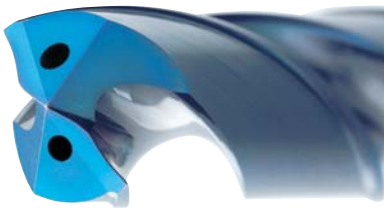
DRILLS

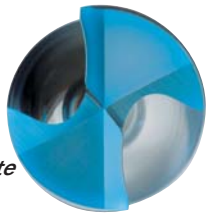
Features

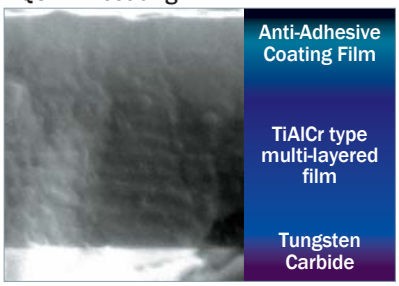
- Designed for consistent high performance drilling in stainless steels to high temperature alloys.
- Unique J-shape flute design helps to generate easy chip break up.
- Smooth flute polishing facilitates fluid chip evacuation.
- Deep pockets ensure minimal chip packing.

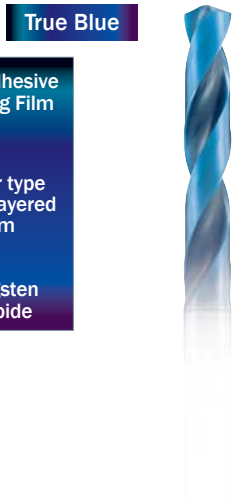


Aqua EX Drill Series Coating

- Aqua EX coating is designed for superior performance in both dry and wet conditions.
- EX = Exotic materials, extreme conditions.
- Engineered to withstand heavy wear and maintain consistent performance.



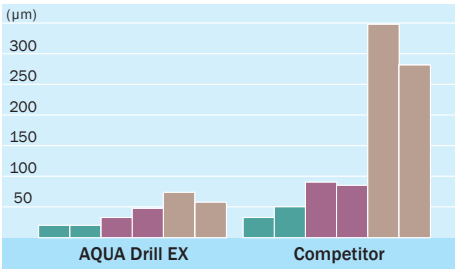




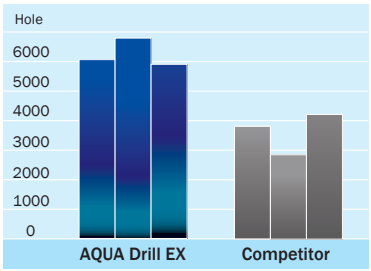
Long Tool Life

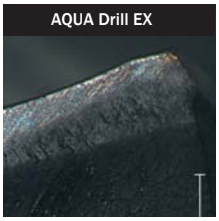
Cutting resistance is low

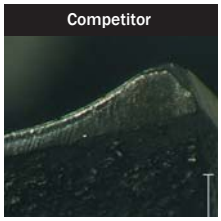
Durability comparison



Durability comparison
(Service Life)







Cutting Conditions		
Tool	:	AQDEXR6.0 (L9602)
Speed	:	100m/min (RPM=5300)
Feed	:	0.18mm/rev (960mm/min)
Feed	:	0.007 IPR / 21.0 IPM
Work Material	:	S50C (Carbon Steel)
Cutting Fluid	:	Water Soluble

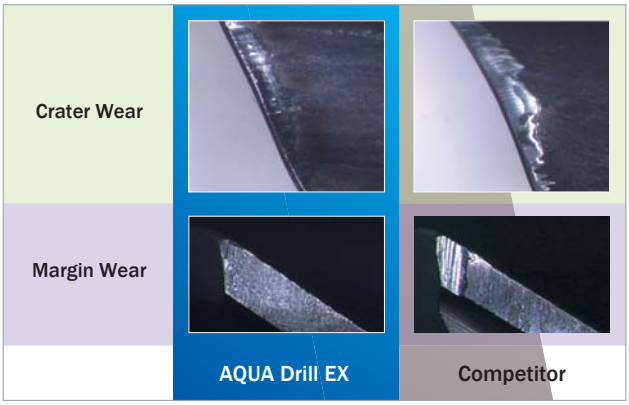
Fine Chips with AQUA DRILL EX

Tool Life Features

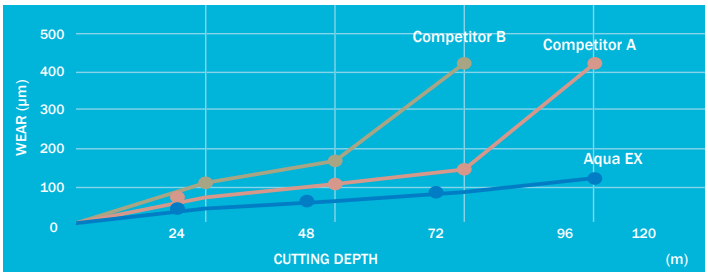
Delicate Cut

Tough Heart

Comparison of wear after 625 Holes in 304 SS



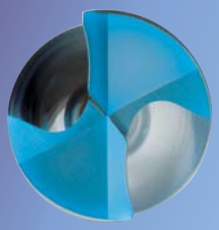
Comparison of wear on 304 SS



Cutting conditions		
Tool : Ø9.0 5D	Feed : 640mm/min (IPR = 0.008 / IPM = 25)	Work Material : 304 Stainless
Speed : 90m/min (RPM = 3,200)	Depth : 40mm (1.57")	Cutting Fluid : Water Soluble

NEW AQUA DRILL EX DESIGN V/S AQUA DRILL

AQUA Drill EX (New Design)



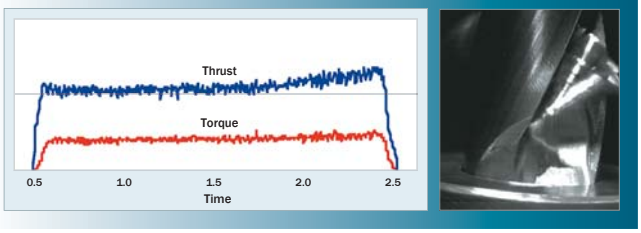
- Engineered to handle the full range of applications.
- Aqua EX coating stands up to the highest temperatures.
- Optimal design for hard materials like Nickel / Titanium alloys.
- From start to finish designed with optimum chip evacuation in mind.

AQUA Drill (Old Design)

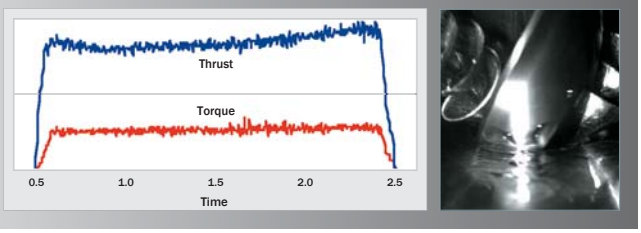
- Special cutting edge shape has superior wear resistance.
- High web thickness to increase tool rigidity
- Innovative AQUA coating was the first of it's kind.
- Not suitable for Stainless Steel

TORQUE / THRUST COMPARISON

AQUA Drill EX



Competitor



Consistent Thrust & Torque with Aqua Drill EX

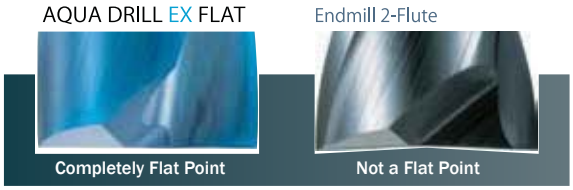
Features

- One drill does it all - eliminates the need to use a “center drill” or “end mill” on inclined or curved surfaces.
- True 180° flat cutting edges create minimal exit burr in tubing and thin plates
- Ideally suited for flat bottom applications in the Oil, Gas, Automotive and General Industries.
- “Double Margin” for stable and precision drilling.

New Features on 3D/5D/Extd.Length:
1) Double Margin
2) Corner Chamfer
• Added Stability & Tool Life

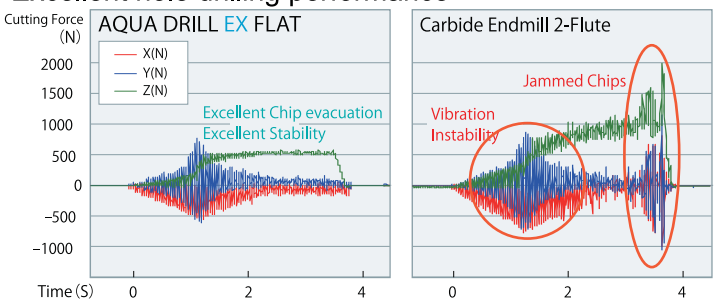
180° True Flat Face

One cut to produce accurate counter bore surface



Drilling Performance of Aqua Drill EX Flat

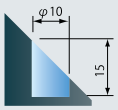
Excellent hole drilling performance



AQDEXZ 10.0 TEST DATA

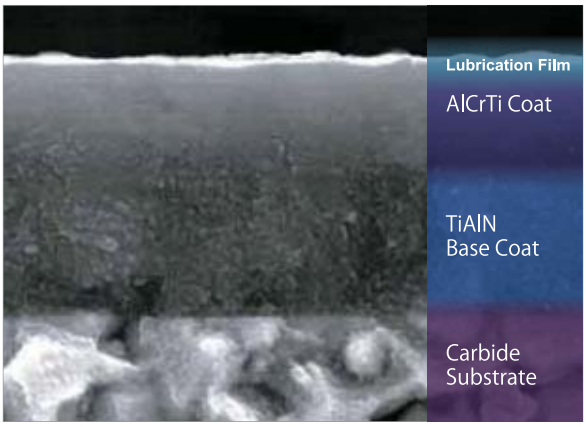
Cutting conditions

Tool:	AQDEXZ 10.0
(SFM)RPM:	(250)2400
(IPR)IPM:	(.002)6.0
Material:	Carbon Steel
Coolant:	Water Soluble

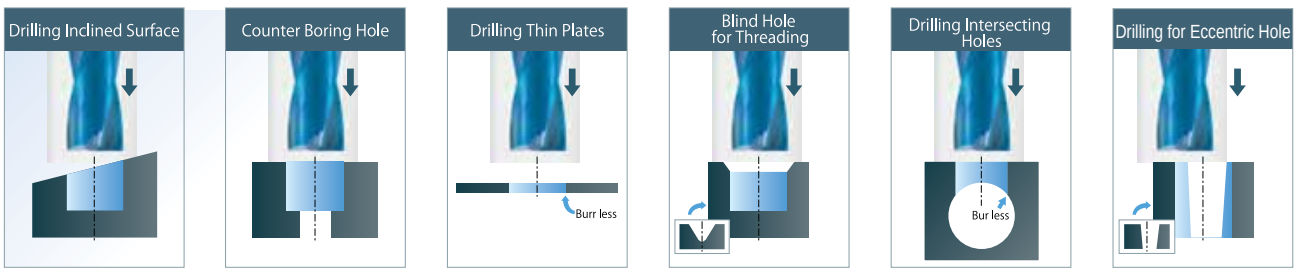


Aqua EX Coating

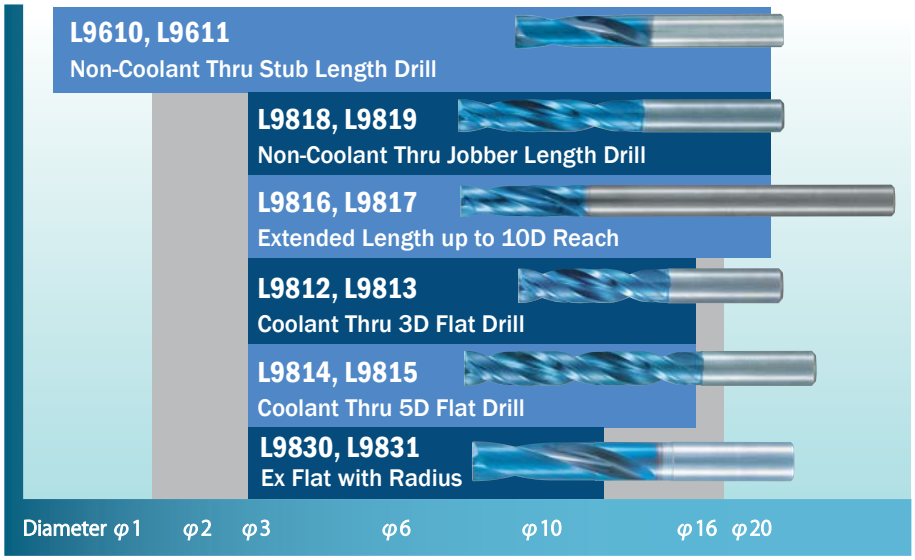
Improved Heat & Wear Resistance



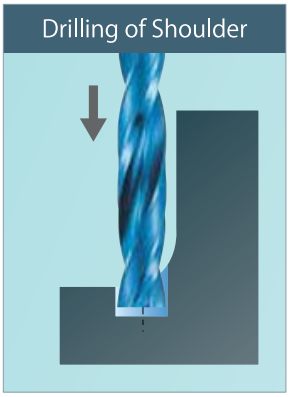
One Step Drilling with Minimal Burr

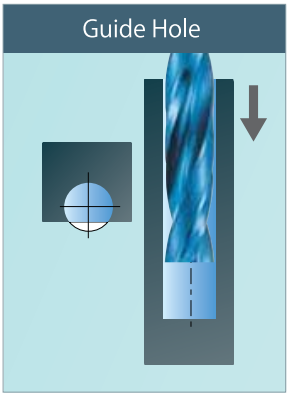


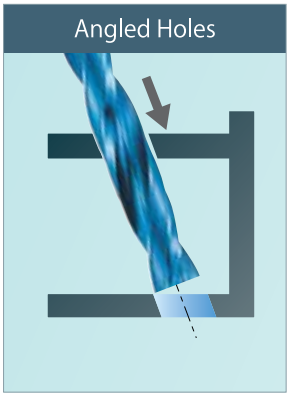
SS400 Wear after 105m (4100")

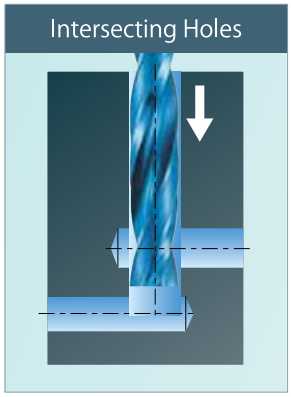


List No.	Diameter Metric	Diameter Fractional
L9610 L9611	0.2 - 20.0	1/8 - 3/4
L9818 L9819	3.0 - 20.0	1/8 - 3/4
L9816 L9817	3.0 - 20.0	1/8 - 3/4
L9812 L9813	3.0 - 16.0	1/8 - 3/4
L9814 L9815	3.0 - 16.0	1/8 - 5/8
L9830 L9831	3.0 - 12.0	1/8 - 3/4









Applicable Work Materials

Work Material	Applicable work materials											
	Structural Steels	Carbon Steels	Pre-Hardened Steels Alloy Steels	Hardened Steels Mold Steels	Hardened Steels		Stainless Steels		Titanium Alloys Nickel Alloys	Cast Irons	Aluminum Alloys	Copper Alloys
	SS400	S45C	SCM/NAK	30~40HRC	40~50HRC	50~60HRC	SUS304/SUS316	SUS420		FC/FCD	AC/ADC	CU
AQDEXZ AQDEXZR AQDEXZLS	◎	◎	◎	◎	○			◎		◎	○	○
AQDEXZOH3D AQDEXZOH5D	◎	◎	◎	◎	○		○	◎	○	◎	◎	◎

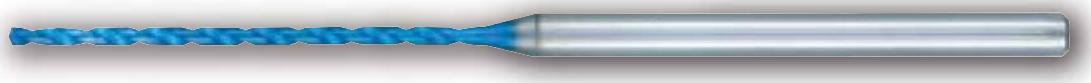
◎ = Great ○ = Good

Features

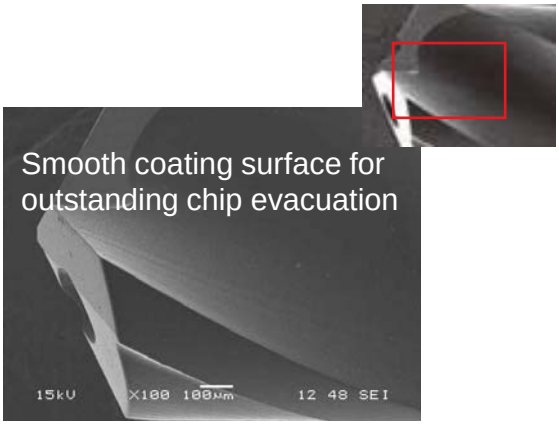
- Oil-Hole Drills for high efficiency drilling of small diameter deep holes
- Stable drilling of small diameter holes with new cutting edge geometry and large oil holes for efficient chip evacuation
- Suitable for wide work materials like Carbon Steels, Alloy Steels and Stainless Steels
- Multi-layered Aqua Ex Coating (TiALN+TiAlCr) plus anti-adhesive coating film for added lubrication

Performance

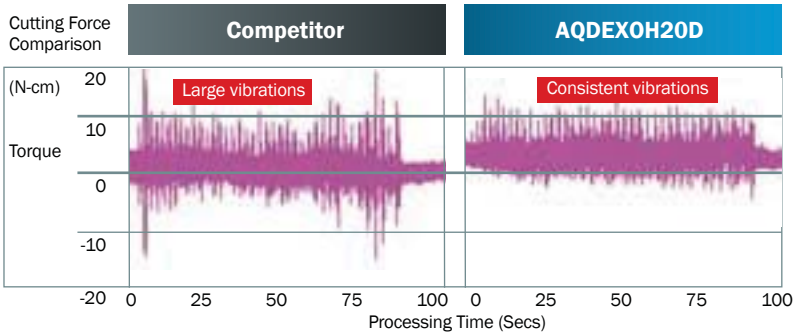
- New Oil Hole Design delivers coolant directly to the cutting edges
- New Cutting -Edge geometry breaks chips effectively
- Extremely smooth Aqua EX coating evacuates chips smoothly



Smooth Drill Flute Surface



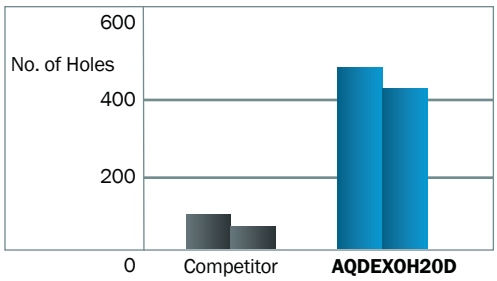
Stable Drilling of Deep Holes

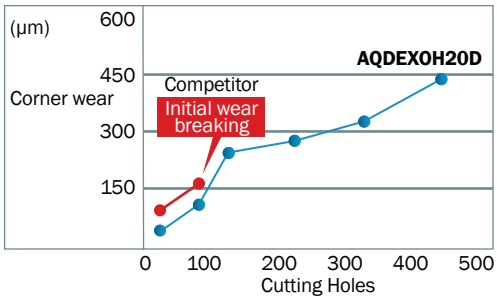


Cutting Conditions

Tool Ø	Ø1.8	Coolant Type	Water Soluble - Coolant Thru
Cutting Speed	150 SFM (45m/min)	Hole Depth	38.1 mm (1.5") (20D) Blind Hole
Feed	0.003 IPR (310mm/min)	Step Feed Interval	0.17" (0.45 mm) / 0.25D
Work Material	Carbon Steel (S50C)	Guide Hole	AQDEXOHPLT01815 for 1.8 mm hole

Long Tool Life





Cutting Conditions

Tool Ø	Ø2.0
Cutting Speed	150 SFM (45m/min)
Feed/Speed	0.003 IPR (310mm/min)
Hole Depth	38.1 mm (1.5") (20D) Blind Hole
Step Feed Interval	0.17" (0.45 mm) / 0.25D
Coolant Type	Water Soluble - Coolant Thru
Guide Hole	AQDEXOHPLT02015 for 2.0 mm hole

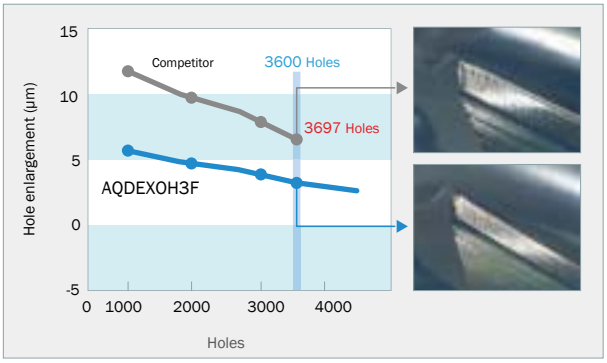
NEW

Features

- High Precision drilling as deep as 5xD of drill.
- High accuracy achieved at high feed rate with optimized cutting edge form and superior drilling balance of 3-flutes.
- Multi-layered Aqua EX Coating (TiAlN + TiAlCr)
- Anti-adhesive coating film for added lubrication

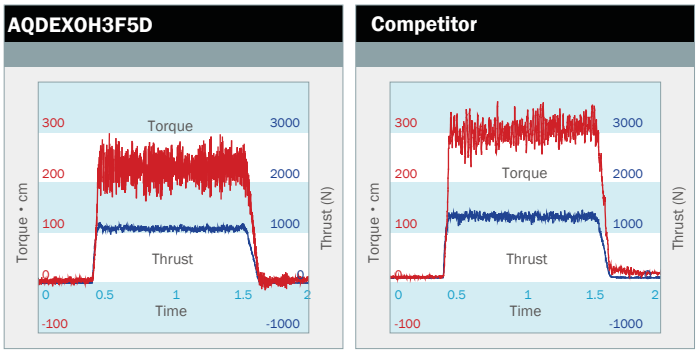
Performance

Hole enlargement



Comparison of cutting force

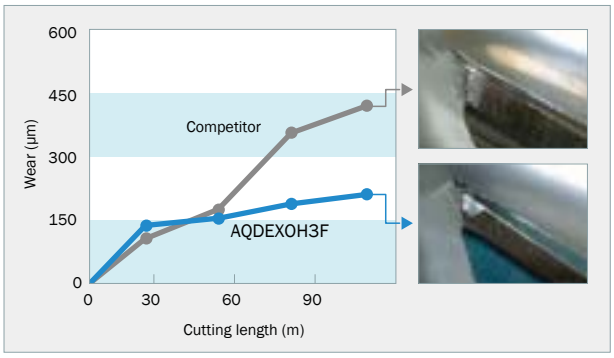
Cutting force is small, and controls amount of oversize.



Cutting condition

Tools Ø	Ø6	Carbon Steel (S50C)	Work Material
Speed	400 SFM (120m/min)	Water Soluble	Type of Coolant
Feed	59 IPM 1500mm/min (0.24mm/rev)	30mm - 1.2" (5D)	Depth/Blind Hole

SS400 Wear after 105m (4100")



Cutting condition

Tools Ø	Ø6	400 Stainless (SS400)	Work Material
Speed	328 SFM (100m/min)	Water Soluble	Type of Coolant
Feed	50 IPM 1280mm/min (0.24mm/rev)	30mm - 1.2" (5D)	Depth/Blind Hole

SUS304 Wear after 60m (2360")

Cutting condition

Tools Ø	Ø6	304 Stainless (SUS304)	Work Material
Speed	164 SFM (50m/min)	Water Soluble	Type of Coolant
Feed	18 IPM 480mm/min (0.18mm/rev)	30mm - 1.2" (5D)	Depth/Blind Hole

Applicable work materials

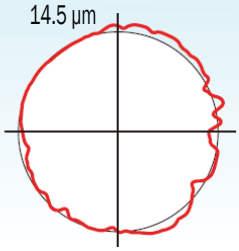
Structural Steels	Carbon Steels	Pre-Hardened Steels Alloy Steels	Hardened Steels Mold Steels	Hardened Steels		Stainless Steels		Titanium Alloys Nickel Alloys	Cast Irons	Aluminum Alloys	Copper Alloys
SS400	S45C/S50C	SCR/NAK	30~40HRC	40~50HRC	50~65HRC	SUS304/SUS316	SUS420		FCD/FC	AC/ADC	Cu
○	○	○	○	○	X	●	●	X	●	●	●

○ Great ● Good X Not Suitable

Performance

2-Flute Drill

Cutting Speed	150 SFM (45m/min)
Feed Speed	0.010 IPR - 12 IPM (300mm/min)
Roundness	14.5 µm



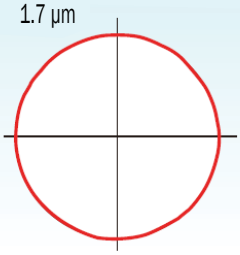
Cutting Conditions

Tool Diameter	Ø 12 mm
Hole Depth/Blind Hole	36 mm (1.4")
Work Material	SUS304
Cutting Fluid	Water Soluble

Superior Hole Finish

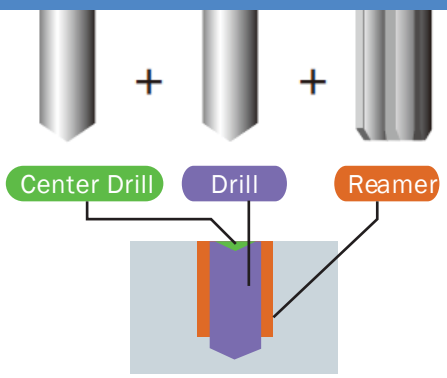
AQDEXOH3F

Cutting Speed	170 SFM (50m/min)
Feed Speed	0.017 IPR - 22 IPM (570mm/min)
Roundness	1.7 µm

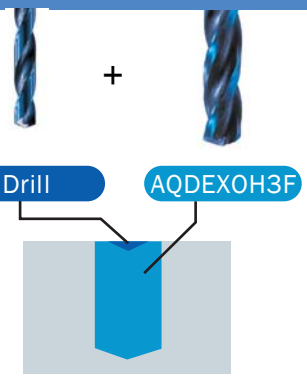


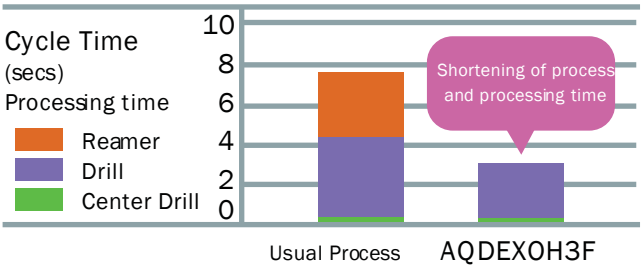
Streamline Process & Reduce Cycle Time

Usual Process



AQDEX OH3F





Cutting Conditions

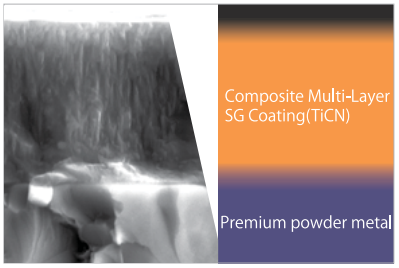
Diameter of Hole	Ø12 H7
Hole Depth	20 mm
Work Material	Carbon Steel

Features

- 4-Facet self-centering point
- Designed & Engineered for drilling Stainless Steel & Hi-temp alloys
- Made from Premium powdered metal cobalt substrate
- Composite Multi-layer SG Coating (Tin+TiCN)
- Precision ground end mill style shank for accurate and precision drilling.

Work Materials

- Hi-temp alloys
- Stainless Steels
- Alloy Steels
- Aluminum Alloys
- Carbon Steels
- Cast Irons
- Structural Steels
- Brass & Bronze



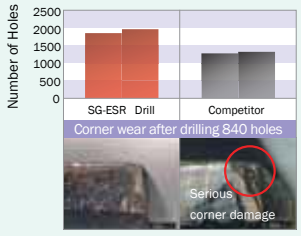
SG Coating (Tin+TiCN)

Performance

- Equals Solid Carbide drill in performance in Stainless, Inconel & titanium.
- 30 ~ 40% Cheaper than Carbide Drills
- Self-centering point eliminates need for center drill operations.

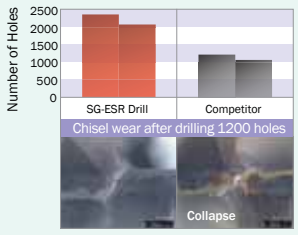
Well Suited for Drilling:

Tool life in Carbon Steel



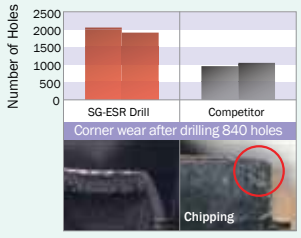
Cutting Conditions	
Drill Diameter	6mm
SFM (RPM)	130 (2100)
Feed	0.008 ipr / 16.5 ipm
Work Material	Carbon Steel
Hole Depth	19mm (Through Hole)
Cutting Fluid	Water soluble

Tool life in Alloy Steel



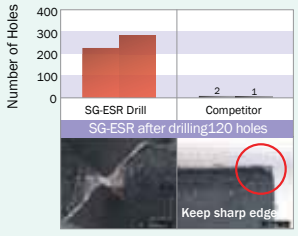
Cutting Conditions	
Drill Diameter	2mm
SFM (RPM)	90 (4,400)
Feed	0.004 ipr / 15.7 ipm
Work Material	Alloy Steel(32HRC)
Hole Depth	6mm(Blind Hole)
Cutting Fluid	Water Soluble

Tool life in 400-Series Stainless



Cutting Conditions	
Drill Diameter	6mm
SFM (RPM)	130 (2100)
Feed	0.007 ipr / 15.7 ipm
Work Material	400-Series Stainless
Hole Depth	19mm(Through Hole)
Cutting Fluid	Water soluble

Tool life in 304 Stainless Steel



Cutting Conditions	
Drill Diameter	12mm
SFM (RPM)	40 (320)
Feed	0.010 ipr / 3.1 ipm
Work Material	304 Stainless Steel
Hole Depth	28mm(Through Hole)
Cutting Fluid	Water soluble

◎: Great ○: Good ×: Not recommended

Drill name	Structural Steels	Carbon Steels	Alloy Steels Pre-hardened Steels	Hardened Steels Mold Steels	Hardened Steels		Stainless Steels		Titanium Alloys Nickel Alloys	Cast Irons	Aluminum Alloys	Copper Alloys
	SS400	S45C/S50C	SCR/NAK	30~40HRC	40~50HRC	50~65HRC	304SS/316SS	400-Series		FCD/FC	AC/ADC	Cu
SGESR Drill	◎	◎	◎	○	×	×	◎	◎	○	◎	◎	◎

Features

- Utilizes a high accuracy shape of lip relief (3 rake, 2 rake + x-thinning)
- Made from premium powder metal with Composite Multi-Layer SG Coating (TiCN)
- End mill style shanks for highly precise and accurate drilling

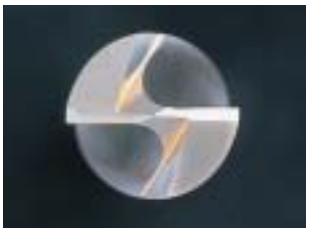
Work Materials

Structural Steels, Carbon Steels, Alloy Steels, Stainless Steels, Cast Irons, Aluminum Alloys

Performance

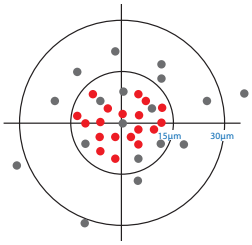
- Streamline the process and reduce machining time dramatically.
- Eliminate the center drill operation with our SG-ESS drills (Stub length)
- Stable positioning within 0.0006" (15µm)
- Faster feed & speed rates than regular HSS-Co drills
- Better cost performance than carbide drills

SG-ESS Drills (stub length) Self centering point:

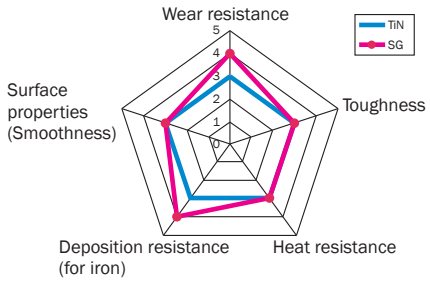


SG-ES Drill (jobber's length):

Positioning

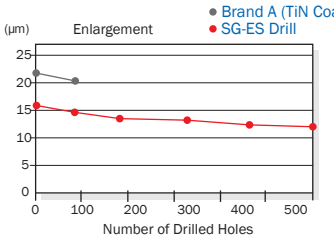


Characteristics of SG coating



Composite multi-layer film coating method characterized by improved wear resistance as compared to TiN.

Performance and cutting data of SG drill series



Cutting Condition
Drill Dia: 9.0mm.
Hole Depth: 32mm
Cutting Speed: 20m/min. (65.6 SFM)
Feed: 142mm/min (5.6 IPM)
Work piece Material: Alloy steel (300HB)
Machine: Vertical machining center

Features

- Premium PM-Cobalt Substrate with composite SG Coating (Tin+Ticn)
- Equals Solid Carbide Drill in performance due to tough PM Cobalt Substrate

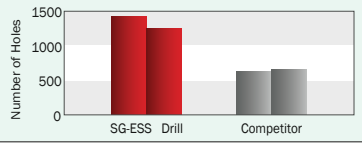
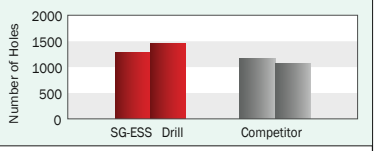
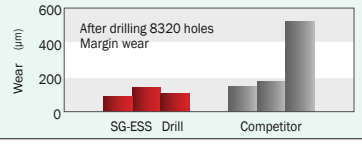
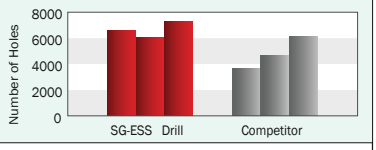
Work Materials

Structural Steels, Carbon Steels, Alloy Steels, Stainless Steels, Cast Irons, Aluminum Alloys

Performance

- 30 - 40% more tool life than conventional HSS/HSCO micro drills.
- 3mm diameter end mill style shanks for highly precise and accurate drilling.
- Precision ground end mill style shank for accurate and precision drilling.

Drilling Performance of SG-ESS Micro Drill

Diameter	Carbon Steel	304 Stainless Steel
0.5 mm	 SFM (RPM) 80 (15,500) Feed 0.0006 ipr / 9.3 ipm Hole Depth 1.5mm (Blind Hole) Cutting Fluid Water solube	 SFM (RPM) 26 (5000) Feed 0.0004 ipr / 2.0 ipm Hole Depth 1.5mm (Blind Hole) 0.25mm-peck depth Cutting Fluid Water Solube
0.99 mm	 SFM (RPM) 80 (8,000) Feed 0.0015 ipr / 12 ipm Hole Depth 1.5mm (Blind Hole) Cutting Fluid Water Solube	 SFM (RPM) 30 (3,200) Feed 0.001 ipr / 2.5 ipm Hole Depth 3mm (Blind Hole) 0.5mm-peck depth Cutting Fluid Water Solube

Well Suited for Drilling:

◎: Great ○: Good ×: Not recommended

Drill name	Structural Steels	Carbon Steels	Alloy Steels Pre-hardened Steels	Hardened Steels Mold Steels	Hardened Steels		Stainless Steels		Titanium Alloys Nickel Alloys	Cast Irons	Aluminum Alloys	Copper Alloys
	SS400	S45C/S50C	SCR/NAK	30~40HRC	40~50HRC	50~65HRC	304SS/316SS	400-Series		FCD/FC	AC/ADC	Cu
SGESS	◎	◎	◎	◎	×	×	◎	◎	○	◎	◎	◎

Features

- Utilizes a high accuracy shape of lip relief (3 rake thinning)
- Made from New HSS (FM-HSS: Fine melting HSS) with Composite Multi-Layer AG Coating (TiAlN)

	Conventional HSS	Powder Metal HSS	FM-HSS
Micro Structure			
Toughness	○	○	●
Heat Resistance	○	●	●
Wear Resistance	○	●	●

○ GOOD ● EXCELLENT

- End mill style shanks for highly precise and accurate drilling

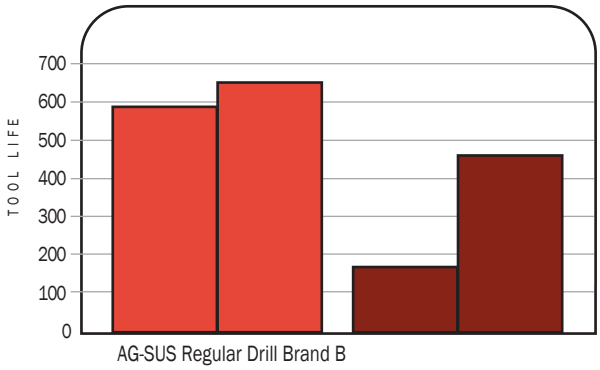
Work Materials

Austenitic Stainless Steels, Martensitic Stainless Steels, Feritic Stainless Steels, Structural Steels, Low Carbon Steels

Performance

CUTTING CONDITION

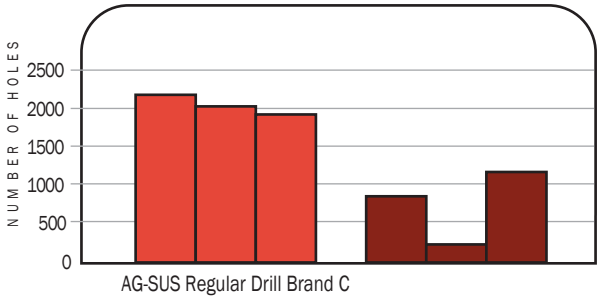
Drill Dia.: 6mm
Material: S42020 (SUS420J2)
Hole Depth: 20mm through
Speed: 78 SFM (1.275 rpm)
Feed: 190mm/min (7.48 IPM)
Pecking: Non
Coolant: Emulsion



CHIP SHAPE-
NACHI AG-SUS DRILL VS. COMPETITOR
FOR STAINLESS STEEL

CUTTING CONDITION

Drill Dia.: 1mm (0.039")
Material: S304 (175 HB)
Hole Depth: 5mm blind
Speed: 49 SFM (4.775 rpm)
Feed: 100mm/min (3.94 IPM)
Pecking: 1mm
Coolant: Emulsion



Stocked Size

Drill Name	List No.	Page
AG-SUS Drill Short/Metric Sizes	6596P	90
AG-SUS Drill Regular/Metric Sizes	6594P	91
AG-SUS Drill Regular/Fractional Sizes	6595P	92

Features

New style Parabolic Drills

- Flute geometry and coating enables non pecking deep hole drilling up to 20XD.
- AG Coating (TiAlN) and HSS-Co material increases tool life.

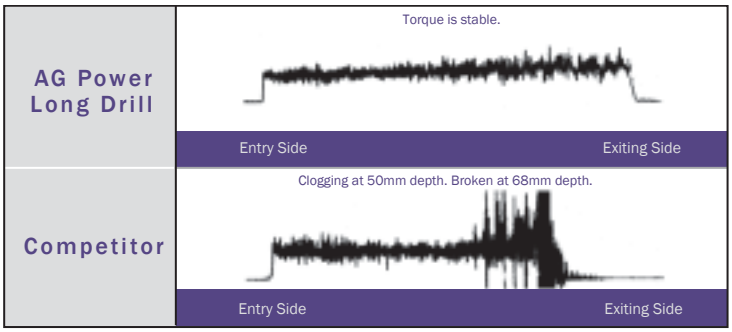
Work Materials

Carbon Steels, Alloy Steels, Mold Steels,
Hardened Steels (under 40HRC), Cast Irons

Performance

AG POWER LONG DRILL VS. STANDARD DRILL

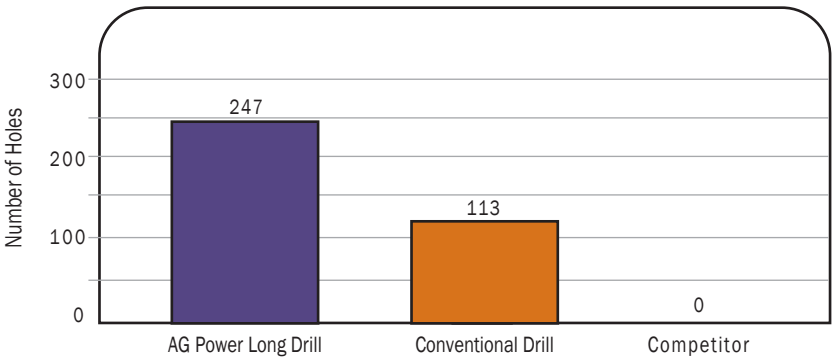
Stable Torque



CUTTING CONDITION

Drill: 6 mm (0.236in)
Material: 1050 (217HB) S50C
Hole Depth: 102 mm (4.01in : 17D) through
Speed: 1590 rpm (98 SFM)
Feed: 0.1mm/rev (6.26 IPM)
non-pecking drilling
Fluid: Emulsion

Long Tool Life



Stocked Size Drill Name	List No.	Page
AG Power Long Drill/Metric Sizes	6540P	93
AG Power Long Drill/Fractional Sizes	6541P	94

Features

- "S" shaped cutting edge for superior chip removal
- Made from High grade carbide with Composite Multi-layer GS Coating (Al-Ti-Cr based coating)
- Utilizes high accuracy shape of relief (2 rake + XWthinning)
- Double Margin for increased drilling stability and performance

Use of a double margin increases drilling straightness by controlling drill bending and swelling.

"S" shaped cutting edge

Cutting Performance

- Streamline the Process and reduce machining time dramatically.

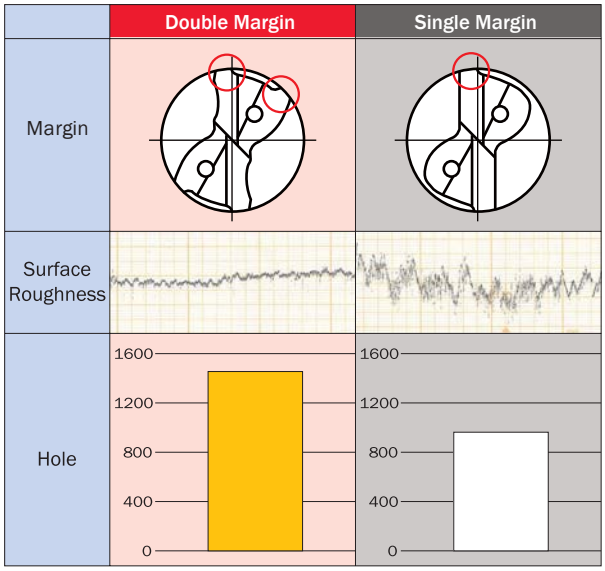
Limit Comparison at Feed

Feed	IPR	.007	.011	.013	.015	.017	.019	.027	.023
	mm/rev	0.2	0.3	0.35	0.4	0.45	0.5	0.55	0.6
MQL Power Long Drill		○	○	○	○	○	○	○	○
Competitor		○	○	○	○	×			

Tool: 6 x 150 x 200 x 6
Cutting Speed: RPM = 4250
Feed: IPR = .007~.024
Hole Depth: 4.7"

Guide Hole Depth: 1"
Work Material: Carbon Steel
Cutting Fluid: MQL (3cc/h)

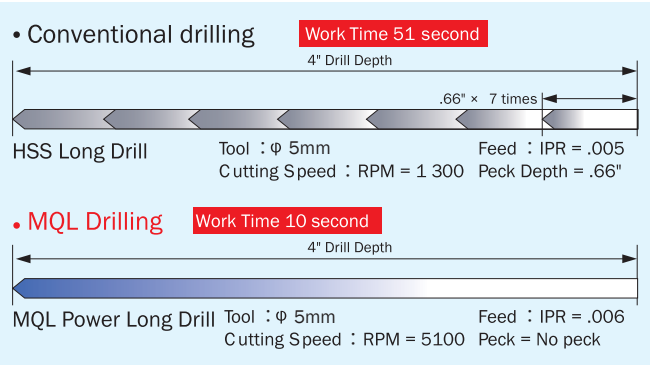
Drilling surface roughness and tool life in double margin



Tool: 5 x 130 x 180 x 5
Cutting Speed: RPM = 5100
Feed: IPR = .006 (0.15 mm/rev)

Hole Depth: 4"
Work Material: Carbon Steel
Cutting Fluid: MQL

• Non-Step Drilling Improves Machining Efficiency by 5x



Work Materials

- Structural Steels, Carbon Steels, Alloy Steels, Stainless Steels, Cast Irons, Hardened Steel (up to 40HRc)

MQL Pilot Drills

Precision guide hole drills for MQL Long Drills

Features

- Coolant Thru Solid Carbide drills with "S" Shaped cutting edge for superior chip removal
- Precision Guide hole drills for our MQL Long Drills
- Made from high grade carbide with composite Multi-layer GS Coating (Al-Ti-Cr based coating)
- Utilizes high accuracy shape of relief (2rake + XW thinning)
- Double margin to provide accurate and straight guide hole for MQL Long Drills

"S" shaped cutting edge

Work Materials

Structural Steels, Carbon Steels, Alloy Steels, Stainless Steels, Cast Irons, Hardened Steels (up to 40Hrc)

Features

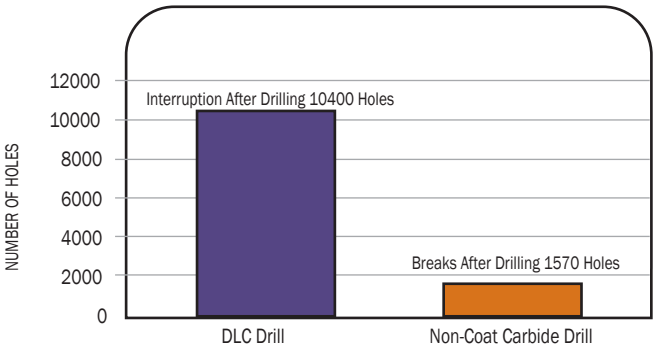
- Utilizes high accuracy shape of lip relief (2 rake thinning)
- Utilizes flute geometry resulting in excellent chip control and dry milling with no edge build-up
- End mill style shanks for highly precise and accurate drilling

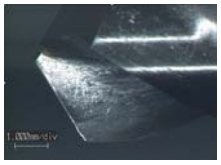
Work Materials

Aluminums, Aluminum alloys, Aluminum Alloy Casting, Aluminum Alloy Die-casting, Copper alloys

Performance

WET DRILLING BY DLC DRILL

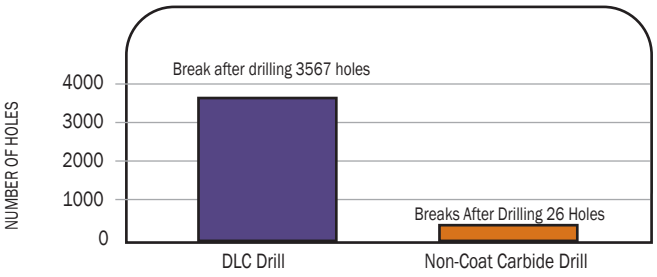


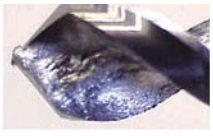


Small wear after drilling 10400 holes

CONDITION
Drill: 5.5mm (0.2165")
Material: AlMg2.5 (A5052)
Hole Depth: 27.5mm (1.06") blind
Speed: 100m/min (328 SFM)
Feed: 0.08mm/rev (18.26 IPM)
Coolant: Emulsion

DRY DRILLING BY DLC DRILL





CONDITION
Drill: 5.5mm (0.2165")
Material: ADC12
Hole Depth: 16.5mm (0.65") blind
Speed: 100m/min (328 SFM)
Feed: 0.08mm/rev (18.26 IPM)
Coolant: Dry

Stocked Size

Drill Name	List No.	Page
DLC HSS Drill/Metric Sizes	544	96
DLC Micro Drill/Metric Sizes	9524	97
DLC Drill Regular/Metric Sizes	9520	98

HIGH PERFORMANCE DRILLS

LIST No.		Drill Name	Material	Coating		Stock Size	Product Page
Aqua Drill EX							
9600		Stub Length	Carbide	AQUA EX	Metric	2.0 to 16.0	p.56, 57
9601		Stub Length	Carbide	AQUA EX	Fractional	1/8 to 5/8	p.57
9602		Jobber Length	Carbide	AQUA EX	Metric	2.0 to 16.0	p.58, 59
9603		Jobber Length	Carbide	AQUA EX	Fractional	1/8 to 5/8	p.59
Aqua Drill EX Oil Hole							
9604		3D	Carbide	AQUA EX	Metric	3.0 to 16.0	p.60, 61
9605		3D	Carbide	AQUA EX	Fractional	1/8 to 5/8	p.61
9606		5D	Carbide	AQUA EX	Metric	3.0 to 16.0	p.62, 63
9607		5D	Carbide	AQUA EX	Fractional	1/8 to 5/8	p.63
9608		8D	Carbide	AQUA EX	Metric	3.0 to 16.0	p.64, 65
9609		8D	Carbide	AQUA EX	Fractional	1/8 to 5/8	p.65
Aqua Drill EX Flat							
9610		Stub Length	Carbide	AQUA EX	Metric	1.0 to 3.0	p.66, 67
9611		Stub Length	Carbide	AQUA EX	Fractional	1.0 to 3.0	p.67
9818		Jobber Length	Carbide	AQUA EX	Metric	3.0 to 20.0	p.68
9816		Long Shank	Carbide	AQUA EX	Metric	3.0 to 20.0	p.69
Aqua Drill EX Flat Oil Hole							
9812		3XD	Carbide	AQUA EX	Metric	1.0 to 13.0	p.70
9814		5XD	Carbide	AQUA EX	Metric	3.0 to 16.0	p.71
Aqua Drill EX 3 Flute							
9826			Carbide	AQUA EX	Metric	3.0 to 20.0	p.72
9820			Carbide	AQUA EX	Metric	3.0 to 12.0	p.73
Aqua Drill EX Oil Hole Micro							
9612		10D	Carbide	AQUA EX	Metric	3.0 to 16.0	p.74
9614		15D	Carbide	AQUA EX	Metric	3.0 to 16.0	p.74
9616		20D	Carbide	AQUA EX	Metric	1.0 to 3.0	p.74
9622			Carbide	AQUA EX	Metric	1.0 to 3.0	p.74
Aqua Drill							
9544		Micro	Carbide	AQUA	Metric	.20 to 1.99	p.75

Continue to next page...

● : Great ○ : Good △ : OK

LIST No.	Cutting Condition Page	Drilling Depth *1				Workpiece Material															
						Carbon Steel		Alloy Steel	Die Steel	Hardened Steel			Stainless Steel		Titanium Alloys	Nickel Alloys	Cast Iron		Aluminum			Copper Alloys
						Low Carbon	High Carbon			HRc			Austenitic	Martensitic			Soft	Hard	6061 7075	Casting Si ≦ 12%	High Si Si > 13%	
		≦3D	≦5D	≦7D	>7D	1010,1018	1045,1065	4140,4330	D2	up to 35	35 to 45	45 to 65	300 Series	400 Series			< 200HB	> 200HB				
Aqua Drill EX																						
9600	p.122	●				●	●	●	●	○			●	●	●	●	○	△	○	○		○
9601	p.122	●				●	●	●	●	○			●	●	●	●	○	△	○	○		○
9602	p.122	●	●	●		●	●	●	●	○			●	●	●	●	○	△	○	○		○
9603	p.122	●	●	●		●	●	●	●	○			●	●	●	●	△	△	○	○		○
Aqua Drill EX Oil Hole																						
9604	p.123	●				●	●	●	●	○			●	●	●	●	△	○	○	○		○
9605	p.123	●				●	●	●	●	○			●	●	●	●	△	○	○	○		○
9606	p.123	●	●			●	●	●	●	○			●	●	●	●	○	○	○	○		○
9607	p.123	●	●			●	●	●	●	○			●	●	●	●	○	○	○	○		○
9608	p.123	●	●	●		●	●	●	●	△			●	●	●	●	●	○	○	○		○
9609	p.123	●	●	●		●	●	●	●	△			●	●	●	●	●	○	○	○		○
Aqua Drill EX Flat																						
9610	p.122	●				●	●	●	●	○				●			○	○	○	○		○
9611	p.122	●				●	●	●	●	○				●			○	○	○	○		○
9818	p.124	●	●	●		●	●	●	●					●			○	○	○	○		○
9816	p.124	●	●	●	●	●	●	●	●	△				●			○	○	○	○		○
Aqua Drill EX Flat Oil Hole																						
9812	p.125	○				●	●	●	●	△			●	●	○	○	●	○	○	○		○
9814	p.125	●	●			●	●	●	●	●	○	△	●	●	○	○	●	○	○	○		○
Aqua Drill EX 3 Flute																						
9826	p.126	●				●	●	●	●	●	●		●	●			○	△				
9820	p.126	●	●			●	●	●	●	●	●		●	●			○	△				
Aqua Drill EX Oil Hole Micro																						
9612	p.126				●	●	●	●	●	●			●	●	○	○	●	●	○			○
9614	p.126				●	●	●	●	●	●			●	●	○	○	●	●	○			○
9616	p.126				●	●	●	●	●	●			●	●	○	○	●	●	○			○
9622	—	●			●	●	●	●	●	●			●	●	○	○	●	●	○			○
Aqua Drill Mist Hole																						
9544	p.128	●	●	●	○	●	●	●	●	●	○	△	●	●	○	○	○	△				

*Some sizes do not meet this preference. Please make sure of flute length of each size before use.

HIGH PERFORMANCE DRILLS

LIST No.		Drill Name	Material	Coating		Stock Size	Product Page
MQL							
9566		**Pilot**	Carbide	GS	Metric	---	p.94
9564 10D		**Power Long**			Metric Fractional	3.0 to 17.5 1/8 to 11/16	p.95
9536 15D 20D 25D					Metric Fractional	15D,20D 4.0 to 10.0 25D 4.0 to 8.0	p.95
SG Drills							
7574P		**SG-ESR**	PM-HSS	SG	Metric	2.0 to 32.0	p.96,97
7575P					Fractional	3/32 to 3/4	p.98
7572P		**Cobalt Micro**			Metric	1.0 to 20.0	p.99
7572P		**Stub**			Metric	1.0 to 20.0	p.100-103
7573P					Fractional	3/32 to 3/4	p.104
7573P					Letter Wire	B to Z #1 to #45	p.104
7570P		**Jobbers Length**			Metric	2.0 to 20.0	p.105
7571P					Fractional	3/32 to 3/4	p.106
7571P					Letter Wire	B to Z #1 to #45	p.106
7596P		**Oil Hole**			Metric	5.0 to 20.0	p.108
7591P					Fractional	15/64 to 3/4	p.108

Continue to next page...

●: Great ○: Good △: OK

LIST No.	Cutting Condition Page	Drilling Depth *1				Workpiece Material															
						Carbon Steel		Alloy Steel	Die Steel	Hardened Steel			Stainless Steel		Titanium Alloys	Nickel Alloys	Cast Iron		Aluminum			Copper Alloys
						Low Carbon	High Carbon			HRc			Austenitic	Martensitic			Soft	Hard	6061	Casting	High Si	
		≦3D	≦5D	≦7D	>7D	1010,1018	1045,1065	4140,4330	D2	up to 35	35 to 45	45 to 65	300 Series	400 Series			< 200HB	> 200HB	7075	Si ≦ 12%	Si > 13%	
MQL Drills																						
9566	p.129	●				●	●	●	●	○			●	●			○	○	○	○		
9564	p.130			△	●	●	●	●	●	○			●	●			○	○	○	○		
9536	p.130				●	●	●	●	●	○			●	●			○	○	○	○		
SG Drills																						
7574P	p.131	●	●	●		●	●	●	●	○			●	●	●	●	○	△	○	○		○
7575P	p.131	●	●	●		●	●	●	●	○			●	●	●	●	○	△	○	○		○
7572P *Micro*	p.131	●				●	●	●	●	○			●	●	●	●	○	△	○	○		○
7572P	p.131	●				●	●	●	●	○			●	●	●	●	○	△	○	○		○
7573P	p.131	●				●	●	●	●	○			●	●	●	●	○	△	○	○		○
7573P	p.131	●	○			●	●	●	●	○			●	●	●	●	○	△	○	○		○
7570P	p.132	●	●	●		●	●	●	●	○				●			△		○	○		
7571P	p.132	●	●	●		●	●	●	●	○				●			△		○	○		
7571P	p.132	●	●	●	○	●	●	●	●	○				●			△		○	○		
7596P	p.132	●	●			●	●	●	●	○			●	●	●	●	○		○	○		△
7591P	p.132	●	●			●	●	●	●	○			●	●	●	●	○		○	○		△

*Some sizes do not meet this preference. Please make sure of flute length of each size before use.

Drills / Selection Chart

LIST No.		Drill Name	Material	Coating		Stock Size	Product Page
AG Drills							
6596P		**Short**	FMX	AG	Metric	1.0 to 20.0	p.90
6594P		**Regular**			Metric	1.0 to 20.0	p.91
6595P					Fractional	3/32 to 3/4	p.92
6540P		**Parabolic Power Long**	HSS-Co		Metric	1.0 to 13.0	p.93
6541P					Fractional	1/8 to 23/64	p.94
6502		**Starting Drill**			Metric	3.0 to 20.0	p.95
6504					Metric	3.0 to 12.0	p.95
DLC Drills							
544			HSS	DLC	Metric	1.0 to 13.0	p.96
9524		**Micro**	Carbide		Metric	0.5 to 1.9	p.97
9520		**Regular**			Metric	2.0 to 12.0	p.98

STRAIGHT SHANK DRILLS

LIST No.		Drill Name	Material	Coating		Stock Size	Product Page
Jobbers Length							
500		**Standard**	HSS	Black Oxide	Metric	0.2 to 17.5	p.99
501					Fractional	3/64 to 11/16	p.102
501					Wire	#1 to #60	p.102
501					Letter	A to Z	p.102
501A				Bright	Fractional	1/64 to 11/16	p.103
501A					Wire	#1 to #80	p.103
501A					Letter	A to Z	p.103
501P				TiN	Fractional	1/16 to 1/2	p.105
501P					Wire	#1 to #52	p.105
520P					Metric	0.5 to 13.0	p.101
6520		**High Helix**	HSS-Co	Black Oxide	Metric	0.5 to 13.0	p.100
6501		**Aircraft NAS 907-J**	HSS-Co	Black Oxide	Fractional	1/64 to 1/2	p.104
6501					Wire	#1 to #80	p.104
6501					Letter	A to Z	p.104
517P		**Parabolic**	HSS	TiN	Fractional	1/16 to 1/2	p.106
517P					Wire	#1 to #52	p.106

Continue to next page...

●: Great ○: Good △: OK

LIST No.	Cutting Condition Page	Drilling Depth *1				Workpiece Material																
						Carbon Steel		Alloy Steel	Die Steel	Hardened Steel			Stainless Steel		Titanium Alloys	Nickel Alloys	Cast Iron		Aluminum			Copper Alloys
										HRc												
		≦3D	≦5D	≦7D	>7D	Low Carbon 1010,1018	High Carbon 1045,1065	4140,4330	D2	up to 35	35 to 45	45 to 65	Austenitic 300 Series	Martensitic 400 Series			Soft < 200HB	Hard > 200HB	6061 7075	Casting Si ≦ 12%	High Si Si > 13%	
AG Drills																						
6596P	p.133	●				●	●	●	●	●			●	●	○	○			○	○		○
6594P	p.133	○	●	●		●	●	●	●	●			●	●	○	○			○	○		○
6595P	p.133	○	●	●		●	●	●	●	●			●	●	○	○			○	○		○
6540P	p.133		△	●	●	●	●	●	●	△			○	○			●	○				
6541P	p.133		△	●	●	●	●	●	●	△			○	○			●	○				
6502	---	●				●	●	●	●	●	○	△	●	●			○	○	●	●		●
6504	---	●	●			●	●	●	●	●	○	△	●	●			○	○	●	●		●
DLC Drills																						
544	p.134	○	●	●															●	○		●
9524	p.134	●	●																●	●		●
9520	p.134	●	●																●	●		●

●: Great ○: Good △: OK

LIST No.	Cutting Condition Page	Drilling Depth *1				Workpiece Material																
						Carbon Steel		Alloy Steel	Die Steel	Hardened Steel			Stainless Steel		Titanium Alloys	Nickel Alloys	Cast Iron		Aluminum			Copper Alloys
										HRc												
		≦3D	≦5D	≦7D	>7D	Low Carbon 1010,1018	High Carbon 1045,1065	4140,4330	D2	up to 35	35 to 45	45 to 65	Austenitic 300 Series	Martensitic 400 Series			Soft < 200HB	Hard > 200HB	6061 7075	Casting Si ≦ 12%	High Si Si > 13%	
Jobbers Length																						
500	p.135	●	●	●		○	○	○									△	△	△	△		△
501	p.135	●	●	●		○	○	○									△	△	△	△		△
501	p.135	●	●	●		○	○	○									△	△	△	△		△
501	p.135	●	●	●		○	○	○									△		△	△		△
501A	p.135	●	●	●		○	○	○									△		△	△		△
501A	p.135	●	●	●		○	○	○									△		△	△		△
501A	p.135	●	●	●		○	○	○									△		△	△		△
501P	p.135	●	●	●		○	●	●	△				△	△	△	△	○	△	△	△		△
501P	p.135	●	●	△		○	●	●	△				△	△	△	△	○	△	△	△		△
520P	p.135	●	●			○	●	●	△				△	△	△	△	○	△	△	△		△
6520	p.135	●	●	●			○	○	△				○	○	△	△			△	△		△
6501	p.135	●	●	●		○	○	○	△				△	○	○	△	△	△	△	△		△
6501	p.135	●	●	●		○	○	○	△				△	○	○	△	△	△	△	△		△
6501	p.135	●	●	●		○	○	○	△				△	○	○	△	△	△	△	△		△
517P	p.136	●	●	●		○	●	●	△					△			○	△	△	△		△
517P	p.136	●	●	●		○	●	●	△					△			○	△	△	△		△

*Some sizes do not meet this preference. Please make sure of flute length of each size before use.

STRAIGHT SHANK DRILLS

LIST No.		Drill Name	Material	Coating		Stock Size	Product Page
Screw Machine Length							
561		**Standard**	HSS	Black Oxide	Fractional	3/64 to 2	p.107
561					Wire	#1 to #60	p.107
561					Letter	A to Z	p.107
561P				TiN	Fractional	1/16 to 1/2	p.108
561P					Wire	#1 to #52	p.108
563		**Aircraft NAS 907-C**		Black Oxide	Fractional	3/64 to 1/2	p.109
563					Wire	#1 to #52	p.109
563					Letter	A to Z	p.109
6563			HSS-Co	Black Oxide	Fractional	3/64 to 1/2	p.110
6563					Wire	#1 to #52	p.110
6563					Letter	A to Z	p.110
Taper Length							
531		**Standard**	HSS	Black Oxide	Fractional	1/64 to 1/2	p.111
6531			HSS-Co		Fractional	1/16 to 3/4	p.112
545P		**Parabolic**	HSS	TiN	Fractional	1/16 to 1/2	p.113
Extra Length							
551		**12”**	HSS	Bright	Fractional	1/8 to 1	p.114
551		**18”**			Fractional	1/8 to 1	p.114
6551		**10”**	HSS-Co	Black Oxide	Fractional	3/16 to 1/2	p.115
Oil Hole Drill							
581			HSS-Co	Bright	Fractional	3/8 to 1-1/2	p.116

Continue to next page...

●: Great ○: Good △: OK

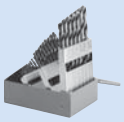
LIST No.	Cutting Condition Page	Drilling Depth *1				Workpiece Material															
						Carbon Steel		Alloy Steel	Die Steel	Hardened Steel			Stainless Steel		Titanium Alloys	Nickel Alloys	Cast Iron		Aluminum			Copper Alloys
										HRc												
		≦3D	≦5D	≦7D	>7D	Low Carbon 1010,1018	High Carbon 1045,1065	4140,4330	D2	up to 35	35 to 45	45 to 65	Austenitic 300 Series	Martensitic 400 Series			Soft < 200HB	Hard > 200HB	6061 7075	Casting Si ≦ 12%	High Si Si > 13%	
Screw Machine Length																						
561	p.135	●				○	○	○												△		△
561	p.135	●				○	○	○												△		△
561	p.135	●				○	○	○												△		△
561P	p.135	●				○	○	○	△				△	△	△	△	○	△	△	△		△
561P	p.135	●				○	○	○	△				△	△	△	△	○	△	△	△		△
563	p.135	●				○	○	○					△	△	△	△	△	△	△	△		△
563	p.135	●				○	○	○					△	△	△	△	△	△	△	△		△
563	p.135	●				○	○	○					△	△	△	△	△	△	△	△		△
6563	p.135	●				○	○	○	△				△	○	○	△	△	△	△	△		△
6563	p.135	●				○	○	○	△				△	○	○	△	△	△	△	△		△
6563	p.135	●				○	○	○	△				△	○	○	△	△	△	△	△		△
Taper Length																						
531	p.135	●	●			○	○	○						△					△	△		△
6531	p.135	●	●			○	○	○	△				△	○			△		△	△		△
545P	p.136	●	●			○	●	●	△					△			○	△	△	△		△
Extra Length																						
551	p.136				●	○	○	○									△		○	△		△
551	p.136				●	○	○	○									△		○			
6551	p.136				●	○	○	○	△				△	○			△		△	△		△
Oil Hole Drill																						
581	p.137	●	●	○			○	○	○				△	○	○	△	○	△	△	△		△

*Some sizes do not meet this preference. Please make sure of the flute length of each size before use.

TAPER SHANK DRILLS

LIST No.		Drill Name	Material	Coating		Stock Size	Product Page
Taper Shank Drills							
601		**Regular**	HSS-Co	Black Oxide	Fractional	9/32 to 3-1/2	p.117
651		**18" Extra Length**		Bright	Fractional	1/4 to 2-1/2	p.118
651		**24"**			Fractional	5/16 to 2-1/2	p.118
683		**Oil Hole Drill**	HSS	Bright	Fractional	3/8 to 1-1/2	p.119

TAPER SHANK DRILLS

LIST No.		Drill Name	Material	Coating		Stock Size	Product Page
Silver & Deming Drills							
575			HSS	Bright	Fractional	1/2 to 1-1/2	p.120
Jobbers Length / Set Drills							
599			HSS-Co	Black Oxide, Bright	Several	Several	p.121

● : Great ○ : Good △ : OK

LIST No.	Cutting Condition Page	Drilling Depth *1				Workpiece Material																
						Carbon Steel		Alloy Steel	Die Steel	Hardened Steel			Stainless Steel		Titanium Alloys	Nickel Alloys	Cast Iron		Aluminum			Copper Alloys
										HRc												
		≦3D	≦5D	≦7D	>7D	Low Carbon 1010,1018	High Carbon 1045,1065	4140,4330	D2	up to 35	35 to 45	45 to 65	Austenitic 300 Series	Martensitic 400 Series			Soft < 200HB	Hard > 200HB	6061 7075	Casting Si ≦ 12%	High Si Si > 13%	
Taper Shank Drills																						
601	p.138	●	○			○	○	○									△		△	△		△
651	p.136				●	○	○	○											○	△		△
651	p.136				●	○	○	○											○	△		△
683	p.138	●	●	○			●	●	●				△	○	○	△	○	△	△	△		△

● : Great ○ : Good △ : OK

LIST No.	Cutting Condition Page	Drilling Depth *1				Workpiece Material																
						Carbon Steel		Alloy Steel	Die Steel	Hardened Steel			Stainless Steel		Titanium Alloys	Nickel Alloys	Cast Iron		Aluminum			Copper Alloys
										HRc												
		≦3D	≦5D	≦7D	>7D	Low Carbon 1010,1018	High Carbon 1045,1065	4140,4330	D2	up to 35	35 to 45	45 to 65	Austenitic 300 Series	Martensitic 400 Series			Soft < 200HB	Hard > 200HB	6061 7075	Casting Si ≦ 12%	High Si Si > 13%	
Silver & Deming Drill																						
575	p.138	●				○	○	○												△		△
Jobbers Length / Set Drills																						
599	p.135	●	●	●		○	○	○	△								△		△	△		△

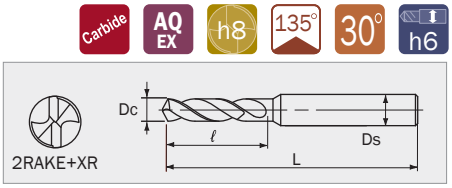
*Some sizes do not meet this preference. Please make sure of the flute length of each size before use.

HIGH PERFORMANCE AQUA DRILL EX STUB / METRIC SIZES

List No. 9600 High Performance

***Replaces List No. 9550**

Non-coolant thru



Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
0700710	2.0	0.0787	8	45	3
0700727	2.1	0.0827	10	45	3
0700733	2.2	0.0866	10	45	3
0700740	2.3	0.0906	10	45	3
0700756	2.4	0.0945	10	45	3
0700762	2.5	0.0984	10	45	3
0700779	2.6	0.1024	13	45	3
0700785	2.7	0.1063	13	45	3
0700791	2.8	0.1102	13	45	3
0700807	2.9	0.1142	13	45	3
0700813	3.0	0.1181	13	45	3
0700820	3.1	0.1220	19	54	4
0700836	3.2	0.1260	19	54	4
0700842	3.3	0.1299	19	54	4
0700859	3.4	0.1339	19	54	4
0700865	3.5	0.1378	19	54	4
0700871	3.6	0.1417	21	54	4
0700888	3.7	0.1457	21	54	4
0700894	3.8	0.1496	21	54	4
0700900	3.9	0.1535	21	54	4
0700916	4.0	0.1575	21	54	4
0700922	4.1	0.1614	23	61	5
0700939	4.2	0.1654	23	61	5
0700945	4.3	0.1693	23	61	5
0700951	4.4	0.1732	23	61	5
0700968	4.5	0.1772	23	61	5
0700974	4.6	0.1811	25	61	5
0700980	4.7	0.1850	25	61	5
0700997	4.8	0.1890	25	61	5
0701001	4.9	0.1929	25	61	5
0701018	5.0	0.1969	25	61	5
0701024	5.1	0.2008	25	65	6
0701030	5.2	0.2047	25	65	6
0701047	5.3	0.2087	25	65	6
0701053	5.4	0.2126	25	65	6
0701060	5.5	0.2165	25	65	6
0701076	5.6	0.2205	27	65	6
0701082	5.7	0.2244	27	65	6
0701099	5.8	0.2283	27	65	6
0701104	5.9	0.2323	27	65	6
0701110	6.0	0.2362	27	65	6
0701127	6.1	0.2402	31	73	7
0701133	6.2	0.2441	31	73	7
0701140	6.3	0.2480	31	73	7
0701156	6.4	0.2520	31	73	7
0701162	6.5	0.2559	31	73	7
0701179	6.6	0.2598	33	73	7
0701185	6.7	0.2638	33	73	7
0701191	6.8	0.2677	33	73	7
0701207	6.9	0.2717	33	73	7
0701213	7.0	0.2756	33	73	7
0701220	7.1	0.2795	33	78	8
0701236	7.2	0.2835	33	78	8
0701242	7.3	0.2874	33	78	8
0701259	7.4	0.2913	33	78	8
0701265	7.5	0.2953	33	78	8

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
0701271	7.6	0.2992	36	78	8
0701288	7.7	0.3031	36	78	8
0701294	7.8	0.3071	36	78	8
0701300	7.9	0.3110	36	78	8
0701316	8.0	0.3150	36	78	8
0701322	8.1	0.3189	36	82	9
0701339	8.2	0.3228	36	82	9
0701345	8.3	0.3268	36	82	9
0701351	8.4	0.3307	36	82	9
0701368	8.5	0.3346	36	82	9
0701374	8.6	0.3386	38	82	9
0701380	8.7	0.3425	38	82	9
0701397	8.8	0.3465	38	82	9
0701402	8.9	0.3504	38	82	9
0701419	9.0	0.3543	38	82	9
0701425	9.1	0.3583	38	87	10
0701431	9.2	0.3622	38	87	10
0701448	9.3	0.3661	38	87	10
0701454	9.4	0.3701	38	87	10
0701460	9.5	0.3740	38	87	10
0701477	9.6	0.3780	41	87	10
0701483	9.7	0.3819	41	87	10
0701490	9.8	0.3858	41	87	10
0701505	9.9	0.3898	41	87	10
0701511	10.0	0.3937	41	87	10
0701528	10.1	0.3976	41	93	11
0701534	10.2	0.4016	41	93	11
0701540	10.3	0.4055	41	93	11
0701557	10.4	0.4094	41	93	11
0701563	10.5	0.4134	41	93	11
0701570	10.6	0.4173	45	93	11
0701586	10.7	0.4213	45	93	11
0701592	10.8	0.4252	45	93	11
0701608	10.9	0.4291	45	93	11
0701614	11.0	0.4331	45	93	11
0701620	11.1	0.4370	45	100	12
0701637	11.2	0.4409	45	100	12
0701643	11.3	0.4449	45	100	12
0701650	11.4	0.4488	45	100	12
0701666	11.5	0.4528	45	100	12
0701672	11.6	0.4567	47	100	12
0701689	11.7	0.4606	47	100	12
0701695	11.8	0.4646	47	100	12
0701700	11.9	0.4685	47	100	12
0701717	12.0	0.4724	47	100	12
0701723	12.1	0.4764	47	100	13
0701730	12.2	0.4803	47	100	13
0701746	12.3	0.4843	47	100	13
0701752	12.4	0.4882	47	100	13
0701769	12.5	0.4921	47	100	13
0701775	12.6	0.4961	49	100	13
0701781	12.7	0.5000	49	100	13
0701798	12.8	0.5039	49	100	13
0701803	12.9	0.5079	49	100	13
0701810	13.0	0.5118	49	100	13
0701826	13.1	0.5157	50	105	14

Package Qty: 1 per Tube Size

HIGH PERFORMANCE AQUA DRILL EX STUB/ METRIC & FRACTIONAL SIZES

List. No. 9600

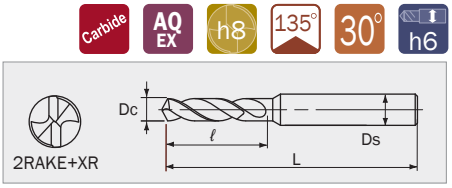
Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
0701832	13.2	0.5197	50	105	14
0701849	13.3	0.5236	50	105	14
0701855	13.4	0.5276	50	105	14
0701861	13.5	0.5315	50	105	14
0701878	13.6	0.5354	52	105	14
0701884	13.7	0.5394	52	105	14
0701890	13.8	0.5433	52	105	14
0701906	13.9	0.5472	52	105	14
0701912	14.0	0.5512	52	105	14
0701929	14.1	0.5551	52	108	15
0701935	14.2	0.5591	52	108	15
0701941	14.3	0.5630	52	108	15
0701958	14.4	0.5669	52	108	15
0701964	14.5	0.5709	52	108	15
0701970	14.6	0.5748	53	108	15

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
0701987	14.7	0.5787	53	108	15
0701993	14.8	0.5827	53	108	15
0702008	14.9	0.5866	53	108	15
0702014	15.0	0.5906	53	108	15
0702020	15.1	0.5945	53	112	16
0702037	15.2	0.5984	53	112	16
0702043	15.3	0.6024	53	112	16
0702050	15.4	0.6063	53	112	16
0702066	15.5	0.6102	53	112	16
0702072	15.6	0.6142	55	112	16
0702089	15.7	0.6181	55	112	16
0702095	15.8	0.6220	55	112	16
0702100	15.9	0.6260	55	112	16
0702117	16.0	0.6299	55	112	16

Package Qty: 1 per Tube Size

List No. 9601 High Performance

***Replaces List No. 9551**



Fractional Sizes; Non-coolant thru

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
1481500	1/8	0.1250	19	54	4
1481517	9/64	0.1406	21	54	4
1481523	5/32	0.1563	21	54	4
1482267	# 21 Wire	0.1590	23	61	5
1482273	#20 Wire	0.1610	23	61	5
1481530	11/64	0.1719	23	61	5
1481546	3/16	0.1875	25	61	5
1482280	#7 Wire	0.2010	25	65	6
1481552	13/64	0.2031	25	65	6
1482296	#3 Wire	0.2130	27	65	6
1481569	7/32	0.2188	27	65	6
1482301	#2 Wire	0.2210	27	65	6
1481575	15/64	0.2344	27	65	6
1481581	1/4	0.2500	31	73	7
1482318	Ltr. F	0.2570	33	73	7
1481598	17/64	0.2656	33	73	7
1482324	Ltr. I	0.2720	33	78	8
1482330	Ltr. J	0.2770	33	78	8
1481603	9/32	0.2813	33	78	8
1481610	19/64	0.2969	36	78	8
1481626	5/16	0.3125	36	78	8
1482347	Ltr. P	0.3230	36	82	9

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
1481632	21/64	0.3281	36	82	9
1482353	Ltr. Q	0.3320	38	82	9
1481649	11/32	0.3438	38	82	9
1481655	23/64	0.3594	38	87	10
1482360	Ltr. U	0.3680	41	87	10
1481661	3/8	0.3750	41	87	10
1481678	25/64	0.3906	41	87	10
1481684	13/32	0.4063	41	93	11
1481690	27/64	0.4219	45	93	11
1481706	7/16	0.4375	45	100	12
1481712	29/64	0.4531	47	100	12
1481729	15/32	0.4688	47	100	12
1481735	31/64	0.4844	47	100	13
1481741	1/2	0.5000	49	100	13
1481758	33/64	0.5156	50	105	14
1481764	17/32	0.5313	50	105	14
1481770	35/64	0.5469	52	105	14
1481787	9/16	0.5625	52	108	15
1481793	37/64	0.5781	53	108	15
1481809	19/32	0.5938	53	112	16
1481815	39/64	0.6094	53	112	16
1481821	5/8	0.6250	55	112	16

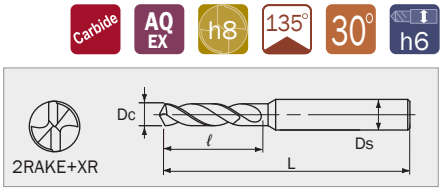
Package Qty: 1 per Tube Size

HIGH PERFORMANCE AQUA DRILL EX JOBBER LENGTH / METRIC SIZES

List No. 9602

***Replaces List No. 9552**

Non-coolant thru



Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
0702123	2.0	0.0787	15	49	3
0702130	2.1	0.0827	17	49	3
0702146	2.2	0.0866	17	49	3
0702152	2.3	0.0906	17	49	3
0702169	2.4	0.0945	17	49	3
0702175	2.5	0.0984	17	49	3
0702181	2.6	0.1024	19	49	3
0702198	2.7	0.1063	19	49	3
0702203	2.8	0.1102	19	49	3
0702210	2.9	0.1142	19	49	3
0702226	3.0	0.1181	19	49	3
0702232	3.1	0.1220	24	60	4
0702249	3.2	0.1260	24	60	4
0702255	3.3	0.1299	24	60	4
0702261	3.4	0.1339	24	60	4
0702278	3.5	0.1378	24	60	4
0702284	3.6	0.1417	27	60	4
0702290	3.7	0.1457	27	60	4
0702306	3.8	0.1496	27	60	4
0702312	3.9	0.1535	27	60	4
0702329	4.0	0.1575	27	60	4
0702335	4.1	0.1614	31	76	5
0702341	4.2	0.1654	31	76	5
0702358	4.3	0.1693	31	76	5
0702364	4.4	0.1732	31	76	5
0702370	4.5	0.1772	31	76	5
0702387	4.6	0.1811	38	76	5
0702393	4.7	0.1850	38	76	5
0702409	4.8	0.1890	38	76	5
0702415	4.9	0.1929	38	76	5
0702421	5.0	0.1969	38	76	5
0702438	5.1	0.2008	39	81	6
0702444	5.2	0.2047	39	81	6
0702450	5.3	0.2087	39	81	6
0702467	5.4	0.2126	39	81	6
0702473	5.5	0.2165	39	81	6
0702480	5.6	0.2205	41	81	6
0702496	5.7	0.2244	41	81	6
0702501	5.8	0.2283	41	81	6
0702518	5.9	0.2323	41	81	6
0702524	6.0	0.2362	41	81	6
0702530	6.1	0.2402	42	83	7
0702547	6.2	0.2441	42	83	7
0702553	6.3	0.2480	42	83	7
0702560	6.4	0.2520	42	83	7
0702576	6.5	0.2559	42	83	7
0702582	6.6	0.2598	43	83	7
0702599	6.7	0.2638	43	83	7
0702604	6.8	0.2677	43	83	7
0702610	6.9	0.2717	43	83	7
0702627	7.0	0.2756	43	83	7
0702633	7.1	0.2795	45	90	8
0702640	7.2	0.2835	45	90	8
0702656	7.3	0.2874	45	90	8
0702662	7.4	0.2913	45	90	8
0702679	7.5	0.2953	45	90	8

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
0702685	7.6	0.2992	48	90	8
0702691	7.7	0.3031	48	90	8
0702707	7.8	0.3071	48	90	8
0702713	7.9	0.3110	48	90	8
0702720	8.0	0.3150	48	90	8
0702736	8.1	0.3189	53	98	9
0702742	8.2	0.3228	53	98	9
0702759	8.3	0.3268	53	98	9
0702765	8.4	0.3307	53	98	9
0702771	8.5	0.3346	53	98	9
0702788	8.6	0.3386	55	98	9
0702794	8.7	0.3425	55	98	9
0702800	8.8	0.3465	55	98	9
0702816	8.9	0.3504	55	98	9
0702822	9.0	0.3543	55	98	9
0702839	9.1	0.3583	58	105	10
0702845	9.2	0.3622	58	105	10
0702851	9.3	0.3661	58	105	10
0702868	9.4	0.3701	58	105	10
0702874	9.5	0.3740	58	105	10
0702880	9.6	0.3780	60	105	10
0702897	9.7	0.3819	60	105	10
0702902	9.8	0.3858	60	105	10
0702919	9.9	0.3898	60	105	10
0702925	10.0	0.3937	60	105	10
0702931	10.1	0.3976	66	114	11
0702948	10.2	0.4016	66	114	11
0702954	10.3	0.4055	66	114	11
0702960	10.4	0.4094	66	114	11
0702977	10.5	0.4134	66	114	11
0702983	10.6	0.4173	68	114	11
0702990	10.7	0.4213	68	114	11
0703004	10.8	0.4252	68	114	11
0703010	10.9	0.4291	68	114	11
0703027	11.0	0.4331	68	114	11
0703033	11.1	0.4370	71	121	12
0703040	11.2	0.4409	71	121	12
0703056	11.3	0.4449	71	121	12
0703062	11.4	0.4488	71	121	12
0703079	11.5	0.4528	71	121	12
0703085	11.6	0.4567	73	121	12
0703091	11.7	0.4606	73	121	12
0703107	11.8	0.4646	73	121	12
0703113	11.9	0.4685	73	121	12
0703120	12.0	0.4724	73	121	12
0703136	12.1	0.4764	76	137	13
0703142	12.2	0.4803	76	137	13
0703159	12.3	0.4843	76	137	13
0703165	12.4	0.4882	76	137	13
0703171	12.5	0.4921	76	137	13
0703188	12.6	0.4961	78	137	13
0703194	12.7	0.5000	78	137	13
0703200	12.8	0.5039	78	137	13
0703216	12.9	0.5079	78	137	13
0703222	13.0	0.5118	78	137	13
0703239	13.1	0.5157	84	147	14

HIGH PERFORMANCE AQUA DRILL EX JOBBER LENGTH/ METRIC & FRACTIONAL SIZES

List. No. 9602

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
0703245	13.2	0.5197	84	147	14
0703251	13.3	0.5236	84	147	14
0703268	13.4	0.5276	84	147	14
0703274	13.5	0.5315	84	147	14
0703280	13.6	0.5354	86	147	14
0703297	13.7	0.5394	86	147	14
0703302	13.8	0.5433	86	147	14
0703319	13.9	0.5472	86	147	14
0703325	14.0	0.5512	86	147	14
0703331	14.1	0.5551	89	153	15
0703348	14.2	0.5591	89	153	15
0703354	14.3	0.5630	89	153	15
0703360	14.4	0.5669	89	153	15
0703377	14.5	0.5709	89	153	15
0703383	14.6	0.5748	91	153	15

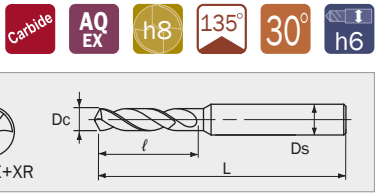
Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
0703390	14.7	0.5787	91	153	15
0703405	14.8	0.5827	91	153	15
0703411	14.9	0.5866	91	153	15
0703428	15.0	0.5906	91	153	15
0703434	15.1	0.5945	94	160	16
0703440	15.2	0.5984	94	160	16
0703457	15.3	0.6024	94	160	16
0703463	15.4	0.6063	94	160	16
0703470	15.5	0.6102	94	160	16
0703486	15.6	0.6142	96	160	16
0703492	15.7	0.6181	96	160	16
0703508	15.8	0.6220	96	160	16
0703514	15.9	0.6260	96	160	16
0703520	16.0	0.6299	96	160	16

Package Qty: 1 per Tube Size

List No. 9603

***Replaces List No. 9552**

Fractional Sizes; Non-coolant thru



Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
1481838	1/8	0.1250	24	60	4
1481844	9/64	0.1406	27	60	4
1481850	5/32	0.1563	27	60	4
1482376	# 21 Wire	0.1590	31	76	5
1482382	#20 Wire	0.1610	31	76	5
1481867	11/64	0.1719	31	76	5
1481873	3/16	0.1875	38	76	5
1482399	#7 Wire	0.2010	39	81	6
1481880	13/64	0.2031	39	81	6
1482404	#3 Wire	0.2130	41	81	6
1481896	7/32	0.2188	41	81	6
1482410	#2 Wire	0.2210	41	81	6
1481901	15/64	0.2344	41	81	6
1481918	1/4	0.2500	42	83	7
1482427	Ltr. F	0.2570	43	83	7
1481924	17/64	0.2656	43	83	7
1482433	Ltr. I	0.2720	45	90	8
1482440	Ltr. J	0.2770	45	90	8
1481930	9/32	0.2813	45	90	8
1481947	19/64	0.2969	48	90	8
1481953	5/16	0.3125	48	90	8
1482456	Ltr. P	0.3230	53	98	9

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
1481960	21/64	0.3281	53	98	9
1482462	Ltr. Q	0.3320	55	98	9
1481976	11/32	0.3438	55	98	9
1481982	23/64	0.3594	58	105	10
1482479	Ltr. U	0.3680	60	105	10
1481999	3/8	0.3750	60	105	10
1482003	25/64	0.3906	60	105	10
1482010	13/32	0.4063	66	114	11
1482026	27/64	0.4219	68	114	11
1482032	7/16	0.4375	71	121	12
1482049	29/64	0.4531	73	121	12
1482055	15/32	0.4688	73	121	12
1480780	31/64	0.4844	76	137	13
1480797	1/2	0.5000	78	137	13
1480802	33/64	0.5156	84	147	14
1480819	17/32	0.5313	84	147	14
1480825	35/64	0.5469	89	153	14
1480831	9/16	0.5625	89	153	15
1480848	37/64	0.5781	89	153	15
1480854	19/32	0.5938	96	160	16
1480860	39/64	0.6094	96	160	16
1480877	5/8	0.6250	96	160	16

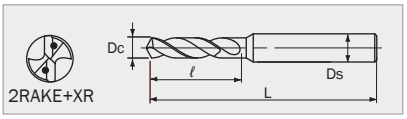
Package Qty: 1 per Tube Size

HIGH PERFORMANCE AQUA DRILL EX OIL HOLE 3D / METRIC SIZES

List No. 9604

***Replaces List No. 9558**

Coolant thru



Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
0704212	3.0	0.1181	17	68	3
0704229	3.1	0.1220	20	72	4
0704235	3.2	0.1260	20	72	4
0704241	3.3	0.1299	20	72	4
0704258	3.4	0.1339	20	72	4
0704264	3.5	0.1378	20	72	4
0704270	3.6	0.1417	22	72	4
0704287	3.7	0.1457	22	72	4
0704293	3.8	0.1496	22	72	4
0704309	3.9	0.1535	22	72	4
0704315	4.0	0.1575	22	72	4
0704321	4.1	0.1614	25	80	5
0704338	4.2	0.1654	25	80	5
0704344	4.3	0.1693	25	80	5
0704350	4.4	0.1732	25	80	5
0704367	4.5	0.1772	25	80	5
0704373	4.6	0.1811	27	80	5
0704380	4.7	0.1850	27	80	5
0704396	4.8	0.1890	27	80	5
0704401	4.9	0.1929	27	80	5
0704418	5.0	0.1969	27	80	5
0704424	5.1	0.2008	27	82	6
0704430	5.2	0.2047	27	82	6
0704447	5.3	0.2087	27	82	6
0704453	5.4	0.2126	27	82	6
0704460	5.5	0.2165	27	82	6
0704476	5.6	0.2205	30	82	6
0704482	5.7	0.2244	30	82	6
0704499	5.8	0.2283	30	82	6
0704504	5.9	0.2323	30	82	6
0704510	6.0	0.2362	30	82	6
0704527	6.1	0.2402	32	88	7
0704533	6.2	0.2441	32	88	7
0704540	6.3	0.2480	32	88	7
0704556	6.4	0.2520	32	88	7
0704562	6.5	0.2559	32	88	7
0704579	6.6	0.2598	35	88	7
0704585	6.7	0.2638	35	88	7
0704591	6.8	0.2677	35	88	7
0704607	6.9	0.2717	35	88	7
0704613	7.0	0.2756	35	88	7
0704620	7.1	0.2795	37	94	8
0704636	7.2	0.2835	37	94	8
0704642	7.3	0.2874	37	94	8
0704659	7.4	0.2913	37	94	8
0704665	7.5	0.2953	37	94	8
0704671	7.6	0.2992	40	94	8
0704688	7.7	0.3031	40	94	8
0704694	7.8	0.3071	40	94	8
0704700	7.9	0.3110	40	94	8
0704716	8.0	0.3150	40	94	8
0704722	8.1	0.3189	42	100	9
0704739	8.2	0.3228	42	100	9
0704745	8.3	0.3268	42	100	9
0704751	8.4	0.3307	42	100	9
0704768	8.5	0.3346	42	100	9

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
0704774	8.6	0.3386	45	100	9
0704780	8.7	0.3425	45	100	9
0704797	8.8	0.3465	45	100	9
0704802	8.9	0.3504	45	100	9
0704819	9.0	0.3543	45	100	9
0704825	9.1	0.3583	47	106	10
0704831	9.2	0.3622	47	106	10
0704848	9.3	0.3661	47	106	10
0704854	9.4	0.3701	47	106	10
0704860	9.5	0.3740	47	106	10
0704877	9.6	0.3780	50	106	10
0704883	9.7	0.3819	50	106	10
0704890	9.8	0.3858	50	106	10
0704905	9.9	0.3898	50	106	10
0704911	10.0	0.3937	50	106	10
0704928	10.1	0.3976	52	116	11
0704934	10.2	0.4016	52	116	11
0704940	10.3	0.4055	52	116	11
0704957	10.4	0.4094	52	116	11
0704963	10.5	0.4134	52	116	11
0704970	10.6	0.4173	55	116	11
0704986	10.7	0.4213	55	116	11
0704992	10.8	0.4252	55	116	11
0705007	10.9	0.4291	55	116	11
0705013	11.0	0.4331	55	116	11
0705020	11.1	0.4370	57	122	12
0705036	11.2	0.4409	57	122	12
0705042	11.3	0.4449	57	122	12
0705059	11.4	0.4488	57	122	12
0705065	11.5	0.4528	57	122	12
0705071	11.6	0.4567	60	122	12
0705088	11.7	0.4606	60	122	12
0705094	11.8	0.4646	60	122	12
0705100	11.9	0.4685	60	122	12
0705116	12.0	0.4724	60	122	12
0705122	12.1	0.4764	62	128	13
0705139	12.2	0.4803	62	128	13
0705145	12.3	0.4843	62	128	13
0705151	12.4	0.4882	62	128	13
0705168	12.5	0.4921	62	128	13
0705174	12.6	0.4961	65	128	13
0705180	12.7	0.5000	65	128	13
0705197	12.8	0.5039	65	128	13
0705202	12.9	0.5079	65	128	13
0705219	13.0	0.5118	65	128	13
0705225	13.1	0.5157	67	134	14
0705231	13.2	0.5197	67	134	14
0705248	13.3	0.5236	67	134	14
0705254	13.4	0.5276	67	134	14
0705260	13.5	0.5315	67	134	14
0705277	13.6	0.5354	70	134	14
0705283	13.7	0.5394	70	134	14
0705290	13.8	0.5433	70	134	14
0705305	13.9	0.5472	70	134	14
0705311	14.0	0.5512	70	134	14
0705328	14.1	0.5551	72	140	15

HIGH PERFORMANCE AQUA DRILL EX OIL HOLE 3D / METRIC & FRACTIONAL SIZES

List. No. 9604

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
0705334	14.2	0.5591	72	140	15
0705340	14.3	0.5630	72	140	15
0705357	14.4	0.5669	72	140	15
0705363	14.5	0.5709	72	140	15
0705370	14.6	0.5748	75	140	15
0705386	14.7	0.5787	75	140	15
0705392	14.8	0.5827	75	140	15
0705408	14.9	0.5866	75	140	15
0705414	15.0	0.5906	75	140	15
0705420	15.1	0.5945	77	146	16

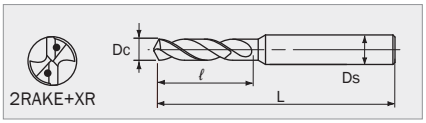
Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
0705437	15.2	0.5984	77	146	16
0705443	15.3	0.6024	77	146	16
0705450	15.4	0.6063	77	146	16
0705466	15.5	0.6102	77	146	16
0705472	15.6	0.6142	80	146	16
0705489	15.7	0.6181	80	146	16
0705495	15.8	0.6220	80	146	16
0705500	15.9	0.6260	80	146	16
0705517	16.0	0.6299	80	146	16

Package Qty: 1 per Tube Size

List No. 9605

***Replaces List No. 9558**

Fractional Sizes; Coolant thru



Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
1480883	1/8	0.1250	20	72	4
1480890	9/64	0.1406	22	72	4
1480905	5/32	0.1563	22	72	4
1482485	# 21 Wire	0.1590	27	80	5
1482491	#20 Wire	0.1610	27	80	5
1480911	11/64	0.1719	27	80	5
1480928	3/16	0.1875	27	80	5
1482507	#7 Wire	0.2010	27	82	6
1480934	13/64	0.2031	27	82	6
1482513	#3 Wire	0.2130	30	82	6
1480940	7/32	0.2188	30	82	6
1482520	#2 Wire	0.2210	30	82	6
1480957	15/64	0.2344	30	82	6
1480963	1/4	0.2500	32	88	7
1482536	Ltr. F	0.2570	35	88	7
1480970	17/64	0.2656	35	88	7
1482542	Ltr. I	0.2720	37	94	8
1482559	Ltr. J	0.2770	37	94	8
1480986	9/32	0.2813	37	94	8
1480992	19/64	0.2969	40	94	8
1481007	5/16	0.3125	40	94	8
1482565	Ltr. P	0.3230	42	100	9

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
1481013	21/64	0.3281	42	100	9
1482571	Ltr. Q	0.3320	45	100	9
1481020	11/32	0.3438	45	100	9
1481036	23/64	0.3594	47	106	10
1482588	Ltr. U	0.3680	50	106	10
1481042	3/8	0.3750	50	106	10
1481059	25/64	0.3906	50	106	10
1481065	13/32	0.4063	52	116	11
1481071	27/64	0.4219	55	116	11
1481088	7/16	0.4375	57	122	12
1481094	29/64	0.4531	60	122	12
1481100	15/32	0.4688	60	122	12
1481116	31/64	0.4844	62	128	13
1481122	1/2	0.5000	65	128	13
1481139	33/64	0.5156	67	134	14
1481145	17/32	0.5313	67	134	14
1481151	35/64	0.5469	70	134	14
1481168	9/16	0.5625	72	140	15
1481174	37/64	0.5781	75	140	15
1481180	19/32	0.5938	75	140	16
1481197	39/64	0.6094	77	146	16
1481202	5/8	0.6250	80	146	16

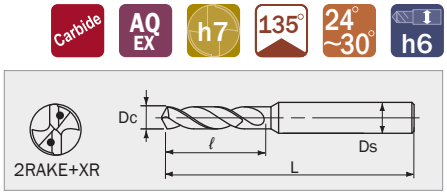
Package Qty: 1 per Tube Size

HIGH PERFORMANCE AQUA DRILL EX OIL HOLE 5D / METRIC SIZES

List No. 9606

***Replaces List No. 9554**

Coolant thru



Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
0705523	3.0	0.1181	28	78	3
0705530	3.1	0.1220	32	86	4
0705546	3.2	0.1260	32	86	4
0705552	3.3	0.1299	32	86	4
0705569	3.4	0.1339	32	86	4
0705575	3.5	0.1378	32	86	4
0705581	3.6	0.1417	36	86	4
0705598	3.7	0.1457	36	86	4
0705603	3.8	0.1496	36	86	4
0705610	3.9	0.1535	36	86	4
0705626	4.0	0.1575	36	86	4
0705632	4.1	0.1614	40	98	5
0705649	4.2	0.1654	40	98	5
0705655	4.3	0.1693	40	98	5
0705661	4.4	0.1732	40	98	5
0705678	4.5	0.1772	40	98	5
0705684	4.6	0.1811	44	98	5
0705690	4.7	0.1850	44	98	5
0705706	4.8	0.1890	44	98	5
0705712	4.9	0.1929	44	98	5
0705729	5.0	0.1969	44	98	5
0705735	5.1	0.2008	44	100	6
0705741	5.2	0.2047	44	100	6
0705758	5.3	0.2087	44	100	6
0705764	5.4	0.2126	44	100	6
0705770	5.5	0.2165	44	100	6
0705787	5.6	0.2205	48	100	6
0705793	5.7	0.2244	48	100	6
0705809	5.8	0.2283	48	100	6
0705815	5.9	0.2323	48	100	6
0705821	6.0	0.2362	48	100	6
0705838	6.1	0.2402	52	109	7
0705844	6.2	0.2441	52	109	7
0705850	6.3	0.2480	52	109	7
0705867	6.4	0.2520	52	109	7
0705873	6.5	0.2559	52	109	7
0705880	6.6	0.2598	56	109	7
0705896	6.7	0.2638	56	109	7
0705901	6.8	0.2677	56	109	7
0705918	6.9	0.2717	56	109	7
0705924	7.0	0.2756	56	109	7
0705930	7.1	0.2795	60	118	8
0705947	7.2	0.2835	60	118	8
0705953	7.3	0.2874	60	118	8
0705960	7.4	0.2913	60	118	8
0705976	7.5	0.2953	60	118	8
0705982	7.6	0.2992	64	118	8
0705999	7.7	0.3031	64	118	8
0706003	7.8	0.3071	64	118	8
0706010	7.9	0.3110	64	118	8
0706026	8.0	0.3150	64	118	8
0706032	8.1	0.3189	68	127	9
0706049	8.2	0.3228	68	127	9
0706055	8.3	0.3268	68	127	9
0706061	8.4	0.3307	68	127	9
0706078	8.5	0.3346	68	127	9

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
0706084	8.6	0.3386	72	127	9
0706090	8.7	0.3425	72	127	9
0706106	8.8	0.3465	72	127	9
0706112	8.9	0.3504	72	127	9
0706129	9.0	0.3543	72	127	9
0706135	9.1	0.3583	76	136	10
0706141	9.2	0.3622	76	136	10
0706158	9.3	0.3661	76	136	10
0706164	9.4	0.3701	76	136	10
0706170	9.5	0.3740	76	136	10
0706187	9.6	0.3780	80	136	10
0706193	9.7	0.3819	80	136	10
0706209	9.8	0.3858	80	136	10
0706215	9.9	0.3898	80	136	10
0706221	10.0	0.3937	80	136	10
0706238	10.1	0.3976	84	149	11
0706244	10.2	0.4016	84	149	11
0706250	10.3	0.4055	84	149	11
0706267	10.4	0.4094	84	149	11
0706273	10.5	0.4134	84	149	11
0706280	10.6	0.4173	88	149	11
0706296	10.7	0.4213	88	149	11
0706301	10.8	0.4252	88	149	11
0706318	10.9	0.4291	88	149	11
0706324	11.0	0.4331	88	149	11
0706330	11.1	0.4370	92	158	12
0706347	11.2	0.4409	92	158	12
0706353	11.3	0.4449	92	158	12
0706360	11.4	0.4488	92	158	12
0706376	11.5	0.4528	92	158	12
0706382	11.6	0.4567	96	158	12
0706399	11.7	0.4606	96	158	12
0706404	11.8	0.4646	96	158	12
0706410	11.9	0.4685	96	158	12
0706427	12.0	0.4724	96	158	12
0706433	12.1	0.4764	100	167	13
0706440	12.2	0.4803	100	167	13
0706456	12.3	0.4843	100	167	13
0706462	12.4	0.4882	100	167	13
0706479	12.5	0.4921	100	167	13
0706485	12.6	0.4961	104	167	13
0706491	12.7	0.5000	104	167	13
0706507	12.8	0.5039	104	167	13
0706513	12.9	0.5079	104	167	13
0706520	13.0	0.5118	104	167	13
0706536	13.1	0.5157	108	176	14
0706542	13.2	0.5197	108	176	14
0706559	13.3	0.5236	108	176	14
0706565	13.4	0.5276	108	176	14
0706571	13.5	0.5315	108	176	14
0706588	13.6	0.5354	112	176	14
0706594	13.7	0.5394	112	176	14
0706600	13.8	0.5433	112	176	14
0706616	13.9	0.5472	112	176	14
0706622	14.0	0.5512	112	176	14
0706639	14.1	0.5551	116	185	15

HIGH PERFORMANCE AQUA DRILL EX OIL HOLE 5D/ METRIC & FRACTIONAL SIZES

List. No. 9606

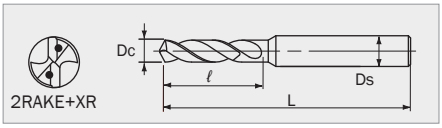
Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
0706639	14.1	0.5551	116	185	15
0706645	14.2	0.5591	116	185	15
0706651	14.3	0.5630	116	185	15
0706668	14.4	0.5669	116	185	15
0706674	14.5	0.5709	116	185	15
0706680	14.6	0.5748	120	185	15
0706697	14.7	0.5787	120	185	15
0706702	14.8	0.5827	120	185	15
0706719	14.9	0.5866	120	185	15
0706725	15.0	0.5906	120	185	15

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
0706731	15.1	0.5945	124	194	16
0706748	15.2	0.5984	124	194	16
0706754	15.3	0.6024	124	194	16
0706760	15.4	0.6063	124	194	16
0706777	15.5	0.6102	124	194	16
0706783	15.6	0.6142	128	194	16
0706790	15.7	0.6181	128	194	16
0706805	15.8	0.6220	128	194	16
0706811	15.9	0.6260	128	194	16
0706828	16.0	0.6299	128	194	16

Package Qty: 1 per Tube Size

List No. 9607

Carbide | AQ EX | h7 | 135° | 24°~30° | h6



***Replaces List No. 9554**

Fractional Sizes; Coolant thru

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
1481219	1/8	0.1250	32	86	4
1481225	9/64	0.1406	36	86	4
1481231	5/32	0.1563	36	86	4
1482594	# 21 Wire	0.1590	40	98	5
1482600	#20 Wire	0.1610	40	98	5
1481248	11/64	0.1719	40	98	5
1481254	3/16	0.1875	44	98	5
1482616	#7 Wire	0.2010	44	100	6
1481260	13/64	0.2031	44	100	6
1482622	#3 Wire	0.2130	48	100	6
1481277	7/32	0.2188	48	100	6
1482639	#2 Wire	0.2210	52	109	7
1481283	15/64	0.2344	48	100	6
1481290	1/4	0.2500	52	109	7
1482645	Ltr. F	0.2570	56	109	7
1481305	17/64	0.2656	56	109	7
1482651	Ltr. I	0.2720	60	118	8
1482668	Ltr. J	0.2770	60	118	8
1481311	9/32	0.2813	60	118	8
1481328	19/64	0.2969	64	118	8
1481334	5/16	0.3125	64	118	8
1482674	Ltr. P	0.3230	68	127	9

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
1481340	21/64	0.3281	68	127	9
1482680	Ltr. Q	0.3320	72	127	9
1481357	11/32	0.3438	72	127	9
1481363	23/64	0.3594	76	136	10
1482697	Ltr. U	0.3680	80	136	10
1481370	3/8	0.3750	80	136	10
1481386	25/64	0.3906	80	136	10
1481392	13/32	0.4063	84	149	11
1481408	27/64	0.4219	88	149	11
1481414	7/16	0.4375	92	158	12
1481420	29/64	0.4531	96	158	12
1481437	15/32	0.4688	96	158	12
1481443	31/64	0.4844	100	167	13
1481450	1/2	0.5000	104	167	13
1481466	33/64	0.5156	108	176	14
1481472	17/32	0.5313	108	176	14
1481489	35/64	0.5469	112	176	14
1481495	9/16	0.5625	116	185	15
1480418	37/64	0.5781	120	185	15
1480424	19/32	0.5938	124	194	16
1480430	39/64	0.6094	124	194	16
1480447	5/8	0.6250	128	194	16

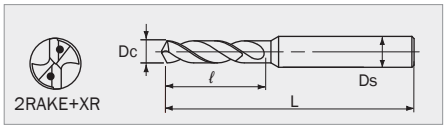
Package Qty: 1 per Tube Size

HIGH PERFORMANCE AQUA DRILL EX OIL HOLE 8D / METRIC SIZES

List No. 9608

*Replaces List No. 9556

Coolant thru



Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
0706834	3.0	0.1181	33	81	3
0706840	3.1	0.1220	38	92	4
0706857	3.2	0.1260	38	92	4
0706863	3.3	0.1299	38	92	4
0706870	3.4	0.1339	38	92	4
0706886	3.5	0.1378	38	92	4
0706892	3.6	0.1417	44	92	4
0706908	3.7	0.1457	44	92	4
0706914	3.8	0.1496	44	92	4
0706920	3.9	0.1535	44	92	4
0706937	4.0	0.1575	44	92	4
0706943	4.1	0.1614	49	105	5
0706950	4.2	0.1654	49	105	5
0706966	4.3	0.1693	49	105	5
0706972	4.4	0.1732	49	105	5
0706989	4.5	0.1772	49	105	5
0706995	4.6	0.1811	55	105	5
0707000	4.7	0.1850	55	105	5
0707016	4.8	0.1890	55	105	5
0707022	4.9	0.1929	55	105	5
0707039	5.0	0.1969	55	105	5
0707045	5.1	0.2008	60	118	6
0707051	5.2	0.2047	60	118	6
0707068	5.3	0.2087	60	118	6
0707074	5.4	0.2126	60	118	6
0707080	5.5	0.2165	60	118	6
0707097	5.6	0.2205	66	118	6
0707102	5.7	0.2244	66	118	6
0707119	5.8	0.2283	66	118	6
0707125	5.9	0.2323	66	118	6
0707131	6.0	0.2362	66	118	6
0707148	6.1	0.2402	71	130	7
0707154	6.2	0.2441	71	130	7
0707160	6.3	0.2480	71	130	7
0707177	6.4	0.2520	71	130	7
0707183	6.5	0.2559	71	130	7
0707190	6.6	0.2598	77	130	7
0707205	6.7	0.2638	77	130	7
0707211	6.8	0.2677	77	130	7
0707228	6.9	0.2717	77	130	7
0707234	7.0	0.2756	77	130	7
0707240	7.1	0.2795	82	142	8
0707257	7.2	0.2835	82	142	8
0707263	7.3	0.2874	82	142	8
0707270	7.4	0.2913	82	142	8
0707286	7.5	0.2953	82	142	8
0707292	7.6	0.2992	88	142	8
0707308	7.7	0.3031	88	142	8
0707314	7.8	0.3071	88	142	8
0707320	7.9	0.3110	88	142	8
0707337	8.0	0.3150	88	142	8
0707343	8.1	0.3189	93	154	9
0707350	8.2	0.3228	93	154	9
0707366	8.3	0.3268	93	154	9
0707372	8.4	0.3307	93	154	9
0707389	8.5	0.3346	93	154	9

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
0707395	8.6	0.3386	99	154	9
0707400	8.7	0.3425	99	154	9
0707417	8.8	0.3465	99	154	9
0707423	8.9	0.3504	99	154	9
0707430	9.0	0.3543	99	154	9
0707446	9.1	0.3583	104	166	10
0707452	9.2	0.3622	104	166	10
0707469	9.3	0.3661	104	166	10
0707475	9.4	0.3701	104	166	10
0707481	9.5	0.3740	104	166	10
0707498	9.6	0.3780	110	166	10
0707503	9.7	0.3819	110	166	10
0707510	9.8	0.3858	110	166	10
0707526	9.9	0.3898	110	166	10
0707532	10.0	0.3937	110	166	10
0707549	10.1	0.3976	115	182	11
0707555	10.2	0.4016	115	182	11
0707561	10.3	0.4055	115	182	11
0707578	10.4	0.4094	115	182	11
0707584	10.5	0.4134	115	182	11
0707590	10.6	0.4173	121	182	11
0707606	10.7	0.4213	121	182	11
0707612	10.8	0.4252	121	182	11
0707629	10.9	0.4291	121	182	11
0707635	11.0	0.4331	121	182	11
0707641	11.1	0.4370	126	194	12
0707658	11.2	0.4409	126	194	12
0707664	11.3	0.4449	126	194	12
0707670	11.4	0.4488	126	194	12
0707687	11.5	0.4528	126	194	12
0707693	11.6	0.4567	132	194	12
0707709	11.7	0.4606	132	194	12
0707715	11.8	0.4646	132	194	12
0707721	11.9	0.4685	132	194	12
0707738	12.0	0.4724	132	194	12
0707744	12.1	0.4764	137	206	13
0707750	12.2	0.4803	137	206	13
0707767	12.3	0.4843	137	206	13
0707773	12.4	0.4882	137	206	13
0707780	12.5	0.4921	137	206	13
0707796	12.6	0.4961	143	206	13
0707801	12.7	0.5000	143	206	13
0707818	12.8	0.5039	143	206	13
0707824	12.9	0.5079	143	206	13
0707830	13.0	0.5118	143	206	13
0707847	13.1	0.5157	148	218	14
0707853	13.2	0.5197	148	218	14
0707860	13.3	0.5236	148	218	14
0707876	13.4	0.5276	148	218	14
0707882	13.5	0.5315	148	218	14
0707899	13.6	0.5354	154	218	14
0707904	13.7	0.5394	154	218	14
0707910	13.8	0.5433	154	218	14
0707927	13.9	0.5472	154	218	14
0707933	14.0	0.5512	154	218	14
0707940	14.1	0.5551	159	230	15

HIGH PERFORMANCE AQUA DRILL EX OIL HOLE 8D/ METRIC & FRACTIONAL SIZES

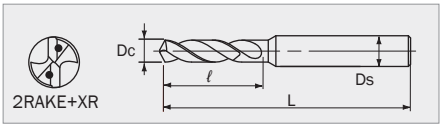
List. No. 9608

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
0707956	14.2	0.5591	159	230	15
0707962	14.3	0.5630	159	230	15
0707979	14.4	0.5669	159	230	15
0707985	14.5	0.5709	159	230	15
0707991	14.6	0.5748	165	230	15
0708006	14.7	0.5787	165	230	15
0708012	14.8	0.5827	165	230	15
0708029	14.9	0.5866	165	230	15
0708035	15.0	0.5906	165	230	15
0708041	15.1	0.5945	170	242	16

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
0708058	15.2	0.5984	170	242	16
0708064	15.3	0.6024	170	242	16
0708070	15.4	0.6063	170	242	16
0708087	15.5	0.6102	170	242	16
0708093	15.6	0.6142	176	242	16
0708109	15.7	0.6181	176	242	16
0708115	15.8	0.6220	176	242	16
0708121	15.9	0.6260	176	242	16
0708138	16.0	0.6299	176	242	16

Package Qty: 1 per Tube Size

List No. 9609



***Replaces List No. 9569**

Fractional Sizes; Coolant thru

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
1480453	1/8	0.1250	38	92	4
1480460	9/64	0.1406	44	92	4
1480476	5/32	0.1563	44	92	4
1482702	# 21 Wire	0.1590	49	105	5
1482719	#20 Wire	0.1610	49	105	5
1480482	11/64	0.1719	49	105	5
1480499	3/16	0.1875	55	105	5
1482725	#7 Wire	0.2010	60	118	6
1480504	13/64	0.2031	60	118	6
1482731	#3 Wire	0.2130	66	118	6
1480510	7/32	0.2188	66	118	6
1482748	#2 Wire	0.2210	66	118	6
1480527	15/64	0.2344	66	118	6
1480533	1/4	0.2500	71	130	7
1482754	Ltr. F	0.2570	77	130	7
1480540	17/64	0.2656	77	130	7
1482760	Ltr. I	0.2720	82	142	8
1482777	Ltr. J	0.2770	82	142	8
1480556	9/32	0.2813	82	142	8
1480562	19/64	0.2969	88	142	8
1480579	5/16	0.3125	88	142	8
1482783t	Ltr. P	0.3230	93	154	9

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
1480585	21/64	0.3281	93	154	9
1482790	Ltr. Q	0.3320	99	154	9
1480591	11/32	0.3438	99	154	9
1480607	23/64	0.3594	104	166	10
1482805	Ltr. U	0.3680	110	166	10
1480613	3/8	0.3750	110	166	10
1480620	25/64	0.3906	110	166	10
1480636	13/32	0.4063	115	182	11
1480642	27/64	0.4219	121	182	11
1480659	7/16	0.4375	126	194	12
1480665	29/64	0.4531	132	194	12
1480671	15/32	0.4688	132	194	12
1480688	31/64	0.4844	137	206	13
1480694	1/2	0.5000	143	206	13
1480700	33/64	0.5156	148	218	14
1480716	17/32	0.5313	148	218	14
1480722	35/64	0.5469	154	218	14
1480739	9/16	0.5625	159	230	15
1480745	37/64	0.5781	159	230	15
1480751	19/32	0.5938	170	242	16
1480768	39/64	0.6094	170	242	16
1480774	5/8	0.6250	176	242	16

Package Qty: 1 per Tube Size

HIGH PERFORMANCE AQUA DRILL EX FLAT / METRIC SIZES

List No. 9610 High Performance

AQDEXZ Aqua Drill EX Flat

Range 1.0 to 20.0

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	L1	Shank Dia
EDP	Dc		ℓ	L	L1	Ds
0715148	1.0	0.0394	3.3	47	3.6	3
0715154	1.1	0.0433	3.5	47	3.9	3
0715160	1.2	0.0472	3.9	47	4.2	3
0715177	1.3	0.0512	4.2	47	4.5	3
0715183	1.4	0.0551	4.6	47	4.9	3
0715190	1.5	0.0591	4.9	50	5.2	3
0715205	1.6	0.0630	5.2	50	5.5	3
0715211	1.7	0.0669	5.5	50	5.8	3
0715228	1.8	0.0709	5.8	50	6.1	3
0715234	1.9	0.0748	6.2	50	6.5	3
0711354	2.0	0.0787	9	50	9.8	4
0713180	2.1	0.0827	11	50	11.4	4
0711360	2.2	0.0866	11	50	11.4	4
0713197	2.3	0.0906	11	50	11.5	4
0713202	2.4	0.0945	12	50	12.6	4
0711377	2.5	0.0984	12	50	12.7	4
0713219	2.6	0.1024	12	50	12.8	4
0713225	2.7	0.1063	14	50	14.9	4
0713231	2.8	0.1102	14	50	15.0	4
0713248	2.9	0.1142	14	50	15.0	4
0709920	3.0	0.1181	14	50	14.4	6
0713254	3.1	0.1220	15	50	15.5	6
0713260	3.2	0.1260	15	50	15.6	6
0710839	3.3	0.1299	15	50	15.7	6
0713277	3.4	0.1339	16	50	16.2	6
0709936	3.5	0.1378	16	50	16.3	6
0713283	3.6	0.1417	16	50	16.4	6
0713290	3.7	0.1457	18	50	18.0	6
0713305	3.8	0.1496	18	50	18.1	6
0713311	3.9	0.1535	18	50	18.2	6
0709942	4.0	0.1575	18	50	18.3	6
0713328	4.1	0.1614	19	60	20.4	6
0710845	4.2	0.1654	19	60	20.4	6
0713334	4.3	0.1693	19	60	20.5	6
0713340	4.4	0.1732	21	60	22.6	6
0709959	4.5	0.1772	21	60	22.7	6
0713357	4.6	0.1811	21	60	22.8	6
0713363	4.7	0.1850	22	60	22.9	6
0713370	4.8	0.1890	22	60	23.0	6
0713386	4.9	0.1929	22	60	23.0	6
0709965	5.0	0.1969	23	60	23.1	6
0713392	5.1	0.2008	24	60	26.2	6
0713408	5.2	0.2047	24	60	26.3	6
0711390	5.3	0.2087	24	60	26.4	6
0713414	5.4	0.2126	25	60	27.5	6
0709971	5.5	0.2165	25	60	27.6	6
0713420	5.6	0.2205	25	60	27.7	6
0713437	5.7	0.2244	27	60	29.7	6
0713443	5.8	0.2283	27	60	29.8	6
0713450	5.9	0.2323	27	60	29.9	6
0709988	6.0	0.2362	27	60	30	6
0713466	6.1	0.2402	28	70	31	6
0713472	6.2	0.2441	28	70	31	6
0713489	6.3	0.2480	28	70	31	6
0713495	6.4	0.2520	30	70	33	6
0709994	6.5	0.2559	30	70	33	6
0713500	6.6	0.2598	30	70	33	6
0713517	6.7	0.2638	31	70	33	6
0710851	6.8	0.2677	31	70	33	6
0713523	6.9	0.2717	31	70	33	6
0710008	7.0	0.2756	32	70	33	6
0713530	7.1	0.2795	33	70	36	6
0713546	7.2	0.2835	33	70	36	6
0713552	7.3	0.2874	33	70	36	6

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	L1	Shank Dia
EDP	Dc		ℓ	L	L1	Ds
0713569	7.4	0.2913	34	70	36	6
0710014	7.5	0.2953	34	70	36	6
0713575	7.6	0.2992	34	70	36	6
0713581	7.7	0.3031	36	70	39	6
0713598	7.8	0.3071	36	70	39	6
0713603	7.9	0.3110	36	70	39	6
0710020	8.0	0.3150	36	70	39	8
0713610	8.1	0.3189	37	80	40	8
0713626	8.2	0.3228	37	80	40	8
0713632	8.3	0.3268	37	80	40	8
0713649	8.4	0.3307	39	80	42	8
0710037	8.5	0.3346	39	80	42	8
0713655	8.6	0.3386	39	80	42	8
0713661	8.7	0.3425	40	80	42	8
0711405	8.8	0.3465	40	80	42	8
0713678	8.9	0.3504	40	80	42	8
0710043	9.0	0.3543	41	80	42	8
0713684	9.1	0.3583	42	80	45	8
0713690	9.2	0.3622	43	80	45	8
0713706	9.3	0.3661	43	80	45	8
0713712	9.4	0.3701	43	80	45	8
0710050	9.5	0.3740	43	80	45	8
0713729	9.6	0.3780	43	80	45	8
0713735	9.7	0.3819	45	80	48	8
0713741	9.8	0.3858	45	80	48	8
0713758	9.9	0.3898	45	80	48	8
0710066	10.0	0.3937	45	80	48	10
0713764	10.1	0.3976	46	90	49	10
0713770	10.2	0.4016	46	90	49	10
0710868	10.3	0.4055	46	90	49	10
0713787	10.4	0.4094	48	90	51	10
0710072	10.5	0.4134	48	90	51	10
0713793	10.6	0.4173	48	90	51	10
0713809	10.7	0.4213	49	90	51	10
0711411	10.8	0.4252	49	90	51	10
0713815	10.9	0.4291	49	90	54	10
0710089	11.0	0.4331	50	90	54	10
0713821	11.1	0.4370	51	90	54	10
0713838	11.2	0.4409	51	90	54	10
0713844	11.3	0.4449	51	90	54	10
0713850	11.4	0.4488	52	90	54	10
0710095	11.5	0.4528	52	90	54	10
0713867	11.6	0.4567	52	90	54	10
0713873	11.7	0.4606	54	90	57	10
0713880	11.8	0.4646	54	90	57	10
0713896	11.9	0.4685	54	90	57	10
0710100	12.0	0.4724	54	90	57	12
0724619	12.1	0.4764	54	100	57	12
0724625	12.2	0.4803	54	100	57	12
0724631	12.3	0.4843	54	100	57	12
0724648	12.4	0.4882	54	100	57	12
0710117	12.5	0.4921	57	100	60	12
0724654	12.6	0.4961	57	100	60	12
0724660	12.7	0.5000	57	100	60	12
0724677	12.8	0.5039	57	100	60	12
0724683	12.9	0.5079	57	100	60	12
0710123	13.0	0.5118	59	100	60	12
0724690	13.1	0.5157	59	100	63	12
0724705	13.2	0.5197	59	100	63	12
0724711	13.3	0.5236	59	100	63	12
0724728	13.4	0.5276	59	100	63	12
0710130	13.5	0.5315	61	100	63	12
0724734	13.6	0.5354	61	100	63	12
0724740	13.7	0.5394	61	100	63	12

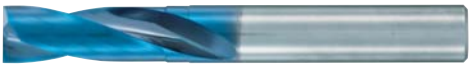
Package Qty: 1 per Tube Size

HIGH PERFORMANCE AQUA DRILL EX FLAT / METRIC & FRACTIONAL SIZES
AQUA DRILL EX FLAT RADIUS / METRIC SIZES

List No. 9610

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	L1	Shank Dia
EDP	Dc		ℓ	L	L1	Ds
0724757	13.8	0.5433	61	100	63	12
0724763	13.9	0.5472	61	100	63	12
0710146	14.0	0.5512	63	100	66	12
0724770	14.1	0.5551	63	100	66	12
0724786	14.2	0.5591	63	100	66	12
0724792	14.3	0.5630	63	100	66	12
0724808	14.4	0.5669	63	100	66	12
0710152	14.5	0.5709	66	105	69	12
0724814	14.6	0.5748	66	105	69	12
0724820	14.7	0.5787	66	105	69	12
0724837	14.8	0.5827	66	105	69	12
0724843	14.9	0.5866	66	105	69	12
0710169	15.0	0.5906	68	105	69	12
0724850	15.1	0.5945	68	105	69	12
0724866	15.2	0.5984	68	105	69	12
0724872	15.3	0.6024	68	105	69	12
0724889	15.4	0.6063	68	105	69	12
0710175	15.5	0.6102	70	115	72	12
0724895	15.6	0.6142	70	115	72	12
0724900	15.7	0.6181	70	115	72	12
0724917	15.8	0.6220	70	115	72	12
0724923	15.9	0.6260	70	115	72	12
0710181	16.0	0.6299	72	115	75	16
0710198	16.5	0.6496	75	115	78	16
0710203	17.0	0.6693	77	125	79	16
0710210	17.5	0.6890	79	125	81	16
0710226	18.0	0.7087	81	125	84	16
0710232	18.5	0.7283	84	135	87	16
0710249	19.0	0.7480	86	135	87	16
0710255	19.5	0.7677	88	145	91	16
0710261	20.0	0.7874	90	145	93	20

List No. 9611 High Performance



Fractional sizes: Range 1/8 to 3/4

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	L1	Shank Dia
EDP	Dc		ℓ	L	L1	Ds
1455595	1/8	0.125	15	50	18	6
1455600	5/32	0.1563	18	50	20	6
1455617	3/16	0.1875	22	60	24	6
1455623	7/32	0.2188	25	60	28	6
1455630	1/4	0.2500	30	70	33	6
1455646	9/32	0.2183	33	70	36	6
1455652	5/16	0.3125	36	70	39	6
1455669	21/64	0.3281	39	80	42	8
1455675	23/64	0.3594	42	80	45	8
1455681	3/8	0.3750	43	80	45	8
1455698	13/32	0.4063	48	90	51	10
1455703	7/16	0.4375	51	90	54	10
1455710	29/64	0.4531	52	90	54	10
1455726	15/32	0.4688	54	90	57	10
1455732	1/2	0.5000	58	100	60	12
1455749	9/16	0.5625	64	105	67	12
1455755	5/8	0.6250	72	115	75	12
1455761	11/16	0.6875	79	125	81	16
1455778	3/4	0.7500	87	135	90	16

Package Qty: 1 per Tube Size

List No. 9830 High Performance

Item Code	Size	Decimal Equivalent	Radius	Flute Length	Overall Length	L1	Shank Dia
EDP	Dc		r	ℓ	L	L1	Ds
0732580	3.0	0.1181	0.3	14	50	14.4	6
0732597	3.3	0.1299	0.3	15	50	15.7	6
0732602	3.5	0.1378	0.3	16	50	16.3	6
0732619	4.0	0.1575	0.3	18	50	18.3	6
0732625	4.2	0.1654	0.3	19	60	20.4	6
0732631	4.5	0.1772	0.3	21	60	22.7	6
0732648	5.0	0.1969	0.3	23	60	23.1	6
0732654	5.3	0.2087	0.3	24	60	26.4	6
0732660	5.5	0.2165	0.3	25	60	27.6	6
0732677	6.0	0.2362	0.4	27	60	30	6
0732683	6.5	0.2559	0.4	30	70	33	6
0732690	6.8	0.2677	0.4	31	70	33	6
0732705	7.0	0.2756	0.4	32	70	33	6
0732711	7.5	0.2953	0.4	34	70	36	6
0732728	8.0	0.3150	0.4	36	70	39	8
0732734	8.5	0.3346	0.4	39	80	42	8
0732740	8.8	0.3465	0.4	40	80	42	8
0732757	9.0	0.3543	0.4	41	80	42	8
0732763	9.5	0.3740	0.4	43	80	45	8
0732770	10.0	0.3937	0.5	45	80	48	10
0732786	10.3	0.4055	0.5	46	90	49	10
0732792	10.5	0.4134	0.5	48	90	51	10
0732808	10.8	0.4252	0.5	49	90	51	10
0732814	11.0	0.4331	0.5	50	90	51	10
0732820	11.5	0.4528	0.5	52	90	54	10
0732837	12.0	0.4724	0.5	54	90	57	12

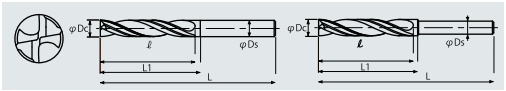
HIGH PERFORMANCE AQUA DRILL EX FLAT / METRIC SIZES

List No. 9818

Range 3.0 to 20.0

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	L1	Shank Dia
EDP	Dc		ℓ	L	L1	Ds
0720751	3.0	0.1181	19	60	20	6
0720768	3.1	0.1220	21	60	23	6
0720774	3.2	0.1260	21	60	23	6
0720780	3.3	0.1299	21	60	24	6
0720797	3.4	0.1339	23	60	24	6
0720802	3.5	0.1378	23	60	24	6
0720819	3.6	0.1417	23	60	25	6
0720825	3.7	0.1457	25	60	25	6
0720831	3.8	0.1496	25	60	25	6
0720848	3.9	0.1535	25	60	25	6
0720854	4.0	0.1575	25	60	25	6
0720860	4.1	0.1614	27	70	29	6
0720877	4.2	0.1654	27	70	29	6
0720883	4.3	0.1693	27	70	30	6
0720890	4.4	0.1732	29	70	32	6
0720905	4.5	0.1772	29	70	32	6
0720911	4.6	0.1811	29	70	32	6
0720928	4.7	0.1850	31	70	33	6
0720934	4.8	0.1890	31	70	33	6
0720940	4.9	0.1929	31	70	32	6
0720957	5.0	0.1969	32	70	32	6
0720963	5.1	0.2008	34	70	36	6
0720970	5.2	0.2047	34	70	36	6
0720986	5.3	0.2087	34	70	36	6
0720992	5.4	0.2126	36	70	37	6
0721007	5.5	0.2165	36	70	37	6
0721013	5.6	0.2205	36	70	39	6
0721020	5.7	0.2244	38	70	39	6
0721036	5.8	0.2283	38	70	39	6
0721042	5.9	0.2323	38	70	39	6
0721059	6.0	0.2362	40	70	39	6
0721065	6.1	0.2402	40	70	41	6
0721071	6.2	0.2441	40	70	41	6
0721088	6.3	0.2480	40	70	41	6
0721094	6.4	0.2520	42	70	43	6
0721100	6.5	0.2559	42	70	43	6
0721116	6.6	0.2598	42	70	43	6
0721122	6.7	0.2638	44	70	45	6
0721139	6.8	0.2677	44	70	45	6
0721145	6.9	0.2717	44	70	45	6
0721151	7.0	0.2756	46	90	47	6
0721168	7.1	0.2795	46	90	47	6
0721174	7.2	0.2835	46	90	47	6
0721180	7.3	0.2874	48	90	47	6
0721197	7.4	0.2913	48	90	49	6
0721202	7.5	0.2953	48	90	49	6
0721219	7.6	0.2992	51	90	49	6
0721225	7.7	0.3031	51	90	52	6
0721231	7.8	0.3071	51	90	52	6
0721248	7.9	0.3110	51	90	52	6
0721254	8.0	0.3150	51	100	53	8
0721260	8.1	0.3189	52	100	53	8
0721277	8.2	0.3228	52	100	53	8
0721283	8.3	0.3268	52	100	53	8
0721290	8.4	0.3307	54	100	55	8
0721305	8.5	0.3346	54	100	55	8
0721311	8.6	0.3386	54	100	55	8
0721328	8.7	0.3425	56	100	57	8
0721334	8.8	0.3465	56	100	57	8
0721340	8.9	0.3504	56	100	57	8
0721357	9.0	0.3543	58	100	59	8

AQDEXZR Aqua Drill EX Flat Regular

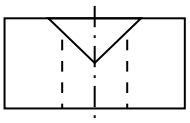


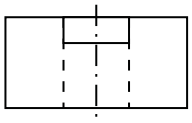
Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	L1	Shank Dia
EDP	Dc		ℓ	L	L1	Ds
0721363	9.1	0.3583	59	100	60	8
0721370	9.2	0.3622	59	100	60	8
0721386	9.3	0.3661	59	100	60	8
0721392	9.4	0.3701	61	100	62	8
0721408	9.5	0.3740	61	100	62	8
0721414	9.6	0.3780	61	100	62	8
0721420	9.7	0.3819	63	100	64	8
0721437	9.8	0.3858	63	100	64	8
0721443	9.9	0.3898	63	100	64	8
0721450	10.0	0.3937	63	110	65	10
0721466	10.1	0.3976	65	110	66	10
0721472	10.2	0.4016	65	110	66	10
0721489	10.3	0.4055	65	110	68	10
0721495	10.4	0.4094	67	110	68	10
0721500	10.5	0.4134	67	110	68	10
0721517	10.6	0.4173	67	110	70	10
0721523	10.7	0.4213	69	110	70	10
0721530	10.8	0.4252	69	110	70	10
0721546	10.9	0.4291	69	110	70	10
0721552	11.0	0.4331	70	115	71	10
0721569	11.1	0.4370	71	115	72	10
0721575	11.2	0.4409	71	115	72	10
0721581	11.3	0.4449	71	115	72	10
0721598	11.4	0.4488	73	115	74	10
0721603	11.5	0.4528	73	115	74	10
0721610	11.6	0.4567	73	115	74	10
0721626	11.7	0.4606	76	115	77	10
0721632	11.8	0.4646	76	115	77	10
0721649	11.9	0.4685	76	115	77	10
0721655	12.0	0.4724	76	125	78	12
0721661	12.5	0.4921	80	125	81	12
0721678	13.0	0.5118	82	130	83	12
0721684	13.5	0.5315	86	130	87	12
0721690	14.0	0.5512	88	135	89	12
0721706	14.5	0.5709	92	135	93	12
0721712	15.0	0.5906	95	145	96	12
0721729	15.5	0.6102	98	145	99	12
0721735	16.0	0.6299	101	160	104	16
0721741	16.5	0.6496	105	160	106	16
0721758	17.0	0.6693	108	165	109	16
0721764	17.5	0.6890	111	165	112	16
0721770	18.0	0.7087	113	175	114	16
0721787	18.5	0.7283	118	175	119	16
0721793	19.0	0.7480	120	185	121	16
0721809	19.5	0.7677	124	185	125	16
0721815	20.0	0.7874	126	195	129	20

Package Qty: 1 per Tube Size

Note:

- Center Drill or Guide Hole Required for over 4XD length





- Using a Center Drill
- Center Hole Diameter should be 0.5mm larger than Flat drill Diameter

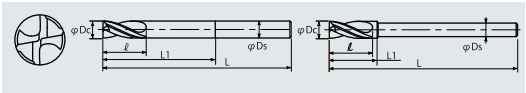
- Using a Pilot Drill
- Guide hole diamter should same as Flat drill Diameter

- Nachi Recommends using L6502 or L6504 AG Staring Drill (Page 114)

List No. 9816 High Performance

Carbide Material | AQ EX Coating | 20° Helix | h7 Dia.Tol | 180° Point Angle | h6 Shank Dia.Tolerance

AQDEXZLS Aqua Drill EX Flat Extended Length



Range 3.0 to 20.0

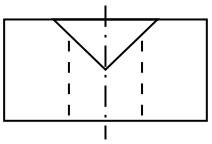
Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	L1	Shank Dia
EDP	Dc		ℓ	L	L1	Ds
0717701	3.0	0.1181	14	100	30	6
0717718	3.1	0.1220	15	100	31	6
0717724	3.2	0.1260	15	100	32	6
0717730	3.3	0.1299	15	100	33	6
0717747	3.4	0.1339	16	100	34	6
0717753	3.5	0.1378	16	100	35	6
0717760	3.6	0.1417	16	100	36	6
0717776	3.7	0.1457	18	100	37	6
0717782	3.8	0.1496	18	100	38	6
0717799	3.9	0.1535	18	100	39	6
0717804	4.0	0.1575	18	100	40	6
0717810	4.1	0.1614	19	100	41	6
0717827	4.2	0.1654	19	100	42	6
0717833	4.3	0.1693	19	100	43	6
0717840	4.4	0.1732	21	100	44	6
0717856	4.5	0.1772	21	100	45	6
0717862	4.6	0.1811	21	100	46	6
0717879	4.7	0.1850	22	100	47	6
0717885	4.8	0.1890	22	100	48	6
0717891	4.9	0.1929	22	100	49	6
0717907	5.0	0.1969	23	110	50	6
0717913	5.1	0.2008	24	110	51	6
0717920	5.2	0.2047	24	110	52	6
0717936	5.3	0.2087	24	110	53	6
0717942	5.4	0.2126	25	110	54	6
0717959	5.5	0.2165	25	110	55	6
0717965	5.6	0.2205	25	110	56	6
0717971	5.7	0.2244	27	110	57	6
0717988	5.8	0.2283	27	110	58	6
0717994	5.9	0.2323	27	110	59	6
0718009	6.0	0.2362	27	120	60	6
0718015	6.1	0.2402	28	120	30	6
0718021	6.2	0.2441	28	120	30	6
0718038	6.3	0.2480	28	120	30	6
0718044	6.4	0.2520	30	120	32	6
0718050	6.5	0.2559	30	120	32	6
0718067	6.6	0.2598	30	120	32	6
0718073	6.7	0.2638	31	120	33	6
0718080	6.8	0.2677	31	120	33	6
0718096	6.9	0.2717	31	120	33	6
0718101	7.0	0.2756	32	120	34	6
0718118	7.1	0.2795	33	120	35	6
0718124	7.2	0.2835	33	120	35	6
0718130	7.3	0.2874	33	120	35	6
0718147	7.4	0.2913	34	120	36	6
0718153	7.5	0.2953	34	120	36	6
0718160	7.6	0.2992	34	120	36	6
0718176	7.7	0.3031	36	120	38	6
0718182	7.8	0.3071	36	120	38	6
0718199	7.9	0.3110	36	120	38	6
0718204	8.0	0.3150	36	130	80	8
0718210	8.1	0.3189	37	130	39	8
0718227	8.2	0.3228	37	130	39	8
0718233	8.3	0.3268	37	130	39	8
0718240	8.4	0.3307	39	130	41	8
0718256	8.5	0.3346	39	130	41	8
0718262	8.6	0.3386	39	130	41	8
0718279	8.7	0.3425	40	130	42	8
0718285	8.8	0.3465	40	130	42	8
0718291	8.9	0.3504	40	130	42	8
0718307	9.0	0.3543	41	130	43	8

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	L1	Shank Dia
EDP	Dc		ℓ	L	L1	Ds
0718313	9.1	0.3583	42	130	44	8
0718320	9.2	0.3622	42	130	44	8
0718336	9.3	0.3661	42	130	44	8
0718342	9.4	0.3701	43	130	45	8
0718359	9.5	0.3740	43	130	45	8
0718365	9.6	0.3780	43	130	45	8
0718371	9.7	0.3819	45	130	47	8
0718388	9.8	0.3858	45	130	47	8
0718394	9.9	0.3898	45	130	47	8
0718400	10.0	0.3937	45	150	100	10
0718416	10.1	0.3976	46	150	48	10
0718422	10.2	0.4016	46	150	48	10
0718439	10.3	0.4055	46	150	48	10
0718445	10.4	0.4094	48	150	50	10
0718451	10.5	0.4134	48	150	50	10
0718468	10.6	0.4173	48	150	50	10
0718474	10.7	0.4213	49	150	51	10
0718480	10.8	0.4252	49	150	51	10
0718497	10.9	0.4291	49	150	51	10
0718502	11.0	0.4331	50	150	52	10
0718519	11.1	0.4370	51	150	53	10
0718525	11.2	0.4409	51	150	53	10
0718531	11.3	0.4449	51	150	53	10
0718548	11.4	0.4488	52	150	54	10
0718554	11.5	0.4528	52	150	54	10
0718560	11.6	0.4567	52	150	54	10
0718577	11.7	0.4606	54	150	56	10
0718583	11.8	0.4646	54	150	56	10
0718590	11.9	0.4685	54	150	56	10
0718605	12.0	0.4724	54	170	120	12
0718611	12.5	0.4921	57	170	59	12
0718628	13.0	0.5118	59	180	61	12
0718634	13.5	0.5315	61	180	63	12
0718640	14.0	0.5512	63	190	65	12
0718657	14.5	0.5709	66	190	68	12
0718663	15.0	0.5906	67	200	69	12
0718670	15.5	0.6102	70	200	72	12
0718686	16.0	0.6299	72	220	160	12
0718692	16.5	0.6496	75	220	77	16
0718708	17.0	0.6693	77	220	79	16
0718714	17.5	0.6890	79	220	81	16
0718720	18.0	0.7087	81	240	83	16
0718737	18.5	0.7283	84	240	86	16
0718743	19.0	0.7480	86	250	88	16
0718750	19.5	0.7677	88	250	90	16
0718766	20.0	0.7874	90	250	200	20

Package Qty: 1 per Tube Size

Note:

- Center Drill Required for AQUA Flat Extended Length



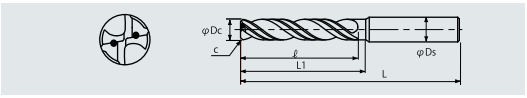
  - Using a Center Drill
  - Center Hole Diameter should be 0.5mm larger than Flat drill Diameter

- Nachi Recommends using L6502 or L6504 AG Starting Drill (Page 114)

HIGH PERFORMANCE AQUA DRILL EX FLAT 3XD OIL HOLE / METRIC SIZES

List No. 9812

AQDEXZOH3D Aqua Drill EX Flat Oil Hole 3XD



Range 3.0 to 16.0

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	L1	Shank Dia
EDP	Dc		ℓ	L	L1	Ds
0718772	3.0	0.1181	14	68	15	3
0718789	3.1	0.1220	15	72	17	4
0718795	3.2	0.1260	15	72	17	4
0718800	3.3	0.1299	15	72	17	4
0718817	3.4	0.1339	16	72	17	4
0718823	3.5	0.1378	16	72	18	4
0718830	3.6	0.1417	16	72	19	4
0718846	3.7	0.1457	18	72	19	4
0718852	3.8	0.1496	18	72	19	4
0718869	3.9	0.1535	18	72	19	4
0718875	4.0	0.1575	18	72	19	4
0718881	4.1	0.1614	19	80	22	5
0718898	4.2	0.1654	19	80	22	5
0718903	4.3	0.1693	19	80	22	5
0718910	4.4	0.1732	21	80	22	5
0718926	4.5	0.1772	21	80	23	5
0718932	4.6	0.1811	21	80	24	5
0718949	4.7	0.1850	22	80	24	5
0718955	4.8	0.1890	22	80	24	5
0718961	4.9	0.1929	22	80	24	5
0718978	5.0	0.1969	23	80	24	5
0718984	5.1	0.2008	24	82	26	6
0718990	5.2	0.2047	24	82	26	6
0719005	5.3	0.2087	24	82	26	6
0719011	5.4	0.2126	25	82	26	6
0719028	5.5	0.2165	25	82	27	6
0719034	5.6	0.2205	25	82	28	6
0719040	5.7	0.2244	27	82	28	6
0719057	5.8	0.2283	27	82	28	6
0719063	5.9	0.2323	27	82	28	6
0719070	6.0	0.2362	27	82	28	6
0719086	6.1	0.2402	28	88	31	7
0719092	6.2	0.2441	28	88	31	7
0719108	6.3	0.2480	28	88	31	7
0719114	6.4	0.2520	30	88	31	7
0719120	6.5	0.2559	30	88	32	7
0719137	6.6	0.2598	30	88	33	7
0719143	6.7	0.2638	31	88	33	7
0719150	6.8	0.2677	31	88	33	7
0719166	6.9	0.2717	31	88	33	7
0719172	7.0	0.2756	32	88	33	7
0719189	7.1	0.2795	33	94	35	8
0719195	7.2	0.2835	33	94	35	8
0719200	7.3	0.2874	33	94	35	8
0719217	7.4	0.2913	34	94	35	8
0719223	7.5	0.2953	34	94	36	8
0719230	7.6	0.2992	34	94	37	8
0719246	7.7	0.3031	36	94	37	8
0719252	7.8	0.3071	36	94	37	8
0719269	7.9	0.3110	36	94	37	8
0719275	8.0	0.3150	36	94	37	8
0719281	8.1	0.3189	37	100	40	9
0719298	8.2	0.3228	37	100	40	9
0719303	8.3	0.3268	37	100	40	9
0719310	8.4	0.3307	39	100	40	9
0719326	8.5	0.3346	39	100	41	9
0719332	8.6	0.3386	39	100	42	9
0719349	8.7	0.3425	40	100	42	9
0719355	8.8	0.3465	40	100	42	9
0719361	8.9	0.3504	40	100	42	9
0719378	9.0	0.3543	41	100	42	9

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	L1	Shank Dia
EDP	Dc		ℓ	L	L1	Ds
0719384	9.1	0.3583	42	106	44	10
0719390	9.2	0.3622	42	106	44	10
0719406	9.3	0.3661	42	106	44	10
0719412	9.4	0.3701	43	106	44	10
0719429	9.5	0.3740	43	106	45	10
0719435	9.6	0.3780	43	106	46	10
0719441	9.7	0.3819	45	106	46	10
0719458	9.8	0.3858	45	106	46	10
0719464	9.9	0.3898	45	106	46	10
0719470	10.0	0.3937	45	106	46	10
0719487	10.1	0.3976	46	116	49	11
0719493	10.2	0.4016	46	116	49	11
0719509	10.3	0.4055	46	116	49	11
0719515	10.4	0.4094	48	116	49	11
0719521	10.5	0.4134	48	116	50	11
0719538	10.6	0.4173	48	116	51	11
0719544	10.7	0.4213	49	116	51	11
0719550	10.8	0.4252	49	116	51	11
0719567	10.9	0.4291	49	116	51	11
0719573	11.0	0.4331	50	116	51	11
0719580	11.1	0.4370	51	122	53	12
0719596	11.2	0.4409	51	122	53	12
0719601	11.3	0.4449	52	122	53	12
0719618	11.4	0.4488	52	122	53	12
0719624	11.5	0.4528	52	122	54	12
0719630	11.6	0.4567	52	122	55	12
0719647	11.7	0.4606	54	122	55	12
0719653	11.8	0.4646	54	122	55	12
0719660	11.9	0.4685	54	122	55	12
0719676	12.0	0.4724	54	122	55	12
0719682	12.5	0.4921	57	128	59	13
0719699	13.0	0.5118	59	128	60	13
0719704	13.5	0.5315	61	134	63	14
0719710	14.0	0.5512	63	134	64	14
0719727	14.5	0.5709	66	140	68	15
0719733	15.0	0.5906	68	140	69	15
0719740	15.5	0.6102	70	146	72	16
0719756	16.0	0.6299	72	146	73	16

Package Qty: 1 per Tube Size

Drill Dia (in mm)		Corner Chamfer
Above	Up to	C (mm)
	6.0	0.04
6.0	10.0	0.1
10.0		0.2

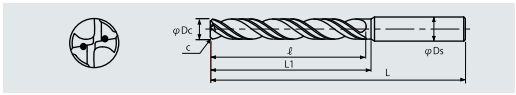
HIGH PERFORMANCE AQUA DRILL EX FLAT OIL HOLE 5XD / METRIC SIZES

List No. 9814 High Performance

Metric sizes: Range 3.0 to 16.0

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	L1	Shank Dia
EDP	Dc		ℓ	L	L1	Ds
0719762	3.0	0.1181	20	74	21	3
0719779	3.1	0.1220	22	80	25	4
0719785	3.2	0.1260	22	80	25	4
0719791	3.3	0.1299	22	80	25	4
0719807	3.4	0.1339	24	80	25	4
0719813	3.5	0.1378	24	80	27	4
0719820	3.6	0.1417	24	80	27	4
0719836	3.7	0.1457	24	80	27	4
0719842	3.8	0.1496	26	80	27	4
0719859	3.9	0.1535	26	80	27	4
0719865	4.0	0.1575	26	80	27	4
0719871	4.1	0.1614	28	90	30	5
0719888	4.2	0.1654	28	90	30	5
0719894	4.3	0.1693	28	90	30	5
0719900	4.4	0.1732	29	90	30	5
0719916	4.5	0.1772	29	90	31	5
0719922	4.6	0.1811	29	90	34	5
0719939	4.7	0.1850	32	90	34	5
0719945	4.8	0.1890	32	90	34	5
0719951	4.9	0.1929	32	90	34	5
0719968	5.0	0.1969	33	90	34	5
0719974	5.1	0.2008	35	94	38	6
0719980	5.2	0.2047	35	94	38	6
0719997	5.3	0.2087	35	94	38	6
0720000	5.4	0.2126	37	94	38	6
0720017	5.5	0.2165	37	94	39	6
0720023	5.6	0.2205	37	94	40	6
0720030	5.7	0.2244	39	94	40	6
0720046	5.8	0.2283	39	94	40	6
0720052	5.9	0.2323	39	94	40	6
0720069	6.0	0.2362	41	94	40	6
0720075	6.1	0.2402	41	101	44	7
0720081	6.2	0.2441	41	101	44	7
0720098	6.3	0.2480	43	101	44	7
0720103	6.4	0.2520	43	101	44	7
0720110	6.5	0.2559	43	101	45	7
0720126	6.6	0.2598	43	101	46	7
0720132	6.7	0.2638	45	101	46	7
0720149	6.8	0.2677	45	101	46	7
0720155	6.9	0.2717	45	101	46	7
0720161	7.0	0.2756	46	101	46	7
0720178	7.1	0.2795	48	110	51	8
0720184	7.2	0.2835	48	110	51	8
0720190	7.3	0.2874	48	110	51	8
0720206	7.4	0.2913	50	110	51	8
0720212	7.5	0.2953	50	110	52	8
0720229	7.6	0.2992	50	110	53	8
0720235	7.7	0.3031	52	110	53	8
0720241	7.8	0.3071	52	110	53	8
0720258	7.9	0.3110	52	110	53	8
0720264	8.0	0.3150	52	110	53	8
0720270	8.1	0.3189	54	117	57	9
0720287	8.2	0.3228	54	117	57	9
0720293	8.3	0.3268	54	117	57	9
0720309	8.4	0.3307	56	117	57	9
0720315	8.5	0.3346	56	117	58	9
0720321	8.6	0.3386	56	117	59	9
0720338	8.7	0.3425	58	117	59	9
0720344	8.8	0.3465	58	117	59	9
0720350	8.9	0.3504	58	117	59	9
0720367	9.0	0.3543	59	117	59	9

AQDEXZLS Aqua Drill EX Flat Oil Hole 5XD



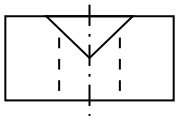
Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	L1	Shank Dia
EDP	Dc		ℓ	L	L1	Ds
0720373	9.1	0.3583	61	126	64	10
0720380	9.2	0.3622	61	126	64	10
0720396	9.3	0.3661	61	126	64	10
0720401	9.4	0.3701	63	126	64	10
0720418	9.5	0.3740	63	126	65	10
0720424	9.6	0.3780	63	126	66	10
0720430	9.7	0.3819	65	126	66	10
0720447	9.8	0.3858	65	126	66	10
0720453	9.9	0.3898	65	126	66	10
0720460	10.0	0.3937	65	126	66	10
0720476	10.1	0.3976	67	138	70	11
0720482	10.2	0.4016	67	138	70	11
0720499	10.3	0.4055	67	138	70	11
0720504	10.4	0.4094	69	138	70	11
0720510	10.5	0.4134	69	138	71	11
0720527	10.6	0.4173	69	138	71	11
0720533	10.7	0.4213	72	138	73	11
0720540	10.8	0.4252	72	138	73	11
0720556	10.9	0.4291	72	138	73	11
0720562	11.0	0.4331	73	138	73	11
0720579	11.1	0.4370	74	146	77	12
0720585	11.2	0.4409	74	146	77	12
0720591	11.3	0.4449	74	146	77	12
0720607	11.4	0.4488	76	146	77	12
0720613	11.5	0.4528	76	146	78	12
0720620	11.6	0.4567	76	146	79	12
0720636	11.7	0.4606	78	146	79	12
0720642	11.8	0.4646	78	146	79	12
0720659	11.9	0.4685	78	146	79	12
0720665	12.0	0.4724	78	146	79	12
0720671	12.5	0.4921	82	153	84	13
0720688	13.0	0.5118	86	153	86	13
0720694	13.5	0.5315	89	162	91	14
0720700	14.0	0.5512	91	162	92	14
0720716	14.5	0.5709	95	169	97	15
0720722	15.0	0.5906	98	169	98	15
0720739	15.5	0.6102	102	178	104	16
0720745	16.0	0.6299	104	178	105	16

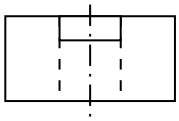
Package Qty: 1 per Tube Size

Drill Dia (in mm)		Corner Chamfer
Above	Up to	C (mm)
	6.0	0.04
6.0	10.0	0.1
10.0		0.2

Note:

- Center Drill or Guide Hole Required for over 4XD length





- Using a Center Drill
- Center Hole Diameter should be 0.5mm larger than Flat drill Diameter

- Using a Pilot Drill
- Guide hole diamter should same as Flat drill Diameter

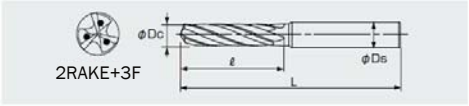
- Nachi Recommends using L6502 or L6504 AG Staring Drill (Page 114)

HIGH PERFORMANCE AQUA DRILL EX OIL HOLE 3 Flute 3XD / METRIC SIZES

List No. 9826 High Performance

Carbide (Material) | AQ EX (Coating) | 24°~30° (Helix) | js6 (Dia.Tol) | 140° (Point Angle) | h6 (Shank Dia.Tolerance)

AQDEXOH3F3D Aqua Drill EX Oil Hole 3 Flute 3D



Metric sizes: Range 3.0 to 16.0

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
0723876	3.0	0.1181	17	68	3
0728483	3.1	0.1220	20	72	4
0728490	3.2	0.1260	20	72	4
0728505	3.3	0.1299	20	72	4
0723882	3.4	0.1339	20	72	4
0723899	3.5	0.1378	20	72	4
0728511	3.6	0.1417	22	72	4
0728528	3.7	0.1457	22	72	4
0728534	3.8	0.1496	22	72	4
0728540	3.9	0.1535	22	72	4
0723904	4.0	0.1575	22	72	4
0728557	4.1	0.1614	25	80	5
0728563	4.2	0.1654	25	80	5
0723910	4.3	0.1693	25	80	5
0729736	4.4	0.1732	25	80	5
0723927	4.5	0.1772	25	80	5
0728570	4.6	0.1811	27	80	5
0728586	4.7	0.1850	27	80	5
0728592	4.8	0.1890	27	80	5
0728608	4.9	0.1929	27	80	5
0723933	5.0	0.1969	27	80	5
0723940	5.1	0.2008	27	82	6
0728614	5.2	0.2047	27	82	6
0728620	5.3	0.2087	27	82	6
0728637	5.4	0.2126	27	82	6
0723956	5.5	0.2165	27	82	6
0728643	5.6	0.2205	30	82	6
0728650	5.7	0.2244	30	82	6
0728666	5.8	0.2283	30	82	6
0728672	5.9	0.2323	30	82	6
0723962	6.0	0.2362	30	82	6
0728689	6.1	0.2402	32	88	7
0728695	6.2	0.2441	32	88	7
0728700	6.3	0.2480	32	88	7
0728717	6.4	0.2520	32	88	7
0723979	6.5	0.2559	32	88	7
0728723	6.6	0.2598	35	88	7
0728730	6.7	0.2638	35	88	7
0723985	6.8	0.2677	35	88	7
0723991	6.9	0.2717	35	88	7
0724006	7.0	0.2756	35	88	7
0729742	7.1	0.2795	37	94	8
0729759	7.2	0.2835	37	94	8
0729765	7.3	0.2874	37	94	8
0729771	7.4	0.2913	37	94	8
0724012	7.5	0.2953	37	94	8
0728746	7.6	0.2992	40	94	8
0728752	7.7	0.3031	40	94	8
0728769	7.8	0.3071	40	94	8
0728775	7.9	0.3110	40	94	8
0724029	8.0	0.3150	40	94	8
0728781	8.1	0.3189	42	100	9
0728798	8.2	0.3228	42	100	9
0728803	8.3	0.3268	42	100	9
0728810	8.4	0.3307	42	100	9
0724035	8.5	0.3346	42	100	9
0724041	8.6	0.3386	45	100	9
0728826	8.7	0.3425	45	100	9
0728832	8.8	0.3465	45	100	9
0728849	8.9	0.3504	45	100	9
0724058	9.0	0.3543	45	100	9

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
0728855	9.1	0.3583	47	106	10
0728861	9.2	0.3622	47	106	10
0728878	9.3	0.3661	47	106	10
0728884	9.4	0.3701	47	106	10
0724064	9.5	0.3740	47	106	10
0728890	9.6	0.3780	50	106	10
0728906	9.7	0.3819	50	106	10
0728912	9.8	0.3858	50	106	10
0728929	9.9	0.3898	50	106	10
0724070	10.0	0.3937	50	106	10
0728935	10.1	0.3976	52	116	11
0728941	10.2	0.4016	52	116	11
0724087	10.3	0.4055	52	116	11
0728958	10.4	0.4094	52	116	11
0724093	10.5	0.4134	52	116	11
0728964	10.6	0.4173	52	116	11
0728970	10.7	0.4213	55	106	11
0728987	10.8	0.4252	55	106	11
0728993	10.9	0.4291	55	106	11
0724109	11.0	0.4331	55	106	11
0729008	11.1	0.4370	57	122	12
0729014	11.2	0.4409	57	122	12
0729020	11.3	0.4449	57	122	12
0729037	11.4	0.4488	57	122	12
0724115	11.5	0.4528	57	122	12
0729043	11.6	0.4567	60	122	12
0729050	11.7	0.4606	60	122	12
0729066	11.8	0.4646	60	122	12
0729072	11.9	0.4685	60	122	12
0724121	12.0	0.4724	60	122	12
0724138	12.1	0.4764	62	128	13
0724144	12.5	0.4921	62	128	13
0724150	13.0	0.5118	65	128	13
0724167	13.5	0.5315	67	134	14
0724173	14.0	0.5512	70	134	14
0724180	14.1	0.5551	72	140	15
0724196	14.5	0.5709	72	140	15
0724201	15.0	0.5906	75	140	15
0724218	15.5	0.6102	77	146	16
0724224	15.6	0.6142	80	146	16
0724230	16.0	0.6299	80	146	16

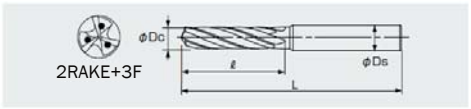
Tolerance of Drill Diameter unit:mm

Tolerance (js6)			
Diameter	3.0 - 6.0	6.1 - 10.0	10.1 - 16.0
Tolerance	±0.004	±0.0045	±0.0055

HIGH PERFORMANCE AQUA DRILL EX OIL HOLE 3 FLUTE 5XD / METRIC SIZES

List No. 9820 High Performance

AQDEXOH3F5D Aqua Drill EX Oil Hole 3 Flute 5D



Metric sizes: Range 3.0 to 16.0

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
0724247	3.0	0.1181	28	78	3
0729089	3.1	0.1220	32	86	4
0729095	3.2	0.1260	32	86	4
0729100	3.3	0.1299	32	86	4
0724253	3.4	0.1339	32	86	4
0724260	3.5	0.1378	32	86	4
0729117	3.6	0.1417	36	86	4
0729123	3.7	0.1457	36	86	4
0729130	3.8	0.1496	36	86	4
0729146	3.9	0.1535	36	86	4
0724276	4.0	0.1575	36	86	4
0729152	4.1	0.1614	40	98	5
0729169	4.2	0.1654	40	98	5
0724282	4.3	0.1693	40	98	5
0729175	4.4	0.1732	40	98	5
0724299	4.5	0.1772	40	98	5
0729181	4.6	0.1811	44	98	5
0729198	4.7	0.1850	44	98	5
0729203	4.8	0.1890	44	98	5
0729210	4.9	0.1929	44	98	5
0724304	5.0	0.1969	44	98	5
0724310	5.1	0.2008	44	100	6
0729226	5.2	0.2047	44	100	6
0729232	5.3	0.2087	44	100	6
0729249	5.4	0.2126	44	100	6
0724327	5.5	0.2165	44	100	6
0729255	5.6	0.2205	48	100	6
0729261	5.7	0.2244	48	100	6
0729278	5.8	0.2283	48	100	6
0729284	5.9	0.2323	48	100	6
0724333	6.0	0.2362	48	100	6
0729290	6.1	0.2402	52	109	7
0729306	6.2	0.2441	52	109	7
0729312	6.3	0.2480	52	109	7
0729329	6.4	0.2520	52	109	7
0724340	6.5	0.2559	52	109	7
0729335	6.6	0.2598	56	109	7
0729341	6.7	0.2638	56	109	7
0724356	6.8	0.2677	56	109	7
0724362	6.9	0.2717	56	109	7
0724379	7.0	0.2756	56	109	7
0729358	7.1	0.2795	60	118	8
0729364	7.2	0.2835	60	118	8
0729370	7.3	0.2874	60	118	8
0729387	7.4	0.2913	60	118	8
0724385	7.5	0.2953	60	118	8
0729393	7.6	0.2992	64	118	8
0729409	7.7	0.3031	64	118	8
0729415	7.8	0.3071	64	118	8
0729421	7.9	0.3110	64	118	8
0724391	8.0	0.3150	64	118	8
0729438	8.1	0.3189	68	127	9
0729444	8.2	0.3228	68	127	9
0729450	8.3	0.3268	68	127	9
0729467	8.4	0.3307	68	127	9
0724407	8.5	0.3346	68	127	9
0724413	8.6	0.3386	72	127	9
0729473	8.7	0.3425	72	127	9
0729480	8.8	0.3465	72	127	9
0729496	8.9	0.3504	72	127	9
0724420	9.0	0.3543	72	127	9

Item Code	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
EDP	Dc		ℓ	L	Ds
0729501	9.1	0.3583	76	136	10
0729518	9.2	0.3622	76	136	10
0729524	9.3	0.3661	76	136	10
0729530	9.4	0.3701	76	136	10
0724436	9.5	0.3740	76	136	10
0729547	9.6	0.3780	80	136	10
0729553	9.7	0.3819	80	136	10
0729560	9.8	0.3858	80	136	10
0729576	9.9	0.3898	80	136	10
0724442	10.0	0.3937	80	136	10
0729582	10.1	0.3976	84	149	11
0729599	10.2	0.4016	84	149	11
0724459	10.3	0.4055	84	149	11
0729604	10.4	0.4094	84	149	11
0724465	10.5	0.4134	84	149	11
0729610	10.6	0.4173	88	149	11
0729627	10.7	0.4213	88	149	11
0729633	10.8	0.4252	88	149	11
0729640	10.9	0.4291	88	149	11
0724471	11.0	0.4331	88	149	11
0729656	11.1	0.4370	92	158	12
0729662	11.2	0.4409	92	158	12
0729679	11.3	0.4449	92	158	12
0729685	11.4	0.4488	92	158	12
0724488	11.5	0.4528	92	158	12
0729691	11.6	0.4567	96	158	12
0729707	11.7	0.4606	96	158	12
0729713	11.8	0.4646	96	158	12
0729720	11.9	0.4685	96	158	12
0724494	12.0	0.4724	96	158	12
0724500	12.1	0.4764	100	167	13
0724516	12.5	0.4921	100	167	13
0724522	13.0	0.5118	104	167	13
0724539	13.5	0.5315	108	176	14
0724545	14.0	0.5512	112	176	14
0724551	14.1	0.5551	116	185	15
0724568	14.5	0.5709	116	185	15
0724574	15.0	0.5906	120	185	15
0724580	15.5	0.6102	124	194	16
0724597	15.6	0.6142	128	194	16
0724602	16.0	0.6299	128	194	16

Tolerance of Drill Diameter unit:mm

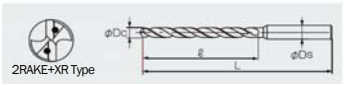
Tolerance (js6)			
Diameter	3.0 - 6.0	6.1 - 10.0	10.1 - 16.0
Tolerance	±0.004	±0.0045	±0.0055

HIGHHIGH PERFORMANCE AQUA DRILL EX OIL HOLE 10XD/15XD/20XD / METRIC SIZES

List No. 9612 High Performance

Carbide Material | AQ EX Coating | 26°~30° Helix | h7 Dia.Tol | 140° Point Angle | h6 Shank Dia.Tolerance

AQDEXOH10D Aqua Drill EX Oil Hole 10D



Metric sizes: Range 1.0 to 3.0

Item Code	Size	Flute Length	Overall Length	Shank Dia
EDP	Dc	ℓ	L	Ds
0733673	1.0	13	61	3
0733680	1.1	14	63	3
0733696	1.2	16	63	3
0733701	1.3	17	63	3
0733718	1.4	18	63	3
0733724	1.5	20	63	3
0733730	1.6	21	70	3
0733747	1.7	22	70	3
0733753	1.8	23	70	3
0733760	1.9	25	70	3

Item Code	Size	Flute Length	Overall Length	Shank Dia
EDP	Dc	ℓ	L	Ds
0733776	2.0	26	70	3
0733782	2.1	27	80	3
0733799	2.2	29	80	3
0733804	2.3	30	80	3
0733810	2.4	31	80	3
0733827	2.5	33	80	3
0733833	2.6	34	89	3
0733840	2.7	35	89	3
0733856	2.8	36	89	3
0733862	2.9	38	89	3
0726519	3.0	36	89	3

List No. 9614

AQDEXOH15D Aqua Drill EX Oil Hole 15D

Item Code	Size	Flute Length	Overall Length	Shank Dia
EDP	Dc	ℓ	L	Ds
0733879	1.0	18	66	3
0733885	1.1	20	71	3
0733891	1.2	22	71	3
0733907	1.3	23	71	3
0733913	1.4	25	71	3
0733920	1.5	27	71	3
0733936	1.6	29	80	3
0733942	1.7	31	80	3
0733959	1.8	32	80	3
0733965	1.9	34	80	3

Item Code	Size	Flute Length	Overall Length	Shank Dia
EDP	Dc	ℓ	L	Ds
0733971	2.0	36	80	3
0733988	2.1	38	93	3
0733994	2.2	40	93	3
0734009	2.3	41	93	3
0734015	2.4	43	93	3
0734021	2.5	45	93	3
0734038	2.6	47	104	3
0734044	2.7	49	104	3
0734050	2.8	50	104	3
0734067	2.9	52	104	3
0726708	3.0	52	104	3

List No. 9616

AQDEXOH20D Aqua Drill EX Oil Hole 20D

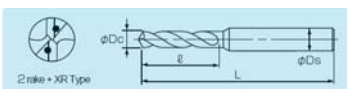
Item Code	Size	Flute Length	Overall Length	Shank Dia
EDP	Dc	ℓ	L	Ds
0734073	1.0	23	71	3
0734080	1.1	25	78	3
0734096	1.2	28	78	3
0734101	1.3	30	78	3
0734118	1.4	32	78	3
0734124	1.5	35	78	3
0734130	1.6	37	90	3
0734147	1.7	39	90	3
0734153	1.8	41	90	3
0734160	1.9	44	90	3

Item Code	Size	Flute Length	Overall Length	Shank Dia
EDP	Dc	ℓ	L	Ds
0734176	2.0	46	90	3
0734182	2.1	48	105	3
0734199	2.2	51	105	3
0734204	2.3	53	105	3
0734210	2.4	55	105	3
0734227	2.5	58	105	3
0734233	2.6	60	119	3
0734240	2.7	62	119	3
0734256	2.8	64	119	3
0734262	2.9	67	119	3
0726898	3.0	69	119	3

List No. 9622 High Performance

Carbide Material | AQ EX Coating | 26°~30° Helix | h7 Dia.Tol | 150° Point Angle | h6 Shank Dia.Tolerance

AQDEXOHPLT Precision Guide Hole Drills for Aqua Micro Coolant Thru Drills



Metric sizes: Range 1.015 to 3.030

Item Code	Size	Flute Length	Overall Length	Shank Dia
EDP	Dc	ℓ	L	Ds
0734279	1.015	3.3	54	3
0734285	1.115	3.6	56	3
0734291	1.215	3.9	56	3
0734307	1.315	4.2	56	3
0734313	1.415	4.6	56	3
0734320	1.515	4.9	56	3
0734336	1.615	5.2	60	3
0734342	1.715	5.5	60	3
0734359	1.815	5.8	60	3
0734365	1.915	6.2	60	3

Item Code	Size	Flute Length	Overall Length	Shank Dia
EDP	Dc	ℓ	L	Ds
0734371	2.015	9	60	3
0734388	2.115	11	63	3
0734394	2.215	11	63	3
0734400	2.315	11	63	3
0734416	2.415	12	63	3
0734422	2.515	12	63	3
0734439	2.615	12	68	3
0734445	2.715	14	68	3
0734451	2.815	14	68	3
0734468	2.915	14	68	3
0727624	3.030	14	68	3

List No. 9544 High Performance

SOLID CARBIDE AQUA COATED

This drill is suitable for stable drilling in small diameter on many kind of materials from raw material to hardened material.

Range 0.20 to 1.99

EDP	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Diameter
0634002	0.2000	0.0079	2.5	38	3
0634019	0.2100	0.0083	2.5	38	3
0634025	0.2200	0.0087	2.5	38	3
0634031	0.2300	0.0091	2.5	38	3
0634048	0.2400	0.0094	2.5	38	3
0634054	0.2500	0.0098	2.5	38	3
0634060	0.2600	0.0102	2.5	38	3
0634077	0.2700	0.0106	2.5	38	3
0634083	0.2800	0.0110	2.5	38	3
0634090	0.2900	0.0114	2.5	38	3
0634105	0.3000	0.0118	3	38	3
0634111	0.3100	0.0122	3	38	3
0634128	0.3200	0.0126	3	38	3
0634134	0.3300	0.0130	3	38	3
0634140	0.3400	0.0134	3	38	3
0634157	0.3500	0.0138	4	38	3
0634163	0.3600	0.0142	4	38	3
0634170	0.3700	0.0146	4	38	3
0634186	0.3800	0.0150	4	38	3
0634192	0.3900	0.0154	4	38	3
0634208	0.4000	0.0157	5	38	3
0634214	0.4100	0.0161	5	38	3
0634220	0.4200	0.0165	5	38	3
0634237	0.4300	0.0169	5	38	3
0634243	0.4400	0.0173	5	38	3
0634250	0.4500	0.0177	5	38	3
0634266	0.4600	0.0181	5	38	3
0634272	0.4700	0.0185	5	38	3
0634289	0.4800	0.0189	5	38	3
0634295	0.4900	0.0193	5	38	3
0634300	0.5000	0.0197	6	38	3
0634317	0.5100	0.0201	6	38	3
0634323	0.5200	0.0205	6	38	3
0634330	0.5300	0.0209	6	38	3
0634346	0.5400	0.0213	6	38	3
0634352	0.5500	0.0217	6	38	3
0634369	0.5600	0.0220	6	38	3
0634375	0.5700	0.0224	6	38	3
0634381	0.5800	0.0228	6	38	3
0634398	0.5900	0.0232	6	38	3
0634403	0.6000	0.0236	7	38	3
0634410	0.6100	0.0240	7	38	3
0634426	0.6200	0.0244	7	38	3
0634432	0.6300	0.0248	7	38	3
0634449	0.6400	0.0252	7	38	3
0634455	0.6500	0.0256	7	38	3
0634461	0.6600	0.0260	7	38	3
0634478	0.6700	0.0264	7	38	3
0634484	0.6800	0.0268	7	38	3
0634490	0.6900	0.0272	7	38	3
0634506	0.7000	0.0276	9	38	3
0634512	0.7100	0.0280	9	38	3
0634529	0.7200	0.0283	9	38	3
0634535	0.7300	0.0287	9	38	3
0634541	0.7400	0.0291	9	38	3
0634558	0.7500	0.0295	9	38	3
0634564	0.7600	0.0299	9	38	3
0634570	0.7700	0.0303	9	38	3
0634587	0.7800	0.0307	9	38	3
0634593	0.7900	0.0311	9	38	3
0634609	0.8000	0.0315	10	38	3
0634615	0.8100	0.0319	10	38	3
0634621	0.8200	0.0323	10	38	3
0634638	0.8300	0.0327	10	38	3
0634644	0.8400	0.0331	10	38	3
0634650	0.8500	0.0335	10	38	3
0634667	0.8600	0.0339	10	38	3
0634673	0.8700	0.0343	10	38	3
0634680	0.8800	0.0346	10	38	3
0634696	0.8900	0.0350	10	38	3
0634701	0.9000	0.0354	11	38	3
0634718	0.9100	0.0358	11	38	3
0634724	0.9200	0.0362	11	38	3
0634730	0.9300	0.0366	11	38	3
0634747	0.9400	0.0370	11	38	3
0634753	0.9500	0.0374	11	38	3
0634760	0.9600	0.0378	11	38	3
0634776	0.9700	0.0382	11	38	3
0634782	0.9800	0.0386	11	38	3
0634799	0.9900	0.0390	11	38	3
0634804	1.0000	0.0394	12	38	3
0634810	1.0100	0.0398	12	38	3
0634827	1.0200	0.0402	12	38	3
0634833	1.0300	0.0406	12	38	3
0634840	1.0400	0.0409	12	38	3
0634856	1.0500	0.0413	12	38	3
0634862	1.0600	0.0417	12	38	3
0634879	1.0700	0.0421	12	38	3
0634885	1.0800	0.0425	12	38	3
0634891	1.0900	0.0429	12	38	3
0634907	1.1000	0.0433	14	47	3
0634913	1.1100	0.0437	14	47	3
0634920	1.1200	0.0441	14	47	3
0634936	1.1300	0.0445	14	47	3
0634942	1.1400	0.0449	14	47	3
0634959	1.1500	0.0453	14	47	3
0634965	1.1600	0.0457	14	47	3
0634971	1.1700	0.0461	14	47	3
0634988	1.1800	0.0465	14	47	3
0634994	1.1900	0.0469	14	47	3
0635009	1.2000	0.0472	15	47	3
0635015	1.2100	0.0476	15	47	3
0635021	1.2200	0.0480	15	47	3
0635038	1.2300	0.0484	15	47	3
0635044	1.2400	0.0488	15	47	3
0635050	1.2500	0.0492	15	47	3
0635067	1.2600	0.0496	15	47	3
0635073	1.2700	0.0500	15	47	3
0635080	1.2800	0.0504	15	47	3
0635096	1.2900	0.0508	15	47	3
0635101	1.3000	0.0512	15	47	3
0635118	1.3100	0.0516	15	47	3
0635124	1.3200	0.0520	15	47	3
0635130	1.3300	0.0524	15	47	3
0635147	1.3400	0.0528	15	47	3
0635153	1.3500	0.0531	15	47	3
0635160	1.3600	0.0535	15	47	3
0635176	1.3700	0.0539	15	47	3
0635182	1.3800	0.0543	15	47	3
0635199	1.3900	0.0547	15	47	3
0635204	1.4000	0.0551	15	47	3
0635210	1.4100	0.0555	15	47	3
0635227	1.4200	0.0559	15	47	3
0635233	1.4300	0.0563	15	47	3
0635240	1.4400	0.0567	15	47	3
0635256	1.4500	0.0571	15	47	3
0635262	1.4600	0.0575	15	47	3
0635279	1.4700	0.0579	15	47	3
0635285	1.4800	0.0583	15	47	3
0635291	1.4900	0.0587	15	47	3
0635307	1.5000	0.0591	15	47	3
0635313	1.5100	0.0594	15	47	3
0635320	1.5200	0.0598	15	47	3
0635336	1.5300	0.0602	15	47	3
0635342	1.5400	0.0606	15	47	3
0635359	1.5500	0.0610	15	47	3
0635365	1.5600	0.0614	15	47	3
0635371	1.5700	0.0618	15	47	3
0635388	1.5800	0.0622	15	47	3
0635394	1.5900	0.0626	15	47	3
0635400	1.6000	0.0630	15	47	3
0635416	1.6100	0.0634	15	47	3
0635422	1.6200	0.0638	15	47	3
0635439	1.6300	0.0642	15	47	3
0635445	1.6400	0.0646	15	47	3
0635451	1.6500	0.0650	15	47	3
0635468	1.6600	0.0654	15	47	3
0635474	1.6700	0.0657	15	47	3
0635480	1.6800	0.0661	15	47	3
0635497	1.6900	0.0665	15	47	3
0635502	1.7000	0.0669	15	47	3
0635519	1.7100	0.0673	15	47	3
0635525	1.7200	0.0677	15	47	3
0635531	1.7300	0.0681	15	47	3
0635548	1.7400	0.0685	15	47	3
0635554	1.7500	0.0689	15	47	3
0635560	1.7600	0.0693	15	47	3
0635577	1.7700	0.0697	15	47	3
0635583	1.7800	0.0701	15	47	3
0635590	1.7900	0.0705	15	47	3
0635605	1.8000	0.0709	15	47	3
0635611	1.8100	0.0713	15	47	3
0635628	1.8200	0.0717	15	47	3
0635634	1.8300	0.0720	15	47	3
0635640	1.8400	0.0724	15	47	3
0635657	1.8500	0.0728	15	47	3
0635663	1.8600	0.0732	15	47	3
0635670	1.8700	0.0736	15	47	3
0635686	1.8800	0.0740	15	47	3
0635692	1.8900	0.0744	15	47	3
0635708	1.9000	0.0748	15	47	3
0635714	1.9100	0.0752	15	47	3
0635720	1.9200	0.0756	15	47	3
0635737	1.9300	0.0760	15	47	3
0635743	1.9400	0.0764	15	47	3
0635750	1.9500	0.0768	15	47	3
0635766	1.9600	0.0772	15	47	3
0635772	1.9700	0.0776	15	47	3
0635789	1.9800	0.0780	15	47	3
0635795	1.9900	0.0783	15	47	3

Tolerance of Drill Dia : +0.000
- 0.009

1 per tube

MQL PILOT DRILLS

List No. 9566

h7 GS Carbide 140° 2RAKE+XW

SOLID CARBIDE GS COATED

Precision guide hole drills for MQL Long Drills
Coolant Thru Solid Carbide drills
Double margin to provide accurate and straight guide hole for MQL Long Drills

EDP No	Size D Metric	Decimal Equivalent	Flute Length	Overall Length	Shank Dia	Recommend Long Drill Dia		
						Metric	Decimal	Fractional
1396086	3.05	0.1201	20	72	4	3.00	0.1181	
1401470	3.23	0.1272	20	72	4	3.18	0.1250	1/8
1396166	3.85	0.1516	23	72	4	3.80	0.1496	
1396172	3.95	0.1555	23	72	4	3.90	0.1535	
1396189	4.05	0.1594	25	80	5	4.00	0.1575	
1396200	4.25	0.1673	25	80	5	4.20	0.1654	
1396217	4.35	0.1713	25	80	5	4.30	0.1693	
1396230	4.55	0.1791	28	80	5	4.50	0.1772	
1396246	4.65	0.1831	28	80	5	4.60	0.1811	
1396252	4.75	0.1870	28	80	5	4.70	0.1850	
1396269	4.85	0.1909	28	80	5	4.80	0.1890	
1396275	4.95	0.1949	28	80	5	4.90	0.1929	
1396281	5.05	0.1988	28	82	6	5.00	0.1969	
1396298	5.15	0.2028	28	82	6	5.10	0.2008	
1396326	5.45	0.2146	28	82	6	5.40	0.2126	
1396332	5.55	0.2185	30	82	6	5.50	0.2165	
1396349	5.65	0.2224	30	82	6	5.60	0.2205	
1396355	5.75	0.2264	30	82	6	5.70	0.2244	
1396361	5.85	0.2303	30	82	6	5.80	0.2283	
1396384	6.05	0.2382	33	88	7	6.00	0.2362	

EDP No	Size D Metric	Decimal Equivalent	Flute Length	Overall Length	Shank Dia	Recommend Long Drill Dia		
						Metric	Decimal	Fractional
1396406	6.25	0.2461	33	88	7	6.20	0.2441	
1396429	6.40	0.2520	33	88	7	6.35	0.2500	1/4
1396435	6.45	0.2539	33	88	7	6.40	0.2520	
1396441	6.55	0.2579	35	88	7	6.50	0.2559	
1396470	6.80	0.2677	35	88	7	6.75	0.2657	17/64
1396509	7.05	0.2776	38	94	8	7.00	0.2756	
1396515	7.15	0.2815	38	94	8	7.10	0.2795	
1396544	7.45	0.2933	38	94	8	7.40	0.2913	
1396550	7.55	0.2972	40	94	8	7.50	0.2953	
1396573	7.75	0.3051	40	94	8	7.70	0.3031	
1396580	7.85	0.3091	40	94	8	7.80	0.3071	
1396596	7.95	0.3130	40	94	8	7.90	0.3110	
1396601	8.05	0.3169	43	100	9	8.00	0.3150	
1396618	8.15	0.3209	43	100	9	8.10	0.3189	
1396653	8.55	0.3366	45	100	9	8.50	0.3346	
1396660	8.65	0.3406	45	100	9	8.60	0.3386	
1396682	8.80	0.3465	45	100	9	8.75	0.3445	11/32
1396710	9.05	0.3563	48	108	10	9.00	0.3543	
1396779	9.60	0.3780	50	108	10	9.55	0.3760	3/8
1396820	10.05	0.3957	53	118	11	10.00	0.3937	

Range 1/8 to (11/16)
Range 3.0 to 17.5

SOLID CARBIDE GS COATED COOLANT THRU

List No. 9564 10D

Unit : mm

EDP No	Size D		Decimal Equivalent	Flute Length	Overall Length	Shank Dia
	Fractional	Metric				
1386300		3.0	0.1181	41	91	3
1386323	1/8	3.175	0.1250	48	98	1/8
1386369		3.5	0.1378	48	98	4
1386398	#25	3.8	0.1496	54	104	4
1386403		3.9	0.1535	54	104	4
1386410		4.0	0.1575	54	104	4
1386432	(#19)	4.2	0.1654	61	111	5
1386449	(#18)	4.3	0.1693	61	111	5
1386461	(#16)	4.5	0.1772	61	111	5
1386478		4.6	0.1811	68	118	5
1386484	#13	4.7	0.1850	68	118	5
1386490	#12	4.8	0.1890	68	118	5
1386506		4.9	0.1929	68	118	5
1386512	(#9)	5.0	0.1969	68	8	5
1386529	#7	5.1	0.2008	75	125	6
1386558	(#3)	5.4	0.2126	75	125	6
1386564		5.5	0.2165	75	125	6
1386570	(#2)	5.6	0.2205	81	131	6
1386587		5.7	0.2244	81	131	6
1386593	(#1)	5.8	0.2283	81	131	6
1386615		6.0	0.2362	81	131	6
1386638		6.2	0.2441	88	138	7
1386650	1/4	6.35	0.2500	88	138	1/4
1386667		6.4	0.2520	88	138	7
1386673		6.5	0.2559	88	138	7
1386701	17/64	6.75	0.2656	95	145	17/64
1386730		7.0	0.2756	95	145	7
1386747		7.1	0.2795	102	152	8
1386776		7.4	0.2913	102	152	8
1386782	(M)	7.5	0.2953	102	152	8
1386804		7.7	0.3031	108	158	8
1386810		7.8	0.3071	108	158	8
1386827		7.9	0.3110	108	158	8
1386833		8.0	0.3150	108	158	8
1386840		8.1	0.3189	115	165	9
1386885		8.5	0.3346	115	165	9
1386913	11/32	8.73	0.3438	122	172	11/32
1386942		9.0	0.3543	122	172	9
1387009	3/8	9.525	0.3750	135	185	3/8
1387050		10.0	03937	135	185	10
1409814		10.3	0.4055	140	205	11
1409820	(7/16)	11.1	0.4370	155	215	12
1409837		11.2	0.4409	155	215	12
1409843	(17/32)	13.5	0.5315	165	215	14
1409850		14.0	0.5512	180	240	14
1409866	9/16	14.28	0.5622	170	220	15
1409872	(11/16)	17.5	0.6890	205	260	18

NOTE: Pilot Hole Drill (L9566) sizes for 10D, 15D, 20D, 25D are available and in stock. Please inquire for available sizes.

( ) closest Fractional size

List No. 9536 15D

Unit : mm

EDP No	Size D		Decimal Equivalent	Flute Length	Overall Length	Shank Dia
	Fractional	Metric				
1383892		4.0	0.1575	80	130	4
1383908	(#16)	4.5	0.1772	90	140	5
1383914	(#9)	5.0	0.1969	100	150	5
1383920		5.5	0.2165	110	160	6
1383937		6.0	0.2362	120	170	6
1384016	1/4	6.35	0.2500	130	180	1/4
1383943		6.5	0.2559	130	180	7
1383950		7.0	0.2756	140	190	7
1383966	(M)	7.5	0.2953	150	200	8
1383972		8.0	0.3150	160	210	8
1383989		8.5	0.3346	170	220	9
1383995		9.0	0.3543	180	230	9
1384022	3/8	9.525	0.3750	190	240	3/8
1384000		10.0	0.3937	200	25	10

List No. 9536 20D

Unit : mm

EDP No	Size D		Decimal Equivalent	Flute Length	Overall Length	Shank Dia
	Fractional	Metric				
1384039		4.0	0.1575	100	150	4
1384045	(#16)	4.5	0.1772	115	165	5
1384051	(#9)	5.0	0.1969	125	175	5
1384068		5.5	0.2165	140	190	6
1384074		6.0	0.2362	150	200	6
1384154	1/4	6.35	0.2500	165	215	1/4
1384080		6.5	0.2559	165	215	7
1384097		7.0	0.2756	175	225	7
1384102	(M)	7.5	0.2953	190	240	8
1384119		8.0	0.3150	200	250	8
1384125		8.5	0.3346	215	265	9
1384131		9.0	0.3543	225	275	9
1409551		9.3	0.3661	225	275	10
1384160	3/8	9.525	0.3750	240	290	3/8
1384148		10.0	0.3937	250	300	10

List No. 9536 25D

Unit : mm

EDP No	Size D		Decimal Equivalent	Flute Length	Overall Length	Shank Dia
	Fractional	Metric				
1384183		4.0	0.1575	120	170	4
1384190	(#16)	4.5	0.1772	135	185	5
1384205	(#9)	5.0	0.1969	150	200	5
1384211		5.5	0.2165	165	215	6
1384228		6.0	0.2362	180	230	6
1384177	1/4	6.35	0.2500	195	245	1/4
1384234		6.5	0.2559	195	245	7
1384240		7.0	0.2756	210	260	7
1384257	(M)	7.5	0.2953	225	275	8
1384263		8.0	0.3150	240	290	8

Unit : mm

Drill Dia. D		Tolerance
Above	Up to	
	3	0~0.01
3	6	0~0.012
6		0~0.015

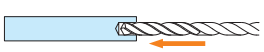
• Tolerance of Shank Dia.: h6 • Point angle: 140°

MQL Drills Recommended Cutting Conditions

1 Guide Hole Drilling

① We recommend pre-drilling of guide holes.
② It is recommended that the pilot hole size be .05mm to .1mm bigger than the MQLPLD.
③ Drill depth : 2-3D or deeper.
④ Ensure a high precision hole is drilled for the guide.
We recommend the Aqua Drill 3 Flutes for precision guide hole drilling.
⑤ If the part is slanted or at an angle, use an endmill to mill a flat surface for the guide hole & MQLPLD.

2 Initial Cutting with MQL Drill

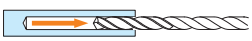


① Penetrate the pilot hole at reduced RPMs.
② Stay about 2 to 3mm (.07"-.1") short of the bottom of the guide hole.

3 Deep Hole Drilling

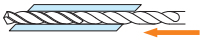
① Start cutting at the recommended speeds and feeds with continous feed cycle(no pecking required)

4 Retracting the Drill from the Hole



① After the drilling has been completed and drill depth has been achieved, retract the drill at reduced RPM's when exiting the hole.

5 Breaking Through



① When breaking through, the cutting edge can be damaged. Reduce feed rate.
② A feed rate of 0.05mm-.1mm/rev (.001-.004 IPR) is recommended.

List No. 7574P High Performance (7xD)

h7 SG FAX HELIX N 135° 2RAKE+X

PM-HSCO SG Coated

New improved SG-Jobbers length drill. Designed & engineered for drilling stainless steel and hi-temp alloys.

Range 2.0 to 32.0 mm

EDP No.	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia.
0721821	2.0	0.0787	24	56	3
0721838	2.1	0.0827	24	56	3
0721844	2.2	0.0866	25	56	3
0721850	2.3	0.0906	25	56	3
0721867	2.4	0.0945	30	61	3
0721873	2.5	0.0984	30	61	3
0721880	2.6	0.1024	30	61	3
0721896	2.7	0.1063	33	64	3
0721901	2.8	0.1102	33	64	3
0721918	2.9	0.1142	33	64	3
0721924	3.0	0.1181	33	64	3
0721930	3.1	0.1220	36	68	4
0721947	3.2	0.1260	36	68	4
0721953	3.3	0.1299	36	68	4
0721960	3.4	0.1339	39	71	4
0721976	3.5	0.1378	39	71	4
0721982	3.6	0.1417	39	71	4
0721999	3.7	0.1457	39	71	4
0722003	3.8	0.1496	43	75	4
0722010	3.9	0.1535	43	75	4
0722026	4.0	0.1575	43	75	4
0722032	4.1	0.1614	43	85	6
0722049	4.2	0.1654	43	85	6
0722055	4.3	0.1693	47	89	6
0722061	4.4	0.1732	47	89	6
0722078	4.5	0.1772	47	89	6
0722084	4.6	0.1811	47	89	6
0722090	4.7	0.1850	47	89	6
0722106	4.8	0.1890	52	94	6
0722112	4.9	0.1929	52	94	6
0722129	5.0	0.1969	52	94	6
0722135	5.1	0.2008	52	94	6
0722141	5.2	0.2047	52	94	6
0722158	5.3	0.2087	52	94	6
0722164	5.4	0.2126	57	99	6
0722170	5.5	0.2165	57	99	6
0722187	5.6	0.2205	57	99	6
0722193	5.7	0.2244	57	99	6

EDP No.	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia.
0722209	5.8	0.2283	57	99	6
0722215	5.9	0.2323	57	99	6
0722221	6.0	0.2362	57	99	6
0722238	6.1	0.2402	63	107	8
0722244	6.2	0.2441	63	107	8
0722250	6.3	0.2480	63	107	8
0722267	6.4	0.2520	63	107	8
0722273	6.5	0.2559	63	107	8
0722280	6.6	0.2598	63	107	8
0722296	6.7	0.2638	63	107	8
0722301	6.8	0.2677	69	113	8
0722318	6.9	0.2717	69	113	8
0722324	7.0	0.2756	69	113	8
0722330	7.1	0.2795	69	113	8
0722347	7.2	0.2835	69	113	8
0722353	7.3	0.2874	69	113	8
0722360	7.4	0.2913	69	113	8
0722376	7.5	0.2953	69	113	8
0722382	7.6	0.2992	75	119	8
0722399	7.7	0.3031	75	119	8
0722404	7.8	0.3071	75	119	8
0722410	7.9	0.3110	75	119	8
0722427	8.0	0.3150	75	119	8
0722433	8.1	0.3189	75	125	10
0722440	8.2	0.3228	75	125	10
0722456	8.3	0.3268	75	125	10
0722462	8.4	0.3307	75	125	10
0722479	8.5	0.3346	75	125	10
0722485	8.6	0.3386	81	131	10
0722491	8.7	0.3425	81	131	10
0722507	8.8	0.3465	81	131	10
0722513	8.9	0.3504	81	131	10
0722520	9.0	0.3543	81	131	10
0722536	9.1	0.3583	81	131	10
0722542	9.2	0.3622	81	131	10
0722559	9.3	0.3661	81	131	10
0722565	9.4	0.3701	81	131	10
0722571	9.5	0.3740	81	131	10

1 per tube

List No. 7574P High Performance (7xD)

PM-HSCO SG Coated

New improved SG-Jobbers length drill. Designed & engineered for drilling stainless steel and hi-temp alloys.

Range 2.0 to 32.0 mm

EDP No.	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia.
0722588	9.6	0.3780	87	137	10
0722594	9.7	0.3819	87	137	10
0722600	9.8	0.3858	87	137	10
0722616	9.9	0.3898	87	137	10
0722622	10.0	0.3937	87	137	10
0722639	10.1	0.3976	87	144	12
0722645	10.2	0.4016	87	144	12
0722651	10.3	0.4055	87	144	12
0722668	10.4	0.4094	87	144	12
0722674	10.5	0.4134	87	144	12
0722680	10.6	0.4173	87	144	12
0722697	10.7	0.4213	94	151	12
0722702	10.8	0.4252	94	151	12
0722719	10.9	0.4291	94	151	12
0722725	11.0	0.4331	94	151	12
0722731	11.1	0.4370	94	151	12
0722748	11.2	0.4409	94	151	12
0722754	11.3	0.4449	94	151	12
0722760	11.4	0.4488	94	151	12
0722777	11.5	0.4528	94	151	12
0722783	11.6	0.4567	94	151	12
0722790	11.7	0.4606	94	151	12
0722805	11.8	0.4646	94	151	12
0722811	11.9	0.4685	101	158	12
0722828	12.0	0.4724	101	158	12
0722834	12.1	0.4764	101	158	12
0722840	12.2	0.4803	101	158	12
0722857	12.3	0.4843	101	158	12
0722863	12.4	0.4882	101	158	12
0722870	12.5	0.4921	101	158	12
0722886	12.6	0.4961	101	158	12
0722892	12.7	0.5000	101	158	12
0722908	12.8	0.5039	101	158	12
0722914	12.9	0.5079	101	158	12
0722920	13.0	0.5118	101	158	12
0722937	13.5	0.5315	108	168	16
0722943	14.0	0.5512	108	168	16
0722950	14.5	0.5709	114	173	16

EDP No.	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia.
0722966	15.0	0.5906	114	180	20
0722972	15.5	0.6102	120	185	20
0722989	16.0	0.6299	120	185	20
0722995	16.5	0.6496	125	189	20
0723000	17.0	0.6693	125	189	20
0723016	17.5	0.6890	130	194	20
0723022	18.0	0.7087	135	206	20
0723039	18.5	0.7283	140	210	20
0723045	19.0	0.7480	135	206	25
0723051	19.5	0.7677	140	210	25
0723068	20.0	0.7874	140	210	25
0723074	20.5	0.8071	140	214	25
0723080	21.0	0.8268	145	214	25
0723097	21.5	0.8465	150	218	25
0723102	22.0	0.8661	150	218	25
0723119	22.5	0.8858	155	223	25
0723125	23.0	0.9055	155	223	25
0723131	23.5	0.9252	155	223	25
0723148	24.0	0.9449	160	237	32
0723154	24.5	0.9646	160	237	32
0723160	25.0	0.9843	165	241	32
0723177	25.5	1.0039	165	241	32
0723183	26.0	1.0236	165	241	32
0723190	26.5	1.0433	165	241	32
0723205	27.0	1.0630	170	245	32
0723211	27.5	1.0827	170	245	32
0723228	28.0	1.1024	170	245	32
0723234	28.5	1.1220	175	248	32
0723240	29.0	1.1417	175	248	32
0723257	29.5	1.1614	175	248	32
0723263	30.0	1.1811	175	248	32
0723270	30.5	1.2008	180	252	32
0723286	31.0	1.2205	180	252	32
0723292	31.5	1.2402	180	252	32
0723308	32.0	1.2598	185	252	32

1 per tube

List No. 7575P High Performance (7xD)

h7 SG FAX HELIX N 135° 2RAKE+X

PM-HSCO SG Coated

New improved SG-Jobbers length drill. Designed & engineered for drilling stainless steel and hi-temp alloys.

Range 3/32" to 3/4"

EDP No.	Size	Decimal Equivalent	Metric Equivalent	Flute Length	Overall Length	Shank Dia.
1464739	3/32	0.0938	2.38	1-1/8	2-3/8	1/8
1464745	7/64	0.1094	2.78	1-1/4	2-1/2	1/8
1464751	1/8	0.1250	3.18	1-3/8	2-5/8	1/8
1464768	9/64	0.1406	3.57	1-1/2	2-7/8	3/16
1464774	5/32	0.1563	3.97	1-3/4	3-1/8	3/16
1464780	11/64	0.1719	4.37	1-7/8	3-1/4	3/16
1464797	3/16	0.1875	4.76	2	3-3/8	3/16
1464802	13/64	0.2031	5.16	2-1/16	3-7/8	1/4
1464819	7/32	0.2188	5.56	2-1/16	3-7/8	1/4
1464825	15/64	0.2344	5.95	2-3/8	4-1/4	1/4
1464831	1/4	0.2500	6.35	2-3/8	4-1/4	1/4
1464848	17/64	0.2656	6.75	2-3/4	4-5/8	3/8
1464854	9/32	0.2813	7.15	2-3/4	4-5/8	3/8
1464860	19/64	0.2969	7.54	2-7/8	4-3/4	3/8
1464877	5/16	0.3125	7.94	2-7/8	4-3/4	3/8
1464883	21/64	0.3281	8.33	2-7/8	4-3/4	3/8
1464890	11/32	0.3438	8.73	3-1/4	5-1/8	3/8
1464905	23/64	0.3594	9.13	3-1/4	5-1/8	3/8

EDP No.	Size	Decimal Equivalent	Metric Equivalent	Flute Length	Overall Length	Shank Dia.
1464911	3/8	0.3750	9.53	3-1/4	5-1/8	3/8
1464928	25/64	0.3906	9.92	3-3/8	5-1/2	1/2
1464934	13/32	0.4063	10.32	3-3/8	5-1/2	1/2
1464940	27/64	0.4219	10.72	3-3/4	5-7/8	1/2
1464957	7/16	0.4375	11.11	3-3/4	5-7/8	1/2
1464963	29/64	0.4531	11.51	3-3/4	5-7/8	1/2
1464970	15/32	0.4688	11.91	4	6-1/4	1/2
1464986	31/64	0.4844	12.30	4	6-1/4	1/2
1464992	1/2	0.5000	12.70	4	6-1/4	1/2
1465007	17/32	0.5313	13.50	4-1/4	6-3/4	5/8
1465013	9/16	0.5625	14.29	4-1/2	7	5/8
1465020	37/64	0.5781	14.68	4-1/2	7	5/8
1465036	19/32	0.5938	15.08	4-3/4	7-1/4	3/4
1465042	5/8	0.6250	15.88	4-3/4	7-1/4	3/4
1465059	21/32	0.6563	16.67	5	7-1/2	3/4
1465065	11/16	0.6875	17.46	5-1/8	7-5/8	3/4
1465071	23/32	0.7188	18.26	5-3/8	7-3/4	7/8
1465088	3/4	0.7500	19.05	5-1/2	7-7/8	7/8

1 per tube

SG-ESR DRILLS LIST NO. 7574P, 7575P

Workpiece Material / Speed (SFM) / Drill Diameter			Structural Steels Carbon Steels		Alloy Steels		Mold Steels Stainless Steels 300-400 Series		Nickel Alloys Titanium Alloys		Cast Irons		Aluminum Alloys Copper Alloys Nonferrous Alloys	
			115 - 135 SFM		95 - 105 SFM		40 - 50 SFM		20 SFM		130 - 150 SFM		200 - 230 SFM	
Fractional	Metric mm	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
–	2	0.0787	6,000	0.003	4,800	0.002	1,800	0.002	800	0.001	6,800	0.003	10,500	0.003
3/32	2.381	0.0937	5,000	0.003	4,000	0.003	1,600	0.003	680	0.001	5,700	0.004	8,700	0.004
–	3	0.1181	4,000	0.004	3,200	0.004	1,200	0.004	550	0.001	4,500	0.005	7,000	0.005
1/8	3.175	0.1250	3,800	0.005	3,000	0.004	1,190	0.004	510	0.002	4,250	0.006	6,500	0.006
5/32	3.969	0.1563	3,000	0.006	2,400	0.005	950	0.004	420	0.002	3,400	0.007	5,200	0.007
3/16	4.763	0.1875	2,500	0.007	2,000	0.005	750	0.004	340	0.002	2,850	0.008	4,300	0.008
–	5	0.1969	2,500	0.007	1,900	0.006	700	0.004	290	0.002	2,700	0.008	4,100	0.008
1/4	6.35	0.2500	1,900	0.008	1,500	0.007	600	0.005	250	0.003	2,100	0.010	3,200	0.009
5/16	7.938	0.3125	1,500	0.009	1,200	0.008	450	0.007	210	0.003	1,750	0.012	2,600	0.011
–	8	0.3150	1,500	0.009	1,200	0.008	450	0.007	210	0.003	1,700	0.012	2,600	0.012
3/8	9.525	0.3750	1,250	0.010	1,000	0.009	400	0.008	170	0.004	1,450	0.012	2,200	0.013
–	10	0.3937	1,200	0.010	950	0.009	400	0.008	170	0.004	1,400	0.013	2,100	0.013
–	12	0.4724	1,000	0.011	800	0.010	300	0.009	120	0.005	1,100	0.014	1,700	0.015
1/2	12.7	0.5000	950	0.011	750	0.010	300	0.009	120	0.005	1,100	0.015	1,650	0.015
–	16	0.6299	750	0.014	600	0.012	250	0.011	100	0.007	850	0.017	1,300	0.017
–	20	0.7874	600	0.016	450	0.014	200	0.012	80	0.008	680	0.020	1,050	0.020
–	25	0.9843	450	0.019	350	0.015	150	0.014	50	0.010	550	0.023	850	0.023
–	32	1.2598	350	0.018	300	0.015	150	0.016	40	0.014	450	0.022	650	0.022

1) The above values apply when coolant is used in vertical machine & horizontal machine.
When drilling in stainless steel and hard to cut material using pecking.
2) Adjust drilling condition when unusual vibration or different sound occurs.
3) Recommended feeds and speeds are starting points only. Actual performance will be determined by specific material, the condition of equipment being used and coolant.

Formulas: $RPM = \frac{SFM \times 3.82}{\text{Drill dia.}}$, Feed Rate (in/min)= RPM x IPR

List No. 7572P High Performance

FAX SG h7 HELIX N 118° h7

PM-HSCO SG Coated

New Micro Sizes

This drill having stub length is suited for high-speed drilling and precise positioning and diameter. This is useful in material from Carbon Steels and Stainless Steels to Aluminum.

Range 1.0 to 20.0

Item Code	Diameter	Flute Length	Overall Length	Shank Dia
EDP	Dc	ℓ	L	Ds
0716602	0.50	3	38	3
0716705	0.51	3	38	3
0716711	0.52	3	38	3
0716728	0.53	3	38	3
0716734	0.54	3	38	3
0716619	0.55	3	38	3
0716740	0.56	3	38	3
0716757	0.57	3	38	3
0716763	0.58	3	38	3
0716770	0.59	3	38	3
0716625	0.60	3.5	38	3
0716786	0.61	3.5	38	3
0716792	0.62	3.5	38	3
0716808	0.63	3.5	38	3
0716814	0.64	3.5	38	3
0716631	0.65	3.5	38	3
0716820	0.66	3.5	38	3
0716837	0.67	3.5	38	3
0716843	0.68	3.5	38	3
0716850	0.69	3.5	38	3
0716648	0.70	4.5	38	3
0716866	0.71	4.5	38	3
0716872	0.72	4.5	38	3
0716889	0.73	4.5	38	3
0716895	0.74	4.5	38	3

Item Code	Diameter	Flute Length	Overall Length	Shank Dia
EDP	Dc	ℓ	L	Ds
0716654	0.75	4.5	38	3
0716900	0.76	4.5	38	3
0716917	0.77	4.5	38	3
0716923	0.78	4.5	38	3
0716930	0.79	4.5	38	3
0716660	0.80	5	38	3
0716946	0.81	5	38	3
0716952	0.82	5	38	3
0716969	0.83	5	38	3
0716975	0.84	5	38	3
0716677	0.85	5	38	3
0716981	0.86	5	38	3
0716998	0.87	5	38	3
0717002	0.88	5	38	3
0717019	0.89	5	38	3
0716683	0.90	5.5	38	3
0717025	0.91	5.5	38	3
0717031	0.92	5.5	38	3
0717048	0.93	5.5	38	3
0717054	0.94	5.5	38	3
0716690	0.95	5.5	38	3
0717060	0.96	5.5	38	3
0717077	0.97	5.5	38	3
0717083	0.98	5.5	38	3
0717090	0.99	5.5	38	3

HIGH PERFORMANCE DRILLS

STUB LENGTH SG-ESS / METRIC SIZES

List No. 7572P High Performance

h7 | SG | FAX | HELIX N | 118° | 135° >1.9 | 3RAKE

PM-HSCO SG Coated

This drill having stub length is suited for high-speed drilling and precise positioning and diameter. This is useful in material from Carbon Steels and Stainless Steels to Aluminum.

New Incremental Sizes

Range 1.0 to 20.0

(Unit) : mm

EDP No.	Size	Decimal	Wire Equivalent	Flute Length	Overall Length	Shank Dia.
0573780	1.00	0.0394		6	38	3
0693862	1.01	0.0398		6	38	3
0693879	1.02	0.0402	#60	6	38	3
0693885	1.03	0.0406		6	38	3
0693891	1.04	0.0409	#59	6	38	3
0575347	1.05	0.0413		6	38	3
0693907	1.06	0.0417		6	38	3
0693913	1.07	0.0421	#58	7	39	3
0693920	1.08	0.0425		7	39	3
0693936	1.09	0.0429	#57	7	39	3
0573797	1.10	0.0433		7	39	3
0693942	1.11	0.0437		7	39	3
0693959	1.12	0.0441		7	39	3
0693965	1.13	0.0445		7	39	3
0693971	1.14	0.0449		7	39	3
0575353	1.15	0.0453		7	39	3
0693988	1.16	0.0457		7	39	3
0693994	1.17	0.0461		7	39	3
0694009	1.18	0.0465	#56	7	39	3
0694015	1.19	0.0469	3/64"	8	40	3
0573802	1.20	0.0472		8	40	3
0694021	1.21	0.0476		8	40	3
0694038	1.22	0.0480		8	40	3
0694044	1.23	0.0484		8	40	3
0694050	1.24	0.0488		8	40	3
0575360	1.25	0.0492		8	40	3
0694067	1.26	0.0496		8	40	3
0694073	1.27	0.0500		8	40	3
0694080	1.28	0.0504		8	40	3
0694096	1.29	0.0508		8	40	3
0573819	1.30	0.0512		8	40	3
0694101	1.31	0.0516		8	40	3
0694118	1.32	0.0520	#55	8	40	3
0694124	1.33	0.0524		9	41	3
0694130	1.34	0.0528		9	41	3
0575376	1.35	0.0531		9	41	3
0694147	1.36	0.0535		9	41	3
0694153	1.37	0.0539		9	41	3
0694160	1.38	0.0543		9	41	3
0694176	1.39	0.0547		9	41	3
0573825	1.40	0.0551		9	41	3
0694182	1.41	0.0555		9	41	3
0694199	1.42	0.0559		9	41	3
0694204	1.43	0.0563		9	41	3
0694210	1.44	0.0567		9	41	3
0575382	1.45	0.0571		9	41	3
0694227	1.46	0.0575		9	41	3
0694233	1.47	0.0579		9	41	3
0694240	1.48	0.0583		9	41	3
0694256	1.49	0.0587		9	41	3
0573831	1.50	0.0591		9	41	3
0694262	1.51	0.0594	#53	10	42	3
0694279	1.52	0.0598		10	42	3
0694285	1.53	0.0602		10	42	3
0694291	1.54	0.0606		10	42	3
0575399	1.55	0.0610		10	42	3
0694307	1.56	0.0614		10	42	3
0694313	1.57	0.0618		10	42	3
0694320	1.58	0.0622		10	42	3
0694336	1.59	0.0626	1/16	10	42	3
0573848	1.60	0.0630		10	42	3
0694342	1.61	0.0634	#52	10	42	3
0694359	1.62	0.0638		10	42	3
0694365	1.63	0.0642		10	42	3
0694371	1.64	0.0646		10	42	3
0575404	1.65	0.0650		10	42	3
0694388	1.66	0.0654		10	42	3
0694394	1.67	0.0657		10	42	3
0694400	1.68	0.0661		10	42	3
0694416	1.69	0.0665		10	42	3
0573854	1.70	0.0669		10	42	3
0694422	1.71	0.0673		11	43	3
0694439	1.72	0.0677		11	43	3
0694445	1.73	0.0681		11	43	3

EDP No.	Size	Decimal	Wire Equivalent	Flute Length	Overall Length	Shank Dia.
0694451	1.74	0.0685		11	43	3
0575410	1.75	0.0689		11	43	3
0694468	1.76	0.0693		11	43	3
0694474	1.77	0.0697		11	43	3
0694480	1.78	0.0701	#50	11	43	3
0694497	1.79	0.0705		11	43	3
0573860	1.80	0.0709		11	43	3
0694502	1.81	0.0713		11	43	3
0694519	1.82	0.0717		11	43	3
0694525	1.83	0.0720		11	43	3
0694531	1.84	0.0724		11	43	3
0575427	1.85	0.0728		11	43	3
0694548	1.86	0.0732	#49	11	43	3
0694554	1.87	0.0736		11	43	3
0694560	1.88	0.0740		11	43	3
0694577	1.89	0.0744		11	43	3
0573877	1.90	0.0748		11	43	3
0694583	1.91	0.0752		12	44	3
0694590	1.92	0.0756		12	44	3
0694605	1.93	0.0760	#48	12	44	3
0694611	1.94	0.0764		12	44	3
0575433	1.95	0.0768		12	44	3
0694628	1.96	0.0772		12	44	3
0694634	1.97	0.0776		12	44	3
0694640	1.98	0.0780	5/64	12	44	3
0694657	1.99	0.0783	#47	12	44	3
0572514	2.00	0.0787		12	44	3
0694663	2.01	0.0791		12	44	3
0694670	2.02	0.0795		12	44	3
0694686	2.03	0.0799		12	44	3
0694692	2.04	0.0803		12	44	3
0575440	2.05	0.0807		12	44	3
0694708	2.06	0.0811	#46	12	44	3
0694714	2.07	0.0815		12	44	3
0694720	2.08	0.0819	#45	12	44	3
0694737	2.09	0.0823		12	44	3
0572520	2.10	0.0827		12	44	3
0694743	2.11	0.0831		12	44	3
0694750	2.12	0.0835		12	44	3
0694766	2.13	0.0839		13	45	3
0694772	2.14	0.0843		13	45	3
0575456	2.15	0.0846		13	45	3
0694789	2.16	0.0850		13	45	3
0694795	2.17	0.0854		13	45	3
0694800	2.18	0.0858	#44	13	45	3
0694817	2.19	0.0862		13	45	3
0572537	2.20	0.0866		13	45	3
0694823	2.21	0.0870		13	45	3
0694830	2.22	0.0874		13	45	3
0694846	2.23	0.0878		13	45	3
0694852	2.24	0.0882		13	45	3
0575462	2.25	0.0886		13	45	3
0694869	2.26	0.0890	#43	13	45	3
0694875	2.27	0.0894		13	45	3
0694881	2.28	0.0898		13	45	3
0694898	2.29	0.0902		13	45	3
0572543	2.30	0.0906		13	45	3
0694903	2.31	0.0909		13	45	3
0694910	2.32	0.0913		13	45	3
0694926	2.33	0.0917		13	45	3
0694932	2.34	0.0921		13	45	3
0575479	2.35	0.0925		13	45	3
0694949	2.36	0.0929		13	45	3
0694955	2.37	0.0933	#42	14	46	3
0694961	2.38	0.0937	3/32	14	46	3
0694978	2.39	0.0941		14	46	3
0572550	2.40	0.0945		14	46	3
0694984	2.41	0.0949		14	46	3
0694990	2.42	0.0953		14	46	3
0695005	2.43	0.0957		14	46	3
0695011	2.44	0.0961	#41	14	46	3
0575485	2.45	0.0965		14	46	3
0695028	2.46	0.0969		14	46	3
0695034	2.47	0.0972		14	46	3

0.01mm size Diameter Tolerance : 0~-.009mm

List No. 7572P High Performance

h7 | SG | FAX | HELIX N | 118° | 135° >1.9 | 3RAKE

PM-HSCO SG Coated

This drill having stub length is suited for high-speed drilling and precise positioning and diameter. This is useful in material from Carbon Steels and Stainless Steels to Aluminum.

Range 1.0 to 20.0

(Unit) : mm

EDP No.	Size	Decimal	Wire Equivalent	Flute Length	Overall Length	Shank Dia.
0695040	2.48	0.0976		14	46	3
0695057	2.49	0.0980	#40	14	46	3
0572566	2.50	0.0984		14	46	3
0695063	2.51	0.0988		14	46	3
0695070	2.52	0.0992		14	46	3
0695086	2.53	0.0996	#39	14	46	3
0695092	2.54	0.1000		14	46	3
0575491	2.55	0.1004		14	46	3
0695108	2.56	0.1008		14	46	3
0695114	2.57	0.1012		14	46	3
0695120	2.58	0.1016	#38	14	46	3
0695137	2.59	0.1020		14	46	3
0572572	2.60	0.1024		14	46	3
0695143	2.61	0.1028		14	46	3
0695150	2.62	0.1031		14	46	3
0695166	2.63	0.1035		14	46	3
0695172	2.64	0.1039	#37	14	46	3
0575507	2.65	0.1043		14	46	3
0695189	2.66	0.1047		16	48	3
0695195	2.67	0.1051		16	48	3
0695200	2.68	0.1055		16	48	3
0695217	2.69	0.1059		16	48	3
0572589	2.70	0.1063		16	48	3
0695223	2.71	0.1067	#36	16	48	3
0695230	2.72	0.1071		16	48	3
0695246	2.73	0.1075		16	48	3
0695252	2.74	0.1079		16	48	3
0575513	2.75	0.1083		16	48	3
0695269	2.76	0.1087		16	48	3
0695275	2.77	0.1091		16	48	3
0695281	2.78	0.1094	7/64	16	48	3
0695298	2.79	0.1098	#35	16	48	3
0572595	2.80	0.1102		16	48	3
0695303	2.81	0.1106		16	48	3
0695310	2.82	0.1110	#34	16	48	3
0695326	2.83	0.1114		16	48	3
0695332	2.84	0.1118		16	48	3
0575520	2.85	0.1122		16	48	3
0695349	2.86	0.1126		16	48	3
0695355	2.87	0.1130	#33	16	48	3
0695361	2.88	0.1134		16	48	3
0695378	2.89	0.1138		16	48	3
0572600	2.90	0.1142		16	48	3
0695384	2.91	0.1146		16	48	3
0695390	2.92	0.1150		16	48	3
0695406	2.93	0.1154		16	48	3
0695412	2.94	0.1157		16	48	3
0575536	2.95	0.1161		16	48	3
0695429	2.96	0.1165		16	48	3
0695435	2.97	0.1169		16	48	3
0695441	2.98	0.1173		16	48	3
0695458	2.99	0.1177		16	48	3
0572617	3.00	0.1181		16	48	3
0695464	3.01	0.1185		18	50	4
0695470	3.02	0.1189		18	50	4
0695487	3.03	0.1193		18	50	4
0695493	3.04	0.1197		18	50	4
0575542	3.05	0.1201		18	50	4
0695509	3.06	0.1205		18	50	4
0695515	3.07	0.1209		18	50	4
0695521	3.08	0.1213		18	50	4
0695538	3.09	0.1217		18	50	4
0572623	3.10	0.1220		18	50	4
0695544	3.11	0.1224		18	50	4
0695550	3.12	0.1228		18	50	4
0695567	3.13	0.1232		18	50	4
0695573	3.14	0.1236		18	50	4
0575559	3.15	0.1240		18	50	4
0695580	3.16	0.1244		18	50	4
0695596	3.17	0.1248		18	50	4
0695601	3.18	0.1252	1/8	18	50	4
0695618	3.19	0.1256		18	50	4
0572630	3.20	0.1260		18	50	4
0695624	3.21	0.1264		18	50	4

EDP No.	Size	Decimal	Wire Equivalent	Flute Length	Overall Length	Shank Dia.
0695630	3.22	0.1268		18	50	4
0695647	3.23	0.1272		18	50	4
0695653	3.24	0.1276		18	50	4
0575565	3.25	0.1280		18	50	4
0695660	3.26	0.1283	#30	18	50	4
0695676	3.27	0.1287		18	50	4
0695682	3.28	0.1291		18	50	4
0695699	3.29	0.1295		18	50	4
0572646	3.30	0.1299		18	50	4
0695704	3.31	0.1303		18	50	4
0695710	3.32	0.1307		18	50	4
0695727	3.33	0.1311		18	50	4
0695733	3.34	0.1315		18	50	4
0575571	3.35	0.1319		18	50	4
0695740	3.36	0.1323		20	52	4
0695756	3.37	0.1327		20	52	4
0695762	3.38	0.1331		20	52	4
0695779	3.39	0.1335		20	52	4
0572652	3.40	0.1339		20	52	4
0695785	3.41	0.1343		20	52	4
0695791	3.42	0.1346		20	52	4
0695807	3.43	0.1350		20	52	4
0695813	3.44	0.1354		20	52	4
0575588	3.45	0.1358		20	52	4
0695820	3.46	0.1362		20	52	4
0695836	3.47	0.1366	#29	20	52	4
0695842	3.48	0.1370		20	52	4
0695859	3.49	0.1374		20	52	4
0572669	3.50	0.1378		20	52	4
0695865	3.51	0.1382		20	52	4
0695871	3.52	0.1386		20	52	4
0695888	3.53	0.1390		20	52	4
0695894	3.54	0.1394		20	52	4
0575594	3.55	0.1398		20	52	4
0695900	3.56	0.1402		20	52	4
0695916	3.57	0.1406	#28,9/64	20	52	4
0695922	3.58	0.1409		20	52	4
0695939	3.59	0.1413		20	52	4
0572675	3.60	0.1417		20	52	4
0695945	3.61	0.1421		20	52	4
0695951	3.62	0.1425		20	52	4
0695968	3.63	0.1429		20	52	4
0695974	3.64	0.1433		20	52	4
0575600	3.65	0.1437		20	52	4
0695980	3.66	0.1441	#27	20	52	4
0695997	3.67	0.1445		20	52	4
0696001	3.68	0.1449		20	52	4
0696018	3.69	0.1453		20	52	4
0572681	3.70	0.1457		20	52	4
0696024	3.71	0.1461		20	52	4
0696030	3.72	0.1465		20	52	4
0696047	3.73	0.1469	#26	20	52	4
0696053	3.74	0.1472		20	52	4
0575616	3.75	0.1476		20	52	4
0696060	3.76	0.1480		22	54	4
0696076	3.77	0.1484		22	54	4
0696082	3.78	0.1488		22	54	4
0696099	3.79	0.1492		22	54	4
0572698	3.80	0.1496		22	54	4
0696104	3.81	0.1500		22	54	4
0696110	3.82	0.1504		22	54	4
0696127	3.83	0.1508		22	54	4
0696133	3.84	0.1512		22	54	4
0575622	3.85	0.1516		22	54	4
0696140	3.86	0.1520	#24	22	54	4
0696156	3.87	0.1524		22	54	4
0696162	3.88	0.1528		22	54	4
0696179	3.89	0.1531		22	54	4
0572703	3.90	0.1535		22	54	4
0696185	3.91	0.1539	#23	22	54	4
0696191	3.92	0.1543		22	54	4
0696207	3.93	0.1547		22	54	4
0696213	3.94	0.1551		22	54	4
0575639	3.95	0.1555		22	54	4

0.01mm size Diameter Tolerance : 0~-.009mm

HIGH PERFORMANCE DRILLS

STUB LENGTH SG-ESS / METRIC SIZES

List No. 7572P High Performance

h7 | SG | FAX | HELIX N | 118° | 135° | 3RAKE

>1.9

PM-HSCO SG Coated

This drill having stub length is suited for high-speed drilling and precise positioning and diameter. This is useful in material from Carbon Steels and Stainless Steels to Aluminum.

Range 1.0 to 20.0

(Unit) : mm

EDP No.	Size	Decimal	Wire Equivalent	Flute Length	Overall Length	Shank Dia.
0696220	3.96	0.1559		22	54	4
0696236	3.97	0.1563	5/32	22	54	4
0696242	3.98	0.1567		22	54	4
0696259	3.99	0.1571	#22	22	54	4
0572710	4.00	0.1575		22	54	4
0696265	4.01	0.1579		22	66	6
0696271	4.02	0.1583		22	66	6
0696288	4.03	0.1587		22	66	6
0696294	4.04	0.1591	#21	22	66	6
0575645	4.05	0.1594		22	66	6
0696300	4.06	0.1598		22	66	6
0696316	4.07	0.1602		22	66	6
0696322	4.08	0.1606		22	66	6
0696339	4.09	0.1610	#20	22	66	6
0572726	4.10	0.1614		22	66	6
0696345	4.11	0.1618		22	66	6
0696351	4.12	0.1622		22	66	6
0696368	4.13	0.1626		22	66	6
0696374	4.14	0.1630		22	66	6
0575651	4.15	0.1634		22	66	6
0696380	4.16	0.1638		22	66	6
0696397	4.17	0.1642		22	66	6
0696402	4.18	0.1646		22	66	6
0696419	4.19	0.1650		22	66	6
0572732	4.20	0.1654		22	66	6
0696425	4.21	0.1657		22	66	6
0696431	4.22	0.1661	#19	22	66	6
0696448	4.23	0.1665		22	66	6
0696454	4.24	0.1669		22	66	6
0575668	4.25	0.1673		22	66	6
0696460	4.26	0.1677		24	68	6
0696477	4.27	0.1681		24	68	6
0696483	4.28	0.1685		24	68	6
0696490	4.29	0.1689		24	68	6
0572749	4.30	0.1693		24	68	6
0696505	4.31	0.1697		24	68	6
0696511	4.32	0.1701		24	68	6
0696528	4.33	0.1705		24	68	6
0696534	4.34	0.1709		24	68	6
0575674	4.35	0.1713		24	68	6
0696540	4.36	0.1717		24	68	6
0696557	4.37	0.1720	11/64	24	68	6
0696563	4.38	0.1724		24	68	6
0696570	4.39	0.1728		24	68	6
0572755	4.40	0.1732		24	68	6
0696586	4.41	0.1736		24	68	6
0696592	4.42	0.1740		24	68	6
0696608	4.43	0.1744		24	68	6
0696614	4.44	0.1748		24	68	6
0575680	4.45	0.1752		24	68	6
0696620	4.46	0.1756		24	68	6
0696637	4.47	0.1760		24	68	6
0696643	4.48	0.1764		24	68	6
0696650	4.49	0.1768		24	68	6
0572761	4.50	0.1772		24	68	6
0696666	4.51	0.1776		24	68	6
0696672	4.52	0.1780		24	68	6
0696689	4.53	0.1783		24	68	6
0696695	4.54	0.1787		24	68	6
0575697	4.55	0.1791		24	68	6
0696700	4.56	0.1795		24	68	6
0696717	4.57	0.1799	#15	24	68	6
0696723	4.58	0.1803		24	68	6
0696730	4.59	0.1807		24	68	6
0572778	4.60	0.1811		24	68	6
0696746	4.61	0.1815		24	68	6
0696752	4.62	0.1819	#14	24	68	6
0696769	4.63	0.1823		24	68	6
0696775	4.64	0.1827		24	68	6
0575702	4.65	0.1831		24	68	6
0696781	4.66	0.1835		24	68	6
0696798	4.67	0.1839		24	68	6
0696803	4.68	0.1843		24	68	6
0696810	4.69	0.1846		24	68	6

EDP No.	Size	Decimal	Wire Equivalent	Flute Length	Overall Length	Shank Dia.
0572784	4.70	0.1850		24	68	6
0696826	4.71	0.1854		24	68	6
0696832	4.72	0.1858		24	68	6
0696849	4.73	0.1862		24	68	6
0696855	4.74	0.1866		24	68	6
0575719	4.75	0.1870		24	68	6
0696861	4.76	0.1874	3/16	26	70	6
0696878	4.77	0.1878		26	70	6
0696884	4.78	0.1882		26	70	6
0696890	4.79	0.1886		26	70	6
0572790	4.80	0.1890		26	70	6
0696906	4.81	0.1894		26	70	6
0696912	4.82	0.1898		26	70	6
0696929	4.83	0.1902		26	70	6
0696935	4.84	0.1906		26	70	6
0575725	4.85	0.1909		26	70	6
0696941	4.86	0.1913		26	70	6
0696958	4.87	0.1917		26	70	6
0696964	4.88	0.1921		26	70	6
0696970	4.89	0.1925		26	70	6
0572806	4.90	0.1929		26	70	6
0696987	4.91	0.1933	#10	26	70	6
0696993	4.92	0.1937		26	70	6
0697008	4.93	0.1941		26	70	6
0697014	4.94	0.1945		26	70	6
0575731	4.95	0.1949		26	70	6
0697020	4.96	0.1953		26	70	6
0697037	4.97	0.1957		26	70	6
0697043	4.98	0.1961	#9	26	70	6
0697050	4.99	0.1965		26	70	6
0572812	5.00	0.1969		26	70	6
0697066	5.01	0.1972		26	70	6
0697072	5.02	0.1976		26	70	6
0697089	5.03	0.1980		26	70	6
0697095	5.04	0.1984		26	70	6
0575748	5.05	0.1988		26	70	6
0697100	5.06	0.1992		26	70	6
0697117	5.07	0.1996		26	70	6
0697123	5.08	0.2000		26	70	6
0697130	5.09	0.2004		26	70	6
0572829	5.10	0.2008		26	70	6
0697146	5.11	0.2012	#7	26	70	6
0697152	5.12	0.2016		26	70	6
0697169	5.13	0.2020		26	70	6
0697175	5.14	0.2024		26	70	6
0575754	5.15	0.2028		26	70	6
0697181	5.16	0.2031	13/64	26	70	6
0697198	5.17	0.2035		26	70	6
0697203	5.18	0.2039	#6	26	70	6
0697210	5.19	0.2043		26	70	6
0572835	5.20	0.2047		26	70	6
0697226	5.21	0.2051		26	70	6
0697232	5.22	0.2055	#5	26	70	6
0697249	5.23	0.2059		26	70	6
0697255	5.24	0.2063		26	70	6
0575760	5.25	0.2067		26	70	6
0697261	5.26	0.2071		26	70	6
0697278	5.27	0.2075		26	70	6
0697284	5.28	0.2079		26	70	6
0697290	5.29	0.2083		26	70	6
0572841	5.30	0.2087		26	70	6
0697306	5.31	0.2091	#4	28	72	6
0697312	5.32	0.2094		28	72	6
0697329	5.33	0.2098		28	72	6
0697335	5.34	0.2102		28	72	6
0575777	5.35	0.2106		28	72	6
0697341	5.36	0.2110		28	72	6
0697358	5.37	0.2114		28	72	6
0697364	5.38	0.2118		28	72	6
0697370	5.39	0.2122		28	72	6
0572858	5.40	0.2126		28	72	6
0697387	5.41	0.2130	#3	28	72	6
0697393	5.42	0.2134		28	72	6
0697409	5.43	0.2138		28	72	6

0.01mm size Diameter Tolerance : 0~-.009mm

List No. 7572P High Performance

h7 | SG | FAX | HELIX N | 118° | 135° >1.9 | 3RAKE

PM-HSCO SG Coated

This drill having stub length is suited for high-speed drilling and precise positioning and diameter. This is useful in material from Carbon Steels and Stainless Steels to Aluminum.

Range 1.0 to 20.0

(Unit) : mm

EDP No.	Size	Decimal	Wire Equivalent	Flute Length	Overall Length	Shank Dia.
0697415	5.44	0.2142		28	72	6
0575783	5.45	0.2146		28	72	6
0697421	5.46	0.2150		28	72	6
0697438	5.47	0.2154		28	72	6
0697444	5.48	0.2157		28	72	6
0697450	5.49	0.2161		28	72	6
0572864	5.50	0.2165		28	72	6
0697467	5.51	0.2169		28	72	6
0697473	5.52	0.2173		28	72	6
0697480	5.53	0.2177		28	72	6
0697496	5.54	0.2181		28	72	6
0575790	5.55	0.2185		28	72	6
0697501	5.56	0.2189	7/32	28	72	6
0697518	5.57	0.2193		28	72	6
0697524	5.58	0.2197		28	72	6
0697530	5.59	0.2201		28	72	6
0572870	5.60	0.2205		28	72	6
0697547	5.61	0.2209	#2	28	72	6
0697553	5.62	0.2213		28	72	6
0697560	5.63	0.2217		28	72	6
0697576	5.64	0.2220		28	72	6
0575805	5.65	0.2224		28	72	6
0697582	5.66	0.2228		28	72	6
0697599	5.67	0.2232		28	72	6
0697604	5.68	0.2236		28	72	6
0697610	5.69	0.2240		28	72	6
0572887	5.70	0.2244		28	72	6
0697627	5.71	0.2248		28	72	6
0697633	5.72	0.2252		28	72	6
0697640	5.73	0.2256		28	72	6
0697656	5.74	0.2260		28	72	6
0575811	5.75	0.2264		28	72	6
0697662	5.76	0.2268		28	72	6
0697679	5.77	0.2272		28	72	6
0697685	5.78	0.2276		28	72	6
0697691	5.79	0.2280	#1	28	72	6
0572893	5.80	0.2283		28	72	6
0697707	5.81	0.2287		28	72	6
0697713	5.82	0.2291		28	72	6
0697720	5.83	0.2295		28	72	6
0697736	5.84	0.2299		28	72	6
0575828	5.85	0.2303		28	72	6
0697742	5.86	0.2307		28	72	6
0697759	5.87	0.2311		28	72	6
0697765	5.88	0.2315		28	72	6
0697771	5.89	0.2319		28	72	6
0572909	5.90	0.2323		28	72	6
0697788	5.91	0.2327		28	72	6
0697794	5.92	0.2331		28	72	6
0697800	5.93	0.2335		28	72	6
0697816	5.94	0.2339		28	72	6
0575834	5.95	0.2343		28	72	6
0697822	5.96	0.2346		28	72	6
0697839	5.97	0.2350		28	72	6
0697845	5.98	0.2354		28	72	6
0697851	5.99	0.2358		28	72	6
0572915	6.00	0.2362		28	72	6
0572921	6.1	0.2402		31	75	8
0572938	6.2	0.2441		31	75	8
0572944	6.3	0.2480		31	75	8
0572950	6.4	0.2520		31	75	8
0572967	6.5	0.2559		31	75	8
0572973	6.6	0.2598		31	75	8
0572980	6.7	0.2638		31	75	8
0572996	6.8	0.2677		34	78	8
0573000	6.9	0.2717		34	78	8
0573017	7.0	0.2756		34	78	8
0573023	7.1	0.2795		34	78	8
0573030	7.2	0.2835		34	78	8
0573046	7.3	0.2874		34	78	8
0573052	7.4	0.2913		34	78	8

EDP No.	Size	Decimal	Wire Equivalent	Flute Length	Overall Length	Shank Dia.
0573069	7.5	0.2953		34	78	8
0573075	7.6	0.2992		37	81	8
0573081	7.7	0.3031		37	81	8
0573098	7.8	0.3071		37	81	8
0573103	7.9	0.3110		37	81	8
0573110	8.0	0.3150		37	81	8
0573126	8.1	0.3189		37	87	10
0573132	8.2	0.3228		37	87	10
0573149	8.3	0.3268		37	87	10
0573155	8.4	0.3307		37	87	10
0573161	8.5	0.3346		37	87	10
0573178	8.6	0.3386		40	90	10
0573184	8.7	0.3425		40	90	10
0573190	8.8	0.3465		40	90	10
0573206	8.9	0.3504		40	90	10
0573212	9.0	0.3543		40	90	10
0573229	9.1	0.3583		40	90	10
0573235	9.2	0.3622		40	90	10
0573241	9.3	0.3661		40	90	10
0573258	9.4	0.3701		40	90	10
0573264	9.5	0.3740		40	90	10
0573270	9.6	0.3780		43	93	10
0573287	9.7	0.3819		43	93	10
0573293	9.8	0.3858		43	93	10
0573309	9.9	0.3898		43	93	10
0573315	10.0	0.3937		43	93	10
0573321	10.1	0.3976		43	100	12
0573338	10.2	0.4016		43	100	12
0573344	10.3	0.4055		43	100	12
0573350	10.4	0.4094		43	100	12
0573367	10.5	0.4134		43	100	12
0573373	10.6	0.4173		43	100	12
0573380	10.7	0.4213		47	104	12
0573396	10.8	0.4252		47	104	12
0573401	10.9	0.4291		47	104	12
0573418	11.0	0.4331		47	104	12
0573424	11.1	0.4370		47	104	12
0573430	11.2	0.4409		47	104	12
0573447	11.3	0.4449		47	104	12
0573453	11.4	0.4488		47	104	12
0573460	11.5	0.4528		47	104	12
0573476	11.6	0.4567		47	104	12
0573482	11.7	0.4606		47	104	12
0573499	11.8	0.4646		47	104	12
0573504	11.9	0.4685		51	108	12
0573510	12.0	0.4724		51	108	12
0573527	12.1	0.4764		51	108	12
0573533	12.2	0.4803		51	108	12
0573540	12.3	0.4843		51	108	12
0573556	12.4	0.4882		51	108	12
0573562	12.5	0.4921		51	108	12
0573579	12.6	0.4961		51	108	12
0573585	12.7	0.5000		51	108	12
0573591	12.8	0.5039		51	108	12
0573607	12.9	0.5079		51	108	12
0573613	13.0	0.5118		51	108	12
0573620	13.5	0.5315		72	132	16
0573636	14.0	0.5512		72	132	16
0573642	14.5	0.5709		76	136	16
0573659	15.0	0.5906		76	142	20
0573665	15.5	0.6102		80	146	20
0573671	16.0	0.6299		80	146	20
0573688	16.5	0.6496		84	150	20
0573694	17.0	0.6693		84	150	20
0573700	17.5	0.6890		87	153	20
0573716	18.0	0.7087		87	153	20
0573722	18.5	0.7283		90	156	20
0573739	19.0	0.7480		90	164	25
0573745	19.5	0.7677		94	168	25
0573751	20.0	0.7874		94	168	25

0.01mm size Diameter Tolerance : 0~-.009mm

STUB LENGTH SG-ESS / FRACTIONAL SIZES

List No. 7573P High Performance

h7 | SG | FAX | HELIX N | 135° | 3RAKE

PM-HSCO SG Coated

This drill having stub length is suited for high-speed drilling and precise positioning and diameter. This is useful in material from Carbon Steels and Stainless Steels to Aluminum.

Wire: Range #1 to #45
Range 3/32 to 3/4

EDP	Size		Decimal Equivalent	Metric Equivalent	Flute Length	Overall Length	Shank Dia.
	Fractional	Wire					
1363043		#45	0.0820	2.08	3/4	2	1/8
1363050		#44	0.0860	2.18	3/4	2	1/8
1363066		#43	0.0890	2.26	3/4	2	1/8
1363072		#42	0.0935	2.37	3/4	2	1/8
1245365	3/32		0.0938	2.38	1/2	1 3/4	1/8
1363089		#41	0.0960	2.44	13/16	2 1/16	1/8
1280931		#40	0.0980	2.49	13/16	2 1/16	1/8
1363095		#39	0.0995	2.53	13/16	2 1/4	1/8
1363100		#38	0.1015	2.58	13/16	2 1/4	1/8
1363117		#37	0.1040	2.64	13/16	2 1/4	1/8
1245823		#36	0.1065	2.71	13/16	2 1/4	1/8
1245371	7/64		0.1094	2.78	5/8	1 7/8	1/8
1363130		#34	0.1110	2.82	7/8	2 5/16	1/8
1363146		#33	0.1130	2.87	7/8	2 5/16	1/8
1245388	1/8		0.1250	3.18	3/4	2	1/8
1289836		#30	0.1285	3.26	15/16	2 3/8	3/16
1245817		#29	0.1365	3.47	15/16	2 3/8	3/16
1245394	9/64		0.1406	3.57	13/16	2 1/8	3/16
1363169		#28	0.1405	3.57	15/16	2 3/8	3/16
1363175		#27	0.1440	3.66	1	2 7/16	3/16
1363181		#26	0.1470	3.73	1	2 7/16	3/16
1245800		#25	0.1495	3.80	1	2 7/16	3/16
1363198		#24	0.1520	3.86	1	2 7/16	3/16
1363203		#23	0.1540	3.91	1	2 7/16	3/16
1245400	5/32		0.1563	3.97	13/16	2 1/8	3/16
1363210		#22	0.1570	3.99	1 1/16	2 1/2	3/16
1245795		#21	0.1590	4.04	1 1/16	2 1/2	3/16
1363226		#20	0.1610	4.09	1 1/16	2 1/2	3/16
1363232		#19	0.1660	4.22	1 1/16	2 1/2	3/16
1245416	11/64		0.1719	4.37	1	2 3/8	3/16
1363278		#15	0.1800	4.57	1 1/18	2 9/16	3/16
1363284		#14	0.1820	4.62	1 1/18	2 9/16	3/16
1245422	3/16		0.1875	4.76	1	2 3/8	3/16
1363329		#10	0.1935	4.91	1 3/16	3	1/4
1363335		#9	0.1960	4.98	1 3/16	3	1/4
1280954		#8	0.1990	5.05	1 3/16	3	1/4
1245789		#7	0.2010	5.11	1 3/16	3	1/4
1245439	13/64		0.2031	5.16	1 1/8	2 7/8	1/4
1280960		#6	0.2040	5.18	1 1/4	3 1/16	1/4
1363341		#5	0.2055	5.22	1 1/4	3 1/16	1/4
1363358		#4	0.2090	5.31	1 1/4	3 1/16	1/4
1363364		#3	0.2130	5.41	1 1/4	3 1/16	1/4
1245445	7/32		0.2188	5.56	1 1/8	2 7/8	1/4
1363370		#2	0.2210	5.61	1 5/16	3 1/8	1/4
1363387		#1	0.2280	5.79	1 5/16	3 1/8	1/4

EDP	Size		Decimal Equivalent	Metric Equivalent	Flute Length	Overall Length	Shank Dia.
	Fractional	Letter					
1245451	15/64		0.2344	5.95	1 1/4	3	1/4
1363409		B	0.2380	6.05	1 3/8	3 3/16	1/4
1363415		C	0.2420	6.15	1 3/8	3 3/16	1/4
1363421		D	0.2460	6.25	1 3/8	3 3/16	1/4
1245468	1/4	E	0.2500	6.35	1 1/4	3	1/4
1245830		F	0.2570	6.53	1 7/16	3 1/4	3/8
1363444		G	0.2610	6.63	1 7/16	3 1/4	3/8
1245474	17/64		0.2656	6.75	1 3/8	3 3/16	3/8
1363450		I	0.2720	6.91	1 1/2	3 5/16	3/8
1363467		J	0.2770	7.04	1 1/2	3 5/16	3/8
1245480	9/32		0.2813	7.14	1 3/8	3 3/16	3/8
1363473		L	0.2900	7.37	1 9/16	3 3/8	3/8
1363480		M	0.2950	7.49	1 9/16	3 3/8	3/8
1245497	19/64		0.2969	7.54	1 3/8	3 3/16	3/8
1363496		N	0.3020	7.67	1 5/8	3 7/16	3/8
1245502	5/16		0.3125	7.94	1 1/2	3 3/8	3/8
1363501		O	0.3160	8.03	1 11/16	3 1/2	3/8
1245519	21/64		0.3281	8.33	1 1/2	3 3/8	3/8
1363524		Q	0.3320	8.43	1 11/16	3 1/2	3/8
1363530		R	0.3390	8.61	1 11/16	3 1/2	3/8
1245525	11/32		0.3438	8.73	1 5/8	3 1/2	3/8
1245531	23/64		0.3594	9.13	1 5/8	3 1/2	3/8
1280977		U	0.3680	9.35	1 13/16	3 5/8	3/8
1245548	3/8		0.3750	9.53	1 5/8	3 1/2	3/8
1363560		V	0.3770	9.58	1 7/8	3 31/32	1/2
1245554	25/64		0.3906	9.92	1 11/16	3 7/8	1/2
1363582		X	0.3970	10.08	1 15/16	4 1/32	1/2
1363599		Y	0.4040	10.26	1 15/16	4 1/32	1/2
1245560	13/32		0.4063	10.32	1 11/16	3 7/8	1/2
1363604		Z	0.4130	10.49	2	4 3/32	1/2
1245577	27/64		0.4219	10.72	1 7/8	4 1/8	1/2
1245583	7/16		0.4375	11.11	1 7/8	4 1/8	1/2
1245590	29/64		0.4531	11.51	1 7/8	4 1/8	1/2
1245605	15/32		0.4688	11.91	2	4 1/4	1/2
1245611	31/64		0.4844	12.30	2	4 1/4	1/2
1245628	1/2		0.5000	12.70	2	4 1/4	1/2
1280851	17/32		0.5313	13.49	2 7/8	5 3/16	5/8
1280868	9/16		0.5625	14.29	3	5 3/8	5/8
1280874	19/32		0.5938	15.08	3	5 5/8	3/4
1280880	5/8		0.6250	15.88	3 3/16	5 3/4	3/4
1280897	21/32		0.6563	16.67	3 3/8	5 15/16	3/4
1280902	11/16		0.6875	17.46	3 7/16	6	3/4
1280919	23/32		0.7188	18.26	3 7/16	6	7/8
1280925	3/4		0.7500	19.05	3 9/16	6 1/2	7/8

1 per tube

List No. 7570P High Performance

h7 | SG | FAX | HELIX N | 135 | 2RAKE+X

PM-HSS SG COATED

Jobber length drill provides stable high-speed drilling and long tool life in a variety of materials; not suitable for Austenintic Stainless Steel.

Range 2.0 to 20.0 mm

(Unit) : mm

EDP	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia.
0562242	2.0	0.0787	24	56	3
0562259	2.1	0.0827	24	56	3
0562265	2.2	0.0866	25	56	3
0562271	2.3	0.0906	25	56	3
0562288	2.4	0.0945	30	61	3
0562294	2.5	0.0984	30	61	3
0562300	2.6	0.1024	30	61	3
0562316	2.7	0.1063	33	64	3
0562322	2.8	0.1102	33	64	3
0562339	2.9	0.1142	33	64	3
0562345	3.0	0.1181	33	64	3
0562351	3.1	0.1220	36	68	4
0562368	3.2	0.1260	36	68	4
0562374	3.3	0.1299	36	68	4
0562380	3.4	0.1339	39	71	4
0562397	3.5	0.1378	39	71	4
0562402	3.6	0.1417	39	71	4
0562419	3.7	0.1457	39	71	4
0562425	3.8	0.1496	43	75	4
0562431	3.9	0.1535	43	75	4
0562448	4.0	0.1575	43	75	4
0562454	4.1	0.1614	43	85	6
0562460	4.2	0.1654	43	85	6
0562477	4.3	0.1693	47	89	6
0562483	4.4	0.1732	47	89	6
0562490	4.5	0.1772	47	89	6
0562505	4.6	0.1811	47	89	6
0562511	4.7	0.1850	47	89	6
0562528	4.8	0.1890	52	94	6
0562534	4.9	0.1929	52	94	6
0562540	5.0	0.1969	52	94	6
0562557	5.1	0.2008	52	94	6
0562563	5.2	0.2047	52	94	6
0562570	5.3	0.2087	52	94	6
0562586	5.4	0.2126	57	99	6
0562592	5.5	0.2165	57	99	6
0562608	5.6	0.2205	57	99	6
0562614	5.7	0.2244	57	99	6
0562620	5.8	0.2283	57	99	6
0562637	5.9	0.2323	57	99	6
0562643	6.0	0.2362	57	99	6
0562650	6.1	0.2402	63	107	8

EDP	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia.
0562666	6.2	0.2441	63	107	8
0562672	6.3	0.2480	63	107	8
0562689	6.4	0.2520	63	107	8
0562695	6.5	0.2559	63	107	8
0562700	6.6	0.2598	63	107	8
0562717	6.7	0.2638	63	107	8
0562723	6.8	0.2677	69	113	8
0562730	6.9	0.2717	69	113	8
0562746	7.0	0.2756	69	113	8
0562752	7.1	0.2795	69	113	8
0562769	7.2	0.2835	69	113	8
0562775	7.3	0.2874	69	113	8
0562781	7.4	0.2913	69	113	8
0562798	7.5	0.2953	69	113	8
0562803	7.6	0.2992	75	119	8
0562810	7.7	0.3031	75	119	8
0562826	7.8	0.3071	75	119	8
0562832	7.9	0.3110	75	119	8
0562849	8.0	0.3150	75	119	8
0562855	8.1	0.3189	75	125	10
0562861	8.2	0.3228	75	125	10
0562878	8.3	0.3268	75	125	10
0562884	8.4	0.3307	75	125	10
0562890	8.5	0.3346	75	125	10
0562906	8.6	0.3386	81	131	10
0562912	8.7	0.3425	81	131	10
0562929	8.8	0.3465	81	131	10
0562935	8.9	0.3504	81	131	10
0562941	9.0	0.3543	81	131	10
0562958	9.1	0.3583	81	131	10
0562964	9.2	0.3622	81	131	10
0562970	9.3	0.3661	81	131	10
0562987	9.4	0.3701	81	131	10
0562993	9.5	0.3740	81	131	10
0563008	9.6	0.3780	87	137	10
0563014	9.7	0.3819	87	137	10
0563020	9.8	0.3858	87	137	10
0563037	9.9	0.3898	87	137	10
0563043	10.0	0.3937	87	137	10
0563050	10.1	0.3976	87	144	12
0563066	10.2	0.4016	87	144	12
0563072	10.3	0.4055	87	144	12

EDP	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia.
0563089	10.4	0.4094	87	144	12
0563095	10.5	0.4134	87	144	12
0563100	10.6	0.4173	87	144	12
0563117	10.7	0.4213	94	151	12
0563123	10.8	0.4252	94	151	12
0563130	10.9	0.4291	94	151	12
0563146	11.0	0.4331	94	151	12
0563152	11.1	0.4370	94	151	12
0563169	11.2	0.4409	94	151	12
0563175	11.3	0.4449	94	151	12
0563181	11.4	0.4488	94	151	12
0563198	11.5	0.4528	94	151	12
0563203	11.6	0.4567	94	151	12
0563210	11.7	0.4606	94	151	12
0563226	11.8	0.4646	94	151	12
0563232	11.9	0.4685	101	158	12
0563249	12.0	0.4724	101	158	12
0563255	12.1	0.4764	101	158	12
0563261	12.2	0.4803	101	158	12
0563278	12.3	0.4843	101	158	12
0563284	12.4	0.4882	101	158	12
0563290	12.5	0.4921	101	158	12
0563306	12.6	0.4961	101	158	12
0563312	12.7	0.5000	101	158	12
0563329	12.8	0.5039	101	158	12
0563335	12.9	0.5079	101	158	12
0563341	13.0	0.5118	101	158	12
0563358	13.5	0.5315	108	168	16
0563364	14.0	0.5512	108	168	16
0563370	14.5	0.5709	114	173	16
0563387	15.0	0.5906	114	180	20
0563393	15.5	0.6102	120	185	20
0563409	16.0	0.6299	120	185	20
0563415	16.5	0.6496	125	189	20
0563421	17.0	0.6693	125	189	20
0563438	17.5	0.6890	130	194	20
0563444	18.0	0.7087	130	194	20
0563450	18.5	0.7283	135	198	20
0563467	19.0	0.7480	135	206	25
0563473	19.5	0.7677	140	210	25
0563480	20.0	0.7874	140	210	25

Not recommended for Austenite type of stainless steel

1 per tube

JOBBERS LENGTH SG-ES / FRACTIONAL SIZES

List No. 7571P High Performance

h7 | SG | FAX | HELIX N | 135° | 2RAKE+X

PM-HSS SG COATED

Jobber length drill provides stable high-speed drilling and long tool life in a variety of materials; not suitable for Austenintic Stainless Steel.

Range 3/32 to 3/4

EDP	Size		Decimal Equivalent	Metric Equivalent	Flute Length	Overall Length	Shank Dia.
	Fractional	Wire					
1362339		#45	0.0820	2.08	1 1/8	2 3/8	1/8
1362345		#44	0.0860	2.18	1 1/8	2 3/8	1/8
1362351		#43	0.0890	2.26	1 1/4	2 1/2	1/8
1362368		#42	0.0935	2.37	1 1/4	2 1/2	1/8
1245009	3/32		0.0938	2.38	1 1/8	2 3/8	1/8
1362374		#41	0.0960	2.44	1 3/8	2 5/8	1/8
1362380		#40	0.0980	2.49	1 3/8	2 5/8	1/8
1362397		#39	0.0995	2.53	1 3/8	2 13/16	1/8
1362402		#38	0.1015	2.58	1 7/16	2 7/8	1/8
1362419		#37	0.1040	2.64	1 7/16	2 7/8	1/8
1362425		#36	0.1065	2.71	1 7/16	2 7/8	1/8
1245015	7/64		0.1094	2.78	1 1/4	2 1/2	1/8
1362448		#34	0.1110	2.82	1 1/2	2 15/16	1/8
1362454		#33	0.1130	2.87	1 1/2	2 15/16	1/8
1245021	1/8		0.1250	3.18	1 3/8	2 5/8	1/8
1362483		#30	0.1285	3.26	1 5/8	3 1/16	3/16
1362490		#29	0.1365	3.47	1 3/4	3 3/16	3/16
1362505		#28	0.1405	3.57	1 3/4	3 3/16	3/16
1245038	9/64		0.1406	3.57	1 1/2	2 7/8	3/16
1362511		#27	0.1440	3.66	1 7/8	3 5/16	3/16
1362528		#26	0.1470	3.73	1 7/8	3 5/16	3/16
1362534		#25	0.1495	3.80	1 7/8	3 5/16	3/16
1362540		#24	0.1520	3.86	2	3 7/16	3/16
1362557		#23	0.1540	3.91	2	3 7/16	3/16
1245044	5/32		0.1563	3.97	1 3/4	3 1/8	3/16
1362563		#22	0.1570	3.99	2	3 7/16	3/16
1362570		#21	0.1590	4.04	2 1/8	3 9/16	3/16
1362586		#20	0.1610	4.09	2 1/8	3 9/16	3/16
1362592		#19	0.1660	4.22	2 1/8	3 9/16	3/16
1245050	11/64		0.1719	4.37	1 7/8	3 1/4	3/16
1362637		#15	0.1800	4.57	2 3/16	3 5/8	3/16
1362643		#14	0.1820	4.62	2 3/16	3 5/8	3/16
1362689		#10	0.1935	4.91	2 7/16	4 1/4	1/4
1362695		#9	0.1960	4.98	2 7/16	4 1/4	1/4
1362700		#8	0.1990	5.05	2 7/16	4 1/4	1/4
1362717		#7	0.2010	5.11	2 7/16	4 1/4	1/4
1245073	13/64		0.2031	5.16	2 1/16	3 7/8	1/4
1362723		#6	0.2040	5.18	2 7/16	4 1/4	1/4
1362730		#5	0.2055	5.22	2 1/2	4 5/16	1/4
1362746		#4	0.2090	5.31	2 1/2	4 5/16	1/4
1362752		#3	0.2130	5.41	2 1/2	4 5/16	1/4
1245080	7/32		0.2188	5.56	2 1/16	3 7/8	1/4
1362769		#2	0.2210	5.61	2 5/8	4 7/16	1/4

EDP	Size		Decimal Equivalent	Metric Equivalent	Flute Length	Overall Length	Shank Dia.
	Fractional	Letter					
1362775		#1	0.2280	5.79	2 5/8	4 7/16	1/4
1245096	15/64		0.2344	5.95	2 3/8	4 1/4	1/4
1362798		B	0.2380	6.05	2 3/4	4 9/16	1/4
1362803		C	0.2420	6.15	2 3/4	4 9/16	1/4
1362810		D	0.2460	6.25	2 3/4	4 9/16	1/4
1245101	1/4		0.2500	6.35	2 3/8	4 1/4	1/4
1362832		F	0.2570	6.53	2 7/8	4 11/16	3/8
1362849		G	0.2610	6.63	2 7/8	4 11/16	3/8
1245118	17/64		0.2656	6.75	2 3/4	4 5/8	3/8
1362855		I	0.2720	6.91	2 7/8	4 11/16	3/8
1362861		J	0.2770	7.04	2 7/8	4 11/16	3/8
1245124	9/32		0.2813	7.14	2 3/4	4 5/8	3/8
1362878		L	0.2900	7.37	2 15/16	4 3/4	3/8
1362884		M	0.2950	7.49	3 1/16	4 7/8	3/8
1245130	19/64		0.2969	7.54	2 7/8	4 3/4	3/8
1362890		N	0.3020	7.67	3 1/16	4 7/8	3/8
1245147	5/16		0.3125	7.94	2 7/8	4 3/4	3/8
1362906		O	0.3160	8.03	3 3/16	5	3/8
1245153	21/64		0.3281	8.33	2 7/8	4 3/4	3/8
1362929		Q	0.3320	8.43	3 7/16	5 1/4	3/8
1362935		R	0.3390	8.61	3 7/16	5 1/4	3/8
1245176	23/64		0.3594	9.13	3 1/4	5 1/8	3/8
1362964		U	0.3680	9.35	3 5/8	5 7/16	3/8
1245182	3/8		0.3750	9.53	3 1/4	5 1/8	3/8
1362970		V	0.3770	9.58	3 5/8	5 23/32	1/2
1245199	25/64		0.3906	9.92	3 3/8	5 1/2	1/2
1362993		X	0.3970	10.08	3 3/4	5 27/32	1/2
1363008		Y	0.4040	10.26	3 7/8	5 31/32	1/2
1245204	13/32		0.4063	10.32	3 3/8	5 1/2	1/2
1363014		Z	0.4130	10.49	3 7/8	5 31/32	1/2
1245210	27/64		0.4219	10.72	3 3/4	5 7/8	1/2
1245227	7/16		0.4375	11.11	3 3/4	5 7/8	1/2
1245233	29/64		0.4531	11.51	3 3/4	5 7/8	1/2
1245240	15/32		0.4688	11.91	4	6 1/4	1/2
1245256	31/64		0.4844	12.30	4	6 1/4	1/2
1245279	17/32		0.5313	13.49	4 1/4	6 3/4	5/8
1245285	9/16		0.5625	14.29	4 1/2	7	5/8
1245291	37/64		0.5781	14.68	4 1/2	7	5/8
1245307	19/32		0.5938	15.08	4 3/4	7 1/4	3/4
1245313	5/8		0.6250	15.88	4 3/4	7 1/4	3/4
1245336	11/16		0.6875	17.46	5 1/8	7 5/8	3/4
1245342	23/32		0.7188	18.26	5 3/8	7 3/4	7/8
1245359	3/4		0.75	19.05	5 1/2	7 7/8	7/8

Not recommended for Austenite type of stainless steel

1 per tube

SG DRILLS WITH OIL-HOLES

List No. 7596P Metric Sizes

L7596P Range 5.0 to 20.0

List No. 7591P Fractional

L7591P Range 15/64 to 3/4

PM-HSS SG COATED

This oil hole drill is suitable for high-speed and long life drilling, and adapted in workpiece material from Carbon Steels and Stainless Steels to Aluminum.

(Unit) : mm

EDP	Size	Decimal Equivalent	Flute Length	Overall Length
1314751	5.0000	0.1969	52	94
1314768	5.5000	0.2165	57	99
1314774	6.0000	0.2362	57	99
1314780	6.5000	0.2559	63	107
1314797	7.0000	0.2756	69	113
1314802	7.5000	0.2953	69	113
1314819	8.0000	0.3150	75	119
1314825	8.5000	0.3346	75	125
1314831	9.0000	0.3543	81	131
1314848	9.5000	0.3740	81	131
1314854	10.0000	0.3937	87	137
1314860	10.5000	0.4134	87	144
1314877	11.0000	0.4331	94	151
1314883	11.5000	0.4528	94	151
1314890	12.0000	0.4724	101	158
1314905	12.5000	0.4921	101	158
1314911	13.0000	0.5118	101	158
1314928	13.5000	0.5315	108	168
1314934	14.0000	0.5512	108	168
1314940	14.5000	0.5709	114	173
1314957	15.0000	0.5906	114	180
1314963	15.5000	0.6102	120	185
1314970	16.0000	0.6299	120	185
1314986	16.5000	0.6496	125	189
1314992	17.0000	0.6693	125	189
1315007	17.5000	0.6890	130	194
1315013	18.0000	0.7087	130	194
1315020	18.5000	0.7283	135	198
1315036	19.0000	0.7480	135	206
1315042	19.5000	0.7677	140	210
1315059	20.0000	0.7874	140	210

1 per tube

(Unit) : mm

EDP	Size	Decimal Equivalent	Flute Length	Overall Length
1315065	15/64	0.2344	2-3/8	4-1/4
1315071	1/4	0.2500	2-3/8	4-1/4
1315088	17/64	0.2656	2-3/4	4-5/8
1315094	9/32	0.2813	2-3/4	4-5/8
1315100	19/64	0.2969	2-7/8	4-3/4
1315116	5/16	0.3125	2-7/8	4-3/4
1315122	21/64	0.3281	2-7/8	4-3/4
1315139	11/32	0.3438	3-1/4	5-1/8
1315145	23/64	0.3594	3-1/4	5-1/8
1315151	3/8	0.3750	3-1/4	5-1/8
1315168	25/64	0.3906	3-3/8	5-1/2
1315174	13/32	0.4063	3-3/8	5-1/2
1315180	27/64	0.4219	3-3/4	5-7/8
1315197	7/16	0.4375	3-3/4	5-7/8
1315202	29/64	0.4531	3-3/4	5-7/8
1315219	15/32	0.4688	4	6-1/4
1315225	31/64	0.4844	4	6-1/4
1315231	1/2	0.5000	4	6-1/4
1315248	17/32	0.5313	4-1/4	6-3/4
1315254	9/16	0.5625	4-1/2	7
1315260	37/64	0.5781	4-1/2	7
1315277	19/32	0.5938	4-3/4	7-1/4
1315283	5/8	0.6250	4-3/4	7-1/4
1315290	21/32	0.6563	5	7-1/2
1315305	11/16	0.6875	5-1/8	7-5/8
1315311	23/32	0.7188	5-3/8	7-3/4
1315328	3/4	0.7500	5-1/2	7-7/8

1 per tube

HIGH PERFORMANCE DRILLS

AG-SUS DRILLS SHORT / METRIC SIZES

List No. 6596P High Performance

h7 | AG | FMX | HELIX H | 135° | 2RAKE | 3RAKE >1.9

FM HSS AG COATED

This drill meets stable drilling by AG coat, and is very suitable for drilling of Stainless Steel.

Range 1.0 to 20.0

(Unit) : mm

EDP	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia.
0646438	1.0	0.0394	6	40	3
0646444	1.1	0.0433	7	40	3
0646450	1.2	0.0472	8	40	3
0646467	1.3	0.0512	8	40	3
0646473	1.4	0.0551	9	40	3
0646480	1.5	0.0591	9	40	3
0646496	1.6	0.0630	10	44	3
0646501	1.7	0.0669	10	44	3
0646518	1.8	0.0709	11	44	3
0646524	1.9	0.0748	11	44	3
0646530	2.0	0.0787	12	44	3
0646547	2.1	0.0827	12	44	3
0646553	2.2	0.0866	13	44	3
0646560	2.3	0.0906	13	44	3
0646576	2.4	0.0945	14	48	3
0646582	2.5	0.0984	14	48	3
0646599	2.6	0.1024	14	48	3
0646604	2.7	0.1063	16	48	3
0646610	2.8	0.1102	16	48	3
0646627	2.9	0.1142	16	48	3
0646633	3.0	0.1181	16	48	3
0646640	3.1	0.1220	18	54	4
0646656	3.2	0.1260	18	54	4
0646662	3.3	0.1299	18	54	4
0646679	3.4	0.1339	20	54	4
0646685	3.5	0.1378	20	54	4
0646691	3.6	0.1417	20	54	4
0646707	3.7	0.1457	20	54	4
0646713	3.8	0.1496	22	54	4
0646720	3.9	0.1535	22	54	4
0646736	4.0	0.1575	22	54	4
0646742	4.1	0.1614	22	66	6
0646759	4.2	0.1654	22	66	6
0646765	4.3	0.1693	24	68	6
0646771	4.4	0.1732	24	68	6
0646788	4.5	0.1772	24	68	6
0646794	4.6	0.1811	24	68	6
0646800	4.7	0.1850	24	68	6
0646816	4.8	0.1890	26	70	6
0646822	4.9	0.1929	26	70	6
0646839	5.0	0.1969	26	70	6
0646845	5.1	0.2008	26	70	6
0646851	5.2	0.2047	26	70	6
0646868	5.3	0.2087	26	70	6
0646874	5.4	0.2126	28	72	6
0646880	5.5	0.2165	28	72	6
0646897	5.6	0.2205	28	72	6
0646902	5.7	0.2244	28	72	6
0646919	5.8	0.2283	28	72	6
0646925	5.9	0.2323	28	72	6
0646931	6.0	0.2362	28	72	6
0646948	6.1	0.2402	31	75	8
0646954	6.2	0.2441	31	75	8
0646960	6.3	0.2480	31	75	8
0646977	6.4	0.2520	31	75	8
0646983	6.5	0.2559	31	75	8
0646990	6.6	0.2598	31	75	8
0647004	6.7	0.2638	31	75	8
0647010	6.8	0.2677	34	78	8
0647027	6.9	0.2717	34	78	8
0647033	7.0	0.2756	34	78	8
0647040	7.1	0.2795	34	78	8
0647056	7.2	0.2835	34	78	8
0647062	7.3	0.2874	34	78	8
0647079	7.4	0.2913	34	78	8
0647085	7.5	0.2953	34	78	8
0647091	7.6	0.2992	37	81	8
0647107	7.7	0.3031	37	81	8
0647113	7.8	0.3071	37	81	8
0647120	7.9	0.3110	37	81	8
0647136	8.0	0.3150	37	81	8
0647142	8.1	0.3189	37	87	10
0647159	8.2	0.3228	37	87	10
0647165	8.3	0.3268	37	87	10
0647171	8.4	0.3307	37	87	10
0647188	8.5	0.3346	37	87	10
0647194	8.6	0.3386	40	90	10
0647200	8.7	0.3425	40	90	10
0647216	8.8	0.3465	40	90	10
0647222	8.9	0.3504	40	90	10
0647239	9.0	0.3543	40	90	10
0647245	9.1	0.3583	40	90	10
0647251	9.2	0.3622	40	90	10
0647268	9.3	0.3661	40	90	10
0647274	9.4	0.3701	40	90	10
0647280	9.5	0.3740	40	90	10
0647297	9.6	0.3780	43	93	10
0647302	9.7	0.3819	43	93	10
0647319	9.8	0.3858	43	93	10
0647325	9.9	0.3898	43	93	10
0647331	10.0	0.3937	43	93	10
0647348	10.1	0.3976	43	100	12
0647354	10.2	0.4016	43	100	12
0647360	10.3	0.4055	43	100	12
0647377	10.4	0.4094	43	100	12
0647383	10.5	0.4134	43	100	12
0647390	10.6	0.4173	43	100	12
0647405	10.7	0.4213	47	104	12
0647411	10.8	0.4252	47	104	12
0647428	10.9	0.4291	47	104	12
0647434	11.0	0.4331	47	104	12
0647440	11.1	0.4370	47	104	12
0647457	11.2	0.4409	47	104	12
0647463	11.3	0.4449	47	104	12
0647470	11.4	0.4488	47	104	12
0647486	11.5	0.4528	47	104	12
0647492	11.6	0.4567	47	104	12
0647508	11.7	0.4606	47	104	12
0647514	11.8	0.4646	47	104	12
0647520	11.9	0.4685	51	108	12
0647537	12.0	0.4724	51	108	12
0647543	12.1	0.4764	51	108	12
0647550	12.2	0.4803	51	108	12
0647566	12.3	0.4843	51	108	12
0647572	12.4	0.4882	51	108	12
0647589	12.5	0.4921	51	108	12
0647595	12.6	0.4961	51	108	12
0647600	12.7	0.5000	51	108	12
0647617	12.8	0.5039	51	108	12
0647623	12.9	0.5079	51	108	12
0647630	13.0	0.5118	51	108	12
0647646	13.5	0.5315	72	132	16
0647652	14.0	0.5512	72	132	16
0647669	14.5	0.5709	76	136	16
0647675	15.0	0.5906	76	142	20
0647681	15.5	0.6102	80	146	20
0647698	16.0	0.6299	80	146	20
0647703	16.5	0.6496	84	150	20
0647710	17.0	0.6693	84	150	20
0647726	17.5	0.6890	87	153	20
0647732	18.0	0.7087	87	153	20
0647749	18.5	0.7283	90	156	20
0647755	19.0	0.7480	90	164	25
0647761	19.5	0.7677	94	168	25
0647778	20.0	0.7874	94	168	25

1 per tube

List No. 6594P High Performance

h7 | AG | FMX | HELIX H | 135° | 2RAKE | 3RAKE >1.4

FM HSS AG COATED

This drill meets stable drilling by AG coat, and is very suitable for drilling of Stainless Steel.

Range 2.0 to 20.0

(Unit) : mm

EDP	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia.
0632160	1.0	0.0394	12	50	3
0632177	1.1	0.0433	14	50	3
0632183	1.2	0.0472	16	50	3
0632190	1.3	0.0512	16	50	3
0632205	1.4	0.0551	18	50	3
0632211	1.5	0.0591	18	50	3
0632228	1.6	0.0630	20	56	3
0632234	1.7	0.0669	20	56	3
0632240	1.8	0.0709	22	56	3
0632257	1.9	0.0748	22	56	3
0632263	2.0	0.0787	24	56	3
0632270	2.1	0.0827	24	56	3
0632286	2.2	0.0866	25	56	3
0632292	2.3	0.0906	25	56	3
0632308	2.4	0.0945	30	61	3
0632314	2.5	0.0984	30	61	3
0632320	2.6	0.1024	30	61	3
0632337	2.7	0.1063	33	64	3
0632343	2.8	0.1102	33	64	3
0632350	2.9	0.1142	33	64	3
0632366	3.0	0.1181	33	64	3
0632372	3.1	0.1220	36	71	4
0632389	3.2	0.1260	36	71	4
0632395	3.3	0.1299	36	71	4
0632400	3.4	0.1339	39	71	4
0632417	3.5	0.1378	39	71	4
0632423	3.6	0.1417	39	71	4
0632430	3.7	0.1457	39	71	4
0632446	3.8	0.1496	43	75	4
0632452	3.9	0.1535	43	75	4
0632469	4.0	0.1575	43	75	4
0632475	4.1	0.1614	43	85	6
0632481	4.2	0.1654	43	85	6
0632498	4.3	0.1693	47	89	6
0632503	4.4	0.1732	47	89	6
0632510	4.5	0.1772	47	89	6
0632526	4.6	0.1811	47	89	6
0632532	4.7	0.1850	47	89	6
0632549	4.8	0.1890	52	94	6
0632555	4.9	0.1929	52	94	6
0632561	5.0	0.1969	52	94	6
0632578	5.1	0.2008	52	94	6
0632584	5.2	0.2047	52	94	6
0632590	5.3	0.2087	52	94	6
0632606	5.4	0.2126	57	99	6
0632612	5.5	0.2165	57	99	6
0632629	5.6	0.2205	57	99	6
0632635	5.7	0.2244	57	99	6
0632641	5.8	0.2283	57	99	6
0632658	5.9	0.2323	57	99	6
0632664	6.0	0.2362	57	99	6
0632670	6.1	0.2402	63	107	8
0632687	6.2	0.2441	63	107	8
0632693	6.3	0.2480	63	107	8
0632709	6.4	0.2520	63	107	8
0632715	6.5	0.2559	63	107	8
0632721	6.6	0.2598	63	107	8
0632738	6.7	0.2638	63	107	8
0632744	6.8	0.2677	69	113	8
0632750	6.9	0.2717	69	113	8
0632767	7.0	0.2756	69	113	8
0632773	7.1	0.2795	69	113	8
0632780	7.2	0.2835	69	113	8
0632796	7.3	0.2874	69	113	8
0632801	7.4	0.2913	69	113	8
0632818	7.5	0.2953	69	113	8
0632824	7.6	0.2992	75	119	8
0632830	7.7	0.3031	75	119	8
0632847	7.8	0.3071	75	119	8
0632853	7.9	0.3110	75	119	8
0632860	8.0	0.3150	75	119	8
0632876	8.1	0.3189	75	125	10
0632882	8.2	0.3228	75	125	10
0632899	8.3	0.3268	75	125	10
0632904	8.4	0.3307	75	125	10
0632910	8.5	0.3346	75	125	10
0632927	8.6	0.3386	81	131	10
0632933	8.7	0.3425	81	131	10
0632940	8.8	0.3465	81	131	10
0632956	8.9	0.3504	81	131	10
0632962	9.0	0.3543	81	131	10
0632979	9.1	0.3583	81	131	10
0632985	9.2	0.3622	81	131	10
0632991	9.3	0.3661	81	131	10
0633006	9.4	0.3701	81	131	10
0633012	9.5	0.3740	81	131	10
0633029	9.6	0.3780	87	137	10
0633035	9.7	0.3819	87	137	10
0633041	9.8	0.3858	87	137	10
0633058	9.9	0.3898	87	137	10
0633064	10.0	0.3937	87	137	10
0633070	10.1	0.3976	87	144	12
0633087	10.2	0.4016	87	144	12
0633093	10.3	0.4055	87	144	12
0633109	10.4	0.4094	87	144	12
0633115	10.5	0.4134	87	144	12
0633121	10.6	0.4173	87	144	12
0633138	10.7	0.4213	94	151	12
0633144	10.8	0.4252	94	151	12
0633150	10.9	0.4291	94	151	12
0633167	11.0	0.4331	94	151	12
0633173	11.1	0.4370	94	151	12
0633180	11.2	0.4409	94	151	12
0633196	11.3	0.4449	94	151	12
0633201	11.4	0.4488	94	151	12
0633218	11.5	0.4528	94	151	12
0633224	11.6	0.4567	94	151	12
0633230	11.7	0.4606	94	151	12
0633247	11.8	0.4646	94	151	12
0633253	11.9	0.4685	101	158	12
0633260	12.0	0.4724	101	158	12
0633276	12.1	0.4764	101	158	12
0633282	12.2	0.4803	101	158	12
0633299	12.3	0.4843	101	158	12
0633304	12.4	0.4882	101	158	12
0633310	12.5	0.4921	101	158	12
0633327	12.6	0.4961	101	158	12
0633333	12.7	0.5000	101	158	12
0633340	12.8	0.5039	101	158	12
0633356	12.9	0.5079	101	158	12
0633362	13.0	0.5118	101	158	12
0633379	13.5	0.5315	108	168	16
0633385	14.0	0.5512	108	168	16
0633391	14.5	0.5709	114	173	16
0633407	15.0	0.5906	114	180	20
0633413	15.5	0.6102	120	185	20
0633420	16.0	0.6299	120	185	20
0633436	16.5	0.6496	125	189	20
0633442	17.0	0.6693	125	189	20
0633459	17.5	0.6890	130	194	20
0633465	18.0	0.7087	130	194	20
0633471	18.5	0.7283	135	198	20
0633488	19.0	0.7480	135	206	25
0633494	19.5	0.7677	140	210	25
0633500	20.0	0.7874	140	210	25

1 per tube

AG-SUS DRILL REGULAR / FRACTIONAL SIZES

List No. 6595P High Performance

h7 AG FMX HELIX H 135° 3RAKE

FM HSS AG COATED

This drill meets stable drilling by AG coat, and is very suitable for drilling of Stainless Steel.

Range 3/32 to 3/4

EDP	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Diameter
1328743	3/32	0.0938	1-1/8	2-3/8	1/8
1328750	7/64	0.1094	1-1/4	2-1/2	1/8
1328766	1/8	0.1250	1-3/8	2-5/8	1/8
1328772	9/64	0.1406	1-1/2	2-7/8	3/16
1328789	5/32	0.1563	1-3/4	3-1/8	3/16
1328795	11/64	0.1719	1-7/8	3-1/4	3/16
1328800	3/16	0.1875	2	3-3/8	3/16
1328817	13/64	0.2031	2-1/16	3-7/8	1/4
1328823	7/32	0.2188	2-1/16	3-7/8	1/4
1328830	15/64	0.2344	2-3/8	4-1/4	1/4
1328846	1/4	0.2500	2-3/8	4-1/4	1/4
1328852	17/64	0.2656	2-3/4	4-5/8	3/8
1328869	9/32	0.2813	2-3/4	4-5/8	3/8
1328875	19/64	0.2969	2-7/8	4-3/4	3/8
1328881	5/16	0.3125	2-7/8	4-3/4	3/8
1328898	21/64	0.3281	2-7/8	4-3/4	3/8
1328903	11/32	0.3438	3-1/4	5-1/8	3/8
1328910	23/64	0.3594	3-1/4	5-1/8	3/8
1328926	3/8	0.3750	3-1/4	5-1/8	3/8
1328932	25/64	0.3906	3-3/8	5-1/2	1/2
1328949	13/32	0.4063	3-3/8	5-1/2	1/2
1328955	27/64	0.4219	3-3/4	5-7/8	1/2
1328961	7/16	0.4375	3-3/4	5-7/8	1/2
1328978	29/64	0.4531	3-3/4	5-7/8	1/2
1328984	15/32	0.4688	4	6-1/4	1/2
1328990	31/64	0.4844	4	6-1/4	1/2
1329005	1/2	0.5000	4	6-1/4	1/2
1329011	17/32	0.5313	4-1/4	6-3/4	5/8
1329028	9/16	0.5625	4-1/2	7	5/8
1329034	37/64	0.5781	4-1/2	7	5/8
1329040	19/32	0.5938	4-3/4	7-1/4	3/4
1329057	5/8	0.6250	4-3/4	7-1/4	3/4
1329063	21/32	0.6563	5	7-1/2	3/4
1329070	11/16	0.6875	5-1/8	7-5/8	3/4
1329086	23/32	0.7188	5-3/8	7-3/4	7/8
1329092	3/4	0.7500	5-1/2	7-7/8	7/8

1 per tube

List No. 6540P Metric Sizes

h8 | AG | HSS Co | HELIX H | 118° | XH-type

Series 1 Range 1.0 to 13.0 Series 2 Range 1.0 to 10.0
Series 3 Range 3.0 to 10.0

HSS-Co AG COATED

This drill meets non-step drilling of deep holes up to 20 times of a diameter, and is used for workpiece materials from raw materials to Mold Die Steels. Note: Pre-hole should be drilled.

Series 1

EDP	Size	Decimal Equivalent	Flute Length	Overall Length
0640796	1.0000	0.0394	33	56
0640801	1.1000	0.0433	37	60
0640818	1.2000	0.0472	41	65
0640824	1.3000	0.0512	41	65
0640830	1.4000	0.0551	45	70
0640847	1.5000	0.0591	45	70
0640853	1.6000	0.0630	50	76
0640860	1.7000	0.0669	50	76
0640876	1.8000	0.0709	53	80
0640882	1.9000	0.0748	53	80
0640899	2.0000	0.0787	56	85
0640904	2.1000	0.0827	56	85
0640910	2.2000	0.0866	59	90
0640927	2.3000	0.0906	59	90
0640933	2.4000	0.0945	62	95
0640940	2.5000	0.0984	62	95
0640956	2.6000	0.1024	62	95
0640962	2.7000	0.1063	66	100
0640979	2.8000	0.1102	66	100
0640985	2.9000	0.1142	66	100
0640991	3.0000	0.1181	66	100
0641006	3.1000	0.1220	69	106
0641012	3.2000	0.1260	69	106
0641029	3.3000	0.1299	69	106
0641035	3.4000	0.1339	73	112
0641041	3.5000	0.1378	73	112
0641058	3.6000	0.1417	73	112
0641064	3.7000	0.1457	73	112
0641070	3.8000	0.1496	78	119
0641087	3.9000	0.1535	78	119
0641093	4.0000	0.1575	78	119
0641109	4.1000	0.1614	78	119
0641115	4.2000	0.1654	78	119
0641121	4.3000	0.1693	82	126
0641138	4.4000	0.1732	82	126
0641144	4.5000	0.1772	82	126
0641150	4.6000	0.1811	82	126
0641167	4.7000	0.1850	82	126
0641173	4.8000	0.1890	87	132
0641180	4.9000	0.1929	87	132
0641196	5.0000	0.1969	87	132
0641201	5.1000	0.2008	87	132
0641218	5.2000	0.2047	87	132
0641224	5.3000	0.2087	87	132
0641230	5.4000	0.2126	91	139
0641247	5.5000	0.2165	91	139
0641253	5.6000	0.2205	91	139
0641260	5.7000	0.2244	91	139
0641276	5.8000	0.2283	91	139
0641282	5.9000	0.2323	91	139
0641299	6.0000	0.2362	91	139
0641304	6.5000	0.2559	97	148
0641310	6.8000	0.2677	102	156
0641327	7.0000	0.2756	102	156
0641333	7.5000	0.2953	102	156
0641340	8.0000	0.3150	109	165
0641356	8.5000	0.3346	109	165
0641362	9.0000	0.3543	115	175
0641379	9.5000	0.3740	115	175
0641385	10.0000	0.3937	121	184
0641391	10.5000	0.4134	121	184
0641407	11.0000	0.4331	128	195
0641413	11.5000	0.4528	128	195
0641420	12.0000	0.4724	134	205
0641436	12.5000	0.4921	134	205
0641442	13.0000	0.5118	134	205

1 per tube

Series 2

EDP	Size	Decimal Equivalent	Flute Length	Overall Length
0641459	1.0000	0.0394	60	100
0641465	1.1000	0.0433	60	100
0641471	1.2000	0.0472	65	105
0641488	1.3000	0.0512	65	105
0641494	1.4000	0.0551	70	110
0641500	1.5000	0.0591	70	110
0641516	1.6000	0.0630	75	115
0641522	1.7000	0.0669	75	115
0641539	1.8000	0.0709	80	120
0641545	1.9000	0.0748	80	120
0641551	2.0000	0.0787	85	125
0641568	2.1000	0.0827	85	125
0641574	2.2000	0.0866	90	135
0641580	2.3000	0.0906	90	135
0641597	2.4000	0.0945	95	140
0641602	2.5000	0.0984	95	140
0641619	2.6000	0.1024	95	140
0641625	2.7000	0.1063	100	150
0641631	2.8000	0.1102	100	150
0641648	2.9000	0.1142	100	150
0641654	3.0000	0.1181	100	150
0641660	3.1000	0.1220	105	155
0641677	3.2000	0.1260	105	155
0641683	3.3000	0.1299	105	155
0641690	3.4000	0.1339	115	165
0641705	3.5000	0.1378	115	165
0641711	3.6000	0.1417	115	165
0641728	3.7000	0.1457	115	165
0641734	3.8000	0.1496	120	175
0641740	3.9000	0.1535	120	175
0641757	4.0000	0.1575	120	175
0641763	4.1000	0.1614	120	175
0641770	4.2000	0.1654	120	175
0641786	4.3000	0.1693	125	185
0641792	4.4000	0.1732	125	185
0641808	4.5000	0.1772	125	185
0641814	4.6000	0.1811	125	185
0641820	4.7000	0.1850	125	185
0641837	4.8000	0.1890	135	195
0641843	4.9000	0.1929	135	195
0641850	5.0000	0.1969	135	195
0641866	5.1000	0.2008	135	195
0641872	5.2000	0.2047	135	195
0641889	5.3000	0.2087	135	195
0641895	5.4000	0.2126	140	205
0641900	5.5000	0.2165	140	205
0641917	5.6000	0.2205	140	205
0641923	5.7000	0.2244	140	205
0641930	5.8000	0.2283	140	205
0641946	5.9000	0.2323	140	205
0641952	6.0000	0.2362	140	205
0641969	6.5000	0.2559	150	215
0641975	6.8000	0.2677	155	225
0641981	7.0000	0.2756	155	225
0641998	7.5000	0.2953	155	225
0642002	8.0000	0.3150	165	240
0642019	8.5000	0.3346	165	240
0642025	9.0000	0.3543	175	250
0642031	9.5000	0.3740	175	250
0642048	10.0000	0.3937	185	265

Series 3

EDP	Size	Decimal Equivalent	Flute Length	Overall Length
0642054	3.0000	0.1181	130	190
0642060	3.5000	0.1378	145	210
0642077	4.0000	0.1575	150	220
0642083	4.5000	0.1772	160	235
0642090	5.0000	0.1969	170	245
0642105	5.5000	0.2165	180	260
0642111	6.0000	0.2362	180	260
0642128	6.5000	0.2559	190	275
0642134	7.0000	0.2756	200	290
0642140	7.5000	0.2953	200	290
0642157	8.0000	0.3150	210	305
0642163	8.5000	0.3346	210	305
0642170	9.0000	0.3543	220	320
0642186	9.5000	0.3740	220	320
0642192	10.0000	0.3937	235	340

*Metric Size is Japan item: Please allow 2-3 weeks delivery

List No. 6541P Fractional Sizes

Series 1 Range 1/8 to 3/8
Series 2 Range 1/8 to 3/8
Series 3 Range 1/8 to 5/16

HSS-Co AG COATED

This drill meets non-step drilling of deep holes up to 20 times of a diameter, and is used for workpiece materials from raw materials to Mold Die Steels. Note: Pre-hole should be drilled.

Series 1

EDP	Fractional Sizes	Size	Decimal Equivalent	Flute Length	Overall Length
1372812	1/8	3.1750	0.1250	69	106
1372829	9/64	3.5720	0.1406	73	112
1372835	5/32	3.9690	0.1563	78	119
1372841	11/64	4.3660	0.1719	82	126
1372858	3/16	4.7620	0.1875	87	132
1372864	13/64	5.1590	0.2031	87	132
1372870	7/32	5.5560	0.2187	91	139
1372887	1/4	6.3500	0.2500	97	148
1372893	17/64	6.7470	0.2656	102	156
1372909	9/32	7.1440	0.2813	102	156
1372915	19/64	7.5410	0.2969	109	165
1372921	5/16	7.9330	0.3123	109	165
1372938	21/64	8.3340	0.3281	109	165
1372944	11/32	8.7310	0.3437	115	175
1372950	23/64	9.1280	0.3594	115	175
1372967	3/8	9.5250	0.3750	121	184

Series 2

EDP	Fractional Sizes	Size	Decimal Equivalent	Flute Length	Overall Length
1372973	1/8	3.1750	0.1250	105	155
1372980	9/64	3.5720	0.1406	115	165
1372996	5/32	3.9690	0.1563	120	175
1373000	11/64	4.3660	0.1719	125	185
1373017	3/16	3.7620	0.1875	135	195
1373023	13/64	5.1590	0.2031	135	195
1373030	7/32	5.5600	0.2187	140	205
1373046	1/4	6.3500	0.2500	150	215
1373052	17/64	6.7470	0.2656	155	225
1373069	9/32	7.1440	0.2813	155	225
1373075	19/64	7.5410	0.2969	165	240
1373081	5/16	7.9330	0.3123	165	240
1373098	21/64	8.3340	0.3281	165	240
1373103	11/32	8.7310	0.3437	175	250
1373110	23/64	9.1280	0.3594	175	250
1373126	3/8	9.5250	0.3750	185	265

Series 3

EDP	Fractional Sizes	Size	Decimal Equivalent	Flute Length	Overall Length
1373132	1/8	3.1750	0.1250	135	200
1373149	9/64	3.5720	0.1406	145	210
1373155	5/32	3.9690	0.1563	150	220
1373161	11/64	4.3660	0.1719	160	235
1373178	3/16	4.7620	0.1875	170	245
1373184	7/32	5.5600	0.2187	180	260
1373190	1/4	6.3500	0.2500	190	275
1373206	5/16	7.9330	0.3123	210	305

1 per tube

List No. 6502

HSS Co (Material) | 25° (Helix) | AG (Coating) | h7 (Shank Dia. Tol)

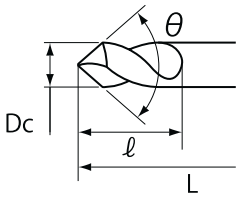
AG Starting Drill

For use with Aqua Flat Drills (List 9818, 9816, 9814)

90° Range 3.0 to 20.0
140° Range 3.0 to 20.0

Item Code	Size	Decimal Equivalent	Drill Point Angle	Flute Length	Overall Length	Shank Dia
EDP	Dc			ℓ	L	Ds
0710358	3.0	0.1181	90°	9	48	3.0
0710364	4.0	0.1575		12	52	4.0
0712613	5.0	0.1969		14	60	5.0
0710370	6.0	0.2362		15	66	6.0
0710387	8.0	0.3150		20	79	8.0
0710393	10.0	0.3937		25	89	10.0
0710409	12.0	0.4724		30	102	12.0
0710415	16.0	0.6299		35	115	16.0
0710421	20.0	0.7874		40	131	20.0
0710518	3.0	0.1181	140°	9	48	3.0
0710524	4.0	0.1575		12	52	4.0
0712636	5.0	0.1969		14	60	5.0
0710530	6.0	0.2362		15	66	6.0
0710547	8.0	0.3150		20	79	8.0
0710553	10.0	0.3937		25	89	10.0
0710560	12.0	0.4724		30	102	12.0
0710576	16.0	0.6299		35	115	16.0
0710582	20.0	0.7874		40	131	20.0

90°,140°



List No. 6504

HSS Co (Material) | 25° (Helix) | AG (Coating) | h7 (Shank Dia. Tol)

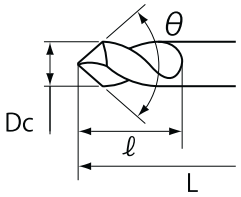
AG Starting Drill

For use with Aqua Flat Drills (List 9818, 9816, 9814)

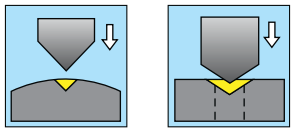
90° Range 3.0 to 12.0
140° Range 3.0 to 12.0

Item Code	Size	Decimal Equivalent	Drill Point Angle	Flute Length	Overall Length	Shank Dia
EDP	Dc			ℓ	L	Ds
0710656	3.0	0.1181	90°	9	75	3.0
0710662	4.0	0.1575		12	100	4.0
0712659	5.0	0.1969		14	100	5.0
0710679	6.0	0.2362		15	150	6.0
0710685	8.0	0.3150		20	150	8.0
0710691	10.0	0.3937		25	200	10.0
0710707	12.0	0.4724		30	200	12.0
0710771	3.0	0.1181	140°	9	75	3.0
0710788	4.0	0.1575		12	100	4.0
0712671	5.0	0.1969		14	100	5.0
0710794	6.0	0.2362		15	150	6.0
0710800	8.0	0.3150		20	150	8.0
0710816	10.0	0.3937		25	200	10.0
0710822	12.0	0.4724		30	200	12.0

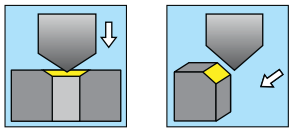
90°,140°



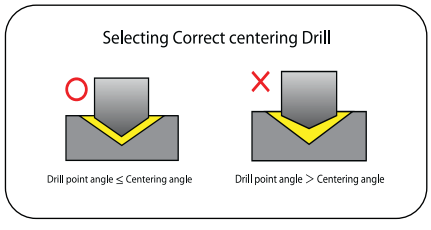
AREAS OF APPLICATION FOR AG STARTING



For Pre-Drilling of Drills that have inconsistent bite and drilling holes on curved or inclined surfaces



For Chamfering of Holes and Chamfering Edges



DLC-HSS DRILLS / METRIC SIZES

JAPAN STOCK ITEM*

List No. 544 High Performance

h7 | DLC | HSS | HELIX H | 135° | 2RAKE | 3RAKE >1.4

HSS DLC COATED

High efficiency drilling of Aluminum Alloy is available.

Range 1.0 to 13.0

(Unit) : mm

EDP	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
0642426	1.0000	0.0394	12	50	3
0642432	1.1000	0.0433	14	50	3
0642449	1.2000	0.0472	16	50	3
0642455	1.3000	0.0512	16	50	3
0642461	1.4000	0.0551	18	50	3
0642478	1.5000	0.0591	18	50	3
0642484	1.6000	0.0630	20	56	3
0642490	1.7000	0.0669	20	56	3
0642506	1.8000	0.0709	22	56	3
0642512	1.9000	0.0748	22	56	3
0642529	2.0000	0.0787	24	56	3
0642535	2.1000	0.0827	24	56	3
0642541	2.2000	0.0866	25	56	3
0642558	2.3000	0.0906	25	56	3
0642564	2.4000	0.0945	30	64	3
0642570	2.5000	0.0984	30	64	3
0642587	2.6000	0.1024	30	64	3
0642593	2.7000	0.1063	33	64	3
0642609	2.8000	0.1102	33	64	3
0642615	2.9000	0.1142	33	64	3
0642621	3.0000	0.1181	33	64	3
0642638	3.1000	0.1220	36	71	4
0642644	3.2000	0.1260	36	71	4
0642650	3.3000	0.1299	36	71	4
0642667	3.4000	0.1339	39	71	4
0642673	3.5000	0.1378	39	71	4
0642680	3.6000	0.1417	39	71	4
0642696	3.7000	0.1457	39	71	4
0642701	3.8000	0.1496	43	75	4
0642718	3.9000	0.1535	43	75	4
0642724	4.0000	0.1575	43	75	4
0642730	4.1000	0.1614	43	89	6
0642747	4.2000	0.1654	43	89	6
0642753	4.3000	0.1693	47	89	6
0642760	4.4000	0.1732	47	89	6
0642776	4.5000	0.1772	47	89	6
0642782	4.6000	0.1811	47	89	6
0642799	4.7000	0.1850	47	89	6
0642804	4.8000	0.1890	52	94	6
0642810	4.9000	0.1929	52	94	6
0642827	5.0000	0.1969	52	94	6
0642833	5.1000	0.2008	52	94	6
0642840	5.2000	0.2047	52	94	6
0642856	5.3000	0.2087	52	94	6
0642862	5.4000	0.2126	57	99	6
0642879	5.5000	0.2165	57	99	6
0642885	5.6000	0.2205	57	99	6
0642891	5.7000	0.2244	57	99	6
0642907	5.8000	0.2283	57	99	6
0642913	5.9000	0.2323	57	99	6
0642920	6.0000	0.2362	57	99	6
0642936	6.1000	0.2402	63	107	8
0642942	6.2000	0.2441	63	107	8
0642959	6.3000	0.2480	63	107	8
0642965	6.4000	0.2520	63	107	8
0642971	6.5000	0.2559	63	107	8
0642988	6.6000	0.2598	63	107	8
0642994	6.7000	0.2638	63	107	8
0643009	6.8000	0.2677	69	113	8
0643015	6.9000	0.2717	69	113	8
0643021	7.0000	0.2756	69	113	8

EDP	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
0643038	7.1000	0.2795	69	113	8
0643044	7.2000	0.2835	69	113	8
0643050	7.3000	0.2874	69	113	8
0643067	7.4000	0.2913	69	113	8
0643073	7.5000	0.2953	69	113	8
0643080	7.6000	0.2992	75	119	8
0643096	7.7000	0.3031	75	119	8
0643101	7.8000	0.3071	75	119	8
0643118	7.9000	0.3110	75	119	8
0643124	8.0000	0.3150	75	119	8
0643130	8.1000	0.3189	75	125	10
0643147	8.2000	0.3228	75	125	10
0643153	8.3000	0.3268	75	125	10
0643160	8.4000	0.3307	75	125	10
0643176	8.5000	0.3346	75	125	10
0643182	8.6000	0.3386	81	131	10
0643199	8.7000	0.3425	81	131	10
0643204	8.8000	0.3465	81	131	10
0643210	8.9000	0.3504	81	131	10
0643227	9.0000	0.3543	81	131	10
0643233	9.1000	0.3583	81	131	10
0643240	9.2000	0.3622	81	131	10
0643256	9.3000	0.3661	81	131	10
0643262	9.4000	0.3701	81	131	10
0643279	9.5000	0.3740	81	131	10
0643285	9.6000	0.3780	87	137	10
0643291	9.7000	0.3819	87	137	10
0643307	9.8000	0.3858	87	137	10
0643313	9.9000	0.3898	87	137	10
0643320	10.0000	0.3937	87	137	10
0643336	10.1000	0.3976	87	144	12
0643342	10.2000	0.4016	87	144	12
0643359	10.3000	0.4055	87	144	12
0643365	10.4000	0.4094	87	144	12
0643371	10.5000	0.4134	87	144	12
0643388	10.6000	0.4173	87	144	12
0643394	10.7000	0.4213	94	151	12
0643400	10.8000	0.4252	94	151	12
0643416	10.9000	0.4291	94	151	12
0643422	11.0000	0.4331	94	151	12
0643439	11.1000	0.4370	94	151	12
0643445	11.2000	0.4409	94	151	12
0643451	11.3000	0.4449	94	151	12
0643468	11.4000	0.4488	94	151	12
0643474	11.5000	0.4528	94	151	12
0643480	11.6000	0.4567	94	151	12
0643497	11.7000	0.4606	94	151	12
0643502	11.8000	0.4646	94	151	12
0643519	11.9000	0.4685	101	158	12
0643525	12.0000	0.4724	101	158	12
0643531	12.1000	0.4764	101	158	12
0643548	12.2000	0.4803	101	158	12
0643554	12.3000	0.4843	101	158	12
0643560	12.4000	0.4882	101	158	12
0643577	12.5000	0.4921	101	158	12
0643583	12.6000	0.4961	101	158	12
0643590	12.7000	0.5000	101	158	12
0643605	12.8000	0.5039	101	158	12
0643611	12.9000	0.5079	101	158	12
0643628	13.0000	0.5118	101	158	12

1 per tube

*JAPAN STOCK ITEM : Please allow 2-3 weeks delivery

DLC MICRODRILLS / METRIC SIZES

JAPAN STOCK ITEM*

List No. 9524 High Performance

h7 DLC Carbide HELIX H 120° 2RAKE

SOLID CARBIDE DLC COATED

High-speed wet processing and dry processing of Aluminum Alloy are available in small diameter.

Range 0.5 to 1.9

(Unit) : mm

EDP	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
0626747	0.5000	0.0197	6	44	3
0626753	0.6000	0.0236	7	44	3
0626760	0.7000	0.0276	9	44	3
0626776	0.8000	0.0315	10	44	3
0626782	0.9000	0.0354	11	44	3
0626799	1.0000	0.0394	12	47	3
0626804	1.1000	0.0433	14	47	3
0626810	1.2000	0.0472	15	47	3
0626827	1.3000	0.0512	15	47	3
0626833	1.4000	0.0551	15	47	3
0626840	1.5000	0.0591	15	47	3
0626856	1.6000	0.0630	15	47	3
0626862	1.7000	0.0669	15	47	3
0626879	1.8000	0.0709	15	47	3
0626885	1.9000	0.0748	15	47	3

1 per tube

*JAPAN STOCK ITEM : Pelase allow 2-3 weeks delivery

DLC DRILLS REGULAR / METRIC SIZES

JAPAN STOCK ITEM*

List No. 9520 High Performance

h7 | DLC | Carbide | HELIX H | 118° | 2RAKE

SOLID CARBIDE DLC COATED

High-speed wet processing and dry processing of Aluminum Alloy are available.

Range 2.0 to 12.0

(Unit) : mm

EDP	Size	Decimal Equivalent	Flute Length	Overall Length	Shank Dia
0626346	2.0000	0.0787	15	47	3
0626352	2.1000	0.0827	15	47	3
0626369	2.2000	0.0866	16	48	3
0626375	2.3000	0.0906	16	48	3
0626381	2.4000	0.0945	17	49	3
0626398	2.5000	0.0984	17	49	3
0626403	2.6000	0.1024	17	49	3
0626410	2.7000	0.1063	19	51	3
0626426	2.8000	0.1102	19	51	3
0626432	2.9000	0.1142	19	51	3
0626449	3.0000	0.1181	19	51	3
0626455	3.1000	0.1220	21	53	4
0626461	3.2000	0.1260	21	53	4
0626478	3.3000	0.1299	21	53	4
0626484	3.4000	0.1339	24	56	4
0626490	3.5000	0.1378	24	56	4
0626506	3.6000	0.1417	24	56	4
0626512	3.7000	0.1457	24	56	4
0626529	3.8000	0.1496	27	59	4
0626535	3.9000	0.1535	27	59	4
0626541	4.0000	0.1575	27	59	4
0626558	4.1000	0.1614	27	71	6
0626564	4.2000	0.1654	27	71	6
0626570	4.3000	0.1693	31	75	6
0626587	4.4000	0.1732	31	75	6
0626593	4.5000	0.1772	31	75	6
0626609	4.6000	0.1811	31	75	6
0626615	4.7000	0.1850	31	75	6
0626621	4.8000	0.1890	33	77	6
0626638	4.9000	0.1929	33	77	6
0626644	5.0000	0.1969	38	82	6
0626650	5.1000	0.2008	38	82	6
0626667	5.2000	0.2047	38	82	6
0626673	5.3000	0.2087	38	82	6
0626680	5.4000	0.2126	38	82	6
0626696	5.5000	0.2165	38	82	6
0626701	5.6000	0.2205	41	85	6
0626718	5.7000	0.2244	41	85	6
0626724	5.8000	0.2283	41	85	6
0626730	5.9000	0.2323	41	85	6
0625734	6.0000	0.2362	41	85	6
0625740	6.1000	0.2402	41	85	8
0625757	6.2000	0.2441	41	85	8
0625763	6.3000	0.2480	41	85	8
0625770	6.4000	0.2520	41	85	8
0625786	6.5000	0.2559	41	85	8
0625792	6.6000	0.2598	43	87	8
0625808	6.7000	0.2638	43	87	8
0625814	6.8000	0.2677	43	87	8
0625820	6.9000	0.2717	43	87	8
0625837	7.0000	0.2756	43	87	8
0625843	7.1000	0.2795	45	89	8
0625850	7.2000	0.2835	45	89	8
0625866	7.3000	0.2874	45	89	8
0625872	7.4000	0.2913	45	89	8
0625889	7.5000	0.2953	45	89	8
0625895	7.6000	0.2992	48	92	8
0625900	7.7000	0.3031	48	92	8
0625917	7.8000	0.3071	48	92	8
0625923	7.9000	0.3110	48	92	8
0625930	8.0000	0.3150	48	92	8
0625946	8.1000	0.3189	53	103	10
0625952	8.2000	0.3228	53	103	10
0625969	8.3000	0.3268	53	103	10
0625975	8.4000	0.3307	53	103	10
0625981	8.5000	0.3346	53	103	10
0625998	8.6000	0.3386	55	105	10
0626002	8.7000	0.3425	55	105	10
0626019	8.8000	0.3465	55	105	10
0626025	8.9000	0.3504	55	105	10
0626031	9.0000	0.3543	55	105	10
0626048	9.1000	0.3583	58	108	10
0626054	9.2000	0.3622	58	108	10
0626060	9.3000	0.3661	58	108	10
0626077	9.4000	0.3701	58	108	10
0626083	9.5000	0.3740	58	108	10
0626090	9.6000	0.3780	60	110	10
0626105	9.7000	0.3819	60	110	10
0626111	9.8000	0.3858	60	110	10
0626128	9.9000	0.3898	60	110	10
0626134	10.0000	0.3937	60	110	10
0626140	10.1000	0.3976	66	123	12
0626157	10.2000	0.4016	66	123	12
0626163	10.3000	0.4055	66	123	12
0626170	10.4000	0.4094	66	123	12
0626186	10.5000	0.4134	66	123	12
0626192	10.6000	0.4173	68	125	12
0626208	10.7000	0.4213	68	125	12
0626214	10.8000	0.4252	68	125	12
0626220	10.9000	0.4291	68	125	12
0626237	11.0000	0.4331	68	125	12
0626243	11.1000	0.4370	71	128	12
0626250	11.2000	0.4409	71	128	12
0626266	11.3000	0.4449	71	128	12
0626272	11.4000	0.4488	71	128	12
0626289	11.5000	0.4528	71	128	12
0626295	11.6000	0.4567	73	130	12
0626300	11.7000	0.4606	73	130	12
0626317	11.8000	0.4646	73	130	12
0626323	11.9000	0.4685	73	130	12
0626330	12.0000	0.4724	73	130	12

1 PER TUBE

*JAPAN STOCK ITEM : Please allow 2-3 weeks delivery

List No. 500 General Purpose

h8 | HSS | HELIX N | 108° >0.55 | 118° >13.0 | S-type | Conical

HIGH SPEED STEEL

Used in wide variety of normal conditions. Will work in a broad range of materials in both machine and portable drilling.

Bright Finish 0.2 to 1.95 mm
Black Oxide 2.0 to 17.5 mm

(Unit) : mm

EDP	Size	Decimal Equivalent	Flute Length	Overall Length
0121256	0.2000	0.0079	3	19
0345266	0.2200	0.0087	3.5	20
0062423	0.2500	0.0098	3.5	20
0345403	0.2800	0.0110	3.5	20
0062417	0.3000	0.0118	3.5	20
0345478	0.3200	0.0126	5.5	24
0062400	0.3500	0.0138	5.5	24
0345570	0.3800	0.0150	5.5	24
0062395	0.4000	0.0157	5.5	24
0346474	0.4200	0.0165	7.5	27
0062389	0.4500	0.0177	7.5	27
0346560	0.4800	0.0189	7.5	27
0062372	0.5000	0.0197	7.5	30
0062366	0.5500	0.0217	8.5	30
0062350	0.6000	0.0236	8.5	30
0062343	0.6500	0.0256	10	32
0062337	0.7000	0.0276	10	32
0062320	0.7500	0.0295	11	34
0062314	0.8000	0.0315	11	34
0062308	0.8500	0.0335	13	36
0062292	0.9000	0.0354	13	36
0062286	0.9500	0.0374	18	40
0062270	1.0000	0.0394	18	40
0128870	1.0500	0.0413	20	42
0062263	1.1000	0.0433	20	42
0129641	1.1500	0.0453	20	42
0062257	1.2000	0.0472	20	42
0130298	1.2500	0.0492	22	45
0062240	1.3000	0.0512	22	45
0131271	1.3500	0.0531	23	48
0062234	1.4000	0.0551	23	48
0132473	1.4500	0.0571	23	48
0062228	1.5000	0.0591	23	48
0133280	1.5500	0.0610	25	50
0062211	1.6000	0.0630	25	50
0134098	1.6500	0.0650	25	50
0062205	1.7000	0.0669	25	50
0135254	1.7500	0.0689	28	52
0062190	1.8000	0.0709	28	52
0136870	1.8500	0.0728	28	52
0062183	1.9000	0.0748	28	52
0138728	1.9500	0.0768	29	55
0004230	2.0000	0.0787	29	55
0139856	2.0500	0.0807	29	55
0004247	2.1000	0.0827	29	55
0143632	2.1500	0.0846	29	55
0004253	2.2000	0.0866	33	58
0144536	2.2500	0.0886	33	58
0004260	2.3000	0.0906	33	58
0146385	2.3500	0.0925	33	58
0004282	2.4000	0.0945	35	61
0147810	2.4500	0.0965	35	61
0004299	2.5000	0.0984	35	61
0149355	2.5500	0.1004	37	64
0004304	2.6000	0.1024	37	64
0151450	2.6500	0.1043	37	64
0004310	2.7000	0.1063	37	64
0152995	2.7500	0.1083	39	67

EDP	Size	Decimal Equivalent	Flute Length	Overall Length
0004333	2.8000	0.1102	39	67
0156256	2.8500	0.1122	39	67
0004340	2.9000	0.1142	42	71
0159123	2.9500	0.1161	42	71
0004356	3.0000	0.1181	42	71
0004362	3.1000	0.1220	42	71
0004385	3.2000	0.1260	42	71
0159713	3.2500	0.1280	42	71
0004391	3.3000	0.1299	45	73
0004407	3.4000	0.1339	45	73
0118957	3.5000	0.1378	45	73
0004436	3.6000	0.1417	48	76
0004442	3.7000	0.1457	48	76
0159880	3.7500	0.1476	48	76
0004459	3.8000	0.1496	48	76
0004465	3.9000	0.1535	51	79
0004488	4.0000	0.1575	54	83
0004494	4.1000	0.1614	54	83
0004500	4.2000	0.1654	54	83
0159931	4.2500	0.1673	54	83
0004516	4.3000	0.1693	54	83
0004539	4.4000	0.1732	56	86
0004545	4.5000	0.1772	56	86
0004551	4.6000	0.1811	56	86
0004568	4.7000	0.1850	59	89
0160090	4.7500	0.1870	59	89
0004580	4.8000	0.1890	59	89
0004597	4.9000	0.1929	62	92
0004602	5.0000	0.1969	62	92
0004619	5.1000	0.2008	62	92
0004631	5.2000	0.2047	64	92
0160347	5.2500	0.2067	64	95
0004648	5.3000	0.2087	64	95
0004654	5.4000	0.2126	64	95
0004660	5.5000	0.2165	64	95
0004683	5.6000	0.2205	67	98
0004690	5.7000	0.2244	67	98
0160600	5.7500	0.2264	67	98
0004705	5.8000	0.2283	67	98
0004711	5.9000	0.2323	67	98
0004734	6.0000	0.2362	70	102
0004740	6.1000	0.2402	70	102
0004757	6.2000	0.2441	70	102
0140640	6.2500	0.2461	70	102
0004763	6.3000	0.2480	70	102
0004786	6.4000	0.2520	73	105
0004792	6.5000	0.2559	73	105
0004808	6.6000	0.2598	73	105
0004814	6.7000	0.2638	73	105
0140713	6.7500	0.2657	73	105
0004837	6.8000	0.2677	73	105
0004843	6.9000	0.2717	73	105
0004850	7.0000	0.2756	73	105
0004866	7.1000	0.2795	75	108
0004889	7.2000	0.2835	75	108
0140977	7.2500	0.2854	75	108
0004895	7.3000	0.2874	75	108
0004900	7.4000	0.2913	78	111

EDP	Size	Decimal Equivalent	Flute Length	Overall Length
0004917	7.5000	0.2953	78	111
0004930	7.6000	0.2992	78	111
0004946	7.7000	0.3031	81	114
0141194	7.7500	0.3051	81	114
0004952	7.8000	0.3071	81	114
0004969	7.9000	0.3110	81	114
0004981	8.0000	0.3150	81	114
0004998	8.1000	0.3189	84	117
0005002	8.2000	0.3228	84	117
0142957	8.2500	0.3248	84	117
0005019	8.3000	0.3268	84	117
0005031	8.4000	0.3307	87	121
0005048	8.5000	0.3346	87	121
0005054	8.6000	0.3386	87	121
0005060	8.7000	0.3425	87	121
0143151	8.7500	0.3445	89	124
0005083	8.8000	0.3465	89	124
0005090	8.9000	0.3504	89	124
0005105	9.0000	0.3543	89	124
0005111	9.1000	0.3583	89	124
0005134	9.2000	0.3622	92	127
0143517	9.2500	0.3642	92	127
0005140	9.3000	0.3661	92	127
0005157	9.4000	0.3701	92	127
0005163	9.5000	0.3740	92	127
0005186	9.6000	0.3780	95	130
0005192	9.7000	0.3819	95	130
0144244	9.7500	0.3839	95	130
0005208	9.8000	0.3858	95	130
0005214	9.9000	0.3898	95	130
0005237	10.0000	0.3937	95	130
0005250	10.2000	0.4016	98	133
0144410	10.2500	0.4035	98	133
0005295	10.5000	0.4134	100	137
0144651	10.7500	0.4232	103	140
0005330	10.8000	0.4252	103	140
0005352	11.0000	0.4331	103	140
0005381	11.2000	0.4409	106	143
0145074	11.2500	0.4429	106	143
0005410	11.5000	0.4528	106	143
0145635	11.7500	0.4626	109	146
0005455	11.8000	0.4646	109	146
0005484	12.0000	0.4724	111	149
0005506	12.2000	0.4803	111	149
0147317	12.2500	0.4823	111	149
0005541	12.5000	0.4921	114	152
0147804	12.7500	0.5020	114	152
0005587	12.8000	0.5039	114	152
0005609	13.0000	0.5118	114	152
0005615	13.5000	0.5315	122	168
0005638	14.0000	0.5512	122	168
0005644	14.5000	0.5709	122	168
0005650	15.0000	0.5906	132	181
0005667	15.5000	0.6102	132	181
0005673	16.0000	0.6299	132	181
0005680	16.5000	0.6496	132	181
0005701	17.0000	0.6693	143	194
0005718	17.5000	0.6890	143	194

0.2 to 8.0 in package of 10, 8.1 to 13.0 in package of 5, 13.5 to 17.50 in package of 2

STRAIGHT SHANK COBALT DRILL /METRIC SIZES

JAPAN STOCK ITEM*

List No. 6520 General Purpose

h8 | HSS Co | HELIX H | 135° | X-type >1.5 | Conical

Bright Finish 0.5 to 1.9 mm
Black Oxide 2.0 to 13.0 mm

HIGH SPEED STEEL COBALT - Black Oxide

This is general purpose cobalt HSS drills.

(Unit) : mm

EDP	Size	Decimal Equivalent	Flute Length	Overall Length
0084008	0.5000	0.0197	5	30
0084037	0.6000	0.0236	5.5	30
0084066	0.7000	0.0276	7.5	32
0084123	0.8000	0.0315	8	34
0084249	0.9000	0.0354	9	36
0046687	1.0000	0.0394	10	40
0046693	1.1000	0.0433	11	42
0046709	1.2000	0.0472	13	42
0046715	1.3000	0.0512	13	45
0046721	1.4000	0.0551	14.5	48
0046738	1.5000	0.0591	14.5	48
0046744	1.6000	0.0630	16	50
0046750	1.7000	0.0669	16	50
0046767	1.8000	0.0709	17.5	52
0046773	1.9000	0.0748	17.5	52
0046780	2.0000	0.0787	20	55
0046796	2.1000	0.0827	20	55
0046801	2.2000	0.0866	23	58
0046818	2.3000	0.0906	23	58
0046824	2.4000	0.0945	24.5	61
0046830	2.5000	0.0984	24.5	61
0046847	2.6000	0.1024	26	64
0046853	2.7000	0.1063	26	64
0046860	2.8000	0.1102	27	67
0046876	2.9000	0.1142	29.5	71
0046882	3.0000	0.1181	29.5	71
0046899	3.1000	0.1220	29.5	71
0046904	3.2000	0.1260	29.5	71
0046910	3.3000	0.1299	31.5	73
0046927	3.4000	0.1339	31.5	73
0046933	3.5000	0.1378	31.5	73
0046940	3.6000	0.1417	33.5	76
0046956	3.7000	0.1457	33.5	76
0046962	3.8000	0.1496	33.5	76
0046979	3.9000	0.1535	36	79
0046985	4.0000	0.1575	38	83
0046991	4.1000	0.1614	38	83
0047006	4.2000	0.1654	38	83
0047012	4.3000	0.1693	38	83
0047029	4.4000	0.1732	39	86
0047035	4.5000	0.1772	39	86
0047041	4.6000	0.1811	39	86
0047058	4.7000	0.1850	41	89
0047064	4.8000	0.1890	41	89
0047070	4.9000	0.1929	43	92
0047087	5.0000	0.1969	43	92
0047093	5.1000	0.2008	43	92
0047109	5.2000	0.2047	45	95
0047115	5.3000	0.2087	45	95
0047121	5.4000	0.2126	45	95
0047138	5.5000	0.2165	45	95
0047144	5.6000	0.2205	47	98
0047150	5.7000	0.2244	47	98
0047167	5.8000	0.2283	47	98
0047173	5.9000	0.2323	47	98
0047180	6.0000	0.2362	49	102
0047196	6.1000	0.2402	49	102
0047201	6.2000	0.2441	49	102
0047218	6.3000	0.2480	49	102
0047224	6.4000	0.2520	51	105
0047230	6.5000	0.2559	51	105
0047247	6.6000	0.2598	51	105
0047253	6.7000	0.2638	51	105
0047260	6.8000	0.2677	51	105
0047276	6.9000	0.2717	51	105
0047282	7.0000	0.2756	51	105
0047299	7.1000	0.2795	53	108
0047304	7.2000	0.2835	53	108
0047310	7.3000	0.2874	53	108
0047327	7.4000	0.2913	55	111
0047333	7.5000	0.2953	55	111
0047340	7.6000	0.2992	55	111
0047356	7.7000	0.3031	57	114
0047362	7.8000	0.3071	57	114
0047379	7.9000	0.3110	57	114
0047385	8.0000	0.3150	57	114
0047391	8.1000	0.3189	59	117
0047407	8.2000	0.3228	59	117
0047413	8.3000	0.3268	59	117
0047420	8.4000	0.3307	61	121
0047436	8.5000	0.3346	61	121
0047442	8.6000	0.3386	61	121
0047459	8.7000	0.3425	61	121
0047465	8.8000	0.3465	63	124
0047471	8.9000	0.3504	63	124
0047488	9.0000	0.3543	63	124
0047494	9.1000	0.3583	63	124
0047500	9.2000	0.3622	65	127
0047516	9.3000	0.3661	65	127
0047522	9.4000	0.3701	65	127
0047539	9.5000	0.3740	65	127
0047545	9.6000	0.3780	67	130
0047551	9.7000	0.3819	67	130
0047568	9.8000	0.3858	67	130
0047574	9.9000	0.3898	67	130
0047580	10.0000	0.3937	67	130
0047597	10.1000	0.3976	69	133
0047602	10.2000	0.4016	69	133
0047619	10.3000	0.4055	69	133
0047625	10.4000	0.4094	69	133
0047631	10.5000	0.4134	70	137
0047648	10.6000	0.4173	70	137
0047654	10.7000	0.4213	70	137
0047660	10.8000	0.4252	72	140
0047677	10.9000	0.4291	72	140
0047683	11.0000	0.4331	72	140
0047690	11.1000	0.4370	72	140
0047705	11.2000	0.4409	75	143
0047711	11.3000	0.4449	75	143
0047728	11.4000	0.4488	75	143
0047734	11.5000	0.4528	75	143
0047740	11.6000	0.4567	77	146
0047757	11.7000	0.4606	77	146
0047763	11.8000	0.4646	77	146
0047770	11.9000	0.4685	77	146
0047786	12.0000	0.4724	78	149
0047792	12.1000	0.4764	78	149
0047808	12.2000	0.4803	78	149
0047814	12.3000	0.4843	78	149
0047820	12.4000	0.4882	80	152
0047837	12.5000	0.4921	80	152
0047843	12.6000	0.4961	80	152
0047850	12.7000	0.5000	80	152
0047866	12.8000	0.5039	80	152
0047872	12.9000	0.5079	80	152
0047889	13.0000	0.5118	80	152

0.5 to 8.0 in package of 10, 8.1 to 13.0 in package of 5

*JAPAN STOCK ITEM : Please allow 2-3 weeks delivery

List No. 520P General Purpose

h8 | HSS | HELIX N | 118° | X-type >3 | Conical

HIGH SPEED STEEL - TiN Coated

Used for high speed drilling. TiN coated.

Range 0.5 to 13.0 mm

(Unit) : mm

EDP	Size	Decimal Equivalent	Flute Length	Overall Length
0579926	0.5000	0.0197	6	22
0579932	0.6000	0.0236	7	24
0579949	0.7000	0.0276	9	28
0579955	0.8000	0.0315	10	30
0579961	0.9000	0.0354	11	32
0156560	1.0000	0.0394	12	34
0156577	1.1000	0.0433	14	36
0156611	1.2000	0.0472	16	38
0156932	1.3000	0.0512	16	38
0157086	1.4000	0.0551	18	40
0157269	1.5000	0.0591	18	40
0157647	1.6000	0.0630	20	43
0157653	1.7000	0.0669	20	43
0157660	1.8000	0.0709	22	46
0157894	1.9000	0.0748	22	46
0157968	2.0000	0.0787	24	49
0158024	2.1000	0.0827	24	49
0158030	2.2000	0.0866	27	53
0158133	2.3000	0.0906	27	53
0158140	2.4000	0.0945	30	57
0158179	2.5000	0.0984	30	57
0158419	2.6000	0.1024	30	57
0158832	2.7000	0.1063	33	61
0158970	2.8000	0.1102	33	61
0158987	2.9000	0.1142	33	61
0159181	3.0000	0.1181	33	61
0159261	3.1000	0.1220	36	65
0159312	3.2000	0.1260	36	65
0159358	3.3000	0.1299	36	65
0160520	3.4000	0.1339	39	70
0161446	3.5000	0.1378	39	70
0161481	3.6000	0.1417	39	70
0161503	3.7000	0.1457	39	70
0161510	3.8000	0.1496	43	75
0161526	3.9000	0.1535	43	75
0161549	4.0000	0.1575	43	75
0161561	4.1000	0.1614	43	75
0161693	4.2000	0.1654	43	75
0161750	4.3000	0.1693	47	80
0161773	4.4000	0.1732	47	80
0161780	4.5000	0.1772	47	80
0161818	4.6000	0.1811	47	80
0162260	4.7000	0.1850	47	80
0162304	4.8000	0.1890	52	86
0162465	4.9000	0.1929	52	86
0162516	5.0000	0.1969	52	86
0162539	5.1000	0.2008	52	86
0162786	5.2000	0.2047	52	86
0162952	5.3000	0.2087	52	86
0163048	5.4000	0.2126	57	93
0163054	5.5000	0.2165	57	93
0163490	5.6000	0.2205	57	93
0163680	5.7000	0.2244	57	93
0163730	5.8000	0.2283	57	93
0164124	5.9000	0.2323	57	93
0164153	6.0000	0.2362	57	93
0164359	6.1000	0.2402	63	101
0164394	6.2000	0.2441	63	101
0164480	6.3000	0.2480	63	101
0164548	6.4000	0.2520	63	101
0164554	6.5000	0.2559	63	101
0164852	6.6000	0.2598	63	101
0165303	6.7000	0.2638	63	101
0165378	6.8000	0.2677	69	109
0165390	6.9000	0.2717	69	109
0165429	7.0000	0.2756	69	109
0165441	7.1000	0.2795	69	109
0165470	7.2000	0.2835	69	109
0165515	7.3000	0.2874	69	109
0165630	7.4000	0.2913	69	109
0165865	7.5000	0.2953	69	109
0165980	7.6000	0.2992	75	117
0166047	7.7000	0.3031	75	117
0166053	7.8000	0.3071	75	117
0166425	7.9000	0.3110	75	117
0166563	8.0000	0.3150	75	117
0166700	8.1000	0.3189	75	117
0166878	8.2000	0.3228	75	117
0166964	8.3000	0.3268	75	117
0167089	8.4000	0.3307	75	117
0167152	8.5000	0.3346	75	117
0167226	8.6000	0.3386	81	125
0167335	8.7000	0.3425	81	125
0167341	8.8000	0.3465	81	125
0168010	8.9000	0.3504	81	125
0168136	9.0000	0.3543	81	125
0168348	9.1000	0.3583	81	125
0168405	9.2000	0.3622	81	125
0168537	9.3000	0.3661	81	125
0168630	9.4000	0.3701	81	125
0168938	9.5000	0.3740	81	125
0171140	9.6000	0.3780	87	133
0172176	9.7000	0.3819	87	133
0172307	9.8000	0.3858	87	133
0172313	9.9000	0.3898	87	133
0172359	10.0000	0.3937	87	133
0172670	10.1000	0.3976	87	133
0172766	10.2000	0.4016	87	133
0172823	10.3000	0.4055	87	133
0172898	10.4000	0.4094	87	133
0172910	10.5000	0.4134	87	133
0173005	10.6000	0.4173	87	133
0173040	10.7000	0.4213	94	142
0173057	10.8000	0.4252	94	142
0174592	10.9000	0.4291	94	142
0176194	11.0000	0.4331	94	142
0177607	11.1000	0.4370	94	142
0178632	11.2000	0.4409	94	142
0180009	11.3000	0.4449	94	142
0180021	11.4000	0.4488	94	142
0180160	11.5000	0.4528	94	142
0180388	11.6000	0.4567	94	142
0180400	11.7000	0.4606	94	142
0181493	11.8000	0.4646	94	142
0181836	11.9000	0.4685	101	151
0182300	12.0000	0.4724	101	151
0182592	12.1000	0.4764	101	151
0183050	12.2000	0.4803	101	151
0183146	12.3000	0.4843	101	151
0183249	12.4000	0.4882	101	151
0184165	12.5000	0.4921	101	151
0184537	12.6000	0.4961	101	151
0184566	12.7000	0.5000	101	151
0184572	12.8000	0.5039	101	151
0184589	12.9000	0.5079	101	151
0184595	13.0000	0.5118	101	151

0.5 to 1.9 - 10 per package, 2.0 to 13.0 - 1 per package

*JAPAN STOCK ITEM : Please allow 2-3 weeks delivery

STRAIGHT SHANK JOBBERS LENGTH DRILLS / FRACTIONAL SIZES / WIRE GAUGE SIZES / LETTER SIZES

List No. 501 General Purpose

h8 | HSS | HELIX N | 118° | S-type >1/2 | Conical

HIGH SPEED STEEL **Black Oxide**

Used in wide variety of normal conditions. Will work in a broad range of materials in both machine and portable drilling.

Fractional: Range 3/64" to 11/16"
Wire: Range #1 to #60
Letter: Range A to Z

EDP	Size			Decimal Equivalent	Flute Length	Overall Length
	Fractional	Wire	Letter			
0011097		#60		0.0400	11/16	1 5/8
0011102		#59		0.0410	11/16	1 5/8
0011119		#58		0.0420	11/16	1 5/8
0011125		#57		0.0430	3/4	1 3/4
0011131		#56		0.0465	3/4	1 3/4
0011148	3/64			0.0469	3/4	1 3/4
0011154		#55		0.0520	7/8	1 7/8
0011160		#54		0.0550	7/8	1 7/8
0011177		#53		0.0595	7/8	1 7/8
0011183	1/16			0.0625	7/8	1 7/8
0011190		#52		0.0635	7/8	1 7/8
0011205		#51		0.0670	1	2
0011211		#50		0.0700	1	2
0011228		#49		0.0730	1	2
0011234		#48		0.0760	1	2
0011240	5/64			0.0781	1	2
0011257		#47		0.0785	1	2
0011263		#46		0.0810	1/8	2 1/8
0011270		#45		0.0820	1/8	2 1/8
0011286		#44		0.0860	1/8	2 1/8
0011292		#43		0.0890	1/4	2 1/4
0011308		#42		0.0935	1/4	2 1/4
0011314	3/32			0.0938	1/4	2 1/4
0011320		#41		0.0960	3/8	2 3/8
0590530		#40		0.0980	3/8	2 3/8
0011343		#39		0.0995	3/8	2 3/8
0011350		#38		0.1015	7/16	2 1/2
0011366		#37		0.1040	7/16	2 1/2
0011372		#36		0.1065	7/16	2 1/2
0011389	7/64			0.1094	1/2	2 5/8
0011395		#35		0.1100	1/2	2 5/8
0011400		#34		0.1110	1/2	2 5/8
0011417		#33		0.1130	1 1/2	2 5/8
0011423		#32		0.1160	1 5/8	2 3/4
0011430		#31		0.1200	1 5/8	2 3/4
0011446	1/8			0.1250	1 5/8	2 3/4
0011452		#30		0.1285	1 5/8	2 3/4
0011469		#29		0.1360	1 3/4	2 7/8
0011475		#28		0.1405	1 3/4	2 7/8
0011481	9/64			0.1406	1 3/4	2 7/8
0011498		#27		0.1440	1 7/8	3
0011503		#26		0.1470	1 7/8	3
0011510		#25		0.1495	1 7/8	3
0011526		#24		0.1520	2	3 1/8
0011532		#23		0.1540	2	3 1/8
0011549	5/32			0.1563	2	3 1/8
0011555		#22		0.1570	2	3 1/8
0011561		#21		0.1590	2 1/8	3 1/4
0011578		#20		0.1610	2 1/8	3 1/4
0011584		#19		0.1660	2 1/8	3 1/4
0011590		#18		0.1695	2 1/8	3 1/4
0011612		#16		0.1700	2 3/16	3 3/8
0011606	11/64			0.1719	2 1/8	3 1/4
0011629		#17		0.1730	2 3/16	3 3/8
0011635		#15		0.1800	2 3/16	3 3/8
0011641		#14		0.1820	2 3/16	3 3/8
0011658		#13		0.1850	2 5/16	3 1/2
0011664	3/16			0.1875	2 5/16	3 1/2
0011670		#12		0.1890	2 5/16	3 1/2
0011687		#11		0.1910	2 5/16	3 1/2
0011693		#10		0.1935	2 7/16	3 5/8
0011709		#9		0.1960	2 7/16	3 5/8
0011715		#8		0.1990	2 7/16	3 5/8
0011721		#7		0.2010	2 7/16	3 5/8
0011738	13/64			0.2031	2 7/16	3 5/8
0011744		#6		0.2040	2 1/2	3 3/4
0011750		#5		0.2055	2 1/2	3 3/4
0011767		#4		0.2090	2 1/2	3 3/4
0011773		#3		0.2130	2 1/2	3 3/4
0011780	7/32			0.2188	2 1/2	3 3/4
0011796		#2		0.2210	2 5/8	3 7/8
0011801		#1		0.2280	2 5/8	3 7/8
0553836			A	0.2340	2 5/8	3 7/8
0011818	15/64			0.2344	2 5/8	3 7/8
0553842			B	0.2380	2 3/4	4
0553859			C	0.2420	2 3/4	4
0553865			D	0.2460	2 3/4	4
0553871			E	0.2500	2 3/4	4
0011824	1/4			0.2500	2 3/4	4
0553888			F	0.2570	2 7/8	4 1/8
0553894			G	0.2610	2 7/8	4 1/8
0011830	17/64			0.2656	2 7/8	4 1/8
0553900			H	0.2660	2 7/8	4 1/8
0553916			I	0.2720	2 7/8	4 1/8
0553922			J	0.2770	2 7/8	4 1/8
0553939			K	0.2810	2 15/16	4 1/4
0011847	9/32			0.2813	2 15/16	4 1/4
0553945			L	0.2900	2 15/16	4 1/4
0553951			M	0.2950	3 1/16	4 3/8
0011853	19/64			0.2969	3 1/16	4 3/8
0553968			N	0.3020	3 1/16	4 3/8
0011860	5/16			0.3125	3 3/16	4 1/2
0553974			O	0.3160	3 3/16	4 1/2
0553980			P	0.3230	3 5/16	4 5/8
0011876	21/64			0.3281	3 5/16	4 5/8
0553997			Q	0.3320	3 7/16	4 3/4
0554001			R	0.3390	3 7/16	4 3/4
0011882	11/32			0.3438	3 7/16	4 3/4
0554018			S	0.3480	3 1/2	4 7/8
0554024			T	0.3580	3 1/2	4 7/8
0011899	23/64			0.3594	3 1/2	4 7/8
0554030			U	0.3680	3 5/8	5
0011904	3/8			0.3750	3 5/8	5
0554047			V	0.3770	3 5/8	5
0554053			W	0.3860	3 3/4	5 1/8
0011910	25/64			0.3906	3 3/4	5 1/8
0554060			X	0.3970	3 3/4	5 1/8
0554076			Y	0.4040	3 7/8	5 1/4
0011927	13/32			0.4063	3 7/8	5 1/4
0554082			Z	0.4130	3 7/8	5 1/4
0011933	27/64			0.4219	3 15/16	5 3/8
0011940	7/16			0.4375	4 1/16	5 1/2
0011956	29/64			0.4531	4 3/16	5 5/8
0011962	15/32			0.4688	4 5/16	5 3/4
0011979	31/64			0.4844	4 3/8	5 7/8
0011985	1/2			0.5000	4 1/2	6
1131669	33/64			0.5156	4 13/16	6 5/8
1131675	17/32			0.5313	4 13/16	6 5/8
1131681	35/64			0.5469	4 13/16	6 5/8
1131698	9/16			0.5625	4 13/16	6 5/8
1131703	37/64			0.5781	4 13/16	6 5/8
1131710	19/32			0.5938	5 3/16	7 1/8
1131726	39/64			0.6094	5 3/16	7 1/8
1131732	5/8			0.6250	5 3/16	7 1/8
1131749	41/64			0.6406	5 3/16	7 1/8
1131755	21/32			0.6563	5 3/16	7 1/8
1131761	43/64			0.6719	5 5/8	7 5/8
1131778	11/16			0.6875	5 5/8	7 5/8

Fractional sizes: Sizes 1/64 to 5/16 in package of 10; 21/64 to 1/2 in package of 5; 33/64 to 11/16 in package of 2
Wire gauge sizes: All sizes in package of 10
Letter sizes: A to N in package of 10; O to Z in package of 5

STRAIGHT SHANK JOBBERS LENGTH DRILLS / FRACTIONAL SIZES / WIRE GAUGES / LETTER SIZES

List No. 501A General Purpose

h8 | HSS | HELIX N | 118° | S-type >1/2 | Conical

HIGH SPEED STEEL Bright Finish

Used in wide variety of normal conditions. Will work in a broad range of materials in both machine and portable drilling.

Fractional: Range 1/64" to 11/16"
Wire: Range #1 to #80
Letter: Range A to Z

EDP	Size			Decimal Equivalent	Flute Length	Overall Length
	Fractional	Wire	Letter			
0010870		#80		0.0135	1/8	3/4
0010886		#79		0.0145	1/8	3/4
0010892	1/64			0.0156	3/16	3/4
0010908		#78		0.0160	3/16	7/8
0010914		#77		0.0180	3/16	7/8
0010920		#76		0.0200	3/16	7/8
0010937		#75		0.0210	1/4	1
0010943		#74		0.0225	1/4	1
0010950		#73		0.0240	5/16	1 1/8
0010966		#72		0.0250	5/16	1 1/8
0010972		#71		0.0260	3/8	1 1/4
0010989		#70		0.0280	3/8	1 1/4
0010995		#69		0.0292	1/2	1 3/8
0011000		#68		0.0310	1/2	1 3/8
0011016	1/32			0.0313	1/2	1 3/8
0011022		#67		0.0320	1/2	1 3/8
0011039		#66		0.0330	1/2	1 3/8
0011045		#65		0.0350	5/8	1 1/2
0011051		#64		0.0360	5/8	1 1/2
0011068		#63		0.0370	5/8	1 1/2
0011074		#62		0.0380	5/8	1 1/2
0011080		#61		0.0390	11/16	1 5/8
0545092		#60		0.0400	11/16	1 5/8
0545108		#59		0.0410	11/16	1 5/8
0545114		#58		0.0420	11/16	1 5/8
0545120		#57		0.0430	3/4	1 3/4
0545137		#56		0.0465	3/4	1 3/4
0543593	3/64			0.0469	3/4	1 3/4
0545143		#55		0.0520	7/8	1 7/8
0545150		#54		0.0550	7/8	1 7/8
0545166		#53		0.0595	7/8	1 7/8
0543609	1/16			0.0625	7/8	1 7/8
0545172		#52		0.0635	7/8	1 7/8
0545189		#51		0.0670	1	2
0545195		#50		0.0700	1	2
0545200		#49		0.0730	1	2
0545217		#48		0.0760	1	2
0543615	5/64			0.0781	1	2
0545223		#47		0.0785	1	2
0545230		#46		0.0810	1/8	2 1/8
0545246		#45		0.0820	1/8	2 1/8
0545252		#44		0.0860	1/8	2 1/8
0545269		#43		0.0890	1/4	2 1/4
0545275		#42		0.0935	1/4	2 1/4
0543621	3/32			0.0938	1/4	2 1/4
0545281		#41		0.0960	3/8	2 3/8
0545298		#40		0.0980	3/8	2 3/8
0545303		#39		0.0995	3/8	2 3/8
0545310		#38		0.1015	7/16	2 1/2
0545326		#37		0.1040	7/16	2 1/2
0545332		#36		0.1065	7/16	2 1/2
0543638	7/64			0.1094	1/2	2 5/8
0545349		#35		0.1100	1/2	2 5/8
0545355		#34		0.1110	1/2	2 5/8
0545361		#33		0.1130	1 1/2	2 5/8
0545378		#32		0.1160	1 5/8	2 3/4
0545384		#31		0.1200	1 5/8	2 3/4
0543644	1/8			0.1250	1 5/8	2 3/4
0545390		#30		0.1285	1 5/8	2 3/4
0545406		#29		0.1360	1 3/4	2 7/8
0545412		#28		0.1405	1 3/4	2 7/8
0543650	9/64			0.1406	1 3/4	2 7/8
0545429		#27		0.1440	1 7/8	3
0545435		#26		0.1470	1 7/8	3
0545441		#25		0.1495	1 7/8	3
0545458		#24		0.1520	2	3 1/8
0545464		#23		0.1540	2	3 1/8
0543667	5/32			0.1563	2	3 1/8
0545470		#22		0.1570	2	3 1/8
0545487		#21		0.1590	2 1/8	3 1/4
0545493		#20		0.1610	2 1/8	3 1/4
0545509		#19		0.1660	2 1/8	3 1/4
0545515		#18		0.1695	2 1/8	3 1/4
0545521		#16		0.1700	2 3/16	3 3/8
0543673	11/64			0.1719	2 1/8	3 1/4
0545538		#17		0.1730	2 3/16	3 3/8
0545544		#15		0.1800	2 3/16	3 3/8
0545550		#14		0.1820	2 3/16	3 3/8
0545567		#13		0.1850	2 5/16	3 1/2
0543680	3/16			0.1875	2 5/16	3 1/2
0545573		#12		0.1890	2 5/16	3 1/2
0545580		#11		0.1910	2 5/16	3 1/2
0545596		#10		0.1935	2 7/16	3 5/8
0545601		#9		0.1960	2 7/16	3 5/8
0545618		#8		0.1990	2 7/16	3 5/8
0545624		#7		0.2010	2 7/16	3 5/8
0543696	13/64			0.2031	2 7/16	3 5/8
0545630		#6		0.2040	2 1/2	3 3/4
0545647		#5		0.2055	2 1/2	3 3/4
0545653		#4		0.2090	2 1/2	3 3/4
0545660		#3		0.2130	2 1/2	3 3/4
0543701	7/32			0.2188	2 1/2	3 3/4
0545676		#2		0.2210	2 5/8	3 7/8
0545682		#1		0.2280	2 5/8	3 7/8
0545699			A	0.2340	2 5/8	3 7/8
0543718	15/64			0.2344	2 5/8	3 7/8
0545704			B	0.2380	2 3/4	4
0545710			C	0.2420	2 3/4	4
0545727			D	0.2460	2 3/4	4
0543724	1/4			0.2500	2 3/4	4
0545733			E	0.2500	2 3/4	4
0545740			F	0.2570	2 7/8	4 1/8
0545756			G	0.2610	2 7/8	4 1/8
0543730	17/64			0.2656	2 7/8	4 1/8
0545762			H	0.2660	2 7/8	4 1/8
0545779			I	0.2720	2 7/8	4 1/8
0545785			J	0.2770	2 7/8	4 1/8
0545791			K	0.2810	2 15/16	4 1/4
0543747	9/32			0.2813	2 15/16	4 1/4
0545807			L	0.2900	2 15/16	4 1/4
0545813			M	0.2950	3 1/16	4 3/8
0543753	19/64			0.2969	3 1/16	4 3/8
0545820			N	0.3020	3 1/16	4 3/8
0543760	5/16			0.3125	3 3/16	4 1/2
0545836			O	0.3160	3 3/16	4 1/2
0545842			P	0.3230	3 5/16	4 5/8
0543776	21/64			0.3281	3 5/16	4 5/8
0545859			Q	0.3320	3 7/16	4 3/4
0545865			R	0.3390	3 7/16	4 3/4
0543782	11/32			0.3438	3 7/16	4 3/4
0545871			S	0.3480	3 1/2	4 7/8
0545888			T	0.3580	3 1/2	4 7/8
0543799	23/64			0.3594	3 1/2	4 7/8
0545894			U	0.3680	3 5/8	5
0543804	3/8			0.3750	3 5/8	5
0545900			V	0.3770	3 5/8	5
0545916			W	0.3860	3 3/4	5 1/8
0543810	25/64			0.3906	3 3/4	5 1/8
0545922			X	0.3970	3 3/4	5 1/8
0545939			Y	0.4040	3 7/8	5 1/4
0543827	13/32			0.4063	3 7/8	5 1/4
0545945			Z	0.4130	3 7/8	5 1/4
0543833	27/64			0.4219	3 15/16	5 3/8
0543840	7/16			0.4375	4 1/16	5 1/2
0543856	29/64			0.4531	4 3/16	5 5/8
0543862	15/32			0.4688	4 5/16	5 3/4
0543879	31/64			0.4844	4 3/8	5 7/8
0543885	1/2			0.5000	4 1/2	6
1131784	33/64			0.5156	4 13/16	6 5/8
1131790	17/32			0.5313	4 13/16	6 5/8
1131806	35/64			0.5469	4 13/16	6 5/8
1131812	9/16			0.5625	4 13/16	6 5/8
1131829	37/64			0.5781	4 13/16	6 5/8
1131835	19/32			0.5938	5 3/16	7 1/8
1131841	39/64			0.6094	5 3/16	7 1/8
1131858	5/8			0.6250	5 3/16	7 1/8
1131864	41/64			0.6406	5 3/16	7 1/8
1131870	21/32			0.6563	5 3/16	7 1/8
1131887	43/64			0.6719	5 5/8	7 5/8
1131893	11/16			0.6875	5 5/8	7 5/8

Fractional sizes: Sizes 1/64 to 5/16 in package of 10; 21/64 to 1/2 in package of 5; 33/64 to 11/16 in package of 2
Wire gauge sizes: All sizes in package of 10
Letter sizes: A to N in package of 10; O to Z in package of 5

DRILLS
STRAIGHT SHANK JOBBERS LENGTH DRILLS / FRACTIONAL SIZES / WIRE GAUGE SIZES / LETTER SIZES

List No. 6501 Aircraft NAS907-J

h8 | HSS Co | HELIX N | 135° | X-type | Conical | >5/64

HIGH SPEED STEEL COBALT **Black Oxide**

L6501 7/64" and Smaller Bright Finish.
Manufactured with 135° Split Point.

Fractional: Range 1/64" to 1/2"
Wire: Range #1 to #80
Letter: Range A to Z

EDP	Size			Decimal Equivalent	Flute Length	Overall Length
	Fractional	Wire	Letter			
1056762		#80		0.0135	1/8	3/4
1056779		#79		0.0145	1/8	3/4
1056785	1/64			0.0156	3/16	3/4
1056791		#78		0.0160	3/16	7/8
1056807		#77		0.0180	3/16	7/8
1056813		#76		0.0200	3/16	7/8
1056820		#75		0.0210	1/4	1
1056836		#74		0.0225	1/4	1
1056842		#73		0.0240	5/16	1 1/8
1056865		#72		0.0250	5/16	1 1/8
1056859		#71		0.0260	3/8	1 1/4
1056871		#70		0.0280	3/8	1 1/4
1056888		#69		0.0292	1/2	1 3/8
1056894		#68		0.0310	1/2	1 3/8
1056900	1/32			0.0313	1/2	1 3/8
1056916		#67		0.0320	1/2	1 3/8
1056922		#66		0.0330	1/2	1 3/8
1056939		#65		0.0350	5/8	1 1/2
1056945		#64		0.0360	5/8	1 1/2
1056951		#63		0.0370	5/8	1 1/2
1056968		#62		0.0380	5/8	1 1/2
1053889		#61		0.0390	11/16	1 5/8
1059950		#60		0.0400	11/16	1 5/8
1059967		#59		0.0410	11/16	1 5/8
1059973		#58		0.0420	11/16	1 5/8
1059980		#57		0.0430	3/4	1 3/4
1059996		#56		0.0465	3/4	1 3/4
1053895	3/64			0.0469	3/4	1 3/4
1060000		#55		0.0520	7/8	1 7/8
1060016		#54		0.0550	7/8	1 7/8
1060022		#53		0.0595	7/8	1 7/8
1053900	1/16			0.0625	7/8	1 7/8
1060039		#52		0.0635	7/8	1 7/8
1060045		#51		0.0670	1	2
1060051		#50		0.0700	1	2
1060068		#49		0.0730	1	2
1060074		#48		0.0760	1	2
1053923	5/64			0.0781	1	2
1060080		#47		0.0785	1	2
1060097		#46		0.0810	1 1/8	2 1/8
1060102		#45		0.0820	1 1/8	2 1/8
1060119		#44		0.0860	1 1/8	2 1/8
1060125		#43		0.0890	1 1/4	2 1/4
1060131		#42		0.0935	1 1/4	2 1/4
1053946	3/32			0.0938	1 1/4	2 1/4
1060148		#41		0.0960	1 3/8	2 3/8

EDP	Size			Decimal Equivalent	Flute Length	Overall Length
	Fractional	Wire	Letter			
1060154		#40		0.0980	1 3/8	2 3/8
1060160		#39		0.0995	1 3/8	2 3/8
1060177		#38		0.1015	1 7/16	2 1/2
1060183		#37		0.1040	1 7/16	2 1/2
1060190		#36		0.1065	1 7/16	2 1/2
1053969	7/64			0.1094	1 1/2	2 5/8
1060205		#35		0.1100	1 1/2	2 5/8
1060211		#34		0.1110	1 1/2	2 5/8
1060228		#33		0.1130	1 1/2	2 5/8
1060234		#32		0.1160	1 5/8	2 3/4
1060240		#31		0.1200	1 5/8	2 3/4
1060257	1/8			0.1250	1 5/8	2 3/4
1060263		#30		0.1285	1 5/8	2 3/4
1060270		#29		0.1360	1 3/4	2 7/8
1060286		#28		0.1405	1 3/4	2 7/8
1060292	9/64			0.1406	1 3/4	2 7/8
1060308		#27		0.1440	1 7/8	3
1060314		#26		0.1470	1 7/8	3
1060320		#25		0.1495	1 7/8	3
1060337		#24		0.1520	2	3 1/8
1060343		#23		0.1540	2	3 1/8
1060350	5/32			0.1563	2	3 1/8
1060366		#22		0.1570	2	3 1/8
1060372		#21		0.1590	2 1/8	3 1/4
1060389		#20		0.1610	2 1/8	3 1/4
1060395		#19		0.1660	2 1/8	3 1/4
1060400		#18		0.1695	2 1/8	3 1/4
1060423		#16		0.1700	2 3/16	3 3/8
1060417	11/64			0.1719	2 1/8	3 1/4
1060430		#17		0.1730	2 3/16	3 3/8
1060446		#15		0.1800	2 3/16	3 3/8
1060452		#14		0.1820	2 3/16	3 3/8
1060469		#13		0.1850	2 5/16	3 1/2
1060475	3/16			0.1875	2 5/16	3 1/2
1060481		#12		0.1890	2 5/16	3 1/2
1060498		#11		0.1910	2 5/16	3 1/2
1060503		#10		0.1935	2 7/16	3 5/8
1060510		#9		0.1960	2 7/16	3 5/8
1060526		#8		0.1990	2 7/16	3 5/8
1060532		#7		0.2010	2 7/16	3 5/8
1060549	13/64			0.2031	2 7/16	3 5/8
1060555		#6		0.2040	2 1/2	3 3/4
1060561		#5		0.2055	2 1/2	3 3/4
1060578		#4		0.2090	2 1/2	3 3/4
1060584		#3		0.2130	2 1/2	3 3/4
1060590	7/32			0.2188	2 1/2	3 3/4

EDP	Size			Decimal Equivalent	Flute Length	Overall Length
	Fractional	Wire	Letter			
1060606		#2		0.2210	2 5/8	3 7/8
1060612		#1		0.2280	2 5/8	3 7/8
1054054			A	0.2340	2 5/8	3 7/8
1060629	15/64			0.2344	2 5/8	3 7/8
1054077			B	0.2380	2 3/4	4
1054083			C	0.2420	2 3/4	4
1054090			D	0.2460	2 3/4	4
1060635	1/4			0.2500	2 3/4	4
1054111			E	0.2500	2 3/4	4
1054128			F	0.2570	2 7/8	4 1/8
1054134			G	0.2610	2 7/8	4 1/8
1060641	17/64			0.2656	2 7/8	4 1/8
1054157			H	0.2660	2 7/8	4 1/8
1054163			I	0.2720	2 7/8	4 1/8
1054170			J	0.2770	2 7/8	4 1/8
1054186			K	0.2810	2 15/16	4 1/4
1060658	9/32			0.2813	2 15/16	4 1/4
1054208			L	0.2900	2 15/16	4 1/4
1054214			M	0.2950	3 1/16	4 3/8
1060664	19/64			0.2969	3 1/16	4 3/8
1054237			N	0.3020	3 1/16	4 3/8
1060670	5/16			0.3125	3 3/16	4 1/2
1054250			O	0.3160	3 3/16	4 1/2
1054266			P	0.3230	3 5/16	4 5/8
1060687	21/64			0.3281	3 5/16	4 5/8
1054289			Q	0.3320	3 7/16	4 3/4
1054295			R	0.3390	3 7/16	4 3/4
1060693	11/32			0.3438	3 7/16	4 3/4
1054317			S	0.3480	3 1/2	4 7/8
1054323			T	0.3580	3 1/2	4 7/8
1060709	23/64			0.3594	3 1/2	4 7/8
1054346			U	0.3680	3 5/8	5
1060715	3/8			0.3750	3 5/8	5
1054369			V	0.3770	3 5/8	5
1054375			W	0.3860	3 3/4	5 1/8
1060721	25/64			0.3906	3 3/4	5 1/8
1054398			X	0.3970	3 3/4	5 1/8
1054403			Y	0.4040	3 7/8	5 1/4
1060738	13/32			0.4063	3 7/8	5 1/4
1054426			Z	0.4130	3 7/8	5 1/4
1060744	27/64			0.4219	3 15/16	5 3/8
1060750	7/16			0.4375	4 1/16	5 1/2
1060767	29/64			0.4531	4 3/16	5 5/8
1060773	15/32			0.4688	4 5/16	5 3/4
1060780	31/64			0.4844	4 3/8	5 7/8
1060796	1/2			0.5000	4 1/2	6

Fractional sizes: Sizes 1/64 to 5/16 in package of 10; 21/64 to 1/2 in package of 5; 33/64 to 11/16 in package of 2
Wire gauge sizes: All sizes in package of 10
Letter sizes: A to N in package of 10; O to Z in package of 5

STRAIGHT SHANK JOBBERS LENGTH DRILLS / FRACTIONAL SIZES / WIRE GAUGE SIZES

List No. 501P General Purpose

h8 | G | HSS | N | 118° | S-type >1/2 | Conical

HIGH SPEED STEEL-TIN COATED

Used for high speed drilling. TiN coated.

Fractional: Range 1/16" to 1/2"
Wire: Range #1 to #52

EDP	Size		Decimal Equivalent	Flute Length	Overall Length
	Fractional	Wire			
1047548	1/16		0.0625	7/8	1 7/8
1001039		#52	0.0635	7/8	1 7/8
1001068		#51	0.0670	1	2
1001102		#50	0.0700	1	2
1001125		#49	0.0730	1	2
1001131		#48	0.0760	1	2
1143985	5/64		0.0781	1	2
1001154		#47	0.0785	1	2
1001160		#46	0.0810	1/8	2 1/8
1001177		#45	0.0820	1/8	2 1/8
1001190		#44	0.0860	1/8	2 1/8
1001205		#43	0.0890	1/4	2 1/4
1001211		#42	0.0935	1/4	2 1/4
1226503	3/32		0.0938	1/4	2 1/4
1001234		#41	0.0960	3/8	2 3/8
1001240		#40	0.0980	3/8	2 3/8
1001270		#39	0.0995	3/8	2 3/8
1001308		#38	0.1015	7/16	2 1/2
1001337		#37	0.1040	7/16	2 1/2
1001395		#36	0.1065	7/16	2 1/2
1141626	7/64		0.1094	1/2	2 5/8
1001475		#35	0.1100	1/2	2 5/8
1001481		#34	0.1110	1/2	2 5/8
1001498		#33	0.1130	1 1/2	2 5/8
1001503		#32	0.1160	1 5/8	2 3/4
1001510		#31	0.1200	1 5/8	2 3/4
1144006	1/8		0.1250	1 5/8	2 3/4
1001532		#30	0.1285	1 5/8	2 3/4
1001549		#29	0.1360	1 3/4	2 7/8
1001584		#28	0.1405	1 3/4	2 7/8
1143991	9/64		0.1406	1 3/4	2 7/8
1001606		#27	0.1440	1 7/8	3
1001612		#26	0.1470	1 7/8	3
1001635		#25	0.1495	1 7/8	3
1001693		#24	0.1520	2	3 1/8
1001744		#23	0.1540	2	3 1/8
1141598	5/32		0.1563	2	3 1/8
1001933		#22	0.1570	2	3 1/8
1001956		#21	0.1590	2 1/8	3 1/4
1002012		#20	0.1610	2 1/8	3 1/4

EDP	Size		Decimal Equivalent	Flute Length	Overall Length
	Fractional	Wire			
1002167		#19	0.1660	2 1/8	3 1/4
1002173		#18	0.1695	2 1/8	3 1/4
1002247		#16	0.1700	2 3/16	3 3/8
1226510	11/64		0.1719	2 1/8	3 1/4
1002260		#17	0.1730	2 3/16	3 3/8
1002310		#15	0.1800	2 3/16	3 3/8
1002385		#14	0.1820	2 3/16	3 3/8
1002420		#13	0.1850	2 5/16	3 1/2
1226526	3/16		0.1875	2 5/16	3 1/2
1002734		#12	0.1890	2 5/16	3 1/2
1002770		#11	0.1910	2 5/16	3 1/2
1002814		#10	0.1935	2 7/16	3 5/8
1002837		#9	0.1960	2 7/16	3 5/8
1002889		#8	0.1990	2 7/16	3 5/8
1002952		#7	0.2010	2 7/16	3 5/8
1174858	13/64		0.2031	2 7/16	3 5/8
1002998		#6	0.2040	2 1/2	3 3/4
1003186		#5	0.2055	2 1/2	3 3/4
1003192		#4	0.2090	2 1/2	3 3/4
1003208		#3	0.2130	2 1/2	3 3/4
1226532	7/32		0.2188	2 1/2	3 3/4
1003237		#2	0.2210	2 5/8	3 7/8
1003300		#1	0.2280	2 5/8	3 7/8
1141632	15/64		0.2344	2 5/8	3 7/8
1226549	1/4		0.2500	2 3/4	4
1141603	17/64		0.2656	2 7/8	4 1/8
1144029	9/32		0.2813	2 15/16	4 1/4
1141610	19/64		0.2969	3 1/16	4 3/8
1141649	5/16		0.3125	3 3/16	4 1/2
1086513	21/64		0.3281	3 5/16	4 5/8
1086520	11/32		0.3438	3 7/16	4 3/4
1086536	23/64		0.3594	3 1/2	4 7/8
1086542	3/8		0.3750	3 5/8	5
1086559	25/64		0.3906	3 3/4	5 1/8
1086565	13/32		0.4063	3 7/8	5 1/4
1086571	27/64		0.4219	3 15/16	5 3/8
1086588	7/16		0.4375	4 1/16	5 1/2
1086594	29/64		0.4531	4 3/16	5 5/8
1086600	15/32		0.4688	4 5/16	5 3/4
1086616	31/64		0.4844	4 3/8	5 7/8
1086622	1/2		0.5000	4 1/2	6

Fractional sizes: Sizes 1/64 to 5/16 in package of 10; 21/64 to 1/2 in package of 5; 33/64 to 11/16 in package of 2
Wire gauge sizes: All sizes in package of 10

STRAIGHT SHANK JOBBERS LENGTH DRILLS / FRACTIONAL SIZES / WIRE GAUGE SIZES

List No. 517P Parabolic

h8 G HSS HELIX H 135° XH-type >1/2

HIGH SPEED STEEL-TIN COATED

Used for high speed drilling. TiN coated.

Fractional: Range 1/16" to 1/2"
Wire: Range #1 to #52

EDP	Size		Decimal Equivalent	Flute Length	Overall Length
	Fractional	Wire			
1019026	1/16		0.0625	7/8	1 7/8
1019055		#52	0.0635	7/8	1 7/8
1019158		#51	0.0670	1	2
1019318		#50	0.0700	1	2
1019330		#49	0.0730	1	2
1019382		#48	0.0760	1	2
1019399	5/64		0.0781	1	2
1019427		#47	0.0785	1	2
1019440		#46	0.0810	1 1/8	2 1/8
1019462		#45	0.0820	1 1/8	2 1/8
1019559		#44	0.0860	1 1/8	2 1/8
1019645		#43	0.0890	1 1/4	2 1/4
1019748		#42	0.0935	1 1/4	2 1/4
1019783	3/32		0.0938	1 1/4	2 1/4
1019840		#41	0.0960	1 3/8	2 3/8
1019870		#40	0.0980	1 3/8	2 3/8
1020015		#39	0.0995	1 3/8	2 3/8
1020118		#38	0.1015	1 7/16	2 1/2
1020153		#37	0.1040	1 7/16	2 1/2
1020233		#36	0.1065	1 7/16	2 1/2
1020279	7/64		0.1094	1 1/2	2 5/8
1020394		#35	0.1100	1 1/2	2 5/8
1020451		#34	0.1110	1 1/2	2 5/8
1020474		#33	0.1130	1 1/2	2 5/8
1020497		#32	0.1160	1 5/8	2 3/4
1020519		#31	0.1200	1 5/8	2 3/4
1020531	1/8		0.1250	1 5/8	2 3/4
1020554		#30	0.1285	1 5/8	2 3/4
1020577		#29	0.1360	1 3/4	2 7/8
1020590		#28	0.1405	1 3/4	2 7/8
1020605	9/64		0.1406	1 3/4	2 7/8
1020628		#27	0.1440	1 7/8	3
1020640		#26	0.1470	1 7/8	3
1020686		#25	0.1495	1 7/8	3
1020714		#24	0.1520	2	3 1/8
1020737		#23	0.1540	2	3 1/8
1020750	5/32		0.1563	2	3 1/8
1020817		#22	0.1570	2	3 1/8
1020852		#21	0.1590	2 1/8	3 1/4
1020881		#20	0.1610	2 1/8	3 1/4

EDP	Size		Decimal Equivalent	Flute Length	Overall Length
	Fractional	Wire			
1020932		#19	0.1660	2 1/8	3 1/4
1020990		#18	0.1695	2 1/8	3 1/4
1021057		#16	0.1700	2 3/16	3 3/8
1021028	11/64		0.1719	2 1/8	3 1/4
1021166		#17	0.1730	2 3/16	3 3/8
1021217		#15	0.1800	2 3/16	3 3/8
1021246		#14	0.1820	2 3/16	3 3/8
1021275		#13	0.1850	2 5/16	3 1/2
1021281	3/16		0.1875	2 5/16	3 1/2
1021310		#12	0.1890	2 5/16	3 1/2
1021384		#11	0.1910	2 5/16	3 1/2
1021515		#10	0.1935	2 7/16	3 5/8
1021544		#9	0.1960	2 7/16	3 5/8
1021596		#8	0.1990	2 7/16	3 5/8
1021630		#7	0.2010	2 7/16	3 5/8
1021647	13/64		0.2031	2 7/16	3 5/8
1021660		#6	0.2040	2 1/2	3 3/4
1021682		#5	0.2055	2 1/2	3 3/4
1021704		#4	0.2090	2 1/2	3 3/4
1021727		#3	0.2130	2 1/2	3 3/4
1021733	7/32		0.2188	2 1/2	3 3/4
1021779		#2	0.2210	2 5/8	3 7/8
1021820		#1	0.2280	2 5/8	3 7/8
1021836	15/64		0.2344	2 5/8	3 7/8
1021842	1/4		0.2500	2 3/4	4
1021871	17/64		0.2656	2 7/8	4 1/8
1021888	9/32		0.2813	2 15/16	4 1/4
1021894	19/64		0.2969	3 1/16	4 3/8
1021900	5/16		0.3125	3 3/16	4 1/2
1021922	21/64		0.3281	3 5/16	4 5/8
1021939	11/32		0.3438	3 7/16	4 3/4
1021951	23/64		0.3594	3 1/2	4 7/8
1021968	3/8		0.3750	3 5/8	5
1021974	25/64		0.3906	3 3/4	5 1/8
1021997	13/32		0.4063	3 7/8	5 1/4
1022001	27/64		0.4219	3 15/16	5 3/8
1022018	7/16		0.4375	4 1/16	5 1/2
1022024	29/64		0.4531	4 3/16	5 5/8
1022030	15/32		0.4688	4 5/16	5 3/4
1022047	31/64		0.4844	4 3/8	5 7/8
1022053	1/2		0.5000	4 1/2	6

Fractional sizes: Sizes 1/64 to 5/16 in package of 10; 21/64 to 1/2 in package of 5; 33/64 to 11/16 in package of 2
Wire gauge sizes: All sizes in package of 10

SCREW MACHINE LENGTH / FRACTIONAL SIZES / WIRE GAUGE SIZES / LETTER SIZES

List No. 561 General Purpose

h8 | HSS | HELIX N | 118° | S-type | Conical

>1/2

HIGH SPEED STEEL **Bright Finish**

Manufactured with short overall and flute length.

Fractional: Range 3/64" to 2"
Wire: Range #1 to #60
Letter Range: A to Z

EDP	Size			Decimal Equivalent	Flute Length	Overall Length	Shank Dia.
	Fractional	Wire	Letter				
1061218		#60		0.0400	1/2	1 3/8	#60
1061224		#59		0.0410	1/2	1 3/8	#59
1061230		#58		0.0420	1/2	1 3/8	#58
1061247		#57		0.0430	1/2	1 3/8	#57
1061253		#56		0.0465	1/2	1 3/8	#56
1265486	3/64			0.0469	1/2	1 3/8	3/64
1061276		#55		0.0520	5/8	1 5/8	#55
1061282		#54		0.0550	5/8	1 5/8	#54
1061299		#53		0.0595	5/8	1 5/8	#53
1265492	1/16			0.0625	5/8	1 5/8	1/16
1061310		#52		0.0635	11/16	1 11/16	#52
1061327		#51		0.0670	11/16	1 11/16	#51
1061333		#50		0.0700	11/16	1 11/16	#50
1061340		#49		0.0730	11/16	1 11/16	#49
1061356		#48		0.0760	11/16	1 11/16	#48
1265508	5/64			0.0781	11/16	1 11/16	5/64
1061379		#47		0.0785	3/4	1 3/4	#47
1061385		#46		0.0810	3/4	1 3/4	#46
1061391		#45		0.0820	3/4	1 3/4	#45
1061407		#44		0.0860	3/4	1 3/4	#44
1061413		#43		0.0890	3/4	1 3/4	#43
1061420		#42		0.0935	3/4	1 3/4	#42
1265514	3/32			0.0938	3/4	1 3/4	3/32
1061442		#41		0.0960	13/16	1 13/16	#41
1061459		#40		0.0980	13/16	1 13/16	#40
1061465		#39		0.0995	13/16	1 13/16	#39
1061471		#38		0.1015	13/16	1 13/16	#38
1061488		#37		0.1040	13/16	1 13/16	#37
1061494		#36		0.1065	13/16	1 13/16	#36
1265520	7/64			0.1094	13/16	1 13/16	7/64
1061516		#35		0.1100	7/8	1 7/8	#35
1061522		#34		0.1110	7/8	1 7/8	#34
1061539		#33		0.1130	7/8	1 7/8	#33
1061545		#32		0.1160	7/8	1 7/8	#32
1061551		#31		0.1200	7/8	1 7/8	#31
1265537	1/8			0.1250	7/8	1 7/8	1/8
1061568		#30		0.1285	15/16	1 15/16	#30
1061574		#29		0.1360	15/16	1 15/16	#29
1061580		#28		0.1405	15/16	1 15/16	#28
1265543	9/64			0.1406	15/16	1 15/16	9/64
1061602		#27		0.1440	1	2 1/16	#27
1061619		#26		0.1470	1	2 1/16	#26
1061625		#25		0.1495	1	2 1/16	#25
1061631		#24		0.1520	1	2 1/16	#24
1061648		#23		0.1540	1	2 1/16	#23
1265550	5/32			0.1563	1	2 1/16	5/32
1061660		#22		0.1570	1 1/16	2 1/8	#22
1061677		#21		0.1590	1 1/16	2 1/8	#21
1061683		#20		0.1610	1 1/16	2 1/8	#20
1061690		#19		0.1660	1 1/16	2 1/8	#19
1061705		#18		0.1695	1 1/16	2 1/8	#18
1265566	11/64			0.1719	1 1/16	2 1/8	11/64
1061728		#17		0.1730	1 1/8	2 3/16	#17
1061734		#16		0.1770	1 1/8	2 3/16	#16
1061740		#15		0.1800	1 1/8	2 3/16	#15
1061757		#14		0.1820	1 1/8	2 3/16	#14
1061763		#13		0.1850	1 1/8	2 3/16	#13
1265572	3/16			0.1875	1 1/8	2 3/16	3/16
1061786		#12		0.1890	1 3/16	2 1/4	#12

EDP	Size			Decimal Equivalent	Flute Length	Overall Length	Shank Dia.
	Fractional	Wire	Letter				
1004080		#11		0.1910	1 3/16	2 1/4	#11
1061792		#10		0.1935	1 3/16	2 1/4	#10
1061808		#9		0.1960	1 3/16	2 1/4	#9
1061814		#8		0.1990	1 3/16	2 1/4	#8
1061820		#7		0.2010	1 3/16	2 1/4	#7
1265589	13/64			0.2031	1 3/16	2 1/4	13/64
1061843		#6		0.2040	1 1/4	2 3/8	#6
1061850		#5		0.2055	1 1/4	2 3/8	#5
1061866		#4		0.2090	1 1/4	2 3/8	#4
1061872		#3		0.2130	1 1/4	2 3/8	#3
1265595	7/32			0.2188	1 1/4	2 3/8	7/32
1061895		#2		0.2210	1 5/16	2 7/16	#2
1061900		#1		0.2285	1 5/16	2 7/16	#1
1061917			A	0.2340	1 5/16	2 7/16	A
1265600	15/64			0.2344	1 5/16	2 7/16	15/64
1061930			B	0.2380	1 3/8	2 1/2	B
1061946			C	0.2420	1 3/8	2 1/2	C
1061952			D	0.2460	1 3/8	2 1/2	D
1265617	1/4			0.2500	1 3/8	2 1/2	1/4
1061975			E	0.2500	1 3/8	2 1/2	E
1061981			F	0.2570	1 7/16	2 5/8	F
1061998			G	0.2610	1 7/16	2 5/8	G
1265623	17/64			0.2656	1 7/16	2 5/8	17/64
1062019			H	0.2660	1 1/2	2 11/16	H
1062025			I	0.2720	1 1/2	2 11/16	I
1062031			J	0.2770	1 1/2	2 11/16	J
1062048			K	0.2810	1 1/2	2 11/16	K
1265630	9/32			0.2813	1 1/2	2 11/16	9/32
1062060			L	0.2900	1 9/16	2 3/4	L
1062077			M	0.2950	1 9/16	2 3/4	M
1265646	19/64			0.2969	1 9/16	2 3/4	19/64
1062090			N	0.3020	1 5/8	2 13/16	N
1265652	5/16			0.3125	1 5/8	2 13/16	5/16
1062111			O	0.3160	1 11/16	2 15/16	O
1062128			P	0.3230	1 11/16	2 15/16	P
1265669	21/64			0.3281	1 11/16	2 15/16	21/64
1062140			Q	0.3320	1 11/16	3	Q
1062157			R	0.3390	1 11/16	3	R
1265675	11/32			0.3438	1 11/16	3	11/32
1062170			S	0.3480	1 3/4	3 1/16	S
1062186			T	0.3580	1 3/4	3 1/16	T
1265681	23/64			0.3594	1 3/4	3 1/16	23/64
1062208			U	0.3680	1 13/16	3 1/8	U
1265698	3/8			0.3750	1 13/16	3 1/8	3/8
1062220			V	0.3770	1 7/8	3 1/4	V
1062237			W	0.3860	1 7/8	3 1/4	W
1265703	25/64			0.3906	1 7/8	3 1/4	25/64
1062250			X	0.3970	1 15/16	3 5/16	X
1062266			Y	0.4040	1 15/16	3 5/16	Y
1265710	13/32			0.4063	1 5/16	3 5/16	13/32
1062289			Z	0.4130	2	3 3/8	Z
1265726	27/64			0.4219	2	3 3/8	27/64
1265732	7/16			0.4375	2 1/16	3 7/16	7/16

EDP	Size			Decimal Equivalent	Flute Length	Overall Length	Shank Dia.
	Fractional	Wire	Letter				
1265749	29/64			0.4531	2 1/8	3 9/16	29/64
1265755	15/32			0.4688	2 1/8	3 5/8	15/32
1265761	31/64			0.4844	2 3/16	3 11/16	31/64
1265778	1/2			0.5000	2 1/4	3 3/4	1/2
1265784	33/64			0.5156	2 3/8	3 7/8	33/64
1265790	17/32			0.5313	2 3/8	3 7/8	17/32
1265806	35/64			0.5469	2 1/2	4	35/64
1265812	9/16			0.5625	2 1/2	4	9/16
1265829	37/64			0.5781	2 5/8	4 1/8	37/64
1265835	19/32			0.5938	2 5/8	4 1/8	19/32
1265841	39/64			0.6094	2 3/4	4 1/4	39/64
1265858	5/8			0.6250	2 3/4	4 1/4	5/8
1265864	41/64			0.6406	2 7/8	4 1/2	41/64
1265870	21/32			0.6563	2 7/8	4 1/2	21/32
1265887	43/64			0.6719	2 7/8	4 5/8	43/64
1265893	11/16			0.6875	2 7/8	4 5/8	11/16
1265909	45/64			0.7031	3	4 3/4	45/64
1265915	23/32			0.7188	3	4 3/4	23/32
1265921	47/64			0.7344	3 1/8	5	47/64
1265938	3/4			0.7500	3 1/8	5	3/4
1265944	49/64			0.7656	3 1/4	5 1/8	49/64
1265950	25/32			0.7813	3 1/4	5 1/8	25/32
1265967	51/64			0.7969	3 3/8	5 1/4	51/64
1265973	13/16			0.8125	3 3/8	5 1/4	13/16
1265980	53/64			0.8281	3 1/2	5 3/8	53/64
1265996	27/32			0.8438	3 1/2	5 3/8	27/32
1266000	55/64			0.8594	3 1/2	5 1/2	55/64
1266017	7/8			0.8750	3 1/2	5 1/2	7/8
1266023	57/64			0.8906	3 5/8	5 5/8	57/64
1266030	29/32			0.9063	3 5/8	5 5/8	29/32
1266046	59/64			0.9219	3 3/4	5 3/4	59/64
1266052	15/16			0.9375	3 3/4	5 3/4	15/16
1266069	61/64			0.9531	3 7/8	5 7/8	61/64
1266075	31/32			0.9688	3 7/8	5 7/8	31/32
1266081	63/64			0.9844	4	6	63/64
1266098	1			1.0000	4	6	1
1266103	1 1/16			1.0625	4	6 1/4	1
1266110	1 1/8			1.1250	4	6 3/8	1
1266126	1 3/16			1.1875	4 1/4	6 5/8	1
1266132	1 1/4			1.2500	4 3/8	6 3/4	1
1266149	1 5/16			1.3125	4 3/8	7	1 1/4
1266155	1 3/8			1.3750	4 1/2	7 1/8	1 1/4
1266161	1 7/16			1.4375	4 3/4	7 3/8	1 1/4
1266178	1 1/2			1.5000	4 7/8	7 1/2	1 1/4
1266184	1 9/16			1.5625	4 7/8	7 3/4	1 1/2
1266190	1 5/8			1.6250	4 7/8	7 3/4	1 1/2
1266206	1 11/16			1.6875	5 1/8	8	1 1/2
1266212	1 3/4			1.7500	5 1/8	8	1 1/2
1266229	1 13/16			1.8125	5 3/8	8 1/4	1 1/2
1266235	1 7/8			1.8750	5 5/8	8 1/4	1 1/2
1266241	1 15/16			1.9375	5 5/8	8 1/2	1 1/2
1266258	2			2.0000	5 5/8	8 1/2	1 1/2

Fractional sizes: Sizes 3/64 to 5/16 in package of 10; 21/64 to 1/2 in package of 5
Wire gauge sizes: All sizes in package of 10
Letter sizes: A to N in package of 10; O to Z in package of 5

SCREW MACHINE LENGTH / FRACTIONAL SIZES / WIRE GAUGE SIZES

List No. 561P General Purpose

h8 | G | HSS | HELIX N | 118° | X-type >5/64 | Conical

HIGH SPEED STEEL-TIN COATED

Manufactured with short overall and flute length with TiN coated.

Fractional: Range 1/16" to 1/2"
Wire: Range #1 to #52

EDP	Size			Decimal Equivalent	Flute Length	Overall Length	Shank Dia.
	Fractional	Wire	Letter				
1087629	1/16			0.0625	5/8	1 5/8	1/16
1019049		#52		0.0635	11/16	1 11/16	#52
1019112		#51		0.0670	11/16	1 11/16	#51
1019215		#50		0.0700	11/16	1 11/16	#50
1019324		#49		0.0730	11/16	1 11/16	#49
1019347		#48		0.0760	11/16	1 11/16	#48
1087635	5/64			0.0781	11/16	1 11/16	5/64
1019410		#47		0.0785	3/4	1 3/4	#47
1019433		#46		0.0810	3/4	1 3/4	#46
1019456		#45		0.0820	3/4	1 3/4	#45
1019520		#44		0.0860	3/4	1 3/4	#44
1019594		#43		0.0890	3/4	1 3/4	#43
1019651		#42		0.0935	3/4	1 3/4	#42
1087641	3/32			0.0938	3/4	1 3/4	3/32
1019805		#41		0.0960	13/16	1 13/16	#41
1019863		#40		0.0980	13/16	1 13/16	#40
1019892		#39		0.0995	13/16	1 13/16	#39
1020096		#38		0.1015	13/16	1 13/16	#38
1020124		#37		0.1040	13/16	1 13/16	#37
1020199		#36		0.1065	13/16	1 13/16	#36
1087658	7/64			0.1094	13/16	1 13/16	7/64
1020371		#35		0.1100	7/8	1 7/8	#35
1020416		#34		0.1110	7/8	1 7/8	#34
1020468		#33		0.1130	7/8	1 7/8	#33
1020480		#32		0.1160	7/8	1 7/8	#32
1020502		#31		0.1200	7/8	1 7/8	#31
1087664	1/8			0.1250	7/8	1 7/8	1/8
1020548		#30		0.1285	15/16	1 15/16	#30
1020560		#29		0.1360	15/16	1 15/16	#29
1020583		#28		0.1405	15/16	1 15/16	#28
1087670	9/64			0.1406	15/16	1 15/16	9/64
1020611		#27		0.1440	1	2 1/16	#27
1020634		#26		0.1470	1	2 1/16	#26
1020663		#25		0.1495	1	2 1/16	#25
1020708		#24		0.1520	1	2 1/16	#24
1020720		#23		0.1540	1	2 1/16	#23
1087687	5/32			0.1563	1	2 1/8	5/32
1020795		#22		0.1570	1.0625	2 1/8	#22
1020846		#21		0.1590	1.0625	2 1/8	#21
1020869		#20		0.1610	1.0625	2 1/8	#20
1020898		#19		0.1660	1.0625	2 1/8	#19

EDP	Size			Decimal Equivalent	Flute Length	Overall Length	Shank Dia.
	Fractional	Wire	Letter				
1020961		#18		0.1695	1.0625	2 1/8	#18
1087693	11/64			0.1719	1.0625	2 1/8	11/64
1021034		#17		0.1730	1.125	2 3/16	#17
1021092		#16		0.1770	1.125	2 3/16	#16
1021200		#15		0.1800	1.125	2 3/16	#15
1021230		#14		0.1820	1.125	2 3/16	#14
1021252		#13		0.1850	1.125	2 3/16	#13
1087709	3/16			0.1875	1.125	2 3/16	3/16
1021303		#12		0.1890	1.1875	2 1/4	#12
1021355		#11		0.1910	1 3/16	2 1/4	#11
1021493		#10		0.1935	1 3/16	2 1/4	#10
1021521		#9		0.1960	1 3/16	2 1/4	#9
1021567		#8		0.1990	1 3/16	2 1/4	#8
1021601		#7		0.2010	1 3/16	2 1/4	#7
1087715	13/64			0.2031	1 3/16	2 1/4	13/64
1021653		#6		0.2040	1 1/4	2 3/8	#6
1021676		#5		0.2055	1 1/4	2 3/8	#5
1021699		#4		0.2090	1 1/4	2 3/8	#4
1021710		#3		0.2130	1 1/4	2 3/8	#3
1087721	7/32			0.2188	1 1/4	2 3/8	7/32
1021762		#2		0.2210	1 5/16	2 7/16	#2
1021791		#1		0.2285	1 5/16	2 7/16	#1
1087738	15/64			0.2344	1 5/16	2 7/16	15/64
1087744	1/4			0.2500	1 3/8	2 1/2	1/4
1087750	17/64			0.2656	1 7/16	2 5/8	17/64
1087767	9/32			0.2813	1 1/2	2 11/16	9/32
1087773	19/64			0.2969	1 9/16	2 3/4	19/64
1087780	5/16			0.3125	1 5/8	2 13/16	5/16
1087796	21/64			0.3281	1 11/16	2 15/16	21/64
1087801	11/32			0.3438	1 11/16	3	11/32
1087818	23/64			0.3594	1 3/4	3 1/16	23/64
1087824	3/8			0.3750	1 13/16	3 1/8	3/8
1087830	25/64			0.3906	1 7/8	3 1/4	25/64
1087847	13/32			0.4063	1 5/16	3 5/16	13/32
1087853	27/64			0.4219	2	3 3/8	27/64
1087860	7/16			0.4375	2 1/16	3 7/16	7/16
1087876	29/64			0.4531	2 1/8	3 9/16	29/64
1087882	15/32			0.4688	2 1/8	3 5/8	15/32
1087899	31/64			0.4844	2 3/16	3 11/16	31/64
1087904	1/2			0.5000	2 1/4	3 3/4	1 /2

Fractional sizes: Sizes 3/64 to 5/16 in package of 10; 21/64 to 1/2 in package of 5
Wire gauge sizes: All sizes in package of 10

List No. 563 Aircraft NAS907-C

h8 | HSS | HELIX N | 135° | S-type | Conical

>5/64

HIGH SPEED STEEL **Black Oxide**

Standard NAS907 Type C. Manufactured with short overall and flute length.

Fractional Range: 3/64" to 1/2"
Range: #1 to #52
Letter: Range A to Z

EDP	Size			Decimal Equivalent	Flute Length	Overall Length	Shank Dia.
	Fractional	Wire	Letter				
1050626	3/64			0.0469	1/2	1 3/8	3/64
1050632	1/16			0.0625	5/8	1 5/8	1/16
1050649		#52		0.0635	11/16	1 11/16	#52
1050655		#51		0.0670	11/16	1 11/16	#51
1050661		#50		0.0700	11/16	1 11/16	#50
1050678		#49		0.0730	11/16	1 11/16	#49
1050684		#48		0.0760	11/16	1 11/16	#48
1050690	5/64			0.0781	11/16	1 11/16	5/64
1050706		#47		0.0785	3/4	1 3/4	#47
1050712		#46		0.0810	3/4	1 3/4	#46
1050729		#45		0.0820	3/4	1 3/4	#45
1050735		#44		0.0860	3/4	1 3/4	#44
1050741		#43		0.0890	3/4	1 3/4	#43
1050758		#42		0.0935	3/4	1 3/4	#42
1050764	3/32			0.0938	3/4	1 3/4	3/32
1050770		#41		0.0960	13/16	1 13/16	#41
1050787		#40		0.0980	13/16	1 13/16	#40
1050793		#39		0.0995	13/16	1 13/16	#39
1050809		#38		0.1015	13/16	1 13/16	#38
1050815		#37		0.1040	13/16	1 13/16	#37
1050821		#36		0.1065	13/16	1 13/16	#36
1050838	7/64			0.1094	13/16	1 13/16	7/64
1050844		#35		0.1100	7/8	1 7/8	#35
1050850		#34		0.1110	7/8	1 7/8	#34
1050867		#33		0.1130	7/8	1 7/8	#33
1050873		#32		0.1160	7/8	1 7/8	#32
1050880		#31		0.1200	7/8	1 7/8	#31
1050896	1/8			0.1250	7/8	1 7/8	1/8
1050901		#30		0.1285	15/16	1 15/16	#30
1059812		#29		0.1360	15/16	1 15/16	#29
1050918		#28		0.1405	15/16	1 15/16	#28
1050924	9/64			0.1406	15/16	1 15/16	9/64
1050930		#27		0.1440	1	2 1/16	#27
1050947		#26		0.1470	1	2 1/16	#26
1050953		#25		0.1495	1	2 1/16	#25
1050960		#24		0.1520	1	2 1/16	#24
1050976		#23		0.1540	1	2 1/16	#23

EDP	Size			Decimal Equivalent	Flute Length	Overall Length	Shank Dia.
	Fractional	Wire	Letter				
1059829	5/32			0.1563	1	2 1/8	5/32
1050982		#22		0.1570	1.0625	2 1/8	#22
1050999		#21		0.1590	1.0625	2 1/8	#21
1059835		#20		0.1610	1.0625	2 1/8	#20
1051003		#19		0.1660	1.0625	2 1/8	#19
1051010		#18		0.1695	1.0625	2 1/8	#18
1059841	11/64			0.1719	1.0625	2 1/8	11/64
1051026		#17		0.1730	1.125	2 3/16	#17
1051032		#16		0.1770	1.125	2 3/16	#16
1051049		#15		0.1800	1.125	2 3/16	#15
1051055		#14		0.1820	1.125	2 3/16	#14
1051061		#13		0.1850	1.125	2 3/16	#13
1051078	3/16			0.1875	1.125	2 3/16	3/16
1051084		#12		0.1890	1.1875	2 1/4	#12
1051090		#11		0.1910	1 3/16	2 1/4	#11
1051106		#10		0.1935	1 3/16	2 1/4	#10
1051112		#9		0.1960	1 3/16	2 1/4	#9
1051129		#8		0.1990	1 3/16	2 1/4	#8
1051135		#7		0.2010	1 3/16	2 1/4	#7
1059858	13/64			0.2031	1 3/16	2 1/4	13/64
1051141		#6		0.2040	1 1/4	2 3/8	#6
1051158		#5		0.2055	1 1/4	2 3/8	#5
1051164		#4		0.2090	1 1/4	2 3/8	#4
1051170		#3		0.2130	1 1/4	2 3/8	#3
1051187	7/32			0.2188	1 1/4	2 3/8	7/32
1051193		#2		0.2210	1 5/16	2 7/16	#2
1051209		#1		0.2285	1 5/16	2 7/16	#1
1051215			A	0.2340	1 5/16	2 7/16	A
1051221	15/64			0.2344	1 5/16	2 7/16	15/64
1051238			B	0.2380	1 3/8	2 1/2	B
1051244			C	0.2420	1 3/8	2 1/2	C
1051250			D	0.2460	1 3/8	2 1/2	D
1051267	1/4			0.2500	1 3/8	2 1/2	1/4
1051273			E	0.2500	1 3/8	2 1/2	E
1051280			F	0.2570	1 7/16	2 5/8	F
1051296			G	0.2610	1 7/16	2 5/8	G
1051301	17/64			0.2656	1 7/16	2 5/8	17/64

EDP	Size			Decimal Equivalent	Flute Length	Overall Length	Shank Dia.
	Fractional	Wire	Letter				
1059864			H	0.2660	1 1/2	2 11/16	H
1051318			I	0.2720	1 1/2	2 11/16	I
1051324			J	0.2770	1 1/2	2 11/16	J
1051330			K	0.2810	1 1/2	2 11/16	K
1051347	9/32			0.2813	1 1/2	2 11/16	9/32
1051353			L	0.2900	1 9/16	2 3/4	L
1051360			M	0.2950	1 9/16	2 3/4	M
1051376	19/64			0.2969	1 9/16	2 3/4	19/64
1051382			N	0.3020	1 5/8	2 13/16	N
1051399	5/16			0.3125	1 5/8	2 13/16	5/16
1051404			O	0.3160	1 11/16	2 15/16	O
1051410			P	0.3230	1 11/16	2 15/16	P
1051427	21/64			0.3281	1 11/16	2 15/16	21/64
1051433			Q	0.3320	1 11/16	3	Q
1051440			R	0.3390	1 11/16	3	R
1051456	11/32			0.3438	1 11/16	3	11/32
1051462			S	0.3480	1 3/4	3 1/16	S

EDP	Size			Decimal Equivalent	Flute Length	Overall Length	Shank Dia.
	Fractional	Wire	Letter				
1051479			T	0.3580	1 3/4	3 1/16	T
1051485	23/64			0.3594	1 3/4	3 1/16	23/64
1051491			U	0.3680	1 13/16	3 1/8	U
1059870	3/8			0.3750	1 13/16	3 1/8	3/8
1051507			V	0.3770	1 7/8	3 1/4	V
1051513			W	0.3860	1 7/8	3 1/4	W
1051520	25/64			0.3906	1 7/8	3 1/4	25/64
1051536			X	0.3970	1 15/16	3 5/16	X
1051542			Y	0.4040	1 15/16	3 5/16	Y
1051559	13/32			0.4063	1 5/16	3 5/16	13/32
1051565			Z	0.4130	2	3 3/8	Z
1051571	27/64			0.4219	2	3 3/8	27/64
1051588	7/16			0.4375	2 1/16	3 7/16	7/16
1051594	29/64			0.4531	2 1/8	3 9/16	29/64
1051600	15/32			0.4688	2 1/8	3 5/8	15/32
1051616	31/64			0.4844	2 3/16	3 11/16	31/64
1051622	1/2			0.5000	2 1/4	3 3/4	1/2

Fractional sizes: Sizes 3/64 to 5/16 in package of 10; 21/64 to 1/2 in package of 5
Wire gauge sizes: All sizes in package of 10
Letter sizes: A to N in package of 10; O to Z in package of 5

SCREW MACHINE LENGTH / FRACTIONAL SIZES / WIRE GAUGE SIZES / LETTER SIZES

List No. 6563 Aircraft NAS907-C

h8 | HSS Co | HELIX N | 135° | X-type | Conical

>5/64
>#53

HIGH SPEED STEEL COBALT

Standard NAS907 Type C. Manufactured with short overall and flute length.

Fractional: Bright Finish 3/64 to 7/64
Black Oxide 1/8 to 1/2
Wire: Bright Finish #32 to #52
Black Oxide #1 to #31
Letter: Range A to Z

EDP	Size			Decimal Equivalent	Flute Length	Overall Length	Shank Dia.
	Fractional	Wire	Letter				
1080704	3/64			0.0469	1/2	1 3/8	3/64
1080710	1/16			0.0625	5/8	1 5/8	1/16
1081259		#52		0.0635	11/16	1 11/16	#52
1081265		#51		0.0670	11/16	1 11/16	#51
1081271		#50		0.0700	11/16	1 11/16	#50
1081288		#49		0.0730	11/16	1 11/16	#49
1081294		#48		0.0760	11/16	1 11/16	#48
1080727	5/64			0.0781	11/16	1 11/16	5/64
1081300		#47		0.0785	3/4	1 3/4	#47
1081316		#46		0.0810	3/4	1 3/4	#46
1081322		#45		0.0820	3/4	1 3/4	#45
1081339		#44		0.0860	3/4	1 3/4	#44
1081345		#43		0.0890	3/4	1 3/4	#43
1081351		#42		0.0935	3/4	1 3/4	#42
1080733	3/32			0.0938	3/4	1 3/4	3/32
1081368		#41		0.0960	13/16	1 13/16	#41
1081374		#40		0.0980	13/16	1 13/16	#40
1081380		#39		0.0995	13/16	1 13/16	#39
1081397		#38		0.1015	13/16	1 13/16	#38
1081402		#37		0.1040	13/16	1 13/16	#37
1081419		#36		0.1065	13/16	1 13/16	#36
1080740	7/64			0.1094	13/16	1 13/16	7/64
1081425		#35		0.1100	7/8	1 7/8	#35
1081431		#34		0.1110	7/8	1 7/8	#34
1081448		#33		0.1130	7/8	1 7/8	#33
1081454		#32		0.1160	7/8	1 7/8	#32
1081460		#31		0.1200	7/8	1 7/8	#31
1080756	1/8			0.1250	7/8	1 7/8	1/8
1081477		#30		0.1285	15/16	1 15/16	#30
1081483		#29		0.1360	15/16	1 15/16	#29
1081490		#28		0.1405	15/16	1 15/16	#28
1080762	9/64			0.1406	15/16	1 15/16	9/64
1081505		#27		0.1440	1	2 1/16	#27
1081511		#26		0.1470	1	2 1/16	#26
1081528		#25		0.1495	1	2 1/16	#25
1081534		#24		0.1520	1	2 1/16	#24
1081540		#23		0.1540	1	2 1/16	#23
1080779	5/32			0.1563	1	2 1/8	5/32
1081557		#22		0.1570	1 1/16	2 1/8	#22
1081563		#21		0.1590	1 1/16	2 1/8	#21
1081570		#20		0.1610	1 1/16	2 1/8	#20
1081586		#19		0.1660	1 1/16	2 1/8	#19
1081592		#18		0.1695	1 1/16	2 1/8	#18
1080785	11/64			0.1719	1 1/16	2 1/8	11/64
1081608		#17		0.1730	1 1/8	2 3/16	#17
1081614		#16		0.1770	1 1/8	2 3/16	#16
1081620		#15		0.1800	1 1/8	2 3/16	#15
1081637		#14		0.1820	1 1/8	2 3/16	#14
1081643		#13		0.1850	1 1/8	2 3/16	#13
1080791	3/16			0.1875	1 1/8	2 3/16	3/16
1081650		#12		0.1890	1 3/16	2 1/4	#12
1081666		#11		0.1910	1 3/16	2 1/4	#11
1081672		#10		0.1935	1 3/16	2 1/4	#10
1081689		#9		0.1960	1 3/16	2 1/4	#9
1081695		#8		0.1990	1 3/16	2 1/4	#8
1081700		#7		0.2010	1 3/16	2 1/4	#7
1080807	13/64			0.2031	1 3/16	2 1/4	13/64
1081717		#6		0.2040	1 1/4	2 3/8	#6
1081723		#5		0.2055	1 1/4	2 3/8	#5
1081730		#4		0.2090	1 1/4	2 3/8	#4
1081746		#3		0.2130	1 1/4	2 3/8	#3
1080813	7/32			0.2188	1 1/4	2 3/8	7/32
1081752		#2		0.2210	1 5/16	2 7/16	#2
1081769		#1		0.2285	1 5/16	2 7/16	#1
1081001			A	0.2340	1 5/16	2 7/16	A
1080820	15/64			0.2344	1 5/16	2 7/16	15/64
1081018			B	0.2380	1 3/8	2 1/2	B
1081024			C	0.2420	1 3/8	2 1/2	C
1146978			D	0.2460	1 3/8	2 1/2	D
1080836	1/4			0.2500	1 3/8	2 1/2	1/4
1081030			E	0.2500	1 3/8	2 1/2	E
1081047			F	0.2570	1 7/16	2 5/8	F
1081053			G	0.2610	1 7/16	2 5/8	G
1080842	17/64			0.2656	1 7/16	2 5/8	17/64
1081060			H	0.2660	1 1/2	2 11/16	H
1081076			I	0.2720	1 1/2	2 11/16	I
1081082			J	0.2770	1 1/2	2 11/16	J
1081099			K	0.2810	1 1/2	2 11/16	K
1080859	9/32			0.2813	1 1/2	2 11/16	9/32
1081104			L	0.2900	1 9/16	2 3/4	L
1081110			M	0.2950	1 9/16	2 3/4	M
1080865	19/64			0.2969	1 9/16	2 3/4	19/64
1081127			N	0.3020	1 5/8	2 13/16	N
1080871	5/16			0.3125	1 5/8	2 13/16	5/16
1081133			O	0.3160	1 11/16	2 15/16	O
1081140			P	0.3230	1 11/16	2 15/16	P
1080888	21/64			0.3281	1 11/16	2 15/16	21/64
1081156			Q	0.3320	1 11/16	3	Q
1081162			R	0.3390	1 11/16	3	R
1080894	11/32			0.3438	1 11/16	3	11/32
1081179			S	0.3480	1 3/4	3 1/16	S
1081185			T	0.3580	1 3/4	3 1/16	T
1080900	23/64			0.3594	1 3/4	3 1/16	23/64
1081191			U	0.3680	1 13/16	3 1/8	U
1080916	3/8			0.3750	1 13/16	3 1/8	3/8
1081207			V	0.3770	1 7/8	3 1/4	V
1081213			W	0.3860	1 7/8	3 1/4	W
1080922	25/64			0.3906	1 7/8	3 1/4	25/64
1081220			X	0.3970	1 15/16	3 5/16	X
1081236			Y	0.4040	1 15/16	3 5/16	Y
1080939	13/32			0.4063	1 5/16	3 5/16	13/32
1081242			Z	0.4130	2	3 3/8	Z
1080945	27/64			0.4219	2	3 3/8	27/64
1080951	7/16			0.4375	2 1/16	3 7/16	7/16
1080968	29/64			0.4531	2 1/8	3 9/16	29/64
1080974	15/32			0.4688	2 1/8	3 5/8	15/32
1080980	31/64			0.4844	2 3/16	3 11/16	31/64
1080997	1/2			0.5000	2 1/4	3 3/4	1/2

Fractional sizes: Sizes 3/64 to 5/16 in package of 10; 21/64 to 1/2 in package of 5
Wire gauge sizes: All sizes in package of 10
Letter sizes: A to N in package of 10; O to Z in package of 5

List No. 531 General Purpose

h8 | HSS | HELIX N | 118° | S-type >1/2 | Conical

HIGH SPEED STEEL **Black Oxide**

Used in wide range of materials under normal conditions.
These drills are longer in length than jobbers drills.

Range 1/64" to 1/2"

EDP	Size	Decimal Equivalent	Flute Length	Overall Length
1278436	1/64	0.0156	5/16	1 1/2
1266264	1/32	0.0313	3/4	2
1266270	3/64	0.0469	1 1/8	2 1/4
1266287	1/16	0.0625	1 3/4	3
1266293	5/64	0.0781	2	3 3/4
1266309	3/32	0.0938	2 1/4	4 1/4
1266315	7/64	0.1094	2 1/2	4 5/8
1266321	1/8	0.1250	2 3/4	5 1/8
1266338	9/64	0.1406	3	5 3/8
1266344	5/32	0.1563	3	5 3/8
1266350	11/64	0.1719	3 3/8	5 3/4
1266367	3/16	0.1875	3 3/8	5 3/4
1266373	13/64	0.2031	3 5/8	6
1266380	7/32	0.2188	3 5/8	6
1266396	15/64	0.2344	3 3/4	6 1/8
1266401	1/4	0.2500	3 3/4	6 1/8
1266418	17/64	0.2656	3 7/8	6 1/4
1266424	9/32	0.2813	3 7/8	6 1/4
1266430	19/64	0.2969	4	6 3/8
1266447	5/16	0.3125	4	6 3/8
1266453	21/64	0.3281	4 1/8	6 1/2
1266460	11/32	0.3438	4 1/8	6 1/2
1266476	23/64	0.3594	4 1/4	6 3/4
1266482	3/8	0.3750	4 1/4	6 3/4
1266499	25/64	0.3906	4 3/8	7
1266504	13/32	0.4063	4 3/8	7
1266510	27/64	0.4219	4 5/8	7 1/4
1266527	7/16	0.4375	4 5/8	7 1/4
1266533	29/64	0.4531	4 3/4	7 1/2
1266540	15/32	0.4688	4 3/4	7 1/2
1266556	31/64	0.4844	4 3/4	7 3/4
1266562	1/2	0.5000	4 3/4	7 3/4

Sizes 1/64 to 5/16 in package of 10; 21/64 to 1/2 in pckage of 5

List No. 6531 General Purpose

h8 | HSS Co | HELIX N | 135° | X-type

HIGH SPEED STEEL COBALT **Black Oxide**

Used in machining hard material, alloy steel, forgings and cast iron.

Range 1/16" to 3/4"

EDP	Size	Decimal Equivalent	Flute Length	Overall Length
1053917	1/16	0.0625	1 3/4	3
1053930	5/64	0.0781	2	3 3/4
1053952	3/32	0.0938	2 1/4	4 1/4
1053975	7/64	0.1094	2 1/2	4 5/8
1053981	1/8	0.1250	2 3/4	5 1/8
1053998	9/64	0.1406	3	5 3/8
1054002	5/32	0.1563	3	5 3/8
1054019	11/64	0.1719	3 3/8	5 3/4
1054025	3/16	0.1875	3 3/8	5 3/4
1054031	13/64	0.2031	3 5/8	6
1054048	7/32	0.2188	3 5/8	6
1054060	15/64	0.2344	3 3/4	6 1/8
1054105	1/4	0.2500	3 3/4	6 1/8
1054140	17/64	0.2656	3 7/8	6 1/4
1054192	9/32	0.2813	3 7/8	6 1/4
1054220	19/64	0.2969	4	6 3/8
1054243	5/16	0.3125	4	6 3/8
1054272	21/64	0.3281	4 1/8	6 1/2
1054300	11/32	0.3438	4 1/8	6 1/2
1054330	23/64	0.3594	4 1/4	6 3/4
1054352	3/8	0.3750	4 1/4	6 3/4
1054381	25/64	0.3906	4 3/8	7
1054410	13/32	0.4063	4 3/8	7
1054432	27/64	0.4219	4 5/8	7 1/4
1054449	7/16	0.4375	4 5/8	7 1/4
1054455	29/64	0.4531	4 3/4	7 1/2
1054461	15/32	0.4688	4 3/4	7 1/2
1054478	31/64	0.4844	4 3/4	7 3/4
1054484	1/2	0.5000	4 3/4	7 3/4
1058198	33/64	0.5156	4 3/4	8
1058261	17/32	0.5313	4 3/4	8
1058312	35/64	0.5469	4 7/8	8 1/4
1058387	9/16	0.5625	4 7/8	8 1/4
1058450	37/64	0.5781	4 7/8	8 3/4
1058524	19/32	0.5938	4 7/8	8 3/4
1058582	39/64	0.6094	4 7/8	8 3/4
1058656	5/8	0.6250	4 7/8	8 3/4
1058713	41/64	0.6406	5 1/8	9
1058765	21/32	0.6563	5 1/8	9
1058822	43/64	0.6719	5 3/8	9 1/4
1058874	11/16	0.6875	5 3/8	9 1/4
1058925	45/64	0.7031	5 5/8	9 1/2
1058954	23/32	0.7188	5 5/8	9 1/2
1058990	47/64	0.7344	5 7/8	9 3/4
1059027	3/4	0.7500	5 7/8	9 3/4

Sizes 1/64 to 5/16 in package of 10; 21/64 to 1/2 in package of 5

List No. 545P Parabolic Style

h8 G HSS HELIX H 135° XH-type

HIGH SPEED STEEL-TIN COATED

Used for deep hole drilling. Parabolic design gives maximum chip removal with no chip clogging. TiN coated.

Range: 1/16" to 1/2"

EDP	Size	Decimal Equivalent	Flute Length	Overall Length
1001016	1/16	0.0625	1 3/4	3
1001148	5/64	0.0781	2	3 3/4
1001228	3/32	0.0938	2 1/4	4 1/4
1001446	7/64	0.1094	2 1/2	4 5/8
1001526	1/8	0.1250	2 3/4	5 1/8
1001590	9/64	0.1406	3	5 3/8
1001899	5/32	0.1563	3	5 3/8
1002218	11/64	0.1719	3 3/8	5 3/4
1002436	3/16	0.1875	3 3/8	5 3/4
1002975	13/64	0.2031	3 5/8	6
1003214	7/32	0.2188	3 5/8	6
1003403	15/64	0.2344	3 3/4	6 1/8
1003455	1/4	0.2500	3 3/4	6 1/8
1003541	17/64	0.2656	3 7/8	6 1/4
1003609	9/32	0.2813	3 7/8	6 1/4
1003615	19/64	0.2969	4	6 3/8
1003621	5/16	0.3125	4	6 3/8
1003667	21/64	0.3281	4 1/8	6 1/2
1003673	11/32	0.3438	4 1/8	6 1/2
1003885	23/64	0.3594	4 1/4	6 3/4
1003920	3/8	0.3750	4 1/4	6 3/4
1003936	25/64	0.3906	4 3/8	7
1004038	13/32	0.4063	4 3/8	7
1004130	27/64	0.4219	4 5/8	7 1/4
1004176	7/16	0.4375	4 5/8	7 1/4
1004199	29/64	0.4531	4 3/4	7 1/2
1004256	15/32	0.4688	4 3/4	7 1/2
1004285	31/64	0.4844	4 3/4	7 3/4
1004291	1/2	0.5000	4 3/4	7 3/4

Sizes 1/64 to 5/16 in package of 10; 21/64 to 1/2 in package of 5

HIGH PERFORMANCE DRILLS

STRAIGHT SHANK DRILL - EXTRA LENGTH

List No. 551 General Purpose

h8 HSS HELIX N 118° S-type

HIGH SPEED STEEL **Bright Finish**

Used in general deep hole drilling.

Range 1/8" to 1"
Overall Length 12" and 18"

EDP	Size	Decimal Equivalent	Flute Length	Overall Length
1054490	1/8	0.1250	9	12
1054506	9/64	0.1406	9	12
1054512	5/32	0.1563	9	12
1054529	11/64	0.1719	9	12
1054535	3/16	0.1875	9	12
1054558	13/64	0.2031	9	12
1054570	7/32	0.2188	9	12
1054593	15/64	0.2344	9	12
1054615	1/4	0.2500	9	12
1054638	17/64	0.2656	9	12
1054650	9/32	0.2813	9	12
1054673	19/64	0.2969	9	12
1054696	5/16	0.3125	9	12
1054718	21/64	0.3281	9	12
1054730	11/32	0.3438	9	12
1054753	23/64	0.3594	9	12
1054776	3/8	0.3750	9	12
1054799	25/64	0.3906	9	12
1054810	13/32	0.4063	9	12
1054833	27/64	0.4219	9	12
1054856	7/16	0.4375	9	12
1054879	29/64	0.4531	9	12
1054891	15/32	0.4688	9	12
1054913	31/64	0.4844	9	12
1054936	1/2	0.5000	9	12
1058226	33/64	0.5156	9	12
1058290	17/32	0.5313	9	12
1058341	35/64	0.5469	9	12
1058415	9/16	0.5625	9	12
1058480	37/64	0.5781	9	12
1058553	19/32	0.5938	9	12
1058610	39/64	0.6094	9	12
1058685	5/8	0.6250	9	12
1058800	21/32	0.6563	9	12
1058902	11/16	0.6875	9	12
1058977	23/32	0.7188	9	12
1059040	3/4	0.7500	9	12
1059120	13/16	0.8125	9	12
1059200	7/8	0.8750	9	12
1059280	15/16	0.9375	9	12
1059354	1	1.0000	9	12

EDP	Size	Decimal Equivalent	Flute Length	Overall Length
1054541	3/16	0.1875	14	18
1054564	13/64	0.2031	14	18
1054587	7/32	0.2188	14	18
1054609	15/64	0.2344	14	18
1054621	1/4	0.2500	14	18
1054644	17/64	0.2656	14	18
1054667	9/32	0.2813	14	18
1054680	19/64	0.2969	14	18
1054701	5/16	0.3125	14	18
1054724	21/64	0.3281	14	18
1054747	11/32	0.3438	14	18
1054760	23/64	0.3594	14	18
1054782	3/8	0.3750	14	18
1054804	25/64	0.3906	14	18
1054827	13/32	0.4063	14	18
1054840	27/64	0.4219	14	18
1054862	7/16	0.4375	14	18
1054885	29/64	0.4531	14	18
1054907	15/32	0.4688	14	18
1054920	31/64	0.4844	14	18
1054942	1/2	0.5000	14	18
1058210	33/64	0.5156	14	18
1058284	17/32	0.5313	14	18
1058335	35/64	0.5469	14	18
1058409	9/16	0.5625	14	18
1058473	37/64	0.5781	14	18
1058547	19/32	0.5938	14	18
1058604	39/64	0.6094	14	18
1058679	5/8	0.6250	14	18
1058788	21/32	0.6563	14	18
1058897	11/16	0.6875	14	18
1058960	23/32	0.7188	14	18
1059033	3/4	0.7500	14	18
1059113	13/16	0.8125	14	18
1059194	7/8	0.8750	14	18
1059274	15/16	0.9375	14	18
1059348	1	1.0000	14	18

1 per box

STRAIGHT SHANK DRILL - EXTRA LENGTH

List No. 6551 Parabolic Tang Drive

h8 | HSS Co | HELIX H | 118 | XH-type

HIGH SPEED STEEL COBALT **Black Oxide**

Used in deep hole drilling for tougher high tensile materials.

Range 3/16 to 1/2
Overall Length 10”

EDP	Size	Decimal Equivalent	Flute Length	Overall Length
1010087	3/16	0.1875	7	10
1010109	13/64	0.2031	7	10
1010150	7/32	0.2188	7	10
1010173	15/64	0.2344	7	10
1010196	1/4	0.2500	7	10
1005275	17/64	0.2656	7	10
1005281	9/32	0.2813	7	10
1005298	19/64	0.2969	7	10
1005303	5/16	0.3125	7	10
1005310	21/64	0.3281	7	10
1005326	11/32	0.3438	7	10
1005332	23/64	0.3594	7	10
1005349	3/8	0.3750	7	10
1010333	25/64	0.3906	7	10
1010362	13/32	0.4063	7	10
1010391	27/64	0.4219	7	10
1005390	7/16	0.4375	7	10
1005406	29/64	0.4531	7	10
1010465	15/32	0.4688	7	10
1005435	31/64	0.4844	7	10
1008040	1/2	0.5000	7	10

1 per box

HIGH PERFORMANCE DRILLS

OIL HOLE DRILLS / STRAIGHT SHANK

List No. 581

h8 | HSS Co | HELIX N | 118 | S-type | OIL HOLE

M35 COBALT **Bright Finish**

Used in heavy-duty applications. Delivers coolant to the point permits higher speeds and feeds and reduces high temperatures.

Range 3/8 to 1 1/2

EDP	Size	Decimal Equivalent	Flute Length	Overall Length
1056974	3/8	0.3750	4 1/4	6 3/4
1056997	25/64	0.3906	4 3/8	7
1057018	13/32	0.4063	4 3/8	7
1057030	27/64	0.4219	4 5/8	7 1/4
1061093	7/16	0.4375	4 5/8	7 1/4
1057060	29/64	0.4531	4 7/8	7 1/2
1061109	15/32	0.4688	4 7/8	7 1/2
1057099	31/64	0.4844	5	7 3/4
1057110	1/2	0.5000	5	7 3/4
1057133	33/64	0.5156	5 1/4	8
1057156	17/32	0.5313	5 1/4	8
1057179	35/64	0.5469	5 3/8	8 1/4
1057191	9/16	0.5625	5 3/8	8 1/4
1057213	37/64	0.5781	5 5/8	8 1/2
1057236	19/32	0.5938	5 5/8	8 1/2
1057259	39/64	0.6094	5 3/4	8 3/4
1057271	5/8	0.6250	5 3/4	8 3/4
1146307	41/64	0.6406	5 7/8	9
1057316	21/32	0.6563	5 7/8	9
1057339	43/64	0.6719	6	9 1/4
1057351	11/16	0.6875	6	9 1/4
1057374	45/64	0.7031	6 3/16	9 1/2
1057397	23/32	0.7188	6 3/16	9 1/2
1057419	47/64	0.7344	6 3/8	9 3/4
1061115	3/4	0.7500	6 3/8	9 3/4
1057448	49/64	0.7656	6 1/2	9 7/8
1057460	25/32	0.7813	6 1/2	9 7/8
1057483	51/64	0.7969	6 5/8	10

EDP	Size	Decimal Equivalent	Flute Length	Overall Length
1057505	13/16	0.8125	6 5/8	10
1057528	53/64	0.8281	6 3/4	10 1/4
1057540	27/32	0.8438	6 3/4	10 1/4
1057563	55/64	0.8594	7	10 1/2
1061121	7/8	0.8750	7	10 1/2
1057592	57/64	0.8906	7	10 5/8
1057614	29/32	0.9063	7	10 5/8
1057637	59/64	0.9219	7	10 3/4
1057650	15/16	0.9375	7	10 3/4
1057672	61/64	0.9531	7 1/8	10 7/8
1057695	31/32	0.9688	7 1/8	10 7/8
1057717	63/64	0.9844	7 3/16	11
1057730	1	1.0000	7 3/16	11
1057752	1 1/64	1.0156	7 5/16	11 1/8
1057769	1 1/32	1.0313	7 5/16	11 1/8
1057775	1 3/64	1.0469	7 3/8	11 1/4
1057781	1 1/16	1.0625	7 3/8	11 1/4
1057803	1 3/32	1.0938	7 5/8	11 1/2
1057810	1 1/8	1.1250	7 7/8	11 3/4
1057832	1 5/32	1.1563	8	11 7/8
1057849	1 3/16	1.1875	8 1/8	12
1057861	1 7/32	1.2188	8 1/8	12 1/8
1057878	1 1/4	1.2500	8 1/2	12 1/2
1057890	1 5/16	1.3125	9 1/4	14 1/4
1057912	1 3/8	1.3750	9 1/2	14 1/2
1057935	1 7/16	1.4375	9 5/8	14 3/4
1057958	1 1/2	1.5000	9 7/8	15

1 per box

List No. 601 General Purpose

h8 | HSS | HELIX N | 118° | S-type >1/2 | Conical

HIGH SPEED STEEL **Black Oxide**

Used in cast iron, steel, forgings, and other materials.

Range 9/32" to 3 1/2"

EDP	Size	Decimal Equivalent	Flute Length	Overall Length	Taper Shank
1267305	9/32	0.2813	3	6 1/4	1
1267328	19/64	0.2969	3 1/8	6 3/8	1
1267357	5/16	0.3125	3 1/8	6 3/8	1
1267363	21/64	0.3281	3 1/4	6 1/2	1
1267370	11/32	0.3438	3 1/4	6 1/2	1
1267386	23/64	0.3594	3 1/2	6 3/4	1
1267392	3/8	0.3750	3 1/2	6 3/4	1
1267408	25/64	0.3906	3 5/8	7	1
1267414	13/32	0.4063	3 5/8	7	1
1268221	27/64	0.4219	3 7/8	7 1/4	1
1268238	7/16	0.4375	3 7/8	7 1/4	1
1268250	29/64	0.4531	4 1/8	7 1/2	1
1268296	15/32	0.4688	4 1/8	7 1/2	1
1268318	31/64	0.4844	4 3/8	8 1/4	2
1268330	1/2	0.5000	4 3/8	8 1/4	2
1268353	33/64	0.5156	4 5/8	8 1/2	2
1268376	17/32	0.5313	4 5/8	8 1/2	2
1268399	35/64	0.5469	4 7/8	8 3/4	2
1268410	9/16	0.5625	4 7/8	8 3/4	2
1268433	37/64	0.5781	4 7/8	8 3/4	2
1268456	19/32	0.5938	4 7/8	8 3/4	2
1268479	39/64	0.6094	4 7/8	8 3/4	2
1268507	5/8	0.6250	4 7/8	8 3/4	2
1268513	41/64	0.6406	5 1/8	9	2
1268536	21/32	0.6563	5 1/8	9	2
1268565	43/64	0.6719	5 3/8	9 1/4	2
1268588	11/16	0.6875	5 3/8	9 1/4	2
1268600	45/64	0.7031	5 5/8	9 1/2	2
1268639	23/32	0.7188	5 5/8	9 1/2	2
1268668	47/64	0.7344	5 7/8	9 3/4	2
1268680	3/4	0.7500	5 7/8	9 3/4	2
1268702	49/64	0.7656	6	9 7/8	2
1268725	25/32	0.7813	6	9 7/8	2
1268886	51/64	0.7969	6 1/8	10 3/4	3
1268892	13/16	0.8125	6 1/8	10 3/4	3
1268908	53/64	0.8281	6 1/8	10 3/4	3
1268914	27/32	0.8438	6 1/8	10 3/4	3
1268920	55/64	0.8594	6 1/8	10 3/4	3
1268943	7/8	0.8750	6 1/8	10 3/4	3
1268972	57/64	0.8906	6 1/8	10 3/4	3
1268995	29/32	0.9063	6 1/8	10 3/4	3
1269022	59/64	0.9219	6 1/8	10 3/4	3
1269051	15/16	0.9375	6 1/8	10 3/4	3
1269080	61/64	0.9531	6 3/8	11	3
1269097	31/32	0.9688	6 3/8	11	3
1269125	63/64	0.9844	6 3/8	11	3
1269160	1	1.0000	6 3/8	11	3
1269205	1 1/64	1.0156	6 1/2	11 1/8	3
1269234	1 1/32	1.0313	6 1/2	11 1/8	3
1269240	1 3/64	1.0469	6 5/8	11 1/4	3
1269263	1 1/16	1.0625	6 5/8	11 1/4	3
1269286	1 5/64	1.0781	6 7/8	12 1/2	4
1269314	1 3/32	1.0938	6 7/8	12 1/2	4
1269337	1 7/64	1.1094	7 1/8	12 3/4	4
1269366	1 1/8	1.1250	7 1/8	12 3/4	4
1269400	1 9/64	1.1406	7 1/4	12 7/8	4
1269430	1 5/32	1.1563	7 1/4	12 7/8	4
1269469	1 11/64	1.1719	7 3/8	13	4
1269498	1 3/16	1.1875	7 3/8	13	4
1269526	1 13/64	1.2031	7 1/2	13 1/8	4
1269664	1 7/32	1.2188	7 1/2	13 1/8	4
1269709	1 15/64	1.2344	7 7/8	13 1/2	4
1269773	1 1/4	1.2500	7 7/8	13 1/2	4
1269830	1 17/64	1.2656	8 1/2	14 1/8	4
1269899	1 9/32	1.2813	8 1/2	14 1/8	4
1269910	1 19/64	1.2969	8 5/8	14 1/4	4
1269927	1 5/16	1.3125	8 5/8	14 1/4	4
1269933	1 21/64	1.3281	8 3/4	14 3/8	4
1269940	1 11/32	1.3438	8 3/4	14 3/8	4
1269956	1 23/64	1.3594	8 7/8	14 1/2	4
1269962	1 3/8	1.3750	8 7/8	14 1/2	4
1269979	1 25/64	1.3906	9	14 5/8	4
1269985	1 13/32	1.4063	9	14 5/8	4
1269991	1 27/64	1.4219	9 1/8	14 3/4	4
1270005	1 7/16	1.4375	9 1/8	14 3/4	4
1270011	1 29/64	1.4531	9 1/4	14 7/8	4
1270028	1 15/32	1.4688	9 1/4	14 7/8	4
1270034	1 31/64	1.4844	9 3/8	15	4
1270040	1 1/2	1.5000	9 3/8	15	4
1270057	1 33/64	1.5156	9 3/8	16 3/8	5
1270063	1 17/32	1.5313	9 3/8	16 3/8	5
1270070	1 35/64	1.5469	9 5/8	16 5/8	5
1270086	1 9/16	1.5625	9 5/8	16 5/8	5
1270092	1 37/64	1.5781	9 7/8	16 5/8	5
1270108	1 19/32	1.5938	9 7/8	16 7/8	5
1270114	1 39/64	1.6094	10	17	5
1270120	1 5/8	1.6250	10	17	5
1270246	1 41/64	1.6406	10 1/8	17 1/8	5
1270269	1 21/32	1.6563	10 1/8	17 1/8	5
1270275	1 43/64	1.6719	10 1/8	17 1/8	5
1270281	1 11/16	1.6875	10 1/8	17 1/8	5
1270298	1 45/64	1.7031	10 1/8	17 1/8	5
1270303	1 23/32	1.7188	10 1/8	17 1/8	5
1270332	1 47/64	1.7344	10 1/8	17 1/8	5
1270361	1 3/4	1.7500	10 1/8	17 1/8	5
1270390	1 25/32	1.7813	10 1/8	17 1/8	5
1270429	1 13/16	1.8125	10 1/8	17 1/8	5
1270458	1 27/32	1.8438	10 1/8	17 1/8	5
1270487	1 7/8	1.8750	10 3/8	17 3/8	5
1270515	1 29/32	1.9063	10 3/8	17 3/8	5
1270630	1 15/16	1.9375	10 3/8	17 3/8	5
1270660	1 31/32	1.9688	10 3/8	17 3/8	5
1270699	2	2.0000	10 3/8	17 3/8	5
1270727	2 1/32	2.0313	10 3/8	17 3/8	5
1270762	2 1/16	2.0625	10 1/4	17 3/8	5
1270785	2 3/32	2.0938	10 1/4	17 3/8	5
1270807	2 1/8	2.1250	10 1/4	17 3/8	5
1270836	2 5/32	2.1563	10 1/4	17 3/8	5
1270859	2 3/16	2.1875	10 1/4	17 3/8	5
1270865	2 7/32	2.2188	10 1/8	17 3/8	5
1270871	2 1/4	2.2500	10 1/8	17 3/8	5
1270888	2 5/16	2.3125	10 1/8	17 3/8	5
1270894	2 3/8	2.3750	10 1/8	17 3/8	5
1270900	2 7/16	2.4375	11 1/4	18 3/4	5
1270916	2 1/2	2.5000	11 1/4	18 3/4	5
1270922	2 9/16	2.5625	11 7/8	19 1/2	5
1270939	2 5/8	2.6250	11 7/8	19 1/2	5
1270945	2 11/16	2.6875	12 3/4	20 3/8	5
1270951	2 3/4	2.7500	12 3/4	20 3/8	5
1270968	2 13/16	2.8125	13 3/8	21 1/8	5
1270974	2 7/8	2.8750	13 3/8	21 1/8	5
1270980	2 15/16	2.9375	14	21 3/4	5
1270997	3	3.0000	14	21 3/4	5
1271001	3 1/16	3.0625	14 5/8	24 1/2	6
1271018	3 1/8	3.1250	14 5/8	24 1/2	6
1271024	3 3/16	3.1875	14 5/8	24 1/2	6
1271030	3 1/4	3.2500	15 1/2	25 1/2	6
1271047	3 5/16	3.3125	15 1/2	25 1/2	6
1271076	3 3/8	3.3750	15 1/2	25 1/2	6
1271127	3 7/16	3.4375	15 1/2	25 1/2	6
1271179	3 1/2	3.5000	16 3/8	26 1/2	6

1 per box

OIL HOLE DRILLS / STRAIGHT SHANK

List No. 651 Taper Shank Drills

h8 | HSS | HELIX N | 118° | S-type >1/2 | Conical

HIGH SPEED STEEL **Bright Finish**

Used for deep hole drilling with Taper Shank.

Range 1/4 to 2 1/2
Overall Length 18”

EDP	Size	Decimal Equivalent	Flute Length	Overall Length	Overall Length	Taper Shank
1057970	1/4	0.2500	14	18		1
1057987	17/64	0.2656	14	18		1
1057993	9/32	0.2813	14	18		1
1058008	19/64	0.2969	14	18		1
1058014	5/16	0.3125	14	18		1
1058020	5/16	0.3125	20		24	1
1058037	21/64	0.3281	14	18		1
1058043	11/32	0.3438	14	18		1
1058050	23/64	0.3594	14	18		1
1058066	3/8	0.3750	14	18		1
1058072	3/8	0.3750	20		24	1
1058089	25/64	0.3906	14	18		1
1058095	13/32	0.4063	14	18		1
1058100	27/64	0.4219	14	18		1
1058117	7/16	0.4375	14	18		1
1058123	7/16	0.4375	20		24	1
1058130	29/64	0.4531	14	18		1
1058146	15/32	0.4688	14	18		1
1058152	31/64	0.4844	14	18		2
1058169	1/2	0.5000	14	18		2
1058175	1/2	0.5000	20		24	2
1058181	33/64	0.5156	14	18		2
1061138	33/64	0.5156	20		24	2
1058249	17/32	0.5313	14	18		2
1058255	17/32	0.5313	20		24	2
1061144	35/64	0.5469	14	18		2
1058364	9/16	0.5625	14	18		2
1058370	9/16	0.5625	20		24	2
1058438	37/64	0.5781	14	18		2
1058444	37/64	0.5781	20		24	2
1058501	19/32	0.5938	14	18		2
1058518	19/32	0.5938	20		24	2
1058576	39/64	0.6094	14	18		2
1058633	5/8	0.6250	14	18		2
1058640	5/8	0.6250	20		24	2
1058707	41/64	0.6406	14	18		2
1058742	21/32	0.6563	14	18		2
1058759	21/32	0.6563	20		24	2
1058816	43/64	0.6719	14	18		2
1058851	11/16	0.6875	14	18		2
1058868	11/16	0.6875	20		24	2
1058919	45/64	0.7031	14	18		2
1058931	23/32	0.7188	14	18		2
1058948	23/32	0.7188	20		24	2
1058983	47/64	0.7344	14	18		2
1059004	3/4	0.7500	14	18		2
1059010	3/4	0.7500	20		24	2
1059056	49/64	0.7656	14	18		2
1059062	25/32	0.7813	14	18		2
1059079	25/32	0.7813	20		24	2
1059085	51/64	0.7969	13	18		3
1059091	13/16	0.8125	13	18		3
1059107	13/16	0.8125	19		24	3
1059136	53/64	0.8281	13	18		3
1059142	27/32	0.8438	13	18		3
1059159	27/32	0.8438	19		24	3
1059165	55/64	0.8594	13	18		3

EDP	Size	Decimal Equivalent	Flute Length	Overall Length	Overall Length	Taper Shank
1059171	7/8	0.8750	13	18		3
1059188	7/8	0.8750	19		24	3
1059216	57/64	0.8906	13	18		3
1059222	29/32	0.9063	13	18		3
1059239	29/32	0.9063	19		24	3
1059245	59/64	0.9219	13	18		3
1059251	15/16	0.9375	13	18		3
1059268	15/16	0.9375	19		24	3
1059297	61/64	0.9531	13	18		3
1059302	31/32	0.9688	13	18		3
1059319	31/32	0.9688	19		24	3
1059325	63/64	0.9844	13	18		3
1061167	1	1.0000	13	18		3
1059331	1	1.0000	19		24	3
1059360	1 1/32	1.0313	13	18		3
1059377	1 1/16	1.0625	13	18		3
1059383	1 1/16	1.0625	19		24	3
1059390	1 3/32	1.0938	12	18		4
1059405	1 1/8	1.1250	12	18		4
1059411	1 1/8	1.1250	19		24	4
1059428	1 5/32	1.1563	12	18		4
1229743	1 5/32	1.1563	18		24	4
1059434	1 3/16	1.1875	12	18		4
1059440	1 3/16	1.1875	18		24	4
1059457	1 7/32	1.2188	12	18		4
1229750	1 7/32	1.2188	18		24	4
1059463	1 1/4	1.2500	12	18		4
1059470	1 1/4	1.2500	18		24	4
1059486	1 9/32	1.2813	12	18		4
1059492	1 5/16	1.3125	12	18		4
1059508	1 5/16	1.3125	18		24	4
1059514	1 11/32	1.3438	12	18		4
1059520	1 3/8	1.3750	12	18		4
1059537	1 3/8	1.3750	18		24	4
1059543	1 13/32	1.4063	12	18		4
1059550	1 7/16	1.4375	12	18		4
1059566	1 7/16	1.4375	18		24	4
1059572	1 15/32	1.4688	12	18		4
1059589	1 1/2	1.5000	12	18		4
1059595	1 1/2	1.5000	18		24	5
1059600	1 9/16	1.5625	10 1/2	18		5
1059617	1 9/16	1.5625	17		24	5
1059623	1 5/8	1.6250	10 1/2	18		5
1059630	1 5/8	1.6250	17		24	5
1059646	1 11/16	1.6875	10 1/2	18		5
1059652	1 11/16	1.6875	17		24	5
1059669	1 3/4	1.7500	10 1/2	18		5
1059675	1 3/4	1.7500	17		24	5
1059681	1 7/8	1.8750	10 1/2	18		5
1059698	1 7/8	1.8750	17		24	5
1059703	2	2.0000	10 1/2	18		5
1061173	2	2.0000	17		24	4
1059726	2 1/16	2.0625	17		24	5
1059749	2 1/8	2.1250	17		24	5
1059761	2 1/4	2.2500	17		24	5
1159848	2 3/8	2.3750	17		24	5
1059784	2 1/2	2.5000	17		24	5

1 per box

List No. 683

M35 COBALT Bright Finish

Used in heavy-duty applications. Delivers coolant to the point permits higher speeds and feeds and reduces high temperatures.

Range 3/8 to 1 1/2

EDP	Size	Decimal Equivalent	Flute Length	Overall Length	Taper Shank
1056980	3/8	0.3750	4 1/4	8 1/8	2
1057001	25/64	0.3906	4 3/8	8 1/4	2
1057024	13/32	0.4063	4 3/8	8 1/4	2
1057047	27/64	0.4219	4 5/8	8 1/2	2
1057053	7/16	0.4375	4 5/8	8 1/2	2
1057076	29/64	0.4531	4 7/8	8 3/4	2
1057082	15/32	0.4688	4 7/8	8 3/4	2
1057104	31/64	0.4844	5	9 5/8	3
1057127	1/2	0.5000	5	9 5/8	3
1057140	33/64	0.5156	5 1/8	9 3/4	3
1057162	17/32	0.5313	5 1/8	9 3/4	3
1057185	35/64	0.5469	5 1/4	9 7/8	3
1057207	9/16	0.5625	5 1/4	9 7/8	3
1057220	37/64	0.5781	5 1/2	10 1/8	3
1057242	19/32	0.5938	5 1/2	10 1/8	3
1057265	39/64	0.6094	5 5/8	10 1/4	3
1057288	5/8	0.6250	5 5/8	10 1/4	3
1057300	41/64	0.6406	5 3/4	10 3/8	3
1057322	21/32	0.6563	5 3/4	10 3/8	3
1057345	43/64	0.6719	5 7/8	10 1/2	3
1057368	11/16	0.6875	5 7/8	10 1/2	3
1057380	45/64	0.7031	6 1/8	10 3/4	3
1057402	23/32	0.7188	6 1/8	10 3/4	3
1057425	47/64	0.7344	6 1/4	10 7/8	3
1057431	3/4	0.7500	6 1/4	10 7/8	3

EDP	Size	Decimal Equivalent	Flute Length	Overall Length	Taper Shank
1057454	49/64	0.7656	6 3/8	11	3
1057477	25/32	0.7813	6 3/8	11	3
1057490	51/64	0.7969	6 1/2	11 1/8	3
1057511	13/16	0.8125	6 1/2	11 1/8	3
1057534	53/64	0.8281	6 5/8	11 1/4	3
1057557	27/32	0.8438	6 5/8	11 1/4	3
1057570	55/64	0.8594	6 7/8	11 1/2	3
1057586	7/8	0.8750	6 7/8	11 1/2	3
1057608	57/64	0.8906	6 7/8	11 1/2	3
1057620	29/32	0.9063	6 7/8	11 1/2	3
1057643	59/64	0.9219	6 7/8	11 1/2	3
1057666	15/16	0.9375	6 7/8	11 1/2	3
1057689	61/64	0.9531	7	11 5/8	3
1057700	31/32	0.9688	7	11 5/8	3
1057723	63/64	0.9844	7 1/8	11 3/4	3
1057746	1	1.0000	7 1/8	11 3/4	3
1057798	1 1/16	1.0625	7 1/4	12 7/8	4
1057826	1 1/8	1.1250	7 3/4	13 3/8	4
1057855	1 3/16	1.1875	8	13 5/8	4
1057884	1 1/4	1.2500	8 1/4	13 7/8	4
1057906	1 5/16	1.3125	9 1/8	14 3/4	4
1057929	1 3/8	1.3750	9 3/8	15	4
1057941	1 7/16	1.4375	9 1/2	15 1/8	4
1057964	1 1/2	1.5000	9 3/4	15 3/8	4

1 per box

List No. 575

h8 | HSS | HELIX N | 118° | S-type | Conical

HIGH SPEED STEEL **Bright Finish**

Used for general purpose drilling when 1/2" shank is required.
Used in drill presses and portable electric drills.

Shank Diameter 1/2" by 2 1/2" long
Range 1/2 to 1 1/2

EDP	Size	Decimal Equivalent	Flute Length	Overall Length
1023604	1/2	0.5000	3 1/8	6
1015599	33/64	0.5156	3 1/8	6
1016600	17/32	0.5312	3 1/8	6
1015604	35/64	0.5469	3 1/8	6
1023839	9/16	0.5625	3 1/8	6
1015640	37/64	0.5781	3 1/8	6
1023925	19/32	0.5938	3 1/8	6
1062352	39/64	0.6094	3 1/8	6
1024062	5/8	0.6250	3 1/8	6
1015656	41/64	0.6406	3 1/8	6
1024194	21/32	0.6562	3 1/8	6
1015685	43/64	0.6719	3 1/8	6
1024319	11/16	0.6875	3 1/8	6
1015765	45/64	0.7031	3 1/8	6
1024550	23/32	0.7187	3 1/8	6
1015771	47/64	0.7344	3 1/8	6
1024909	3/4	0.7500	3 1/8	6
1015788	49/64	0.7656	3	6
1025178	25/32	0.7812	3	6
1015822	51/64	0.7969	3	6
1025642	13/16	0.8125	3	6
1015839	53/64	0.8281	3	6
1026408	27/32	0.8438	3	6
1015845	55/64	0.8594	3	6
1027250	7/8	0.8750	3	6

EDP	Size	Decimal Equivalent	Flute Length	Overall Length
1015851	57/64	0.8906	3	6
1027857	29/32	0.9062	3	6
1015874	59/64	0.9219	3	6
1028148	15/16	0.9375	3	6
1015897	61/64	0.9531	3	6
1028498	31/32	0.9687	3	6
1015902	63/64	0.9844	3	6
1028721	1	1.0000	3	6
1015919	1 1/32	1.0312	3	6
1029391	1 1/16	1.0625	3	6
1015925	1 3/32	1.0938	3	6
1029757	1 1/8	1.1250	3	6
1015948	1 5/32	1.1562	3	6
1030300	1 3/16	1.1875	3	6
1015954	1 7/32	1.2188	3	6
1030993	1 1/4	1.1250	3	6
1005922	1 9/32	1.2812	2 3/4	6
1005939	1 5/16	1.3125	2 3/4	6
1011054	1 11/32	1.3438	2 3/4	6
1005951	1 3/8	1.3750	2 3/4	6
1011140	1 13/32	1.4062	2 3/4	6
1005968	1 7/16	1.4375	2 3/4	6
1011163	1 15/32	1.4688	2 3/4	6
1005974	1 1/2	1.5000	2 3/4	6

1 per box

List No. 599 General Purpose

Black Oxide

EDP	HIGH SPEED DRILLS SETS	SET NO.
Fractional Sizes	**Fractional Sizes**	
3599013	1/16” To 1/4” By 64ths	S13
3599015	1/16” To 1/2” By 32nds	S15
3599021	1/16” To 3/8” By 64ths	S21
3599129	1/16” To 1/2” By 64ths	S29
Wire Gauge Sizes	**Wire Gauge Sizes**	
3599060	No.1 To No.60	S60
3599020	No.61 To No. 80	S20
Letter Sizes	**Letter Sizes**	
3599026	A To Z	S26
Combination Sizes	**Combination Sizes**	
3599115	S29, S60, S26	S115
COBALT DRILL SETS	**COBALT DRILL SETS**	SET NO.
Fractional Sizes	**Fractional Sizes**	
3599029	1/16” To 1/2” By 64ths	C29

Aqua Drill EX Stub Drills List No. 9600, 9601 AQDEXS

Work Material / Speed (SFM)		Cast Irons / Carbon Steels		Alloy Steels (20-30 HRC)		Mold Steels/ Hardened Steels (30-40 HRC)		Hardened Steels (40-50 HRC)		Ductile Cast Irons		Stainless Steel (300-Series Stainless)		Nickel Alloys, Titanium Alloys, PH Stainless		Aluminum Alloys	
Drill Diameter		260-270 SFM		210-220 SFM		110-120 SFM		80-90 SFM		180-190 SFM		100-105 SFM		80-90 SFM		275-300 SFM	
Metric mm	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
3	0.118	8500	0.003	7000	0.003	3700	0.003	2700	0.003	6000	0.003	3200	0.002	2900	0.002	9700	0.004
4	0.157	6500	0.004	5200	0.004	2800	0.004	2100	0.003	4400	0.004	2400	0.002	2200	0.003	7300	0.005
5	0.197	5100	0.005	4100	0.005	2200	0.005	1600	0.004	3600	0.005	1900	0.003	1750	0.003	5900	0.006
6	0.236	4300	0.006	3500	0.006	1800	0.006	1300	0.005	2900	0.006	1600	0.004	1450	0.004	4900	0.007
8	0.315	3200	0.008	2600	0.008	1400	0.007	900	0.007	2200	0.008	1200	0.005	1090	0.005	3700	0.009
10	0.394	2600	0.010	2100	0.010	1100	0.009	800	0.008	1800	0.009	1000	0.006	870	0.006	2900	0.010
12	0.472	2100	0.011	1700	0.011	950	0.010	700	0.009	1500	0.010	800	0.006	730	0.007	2200	0.013
14	0.551	1800	0.011	1500	0.012	800	0.011	600	0.011	1300	0.011	700	0.007	620	0.008	1900	0.013
16	0.630	1600	0.014	1300	0.013	700	0.012	500	0.011	1100	0.013	600	0.008	550	0.009	1700	0.015

Aqua Drill EX Jobber Length List No. 9602, 9603 AQDEXR

Work Material / Speed (SFM)		Cast Irons / Carbon Steels		Alloy Steels (20-30 HRC)		Mold Steels/ Hardened Steels (30-40 HRC)		Hardened Steels (40-50 HRC)		Ductile Cast Irons		Stainless Steel (300-Series Stainless)		Nickel Alloys, Titanium Alloys, PH Stainless		Aluminum Alloys	
Drill Diameter		260-270 SFM		210-220 SFM		110-120 SFM		80-90 SFM		180-190 SFM		100-105 SFM		80-90 SFM		275-300 SFM	
Metric mm	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
3	0.118	8500	0.003	7000	0.003	3700	0.003	2700	0.003	6000	0.003	3200	0.002	2900	0.002	9700	0.004
4	0.157	6500	0.004	5200	0.004	2800	0.004	2100	0.003	4400	0.004	2400	0.002	2200	0.003	7300	0.005
5	0.197	5100	0.005	4100	0.005	2200	0.005	1600	0.004	3600	0.005	1900	0.003	1750	0.003	5900	0.006
6	0.236	4300	0.006	3500	0.006	1800	0.006	1300	0.005	2900	0.006	1600	0.004	1450	0.004	4900	0.007
8	0.315	3200	0.008	2600	0.008	1400	0.007	900	0.007	2200	0.008	1200	0.005	1090	0.005	3700	0.009
10	0.394	2600	0.010	2100	0.010	1100	0.009	800	0.008	1800	0.009	1000	0.006	870	0.006	2900	0.010
12	0.472	2100	0.011	1700	0.011	950	0.010	700	0.009	1500	0.010	800	0.006	730	0.007	2200	0.013
14	0.551	1800	0.011	1500	0.012	800	0.011	600	0.011	1300	0.011	700	0.007	620	0.008	1900	0.013
16	0.630	1600	0.014	1300	0.013	700	0.012	500	0.011	1100	0.013	600	0.008	550	0.009	1700	0.015

Note : 1) Utilize the standard drilling conditions shown in the catalogs, just a general guide when starting operation.
2) Adjust drilling conditions if required, if any vibration or unusual sound occurs when cutting.
3) When using low speed machines, use the maximum speed and adjust the feed rate.
4) Use of water soluble cutting fluid is recommended.
5) In case of drying drilling - use Air blow and reduce feeds/speeds by 30%.

Formulas : $\text{RPM} = \frac{\text{SFM} \times 3.82}{\text{Drill dia.}}$ Feed Rate (in/min) : RPM×IPR

Aqua Drill EX Flat List No. 9610, 9611

Work Material / Speed (SFM)		Cast Irons / Carbon Steels		Alloy Steels (20~30 HRC)		Mold Steels / Hardened Steels (30-35 Hrc)		Ductile Cast Irons		Aluminum Alloys		Aluminum Castings	
Drilling Diameter		325-328 SFM		290-295 SFM		220-225 SFM		290-295 SFM		515-525 SFM		260-400 SFM	
Metric mm	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
3	0.118	7950	0.002	6900	0.002	3700	0.002	6900	430	17000	0.002	12500	0.002
4	0.157	5950	0.003	5150	0.002	2800	0.002	5150	430	12500	0.002	9500	0.003
5	0.197	4800	0.004	4150	0.003	2200	0.003	4150	430	10000	0.003	7600	0.004
6	0.236	4000	0.005	3450	0.004	1800	0.004	3450	430	8500	0.003	6400	0.005
8	0.315	3000	0.006	2600	0.005	1400	0.005	2600	430	6350	0.005	4780	0.006
10	0.394	2400	0.008	2050	0.006	1100	0.006	2050	430	5100	0.006	3800	0.008
12	0.472	2000	0.009	1700	0.007	950	0.007	1700	430	4250	0.007	3180	0.009
16	0.630	1500	0.012	1300	0.009	700	0.009	1300	430	3200	0.009	2390	0.013
20	0.787	1200	0.016	1050	0.012	550	0.012	1050	430	2550	0.012	1910	0.016
1/8	0.125	7500	0.003	6500	0.002	3500	0.002	6500	430	16000	0.002	12000	0.002
5/32	0.1562	6000	0.004	5200	0.003	2800	0.002	5200	430	12800	0.002	9600	0.003
3/16	0.1875	5000	0.005	4350	0.004	2350	0.003	4350	430	10700	0.003	8050	0.004
1/4	0.2500	3750	0.006	3250	0.005	1750	0.004	3250	430	8000	0.003	6000	0.005
5/16	0.3125	3000	0.008	2600	0.006	1400	0.005	2600	430	6400	0.005	4800	0.006
3/8	0.3750	2500	0.010	2150	0.008	1150	0.006	2150	430	5350	0.006	4000	0.008
1/2	0.5000	1900	0.012	1650	0.009	900	0.007	1650	430	4000	0.007	3000	0.009
5/8	0.6250	1500	0.016	1300	0.013	700	0.009	1300	430	3200	0.009	2400	0.013
3/4	0.750	1250	0.020	1100	0.016	600	0.012	1100	430	2650	0.012	2000	0.016

Note : 1) Adjust driling conditions according to the rigidity of machine and work clamp states.
2) For drilling after the forged surface has been removed.
3) For drilling with water soluble cutting fluid. With non water soluble cutting fluid, reduce the RPM and feed by 20%.
4) For drilling depths of 2D or less. Drilling holes deeper than 2D is not recommended.
5) Drilling Stainless Steel (SUS304, 316) is not recommended.
6) When drilling angle is less that 30°, reduce feed to 50%; When drilling angle is over 30°, reduce the RPM to under 70%, the feed to under 30%.

Aqua Drill EX Oil Hole 3D List No. 9604, 9605 AQDEXOH3D

Work Material / Speed (SFM)		Cast Irons / Carbon Steels		Alloy Steels (20-30 HRC)		Mold Steels/ Hardened Steels (30-40 HRC)		Hardened Steels (40-50 HRC)		Ductile Cast Irons		Stainless Steel (300-Series Stainless)		Nickel Alloys, Titanium Alloys, PH Stainless		Aluminum Alloys	
Drill Diameter		325-330 SFM		330-335 SFM		255-265 SFM		160-165 SFM		320-330 SFM		255-265 SFM		100-110 SFM		280-320 SFM	
Metric mm	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
3	0.118	10700	0.004	10600	0.004	8500	0.004	5300	0.002	10600	0.004	8500	0.003	3200	0.002	10500	0.004
4	0.157	8000	0.006	8000	0.005	6400	0.005	4000	0.003	8000	0.005	6400	0.004	2400	0.003	7500	0.006
5	0.197	6300	0.007	6400	0.006	5100	0.005	3200	0.004	6400	0.006	5100	0.005	1900	0.004	6000	0.007
6	0.236	5300	0.008	5300	0.007	4200	0.007	2700	0.005	5300	0.007	4200	0.006	1600	0.005	5000	0.007
8	0.315	4000	0.011	4000	0.009	3200	0.009	2000	0.006	4000	0.009	3200	0.008	1200	0.006	3700	0.010
10	0.394	3200	0.014	3200	0.010	2500	0.010	1600	0.007	3200	0.010	2500	0.009	900	0.008	2500	0.013
12	0.472	2650	0.017	2700	0.010	2100	0.010	1300	0.009	2700	0.010	2100	0.009	800	0.009	2100	0.015
14	0.551	2250	0.020	2300	0.011	1800	0.012	1100	0.009	2300	0.011	1800	0.010	700	0.008	1900	0.016
16	0.630	2000	0.022	2000	0.012	1600	0.014	1000	0.010	2000	0.012	1600	0.012	600	0.010	1700	0.017

Aqua Drill EX Oil Hole 5D List No. 9606, 9607 AQDEXOH5D

Work Material / Speed (SFM)		Cast Irons / Carbon Steels		Alloy Steels (20-30 HRC)		Mold Steels/ Hardened Steels (30-40 HRC)		Hardened Steels (40-50 HRC)		Ductile Cast Irons		Stainless Steel (300-Series Stainless)		Nickel Alloys, Titanium Alloys, PH Stainless		Aluminum Alloys	
Drill Diameter		325-330 SFM		330-335 SFM		255-265 SFM		160-165 SFM		320-330 SFM		255-265 SFM		100-110 SFM		280-320 SFM	
Metric mm	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
3	0.118	10700	0.004	10600	0.004	8500	0.004	5300	0.002	10600	0.004	8500	0.003	3200	0.002	10500	0.004
4	0.157	8000	0.006	8000	0.005	6400	0.005	4000	0.003	8000	0.005	6400	0.004	2400	0.003	7500	0.006
5	0.197	6300	0.007	6400	0.006	5100	0.005	3200	0.004	6400	0.006	5100	0.005	1900	0.004	6000	0.007
6	0.236	5300	0.008	5300	0.007	4200	0.007	2700	0.005	5300	0.007	4200	0.006	1600	0.005	5000	0.007
8	0.315	4000	0.011	4000	0.009	3200	0.009	2000	0.006	4000	0.009	3200	0.008	1200	0.006	3700	0.010
10	0.394	3200	0.014	3200	0.010	2500	0.010	1600	0.007	3200	0.010	2500	0.009	900	0.008	2500	0.013
12	0.472	2650	0.017	2700	0.010	2100	0.010	1300	0.009	2700	0.010	2100	0.009	800	0.009	2100	0.015
14	0.551	2250	0.020	2300	0.011	1800	0.012	1100	0.009	2300	0.011	1800	0.010	700	0.008	1900	0.016
16	0.630	2000	0.022	2000	0.012	1600	0.014	1000	0.010	2000	0.012	1600	0.012	600	0.010	1700	0.017

Aqua Drill EX Oil Hole 8D List No. 9608, 9609 AQDEXOH8D

Work Material / Speed (SFM)		Cast Irons / Carbon Steels		Alloy Steels (20-30 HRC)		Mold Steels/ Hardened Steels (30-40 HRC)		Hardened Steels (40-50 HRC)		Ductile Cast Irons		Stainless Steel (300-Series Stainless)		Nickel Alloys, Titanium Alloys, PH Stainless		Aluminum Alloys	
Drill Diameter		325-330 SFM		330-335 SFM		255-265 SFM		160-165 SFM		320-330 SFM		255-265 SFM		100-110 SFM		280-320 SFM	
Metric mm	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
3	0.118	10700	0.004	10600	0.004	8500	0.004	5300	0.002	10600	0.004	8500	0.003	3200	0.002	10500	0.004
4	0.157	8000	0.006	8000	0.005	6400	0.005	4000	0.003	8000	0.005	6400	0.004	2400	0.003	7500	0.006
5	0.197	6300	0.007	6400	0.006	5100	0.005	3200	0.004	6400	0.006	5100	0.005	1900	0.004	6000	0.007
6	0.236	5300	0.008	5300	0.007	4200	0.007	2700	0.005	5300	0.007	4200	0.006	1600	0.005	5000	0.007
8	0.315	4000	0.011	4000	0.009	3200	0.009	2000	0.006	4000	0.009	3200	0.008	1200	0.006	3700	0.010
10	0.394	3200	0.014	3200	0.010	2500	0.010	1600	0.007	3200	0.010	2500	0.009	900	0.008	2500	0.013
12	0.472	2650	0.017	2700	0.010	2100	0.010	1300	0.009	2700	0.010	2100	0.009	800	0.009	2100	0.015
14	0.551	2250	0.020	2300	0.011	1800	0.012	1100	0.009	2300	0.011	1800	0.010	700	0.008	1900	0.016
16	0.630	2000	0.022	2000	0.012	1600	0.014	1000	0.010	2000	0.012	1600	0.012	600	0.010	1700	0.017

Note : 1) Utilize the standard drilling conditions shown in the catalogs, just a general guide when starting operation.
2) Adjust drilling conditions if required, if any vibration or unusual sound occurs when cutting.
3) When using low speed machines, use the maximum speed and adjust the feed rate.
4) Use of water soluble cutting fluid is recommended.
5) In case of drying drilling - use Air blow and reduce feeds/speeds by 30%.

Formulas : $\text{RPM} = \frac{\text{SFM} \times 3.82}{\text{Drill dia.}}$ Feed Rate (in/min) : RPM×IPR

Aqua Drill EX Flat Drills List No. 9818 AQDEXZR

Work Material / Speed (SFM) / Drill Diameter		Cast Irons / Carbon Steels		Alloy Steels (20-30 HRC)		Mold Steels/ Hardened Steels (30-35 HRC)		Ductile Cast Irons		Aluminum Alloys		Aluminum Casting	
		325-328 SFM		290-295 SFM		220-225 SFM		290-295 SFM		515-525 SFM		260-400 SFM	
Metric mm	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
3	0.118	10600	0.002	9500	0.002	7400	0.002	9500	430	17000	0.002	12700	0.002
4	0.157	7900	0.003	7100	0.002	5550	0.002	7100	430	12500	0.002	9500	0.003
5	0.197	6300	0.004	5700	0.003	4450	0.003	5700	430	10000	0.003	7600	0.004
6	0.236	5300	0.005	4750	0.004	3700	0.004	4750	430	8500	0.003	6400	0.005
8	0.315	3950	0.006	3550	0.005	2790	0.005	3550	430	6350	0.005	4780	0.006
10	0.394	3150	0.008	2860	0.006	2230	0.006	2860	430	5100	0.006	3800	0.008
12	0.472	2650	0.009	2390	0.007	1860	0.007	2390	430	4250	0.007	3180	0.009
16	0.630	1990	0.012	1790	0.009	1390	0.009	1790	430	3200	0.009	2390	0.013
20	0.787	1590	0.016	1430	0.012	1110	0.012	1430	430	2550	0.012	1910	0.016

Note : 1) Adjust drilling conditions according to the rigidity of machine or work clamp state.
2) Use the table values for drilling depths upto 4xD. Adjust cutting conditions per table based on "degree angle to be drilled."
3) Above table values are for drilling water soluble cutting fluid. For non-water soluble cutting fluid reduce the RPM and feed rates by 20%.
4) Not recommended for drilling in Stainless Steel. We recommend using List9814 AQUA EX Flat OH5D for Stainless Steel & Hi-temp alloys.
5) Center Drill or Guide hole required. (1: Use AG Starting drill or Aqua Ex Flat drill)

Formulas : $\text{RPM} = \frac{\text{SFM} \times 3.82}{\text{Drill dia.}}$ Feed Rate (in/min) : RPM×IPR

Aqua Drill EX Flat Drills List No. 9816 AQDEXZLS

Work Material / Speed (SFM) / Drill Diameter		Cast Irons / Carbon Steels		Alloy Steels (20-30 HRC)		Mold Steels/ Hardened Steels (30-35 HRC)		Ductile Cast Irons		Aluminum Alloys		Aluminum Casting	
		325-328 SFM		290-295 SFM		220-225 SFM		290-295 SFM		515-525 SFM		260-400 SFM	
Metric mm	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
3	0.118	10600	0.003	9500	0.002	7400	0.002	9500	430	17000	0.002	12700	0.002
4	0.157	7900	0.004	7100	0.003	5550	0.002	7100	430	12500	0.002	9500	0.003
5	0.197	6300	0.005	5700	0.004	4450	0.003	5700	430	10000	0.003	7600	0.004
6	0.236	5300	0.006	4750	0.005	3700	0.004	4750	430	8500	0.003	6400	0.005
8	0.315	3950	0.008	3550	0.006	2790	0.005	3550	430	6350	0.005	4780	0.006
10	0.394	3150	0.010	2860	0.008	2230	0.006	2860	430	5100	0.006	3800	0.008
12	0.472	2650	0.012	2390	0.009	1860	0.007	2390	430	4250	0.007	3180	0.009
16	0.630	1990	0.016	1790	0.013	1390	0.009	1790	430	3200	0.009	2390	0.013
20	0.787	1590	0.020	1430	0.016	1110	0.012	1430	430	2550	0.012	1910	0.016

Note : 1) Adjust drilling conditions according to the rigidity of machine or work clamp state.
2) Use the table values for drilling depths upto 2xD. Adjust cutting conditions per table based on "degree angle to be drilled."
3) Above table values are for drilling water soluble cutting fluid. For non-water soluble cutting fluid reduce the RPM and feed rates by 20%.
4) Not recommended for drilling in Stainless Steel. We recommend using List9814 AQUA EX Flat OH3Dor OH5D for Stainless Steel & Hi-temp alloys.
5) Center Drill or Guide hole required. (1: Use AG Starting drill or Aqua Ex Flat drill)

Formulas : $\text{RPM} = \frac{\text{SFM} \times 3.82}{\text{Drill dia.}}$ Feed Rate (in/min) : RPM×IPR

Drilling conditions for Angled Surfaces					
Reduction % to above table values					
Degree Angle		Reduction %		Reduction % (Multiplier)	
		RPM	Feed	RPM	Feed
0°	5°	100%	100%	Table Value	Table Value
6°	20°	50%	50%	(Table Value)x0.5	(Table Value)x0.5
21°	35°	70%	40%	(Table Value)x0.3	(Table Value)x0.6
36°	60°	70%	40%	(Table Value)x0.3	(Table Value)x0.6
61°		70%	30%	(Table Value)x0.3	(Table Value)x0.7

Aqua Drill EX Flat Drills List No. 9812 AQDEXZOH3D

Work Material / Speed (SFM)		Cast Irons / Carbon Steels		Alloy Steels (20-30 HRC)		Mold Steels / Hardened Steels (30-40 HRC)		Hardened Steels (40-50 HRC)		Ductile Cast Irons		Stainless Steel (300-Series Stainless)		Nickel Alloys, Titanium Alloys, PH Stainless		Aluminum Casting	
Drill Diameter		390 - 395 SFM		325 - 328 SFM		225 - 230 SFM		160 - 165 SFM		200 - 225 SFM		180 - 185 SFM		100 SFM		450-455 SFM	
Metric mm	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
3	0.118	12700	0.003	10600	0.002	7400	0.002	5300	0.002	10600	0.002	6000	0.003	3200	0.002	14800	0.004
4	0.157	9500	0.004	7900	0.003	5550	0.002	4000	0.003	7900	0.002	4500	0.004	2400	0.003	11100	0.005
5	0.197	7600	0.005	6300	0.004	4450	0.003	3200	0.004	6300	0.003	3600	0.005	1900	0.004	8900	0.006
6	0.236	6300	0.006	5300	0.005	3700	0.004	2700	0.004	5300	0.004	3000	0.006	1600	0.005	7400	0.007
8	0.315	4800	0.008	3950	0.006	2790	0.005	2000	0.006	3950	0.005	2250	0.008	1200	0.006	5570	0.009
10	0.394	3800	0.010	3150	0.008	2230	0.006	1600	0.007	3150	0.006	1800	0.010	950	0.007	4460	0.012
12	0.472	3200	0.012	2650	0.009	1860	0.007	1300	0.009	2650	0.007	1500	0.012	800	0.007	3710	0.014
16	0.630	2400	0.016	1990	0.013	1390	0.009	1000	0.011	1990	0.009	1100	0.016	600	0.009	2790	0.019

Note : 1) Adjust drilling conditions according to the rigidity of machine or work clamp state.
2) Use the table values for drilling depths upto 3xD. Adjust cutting conditions per table based on "degree angle to be drilled."
3) Above table values are for drilling water soluble cutting fluid. For non-water soluble cutting fluid reduce the RPM and feed rates by 20%.

Formulas : RPM $= \frac{\text{SFM} \times 3.82}{\text{Drill dia.}}$ Feed Rate (in/min) : RPM×IPR

Aqua Drill EX Flat Drills List No. 9814 AQDEXZOH5D

Work Material / Speed (SFM)		Cast Irons / Carbon Steels		Alloy Steels (20-30 HRC)		Mold Steels / Hardened Steels (30-40 HRC)		Hardened Steels (40-50 HRC)		Ductile Cast Irons		Stainless Steel (300-Series Stainless)		Nickel Alloys, Titanium Alloys, PH Stainless		Aluminum Casting	
Drill Diameter		390 - 395 SFM		325 - 328 SFM		225 - 230 SFM		160 - 165 SFM		200 - 225 SFM		175 - 180 SFM		90 SFM		450-455 SFM	
Metric mm	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
3	0.118	12000	0.003	10000	0.002	7000	0.002	5000	0.002	10600	0.002	5700	0.003	3000	0.002	14800	0.004
4	0.157	9000	0.004	7500	0.003	5200	0.002	3800	0.002	7900	0.002	4200	0.003	2200	0.002	11100	0.005
5	0.197	7200	0.005	5900	0.004	4200	0.003	3000	0.003	6300	0.003	3400	0.004	1800	0.003	8900	0.006
6	0.236	5900	0.006	5000	0.005	3500	0.003	2500	0.003	5300	0.004	2800	0.005	1500	0.004	7400	0.007
8	0.315	4500	0.008	3700	0.006	2600	0.005	1900	0.005	3950	0.005	2100	0.007	1100	0.005	5570	0.009
10	0.394	3600	0.010	2900	0.008	2100	0.006	1500	0.006	3150	0.006	1700	0.009	900	0.006	4460	0.012
12	0.472	3000	0.012	2500	0.009	1700	0.007	1200	0.007	2650	0.007	1400	0.010	700	0.007	3710	0.014
16	0.630	2200	0.016	1800	0.013	1300	0.009	900	0.010	1990	0.009	1000	0.014	500	0.009	2790	0.019

Note : 1) Adjust drilling conditions according to the rigidity of machine or work clamp state.
2) Use the table values for drilling depths upto 5xD. Adjust cutting conditions per table based on "degree angle to be drilled."
3) Above table values are for drilling water soluble cutting fluid. For non-water soluble cutting fluid reduce the RPM and feed rates by 20%.
4) Center Drill or Guide hole required. (1: Use AG Starting drill or Aqua Ex Flat drill 2: For drilling guide holes in Stainless use AQUA EX Flat OH3D)

Formulas : RPM $= \frac{\text{SFM} \times 3.82}{\text{Drill dia.}}$ Feed Rate (in/min) : RPM×IPR

Drilling conditions for Angled Surfaces					
Reduction % to above table values					
Degree Angle		Reduction %		Reduction % (Multiplier)	
		RPM	Feed	RPM	Feed
0°	5°	100%	100%	Table Value	Table Value
6°	20°	50%	50%	(Table Value)x0.5	(Table Value)x0.5
21°	35°	70%	40%	(Table Value)x0.3	(Table Value)x0.6
36°	60°	70%	40%	(Table Value)x0.3	(Table Value)x0.6
61°		70%	30%	(Table Value)x0.3	(Table Value)x0.7

Aqua Drill EX 3 Flute Drills List No. 9826, 9820

Work Material / Speed (SFM) / Drilling Diameter		Cast Irons/Carbon Steel		Alloy Steels/Pre-Hardened (20-30 HRC)		Mold Steels/Hardened Steels (30-40 HRC)		Hardened Steels (40-50 HRC)		Cast Irons		Stainless Steel (300-Series Stainless)		Cast Aluminum	
		325-330 SFM		260-265 SFM		225-230 SFM		170-175 SFM		260-265 SFM		160-165 SFM		260-400 SFM	
Metric	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
3	0.118	10,700	0.005	8,500	0.005	7,450	0.004	5,600	0.005	8,500	0.005	5,300	0.004	14,800	0.007
4	0.157	8,000	0.006	6,400	0.006	5,600	0.005	4,200	0.007	6,400	0.006	4,000	0.006	11,200	0.009
6	0.236	5,300	0.010	4,250	0.009	3,750	0.008	2,800	0.011	4,250	0.009	2,650	0.008	7,400	0.010
8	0.315	4,000	0.013	3,200	0.013	2,800	0.011	2,100	0.015	3,200	0.013	2,000	0.011	5,600	0.013
10	0.394	3,200	0.016	2,550	0.016	2,250	0.014	1,700	0.018	2,550	0.016	1,600	0.014	4,500	0.016
12	0.472	2,650	0.019	2,100	0.019	1,850	0.017	1,400	0.022	2,100	0.019	1,350	0.016	3,700	0.019
14	0.551	2,250	0.020	1,800	0.020	1,600	0.016	1,200	0.022	1,800	0.019	1,150	0.016	3,200	0.022
16	0.630	2,000	0.022	1,600	0.022	1,400	0.019	1,050	0.025	1,600	0.022	1,000	0.019	2,200	0.032

Drill Dia. (mm/inches)

Note:
1) Adjust drilling conditions according to the rigidity of machine or work clamp state.
2) Use the table values as starting parameters. Adjust per your machine & set up as required.
3) Above table values are for drilling water soluble cutting fluid. For non-water soluble cutting fluid reduce the RPM and feed rates by 20%
4) Use Internal Coolant. If drilling more than 3xD or 5xD use peck drill cycle (G83).
5) Peck Depth interval = 1xD

Formulas:

$$RPM = \frac{SFM \times 3.82}{\text{Drill Dia.}}$$

Feed rate(in/min): RPM x IPR

Aqua Drill EX Micro Drills List No. 9612, 9614, 9616

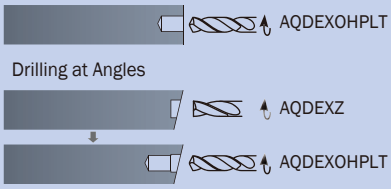
Work Material / Speed (SFM) / Drilling Diameter		Structural Steels Carbon Steels		Alloy Steels/Pre-Hardened (20-30 HRC)		Mold Steels/Hardened Steels (30-40 HRC)		Hardened Steels (40-50 HRC)		Cast Irons		Stainless Steel (300-Series Stainless)		Nickel Alloys Titanium Alloys	
		145-180 SFM		130-165 SFM		115-150 SFM		65-80 SFM		115-150 SFM		80-100 SFM		30-40 SFM	
Metric	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
1	0.039	14,300	0.0010	12,700	0.0008	11,150	0.0006	6,350	0.0004	11,150	0.0008	7,650	0.0004	3,150	0.0004
1.5	0.059	9,550	0.0010	8,500	0.0012	7,400	0.0009	4,250	0.0006	7,400	0.0012	5,300	0.0006	2,100	0.0006
2	0.079	7,150	0.0020	6,350	0.0016	5,550	0.0012	3,200	0.0008	5,550	0.0016	4,000	0.0008	1,600	0.0007
2.5	0.098	7,000	0.0030	6,350	0.0022	5,700	0.0019	3,200	0.0012	5,700	0.0024	3,800	0.0015	1,650	0.0012
2.9	0.114	6,050	0.0030	5,500	0.0026	4,950	0.0022	2,750	0.0014	4,950	0.0028	3,300	0.0017	1,400	0.0014

Drill Dia. (mm/inches)

Note:
1) Guide hole is required. It is recommended to use AQDEXOHPLT (Guide hole). Hole Depth (1D-2D).
2) It is recommended to use Guide hole drill 0.015mm larger in diameter than deep-hole drill.
3) Utilize the standard drilling conditions shown in catalogs just as general guide, when starting operation.
4) Adjust drilling conditions when unusual vibration or unusual sound occurs when cutting.
5) The above table is for water-soluble cutting fluid. If using non-water soluble cutting fluid, reduce feeds & speeds by 30%.
6) Min. Coolant pressure requirement = 300 psi or 2.0 Mpa.
7) To prevent coolant holes from being blocked use a fine mesh filter. (Recommended filteration efficiency 5μm).
8) Use Step Feed drilling cycle for hole depth over 10D. (Step Feed interval = 0.1D-0.5D).
9) When drilling Stainless Steel always use Step Feed Drilling Cycle.

Aqua Drill EX Oil Hole 10D, 15D, 20D, PLT

1. Use Guide Hole Drill (AQDEXOHPLT)



- We recommend pre-drilling with guide hole drill. Hole depth 1D - 2D
- We recommend using AQEXOHPLT for guide hole drilling. Select one with a diameter 0.015mm larger than deep hole drill
- If drilling at an angle use Aqua EX flat drill (AQDEXZ) to create a flat surface and then use Pilot Drill

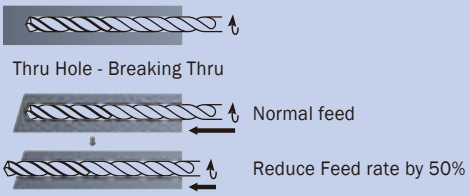
2 . Deep Hole Drilling into guide Hole

- Penetrate into the guide hole at 50% lower RPM until 0.5-1.0mm (0.02"- 0.04")from depth of guide

3 . Deep Hole Drilling

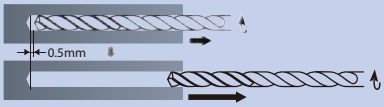
- Start Drilling at recommended Feeds & Speeds

4. Deep Hole Drilling (Breaking thru or blind hole)



- When breaking thru for a thru hole reduce feed rate by 50% to prevent drill from breaking

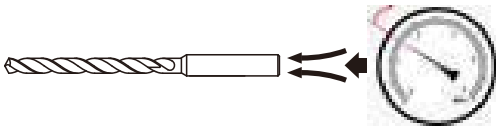
5. Retracting Drill from the Hole



- After drilling is complete, decrease RPM and pull the drill back through the hole
- About , RPM = 500, Feed = 2000 mm/min (IPR=0.157 IPM=79)

Precautions for Small Diameter Drills

1. Handling of Cutting Fluid
   - To prevent Coolant holes from being blocked use a fine mesh filter. (Recommended Filtration efficiency 5μm)
   - Water Soluble cutting fluid is recommended
2. Min. Coolant pressure requirement
   - Min. Coolant pressure requirement = 300 psi or 2.0 Mpa
   - Above recommended pressure will enable stable machining
   - If using non-water soluble cutting oils, higher pressure might be required
3. ATC
   - To reduce shock and vibration reduce ATC feed if required



Min.Coolant Pressure = 300 psi or 2.0 MPa

AQUA Micro Drills List No. 9544

Drilling in Wet Condition

Workpiece Material / Drill Diameter		Carbon Steels Cast Irons			Alloy Steels			Die Steels Hardened Steels (30-40HRc)			Hardened Steels (40-50HRc)		
Metric mm	Decimal	RPM	Feed (IPR)	Step Feed	RPM	Feed (IPR)	Step Feed	RPM	Feed (IPR)	Step Feed	RPM	Feed (IPR)	Step Feed
0.2	0.0079	31,800	0.0001	0.1D	26,500	0.0001	0.1D	21,200	0.0001	0.1D	12,700	0.0001	0.1D
0.3	0.0118	31,800	0.0001	0.1D	26,500	0.0001	0.1D	21,200	0.0001	0.1D	12,700	0.0001	0.1D
0.4	0.0157	31,800	0.0002	0.1D	25,900	0.0002	0.1D	19,900	0.0002	0.1D	12,700	0.0002	0.1D
0.5	0.0197	31,800	0.0002	0.1D	25,900	0.0002	0.1D	19,100	0.0002	0.1D	12,700	0.0002	0.1D
1.0	0.0394	23,900	0.0006	0.2D-0.5D*[5]	15,900	0.0006	0.2D-0.5D*[5]	12,700	0.0006	0.2D-0.5D*[5]	8,000	0.0005	0.1D
1.5	0.0591	21,200	0.0011	0.2D-0.5D*[5]	13,800	0.0011	0.2D-0.5D*[5]	9,500	0.0011	0.2D-0.5D*[5]	6,400	0.0009	0.1D
1.99	0.0783	19,200	0.0019	0.2D-0.5D*[5]	12,800	0.0020	0.2D-0.5D*[5]	8,000	0.0020	0.2D-0.5D*[5]	5,600	0.0015	0.1D

D: Drill Diameter

Workpiece Material / Drill Diameter		Hardened Steels (50-55HRc)			Ductile Cast Irons			Stainless Steels		
Metric mm	Decimal	RPM	Feed (IPR)	Step Feed	RPM	Feed (IPR)	Step Feed	RPM	Feed (IPR)	Step Feed
0.2	0.0079	10,600	0.0001	0.1D	31,800	0.0001	0.1D	10,600	0.0001	0.1D
0.3	0.0118	10,600	0.0001	0.1D	31,800	0.0001	0.1D	10,600	0.0001	0.1D
0.4	0.0157	9,900	0.0002	0.1D	31,800	0.0002	0.1D	9,500	0.0002	0.1D
0.5	0.0197	9,500	0.0002	0.1D	31,800	0.0002	0.1D	9,500	0.0002	0.1D
1.0	0.0394	5,600	0.0004	0.1D	19,100	0.0006	0.2D-0.5D*[5]	5,600	0.0006	0.1D
1.5	0.0591	4,200	0.0006	0.1D	17,000	0.0011	0.2D-0.5D*[5]	4,200	0.0012	0.1D
1.99	0.0783	3,600	0.0008	0.1D	16,000	0.0014	0.2D-0.5D*[5]	3,600	0.0015	0.1D

D: Drill Diameter

1) These table values are for drilling with water soulble cutting fluid.
2) Drill diameters under 1mm must be used in wet condition.
3) Adjust drilling condition when unusual vibration or different sound occurs.
4) When using low speed machines, use the maximum speed and adjust the feed rate.
5) If drilling a deep hole over 3 times drill diameter, use pecking.

* SFM vary largely according the diameter. It is decided that AQUA Micro does not have SFM information.

MQL Pilot Drills List No. 9566

Drilling in MQL Conditions

Work Material				Cast Irons / Carbon Steels		Alloy Steels / Pre-Hardened Steels		Mold Steels / Hardened Steels (-40HRc)		Ductile Cast Irons	
Drilling Condition				235-260 SFM		200-225 SFM		160-185 SFM		200-225 SFM	
Drill Dia. (mm/ inches)	Fractional	Metric (mm)	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
		3	0.118	7,600	0.004	6,400	0.003	5,100	0.003	6,400	0.003
		4	0.157	5,700	0.005	4,800	0.004	3,800	0.004	4,800	0.004
		5	0.197	4,500	0.006	3,800	0.006	3,100	0.005	3,800	0.006
		6	0.236	3,800	0.008	3,200	0.007	2,500	0.006	3,200	0.007
		7	0.276	3,200	0.010	2,700	0.008	2,200	0.008	2,700	0.008
		8	0.315	2,800	0.011	2,400	0.009	1,900	0.009	2,400	0.009
		9	0.354	2,500	0.012	2,100	0.010	1,700	0.010	2,100	0.010
		10	0.394	2,200	0.013	1,900	0.010	1,500	0.010	1,900	0.011

Drilling in WET Conditions

Work Material				Cast Irons / Carbon Steels		Alloy Steels / Pre-Hardened Steels		Mold Steels / Hardened Steels (-40HRc)		Ductile Cast Irons		Stainless Steel	
Drilling Condition				295-320 SFM		200-225 SFM		160-185 SFM		200-225 SFM		140-170 SFM	
Drill Dia. (mm/ inches)	Fractional	Metric (mm)	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
		3	0.118	9,500	0.004	6,400	0.003	5,100	0.003	6,450	0.003	5,170	0.003
		4	0.157	7,100	0.005	4,850	0.004	3,850	0.004	4,850	0.004	3,850	0.003
		5	0.197	5,700	0.007	3,880	0.006	3,100	0.005	3,850	0.006	3,100	0.005
		6	0.236	4,700	0.009	3,200	0.007	2,500	0.007	3,200	0.007	2,500	0.006
		7	0.276	4,000	0.010	2,750	0.008	2,200	0.008	2,750	0.008	2,200	0.007
		8	0.315	3,500	0.012	2,400	0.009	1,900	0.009	2,400	0.009	1,950	0.008
		9	0.354	3,100	0.012	2,150	0.010	1,700	0.010	2,150	0.010	1,700	0.008
		10	0.394	2,800	0.013	1,950	0.010	1,550	0.010	1,950	0.010	1,500	0.008

NOTE:
1) It is recommended that the pilot hole size be .05mm or .1mm bigger than the MQLPLD.
2) Drill Depth for Pilot Holes: 2~3D or deeper.
3) Utilize the standard drilling condition shown in catalog just as a general guide, when starting operation.
4) Adjust drilling conditions when unusual vibration or unusual sound occurs when cutting.
5) When using low speed machines, use maximum speed and adjust the feed rate.

Formulas:

$$RPM = \frac{SFM \times 3.82}{\text{Drill dia.}}$$

Feed Rate (in/min): RPM×IPR

MQL Power Long Drills List No. 9564, 9536

Drilling in MQL Conditions

	Work Material				Cast Irons / Carbon Steels		Alloy Steels Pre-Hardened Steels		Mold Steels / Hardened Steels (-40HRc)		Ductile Cast Irons	
	Drilling Condition				235 - 260 SFM		200 - 225 SFM		160 - 185 SFM		200 - 225 SFM	
		Fractional	Metric (mm)	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
10D 15D 20D	Drill Dia. (mm/ inches)		3	0.118	7600	0.004	6400	0.003	5100	0.003	6500	0.003
		1/8	3.175	.0125	7180	0.004	6100	0.003	4800	0.003	6100	0.003
			4	0.157	5700	0.005	4850	0.004	3850	0.004	4850	0.004
			5	0.197	4500	0.006	3850	0.006	3100	0.005	3850	0.006
			6	0.236	3800	0.007	3200	0.007	2600	0.006	3200	0.007
		1/4	6.35	0.250	3500	0.008	3100	0.007	2500	0.006	3100	0.007
			7	0.276	3250	0.008	2750	0.008	2200	0.007	2800	0.008
			8	0.315	2850	0.009	2400	0.009	1900	0.008	2450	0.009
		11/32	8.731	0.344	2600	0.009	2200	0.009	1750	0.009	2250	0.010
			9	0.354	2550	0.010	2150	0.010	1700	0.010	2150	0.010
		3/8	9.525	0.375	2400	0.010	2000	0.010	1650	0.010	2000	0.011
			10	0.394	2300	0.010	1900	0.010	1500	0.010	1900	0.011
			11	0.433	2100	0.011	1750	0.011	1400	0.011	1800	0.012
			12	0.472	1900	0.011	1600	0.011	1300	0.011	1600	0.012
			13	0.512	1750	0.012	1500	0.012	1200	0.012	1500	0.012
			14	0.551	1650	0.012	1400	0.012	1100	0.012	1400	0.012
		9/16	14.28	0.562	1600	0.012	1350	0.012	1100	0.012	1400	0.012
			15	0.591	1550	0.013	1300	0.013	1050	0.012	1300	0.012
			16	0.630	1450	0.013	1200	0.013	1000	0.012	1200	0.013
			17	0.669	1350	0.013	1150	0.013	950	0.013	1100	0.013
			18	0.709	1250	0.013	1050	0.013	900	0.013	1050	0.013
25D	Drill Dia. (mm/ inches)		4	0.157	5700	0.004	4800	0.003	3850	0.004	4850	0.004
			5	0.197	4500	0.005	3850	0.005	3100	0.005	3850	0.005
			6	0.236	3800	0.006	3200	0.006	2600	0.006	3200	0.006
		1/4	6.35	0.250	3600	0.006	3100	0.006	2450	0.006	3100	0.006
			7	0.276	3200	0.007	2750	0.007	2200	0.007	2750	0.007
			8	0.315	2900	0.008	2400	0.008	1950	0.008	2400	0.008
			9	0.354	2500	0.009	2200	0.009	1750	0.009	2150	0.009
		3/8	9.525	0.375	2400	0.010	2050	0.009	1650	0.009	2050	0.009
			10	0.394	2300	0.010	1950	0.009	1550	0.009	1950	0.010

Drilling in WET Conditions

	Work Material				Cast Irons / Carbon Steels		Alloy Steels Pre-Hardened Steels		Mold Steels / Hardened Steels (-40HRc)		Ductile Cast Irons		Stainless Steel	
	Drilling Condition				295-320 SFM		200-225 SFM		160-185 SFM		200-225 SFM		140 - 170 SFM	
		Fractional	Metric (mm)	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
10D 15D 20D	Drill Dia. (mm/ inches)		3	0.118	9500	0.0035	6500	0.003	5100	0.003	6500	0.003	5100	0.003
		1/8	3.175	.0125	9000	0.004	6100	0.003	4900	0.003	6100	0.003	4800	0.003
			4	0.157	7100	0.005	4900	0.004	3900	0.004	4800	0.004	3800	0.004
			5	0.197	5700	0.006	3900	0.006	3100	0.005	3900	0.006	3100	0.005
			6	0.236	4750	0.007	3300	0.007	2600	0.006	3300	0.007	2600	0.006
		1/4	6.35	0.250	4500	0.008	3100	0.007	2500	0.006	3100	0.008	2400	0.006
			7	0.276	4100	0.009	2800	0.008	2200	0.007	2800	0.008	2200	0.007
			8	0.315	3600	0.010	2500	0.009	2000	0.008	2500	0.009	1900	0.008
		11/32	8.731	0.344	3300	0.011	2300	0.009	1800	0.009	2300	0.010	1750	0.008
			9	0.354	3200	0.011	2200	0.010	1700	0.009	2200	0.010	1700	0.008
		3/8	9.525	0.375	3000	0.011	2100	0.010	1600	0.009	2100	0.011	1600	0.008
			10	0.394	2900	0.012	2000	0.010	1500	0.010	2000	0.011	1500	0.008
			11	0.433	2600	0.013	1800	0.011	1400	0.011	1800	0.012	1400	0.009
			12	0.472	2400	0.014	1600	0.011	1300	0.011	1600	0.013	1300	0.010
			13	0.512	2200	0.015	1500	0.012	1200	0.012	1500	0.013	1200	0.011
			14	0.551	2100	0.014	1400	0.012	1100	0.012	1400	0.013	1100	0.011
		9/16	14.28	0.562	2000	0.014	1400	0.012	1100	0.012	1400	0.013	1100	0.011
			15	0.591	1900	0.013	1300	0.013	1050	0.013	1300	0.013	1000	0.012
			16	0.630	1800	0.013	1200	0.013	950	0.013	1200	0.013	900	0.012
			17	0.669	1700	0.014	1150	0.014	900	0.014	1150	0.014	850	0.012
			18	0.709	1600	0.014	1100	0.014	850	0.014	1100	0.014	800	0.013
25D	Drill Dia. (mm/ inches)		4	0.157	7150	0.005	4850	0.004	3850	0.004	4850	0.004	3850	0.003
			5	0.197	5700	0.006	3850	0.005	3100	0.005	3850	0.005	3100	0.004
			6	0.236	4750	0.007	3200	0.006	2550	0.006	3200	0.006	2500	0.005
		1/4	6.35	0.250	4500	0.008	3050	0.006	2450	0.006	3100	0.006	2400	0.005
			7	0.276	4100	0.009	2750	0.007	2200	0.007	2750	0.007	2200	0.006
			8	0.315	3600	0.010	2400	0.008	1950	0.008	2400	0.008	1900	0.007
			9	0.354	3200	0.011	2150	0.009	1700	0.009	2150	0.009	1700	0.007
		3/8	9.525	0.375	3000	0.011	2050	0.009	1650	0.009	2050	0.009	1600	0.007
			10	0.394	2900	0.012	1950	0.010	1550	0.009	1950	0.010	1500	0.007

NOTE:
1) Guide (Pilot) hole is required. It is recommended to use same diameter or up to 0.1mm larger than diameter of the long drill. The depth of cut of the pilot hole should be 2xD in most cases or deeper.
2) We recommend using Nachi Guide (Pilot) Hole Drills with MQL Long Drills.
3) Utilize the standard drilling condition shown in catalog just as general guide when starting operation.
4) Adjust drilling conditions when unusual vibration or unusual sound occurs when cutting.
5) When using low speed machines, use maximum speed and adjust the feed rate.

Formulas :

$$RPM = \frac{SFM \times 3.82}{\text{Drill dia.}}$$

Feed Rate (in/min) : RPM × IPR

SG-ESR Drills List No. 7574P, 7575P

Workpiece Material / Speed (SFM) / Drill Diameter			Structural Steels, Carbon Steels		Alloy Steels		Mold Steels Stainless Steels 300-400 series		Nickel Alloys, Titanium Alloys		Cast Irons		Aluminum Alloys, Copper Alloys, Nonferrous Alloys	
			115 - 135 SFM		95 - 105 SFM		40 - 50 SFM		20 SFM		130 - 150 SFM		200 - 230 SFM	
Fractional	Metric mm	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
—	2	0.0787	6,000	0.003	4,800	0.002	1,800	0.002	800	0.001	6,800	0.003	10,500	0.003
3/32	2.381	0.0937	5,000	0.003	4,000	0.003	1,600	0.003	680	0.001	5,700	0.004	8,700	0.004
—	3	0.1181	4,000	0.004	3,200	0.004	1,200	0.004	550	0.001	4,500	0.005	7,000	0.005
1/8	3.175	0.1250	3,800	0.005	3,000	0.004	1,190	0.004	510	0.002	4,250	0.006	6,500	0.006
5/32	3.969	0.1563	3,000	0.006	2,400	0.005	950	0.004	420	0.002	3,400	0.007	5,200	0.007
3/16	4.763	0.1875	2,500	0.007	2,000	0.005	750	0.004	340	0.002	2,850	0.008	4,300	0.008
—	5	0.1969	2,500	0.007	1,900	0.006	700	0.004	290	0.002	2,700	0.008	4,100	0.008
1/4	6.35	0.2500	1,900	0.008	1,500	0.007	600	0.005	250	0.003	2,100	0.010	3,200	0.009
5/16	7.938	0.3125	1,500	0.009	1,200	0.008	450	0.007	210	0.003	1,750	0.012	2,600	0.011
—	8	0.3150	1,500	0.009	1,200	0.008	450	0.007	210	0.003	1,700	0.012	2,600	0.012
3/8	9.525	0.3750	1,250	0.010	1,000	0.009	400	0.008	170	0.004	1,450	0.012	2,200	0.013
—	10	0.3937	1,200	0.010	950	0.009	400	0.008	170	0.004	1,400	0.013	2,100	0.013
—	12	0.4724	1,000	0.011	800	0.010	300	0.009	120	0.005	1,100	0.014	1,700	0.015
1/2	12.7	0.5000	950	0.011	750	0.010	300	0.009	120	0.005	1,100	0.015	1,650	0.015
—	16	0.6299	750	0.014	600	0.012	250	0.011	100	0.007	850	0.017	1,300	0.017
—	20	0.7874	600	0.016	450	0.014	200	0.012	80	0.008	680	0.020	1,050	0.020
—	25	0.9843	450	0.019	350	0.015	150	0.014	50	0.010	550	0.023	850	0.023
—	32	1.2598	350	0.018	300	0.015	150	0.016	40	0.014	450	0.022	650	0.022

1) The above values apply when coolant is used in vertical machine & horizontal machine.
When drilling in stainless steel and hard-to-cut material using pecking.
2) Adjust drilling condition when unusual vibration or different sound occurs.
3) Recommended feeds and speeds are starting points only. Actual performance will be determined by specific material, the condition of equipment being used and coolant.

Formulas: $RPM = \frac{SFM \times 3.82}{\text{Drill dia.'}}$ Feed Rate (in/min)= RPM x IPR

SG-ESS Drills List No. 7572P, 7573P

Workpiece Material / Speed (SFM) / Drill Diameter			Structural Steels, Carbon Steels		Alloy Steels		Mold Steels Stainless Steels 300-400 series		Nickel Alloys, Titanium Alloys		Cast Irons		Aluminum Alloys, Copper Alloys, Nonferrous Alloys	
			115 - 135 SFM		95 - 105 SFM		40 - 50 SFM		20 SFM		130 - 150 SFM		200 - 230 SFM	
Fractional	Metric mm	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
—	2	0.0787	6,000	0.003	4,800	0.002	2,100	0.002	950	0.001	6,800	0.003	10,500	0.003
3/32	2.381	0.0938	5,000	0.003	4,000	0.003	1,800	0.003	800	0.001	5,700	0.004	8,700	0.004
—	3	0.1181	4,000	0.004	3,200	0.004	1,500	0.004	650	0.001	4,500	0.005	7,000	0.005
1/8	3.175	0.1250	3,800	0.005	3,000	0.004	1,400	0.004	600	0.002	4,250	0.006	6,500	0.006
5/32	3.969	0.1563	3,000	0.006	2,400	0.005	1,100	0.004	500	0.002	3,400	0.007	5,200	0.007
3/16	4.763	0.1875	2,500	0.007	2,000	0.005	900	0.004	400	0.002	2,850	0.008	4,300	0.008
—	5	0.1969	2,500	0.007	1,900	0.006	850	0.004	350	0.002	2,700	0.008	4,100	0.008
1/4	6.35	0.2500	1,900	0.008	1,500	0.007	700	0.005	300	0.003	2,100	0.010	3,200	0.009
5/16	7.938	0.3125	1,500	0.009	1,200	0.008	550	0.007	250	0.003	1,750	0.012	2,600	0.011
—	8	0.3150	1,500	0.009	1,200	0.008	550	0.007	250	0.003	1,700	0.012	2,600	0.012
3/8	9.525	0.3750	1,250	0.010	1,000	0.009	450	0.008	200	0.004	1,450	0.012	2,200	0.013
—	10	0.3937	1,200	0.010	950	0.009	450	0.008	200	0.004	1,400	0.013	2,100	0.013
—	12	0.4724	1,000	0.011	800	0.010	350	0.009	150	0.005	1,100	0.014	1,700	0.015
1/2	12.7	0.5000	950	0.011	750	0.010	350	0.009	150	0.005	1,100	0.015	1,650	0.015
—	16	0.6299	750	0.014	600	0.012	250	0.011	120	0.007	850	0.017	1,300	0.017
—	20	0.7874	600	0.016	450	0.014	200	0.012	100	0.008	680	0.020	1,050	0.020
—	25	0.9843	450	0.019	350	0.015	150	0.014	70	0.010	550	0.023	850	0.023
—	32	1.2598	350	0.018	300	0.015	150	0.016	50	0.014	450	0.022	650	0.022

1) The above values apply when coolant is used in vertical machine & horizontal machine.
When drilling in stainless steel and hard-to-cut material using pecking.
2) Adjust drilling condition when unusual vibration or different sound occurs.
3) Recommended feeds and speeds are starting points only. Actual performance will be determined by specific material, the condition of equipment being used and coolant.

Formulas: $RPM = \frac{SFM \times 3.82}{\text{Drill dia.'}}$ Feed Rate (in/min)= RPM x IPR

STANDARD DRILLING CONDITION

SG-ES Drills List No. 7570P, 7571P

Workpiece Material / Speed (SFM) / Drill Diameter			Structural Steels, Carbon Steels		Alloy Steels		Die Steels Steels(35-45HRc) 400 Series Stainless Steel		Cast Irons		Aluminum Alloys, Copper Alloys, Nonferrous Alloys	
			115 - 135 SFM		95 - 105 SFM		40 - 50 SFM		130 - 150 SFM		200 - 230 SFM	
Fractional	Metric mm	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
—	2	0.0787	6,000	0.003	4,800	0.002	2,200	0.002	6,800	0.003	10,400	0.003
3/32	2.381	0.0938	5,100	0.003	4,000	0.003	1,800	0.003	5,700	0.004	8,700	0.004
—	3	0.1181	4,100	0.004	3,200	0.004	1,450	0.004	4,500	0.005	6,900	0.005
1/8	3.175	0.1250	3,800	0.005	3,100	0.004	1,375	0.004	4,300	0.006	6,570	0.006
5/32	3.969	0.1563	3,100	0.006	2,450	0.005	1,100	0.004	3,450	0.007	5,300	0.007
3/16	4.763	0.1875	2,550	0.007	2,000	0.005	900	0.004	2,900	0.008	4,400	0.008
—	5	0.1969	2,400	0.007	1,900	0.006	870	0.004	2,700	0.008	4,200	0.008
1/4	6.35	0.2500	1,900	0.008	1,500	0.007	700	0.005	2,100	0.010	3,300	0.009
5/16	7.938	0.3125	1,500	0.009	1,200	0.008	550	0.007	1,750	0.012	2,700	0.011
—	8	0.3150	1,500	0.009	1,200	0.008	550	0.007	1,700	0.012	2,600	0.012
3/8	9.525	0.3750	1,300	0.010	1,000	0.009	500	0.008	1,500	0.012	2,200	0.013
—	10	0.3937	1,200	0.010	950	0.009	450	0.008	1,400	0.013	2,100	0.013
—	12	0.4724	1,000	0.011	800	0.010	400	0.009	1,100	0.014	1,750	0.015
1/2	12.7	0.5000	950	0.011	750	0.010	350	0.009	1,050	0.015	1,650	0.015
—	16	0.6299	750	0.014	600	0.012	300	0.011	850	0.017	1,300	0.017
—	20	0.7874	600	0.016	500	0.014	250	0.012	700	0.020	1,050	0.020
—	25	0.9843	500	0.019	400	0.015	200	0.014	550	0.023	850	0.023
—	32	1.2598	400	0.018	300	0.015	150	0.016	450	0.022	650	0.022

1) SG-ES is not recommended for 300-series Stainless Steels.
2) SG-ES is suitable for driling into 400-series Stainless Steels.
3) Pilot hole required for deep hole drilling applications. It is recommended to use same diameter pilot drill.
The depth of cut for pilot hole is 1 to 2 times drill diameter.
4) Use pecking in hard-to-cut materials.
5) Recommended feeds and speeds are starting points only. Actual performance will be determined by specific material, the condition of equipment being used and coolant.

Formulas: $RPM = \frac{SFM \times 3.82}{\text{Drill dia.'}}$ Feed Rate (in/min)= RPM x IPR

SG Drills with Oil Hole List No. 7596P, 7591P

Workpiece Material / Speed (SFM) / Drill Diameter			Structural Steels, Carbon Steels		Alloy Steels		Die Steels Hardened Steels (35-45HRc)		Stainless Steels		Cast Irons		Aluminum Alloys, Copper Alloys, Nonferrous Alloys	
			120 - 130 SFM		105 - 110 SFM		40 - 50 SFM		60 - 70 SFM		130 - 150 SFM		200 - 230 SFM	
Fractional	Metric mm	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
—	5	0.1969	2,400	0.007	1,900	0.006	850	0.005	1,200	0.005	2,700	0.009	4,100	0.009
1/4	6.35	0.2500	1,900	0.008	1,500	0.008	650	0.006	1,000	0.006	2,100	0.011	3,300	0.011
5/16	7.938	0.3125	1,500	0.009	1,250	0.008	550	0.007	800	0.007	1,700	0.013	2,650	0.013
—	8	0.3150	1,500	0.009	1,200	0.009	550	0.009	750	0.008	1,700	0.014	2,600	0.014
3/8	9.525	0.3750	1,250	0.010	1,000	0.010	500	0.009	700	0.009	1,500	0.014	2,200	0.014
—	10	0.3937	1,200	0.010	950	0.011	450	0.010	650	0.010	1,400	0.016	2,000	0.016
—	12	0.4724	1,000	0.011	800	0.011	400	0.010	550	0.010	1,200	0.016	1,700	0.016
1/2	12.7	0.5000	950	0.011	750	0.013	350	0.012	500	0.013	1,100	0.019	1,600	0.019
—	16	0.6299	750	0.014	600	0.014	250	0.014	400	0.015	850	0.021	1,300	0.021
—	20	0.7874	600	0.016	450	0.015	200	0.014	300	0.015	650	0.022	1,000	0.021

1) The above values apply when coolant is used in vertical machine & horizontal machine.
When drilling in stainless steel and hard to cut material using pecking.
2) Adjust drilling condition when unusual vibration or different sound occurs.
3) Recommended feeds and speeds are starting points only. Actual performance will be determined by specific material, the condition of equipment being used and coolant.

Formulas: $RPM = \frac{SFM \times 3.82}{\text{Drill dia.'}}$ Feed Rate (in/min)= RPM x IPR

AG-SUS Short Drills List No. 6596P
AG-SUS Regular Drills List No. 6594P, 6595P

Workpiece Material / Speed (SFM) / Drill Diameter			Austenitic Stainless Steels 304, 316		Austenitic Stainless Steels 304N		Martensitic Stainless Steels 420, 440		Ferritic Stainless Steels 405, 430		Low Carbon Steels	
			40 - 50 SFM		30 - 40 SFM		50 - 60 SFM		50 - 65 SFM		100 - 115 SFM	
Fractional	Metric mm	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
—	1	0.0394	4,300	0.001	3,300	0.001	5,300	0.001	5,300	0.001	10,600	0.001
—	2	0.0787	2,100	0.003	1,700	0.002	2,650	0.002	2,650	0.001	5,300	0.003
3/32	2.381	0.0938	1,800	0.003	1,400	0.003	2,240	0.003	2,240	0.001	4,450	0.004
—	3	0.1181	1,400	0.004	1,100	0.004	1,770	0.004	1,750	0.001	3,500	0.005
1/8	3.175	0.1250	1,300	0.005	1,000	0.004	1,680	0.004	1,650	0.002	3,300	0.006
5/32	3.969	0.1563	1,100	0.006	850	0.005	1,340	0.004	1,340	0.002	2,650	0.007
3/16	4.763	0.1875	900	0.007	700	0.005	1,120	0.004	1,120	0.002	2,250	0.008
—	5	0.1969	850	0.007	670	0.006	1,050	0.004	1,060	0.002	2,100	0.008
1/4	6.35	0.2500	650	0.008	530	0.007	840	0.005	840	0.003	1,680	0.010
5/16	7.938	0.3125	550	0.009	420	0.008	670	0.007	650	0.003	1,350	0.012
—	8	0.3150	550	0.009	400	0.008	650	0.007	650	0.003	1,300	0.012
3/8	9.525	0.3750	450	0.010	350	0.009	560	0.008	560	0.004	1,100	0.012
—	10	0.3937	430	0.010	340	0.009	530	0.008	500	0.004	1,000	0.013
—	12	0.4724	360	0.011	280	0.010	440	0.009	450	0.005	850	0.014
1/2	12.7	0.5000	340	0.011	260	0.010	420	0.009	420	0.005	800	0.015
—	16	0.6299	270	0.014	210	0.012	330	0.011	330	0.007	650	0.017
3/4	19.05	0.7500	220	0.016	200	0.015	280	0.016	280	0.016	550	0.015
—	20	0.7874	210	0.016	170	0.014	260	0.012	250	0.008	500	0.020

1) The above values apply when coolant is used in vertical machine & horizontal machine.
2) Adjust drilling condition when unusual vibration or different sound occurs.
3) Recommended feeds and speeds are starting points only. Actual performance will be determined by specific material, the condition of equipment being used and coolant.

Formulas: RPM = $\frac{\text{SFM x 3.82}}{\text{Drill dia.'}}$ Feed Rate (in/min)= RPM x IPR

AG-Power Long Drills List No. 6540P, 6541P

Workpiece Material / Speed (SFM) / Drill Diameter			Structural Steels, Carbon Steels		Alloy Steels		Hardened Steels, (-40 HRc), Tool Steels		Stainless Steels 300-400 Series		Cast Irons	
			40 - 80 SFM		25 - 50 SFM		16 - 35 SFM		30 - 40 SFM		42 - 82 SFM	
Fractional	Metric mm	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
—	1	0.0394	5,800	0.0007	3,300	0.0007	2,400	0.0005	2,900	0.0006	6,000	0.0008
—	2	0.0787	2,900	0.002	1,600	0.002	1,200	0.002	1,400	0.0015	3,000	0.002
—	3	0.1181	1,950	0.003	1,100	0.003	800	0.002	950	0.002	2,000	0.003
1/8	3.175	0.1250	1,800	0.003	1,000	0.003	750	0.002	900	0.002	1,800	0.003
3/16	4.763	0.1875	1,200	0.005	700	0.005	500	0.004	600	0.003	1,200	0.005
—	5	0.1969	1,100	0.005	650	0.005	480	0.004	550	0.004	1,200	0.006
—	6	0.2362	970	0.006	550	0.006	400	0.005	450	0.004	1,000	0.007
1/4	6.350	0.2500	900	0.006	500	0.006	350	0.005	450	0.004	950	0.008
9/32	7.144	0.2813	800	0.007	450	0.007	350	0.005	400	0.005	850	0.009
5/16	7.938	0.3125	700	0.008	400	0.008	300	0.006	350	0.006	800	0.010
—	8	0.3150	700	0.008	400	0.008	300	0.006	350	0.006	750	0.009
23/64	9	0.3594	650	0.009	350	0.009	250	0.007	300	0.007	700	0.010
—	10	0.3937	600	0.010	350	0.009	250	0.008	300	0.007	650	0.013
—	13	0.5118	550	0.009	300	0.009	200	0.008	250	0.008	600	0.011

1) Pilot Hole is required. It is recommended to use same diameter or up to 0.1mm larger than diamter of the long drill.
The depth of cut of the pilot hole is 1 to 2 times diameter of the drill diameter.
2) Above drilling table is applied to Series 1 & 2. In case of series 3 & 4, reduce the RPM and feed to 80% of table values.
3) Use pecking when drilling in Stainless Steel & Hardened Steels.
4) Recommended feeds and speeds are starting points only. Actual performance will be determined by specific material, the condition of equipment being used and coolant.

Formulas: RPM = $\frac{\text{SFM x 3.82}}{\text{Drill dia.'}}$ Feed Rate (in/min)= RPM x IPR

DLC-HSS Drill List No. 544

Drilling in Wet Condition

Workpiece Material / Speed (SFM) / Drill Diameter		Aluminum 1017		Aluminum Alloys						Aluminum Alloy Casting		Copper Alloys	
				4032, 6061		5052		7075					
		330 - 390 SFM		210 - 260 SFM		280 - 330 SFM		210 - 260 SFM		210 - 260 SFM		150 - 200 SFM	
Metric mm	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
1	0.0394	30,600	0.001	20,400	0.001	25,500	0.001	20,400	0.001	20,400	0.001	15,300	0.001
2	0.0787	19,100	0.002	12,700	0.002	15,900	0.002	12,700	0.002	12,700	0.002	9,600	0.002
3	0.1181	12,700	0.003	8,500	0.003	10,600	0.003	8,500	0.002	8,500	0.002	6,400	0.002
5	0.1969	7,600	0.005	5,100	0.005	6,400	0.005	5,100	0.004	5,100	0.004	3,800	0.004
8	0.3150	4,800	0.008	3,200	0.008	4,000	0.008	3,200	0.006	3,200	0.006	2,400	0.006
10	0.3937	3,800	0.010	2,500	0.010	3,200	0.010	2,500	0.008	2,500	0.008	1,900	0.008
12	0.4724	3,200	0.012	2,100	0.012	2,700	0.012	2,100	0.009	2,100	0.009	1,600	0.009
16	0.6299	2,400	0.013	1,600	0.013	2,000	0.013	1,600	0.010	1,600	0.010	1,200	0.010
20	0.7874	1,900	0.012	1,300	0.012	1,600	0.012	1,300	0.009	1,300	0.009	1,000	0.009

1) The table values are for drilling with water soulble cutting fluid.
2) DLC-HSS Drills are used in Nonferrous Metals such as Aluminum or Copper alloys.
3) Adjust drilling condition when unusual vibration or different sound occurs.
4) If drilling a deep hole over 3 times drill diameter, use pecking.

DLC Microdrills List No. 9524
DLC Drills Regular List No. 9520

Drilling in Wet & Semi Dry (Mist Coolant) Condition

Workpiece Material / Speed (SFM) / Drill Diameter		Aluminum 1017		Aluminum Alloys						Aluminum Alloy Casting		Copper Alloys	
				4032, 6061		5052		7075					
		650 - 820 SFM		330 - 500 SFM		500 - 650 SFM		500 - 650 SFM		430 - 590 SFM		260 - 330 SFM	
Metric mm	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
0.5	0.0197	60,000	0.0002	58,000	0.0002	60,000	0.0002	60,000	0.0003	60,000	0.0003	38,000	0.0003
1	0.0394	50,000	0.0006	38,000	0.0006	50,000	0.0006	50,000	0.0007	48,000	0.0007	25,000	0.0007
2	0.0787	40,000	0.0014	24,000	0.0014	32,000	0.0015	32,000	0.0016	29,000	0.0016	16,000	0.0016
3	0.1181	26,500	0.0021	16,000	0.0021	21,000	0.0022	21,000	0.0024	19,000	0.0025	10,500	0.0024
5	0.1969	16,000	0.003	9,600	0.004	12,700	0.004	12,700	0.004	11,500	0.004	6,400	0.004
8	0.3150	10,000	0.006	6,000	0.006	8,000	0.006	8,000	0.006	7,200	0.007	4,000	0.006
10	0.3937	8,000	0.007	4,800	0.007	6,400	0.007	6,400	0.008	5,700	0.008	3,200	0.008
12	0.4724	6,600	0.008	4,000	0.008	5,300	0.009	5,300	0.010	4,800	0.010	2,650	0.010

Drilling in Dry Condition

Workpiece Material / Speed (SFM) / Drill Diameter		Aluminum 1017		Aluminum Alloys						Aluminum Alloy Casting		Copper Alloys	
				4032, 6061		5052		7075					
		–		210 - 260 SFM		280 - 330 SFM		330 - 390 SFM		280 - 330 SFM		164 - 196 SFM	
Metric mm	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
0.5	0.0197	Not Used		30,000	0.0002	38,000	0.0002	45,000	0.0002	38,000	0.0002	22,000	0.0002
1	0.0394			20,000	0.0004	25,000	0.0004	30,000	0.0005	25,000	0.0005	15,000	0.0005
2	0.0787			12,500	0.0010	16,000	0.0010	19,000	0.0012	16,000	0.0012	9,500	0.0012
3	0.1181			8,500	0.0015	10,600	0.0016	12,700	0.0018	10,600	0.0018	6,400	0.0017
5	0.1969			5,100	0.0025	6,400	0.0026	7,600	0.003	6,400	0.003	3,800	0.003
8	0.3150			3,200	0.004	4,000	0.004	4,800	0.005	4,000	0.005	2,400	0.005
10	0.3937			2,550	0.005	3,200	0.005	3,800	0.006	3,200	0.006	1,900	0.006
12	0.4724			2,100	0.006	2,650	0.006	3,200	0.007	2,650	0.007	1,600	0.007

1) DLC Drills are used in Nonferrous Metals such as Aluminum or Copper Alloys.
2) Adjust drilling condition when unusual vibration or different sound occurs.
3) When using low speed machines, use the maximum speed and adjust the feed rate.

Straight Shank Drills — **Jobbers Length** — **List No. 500, 501, 501A, 599**
Screw Machine Length — **List No. 561, 563**
Taper Length — **List No. 531**

Straight Shank Cobalt Drills — **Jobbers Length** — **List No. 6501, 6520, 599**
Screw Machine Length — **List No. 6563**
Taper Length — **List No. 6531**

Workpiece Material / Speed (SFM) / Drill Diameter			Carbon Steels		Alloy Steels Hardened Steels		Mold Steels Stainless Steels		Titanium Alloys[1] High Temperature Alloys[1]		Cast Irons		Aluminum Alloys Nonferrous Metals	
			50 - 65 SFM		40 - 52 SFM		30 - 40 SFM		10 - 20 SFM		55 - 72 SFM		83 - 115 SFM	
Fractional	Metric mm	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
—	1	0.0394	4,800	0.0008	3,800	0.0007	2,900	0.0006	1,500	0.0003	5,300	0.0010	8,100	0.0007
1/16	1.588	0.0625	3,400	0.0013	2,700	0.0011	2,100	0.0009	1,000	0.0005	3,800	0.0015	5,800	0.0011
—	2	0.0787	2,900	0.0016	2,300	0.0013	1,700	0.0012	720	0.0006	3,200	0.0020	4,900	0.0014
—	3	0.1181	2,100	0.0028	1,700	0.0023	1,300	0.0021	480	0.0009	2,300	0.0034	3,600	0.0024
1/8	3.175	0.1250	2,000	0.0029	1,700	0.0023	1,200	0.0022	460	0.0010	2,200	0.0036	3,500	0.0025
—	5	0.1969	1,300	0.0042	1,000	0.0037	760	0.0033	290	0.0015	1,400	0.0053	2,200	0.0038
1/4	6.35	0.2500	1,100	0.0047	800	0.0044	610	0.0038	230	0.0020	1,120	0.0064	1,750	0.0044
—	8	0.3150	800	0.0059	640	0.0050	480	0.0044	180	0.0025	900	0.0074	1,400	0.0051
3/8	9.525	0.3750	680	0.0065	540	0.0055	400	0.0049	160	0.0030	740	0.0082	1,200	0.0054
—	10	0.3937	640	0.0068	510	0.0057	380	0.0050	150	0.0032	700	0.0084	1,100	0.0057
—	12	0.4724	530	0.0074	420	0.0064	320	0.0057	120	0.0040	580	0.0095	900	0.0066
1/2	12.7	0.5000	510	0.0076	400	0.0066	310	0.0057	120	0.0043	550	0.0099	860	0.0069
5/8	15.875	0.6250	410	0.0089	330	0.0076	250	0.0065	100	0.0050	450	0.0115	690	0.0086
—	16	0.6299	400	0.0091	320	0.0078	240	0.0067	90	0.0050	440	0.0116	680	0.0087

1) The cutting condition of Titanium Alloys and Nickel Alloys are for HSS-Co drills only.
2) The above values apply when coolant is used in a vertical machine. In a horizontal machine or deep hole, use pecking.
3) Adjust drilling condition when unusual vibration or different sound occurs.

Straight Shank Drills TiN Coated — **Jobbers Length** — **List No. 501P, 520P**
Screw Machine Length — **List No. 561P**

Workpiece Material / Speed (SFM) / Drill Diameter			Carbon Steels		Alloy Steels		Die Steels Hardened Steels Stainless Steels		Cast Irons		Aluminum Alloys Nonferrous Metals	
			60 - 85 SFM		47 - 65 SFM		36 - 48 SFM		66 - 90 SFM		100 - 140 SFM	
Fractional	Metric mm	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
—	1	0.0394	5,800	0.0008	4,600	0.0007	3,500	0.0006	6,400	0.0010	9,800	0.0007
1/16	1.588	0.0625	4,100	0.0013	3,200	0.0011	2,500	0.0009	4,400	0.0015	7,000	0.0011
—	2	0.0787	3,500	0.0016	2,800	0.0013	2,000	0.0012	3,800	0.0020	5,900	0.0014
—	3	0.1181	2,500	0.0028	2,000	0.0023	1,500	0.0021	2,800	0.0034	4,300	0.0024
1/8	3.175	0.1250	2,400	0.0029	2,000	0.0023	1,400	0.0022	2,600	0.0036	4,200	0.0025
—	5	0.1969	1,600	0.0042	1,200	0.0037	910	0.0033	1,700	0.0053	2,600	0.0038
1/4	6.35	0.2500	1,300	0.0047	1,000	0.0044	730	0.0038	1,300	0.0064	2,100	0.0044
—	8	0.3150	1,000	0.0059	770	0.0050	580	0.0044	1,100	0.0074	1,700	0.0051
3/8	9.525	0.3750	820	0.0065	650	0.0055	480	0.0049	890	0.0082	1,400	0.0054
—	10	0.3937	770	0.0068	610	0.0057	460	0.0050	840	0.0084	1,300	0.0057
—	12	0.4724	640	0.0074	500	0.0064	380	0.0057	700	0.0095	1,100	0.0066
1/2	12.7	0.5000	610	0.0076	490	0.0066	370	0.0057	670	0.0099	1,000	0.0069
5/8	15.875	0.6250	500	0.0089	400	0.0076	300	0.0065	540	0.0115	830	0.0086
—	16	0.6299	480	0.0091	380	0.0078	290	0.0067	530	0.0116	820	0.0087

1) The above values apply when coolant is used in a vertical machine. In a horizontal machine or deep hole, use pecking.
2) Adjust drilling condition when unusual vibration or different sound occurs.

Straight Shank Drills Parabolic Style TiN Coated — Jobbers Length — List No. 517P
Taper Length — List No. 545P

Workpiece Material / Speed (SFM) / Drill Diameter			Carbon Steels		Alloy Steels		Die Steels Hardened Steels Stainless Steels		Cast Irons	
			60 - 85 SFM		47 - 65 SFM		36 - 48 SFM		66 - 90 SFM	
Fractional	Metric mm	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
—	1	0.0394	5,800	0.0011	4,600	0.0009	3,500	0.0008	6,400	0.0014
1/16	1.588	0.0625	4,100	0.0018	3,200	0.0014	2,500	0.0012	4,400	0.0021
—	2	0.0787	3,500	0.0023	2,800	0.0017	2,000	0.0015	3,800	0.0028
—	3	0.1181	2,500	0.0039	2,000	0.0030	1,500	0.0027	2,800	0.0048
1/8	3.175	0.1250	2,400	0.0041	2,000	0.0030	1,400	0.0029	2,600	0.0050
—	5	0.1969	1,600	0.0059	1,200	0.0048	910	0.0042	1,700	0.0075
1/4	6.35	0.2500	1,300	0.0066	1,000	0.0057	730	0.0049	1,300	0.0089
—	8	0.3150	1,000	0.0083	770	0.0066	580	0.0058	1,100	0.0104
3/8	9.525	0.3750	820	0.0091	650	0.0072	480	0.0063	890	0.0115
—	10	0.3937	770	0.0095	610	0.0074	460	0.0065	840	0.0118
—	12	0.4724	640	0.0104	500	0.0083	380	0.0074	700	0.0133
1/2	12.7	0.5000	610	0.0107	490	0.0086	370	0.0075	670	0.0139
5/8	15.875	0.6250	500	0.0124	400	0.0099	300	0.0085	540	0.0161
—	16	0.6299	480	0.0127	380	0.0101	290	0.0087	530	0.0163

1) The above values apply when coolant is used in a vertical machine. In a horizontal machine or deep hole, use pecking.
2) Adjust drilling condition when unusual vibration or different sound occurs.

Straight Shank Drills — Extra Length — List No. 551, 6551
Taper Shank Drills Extra Length — List No. 651

Workpiece Material / Speed (SFM) / Drill Diameter		Carbon Steels		Alloy Steels Hardened Steels		Stainless Steels		Cast Irons		Brass Nonferrous Metals	
		44 - 55 SFM		32 - 40 SFM		32 - 40 SFM		52 - 65 SFM		48 - 60 SFM	
Fractional	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
1/16	0.0625	2,700	0.0020	2,000	0.0010	2,000	0.0015	3,200	0.0015	3,000	0.0020
1/8	0.1250	1,600	0.0038	1,200	0.0018	1,200	0.0025	1,800	0.0025	1,700	0.0036
3/16	0.1875	1,200	0.0052	820	0.0025	820	0.0035	1,400	0.0035	1,300	0.0050
1/4	0.2500	850	0.0065	620	0.0030	620	0.0048	1,000	0.0048	1,000	0.0063
5/16	0.3125	680	0.0075	490	0.0035	490	0.0055	800	0.0055	740	0.0078
3/8	0.3750	570	0.0090	410	0.0040	410	0.0060	670	0.0060	620	0.0090
1/2	0.5000	430	0.0110	310	0.0052	310	0.0080	500	0.0080	460	0.0110
5/8	0.6250	340	0.0120	250	0.0060	250	0.0090	400	0.0090	370	0.0120
3/4	0.7500	290	0.0130	210	0.0070	210	0.0100	340	0.0100	310	0.0130
1	1.0000	220	0.0140	160	0.0080	160	0.0110	250	0.0110	230	0.0140

1) The above values apply when coolant is used in a vertical machine. In a horizontal machine or deep hole, use pecking.
2) Adjust drilling condition when unusual vibration or different sound occurs.

Straight Shank Oil Hole Drills / Cobalt List No. 581

Workpiece Material / Speed (SFM) / Drill Diameter		Carbon Steels		Alloy Steels		Die Steels Hardened Steels Stainless Steels		Cast Irons		Aluminum Alloys Nonferrous Metals	
		55 - 66 SFM		44 - 52 SFM		32 - 40 SFM		61 - 73 SFM		94 - 114 SFM	
Fractional	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
1/16	0.0625	3,400	0.0016	2,700	0.0013	2,100	0.0011	3,800	0.0018	5,800	0.0013
1/8	0.1250	2,000	0.0035	1,700	0.0027	1,200	0.0027	2,200	0.0043	3,500	0.0030
1/4	0.2500	1,100	0.0056	800	0.0052	610	0.0046	1,120	0.0076	1,750	0.0053
3/8	0.3750	680	0.0078	540	0.0066	400	0.0058	740	0.0099	1,200	0.0065
1/2	0.5000	510	0.0091	400	0.0079	310	0.0069	550	0.0119	860	0.0082
5/8	0.6250	410	0.0106	330	0.0091	250	0.0079	450	0.0138	690	0.0103

1) The above values apply when coolant is used in a vertical machine. In a horizontal machine or deep hole, use pecking.
2) Adjust drilling condition when unusual vibration or different sound occurs.

Taper Shank Drills — Regular Shank / Core Drills — List No. 601
Silver and Deming Drills — List No. 575

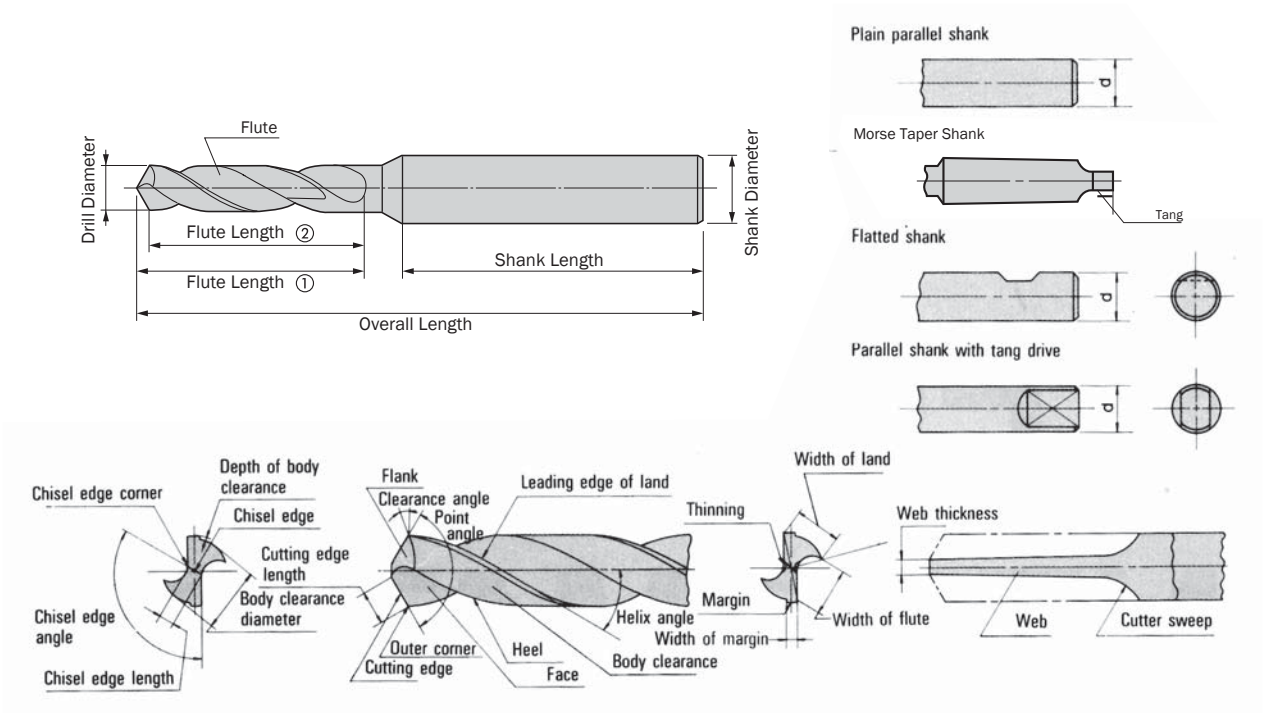
Workpiece Material / Speed (SFM) / Drill Diameter		Carbon Steels		Alloy Steels		Die Steels Hardened Steels Stainless Steels		Cast Irons		Aluminum Alloys Nonferrous Metals	
		55 - 65 SFM		50 - 60 SFM		35 - 45 SFM		65 - 80 SFM		100 - 110 SFM	
Fractional	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
1/8	0.1250	2,000	0.003	1,900	0.003	1,400	0.002	2,500	0.004	3,400	0.003
3/16	0.1875	1,400	0.004	1,300	0.004	920	0.003	1,700	0.005	2,300	0.005
1/4	0.2500	1,000	0.004	920	0.005	690	0.004	1,300	0.007	1,700	0.006
5/16	0.3125	800	0.004	740	0.005	560	0.005	980	0.008	1,400	0.008
3/8	0.3750	670	0.007	620	0.006	460	0.005	820	0.008	1,200	0.008
7/16	0.4375	570	0.007	530	0.006	400	0.005	700	0.009	970	0.009
1/2	0.5000	500	0.008	460	0.006	350	0.006	620	0.010	850	0.009
5/8	0.6250	400	0.009	370	0.008	280	0.007	490	0.012	680	0.012
3/4	0.7500	340	0.010	310	0.009	230	0.008	410	0.013	570	0.013
7/8	0.8750	290	0.011	270	0.009	200	0.008	350	0.014	490	0.014
1	1.0000	250	0.012	230	0.010	180	0.009	310	0.015	430	0.014
1 1/8	1.1250	230	0.012	210	0.011	160	0.010	280	0.016	380	0.015
1 1/4	1.2500	200	0.014	190	0.011	140	0.010	250	0.016	340	0.016
1 3/8	1.3750	190	0.014	170	0.012	130	0.010	230	0.017	310	0.017
1 1/2	1.5000	170	0.014	160	0.012	120	0.011	210	0.017	290	0.017
1 5/8	1.6250	160	0.015	150	0.013	110	0.011	190	0.017	260	0.017
1 3/4	1.7500	150	0.016	140	0.013	100	0.011	180	0.018	250	0.018
1 7/8	1.8750	140	0.016	130	0.014	100	0.012	170	0.019	230	0.019
2	2.0000	130	0.016	120	0.014	90	0.012	160	0.020	220	0.020

Taper Shank Oil Hole Drills / Cobalt — List No. 683

Workpiece Material / Speed (SFM) / Drill Diameter		Carbon Steels		Alloy Steels Hardened Steels		Mold Steels Stainless Steels		Cast Irons		Aluminum Alloys Nonferrous Metals	
		55 - 65 SFM		50 - 60 SFM		35 - 45 SFM		65 - 80 SFM		100 - 110 SFM	
Fractional	Decimal	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)	RPM	Feed (IPR)
3/8	0.3750	680	0.008	620	0.007	460	0.006	820	0.010	1,200	0.010
7/16	0.4375	580	0.009	530	0.007	400	0.006	700	0.011	970	0.011
1/2	0.5000	510	0.009	460	0.008	350	0.007	620	0.012	850	0.012
5/8	0.6250	410	0.011	370	0.010	280	0.008	490	0.014	680	0.014
23/32	0.7188	360	0.012	320	0.010	240	0.009	430	0.015	590	0.014
3/4	0.7500	340	0.013	310	0.011	230	0.009	410	0.015	570	0.015
7/8	0.8750	290	0.013	270	0.011	200	0.010	350	0.017	490	0.017
1	1.0000	260	0.014	230	0.012	180	0.011	310	0.018	430	0.018
1 1/4	1.2500	210	0.016	190	0.013	140	0.011	250	0.019	340	0.019
1 1/2	1.5000	170	0.017	160	0.014	120	0.012	210	0.021	290	0.021

1) The above values apply when coolant is used in a vertical machine. In a horizontal machine or deep hole, use pecking.
2) Adjust drilling condition when unusual vibration or different sound occurs.

TERMS FOR DRILLS



Precautions in using drills: 6-point

1. PROPER SELECTION OF DRILLS

Depending on work material and cutting conditions, standard drills can be used for drilling holes in materials. However, to ensure efficient and economical production, it is important that the proper drill is selected for each drilling operation.

2. MAINTENANCE OF DRILLING MACHINE, JIGS AND FIXTURES

For prolonging the drill life and maintaining accurate hole production, both the drilling machine used and jigs and fixtures must preserve high rigidity.

3. CORRECT HOLDING OF DRILLS

Of the time spent in drilling operations, net cutting time is surprisingly short and setting up time is much longer. Consequently, improved efficiency in attaching and detaching of drill from its holder is decidedly important from the point of view of increased productivity.

4. CORRECT CLAMPING OF WORKPIECE

5. PROPER CUTTING SPEED AND FEED RATE

Incorrect cutting speed and feed may cause the drill to wear excessively or even to break and will greatly shorten drill life. Cutting conditions are determined by the shape and machining qualities of the material, condition of the drilling machine, jigs and so forth, select proper values, referring to the cutting conditions. When deep hole drilling, reduce the cutting speed and feed in accordance with table shown in below.

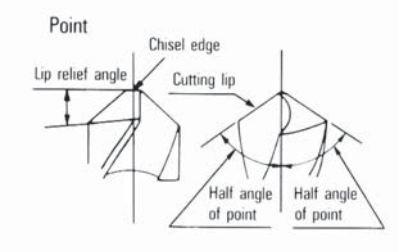
Speed and feed reductions for drilling deep holes

HOLE DEPTH	CUTTING SPEED REDUCTION RATE	FEED REDUCTION RATE
3 Times Diameter	10%	10%
4 Times Diameter	20%	10%
5 Times Diameter	30%	20%
6-8 Times Diameter	35-40%	20%

6. REGRINDING

When a drill is used until it is completely worn and does not cut, disadvantages will accumulate such as decreased production, deterioration of surface finish, reduced accuracy, drill breakage, increased amount of stock removal in regrinding and so forth. It is much better to sharpen a drill before it is worn completely. When correcting regrinding, the following five points should be carefully observed:

a) Completely remove the worn part (rough grind).
b) Center the chisel point.
c) The lengths of each cutting edge must be equal.
d) Regardless of the point angle, each cutting edge must be equally inclined to the axis of the drill.
e) Make the clearance angles proper and each clearance angle identical.

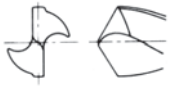


THE MAIN GEOMETRY FACTOR OF DRILLS AND THEIR WORK

CHARACTERISTICS	Cutting Resistance		Rigidity		Chip Removable	Guide Prfrmnc.	Amount of burr at the end	Remark
GEOMETRY FACTORS OF DRILLS	Thrust	Torque	Body	Cutting Edge				
Helix Angle: High ↕ Low	Small ↕ Big	Small ↕ Big	Small ↕ Big	Good ↕ Big	Good ↕ Bad		Small ↕ Big	When the helix angle is getting bigger, the cutting resistance is decreased, but the drill's rigidity down. High helix angle is adopted for soft material, and low helix angle is adopted for brittle material.
Point Angle: Big ↕ Small	Big ↕ Small	Small ↕ Big					Small ↕ Big	When the point angle is getting small, thrust is also small, but torque the gets bigger. For general purpose, 118 point angle is adopted. For hard material, or for high-speed cutting, 135 is recommended.
Web Thickness: Big ↕ Small	Big ↕ Small	Big ↕ Small	Big ↕ Small		Bad ↕ Good			To increase the drill web thickness, the rigidity of drill should be bigger. But thrust is also increased because of long chisel edge. To decrease thrust, the thinning is treated.
Clearance Angle: Big ↕ Small	Small ↕ Big			Small ↕ Big			Small ↕ Big	If large clearance angle is taken, thrust is decreased, and flank wear is also decreased, but cutting edge is getting brittle. For hard material, small clearance angle is taken, for soft material, large clearance angle is taken.
Back Taper: Big ↕ Small		Small ↕ Big				Bad ↕ Good		When back taper is getting bigger, torque is smaller, and worn margin length is also smaller. But too much back taper has less guide performance, and straight-ness of hole is decreased.

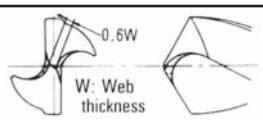
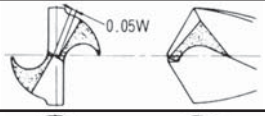
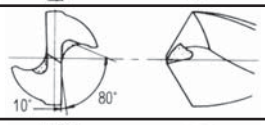
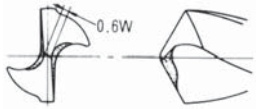
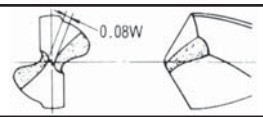
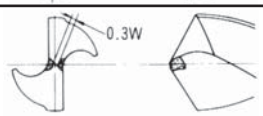
Shape of Lip Relief

The conical grinding method is broadly adopted as the most normal one. The other lip reliefs are chosen according to the application when it is preferable to make the highly accurate holes.

Shape	Features - Effects	Application	Symbol
Conical 	● the most normal grinding method ● The lip relief angle becomes greater as to it approaches to the center from corner because of grinding the lip relief conically.	General purpose	
Flat 	● grind the lip relief planely ● easy grinding	small diameter	
Three-rake 	● having good centripetalability because of no chisel edge ● less enlargement of hole ● need special grinder	drilling high accurate hole and location	
Spiral point 	● lip relief spirally ground makes an S-shaped chisel edge ● brings good centripetalability and high accuracy	drilling high accurate hole	
Radial-lip 	● making load uniformly disperse on curved-edge depending on grinding cutting edges to curved-one ● get good accuracy and surface roughness by this point ● less burr on exit side of through hole ● need special grinder	cast iron, light alloy and steel plate	
Fishtail 	● bring good centripetalability and less shock when penetrate ● less burr when penetrate	thin plate	

Web Thinning

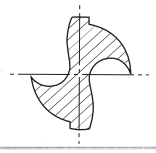
The proportion of drill resistance caused by the various drilling force concentrates on the chisel edge. The thrust force on the chisel edge is in the same proportion as that on the lip. Drill-thrust force is very sensitive to variations of chisel-edge length or web thickness. Web thinning reduces drilling thrust and produces other advantages such as reduced cutting temperature, increased drill life and improved hole geometry. In order to recondition the drill properly, it is necessary to reduce this web thickness.

Type	Features - Effects	Application	Symbol
S-type 	● very easy to make thinning	General purpose for steel, cast iron, non-ferrous metal	
X-type (split point) 	● reduce thrust force substantially ● advantage when entering ● This type of thinning is very effective for thick web	● drilling deep hole ex. oil-hole of crankshaft ● material of low-machinability and of machining hardenability	 
N-type 	● effective for thick web	● drilling deep hole	
R-type 	● reduce thrust force substantially ● lessen chipping on cutting edges	● heavy duty ● rail or manganese steel	
XS-type 	● easier grinding than x-type ● reduce thrust force substantially ● advantage when entering	● drilling deep hole	
H-type 	● lessen web thickness and strengthen chisel at same time	● heavy duty	

Figures reference only

Chip Breaker

Because continuous chips do not discharge easily, it is necessary to break these forcibly. Particularly, to change the shape of continuous chips generated in the deep hole processing of tough materials, it is desirable that the drill shall be provided with a chipbreaker. Examples of chipbreakers are shown below.

Type	Effect
	The rake angle is decreased by grinding the face flat along the cutting edge, preventing the winding of chips on the drill. In this case, the breaker must not affect the margin.
	The face is ground in the same way as for a chip breaker for a bit. This form of grinding is very difficult and, since there is a danger of breaking the margin, the amount of the breaker must be kept at minimum, care must be exercised to prevent interference with the chip pocket. This chipbreaker effective especially in the processing of deep holes. 
	This nicks on the flank function as chip breakers. Stagger the positions of nicks so that distances of the nicks from the drill axis are not identical. Cut chips become thin and long and they discharged smoothly.

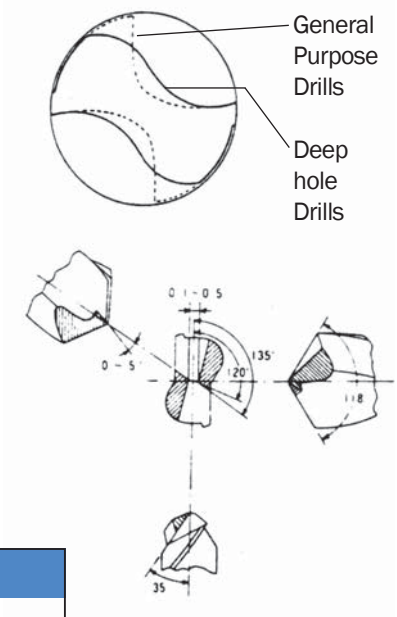
ex. Characteristics of the drills for deep hole

To drill a very deep hole, it is necessary for the drills to have the following four features:

1. Good removal of the cutting chip
2. Good penetration of the cutting coolant
3. Good heat resistance
4. High rigidity

We show the geometries for the drills in the illustration.

The drill has a thick web for strength and proper thinning for less thrust force.



Drilling Terminology

Terms	Descriptions	Formulas
IPM	Inches Per Minute	IPR x RPM
IPR	Inches Per Revolution	$\frac{IPM}{RPM}$
RPM	Revolutions Per Minute	$\frac{SFM \times 3.82}{D}$
SFM	Surface Feet Per Minute	D x RPM x 0.26
D	Drill Diameter	

OPERATING INSTRUCTIONS FOR RE-SHARPENING OF SG-ES & SG-ESS DRILLS

Accurate re-sharpening is one of the most important skills that a qualified worker must have.

SG-ESS RE-SHARPENING

1. DIMENSIONS OF THREE RAKE POINTING

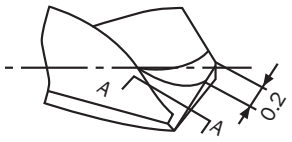
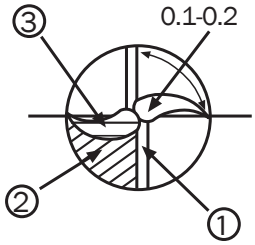
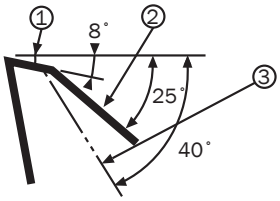


Fig. 1





A-A

2. RE-SHARPENERS

The relief flank is re-sharpened in an ordered sequence.
(1) The cutting tools are held parallel to the table.
(2) The drill swings from the same horizontal plane, about 20 degrees (Fig.2).
(3) The grinding wheel swings from the same number of degrees as the relief angle.
(4) Re-sharpening relief flank (Fig.3).

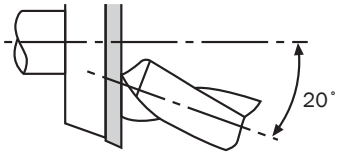


Fig. 2

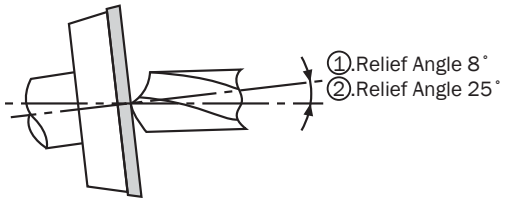


Fig. 3

3. THINNING (3RD RAKE)

The thinning is re-sharpened according to the following stipulations:
(1) The drills rotate about 40 degrees towards the re-sharpening surface (Fig. 4).
(2) The drills swings about 40 degrees (Fig. 5).
(3) The thinning surface must be re-sharpened done at 0.1 to 0.2 mm (0.004-0.008") increments.

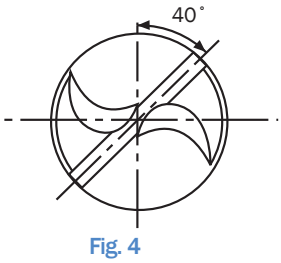


Fig. 4

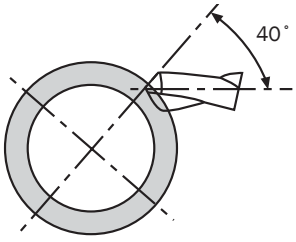
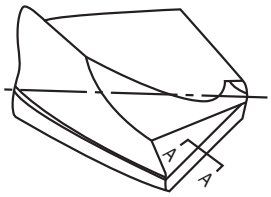
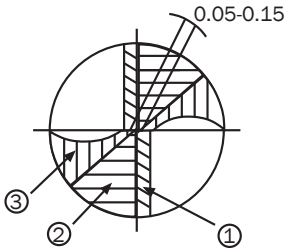


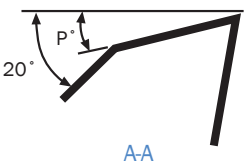
Fig. 5

SG-ES RE-SHARPENING

1. DIMENSIONS OF TWO-RAKE+X-THINNING







A-A

Diameter	P
2.0-5.0 (3/32-3/16)	12°
5.1-13.0 (13/64-1/2)	10°
13.1-20.0 (17/32-3/4)	8°

Table 1

2. GRINDING OF RELIEF FLANK

2-1. Utilize a drill grinder or a universal tool grinder.
2-2. Grind relief flank as having 8 – 12 deg. as relief angle shown in Table 1. and Fig. 2.
2-3. Fix the drill after incline it. Then grind relief flank as having 20 deg. as secondary relief.
2-4. At this time, regrind it to meet the edgeline of these two relief in center line (Fig.3).

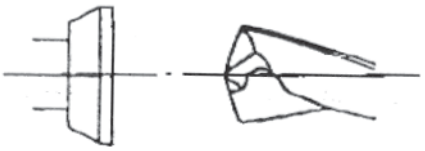


Fig. 1

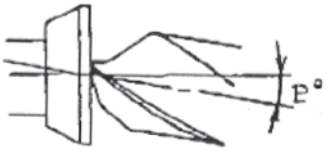


Fig. 2

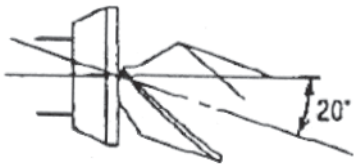
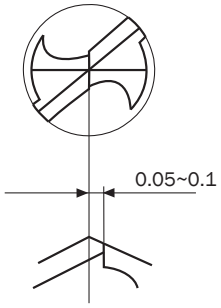


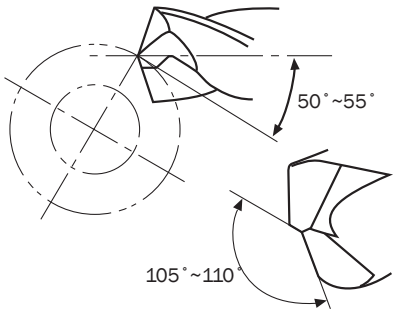
Fig. 3

3. WEB THINNING

3-1. As shown Fig. 4, incline drill in 50-55 deg. then grind the corner of secondary relief remaining .05-.1 mm (.002-.004 in.). At this time, give attention not to grind the center of drill, then remain approx. 0.1 mm (.004 in.).
3-2. Rotate drill in 10 – 15 deg., then grind it. And secure the pocket of 105 – 110 deg.

Fig. 4





4. INSPECTION

Please check the following points before using.

4-1. Lip height exist within 0.02 mm. (0.001 in.).
4-2. No remainder of damage on cutting edges after regrind.
4-3. Burr by regrind is removed.

GUIDELINES FOR TROUBLESHOOTING TWIST DRILL PROBLEMS

○ **Remedial measure is highly effective**

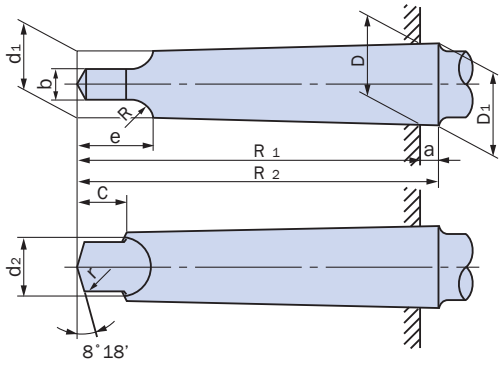
● **Remedial measure is relatively effective**

Problems	Solution	Possible Cause: Trouble with device	Faulty jig, clamp, or fixture	Faulty tool (design)	Faulty tool (regrinding)	Faulty tool holder	Defect in workplace	Unsatisfactory cutting conditions	Faulty coolant or lubricating system	Faulty process design
Oversize holes	Reduce material build up on cutting lips and flutes				(22)		24		29 30 31 32	
	Reduce difference in cutting resistance between Right and left cutting lips.		(4) (5B) 7	13B	● 19 20 (21)	8				
Curved hole or drilled off center	Prevent defective leading	(3)	3 ● 4 (5B) 7		13A 21	8			26B (27)	6 33
	Increase drill rigidity			(10)						
	Reduce difference in cutting resistance between right and left cutting lips.				17B 19					
Distorted Holes	Prevent rifling		● 4		18B 19					
	Reduce irregular motion and vibration		3 7	(23)	● 20 (21)	8		26A		33
	Eliminate clogging with chips			9A 11 14 15						34
Hole position shift			(3) ● 4		20 21	8		27		33
Rough Finish or tearing in hole	Reduce galling (material build up on cutting lips)				22		(24)		29 30 31 32	
	Reduce wear				13A 19			25B		
	Reduce chatter and vibration	1	4 7	9A (23)	20 21			26A		33
Breakage of drill	Eliminate clogging with chips			9A 11 (14) 15				● 26A (36)		34
	Increase drill rigidity			(10) 23	17			● 26B		
	Reduce feed at breakthrough	1 (2)	(7)		(20) 18			● 28		
	Prevent drill deflection		3 ● 4 5B 7		13A 19 21			26B		
Abnormal wear of drill corner edge	Reduce wear			12 16	18A		24	● 25B ● 26B		
	Prevent chipping	(2)	(7)					26B		
Wrapping of chip around drill	Increase or decrease helix angle and cutting speed from the recommended angle and speed	(34)	5A	9 ● 11 14				26A		

GUIDELINES FOR TROUBLESHOOTING TWIST DRILL PROBLEMS... continued

No.	Remedial action and important points
1	Increase rigidity (column and spindle) of machine tool.
2	Take steps to insure a steady feed (particularly components with pneumatic or hydraulic controls).
3	Increase accuracy of alignment of bushing. (Increase alignment of preliminary hole and spindle for hole with large diameter.)
4	Use bushing and reduce bushing clearance.
5 5A: 5B:	Clearance between workpiece to be drilled and bushing Widen this clearance. Narrow this clearance.
6	Rotate workpiece instead of tool.
7	Secure workpiece or replace fixture on the workpiece with fittings that have less clamp distortion.
8	Check contact of drill taper (clean) and reduce run-out of holder and spindle.
9 9A: 9B:	Helix angle Increase this angle. Decrease this angle.
10	Shorten overall length and flute length to Increase rigidity.
11	Provide chipbreaker.
12	Use surface treatment.
13	Point angle
13A: 13B:	Increase this angle Decrease this angle.
14	Increase flute width ratio.
15	Use oil-hole drill.
16	Upgrade material of tool.
17 17A: 17B:	Back taper Increase back taper. Decrease back taper (Check a slight decrease in diameter from point to back).
18 18A: 18B:	Lip relief angle Increase this angle. Decrease this angle.
19	Eliminate relative lip height (difference in cutting resistance between right and left cutting edges).
20	Thinning (take care to prevent excessive thinning).
21	Eliminate unevenly chiseled areas.
22	Rework worn margin completely.
23	Increase web thickness.
24	Check workpiece to be drilled, for proper grain structure and heat treatment. (HB: 180 or more)
25 25A: 25B:	Cutting speed Increase this speed. Decrease this speed.
26 26A: 26B:	Feed Increase feed rate. Decrease feed rate.
27	Decrease feed at entrance to workpiece.
28	Decrease feed at exit from workpiece.
29	Use non-water-soluble coolant.
30	Use sulfuric or chloric extreme-pressure oils.
31	Increase quantity of coolant discharged.
32	Feed oil in correct direction.
33	Drill center hole in preceding process.
34	Effect intermittent feed. (Narrow step for deep holes.)
35	Select such helix angle and end angle that cutting
36	Decrease feed rate for deep holes

TAPER SHANK WITH TENON



Morse taper	Taper		Angle on Side	Taper shank with tenon																
				D(2)	a	D1(3)	d1(3)	d2		R 1		R 2		b		C(4)	e		R	r
								Basic size	Tolerance	Basic size	Tolerance	Basic size	Tolerance	Basic size	Tolerance		Basic size	Tolerance	Max.	
0	1/19.212	0.05205	1°29'27"	9.045	3	9.201	6.104	6	0 −0.3	56.5	0 −1.2	59.5	0 −1.9	3.9	0 −0.180	6.5	10.5	0 −1.1	4	1
1	1/20.047	0.04988	1°25'43"	12.065	3.5	12.240	8.972	8.7	0 −0.3	62.0	0 −1.2	65.5	0 −1.9	5.2	0 −0.180	8.5	13.5	0 −1.1	5	1.2
2	1/20.020	0.04995	1°25'50"	17.780	5	18.030	14.034	13.5	0 −0.43	75.0	0 −1.2	80	0 −1.9	6.3	0 −0.220	10	16	0 −1.1	6	1.6
3	1/19.922	0.05020	1°26'16"	23.825	5	24.076	19.107	18.5	0 −0.52	94.0	0 −1.4	99	0 −2.2	7.9	0 −0.220	13	20	0 −1.3	7	2
4	1/19.254	0.05194	1°29'15"	31.267	6.5	31.605	25.164	24.5	0 −0.52	117.5	0 −1.4	124	0 −2.5	11.9	0 −0.270	16	24	0 −1.3	8	2.5
5	1/19.002	0.05263	1°30'26"	44.399	6.5	44.741	36.531	35.7	0 −0.62	149.5	0 −1.6	156	0 −2.5	15.9	0 −0.270	19	29	0 −1.3	10	3
6	1/19.180	0.05214	1°29'36"	63.348	8	63.765	52.399	51.0	0 −0.74	210.0	0 −1.85	218	0 −2.9	19	0 −0.330	27	40	0 −1.6	13	4

Tolerance of Drill Diameter

Unit : 0.001mm

Diameter (mm)		Under 3.0 D≦3	Above 3.0 Under 6.0 3<D≦6	Above 6.0 Under 10 6<D≦10	Above 10 Under 18 10<D≦18	Above 18 Under 30 18<D≦30	Above 30 Under 50 30<D≦50	Above 50 Under 80 50<D≦80	Above 80 Under 120 80<D≦120
Tolerance	js6	±3	±4	±4.5	±5.5	±6.5	±8	±8.5	±11
	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

NUMERICAL VALUES OF STANDARD TOLERANCE IT (JIS B 0401-1 : 1998 EXTRACT)

Unit : 0.001mm

Base size (mm) Above	Base size (mm) Up to and including	IT 1	IT 2	IT 3	IT 4	IT 5	IT 6	IT 7	IT 8	IT 9	IT 10	IT 11	IT 12	IT 13	IT 14
—	3	0.8	1.2	2	3	4	6	10	14	25	40	60	100	140	250
3	6	1	1.5	2.5	4	5	8	12	18	30	48	75	120	180	300
6	10	1	1.5	2.5	4	6	9	15	22	36	58	90	150	220	360
10	18	1.2	2	3	5	8	11	18	27	43	70	110	180	270	430
18	30	1.5	2.5	4	6	9	13	21	33	52	84	130	210	330	520
30	50	1.5	2.5	4	7	11	16	25	39	62	100	160	250	390	620
50	80	2	3	5	8	13	19	30	46	74	120	190	300	460	740
80	120	2.5	4	6	10	15	22	35	54	87	140	220	350	540	870
120	180	3.5	5	8	12	18	25	40	63	100	160	250	400	630	1000
180	250	4.5	7	10	14	20	29	46	72	115	185	290	460	720	1150
250	315	6	8	12	16	23	32	52	81	130	210	320	520	810	1300
315	400	7	9	13	18	25	36	57	89	140	230	360	570	890	1400
400	500	8	10	15	20	27	40	63	97	155	250	400	630	970	1550

TOLERANCE GRADE (JIS B 0401-1 : 1998 EXTRACT)