833332
H85141/64	3/4	19.05	34.90	99.9	50.8	Cylindrical	1	7833333
H85111/16	3/4	19.05	36.40	101.4	50.8	Cylindrical	1	7833334
H85123/32	3/4	19.05	39.00	104.0	50.8	Cylindrical	1	7833335
H85115.0	—	20.00	32.30	97.3	50.0	ISO 9766	1	7833336
H85116.0	—	20.00	34.90	99.9	50.0	ISO 9766	1	7833337
H85117.0	—	20.00	36.40	101.4	50.0	ISO 9766	1	7833338
H85118.0	—	20.00	39.00	104.0	50.0	ISO 9766	1	7833339
H85119.0	—	25.00	40.40	111.4	56.0	ISO 9766	1	7833340
H85120.0	—	25.00	43.00	114.0	56.0	ISO 9766	1	7833341
H85121.0	—	25.00	44.50	115.5	56.0	ISO 9766	1	7833342
H85122.0	—	25.00	46.10	117.1	56.0	ISO 9766	1	7833343
H85123.0	—	25.00	47.00	118.0	56.0	ISO 9766	1	7833344
H85149/64	1"	25.40	40.40	111.4	57.1	Cylindrical	1	7833345
H85151/64	1"	25.40	43.00	114.0	57.1	Cylindrical	1	7833346
H85127/32	1"	25.40	44.50	115.5	57.1	Cylindrical	1	7833347
H85157/64	1"	25.40	46.10	117.1	57.1	Cylindrical	1	7833348
H85159/64	1"	25.40	47.00	118.0	57.1	Cylindrical	1	7833349
H85131/32	1"	25.40	49.30	124.3	57.1	Cylindrical	1	7833350
H8511.1/64	1.1/4	31.75	49.70	124.7	60.3	Cylindrical	1	7833351
H8511.3/64	1.1/4	31.75	52.30	127.3	60.3	Cylindrical	1	7833352
H8511.3/32	1.1/4	31.75	52.80	127.8	60.3	Cylindrical	1	7833353
H8511.3/16	1.1/4	31.75	58.40	133.4	60.3	Cylindrical	1	7833356



Product	DCON MS	DCON MS	LU	OAL	LS	ADINTMS	Pack Qty	MID
	(inch)	(mm)	(mm)	(mm)	(mm)			
H85124.0	–	32.00	49.30	124.3	60.0	ISO 9766	1	7833357
H85125.0	–	32.00	49.70	124.7	60.0	ISO 9766	1	7833358
H85126.0	–	32.00	52.30	127.3	60.0	ISO 9766	1	7833359
H85127.0	–	32.00	52.80	127.8	60.0	ISO 9766	1	7833360
H85128.0	–	32.00	54.40	129.4	60.0	ISO 9766	1	7833361
H85129.0	–	32.00	55.80	130.8	60.0	ISO 9766	1	7833362
H85130.0	–	32.00	58.40	133.4	60.0	ISO 9766	1	7833363



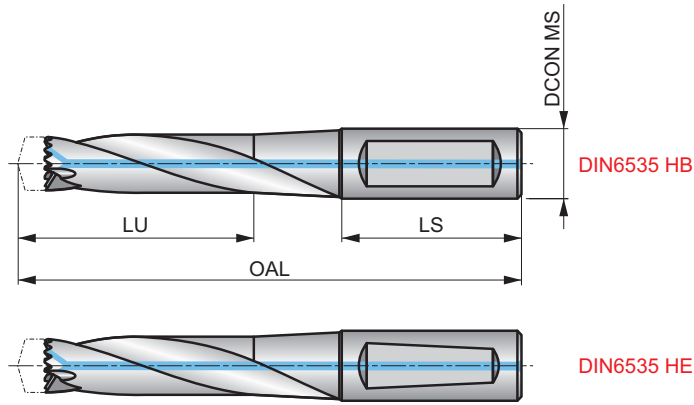
H853



HYDRA Body 3XD, with Coolant Feed, Bright Nickel Plating

Used with R950, R960 and R970 HYDRA heads. A range of head diameters can be used with the same body. Coolant holes aligned with the heads offer efficient cooling. Bright Nickel plated surface protects from rust and corrosion, and improves chip evacuation.

HYDRA



HSS	DORMER	3xD
Bright Ni	DIN 6535HB DIN 6535HE	R

Four (4) screws and one (1) screwdriver are included with a drill body, DCON MS tolerance h6.

Product	DCON MS		LU	OAL	LS	ADINTMS	Pack Qty	MID
	(inch)	(mm)						
H85312.0	—	16.00	44.00	105.0	48.0	DIN6535HE	1	5988132
H85331/64	5/8	15.88	44.00	105.0	48.0	DIN6535HB	1	5988068
H85312.5	—	16.00	44.00	105.0	48.0	DIN6535HE	1	5987969
H8531/2	5/8	15.88	44.00	105.0	48.0	DIN6535HB	1	5988126
H85313.0	—	16.00	47.00	110.0	48.0	DIN6535HE	1	5987973
H85317/32	5/8	15.88	47.00	110.0	48.0	DIN6535HB	1	5987992
H85314.0	—	16.00	52.50	116.5	48.0	DIN6535HE	1	5987976
H8539/16	3/4	19.05	52.50	116.5	48.0	DIN6535HB	1	5988093
H85315.0	—	20.00	55.50	126.5	50.0	DIN6535HE	1	5987979
H85339/64	3/4	19.05	55.50	126.5	50.0	DIN6535HB	1	5988072
H85316.0	—	20.00	59.50	131.5	50.0	DIN6535HE	1	5987983
H85341/64	3/4	19.05	59.50	131.5	50.0	DIN6535HB	1	5988076
H85317.0	—	20.00	62.50	136.5	50.0	DIN6535HE	1	5987987
H85311/16	3/4	19.05	62.50	136.5	50.0	DIN6535HB	1	5988129
H85318.0	—	20.00	66.50	141.5	50.0	DIN6535HE	1	5987996
H85323/32	3/4	19.05	66.50	141.5	50.0	DIN6535HB	1	5988025
H85319.0	—	25.00	69.50	156.5	56.0	DIN6535HE	1	5987999
H85349/64	1"	25.40	69.50	156.5	56.0	DIN6535HB	1	5988079
H85320.0	—	25.00	73.50	156.5	56.0	DIN6535HE	1	5988003
H85351/64	1"	25.40	73.50	156.5	56.0	DIN6535HB	1	5988083
H85321.0	—	25.00	76.50	156.5	56.0	DIN6535HE	1	5988013
H85327/32	1"	25.40	76.50	156.5	56.0	DIN6535HB	1	5988045
H85322.0	—	25.00	80.10	161.5	56.0	DIN6535HE	1	5988017
H85357/64	1"	25.40	80.10	161.5	56.0	DIN6535HB	1	5988086
H85323.0	—	25.00	82.50	160.5	56.0	DIN6535HE	1	5988021
H85359/64	1"	25.40	82.50	160.5	56.0	DIN6535HB	1	5988089
H85324.0	—	32.00	86.20	170.2	60.0	DIN6535HE	1	5988029
H85331/32	1"	25.40	86.20	170.2	60.0	DIN6535HB	1	5988064
H85325.0	—	32.00	88.00	170.0	60.0	DIN6535HE	1	5988033



Product	DCON MS	DCON MS	LU	OAL	LS	ADINTMS	Pack Qty	MID
	(inch)	(mm)	(mm)	(mm)	(mm)			
H8531.1/64	1.1/4	31.75	88.00	170.0	60.0	DIN6535HB	1	5987965
H85326.0	–	32.00	92.00	175.0	60.0	DIN6535HE	1	5988037
H8531.3/64	1.1/4	31.75	92.00	175.0	60.0	DIN6535HB	1	5988123
H85327.0	–	32.00	94.00	175.0	60.0	DIN6535HE	1	5988042
H8531.3/32	1.1/4	31.75	94.00	175.0	60.0	DIN6535HB	1	5988118
H85328.0	–	32.00	97.00	180.0	60.0	DIN6535HE	1	5988050
H8531.1/8	1.1/4	31.75	97.00	180.0	60.0	DIN6535HB	1	5988007
H85329.0	–	32.00	100.00	185.0	60.0	DIN6535HE	1	5988057
H8531.11/64	1.1/4	31.75	100.00	185.0	60.0	DIN6535HB	1	5988053
H85330.0	–	32.00	104.00	185.0	60.0	DIN6535HE	1	5988061
H8531.3/16	1.1/4	31.75	104.00	185.0	60.0	DIN6535HB	1	5988091
H85332.0	–	32.00	111.50	196.5	60.0	DIN6535HE	1	6111405
H85333.5	–	32.00	116.50	201.5	60.0	DIN6535HE	1	6111406
H85335.0	–	40.00	121.50	216.5	70.0	DIN6535HB	1	6111407
H85336.5	–	40.00	125.50	221.5	70.0	DIN6535HB	1	6111408
H85338.0	–	40.00	131.50	226.5	70.0	DIN6535HB	1	6111409
H85339.5	–	40.00	136.50	231.5	70.0	DIN6535HB	1	6111410
H85341.0	–	40.00	146.50	246.5	70.0	DIN6535HB	1	6111411
H85342.5	–	40.00	151.60	251.6	70.0	DIN6535HB	1	6111412



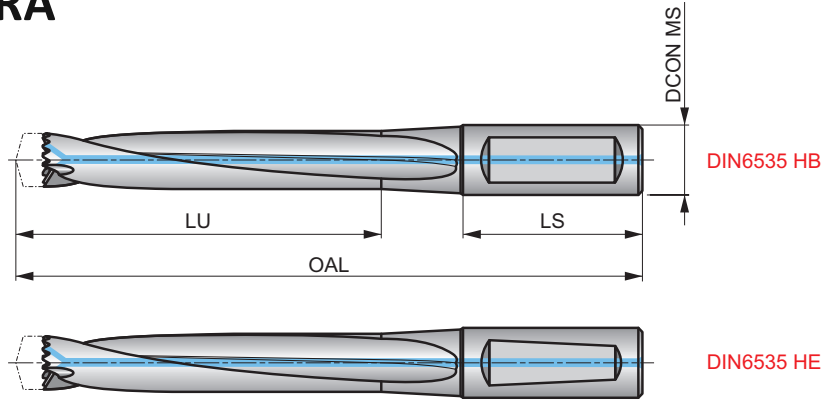
H855



HYDRA Body 5XD, with Coolant Feed, Bright Nickel Plating

Used with R950, R960 and R970 HYDRA heads. A range of head diameters can be used with the same body. Coolant holes aligned with the heads offer efficient cooling. Bright Nickel plated surface protects from rust and corrosion, and improves chip evacuation.

HYDRA



HSS	DORMER	5xD
Bright Ni	DIN 6535HB DIN 6535HE	R

Four (4) screws and one (1) screwdriver are included with a drill body, DCON MS tolerance h6.

Product	DCON MS		LU	OAL	LS	ADINTMS	Pack Qty	MID
	(inch)	(mm)						
H85512.0	–	16.00	69.00	130.0	48.0	DIN6535HE	1	5988115
H85531/64	5/8	15.88	69.00	130.0	48.0	DIN6535HB	1	5988755
H85512.5	–	16.00	69.00	130.0	48.0	DIN6535HE	1	5988120
H8551/2	5/8	15.88	69.00	130.0	48.0	DIN6535HB	1	5988109
H85513.0	–	16.00	74.00	140.0	48.0	DIN6535HE	1	5988681
H85517/32	5/8	15.88	74.00	140.0	48.0	DIN6535HB	1	5988878
H85514.0	–	16.00	81.50	146.5	48.0	DIN6535HE	1	5988738
H8559/16	3/4	19.05	81.50	146.5	48.0	DIN6535HB	1	5988785
H85515.0	–	20.00	86.50	156.5	50.0	DIN6535HE	1	5988781
H85539/64	3/4	19.05	86.50	156.5	50.0	DIN6535HB	1	5988759
H85516.0	–	20.00	92.50	166.5	50.0	DIN6535HE	1	5988825
H85541/64	3/4	19.05	92.50	166.5	50.0	DIN6535HB	1	5988762
H85517.0	–	20.00	97.50	171.5	50.0	DIN6535HE	1	5988870
H85511/16	3/4	19.05	97.50	171.5	50.0	DIN6535HB	1	5988112
H85518.0	–	20.00	103.50	176.5	50.0	DIN6535HE	1	5988882
H85523/32	3/4	19.05	103.50	176.5	50.0	DIN6535HB	1	5988703
H85519.0	–	25.00	108.50	191.5	56.0	DIN6535HE	1	5988886
H85549/64	1"	25.40	108.50	191.5	56.0	DIN6535HB	1	5988766
H85520.0	–	25.00	114.50	196.5	56.0	DIN6535HE	1	5988890
H85551/64	1"	25.40	114.50	196.5	56.0	DIN6535HB	1	5988770
H85521.0	–	25.00	119.50	196.5	56.0	DIN6535HE	1	5988686
H85527/32	1"	25.40	119.50	196.5	56.0	DIN6535HB	1	5988726
H85522.0	–	25.00	125.10	201.1	56.0	DIN6535HE	1	5988689
H85557/64	1"	25.40	125.10	201.1	56.0	DIN6535HB	1	5988774
H85523.0	–	25.00	129.50	210.5	56.0	DIN6535HE	1	5988694
H85559/64	1"	25.40	129.50	210.5	56.0	DIN6535HB	1	5988778
H85524.0	–	32.00	135.20	220.2	60.0	DIN6535HE	1	5988707
H85531/32	1"	25.40	135.20	220.2	60.0	DIN6535HB	1	5988751
H85525.0	–	32.00	140.00	225.0	60.0	DIN6535HE	1	5988711



Product	DCON MS	DCON MS	LU	OAL	LS	ADINTMS	Pack Qty	MID
	(inch)	(mm)	(mm)	(mm)	(mm)			
H8551.1/64	1.1/4	31.75	140.00	225.0	60.0	DIN6535HB	1	5988095
H85526.0	–	32.00	146.00	230.0	60.0	DIN6535HE	1	5988716
H8551.3/64	1.1/4	31.75	146.00	230.0	60.0	DIN6535HB	1	5988106
H85527.0	–	32.00	151.00	235.0	60.0	DIN6535HE	1	5988722
H8551.3/32	1.1/4	31.75	151.00	235.0	60.0	DIN6535HB	1	5988104
H85528.0	–	32.00	157.00	240.0	60.0	DIN6535HE	1	5988732
H8551.1/8	1.1/4	31.75	157.00	240.0	60.0	DIN6535HB	1	5988097
H85529.0	–	32.00	162.00	245.0	60.0	DIN6535HE	1	5988743
H8551.11/64	1.1/4	31.75	162.00	245.0	60.0	DIN6535HB	1	5988099
H85530.0	–	32.00	167.00	255.0	60.0	DIN6535HE	1	5988748
H8551.3/16	1.1/4	31.75	167.00	255.0	60.0	DIN6535HB	1	5988101
H85532.0	–	32.00	176.50	261.5	60.0	DIN6535HE	1	6111413
H85533.5	–	32.00	186.50	271.5	60.0	DIN6535HE	1	6111414
H85535.0	–	40.00	196.50	291.5	70.0	DIN6535HB	1	6111415
H85536.5	–	40.00	201.50	296.5	70.0	DIN6535HB	1	6111416
H85538.0	–	40.00	211.50	306.5	70.0	DIN6535HB	1	6111417
H85539.5	–	40.00	221.50	316.5	70.0	DIN6535HB	1	6111418
H85541.0	–	40.00	226.50	325.6	70.0	DIN6535HB	1	6111419
H85542.5	–	40.00	236.50	336.5	70.0	DIN6535HB	1	6111420



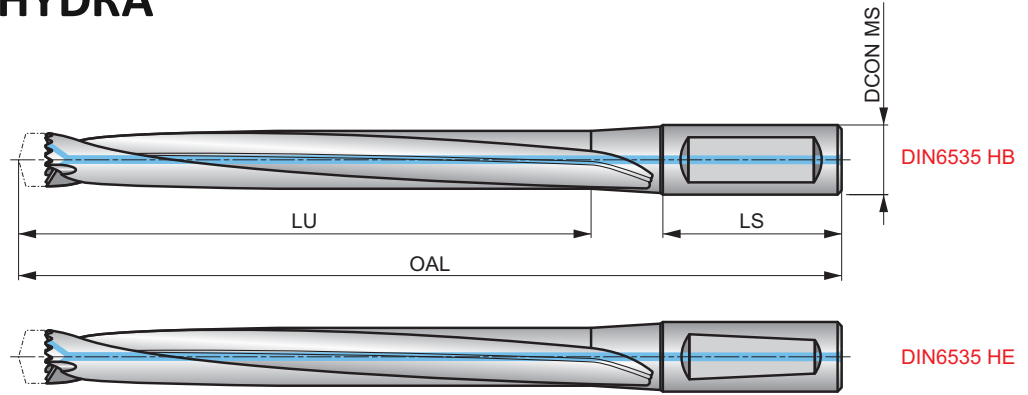
H858



HYDRA Body 8XD, with Coolant Feed, Bright Nickel Plating

Used with R950, R960 and R970 HYDRA heads. A range of head diameters can be used with the same body. Coolant holes aligned with the heads offer efficient cooling. Bright Nickel plated surface protects from rust and corrosion, and improves chip evacuation.

HYDRA



HSS	DORMER	8xD
Bright Ni	DIN 6535HB DIN 6535HE	R

Four (4) screws and one (1) screwdriver are included with a drill body, DCON MS tolerance h6.

Product	DCON MS (mm)	LU (mm)	OAL (mm)	LS (mm)	ADINTMS	Pack Qty	MID
H85814.0	16.00	124.50	191.5	48.0	DIN6535HE	1	5988789
H85815.0	20.00	133.50	201.5	50.0	DIN6535HE	1	5988793
H85816.0	20.00	141.50	211.5	50.0	DIN6535HE	1	5988797
H85817.0	20.00	150.50	221.5	50.0	DIN6535HE	1	5988800
H85818.0	20.00	158.50	226.5	50.0	DIN6535HE	1	5988804
H85819.0	25.00	167.50	251.5	56.0	DIN6535HE	1	5988808
H85820.0	25.00	175.50	264.5	56.0	DIN6535HE	1	5988812
H85821.0	25.00	184.50	266.5	56.0	DIN6535HE	1	5988817
H85822.0	25.00	192.10	271.1	56.0	DIN6535HE	1	5988821
H85823.0	25.00	200.50	280.5	56.0	DIN6535HE	1	5988829
H85824.0	32.00	208.20	295.2	60.0	DIN6535HE	1	5988832
H85825.0	32.00	217.00	300.0	60.0	DIN6535HE	1	5988836
H85826.0	32.00	225.00	310.0	60.0	DIN6535HE	1	5988842
H85827.0	32.00	234.00	320.0	60.0	DIN6535HE	1	5988846
H85828.0	32.00	242.00	325.0	60.0	DIN6535HE	1	5988849
H85829.0	32.00	251.00	335.0	60.0	DIN6535HE	1	5988852
H85830.0	32.00	259.00	345.0	60.0	DIN6535HE	1	5988859
H85832.0	32.00	271.50	356.5	60.0	DIN6535HE	1	6111421
H85833.5	32.00	286.50	371.5	60.0	DIN6535HE	1	6111422
H85835.0	40.00	301.50	396.5	70.0	DIN6535HB	1	6111423
H85836.5	40.00	311.50	406.5	70.0	DIN6535HB	1	6111424
H85838.0	40.00	326.50	421.5	70.0	DIN6535HB	1	6111425
H85839.5	40.00	336.50	431.5	70.0	DIN6535HB	1	6111426
H85841.0	40.00	351.50	451.5	70.0	DIN6535HB	1	6111427
H85842.5	40.00	361.50	461.5	70.0	DIN6535HB	1	6111428



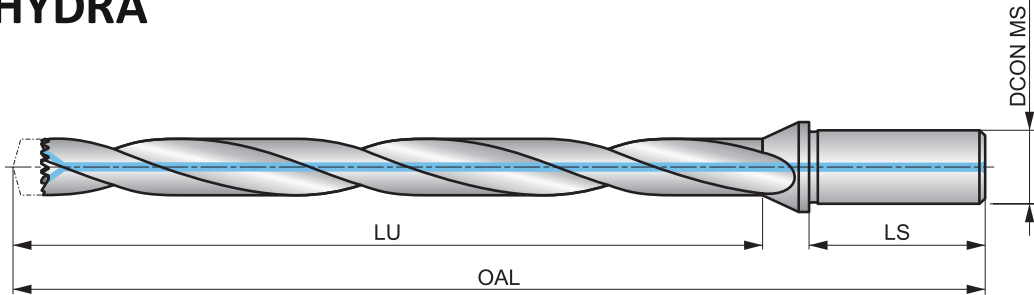
H8512



HYDRA Body 12XD, with Coolant Feed, Bright Nickel Plating

Used with R950, R960 and R970 HYDRA heads. A range of head diameters can be used with the same body. Coolant holes aligned with the heads offer efficient cooling. Flanged shank prevents the drill from wandering in the holder. Nickel plated surface protects from rust and corrosion, and improves chip evacuation.

HYDRA



HSS	DORMER	12xD
Bright Ni		R

Four (4) screws and one (1) screwdriver are included with a drill body, DCON MS tolerance h6.

Product	DCON MS (mm)	LU (mm)	OAL (mm)	LS (mm)	Pack Qty	MID
H851214.0	16.00	168.00	236.0	48.0	1	7833364
H851215.0	20.00	180.00	250.3	50.0	1	7833365
H851216.0	20.00	192.00	262.6	50.0	1	7833366
H851217.0	20.00	204.00	275.0	50.0	1	7833367
H851218.0	20.00	216.00	287.2	50.0	1	7833368
H851219.0	25.00	228.00	305.6	56.0	1	7833369
H851220.0	25.00	240.00	317.8	56.0	1	7833370
H851221.0	25.00	252.00	330.1	56.0	1	7833371
H851222.0	25.00	264.00	343.0	56.0	1	7833372
H851223.0	25.00	276.00	354.8	56.0	1	7833373
H851224.0	32.00	288.00	371.7	60.0	1	7833374
H851225.0	32.00	300.00	383.8	60.0	1	7833375



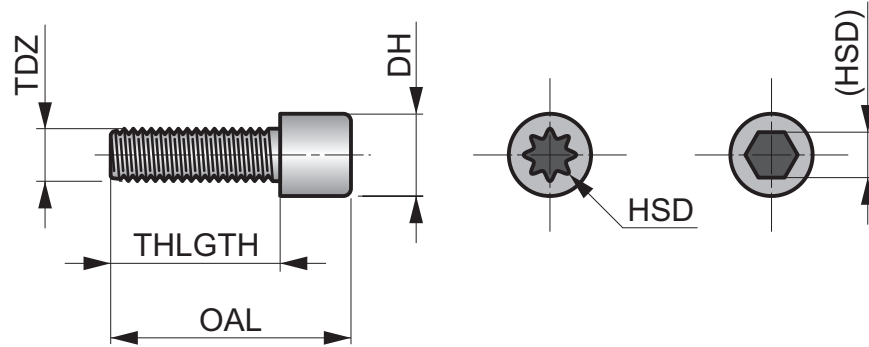
H860



HYDRA Screws

Replacement screws used to securely hold HYDRA heads in place.

HYDRA



Product	Nr.	TDZ	OAL	THLGTH	DH	HSD	Pack Qty	MID
			(mm)	(mm)	(mm)			
H860N1	1	M2.2	7.5	5.70	3.5	8IP	1	5988862
H860N2	2	M2.5	9.0	7.00	4.1	10IP	1	5988866
H860N3	3	M3.0	10.5	8.00	4.9	15IP	1	5988874
H860N4	4	M3.5	11.5	8.80	5.5	15IP	1	5987928
H860N5	5	M4.0	12.5	9.50	6.0	20IP	1	5987933
H860N6	6	M4.5	14.3	10.80	6.8	25IP	1	5987936
H860N7	7	M5.0	20.0	15.00	8.5	4	1	6111949

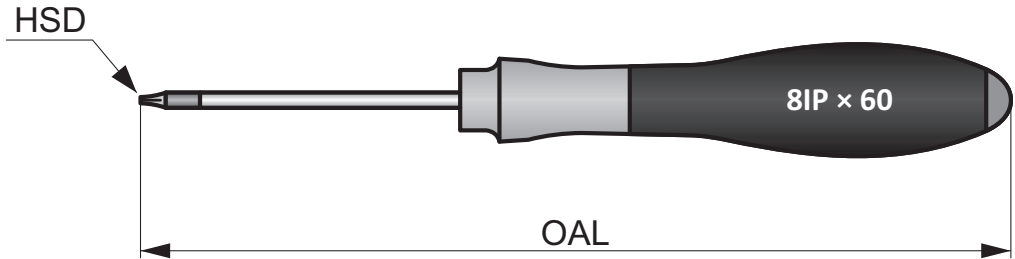


H861



HYDRA Screw Driver
Screwdrivers used to tighten HYDRA screws.

HYDRA



Product	Nr.	HSD	OAL (mm)	Pack Qty	MID
H861N1	N1	8IP	164.0	1	5987939
H861N2	N2	10IP	191.0	1	5987942
H861N3	N3	15IP	191.0	1	5987945
H861N4	N4	20IP	218.0	1	5987947
H861N5	N5	25IP	218.0	1	5987950



CUTTING CONDITIONS CORRECTION FACTORS (BASED ON HYDRA BODY LENGTHS)

H851	Apply starting values for speed and feed with a correction factor of 1.10
H853	Apply starting values for speed and feed with a correction factor of 1.00
H855	Apply starting values for speed and feed with a correction factor of 0.95
H858	Apply starting values for speed and feed with a correction factor of 0.90
H8512	Apply starting values for speed and feed with a correction factor of 0.80






The background of the page is a complex technical drawing. It features a large, faint silhouette of a human head in profile at the top. Below it, there are various mechanical and architectural details, including lines, circles, and arrows. A prominent feature is a series of overlapping hexagonal shapes in the center, some outlined in orange and others in grey. The overall aesthetic is clean, technical, and modern.

HYDRA
TECHNICAL INFORMATION

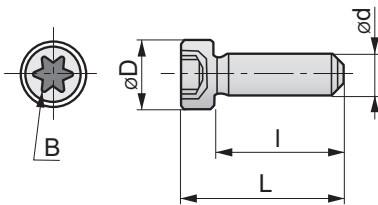


HYDRA – TECHNICAL INFO

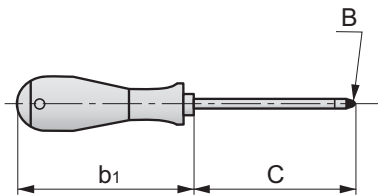
Torque table

					Torque Values Nm (Metric System)	Torque Values in/lbs (Inch System)
H860	H861	Hydra Head \varnothing Metric Range	Hydra Head \varnothing Fractional Range	Hydra Head \varnothing Decimal Size Range (min. / max.)		
H860N1	H861N1	12.0 mm – 15.5 mm	15/32" – 39/64"	0.4688" – 0.6102"	0.75 – 0.99	6.6 – 8.8
H860N2	H861N2	15.6 mm – 18.5 mm	5/8" – 23/32"	0.6142" – 0.7283v	0.93 – 1.24	8.2 – 11.0
H860N3	H861N3	18.6 mm – 21.5 mm	47/64" – 27/32"	0.7323" – 0.8465"	1.84 – 2.44	16.3 – 21.6
H860N4	H861N3	22.0 mm – 24.5 mm	55/64" – 31/32"	0.8594" – 0.9688"	2.73 – 3.72	24.2 – 32.9
H860N5	H861N4	25.0 mm – 27.5 mm	63/64" – 1-3/32"	0.9843" – 1.0938"	4.14 – 5.52	36.6 – 48.8
H860N6	H861N5	28.0 mm – 33.5 mm	1-7/64" – 1-19/64"	1.1024" – 1.3189"	4.97 – 6.63	44.0 – 58.7
H860N7	H861N6	34.0 mm – 42.0 mm	1-11/32" – 1-5/8"	1.3386" – 1.6535"	7.2	63.7

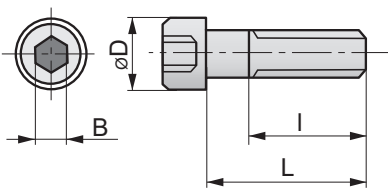
Screws and screw-driver data



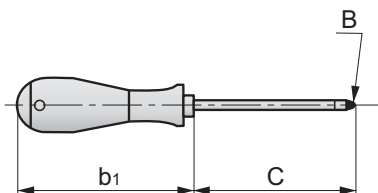
e-code	d	Pitch	L (mm)	I (mm)	D (mm)	B
H860N1	M2.2	0.45	7.5	5.7	3.5	8IP
H860N2	M2.5	0.45	9.0	7.0	4.1	10IP
H860N3	M3.0	0.50	10.5	8.0	4.9	15IP
H860N4	M3.5	0.60	11.5	8.8	5.5	15IP
H860N5	M4.0	0.70	12.5	9.5	6.0	20IP
H860N6	M4.5	0.75	14.3	10.8	6.8	25IP



e-code	B	C	b ₁
H861N1	8IP	60	104
H861N2	10IP	80	111
H861N3	15IP	80	111
H861N4	20IP	100	118
H861N5	25IP	100	118



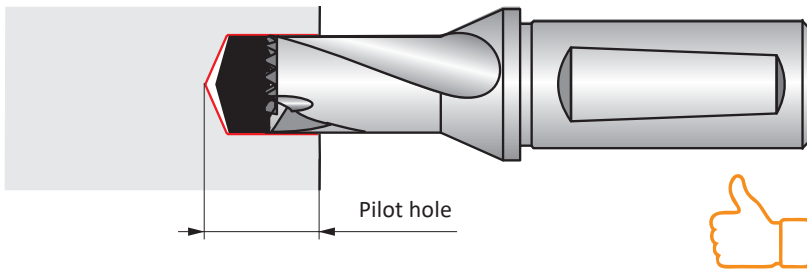
e-code	d	Pitch	L (mm)	I (mm)	D (mm)	B
H860N7	M5.0	0.8	15	full	8.5	4



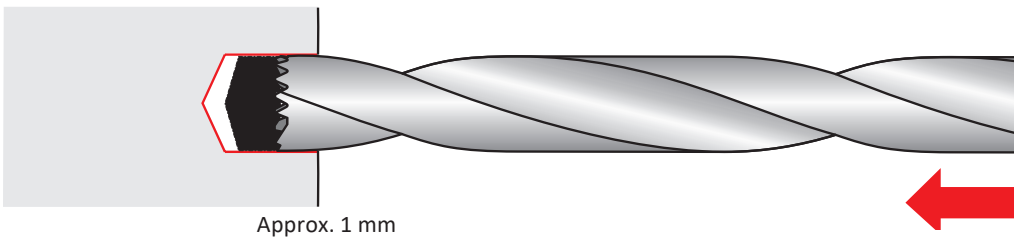
e-code	B	C	b ₁
H861N6	4	75	111



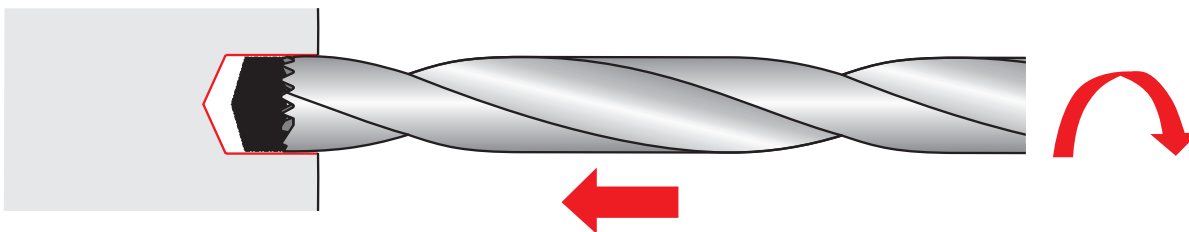
Apply special programming for 8xD and 12xD drilling



Drill a pilot hole (1.5xD to 3xD depth) with the same HYDRA head diameter (if needed check the runout of the drill max. +/- 0.05 mm).

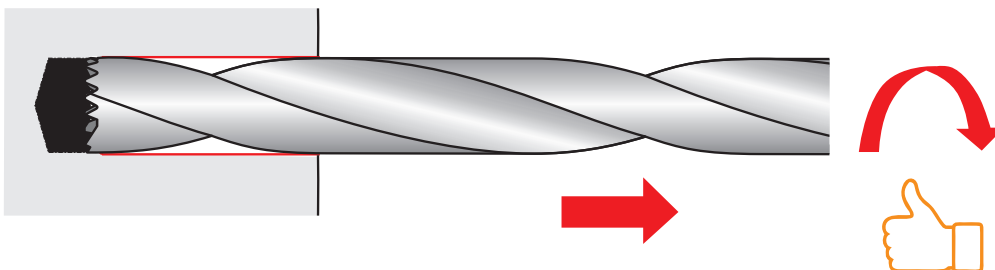


Enter the pilot hole with the 8xD or 12xD Body running a maximum of 500 rpm, to approximately 1mm above the pre-drilled pilot hole depth.



Start coolant flow and increase the rotational speed up to the recommended RPM.
Note: Apply a short dwell time don't start the feed before recommended RPM is reached.

Drill without pecking to the required depth.



When the required depth is reached, retract the drill by approximately 0.1 mm to 0.5 mm and reduce to 500 rpm followed by a complete retraction with normal feed. **Note: retracting the drill with a higher spindle speed may cause a shoulder damage from run out or destroy the hole surface and tolerance.**



Drilling hints & tips with the hydra drill

Coolants

For maximum chip evacuation and tool performance, coolant use is recommended. Emulsion coolant concentration of 6 – 8% is recommended for most applications, with a coolant pressure of 20 bar (290 PSI) or higher. For high strength steel, stainless steels and tougher drilling applications, particularly in stainless steels, it is recommended to use the maximum coolant pressure on the machine. The Hydra-drill coolant holes provide improved web strength and reduce heat at the cutting edges for increased productivity and longer tool life.

HOLDERS

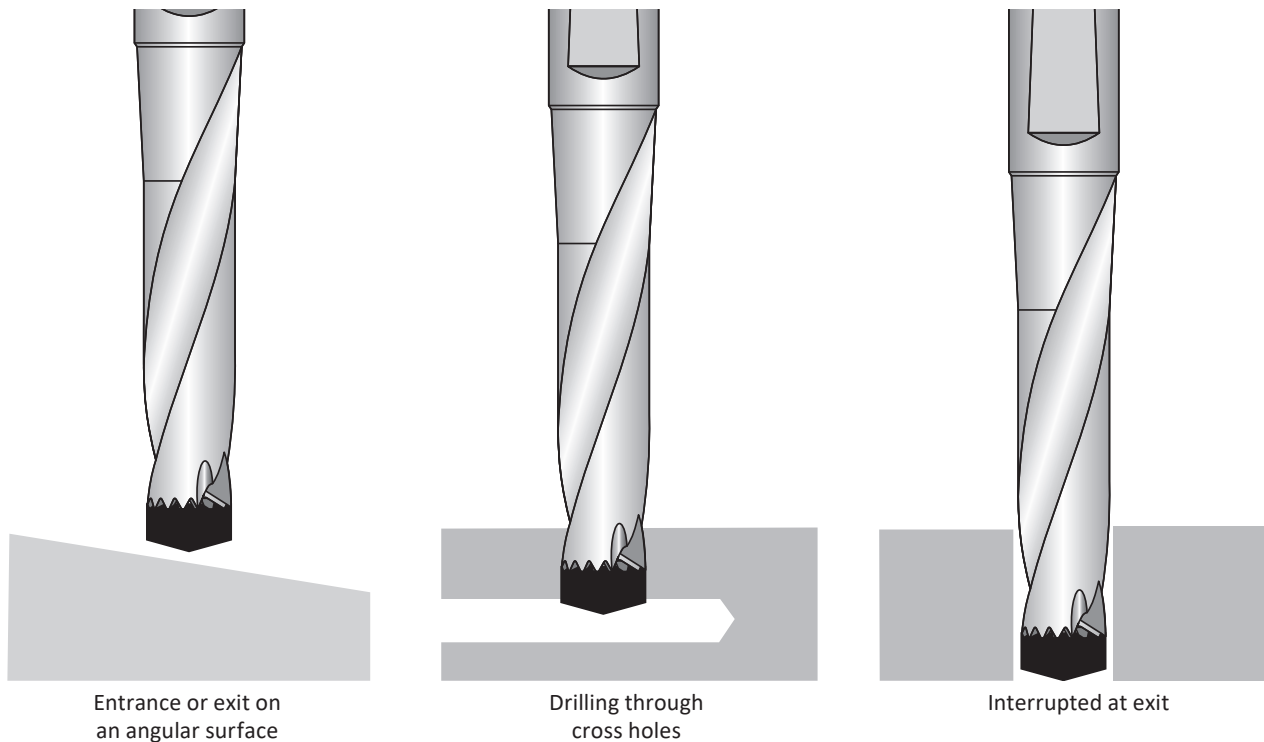
Always use tool holders and collets that provide good concentricity between the drill and the machine spindle. Use a positive stop to prevent the tool from backing up into the holder. Radial runout in the tool assembly must be accurately checked and maintained.

Workpiece

A secure and rigid workpiece will minimise deflection, and allow for better accuracy and true position of the hole.

Feeds

It is important not to underfeed the drill which will cause it to dwell and dull. This is particularly true in work hardening materials. Feed rates should be high enough for proper chip formation.



In these drilling scenarios, reducing feed rate to 1/3 (33%) is generally recommended. Drilling into an entry angle of more than 10° is NOT recommended – surface should be milled flat first.



GENERAL – TECHNICAL INFO

	Grade	Hardness (HV10)	C %	W %	Mo %	Cr %	V %	Co %	Tool Material
HSS	M2	810 – 850	0.9	6.4	5.0	4.2	1.8	–	HSS

Properties	HSS materials	Carbide materials	K10/30F (often used for solid tools)
Hardness (HV30)	800 – 950	1300 – 1800	1600
Density (g/cm ³)	8.0 – 9.0	7.2 – 15	14.45
Compressive strength (N/mm ²)	3000 – 4000	3000 – 8000	6250
Flexural strength, (bending) (N/mm ²)	2500 – 4000	1000 – 4700	4300
Heat resistance (°C)	550	1000	900
E-module (KN/mm ²)	260 – 300	460 – 630	580
Grain size (µm)	–	0.2 – 10	0.8

The combination of hard particle (WC) and binder metal (Co) give the following changes in characteristics.

Characteristic	Higher WC content give	Higher Co content give
Hardness	Higher hardness	Lower hardness
Compressive strength (CS)	Higher CS	Lower CS
Bending strength (BS)	Lower BS	Higher BS

Grain size also influences the material properties. Small grain sizes means higher hardness and coarse grains give more toughness.



GENERAL – TECHNICAL INFO

Industry Standard tolerances For Shafts & Holes

Tolerance values are shown in Microns (μm)

Formula for Microns ...1 $\mu\text{m} = 0.001 \text{ mm} / 0.000039''$

Tolerance	Diameter (mm)							
	> 1 ≤ 3	> 3 ≤ 6	> 6 ≤ 10	> 10 ≤ 18	> 18 ≤ 30	> 30 ≤ 50	> 50 ≤ 80	> 80 ≤ 120
	Diameter (inch)							
	> 0.039" ≤ 0.118"	> 0.118" ≤ 0.236"	> 0.236" ≤ 0.394"	> 0.394" ≤ 0.709"	> 0.709" ≤ 1.181"	> 1.181" ≤ 1.968"	> 1.968" ≤ 3.149"	> 3.149" ≤ 4.724"
Tolerance values (μm)								
e8	-14 / -28	-20 / -38	-25 / -47	-32 / -59	-40 / -73	-50 / -89	-60 / -106	-72 / -126
f6	-6 / -12	-10 / -18	-13 / -22	-16 / -27	-20 / -33	-25 / -41	-30 / -49	-36 / -58
f7	-6 / -16	-10 / -22	-13 / -28	-16 / -34	-20 / -41	-25 / -50	-30 / -60	-36 / -71
h6	0 / -6	0 / -8	0 / -9	0 / -11	0 / -13	0 / -16	0 / -19	0 / -22
h7	0 / -10	0 / -12	0 / -15	0 / -18	0 / -21	0 / -25	0 / -30	0 / -35
h8	0 / -14	0 / -18	0 / -22	0 / -27	0 / -33	0 / -39	0 / -46	0 / -54
h9	0 / -25	0 / -30	0 / -36	0 / -43	0 / -52	0 / -62	0 / -74	0 / -87
h10	0 / -40	0 / -48	0 / -58	0 / -70	0 / -84	0 / -100	0 / -120	0 / -140
h11	0 / -60	0 / -75	0 / -90	0 / -110	0 / -130	0 / -160	0 / -190	0 / -220
h12	0 / -100	0 / -120	0 / -150	0 / -180	0 / -210	0 / -250	0 / -300	0 / -350
k10	+ 40 / 0	+ 48 / 0	+ 58 / 0	+ 70 / 0	+ 84 / 0	+ 100 / 0	+ 120 / 0	+ 140 / 0
k12	+ 100 / 0	+ 120 / 0	+ 150 / 0	+ 180 / 0	+ 210 / 0	+ 250 / 0	+ 300 / 0	+ 350 / 0
m7	+ 2 / + 12	+ 4 / + 16	+ 6 / + 21	+ 7 / + 25	+ 8 / + 29	+ 9 / + 34	+ 11 / + 41	+ 13 / + 48
js14	+ / -125	+ / -150	+ / -180	+ / -215	+ / -260	+ / -310	+ / -370	+ / -435
js16	+ / -300	+ / -375	+ / -450	+ / -550	+ / -650	+ / -800	+ / -950	+ / -1100
H7	+ 10 / 0	+ 12 / 0	+ 15 / 0	+ 18 / 0	+ 21 / 0	+ 25 / 0	+ 30 / 0	+ 35 / 0
H8	+ 14 / 0	+ 18 / 0	+ 22 / 0	+ 27 / 0	+ 33 / 0	+ 39 / 0	+ 46 / 0	+ 54 / 0
H9	+ 25 / 0	+ 30 / 0	+ 36 / 0	+ 43 / 0	+ 52 / 0	+ 62 / 0	+ 74 / 0	+ 87 / 0
H12	+ 100 / 0	+ 120 / 0	+ 150 / 0	+ 180 / 0	+ 210 / 0	+ 250 / 0	+ 300 / 0	+ 350 / 0
P9	-6 / -31	-12 / -42	-15 / -51	-18 / -61	-22 / -74	-26 / -86	-32 / -106	-37 / -124
S7	-13 / -22	-15 / -27	-17 / -32	-21 / -39	-27 / -48	-34 / -59	-42 / -72	-58 / -93



GENERAL – TECHNICAL INFO

Table of Cutting Speeds

		Vc															
m/min.		5	8	10	15	20	25	30	40	50	60	70	80	90	100	110	150
SFM (feet/min.)		16	26	32	50	66	82	98	130	165	197	230	262	296	330	362	495
Ø		RPM															
mm	inch																
1.00	–	1592	2546	3183	4775	6366	7958	9549	12732	15916	19099	22282	25465	28648	31831	35014	47747
1.50	–	1061	1698	2122	3183	4244	5305	6366	8488	10610	12732	14854	16977	19099	21221	23343	31831
2.00	–	796	1273	1592	2387	3183	3979	4775	6366	7958	9549	11141	12732	14324	15916	17507	23873
2.50	–	637	1019	1273	1910	2546	3183	3820	5093	6366	7639	8913	10186	11459	12732	14006	19099
3.00	–	531	849	1061	1592	2122	2653	3183	4244	5305	6366	7427	8488	9549	10610	11671	15916
3.18	1/8	500	801	1001	1501	2002	2502	3003	4004	5005	6006	7007	8008	9009	10010	11011	15015
3.50	–	455	728	909	1364	1819	2274	2728	3638	4547	5457	6366	7276	8185	9095	10004	13642
4.00	–	398	637	796	1194	1592	1989	2387	3183	3979	4775	5570	6366	7162	7958	8754	11937
4.50	–	354	566	707	1061	1415	1768	2122	2829	3537	4244	4951	5659	6366	7074	7781	10610
4.76	3/16	334	535	669	1003	1337	1672	2006	2675	3344	4012	4681	5350	6018	6687	7356	10031
5.00	–	318	509	637	955	1273	1592	1910	2546	3183	3820	4456	5093	5730	6366	7003	9549
6.00	–	265	424	531	796	1061	1326	1592	2122	2653	3183	3714	4244	4775	5305	5836	7958
6.35	1/4	251	401	501	752	1003	1253	1504	2005	2506	3008	3509	4010	4511	5013	5514	7519
7.00	–	227	364	455	682	909	1137	1364	1819	2274	2728	3183	3638	4093	4547	5002	6821
7.94	5/16	200	321	401	601	802	1002	1203	1604	2004	2405	2806	3207	3608	4009	4410	6013
8.00	–	199	318	398	597	796	995	1194	1592	1989	2387	2785	3183	3581	3979	4377	5968
9.00	–	177	283	354	531	707	884	1061	1415	1768	2122	2476	2829	3183	3537	3890	5305
9.53	3/8	167	267	334	501	668	835	1002	1336	1670	2004	2338	2672	3006	3340	3674	5010
10.00		159	255	318	477	637	796	955	1273	1592	1910	2228	2546	2865	3183	3501	4775
11.11	7/16	143	229	287	430	573	716	860	1146	1433	1719	2006	2292	2579	2865	3152	4298
12.00		133	212	265	398	531	663	796	1061	1326	1592	1857	2122	2387	2653	2918	3979
12.70	1/2	125	201	251	376	501	627	752	1003	1253	1504	1754	2005	2256	2506	2757	3760
14.00		114	182	227	341	455	568	682	909	1137	1364	1592	1819	2046	2274	2501	3410
14.29	9/16	111	178	223	334	446	557	668	891	1114	1337	1559	1782	2005	2228	2450	3341
15.00	–	106	170	212	318	424	531	637	849	1061	1273	1485	1698	1910	2122	2334	3183
15.88	5/8	100	160	200	301	401	501	601	802	1002	1203	1403	1604	1804	2004	2205	3007
16.00	–	99	159	199	298	398	497	597	796	995	1194	1393	1592	1790	1989	2188	2984
17.46	11/16	91	146	182	273	365	456	547	729	912	1094	1276	1458	1641	1823	2005	2735
18.00	–	88	141	177	265	354	442	531	707	884	1061	1238	1415	1592	1768	1945	2653
19.05	3/4	84	134	167	251	334	418	501	668	835	1003	1170	1337	1504	1671	1838	2506
20.00	–	80	127	159	239	318	398	477	637	796	955	1114	1273	1432	1592	1751	2387
24.00	–	66	106	133	199	265	332	398	531	663	796	928	1061	1194	1326	1459	1989
25.00	–	64	102	127	191	255	318	382	509	637	764	891	1019	1146	1273	1401	1910
27.00	–	59	94	118	177	236	295	354	472	589	707	825	943	1061	1179	1297	1768
30.00	–	53	85	106	159	212	265	318	424	531	637	743	849	955	1061	1167	1592
32.00	–	50	80	99	149	199	249	298	398	497	597	696	796	895	995	1094	1492
36.00	–	44	71	88	133	177	221	265	354	442	531	619	707	796	884	973	1326
40.00	–	40	64	80	119	159	199	239	318	398	477	557	637	716	796	875	1194
50.00	–	32	51	64	95	127	159	191	255	318	382	446	509	573	637	700	955



GENERAL – TECHNICAL INFO

Hardness and Tensile Strength

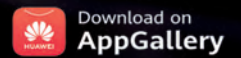
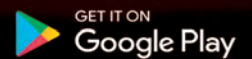
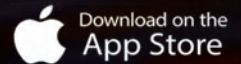
HV	HRC	HB	Tensile Strength	
			(N/mm ²)	(Tons/sq. in.)
940	68	–	–	–
900	67	–	–	–
864	66	–	–	–
829	65	–	–	–
800	64	–	–	–
773	63	–	–	–
745	62	–	–	–
720	61	–	–	–
698	60	–	–	–
675	59	–	–	–
655	58	–	2200	142
650	–	618	2180	141
640	–	608	2145	139
639	57	607	2140	138
630	–	599	2105	136
620	–	589	2070	134
615	56	584	2050	133
610	–	580	2030	131
600	–	570	1995	129
596	55	567	1980	128
590	–	561	1955	126
580	–	551	1920	124
578	54	549	1910	124
570	–	542	1880	122
560	53	532	1845	119
550	–	523	1810	117
544	52	517	1790	116
540	–	513	1775	115
530	–	504	1740	113
527	51	501	1730	112
520	–	494	1700	110
514	50	488	1680	109
510	–	485	1665	108
500	–	475	1630	105
497	49	472	1620	105
490	–	466	1595	103
484	48	460	1570	102
480	–	456	1555	101
473	47	449	1530	99
470	–	447	1520	98
460	–	437	1485	96
458	46	435	1480	96
450	–	428	1455	94
446	45	424	1440	93
440	–	418	1420	92

HV	HRC	HB	Tensile Strength	
			(N/mm ²)	(Tons/sq. in.)
434	44	413	1400	91
423	43	402	1360	88
413	42	393	1330	86
403	41	383	1300	84
392	40	372	1260	82
382	39	363	1230	80
373	38	354	1200	78
364	37	346	1170	76
355	36	337	1140	74
350	–	333	1125	73
345	35	328	1110	72
340	–	323	1095	71
336	34	319	1080	70
330	–	314	1060	69
327	33	311	1050	68
320	–	304	1030	67
317	32	301	1020	66
310	31	295	995	64
302	30	287	970	63
300	–	285	965	62
295	–	280	950	61
293	29	278	940	61
290	–	276	930	60
287	28	273	920	60
285	–	271	915	59
280	27	266	900	58
275	–	261	880	57
272	26	258	870	56
270	–	257	865	56
268	25	255	860	56
265	–	252	850	55
260	24	247	835	54
255	23	242	820	53
250	22	238	800	52
245	–	233	785	51
243	21	231	780	50
240	–	228	770	50
235	–	223	755	49
230	–	219	740	48
225	–	214	720	47
220	–	209	705	46
215	–	204	690	45
210	–	199	675	44
205	–	195	660	43
200	–	190	640	41



QUICK SEARCH

Easily and quickly perform a text search within any publication launched by Dormer Pramet in recent time through our library app. Download it today from your relevant app store. **Simply Reliable.**





INDEXABLE DRILLS



INDEXABLE DRILLS – OVERVIEW

Working length	2×D	3×D	4×D	5×D	EP	XPET..AP	SCET..-UD	XPET..AP-SD	SCET..-SD
Picture									
Coolant					-	-	-	-	-
	442	446	451	456	458	460	459	460	459
Drill type	802D	803D	804D	805D	-	-	-	-	-
Drill tolerance	± 0.05	± 0.05	± 0.05	± 0.05	-	-	-	-	-
Hole tolerance *	0/+0.2	0/+0.3	0/+0.4	0/+0.5	-	-	-	-	-
Surface finish *	R _a 2–6 μm	R _a 2–6 μm	R _a 2–6 μm	R _a 2–6 μm	-	-	-	-	-
Diameter range	15.0–40.0	15.0–58.0	17.0–58.0	19.0–31.0	-	-	-	-	-
Application areas	P1				.	.	.	.	.
	P2				.	.	.	.	.
	P3				.	.	.	.	.
	P4				.	.	.	.	.
	M1				.	.	.	.	.
	M2				.	.	.	.	.
	M3				.	.	.	.	.
	M4				.	.	.	.	.
	K1				.	.	.	.	.
	K2				.	.	.	.	.
	K3				.	.	.	.	.
	K4				.	.	.	.	.
	K5				.	.	.	.	.
	S1				.	.	.	.	.
	S2				.	.	.	.	.
	S3				.	.	.	.	.
S4				.	.	.	.	.

* The tolerance of drilled hole and surface finish are heavily dependent on machining conditions.



INDEXABLE DRILLS – GRADES NAVIGATOR

Grade Identification	Area of Application	Application	Feed	Cutting speed	Resistance to adverse Working Conditions	Coating	Colour	Substrate	Coolant benefit	Grade description
D9335	P20 - P35	<input type="checkbox"/>				MT-CVD		FGM	+++	This grade is recommended for the peripheral insert in indexable drills, it is more suited to higher cutting speeds and feeds.
	M15 - M30	<input type="checkbox"/>								
	K15 - K35	<input type="checkbox"/>								
	S10 - S20	<input checked="" type="checkbox"/>								
D8330	P20 - P35	<input type="checkbox"/>				PVD		submicron H	+++	This is a universal grade for the peripheral insert in indexable drills, it can be used for most materials and stands out for its operational reliability.
	M15 - M30	<input type="checkbox"/>								
	K15 - K35	<input type="checkbox"/>								
	S10 - S20	<input checked="" type="checkbox"/>								
D8345	P30 - P50	<input type="checkbox"/>				PVD		submicron H	+++	This grade is a universal grade for the central insert in indexable drills, it is an extremely tough suited to most materials.
	M20 - M40	<input type="checkbox"/>								
	K30 - K40	<input type="checkbox"/>								
	S20 - S30	<input checked="" type="checkbox"/>								

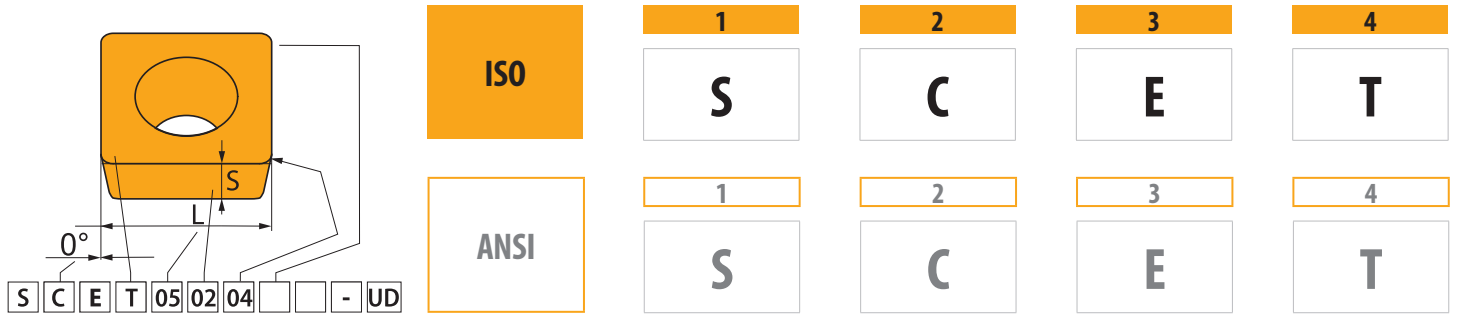
Substrat	
submicron H	WC-Co based substrate fine grained (< 1 µm)
FGM	Functionally graded substrate

Coating	
MT-CVD	Medium-temperature chemical method of coating
PVD	Low-temperature physical method of coating

Benefits of Cutting Fluid	
+++	Use of coolant is essential

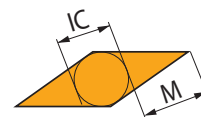
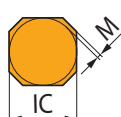
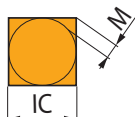
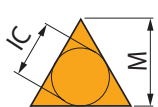


INSERTS – ISO CODE DESIGNATION



1				1				2		2		4		4	
Insert shape				Insert clearance angle				Insert type							
H 	O 	P 	R 	A 	B 	N 		R 		F 		A 		M 	
S 	T 	C 	D 	C 	D 	G 		E 	F 	W 		T 		Q 	
E 	M 	V 	W 	G 	N 	U 		P 	O Special	B 		H 		C 	
L 	A 	B 	K 			J 				X Special					

3				3			
Tolerances							
	(mm)			(")			
	M(±)	S(±)	IC(±)	M(±)	S(±)	IC(±)	
A	0.005	0.025	0.025	.0002"	.001"	.0010"	
F	0.005	0.025	0.013	.0002"	.001"	.0005"	
C	0.013	0.025	0.025	.0005"	.001"	.0010"	
H	0.013	0.025	0.013	.0005"	.001"	.0005"	
E	0.025	0.025	0.025	.0010"	.001"	.0010"	
G	0.025	0.130	0.025	.0010"	.005"	.0010"	
J	0.005	0.025	0.05 – 0.13	.0002"	.001"	.002 – 0.005"	
K	0.013	0.025	0.05 – 0.13	.0005"	.001"	.002 – 0.005"	
L	0.025	0.025	0.05 – 0.13	.0010"	.001"	.002 – 0.005"	
M	0.08 – 0.18	0.130	0.05 – 0.13	.003 – 0.007"	.005"	.002 – 0.005"	
N	0.08 – 0.18	0.025	0.05 – 0.13	.003 – 0.007"	.001"	.002 – 0.005"	
U	0.05 – 0.38	0.130	0.05 – 0.13	.005 – 0.015"	.005"	.003 – 0.010"	





INSERTS – ISO CODE DESIGNATION

5	6	7	8	9	10
05	02	04			UD
5	6	7	8	9	10
1.8	1.5	1			UD

5		5												
Insert cutting edge length (insert size)														
d=IC		H	O	P	S	T	C	D	E	M	V	W	R	K
(mm)	(in)													
3.97	5/32"				03	06					06	02		
4.76	3/16"				04	08	04	05	04	04	08	L3		
5.56	7/32"				05	09	05	06	05	05	09	03		
6.35	1/4"	03	02	04	08	11	06	07	08	08	11	04	06	
7.94	5/16"	04	03	05	07	13	08	09	06	07	13	05	07	
9.525	3/8"	05	04	07	09	16	09	11	09	09	16	06	09	16
12.7	1/2"	07	05	09	12	22	12	15	13	12	22	08	12	
15.875	5/8"	09	06	11	15	27	16	19	16	15	27	10	15	
19.05	3/4"	11	07	13	19	33	19	23	19	19	33	13	19	
25.40	1"	14	10	18	25	44	25	31	26	25	44	17	25	
31.75	1 1/4"	18	13	23	31	54	32	38	32	31	54	21	31	

6	
Insert thickness	
	S
	(mm) (")
01	1.59 1/16"
T1	1.98 5/64"
02	2.38 3/32"
03	3.18 1/8"
T3	3.97 5/32"
04	4.76 3/16"
05	5.56 7/32"
06	6.35 1/4"
07	7.94 5/16"
09	9.52 3/8"

7	
Insert nose radius	
	RE
	(mm) (")
00	0 0"
02	0.2 1/128"
04	0.4 1/64"
08	0.8 1/32"
12	1.2 3/64"
16	1.6 1/16"
24	2.4 3/32"
32	3.2 1/8"
Round inserts	
d=I.C.	
(")	00
(mm)	M0

ANSI		
5	6	7
Inscribed circle	Insert thickness	Insert nose radius
Symbol	Symbol	Symbol
	(mm) (")	(mm) (")
1	1.588 1/16"	0
1.2	1.984 5/64"	0.2 0.099 1/256"
1.5	2.381 3/32"	0.5 0.198 1/128"
1.8	3.175 1/8"	1 0.397 1/64"
2	3.969 5/32"	2 0.794 1/32"
2.5	4.763 3/16"	3 1.191 3/64"
3	5.556 7/32"	4 1.588 1/16"
4	6.350 1/4"	5 1.984 5/64"
5	7.938 5/16"	6 2.381 3/32"
6	9.525 3/8"	7 2.778 7/64"
7	11.113 7/16"	8 3.175 1/8"
8	12.700 1/2"	10 3.969 5/32"
9	14.288 9/16"	12 4.763 3/16"
10	15.875 5/8"	14 5.556 7/32"
		16 6.350 1/4"

8	
Insert cutting edge design	
	Sharp edges
	Rounded edges
	Edges with facet
	Rounded edges with facet
	Edges with double facet
	Rounded edges with double facet

9	
Feed direction	
R	
L	
N	

10	
Chip breaker design	



CODE KEY FOR DRILLS

1	2	3		4		5		6	7
8	05	D	-	19	-	95	-	S	25

*Marking is valid for types produced from 2011



Indexable drill *

1		2		3		4	
Tool type		Approximate length		Variant		Cutting diameter	
8	Indexable drill	02	2 × DC	D	Drill	15.5	DC = 15.5 mm
		03	3 × DC				19	DC = 19 mm
		04	4 × DC				
		05	5 × DC				
5		6		7			
Max. drilling depth		Type of shank		Shank diameter			
35	35 mm	E	Whistle Notch	25	D CON MS = 25 mm		
95	95 mm			32	D CON MS = 32 mm		
140	140 mm	S	ISO 9766	40	D CON MS = 40 mm		



I802D



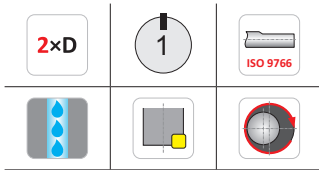
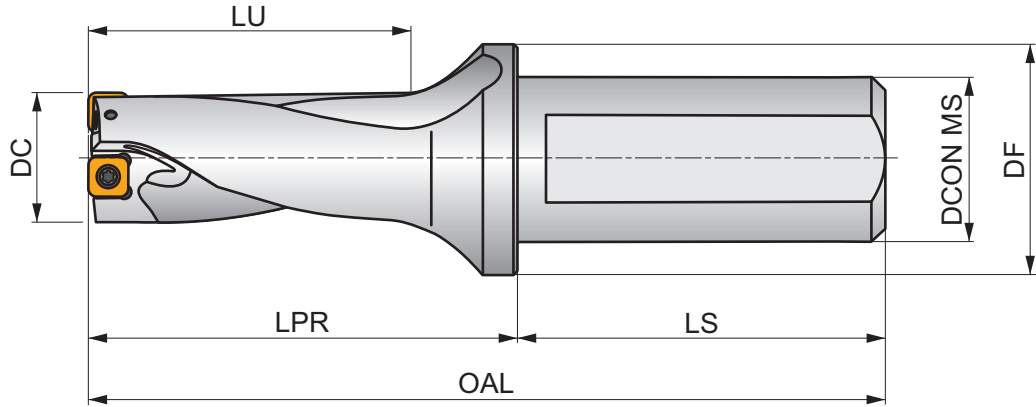
PRAMET

S



2xD I802D Indexable Insert Drill body with Internal Coolant Feed

High performance indexable insert drill body for drilling blind and through holes. Also, potentially cross hole, off center and stack drilling, helical interpolation, plunging, drilling on concave or angled surfaces, drilling with interrupted cuts, chamfer drilling and boring.



Product	DC	APMX	OAL	LPR	LS	LU	DCON MS	DF	\bar{D}	\bar{D}^+							MID
	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)							
802D-0594-118-S100	.594	1.188	4.417	2.173	2.244	1.346	1.000	1.378	.012	.012	EP253253	GI300	GI313	.68	HM001	6801090	
802D-0625-125-S100	.625	1.250	4.480	2.236	2.244	1.425	1.000	1.378	.006	.016	EP253253	GI300	GI313	.70	HM001	6801091	
802D-0656-131-S100	.656	1.312	4.539	2.295	2.244	1.500	1.000	1.378	.006	.016	EP253253	GI300	GI313	.71	HM001	6801092	
802D-0687-137-S100	.687	1.374	4.602	2.358	2.244	1.559	1.000	1.378	.020	.020	EP253253	GI301	GI314	.72	HM002	6801093	
802D-0709-141-S100	.709	1.418	4.646	2.402	2.244	1.614	1.000	1.378	.014	.008	EP253253	GI301	GI314	.72	HM002	6801094	
802D-0750-150-S100	.750	1.500	4.728	2.484	2.244	1.677	1.000	1.378	.012	.014	EP253253	GI301	GI314	.73	HM002	6801095	
802D-0787-157-S100	.787	1.574	4.803	2.559	2.244	1.772	1.000	1.378	.008	.020	EP253253	GI302	GI315	.75	HM003	6801097	
802D-0812-162-S100	.812	1.624	4.850	2.606	2.244	1.831	1.000	1.378	.004	.019	EP253253	GI302	GI315	.76	HM003	6801098	
802D-0827-165-S100	.827	1.654	4.882	2.638	2.244	1.870	1.000	1.378	.004	.019	EP253253	GI302	GI315	.77	HM003	6801099	
802D-0875-175-S100	.875	1.750	4.976	2.732	2.244	1.992	1.000	1.378	.011	.019	EP253253	GI303	GI316	.80	HM004	6801100	
802D-0906-181-S100	.906	1.812	5.039	2.795	2.244	2.067	1.000	1.378	.008	.019	EP253253	GI304	GI317	.80	HM005	6801101	
802D-0922-184-S100	.922	1.844	5.071	2.827	2.244	2.106	1.000	1.378	.008	.019	EP253253	GI304	GI317	.84	HM005	6801102	
802D-0937-187-S100	.937	1.874	5.102	2.858	2.244	2.146	1.000	1.378	.004	.019	EP253253	GI304	GI317	.84	HM005	6801103	
802D-0984-196-S125	.984	1.969	5.315	2.953	2.362	2.165	1.250	1.654	.004	.019	EP324058	GI304	GI317	1.26	HM005	6801104	
802D-1000-200-S125	1.000	2.000	5.346	2.984	2.362	2.205	1.250	1.654	.004	.019	EP324058	GI304	GI317	1.28	HM005	6801105	
802D-1032-206-S125	1.032	2.064	5.409	3.047	2.362	2.283	1.250	1.654	.004	.019	EP324058	GI305	GI318	1.29	HM006	6801106	
802D-1062-212-S125	1.062	2.124	5.469	3.106	2.362	2.358	1.250	1.654	.020	.008	EP324058	GI305	GI318	1.31	HM006	6801107	
802D-1109-221-S125	1.109	2.218	5.563	3.201	2.362	2.476	1.250	1.654	.020	.014	EP324058	GI306	GI319	1.35	HM007	6801108	
802D-1125-225-S125	1.125	2.250	5.598	3.236	2.362	2.520	1.250	1.654	.020	.014	EP324058	GI306	GI319	1.36	HM007	6801109	
802D-1187-237-S125	1.187	2.374	5.720	3.358	2.362	2.669	1.250	1.654	.014	.020	EP324058	GI306	GI319	1.43	HM007	6801111	
802D-1250-250-S150	1.250	2.500	6.122	3.484	2.638	2.669	1.500	1.969	.006	.020	-	GI307	GI320	2.08	HM008	6801112	
802D-1375-275-S150	1.375	2.750	6.370	3.732	2.638	2.945	1.500	1.969	.008	.020	-	GI308	GI321	2.23	HM009	6801115	
802D-1437-287-S150	1.437	2.874	6.496	3.858	2.638	3.098	1.500	1.969	.004	.020	-	GI308	GI321	2.30	HM009	6801116	



Product	DC	APMX	OAL	LPR	LS	LU	DCON MS	DF					MID			
	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	lbs					
802D-1500-300-S150	1.500	3.000	6.622	3.984	2.638	3.256	1.500	1.969	.006	.020	—	GI308	GI321	2.42	HM009	6801117
802D-1750-350-S150	1.750	3.500	7.094	4.457	2.638	3.894	1.500	1.969	.020	.020	—	GI310	GI323	2.87	HM010	6801118
802D-2000-400-S150	2.000	4.000	7.626	4.988	2.638	4.394	1.500	2.205	.006	.020	—	GI311	GI324	3.70	HM030	6801119

GI300	XPET 0502AP	SCET 050204-UD
GI301	XPET 0602AP	SCET 050204-UD
GI302	XPET 0602AP	SCET 060204-UD
GI303	XPET 0703AP	SCET 060204-UD
GI304	XPET 0703AP	SCET 070308-UD
GI305	XPET 0903AP	SCET 070308-UD
GI306	XPET 0903AP	SCET 09T308-UD
GI307	XPET 11T3AP	SCET 09T308-UD
GI308	XPET 11T3AP	SCET 120408-UD
GI310	XPET 1504AP	SCET 120408-UD
GI311	XPET 1504AP	SCET 150512-UD
GI313	XPET 0502AP-SD	SCET 050204-SD
GI314	XPET 0602AP-SD	SCET 050204-SD
GI315	XPET 0602AP-SD	SCET 060204-SD
GI316	XPET 0703AP-SD	SCET 060204-SD
GI317	XPET 0703AP-SD	SCET 070308-SD
GI318	XPET 0903AP-SD	SCET 070308-SD
GI319	XPET 0903AP-SD	SCET 09T308-SD
GI320	XPET 11T3AP-SD	SCET 09T308-SD
GI321	XPET 11T3AP-SD	SCET 120408-SD
GI323	XPET 1504AP-SD	SCET 120408-SD
GI324	XPET 1504AP-SD	SCET 150512-SD

HM001	US 2245-T07P	0.9	US 2245-T07P	0.9	FLAG T07P
HM002	US 2205-T07P	0.9	US 2245-T07P	0.9	FLAG T07P
HM003	US 2205-T07P	0.9	US 2205-T07P	0.9	FLAG T07P
HM004	US 2506-T07P	1.2	US 2506-T07P	1.2	FLAG T07P
HM005	US 2507-T08P	1.2	US 3007-T08P	2.0	FLAG T08P
HM006	US 3007-T09P	2.0	US 3007-T09P	2.0	FLAG T09P
HM007	US 3007-T09P	2.0	US 3009-T09P	2.0	FLAG T09P
HM008	US 3510-T15P	3.0	US 3508-T15P	3.0	FLAG T15P
HM009	US 3510-T15P	3.0	US 5012-T15P	5.0	FLAG T15P
HM010	US 4011-T15P	3.5	US 5012-T15P	5.0	FLAG T15P
HM030	US 4011-T15P	4.0	US 5012-T15P	5.0	FLAG T15P



802D



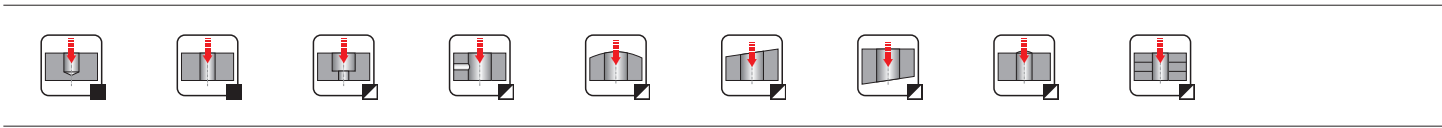
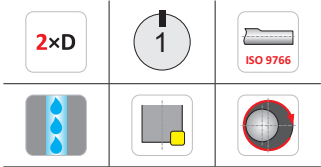
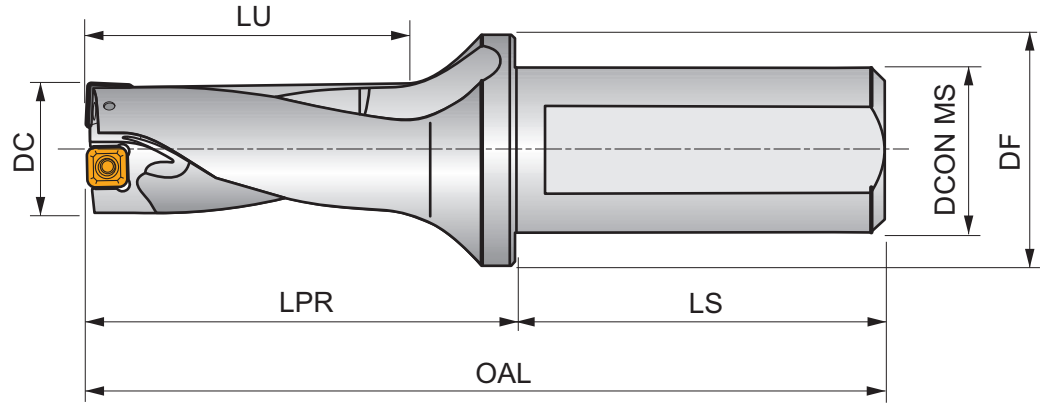
PRAMET

S



2xD 802D Indexable Insert Drill body with Internal Coolant Feed

High performance indexable insert drill body for drilling blind and through holes. Also, potentially cross hole, off center and stack drilling, helical interpolation, plunging, drilling on concave or angled surfaces, drilling with interrupted cuts, chamfer drilling and boring.



Product	DC	APMX	OAL	LPR	LS	LU	DCON MS	DF	$\overset{-}{D}$	$\overset{+}{D}$					MID	
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)			lbs			
802D-15-30-S25	15	30.00	121	65	56	34.5	25	35	0.25	0.35	EP253253	GI300	GI313	.70	HM001	6820734
802D-16-32-S25	16	32.00	123	67	56	37	25	35	0.15	0.45	EP253253	GI300	GI313	.71	HM001	6820735
802D-17-34-S25	17	34.00	125	69	56	39.5	25	35	0.10	0.50	EP253253	GI300	GI313	.68	HM001	6820736
802D-18-36-S25	18	36.00	127	71	56	42	25	35	0.35	0.25	EP253253	GI301	GI314	.69	HM002	6820737
802D-19-38-S25	19	38.00	129	73	56	44.5	25	35	0.15	0.45	EP253253	GI301	GI314	.70	HM002	6820738
802D-20-40-S25	20	40.00	131	75	56	47	25	35	0.10	0.45	EP253253	GI302	GI315	.78	HM003	6820739
802D-21-42-S25	21	42.00	133	77	56	49.5	25	35	0.10	0.50	EP253253	GI302	GI315	.74	HM003	6820770
802D-22-44-S25	22	44.00	135	79	56	52	25	35	0.45	0.50	EP253253	GI303	GI316	.76	HM004	6820771
802D-23-46-S25	23	46.00	137	81	56	54.5	25	35	0.35	0.50	EP253253	GI304	GI317	.79	HM005	6820772
802D-24-48-S25	24	48.00	139	83	56	57	25	35	0.15	0.50	EP253253	GI304	GI317	.81	HM005	6820773
802D-25-50-S32	25	50.00	145	85	60	57	32	42	0.15	0.50	EP324058	GI304	GI317	1.26	HM005	6820774
802D-26-52-S32	26	52.00	147	87	60	59.5	32	42	0.10	0.50	EP324058	GI304	GI317	1.29	HM005	6820775
802D-27-54-S32	27	54.00	149	89	60	62	32	42	0.50	0.30	EP324058	GI305	GI318	1.30	HM006	6820776
802D-28-56-S32	28	56.00	151	91	60	64.5	32	42	0.30	0.50	EP324058	GI306	GI319	1.34	HM007	6820777
802D-29-58-S32	29	58.00	153	93	60	67	32	42	0.20	0.50	EP324058	GI306	GI319	1.38	HM007	6820778
802D-30-60-S32	30	60.00	155	95	60	69.5	32	42	0.15	0.50	EP324058	GI306	GI319	1.48	HM007	6820779
802D-32-64-S32	32	64.00	159	99	60	70	32	42	0.50	0.35	EP324058	GI307	GI320	1.51	HM008	6820780
802D-32-64-S40	32	64.00	167	99	68	70	40	50	0.50	0.35	-	GI307	GI320	2.27	HM008	6820781
802D-34-68-S32	34	68.00	163	103	60	75	32	42	0.25	0.50	EP324058	GI307	GI320	1.60	HM008	6820782
802D-34-68-S40	34	68.00	171	103	68	75	40	50	0.25	0.50	-	GI307	GI320	2.37	HM008	6820783
802D-36-72-S32	36	72.00	167	107	60	80	32	42	0.10	0.50	EP324058	GI308	GI321	1.68	HM009	6820784
802D-36-72-S40	36	72.00	173	105	68	77.5	40	50	0.10	0.50	-	GI308	GI321	2.44	HM009	6820785
802D-38-76-S32	38	76.00	171	111	60	85	32	42	0.50	0.50	EP324058	GI308	GI321	1.83	HM009	6820786



Product	DC	APMX	OAL	LPR	LS	LU	DCON MS	DF	\bar{D}	D^+						MID
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)				lbs		
802D-38-76-S40	38	76.00	179	111	68	85	40	50	0.50	0.50	–	GI308	GI321	2.59	HM009	6820787
802D-40-80-S32	40	80.00	175	115	60	90	32	42	0.20	0.50	EP324058	GI309	GI322	2.07	HM009	6820788
802D-40-80-S40	40	80.00	183	115	68	90	40	50	0.20	0.50	–	GI309	GI322	2.76	HM009	6820789

GI300	XPET 0502AP	SCET 050204-UD
GI301	XPET 0602AP	SCET 050204-UD
GI302	XPET 0602AP	SCET 060204-UD
GI303	XPET 0703AP	SCET 060204-UD
GI304	XPET 0703AP	SCET 070308-UD
GI305	XPET 0903AP	SCET 070308-UD
GI306	XPET 0903AP	SCET 09T308-UD
GI307	XPET 11T3AP	SCET 09T308-UD
GI308	XPET 11T3AP	SCET 120408-UD
GI309	XPET 12T3AP	SCET 120408-UD
GI313	XPET 0502AP-SD	SCET 050204-SD
GI314	XPET 0602AP-SD	SCET 050204-SD
GI315	XPET 0602AP-SD	SCET 060204-SD
GI316	XPET 0703AP-SD	SCET 060204-SD
GI317	XPET 0703AP-SD	SCET 070308-SD
GI318	XPET 0903AP-SD	SCET 070308-SD
GI319	XPET 0903AP-SD	SCET 09T308-SD
GI320	XPET 11T3AP-SD	SCET 09T308-SD
GI321	XPET 11T3AP-SD	SCET 120408-SD
GI322	XPET 12T3AP-SD	SCET 120408-SD

HM001	US 2245-T07P	0.9	US 2245-T07P	0.9	FLAG T07P
HM002	US 2205-T07P	0.9	US 2245-T07P	0.9	FLAG T07P
HM003	US 2205-T07P	0.9	US 2205-T07P	0.9	FLAG T07P
HM004	US 2506-T07P	1.2	US 2506-T07P	1.2	FLAG T07P
HM005	US 2507-T08P	1.2	US 3007-T08P	2.0	FLAG T08P
HM006	US 3007-T09P	2.0	US 3007-T09P	2.0	FLAG T09P
HM007	US 3007-T09P	2.0	US 3009-T09P	2.0	FLAG T09P
HM008	US 3510-T15P	3.0	US 3508-T15P	3.0	FLAG T15P
HM009	US 3510-T15P	3.0	US 5012-T15P	5.0	FLAG T15P

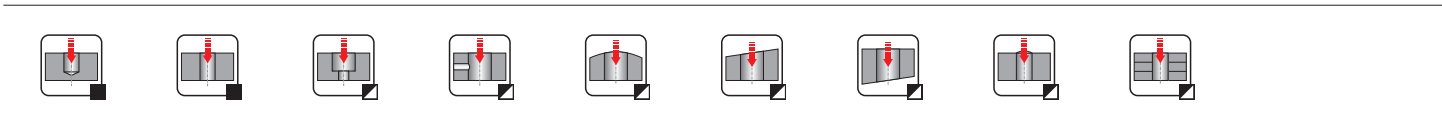
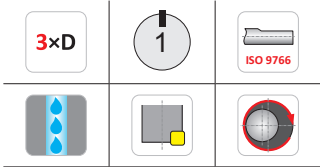
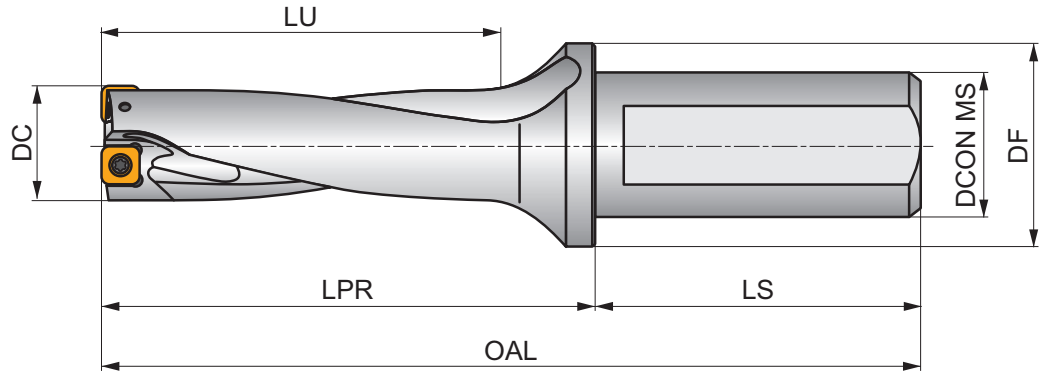


1803D



3xD 1803D Indexable Insert Drill body with Internal Coolant Feed

High performance indexable insert drill body for drilling blind and through holes. Also, potentially cross hole, off center and stack drilling, helical interpolation, plunging, drilling on concave or angled surfaces, drilling with interrupted cuts, chamfer drilling and boring.



Product	DC	APMX	OAL	LPR	LS	LU	DCON MS	DF	$\overset{-}{D}$	$\overset{+}{D}$				lbs		MID
	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)						
803D-0594-178-S100	.594	1.783	5.012	2.768	2.244	1.941	1.000	1.378	.012	.012	EP253253	GI300	GI313	.71	HM001	6801120
803D-0625-187-S100	.625	1.875	5.102	2.858	2.244	2.047	1.000	1.378	.006	.016	EP253253	GI300	GI313	.73	HM001	6801121
803D-0656-196-S100	.656	1.969	5.197	2.953	2.244	2.157	1.000	1.378	.006	.016	EP253253	GI300	GI313	.73	HM001	6801122
803D-0687-206-S100	.687	2.061	5.287	3.043	2.244	2.244	1.000	1.378	.020	.020	EP253253	GI301	GI314	.75	HM002	6801123
803D-0709-212-S100	.709	2.127	5.354	3.110	2.244	2.323	1.000	1.378	.014	.008	EP253253	GI301	GI314	.76	HM002	6801124
803D-0750-225-S100	.750	2.250	5.476	3.232	2.244	2.425	1.000	1.378	.012	.014	EP253253	GI301	GI314	.78	HM002	6801125
803D-0766-229-S100	.766	2.298	5.528	3.283	2.244	2.484	1.000	1.378	.008	.020	EP253253	GI302	GI315	.79	HM003	6801126
803D-0787-236-S100	.787	2.361	5.591	3.346	2.244	2.559	1.000	1.378	.008	.020	EP253253	GI302	GI315	.80	HM003	6801127
803D-0812-243-S100	.812	2.436	5.665	3.421	2.244	2.646	1.000	1.378	.004	.019	EP253253	GI302	GI315	.82	HM003	6801128
803D-0827-248-S100	.827	2.481	5.709	3.465	2.244	2.697	1.000	1.378	.004	.019	EP253253	GI302	GI315	.84	HM003	6801129
803D-0875-262-S100	.875	2.625	5.854	3.610	2.244	2.866	1.000	1.378	.011	.019	EP253253	GI303	GI316	.88	HM004	6801130
803D-0906-271-S100	.906	2.718	5.945	3.701	2.244	2.972	1.000	1.378	.008	.019	EP253253	GI304	GI317	.91	HM005	6801131
803D-0922-276-S100	.922	2.766	5.996	3.752	2.244	3.031	1.000	1.378	.008	.019	EP253253	GI304	GI317	.94	HM005	6801132
803D-0937-281-S100	.937	2.811	6.039	3.795	2.244	3.083	1.000	1.378	.004	.019	EP253253	GI304	GI317	.93	HM005	6801133
803D-0984-295-S125	.984	2.952	6.299	3.937	2.362	3.150	1.250	1.654	.004	.019	EP324058	GI304	GI317	1.37	HM005	6801134
803D-1000-300-S125	1.000	3.000	6.346	3.984	2.362	3.205	1.250	1.654	.004	.019	EP324058	GI304	GI317	1.39	HM005	6801135
803D-1032-310-S125	1.032	3.096	6.441	4.079	2.362	3.315	1.250	1.654	.004	.019	EP324058	GI305	GI318	1.41	HM006	6865420
803D-1062-318-S125	1.062	3.186	6.531	4.169	2.362	3.421	1.250	1.654	.020	.008	EP324058	GI305	GI318	1.44	HM006	6801137
803D-1109-332-S125	1.109	3.327	6.673	4.311	2.362	3.587	1.250	1.654	.020	.014	EP324058	GI306	GI319	1.51	HM007	6801138
803D-1125-337-S125	1.125	3.375	6.720	4.358	2.362	3.642	1.250	1.654	.020	.014	EP324058	GI306	GI319	1.52	HM007	6801139
803D-1172-351-S125	1.172	3.516	6.862	4.500	2.362	3.807	1.250	1.654	.014	.020	EP324058	GI306	GI319	1.60	HM007	6801140
803D-1187-356-S125	1.187	3.561	6.906	4.543	2.362	3.858	1.250	1.654	.014	.020	EP324058	GI306	GI319	1.62	HM007	6801141
803D-1250-375-S150	1.250	3.750	7.370	4.732	2.638	3.921	1.500	1.969	.006	.020	-	GI307	GI320	2.31	HM008	6801142



Product	DC	APMX	OAL	LPR	LS	LU	DCON MS	DF	\bar{D}	D^+								MID
	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)								
803D-1312-393-S150	1.312	3.936	7.559	4.921	2.638	4.138	1.500	1.969	.020	.020	–	GI307	GI320	2.45	HM008	6801143		
803D-1344-403-S150	1.344	4.032	7.654	5.016	2.638	4.252	1.500	1.969	.020	.020	–	GI307	GI320	2.49	HM008	6801144		
803D-1375-412-S150	1.375	4.125	7.748	5.110	2.638	4.319	1.500	1.969	.008	.020	–	GI308	GI321	2.55	HM009	6801145		
803D-1437-431-S150	1.437	4.311	7.933	5.295	2.638	4.535	1.500	1.969	.004	.020	–	GI308	GI321	2.63	HM009	6801146		
803D-1500-450-S150	1.500	4.500	8.122	5.484	2.638	4.756	1.500	1.969	.006	.020	–	GI308	GI321	2.81	HM009	6801147		
803D-1750-525-S150	1.750	5.250	8.843	6.205	2.638	5.642	1.500	1.969	.020	.020	–	GI310	GI323	3.47	HM010	6801148		
803D-2000-600-S150	2.000	6.000	9.626	6.988	2.638	6.394	1.500	2.205	.006	.020	–	GI311	GI324	4.68	HM030	6801149		

GI300	XPET 0502AP	SCET 050204-UD
GI301	XPET 0602AP	SCET 050204-UD
GI302	XPET 0602AP	SCET 060204-UD
GI303	XPET 0703AP	SCET 060204-UD
GI304	XPET 0703AP	SCET 070308-UD
GI305	XPET 0903AP	SCET 070308-UD
GI306	XPET 0903AP	SCET 09T308-UD
GI307	XPET 11T3AP	SCET 09T308-UD
GI308	XPET 11T3AP	SCET 120408-UD
GI310	XPET 1504AP	SCET 120408-UD
GI311	XPET 1504AP	SCET 150512-UD
GI313	XPET 0502AP-SD	SCET 050204-SD
GI314	XPET 0602AP-SD	SCET 050204-SD
GI315	XPET 0602AP-SD	SCET 060204-SD
GI316	XPET 0703AP-SD	SCET 060204-SD
GI317	XPET 0703AP-SD	SCET 070308-SD
GI318	XPET 0903AP-SD	SCET 070308-SD
GI319	XPET 0903AP-SD	SCET 09T308-SD
GI320	XPET 11T3AP-SD	SCET 09T308-SD
GI321	XPET 11T3AP-SD	SCET 120408-SD
GI323	XPET 1504AP-SD	SCET 120408-SD
GI324	XPET 1504AP-SD	SCET 150512-SD

HM001	US 2245-T07P	0.9	US 2245-T07P	0.9	FLAG T07P
HM002	US 2205-T07P	0.9	US 2245-T07P	0.9	FLAG T07P
HM003	US 2205-T07P	0.9	US 2205-T07P	0.9	FLAG T07P
HM004	US 2506-T07P	1.2	US 2506-T07P	1.2	FLAG T07P
HM005	US 2507-T08P	1.2	US 3007-T08P	2.0	FLAG T08P
HM006	US 3007-T09P	2.0	US 3007-T09P	2.0	FLAG T09P
HM007	US 3007-T09P	2.0	US 3009-T09P	2.0	FLAG T09P
HM008	US 3510-T15P	3.0	US 3508-T15P	3.0	FLAG T15P
HM009	US 3510-T15P	3.0	US 5012-T15P	5.0	FLAG T15P
HM010	US 4011-T15P	3.5	US 5012-T15P	5.0	FLAG T15P
HM030	US 4011-T15P	4.0	US 5012-T15P	5.0	FLAG T15P

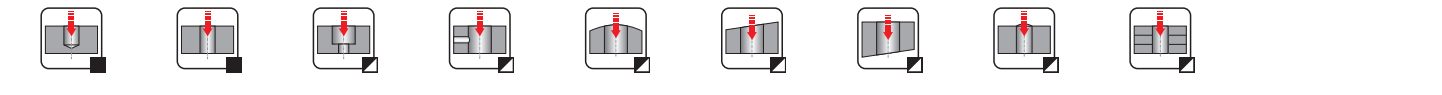
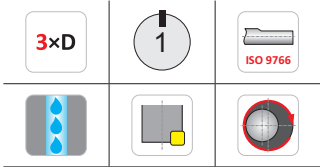
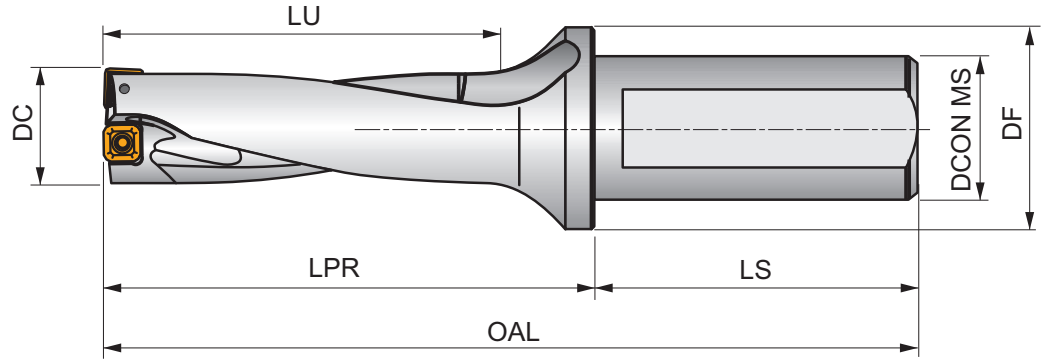


803D



3xD 803D Indexable Insert Drill body with Internal Coolant Feed

High performance indexable insert drill body for drilling blind and through holes. Also, potentially cross hole, off center and stack drilling, helical interpolation, plunging, drilling on concave or angled surfaces, drilling with interrupted cuts, chamfer drilling and boring.



Product	DC	APMX	OAL	LPR	LS	LU	DCON MS	DF	\bar{D}^-	\bar{D}^+						MID
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)						
803D-15-45-S25	15	45.00	136	80	56	49.5	25	35	0.25	0.35	EP253253	G1300	G1313	.73	HM001	6820791
803D-15,5-46,5-S25	15.5	47.00	137.5	81.5	56	51.2	25	35	0.30	0.35	EP253253	G1300	G1313	.68	HM001	6820790
803D-16-48-S25	16	48.00	139	83	56	53	25	35	0.15	0.45	EP253253	G1300	G1313	.71	HM001	6820793
803D-16,5-49,5-S25	16.5	50.00	140.5	84.5	56	54.7	25	35	0.15	0.40	EP253253	G1300	G1313	.71	HM001	6820792
803D-17-51-S25	17	51.00	142	86	56	56.5	25	35	0.10	0.50	EP253253	G1300	G1313	.77	HM001	6820795
803D-17,5-52,5-S25	17.5	53.00	143.5	87.5	56	58.2	25	35	0.50	0.50	EP253253	G1301	G1314	.71	HM002	6820794
803D-18-54-S25	18	54.00	145	89	56	60	25	35	0.35	0.25	EP253253	G1301	G1314	.73	HM002	6820797
803D-18,5-55,5-S25	18.5	56.00	146.5	90.5	56	61.2	25	35	0.35	0.25	EP253253	G1301	G1314	.75	HM002	6820796
803D-19-57-S25	19	57.00	148	92	56	63.5	25	35	0.15	0.45	EP253253	G1301	G1314	.75	HM002	6820799
803D-19,5-58,5-S25	19.5	59.00	149.5	93.5	56	63.7	25	35	0.25	0.40	EP253253	G1302	G1315	.75	HM003	6820798
803D-20-60-S25	20	60.00	151	95	56	67	25	35	0.10	0.45	EP253253	G1302	G1315	.74	HM003	6820801
803D-20,5-61,5-S25	20.5	62.00	152.5	96.5	56	67.2	25	35	0.10	0.50	EP253253	G1302	G1315	.79	HM003	6820800
803D-21-63-S25	21	63.00	154	98	56	70.5	25	35	0.10	0.50	EP253253	G1302	G1315	.79	HM003	6820803
803D-21,5-64,5-S25	21.5	65.00	155.5	99.5	56	70.8	25	35	0.35	0.50	EP253253	G1303	G1316	.82	HM004	6820802
803D-22-66-S25	22	66.00	157	101	56	74	25	35	0.45	0.50	EP253253	G1303	G1316	.89	HM004	6820805
803D-22,5-67,5-S25	22.5	68.00	158.5	102.5	56	74.3	25	35	0.35	0.50	EP253253	G1304	G1317	.92	HM005	6820804
803D-23-69-S25	23	69.00	160	104	56	77.5	25	35	0.35	0.50	EP253253	G1304	G1317	.88	HM005	6820807
803D-23,5-70,5-S25	23.5	71.00	161.5	105.5	56	77.6	25	35	0.10	0.50	EP253253	G1304	G1317	.88	HM005	6820806
803D-24-72-S25	24	72.00	163	107	56	81	25	35	0.15	0.50	EP253253	G1304	G1317	.90	HM005	6820809
803D-24,5-73,5-S25	24.5	74.00	168.5	108.5	60	78.7	25	35	0.10	0.50	EP253253	G1304	G1317	.99	HM005	6820808
803D-25-75-S32	25	75.00	170	110	60	82	32	42	0.15	0.50	EP324058	G1304	G1317	1.36	HM005	6820811
803D-25,5-76,5-S32	25.5	77.00	171.5	111.5	60	82.2	32	42	0.50	0.10	EP324058	G1304	G1317	1.39	HM005	6820810
803D-26-78-S32	26	78.00	173	113	60	85.5	32	42	0.10	0.50	EP324058	G1304	G1317	1.46	HM005	6820813



Product	DC	APMX	OAL	LPR	LS	LU	DCON MS	DF	\bar{D}	D^+						MID
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)						
803D-26,5-79,5-S32	26.5	80.00	174.5	114.5	60	85.7	32	42	0.50	0.10	EP324058	GI305	GI318	1.43	HM006	6820812
803D-27-81-S32	27	81.00	176	116	60	89	32	42	0.50	0.30	EP324058	GI305	GI318	1.43	HM006	6820814
803D-28-84-S32	28	84.00	179	119	60	92.5	32	42	0.30	0.50	EP324058	GI306	GI319	1.50	HM007	6820815
803D-29-87-S32	29	87.00	182	122	60	96	32	42	0.20	0.50	EP324058	GI306	GI319	1.54	HM007	6820816
803D-30-90-S32	30	90.00	185	125	60	99.5	32	42	0.15	0.50	EP324058	GI306	GI319	1.61	HM007	6820817
803D-31-93-S32	31	93.00	188	128	60	103	32	42	0.15	0.50	EP324058	GI306	GI319	1.68	HM007	6820818
803D-32-96-S32	32	96.00	191	131	60	102	32	42	0.50	0.30	EP324058	GI307	GI320	1.74	HM008	6820819
803D-32-96-S40	32	96.00	199	131	68	102	40	50	0.50	0.30	–	GI307	GI320	2.51	HM008	6820820
803D-33-99-S32	33	99.00	194	134	60	105.5	32	42	0.50	0.50	EP324058	GI307	GI320	1.83	HM008	6820821
803D-33-99-S40	33	99.00	202	134	68	105.5	40	50	0.50	0.50	–	GI307	GI320	2.60	HM008	6820822
803D-34-102-S32	34	102.00	197	137	60	109	32	42	0.25	0.50	EP324058	GI307	GI320	1.90	HM008	6820823
803D-34-102-S40	34	102.00	205	137	68	109	40	50	0.25	0.50	–	GI307	GI320	2.47	HM008	6820824
803D-35-105-S32	35	105.00	200	140	60	112.5	32	42	0.25	0.50	EP324058	GI308	GI321	1.98	HM009	6820825
803D-35-105-S40	35	105.00	208	140	68	112.5	40	50	0.25	0.50	–	GI308	GI321	2.73	HM009	6820826
803D-36-108-S32	36	108.00	203	143	60	116	32	42	0.10	0.50	EP324058	GI308	GI321	2.01	HM009	6820827
803D-36-108-S40	36	108.00	211	143	68	116	40	50	0.10	0.50	–	GI308	GI321	2.76	HM009	6820828
803D-37-111-S32	37	111.00	206	146	60	119.5	32	42	0.10	0.50	EP324058	GI308	GI321	2.09	HM009	6820829
803D-37-111-S40	37	111.00	214	146	68	119.5	40	50	0.10	0.50	–	GI308	GI321	2.84	HM009	6820830
803D-38-114-S32	38	114.00	199	139	60	124.5	32	42	0.50	0.50	EP324058	GI308	GI321	2.20	HM009	6820831
803D-38-114-S40	38	114.00	217	149	68	123	40	50	0.50	0.50	–	GI308	GI321	2.95	HM009	6820832
803D-39-117-S32	39	114.00	209	149	60	123	32	42	0.40	0.50	EP324058	GI309	GI322	2.34	HM009	6820833
803D-39-117-S40	39	117.00	220	152	68	126.5	40	50	0.40	0.50	–	GI309	GI322	3.09	HM009	6820834
803D-40-120-S32	40	120.00	215	155	60	130	32	42	0.20	0.50	EP324058	GI309	GI322	2.47	HM009	6820835
803D-40-120-S40	40	120.00	223	155	68	130	40	50	0.20	0.50	–	GI309	GI322	3.22	HM009	6820836
803D-41-123-S40	41	123.00	219	149	70	133	40	50	0.20	0.50	–	GI309	GI322	3.26	HM009	6758967
803D-42-126-S40	42	126.00	221.5	152	70	136	40	50	0.15	0.50	–	GI309	GI322	3.35	HM009	6758974
803D-43-129-S40	43	129.00	224	154	70	139	40	50	0.10	0.50	–	GI309	GI322	3.48	HM009	6758975
803D-44-132-S40	44	132.00	226.5	157	70	142	40	50	0.50	0.50	–	GI310	GI323	3.59	HM010	6758976
803D-45-135-S40	45	135.00	230.5	161	70	144	40	55	0.50	0.50	–	GI311	GI324	3.81	HM010	6758977
803D-46-138-S40	46	138.00	235	165	70	148	40	55	0.50	0.50	–	GI311	GI324	4.01	HM010	6758978
803D-47-141-S40	47	141.00	237.5	168	70	151	40	55	0.50	0.50	–	GI311	GI324	4.19	HM010	6758979
803D-48-144-S40	48	144.00	240	170	70	154	40	55	0.50	0.50	–	GI311	GI324	4.37	HM010	6758980
803D-49-147-S40	49	147.00	242.5	173	70	157	40	55	0.30	0.50	–	GI311	GI324	4.54	HM010	6758968
803D-50-150-S40	50	150.00	246.5	177	70	160	40	58	0.15	0.50	–	GI311	GI324	4.81	HM010	6758981
803D-51-153-S40	51	153.00	249	179	70	163	40	58	0.15	0.50	–	GI311	GI324	4.94	HM010	6758982
803D-52-156-S40	52	156.00	251.5	182	70	166	40	58	0.50	0.50	–	GI312	GI325	4.85	HM010	6758983
803D-53-159-S40	53	159.00	254	184	70	169	40	58	0.50	0.50	–	GI312	GI325	5.05	HM010	6758984
803D-54-162-S40	54	162.00	257.5	188	70	173	40	58	0.50	0.50	–	GI312	GI325	5.27	HM010	6758985
803D-55-165-S40	55	165.00	260	190	70	176	40	58	0.50	0.50	–	GI312	GI325	5.42	HM010	6758986
803D-56-168-S40	56	168.00	264	194	70	179	40	58	0.50	0.50	–	GI312	GI325	5.71	HM010	6758987
803D-57-171-S40	57	171.00	266.5	197	70	182	40	58	0.35	0.50	–	GI312	GI325	5.95	HM010	6758988
803D-58-174-S40	58	174.00	270	200	70	186	40	58	0.15	0.50	–	GI312	GI325	6.24	HM010	6758969

GI300	XPET 0502AP	SCET 050204-UD
GI301	XPET 0602AP	SCET 050204-UD
GI302	XPET 0602AP	SCET 060204-UD
GI303	XPET 0703AP	SCET 060204-UD
GI304	XPET 0703AP	SCET 070308-UD
GI305	XPET 0903AP	SCET 070308-UD
GI306	XPET 0903AP	SCET 09T308-UD
GI307	XPET 11T3AP	SCET 09T308-UD
GI308	XPET 11T3AP	SCET 120408-UD
GI309	XPET 12T3AP	SCET 120408-UD
GI310	XPET 1504AP	SCET 120408-UD



GI311	XPET 1504AP	SCET 150512-UD
GI312	XPET 1904AP	SCET 150512-UD
GI313	XPET 0502AP-SD	SCET 050204-SD
GI314	XPET 0602AP-SD	SCET 050204-SD
GI315	XPET 0602AP-SD	SCET 060204-SD
GI316	XPET 0703AP-SD	SCET 060204-SD
GI317	XPET 0703AP-SD	SCET 070308-SD
GI318	XPET 0903AP-SD	SCET 070308-SD
GI319	XPET 0903AP-SD	SCET 09T308-SD
GI320	XPET 11T3AP-SD	SCET 09T308-SD
GI321	XPET 11T3AP-SD	SCET 120408-SD
GI322	XPET 12T3AP-SD	SCET 120408-SD
GI323	XPET 1504AP-SD	SCET 120408-SD
GI324	XPET 1504AP-SD	SCET 150512-SD
GI325	XPET 1904AP-SD	SCET 150512-SD

HM001	US 2245-T07P	0.9	US 2245-T07P	0.9	FLAG T07P
HM002	US 2205-T07P	0.9	US 2245-T07P	0.9	FLAG T07P
HM003	US 2205-T07P	0.9	US 2205-T07P	0.9	FLAG T07P
HM004	US 2506-T07P	1.2	US 2506-T07P	1.2	FLAG T07P
HM005	US 2507-T08P	1.2	US 3007-T08P	2.0	FLAG T08P
HM006	US 3007-T09P	2.0	US 3007-T09P	2.0	FLAG T09P
HM007	US 3007-T09P	2.0	US 3009-T09P	2.0	FLAG T09P
HM008	US 3510-T15P	3.0	US 3508-T15P	3.0	FLAG T15P
HM009	US 3510-T15P	3.0	US 5012-T15P	5.0	FLAG T15P
HM010	US 4011-T15P	3.5	US 5012-T15P	5.0	FLAG T15P



804D



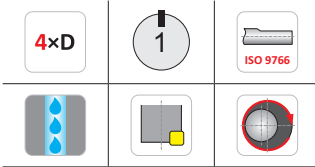
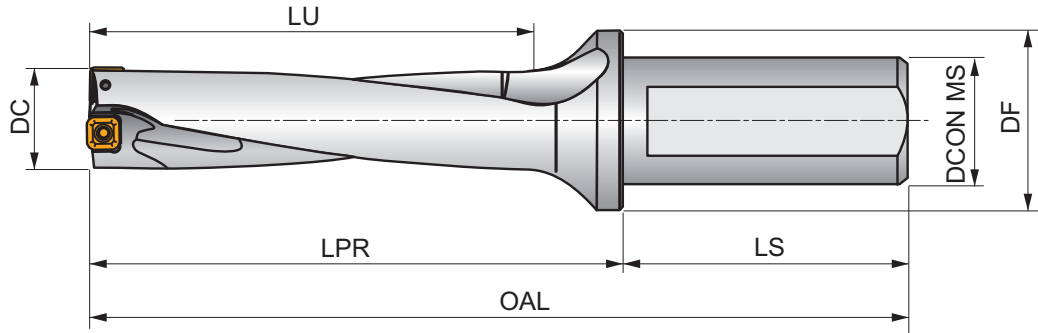
PRAMET

S



4xD 804D Indexable Insert Drill body with Internal Coolant Feed

High performance indexable insert drill body for drilling blind and through holes. Also, potentially cross hole, off center and stack drilling, helical interpolation, plunging, drilling on concave or angled surfaces, drilling with interrupted cuts, chamfer drilling and boring.



Product	DC	APMX	OAL	LPR	LS	LU	DCON MS	DF	\bar{D}	\bar{D}^+						MID
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)				lbs		
804D-17-68-S25	17	68.00	149	93	56	73	25	35	0.10	0.50	-	G1300	G1313	.75	HM001	6758989
804D-18-72-S25	18	72.00	153	97	56	77	25	35	0.35	0.25	-	G1301	G1314	.77	HM002	6758990
804D-19-76-S25	19	76.00	157	101	56	81.5	25	35	0.15	0.45	-	G1301	G1314	.79	HM002	6758991
804D-20-80-S25	20	80.00	161	105	56	85	25	35	0.10	0.45	-	G1302	G1315	.82	HM003	6758970
804D-21-84-S25	21	84.00	165	109	56	89.5	25	35	0.10	0.50	-	G1302	G1315	.95	HM003	6758992
804D-22-88-S25	22	88.00	169	113	56	94	25	35	0.45	0.50	-	G1303	G1316	.99	HM004	6758993
804D-23-92-S25	23	92.00	173	117	56	98.5	25	35	0.35	0.50	-	G1304	G1317	.97	HM005	6758994
804D-24-96-S25	24	96.00	177	121	56	103	25	35	0.15	0.50	-	G1304	G1317	.99	HM005	6758995
804D-25-100-S32	25	100.00	185	125	60	105	32	42	0.15	0.50	-	G1304	G1317	1.48	HM005	6758996
804D-26-104-S32	26	104.00	189	129	60	109.5	32	42	0.10	0.50	-	G1304	G1317	1.54	HM005	6758971
804D-27-108-S32	27	108.00	193	133	60	114	32	42	0.50	0.30	-	G1305	G1318	1.57	HM006	6758997
804D-28-112-S32	28	112.00	197	137	60	118.5	32	42	0.30	0.50	-	G1306	G1319	1.65	HM007	6758998
804D-29-116-S32	29	116.00	201	141	60	123	32	42	0.20	0.50	-	G1306	G1319	1.72	HM007	6758999
804D-30-120-S32	30	120.00	205	145	60	127.5	32	42	0.15	0.50	-	G1306	G1319	1.81	HM007	6759000
804D-31-124-S32	31	124.00	209	149	60	132	32	42	0.15	0.50	-	G1306	G1319	1.87	HM007	6759001
804D-32-128-S32	32	128.00	213	153	60	136.5	32	42	0.50	0.30	-	G1307	G1320	1.98	HM008	6759002
804D-33-132-S32	33	132.00	217	157	60	141	32	42	0.50	0.50	-	G1307	G1320	2.09	HM008	6759003
804D-34-136-S32	34	136.00	221	161	60	145.5	32	42	0.25	0.50	-	G1307	G1320	2.18	HM008	6758972
804D-35-140-S32	35	140.00	225	165	60	149	32	42	0.25	0.50	-	G1308	G1321	2.29	HM009	6759004
804D-36-144-S32	36	144.00	229	169	60	153.5	32	42	0.10	0.50	-	G1308	G1321	2.31	HM009	6759005
804D-37-148-S32	37	148.00	233	173	60	158	32	42	0.10	0.50	-	G1308	G1321	2.45	HM009	6759006
804D-38-152-S32	38	152.00	237	177	60	162.5	32	42	0.50	0.50	-	G1308	G1321	2.60	HM009	6759007
804D-39-156-S32	39	156.00	241	181	60	167	32	42	0.40	0.50	-	G1309	G1322	2.76	HM009	6759008









Product	DC	APMX	OAL	LPR	LS	LU	DCON MS	DF							MID	
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)						
804D-40-160-S32	40	160.00	245	185	60	171.5	32	42	0.20	0.50	–	G1309	G1322	2.93	HM009	6758973
804D-41-164-S40	41	164.00	259	189	70	172	40	50	0.20	0.50	–	G1309	G1322	3.70	HM009	6760972
804D-42-168-S40	42	168.00	263	193	70	176.5	40	50	0.15	0.50	–	G1309	G1322	3.88	HM009	6760973
804D-43-172-S40	43	172.00	267	197	70	181	40	50	0.10	0.50	–	G1309	G1322	4.03	HM009	6760974
804D-44-176-S40	44	176.00	271	201	70	185.5	40	50	0.50	0.50	–	G1310	G1323	4.21	HM010	6760975
804D-45-180-S40	45	180.00	275	205	70	187.5	40	55	0.50	0.50	–	G1311	G1324	4.45	HM010	6760976
804D-46-184-S40	46	184.00	279	209	70	192	40	55	0.50	0.50	–	G1311	G1324	4.67	HM010	6760977
804D-47-188-S40	47	188.00	283	213	70	196.5	40	55	0.50	0.50	–	G1311	G1324	4.89	HM010	6760978
804D-48-192-S40	48	192.00	287	217	70	201	40	55	0.50	0.50	–	G1311	G1324	5.14	HM010	6760979
804D-49-196-S40	49	196.00	291	221	70	205.5	40	55	0.30	0.50	–	G1311	G1324	5.40	HM010	6760980
804D-50-200-S40	50	200.00	295	225	70	208.5	40	58	0.15	0.50	–	G1311	G1324	5.69	HM010	6760981
804D-51-204-S40	51	204.00	299	229	70	213	40	58	0.15	0.50	–	G1311	G1324	5.91	HM010	6760982
804D-52-208-S40	52	208.00	303	233	70	217.5	40	58	0.50	0.50	–	G1312	G1325	5.82	HM010	6760983
804D-53-212-S40	53	212.00	307	237	70	222	40	58	0.50	0.50	–	G1312	G1325	6.08	HM010	6760984
804D-54-216-S40	54	216.00	311	241	70	226.5	40	58	0.50	0.50	–	G1312	G1325	6.39	HM010	6760985
804D-55-220-S40	55	220.00	315	245	70	231	40	58	0.50	0.50	–	G1312	G1325	6.61	HM010	6760986
804D-56-224-S40	56	224.00	319	249	70	235.5	40	58	0.50	0.50	–	G1312	G1325	6.94	HM010	6760987
804D-57-228-S40	57	228.00	323	253	70	240	40	58	0.35	0.50	–	G1312	G1325	7.28	HM010	6760988
804D-58-232-S40	58	232.00	327	257	70	244.5	40	58	0.15	0.50	–	G1312	G1325	7.63	HM010	6760989

G1300	XPET 0502AP	SCET 050204-UD
G1301	XPET 0602AP	SCET 050204-UD
G1302	XPET 0602AP	SCET 060204-UD
G1303	XPET 0703AP	SCET 060204-UD
G1304	XPET 0703AP	SCET 070308-UD
G1305	XPET 0903AP	SCET 070308-UD
G1306	XPET 0903AP	SCET 09T308-UD
G1307	XPET 11T3AP	SCET 09T308-UD
G1308	XPET 11T3AP	SCET 120408-UD
G1309	XPET 12T3AP	SCET 120408-UD
G1310	XPET 1504AP	SCET 120408-UD
G1311	XPET 1504AP	SCET 150512-UD
G1312	XPET 1904AP	SCET 150512-UD
G1313	XPET 0502AP-SD	SCET 050204-SD
G1314	XPET 0602AP-SD	SCET 050204-SD
G1315	XPET 0602AP-SD	SCET 060204-SD
G1316	XPET 0703AP-SD	SCET 060204-SD
G1317	XPET 0703AP-SD	SCET 070308-SD
G1318	XPET 0903AP-SD	SCET 070308-SD
G1319	XPET 0903AP-SD	SCET 09T308-SD
G1320	XPET 11T3AP-SD	SCET 09T308-SD
G1321	XPET 11T3AP-SD	SCET 120408-SD
G1322	XPET 12T3AP-SD	SCET 120408-SD
G1323	XPET 1504AP-SD	SCET 120408-SD
G1324	XPET 1504AP-SD	SCET 150512-SD
G1325	XPET 1904AP-SD	SCET 150512-SD

HM001	US 2245-T07P	0.9	US 2245-T07P	0.9	FLAG T07P
HM002	US 2205-T07P	0.9	US 2245-T07P	0.9	FLAG T07P
HM003	US 2205-T07P	0.9	US 2205-T07P	0.9	FLAG T07P
HM004	US 2506-T07P	1.2	US 2506-T07P	1.2	FLAG T07P



					
HM005	US 2507-T08P	1.2	US 3007-T08P	2.0	FLAG T08P
HM006	US 3007-T09P	2.0	US 3007-T09P	2.0	FLAG T09P
HM007	US 3007-T09P	2.0	US 3009-T09P	2.0	FLAG T09P
HM008	US 3510-T15P	3.0	US 3508-T15P	3.0	FLAG T15P
HM009	US 3510-T15P	3.0	US 5012-T15P	5.0	FLAG T15P
HM010	US 4011-T15P	3.5	US 5012-T15P	5.0	FLAG T15P

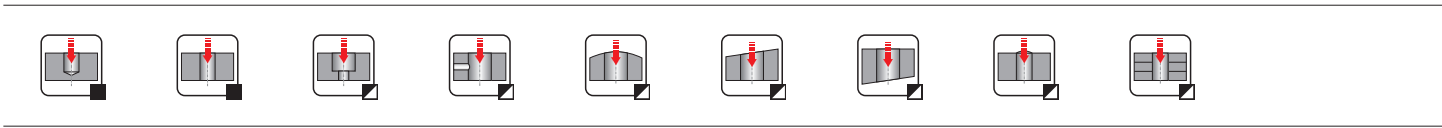
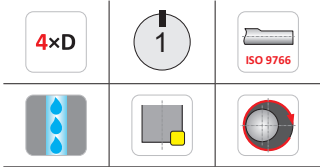
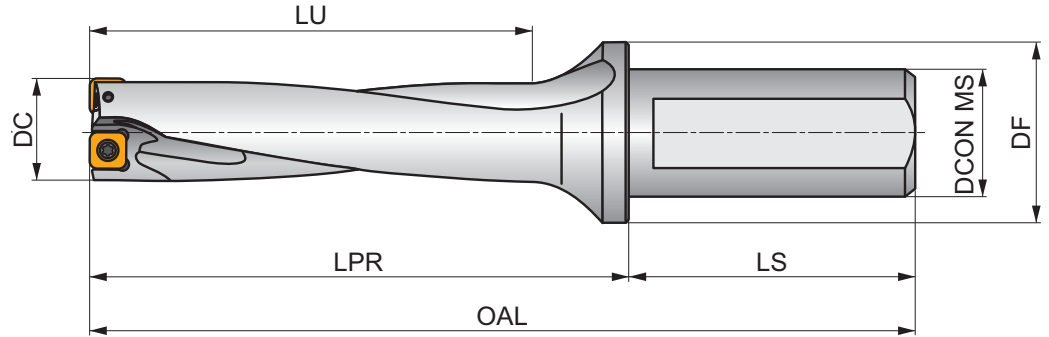


1804D



4xD 1804D Indexable Insert Drill body with Internal Coolant Feed

High performance indexable insert drill body for drilling blind and through holes. Also, potentially cross hole, off center and stack drilling, helical interpolation, plunging, drilling on concave or angled surfaces, drilling with interrupted cuts, chamfer drilling and boring.



Product	DC	APMX	OAL	LPR	LS	LU	DCON MS	DF	$\overset{-}{D}$	$\overset{+}{D}$				lbs		MID
	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)						
804D-0594-237-S100	.594	2.376	5.606	3.362	2.244	2.535	1.000	1.378	.012	.012	EP253253	GI300	GI313	.73	HM001	6801150
804D-0625-250-S100	.625	2.500	5.728	3.484	2.244	2.673	1.000	1.378	.006	.016	EP253253	GI300	GI313	.75	HM001	6801151
804D-0656-262-S100	.656	2.624	5.850	3.587	2.244	2.811	1.000	1.378	.006	.016	EP253253	GI300	GI313	.77	HM001	6801152
804D-0687-274-S100	.687	2.748	5.976	3.732	2.244	2.933	1.000	1.378	.020	.020	EP253253	GI301	GI314	.79	HM002	6801153
804D-0750-300-S100	.750	3.000	6.228	3.984	2.244	3.217	1.000	1.378	.012	.014	EP253253	GI301	GI314	.82	HM002	6801155
804D-0766-306-S100	.766	3.064	6.291	4.047	2.244	3.248	1.000	1.378	.008	.020	EP253253	GI302	GI315	.84	HM003	6801156
804D-0787-314-S100	.787	3.148	6.378	4.134	2.244	3.346	1.000	1.378	.008	.020	EP253253	GI302	GI315	.86	HM003	6801157
804D-0812-324-S100	.812	3.248	6.476	4.232	2.244	3.457	1.000	1.378	.004	.019	EP253253	GI302	GI315	.88	HM003	6801158
804D-0827-330-S100	.827	3.308	6.535	4.291	2.244	3.524	1.000	1.378	.004	.019	EP253253	GI302	GI315	.90	HM003	6801159
804D-0875-350-S100	.875	3.500	6.728	4.484	2.244	3.740	1.000	1.378	.011	.019	EP253253	GI303	GI316	.96	HM004	6801160
804D-0922-368-S100	.922	3.688	6.917	4.673	2.244	3.953	1.000	1.378	.008	.019	EP253253	GI304	GI317	1.02	HM005	6801162
804D-0937-374-S100	.937	3.748	6.976	4.732	2.244	4.020	1.000	1.378	.004	.019	EP253253	GI304	GI317	1.02	HM005	6801163
804D-0984-393-S125	.984	3.936	7.283	4.921	2.362	4.134	1.250	1.654	.004	.019	EP324058	GI304	GI317	1.48	HM005	6801164
804D-1000-400-S125	1.000	4.000	7.346	4.984	2.362	4.205	1.250	1.654	.004	.019	EP324058	GI304	GI317	1.51	HM005	6801165
804D-1032-412-S125	1.032	4.128	7.476	5.114	2.362	4.350	1.250	1.654	.004	.019	EP324058	GI305	GI318	1.55	HM006	6801166
804D-1062-424-S125	1.062	4.248	7.594	5.232	2.362	4.248	1.250	1.654	.020	.008	EP324058	GI305	GI318	1.58	HM006	6801167
804D-1109-443-S125	1.109	4.437	7.783	5.421	2.362	4.697	1.250	1.654	.020	.014	EP324058	GI306	GI319	1.67	HM007	6801168
804D-1125-450-S125	1.125	4.500	7.846	5.484	2.362	4.768	1.250	1.654	.020	.014	EP324058	GI306	GI319	1.69	HM007	6801169
804D-1172-468-S125	1.172	4.688	8.035	5.673	2.362	4.980	1.250	1.654	.014	.020	EP324058	GI306	GI319	1.79	HM007	6801170
804D-1187-474-S125	1.187	4.748	8.094	5.732	2.362	5.043	1.250	1.654	.014	.020	EP324058	GI306	GI319	1.82	HM007	6801171
804D-1250-500-S150	1.250	5.000	8.622	5.984	2.638	5.169	1.500	1.969	.006	.020	-	GI307	GI320	2.54	HM008	6801172
804D-1312-524-S150	1.312	5.248	8.870	6.232	2.638	5.449	1.500	1.969	.020	.020	-	GI307	GI320	2.73	HM008	6801173
804D-1344-537-S150	1.344	5.374	8.996	6.358	2.638	5.594	1.500	1.969	.020	.020	-	GI307	GI320	2.78	HM008	6801174



Product	DC	APMX	OAL	LPR	LS	LU	DCON MS	DF									MID
	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)	(inch)							
804D-1375-550-S150	1.375	5.500	9.122	6.484	2.638	5.693	1.500	1.969	.008	.020	–	GI308	GI321	2.86	HM009	6801175	
804D-1437-574-S150	1.437	5.748	9.370	6.732	2.638	5.748	1.500	1.969	.004	.020	–	GI308	GI321	2.97	HM009	6801176	
804D-1500-600-S150	1.500	6.000	9.622	6.984	2.638	6.256	1.500	1.969	.006	.020	–	GI308	GI321	3.48	HM009	6801177	
804D-1750-700-S150	1.750	7.000	1.622	7.984	2.638	7.421	1.500	1.969	.020	.020	–	GI310	GI323	4.12	HM010	6801178	
804D-2000-800-S150	2.000	8.000	11.622	8.984	2.638	8.390	1.500	2.205	.006	.020	–	GI311	GI324	5.67	HM030	6801179	

GI300	XPET 0502AP	SCET 050204-UD
GI301	XPET 0602AP	SCET 050204-UD
GI302	XPET 0602AP	SCET 060204-UD
GI303	XPET 0703AP	SCET 060204-UD
GI304	XPET 0703AP	SCET 070308-UD
GI305	XPET 0903AP	SCET 070308-UD
GI306	XPET 0903AP	SCET 09T308-UD
GI307	XPET 11T3AP	SCET 09T308-UD
GI308	XPET 11T3AP	SCET 120408-UD
GI310	XPET 1504AP	SCET 120408-UD
GI311	XPET 1504AP	SCET 150512-UD
GI313	XPET 0502AP-SD	SCET 050204-SD
GI314	XPET 0602AP-SD	SCET 050204-SD
GI315	XPET 0602AP-SD	SCET 060204-SD
GI316	XPET 0703AP-SD	SCET 060204-SD
GI317	XPET 0703AP-SD	SCET 070308-SD
GI318	XPET 0903AP-SD	SCET 070308-SD
GI319	XPET 0903AP-SD	SCET 09T308-SD
GI320	XPET 11T3AP-SD	SCET 09T308-SD
GI321	XPET 11T3AP-SD	SCET 120408-SD
GI323	XPET 1504AP-SD	SCET 120408-SD
GI324	XPET 1504AP-SD	SCET 150512-SD

HM001	US 2245-T07P	0.9	US 2245-T07P	0.9	FLAG T07P
HM002	US 2205-T07P	0.9	US 2245-T07P	0.9	FLAG T07P
HM003	US 2205-T07P	0.9	US 2205-T07P	0.9	FLAG T07P
HM004	US 2506-T07P	1.2	US 2506-T07P	1.2	FLAG T07P
HM005	US 2507-T08P	1.2	US 3007-T08P	2.0	FLAG T08P
HM006	US 3007-T09P	2.0	US 3007-T09P	2.0	FLAG T09P
HM007	US 3007-T09P	2.0	US 3009-T09P	2.0	FLAG T09P
HM008	US 3510-T15P	3.0	US 3508-T15P	3.0	FLAG T15P
HM009	US 3510-T15P	3.0	US 5012-T15P	5.0	FLAG T15P
HM010	US 4011-T15P	3.5	US 5012-T15P	5.0	FLAG T15P
HM030	US 4011-T15P	4.0	US 5012-T15P	5.0	FLAG T15P



805D



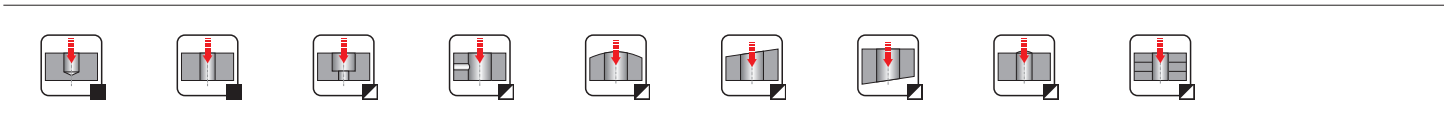
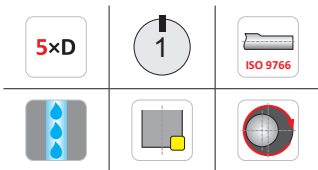
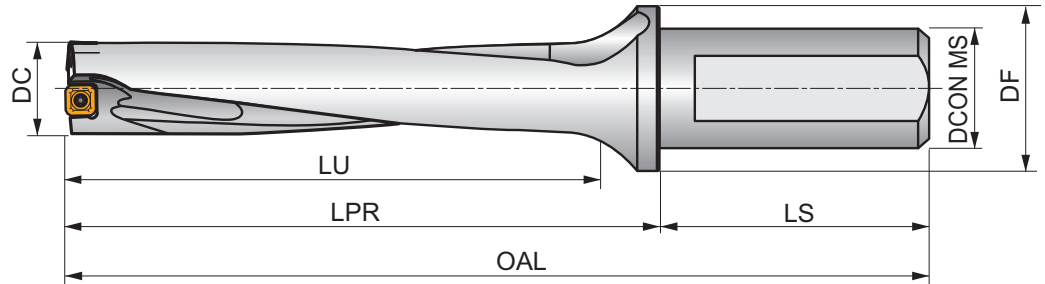
PRAMET

S



5xD 805D Indexable Insert Drill body with Internal Coolant Feed

High performance indexable insert drill body for drilling blind and through holes. Also, potentially cross hole, off center and stack drilling, helical interpolation, plunging, drilling on concave or angled surfaces, drilling with interrupted cuts, chamfer drilling and boring.



Product	DC	APMX	OAL	LPR	LS	LU	DCON MS	DF	\bar{D}^-	\bar{D}^+				lbs		MID
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)						
805D-19-95-S25	19	95.00	176	120	56	100.5	25	35	0.15	0.45	–	GI301	GI314	.84	HM002	6759009
805D-20-100-S25	20	100.00	181	125	56	105	25	35	0.10	0.45	–	GI302	GI315	.88	HM003	6759010
805D-21-105-S25	21	105.00	186	130	56	110.5	25	35	0.10	0.50	–	GI302	GI315	.93	HM003	6759011
805D-22-110-S25	22	110.00	191	135	56	116	25	35	0.45	0.50	–	GI303	GI316	.99	HM004	6759012
805D-23-115-S25	23	115.00	196	140	56	121.5	25	35	0.35	0.50	–	GI304	GI317	1.06	HM005	6759013
805D-24-120-S25	24	120.00	201	145	56	127	25	35	0.15	0.50	–	GI304	GI317	1.08	HM005	6759014
805D-25-125-S32	25	125.00	210	150	60	130	32	42	0.15	0.50	–	GI304	GI317	1.59	HM005	6759015
805D-26-130-S32	26	130.00	215	155	60	135.5	32	42	0.10	0.50	–	GI304	GI317	1.81	HM005	6759016
805D-27-135-S32	27	135.00	220	160	60	141	32	42	0.50	0.30	–	GI305	GI318	1.72	HM006	6759017
805D-28-140-S32	28	140.00	225	165	60	146.5	32	42	0.30	0.50	–	GI306	GI319	1.81	HM007	6759018
805D-29-145-S32	29	145.00	230	170	60	152	32	42	0.20	0.50	–	GI306	GI319	1.90	HM007	6759019
805D-30-150-S32	30	150.00	235	175	60	157.5	32	42	0.15	0.50	–	GI306	GI319	1.98	HM007	6759020
805D-31-155-S32	31	155.00	240	180	60	163	32	42	0.15	0.50	–	GI306	GI319	2.09	HM007	6759021

GI301	XPET 0602AP	SCET 050204-UD
GI302	XPET 0602AP	SCET 060204-UD
GI303	XPET 0703AP	SCET 060204-UD
GI304	XPET 0703AP	SCET 070308-UD
GI305	XPET 0903AP	SCET 070308-UD
GI306	XPET 0903AP	SCET 09T308-UD
GI314	XPET 0602AP-SD	SCET 050204-SD



GI315	XPET 0602AP-SD	SCET 060204-SD
GI316	XPET 0703AP-SD	SCET 060204-SD
GI317	XPET 0703AP-SD	SCET 070308-SD
GI318	XPET 0903AP-SD	SCET 070308-SD
GI319	XPET 0903AP-SD	SCET 09T308-SD

HM002	US 2205-T07P	0.9	US 2245-T07P	0.9	FLAG T07P
HM003	US 2205-T07P	0.9	US 2205-T07P	0.9	FLAG T07P
HM004	US 2506-T07P	1.2	US 2506-T07P	1.2	FLAG T07P
HM005	US 2507-T08P	1.2	US 3007-T08P	2.0	FLAG T08P
HM006	US 3007-T09P	2.0	US 3007-T09P	2.0	FLAG T09P
HM007	US 3007-T09P	2.0	US 3009-T09P	2.0	FLAG T09P

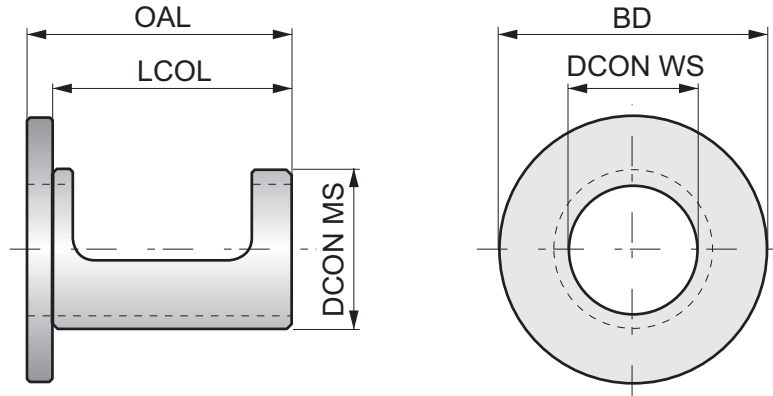


EP




EP - Indexable Insert Drill Adjustment Sleeve

Sleeve to adjust indexable insert drill diameter. Can be used in Ø32 or Ø40 mm weldon tool holders. The outside drill diameter is adjusted by rotating the sleeve.



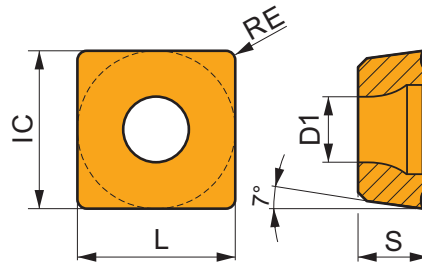
Diameter adjustment range is 0.4 – -0.2; center height adjustment range is 0.2 – -0.15.

Product	DCON WS (mm)	DCON MS (mm)	BD (mm)	OAL (mm)	LCOL (mm)		MID
EP253253	25.00	32.00	53.00	53.0	48	.33	6758513
EP324058	32.00	40.00	58.00	58.0	53	.41	6758509



SCET

	IC	D1	L
	(inch)	(inch)	(inch)
0502	.219	.094	.219
0602	.250	.114	.250
0703	.312	.138	.312
09T3	.375	.177	.375
1204	.500	.220	.500
1505	.625	.220	.625



Suitability and starting values for cutting speed (vc) and feed (f). Refer to our Machining Calculator app for further calculations.

---	Product	RE (inch)	P			M			K			N			S			H			MID
			vc (ft/min)	f (in/rev)	ap (inch)	vc (ft/min)	f (in/rev)	ap (inch)	vc (ft/min)	f (in/rev)	ap (inch)	vc (ft/min)	f (in/rev)	ap (inch)	vc (ft/min)	f (in/rev)	ap (inch)	vc (ft/min)	f (in/rev)	ap (inch)	



SCET 050204-UD .005
 SCET 060204-UD .006
 SCET 070308-UD .006
 SCET 09T308-UD .006
 SCET 120408-UD .008
 SCET 150512-UD .008



UD geometry with universal design for periphery inserts.

SCET 050204-UD	D8330	.016	541	.003	—	—	—	—	509	.003	—	—	—	—	—	—	—	—	—	6754634
	D9335	.016	787	.003	—	—	—	—	738	.003	—	—	—	—	—	—	—	—	—	6754650
SCET 060204-UD	D8330	.016	541	.004	—	—	—	—	509	.004	—	—	—	—	—	—	—	—	—	6754635
	D9335	.016	787	.004	—	—	—	—	738	.004	—	—	—	—	—	—	—	—	—	6754651
SCET 070308-UD	D8330	.031	541	.005	—	—	—	—	509	.005	—	—	—	—	—	—	—	—	—	6754636
	D9335	.031	787	.005	—	—	—	—	738	.005	—	—	—	—	—	—	—	—	—	6754652
SCET 09T308-UD	D8330	.031	541	.006	—	—	—	—	509	.006	—	—	—	—	—	—	—	—	—	6754637
	D9335	.031	787	.006	—	—	—	—	738	.006	—	—	—	—	—	—	—	—	—	6754586
SCET 120408-UD	D8330	.031	541	.006	—	—	—	—	509	.006	—	—	—	—	—	—	—	—	—	6754631
	D9335	.031	787	.006	—	—	—	—	738	.006	—	—	—	—	—	—	—	—	—	6754584
SCET 150512-UD	D8330	.047	541	.007	—	—	—	—	509	.007	—	—	—	—	—	—	—	—	—	6754731
	D9335	.047	787	.007	—	—	—	—	738	.007	—	—	—	—	—	—	—	—	—	6754585



SCET 050204-SD .002
 SCET 060204-SD .002
 SCET 070308-SD .003
 SCET 09T308-SD .004
 SCET 120408-SD .004
 SCET 150512-SD .004



SD geometry with positive design for periphery inserts.

SCET 050204-SD	D8330	.016	541	.003	312	.003	—	509	.003	—	—	—	—	131	.002	—	—	—	—	6920783
	D9335	.016	787	.003	459	.003	—	738	.003	—	—	—	—	197	.002	—	—	—	—	6920784
SCET 060204-SD	D8330	.016	541	.004	312	.004	—	509	.004	—	—	—	—	131	.003	—	—	—	—	6920785
	D9335	.016	787	.004	459	.004	—	738	.004	—	—	—	—	197	.003	—	—	—	—	6920786
SCET 070308-SD	D8330	.031	541	.005	312	.004	—	509	.005	—	—	—	—	131	.004	—	—	—	—	6920787
	D9335	.031	787	.005	459	.004	—	738	.005	—	—	—	—	197	.004	—	—	—	—	6920788
SCET 09T308-SD	D8330	.031	541	.006	312	.005	—	509	.006	—	—	—	—	131	.004	—	—	—	—	6920789
	D9335	.031	787	.006	459	.005	—	738	.006	—	—	—	—	197	.004	—	—	—	—	6920800
SCET 120408-SD	D8330	.031	541	.006	312	.006	—	509	.006	—	—	—	—	131	.004	—	—	—	—	6920801
	D9335	.031	787	.006	459	.006	—	738	.006	—	—	—	—	197	.004	—	—	—	—	6920802
SCET 150512-SD	D8330	.047	541	.007	312	.006	—	509	.007	—	—	—	—	131	.005	—	—	—	—	6920803
	D9335	.047	787	.007	459	.006	—	738	.007	—	—	—	—	197	.005	—	—	—	—	6920804



INDEXABLE DRILLS
TECHNICAL INFORMATION



WORKPIECE MATERIAL GROUP (WMG)

ISO To select a cutting grade and geometry for a broad range of workpiece materials

General definition

i.e. Steel, Stainless Steel...

P **M** **K** **N** **S** **H**

Subgroup To navigate and select a tool by suitability for a more specific range of workpiece materials

Definition by structure/composition

i.e. Plain Carbon Steel, Alloy Steel...

P **M** **K** **N** **S** **H**

P1

P2

P3

P4

WMG To select and provide cutting conditions within a bandwidth of $\pm 10\%$

Definition by hardness/ultimate tensile strength

i.e. $160 < 220 \text{ HB}$, $620 < 900 \text{ N/mm}^2$...

P

P1

P1.1 **P1.2** **P1.3**

P2

P2.1 **P2.2** **P2.3**

P3

P3.1 **P3.2** **P3.3**

P4

P4.1 **P4.2** **P4.3**

ABOUT DORMER PRAMET'S WORKPIECE MATERIAL CLASSIFICATION

Workpiece Material Groups (WMG) are used to support easy and reliable selection of the right cutting tool and starting values for machining conditions in particular applications.

Dormer Pramet classifies workpiece materials into six different coloured groups;

- **Blue:** Steel and cast steel (P-group)
- **Yellow:** Stainless steel (M-group)
- **Red:** Cast iron (K-group)
- **Green:** Non-ferrous metals (N-group)
- **Brown:** High-temperature alloys (S-group)

- **Grey:** Hardened materials (H-group)

Each of these are divided into subgroups on the basis of their structure and/or composition. For example, P-group steel and cast steel is split into four subgroups, namely;

- **P1** – Free machining steel
- **P2** – Plain carbon steel
- **P3** – Alloy steel
- **P4** – Tool steel

A final division includes material properties, such as hardness and ultimate tensile strength. This is to provide our customers with a complete tool recommendation, including starting values for cutting speed and feed.

The table on the next page includes a description of each workpiece material group, as well as examples of commonly used designations.



WORKPIECE MATERIAL GROUP (WMG)

ISO group	Subgroup	WMG (Work Material Group)	k_{vc}	Examples of material (AISI, EN, DIN, ČSN, GB, SS, STN, BS, UNE, AFNOR, ASTM, GOST, UNS, UNI, ...)
P Steel and cast steel (steels with alloy content ≤ 10 % and a hardness of < 45HRC)	P1 Free machining steel (carbon steels with increased machinability)	P1.1 Free machining sulfurized carbon steel with a hardness of < 240 HB	1.33	AISI 1108, EN 15S22, DIN 1.0723, SS 1922, ČSN 11120, BS 210A15, UNE F.210F, GB Y15, AFNOR 10F1, GOST A30, UNI CF10S20
		P1.2 Free machining sulfurized and phosphorized carbon steel with a hardness of < 180 HB	1.49	AISI 1211, EN 115Mn30, DIN 1.0715, SS 1912, ČSN 11109, BS 230M7, UNE F.2111, GB Y15, AFNOR S250, GOST A40G, UNI CF95Mn28
		P1.3 Free machining sulfurized/phosphorized and leaded carbon steel with a hardness of < 180 HB	1.53	AISI 12L13, EN 115MnPb30, DIN 1.0718, SS 1914, ČSN 12110, BS 210M16, UNE F.2114, GB Y15Pb, AFNOR S250Pb, GOST ASS5G2, UNI CF10SPb20
	P2 Plain carbon steel (steels comprised of mainly iron and carbon)	P2.1 Plain low carbon steel containing < 0.25 % C with a hardness of < 180 HB	1.14	AISI 1015, EN C15, DIN 1.0401, SS 1350, ČSN 11301, BS 080A15, UNE F.111, GB 15, AFNOR C18RR, GOST St2ps, UNI Fe360
		P2.2 Plain medium carbon steel containing < 0.55 % C with a hardness of < 240 HB	1.00	AISI 1030, EN C30, DIN 1.0528, SS 1550, ČSN 12031, BS 080M32, UNE F.1130, GB 30, AFNOR AF50C30, GOST 30G, UNI Fe590
		P2.3 Plain high carbon steel containing > 0.55 % C, with a hardness of < 300 HB	0.89	AISI 1060, EN C60, DIN 1.0601, SS 1655, ČSN 12061, BS 080A62, UNE F.513, GB 60, AFNOR 1C60, GOST 60G, UNI C60
	P3 Alloy steel (carbon steels with an alloying content ≤ 10 %)	P3.1 Alloy steel with a hardness of < 180 HB	0.92	AISI 5015, EN 16Mo3, DIN 1.5415, SS 2912, ČSN 15020, BS 1501-240, UNE F.2601, GB 16Mo, AFNOR 15D3, GOST 15M, UNI 16Mo3KW
		P3.2 Alloy steel with a hardness of 180 – 260 HB	0.74	AISI 4140, EN 42CrMo4, DIN 1.7225, SS 2244, ČSN 15142, BS 708M40, UNE F.8232, GB 42CrMo, AFNOR 42CD4, GOST 40ChFA, UNI 42CrMo4
		P3.3 Alloy steel with a hardness of 260 – 360 HB	0.63	AISI 4140, EN 42CrMo4, DIN 1.7225, SS 2244, ČSN 15142, BS 708M40, UNE F.8232, GB 42CrMo, AFNOR 42CD4, GOST 40ChFA, UNI 42CrMo4
	P4 Tool steel (special alloy steel for tools, dies and molds)	P4.1 Tool steel with a hardness of < 26 HRC	0.55	AISI D2, EN X155CrVMo12-1, DIN 1.2370, SS 2736, ČSN 19573, BS BD2, UNE F.520A, GB Cr12Mo1V1, AFNOR Z160CDV12, GOST Ch12MF, UNI X155CrVMo121KU
		P4.2 Tool steel with a hardness of 26 – 39 HRC	0.47	AISI D2, EN X155CrVMo12-1, DIN 1.2370, SS 2736, ČSN 19573, BS BD2, UNE F.520A, GB Cr12Mo1V1, AFNOR Z160CDV12, GOST Ch12MF, UNI X155CrVMo121KU
		P4.3 Tool steel with a hardness of 39 – 45 HRC	0.38	AISI D2, EN X155CrVMo12-1, DIN 1.2370, SS 2736, ČSN 19573, BS BD2, UNE F.520A, GB Cr12Mo1V1, AFNOR Z160CDV12, GOST Ch12MF, UNI X155CrVMo121KU



WORKPIECE MATERIAL GROUP (WMG)

ISO group	Subgroup	WMG (Work Material Group)	k_{vc}	Examples of material (AISI, EN, DIN, ČSN, GB, SS, STN, BS, UNE, AFNOR, ASTM, GOST, UNS, UNI, ...)
M	M1 Ferritic stainless steel (straight chromium non-hardenable alloys)	M1.1 Stainless steel, ferritic with a hardness of < 160 HB	1.22	AISI S429 , EN X7Cr14 , DIN 1.4001 , SS 2326 , BS 434517 , UNE F.3401 , AFNOR Z8C12 , GOST 08Ch13 , UNI X6CrTi12
		M1.2 Stainless steel, ferritic with a hardness of 160 – 220 HB	1.03	AISI 446 , EN X10CrAl24 , DIN 1.4762 , SS 2322 , ČSN 17113 , BS 430517 , UNE F.3154 , GB 10Cr17 , AFNOR Z10CAS24 , GOST 12Ch17 , UNI X16Cr26
		M2.1 Stainless steel, martensitic with a hardness of < 200 HB	1.08	AISI 430F , EN X14CrMoS17 , DIN 1.4104 , SS 2383 , ČSN 17140 , BS 410S21 , UNE F.3117 , AFNOR Z10CF17 , UNI X10CrS17
	M2 Martensitic stainless steel (straight chromium hardenable alloys)	M2.2 Stainless steel, martensitic with a hardness of 200 – 280 HB	0.89	AISI 440C , EN X105CrMo17 , DIN 1.4125 , SS 2385 , ČSN 17023 , BS 425C11 , UNE F.3402 , GB 102Cr17Mo , AFNOR Z100CD17 , GOST 95Ch18 , UNI GX6CrNi13 04
		M2.3 Stainless steel, martensitic with a hardness of 280 – 380 HB	0.75	AISI 420 , EN X45Cr13 , DIN 1.4034 , ČSN 17029 , BS 425C11 , UNE F.3405 , AFNOR Z44C14 , GOST 20X17H12 , UNI X30Cr13
		M3.1 Stainless steel, austenitic with a hardness of < 200 HB	1.00	AISI 304 , EN X5CrNi18-12 , DIN 1.4303 , SS 2352 , ČSN 17249 , BS 305S17 , UNE F.3513 , GB 10Cr18Ni12 , AFNOR Z8CN18.12 , UNI X7CrNi18 10
	M3 Austenitic stainless steel (chromium-nickel and chromium-nickel-manganese alloys)	M3.2 Stainless steel, austenitic with a hardness of 200 – 260 HB	0.86	AISI 309 , EN X15CrNiSi20-12 , DIN 1.4828 , ČSN 17251 , BS 309S24 , UNE F.3312 , GB 1Cr23Ni13 , AFNOR Z15CNS20.12 , GOST 20Ch20N14S2 , UNI 16CrNi23 14
		M3.3 Stainless steel, austenitic with a hardness of 260 – 300 HB	0.77	AISI 5848 , EN X45CrNiW18-9 , DIN 1.4873 , BS 331S40 , UNE F.3211 , AFNOR Z35CNWS14-4 , UNI X45CrNiW 18 9
		M4.1 Stainless steel, austenitic-ferritic or super-austenitic with a hardness of < 300 HB	0.75	AISI 329 , EN X1-NiCrMoCu25-20-5 , DIN 1.4539 , SS 2562 , ČSN 17265 , BS 318S13 , UNE F.3552 , GB 022Cr25NiMo2N , AFNOR Z1NCDU25.20
	M4 Super-austenitic, Duplex or Precipitation Hardening stainless steel (austenitic alloys with > 20 % Ni, austenitic-ferritic microstructure or precipitation hardened)	M4.2 Stainless steel, precipitation hardening austenitic with a hardness of 300 – 380 HB	0.64	AISI 631 (17-7PH) , EN X7CrNiAl17-7 , DIN 1.4568 , SS 2388 , ČSN 17465 , BS 301S13 , UNE F.3217 , GB 07Cr17Ni7Al , AFNOR Z9CNA17-07 , GOST 09Ch17N7Ju1 , UNI X53CrMnNiN21 9



WORKPIECE MATERIAL GROUP (WMG)

ISO group	Subgroup	WMG (Work Material Group)	k_{vc}	Examples of material (AISI, EN, DIN, ČSN, GB, SS, STN, BS, UNE, AFNOR, ASTM, GOST, UNS, UNI, ...)
K Cast Iron (castings of iron and carbon alloys with > 2 % carbon content)	K1 Gray iron (GG) (iron-carbon castings with a lamellar graphite microstructure)	K1.1 Gray iron, ferritic or ferritic-pearlitic with a hardness of < 180 HB	1.35	ASTM A48 Grade 20 (F11401), EN-JL-100, DIN GG-10 (0.6010), SS 0110, STN 422410, BS Grade 150, UNE FG10, GB HAT 100, AFNOR Ff10D, GOST SC 10, UNI G10
		K1.2 Gray iron, ferritic-pearlitic or pearlitic with a hardness of 180 – 240 HB	1.00	ASTM A48 Grade 30 (F12101), EN-JL-1030, DIN GG-20 (0.6020), SS 0120, STN 422420, BS Grade 220, UNE FG20, GB HT200, AFNOR Ff20D, GOST C420, UNI G20
		K1.3 Gray iron, pearlitic with a hardness of 240 – 280 HB	0.75	ASTM A48 Grade 50 (F13501), EN-JL-1060, DIN GG-35 (0.6035), SS 0135, STN 422435, BS Grade 350, UNE FG35, GB HAT300, AFNOR Ff35D, GOST SC35, UNI G35
	K2 Malleable iron (GTS/GTW) (heat-treated iron-carbon castings with a graphite-free microstructure)	K2.1 Malleable iron, ferritic with a hardness of < 160 HB	1.39	ASTM A602 Grade M3210 (F20000), EN-JM-1130, DIN GTS-35 (0.8135), SS 0815, BS B340/12, UNE Type A, AFNOR MN 35-10, GOST K435-10
		K2.2 Malleable iron, pearlitic with a hardness of 160 – 200 HB	1.13	ASTM A602 Grade M4504 (F20001), EN-JM-1040, DIN GTS-50-05 (0.8045), BS P50-05, AFNOR MB 45-7
		K2.3 Malleable iron, pearlitic with a hardness of 200 – 240 HB	0.90	ASTM A602 Grade M7002 (F20004), EN-JM-1140, DIN GTS-45 (0.8145), SS 0854, STN 422540, BS P 45-06, UNE Typ B, AFNOR MP 50-5, GOST K445-7, UNI GMMN 45
	K3 Ductile iron (GGG) (iron-carbon castings with a nodular graphite microstructure)	K3.1 Ductile (nodular/spheroidal) iron, ferritic or pearlitic with a hardness of 180 – 220 HB	1.23	ASTM A536 Grade 60-40-18 (F32800), EN-JS-1030, DIN GGG-40 (0.7040), SS 0717, STN 422304, BS 420/12, UNE FGE 42-12, GB QT 400, AFNOR FGS 400-12, GOST B440
		K3.2 Ductile (nodular/spheroidal) iron, pearlitic with a hardness of 220 – 260 HB	0.94	ASTM A536 Grade 80-55-06 (F33800), EN-JS-1050, DIN GGG-50 (0.7050), SS 0727, STN 422305, BS 500/7, UNE FGE 50-7, GB QT 500-7, AFNOR FGS 500-7, GOST B450
		K3.3 Austenitic cast iron with a hardness of < 180 HB	0.76	ASTM A536 Grade 100-70-03 (F34800), EN-JS-1060, DIN GGG-60 (0.7060), SS 0732, STN 422306, BS 600/3, UNE FGE 60-3, GB QT 600-3, AFNOR FGS 600-3, GOST B460
	K4 Austenitic or austempered ductile iron (Ni-Resist/ADI) (iron-carbon alloy castings with an austenitic or ausferrite microstructure)	K4.1 Austenitic cast iron with a hardness of 180 – 240 HB	1.14	ASTM A436 Type T (L-NiCuCr 15 6 2, F41000), EN-JL-3011, DIN GGL-NiMn 13 7 (0.6652), SS 0523, BS Grade Ft, AFNOR FGL-Ni13 Mn7, GOST S-NiMn 13 7
		K4.2 Austenitic or austempered ductile iron (Ni-Resist/ADI) (iron-carbon alloy castings with an austenitic or ausferrite microstructure)	0.86	ASTM A439 Type D-2B (S-NiCr 20 3, F43001), EN-JS-3021, DIN GGG-NiMn 23 4, SS 0776, BS Grade S2M, AFNOR FGS Ni23 Mn4, GOST CH19X3II
		K4.3 Austenitic or austempered ductile iron with a hardness of 240 – 280 HB	0.63	ASTM A897 Grade 110-70-11
	K5 Compacted graphite iron (CGI) (iron-carbon castings with a vermicular graphite structure)	K4.4 Austenitic or austempered ductile iron with a hardness of 280 – 320 HB	0.54	ASTM A897 Grade 125-80-10, EN-JS-1100, DIN GGG-90 (5.3400)
		K4.5 Austenitic or austempered ductile iron with a hardness of 320 – 360 HB	0.45	ASTM A897 Grade 2 (150-110-07), EN-JS-1110, DIN GGG-100 (5.3403)
		K5.1 Compacted graphite iron (CGI) (iron-carbon castings with a vermicular graphite structure)	1.29	ASTM A842 Grade 300, EN-GJV-300, DIN GGV 30, GOST ЧВГ30,
K5 Compacted graphite iron (CGI) (iron-carbon castings with a vermicular graphite structure)	K5.2 Vermicular, compacted graphite iron with a hardness of 180 – 220 HB	0.97	ASTM A842 Grade 350, EN-GJV-350, DIN GGV 35 (5.2200), GOST ЧВГ30,	
	K5.3 Vermicular, compacted graphite iron with a hardness of 220 – 260 HB	0.75	ASTM A842 Grade 450, EN-GJV-450, DIN GGV 45, GOST ЧВГ45,	



WORKPIECE MATERIAL GROUP (WMG)

ISO group	Subgroup	WMG (Work Material Group)	k_{vc}	Examples of material (AISI, EN, DIN, ČSN, GB, SS, STN, BS, UNE, AFNOR, ASTM, GOST, UNS, UNI, ...)
N Non-ferrous metals (metals including alloys without an appreciable amount of iron)	N1 Wrought aluminium	N1.1	1.33	Pure aluminium and wrought aluminium alloys with a hardness of < 60 HB UNS A91200, EN AL99.6, DIN 3.0205, SS 4010, STN 424009, BS 1C, UNE L-3001, GB L5, AFNOR A4, GOST A4C, UNI 3567
		N1.2	1.00	Wrought aluminium alloys with a hardness of 60 – 100 HB UNS A93004, EN AlMn0.5Mg0.5, DIN 3.0505, SS 4054, STN 424432, BS N31, UNE L-3831, GB LF2, AFNOR A-M1, GOST AMu, UNI 3568
		N1.3	0.67	Wrought aluminium alloys with a hardness of 100 – 150 HB UNS A95083, EN AlMg4.5Mn0.7, DIN 3.3547, SS 4140, STN 424415, BS N8, UNE L-3321, GB AlMg4.5Mn, AFNOR A-G4.5Mn, GOST Amg 4.5, UNI P-AlMg4.4
		N2.1	0.67	Cast aluminium alloys with a hardness of < 75 HB UNS A02080, EN AlCu4S, BS LM11, STN 424331, UNE Al Si1Cu, GOST AMg5K, UNI G-AIS17Mg
		N2.2	0.60	Cast aluminium alloys with a hardness of 75 – 90 HB UNS A02420, EN AlCu4Ni2Mg2, SS AISI7MgFe, BS LM6, STN 424519, UNE Al-7SiMg, AFNOR A-57G, GOST AK7, UNI G-AIS17Mg
		N2.3	0.43	Cast aluminium alloys with a hardness of 90 < 140 HB UNS A03360, EN G-ALCu4NiMg2, SS ALS110Mg, STN 424336, BS LM 30, AFNOR A-S10G, UNI G-AIS19Mg
		N3.1	0.70	Free-cutting copper-alloys materials with excellent machining properties UNS C14700, EN CuPb1P, DIN 2.1498, STN 423214, BS C111, AFNOR CuZn35Pb2, GOST L63-3, UNI CuS(P0.01)
		N3.2	0.41	Short-chip copper-alloys with good to moderate machining properties UNS C81540, EN CuNi2SiCr, DIN 2.0857, STN 423220, BS NS113, UNE CuSn12, AFNOR CuZn40, GOST L60, UNI P-CuZn-40
		N3.3	0.21	Electrolytic copper and long-chip copper-alloys with moderate to poor machining properties UNS C10100, EN CuAg0.1, DIN 2.1203, SS 5010, UNE CUS13Mn1, AFNOR Cu-C2, GOST M1f, UNI Cu-Of
	N4 Polymers (synthetic or semi-synthetic materials)	N4.1	0.70	Thermoplastic polymers ABS, Acryl, Duraplast, Elastomer, EP, Epoxid, FEP, Fluor, Gummi, Kautschuk, Latex, MF, MPF, PA, PAl, PC, PE, PEEK, PEI, PES, PET, PF, Phenolharze, PI, PMMA, Polyamide, Polyester, Polyolefine, Polysulfon, POM, PP, PPE, PPS, PS, PSU, PTFE, PU, PUR, PVDF, SAN, SI, Styrol, UF, Ureol
		N4.2	0.27	Thermosetting polymers Aramid, Epoxy, Fluoropolymer, Methacrylate, Melamine, Phenolic, Polyester, Polyimide, Polymethacrylimide, Polyurethane
		N4.3	0.29	Reinforced polymers or composites CFK, GFK, GMT, Honeycomb, Kevlar, LFT, Organo, SMC
	N5 Graphite	N5.1	1.0	CGM-1, CM-00, GM-10, GM-11, GR030, GR030PI, GR060, GR060PI, GR125, MC-01, MC-01R0, MC-03, MC-03M, IG11, IG-15, IG-32, IG-43, IG-45, IG-70, ISEM-1, ISEM-2, ISEM-3, R8340, R8500X, Technograph 15, Technograph 30, ISO-63, EDM C-3, EDM1, EDM3, ISO-90, ISO-93, ISO-95, R8510, R8650,



WORKPIECE MATERIAL GROUP (WMG)

ISO group	Subgroup	WMG (Work Material Group)	k_{vc}	Examples of material (AISI, EN, DIN, ČSN, GB, SS, STN, BS, UNE, AFNOR, ASTM, GOST, UNS, UNI, ...)
S High-temperature alloys (superalloys with high temperature strength and corrosion resistant surpassing that of stainless steel)	S1 Titanium or titanium alloys	S1.1 Titanium or titanium alloys, with a hardness of <200 HB	1.94	UNS R50250 (Grade 1), EN Ti 99.6, DIN 3.7035, BS TA.2, UNE Ti-Po2, AFNOR T-40, GOST BT1-00, AISI R50250, 3.7025, T35, 2TA1, R50400, 3.7035, 2TA2,
		S1.2 Titanium alloys, with a hardness of 200 – 280 HB	1.72	UNS R56404 (Grade 29), EN Ti2Cu, DIN 3.7124, BS TA.21, UNE Ti-P11, AFNOR T-U2, AISI TA6V, Ti-6Al-4V, Ti 10.2.3, Ti5553
		S1.3 Titanium alloys, a hardness of 280 – 360 HB	1.44	UNS R54250 (Grade 38), EN TiAl6V4, DIN 3.7165, ČSN TiAl6VELL, BS TA. 13, UNE Ti-P63, AFNOR T-A6V, GOST BT6, AISI TA6V, Ti-6Al-4V, Ti 10.2.3, Ti5553
	S2 Fe-based high-temperature alloys	S2.1 High-temperature Fe-based alloys with a hardness of <200 HB	1.33	UNS N08801 (Incoloy 801), EN X8 NiCrAlTi31-21, DIN 1.4959, BS NA 15, AFNOR Z8NC33-21, AISI A-286, Discoloy, Haynes 556, Inconel 909, Greek Ascology
		S2.2 High-temperature Fe-based alloys with a hardness of 200 – 280 HB	1.17	UNS N19907, EN X6NiCrTiMoVB25-15-2, DIN 1.4980, SS 2570, BS HR52, AFNOR Z6NCTDV25.15B, GOST 36HXT10, AISI A-286, Discoloy, Haynes 556, Inconel 909, Greek Ascology
	S3 Ni-based high-temperature alloys	S3.1 High-temperature Ni-based alloys with a hardness of <280 HB	1.00	UNS A09706 (Inconel 706), EN NiCr25FeAl, DIN 2.4856, BS HR 6, ČSN Inconel 625, UNE F.3313, GB 1Cr16Ni35, AFNOR NC22FeDNB, GOST XH38BT, AISI Inconel 718, 706 Waspalloy, Udimet 720, Inconel 625
		S3.2 High-temperature Ni-based alloys with a hardness of 280 – 360 HB	0.83	UNS N07001, EN NiCr20Co13Mo4Ti3Al, DIN 2.4654, BS HR 2, ČSN Waspalloy, AFNOR NCKD 20ATV, GOST XH80TB10, AISI Inconel 718, 706 Waspalloy, Udimet 720, Inconel 625
	S4 Co-based high-temperature alloys	S4.1 High-temperature Co-based alloys with a hardness of <240 HB	0.78	UNS R30016 (Stellite 6b), EN CoCr20W15Ni, DIN 2.4964, AFNOR KC20 WN, GOST ЛКС2, AISI Haynes 25, Stellite 21, 31
		S4.2 High-temperature Co-based alloys with a hardness of 240 – 320 HB	0.67	UNS R30016 (Stellite 6b), EN CoCr20W15Ni, DIN 2.4964, AFNOR KC20 WN, GOST ЛКС2, AISI Haynes 25, Stellite 21, 31



WORKPIECE MATERIAL GROUP (WMG)

ISO group	Subgroup	WMG (Work Material Group)	k_{vc}	Examples of material (AISI, EN, DIN, ČSN, GB, SS, STN, BS, UNE, AFNOR, ASTM, GOST, UNS, UNI, ...)
H Hardened materials (any engineering metal with a hardness > 45 HRC)	H1 Chilled cast iron	H1.1 Chilled cast iron with a hardness of < 440 HB	1.52	UNS F45001, EN-GJS-1050-6, DIN 5.3406, SS 0512, BS Grade 2A
		H2.1 Hardened cast iron with a hardness < 55 HRC	0.90	UNS F45003, EN-GJS-1400-1, DIN 5.3405, SS 0457, BS Grade 3D
	H2 Hardened cast iron	H2.2 Hardened cast iron with a hardness > 55 HRC	0.77	UNS F45003, EN-G-1260NiCr4-2, DIN 0.9620, SS 0466, BS Grade S
		H3 Hardened steel < 55 HRC	H3.1 Hardened steel with a hardness of < 51 HRC	1.00	AISI 4135, EN 34CrMo4, DIN 1.7220, SS 2234, STN 415131, BS 198, UNE F.1250, GB 35CrMo, AFNOR 35CD4, GOST AC38XTM, UNI 35CrMo4KB
	H3.2 Hardened steel with a hardness of 51 – 55 HRC		0.82	AISI 4135, EN 34CrMo4, DIN 1.7220, SS 2234, STN 415131, BS 198, UNE F.1250, GB 35CrMo, AFNOR 35CD4, GOST AC38XTM, UNI 35CrMo4KB
	H4 Hardened steel > 55 HRC	H4.1 Hardened steel with a hardness of 55 – 59 HRC	0.64	UNS T31501, EN 100MnCrW4, DIN 1.2510, SS 2140, STN 419413, BS B01, UNE F.5220, GB 9CrWMn, AFNOR 90MnWCrV5, GOST 9XBТ, UNI 95MnWCr5KU
		H4.2 Hardened steel with a hardness of > 59 HRC	0.54	UNS T31501, EN 100MnCrW4, DIN 1.2510, SS 2140, STN 419413, BS B01, UNE F.5220, GB 9CrWMn, AFNOR 90MnWCrV5, GOST 9XBТ, UNI 95MnWCr5KU



GEOMETRY OF CUTTING INSERTS

45

P	M	K	N	S	H
■	▣	■	■	■	■

f → See diagram

? WCMT 06, WCMX 06

46

P	M	K	N	S	H
■	▣	■	■	■	■

f → See diagram

? WCMT 04, WCMX 03, WCMX 04

47

P	M	K	N	S	H
■	▣	■	■	■	■

f → See diagram

? WCMT 05, WCMX 05

48

P	M	K	N	S	H
■	▣	■	■	■	■


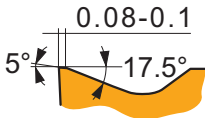
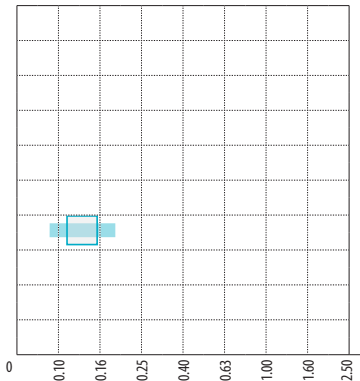
f → See diagram

? WCMT 08, WCMX 08




GEOMETRY OF CUTTING INSERTS

UM


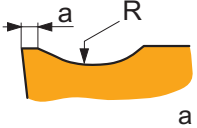
P	M	K	N	S	H
■	▣	■	■	■	■

See diagram

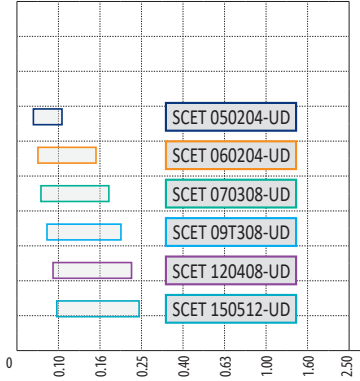


? WCMT 04, WCMT 05

SCET-UD





SCET 050204-UD	0.12
SCET 060204-UD	0.15
SCET 070308-UD	0.15
SCET 09T308-UD	0.15
SCET 120408-UD	0.20
SCET 150512-UD	0.20




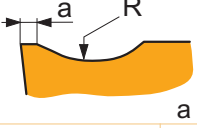
P	M	K	N	S	H
■	■	■	■	■	■

See diagram

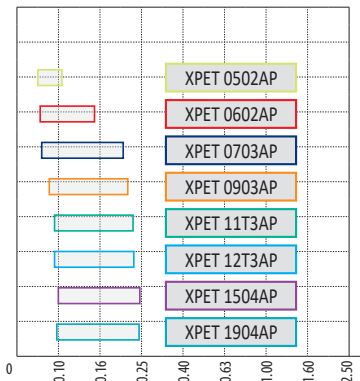


? SCET-UD

XPETAP





XPET 0502AP	0.10
XPET 0602AP	0.10
XPET 0703AP	0.15
XPET 0903AP	0.25
XPET 11T3AP	0.25
XPET 12T3AP	0.25
XPET 1504AP	0.25
XPET 1904AP	0.25



P	M	K	N	S	H
■	■	■	■	■	■

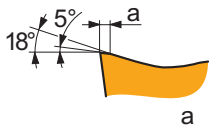
See diagram



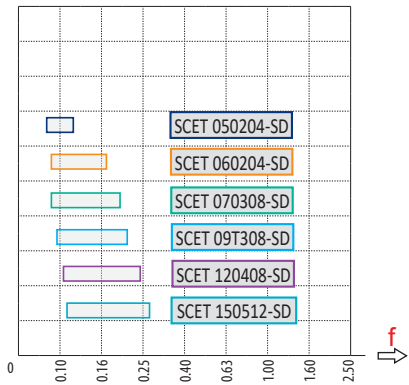
? XPETAP

GEOMETRY OF CUTTING INSERTS

SCET-SD

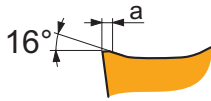


	a
SCET 050204-SD	0,04
SCET 060204-SD	0,06
SCET 070308-SD	0,08
SCET 09T308-SD	0,10
SCET 120408-SD	0,10
SCET 150512-SD	0,10

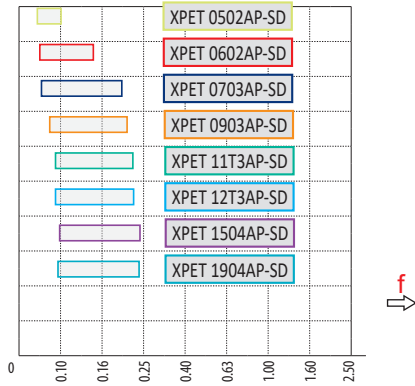


P	M	K	N	S	H
■	■	▣	■	▣	■
f → See diagram					
SCET .....-SD					

XPETAP-SD



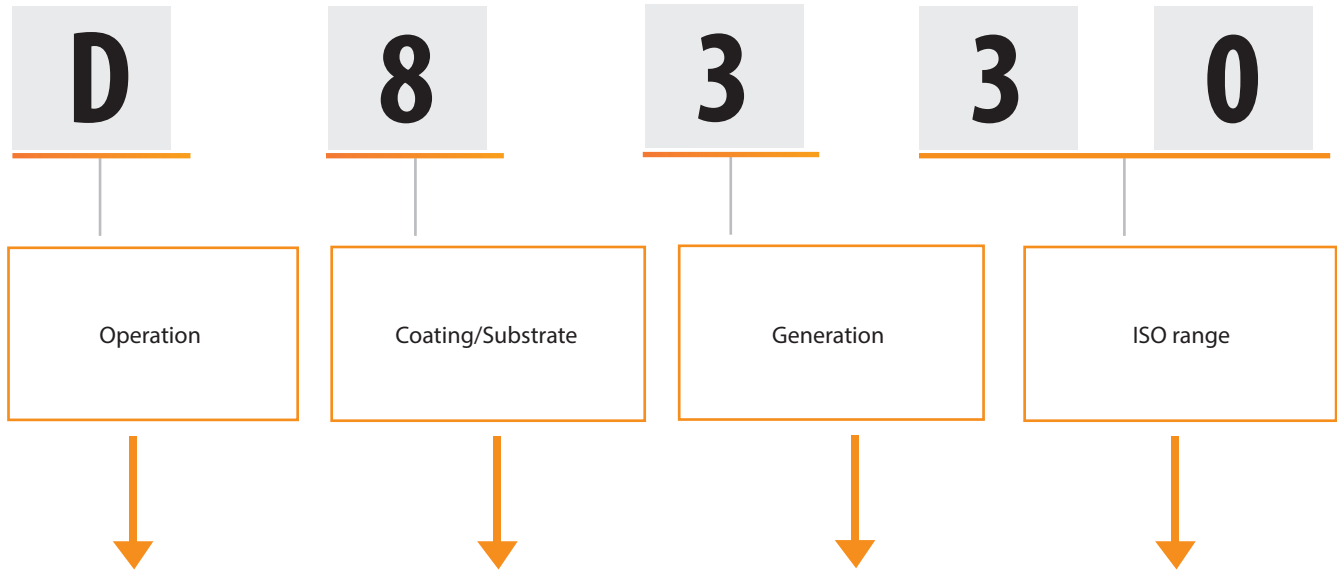
	a
XPET 0502AP-SD	0,04
XPET 0602AP-SD	0,05
XPET 0703AP-SD	0,08
XPET 0903AP-SD	0,10
XPET 11T3AP-SD	0,10
XPET 12T3AP-SD	0,10
XPET 1504AP-SD	0,10
XPET 1904AP-SD	0,12



P	M	K	N	S	H
■	■	▣	■	▣	■
f → See diagram					
XPET ....AP-SD					



DRILING GRADES



D	Drilling
M	Milling
T	Turning
G	Grooving and Parting off

0 PVD 1 CVD	Special application
2 PVD 3 CVD	Free
4 PVD 5 CVD	Group K, H
6 PVD 7 CVD	Group M, S
8 PVD 9 CVD	Universal
B	CBN
C	Ceramic
D	PCD
T	Cermet

1 - 9

01 - 50	
	01 - 05
	05 - 10
	10 - 20
	20 - 30
	30 - 40
	40 - 50



DRILLING GRADES

Grade Identification	Area of Application	Application	Feed	Cutting speed	Resistance to adverse Working Conditions	Coating	Colour	Substrate	Coolant benefit	Grade description
D9335	P20 - P35	■				MT-CVD	■	FGM	+++	This grade is recommended for the peripheral insert in indexable drills, it is more suited to higher cutting speeds and feeds.
	M15 - M30	■								
	K15 - K35	■								
	S10 - S20	▣								
D8330	P20 - P35	■				PVD	■	submicron H	+++	This is a universal grade for the peripheral insert in indexable drills, it can be used for most materials and stands out for its operational reliability.
	M15 - M30	■								
	K15 - K35	■								
	S10 - S20	▣								
D8345	P30 - P50	■				PVD	■	submicron H	+++	This grade is a universal grade for the central insert in indexable drills, it is an extremely tough suited to most materials.
	M20 - M40	■								
	K30 - K40	■								
	S20 - S30	▣								

Substrate	
submicron H	WC-Co based substrate fine grained (< 1 μm)
FGM	Functionally graded substrate

Coating	
MT-CVD	Medium-temperature chemical method of coating
PVD	Low-temperature physical method of coating

Benefits of cutting fluid	
+++	Use of coolant is essential



INDEXABLE DRILLS – RECOMMENDED CUTTING CONDITIONS

802D, 803D (XPET..AP, SCET..-UD)



	D9335	D8330	D8345	∅ 15	∅ 20	∅ 25	∅ 30	∅ 40	∅ 58
P1	■	■	■	0.07	0.08	0.09	0.10	0.12	0.16
P2	■	■	■	0.11	0.13	0.15	0.17	0.21	0.28
P3	■	■	■	0.13	0.15	0.18	0.20	0.24	0.32
P4	■	■	■	0.12	0.14	0.16	0.18	0.22	0.30
K1	■	■	■	0.14	0.16	0.19	0.21	0.26	0.34
K2	■	■	■	0.14	0.16	0.19	0.21	0.26	0.34
K3	■	■	■	0.14	0.16	0.19	0.21	0.26	0.34
K4	■	■	■	0.14	0.16	0.19	0.21	0.26	0.34
K5	■	■	■	0.14	0.16	0.19	0.21	0.26	0.34

802D, 803D (XPET..AP-SD, SCET..-SD)



	D9335	D8330	D8345	∅ 15	∅ 20	∅ 25	∅ 30	∅ 40	∅ 58
P1	■	■	■	0.08	0.09	0.10	0.11	0.14	0.18
P2	■	■	■	0.11	0.13	0.15	0.17	0.21	0.28
P3	■	■	■	0.13	0.15	0.18	0.20	0.24	0.32
P4	■	■	■	–	–	–	–	–	–
K1	▣	▣	▣	0.08	0.09	0.10	0.11	0.14	0.18
K2	▣	▣	▣	0.11	0.13	0.15	0.17	0.21	0.28
K3	▣	▣	▣	0.12	0.14	0.16	0.18	0.22	0.24
K4	▣	▣	▣	0.13	0.15	0.18	0.20	0.24	0.32
K5	▣	▣	▣	0.14	0.16	0.19	0.21	0.25	0.33
M1	■	■	■	0.12	0.14	0.16	0.18	0.22	0.30
M2	■	■	■	0.11	0.13	0.15	0.17	0.21	0.28
M3	■	■	■	0.07	0.08	0.09	0.10	0.12	0.16
M4	■	■	■	0.07	0.08	0.09	0.10	0.12	0.16
S1	▣	▣	▣	0.08	0.09	0.10	0.11	0.14	0.18
S2	▣	▣	▣	0.08	0.09	0.10	0.11	0.14	0.18
S3	▣	▣	▣	0.07	0.08	0.09	0.10	0.12	0.16
S4	▣	▣	▣	0.07	0.08	0.09	0.10	0.12	0.16

804D (XPET..AP, SCET..-UD)



	D9335	D8330	D8345	∅ 15	∅ 20	∅ 25	∅ 30	∅ 40	∅ 58
P1	■	■	■	0.06	0.07	0.08	0.09	0.10	0.14
P2	■	■	■	0.10	0.12	0.14	0.16	0.19	0.25
P3	■	■	■	0.12	0.14	0.16	0.18	0.22	0.30
P4	■	■	■	0.11	0.13	0.15	0.17	0.21	0.28
K1	■	■	■	0.13	0.15	0.18	0.20	0.24	0.32
K2	■	■	■	0.13	0.15	0.18	0.20	0.24	0.32
K3	■	■	■	0.13	0.15	0.18	0.20	0.24	0.32
K4	■	■	■	0.13	0.15	0.18	0.20	0.24	0.32
K5	■	■	■	0.13	0.15	0.18	0.20	0.24	0.32



INDEXABLE DRILLS – RECOMMENDED CUTTING CONDITIONS

804D (XPET..AP-SD, SCET..-SD)



	D9335	D8330	D8345	ø 15	ø 20	ø 25	ø 30	ø 40	ø 58
P1	■	■	■	0.07	0.08	0.09	0.10	0.12	0.16
P2	■	■	■	0.10	0.12	0.14	0.16	0.19	0.25
P3	■	■	■	0.12	0.14	0.16	0.18	0.22	0.30
P4	■	■	■	–	–	–	–	–	–
K1	▣	▣	▣	0.07	0.08	0.09	0.10	0.12	0.16
K2	▣	▣	▣	0.10	0.12	0.14	0.16	0.19	0.25
K3	▣	▣	▣	0.11	0.13	0.15	0.17	0.20	0.27
K4	▣	▣	▣	0.12	0.14	0.16	0.18	0.22	0.30
K5	▣	▣	▣	0.14	0.16	0.19	0.21	0.25	0.33
M1	■	■	■	0.11	0.13	0.15	0.17	0.21	0.28
M2	■	■	■	0.10	0.12	0.14	0.16	0.19	0.25
M3	■	■	■	0.06	0.07	0.08	0.09	0.10	0.14
M4	■	■	■	0.06	0.07	0.08	0.09	0.10	0.14
S1	▣	▣	▣	0.07	0.08	0.09	0.10	0.12	0.16
S2	▣	▣	▣	0.07	0.08	0.09	0.10	0.12	0.16
S3	▣	▣	▣	0.06	0.07	0.08	0.09	0.10	0.14
S4	▣	▣	▣	0.06	0.07	0.08	0.09	0.10	0.14

805D (XPET..AP, SCET..-UD)



	D9335	D8330	D8345	ø 15	ø 20	ø 25	ø 30	ø 40	ø 58
P1	■	■	■	0.06	0.07	0.08	0.09	0.10	0.14
P2	■	■	■	0.10	0.12	0.14	0.16	0.19	0.25
P3	■	■	■	0.12	0.14	0.16	0.18	0.22	0.30
P4	■	■	■	0.11	0.13	0.15	0.17	0.21	0.28
K1	■	■	■	0.13	0.15	0.18	0.20	0.24	0.32
K2	■	■	■	0.13	0.15	0.18	0.20	0.24	0.32
K3	■	■	■	0.13	0.15	0.18	0.20	0.24	0.32
K4	■	■	■	0.13	0.15	0.18	0.20	0.24	0.32
K5	■	■	■	0.13	0.15	0.18	0.20	0.24	0.32

805D (XPET..AP-SD, SCET..-SD)



	D9335	D8330	D8345	ø 15	ø 20	ø 25	ø 30	ø 40	ø 58
P1	■	■	■	0.07	0.08	0.09	0.10	0.12	0.16
P2	■	■	■	0.10	0.12	0.14	0.16	0.19	0.25
P3	■	■	■	0.12	0.14	0.16	0.18	0.22	0.30
P4	■	■	■	–	–	–	–	–	–
K1	▣	▣	▣	0.07	0.08	0.09	0.10	0.12	0.16
K2	▣	▣	▣	0.10	0.12	0.14	0.16	0.19	0.25
K3	▣	▣	▣	0.11	0.13	0.15	0.17	0.20	0.27
K4	▣	▣	▣	0.12	0.14	0.16	0.18	0.22	0.30
K5	▣	▣	▣	0.12	0.14	0.16	0.18	0.22	0.30
M1	■	■	■	0.11	0.13	0.15	0.17	0.21	0.28
M2	■	■	■	0.10	0.12	0.14	0.16	0.19	0.25
M3	■	■	■	0.06	0.07	0.08	0.09	0.10	0.14
M4	■	■	■	0.06	0.07	0.08	0.09	0.10	0.14
S1	▣	▣	▣	0.07	0.08	0.09	0.10	0.12	0.16
S2	▣	▣	▣	0.07	0.08	0.09	0.10	0.12	0.16
S3	▣	▣	▣	0.06	0.07	0.08	0.09	0.10	0.14
S4	▣	▣	▣	0.06	0.07	0.08	0.09	0.10	0.14



FORMULA FOR CALCULATION OF CUTTING PARAMETERS

Nomenclature and formula

Parameter	Formula	Unit
RPM	$n = \frac{v_c \cdot 1000}{DC \cdot \pi}$	(rev/min)
Cutting speed	$v_c = \frac{\pi \cdot DC \cdot n}{1000}$	(m/min)
Table feed	$v_f = n \cdot f$	(mm/min)
Cross section area of the hole	$A = \frac{\pi \cdot DC^2}{4}$	(mm ²)
Metal removal rate	$Q = \frac{v_f \cdot A}{1000}$	(cm ³ /min)
Machining time	$T_c = \frac{L + h}{v_f}$	(min/pcs)








DC Diameter of drill
f Feed per revolution

(mm)
(mm/rev)

h Distance from drill point
to workpiece before feeding
L Depth of hole

(mm)
(mm)

RECOMMENDED TIGHTENING TORQUES FOR SCREWS

	 Nm					
US 2245-T07P	0.9	FLAG T07P	M 2.2	5.3	D-T7P	MR-0.8-2.0 vario
US 2205-T07P	0.9	FLAG T07P	M2.2	5.4	D-T7P	MR-0.8-2.0 vario
US 2506-T07P	1.2	FLAG T07P	M 2.5	6	D-T7P	MR-0.8-2.0 vario
US 2507-T08P	1.2	FLAG T08P	M 2.5	7	D-T8P	MR-0.8-2.0 vario
US 3007-T08P	2.0	FLAG T08P	M 3	7	D-T8P	MR-1.0-5.0 vario
US 3007-T09P	2.0	FLAG T09P	M 3	7.4	D-T9P	MR-1.0-5.0 vario
US 3009-T09P	2.0	FLAG T09P	M 3	8.7	D-T9P	MR-1.0-5.0 vario
US 3508-T15P	3.0	FLAG T15P	M 3.5	8.3	D-T15P	MR-1.0-5.0 vario
US 3510-T15P	3.0	FLAG T15P	M 3.5	10.6	D-T15P	MR-1.0-5.0 vario
US 4011-T15P	3.5	FLAG T15P	M 4	10.7	D-T15P	MR-1.0-5.0 vario
US 5012-T15P	5.0	FLAG T15P	M 5	12.2	D-T15P	MR-1.0-5.0 vario



MACHINING DATA FOR INDEXABLE DRILLS

Radial adjustment

Hole diameter adjustment and set-up recommendation

Radial adjustment is possible with indexable drills to achieve a smaller or larger hole diameter than the actual drill.

Radial adjustment values are available in the main drill data tables.

Rotating tool

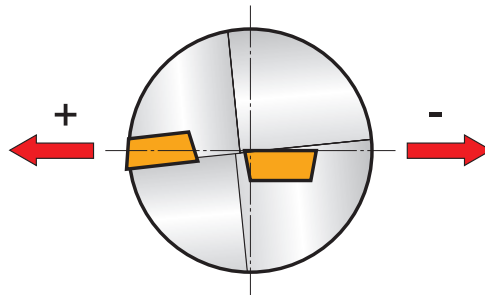
For drilling holes with accuracy IT10 and higher, adjustable holders are

recommended when using 802D, 803D, 804D and 805D drills.

Stationary tool

When mounting the drill make sure the drill center line and workpiece center are aligned. To achieve a larger hole diameter displace the drill so that the peripheral

insert moves in a + away from the workpiece center line (see diagram below).



Tool life

Inserts should be changed when flank wear measures 0.2 – 0.4 mm at the largest point.

Cutting data recommendations in this catalog are aimed at achieving tool life of 7 metres drilling depth on the peripheral insert. (20 – 30 mins contact).

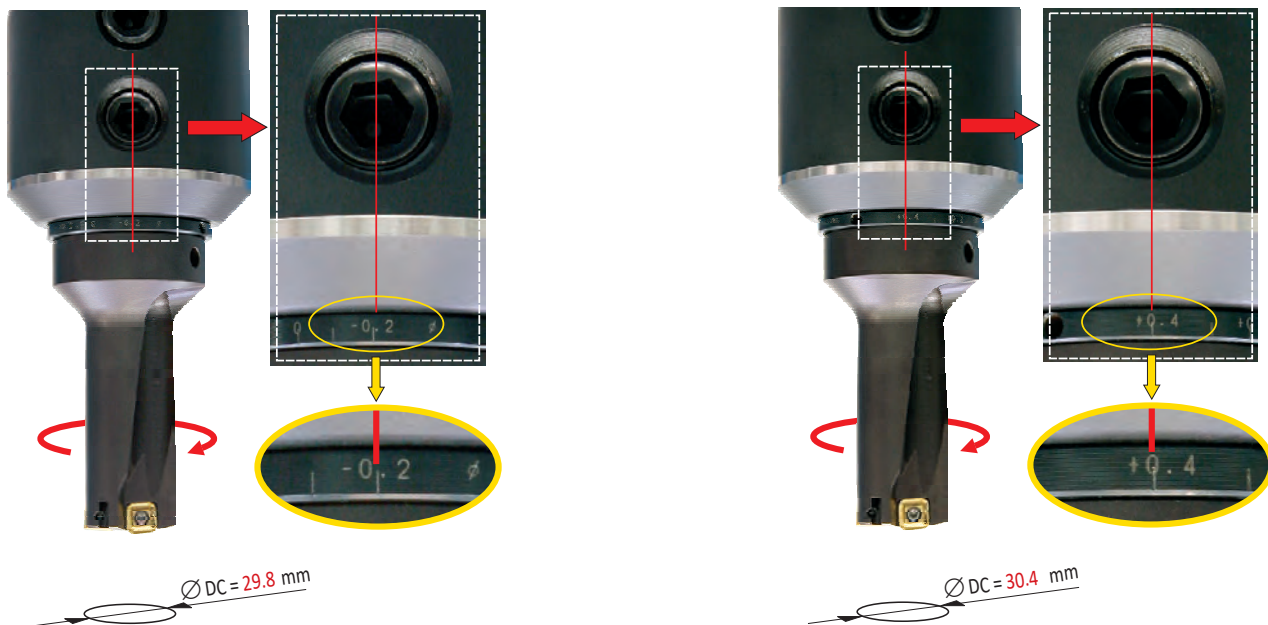
EP

ADJUSTABLE SLEEVE

Shank diameter	Drill diameter	Range
25	15 – 24	+0.4 – -0.2
32	24.5 – 40	+0.4 – -0.2

For Milling Machines

Diameter adjustment range





EP

ADJUSTABLE SLEEVE

Shank diameter	Drill diameter	Range
25	15 – 24	+0.2 – -0.15
32	24.5 – 40	+0.2 – -0.15

Center height adjustment
– for lathe operation

Center height adjustment range



MACHINING DATA FOR INDEXABLE DRILLS

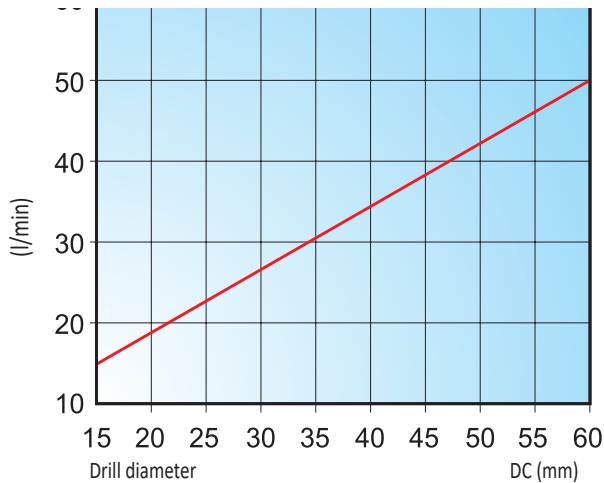
Recommended pressure of supplied cutting fluid

Drill diameter DC (mm)	Pressure of cutting fluid	
	Drill length	
	2.0 – 2.5 DC	3.0 – 5.0 DC
15 – 25	6 bar	12 bar
26 – 40	4.5 bar	9 bar
> 40	3 bar	6 bar

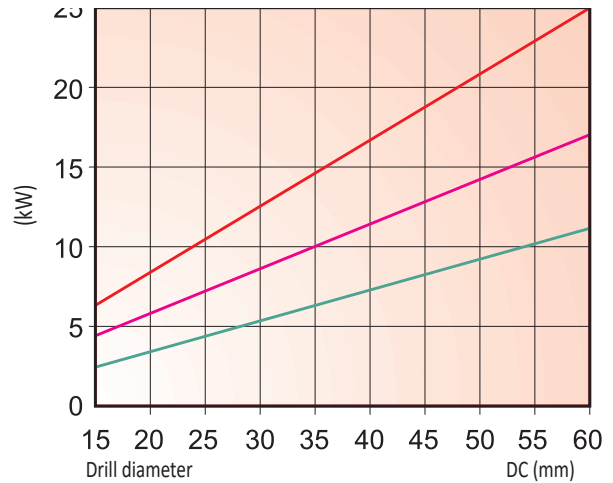
Coolant volume requirement

DRY DRILLING

Pressurised air through the drill is recommended when drilling without coolant in cast iron and steel



Net power consumption





COMMON MACHINING DATA

	BLIND HOLE DRILLING For drilling holes deeper than $1 \times DC$ internal cooling is necessary.
	THROUGH HOLE DRILLING A disc can be produced when the indexable drill exits the material. This disc can be ejected at high speed when the workpiece is rotating. It is essential that the machine is adequately guarded to ensure operator safety
	OFF-CENTER DRILLING Decrease the feed to lower recommended values for particular inserts. See inserts description pages for indexable drills. Do not exceed radial adjustment values.
	STARTING ON UNEVEN AND CAST SURFACES Decrease the feed by 50% on entrance for indexable drills until both inserts are engaged.
	BORING AND DRILLING INTO PILOT HOLES If a pre-drilled hole is larger than $1/4$ drill diameter, decrease the feed.
	DRILLING CROSS HOLES Decrease the feed by 50% when drilling across an existing hole. The diameter of existing hole should not be larger than $0.25 \times DC$.
	INTERRUPTED CUT AND PLUNGING Decrease the feed to lower recommended feed values for particular insert. See inserts description site for indexable drills.
	DRILLING ON CURVED SURFACE Drilling on the center line can be done with reduced feed rate down to 50% during entrance and exit.
	DRILLING ON ANGLED SURFACES Decrease the feed by 50% on entrance for indexable drills until both inserts are engaged if the angle of entry is more than 5° .
	EXIT ON ANGLED SURFACE Decrease the feed by 50% on exit if angle of exit is more than 5° .
	STARTING ON A WELDED SEAM Facing is recommended before drilling. Decrease the feed by 50% during drilling of the welded material.
	DRILLING OF STACKED MATERIALS Avoid spaces larger than 0.2 mm between layers. The component must be securely fixed. If necessary reduce the feed.



TROUBLESHOOTING FOR INDEXABLE DRILLS

LOW PERFORMANCE OF DRIVING MOTOR (LOW SPINDLE POWER)	<ul style="list-style-type: none">a) reduce cutting speed = reduction of spindle RPMb) reduce feed rate
EXCESSIVE WEAR OF PERIPHERAL INSERT	<ul style="list-style-type: none">a) reduce cutting speed = reduction of spindle RPMb) choose a more wear resistant gradec) increase coolant volume and pressure
CHIPPING OF PERIPHERAL INSERT	<ul style="list-style-type: none">a) reduce feed rate until peripheral insert is fully engagedb) choose a tougher insert gradec) reduce cutting speed
CHIPPING OF CENTER INSERT	<ul style="list-style-type: none">a) reduce feed rate during entryb) check the drill and workpiece clamping
CONTINUOUS, BADLY FORMED CHIP	<ul style="list-style-type: none">a) adjust feed rateb) increase cutting speed and simultaneously reduce feed rate
CHIP CONGESTION IN THE FLUTES	<ul style="list-style-type: none">a) increase coolant volume and pressureb) reduce cutting speedc) adjust feed rate



RECOMMENDED DRILL SIZES FOR TAPPING

Metric ISO threads		Recommended drill diameter for	
Thread	Pitch	Cutting tap	Fluteless tap
M16 × 1.0	1.00	15.0	15.5
M16 × 0.75	0.75	15.3	–
M17 × 1.0	1.00	16.0	–
M18	2.50	15.5	16.8
M18 × 2.0	2.00	16.0	–
M18 × 1.5	1.50	16.5	17.3
M18 × 1.0	1.00	17.0	–
M20	2.50	17.5	18.8
M20 × 2.0	2.00	18.0	–
M20 × 1.5	1.50	18.5	19.3
M20 × 1.0	1.00	19.0	–
M22	2.50	19.5	20.8
M22 × 2.0	2.00	20.0	–
M22 × 1.5	1.50	20.5	21.3
M22 × 1.0	1.00	21.0	–
M24	3.00	21.0	22.5
M24 × 2.0	2.00	22.0	–
M24 × 1.5	1.50	22.5	23.3
M27	3.00	24.0	–
M27 × 2.0	2.00	25.0	–
M30	3.50	26.5	–
M30 × 2.0	2.00	28.0	–
M33	3.50	29.5	–
M36	4.00	32.0	–
M36 × 3.0	3.00	33.0	–
M39	4.00	35.0	–
M42	4.50	37.5	–
M42 × 3.0	3.00	39.0	–
M45	4.50	40.5	–
M48	5.00	43.0	–
M48 × 3.0	3.00	45.0	–
M52	5.00	47.0	–
M52 × 3.0	3.00	48.0	–

Inch threads UNF		Recommended drill diameter for	
Thread	Pitch	Cutting tap	Fluteless tap
3/4"	16	17.5	18.3
7/8"	14	20.5	21.3
1"	12	23.4	24.3
1 1/8"	12	26.5	–
1 1/4"	12	29.8	–
1 3/8"	12	33.0	–
1 1/2"	12	36.0	–

Inch threads UNC		Recommended drill diameter for	
Thread	Pitch	Cutting tap	Fluteless tap
3/4"	10	16.7	17.8
7/8"	9	19.5	20.8
1"	8	22.2	23.8
1 1/8"	7	25.0	–
1 1/4"	7	28.2	–
1 3/8"	6	31.0	–
1 1/2"	6	34.0	–
1 3/4"	5	39.5	–
2"	4 1/2	45.2	–
2 1/4"	4 1/2	51.6	–
2 1/2"	4	57.2	–

Whitworth pipe threads		Recommended drill diameter for	
Thread	Pitch	Cutting tap	Fluteless tap
G 3/8"	19	15.3	16.0
G 1/2"	14	19.0	20.0
G 5/8"	14	21.0	22.0
G 3/4"	14	24.5	25.5
G 7/8"	14	28.3	29.3
G 1"	11	30.8	32.0
G 1 1/8"	11	35.5	–
G 1 1/4"	11	39.5	–
G 1 3/8"	11	41.8	–
G 1 1/2"	11	45.3	–
G 1 3/4"	11	51.0	–
G 2"	11	57.0	–

SIMPLY RELIABLE

As a professional you can judge the quality of work by just looking at the chip. Our chip is a clean and uncomplicated shape that in itself tells a story. It is a clear and consistent signal and that's why we use it as a symbol for being **Simply Reliable**.

DORMER PRAMET

Austria

T: +31 10 2080 240
info.at@dormerpramet.com

Belgium & Luxembourg

T: +32 3 440 59 01
info.be@dormerpramet.com

Brazil

T: +55 11 5660 3000
info.br@dormerpramet.com

Canada

T: (888) 336 7637
En Français: (888) 368 8457
cs.canada@dormerpramet.com

China

T: +86 21 2416 0508
info.cn@dormerpramet.com

Croatia

T: +385 98 407 489
info.hr@dormerpramet.com

Czech Republic

T: +420 583 381 111
info.cz@dormerpramet.com

Denmark

T: 808 82106
info.se@dormerpramet.com

Finland

T: 0205 44 7003
info.fi@dormerpramet.com

France

T: +33 (0)2 47 62 57 01
info.fr@dormerpramet.com

Germany

T: +49 9131 933 08 70
info.de@dormerpramet.com

Hungary

T: +36-96 / 522-846
info.hu@dormerpramet.com

India

T: +91 11 4601 5686
info.in@dormerpramet.com

Italy

T: +39 02 30 70 54 44
info.it@dormerpramet.com

Kazakhstan

T: +7 771 305 11 45
info.kz@dormerpramet.com

Mexico

T: +52 (555) 7293981
cs.mexico@dormerpramet.com

Netherlands

T: +31 10 2080 240
info.nl@dormerpramet.com

Norway

T: 800 10 113
info.se@dormerpramet.com

Poland

T: +48 32 78-15-890
info.pl@dormerpramet.com

Portugal

T: +351 21 424 54 21
info.pt@dormerpramet.com

Romania

T: +4(0)730 015 885
info.ro@dormerpramet.com

Russia

T: +7 (495) 775 10 28
info.ru@dormerpramet.com

Slovakia

T: +421 (41) 764 54 60
info.sk@dormerpramet.com

Slovenia

T: +385 98 407 489
info.si@dormerpramet.com

Spain

T: +34 935717722
info.es@dormerpramet.com

Sweden

responsible for Iceland
T: +46 35 16 52 96
info.se@dormerpramet.com

Switzerland

T: +31 10 2080 240
info.ch@dormerpramet.com

Turkey

T: +90 533 212 45 47
info.tr@dormerpramet.com

Ukraine

T: +38 067 566 38 80
T: +38 067 566 81 51
info.ua@dormerpramet.com

United Kingdom

responsible for Ireland
T: 0870 850 4466
info.uk@dormerpramet.com

United States of America

T: (800) 877-3745
cs@dormerpramet.com

Other countries

South America

T: +55 11 5660 3000
info.br@dormerpramet.com

Adria

T: +420 583 381 527
info.rcee@dormerpramet.com

Rest of the World

Dormer Pramet International UK
T: +44 1246 571338
info.int@dormerpramet.com

Dormer Pramet International CZ

T: +420 583 381 520
info.int.cz@dormerpramet.com

DP-CAT-HOLEMAKING-2023-EN

FOLLOW US...



www.dormerpramet.com



youtube.com/dormerpramet



facebook.com/dormerprametsocial



linkedin.com/company/dormerpramet



instagram.com/dormerprametsocial



twitter.com/dormerpramet