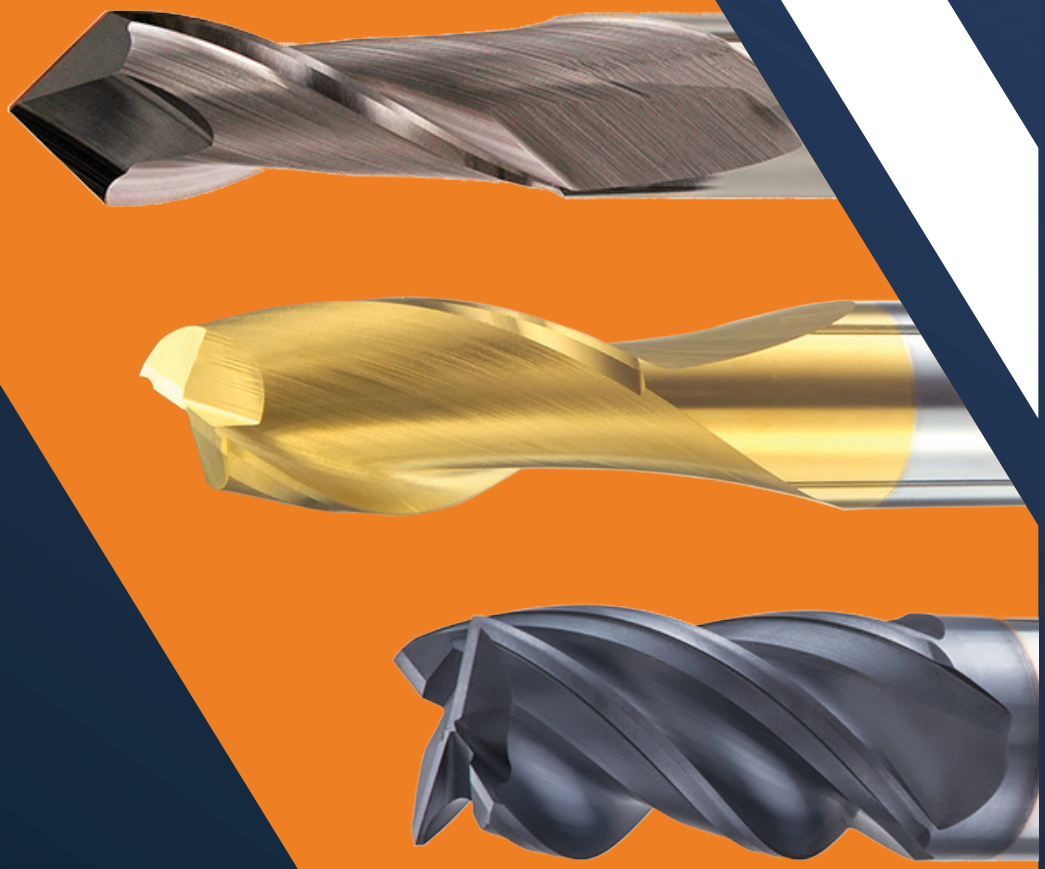
2022 Catalog



COBRA CARBIDE®
Power. Precision. Performance.

CARBIDE CUTTING TOOLS

NMSDC
National Minority Supplier Development Council

ISO 9001:2015 CERTIFIED COMPANY

AS9100 Rev. D Certified

www.cobracarbide.com

Solid Carbide Endmills, Drills, Reamers, Routers, Boring Bars, & Burrs

Message from CEO:

Thank you for considering Cobra Carbide for your tooling needs. Cobra has seen many changes over the last 30 years. Like many manufacturers, we adapted to an ever-changing marketplace full of competition. Here at Cobra, we pride ourselves on 3 core values: Power, Precision, & Performance. To establish these beliefs in line, we made many significant changes. Along with our improvements, we rely on our trustful customer service and good pricing on many of our great quality tools.

Whether you're buying from our 6000+ standard catalog items or if you're using our "Made to Print Specials", our commitment is to provide you with the best tools possible at extremely competitive prices. Every tool goes through a 3-step quality process before being shipped out. Our tools go through a First Article Inspection, a Work in Progress (WIP) inspection, and a Final Inspection here in our California facility.

In 2017, Cobra sold off all of its overseas operations and brought all manufacturing operations to the United States. We've invested heavily over the last couple of years in the latest machines and technology to make our tools faster, better, and cost-efficient. Our state-of-the-art facility along with our quality process ensure you that our products will exceed the competition. We continue to innovate and design the latest & advanced tools that go beyond our customer's needs.

Again, I'd like to personally thank you for considering Cobra Carbide as your tooling provider. We wish you success in all of your tooling endeavors. If you're ever in the area, please feel free to stop by & see our operations firsthand.

Sincerest Regards,

Rakesh Aghi
Chief Executive Officer

CONTACT US

www.cobracarbide.com

(951) 280-4700

websales@cobracarbide.com

12650 Magnolia Ave, Riverside, CA 92503

CUSTOM ENGINEERED TOOLING SOLUTIONS

Cobra Carbide has a team of dedicated tooling engineers that are able to both quote and make tools to print. If you need a tool for a special project, our staff is capable of creating one for a special project. Our tooling engineers can provide recommended tooling solutions for your specific needs and create prints specific to your tool designs.

In addition to creating tools for specific projects, our tooling engineers can put together a print for your tool design. We can manufacture from print once the design is finalized and approved.

Cobra Carbide prides itself on our three mantras (3-P's): POWER, PRECISION, & PERFORMANCE. We stand behind every tool that we make and we understand that it takes both quality & price to make Cobra Carbide your preferred choice for tools.

AVAILABLE PVD COATINGS

Coating Services Chart

Standard coating thickness = 2.5 microns

Standard Coating	Coating Material	Color	Hardness [HV]	Friction Coefficient	Avl. Thickness	Max. Working Temperature	Characteristics	Common Use
TiN	Titanium Nitride	Gold	2400	0.50	1-7	600c - 1100f	The General Purpose Coating	Steels - Cast Iron - Aluminum - Bronze - Copper
ALTIN	Aluminum Titanium Nitride	Dark Grey	3400-3600	0.60	1-4	700c - 1300f	Universal High Performance Coating	Steels - Copper
TIALN	Titanium Aluminum Nitride	Dark Grey	3400-3600	0.60	1-4	700c - 1300f	Universal High Performance Coating	Steels - Copper
TiCN	Titanium Carbonitride	Silver Grey	3500	0.25	1-4	400c - 750f	Conventional Coating	Steels - Alloyed Steels - Superalloys - Cast Ion - Wood - Bronze - Copper - Aluminum
ZRN	Zirconium Nitride	Light Gold	2400	0.30	1-4	550c - 1300f	Monolayer Ti or Cr based adhesion layer	Steels - Alloyed Steels - Superalloys - Cast Ion - Wood - Bronze - Copper - Aluminum
CRN	Chromium Nitride	Silver Grey	1800	0.30	1-4	700c - 1300f	Standard Coating for Non-Cutting Application	Steels - Copper

DLC Coatings	Coating Material	Color	Hardness [HV]	Friction Coefficient	Avl. Thickness	Max. Working Temperature	Characteristics	Uses
DLC	Diamond Like Carbon	Dark Grey	2400-4000	0.1-0.2	1-8	200c - 400f	Ultimate Performance Coating	Low Friction Properties - Molds & Mold Components - High Performance Moto & Auto - Aerospace - Bearings
DLC Plus	Diamond Like Carbon	Black	2400-4000	0.1-0.2	1-8	200c - 400f	Ultimate Performance Coating	Low Friction Properties - Molds & Mold Components - High Performance Moto & Auto - Aerospace - Bearings
DLC Rainbow	Diamond Like Carbon	Rainbow	2400-4000	0.1-0.2	1-8	200c - 400f	Ultimate Performance Coating	Low Friction Properties - Molds & Mold Components - High Performance Moto & Auto - Aerospace - Bearings
DLC Blue	Diamond Like Carbon	Ice Blue Tint	2400-4000	0.1-0.2	1-8	200c - 400f	Ultimate Performance Coating	Low Friction Properties - Molds & Mold Components - High Performance Moto & Auto

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Specialty Coating	Coating Material	Color	Hardness [HV]	Friction Coefficient	Avl. Thickness [Microns]	Max. Working Temperature	Characteristics	Uses
ALTICMAS	ALTIN + TICN Top Layer	Grey	3400	0.20	1-3	400c - 750f	Dry Lubricant Film	
X-LC (MOS)	Molybdenum Disulfide	Black	600	0.10	1	200c - 400f	Low Coefficient of Friction	Bearings - Sliding Parts - Injection Molding - Engine Components - Shaft/Gear - Vacuum / Space
X-LC Shadow (MOS)	Molybdenum Disulfide + TICN Underlayer	Black	3500	0.10	2-3	200c - 400f	Low Coefficient of Friction	Bearings - Sliding Parts - Injection Molding - Engine Components - Shaft/Gear - Vacuum / Space
ALCRONA	Aluminum Chromium Nitride	Dark Silver	4500	0.45	1-7	1100c - 2000f	High Heat Coating	Steels - Alloys - Hardened Steels - Cast Iron
ALTISIN	Aluminum Titanium Silicon Nitride	Dark Grey	4500	0.45	1-4	1200c - 2200f	Extremely High Hardness	Dry Milling - High Speed Ops
Quantum(x)	ZRN+TIN Top Layer	Gold	2400	0.30	1-4	660c - 1100f	High Wear Resistant Coating	Milling Titanium
Volt(x)	TICN+TIN Top Layer	Gold	2900	0.30	1-4	500c - 930f	High Wear Resistant Coating	Milling Titanium - Inconel Materials
Super Tin	TIN+TICN Top Layer	Gold	2800	0.50	1-4	600c - 1100f	Universal Cutting Use	Steels - Cast Iron - Aluminum - Copper - Wood - Bronze
TICN Red	Titanium Carbonitride	Rose	3800	0.25	1-4	400c - 750f	Conventional Coating	Steels - Alloyed Steels - Superalloys - Cast Ion - Wood - Bronze - Copper - Aluminum
NACO-Blue	Titanium Carbonitride	Blue Tint	3800	0.25	1-4	400c - 750f	Conventional Coating	Steels - Alloys - Hardened Steels
Warrior	Proprietary	Copper	Proprietary				Universal High Performance Coating	Cutting Tools - Weaponry
NACO	Titanium Aluminum Silicon Nitride	Dark Grey	4500	0.45	1-4	1200c - 2200f	Extremely High Hardness	Steels - Alloys - Hardened Steels
NACRO	Titanium Aluminum Chrome Nitride	Dark Silver	4500	0.45	1-7	1100c - 2000f	Extremely High Hardness	Steels - Alloys - Hardened Steels - Cast Iron
NEXCEL	NACRO+MOS Top Layer	Black	4500	0.25	1-7	1100c - 2000f	Low Coefficient of Friction	Cutting of Non-Ferrous Material

Coating Services Chart

COBRA CARBIDE®
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GENERAL PURPOSE & HIGH PERFORMANCE

CARBIDE ENDMILLS

ENDMILLS
Pictoral Index

Tool Type:	# of Flutes	Description	Page #
ADDER			
	4 Flute	40° Helix - Ultra Performance Endmill	15-16
	5 Flute	40° Helix - Ultra Performance Endmill	16-17
	4 Flute Metric	40° Helix - Ultra Performance Endmill	18
VIPER			
	4 Flute	32° to 38° Variable Helix Endmill	20
	5 Flute	32° to 38° Variable Helix Endmill	21
	4 & 5 Flute Metric	32° to 38° Variable Helix Endmill	22
COPPERHEAD			
	2 Flute Fraction	45° - Copperhead-NF Endmill	24
	2 Flute Metric	45° - Copperhead-NF Endmill	25
	3 Flute Fraction & Metric	42° - Copperhead-NF Endmill	26-27

ENDMILLS
Pictoral Index

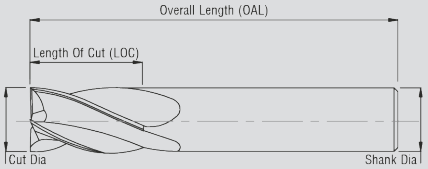
ENDMILLS
Pictoral Index

BURRS
Pictoral Index

DRILLS
Pictoral Index

DRILLS			
	BLACK MAMBA - 3XD	Black Mamba Coolant Fed - 140° Point Angle	91-95
	BLACK MAMBA - 5XD	Black Mamba Coolant Fed - 140° Point Angle	96-100
	BLACK MAMBA -8XD	Black Mamba Coolant Fed - 140° Point Angle	101-104
	NON-COOLANT - 3XD	Non-Coolant Fed - 140° Point Angle	105-111
	NON-COOLANT - 5XD	Non-Coolant Fed - 140° Point Angle	112-117
	NON-COOLANT - 8XD	Non-Coolant Fed - 140° Point Angle	118-121
	JOBBER DRILL	Jobber Length Drill	124-129
	SCREW MACHINE LENGTH DRILL	Screw Machine Length Drill	131-135
	3 FLUTE DRILLS	3 Flute Drill	138-139
	STRAIGHT FLUTE DRILL	Straight Flute Drill	142-146
	SPADE DRILL	Spade Drill	147
	SPOTTING DRILL	2 Flute N/C Spotting Drill	150
	COMBINED DRILL & COUNTERSINK	60°, 82°, & 90° Combined Drills (Center Drill)	150-151
	COMBINED DRILL & COUNTERSINK	Combined Drill Form B & Form R	152
	COUNTERSINK	Single & Three Flute Countersinks	153
	COUNTERSINK	Six Flute Countersinks	154

REAMERS			
	CHUCKING REAMERS	Chucking Reamers	156-177



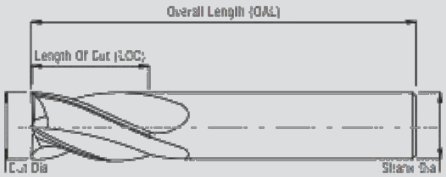
TECHNICAL DATA ENDMILLS

SPEEDS & FEEDS – GENERAL ENDMILLS

ADDER		
Material Group	Material Type	Cutting Speed (Vc) (m/min)
Steel	Structural Steel	115 - 145
	Free Cutting Steel	95 - 125
	Unalloyed Heat Treatable Steel	95 - 125
	Unalloyed Case Hard Steel	140 - 170
	Alloyed Case Hardened Steel	90 - 120
	Nitriding Steel	110 - 140
Acid Resistant /	Stainless Steel, Sulphured Austenitic Steel,	85 - 105
Stainless Steel	Martensitic	
High Tensile Steel	Low Carbon Steel	110 - 125
	Medium Carbon Steel	75 - 90
	Alloyed Heat Treatable Steel	90 - 120
	Tool Steel	90 - 120
	High Speed Steel	70 - 85
	Spring Steel	
Cast Materials	Cast Iron	150 - 185
	Spheroidal Graphite & Malleable Ci	120 - 160
	Chilled CI	
Aluminium &	Aluminium & Ti Alloys	
Aluminium Alloys	Al Wrought Alloys	
	Al Cast Alloys < 10%si	
	Al Cast Alloys > 10%si	
Special Alloys	Special Alloys	70 - 80
	Ti Alloys	80 - 95
Non ferrous Metals	Copper Low Alloyed	
	Brass	
	Bronze	
Plastics	Duro Plastics	
	Thermoplastics	
Magnesium Alloys	Mg Alloys	

ADDER

Ultra Performance Endmill



4 FLUTE REGULAR LENGTH

BENEFITS

- Ultra High Performance Endmill suitable for Roughing & Finishing a wide range of materials.
- Flute geometry desiged to increase stability, reduce vibration and for smoother cutting action.

FEATURES

- Utilizes optimal helix angle, flute geometry, and core thickness
- Tool rigidity to increase the stability during cutting action
- Unequal flutes helps to reducing the chatter and vibration
- NACRO coating for improved tool life
- Manufactured from premium submicron grain carbide

< 40 HRc

Shank Dia: h6
Cut Dia: h10

NACRO COATING:

Tools are heavily stressed in production, with high mechanical and thermal strains. For these demands we created NACRO, this is the top level all-round coating for cutting, punching and die casting. With this coating we were able to significantly improvel the performance curve. This results in an extremely wear resistant coating with excellent hot hardness and thermal shock stability. In short: The universal coating for superb results in dry and wet machining at high cutting speeds.

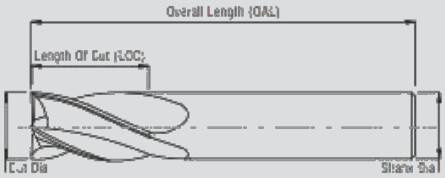
4 FLUTE ADDER SERIES (INCH)

Cut Dia	Shank Dia	LOC	OAL	Radius	EDP # NACRO
1/8	1/8	1/4	1-1/2	SQ	18862
1/8	1/8	1/4	1-1/2	R.015	18801
1/8	1/8	1/2	1-1/2	SQ	18804
1/8	1/8	1/2	1-1/2	R.015	18800
1/8	1/8	1	3	R.015	18863
3/16	3/16	3/8	2	R.015	18850
3/16	3/16	5/8	2	R.015	18802
3/16	3/16	5/8	2	SQ	18808
3/16	3/16	5/8	2	R.030	18831
3/16	3/16	1-1/8	3	R.015	18864
1/4	1/4	1/2	2	R.020	18805
1/4	1/4	1/2	2	R.030	18810
1/4	1/4	5/8	2-3/8	SQ	18867
1/4	1/4	3/4	2-1/2	SQ	18816
1/4	1/4	3/4	2-1/2	R.020	18806
1/4	1/4	3/4	2-1/2	R.030	18807
1/4	1/4	3/4	2-1/2	R.060	18809
1/4	1/4	1-1/8	3	R.015	18865
1/4	1/4	1-1/8	3	R.020	18811
5/16	5/16	1/2	2	R.030	18843
5/16	5/16	13/16	2-1/2	SQ	18840
5/16	5/16	13/16	2-1/2	R.030	18812
5/16	5/16	13/16	2-1/2	R.060	18845
5/16	5/16	1-1/8	3	R.015	18866
3/8	3/8	5/8	2	R.030	18819
3/8	3/8	5/8	2	SQ	18859
3/8	3/8	1	2-1/2	SQ	18860
3/8	3/8	1	2-1/2	R.030	18818
3/8	3/8	1	2-1/2	R.060	18861
3/8	3/8	1-1/2	4	R.030	18868
7/16	7/16	1	2-3/4	R.030	18822
7/16	7/16	1	2-3/4	SQ	18823
1/2	1/2	5/8	2-1/2	R.030	18826

ENDMILL

ADDER

Ultra Performance Endmill



40°

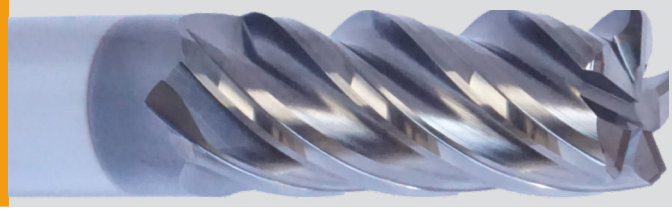
< 40 HRc

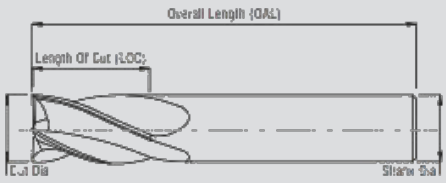
Shank Dia: h6
Cut Dia: h10

ENDMILL

4 FLUTE ADDER SERIES (INCH)

Cut Dia	Shank Dia	LOC	OAL	Radius	EDP # NACRO
1/2	1/2	1-1/4	3	SQ	18870
1/2	1/2	1-1/4	3	R.030	18827
1/2	1/2	1-1/4	3	R.060	18828
1/2	1/2	1-1/4	3	R.125	18630
1/2	1/2	1-3/4	4	R.030	18837
5/8	5/8	3/4	3	R.040	18846
5/8	5/8	1-1/4	3-1/2	SQ	18880
5/8	5/8	1-1/4	3-1/2	R.040	18832
5/8	5/8	1-1/4	3-1/2	R.060	18853
5/8	5/8	2	4	R.040	18835
5/8	5/8	2-1/4	5	R.040	18882
3/4	3/4	1	3	R.050	18887
3/4	3/4	1-1/2	4	R.030	19002
3/4	3/4	1-3/4	4	SQ	18886
3/4	3/4	1-3/4	4	R.030	18877
3/4	3/4	1-3/4	4	R.060	18838
3/4	3/4	1-3/4	4	R.125	18899
3/4	3/4	2-1/4	5	R.060	18820
1	1	1-1/2	4	SQ	18894
1	1	1-1/2	4	R.060	18842





5 FLUTE REGULAR LENGTH

BENEFITS

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FEATURES

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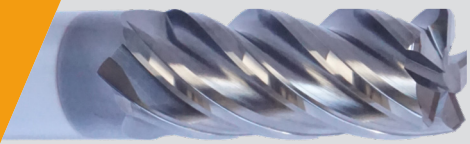
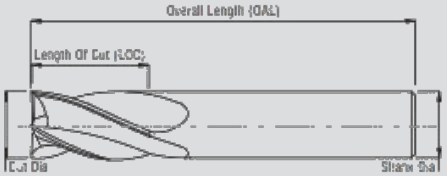
5 FLUTE ADDER SERIES (INCH)

Cut Dia	Shank Dia	LOC	OAL	Radius	EDP # NACRO
1/8	1/8	1/2	1-1/2	R.015	18900
1/8	1/8	1/2	1-1/2	SQ	18911

ADDER

Ultra Performance Endmill





5 FLUTE ADDER SERIES (INCH)

Cut Dia	Shank Dia	LOC	OAL	Radius	EDP # NACRO
3/16	3/16	5/8	2	R.015	18902
3/16	3/16	5/8	2	R.030	18931
3/16	3/16	5/8	2	SQ	18933
1/4	1/4	3/4	2-1/2	R.020	18905
1/4	1/4	3/4	2-1/2	SQ	18917
1/4	1/4	3/4	2-1/2	R.030	18907
1/4	1/4	3/4	2-1/2	R.060	18909
5/16	5/16	13/16	2-1/2	R.030	18912
5/16	5/16	13/16	2-1/2	R.060	18945
5/16	5/16	13/16	2-1/2	SQ	18934
3/8	3/8	1	2-1/2	R.015	18948
3/8	3/8	1	2-1/2	R.030	18918
3/8	3/8	1	2-1/2	R.060	18961
3/8	3/8	1	2-1/2	SQ	18963
1/2	1/2	5/8	2-1/2	R.030	18926
1/2	1/2	5/8	2-1/2	SQ	18935
1/2	1/2	1	3	R.015	18962
1/2	1/2	1-1/4	3	R.030	18927
1/2	1/2	1-1/4	3	R.060	18928
1/2	1/2	1-1/4	3	R.125	18925
1/2	1/2	1-1/4	3	SQ	18936
1/2	1/2	1-3/4	4	R.030	18920
1/2	1/2	1-3/4	4	SQ	18937
5/8	5/8	1-1/4	3-1/2	R.040	18932
5/8	5/8	1-1/4	3-1/2	R.060	18953
5/8	5/8	1-1/4	3-1/2	SQ	18956
3/4	3/4	1-3/4	4	R.030	18977
3/4	3/4	1-3/4	4	R.060	18938
3/4	3/4	1-3/4	4	R.125	18915
3/4	3/4	1-3/4	4	SQ	18939
1	1	1-3/4	4	R.060	18942
1	1	1-3/4	4	SQ	18941

40°

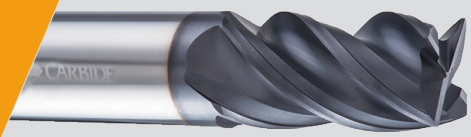
< 40 HRc

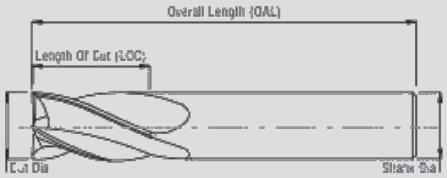
Shank Dia: h6
Cut Dia: h10

ENDMILL

ADDER

Ultra Performance Endmill





4 FLUTE REGULAR LENGTH

40°

< 40 HRc

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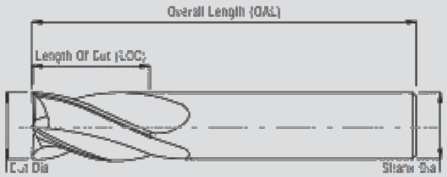
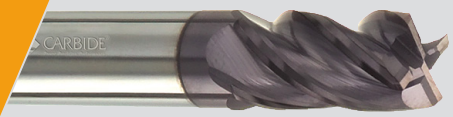
4 FLUTE ADDER - METRIC (SQUARE)

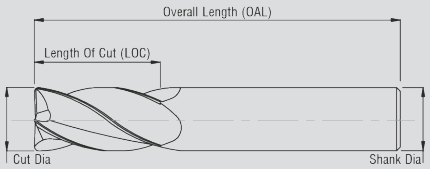
Cut Dia	Shank Dia	LOC	OAL	EDP # NACRO
4	4	14	51	14104
6	6	19	63	14106
8	8	20	63	14108
10	10	22	75	14110
12	12	25	75	14112
14	14	32	89	14114
16	16	32	89	14116
18	18	38	100	14118
20	20	38	100	14120
25	25	38	100	14125



4 FLUTE ADDER - METRIC (W/RADIUS)

Cut Dia	Shank Dia	LOC	OAL	Radius	EDP # NACRO
4	4	14	51	0.040	14150
6	6	19	63	0.500	14152
8	8	20	63	0.080	14154
10	10	22	75	0.080	14156
12	12	25	75	0.080	14158
14	14	32	89	1.000	14160
16	16	32	89	1.000	14162
18	18	38	100	1.250	14164
20	20	38	100	1.250	14166





TECHNICAL DATA ENDMILLS

MICRO GRAIN SOLID CARBIDE

SPEEDS & FEEDS – HIGH PERFORMANCE ENDMILLS

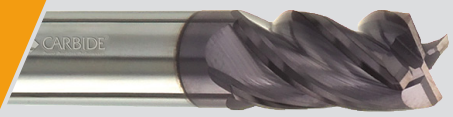
- Viper - 4 Flute Variable Helix Endmills
- Super Viper - 4 Flute Double Variable Helix Endmills

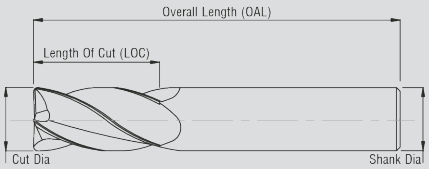
TECHNICAL DATA ENDMILLS

Material Group	Material Type	Cutting Speed (Vc - m/min)			
		Viper		Super Viper	
		m/min	SFM	m/min	SFM
Steel	Structural Steel	100-136	328 - 446	170-230	557 - 754
	Free Cutting Steel	80-136	262 - 446	130-230	426 - 754
	Unalloyed Heat Treatable Steel	80-130	262 - 446	130-230	426 - 754
	Unalloyed Case Hard Steel	120-150	393 - 490	200-250	656 - 820
	Alloyed Case Hardened Steel	75-120	246 - 393	120-200	393 - 656
	Nitriding Steel	100-136	328 - 446	160-230	525 - 754
Acid Resistant /	Stainless Steel, Sulphured Austenitic Steel,	75-100	246 - 328	80-120	262 - 393
Stainless Steel	Martensitic				
High Tensile Steel	Low Carbon Steel	90-100	295 - 328	100-120	328 - 393
	Medium Carbon Steel	60-80	196 - 262	90-100	295 - 328
	Alloyed Heat Treatable Steel	80-120	262 - 393	130-200	426 - 656
	Tool Steel	80-120	262 - 393	130-200	426 - 656
	High Speed Steel	60-75	196 - 246	100-125	328 - 410
	Spring Steel			100-125	328 - 410
Cast Materials	Cast Iron	130-175	446 - 574	220-300	721 - 984
	Spheroidal Graphite & Malleable Ci	100-150	328 - 490	170-240	557 - 787
	Chilled Ci	70-85	230 - 278		
Aluminium &	Aluminium & Ti Alloys				
Aluminium Alloys	Al Wrought Alloys				
	Al Cast Alloys < 10%si				
	Al Cast Alloys > 10%si				
Special Alloys	Special Alloys			60-75	196 - 246
	Ti & Ti Alloys	50-75	164 - 246	80-120	262 - 393
Non ferrous Metals	Copper Low Alloyed				
	Brass				
	Bronze				
Plastics	Duro Plastics				
	Thermoplastics				
Magnesium Alloys	Mg Alloys				

VIPER

Variable Helix Endmills





4 FLUTE - FRACTION

32°-38°

Up to 40 HRc

Shank Dia: h6
Cut Dia: h10

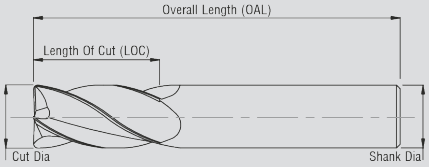
ENDMILL

BENEFITS & FEATURES

- Special flute design for chatter and vibration free machining
- Helix angle changes along flute - Substantial increases in metal removal rates
- Increased stability during cutting action
- Unequal flute design helps to reduce chatter and vibration
- Effective for both slotting and profiling operations
- Manufactured from premium submicron grain carbide

4 FLUTE - FRACTION					
Cut Dia	Shank Dia	LOC	OAL	Radius	AlTiN
1/8	1/8	1/2	1-1/2	SQ	19829
1/8	1/8	1/2	1-1/2	R.015	19800
3/16	3/16	5/8	2	SQ	19860
3/16	3/16	5/8	2	R.015	19802
1/4	1/4	1/2	2	R.015	19804
1/4	1/4	3/4	2-1/2	SQ	19922
1/4	1/4	3/4	2-1/2	R.015	19806
1/4	1/4	1-1/8	3	R.015	19808
5/16	5/16	1/2	2	R.015	19810
5/16	5/16	13/16	2-1/2	SQ	19948
5/16	5/16	13/16	2-1/2	R.015	19812
5/16	5/16	1-1/8	3	R.015	19814
3/8	3/8	5/8	2	R.015	19816
3/8	3/8	1	2-1/2	SQ	16660
3/8	3/8	1	2-1/2	R.015	19818
3/8	3/8	1-1/8	3	R.015	19820
7/16	7/16	1	2-3/4	R.020	19822
1/2	1/2	5/8	2-1/2	R.030	19824
1/2	1/2	1	3	R.015	19916
1/2	1/2	1	3	R.030	19826
1/2	1/2	1-1/4	3	SQ	16743
1/2	1/2	1-1/4	3	R.030	19827
1/2	1/2	2	4	R.030	19828
5/8	5/8	3/4	3	R.030	19830
5/8	5/8	1-1/4	3-1/2	SQ	16785
5/8	5/8	1-1/4	3-1/2	R.030	19832
5/8	5/8	2-1/4	5	R.030	19834
3/4	3/4	1	3	R.030	19836
3/4	3/4	1-1/2	4	SQ	19840
3/4	3/4	1-1/2	4	R.030	19838
3/4	3/4	2-1/4	5	R.030	19837
1	1	1-1/2	4	SQ	16879
1	1	1-1/2	4	R.030	19842

VIPER
Variable Helix Endmills



5 FLUTE - FRACTION

BENEFITS & FEATURES

- Special flute design for chatter and vibration free machining - Helix angle changes along flute
- Substantial increases in metal removal rates - Increased stability during cutting action
- Unequal flute design helps to reduce chatter and vibration
- Effective for both slotting and profiling operations
- Increased feed rate due to 5 flutes - Less loads per tooth
- Manufactured from premium submicron grain carbide

Up to 40 HRc

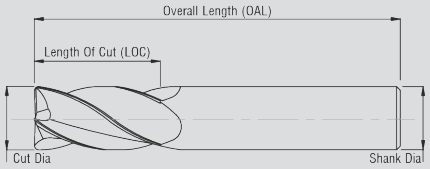
Shank Dia: h6
Cut Dia: h10

5 FLUTE - FRACTION

Cut Dia	Shank Dia	LOC	OAL	Radius	Uncoated	AlTiN
1/8	1/8	1/2	1-1/2	SQ	17508	17511
1/8	1/8	1/2	1-1/2	R.015	17512	17513
3/16	3/16	5/8	2	SQ	17524	17525
3/16	3/16	5/8	2	R.015	17507	17528
1/4	1/4	3/4	2-1/2	SQ	17553	17557
1/4	1/4	3/4	2-1/2	R.015	17556	19844
1/4	1/4	1-1/8	3	SQ	17560	17561
1/4	1/4	1-1/8	3	R.015	17564	17568
5/16	5/16	13/16	2-1/2	SQ	17576	17577
5/16	5/16	13/16	2-1/2	R.015	17578	18579
3/8	3/8	1	2-1/2	SQ	17614	17615
3/8	3/8	1	2-1/2	R.015	17616	19846
7/16	7/16	1	2-3/4	R.020	17628	17629
1/2	1/2	1-1/4	3	SQ	17664	17665
1/2	1/2	1-1/4	3	R.030	17668	19848
1/2	1/2	1-1/2	4	SQ	17684	17685
1/2	1/2	2	4	R.030	17678	17679
5/8	5/8	1-1/4	3-1/2	SQ	17720	17721
5/8	5/8	1-1/4	3-1/2	R.030	17722	19850
5/8	5/8	2-1/4	5	R.030	17730	17731
3/4	3/4	1	3-1/2	R.020	17734	17736
3/4	3/4	1-1/2	4	SQ	17782	17783
3/4	3/4	1-1/2	4	R.030	17784	19854
3/4	3/4	2-1/4	5	R.030	17794	17795
1	1	1-1/2	4	SQ	17814	17815
1	1	1-1/2	4	R.030	17816	17817
1.	1	2-1/4	5	R.030	17874	17875

VIPER

Variable Helix Endmills



4 FLUTE REGULAR LENGTH - METRIC

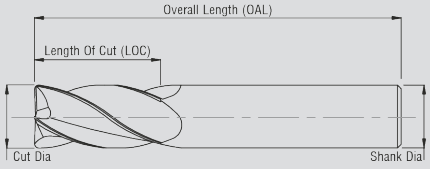
Up to 40 HRc

Shank Dia: h6
Cut Dia: h10

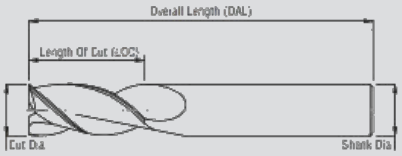
BENEFITS & FEATURES

- Special flute design for chatter and vibration free machining
- Helix angle changes along flute - Substantial increases in metal removal rates
- Increased stability during cutting action
- Unequal flute design helps to reduce chatter and vibration
- Effective for both slotting and profiling operations
- Manufactured from premium submicron grain carbide

4 FLUTE REGULAR LENGTH - METRIC					
Cut Dia	Shank Dia	LOC	OAL	Radius	AlTiN
4	4	14	51	0.4	19880
6	6	20	63	0.4	19882
8	8	20	63	0.4	19884
10	10	25	70	0.4	19886
12	12	25	76	0.6	19888
16	16	32	89	0.7	19890
20	20	38	100	0.7	19901
25	25	38	100	0.7	19903



5 FLUTE REGULAR LENGTH - METRIC					
Cut Dia	Shank Dia	LOC	OAL	Radius	AlTiN
4	4	14	51	0.4	19891
6	6	20	63	0.4	19892
8	8	20	63	0.4	19894
10	10	25	70	0.4	19896
12	12	25	76	0.6	19898
16	16	32	89	0.7	19899
20	20	38	100	0.7	19904
25	25	38	100	0.7	19906



TECHNICAL DATA ENDMILLS

MICRO GRAIN SOLID CARBIDE

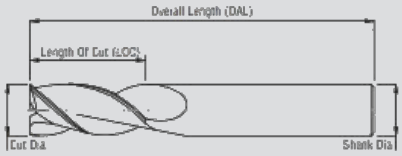
SPEEDS & FEEDS – HIGH PERFORMANCE ENDMILLS

2 & 3 FLUTE COPPERHEAD ENDMILLS

Material Group	Material Type	Cutting Speed (Vc - m/min)			
		2 Flute		3 Flute	
		m/min	SFM	m/min	SFM
Steel	Structural Steel				
	Free Cutting Steel				
	Unalloyed Heat Treatable Steel				
	Unalloyed Case Hardened Steel				
	Alloyed Case Hardened Steel				
	Nitriding Steel				
Acid Resistant /	Stainless Steel, Sulphured Austenitic Steel,				
Stainless Steel	Martensitic				
High Tensile Steel	Low Carbon Steel				
	Medium Carbon Steel				
	Alloyed Heat Treatable Steel				
	Tool Steel				
	High Speed Steel				
	Spring Steel				
Cast Materials	Cast Iron				
	Spheroidal Graphite & Malleable Ci				
	Chilled Ci				
Aluminium &	Aluminium & Ti Alloys	300-350	984 - 1148	320-375	1049 - 1230
Aluminium Alloys	Al Wrought Alloys	350-430	1148 - 1410	350-440	1148 - 1448
	Al Cast Alloys < 10%si	100-175	328 - 574	100-180	328 - 590
	Al Cast Alloys > 10%si	100-175	328 - 574	100-180	328 - 590
Special Alloys	Special Alloys				
	Ti Alloys				
Non ferrous Metals	Copper Low Alloyed	80-100	262 - 328	90-120	295 - 393
	Brass	65-85	214 - 278	75-95	246 - 311
	Bronze	65-85	214 - 278	75-95	246 - 311
Plastics	Duro Plastics	75-100	246 - 328	80-110	262 - 360
	Thermoplastics	75-100	246 - 328	80-110	262 - 360
Magnesium Alloys	Mg Alloys	175-200	574 - 721	185-225	606 - 738

COPPERHEAD

Copperhead-NF Endmills



2 FLUTE 45 DEG - FRACTION

Shank Dia: h6
Cut Dia: h10

BENEFITS & FEATURES

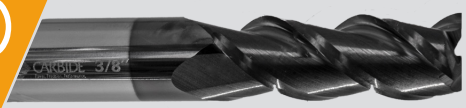
- Maximum metal removal and better chip evacuation
- Excellent for slotting and profiling at high speeds
- Special submicron grade for machining Aluminum and other Non-Ferrous materials
- Tool coating offered is our Top of the Line Proprietary Apache Coating for Top Performance & Tool Life (The Tried & True ZrN Coating)

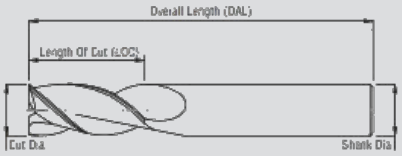
2 FLUTE 45° - FRACTION

Cut Dia	Shank Dia	LOC	OAL	Radius	Uncoated	Apache Coated	ZrN Coated
1/8	1/8	1/2	1-1/2	SQ	29600	29602	29601
1/8	1/8	1/2	1-1/2	R.010	29604	29608	29609
5/32	3/16	9/16	2	R.010	29610	29616	29615
3/16	3/16	5/8	2	SQ	29606	29620	29621
3/16	3/16	5/8	2-1/2	R.010	29622	29625	29623
7/32	1/4	3/4	2-1/2	R.010	29640	29642	29641
1/4	1/4	3/4	2-1/2	SQ	29612	29614	29613
1/4	1/4	3/4	2-1/2	R.015	29644	29646	29645
1/4	1/4	1-1/4	3	SQ	29618	29652	29619
1/4	1/4	1-1/4	3	R.015	29658	29664	29659
5/16	5/16	13/16	2-1/2	SQ	29624	29626	29627
5/16	5/16	13/16	2-1/2	R.015	29670	29674	29671
5/16	5/16	1-1/4	3	SQ	29630	29632	29631
5/16	5/16	1-1/4	3	R.015	29686	29688	29689
11/32	3/8	1	2-1/2	R.015	29690	29692	29693
3/8	3/8	1	2-1/2	SQ	29636	29638	29939
3/8	3/8	1	2-1/2	R.015	29694	29696	29698
3/8	3/8	1-1/2	3-1/2	SQ	29648	29650	29649
13/32	7/16	1	2-3/4	R.015	29702	29704	29726
7/16	7/16	1	2-3/4	SQ	29703	29705	29699
7/16	7/16	1	2-3/4	R.015	29709	29708	29691
15/32	1/2	1-1/4	3	R.015	29714	29701	29695
1/2	1/2	1-1/4	3	SQ	29654	29656	29657
1/2	1/2	1-1/4	3	R.030	29643	29718	29665
1/2	1/2	1-1/2	3-1/2	SQ	29660	29662	29663
1/2	1/2	2	4	SQ	29666	29668	29667
1/2	1/2	2	4	R.030	29669	29628	29629
5/8	5/8	1-1/4	3-1/2	SQ	29421	29634	29635
5/8	5/8	1-1/4	3-1/2	R.030	29672	29739	29675
5/8	5/8	2-1/2	4-1/2	SQ	29676	29651	29677
5/8	5/8	2-1/2	4-1/2	R.060	29647	29653	29655
5/8	5/8	2-1/2	5	R.030	29617	29661	29673
3/4	3/4	1-1/2	4	SQ	29678	29742	29743
3/4	3/4	1-1/2	4	R.030	29679	29683	29682
3/4	3/4	2-1/2	5	SQ	29684	29740	29685
1	1	1-1/2	4	SQ	29748	29750	29749
1	1	1-1/2	4	R.030	29681	29741	29687

COPPERHEAD

Copperhead-NF Endmills





2 FLUTE 45 DEG - METRIC

BENEFITS & FEATURES

- Maximum metal removal and better chip evacuation
- Excellent for slotting and profiling at high speeds
- Special submicron grade for machining Aluminum and other Non-Ferrous materials
- Tool coating offered is our Top of the Line Proprietary Apache Coating for Top Performance & Tool Life (The Tried & True ZrN Coating)

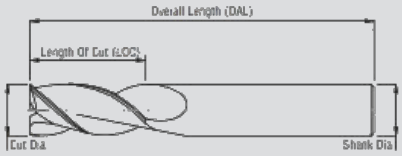
Shank Dia: h6
Cut Dia: h10

2 FLUTE 45° - METRIC

Cut Dia	Shank Dia	LOC	OAL	Radius	Uncoated	Apache Coated	ZrN Coated
3	3	12	38	SQ	29716	29717	29745
4	4	11	50	R 0.15	29706	29707	29756
4	4	14	50	SQ	29724	29725	29747
5	5	13	50	R 0.15	29710	29711	29751
5	5	16	63	SQ	29732	29733	29753
6	6	13	63	R 0.2	29713	29719	29754
6	6	19	50	SQ	29736	29720	29755
8	8	19	63	R 0.2	29721	29722	29721
8	8	20	63	SQ	29744	29723	29757
10	10	22	70	R 0.25	29727	29728	29761
10	10	22	70	R 0.05	29729	29730	29762
10	10	22	70	R 1	29731	29734	29771
10	10	22	70	R 1.5	29735	29737	29773
10	10	22	70	SQ	29752	29738	29774
12	12	25	75	SQ	29760	29758	29775
12	12	26	75	R 0.25	29759	29763	29777
12	12	26	75	R 1	29764	29765	29778
12	12	26	75	R 1.5	29766	29767	29779
12	12	26	75	R 2	29769	29770	29781
14	14	26	89	R 0.25	29791	29792	29790
14	14	26	89	R 1	29793	29794	29782
14	14	26	89	R 1.5	29795	29796	29783
14	14	26	89	R 2	29797	29798	29799
14	14	32	89	SQ	29768	29829	29784
16	16	32	89	R 1	29835	29837	29831
16	16	32	89	R 1.5	29839	29841	29849
16	16	32	89	R 2	29843	29845	29847
18	18	32	100	R 1	29865	29866	29873
18	18	32	100	R 1.5	29867	29869	29874
18	18	32	100	R 2	29870	29871	29875
18	18	38	100	SQ	29776	29882	29881
20	20	38	100	R 1	29885	29886	29883
20	20	38	100	R 1.5	29887	29888	29884
20	20	38	100	R 2	29889	29890	29892
20	20	38	100	SQ	29780	29891	29893
25	25	38	100	R 1	29911	29912	29918
25	25	38	100	R 1.5	29913	29914	29919
25	25	38	100	R 2	29915	29916	29920
25	25	38	100	SQ	29788	29917	29789

COPPERHEAD

Copperhead-NF Endmills



3 FLUTE 42 DEG - FRACTION

Shank Dia: h6
Cut Dia: h10

BENEFITS & FEATURES

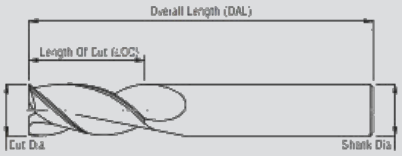
- Maximum metal removal and better chip evacuation
- Excellent for slotting and profiling at high speeds
- Outstanding for finishing and light roughing applications
- Special submicron grade for machining Aluminum and other Non-Ferrous materials
- Tool coating offered is our Top of the Line Proprietary Apache

3 FLUTE 42° - FRACTION

Cut Dia	Shank Dia	LOC	OAL	Radius	Uncoated	Apache Coated	ZrN Coated
1/8	1/8	1/2	1-1/2	SQ	14201	14203	14204
1/8	1/8	1/2	1-1/2	R.010	14200	14202	14205
5/32	3/16	9/16	2	R.010	14208	14210	14206
3/16	3/16	5/8	2	SQ	14209	14211	14207
3/16	3/16	5/8	2	R.010	14212	14214	14213
7/32	1/4	3/4	2-1/2	R.010	14220	14222	14221
1/4	1/4	3/4	2-1/2	SQ	14228	14230	14229
1/4	1/4	3/4	2-1/2	R.015	14224	14226	14225
1/4	1/4	1-1/8	3	R.015	14232	14234	14233
9/32	5/16	7/16	2-1/2	R.015	14236	14238	14235
5/16	5/16	13/16	2-1/2	SQ	14237	14239	14241
5/16	5/16	13/16	2-1/2	R.015	14240	14242	14243
5/16	5/16	1-1/8	3	R.015	14248	14250	14249
11/32	3/8	1	2-1/2	R.015	14252	14254	14251
3/8	3/8	1	2-1/2	SQ	14253	14255	14257
3/8	3/8	1	2-1/2	R.015	14256	14258	14259
3/8	3/8	1	2-1/2	R.030	14244	14245	14246
3/8	3/8	1	2-1/2	R.060	14247	14260	14279
3/8	3/8	1-1/2	3-1/2	SQ	14261	14262	14263
3/8	3/8	1-1/2	4	R.015	14264	14266	14265
13/32	7/16	1	2-3/4	R.015	14268	14270	14267
7/16	7/16	1	2-3/4	SQ	14269	14271	14273
7/16	7/16	1	2-3/4	R.015	14272	14274	14275
15/32	1/2	1-1/4	3	R.015	14280	14282	14283
1/2	1/2	1-1/4	3	SQ	14284	14286	14287
1/2	1/2	1-1/4	3	R.030	14288	14290	14289
1/2	1/2	1-1/4	4	R.060	14328	14329	14330
1/2	1/2	1-1/2	4	R.030	14292	14294	14291
1/2	1/2	1-1/2	4	R.125	-	14216	14305
1/2	1/2	2	4	SQ	14293	14295	14276
1/2	1/2	2	4	R.030	14296	14298	14278
5/8	5/8	1-1/4	3-1/2	SQ	14297	14299	14285
5/8	5/8	1-1/4	3-1/2	R.030	14300	14302	14304
5/8	5/8	1-3/4	4	SQ	14301	14303	14306
5/8	5/8	2-1/2	5	R.030	14308	14310	14307
3/4	3/4	1-5/8	4	SQ	14309	14311	14313
3/4	3/4	1-5/8	4	R.030	14312	14314	14318
3/4	3/4	2-1/4	5	SQ	14332	14334	14336
3/4	3/4	2-1/4	5	R.030	14316	14315	14319
1	1	1-1/2	4	SQ	14317	14321	14324
1	1	1-1/2	4	R.030	14320	14322	14326

COPPERHEAD

Copperhead-NF Endmills



3 FLUTE 42 DEG - METRIC

BENEFITS & FEATURES

- Maximum metal removal and better chip evacuation
- Excellent for slotting and profiling at high speeds
- Outstanding for finishing and light roughing applications
- Special submicron grade for machining Aluminum and other Non-Ferrous materials
- Tool coating offered is our Top of the Line Proprietary Apache

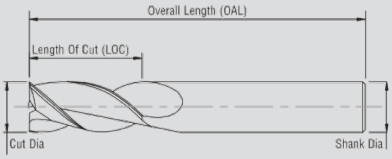
Shank Dia: h6
Cut Dia: h10

3 FLUTE 42° - METRIC

Cut Dia	Shank Dia	LOC	OAL	Radius	Uncoated	Apache Coated	ZrN Coated
4	4	11	63	R 0.15	62202	62203	62212
5	5	13	63	R 0.15	62204	62205	62213
6	6	13	63	R 0.2	62206	62207	62218
8	8	19	63	R 0.2	62208	62209	62219
10	10	22	70	R 0.25	62210	62211	62220
10	10	22	70	R 1	62214	62215	62221
10	10	22	70	R 1.5	62216	62217	62222
12	12	26	76	R 0.25	62234	62235	62223
12	12	26	76	R 1	62236	62237	62224
12	12	26	76	R 1.5	62238	62239	62225
12	12	26	76	R 2	62240	62241	62242
14	14	26	89	R 0.25	62258	62259	62266
14	14	26	89	R 1	62260	62261	62267
14	14	26	89	R 1.5	62262	62263	62268
14	14	26	89	R 2	62264	62265	62269
16	16	32	89	R 1	62284	62285	62290
16	16	32	89	R 1.5	62286	62287	62291
16	16	32	89	R 2	62288	62289	62292
18	18	32	100	R 1	62300	62301	62322
18	18	32	100	R 1.5	62302	62303	62324
18	18	32	100	R 2	62304	62305	62325
20	20	38	100	R 1	62316	62317	62326
20	20	38	100	R 1.5	62318	62319	62327
20	20	38	100	R 2	62320	62321	62328
25	25	38	100	R 1	62340	62341	62329
25	25	38	100	R 1.5	62342	62343	62330
25	25	38	100	R 2	62344	62345	62333

HIGH SHEAR

3 Flute Endmill



TECHNICAL DATA ENDMILLS

MICRO GRAIN SOLID CARBIDE

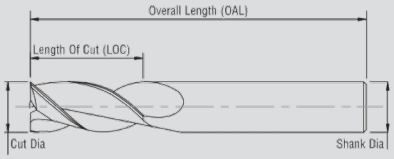
SPEEDS & FEEDS – HIGH PERFORMANCE ENDMILLS

3 FLUTE HIGH SHEAR ENDMILLS			
Material Group	Material Type	Cutting Speed (Vc-m/min) High Shear	Cutting Speed (SFM) High Shear
Steel	Structural Steel	84-107	274 - 350
	Free Cutting Steel	84-107	274 - 350
	Unalloyed Heat Treatable Steel	75 - 109	245 - 356
	Unalloyed Case Hardened Steel	75 - 90	245 - 294
	Alloyed Case Hardened Steel	75 - 90	245 - 294
	Nitriding Steel	75 - 90	245 - 294
Acid Resistant /	Stainless Steel, Sulphured	69 - 84	225 - 274
Stainless Steel	Austenitic Steel, Martensitic		
High Tensile Steel	Low Carbon Steel	100-114	327 - 373
	Medium Carbon Steel	84- 107	274 - 350
	Alloyed Heat Treatable Steel	75-90	245 - 294
	Tool Steel	84-107	274 - 350
	High Speed Steel	75-90	245 - 294
	Spring Steel	75 - 90	245 - 294
Cast Materials	Cast Iron	100-114	327 - 373
	Spheroidal Graphite & Malleable CI	100-114	327 - 373
	Chilled CI	84-107	274 - 350
Aluminium &	Aluminium	84 - 107	274 - 350
Aluminium Alloys	Al Wrought Alloys	84 - 107	274 - 350
	Al Cast Alloys < 10%Si	84 - 107	274 - 350
	Al Cast Alloys > 10%Si	84 - 107	274 - 350
Special Alloys	Special Alloys	—	—
	Ti Alloys	—	—
Non ferrous Metals	Copper Low Alloyed	130 - 160	425 - 523
	Brass	130 - 160	425 - 523
	Bronze	130 - 160	425 - 523
Plastics	Duro Plastics	—	—
	Thermoplastics	—	—
Magnesium Alloys	Mg Alloys	84 - 107	274 - 350
Hardened Steel	Die & Mould		
(45-65 HRC)			

NOTE: All the parameters are taken for closed slot & for 1XD(depth). For open slot increase speed by 10% & for depth more than 1XD decrease speed by 10%

HIGH SHEAR

Regular Length - Fraction



3 FLUTE 60 DEG FOR TOUGH MATERIAL

BENEFITS & FEATURES

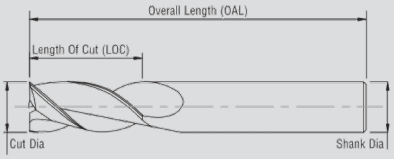
- Suitable for profiling operation
- High shear geometry with edge strength
- Increased cutting edge engagement
- Increased tool life

Up to 40 HRc

Shank Dia: h6
Cut Dia: h10

3 FLUTE 60° REGULAR LENGTH - FRACTION

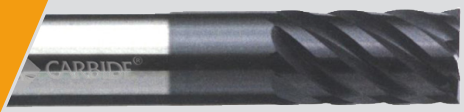
Cut Dia	Shank Dia	LOC	OAL	EDP #	
				Uncoated	AlTiN Coated
1/8	1/8	1/2	1-1/2	27300	27304
3/16	3/16	5/8	2	27308	27312
1/4	1/4	3/4	2-1/2	27316	27320
5/16	5/16	13/16	2-1/2	27324	27328
3/8	3/8	1	2-1/2	27332	27336
7/16	7/16	1	2-3/4	27340	27344
1/2	1/2	1	3	27348	27352
1/2	1/2	1-1/4	3	27350	27354
5/8	5/8	1-1/4	3-1/2	27356	27360
3/4	3/4	1-1/2	4	27364	27368
1	1	1-1/2	4	27372	27376

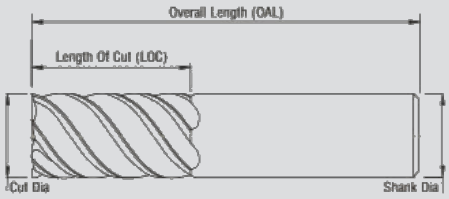


3 FLUTE 60° REGULAR LENGTH - METRIC

Cut Dia	Shank Dia	LOC	OAL	EDP # AlTiN Coated
6	6	20	63	26800
8	8	20	63	26802
10	10	25	70	26804
12	12	25	76	26806
14	14	32	89	26808
16	16	32	89	26810
18	18	38	100	26812
20	20	38	100	26814

All other coatings available on request





TECHNICAL DATA ENDMILLS

MICRO GRAIN SOLID CARBIDE

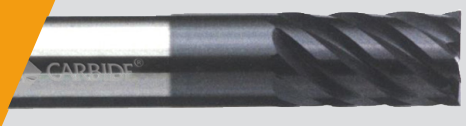
SPEEDS & FEEDS – HIGH PERFORMANCE ENDMILLS

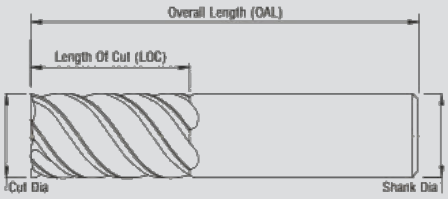
6 FLUTE 40° & MULTI FLUTE			
Material Group	Material Type	Cutting Speed (Vc)	
		m/min	SFM
Steel	Structural Steel	150-200	490 - 654
	Free Cutting Steel	120-200	392 - 654
	Unalloyed Heat Treatable Steel	120-200	392 - 654
	Unalloyed Case Hardened Steel	180-230	588 - 752
	Alloyed Case Hardened Steel	110-180	360 - 588
	Nitriding Steel	150-200	490 - 654
Acid Resistant /	Stainless Steel, Sulphured Austenitic Steel,	70-110	228 - 360
Stainless Steel	Martensitic		
High Tensile Steel	Low Carbon Steel	100-120	300 - 500
	Medium Carbon Steel	60-90	250 - 500
	Alloyed Heat Treatable Steel	120-180	300 - 500
	Tool Steel	120-180	250 - 500
	High Speed Steel	90-110	300 - 500
	Spring Steel	90-110	300 - 500

NOTE: All the parameters are taken for closed slot & for 1XD(depth). For open slot increase speed by 10% & for depth more than 1XD decrease speed by 10%

SIDEWINDER

6 FLUTE H.P. ENDMILL





6 FLUTE REGULAR LENGTH - FRACTIONAL

6 FLUTE 40 DEG REGULAR LENGTH – FRACTION

BENEFITS & FEATURES

- Increased core diameter for added strength
- Use for light finishing cuts
- NACRO coated for increased tool life
- Made from premium ultra fine grain carbide
- Specifically Designed for Titanium

Up to 50 HRc

Shank Dia: h6
Cut Dia: h10

6 FLUTE HIGH PERFORMANCE REGULAR LENGTH - FRACTION

Cut Dia	Shank Dia	LOC	OAL	Corner Radius	EDP # NACRO
3/16	3/16	5/8	2	0.015	15602
1/4	1/4	3/4	2-1/2	0.015	15604
5/16	5/16	13/16	2-1/2	0.020	15606
3/8	3/8	1	2-1/2	0.020	15608
1/2	1/2	1	3	0.060	15609
1/2	1/2	1-1/4	3	SQ	15607
1/2	1/2	1-1/4	3	0.025	15610
1/2	1/2	1-1/4	3	0.125	15611
5/8	5/8	1-1/4	3-1/2	0.030	15612
3/4	3/4	1-1/2	4	0.035	15614
3/4	3/4	1-5/8	4	0.125	15615
3/4	3/4	2	5	0.030	15618
1	1	1-1/2	4	0.035	15616
1	1	2	5	0.030	15620

MULTIFLUTE FOR TOUGH MATERIAL

30 DEG REGULAR LENGTH – FRACTION

BENEFITS & FEATURES

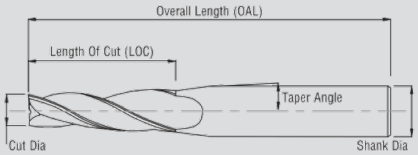
- Multi flute design allows for less chatter and vibration free operations
- Lighter chip load per tooth increases tool life and provides a better finish
- TiAlN coated for increased tool life
- Excellent accuracy
- Manufactured from premium ultra fine grain carbide

Up to 50 HRc

Shank Dia: h6
Cut Dia: h10

MULTIFLUTE - FRACTIONAL

Cut Dia	Shank Dia	LOC	OAL	No. Of Flutes	Uncoated	AlTiN Coated
1/8	1/8	1/2	1-1/2	6	29390	29392
3/16	3/16	5/8	2	6	29400	29402
1/4	1/4	3/4	2-1/2	6	29404	29406
5/16	5/16	13/16	2-1/2	6	29408	29410
3/8	3/8	1	2-1/2	6	29412	29414
1/2	1/2	1	3	6	29417	29415
1/2	1/2	1-1/4	3	6	29420	29418
5/8	5/8	1-1/4	3-1/2	8	29424	29426
3/4	3/4	1-1/2	4	6	29428	29430
3/4	3/4	1-1/2	4	8	29432	29434
1	1	2	4	6	29438	29440
1	1	2	4	8	29442	29444
1	1	2	4	10	29446	29448
1-1/4	1-1/4	3	6	6	29447	29449
1-1/4	1-1/4	3	6	8	29452	29455
1-1/4	1-1/4	3	6	12	29456	29457



TECHNICAL DATA ENDMILLS

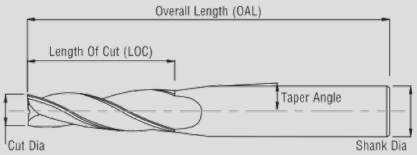
MICRO GRAIN SOLID CARBIDE

SPEEDS & FEEDS – GENERAL ENDMILLS

TAPER ENDMILLS - SQUARE & BALL		
Material Group	Material Type	Cutting Speed (Vc) m/min
Steel	Structural Steel	50-70
	Free Cutting Steel	50-70
	Unalloyed Heat Treatable Steel	40-60
	Unalloyed Case Hardened Steel	40-50
	Alloyed Case Hardened Steel	30-40
	Nitriding Steel	30-45
Acid Resistant /	Stainless Steel, Sulphured	20-30
Stainless Steel	Austenitic Steel, Martensitic	
High Tensile Steel	Low Carbon Steel	80-100
	Medium Carbon Steel	75-90
	Alloyed Heat Treatable Steel	50-70
	Tool Steel	20-35
	High Speed Steel	30-40
	Spring Steel	
Cast Materials	Cast Iron	90-100
	Spheroidal Graphite & Malleable CI	60-80
	Chilled CI	50-75
Aluminium &	Aluminium	150-180
Aluminium Alloys	Al Wrought Alloys	120-120
	Al Cast Alloys < 10%Si	150-180
	Al Cast Alloys > 10%Si	100-130
Special Alloys	Special Alloys	
	Ti Alloys	20-30
Non ferrous Metals	Copper Low Alloyed	100-120
	Brass	100-120
	Bronze	130-150
Plastics	Duro Plastics	
	Thermoplastics	
Magnesium Alloys	Mg Alloys	120-140

TAPER

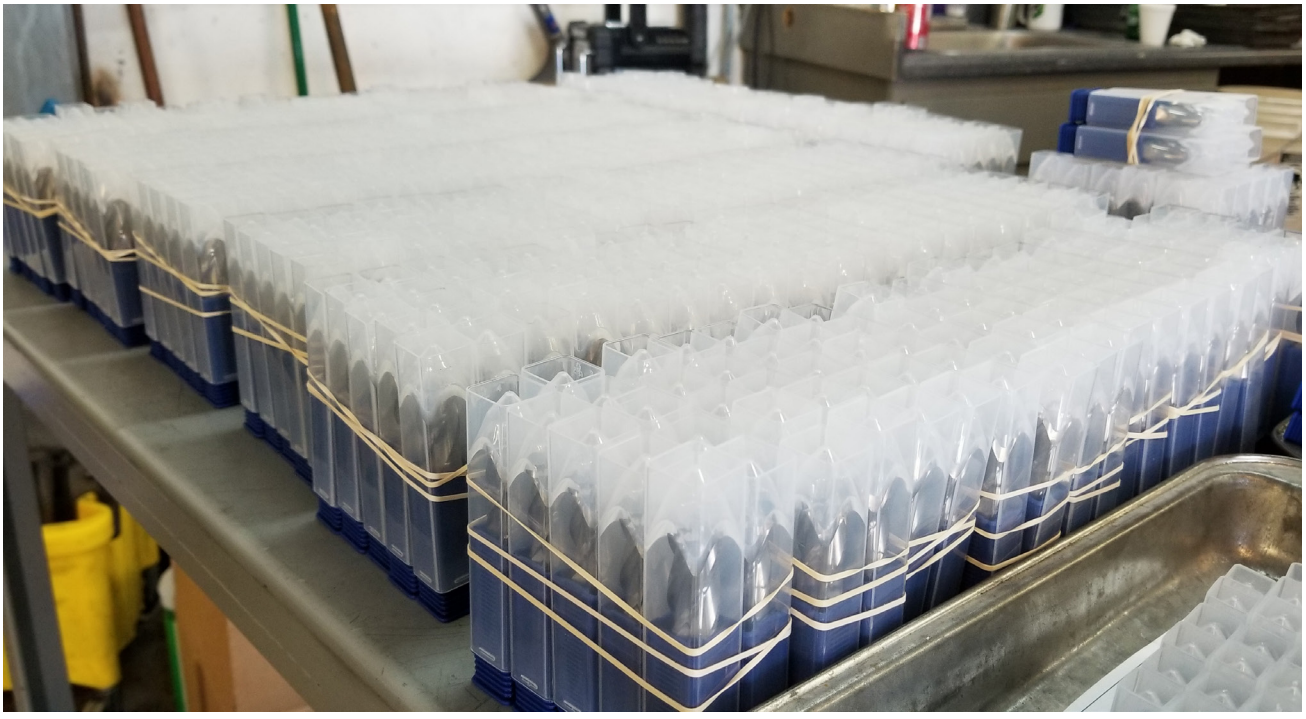
Taper Endmills



USED FOR SINKING AND MOLD CAVITIES

TAPER - SQUARE 3 FLUTE - FRACTIONAL

Taper Per Side	Tip Diameter	Shank Dia	Flute Length	OAL	Uncoated	AlTiN Coated
1°	1/8	1/4	1-1/2	3	60010	60014
1°	3/16	3/8	1-3/4	3-1/2	60018	60022
1°	1/4	1/2	2	4	60026	60030
1-1/2°	1/8	1/4	1-1/2	3	60034	60038
1-1/2°	3/16	3/8	1-3/4	3-1/2	60042	60046
2°	1/8	1/4	1-1/4	3	60050	60054
2°	3/16	3/8	1-3/4	3-1/2	60058	60062
2°	1/4	1/2	2	4	60066	60070
3°	1/8	1/4	1	3	60074	60078
3°	5/32	3/8	1-3/4	3-1/2	60082	60086
3°	1/4	1/2	2	4	60090	60094
5°	1/8	1/4	3/4	3	60098	60102
5°	1/8	3/8	1-1/2	3-1/2	60106	60110
5°	1/4	1/2	1-1/4	4	60114	60118
7°	1/8	1/4	1/2	3	60122	60126
7°	1/8	3/8	1	3-1/2	60130	60134
7°	5/32	3/8	3/4	3-1/2	60138	60142
7°	3/16	1/2	1-1/4	4	60146	60150
10°	5/32	1/4	1/2	3	60154	60158
10°	1/8	3/8	3/4	3-1/2	60162	60166
10°	1/2	1/2	1	4	60170	60174



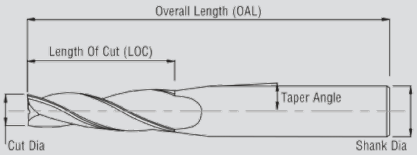
Up to 40 HRc

Shank Dia: h6
Cut Dia: h10

ENDMILL

TAPER

Taper Endmills



USED FOR SINKING AND MOLD CAVITIES

30°

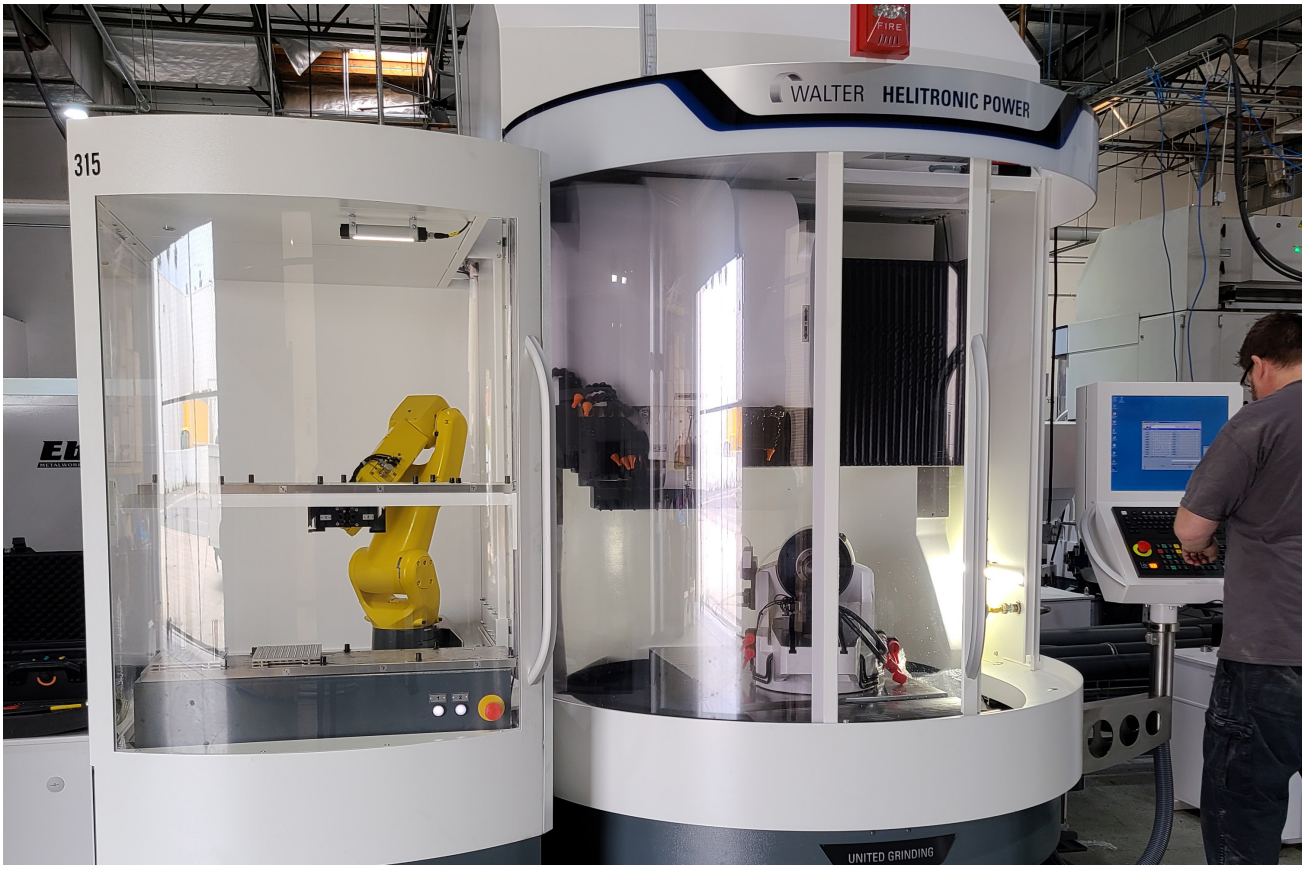
Up to 40 HRc

Shank Dia: h6
Cut Dia: h10

TAPER - BALL NOSE 3 FLUTE - FRACTIONAL						
Taper Per Side	Tip Diameter	Shank Dia	Flute Length	OAL	Uncoated	AlTiN Coated
1°	1/8	1/4	1-1/2	3	60178	60182
1°	3/16	3/8	1-3/4	3-1/2	60186	60190
1-1/2°	1/8	1/4	1-1/2	3	60194	60198
1-1/2°	3/16	3/8	1-3/4	3-1/2	60202	60206
2°	1/8	1/4	1	3	60210	60214
2°	3/16	3/8	1-3/4	3-1/2	60218	60222
2°	1/4	1/2	2	4	60226	60230
3°	1/8	1/4	1	3	60234	60238
3°	5/32	3/8	1-3/4	3-1/2	60242	60246
3°	1/4	1/2	2	4	60250	60254
5°	1/8	1/4	3/4	3	60258	60262
5°	1/8	3/8	1-1/2	3-1/2	60266	60270
5°	1/4	1/2	1-1/4	4	60274	60278
7°	1/8	1/4	1/2	3	60282	60286
7°	5/32	3/8	3/4	3-1/2	60290	60294
7°	3/16	1/2	1-1/4	4	60298	60302

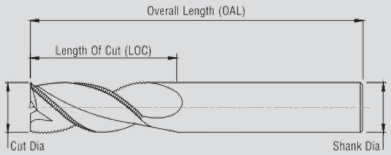
All other coatings available on request

SPECIAL TAPERED ENDMILLS
Special cutters are available for quote.



ENDMILL

COBRA CARBIDE® Power. Precision. Performance.

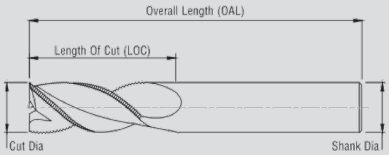


TECHNICAL DATA ENDMILLS

MICRO GRAIN SOLID CARBIDE

SPEEDS & FEEDS – GENERAL ENDMILLS

ROUGHERS & PLUNGE MASTER			
Material Group	Material Type	Cutting Speed (Vc) m/min	
		Roughers (m/min)	Roughers (SFM)
Steel	Structural Steel	90-120	294 - 392
	Free Cutting Steel	70-120	228 - 392
	Unalloyed Heat Treatable Steel	70-120	228 - 392
	Unalloyed Case Hardened Steel	100-130	327 - 425
	Alloyed Case Hardened Steel	60-100	196 - 327
	Nitriding Steel	80-120	260 - 392
Acid Resistant /	Stainless Steel, Sulphured Austenitic Steel,	40-60	130 - 196
Stainless Steel	Martensitic		
High Tensile Steel	Low Carbon Steel	90-110	294 - 360
	Medium Carbon Steel	80-100	260 - 327
	Alloyed Heat Treatable Steel	70-100	228 - 327
	Tool Steel	70-100	228 - 327
	High Speed Steel		
	Spring Steel		
Cast Materials	Cast Iron	100-150	327 - 490
	Spheroidal Graphite & Malleable Ci	90-120	294 - 392
	Chilled Ci		
Aluminium &	Aluminium & Ti Alloys		
Aluminium Alloys	Al Wrought Alloys		
	Al Cast Alloys < 10%si		
	Al Cast Alloys > 10%si		
Special Alloys	Special Alloys	30-40	98 - 130
	Ti Alloys	40-60	130 - 196
Non ferrous Metals	Copper Low Alloyed		
	Brass		
	Bronze		
Plastics	Duro Plastics		
	Thermoplastics		
Magnesium Alloys	Mg Alloys		



3 FLUTE - FRACTION (COARSE)

30°

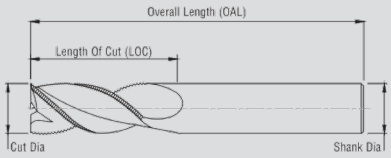
Shank Dia: h6
Cut Dia: h10

BENEFITS & FEATURES

- Form relieved for excellent profile milling
- Vibration free cutting roughing endmill which will produce a smooth finish
- Small corner radius/chamfer for strength
- Manufactured from premium submicron grain carbide

3 FLUTE 42° - FRACTION

Cut Dia	Shank Dia	LOC	OAL	SQUARE EDP #	
				Uncoated	ZrN Coated
3/16	3/16	5/8	2	25800	25801
1/4	1/4	3/4	2-1/2	25802	25803
1/4	1/4	1-1/8	3	25804	25805
5/16	5/16	13/16	2-1/2	25812	25813
3/8	3/8	1	2-1/2	25818	25819
7/16	7/16	1	2-3/4	25824	25825
1/2	1/2	1-1/4	3	25828	25829
1/2	1/2	2	4	25830	25831
9/16	9/16	1-1/4	3-1/2	25832	25833
5/8	5/8	1-1/4	3-1/2	25836	25837
5/8	5/8	2-1/8	5	25840	25841
3/4	3/4	1-1/2	4	25846	25847
3/4	3/4	2-1/8	5	25850	25851
1	1	1-1/2	4	25852	25853
1	1	2	5	25854	25855



30°

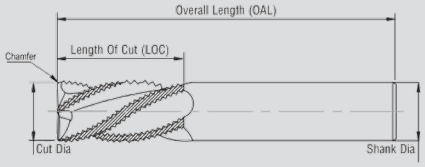
Up to 40 HRc

Shank Dia: h6
Cut Dia: h10

3 FLUTE - METRIC

Cut Dia	Shank Dia	LOC	OAL	SQUARE EDP # Coated ZrN
6	6	20	63	16718
8	8	20	63	16719
10	10	25	75	16720
12	12	25	75	16721
14	14	32	89	16722
16	16	32	89	16723
18	18	38	100	16724
20	20	38	100	16725
25	25	38	100	16726

All other coatings available on request



4 FLUTE - FRACTION

COARSE PITCH ROUGHERS

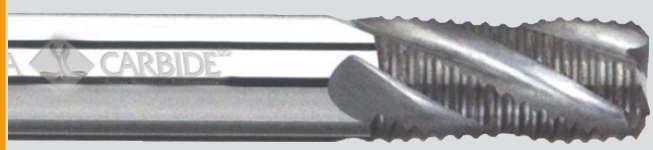
BENEFITS & FEATURES

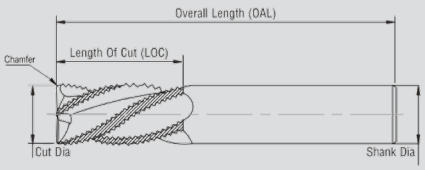
- Excellent roughing with reduced heat in the cut for hard material
- 4 Flute right hand helix
- Small corner radius/chamfer for strength
- For profiling, plunging, and ramping roughing operations in all types of hard material

Up to 40 HRc

Shank Dia: h6
Cut Dia: h10

4 FLUTE - FRACTION					
Cut Dia	Shank Dia	LOC	OAL	Uncoated	AlTiN Coated
1/4	1/4	3/4	2-1/2	29066	29070
1/4	1/4	1-1/8	3	29138	29142
5/16	5/16	11/32	2-1/2	29074	29078
3/8	3/8	7/8	2-1/2	29082	29086
3/8	3/8	1-1/8	3	29154	29158
7/16	7/16	1	2-3/4	29090	29094
1/2	1/2	1-1/4	3	29098	29102
1/2	1/2	2	4	29162	29166
9/16	9/16	1-1/4	3-1/2	29106	29110
5/8	5/8	1-1/4	3-1/2	29114	29118
5/8	5/8	2-1/4	5	29170	29174
3/4	3/4	1-1/2	4	29122	29126
3/4	3/4	2-1/4	5	29178	29182
1	1	1-1/2	4	29130	29134
1	1	2-1/4	5	29186	29190





ENDMILL

4 FLUTE - METRIC

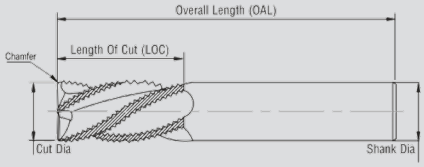
FINE PITCH ROUGHERS

4 FLUTE - METRIC				
Cut Dia	Shank Dia	LOC	OAL	AlTiN Coated
6	6	20	63	16600
8	8	20	63	16602
10	10	25	75	16604
12	12	25	75	16606
14	14	32	89	16608
16	16	32	89	16610
18	18	38	100	16612
20	20	38	100	16614
25	25	38	100	16616

Up to 40 HRc

Shank Dia: h6
Cut Dia: h10

All other coatings available on request



4 FLUTE REGULAR & LONG LENGTH - FRACTION

FINE PITCH ROUGHERS

Up to 40 HRc

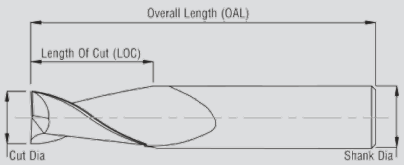
Shank Dia: h6
Cut Dia: h10

BENEFITS & FEATURES

- Excellent roughing with reduced heat in the cut for hard material
- 4 Flute right hand helix
- Small corner radius/chamfer for strength
- For profiling, plunging, and ramping roughing operations in all types of hard material

4 FLUTE REGULAR & LONG LENGTH - FRACTION

Cut Dia	Shank Dia	LOC	OAL	SQUARE EDP #	
				Uncoated	AlTiN Coated
3/16	3/16	5/8	2	29012	29014
1/4	1/4	3/4	2-1/2	29064	29068
1/4	1/4	1-1/8	3	29136	29140
5/16	5/16	11/32	2-1/2	29072	29076
5/16	5/16	13/16	2-1/2	29027	29029
3/8	3/8	7/8	2-1/2	29080	29084
3/8	3/8	1	2-1/2	29085	29087
7/16	7/16	1	2-3/4	29088	29092
1/2	1/2	1-1/4	3	29096	29100
1/2	1/2	2	4	29160	29164
9/16	9/16	1-1/4	3-1/2	29104	29108
5/8	5/8	1-1/4	3-1/2	29112	29116
5/8	5/8	2-1/4	5	29168	29172
3/4	3/4	1-1/2	4	29120	29124
3/4	3/4	2-1/4	5	29176	29180
1	1	1-1/2	4	29128	29132
1	1	2-1/4	5	29184	29188
1	1	3	6	29193	29197

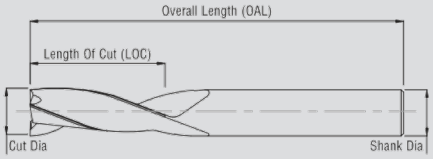


TECHNICAL DATA ENDMILLS

MICRO GRAIN SOLID CARBIDE

2 FLUTE SQUARE END & BALL NOSE

Material Group	Material Type	Cutting Speed (Vc) m/min			
		2Fl SQ		2Fl BNEM	
		m/min	SFM	m/min	SFM
Steel	Structural Steel	70-100	229 - 328	60-80	196 - 262
	Free Cutting Steel	55-90	180 - 295	60-80	196 - 262
	Unalloyed Heat Treatable Steel	55-90	180-295	40-60	131 - 196
	Unalloyed Case Hardened Steel	80-100	262-328	40-60	131 - 196
	Alloyed Case Hardened Steel	50-70	164-229	35-45	114 - 148
	Nitriding Steel	60-90	196-295	35-45	114 - 148
Acid Resistant /	Stainless Steel, Sulphured	30-45	98 - 148	30-40	98 - 131
Stainless Steel	Austenitic Steel, Martensitic				
High Tensile Steel	Low Carbon Steel	50-60	164 - 196	55-70	180 - 230
	Medium Carbon Steel	40-50	131 - 164	40-60	131 - 196
	Alloyed Heat Treatable Steel	55-80	180 - 262	50-70	164 - 230
	Tool Steel	55-80	180 - 262	40-60	131 - 196
	High Speed Steel	35-45	114 - 147	40-60	131 - 196
	Spring Steel	35-45	114 - 117	50-70	164 - 230
Cast Materials	Cast Iron	80-110	262 - 360	60-75	196 - 246
	Spheroidal Graphite & Malleable CI	70-90	230 - 295	50-60	164 - 196
	Chilled CI	40-50	131 - 164	45-60	147 - 196
Aluminium &	Aluminium	400-450	1312 - 1476	500-700	1640 - 2296
Aluminium Alloys	Al Wrought Alloys	450-550	1476 - 1800	450-500	1476 - 1640
	Al Cast Alloys < 10%Si	150-220	492 - 721	75-90	246 - 295
	Al Cast Alloys > 10%Si	150-220	492 - 721	75-90	246 - 295
Special Alloys	Special Alloys	20-30	65 - 98	30-40	98 - 131
	Ti Alloys	30-45	98 - 147	50-60	164 - 196
Non ferrous Metals	Copper Low Alloyed	90-120	295 - 393	75-90	246 - 295
	Brass	70-90	230 - 295	50-60	164 - 196
	Bronze	60-90	196 - 295	75-100	246 - 328
Plastics	Duro Plastics	80-120	262 - 393		
	Thermoplastics	80-120	262 - 393		
Magnesium Alloys	Mg Alloys	200-250	656 - 820	70-100	230 - 328

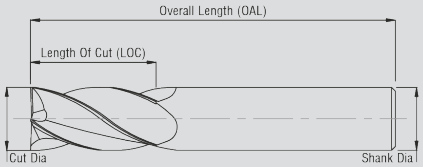


TECHNICAL DATA ENDMILLS

MICRO GRAIN SOLID CARBIDE

SPEEDS & FEEDS – GENERAL ENDMILLS

3 FLUTE SQUARE			
Material Group	Material Type	Cutting Speed (Vc) 2Fl SQ	
		m/min	SFM
Steel	Structural Steel	70 - 100	229 - 328
	Free Cutting Steel	55 - 90	180 - 295
	Unalloyed Heat Treatable Steel	55 - 90	180 - 295
	Unalloyed Case Hardened Steel	80 - 100	262 - 328
	Alloyed Case Hardened Steel	50 - 70	164 - 229
	Nitriding Steel	60 - 90	196 - 295
Acid Resistant /	Stainless Steel, Sulphured	30 - 45	98 - 148
Stainless Steel	Austenitic Steel, Martensitic		
High Tensile Steel	Low Carbon Steel	55 - 70	180 - 229
	Medium Carbon Steel	50 - 65	164 - 213
	Alloyed Heat Treatable Steel	55 - 80	180 - 262
	Tool Steel	55 - 80	180 - 262
	High Speed Steel	35 - 45	114 - 147
	Spring Steel	35 - 45	114 - 117
Cast Materials	Cast Iron	80 - 110	262 - 360
	Spheroidal Graphite & Malleable CI	70 - 90	230 - 295
	Chilled CI	40 - 50	131 - 164
Aluminium &	Aluminium		
Aluminium Alloys	Al Wrought Alloys		
	Al Cast Alloys < 10%Si		
	Al Cast Alloys > 10%Si		
Special Alloys	Special Alloys	20-30	65 - 98
	Ti Alloys	30-45	98 - 147
Non ferrous Metals	Copper Low Alloyed		
	Brass		
	Bronze		
Plastics	Duro Plastics		
	Thermoplastics		
Magnesium Alloys	Mg Alloys		
Hardened Steel	Die & Mould		
(45-65 HRC)			



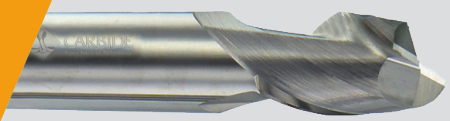
TECHNICAL DATA ENDMILLS

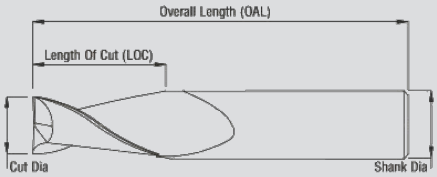
MICRO GRAIN SOLID CARBIDE

SPEEDS & FEEDS – SQUARE RADIUS & BALL NOSE ENDMILLS

SQUARE RADIUS & BALL NOSE ENDMILLS

Material Group	Material Type	Cutting Speed (Vc) m/min			
		2Fl SQ		2Fl BNEM	
		m/min	SFM	m/min	SFM
Steel	Structural Steel	70-100	229 - 328	60-80	196 - 262
	Free Cutting Steel	55-90	180 - 295	60-80	196 - 262
	Unalloyed Heat Treatable Steel	55-90	180-295	40-60	131 - 196
	Unalloyed Case Hardened Steel	80-100	262-328	40-60	131 - 196
	Alloyed Case Hardened Steel	50-70	164-229	35-45	114 - 148
	Nitriding Steel	60-90	196-295	35-45	114 - 148
Acid Resistant /	Stainless Steel, Sulphured	30-45	98 - 148	30-40	98 - 131
Stainless Steel	Austenitic Steel, Martensitic				
High Tensile Steel	Low Carbon Steel	50-60	164 - 196	55-70	180 - 230
	Medium Carbon Steel	40-50	131 - 164	40-60	131 - 196
	Alloyed Heat Treatable Steel	55-80	180 - 262	50-70	164 - 230
	Tool Steel	55-80	180 - 262	40-60	131 - 196
	High Speed Steel	35-45	114 - 147	40-60	131 - 196
	Spring Steel	35-45	114 - 117	50-70	164 - 230
Cast Materials	Cast Iron	80-110	262 - 360	60-75	196 - 246
	Spheroidal Graphite & Malleable CI	70-90	230 - 295	50-60	164 - 196
	Chilled CI	40-50	131 - 164	45-60	147 - 196
Aluminium &	Aluminium	400-450	1312 - 1476	500-700	1640 - 2296
Aluminium Alloys	Al Wrought Alloys	450-550	1476 - 1800	450-500	1476 - 1640
	Al Cast Alloys < 10%Si	150-220	492 - 721	75-90	246 - 295
	Al Cast Alloys > 10%Si	150-220	492 - 721	75-90	246 - 295
Special Alloys	Special Alloys	20-30	65 - 98	30-40	98 - 131
	Ti Alloys	30-45	98 - 147	50-60	164 - 196
Non ferrous Metals	Copper Low Alloyed	90-120	295 - 393	75-90	246 - 295
	Brass	70-90	230 - 295	50-60	164 - 196
	Bronze	60-90	196 - 295	75-100	246 - 328
Plastics	Duro Plastics	80-120	262 - 393		
	Thermoplastics	80-120	262 - 393		
Magnesium Alloys	Mg Alloys	200-250	656 - 820	70-100	230 - 328





2 FLUTE ENDMILLS

ALL LENGTHS SQUARE AND BALL NOSE – FRACTION

Up to 35 HRc

Shank Dia: h6
Cut Dia: h10

BENEFITS & FEATURES

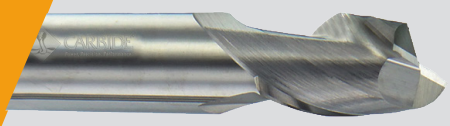
- Center cutting geometry
- Capable to do slotting, profiling and plunging operations
- Manufactured from premium submicron grain carbide

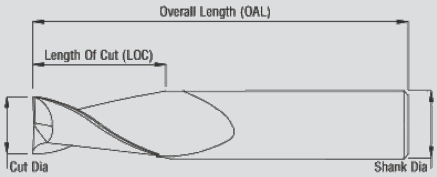
2 FLUTE ENDMILLS

Cut Dia	Shank Dia	LOC	OAL	Square EDP #		Ball Nose EDP #	
				Uncoated	AlTiN	Uncoated	AlTiN
1/64	1/8	1/32	1-1/2	20005	20013	21100	21104
1/64	1/8	3/64	1-1/2	20006	20007	21106	21107
1/32	1/8	1/16	1-1/2	20017	20025	21108	21110
1/32	1/8	1/8	1-1/2	20029	20037	21112	21120
3/64	1/8	3/32	1-1/2	20041	20049	21121	21123
3/64	1/8	1/8	1-1/2	20053	20061	21124	21132
1/16	1/8	1/8	1-1/2	20065	20073	21136	21144
1/16	1/8	3/16	1-1/2	20077	20085	21148	21156
5/64	1/8	1/4	1-1/2	20089	20097	21160	21168
5/64	1/8	3/16	1-1/2	20086	20088	21157	21159
3/32	1/8	3/16	1-1/2	20101	20109	21172	21180
3/32	1/8	3/8	1-1/2	20113	20121	21184	21192
7/64	1/8	7/32	1-1/2	20110	20112	21196	21204
7/64	1/8	3/8	1-1/2	20125	20133	21208	21216
1/8	1/8	1/4	1-1/2	20137	20145	21220	21228
1/8	1/8	1/2	1-1/2	20149	20157	21232	21240
1/8	1/8	3/4	2-1/4	20161	20169	21244	21252
1/8	1/8	1	3	20173	20181	21253	21255
1/8	1/8	1-1/8	4	20185	20193	21256	21264
9/64	3/16	9/32	2	20197	20205	21268	21276
9/64	3/16	9/16	2	20209	20217	21280	21288
5/32	3/16	5/16	2	20221	20229	21292	21300
5/32	3/16	9/16	2	20233	20241	21304	21312
11/64	3/16	3/8	2	20230	20232	21316	21324
11/64	3/16	5/8	2	20245	20253	21328	21336
3/16	3/16	3/8	2	20257	20265	21340	21348
3/16	3/16	5/8	2	20269	20277	21352	21360
3/16	3/16	3/4	2-1/2	20281	20289	21364	21372
3/16	3/16	1-1/8	3	20293	20301	21376	21384
3/16	3/16	1-1/2	4	20305	20313	21386	21390
3/16	3/16	1-1/2	6	20317	20325	21392	21396
13/64	1/4	5/8	2-1/2	20329	20337	21400	21408
7/32	1/4	7/16	2	20341	20349	21412	21420
7/32	1/4	5/8	2-1/2	20353	20361	21424	21432
15/64	1/4	3/4	2-1/2	20365	20373	21434	21438
1/4	1/4	1/2	2	20377	20385	21448	21456

2 FLUTE

2 Flute Standard





2 FLUTE ENDMILLS

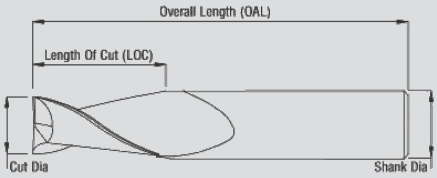
Cut Dia	Shank Dia	LOC	OAL	Square EDP #		Ball Nose EDP #	
				Uncoated	AlTiN	Uncoated	AlTiN
1/4	1/4	3/4	2-1/2	20389	20397	21460	21468
1/4	1/4	1-1/8	3	20401	20409	21472	21480
1/4	1/4	1-1/2	4	20413	20421	21484	21492
1/4	1/4	1-1/2	6	20425	20433	21500	21502
1/4	1/4	2-1/2	6	20437	20445	21503	21505
17/64	5/16	3/4	2-1/2	20449	20457	21494	21498
9/32	5/16	3/4	2-1/2	20461	20469	21508	21516
19/64	5/16	13/16	2-1/2	20473	20481	21517	21519
5/16	5/16	1/2	2	20485	20493	21520	21528
5/16	5/16	13/16	2-1/2	20497	20505	21532	21540
5/16	5/16	1-1/8	3	20509	20517	21544	21552
5/16	5/16	1-1/2	6	20075	20076	21568	21576
5/16	5/16	1-5/8	4	20521	20529	21556	21564
5/16	5/16	2-1/2	6	20533	20541	21182	21183
21/64	3/8	1	2-1/2	20498	-	21186	21187
11/32	3/8	1	2-1/2	20545	20553	21580	21588
23/64	3/8	1	2-1/2	20078	20079	21190	21191
3/8	3/8	5/8	2	20557	20565	21194	21195
3/8	3/8	1	2-1/2	20569	20577	21604	21612
3/8	3/8	1-1/8	3	20581	20589	21616	21624
3/8	3/8	1-1/2	6	20605	20613	21640	21648
3/8	3/8	1-3/4	4	20593	20601	21628	21636
3/8	3/8	2-1/2	6	20617	20621	21649	21651
25/64	7/16	1	2-3/4	20098	20099	21202	21203
13/32	7/16	1	2-3/4	20629	20637	21652	21660
27/64	7/16	1	2-3/4	20638	20639	21206	21207
7/16	7/16	5/8	2-1/2	20641	20649	21664	21672
7/16	7/16	1	2-3/4	20653	20661	21676	21684
7/16	7/16	2	4	20665	20673	21688	21696
7/16	7/16	3	6	20677	20685	21700	21708
29/64	1/2	1	3	20115	20116	21210	21211
15/32	1/2	1	3	20686	20687	21214	21215
31/64	1/2	1	3	20119	20120	21218	21219
1/2	1/2	5/8	2-1/2	20689	20697	21712	21720
1/2	1/2	1	3	20701	20709	21724	21732
1/2	1/2	1-1/4	3	20710	20712	21222	21223
1/2	1/2	1-1/2	4	20123	20124	21226	21227
1/2	1/2	1-1/2	6	20737	20745	21749	21751
1/2	1/2	2	4	20713	20721	21736	21744
1/2	1/2	3	6	20725	20733	21748	21756
1/2	1/2	4	7	20749	20757	21753	21755
33/64	9/16	1-1/4	3-1/2	20127	20128	21230	21231
17/32	9/16	1-1/4	3-1/2	20131	20132	21234	21235
9/16	9/16	1-1/8	3-1/2	20773	20781	21760	21768

Up to 35 HRc

Shank Dia: h6
Cut Dia: h10

2 FLUTE

2 Flute - Standard



ENDMILL

30°

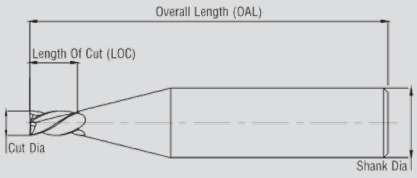
Up to 35 HRc

Shank Dia: h6
Cut Dia: h10

2 FLUTE ENDMILLS

Cut Dia	Shank Dia	LOC	OAL	Square EDP #		Ball Nose EDP #	
				Uncoated	AlTiN	Uncoated	AlTiN
5/8	5/8	3/4	3	20785	20793	21772	21780
5/8	5/8	1-1/4	3-1/2	20797	20805	21784	21792
5/8	5/8	2-1/4	5	20809	20817	21796	21804
5/8	5/8	3	6	20821	20829	21805	21807
5/8	5/8	4	7	20833	20841	21801	21803
11/16	3/4	1-3/8	4	20845	20853	21808	21816
3/4	3/4	1	3	20857	20865	21820	21828
3/4	3/4	1-1/2	4	20869	20877	21832	21840
3/4	3/4	1-1/2	6	20135	20136	21257	21258
3/4	3/4	2-1/4	5	20881	20889	21844	21852
3/4	3/4	3	6	20893	20901	21856	21864
3/4	3/4	4	7	20902	20904	21868	21876
3/4	3/4	5	8	20906	20908	21877	21879
7/8	7/8	1-1/2	4	20905	20913	21880	21888
1	1	1-1/2	4	20917	20925	21892	21900
1	1	1-1/2	6	20142	20143	21246	21247
1	1	2-1/4	5	20929	20937	21904	21912
1	1	3	6	20941	20949	21916	21924
1	1	4	7	20953	20961	21928	21936

All other coatings available on request



2 FLUTE - DECIMAL

MINIATURE – SQUARE AND BALL NOSE

30°

Up to 35 HRc

Shank Dia: h6
Cut Dia: h10

BENEFITS & FEATURES

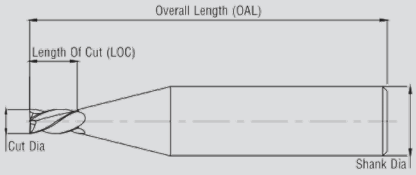
- General purpose milling in most materials of medium hardness such as Steel, Brass, Iron etc.
- Manufactured from premium submicron grain carbide

2 FLUTE ENDMILLS - DECIMAL

Cut Dia	Metric Dia	Shank Dia	LOC	OAL	Square	Ball Nose
0.005	-	1/8	0.015	1-1/2	26005	26400
0.006	0.15	1/8	0.018	1-1/2	26013	26404
0.007	-	1/8	0.021	1-1/2	26023	26409
0.008	0.2	1/8	0.024	1-1/2	26029	26412
0.009	-	1/8	0.027	1-1/2	26037	26416

2 FLUTE

2 Flute - Decimal



2 FLUTE ENDMILLS - DECIMAL

Cut Dia	Metric Dia	Shank Dia	LOC	OAL	Square	Ball Nose
0.010	0.25	1/8	0.030	1-1/2	26045	26420
0.011	-	1/8	0.033	1-1/2	26053	26424
0.012	0.3	1/8	0.036	1-1/2	26061	26428
0.013	-	1/8	0.039	1-1/2	26069	26432
0.014	0.35	1/8	0.042	1-1/2	26077	26436
0.015	-	1/8	0.045	1-1/2	26085	26440
0.016	0.4	1/8	0.048	1-1/2	26093	26444
0.017	-	1/8	0.051	1-1/2	26101	26448
0.018	-	1/8	0.054	1-1/2	26109	26452
0.019	-	1/8	0.057	1-1/2	26117	26456
0.020	0.5	1/8	0.060	1-1/2	26125	26460
0.021	-	1/8	0.063	1-1/2	26133	26464
0.022	-	1/8	0.066	1-1/2	26141	26468
0.023	-	1/8	0.069	1-1/2	26149	26472
0.024	0.6	1/8	0.072	1-1/2	26157	26476
0.025	-	1/8	0.075	1-1/2	26165	26480
0.026	-	1/8	0.078	1-1/2	26173	26484
0.027	-	1/8	0.081	1-1/2	26181	26488
0.028	-	1/8	0.084	1-1/2	26189	26492
0.029	-	1/8	0.087	1-1/2	26197	26496
0.030	-	1/8	0.090	1-1/2	26205	26500
0.031	-	1/8	0.093	1-1/2	26208	26503
0.032	-	1/8	0.096	1-1/2	26211	26506
0.033	-	1/8	0.099	1-1/2	26214	26509
0.034	-	1/8	0.102	1-1/2	26216	26511
0.035	0.90	1/8	0.105	1-1/2	26213	26504
0.040	-	1/8	0.120	1-1/2	26221	26508
0.045	1.15	1/8	0.135	1-1/2	26229	26512
0.050	-	1/8	0.150	1-1/2	26237	26516
0.055	1.40	1/8	0.165	1-1/2	26245	26520
0.060	-	1/8	0.180	1-1/2	26253	26524
0.065	1.65	1/8	0.195	1-1/2	26261	26528
0.070	-	1/8	0.210	1-1/2	26269	26532
0.075	1.90	1/8	0.225	1-1/2	26277	26536
0.080	2.05	1/8	0.240	1-1/2	26285	26540
0.085	2.15	1/8	0.255	1-1/2	26293	26544
0.090	2.30	1/8	0.270	1-1/2	26301	26548
0.095	2.40	1/8	0.285	1-1/2	26309	26552
0.100	2.55	1/8	0.300	1-1/2	26317	26556
0.105	-	1/8	0.315	1-1/2	26325	26560
0.110	2.80	1/8	0.330	1-1/2	26333	26564
0.115	-	1/8	0.345	1-1/2	26341	26568
0.120	-	1/8	0.360	1-1/2	26349	26572

Up to 35 HRc

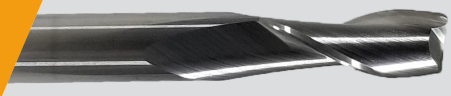
Shank Dia: h6
Cut Dia: h10

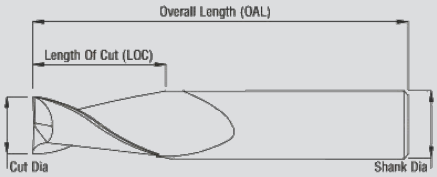
ENDMILL

All other coatings available on request

2 FLUTE

2 Flute Radius Endmill





2 FLUTE CORNER RADIUS

REGULAR LENGTH – FRACTION

30°

Up to 35 HRc

Shank Dia: h6
Cut Dia: h10

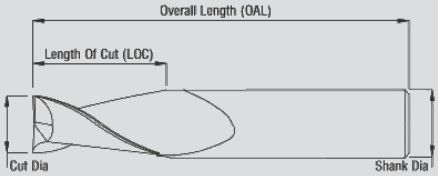
BENEFITS & FEATURES

- Corner radius gives more strength
- Used where a radius is permissible
- Center cutting geometry
- Used for roughing and finishing operation
- Designed for slotting and profiling
- Made from premium submicron grain carbide

2 FLUTE CORNER RADIUS UNCOATED

Cut Dia	Shank Dia	LOC	OAL	Uncoated						
				0.015	0.020	0.030	0.045	0.060	0.090	0.125
1/8	1/8	1/2	1-1/2	19004	19012	19020	19028	19036	-	-
3/16	3/16	5/8	2	19044	19052	19060	19068	19076	-	-
1/4	1/4	3/4	2-1/2	19084	19092	19100	19108	19116	-	-
5/16	5/16	13/16	2-1/2	19124	19132	19140	19148	19156	-	-
3/8	3/8	1	2-1/2	19164	19172	19180	19188	19196	-	19199
1/2	1/2	1	3	19204	19212	19220	19228	19236	19241	19242
5/8	5/8	1-1/4	3-1/2	19244	19252	19260	19268	19276	-	-
3/4	3/4	1-1/2	4	19284	19292	19300	19308	19316	19324	19332
1	1	1-1/2	4	-	19340	19348	19356	19364	19372	19380

ENDMILL



2 FLUTE CORNER RADIUS ALTIN COATED

Cut Dia	Shank Dia	LOC	OAL	AlTiN Coated						
				0.015	0.020	0.030	0.045	0.060	0.090	0.125
1/8	1/8	1/2	1-1/2	19008	19016	19024	19032	19040	-	-
3/16	3/16	5/8	2	19048	19056	19064	19072	19080	-	-
1/4	1/4	3/4	2-1/2	19088	19096	19104	19112	19120	-	-
5/16	5/16	13/16	2-1/2	19128	19136	19144	19152	19160	-	-
3/8	3/8	1	2-1/2	19168	19176	19184	19192	19200	-	19202
1/2	1/2	1	3	19208	19216	19224	19232	19240	19243	19246
5/8	5/8	1- 1/4	3-1/2	19248	19256	19264	19272	19280	-	-
3/4	3/4	1- 1/2	4	19288	19296	19304	19312	19320	19328	19336
1	1	1- 1/2	4	-	19344	19352	19360	19368	19376	19384

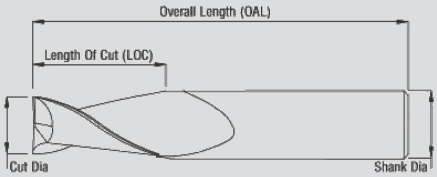
30°

Up to 35 HRc

Shank Dia: h6
Cut Dia: h10

All other coatings available on request

COBRA CARBIDE® Power. Precision. Performance.



2 FLUTE ENDMILLS

ALL LENGTHS SQUARE AND BALL NOSE – METRIC

BENEFITS & FEATURES

- Center cutting geometry
- Design for increased chip removal rate
- Capable to do slotting, profiling and plunging operations
- Used for semi-finishing operation
- Manufactured from premium submicron grain carbide

Up to 35 HRc

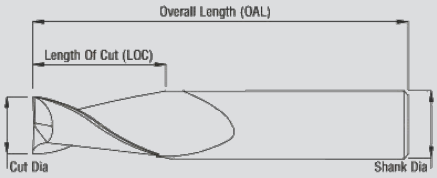
Shank Dia: h6
Cut Dia: h10

2 FLUTE ENDMILLS

Cut Dia	Shank Dia	LOC	OAL	Square EDP #		Ball Nose EDP #	
				Uncoated	AlTiN	Uncoated	AlTiN
1	3	4	38	24000	24004	25001	25005
1	4	4	50	24001	24358	25006	25008
1.5	3	6	38	24165	24167	25350	25352
1.5	3	4.5	38	24008	24012	25009	25013
1.5	4	4.5	50	24009	24013	25010	25014
2	3	6.3	38	24016	24020	25017	25021
2	3	9	38	24045	24047	25362	25064
2	4	6.3	50	24017	24021	25018	25022
2.5	3	9.5	38	24024	24028	25025	25029
2.5	4	9.5	50	24025	24029	25026	25030
3	3	12	38	24032	24036	25033	25037
3	3	19	57	24040	24044	25041	25045
3	3	25	75	24048	24052	25049	25053
3	3	25	100	24069	24072	25054	25056
3	6	6	38	23927	23930	25150	25152
3	6	12	50	24033	24037	25034	25038
3	6	25	75	24211	24213	25080	25090
3	6	25	100	24231	24215	25092	25095
3.5	4	12	50	24056	24060	25057	25061
3.5	6	12	50	24359	24061	25058	25062
4	4	8	50	23903	23904	25158	25160
4	4	14	50	24064	24068	25065	25069
4	4	20	50	24219	24102	25074	25078
4	4	25	75	24080	24084	25081	25085
4	4	25	100	24073	24075	25086	25088
4	6	8	50	23931	23933	25172	25174
4	6	14	50	24065	24361	25070	25072
4	6	20	50	24222	24223	25098	25102
4	6	25	75	24803	24086	25106	25110
4	6	25	100	24087	24105	25114	25117
4.5	6	16	50	24088	24092	25089	25093
5	5	11	50	23906	23907	25202	25204
5	5	25	63	24106	24107	25105	25109
5	5	25	75	24112	24116	25111	25115
5	5	30	100	24079	24081	25116	25120
5	6	11	50	23934	23936	25205	25207
5	6	16	50	24096	24100	25097	25101

2 FLUTE

2 Flute - Metric



30°

Up to 35 HRc

Shank Dia: h6
Cut Dia: h10

ENDMILL

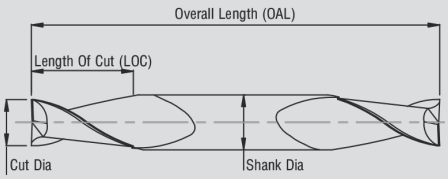
2 FLUTE ENDMILLS

Cut Dia	Shank Dia	LOC	OAL	Square EDP #		Ball Nose EDP #	
				Uncoated	AlTiN	Uncoated	AlTiN
5	6	25	63	24093	24095	25119	25122
5	6	25	75	24113	24117	25126	25140
5.5	6	19	50	24099	24121	25222	25224
6	6	12	50	23909	23910	25234	25236
6	6	19	50	24120	24124	25121	25125
6	6	25	75	24128	24132	25129	25133
6	6	30	100	24382	24384	25134	25136
6	6	38	150	24385	24387	25137	25139
7	8	20	63	24144	24148	25145	25149
8	8	12	50	23912	23913	25260	25262
8	8	20	63	24152	24156	25153	25157
8	8	25	75	24168	24172	25161	25165
8	8	40	100	24388	24390	25166	25168
8	8	40	150	24391	24393	25169	25171
9	10	22	75	24176	24180	25177	25181
10	10	16	50	23915	23916	25294	25296
10	10	22	75	24184	24188	25185	25189
10	10	30	75	24225	24229	25190	25192
10	10	40	100	24200	24204	25193	25197
10	10	75	150	24394	24396	25198	25200
11	12	25	75	24208	24212	25209	25213
12	12	19	63	23918	23919	25308	25310
12	12	25	75	24216	24220	25217	25221
12	12	50	100	24232	24228	25225	25229
12	12	75	150	24236	24241	25230	25232
13	14	32	89	24240	24244	25241	25245
14	14	18	70	23921	23922	25318	25320
14	14	32	89	24248	24252	25249	25253
14	14	50	125	24258	24262	25254	25259
14	14	75	150	24264	24268	25265	25269
16	16	20	75	23924	23925	25332	25334
16	16	32	89	24272	24276	25273	25277
16	16	50	125	24269	24271	25283	25287
16	16	75	150	24288	24292	25289	25293
18	18	38	100	24296	24300	25297	25301
18	18	50	125	24293	24295	25303	25307
18	18	75	150	24312	24316	25313	25317
20	20	38	100	24320	24324	25321	25325
20	20	50	125	24313	24317	25327	25331
20	20	75	150	24336	24340	25337	25341
22	22	38	100	24344	24348	25345	25349
25	25	38	100	24352	24356	25353	25357
25	25	50	125	24337	24341	25363	25367
25	25	75	150	24368	24372	25369	25373

All other coatings available on request

2 FLUTE

2 Flute DE Stub



2 FLUTE ENDMILLS DOUBLE END STUB

DOUBLE END – FRACTION

BENEFITS & FEATURES

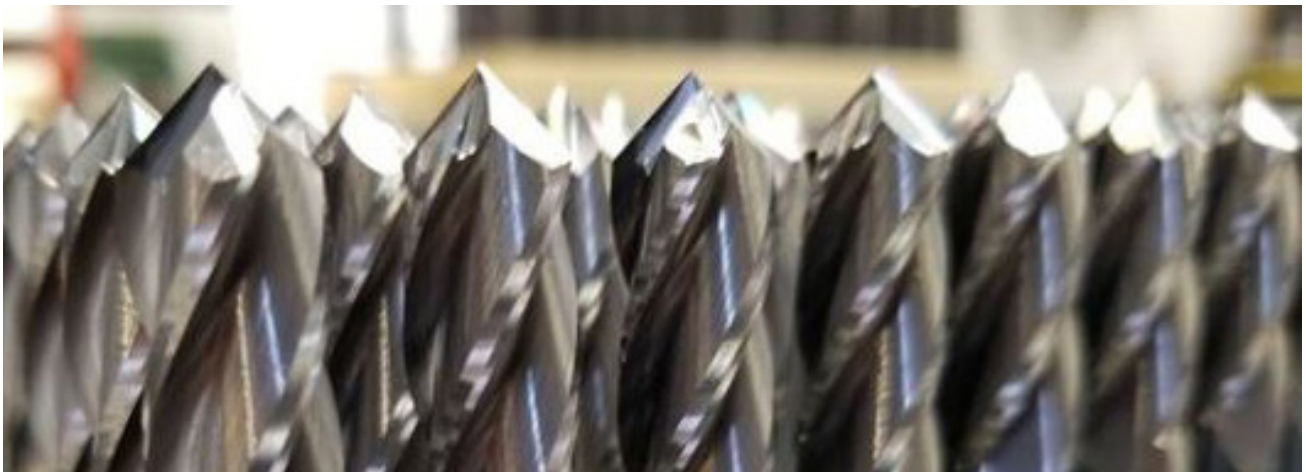
- Center cutting geometry
- Designed for milling, slotting, profiling and trace milling
- Used for roughing and finishing operation
- Made from premium submicron grain carbide

Up to 35 HRc

Shank Dia: h6
Cut Dia: h10

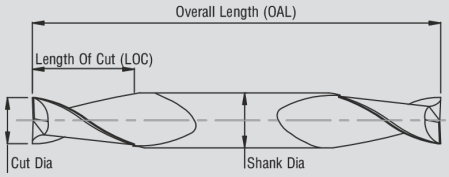
DOUBLE END STUB - SQUARE AND BALL NOSE

Cut Dia	Shank Dia	LOC	OAL	Square EDP #		Ball Nose EDP #	
				Uncoated	AlTiN	Uncoated	AlTiN
1/32	1/8	5/64	1-1/2	28502	28508	28702	28705
3/64	1/8	3/32	1-1/2	28511	28517	28711	28714
1/16	1/8	1/8	1-1/2	28520	28526	28720	28723
5/64	1/8	5/32	1-1/2	28529	28535	28729	28732
3/32	1/8	3/16	1-1/2	28538	28544	28738	28741
7/64	1/8	7/32	1-1/2	28547	28553	28747	28750
1/8	1/8	1/4	1-1/2	28556	28562	28756	28759
9/64	3/16	9/32	2	28565	28571	28765	28768
5/32	3/16	5/16	2	28574	28580	28774	28777
11/64	3/16	3/8	2	28583	28589	28783	28786
3/16	3/16	3/8	2	28592	28598	28792	28795
13/64	1/4	1/2	2-1/2	28594	28600	28794	28800
7/32	1/4	1/2	2-1/2	28601	28607	28801	28804
15/64	1/4	1/2	2-1/2	28608	28611	28810	28813
1/4	1/4	1/2	2-1/2	28610	28616	28819	28822
9/32	5/16	1/2	2-1/2	28617	28620	28824	28826
5/16	5/16	1/2	2-1/2	28619	28625	28828	28831
3/8	3/8	1/2	2-1/2	28628	28634	28837	28840
7/16	7/16	9/16	2-1/2	28637	28643	28846	28849
1/2	1/2	5/8	3	28646	28652	28855	28858
5/8	5/8	3/4	4	28648	28654	28856	28860
3/4	3/4	1	4	28650	28656	28862	28864



2 FLUTE

2 Flute DE with Flat



30°

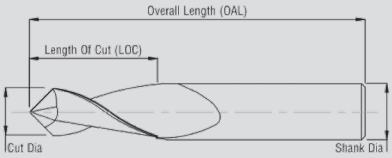
Up to 35 HRc

Shank Dia: h6
Cut Dia: h10

DOUBLE END SQUARE AND BALL NOSE WITH WELDON

Cut Dia	Shank Dia	LOC	OAL	Square Uncoated	Ball Nose Uncoated
1/8	3/8	3/8	3-1/16	28904	28908
5/32	3/8	7/16	3-1/8	28912	28916
3/16	3/8	1/2	3-1/4	28920	28924
7/32	3/8	9/16	3-3/8	28928	28932
1/4	3/8	5/8	3-3/8	28936	28940
9/32	3/8	11/16	3-3/8	28944	28948
5/16	3/8	3/4	3-1/2	28952	28956
11/32	3/8	3/4	3-1/2	28960	28964
3/8	3/8	3/4	3-1/2	28968	28972
7/16	1/2	7/8	4	28976	28980
1/2	1/2	1	4	28984	28988

All other coatings available on request



ENDMILL

2 FLUTE 90 DEG DRILL POINT ENDMILLS

REGULAR LENGTHS – FRACTION

BENEFITS & FEATURES

- Can be used for drilling, slotting, chamfering, profile milling and countersinking.
- Manufactured from premium submicron grain carbide.
- Available In 82° point angle also.

30°

Up to 35 HRc

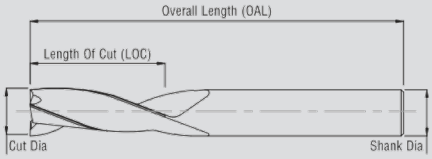
Shank Dia: h6
Cut Dia: h10

2 FLUTE 90° DRILL POINT ENDMILLS

Cut Dia	Shank Dia	LOC	OAL	Uncoated	AlTiN
1/16	1/8	3/16	1-1/2	15400	15404
3/32	1/8	3/8	1-1/2	15406	15410
1/8	1/8	1/2	1-1/2	15412	15416
3/16	3/16	5/8	2	15418	15422
1/4	1/4	3/4	2-1/2	15424	15428
5/16	5/16	13/16	2-1/2	15430	15434
3/8	3/8	1	2-1/2	15436	15440
7/16	7/16	1	2-3/4	15442	15446
1/2	1/2	1	3	15448	15452
5/8	5/8	1-1/4	3-1/2	15454	15458
3/4	3/4	1-1/2	4	15460	15464

All other coatings available on request

3 FLUTE
Standard Endmills



3 FLUTE 30 DEG ENDMILLS

FOR TOUGH MATERIAL – FRACTION

BENEFITS & FEATURES

- Single Centre cutting geometry
- Design offers more chip space than four flute and better finish than 2 flute
- Designed for milling, slotting and profiling
- Manufactured from premium submicron grain carbide

Up to 35 HRc

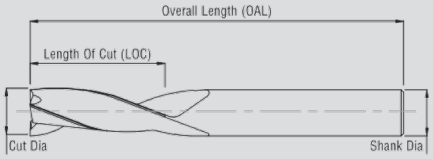
Shank Dia: h6
Cut Dia: h10

3 FLUTE 30° ENDMILLS

Cut Dia	Shank Dia	LOC	OAL	Square EDP #	
				Uncoated	AlTiN
1/32	1/8	1/8	1-1/2	27005	27007
3/64	1/8	1/8	1-1/2	27001	27003
1/16	1/8	1/4	1-1/2	27004	27008
5/64	1/8	1/4	1-1/2	27009	27011
3/32	1/8	3/8	1-1/2	27012	27016
1/8	1/8	1/2	1-1/2	27020	27024
9/64	3/16	9/16	2	27025	27027
5/32	3/16	9/16	2	27028	27032
3/16	3/16	5/8	2	27036	27040
13/64	1/4	5/8	2-1/2	27041	27043
7/32	1/4	5/8	2-1/2	27044	27048
1/4	1/4	3/4	2-1/2	27052	27056
5/16	5/16	13/16	2-1/2	27060	27064
3/8	3/8	1	2-1/2	27068	27072
25/64	7/16	1	2-3/4	27073	27075
7/16	7/16	1	2-3/4	27076	27080
1/2	1/2	1	3	27084	27088
9/16	9/16	1-1/8	3-1/2	27092	27096
5/8	5/8	1-1/4	3-1/2	27100	27104
5/8	5/8	2-1/4	4	27108	27112
11/16	3/4	1-1/2	4	27113	27115
3/4	3/4	1-1/2	4	27116	27120
7/8	7/8	1-1/2	4	27121	27123
1	1	1-1/2	4	27124	27128
1	1	2-1/4	5	27132	27136

All other coatings available on request

3 FLUTE
Standard Endmills



3 FLUTE 30 DEG ENDMILLS

REGULAR LENGTHS – METRIC

Up to 35 HRc

Shank Dia: h6
Cut Dia: h10

ENDMILL

BENEFITS & FEATURES

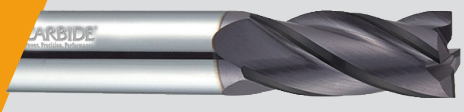
- Single Centre cutting geometry
- Design offers more chip space than four flute and better finish than 2 flute
- Designed for milling, slotting and profiling
- Manufactured from premium submicron grain carbide

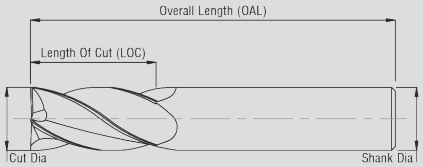
3 FLUTE 30° ENDMILLS

Cut Dia	Shank Dia	LOC	OAL	Square EDP #	
				Uncoated	AlTiN
1	3	3	39	27500	27504
1.5	3	5	39	27508	27512
2	3	6.3	38	27516	27520
2	4	6.3	50	27554	27555
2.5	2.5	3	39	27524	27528
3	3	9	38	27532	27536
3	6	12	50	27557	27558
3	3	25	75	27760	27762
3	6	25	75	27799	27819
3.5	4	12	51	27540	27544
4	4	14	50	27548	27552
4	6	14	50	27549	27553
4	4	25	75	27763	27765
4	6	25	75	27801	27805
4.5	5	14	50	27556	27560
5	6	16	50	27564	27568
5	5	25	75	27766	27768
5	6	25	75	27809	27813
6	6	19	50	27572	27576
6	6	25	75	27769	27771
7	8	19	63	27588	27592
8	8	20	63	27596	27600
8	8	25	75	27775	27777
9	10	22	76	27604	27608
10	10	22	75	27612	27616
10	10	38	100	27778	27780
12	12	25	75	27620	27624
12	12	50	100	27781	27783
14	14	32	89	27628	27632
14	14	75	150	27784	27786
16	16	32	89	27636	27640
16	16	75	150	27787	27789
18	18	35	102	27644	27648
18	18	75	150	27790	27792
20	20	38	100	27652	27656
20	20	75	150	27793	27795
22	22	38	100	27660	27664
25	25	38	100	27668	27672
25	25	75	150	27796	27798

All other coatings available on request

COBRA CARBIDE® Power. Precision. Performance.





4 FLUTE ENDMILLS

ALL LENGTHS SQUARE AND BALL NOSE – FRACTION

BENEFITS & FEATURES

- Center cutting geometry
- Design for increased chip removal rate
- Used for finishing operation
- Designed for milling, slotting, profiling and trace milling
- Manufactured from premium submicron grain carbide

Up to 35 HRc

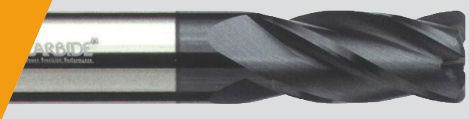
Shank Dia: h6
Cut Dia: h10

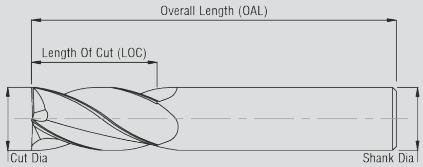
ENDMILL

4 FLUTE ENDMILLS

Cut Dia	Shank Dia	LOC	OAL	Square EDP #		Ball Nose EDP #	
				Uncoated	AlTiN	Uncoated	AlTiN
1/64	1/8	1/32	1-1/2	22004	22012	23006	23014
1/32	1/8	1/16	1-1/2	22016	22024	23015	23017
1/32	1/8	1/8	1-1/2	22028	22036	23018	23026
3/64	1/8	3/32	1-1/2	22040	22048	23030	23038
3/64	1/8	1/8	1-1/2	22052	22060	23042	23050
1/16	1/8	1/8	1-1/2	22064	22072	23054	23062
1/16	1/8	3/16	1-1/2	22076	22084	23066	23074
5/64	1/8	3/16	1-1/2	22086	22088	23078	23086
5/64	1/8	1/4	1-1/2	22090	22096	23090	23098
3/32	1/8	3/16	1-1/2	22100	22108	23102	23110
3/32	1/8	3/8	1-1/2	22112	22120	23114	23122
7/64	1/8	7/32	1-1/2	22121	22123	23126	23134
7/64	1/8	3/8	1-1/2	22124	22132	23138	23146
1/8	1/8	1/4	1-1/2	22136	22144	23150	23158
1/8	1/8	1/2	1-1/2	22148	22156	23162	23170
1/8	1/8	3/4	2-1/4	22160	22168	23174	23182
1/8	1/8	1	3	22172	22180	23186	23194
1/8	1/8	1-1/8	4	22184	22192	23196	23200
1/8	1/8	1-1/2	4	22181	22182	–	–
9/64	3/16	9/32	2	22193	22195	23210	23218
9/64	3/16	9/16	2	22196	22204	23222	23230
5/32	3/16	5/16	2	22208	22216	23234	23242
5/32	3/16	9/16	2	22220	22228	23246	23254
11/64	3/16	3/8	2	22241	22243	23255	23257
11/64	3/16	5/8	2	22232	22240	23258	23266
3/16	3/16	3/8	2	22244	22252	23270	23278
3/16	3/16	5/8	2	22256	22264	23282	23290
3/16	3/16	3/4	2-1/2	22268	22276	23294	23302
3/16	3/16	1-1/8	3	22280	22288	23306	23314
3/16	3/16	1-1/2	4	22292	22300	23315	23317
3/16	3/16	1-1/2	6	22304	22312	23319	23321
13/64	1/4	5/8	2-1/2	22316	22324	23318	23326
7/32	1/4	7/16	2	22328	22336	23330	23338
7/32	1/4	5/8	2-1/2	22340	22348	23342	23350
15/64	1/4	3/4	2-1/2	22352	22360	23354	23362
1/4	1/4	1/2	2	22364	22372	23366	23374

4 FLUTE
Standard Endmills





30°

Up to 35 HRc

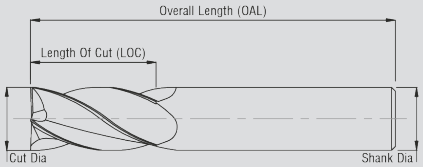
Shank Dia: h6
Cut Dia: h10

ENDMILL

4 FLUTE ENDMILLS

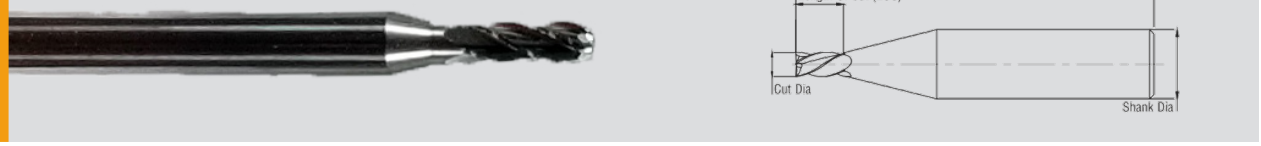
Cut Dia	Shank Dia	LOC	OAL	Square EDP #		Ball Nose EDP #	
				Uncoated	AlTiN	Uncoated	AlTiN
1/4	1/4	3/4	2-1/2	22376	22384	23378	23386
1/4	1/4	1-1/8	3	22388	22396	23390	23398
1/4	1/4	1-1/2	4	22400	22408	23402	23410
1/4	1/4	1-1/2	6	22412	22420	23414	23422
1/4	1/4	2-1/2	6	22424	22432	23424	23427
17/64	5/16	3/4	2-1/2	22436	22444	23426	23434
9/32	5/16	3/4	2-1/2	22448	22456	23438	23446
19/64	5/16	13/16	2-1/2	22460	22468	23450	23458
5/16	5/16	1/2	2	22472	22480	23462	23470
5/16	5/16	13/16	2-1/2	22484	22492	23474	23482
5/16	5/16	1-1/8	3	22496	22504	23486	23494
5/16	5/16	1-1/2	6	22502	23492	23508	23511
5/16	5/16	1-5/8	4	22508	22516	23498	23506
5/16	5/16	2-1/2	6	22520	22528	23499	23517
21/64	3/8	1	2-1/2	22530	23507	23400	23519
11/32	3/8	1	2-1/2	22532	22540	23510	23518
23/64	3/8	1	2-1/2	22538	23512	23515	23520
3/8	3/8	1/2	2	22544	22552	23522	23530
3/8	3/8	1	2-1/2	22556	22564	23534	23542
3/8	3/8	1-1/8	3	22568	22576	23546	23554
3/8	3/8	1-1/2	6	22592	22600	23574	23578
3/8	3/8	1-3/4	4	22580	22588	23568	23572
3/8	3/8	2-1/2	6	22604	22612	23555	23557
25/64	7/16	1	2-3/4	22613	23560	23563	23565
13/32	7/16	1	2-3/4	22616	22624	23558	23566
27/64	7/16	1	2-3/4	22618	23567	23569	23571
7/16	7/16	5/8	2-1/2	22628	22636	23579	23581
7/16	7/16	1	2-3/4	22640	22648	23582	23590
7/16	7/16	2	4	22652	22660	23594	23602
7/16	7/16	3	6	22664	22672	23606	23614
29/64	1/2	1	3	22666	23608	23615	23623
15/32	1/2	1	3	22673	22675	23619	23621
31/64	1/2	1	3	22687	23617	23627	23629
1/2	1/2	5/8	2-1/2	22676	22684	23618	23626
1/2	1/2	1	3	22688	22696	23630	23638
1/2	1/2	1-1/4	3	22697	23632	23639	23641
1/2	1/2	1-1/2	4	22698	23648	23643	23645
1/2	1/2	1-1/2	6	22724	22732	23666	23674
1/2	1/2	2	4	22700	22708	23642	23650
1/2	1/2	3	6	22712	22720	23654	23662
1/2	1/2	4	7	22736	22744	23678	23686
33/64	9/16	1-1/4	3-1/2	22750	23680	23691	23693
17/32	9/16	1-1/4	3-1/2	22754	23683	23695	23697
9/16	9/16	1-1/8	3-1/2	22760	22768	23690	23698

4 FLUTE
Standard Endmills



4 FLUTE ENDMILLS

Cut Dia	Shank Dia	LOC	OAL	Square EDP #		Ball Nose EDP #	
				Uncoated	AlTiN	Uncoated	AlTiN
5/8	5/8	3/4	3	22772	22780	23702	23710
5/8	5/8	1-1/4	3-1/2	22784	22792	23714	23722
5/8	5/8	2-1/4	5	22796	22804	23726	23734
5/8	5/8	3	6	22808	22816	23738	23746
5/8	5/8	4	7	22820	22828	23750	23758
21/32	3/4	1-1/2	4	22830	22833	–	–
11/16	3/4	1-3/8	4	22832	22840	23762	23770
3/4	3/4	1	3	22844	22852	23774	23782
3/4	3/4	1-1/2	4	22856	22864	23786	23794
3/4	3/4	1-1/2	6	22858	22866	23788	23796
3/4	3/4	2-1/4	5	22868	22876	23798	23806
3/4	3/4	3	6	22880	22888	23810	23818
3/4	3/4	4	7	22892	22900	23819	23821
3/4	3/4	5	8	22901	22903	23822	23830
7/8	7/8	1-1/2	4	22904	22912	23834	23842
1	1	1-1/2	4	22916	22924	23846	23854
1	1	2-1/4	5	22928	22936	23858	23866
1	1	3	6	22940	22948	23870	23878
1	1	4	7	22952	22960	23880	23884
1	1	4	8	22964	22972	23886	23890



All other coatings available on request

ENDMILL

4 FLUTE ENDMILLS - DECIMAL

MINIATURE – SQUARE AND BALL NOSE

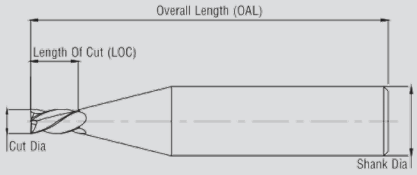
BENEFITS & FEATURES

- General purpose milling in most materials of medium hardness such as Steel, Brass, Iron etc.
- Manufactured from premium submicron grain carbide

4 FLUTE ENDMILLS - DECIMAL

Cut Dia	Metric Dia	Shank Dia	LOC	OAL	UNCOATED EDP #	
					Square	Ball Nose
0.005	-	1/8	0.015	1-1/2	26009	26600
0.006	0.15	1/8	0.018	1-1/2	26011	26604

4 FLUTE
Standard Endmills



Up to 35 HRc

Shank Dia: h6
Cut Dia: h10

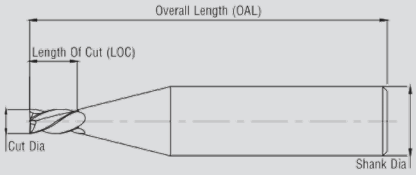
ENDMILL

4 FLUTE ENDMILLS - DECIMAL

Cut Dia	Metric Dia	Shank Dia	LOC	OAL	UNCOATED EDP #	
					Square	Ball Nose
0.007	-	1/8	0.021	1-1/2	26028	26609
0.008	0.2	1/8	0.024	1-1/2	26033	26612
0.009	-	1/8	0.027	1-1/2	26039	26616
0.010	0.25	1/8	0.030	1-1/2	26049	26620
0.011	-	1/8	0.033	1-1/2	26057	26624
0.012	0.3	1/8	0.036	1-1/2	26065	26628
0.013	-	1/8	0.039	1-1/2	26073	26632
0.014	0.35	1/8	0.042	1-1/2	26081	26636
0.015	-	1/8	0.045	1-1/2	26089	26640
0.015	-	1/8	0.075	2-1/2	26091	26642
0.016	0.4	1/8	0.048	1-1/2	26097	26644
0.017	-	1/8	0.051	1-1/2	26105	26648
0.017	-	1/8	0.089	1-1/2	26106	26650
0.018	-	1/8	0.054	1-1/2	26113	26652
0.019	-	1/8	0.057	1-1/2	26121	26656
0.019	-	1/8	0.095	1-1/2	26122	26658
0.020	0.5	1/8	0.060	1-1/2	26129	26660
0.020	0.5	1/8	0.100	2-1/2	26131	26662
0.021	-	1/8	0.063	1-1/2	26137	26664
0.022	-	1/8	0.066	1-1/2	26139	26666
0.022	-	1/8	0.110	1-1/2	26145	26668
0.023	-	1/8	0.069	1-1/2	26154	26672
0.024	0.60	1/8	0.072	1-1/2	26161	26676
0.025	-	1/8	0.075	1-1/2	26169	26680
0.025	-	1/8	0.125	2-1/2	26170	26682
0.026	-	1/8	0.078	1-1/2	26177	26684
0.027	-	1/8	0.081	1-1/2	26185	26688
0.028	-	1/8	0.084	1-1/2	26193	26692
0.028	-	1/8	0.140	1-1/2	26196	26694
0.029	-	1/8	0.087	1-1/2	26201	26696
0.030	-	1/8	0.090	1-1/2	26209	26700
0.030	-	1/8	0.150	2-1/2	26361	26702
0.031	-	1/8	0.093	1-1/2	26363	26781
0.032	-	1/8	0.096	1-1/2	26365	26783
0.033	-	1/8	0.099	1-1/2	26367	26785
0.034	-	1/8	0.102	1-1/2	26369	26787

4 FLUTE

Decimal Endmills



4 FLUTE ENDMILLS - DECIMAL						
Cut Dia	Metric Dia	Shank Dia	LOC	OAL	UNCOATED EDP #	
					Square	Ball Nose
0.035	0.90	1/8	0.105	1-1/2	26217	26704
0.035	-	1/8	0.175	2-1/2	26220	26706
0.040	-	1/8	0.120	1-1/2	26225	26708
0.045	1.15	1/8	0.135	1-1/2	26233	26712
0.045	1.15	1/8	0.250	2-1/2	26235	26714
0.050	-	1/8	0.150	1-1/2	26241	26716
0.050	-	1/8	0.300	2-1/2	26243	26718
0.055	1.40	1/8	0.165	1-1/2	26249	26720
0.055	1.40	1/8	0.275	1-1/2	26250	26722
0.060	-	1/8	0.180	1-1/2	26257	26724
0.060	-	1/8	0.500	2-1/2	26258	26726
0.065	1.65	1/8	0.195	1-1/2	26265	26728
0.070	-	1/8	0.210	1-1/2	26273	26732
0.070	-	1/8	0.350	1-1/2	26274	26734
0.075	1.90	1/8	0.225	1-1/2	26281	26736
0.075	1.90	1/8	0.500	2-1/2	26282	26738
0.080	2.05	1/8	0.240	1-1/2	26289	26740
0.080	2.05	1/8	0.408	1-1/2	26290	26741
0.085	2.15	1/8	0.255	1-1/2	26297	26744
0.090	2.30	1/8	0.270	1-1/2	26305	26748
0.090	2.30	1/8	0.450	2-1/2	26306	26750
0.095	2.40	1/8	0.285	1-1/2	26313	26752
0.100	2.55	1/8	0.300	1-1/2	26321	26756
0.105	-	1/8	0.315	1-1/2	26329	26760
0.110	2.80	1/8	0.330	1-1/2	26337	26764
0.115	-	1/8	0.345	1-1/2	26345	26768
0.120	-	1/8	0.360	1-1/2	26353	26772

Up to 35 HRc

Shank Dia: h6
Cut Dia: h10

ENDMILL

All other coatings available on request

4 FLUTE W-RADIUS (CORNER RADIUS)

ALL LENGTHS – FRACTION

Up to 35 HRc

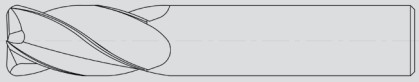
Shank Dia: h6
Cut Dia: h10

BENEFITS & FEATURES

- Center cutting geometry
- Design for increased chip removal rate
- Used for finishing operation
- Designed for milling, slotting, profiling and trace milling
- Manufactured from premium submicron grain carbide

4 FLUTE ENDMILLS - UNCOATED

Cut dia	Shank dia	LOC	OAL	CORNER RADIUS EDP # Uncoated							
				0.010	0.015	0.020	0.030	0.045	0.060	0.090	0.125
1/8	1/8	1/2	1-1/2	19386	19400	19408	19416	19424	19432	-	-
3/16	3/16	5/8	2	19478	19440	19448	19456	19464	19472	-	-
1/4	1/4	3/4	2-1/2	-	19480	19488	19496	19504	19512	-	-
5/16	5/16	13/16	2-1/2	-	19520	19528	19536	19544	19552	-	-
3/8	3/8	1	2-1/2	-	19560	19568	19576	19584	19592	-	19599
1/2	1/2	1	3	-	19600	19608	19616	19624	19632	19638	19634
5/8	5/8	1-1/4	3-1/2	-	19640	19648	19656	19664	19672	19678	-
3/4	3/4	1-1/2	4	-	-	19688	19696	19704	19712	19720	19728
1	1	1-1/2	4	-	-	19736	19744	19752	19760	19768	19776



Up to 35 HRc

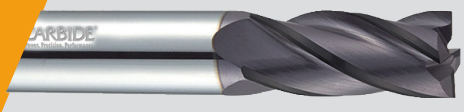
Shank Dia: h6
Cut Dia: h10

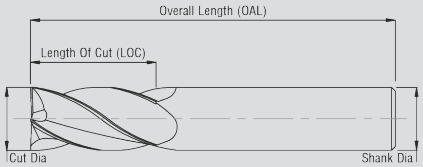
4 FLUTE ENDMILLS - ALTIN COATED

Cut dia	Shank dia	LOC	OAL	CORNER RADIUS EDP # AlTiN Coated							
				0.010	0.015	0.020	0.030	0.045	0.060	0.090	0.125
1/8	1/8	1/2	1-1/2	-	19404	19412	19420	19428	19436	-	-
3/16	3/16	5/8	2	-	19444	19452	19460	19468	19476	-	-
1/4	1/4	3/4	2-1/2	19479	19484	19492	19500	19508	19516	-	-
5/16	5/16	13/16	2-1/2	-	19524	19532	19540	19548	19556	-	-
3/8	3/8	1	2-1/2	-	19564	19572	19580	19588	19596	-	-
1/2	1/2	1	3	-	19604	19612	19620	19628	19636	19637	19635
5/8	5/8	1-1/4	3-1/2	-	19644	19652	19660	19668	19676	19680	-
3/4	3/4	1-1/2	4	-	19684	19692	19700	19708	19716	19724	19732
1	1	1-1/2	4	-	-	19740	19748	19756	19764	19772	19780

All other coatings available on request

4 FLUTE
Metric Endmills





4 FLUTE - METRIC

ALL LENGTHS SQUARE AND BALL NOSE – METRIC

BENEFITS & FEATURES

- Center cutting geometry
- Designed for milling, slotting, profiling and trace milling
- Used for finishing operation
- Manufactured from premium submicron grain carbide

Up to 35 HRc

Shank Dia: h6
Cut Dia: h10

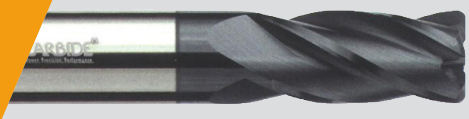
ENDMILL

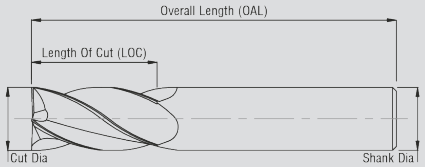
4 FLUTE ENDMILLS

Cut Dia	Shank Dia	LOC	OAL	Square EDP #		Ball Nose EDP #	
				Uncoated	AlTiN	Uncoated	AlTiN
1	3	4	38	24400	24404	25402	25406
1	4	4	50	24401	24405	25403	25480
1.5	3	4.5	38	24408	24412	25410	25414
1.5	4	4.5	50	24409	24413	25411	25415
2	3	6.3	38	24416	24420	25418	25422
2	4	6.3	50	24417	24421	25419	25483
2.5	3	9.5	38	24424	24428	25426	25430
2.5	4	9.5	50	24470	24429	25427	25431
3	3	6	38	23950	23951	-	-
3	3	12	38	24432	24436	25434	25438
3	3	25	75	24448	24452	25450	25454
3	3	25	100	24780	24784	25455	25457
3	6	6	38	23937	23940	-	-
3	6	12	50	24433	24437	25435	25439
3	6	25	75	24843	24453	25451	25517
3	6	25	100	24781	24785	25518	25520
3.5	4	12	50	24456	24460	25458	25462
3.5	6	12	50	24457	24461	25459	25463
4	4	8	50	23953	23954	-	-
4	4	14	50	24464	24468	25466	25470
4	4	20	50	24472	24476	25474	25478
4	4	25	75	24480	24484	25482	25486
4	4	25	100	24786	24790	25487	25489
4	6	8	50	23942	23944	-	-
4	6	14	50	24471	24469	25467	25471
4	6	20	50	24473	24477	25521	25479
4	6	25	75	24481	24485	25551	25552
4	6	25	100	24791	24793	25553	25555
4.5	6	16	50	24488	24492	25490	25494
5	5	11	50	23956	23957	-	-
5	5	25	63	24833	24835	25503	25505
5	5	25	75	24512	24516	25506	25510
5	6	11	50	23946	23979	-	-
5	6	16	50	24496	24500	25498	25502
5	6	25	63	24797	24799	25511	25513
6	6	12	50	23959	23960	-	-

4 FLUTE

Metric Endmills





30°

Up to 35 HRc

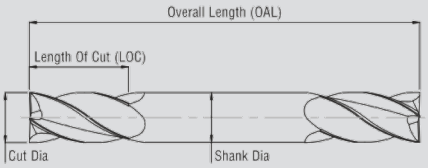
Shank Dia: h6
Cut Dia: h10

ENDMILL

4 FLUTE ENDMILLS

Cut Dia	Shank Dia	LOC	OAL	Square EDP #		Ball Nose EDP #	
				Uncoated	AlTiN	Uncoated	AlTiN
6	6	19	50	24520	24524	25522	25526
6	6	25	75	24536	24540	25530	25534
6	6	30	100	24804	24808	25535	25537
6	6	35	100	24573	24575	25671	25673
6	6	38	150	24810	24814	25538	25540
7	8	20	63	24544	24548	25546	25550
8	8	12	50	23962	23963	-	-
8	8	20	63	24552	24556	25554	25558
8	8	25	75	24809	24805	25562	25566
8	8	40	100	24816	24820	25567	25570
8	8	40	150	24822	24826	25572	25576
9	10	22	75	24576	24580	25578	25582
10	10	16	50	23965	23966	-	-
10	10	22	75	24584	24588	25586	25590
10	10	30	75	24841	24842	25591	25593
10	10	40	100	24600	24604	25594	25598
10	10	75	150	24828	24832	25600	25604
12	12	19	63	23968	23969	-	-
12	12	25	75	24616	24620	25618	25622
12	12	50	100	24624	24628	25626	25630
12	12	75	150	24834	24838	25632	25636
13	14	32	89	24640	24644	25658	25646
14	14	18	70	23971	23972	-	-
14	14	32	89	24648	24652	25650	25654
14	14	50	125	24654	24658	25656	25660
14	14	75	150	24664	24668	25666	25708
16	16	20	75	23974	23975	-	-
16	16	32	89	24672	24676	25674	25678
16	16	50	125	24665	24669	25684	25688
16	16	75	150	24688	24692	25690	25694
18	18	38	100	24696	24700	25698	25702
18	18	50	125	24689	24693	25704	25670
18	18	75	150	24712	24716	25714	25718
20	20	38	100	24720	24724	25722	25726
20	20	50	125	24713	24717	25728	25732
20	20	75	150	24736	24740	25738	25742
22	22	38	100	24744	24748	25746	25750
25	25	38	100	24752	24756	25754	25758
25	25	50	125	24737	24741	25760	25764
25	25	75	150	24768	24772	25770	25774

All other coatings available on request



4 FLUTE ENDMILLS DOUBLE END - STUB

DOUBLE END, STUB SQUARE AND BALL NOSE – FRACTION

BENEFITS & FEATURES

- Center cutting geometry
- Designed for milling, slotting, profiling and trace milling
- Used for roughing and finishing operation
- Made from premium submicron grain carbide

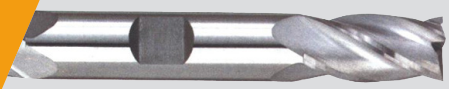
Up to 35 HRc

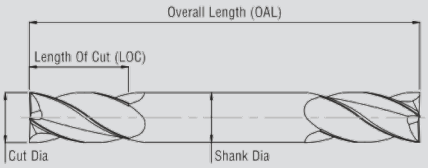
Shank Dia: h6
Cut Dia: h10

4 FLUTE ENDMILLS DOUBLE END - STUB

Cut Dia	Shank Dia	LOC	OAL	Square EDP #		Ball Nose EDP #	
				Uncoated	AlTiN	Uncoated	AlTiN
1/32	1/8	5/64	1-1/2	28002	28008	28202	28205
3/64	1/8	3/32	1-1/2	28011	28017	28211	28214
1/16	1/8	1/8	1-1/2	28020	28026	28220	28223
5/64	1/8	5/32	1-1/2	28029	28035	28229	28232
3/32	1/8	3/16	1-1/2	28038	28044	28238	28241
7/64	1/8	7/32	1-1/2	28047	28053	28247	28250
1/8	1/8	1/4	1-1/2	28056	28062	28256	28259
9/64	3/16	9/32	2	28065	28071	28265	28268
5/32	3/16	5/16	2	28074	28080	28274	28277
11/64	3/16	3/8	2	28083	28089	28283	28286
3/16	3/16	3/8	2	28092	28098	28292	28295
13/64	1/4	1/2	2-1/2	28094	28100	28296	28300
7/32	1/4	1/2	2-1/2	28101	28107	28301	28304
15/64	1/4	1/2	2-1/2	28108	28111	28307	28309
1/4	1/4	1/2	2-1/2	28110	28116	28310	28313
9/32	5/16	1/2	2-1/2	28117	28120	28316	28317
5/16	5/16	1/2	2-1/2	28119	28125	28319	28322
11/32	11/32	1/2	2-1/2	28126	28127	28324	28326
3/8	3/8	1/2	2-1/2	28128	28134	28328	28331
7/16	7/16	9/16	2-1/2	28137	28143	28337	28340
1/2	1/2	5/8	3	28146	28152	28346	28349
5/8	5/8	3/4	4	28150	28156	28352	28356
3/4	3/4	1	4	28151	28159	28358	28360

4 FLUTE
Double End Endmills





30°

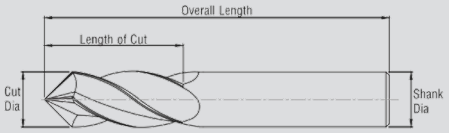
Up to 35 HRc

Shank Dia: h6
Cut Dia: h10

DOUBLE END WITH WELDON - SQUARE AND BALL NOSE

Cut Dia	Shank Dia	LOC	OAL	Square EDP #		Ball Nose EDP #	
				Uncoated	AlTiN	Uncoated	AlTiN
1/8	3/8	3/8	3-1/16	28404	28406	28408	28409
5/32	3/8	7/16	3-1/8	28412	28414	28416	28418
3/16	3/8	1/2	3-1/4	28420	28422	28424	28426
7/32	3/8	9/16	3-3/8	28428	28430	28432	28434
1/4	3/8	5/8	3-3/8	28429	28431	28433	28435
9/32	3/8	11/16	3-3/8	28444	28446	28448	28450
5/16	3/8	3/4	3-1/2	28445	28447	28449	28451
11/32	3/8	3/4	3-1/2	28460	28462	28464	28466
3/8	3/8	3/4	3-1/2	28468	28470	28472	28474
7/16	1/2	7/8	4	28469	28471	28473	28475
1/2	1/2	1	4	28484	28486	28488	28490

All other coatings available on request



ENDMILL

4 FLUTE 90 DEG DRILL POINT ENDMILLS

REGULAR LENGTHS – FRACTION

BENEFITS & FEATURES

- Can be used for drilling, slotting, chamfering and profile milling.
- Manufactured from premium submicron grain carbide.
- Available In 82 ™point angle

30°

Up to 35 HRc

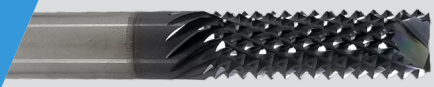
Shank Dia: h6
Cut Dia: h10

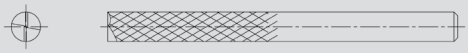
4 FLUTE 90° DRILL POINT ENDMILLS

Cut Dia	Shank Dia	LOC	OAL	Square EDP #	
				Uncoated	AlTiN
1/16	1/8	3/16	1-1/2	15466	15470
3/32	1/8	3/8	1-1/2	15472	15476
1/8	1/8	1/2	1-1/2	15478	15482
3/16	3/16	5/8	2	15484	15488
1/4	1/4	3/4	2-1/2	15490	15494
5/16	5/16	13/16	2-1/2	15496	15500
3/8	3/8	1	2-1/2	15502	15506
7/16	7/16	1	2-3/4	15508	15512
1/2	1/2	1	3	15514	15518
5/8	5/8	1-1/4	3-1/2	15520	15524
3/4	3/4	1-1/2	4	15526	15530

COBRA CARBIDE®
Power. Precision. Performance.

FIBERGLASS ROUTERS





DIAMOND CUT FIBERGLASS ROUTERS

REGULAR LENGTH – NACRO COATED

BENEFITS & FEATURES

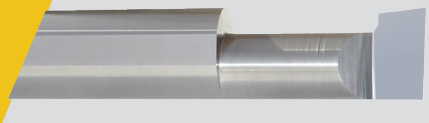
- Increased core diameter for added strength
- Use for light finishing cuts
- Nex-Gen coated for increased tool life
- Made from premium ultra fine grain carbide

DIAMOND CUT FIBERGLASS ROUTERS							
Nacro Coated				Style A	Style B	Style C	Style D
Cut Dia	Shank Dia	LOC	OAL	No End Cut	Burr End Cut	End Mill EC	120⁰ Drill Pt.
1/8	1/8	1/2	1-1/2	12081	12082	12083	12084
1/4	1/4	3/4	2	12161	12162	12163	12164
1/4	1/4	1-1/4	3	12166	12167	12168	12169
3/8	3/8	1-1/4	3	12241	12242	12243	12244
1/2	1/2	1-1/4	3	12321	12322	12323	12324

All other coatings available on request

BORING BARS

Left Hand & Right Hand Cut



STYLE: BBC

Boring Bar

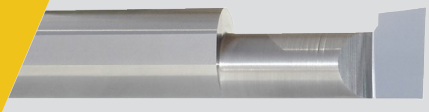
BENEFITS & FEATURES

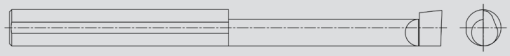
- Boring Bar
- Single Straight Flute
- Left Hand Cut & Right Hand Cut

BORING BARS							
Minimum Bore Diameter	Maximum Bore Depth	Projection	Shank Diameter	Tool Radius	Overall Length	Cobra EDP Left Hand	Cobra EDP Right Hand
.050	0.150	.013	.1250	.003	1-1/2	37400	37700
.050	0.200	.013	.1250	.003	1-1/2	37402	37702
.050	0.300	.013	.1250	.003	1-1/2	37404	37704
.050	0.400	.013	.1250	.003	1-1/2	37406	37706
.060	0.150	.015	.1250	.003	1-1/2	37408	38900
.060	0.200	.015	.1250	.003	1-1/2	37410	37708
.060	0.300	.015	.1250	.003	1-1/2	37412	37710
.060	0.400	.015	.1250	.003	1-1/2	37414	37712
.060	0.500	.015	.1250	.003	1-1/2	37416	37714
.080	0.150	.020	.1250	.003	1-1/2	37418	38902
.080	0.200	.020	.1250	.003	1-1/2	37420	37716
.080	0.300	.020	.1250	.003	1-1/2	37422	37718
.080	0.400	.020	.1250	.003	1-1/2	37424	37720
.080	0.500	.020	.1250	.003	1-1/2	37426	37722
.080	0.600	.020	.1250	.003	1-1/2	37428	37724
.100	0.150	.025	.1250	.003	1-1/2	37430	37726
.100	0.200	.025	.1250	.003	1-1/2	37432	37728
.100	0.300	.025	.1250	.003	1-1/2	37434	37730
.100	0.400	.025	.1250	.003	1-1/2	37436	37732
.100	0.500	.025	.1250	.003	1-1/2	37438	37734
.100	0.600	.025	.1250	.003	1-1/2	37440	37736
.100	0.700	.025	.1250	.003	1-1/2	37442	37738
.110	0.150	.028	.1250	.003	1-1/2	37444	37740
.110	0.200	.028	.1250	.003	1-1/2	37446	37742
.110	0.300	.028	.1250	.003	1-1/2	37448	37744
.110	0.400	.028	.1250	.003	1-1/2	37450	37746
.110	0.500	.028	.1250	.003	1-1/2	37452	37748
.110	0.600	.028	.1250	.003	1-1/2	37454	37750
.110	0.700	.028	.1250	.003	1-1/2	37456	37752
.120	0.250	.030	.1875	.005	2	37458	37754

BORING BARS

Left Hand & Right Hand Cut

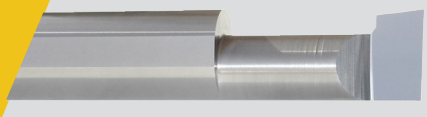




BORING BARS							
Minimum Bore Diameter	Maximum Bore Depth	Projection	Shank Diameter	Tool Radius	Overall Length	Cobra EDP Left Hand	Cobra EDP Right Hand
.120	0.350	.030	.1875	.005	2	37460	37756
.120	0.500	.030	.1875	.005	2	37462	37758
.120	0.600	.030	.1875	.005	2	37464	37760
.120	0.700	.030	.1875	.005	2	37466	37762
.120	0.800	.030	.1875	.005	2	37468	37764
.140	0.250	.035	.1875	.005	2	37470	37766
.140	0.400	.035	.1875	.005	2	37472	37768
.140	0.500	.035	.1875	.005	2	37474	37770
.140	0.600	.035	.1875	.005	2	37476	37772
.140	0.700	.035	.1875	.005	2	37478	37774
.140	0.750	.035	.1875	.005	2	37480	37776
.140	0.800	.035	.1875	.005	2	37482	37778
.160	0.250	.040	.1875	.005	2	37484	38908
.160	0.400	.040	.1875	.005	2	37486	37780
.160	0.500	.040	.1875	.005	2	37488	37782
.160	0.600	.040	.1875	.005	2	37490	37784
.160	0.750	.040	.1875	.005	2	37492	37786
.160	0.900	.040	.1875	.005	2	37494	37788
.160	1.000	.040	.1875	.005	2	37496	37790
.180	0.350	.045	.2500	.005	2-1/2	37498	38910
.180	0.500	.045	.2500	.005	2-1/2	37500	37792
.180	0.600	.045	.2500	.005	2-1/2	37502	37794
.180	0.750	.045	.2500	.005	2-1/2	37504	37796
.180	0.900	.045	.2500	.005	2-1/2	37506	37798
.180	1.000	.045	.2500	.005	2-1/2	37508	37800
.180	1.100	.045	.2500	.005	2-1/2	37510	37802
.180	1.250	.045	.2500	.005	2-1/2	37512	37804
.180	1.500	.045	.2500	.005	2-1/2	37514	37806
.200	0.400	.050	.2500	.005	2-1/2	37516	37808
.200	0.500	.050	.2500	.005	2-1/2	37518	37810
.200	0.600	.050	.2500	.005	2-1/2	37520	37812
.200	0.700	.050	.2500	.005	2-1/2	37522	37814
.200	0.800	.050	.2500	.005	2-1/2	37524	37816
.200	0.900	.050	.2500	.005	2-1/2	37526	37818
.200	1.000	.050	.2500	.005	2-1/2	37528	37820
.200	1.100	.050	.2500	.005	2-1/2	37530	37822

BORING BARS

Left Hand & Right Hand Cut



BORING BARS							
Minimum Bore Diameter	Maximum Bore Depth	Projection	Shank Diameter	Tool Radius	Overall Length	Cobra EDP Left Hand	Cobra EDP Right Hand
.200	1.200	.050	.2500	.005	2-1/2	37532	37824
.200	1.300	.050	.2500	.005	2-1/2	37534	37826
.230	0.400	.058	.3125	.005	2-1/2	37536	37828
.230	0.500	.058	.3125	.005	2-1/2	37538	37830
.230	0.600	.058	.3125	.005	2-1/2	37540	37832
.230	0.700	.058	.3125	.005	2-1/2	37542	37834
.230	0.800	.058	.3125	.005	2-1/2	37544	37836
.230	0.900	.058	.3125	.005	2-1/2	37546	37838
.230	1.000	.058	.3125	.005	2-1/2	37548	37840
.230	1.100	.058	.3125	.005	2-1/2	37550	37842
.230	1.150	.058	.3125	.005	2-1/2	37552	37844
.230	1.200	.058	.3125	.005	2-1/2	37554	37846
.230	1.250	.058	.3125	.005	2-1/2	37556	37848
.230	1.400	.058	.3125	.005	2-1/2	37558	37850
.230	1.500	.058	.3125	.005	2-1/2	37560	37852
.230	1.600	.058	.3125	.005	2-1/2	37562	37854
.290	0.500	.073	.3125	.005	2-1/2	37564	37856
.290	0.600	.073	.3125	.005	2-1/2	37566	37858
.290	0.750	.073	.3125	.005	2-1/2	37568	37860
.290	0.900	.073	.3125	.005	2-1/2	37570	37862
.290	1.000	.073	.3125	.005	2-1/2	37572	37864
.290	1.100	.073	.3125	.005	2-1/2	37574	37866
.290	1.250	.073	.3125	.005	2-1/2	37576	37868
.290	1.350	.073	.3125	.005	2-1/2	37578	37870
.290	1.500	.073	.3125	.005	2-1/2	37580	37872
.290	1.600	.073	.3125	.005	2-1/2	37582	37874
.290	1.750	.073	.3125	.005	2-1/2	37584	37876
.320	0.500	.080	.3750	.005	2-1/2	37586	37878
.320	0.600	.080	.3750	.005	2-1/2	37588	37880
.320	0.750	.080	.3750	.005	2-1/2	37590	37882
.320	0.900	.080	.3750	.005	2-1/2	37592	37884
.320	1.000	.080	.3750	.005	2-1/2	37594	37886
.320	1.100	.080	.3750	.005	2-1/2	37596	37888
.320	1.250	.080	.3750	.005	2-1/2	37598	37890
.320	1.500	.080	.3750	.005	2-1/2	37600	37892
.320	1.600	.080	.3750	.005	2-1/2	37602	37894

BORING BARS

Left Hand & Right Hand Cut

BORING BARS							
Minimum Bore Diameter	Maximum Bore Depth	Projection	Shank Diameter	Tool Radius	Overall Length	Cobra EDP Left Hand	Cobra EDP Right Hand
.320	1.800	.080	.3750	.005	2-1/2	37604	37896
.320	2.000	.080	.3750	.005	4	37606	37898
.320	2.500	.080	.3750	.005	4	37608	37900
.320	3.000	.080	.3750	.005	4	37610	37902
.360	0.500	.090	.3750	.005	2-1/2	37612	38922
.360	0.600	.090	.3750	.005	2-1/2	37614	37904
.360	0.750	.090	.3750	.005	2-1/2	37616	37906
.360	0.900	.090	.3750	.005	2-1/2	37618	37908
.360	1.000	.090	.3750	.005	2-1/2	37620	37910
.360	1.100	.090	.3750	.005	2-1/2	37622	37912
.360	1.250	.090	.3750	.005	2-1/2	37624	37914
.360	1.500	.090	.3750	.005	2-1/2	37626	37916
.360	1.600	.090	.3750	.005	2-1/2	37628	37918
.360	1.800	.090	.3750	.005	2-1/2	37630	37920
.360	2.000	.090	.3750	.005	4	37632	37922
.360	2.500	.090	.3750	.005	4	37634	37924
.360	3.000	.090	.3750	.005	4	37636	37926
.490	0.750	.123	.5000	.005	3	37638	37928
.490	1.000	.123	.5000	.005	3	37640	37930
.490	1.200	.123	.5000	.005	3	37642	37932
.490	1.500	.123	.5000	.005	3	37644	37934
.490	2.000	.123	.5000	.005	4	37646	37936
.490	2.500	.123	.5000	.005	4	37648	37938
.490	2.750	.123	.5000	.005	4	37650	37940
.490	3.000	.123	.5000	.005	6	37652	37942
.490	3.500	.123	.5000	.005	6	37654	37944
.490	4.000	.123	.5000	.005	6	37656	37946
.490	4.500	.123	.5000	.005	6	37658	37948

*Other styles/sizes available upon request

COBRA CARBIDE®
Power. Precision. Performance.

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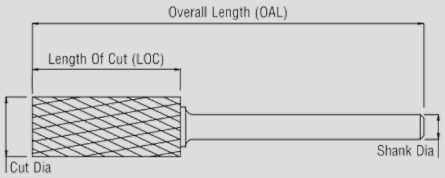
Shape A



SHAPE A - FRACTION

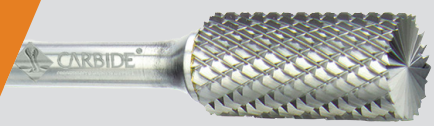
CYLINDRICAL WITHOUT END CUT

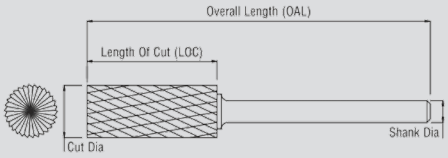
1/8" SHANK DIAMETER						
Tool	Cut Dia	LOC	Shank Dia	Shank Type	Single Cut	Double Cut
SA-41	1/16	1/4	1/8	A	10007	10011
SA-42	3/32	7/16	1/8	A	10015	10019
SA-43	1/8	9/16	1/8	A	10031	10035
SA-43L2	1/8	9/16	1/8	A	10040	10041
SA-43L3	1/8	9/16	1/8	A	10044	10045
SA-51	1/4	1/2	1/8	C	10063	10067
SA-50	1/4	3/16	1/8	C	10057	10059
SA-53	3/16	1/2	1/8	C	10039	10043

REGULAR LENGTH							
Tool #	Cut Dia	LOC	Shank Dia	Shank Type	Single Cut	Double Cut	Aluma Cut NF
SA-11	1/8	1/2	1/4	A	10023	10027	-
SA-14	3/16	5/8	1/4	A	10047	10051	-
SA-1	1/4	5/8	1/4	A	10071	10075	10167
SA-1A	1/4	1	1/4	A	10079	10083	-
SA-2	5/16	3/4	1/4	C	10087	10091	-
SA-3	3/8	3/4	1/4	C	10095	10099	10171
SA-3A	3/8	1	1/4	C	10103	10107	-
SA-4	7/16	1	1/4	C	10111	10115	-
SA-5	1/2	1	1/4	C	10119	10123	10175
SA-6	5/8	1	1/4	C	10127	10131	10179
SA-15	3/4	1/2	1/4	C	10135	10139	-
SA-16	3/4	3/4	1/4	C	10143	10147	-
SA-7	3/4	1	1/4	C	10151	10155	10183
SA-9	1	1	1/4	C	10159	10163	-

LONG LENGTH						
Tool	Cut Dia	LOC	Shank Dia	Shank Type	Single Cut	Double Cut
SA-1L6	1/4	5/8	1/4	A	10187	10191
SA-3L6	3/8	3/4	1/4	C	10195	10199
SA-5L6	1/2	1	1/4	C	10203	10207

Note: Shank Type A : Solid Carbide Shank, C : Brazed Shank
L2 is 2" OAL
L3 is 3" OAL
L4 is 4" OAL
L6 is 6" Long Shank





SHAPE B - FRACTION

CYLINDRICAL WITH END CUT

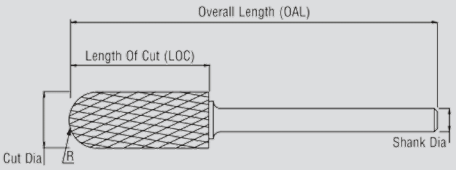
1/8" SHANK DIAMETER						
Tool	Cut Dia	LOC	Shank Dia	Shank Type	Single Cut	Double Cut
SB-41	1/16	1/4	1/8	A	10209	10210
SB-42ECO	3/32	-	1/8	A	10204	10205
SB-42	3/32	7/16	1/8	A	10218	10215
SB-43	1/8	9/16	1/8	A	10219	10223
SB-43ECO	1/8	-	1/8	A	10227	10226
SB-51	1/4	1/2	1/8	C	10259	10263

REGULAR LENGTH							
Tool #	Cut Dia	LOC	Shank Dia	Shank Type	Single Cut	Double Cut	Aluma Cut NF
SB-61	3/32	3/8	3/32	A	10261	10271	-
SB-11	1/8	1/2	1/4	A	10239	10241	-
SB-81	3/16	5/8	3/16	A	10262	10272	-
SB-14	3/16	5/8	1/4	A	10243	10247	-
SB-1ECO	1/4	-	1/4	A	10250	10251	-
SB-1	1/4	5/8	1/4	A	10275	10279	10276
SB-1A	1/4	1	1/4	A	10283	10287	-
SB-2	5/16	3/4	1/4	C	10291	10295	-
SB-3	3/8	3/4	1/4	C	10299	10303	10302
SB-3A	3/8	1	1/4	C	10307	10311	-
SB-4	7/16	1	1/4	C	10315	10319	-
SB-5	1/2	1	1/4	C	10323	10327	10326
SB-6	5/8	1	1/4	C	10331	10335	10334
SB-15	3/4	1/2	1/4	C	10339	10343	10345
SB-16	3/4	3/4	1/4	C	10347	10351	-
SB-7	3/4	1	1/4	C	10355	10359	-
SB-9	1	1	1/4	C	10371	10375	-

LONG LENGTH						
Tool	Cut Dia	LOC	Shank Dia	Shank Type	Single Cut	Double Cut
SB-43L2	1/8	9/16	1/8	A	10244	10245
SB-43L3 ECO	1/8	9/16	1/8	A	10228	10231
SB-1L6	1/4	5/8	1/4	C	10284	10282

Note: Shank Type A: Solid Carbide Shank, C: Brazed Shank
ECO - End Cut Only
L2 is 2" OAL
L3 is 3" OAL
L4 is 4" OAL
L6 is 6" Long Shank

BURRS
Shape C



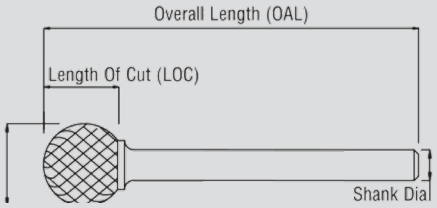
SHAPE C - FRACTION
CYLINDRICAL WITH RADIUS END

1/8" SHANK DIAMETER						
Tool	Cut Dia	LOC	Shank Dia	Shank Type	Single Cut	Double Cut
SC-41	3/32	7/16	1/8	A	10379	10383
SC-42	1/8	9/16	1/8	A	10395	10399
SC-42L2	1/8	9/16	1/8	A	10402	10403
SC-42L3	1/8	9/16	1/8	A	10404	10406
SC-51	1/4	1/2	1/8	C	10419	10423

REGULAR LENGTH							
Tool #	Cut Dia	LOC	Shank Dia	Shank Type	Single Cut	Double Cut	Aluma Cut NF
SC-11	1/8	1/2	1/4	A	10387	10391	-
SC-14	3/16	5/8	1/4	A	10411	10415	-
SC-1	1/4	5/8	1/4	A	10427	10431	10499
SC-1A	1/4	1	1/4	A	10435	10439	-
SC-2	5/16	3/4	1/4	C	10443	10447	-
SC-3	3/8	3/4	1/4	C	10451	10455	10503
SC-3A	3/8	1	1/4	C	10459	10463	-
SC-4	7/16	1	1/4	C	10467	10471	-
SC-5	1/2	1	1/4	C	10475	10479	10507
SC-6	5/8	1	1/4	C	10483	10487	10511
SC-7	3/4	1	1/4	C	10491	10495	10515
SC-9	1	1	1/4	C	10516	10517	-

LONG LENGTH						
Tool	Cut Dia	LOC	Shank Dia	Shank Type	Single Cut	Double Cut
SC-1L6	1/4	5/8	1/4	A	10519	10523
SC-3L6	3/8	3/4	1/4	C	10527	10531
SC-5L6	1/2	1	1/4	C	10535	10539

Note: Shank Type A: Solid Carbide Shank, C: Brazed Shank
L2 is 2" OAL
L3 is 3" OAL
L4 is 4" OAL
L6 is 6" Long Shank



SHAPE D - FRACTION

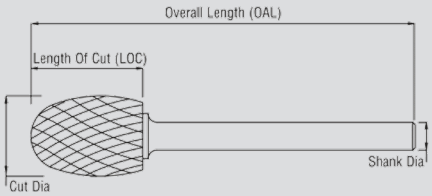
BALL END

1/8" SHANK DIAMETER						
Tool	Cut Dia	LOC	Shank Dia	Shank Type	Single Cut	Double Cut
SD-41	3/32	3/32	1/8	A	10541	10542
SD-52	5/32	5/32	1/8	C	10586	10588
SD-42	1/8	1/8	1/8	A	10543	10547
SD-42L2	1/8	1/8	1/8	A	10546	10566
SD-42L3	1/8	1/8	1/8	A	10554	10550
SD-51	1/4	7/32	1/8	C	10583	10587

REGULAR LENGTH							
Tool #	Cut Dia	LOC	Shank Dia	Shank Type	Single Cut	Double Cut	Aluma Cut NF
SD-61	3/32	3/32	3/32	A	10538	10540	-
SD-11	1/8	3/32	1/4	A	10551	10555	-
SD-14	3/16	1/8	1/4	A	10575	10579	-
SD-1	1/4	7/32	1/4	A	10591	10595	10655
SD-2	5/16	1/4	1/4	C	10599	10603	-
SD-3	3/8	5/16	1/4	C	10607	10611	10659
SD-4	7/16	3/8	1/4	C	10615	10619	-
SD-5	1/2	7/16	1/4	C	10623	10627	10663
SD-6	5/8	9/16	1/4	C	10631	10635	10667
SD-7	3/4	11/16	1/4	C	10639	10643	10671
SD-9	1	15/16	1/4	C	10647	10651	-
SD-81	3/16	5/32	3/16	C	10567	10571	-

LONG LENGTH						
Tool	Cut Dia	LOC	Shank Dia	Shank Type	Single Cut	Double Cut
SD-1L6	1/4	7/32	1/4	A	10675	10679
SD-3L6	3/8	5/16	1/4	C	10683	10687
SD-5L6	1/2	7/16	1/4	C	10691	10695

Note: Shank Type A: Solid Carbide Shank, C: Brazed Shank
L2 is 2" OAL
L3 is 3" OAL
L4 is 4" OAL
L6 is 6" Long Shank



SHAPE E - FRACTION

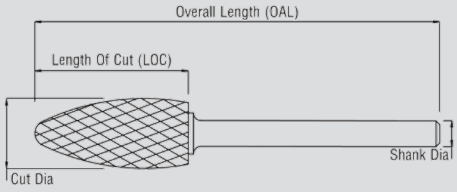
OVAL

1/8" SHANK DIAMETER						
Tool	Cut Dia	LOC	Shank Dia	Shank Type	Single Cut	Double Cut
SE-41	1/8	7/32	1/8	A	10699	10703
SE-41L2	1/8	7/32	1/8	A	10700	10709
SE-41L3	1/8	7/32	1/8	A	10711	10713
SE-53	3/16	9/32	1/8	C	10718	10721
SE-51	1/4	3/8	1/8	C	10715	10719

REGULAR LENGTH							
Tool #	Cut Dia	LOC	Shank Dia	Shank Type	Single Cut	Double Cut	Aluma Cut NF
SE-11	3/16	5/16	1/4	A	10725	10726	-
SE-1	1/4	3/8	1/4	A	10723	10727	10763
SE-3	3/8	5/8	1/4	C	10731	10735	10764
SE-5	1/2	7/8	1/4	C	10739	10743	10767
SE-6	5/8	1	1/4	C	10747	10751	10771
SE-7	3/4	1	1/4	C	10755	10759	10775

LONG LENGTH						
Tool	Cut Dia	LOC	Shank Dia	Shank Type	Single Cut	Double Cut
SE-1L6	1/4	3/8	1/4	A	10779	10783
SE-3L6	3/8	5/8	1/4	C	10787	10791
SE-5L6	1/2	7/8	1/4	C	10795	10799

Note: Shank Type A: Solid Carbide Shank, C: Brazed Shank
L2 is 2" OAL
L3 is 3" OAL
L4 is 4" OAL
L6 is 6" Long Shank



SHAPE F - FRACTION

TREE SHAPE WITH RADIUS

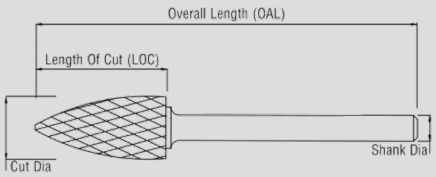
1/8" SHANK DIAMETER						
Tool	Cut Dia	LOC	Shank Dia	Shank Type	Single Cut	Double Cut
SF-53	3/16	1/2	1/8	C	10840	10841
SF-41	1/8	1/4	1/8	A	10803	10807
SF-42	1/8	1/2	1/8	A	10811	10815
SF-42L2	1/8	1/2	1/8	A	10834	10826
SF-42L3	1/8	1/2	1/8	A	10821	10822
SF-51	1/4	1/2	1/8	C	10835	10839

REGULAR LENGTH							
Tool #	Cut Dia	LOC	Shank Dia	Shank Type	Single Cut	Double Cut	Aluma Cut NF
SF-1	1/4	5/8	1/4	A	10843	10847	10915
SF-1A	1/4	1	1/4	A	10846	10850	-
SF-11	1/8	1/2	1/4	A	10819	10823	-
SF-3	3/8	3/4	1/4	C	10851	10855	10919
SF-4	7/16	1	1/4	C	10859	10863	-
SF-13	1/2	3/4	1/4	C	10867	10871	-
SF-5	1/2	1	1/4	C	10875	10879	10923
SF-6	5/8	1	1/4	C	10883	10887	10927
SF-7	3/4	1	1/4	C	10891	10895	10931
SF-14	3/4	1-1/4	1/4	C	10899	10903	-
SF-15	3/4	1-1/2	1/4	C	10907	10911	-

REGULAR LENGTH							
Tool #	Cut Dia	LOC	Shank Dia	Shank Type	Single Cut	Double Cut	Aluma Cut NF
SF-1L6	1/4	1/2	1/4	A	10935	10939	-
SF-3L6	3/8	3/4	1/4	C	10943	10947	-
SF-5L6	1/2	1	1/4	C	10950	10949	10925
SF-7L6	3/4	1	1/4	C	10890	10893	-

Note: Shank Type A: Solid Carbide Shank, C: Brazed Shank
L2 is 2" OAL
L3 is 3" OAL
L4 is 4" OAL
L6 is 6" Long Shank

BURRS
Shape G



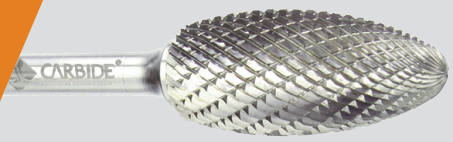
SHAPE G - FRACTION
TREE WITH POINTED END

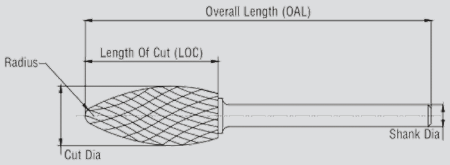
1/8" SHANK DIAMETER						
Tool	Cut Dia	LOC	Shank Dia	Shank Type	Single Cut	Double Cut
SG-41	1/8	1/4	1/8	A	10951	10955
SG-42	1/8	5/16	1/8	A	10988	10986
SG-43	1/8	3/8	1/8	A	10956	10957
SG-44	1/8	1/2	1/8	A	10954	10958
SG-44L2	1/8	1/2	1/8	A	11017	11018
SG-44L3	1/8	1/4	1/8	A	11024	11022
SG-51	1/4	1/2	1/8	C	10960	10961
SG-53	3/16	1/2	1/8	C	11042	11044

REGULAR LENGTH						
Tool #	Cut Dia	LOC	Shank Dia	Shank Type	Single Cut	Double Cut
SG-1	1/4	5/8	1/4	A	10959	10963
SG-1A	1/4	1	1/4	A	10989	10966
SG-2	5/16	3/4	1/4	C	10967	10971
SG-3	3/8	3/4	1/4	C	10975	10979
SG-13	1/2	3/4	1/4	C	10983	10987
SG-5	1/2	1	1/4	C	10991	10995
SG-6	5/8	1	1/4	C	10999	11003
SG-7	3/4	1	1/4	C	11007	11011
SG-15	3/4	1-1/2	1/4	C	11015	11019

LONG LENGTH						
Tool	Cut Dia	LOC	Shank Dia	Shank Type	Single Cut	Double Cut
SG-1L6	1/4	5/8	1/4	A	11023	11027
SG-3L6	3/8	3/4	1/4	C	11031	11035
SG-5L6	1/2	1	1/4	C	11039	11043

Note: Shank Type A: Solid Carbide Shank, C: Brazed Shank
L2 is 2" OAL
L3 is 3" OAL
L4 is 4" OAL
L6 is 6" Long Shank





SHAPE H - FRACTION

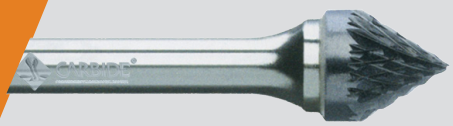
FLAME

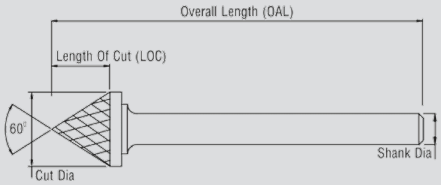
1/8" SHANK DIAMETER						
Tool	Cut Dia	LOC	Shank Dia	Shank Type	Single Cut	Double Cut
SH-41	1/8	1/4	1/8	A	11047	11051
SH-41L2	1/8	1/4	1/8	A	11092	11093
SH-41L3	1/8	1/4	1/8	A	11096	11097
SH-53	3/16	3/8	1/8	C	11053	11054

REGULAR LENGTH						
Tool #	Cut Dia	LOC	Shank Dia	Shank Type	Single Cut	Double Cut
SH-1	1/4	5/8	1/4	A	11055	11059
SH-2	5/16	3/4	1/4	C	11063	11067
SH-5	1/2	1-1/4	1/4	C	11071	11075
SH-6	5/8	1-7/16	1/4	C	11079	11083
SH-7	3/4	1-5/8	1/4	C	11087	11091

LONG LENGTH						
Tool	Cut Dia	LOC	Shank Dia	Shank Type	Single Cut	Double Cut
SH-2L6	5/16	3/4	1/4	C	11095	11099
SH-5L6	1/2	1-1/4	1/4	C	11103	11107

Note: Shank Type A: Solid Carbide Shank, C: Brazed Shank
L2 is 2" OAL
L3 is 3" OAL
L4 is 4" OAL
L6 is 6" Long Shank



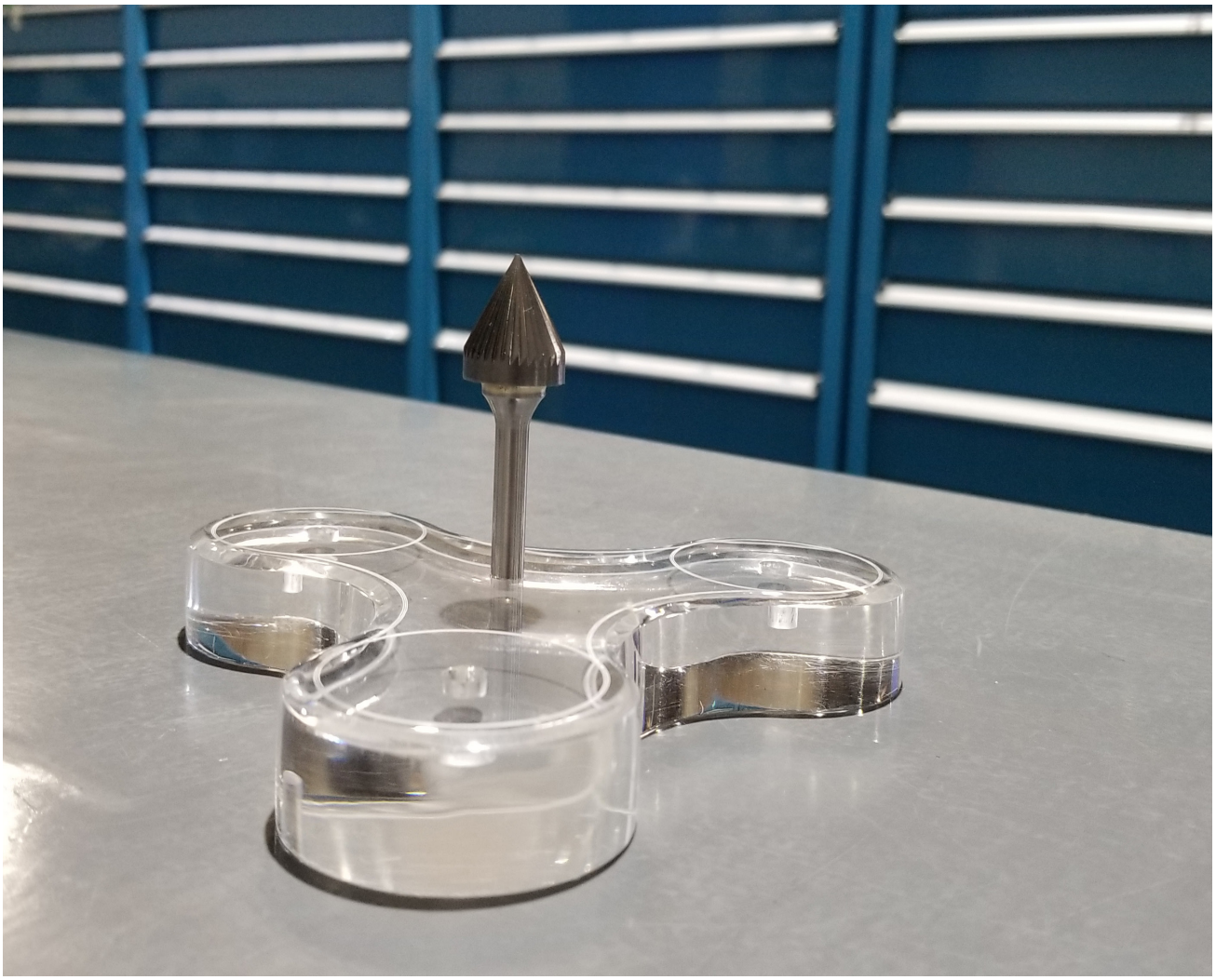


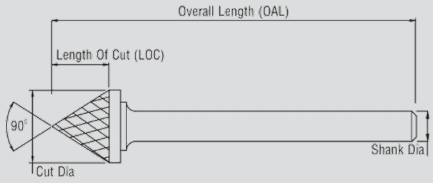
SHAPE J - FRACTION

60 DEG CONE SHAPE

1/8" SHANK DIAMETER - FRACTION						
Tool	Cut Dia	LOC	Shank Dia	Shank Type	Single Cut	Double Cut
SJ-42	1/8	3/32	1/8	A	11111	11115

REGULAR LENGTH - FRACTION						
Tool #	Cut Dia	LOC	Shank Dia	Shank Type	Single Cut	Double Cut
SJ-1	1/4	3/16	1/4	A	11119	11123
SJ-3	3/8	1/4	1/4	C	11127	11131
SJ-5	1/2	7/16	1/4	C	11135	11139
SJ-6	5/8	1/2	1/4	C	11143	11147
SJ-7	3/4	5/8	1/4	C	11151	11155
SJ-9	1	3/4	1/4	C	11159	11163





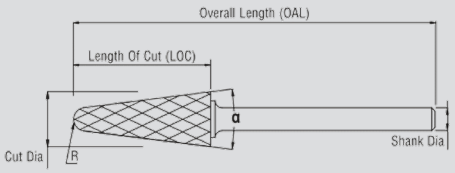
SHAPE K - FRACTION

90 DEG CONE SHAPE

1/8" SHANK DIAMETER - FRACTION						
Tool	Cut Dia	LOC	Shank Dia	Shank Type	Single Cut	Double Cut
SK-42	1/8	1/16	1/8	A	11167	11171
SK-81	3/16	3/32	3/16	A	11175	11179

REGULAR LENGTH - FRACTION						
Tool #	Cut Dia	LOC	Shank Dia	Shank Type	Single Cut	Double Cut
SK-1	1/4	1/8	1/4	A	11183	11187
SK-3	3/8	3/16	1/4	C	11191	11195
SK-5	1/2	1/4	1/4	C	11199	11203
SK-6	5/8	5/16	1/4	C	11207	11211
SK-7	3/4	3/8	1/4	C	11215	11219
SK-9	1	1/2	1/4	C	11223	11227

Note: Shank Type A: Solid Carbide Shank, C: Brazed Shank
L2 is 2" OAL
L3 is 3" OAL
L4 is 4" OAL
L6 is 6" Long Shank



SHAPE L - FRACTION

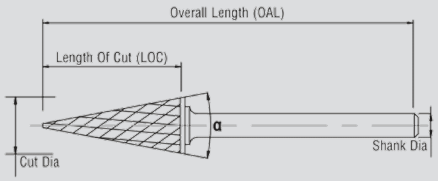
TAPER WITH RADIUS END

1/8" SHANK DIAMETER							
Tool #	Cut Dia	LOC	Shank Dia	Included Angle	Shank Type	Single Cut	Double Cut
SL-41	1/8	3/8	1/8	14°	A	11231	11235
SL-42	1/8	1/2	1/8	14°	A	11239	11243
SL-42L2	1/8	1/2	1/8	14°	A	11222	11257
SL-42L3	1/8	1/2	1/8	14°	A	11258	11251
SL-53	3/16	1/2	1/8	14°	C	11241	11250

REGULAR LENGTH								
Tool #	Cut Dia	LOC	Shank Dia	Included Angle	Shank Type	Single Cut	Double Cut	Aluma Cut NF
SL-1	1/4	5/8	1/4	14°	A	11255	11259	11256
SL-2	5/16	7/8	1/4	14°	C	11263	11267	-
SL-3	3/8	1-1/16	1/4	14°	C	11271	11275	11303
SL-4	1/2	1-1/8	1/4	14°	C	11279	11283	11305
SL-5	5/8	1-3/16	1/4	14°	C	11287	11291	11307
SL-6	5/8	1-5/16	1/4	14°	C	11293	11298	11311
SL-7	3/4	1-1/2	1/4	14°	C	11295	11299	11314

LONG LENGTH - 6" LONG STEEL SHANK							
Tool	Cut Dia	LOC	Shank Dia	Included Angle	Shank Type	Single Cut	Double Cut
SL-1L6	1/4	5/8	1/4	14°	A	11315	11319
SL-3L6	3/8	1-1/16	1/4	14°	C	11323	11327
SL-4L6	1/2	1-1/8	1/4	14°	C	11331	11335

Note: Shank Type A: Solid Carbide Shank, C: Brazed Shank
L2 is 2" OAL
L3 is 3" OAL
L4 is 4" OAL
L6 is 6" Long Shank



SHAPE M - FRACTION

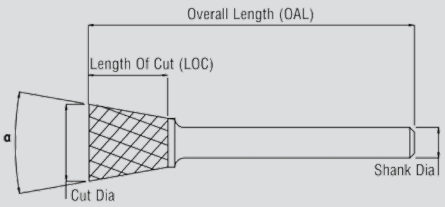
CONE SHAPE

1/8" SHANK DIAMETER							
Tool #	Cut Dia	LOC	Shank Dia	Included Angle	Shank Type	Single Cut	Double Cut
SM-41	1/8	3/8	1/8	12°	A	11339	11343
SM-42	1/8	7/16	1/8	14°	A	11347	11351
SM-42L2	1/8	7/16	1/8	14°	A	11348	11349
SM-42L3	1/8	7/16	1/8	14°	A	11362	11358
SM-43	1/8	5/8	1/8	7°	A	11355	11359
SM-53	3/16	1/2	1/8	16°	C	11370	11380
SM-51	1/4	1/2	1/8	10°	C	11371	11375

REGULAR LENGTH							
Tool #	Cut Dia	LOC	Shank Dia	Included Angle	Shank Type	Single Cut	Double Cut
SM-1	1/4	1/2	1/4	22°	A	11387	11391
SM-2	1/4	3/4	1/4	14°	A	11395	11399
SM-3	1/4	1	1/4	10°	A	11403	11407
SM-4	3/8	5/8	1/4	28°	C	11411	11415
SM-5	1/2	7/8	1/4	28°	C	11419	11423
SM-6	5/8	1	1/4	31°	C	11427	11431

LONG LENGTH - 6" LONG STEEL SHANK							
Tool	Cut Dia	LOC	Shank Dia	Included Angle	Shank Type	Single Cut	Double Cut
SM-1L6	1/4	1/2	1/4	22°	A	11426	11430
SM-3L6	1/4	1	1/4	10°	A	11434	11438
SM-4L6	3/8	5/8	1/4	28°	C	11436	11442
SM5L6	1/2	7/8	1/4	28°	C	11444	11452

Note: Shank Type A: Solid Carbide Shank, C: Brazed Shank
L2 is 2" OAL
L3 is 3" OAL
L4 is 4" OAL
L6 is 6" Long Shank



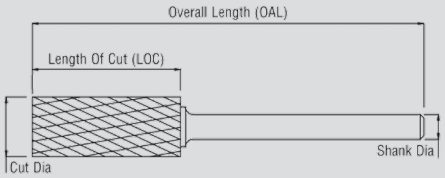
SHAPE N - FRACTION

INVERTED CONE SHAPE

1/8" SHANK DIAMETER - FRACTION							
Tool #	Cut Dia	LOC	Shank Dia	Included Angle	Shank Type	Single Cut	Double Cut
SN-41	3/32	1/8	1/8	10°	A	11435	11439
SN-42	1/8	3/16	1/8	10°	A	11443	11447
SN-51	1/4	1/4	1/8	10°	C	11459	11463

REGULAR LENGTH							
Tool #	Cut Dia	LOC	Shank Dia	Included Angle	Shank Type	Single Cut	Double Cut
SN-1	1/4	5/16	1/4	10°	A	11467	11471
SN-2	3/8	3/8	1/4	13°	C	11472	11473
SN-4	1/2	1/2	1/4	28°	C	11483	11487
SN-6	5/8	3/4	1/4	18°	C	11491	11495
SN-7	3/4	1	1/4	30°	C	11499	11503

Note: Shank Type A: Solid Carbide Shank, C: Brazed Shank



BURRS - SETS

1/8" & 1/4" BURRS SET

1/8" SHANK DIAMETER - FRACTION

Tool #	LOC	Shank Dia
SA-43	9/16	1/8
SC-42	9/16	1/8
SD-42	1/8	1/8
SJ-42	3/32	1/8
SL-41	3/8	1/8
SN-42	3/16	1/8
SH-41	1/4	1/8
SL-42	1/2	1/8
SM-42	7/16	1/8
SG-43	3/8	1/8

Solid Carbide Burrs
10 Piece set in a case
Double Cut Order # 00050
Single Cut Order # 00051

1/8" SHANK DIAMETER - FRACTION

Tool #	LOC	Shank Dia
SA-43	9/16	1/8
SC-42	9/16	1/8
SD-42	1/8	1/8
SE-41	7/32	1/8
SF-42	1/2	1/8
SG-41	1/4	1/8
SH-41	1/4	1/8
SL-41	3/8	1/8
SM-42	7/16	1/8
SN-41	1/8	1/8

Solid Carbide Burrs
10 Piece set in a case
Double Cut Order # 10000
Single Cut Order # 10001

1/4" SHANK DIAMETER - FRACTION

Tool #	LOC	Shank Dia
SA-1	5/8	1/4
SB-1	5/8	1/4
SC-1	5/8	1/4
SE-1	3/8	1/4
SF-1	5/8	1/4
SG-1	5/8	1/4
SL-1	5/8	1/4
SM-1	1/2	1/4

Solid Carbide Burrs
8 Piece set in a case
Double Cut Order # 10003
Single Cut Order # 10004

1/4" SHANK DIAMETER - FRACTION

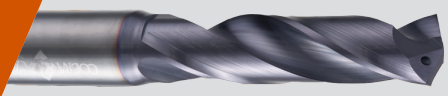
Tool #	LOC	Shank Dia
SA-5	1	1/4
SC-5	1	1/4
SD-5	7/16	1/4
SE-5	7/8	1/4
SG-5	1	1/4
SH-5	1-1/4	1/4
SK-5	1/4	1/4
SM-5	7/8	1/4

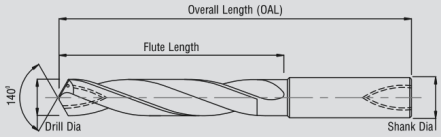
Solid Carbide Burrs
8 Piece set in a case
Double Cut Order # 10002

Note: Shank Type A: Solid Carbide Shank, C: Brazed Shank
L2 is 2" OAL
L3 is 3" OAL
L4 is 4" OAL
L6 is 6" Long Shank

COBRA CARBIDE®
Power. Precision. Performance.


DRILLS





SPEEDS & FEEDS

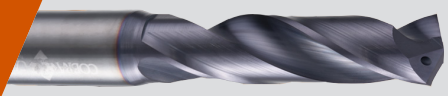
BLACK MAMBA COOLANT-FED DRILLS

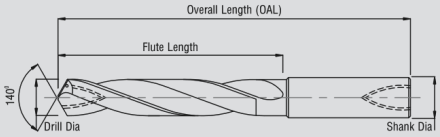
COOLANT-FED DRILLS			
Material Group	Material Type	Cutting Speed Coolant	
		m/min	SFM
Steel	Structural Steel	80 - 100	263 - 328
	Free Cutting Steel	100 - 120	328 - 393
	Unalloyed Heat Treatable Steel	80 - 90	263 - 295
	Unalloyed Case Hardened Steel	90 - 100	295 - 328
	Alloyed Case Hardened Steel	50 - 75	164 - 246
	Nitriding Steel	70 - 80	230 - 262
Acid Resistant /	Stainless Steel	30 - 40	98 - 131
Stainless Steel	Sulphured Austenitic Steel, Martensitic		
High Tensile Steel	Alloyed Heat Treatable Steel	60 - 80	197 - 262
	Tool Steel	40 - 50	131 - 164
	High Speed Steel	30 - 40	98 - 131
	Spring Steel	30 - 40	98 - 131
Cast Materials	Cast Iron	125 - 150	409 - 491
	Spheroidal Graphite & Malleable Ci	95 - 115	311 - 376
	Chilled Ci	30 - 40	98 - 131
Special Alloys	Special Alloys	20 - 25	66 - 82
	Ti Alloys	20 - 30	66 - 98
Magnesium Alloys	Mg Alloys	180 - 200	574 - 656

All other coatings available on request

CARBIDE DRILLS

Coolant-Fed

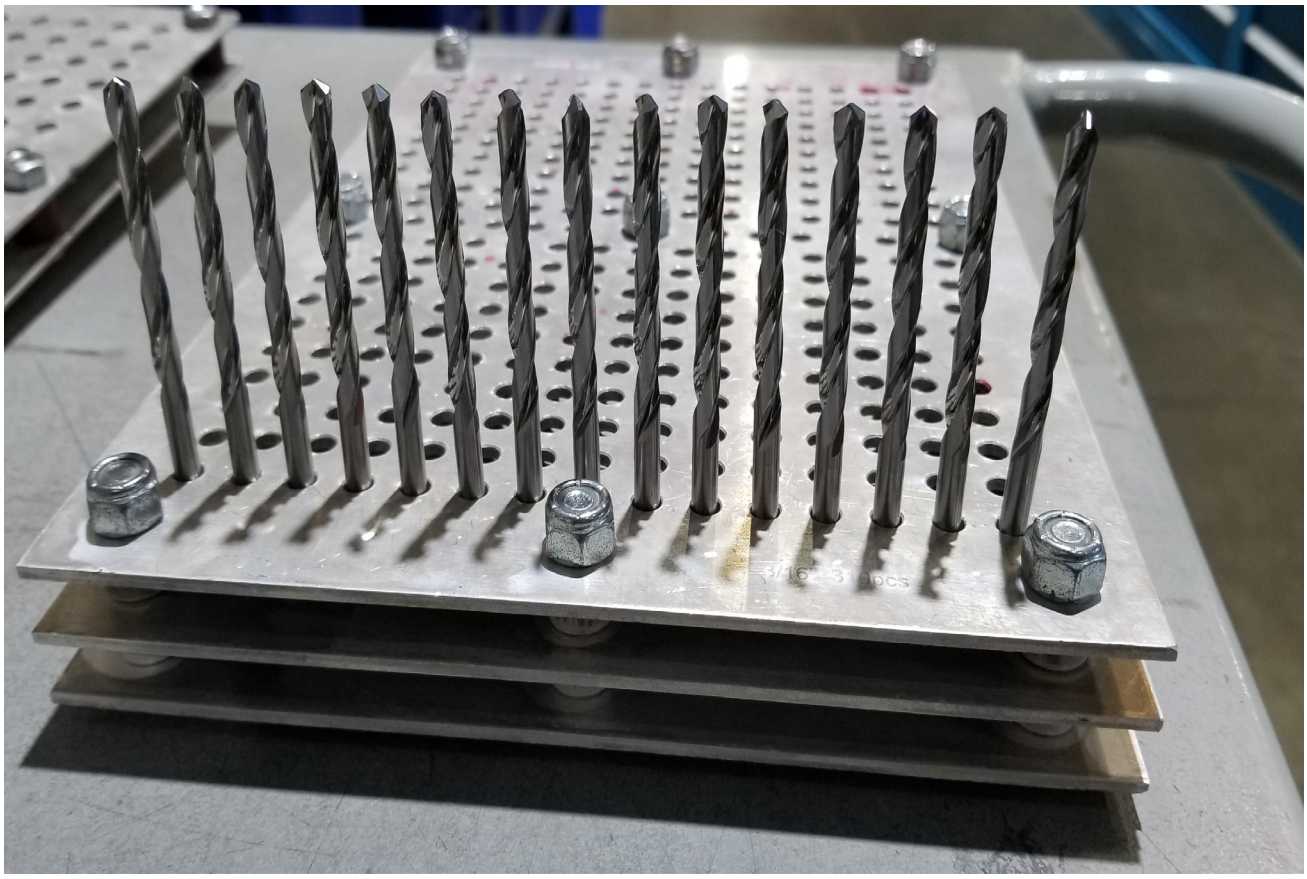




COOLANT-FED DRILLS

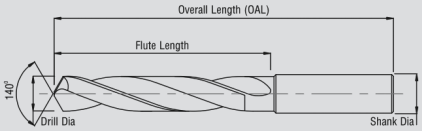
Material	Drill Diameter									
	2.00	3.00	5.00	6.00	8.00	10.00	12.00	16.00	20.00	25.00
	5/64″	7/64″	3/16″	15/64″	5/16"	25/64″	15/32″	5/8″	3/4″	1″
	Feed Rate mm/rev									
	Feed Rate IPR									
Steel	0.06	0.10	0.12	0.15	0.17	0.20	0.23	0.28	0.30	0.35
	0.002	0.004	0.005	0.006	0.007	0.008	0.009	0.011	0.012	0.014
"High Tensile Steels/acid Resistant"	0.04	0.06	0.08	0.1	0.13	0.16	0.16	0.20	0.25	0.30
	0.0016	0.002	0.003	0.004	0.005	0.006	0.006	0.008	0.01	0.012
Cast Material	0.07	0.10	0.14	0.17	0.20	0.23	0.23	0.28	0.3	0.35
	0.003	0.004	0.006	0.007	0.008	0.009	0.009	0.011	0.012	0.014
Titanium Alloys	0.02	0.04	0.05	0.07	0.09	0.11	0.11	0.14	0.18	0.20
	0.001	0.002	0.002	0.003	0.004	0.004	0.004	0.006	0.007	0.008
Mg Alloys	0.08	0.10	0.13	0.18	00.21	0.25	0.25	0.28	0.31	0.35
	0.003	0.004	0.005	0.007	0.008	0.01	0.01	0.011	0.012	0.014

All other coatings available on request



CARBIDE DRILLS

Non-Coolant



SPEEDS & FEEDS

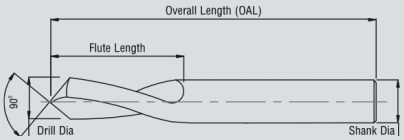
MICRO GRAIN SOLID CARBIDE

NON COOLANT DRILLS 140⁰ POINT ANGLE				
Material Group	Material Type	Cutting Speed		
		3XD	5XD	8XD
		m/min		
Steel	Structural Steel	60 - 80	50 - 70	40 - 60
	Free Cutting Steel	70 - 90	60 - 80	50 - 70
	Unalloyed Heat Treatable Steel	60 - 75	50 - 65	40 - 55
	Unalloyed Case Hardened Steel	60 - 70	50 - 60	40 - 50
	Alloyed Case Hardened Steel	65 - 75	55 - 65	50 - 60
	Nitriding Steel	50 - 60	45 - 55	40 - 50
Acid Resistant /	Stainless Steel	25 - 35	20 - 30	15 - 25
Stainless Steel	Sulphured Austenitic Steel, Martensitic			
High Tensile Steel	Alloyed Heat Treatable Steel	50 - 60	45 - 55	40 - 50
	Tool Steel	30 - 40	25 - 35	20 - 30
	High Speed Steel	25 - 35	20 - 30	20 - 30
	Spring Steel	30 - 35	25 - 30	23 - 28
Cast Materials	Cast Iron	100 - 120	80 - 100	70 - 90
	Spheroidal Graphite & Malleable Ci	75 - 100	65 - 90	60 - 80
	Chilled Ci	20 - 25	18 - 23	15 - 20
Special Alloys	Special Alloys	15 - 20	12 - 17	10 - 15
	Ti Alloys	20 - 25	17 - 23	15 - 20
Magnesium Alloys	Mg Alloys	150 -180	120 - 150	100 - 125

All other coatings available on request

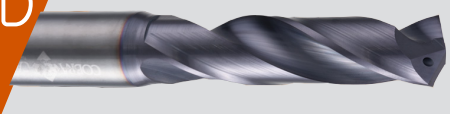
CARBIDE DRILLS

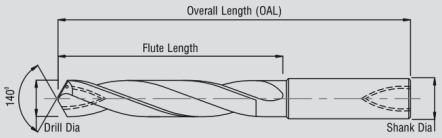
Speeds & Feeds



COMBINED DRILLS & SPOTTING DRILLS										
Material	Drill Diameter									
	2.00	3.00	5.00	6.00	8.00	10.00	12.00	16.00	20.00	25.00
	Feed Rate mm/rev									
Steel	0.05	0.08	0.10	0.125	0.15	0.18	0.20	0.23	0.25	0.30
High Tensile Steels/ acid Resistant	0.03	0.05	0.07	0.085	0.12	0.14	0.15	0.18	0.21	0.25
Cast Material	0.06	0.09	0.12	0.15	0.18	0.20	0.22	0.25	0.28	0.30
Aluminum Alloys	0.09	0.12	0.18	0.22	0.26	0.3	0.30	0.35	0.40	0.43
Titanium Alloys	0.015	0.03	0.04	0.06	0.08	0.10	0.11	0.13	0.016	0.18
Non Ferrous	0.06	0.08	0.10	0.13	0.18	0.2	0.20	0.25	0.30	0.35
Mg Alloys	0.07	0.09	0.125	0.16	0.18	0.20	0.23	0.25	0.28	0.32

All other coatings available on request





BLACK MAMBA - COOLANT-FED DRILLS 140° POINT ANGLE

3XD - INCH AND METRIC

BENEFITS & FEATURES

- 140° point angle and high performance geometry allows for high penetration rates
- Cobra's high performance high penetration drills provide accurate hole sizing as well as near burnished holes
- Manufactured from premium submicron grain carbide

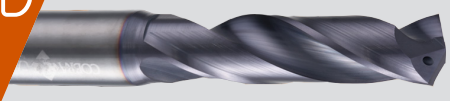
Shank Dia: h6
Cut Dia: h7

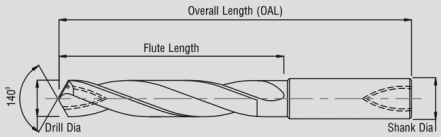
BLACK MAMBA - COOLANT-FED DRILLS 140° POINT ANGLE

Fraction Size	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
-	3.00		0.1181	4mm	20mm	62mm	50520
-	3.10		0.1220	4mm	20mm	62mm	56062
1/8	3.17		0.1250	4mm	3/4	2-1/2	50130
-	3.20		0.1260	4mm	20mm	62mm	56063
-	3.30	M4x0.7	0.1299	4mm	20mm	62mm	50521
-	3.40	8-32	0.1334	4mm	20mm	62mm	50131
-	3.50		0.1378	4mm	20mm	62mm	50522
9/64	3.57		0.1406	4mm	3/4	2-1/2	56065
-	3.60		0.1417	4mm	20mm	62mm	50132
-	3.70		0.1456	4mm	20mm	62mm	50523
-	3.90		0.1535	4mm	24mm	66mm	56067
5/32	3.97		0.1562	4mm	15/16	2-5/8	50133
-	4.00		0.1575	4mm	24mm	66mm	50524
-	4.10		0.1614	6mm	24mm	66mm	56068
-	4.20		0.1654	6mm	24mm	66mm	50525
11/64	4.37	12-24	0.1719	6mm	15/16	2-5/8	50134
-	4.37		0.1720	6mm	24mm	66mm	56070
-	4.40		0.1732	6mm	24mm	66mm	56071
-	4.50		0.1772	6mm	24mm	66mm	50526
-	4.60	12-28	0.1811	6mm	24mm	66mm	56072
-	4.65		0.1830	6mm	24mm	66mm	56073
-	4.76		0.1874	6mm	24mm	66mm	56074
3/16	4.76		0.1875	6mm	15/16	2-5/8	50135
-	4.80		0.1890	6mm	24mm	66mm	50129
-	4.90		0.1929	6mm	24mm	66mm	56076
-	5.00	M6x1.0	0.1969	6mm	24mm	66mm	50527
-	5.10		0.2008	6mm	24mm	66mm	50136
13/64	5.16	1/4-20	0.2031	6mm	15/16	2-5/8	50137
-	5.20		0.2047	6mm	24mm	66mm	50528
-	5.30		0.2087	6mm	24mm	66mm	56077
-	5.40		0.2126	6mm	24mm	66mm	56078
-	5.50		0.2165	6mm	24mm	66mm	50529
7/32	5.56		0.2188	6mm	15/16	2-5/8	50138
-	5.60		0.2205	6mm	24mm	66mm	56079
-	5.70		0.2244	6mm	24mm	66mm	56080
-	5.80		0.2283	6mm	24mm	66mm	56081
-	5.90		0.2323	6mm	24mm	66mm	56082

CARBIDE DRILLS - 3XD

Coolant-Fed





Shank Dia: h6
Cut Dia: h7

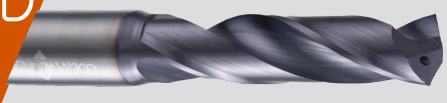
DRILLS

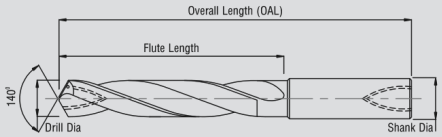
BLACK MAMBA - COOLANT-FED DRILLS 140° POINT ANGLE

Fraction Size	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
15/64	5.95		0.2344	6mm	15/16	2-5/8	50139
-	6.00	M7x1.0	0.2362	6mm	24mm	66mm	50530
-	6.10		0.2402	8mm	34mm	79mm	50140
-	6.20		0.2441	8mm	34mm	79mm	50531
-	6.30		0.2480	8mm	34mm	79mm	56083
1/4	6.35		0.2500	8mm	1-11/32	3-1/8	56730
-	6.40		0.2520	8mm	34mm	79mm	56085
-	6.50		0.2559	8mm	34mm	79mm	50532
-	6.60		0.2598	8mm	34mm	79mm	56087
-	6.70		0.2638	8mm	34mm	79mm	56088
17/64	6.75		0.2656	8mm	1-11/32	3-1/8	56731
-	6.80		0.2677	8mm	34mm	79mm	56089
-	6.83		0.2689	8mm	34mm	79mm	50533
-	6.90	5/16-24	0.2717	8mm	34mm	79mm	50143
-	7.00	M8x1	0.2756	8mm	34mm	79mm	50534
-	7.10		0.2795	8mm	41mm	79mm	50144
9/32	7.14		0.2812	8mm	1-39/64	3-1/8	56732
-	7.20		0.2835	8mm	41mm	79mm	50535
-	7.30		0.2874	8mm	41mm	79mm	56091
-	7.40		0.2913	8mm	41mm	79mm	56092
-	7.50		0.2953	8mm	41mm	79mm	50536
19/64	7.54		0.2969	8mm	1-39/64	3-1/8	50517
-	7.60		0.2992	8mm	41mm	79mm	56094
-	7.70		0.3031	8mm	41mm	79mm	56095
-	7.80		0.3071	8mm	41mm	79mm	56096
-	7.90		0.3110	8mm	41mm	79mm	56097
5/16	7.94	3/8-16	0.3125	8mm	1-39/64	3-1/8	56733
-	8.00		0.3150	8mm	41mm	79mm	50537
-	8.10		0.3189	10mm	47mm	89mm	56098
-	8.20		0.3228	10mm	47mm	89mm	56605
-	8.30		0.3268	10mm	47mm	89mm	56099
21/64	8.33		0.3281	10mm	1-27/32	3-1/2	50580
-	8.40		0.3307	10mm	47mm	89mm	56100
-	8.50	M10x1.5	0.3346	10mm	47mm	89mm	50538
-	8.60		0.3386	10mm	47mm	89mm	56101
-	8.70		0.3425	10mm	47mm	89mm	50515
-	8.73		0.3437	10mm	47mm	89mm	56103
11/32	8.73		0.3438	10mm	1-27/32	3-1/2	56734
-	8.80	M10x1.25	0.3465	10mm	47mm	89mm	50539
-	8.90		0.3504	10mm	47mm	89mm	56735
-	9.00		0.3543	10mm	47mm	89mm	50540
-	9.10		0.3583	10mm	47mm	89mm	56611
23/64	9.13		0.3594	10mm	1-27/32	3-1/2	50518
-	9.20		0.3622	10mm	47mm	89mm	50541
-	9.30		0.3661	10mm	47mm	89mm	56105

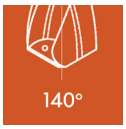
CARBIDE DRILLS - 3XD

Coolant-Fed





BLACK MAMBA - COOLANT-FED DRILLS 140° POINT ANGLE

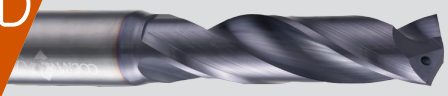


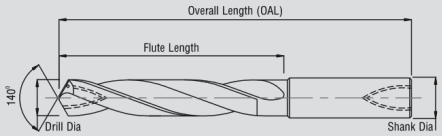
Shank Dia: h6
Cut Dia: h7

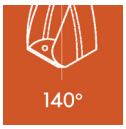
Fraction Size	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
-	9.40		0.3701	10mm	47mm	89mm	56736
-	9.50		0.3740	10mm	47mm	89mm	50542
3/8	9.52		0.3750	10mm	1-27/32	3-1/2	56737
-	9.60		0.3780	10mm	47mm	89mm	56107
-	9.70		0.3819	10mm	47mm	89mm	56738
-	9.80	7/16-20	0.3858	10mm	47mm	89mm	56109
-	9.90		0.3898	10mm	47mm	89mm	56739
25/64	9.92		0.3906	10mm	1-27/32	3-1/2	50584
-	10.00		0.3937	10mm	47mm	89mm	50543
-	10.10		0.3976	12mm	55mm	102mm	56111
-	10.20		0.4016	12mm	55mm	102mm	50544
-	10.30	M12x1.75	0.4055	12mm	55mm	102mm	56740
13/32	10.32		0.4062	12mm	2-11/64	4	56741
-	10.40		0.4094	12mm	55mm	102mm	56113
-	10.50		0.4134	12mm	55mm	102mm	50545
-	10.60		0.4173	12mm	55mm	102mm	56115
-	10.70		0.4213	12mm	55mm	102mm	56742
27/64	10.72	1/2-13	0.4219	12mm	2-11/64	4	50566
-	10.80	M12x1.25	0.4252	12mm	55mm	102mm	50546
-	10.90		0.4291	12mm	55mm	102mm	56117
-	11.00		0.4331	12mm	55mm	102mm	50547
-	11.10		0.4370	12mm	55mm	102mm	56743
7/16	11.11		0.4375	12mm	2-11/64	4	56744
-	11.20		0.4409	12mm	55mm	102mm	56119
-	11.30		0.4449	12mm	55mm	102mm	56745
-	11.40		0.4488	12mm	55mm	102mm	56121
-	11.50	1/2-20	0.4528	12mm	55mm	102mm	50548
29/64	11.51		0.4531	12mm	2-11/64	4	50565
-	11.60		0.4567	12mm	55mm	102mm	56123
-	11.70		0.4606	12mm	55mm	102mm	56746
-	11.80		0.4646	12mm	55mm	102mm	56125
-	11.90		0.4685	12mm	55mm	102mm	56127
15/32	11.91		0.4688	12mm	2-11/64	4	56747
-	12.00	M14x2.0	0.4724	12mm	55mm	102mm	50549
-	12.10		0.4764	14mm	60mm	107mm	56748
-	12.20	9/16-12	0.4803	14mm	60mm	107mm	50564
31/64	12.30		0.4844	14mm	2-3/8	4-1/4	50561
-	12.40		0.4882	14mm	60mm	107mm	56749
-	12.50	M14x1.5	0.4921	14mm	60mm	107mm	50550
-	12.60		0.4961	14mm	60mm	107mm	56131
1/2	12.70		0.5000	14mm	2-3/8	4-1/4	56750
-	12.80		0.5039	14mm	60mm	107mm	56751
-	12.90	9/16-18	0.5079	14mm	60mm	107mm	56133
-	13.00		0.5118	14mm	60mm	107mm	50551

CARBIDE DRILLS - 3XD

Coolant-Fed







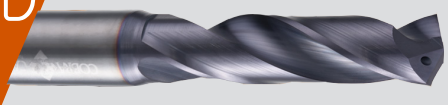
Shank Dia: h6
Cut Dia: h7

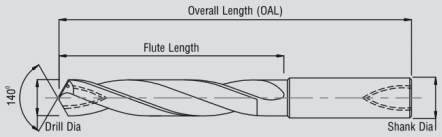
BLACK MAMBA - COOLANT-FED DRILLS 140° POINT ANGLE

Fraction Size	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
33/64	13.01		0.5156	14mm	2-3/8	4-1/4	56752
-	13.20		0.5197	14mm	60mm	107mm	56135
-	13.30		0.5236	14mm	60mm	107mm	56753
-	13.40		0.5276	14mm	60mm	107mm	56137
17/32	13.49	5/8-11	0.5312	14mm	2-3/8	4-1/4	56754
-	13.50		0.5315	14mm	60mm	107mm	50552
-	13.60		0.5354	14mm	60mm	107mm	56755
-	13.70		0.5394	14mm	60mm	107mm	56139
-	13.80		0.5433	14mm	60mm	107mm	56756
35/64	13.89		0.5469	14mm	2-3/8	4-1/4	56141
-	13.90		0.5472	14mm	60mm	107mm	56757
-	14.00	M16x2.0	0.5512	14mm	60mm	107mm	50553
-	14.10		0.5551	16mm	65mm	115mm	56758
-	14.20		0.5591	16mm	65mm	115mm	56145
9/16	14.29		0.5625	16mm	2-9/16	4-1/2	56759
-	14.30		0.5630	16mm	65mm	115mm	56147
-	14.40		0.5669	16mm	65mm	115mm	56760
-	14.50	M16x1.5	0.5709	16mm	65mm	115mm	50554
-	14.60		0.5748	16mm	65mm	115mm	56149
37/64	14.68	5/8-18	0.5781	16mm	2-9/16	4-1/2	56151
-	14.70		0.5787	16mm	65mm	115mm	56761
-	14.80		0.5827	16mm	65mm	115mm	56153
-	14.90		0.5866	16mm	65mm	115mm	56762
-	15.00		0.5906	16mm	65mm	115mm	50555
19/32	15.08		0.5938	16mm	2-9/16	4-1/2	50595
-	15.10		0.5945	16mm	65mm	115mm	56155
-	15.20		0.5984	16mm	65mm	115mm	56763
-	15.30		0.6024	16mm	65mm	115mm	56157
-	15.40		0.6063	16mm	65mm	115mm	56764
39/64	15.48		0.6094	16mm	2-9/16	4-1/2	56159
-	15.50	M18x2.5	0.6102	16mm	65mm	115mm	50556
-	15.60		0.6142	16mm	65mm	115mm	56161
-	15.70		0.6181	16mm	65mm	115mm	56765
-	15.80		0.6220	16mm	65mm	115mm	56163
-	15.87		0.6248	16mm	65mm	115mm	56766
5/8	15.88		0.6250	16mm	2-9/16	4-1/2	50596
-	15.90		0.6260	16mm	65mm	115mm	55958
-	16.00		0.6299	16mm	65mm	115mm	50557
-	16.10		0.6339	18mm	73mm	123mm	56167
-	16.20		0.6378	18mm	73mm	123mm	56767
41/64	16.27		0.6406	18mm	2-7/8	4-27/32	56169
-	16.30		0.6417	18mm	73mm	123mm	56768
-	16.40		0.6457	18mm	73mm	123mm	56171
-	16.50	M18x1.5	0.6496	18mm	73mm	123mm	56769

CARBIDE DRILLS - 3XD

Coolant-Fed





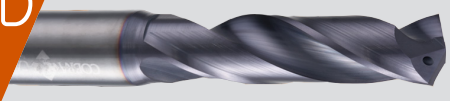
BLACK MAMBA - COOLANT-FED DRILLS 140° POINT ANGLE

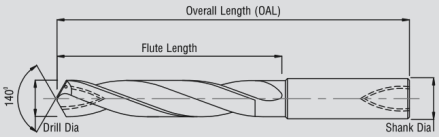
Fraction Size	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
-	16.60		0.6535	18mm	73mm	123mm	56173
21/32	16.67	3/4-10	0.6562	18mm	2-7/8	4-27/32	50598
-	16.70		0.6575	18mm	73mm	123mm	56770
-	16.80		0.6614	18mm	73mm	123mm	56175
-	16.90		0.6654	18mm	73mm	123mm	56771
-	17.00		0.6693	18mm	73mm	123mm	50559
43/64	17.07		0.6720	18mm	2-7/8	4-27/32	56177
-	17.10		0.6732	18mm	73mm	123mm	56772
-	17.20		0.6772	18mm	73mm	123mm	56179
-	17.30		0.6811	18mm	73mm	123mm	56773
-	17.40		0.6850	18mm	73mm	123mm	56181
11/16	17.46	3/4-16	0.6874	18mm	2-7/8	4-27/32	50599
-	17.50	M20x2.5	0.6890	18mm	73mm	123mm	56183
-	17.60		0.6929	18mm	73mm	123mm	56774
-	17.70		0.6969	18mm	73mm	123mm	56185
-	17.80		0.7008	18mm	73mm	123mm	56775
45/64	17.86		0.7031	18mm	2-7/8	4-27/32	56187
-	17.90		0.7047	18mm	73mm	123mm	56776
-	18.00		0.7087	18mm	73mm	123mm	50560
-	18.10		0.7126	20mm	79mm	131mm	56777
-	18.20		0.7165	20mm	79mm	131mm	56191
23/32	18.25		0.7187	20mm	3-1/8	5-5/32	56778
-	18.30		0.7205	20mm	79mm	131mm	56780
-	18.40		0.7244	20mm	79mm	131mm	56193
-	18.50	M20x1.5	0.7283	20mm	79mm	131mm	56781
-	18.60		0.7323	20mm	79mm	131mm	56195
47/64	18.65		0.7343	20mm	3-1/8	5-5/32	56782
-	18.70		0.7362	20mm	79mm	131mm	56197
-	18.80		0.7402	20mm	79mm	131mm	56783
-	18.90		0.7441	20mm	79mm	131mm	56199
-	19.00		0.7480	20mm	79mm	131mm	50562
3/4	19.05		0.7500	20mm	3-1/8	5-5/32	56784
-	19.10		0.7520	20mm	79mm	131mm	56785
-	19.20		0.7559	20mm	79mm	131mm	56203
-	19.30		0.7598	20mm	79mm	131mm	56786
49/64	19.45	7/8-9	0.7657	20mm	3-1/8	5-5/32	56205
-	19.50		0.7677	20mm	79mm	131mm	56787
-	19.60		0.7717	20mm	79mm	131mm	56207
-	19.70		0.7756	20mm	79mm	131mm	56788
-	19.80		0.7795	20mm	79mm	131mm	56209
-	19.90		0.7835	20mm	79mm	131mm	56789
-	20.00		0.7874	20mm	79mm	131mm	50563

Shank Dia: h6
Cut Dia: h7

DRILLS

All other coatings available on request





140°

30°

Shank Dia: h6
Cut Dia: h7

BLACK MAMBA - COOLANT-FED DRILLS 140° POINT ANGLE

5XD - INCH AND METRIC

BENEFITS & FEATURES

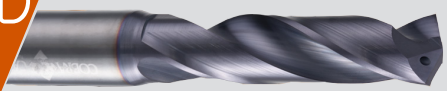
- 140° point angle and high performance geometry allows for high penetration rates
- Cobra's high performance high penetration drills provide accurate hole sizing as well as near burnished holes
- Manufactured from premium submicron grain carbide

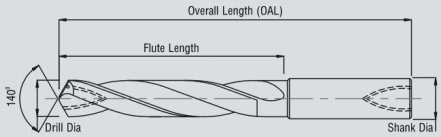
BLACK MAMBA - COOLANT-FED DRILLS 140° POINT ANGLE

Fraction Size	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
-	3.00		0.1181	4mm	28mm	66mm	55101
-	3.10		0.1220	4mm	28mm	66mm	55105
1/8	3.17		0.1250	4mm	1-1/8	2-5/8	53030
-	3.20		0.1260	4mm	28mm	66mm	56211
-	3.30	M4x0.7	0.1299	4mm	28mm	66mm	55109
-	3.40	8-32	0.1339	4mm	28mm	66mm	53032
-	3.50		0.1378	4mm	28mm	66mm	55113
9/64	3.57		0.1406	4mm	1-1/8	2-5/8	56628
-	3.60		0.1417	4mm	28mm	66mm	56213
-	3.68		0.1450	4mm	28mm	66mm	56265
-	3.70		0.1457	4mm	28mm	66mm	55117
-	3.80	10-24	0.1496	4mm	28mm	66mm	55121
-	3.90		0.1535	4mm	36mm	74mm	56215
5/32	3.97		0.1562	4mm	1-27/64	3	53038
-	4.00		0.1575	4mm	36mm	74mm	55125
-	4.10		0.1614	6mm	36mm	74mm	56791
-	4.20		0.1654	6mm	36mm	74mm	55128
-	4.30		0.1693	6mm	36mm	74mm	53043
11/64	4.37		0.1719	6mm	1-27/64	3	53045
-	4.40		0.1732	6mm	36mm	74mm	56792
-	4.50		0.1771	6mm	36mm	74mm	55132
-	4.60	12-28	0.1811	6mm	36mm	74mm	56219
-	4.65		0.1830	6mm	36mm	74mm	56793
-	4.70		0.1850	6mm	36mm	74mm	53048
3/16	4.76		0.1875	6mm	1-3/4	3-1/4	53050
-	4.80		0.1891	6mm	44mm	82mm	55136
-	4.90		0.1929	6mm	44mm	82mm	56221
-	5.00	M6x1.0	0.1969	6mm	44mm	82mm	55140
-	5.10		0.2008	6mm	44mm	82mm	55144
13/64	5.16		0.2031	6mm	1-3/4	3-1/4	53057
-	5.20		0.2047	6mm	44mm	82mm	55148
-	5.30		0.2087	6mm	44mm	82mm	56794
-	5.40		0.2126	6mm	44mm	82mm	56223
-	5.50		0.2165	6mm	44mm	82mm	55152
7/32	5.56		0.2189	6mm	1-3/4	3-1/4	56795
-	5.60		0.2205	6mm	44mm	82mm	56225
-	5.70		0.2244	6mm	44mm	82mm	56796

CARBIDE DRILLS - 5XD

Coolant-Fed





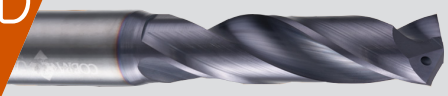
BLACK MAMBA - COOLANT-FED DRILLS 140° POINT ANGLE

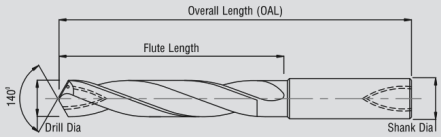
Fraction Size	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
-	5.80		0.2283	6mm	44mm	82mm	55156
-	5.90		0.2323	6mm	44mm	82mm	56227
15/64	5.95		0.2344	6mm	1-3/4	3-1/4	53062
-	6.00	M7x1.0	0.2362	6mm	44mm	82mm	55160
-	6.10		0.2402	8mm	53mm	91mm	56228
-	6.20		0.2441	8mm	53mm	91mm	56229
-	6.30		0.2480	8mm	53mm	91mm	55164
1/4	6.35		0.2500	8mm	2-1/8	3-37/64	55000
-	6.40		0.2520	8mm	53mm	91mm	56230
-	6.50		0.2559	8mm	53mm	91mm	55168
-	6.60		0.2598	8mm	53mm	91mm	56231
-	6.70		0.2638	8mm	53mm	91mm	56232
17/64	6.75		0.2656	8mm	2-1/8	3-37/64	55002
-	6.80		0.2677	8mm	53mm	91mm	55172
-	6.90	5/16-24	0.2717	8mm	53mm	91mm	53070
-	7.00	M8x1.0	0.2756	8mm	53mm	91mm	55176
-	7.10		0.2795	8mm	53mm	91mm	53073
9/32	7.14		0.2812	8mm	2-1/8	3-37/64	55004
-	7.20		0.2835	8mm	53mm	91mm	56233
-	7.30		0.2874	8mm	53mm	91mm	56234
-	7.40		0.2913	8mm	53mm	91mm	56235
-	7.50		0.2953	8mm	53mm	91mm	55180
19/64	7.54		0.2969	8mm	2-1/8	3-37/64	55006
-	7.60		0.2992	8mm	53mm	91mm	56236
-	7.70		0.3031	8mm	53mm	91mm	56237
-	7.80		0.3071	8mm	53mm	91mm	55184
-	7.90		0.3110	8mm	53mm	91mm	56238
5/16	7.94	3/8-16	0.3125	8mm	2-1/8	3-37/64	55008
-	8.00		0.3150	8mm	53mm	91mm	55188
-	8.10		0.3189	10mm	61mm	103mm	56239
-	8.20		0.3228	10mm	61mm	103mm	56240
-	8.30		0.3268	10mm	61mm	103mm	56241
21/64	8.33		0.3281	10mm	2-13/32	4-1/16	55010
-	8.40		0.3307	10mm	61mm	103mm	56242
-	8.50	M10x1.5	0.3346	10mm	61mm	103mm	55192
-	8.60		0.3386	10mm	61mm	103mm	56244
-	8.70		0.3425	10mm	61mm	103mm	56245
11/32	8.73		0.3438	10mm	2-13/32	4-1/16	55012
-	8.80	M10x1.25	0.3465	10mm	61mm	103mm	55196
-	8.90		0.3504	10mm	61mm	103mm	56246
-	9.00		0.3543	10mm	61mm	103mm	55200
-	9.10		0.3583	10mm	61mm	103mm	53084
23/64	9.13		0.3594	10mm	2-13/32	4-1/16	55014
-	9.20		0.3622	10mm	61mm	103mm	55204
-	9.30		0.3661	10mm	61mm	103mm	56248

Shank Dia: h6
Cut Dia: h7

CARBIDE DRILLS - 5XD

Coolant-Fed





Shank Dia: h6
Cut Dia: h7

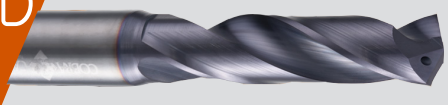
DRILLS

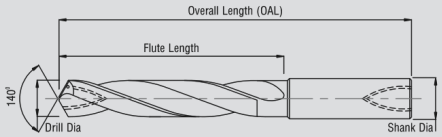
BLACK MAMBA - COOLANT-FED DRILLS 140° POINT ANGLE

Fraction Size	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
-	9.40		0.3701	10mm	61mm	103mm	56249
-	9.50		0.3740	10mm	61mm	103mm	55208
3/8	9.52		0.3750	10mm	2-13/32	4-1/16	55016
-	9.60		0.3780	10mm	61mm	103mm	56250
-	9.70		0.3819	10mm	61mm	103mm	56251
-	9.80		0.3858	10mm	61mm	103mm	55212
-	9.90		0.3898	10mm	61mm	103mm	56252
25/64	9.92		0.3906	10mm	2-13/32	4-1/16	55018
-	10.00		0.3937	10mm	61mm	103mm	55216
-	10.10		0.3976	12mm	71mm	118mm	56253
-	10.20		0.4016	12mm	71mm	118mm	55220
-	10.30	M12x1.75	0.4055	12mm	71mm	118mm	56254
13/32	10.32		0.4062	12mm	2-7/16	4-11/16	55020
-	10.40		0.4094	12mm	71mm	118mm	56255
-	10.50		0.4134	12mm	71mm	118mm	55224
-	10.60		0.4173	12mm	71mm	118mm	56256
-	10.70		0.4213	12mm	71mm	118mm	56257
27/64	10.72	1/2-13	0.4219	12mm	2-7/16	4-11/16	55022
-	10.80	M12x1.25	0.4252	12mm	71mm	118mm	55228
-	10.90		0.4291	12mm	71mm	118mm	56258
-	11.00		0.4331	12mm	71mm	118mm	55232
-	11.10		0.4370	12mm	71mm	118mm	56259
7/16	11.11		0.4375	12mm	2-7/16	4-11/16	55024
-	11.20		0.4409	12mm	71mm	118mm	56261
-	11.30		0.4449	12mm	71mm	118mm	56262
-	11.40		0.4488	12mm	71mm	118mm	56263
-	11.50	1/2-20	0.4528	12mm	71mm	118mm	55236
29/64	11.51		0.4531	12mm	2-7/16	4-11/16	55026
-	11.60		0.4567	12mm	71mm	118mm	56266
-	11.70		0.4606	12mm	71mm	118mm	56267
-	11.80		0.4646	12mm	71mm	118mm	55240
-	11.90		0.4685	12mm	71mm	118mm	56268
15/32	11.91		0.4688	12mm	2-7/16	4-11/16	55028
-	12.00	M14x2.0	0.4724	12mm	71mm	118mm	55244
-	12.10		0.4764	14mm	77mm	124mm	56269
-	12.20	9/16-12	0.4803	14mm	77mm	124mm	53091
-	12.30		0.4843	14mm	77mm	124mm	55248
31/64	12.30		0.4844	14mm	3	4-7/8	55030
-	12.40		0.4882	14mm	77mm	124mm	56272
-	12.50	M14x1.5	0.4921	14mm	77mm	124mm	55252
-	12.60		0.4961	14mm	77mm	124mm	56273
1/2	12.70		0.5000	14mm	3	4-7/8	55032
-	12.80		0.5039	14mm	77mm	124mm	55256
-	12.90	9/16-18	0.5079	14mm	77mm	124mm	56629
-	13.00		0.5118	14mm	77mm	124mm	55260

CARBIDE DRILLS - 5XD

Coolant-Fed





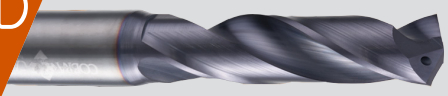
BLACK MAMBA - COOLANT-FED DRILLS 140° POINT ANGLE

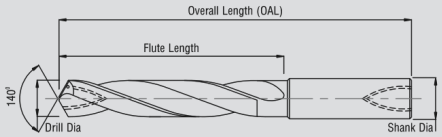
Shank Dia: h6
Cut Dia: h7

Fraction Size	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
33/64	13.10		0.5156	14mm	3	4-7/8	55034
-	13.20		0.5197	14mm	77mm	124mm	56275
-	13.30		0.5236	14mm	77mm	124mm	56276
-	13.40		0.5276	14mm	77mm	124mm	56277
17/32	13.49	5/8-11	0.5312	14mm	3	4-7/8	55036
-	13.50		0.5315	14mm	77mm	124mm	55264
-	13.60		0.5354	14mm	77mm	124mm	56278
-	13.70		0.5394	14mm	77mm	124mm	56279
-	13.80		0.5433	14mm	77mm	124mm	56280
35/64	13.89		0.5469	14mm	3	4-7/8	55038
-	13.90		0.5472	14mm	77mm	124mm	56281
-	14.00	M16x2	0.5512	14mm	77mm	124mm	55268
-	14.10		0.5551	16mm	83mm	133mm	56282
-	14.20		0.5591	16mm	83mm	133mm	56283
9/16	14.29		0.5625	16mm	3-17/64	5-1/4	55040
-	14.30		0.5630	16mm	83mm	133mm	56284
-	14.40		0.5669	16mm	83mm	133mm	56285
-	14.50	M16x1.50	0.5709	16mm	83mm	133mm	55272
-	14.60		0.5748	16mm	83mm	133mm	56286
37/64	14.68		0.5781	16mm	3-17/64	5-1/4	55042
-	14.70		0.5787	16mm	83mm	133mm	56287
-	14.80		0.5827	16mm	83mm	133mm	56288
-	14.90		0.5866	16mm	83mm	133mm	56289
-	15.00		0.5906	16mm	83mm	133mm	55276
19/32	15.08		0.5938	16mm	3-1/4	5-1/4	55044
-	15.10		0.5945	16mm	83mm	133mm	56290
-	15.20		0.5984	16mm	83mm	133mm	56291
-	15.30		0.6024	16mm	83mm	133mm	56292
-	15.40		0.6063	16mm	83mm	133mm	56293
39/64	15.48		0.6094	16mm	3-1/4	5-1/4	56294
-	15.50	M18x2.5	0.6102	16mm	83mm	133mm	55280
-	15.60		0.6142	16mm	83mm	133mm	56295
-	15.70		0.6181	16mm	83mm	133mm	56296
-	15.80		0.6220	16mm	83mm	133mm	56297
5/8	15.87		0.6250	16mm	3-1/4	5-1/4	55048
-	15.90		0.6260	16mm	83mm	133mm	56299
-	16.00		0.6299	16mm	83mm	133mm	55284
-	16.10		0.6339	18mm	92mm	143mm	56300
-	16.20		0.6378	18mm	92mm	143mm	56301
41/64	16.23		0.6406	18mm	3-5/8	5-5/8	55050
-	16.30		0.6417	18mm	92mm	143mm	56302
-	16.40		0.6457	18mm	92mm	143mm	56303
-	16.50	M18x1.5	0.6496	18mm	92mm	143mm	55288
-	16.60		0.6535	18mm	92mm	143mm	56304
21/32	16.67	3/4-10	0.6563	18mm	3-5/8	5-5/8	55052

CARBIDE DRILLS – 5XD

Coolant-Fed





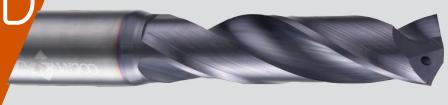
Shank Dia: h6
Cut Dia: h7

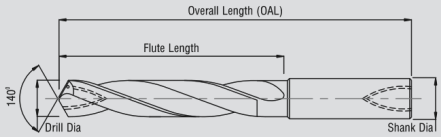
DRILLS

BLACK MAMBA - COOLANT-FED DRILLS 140° POINT ANGLE

Fraction Size	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
-	16.70		0.6575	18mm	92mm	143mm	56305
-	16.80		0.6614	18mm	92mm	143mm	56306
-	16.90		0.6654	18mm	92mm	143mm	56307
-	17.00		0.6692	18mm	92mm	143mm	55292
43/64	17.06		0.6719	18mm	3-5/8	5-5/8	55054
-	17.10		0.6732	18mm	93mm	143mm	56308
-	17.20		0.6772	18mm	92mm	143mm	56309
-	17.30		0.6811	18mm	92mm	143mm	56310
-	17.40		0.6850	18mm	92mm	143mm	56311
11/16	17.45	3/4-16	0.6875	18mm	3-5/8	5-5/8	55056
-	17.50	M20x2.5	0.6890	18mm	92mm	143mm	55296
-	17.60		0.6929	18mm	92mm	143mm	56312
-	17.70		0.6969	18mm	92mm	143mm	56313
-	17.80		0.7008	18mm	92mm	143mm	56314
45/64	17.84		0.7031	18mm	3-5/8	5-5/8	55058
-	17.90		0.7047	18mm	92mm	143mm	56315
-	18.00		0.7086	18mm	92mm	143mm	55300
-	18.10		0.7126	20mm	100mm	153mm	56316
-	18.20		0.7165	20mm	100mm	153mm	56317
23/32	18.24		0.7188	20mm	3-15/16	6	55060
-	18.30		0.7205	20mm	100mm	153mm	56318
-	18.40		0.7244	20mm	100mm	153mm	56319
-	18.50	M20x1.5	0.7283	20mm	100mm	153mm	56320
-	18.60		0.7323	20mm	100mm	153mm	56321
47/64	18.64		0.7344	20mm	3-15/16	6	55062
-	18.70		0.7362	20mm	100mm	153mm	56322
-	18.80		0.7402	20mm	100mm	153mm	56323
-	18.90		0.7441	20mm	100mm	153mm	56324
-	19.00		0.7480	20mm	100mm	153mm	56325
3/4	19.05		0.7500	20mm	3-15/16	6	55064
-	19.10		0.7520	20mm	100mm	153mm	56326
-	19.20		0.7559	20mm	100mm	153mm	56327
-	19.30		0.7598	20mm	100mm	153mm	56328
49/64	19.44		0.7656	20mm	3-15/16	6	55605
-	19.50	7/8-9	0.7677	20mm	100mm	153mm	56329
-	19.60		0.7717	20mm	100mm	153mm	56330
-	19.70		0.7756	20mm	100mm	153mm	56331
-	19.80		0.7795	20mm	100mm	153mm	56332
25/32	19.84		0.7812	20mm	3-15/16	6	55338
-	19.90		0.7835	20mm	100mm	153mm	56333
-	20.00		0.7874	20mm	100mm	153mm	55304

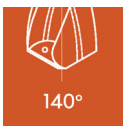
All other coatings available on request





BLACK MAMBA - COOLANT-FED DRILLS 140° POINT ANGLE

8XD – INCH AND METRIC



Shank Dia: h6
Cut Dia: h7

BENEFITS & FEATURES

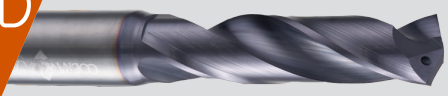
- 140° point angle and high performance geometry allows for high penetration rates
- Cobra's high performance high penetration drills provide accurate hole sizing as well as near burnished holes
- Manufactured from premium submicron grain carbide

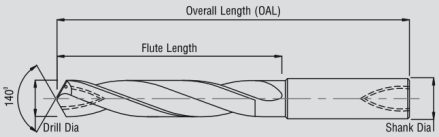
BLACK MAMBA - COOLANT-FED DRILLS 140° POINT ANGLE

Fraction Size	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
-	3.00		0.1181	6mm	34mm	72mm	55320
-	3.10		0.1220	6mm	34mm	72mm	56483
1/8	3.17		0.1250	6mm	1-1/2	2-1/2	55321
-	3.20		0.1260	6mm	34mm	72mm	56484
-	3.30	M4x0.7	0.1299	6mm	34mm	72mm	56485
-	3.40	8-32	0.1339	6mm	34mm	72mm	56486
-	3.50		0.1378	6mm	34mm	72mm	55351
-	3.50		0.1378	6mm	34mm	72mm	55350
9/64	3.57		0.1406	6mm	1-1/2	2-1/2	55322
-	3.60		0.1417	6mm	34mm	72mm	56487
-	3.70		0.1457	6mm	34mm	72mm	55355
-	3.70		0.1457	6mm	34mm	72mm	55354
-	3.80	10-24	0.1496	6mm	43mm	81mm	55358
-	3.90		0.1535	6mm	43mm	81mm	56489
5/32	3.97		0.1562	6mm	1-1/2	3-1/4	55323
-	4.00		0.1575	6mm	43mm	81mm	55362
-	4.10		0.1614	6mm	43mm	81mm	56490
-	4.20		0.1654	6mm	43mm	81mm	55366
-	4.30		0.1693	6mm	43mm	81mm	56491
11/64	4.37		0.1719	6mm	1-1/2	3-1/4	55324
-	4.40		0.1732	6mm	43mm	81mm	56492
-	4.50		0.1772	6mm	43mm	81mm	55370
-	4.60	12-28	0.1811	6mm	43mm	81mm	56493
-	4.70		0.1850	6mm	43mm	81mm	56495
3/16	4.76		0.1875	6mm	2-1/4	4	55325
-	4.80		0.1890	6mm	57mm	95mm	55374
-	4.90		0.1929	6mm	57mm	95mm	56632
-	5.00	M6x1.0	0.1969	6mm	57mm	95mm	55378
-	5.10		0.2008	6mm	57mm	95mm	55382
13/64	5.16		0.2031	6mm	2-1/4	4	55326
-	5.20		0.2047	6mm	57mm	95mm	55386
-	5.30		0.2087	6mm	57mm	95mm	56496
-	5.40		0.2126	6mm	57mm	95mm	56497
-	5.50		0.2165	6mm	57mm	95mm	55390
7/32	5.56		0.2188	6mm	2-1/4	4	55327
-	5.60		0.2205	6mm	57mm	95mm	56498

CARBIDE DRILLS - 8XD

Coolant-Fed





Shank Dia: h6
Cut Dia: h7

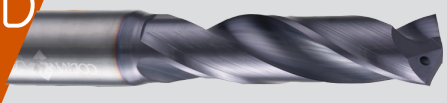
DRILLS

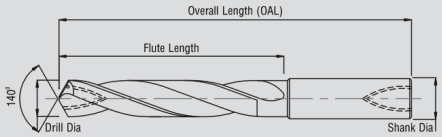
BLACK MAMBA - COOLANT-FED DRILLS 140° POINT ANGLE

Fraction Size	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
-	5.70		0.2244	6mm	57mm	95mm	56499
-	5.80		0.2283	6mm	57mm	95mm	55394
-	5.90		0.2323	6mm	57mm	95mm	56500
15/64	5.95		0.2344	6mm	2-1/4	4	55328
-	6.00	M7x1.0	0.2362	6mm	57mm	95mm	55398
-	6.10		0.2402	8mm	76mm	114mm	56501
-	6.20		0.2441	8mm	76mm	114mm	56502
-	6.30		0.2480	8mm	76mm	114mm	55402
1/4	6.35		0.2500	8mm	3	4-1/2	55600
-	6.40		0.2520	8mm	76mm	114mm	56503
-	6.50		0.2560	8mm	76mm	114mm	55406
-	6.60		0.2598	8mm	76mm	114mm	56504
-	6.70		0.2638	8mm	76mm	114mm	56505
17/64	6.75		0.2656	8mm	3	4-1/2	55604
-	6.80		0.2667	8mm	76mm	114mm	55410
-	6.90	5/16-24	0.2716	8mm	76mm	114mm	56506
-	7.00	M8x1.0	0.2756	8mm	76mm	114mm	55414
-	7.10		0.2795	8mm	76mm	114mm	56507
9/32	7.14		0.2812	8mm	3	4-1/2	55608
-	7.20		0.2835	8mm	76mm	114mm	56508
-	7.30		0.2874	8mm	76mm	114mm	56509
-	7.40		0.2913	8mm	76mm	114mm	56510
-	7.50		0.2953	8mm	76mm	114mm	55418
19/64	7.54		0.2969	8mm	3	4-1/2	55612
-	7.60		0.2992	8mm	76mm	114mm	56511
-	7.70		0.3031	8mm	76mm	114mm	56512
-	7.80		0.3071	8mm	76mm	114mm	55422
-	7.90		0.3110	8mm	76mm	114mm	56513
5/16	7.94	3/8-16	0.3125	8mm	3	4-1/2	55616
-	8.00		0.3150	8mm	76mm	114mm	55426
-	8.10		0.3189	10mm	95mm	142mm	56514
-	8.20		0.3228	10mm	95mm	142mm	56515
-	8.30		0.3268	10mm	95mm	142mm	56516
21/64	8.33		0.3281	10mm	3-3/4	5-3/4	55620
-	8.40		0.3307	10mm	95mm	142mm	56517
-	8.50	M10x1.5	0.3346	10mm	95mm	142mm	55430
-	8.60		0.3386	10mm	95mm	142mm	56518
-	8.70		0.3425	10mm	95mm	142mm	56519
11/32	8.73		0.3438	10mm	3-3/4	5-3/4	55624
-	8.80	M10x1.25	0.3466	10mm	95mm	142mm	55434
-	8.90		0.3504	10mm	95mm	142mm	56520
-	9.00		0.3543	10mm	95mm	142mm	55438
-	9.10		0.3583	10mm	95mm	142mm	56521
23/64	9.13		0.3594	10mm	3-3/4	5-3/4	55628

CARBIDE DRILLS - 8XD

Coolant-Fed





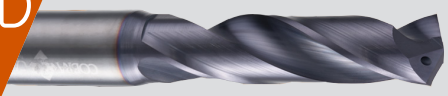
BLACK MAMBA - COOLANT-FED DRILLS 140° POINT ANGLE

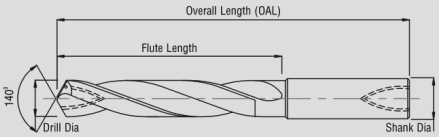
Shank Dia: h6
Cut Dia: h7

Fraction Size	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
-	9.20		0.3622	10mm	95mm	142mm	55442
-	9.30		0.3661	10mm	95mm	142mm	56522
-	9.40		0.3701	10mm	95mm	142mm	56523
-	9.50		0.3740	10mm	95mm	142mm	55446
3/8	9.52		0.3750	10mm	3-3/4	5-3/4	55632
-	9.60		0.3780	10mm	95mm	142mm	56524
-	9.70		0.3819	10mm	95mm	142mm	56525
-	9.80	7/16-20	0.3858	10mm	95mm	142mm	55450
-	9.90		0.3898	10mm	95mm	142mm	56526
25/64	9.92		0.3906	10mm	4-1/2	6-1/2	55636
-	10.00		0.3937	10mm	95mm	142mm	55454
-	10.10		0.3976	12mm	114mm	162mm	56527
-	10.20		0.4016	12mm	114mm	162mm	55458
-	10.30	M12x1.75	0.4055	12mm	114mm	162mm	56528
13/32	10.32		0.4062	12mm	4-1/2	6-1/2	55640
-	10.40		0.4094	12mm	114mm	162mm	56529
-	10.50		0.4134	12mm	114mm	162mm	55462
-	10.60		0.4173	12mm	114mm	162mm	56530
-	10.70		0.4213	12mm	114mm	162mm	56531
27/64	10.72	1/2-13	0.4219	12mm	4-1/2	6-1/2	55644
-	10.80	M12x1.25	0.4252	12mm	114mm	162mm	55466
-	10.90		0.4291	12mm	114mm	162mm	56532
-	11.00		0.4331	12mm	114mm	162mm	55470
-	11.10		0.4370	12mm	114mm	162mm	56533
7/16	11.11		0.4375	12mm	4-1/2	6-1/2	55648
-	11.20		0.4409	12mm	114mm	162mm	56534
-	11.30		0.4449	12mm	114mm	162mm	56535
-	11.40		0.4488	12mm	114mm	162mm	56536
-	11.50	1/2-20	0.4528	12mm	114mm	162mm	55474
29/64	11.51		0.4531	12mm	5-1/4	7	55652
-	11.60		0.4567	12mm	114mm	162mm	56537
-	11.70		0.4606	12mm	114mm	162mm	56538
-	11.80		0.4646	12mm	114mm	162mm	55478
-	11.90		0.4685	12mm	114mm	162mm	56540
15/32	11.91		0.4688	12mm	5-1/4	7	55656
-	12.00	M14x2.0	0.4724	12mm	114mm	162mm	55482
-	12.10		0.4764	14mm	133mm	178mm	56342
-	12.20	9/16-12	0.4803	14mm	133mm	178mm	56542
-	12.30		0.4843	14mm	133mm	178mm	55486
31/64	12.30		0.4844	14mm	5-1/4	7	55660
-	12.40		0.4882	14mm	133mm	178mm	56543
-	12.50	M14x1.5	0.4921	14mm	133mm	178mm	55490
-	12.60		0.4961	14mm	133mm	178mm	56544
1/2	12.70		0.5000	14mm	5-1/4	7	55664

CARBIDE DRILLS - 8XD

Coolant-Fed



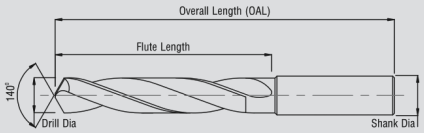


Shank Dia: h6
Cut Dia: h7

BLACK MAMBA - COOLANT-FED DRILLS 140° POINT ANGLE

Fraction Size	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
-	12.80		0.5039	14mm	133mm	178mm	55494
-	12.90	9/16-18	0.5079	14mm	133mm	178mm	56545
-	13.00		0.5118	14mm	133mm	178mm	55498
33/64	13.09		0.5156	14mm	5-1/4	7	55668
-	13.10		0.5157	14mm	133mm	178mm	56546
-	13.20		0.5197	14mm	133mm	178mm	56547
-	13.30		0.5236	14mm	133mm	178mm	56548
-	13.40		0.5276	14mm	133mm	178mm	56549
17/32	13.49	5/8-11	0.5312	14mm	5-1/4	7	55672
-	13.50		0.5315	14mm	133mm	178mm	55502
-	13.60		0.5354	14mm	133mm	178mm	56551
-	13.70		0.5394	14mm	133mm	178mm	56552
-	13.80		0.5433	14mm	133mm	178mm	56553
35/64	13.89		0.5469	14mm	5-1/4	7	56554
-	13.90		0.5472	14mm	133mm	178mm	56555
-	14.00	M16x2.0	0.5512	14mm	133mm	178mm	55506
-	14.10		0.5551	16mm	152mm	203mm	56556
-	14.20		0.5591	16mm	152mm	203mm	56557
9/16	14.28		0.5625	16mm	5-1/4	7	55680
-	14.30		0.5630	16mm	152mm	203mm	56559
-	14.40		0.5669	16mm	152mm	203mm	56560
-	14.50	M16x1.5	0.5709	16mm	152mm	203mm	55510
-	14.60		0.5748	16mm	152mm	203mm	56562
37/64	14.68	5/8-18	0.5781	16mm	6	8	56563
-	14.70		0.5787	16mm	152mm	203mm	56564
-	14.80		0.5827	16mm	152mm	203mm	56565
-	14.90		0.5866	16mm	152mm	203mm	56566
-	15.00		0.5906	16mm	152mm	203mm	55514
19/32	15.08		0.5938	16mm	6	8	55688
-	15.10		0.5945	16mm	152mm	203mm	56567
-	15.20		0.5984	16mm	152mm	203mm	56568
-	15.30		0.6024	16mm	152mm	203mm	56569
-	15.40		0.6063	16mm	152mm	203mm	56570
39/64	15.48		0.6094	16mm	6	8	56571
-	15.50	M18x2.5	0.6102	16mm	152mm	203mm	55518
-	15.60		0.6142	16mm	152mm	203mm	56572
-	15.70		0.6181	16mm	152mm	203mm	56574
-	15.80		0.6220	16mm	152mm	203mm	56575
5/8	15.87		0.6250	16mm	6	8	55696
-	15.90		0.6260	16mm	152mm	203mm	56576
-	16.00		0.6299	16mm	152mm	203mm	55522

All other coatings available on request



NON-COOLANT DRILLS 140° POINT ANGLE

3XD – INCH AND METRIC

140°

30°

Shank Dia: h6
Cut Dia: h7

BENEFITS & FEATURES

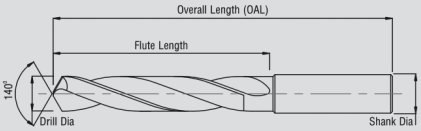
- 140° point angle and high performance geometry allows for high penetration rates
- Provides accurate hole sizing as well as near burnished holes
- The Cobra drill comes standard with AlTiN coating that provides unparalleled performance in difficult to machine applications
- Manufactured from premium submicron grain carbide

NON-COOLANT DRILLS 140° POINT ANGLE

Fraction Size	Letter / Wire	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
-	-	3.00		0.1181	6mm	20mm	62mm	51300
-	31	3.05		0.1200	6mm	7/8	2	51301
-	-	3.10		0.1220	6mm	20mm	62mm	55919
1/8	-	3.17		0.1250	6mm	3/4	2-1/2	51464
-	-	3.20		0.1260	6mm	20mm	62mm	55920
-	30	3.26		0.1285	6mm	3/4	2-1/2	51302
-	-	3.30	M4x0.7	0.1299	6mm	20mm	62mm	51304
-	-	3.40	8-32	0.1334	6mm	20mm	62mm	51305
-	29	3.45	8-36	0.1360	6mm	3/4	2-1/2	51306
-	-	3.50		0.1378	6mm	20mm	62mm	51308
-	28	3.57		0.1405	6mm	3/4	2-1/2	51309
9/64	-	3.57		0.1406	6mm	3/4	2-1/2	51468
-	-	3.60		0.1417	6mm	20mm	62mm	55921
-	27	3.66		0.1440	6mm	3/4	2-1/2	51310
-	-	3.70		0.1457	6mm	20mm	62mm	51312
-	26	3.73		0.1470	6mm	3/4	2-1/2	51311
-	25	3.80	10-24	0.1495	6mm	3/4	2-1/2	51313
-	24	3.86		0.1520	6mm	3/4	2-1/2	51314
-	-	3.90		0.1535	6mm	24mm	66mm	55922
-	23	3.91		0.1540	6mm	15/16	2-5/8	51315
5/32	-	3.97		0.1562	6mm	15/16	2-5/8	51472
-	22	3.99		0.1570	6mm	15/16	2-5/8	51473
-	-	4.00		0.1575	6mm	24mm	66mm	51316
-	21	4.04	10-32	0.1590	6mm	15/16	2-5/8	51317
-	20	4.09		0.1610	6mm	15/16	2-5/8	51318
-	-	4.10		0.1614	6mm	24mm	66mm	55923
-	-	4.20		0.1654	6mm	24mm	66mm	51320
-	19	4.22	M5x0.8	0.1660	6mm	15/16	2-5/8	51321
-	18	4.30		0.1695	6mm	15/16	2-5/8	51322
11/64	-	4.37		0.1719	6mm	15/16	2-5/8	51476
-	17	4.39		0.1730	6mm	15/16	2-5/8	51323
-	-	4.40		0.1732	6mm	24mm	66mm	55925
-	16	4.49	12-24	0.1770	6mm	15/16	2-5/8	51319
-	-	4.50		0.1772	6mm	24mm	66mm	51324
-	15	4.57		0.1800	6mm	15/16	2-5/8	51325
-	-	4.60	12-28	0.1811	6mm	24mm	66mm	55926
-	14	4.62	12-28	0.1820	6mm	15/16	2-5/8	51326

CARBIDE DRILLS - 3XD

Non-Coolant



Shank Dia: h6
Cut Dia: h7

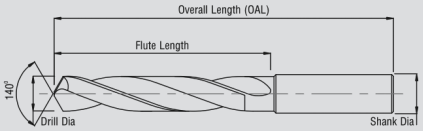
DRILLS

NON-COOLANT DRILLS 140° POINT ANGLE

Fraction Size	Letter / Wire	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
-	-	4.65		0.1830	6mm	24mm	66mm	55927
-	13	4.70		0.1850	6mm	15/16	2-5/8	51327
-	-	4.76		0.1874	6mm	24mm	66mm	55928
3/16	-	4.76		0.1875	6mm	15/16	2-5/8	51480
-	12	4.80		0.1890	6mm	15/16	2-5/8	51481
-	11	4.85		0.1910	6mm	15/16	2-5/8	51482
-	-	4.90		0.1929	6mm	24mm	66mm	55929
-	10	4.91		0.1935	6mm	15/16	2-5/8	51483
-	9	4.98		0.1960	6mm	15/16	2-5/8	51379
-	-	5.00	M6x1.0	0.1969	6mm	24mm	66mm	51328
-	8	5.05		0.1990	6mm	15/16	2-5/8	51329
-	-	5.10		0.2008	6mm	24mm	66mm	51330
-	7	5.10	1/4-20	0.2010	6mm	15/16	2-5/8	51331
13/64	-	5.16		0.2031	6mm	15/16	2-5/8	51484
-	6	5.18		0.2040	6mm	15/16	2-5/8	51485
-	-	5.20		0.2047	6mm	24mm	66mm	51332
-	5	5.22		0.2055	6mm	15/16	2-5/8	51333
-	-	5.30		0.2087	6mm	24mm	66mm	55930
-	4	5.31		0.2090	6mm	15/16	2-5/8	51334
-	-	5.40		0.2126	6mm	24mm	66mm	55931
-	3	5.41	1/4-28	0.2130	6mm	15/16	2-5/8	51335
-	-	5.50		0.2165	6mm	24mm	66mm	51336
7/32	-	5.56		0.2188	6mm	15/16	2-5/8	51488
-	-	5.60		0.2205	6mm	24mm	66mm	55932
-	2	5.61		0.2210	6mm	15/16	2-5/8	51337
-	-	5.70		0.2244	6mm	24mm	66mm	55933
-	1	5.79		0.2280	6mm	15/16	2-5/8	51338
-	-	5.80		0.2283	6mm	24mm	66mm	55934
-	-	5.90		0.2323	6mm	24mm	66mm	55935
-	A	5.94		0.2340	6mm	15/16	2-5/8	51339
15/64	-	5.95		0.2344	6mm	15/16	2-5/8	51303
-	-	6.00	M7x1.0	0.2362	6mm	24mm	66mm	51340
-	B	6.04		0.2380	8mm	1-11/32	3-1/8	51341
-	-	6.10		0.2402	8mm	34mm	79mm	51342
-	C	6.15		0.2420	8mm	1-11/32	3-1/8	55941
-	-	6.20		0.2441	8mm	34mm	79mm	51344
-	D	6.25		0.2460	8mm	1-11/32	3-1/8	51343
-	-	6.30		0.2480	8mm	34mm	79mm	55936
1/4	E	6.35		0.2500	8mm	1-11/32	3-1/8	51492
-	-	6.40		0.2520	8mm	34mm	79mm	55937
-	-	6.50		0.2559	8mm	34mm	79mm	51348
-	F	6.53	5/16-18	0.2570	8mm	1-11/32	3-1/8	51345
-	-	6.60		0.2598	8mm	34mm	79mm	55938
-	G	6.63		0.2610	8mm	1-11/32	3-1/8	51346
-	-	6.70		0.2638	8mm	34mm	79mm	55939

CARBIDE DRILLS - 3XD

Non-Coolant



NON-COOLANT DRILLS 140° POINT ANGLE

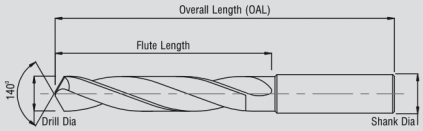
Fraction Size	Letter / Wire	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
17/64	-	6.75		0.2656	8mm	1-11/32	3-1/8	51307
-	H	6.76	M8x1.25	0.2660	8mm	1-11/32	3-1/8	51347
-	-	6.80		0.2677	8mm	34mm	79mm	55940
-	-	6.83		0.2689	8mm	34mm	79mm	51352
-	-	6.90	5/16-24	0.2717	8mm	34mm	79mm	51353
-	I	6.91	5/16-24	0.2720	8mm	1-11/32	3-1/8	51354
-	-	7.00	M8x1.0	0.2756	8mm	34mm	79mm	51356
-	J	7.03		0.2770	8mm	1-39/64	3-1/8	51349
-	-	7.10		0.2795	8mm	41mm	79mm	51350
-	K	7.14		0.2810	8mm	1-39/64	3-1/8	51351
9/32	-	7.14		0.2812	8mm	1-39/64	3-1/8	51496
-	-	7.20		0.2835	8mm	41mm	79mm	51355
-	-	7.30		0.2874	8mm	41mm	79mm	55942
-	L	7.37		0.2900	8mm	1-39/64	3-1/8	51357
-	-	7.40		0.2913	8mm	41mm	79mm	55943
-	M	7.49		0.2950	8mm	1-39/64	3-1/8	51358
-	-	7.50		0.2953	8mm	41mm	79mm	51360
19/64	-	7.54		0.2969	8mm	1-39/64	3-1/8	51361
-	-	7.60		0.2992	8mm	41mm	79mm	51299
-	N	7.67		0.3020	8mm	41mm	79mm	51362
-	-	7.70		0.3031	8mm	41mm	79mm	55944
-	-	7.80		0.3071	8mm	41mm	79mm	55945
-	-	7.90		0.3110	8mm	41mm	79mm	55946
5/16	-	7.94	3/8-16	0.3125	8mm	1-39/64	3-1/8	51500
-	-	8.00		0.3150	8mm	41mm	79mm	51364
-	O	8.03		0.3160	10mm	1-27/32	3-1/2	51365
-	-	8.10		0.3189	10mm	47mm	89mm	55947
-	-	8.20		0.3228	10mm	47mm	89mm	55948
-	P	8.20		0.3230	10mm	1-27/32	3-1/2	51366
-	-	8.30		0.3268	10mm	47mm	89mm	55949
21/64	-	8.33		0.3281	10mm	1-27/32	3-1/2	51367
-	-	8.40		0.3307	10mm	47mm	89mm	55951
-	Q	8.43	3/8-24	0.3320	10mm	1-27/32	3-1/2	51363
-	-	8.50	M10x1.5	0.3346	10mm	47mm	89mm	51368
-	-	8.60		0.3386	10mm	47mm	89mm	55952
-	R	8.61		0.3390	10mm	1-27/32	3-1/2	51369
-	-	8.70		0.3425	10mm	47mm	89mm	51370
11/32	-	8.73		0.3438	10mm	1-27/32	3-1/2	51504
-	-	8.80	M10x1.25	0.3464	10mm	47mm	89mm	51372
-	S	8.84		0.3480	10mm	1-27/32	3-1/2	51374
-	-	8.90		0.3504	10mm	47mm	89mm	55953
-	-	9.00		0.3543	10mm	47mm	89mm	51376
-	T	9.09		0.3580	10mm	1-27/32	3-1/2	51377
-	-	9.10		0.3583	10mm	47mm	89mm	55955
23/64	-	9.13		0.3594	10mm	1-27/32	3-1/2	51378

Shank Dia: h6
Cut Dia: h7

DRILLS

CARBIDE DRILLS - 3XD

Non-Coolant



Shank Dia: h6
Cut Dia: h7

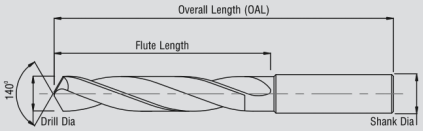
DRILLS

NON-COOLANT DRILLS 140° POINT ANGLE

Fraction Size	Letter / Wire	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
-	-	9.20		0.3622	10mm	47mm	89mm	51380
-	-	9.30		0.3661	10mm	47mm	89mm	55956
-	U	9.35	7/16-14	0.3680	10mm	1-27/32	3-1/2	51381
-	-	9.40		0.3701	10mm	47mm	89mm	55957
-	-	9.50		0.3740	10mm	47mm	89mm	51384
3/8	-	9.52		0.3750	10mm	1-27/32	3-1/2	56640
-	V	9.57		0.3770	10mm	1-27/32	3-1/2	51385
-	-	9.60		0.3780	10mm	47mm	89mm	55959
-	-	9.70		0.3819	10mm	47mm	89mm	55960
-	-	9.80		0.3858	10mm	47mm	89mm	55961
-	W	9.80	7/16-20	0.3860	10mm	1-27/32	3-1/2	51386
-	-	9.90		0.3898	10mm	47mm	89mm	55962
25/64	-	9.92		0.3906	10mm	1-27/32	3-1/2	51387
-	-	10.00		0.3937	10mm	47mm	89mm	51388
-	X	10.08		0.3970	12mm	2-5/32	4	51389
-	-	10.10		0.3976	12mm	55mm	102mm	55964
-	-	10.20		0.4016	12mm	55mm	102mm	51392
-	Y	10.26		0.4040	12mm	2-5/32	4	51390
-	-	10.30		0.4055	12mm	55mm	102mm	55965
13/32	-	10.32		0.4062	12mm	2-5/32	4	51391
-	-	10.40		0.4094	12mm	55mm	102mm	55966
-	Z	10.49		0.4130	12mm	2-5/32	4	51359
-	-	10.50		0.4134	12mm	55mm	102mm	51396
-	-	10.60		0.4173	12mm	55mm	102mm	55967
-	-	10.70		0.4213	12mm	55mm	102mm	55968
27/64	-	10.72	1/2-13	0.4219	12mm	2-5/32	4	51397
-	-	10.80	M12x1.25	0.4252	12mm	55mm	102mm	56642
-	-	10.90		0.4291	12mm	55mm	102mm	55969
-	-	11.00		0.4331	12mm	55mm	102mm	56641
-	-	11.10		0.4370	12mm	55mm	102mm	55970
7/16	-	11.11		0.4375	12mm	2-5/32	4	51512
-	-	11.20		0.4409	12mm	55mm	102mm	55971
-	-	11.30		0.4449	12mm	55mm	102mm	55972
-	-	11.40		0.4488	12mm	55mm	102mm	55973
-	-	11.50	1/2-20	0.4528	12mm	55mm	102mm	56643
29/64	-	11.51		0.4531	12mm	2-5/32	4	56644
-	-	11.60		0.4567	12mm	55mm	102mm	55974
-	-	11.70		0.4606	12mm	55mm	102mm	55975
-	-	11.80		0.4646	12mm	55mm	102mm	55976
-	-	11.90		0.4685	12mm	55mm	102mm	55977
15/32	-	11.91		0.4688	12mm	2-5/32	4	56645
-	-	12.00	M14x2.0	0.4724	12mm	55mm	102mm	56646
-	-	12.10		0.4764	14mm	60mm	107mm	55980
-	-	12.20	9/16-12	0.4803	14mm	60mm	107mm	56647
31/64	-	12.30		0.4844	14mm	2-3/8	4-1/4	56648

CARBIDE DRILLS – 3XD

Non-Coolant



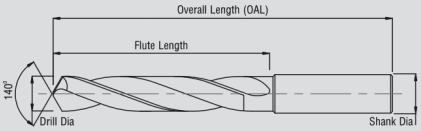
NON-COOLANT DRILLS 140° POINT ANGLE

Fraction Size	Letter / Wire	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
-	-	12.40		0.4882	14mm	60mm	107mm	55982
-	-	12.50	M14x1.5	0.4922	14mm	60mm	107mm	56649
-	-	12.60		0.4961	14mm	60mm	107mm	55983
1/2	-	12.70		0.5000	14mm	2-3/8	4-1/4	51516
-	-	12.80		0.5039	14mm	60mm	107mm	55985
-	-	12.90		0.5079	14mm	60mm	107mm	55986
-	-	13.00		0.5118	14mm	60mm	107mm	56650
33/64	-	13.10		0.5157	14mm	2-3/8	4-1/4	55987
-	-	13.20		0.5197	14mm	60mm	107mm	55988
-	-	13.30		0.5236	14mm	60mm	107mm	55989
-	-	13.40		0.5276	14mm	60mm	107mm	55990
17/32	-	13.49	5/8-11	0.5312	14mm	2-3/8	4-1/4	56651
-	-	13.50		0.5315	14mm	60mm	107mm	56652
-	-	13.60		0.5354	14mm	60mm	107mm	55991
-	-	13.70		0.5394	14mm	60mm	107mm	55992
-	-	13.80		0.5433	14mm	60mm	107mm	55993
35/64	-	13.89		0.5469	14mm	2-3/8	4-1/4	55994
-	-	13.90		0.5472	14mm	60mm	107mm	55995
-	-	14.00	M16x2.0	0.5512	14mm	60mm	107mm	56653
-	-	14.10		0.5551	16mm	65mm	115mm	55996
-	-	14.20		0.5591	16mm	65mm	115mm	55997
9/16	-	14.28		0.5625	16mm	2-9/16	4-1/2	56654
-	-	14.30		0.5630	16mm	65mm	115mm	55998
-	-	14.40		0.5669	16mm	65mm	115mm	55999
-	-	14.50	M16x1.5	0.5708	16mm	65mm	115mm	56655
-	-	14.60		0.5748	16mm	65mm	115mm	56000
37/64	-	14.68	5/8-18	0.5780	16mm	2-9/16	4-1/2	56001
-	-	14.70		0.5787	16mm	65mm	115mm	56002
-	-	14.80		0.5827	16mm	65mm	115mm	55950
-	-	14.90		0.5866	16mm	65mm	115mm	56003
-	-	15.00		0.5906	16mm	65mm	115mm	51436
19/32	-	15.08		0.5938	16mm	2-9/16	4-1/2	56657
-	-	15.10		0.5945	16mm	65mm	115mm	56004
-	-	15.20		0.5984	16mm	65mm	115mm	56005
-	-	15.30		0.6024	16mm	65mm	115mm	56006
-	-	15.40		0.6063	16mm	65mm	115mm	56007
39/64	-	15.48		0.6094	16mm	2-9/16	4-1/2	56008
-	-	15.50	M18x2.5	0.6102	16mm	65mm	115mm	51440
-	-	15.60		0.6142	16mm	65mm	115mm	56009
-	-	15.70		0.6181	16mm	65mm	115mm	56010
-	-	15.80		0.6220	16mm	65mm	115mm	56011
-	-	15.87		0.6248	16mm	65mm	115mm	56012
5/8	-	15.88		0.6250	16mm	2-9/16	4-1/2	51524
-	-	15.90		0.6260	16mm	65mm	115mm	56013
-	-	16.00		0.6299	16mm	65mm	115mm	56014

Shank Dia: h6
Cut Dia: h7

CARBIDE DRILLS - 3XD

Non-Coolant



Shank Dia: h6
Cut Dia: h7

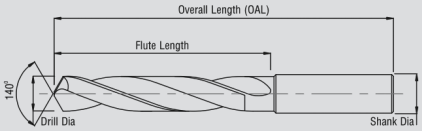
DRILLS

NON-COOLANT DRILLS 140° POINT ANGLE

Fraction Size	Letter / Wire	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
-	-	16.10		0.6339	18mm	73mm	123mm	56015
-	-	16.20		0.6378	18mm	73mm	123mm	56016
41/64	-	16.27		0.6406	18mm	2-7/8	4-27/32	56017
-	-	16.30		0.6417	18mm	73mm	123mm	56018
-	-	16.40		0.6457	18mm	73mm	123mm	56019
-	-	16.50	M18x1.5	0.6496	18mm	73mm	123mm	56020
-	-	16.60		0.6535	18mm	73mm	123mm	56021
21/32	-	16.67	3/4-10	0.6562	18mm	2-7/8	4-27/32	56658
-	-	16.70		0.6575	18mm	73mm	123mm	56022
-	-	16.80		0.6614	18mm	73mm	123mm	56023
-	-	16.90		0.6654	18mm	73mm	123mm	56024
-	-	17.00		0.6693	18mm	73mm	123mm	51448
43/64	-	17.07		0.6720	18mm	2-7/8	4-27/32	56026
-	-	17.10		0.6732	18mm	73mm	123mm	56027
-	-	17.20		0.6772	18mm	73mm	123mm	56028
-	-	17.30		0.6811	18mm	73mm	123mm	56029
-	-	17.40		0.6850	18mm	73mm	123mm	56030
11/16	-	17.46	3/4-16	0.6875	18mm	2-7/8	4-27/32	56031
-	-	17.50	M20x2.5	0.6890	18mm	73mm	123mm	56032
-	-	17.60		0.6929	18mm	73mm	123mm	56033
-	-	17.70		0.6969	18mm	73mm	123mm	56034
-	-	17.80		0.7008	18mm	73mm	123mm	56035
45/64	-	17.86		0.7031	18mm	2-7/8	4-27/32	56036
-	-	17.90		0.7047	18mm	73mm	123mm	56037
-	-	18.00		0.7087	18mm	73mm	123mm	51452
-	-	18.10		0.7126	20mm	79mm	131mm	56039
-	-	18.20		0.7165	20mm	79mm	131mm	56040
23/32	-	18.25		0.7187	20mm	3-1/8	5-5/32	56038
-	-	18.30		0.7205	20mm	79mm	131mm	56041
-	-	18.40		0.7244	20mm	79mm	131mm	56042
-	-	18.50	M20x1.5	0.7283	20mm	79mm	131mm	56043
-	-	18.60		0.7323	20mm	79mm	131mm	56044
47/64	-	18.65		0.7344	20mm	3-1/8	5-5/32	56045
-	-	18.70		0.7362	20mm	79mm	131mm	56046
-	-	18.80		0.7402	20mm	79mm	131mm	56047
-	-	18.90		0.7441	20mm	79mm	131mm	56048
-	-	19.00		0.7480	20mm	79mm	131mm	51456
3/4	-	19.05		0.7500	20mm	3-1/8	5-5/32	51528
-	-	19.10		0.7520	20mm	79mm	131mm	56051
-	-	19.20		0.7559	20mm	79mm	131mm	56052
-	-	19.30		0.7598	20mm	79mm	131mm	56053
49/64	-	19.45	7/8-9	0.7657	20mm	3-1/8	5-5/32	56054
-	-	19.50		0.7677	20mm	79mm	131mm	56055
-	-	19.60		0.7717	20mm	79mm	131mm	56056
-	-	19.70		0.7756	20mm	79mm	131mm	56057

CARBIDE DRILLS - 3XD

Non-Coolant

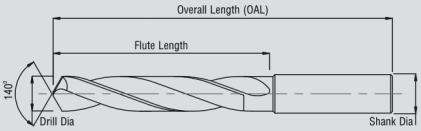


NON-COOLANT DRILLS 140° POINT ANGLE

Fraction Size	Letter / Wire	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
-	-	19.80		0.7795	20mm	79mm	131mm	56058
-	-	19.90		0.7835	20mm	79mm	131mm	56059
-	-	20.00		0.7874	20mm	79mm	131mm	51460

Shank Dia: h6
Cut Dia: h7

DRILLS



140°

30°

Shank Dia: h6
Cut Dia: h7

NON-COOLANT DRILLS 140° POINT ANGLE

5XD - INCH AND METRIC

BENEFITS & FEATURES

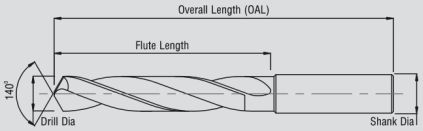
- 140° point angle and high performance geometry allows for high penetration rates
- Provides accurate hole sizing as well as near burnished holes
- The drill comes standard with AlTiN coating that provides unparalleled performance in difficult to machine applications
- Manufactured from premium submicron grain carbide

NON-COOLANT DRILLS 140° POINT ANGLE

Fraction Size	Letter/ Wire	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
-	-	3.00		0.1181	6mm	28mm	66mm	56659
-	31	3.05		0.1200	6mm	1-1/8	2-5/8	51534
-	-	3.10		0.1220	6mm	28mm	66mm	51536
1/8	-	3.17		0.1250	6mm	1-1/8	2-5/8	56660
-	-	3.20		0.1260	6mm	28mm	66mm	55800
-	30	3.26		0.1285	6mm	1-1/8	2-5/8	51530
-	-	3.30	M4x0.7	0.1299	6mm	28mm	66mm	51540
-	-	3.40		0.1334	6mm	28mm	66mm	53035
-	-	3.40	8-32	0.1339	6mm	28mm	66mm	55805
-	29	3.45	8-36	0.1360	6mm	1-1/8	2-5/8	51542
-	-	3.50		0.1378	6mm	28mm	66mm	56661
9/64	-	3.57		0.1406	6mm	1-1/8	2-5/8	55856
-	-	3.60		0.1417	6mm	28mm	66mm	55801
-	27	3.66		0.1440	6mm	1-1/8	2-5/8	51551
-	-	3.70		0.1457	6mm	28mm	66mm	51548
-	26	3.73		0.1470	6mm	1-1/8	2-5/8	51549
-	25	3.80	10-24	0.1495	6mm	1-1/8	2-5/8	53037
-	-	3.80	10-24	0.1496	6mm	28mm	66mm	55802
-	24	3.86		0.1520	6mm	1-27/64	3	51552
-	-	3.90		0.1535	6mm	36mm	74mm	55803
-	23	3.91		0.1540	6mm	1-27/64	3	53039
5/32	-	3.97		0.1562	6mm	1-27/64	3	51554
-	22	3.99		0.1570	6mm	1-27/64	3	51555
-	-	4.00		0.1575	6mm	36mm	74mm	56662
-	21	4.04	10-32	0.1590	6mm	1-27/64	3	51557
-	20	4.09		0.1610	6mm	1-27/64	3	51558
-	-	4.10		0.1614	6mm	36mm	74mm	55804
-	-	4.20		0.1654	6mm	36mm	74mm	51560
-	19	4.22	M5x0.8	0.1660	6mm	1-27/64	3	51561
-	-	4.30		0.1693	6mm	36mm	74mm	53041
-	18	4.30		0.1695	6mm	1-27/64	3	51563
11/64	-	4.37		0.1719	6mm	1-27/64	3	54042
-	17	4.39		0.1730	6mm	1-27/64	3	54043
-	-	4.40		0.1732	6mm	36mm	74mm	55806
-	-	4.50		0.1772	6mm	36mm	74mm	51564
-	15	4.57		0.1800	6mm	1-27/64	3	54044
-	-	4.60	12-28	0.1811	6mm	36mm	74mm	55807

CARBIDE DRILLS - 5XD

Non-Coolant



NON-COOLANT DRILLS 140° POINT ANGLE

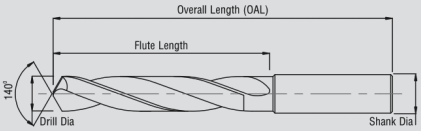
Fraction Size	Letter/ Wire	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
-	14	4.62	12-28	0.1820	6mm	1-27/64	3	51566
-	-	4.65		0.1830	6mm	36mm	74mm	55808
-	13	4.70		0.1850	6mm	1-27/64	3	51567
3/16	-	4.76		0.1875	6mm	1-3/4	3-1/4	54041
-	12	4.80		0.1890	6mm	1-3/4	3-1/4	54045
-	-	4.80		0.1891	6mm	44mm	82mm	56663
-	11	4.85		0.1910	6mm	1-3/4	3-1/4	51569
-	-	4.90		0.1929	6mm	44mm	82mm	55809
-	10	4.91		0.1935	6mm	1-3/4	3-1/4	51570
-	9	4.98		0.1960	6mm	1-3/4	3-1/4	54047
-	-	5.00	M6x1.0	0.1969	6mm	44mm	82mm	51572
-	8	5.05		0.1990	6mm	1-3/4	3-1/4	51573
-	-	5.10		0.2008	6mm	44mm	82mm	51576
-	7	5.10	1/4-20	0.2010	6mm	1-3/4	3-1/4	54048
13/64	-	5.16		0.2031	6mm	1-3/4	3-1/4	51578
-	6	5.18		0.2040	6mm	1-3/4	3-1/4	51579
-	-	5.20		0.2047	6mm	44mm	82mm	56664
-	5	5.22		0.2055	6mm	1-3/4	3-1/4	51581
-	-	5.30		0.2087	6mm	44mm	82mm	55810
-	4	5.31		0.2090	6mm	1-3/4	3-1/4	51582
-	-	5.40		0.2126	6mm	44mm	82mm	55811
-	3	5.41	1/4-28	0.2130	6mm	1-3/4	3-1/4	54050
-	-	5.50		0.2165	6mm	44mm	82mm	51584
7/32	-	5.56		0.2189	6mm	1-3/4	3-1/4	55812
-	-	5.60		0.2205	6mm	44mm	82mm	55813
-	2	5.61		0.2210	6mm	1-3/4	3-1/4	55870
-	-	5.70		0.2244	6mm	44mm	82mm	55814
-	1	5.79		0.2280	6mm	1-3/4	3-1/4	55881
-	-	5.80		0.2283	6mm	44mm	82mm	51588
-	-	5.90		0.2323	6mm	44mm	82mm	55815
15/64	-	5.95		0.2344	6mm	1-3/4	3-1/4	51590
-	-	6.00	M7x1.0	0.2362	6mm	44mm	82mm	56665
-	B	6.04		0.2380	8mm	2-1/8	3-37/64	51593
-	-	6.10		0.2402	8mm	53mm	91mm	55816
-	C	6.15		0.2420	8mm	2-1/8	3-37/64	51594
-	-	6.20		0.2441	8mm	53mm	91mm	55817
-	D	6.25		0.2460	8mm	2-1/8	3-37/64	54052
-	-	6.30		0.2480	8mm	53mm	91mm	51596
1/4	E	6.35		0.2500	8mm	2-1/8	3-37/64	56666
-	-	6.40		0.2520	8mm	53mm	91mm	55818
-	-	6.50		0.2559	8mm	53mm	91mm	51600
-	F	6.53	5/16-18	0.2570	8mm	2-1/8	3-37/64	54054
-	-	6.60		0.2598	8mm	53mm	91mm	55819
-	G	6.63		0.2610	8mm	2-1/8	3-37/64	51602
-	-	6.70		0.2638	8mm	53mm	91mm	55820
17/64	-	6.75		0.2656	8mm	2-1/8	3-37/64	56667

Shank Dia: h6
Cut Dia: h7

DRILLS

CARBIDE DRILLS - 5XD

Non-Coolant



Shank Dia: h6
Cut Dia: h7

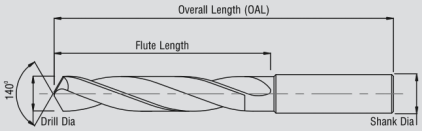
DRILLS

NON-COOLANT DRILLS 140° POINT ANGLE

Fraction Size	Letter/ Wire	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
-	H	6.76	M8x1.25	0.2660	8mm	2-1/8	3-37/64	51603
-	-	6.80		0.2678	8mm	53mm	91mm	56668
-	-	6.90	5/16-24	0.2717	8mm	53mm	91mm	51605
-	I	6.91	5/16-24	0.2720	8mm	2-1/8	3-37/64	51606
-	-	7.00	M8x1.0	0.2756	8mm	53mm	91mm	51608
-	J	7.03		0.2770	8mm	2-1/8	3-37/64	51609
-	-	7.10		0.2795	8mm	53mm	91mm	54061
-	K	7.14		0.2810	8mm	2-1/8	3-37/64	51611
9/32	-	7.14		0.2812	8mm	2-1/8	3-37/64	56669
-	-	7.20		0.2835	8mm	53mm	91mm	55821
-	-	7.30		0.2874	8mm	53mm	91mm	55822
-	L	7.37		0.2900	8mm	2-1/8	3-37/64	54063
-	-	7.40		0.2913	8mm	53mm	91mm	55823
-	M	7.49		0.2950	8mm	2-1/8	3-37/64	51614
-	-	7.50		0.2953	8mm	53mm	91mm	51612
19/64	-	7.54		0.2969	8mm	2-1/8	3-37/64	56639
-	-	7.60		0.2992	8mm	53mm	91mm	55824
-	N	7.67		0.3020	8mm	2-1/8	3-37/64	51615
-	-	7.70		0.3031	8mm	53mm	91mm	55825
-	-	7.80		0.3071	8mm	53mm	91mm	56670
-	-	7.90		0.3110	8mm	53mm	91mm	55826
5/16	-	7.94	3/8-16	0.3125	8mm	2-1/8	3-37/64	56671
-	-	8.00		0.3150	8mm	53mm	91mm	51620
-	O	8.03		0.3160	10mm	2-13/32	4-1/16	51617
-	-	8.10		0.3189	10mm	61mm	103mm	55827
-	P	8.20		0.3230	10mm	2-13/32	4-1/16	51618
-	-	8.30		0.3268	10mm	61mm	103mm	55828
21/64	-	8.33		0.3281	10mm	2-13/32	4-1/16	56672
-	-	8.40		0.3307	10mm	61mm	103mm	55829
-	Q	8.43	3/8-24	0.3320	10mm	2-13/32	4-1/16	54068
-	-	8.50	M10x1.5	0.3346	10mm	61mm	103mm	51624
-	-	8.60		0.3386	10mm	61mm	103mm	55830
-	R	8.61		0.3390	10mm	2-13/32	4-1/16	51626
-	-	8.61		0.3390	10mm	61mm	103mm	51627
-	-	8.70		0.3425	10mm	61mm	103mm	55831
11/32	-	8.73		0.3438	10mm	2-13/32	4-1/16	56673
-	-	8.80	M10x1.25	0.3465	10mm	61mm	103mm	51628
-	S	8.84		0.3480	10mm	2-13/32	4-1/16	51629
-	-	8.90		0.3504	10mm	61mm	103mm	55832
-	-	9.00		0.3543	10mm	61mm	103mm	51632
-	-	9.10		0.3583	10mm	61mm	103mm	51631
23/64	-	9.13		0.3594	10mm	2-13/32	4-1/16	56674
-	-	9.20		0.3622	10mm	61mm	103mm	51636
-	-	9.30		0.3661	10mm	61mm	103mm	55834
-	U	9.35	7/16-14	0.3680	10mm	2-13/32	4-1/16	51638
-	-	9.40		0.3701	10mm	61mm	103mm	55835

CARBIDE DRILLS - 5XD

Non-Coolant



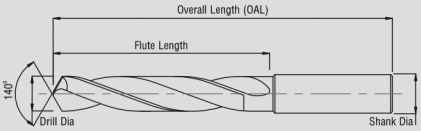
NON-COOLANT DRILLS 140° POINT ANGLE

Shank Dia: h6
Cut Dia: h7

Fraction Size	Letter/ Wire	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
-	-	9.50		0.3740	10mm	61mm	103mm	51640
3/8	-	9.52		0.3750	10mm	2-13/32	4-1/16	56675
-	V	9.57		0.3770	10mm	2-13/32	4-1/16	51641
-	-	9.60		0.3780	10mm	61mm	103mm	55836
-	-	9.70		0.3819	10mm	61mm	103mm	55837
-	W	9.80	7/16-20	0.3860	10mm	2-13/32	4-1/16	51642
-	-	9.80		0.3860	10mm	61mm	103mm	51644
-	-	9.90		0.3898	10mm	61mm	103mm	55838
25/64	-	9.92		0.3906	10mm	2-13/32	4-1/16	56676
-	-	10.00		0.3937	10mm	61mm	103mm	51648
-	X	10.08		0.3970	12mm	2-13/32	4-1/16	51650
-	-	10.10		0.3976	12mm	71mm	118mm	55839
-	-	10.20		0.4016	12mm	71mm	118mm	51652
-	Y	10.26		0.4040	12mm	2-7/16	4-11/16	51654
-	-	10.30	M12x1.75	0.4055	12mm	71mm	118mm	55840
13/32	-	10.32		0.4062	12mm	2-7/16	4-11/16	56677
-	-	10.40		0.4094	12mm	71mm	118mm	55841
-	Z	10.49		0.4130	12mm	2-7/16	4-11/16	51655
-	-	10.50		0.4134	12mm	71mm	118mm	51656
-	-	10.60		0.4173	12mm	71mm	118mm	55842
-	-	10.70		0.4213	12mm	71mm	118mm	55843
27/64	-	10.72	1/2-13	0.4219	12mm	2-7/16	4-11/16	56678
-	-	10.80	M12x1.25	0.4252	12mm	71mm	118mm	51660
-	-	10.90		0.4291	12mm	71mm	118mm	55844
-	-	11.00		0.4331	12mm	71mm	118mm	51664
-	-	11.10		0.4370	12mm	71mm	118mm	55845
7/16	-	11.11		0.4375	12mm	2-7/16	4-11/16	56679
-	-	11.20		0.4409	12mm	71mm	118mm	55846
-	-	11.30		0.4449	12mm	71mm	118mm	55847
-	-	11.40		0.4488	12mm	71mm	118mm	55848
-	-	11.50	1/2-20	0.4528	12mm	71mm	118mm	51668
29/64	-	11.51		0.4531	12mm	2-7/16	4-11/16	56680
-	-	11.60		0.4567	12mm	71mm	118mm	55849
-	-	11.70		0.4606	12mm	71mm	118mm	55850
-	-	11.80		0.4646	12mm	71mm	118mm	56681
-	-	11.90		0.4685	12mm	71mm	118mm	55851
15/32	-	11.91		0.4688	12mm	2-7/16	4-11/16	56682
-	-	12.00	M14x2.0	0.4724	12mm	71mm	118mm	56683
-	-	12.10		0.4764	14mm	77mm	124mm	55852
-	-	12.20	9/16-12	0.4803	14mm	77mm	124mm	54080
-	-	12.30		0.4843	14mm	77mm	124mm	56684
31/64	-	12.30		0.4844	14mm	3	4-7/8	56685
-	-	12.40		0.4882	14mm	77mm	124mm	55853
-	-	12.50	M14x1.5	0.4921	14mm	77mm	124mm	56686
-	-	12.60		0.4961	14mm	77mm	124mm	55854
1/2	-	12.70		0.5000	14mm	3	4-7/8	56687

CARBIDE DRILLS - 5XD

Non-Coolant



Shank Dia: h6
Cut Dia: h7

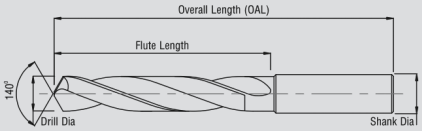
DRILLS

NON-COOLANT DRILLS 140° POINT ANGLE

Fraction Size	Letter/ Wire	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
-	-	12.80		0.5039	14mm	77mm	124mm	56688
-	-	12.90	9/16-18	0.5079	14mm	77mm	124mm	55855
-	-	13.00		0.5118	14mm	77mm	124mm	56689
33/64	-	13.10		0.5156	14mm	3	4-7/8	56690
-	-	13.20		0.5197	14mm	77mm	124mm	55857
-	-	13.30		0.5236	14mm	77mm	124mm	55858
-	-	13.40		0.5276	14mm	77mm	124mm	55859
17/32	-	13.49	5/8-11	0.5312	14mm	3	4-7/8	56691
-	-	13.50		0.5315	14mm	77mm	124mm	56692
-	-	13.60		0.5354	14mm	77mm	124mm	55860
-	-	13.70		0.5394	14mm	77mm	124mm	55861
-	-	13.80		0.5433	14mm	77mm	124mm	55862
35/64	-	13.89		0.5469	14mm	3	4-7/8	51816
-	-	13.90		0.5472	14mm	77mm	124mm	55864
-	-	14.00	M16x2	0.5512	14mm	77mm	124mm	56693
-	-	14.10		0.5551	16mm	83mm	133mm	55865
-	-	14.20		0.5591	16mm	83mm	133mm	55866
9/16	-	14.29		0.5625	16mm	3-17/64	5-1/4	51820
-	-	14.30		0.5630	16mm	83mm	133mm	55867
-	-	14.40		0.5669	16mm	83mm	133mm	55868
-	-	14.50	M16x1.50	0.5709	16mm	83mm	133mm	56694
-	-	14.60		0.5748	16mm	83mm	133mm	55869
37/64	-	14.68		0.5781	16mm	3-17/64	5-1/4	51824
-	-	14.70		0.5787	16mm	83mm	133mm	55871
-	-	14.80		0.5827	16mm	83mm	133mm	55872
-	-	14.90		0.5866	16mm	83mm	133mm	55873
-	-	15.00		0.5906	16mm	83mm	133mm	56695
19/32	-	15.08		0.5938	16mm	3-1/4	5-1/4	51828
-	-	15.10		0.5945	16mm	83mm	133mm	55874
-	-	15.20		0.5984	16mm	83mm	133mm	55875
-	-	15.30		0.6024	16mm	83mm	133mm	55876
-	-	15.40		0.6063	16mm	83mm	133mm	55877
39/64	-	15.48		0.6094	16mm	3-1/4	5-1/4	51832
-	-	15.50	M18x2.5	0.6102	16mm	83mm	133mm	56696
-	-	15.60		0.6142	16mm	83mm	133mm	55878
-	-	15.70		0.6181	16mm	83mm	133mm	55879
-	-	15.80		0.6220	16mm	83mm	133mm	55880
5/8	-	15.86		0.6250	16mm	3-1/4	5-1/4	51836
-	-	15.90		0.6260	16mm	83mm	133mm	55882
-	-	16.00		0.6299	16mm	83mm	133mm	56697
-	-	16.10		0.6339	18mm	92mm	143mm	55883
-	-	16.20		0.6378	18mm	92mm	143mm	55884
41/64	-	16.23		0.6406	18mm	3-5/8	5-5/8	51840
-	-	16.30		0.6417	18mm	92mm	143mm	55885
-	-	16.40		0.6457	18mm	92mm	143mm	55886
-	-	16.50	M18x1.5	0.6496	18mm	92mm	143mm	56698

CARBIDE DRILLS - 5XD

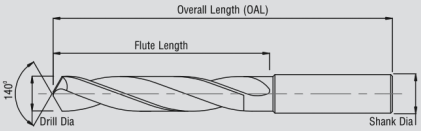
Non-Coolant



NON-COOLANT DRILLS 140° POINT ANGLE

Fraction Size	Letter/ Wire	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
-	-	16.60		0.6535	18mm	92mm	143mm	55887
21/32	-	16.67	3/4-10	0.6563	18mm	3-21/32	5-5/8	51844
-	-	16.70		0.6575	18mm	92mm	143mm	55888
-	-	16.80		0.6614	18mm	92mm	143mm	55889
-	-	16.90		0.6654	18mm	92mm	143mm	55890
-	-	17.00		0.6692	18mm	92mm	143mm	56699
43/64	-	17.06		0.6719	18mm	3-21/32	5-5/8	51848
-	-	17.10		0.6732	18mm	92mm	143mm	55891
-	-	17.20		0.6772	18mm	92mm	143mm	55892
-	-	17.30		0.6811	18mm	92mm	143mm	55893
-	-	17.40		0.6850	18mm	92mm	143mm	55894
11/16	-	17.45	3/4x16	0.6875	18mm	3-21/32	5-5/8	51852
-	-	17.50	M20x2.5	0.6890	18mm	92mm	143mm	56700
-	-	17.60		0.6929	18mm	92mm	143mm	55895
-	-	17.70		0.6969	18mm	92mm	143mm	55896
-	-	17.80		0.7008	18mm	92mm	143mm	55897
45/64	-	17.84		0.7031	18mm	3-31/32	6	51856
-	-	17.90		0.7047	18mm	92mm	143mm	55899
-	-	18.00		0.7086	18mm	92mm	143mm	56701
-	-	18.10		0.7126	20mm	101mm	153mm	55900
-	-	18.20		0.7165	20mm	101mm	153mm	55901
23/32	-	18.24		0.7188	20mm	3-31/32	6	51860
-	-	18.30		0.7205	20mm	101mm	153mm	55902
-	-	18.40		0.7244	20mm	101mm	153mm	55903
-	-	18.50	M20x1.5	0.7283	20mm	101mm	153mm	55904
-	-	18.60		0.7323	20mm	101mm	153mm	55905
47/64	-	18.64		0.7344	20mm	3-31/32	6	51864
-	-	18.70		0.7362	20mm	101mm	153mm	55906
-	-	18.80		0.7402	20mm	101mm	153mm	55907
-	-	18.90		0.7441	20mm	101mm	153mm	55908
-	-	19.00		0.7480	20mm	101mm	153mm	55909
3/4	-	19.05		0.7500	20mm	3-31/32	6	51868
-	-	19.10		0.7520	20mm	101mm	153mm	55910
-	-	19.20		0.7559	20mm	101mm	153mm	55911
-	-	19.30		0.7598	20mm	101mm	153mm	55912
49/64	-	19.44	7/8-9	0.7656	20mm	3-31/32	6	55913
-	-	19.50		0.7677	20mm	101mm	153mm	55914
-	-	19.60		0.7717	20mm	101mm	153mm	55915
-	-	19.70		0.7756	20mm	101mm	153mm	55916
-	-	19.80		0.7795	20mm	101mm	153mm	55917
-	-	19.90		0.7835	20mm	101mm	153mm	55918
-	-	20.00		0.7874	20mm	101mm	153mm	56798

Shank Dia: h6
Cut Dia: h7



Shank Dia: h6
Cut Dia: h7

NON-COOLANT DRILLS 140° POINT ANGLE

8XD - INCH AND METRIC

BENEFITS & FEATURES

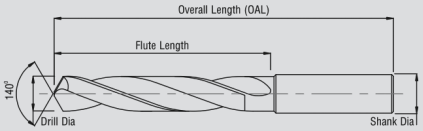
- 140° point angle and high performance geometry allows for high penetration rates
- Provides accurate hole sizing as well as near burnished holes
- The drill comes standard with AlTiN coating that provides unparalleled performance in difficult to machine applications
- Manufactured from premium submicron grain carbide

NON-COOLANT DRILLS 140° POINT ANGLE

Fraction Size	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
-	3.00		0.1181	6mm	34mm	72mm	51870
-	3.10		0.1220	6mm	34mm	72mm	56334
1/8	3.17		0.1250	6mm	1-1/2	2-1/2	52075
-	3.20		0.1260	6mm	34mm	72mm	56335
-	3.30	M4x0.7	0.1299	6mm	34mm	72mm	56336
-	3.40	8-32	0.1339	6mm	34mm	72mm	56337
-	3.50		0.1378	6mm	34mm	72mm	51872
9/64	3.57		0.1406	6mm	1-1/2	2-1/2	52001
-	3.60		0.1417	6mm	34mm	72mm	56338
-	3.70		0.1457	6mm	34mm	72mm	51876
-	3.80	10-24	0.1496	6mm	43mm	81mm	51880
-	3.90		0.1535	6mm	43mm	81mm	56339
5/32	3.97		0.1562	6mm	1-1/2	3-1/4	52047
-	4.00		0.1575	6mm	43mm	81mm	51884
-	4.10		0.1614	6mm	43mm	81mm	56340
-	4.20		0.1654	6mm	43mm	81mm	51888
11/64	4.37		0.1719	6mm	1-1/2	3-1/4	52049
-	4.40		0.1732	6mm	43mm	81mm	56343
-	4.50		0.1771	6mm	43mm	81mm	51892
-	4.60	12-28	0.1811	6mm	57mm	95mm	56344
-	4.65		0.1830	6mm	57mm	95mm	56345
-	4.70		0.1850	6mm	57mm	95mm	56346
3/16	4.76		0.1875	6mm	2-1/4	4	56702
-	4.80		0.1880	6mm	57mm	95mm	51896
-	4.90		0.1929	6mm	57mm	95mm	56349
-	5.00	M6x1.0	0.1969	6mm	57mm	95mm	51900
-	5.10		0.2008	6mm	57mm	95mm	51904
13/64	5.16		0.2031	6mm	2-1/4	4	52051
-	5.20		0.2047	6mm	57mm	95mm	51908
-	5.30		0.2087	6mm	57mm	95mm	56350
-	5.40		0.2126	6mm	57mm	95mm	56351
-	5.41	1/4-28	0.2130	6mm	57mm	95mm	56379
-	5.50		0.2165	6mm	57mm	95mm	51912
7/32	5.56		0.2188	6mm	2-1/4	4	51871
-	5.60		0.2205	6mm	57mm	95mm	56352
-	5.70		0.2244	6mm	57mm	95mm	56353
-	5.80		0.2283	6mm	57mm	95mm	51916

CARBIDE DRILLS - 8XD

Non-Coolant



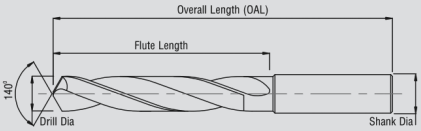
NON-COOLANT DRILLS 140° POINT ANGLE

Fraction Size	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
-	5.90		0.2323	6mm	57mm	95mm	56354
15/64	5.95		0.2344	6mm	2-1/4	4	51873
-	6.00	M7x1.0	0.2362	6mm	57mm	95mm	51920
-	6.10		0.2402	8mm	76mm	114mm	56355
-	6.20		0.2441	8mm	76mm	114mm	56356
-	6.30		0.2480	8mm	76mm	114mm	51924
1/4	6.35		0.2500	8mm	3	4-1/2	56703
-	6.40		0.2520	8mm	76mm	114mm	56357
-	6.50		0.2559	8mm	76mm	114mm	51928
-	6.60		0.2598	8mm	76mm	114mm	56358
-	6.70		0.2638	8mm	76mm	114mm	56359
17/64	6.75		0.2656	8mm	3	4-1/2	56704
-	6.80		0.2667	8mm	76mm	114mm	51932
-	6.90	5/16-24	0.2716	8mm	76mm	114mm	56360
-	7.00	M8x1.0	0.2756	8mm	76mm	114mm	51936
-	7.10		0.2795	8mm	76mm	114mm	56361
9/32	7.14		0.2812	8mm	3	4-1/2	56705
-	7.20		0.2835	8mm	76mm	114mm	56363
-	7.30		0.2874	8mm	76mm	114mm	56364
-	7.40		0.2913	8mm	76mm	114mm	56365
-	7.50		0.2953	8mm	76mm	114mm	51940
19/64	7.54		0.2969	8mm	3	4-1/2	56706
-	7.60		0.2992	8mm	76mm	114mm	56366
-	7.70		0.3031	8mm	76mm	114mm	56367
-	7.80		0.3071	8mm	76mm	114mm	51944
-	7.90		0.3110	8mm	76mm	114mm	56368
5/16	7.94	3/8-16	0.3125	8mm	3	4-1/2	56707
-	8.00		0.3150	8mm	76mm	114mm	51948
-	8.10		0.3189	10mm	95mm	142mm	56370
-	8.20		0.3228	10mm	95mm	142mm	56371
-	8.30		0.3268	10mm	95mm	142mm	56372
21/64	8.33		0.3281	10mm	3-3/4	5-3/4	56708
-	8.40		0.3307	10mm	95mm	142mm	56373
-	8.50	M10x1.5	0.3346	10mm	95mm	142mm	51952
-	8.60		0.3386	10mm	95mm	142mm	56374
-	8.70		0.3425	10mm	95mm	142mm	56375
11/32	8.73		0.3438	10mm	3-3/4	5-3/4	56709
-	8.80	M10x1.25	0.3465	10mm	95mm	142mm	51956
-	8.90		0.3504	10mm	95mm	142mm	56376
-	9.00		0.3543	10mm	95mm	142mm	51960
-	9.10		0.3583	10mm	95mm	142mm	56377
23/64	9.13		0.3594	10mm	3-3/4	5-3/4	56710
-	9.20		0.3622	10mm	95mm	142mm	51964
-	9.30		0.3661	10mm	95mm	142mm	56378
-	9.50		0.3701	10mm	95mm	142mm	51968

Shank Dia: h6
Cut Dia: h7

CARBIDE DRILLS - 8XD

Non-Coolant



Shank Dia: h6
Cut Dia: h7

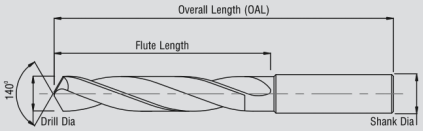
DRILLS

NON-COOLANT DRILLS 140° POINT ANGLE

Fraction Size	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
-	9.52		0.3748	10mm	95mm	142mm	56380
3/8	9.52		0.3750	10mm	3-3/4	5-3/4	56711
-	9.60		0.3780	10mm	95mm	142mm	56381
-	9.70		0.3819	10mm	95mm	142mm	56382
-	9.80	7/16-20	0.3858	10mm	95mm	142mm	51972
-	9.90		0.3898	10mm	95mm	142mm	56383
25/64	9.92		0.3906	10mm	4-1/2	6-1/2	56712
-	10.00		0.3937	10mm	95mm	142mm	51976
-	10.10		0.3976	12mm	114mm	162mm	56384
-	10.20		0.4016	12mm	114mm	162mm	51980
-	10.30	M12x1.75	0.4055	12mm	114mm	162mm	56385
13/32	10.32		0.4062	12mm	4-1/2	6-1/2	56713
-	10.40		0.4094	12mm	114mm	162mm	56386
-	10.50		0.4134	12mm	114mm	162mm	51984
-	10.60		0.4173	12mm	114mm	162mm	56388
-	10.70		0.4213	12mm	114mm	162mm	56389
27/64	10.72	1/2-13	0.4219	12mm	4-1/2	6-1/2	56714
-	10.80	M12x1.25	0.4252	12mm	114mm	162mm	51988
-	10.90		0.4291	12mm	114mm	162mm	56392
-	11.00		0.4331	12mm	114mm	162mm	51992
-	11.10		0.4370	12mm	114mm	162mm	56393
7/16	11.11		0.4375	12mm	4-1/2	6-1/2	56799
-	11.20		0.4409	12mm	114mm	162mm	56395
-	11.30		0.4449	12mm	114mm	162mm	56396
-	11.40		0.4488	12mm	114mm	162mm	56397
-	11.50	1/2-20	0.4528	12mm	114mm	162mm	51996
29/64	11.51		0.4531	12mm	5-1/4	7	56715
-	11.60		0.4567	12mm	114mm	162mm	56399
-	11.70		0.4606	12mm	114mm	162mm	56400
-	11.80		0.4646	12mm	114mm	162mm	56143
-	11.90		0.4685	12mm	114mm	162mm	56402
15/32	11.91		0.4688	12mm	5-1/4	7	56718
-	12.00	M14x2.0	0.4724	12mm	114mm	162mm	56165
-	12.10		0.4764	14mm	133mm	178mm	56403
-	12.20	9/16-12	0.4803	14mm	133mm	178mm	56404
-	12.30		0.4843	14mm	133mm	178mm	56189
31/64	12.30		0.4844	14mm	5-1/4	7	52108
-	12.40		0.4882	14mm	133mm	178mm	56405
-	12.50	M14x1.5	0.4921	14mm	133mm	178mm	56201
-	12.60		0.4961	14mm	133mm	178mm	56406
1/2	12.70		0.5000	14mm	5-1/4	7	52112
-	12.80		0.5039	14mm	133mm	178mm	56243
-	12.90		0.5079	14mm	133mm	178mm	56408
-	13.00	9/16-18	0.5118	14mm	133mm	178mm	56247
33/64	13.10		0.5157	14mm	5-1/4	7	52116

CARBIDE DRILLS - 8XD

Non-Coolant



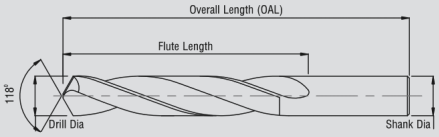
NON-COOLANT DRILLS 140° POINT ANGLE

Fraction Size	Metric	Drill Tap Size	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Coated AlTiN
-	13.20		0.5197	14mm	133mm	178mm	56409
-	13.30		0.5236	14mm	133mm	178mm	56410
17/32	13.40		0.5276	14mm	133mm	178mm	56411
-	13.49	5/8-11	0.5312	14mm	5-1/4	7	52120
-	13.50		0.5315	14mm	133mm	178mm	56260
-	13.60		0.5354	14mm	133mm	178mm	56412
-	13.70		0.5394	14mm	133mm	178mm	56413
35/64	13.80		0.5433	14mm	133mm	178mm	56414
-	13.89		0.5469	14mm	5-1/4	178mm	52124
-	13.90		0.5472	14mm	133mm	178mm	56417
-	14.00	M16x2.0	0.5512	14mm	133mm	178mm	56264
-	14.10		0.5551	16mm	133mm	178mm	56419
9/16	14.20		0.5591	16mm	133mm	178mm	56420
-	14.29		0.5626	16mm	5-1/4	7	52128
-	14.30		0.5630	16mm	152mm	203mm	56421
-	14.40		0.5669	16mm	152mm	203mm	56422
-	14.50	M16x1.5	0.5709	16mm	152mm	203mm	56270
37/64	14.60		0.5748	16mm	152mm	203mm	56423
-	14.68	5/8-18	0.5780	16mm	6	8	52132
-	14.70		0.5787	16mm	152mm	203mm	56425
-	14.80		0.5827	16mm	152mm	203mm	56426
-	14.90		0.5866	16mm	152mm	203mm	56427
19/32	15.00		0.5906	16mm	152mm	203mm	56271
-	15.08		0.5938	16mm	6	8	52136
-	15.10		0.5945	16mm	152mm	203mm	56428
-	15.20		0.5984	16mm	152mm	203mm	56429
-	15.30		0.6024	16mm	152mm	203mm	56430
39/64	15.40		0.6063	16mm	152mm	203mm	56431
-	15.48		0.6094	16mm	6	8	52140
-	15.50	M18x2.5	0.6102	16mm	152mm	203mm	56274
-	15.60		0.6142	16mm	152mm	203mm	56433
-	15.70		0.6181	16mm	152mm	203mm	56434
5/8	15.80		0.6220	16mm	152mm	203mm	56435
-	15.87		0.6250	16mm	6	8	52144
-	15.90		0.6260	16mm	152mm	203mm	52043
	16.00		0.6299	16mm	152mm	203mm	56729

Shank Dia: h6
Cut Dia: h7

JOBBER DRILLS

Speeds & Feeds



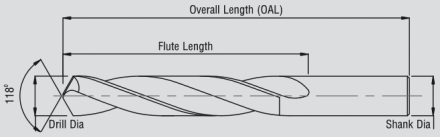
DRILLS

MICRO GRAIN SOLID CARBIDE

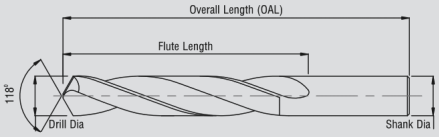
JOBBER LENGTH DRILLS			
Material Group	Material Type	Cutting Speed	
		m/min	SFM
Steel	Structural Steel	60 - 70	197- 230
	Free Cutting Steel	60 - 70	197 - 230
	Unalloyed Heat Treatable Steel	60 - 70	197 - 230
	Unalloyed Case Hardened Steel	60 - 70	197 - 230
	Alloyed Case Hardened Steel	50 - 60	164 - 197
	Nitriding Steel	40 -50	131 - 164
Acid Resistant /	Stainless Steel,	20 - 25	66 - 82
Stainless Steel	Sulphured Austenitic Steel, Martensitic		
High Tensile Steel	Alloyed Heat Treatable Steel	40 - 50	131 - 164
	Tool Steel	40 - 50	131- 164
	High Speed Steel		
	Spring Steel	20 - 25	66 - 82
Cast Materials	Cast Iron	70 - 80	230 - 263
	Spheroidal Graphite & Malleable Ci	60 - 70	197 - 230
	Chilled Ci	10	32 - 49
Aluminum &	Aluminum Alloys	150 - 180	492 - 590
Aluminum Alloys	Al Wrought Alloys	150 - 180	492 - 590
	Al Cast Alloys < 10%si	100 - 130	328 - 427
	Al Cast Alloys > 10%si	100 - 130	328 - 427
Special Alloys	Special Alloys	15 - 18	49 - 60
	Ti Alloys	15 - 20	49 - 65
Non Ferrous Metals	Copper Low Alloyed	60 - 70	197 - 230
	Brass	130 - 150	425 - 492
	Bronze	100 - 110	328 - 360
Magnesium Alloys	Mg Alloys	120 - 150	393 - 492

JOBBER DRILLS

Speeds & Feeds



JOBBER LENGTH DRILLS DIAMETER										
Material	2.00	3.00	5.00	6.00	8.00	10.00	12.00	16.00	20.00	25.00
	5/64″	7/64″	3/16″	15/64″	5/16″	25/64″	15/32″	5/8″	3/4″	1″
	Feed Rate mm/rev									
	Feed Rate IPR									
Steel	0.05	0.08	0.10	0.125	0.15	0.18	0.20	0.23	0.25	0.30
	0.002	0.0032	0.004	0.005	0.006	0.007	0.008	0.009	0.010	0.012
High Tensile Steels /acid Resistant	0.03	0.05	0.07	0.085	0.12	0.14	0.15	0.18	0.21	0.25
	0.0016	0.002	0.003	0.004	0.005	0.0055	0.006	0.007	0.0083	0.010
Cast Material	0.06	0.09	0.12	0.15	0.18	0.20	0.22	0.25	0.28	0.30
	0.0024	0.004	0.005	0.006	0.007	0.008	0.009	0.010	0.011	0.012
Aluminum Alloys	0.09	0.12	0.18	0.22	0.26	0.3	0.30	0.35	0.40	0.43
	0.004	0.005	0.007	0.009	0.01	0.012	0.012	0.014	0.016	0.017
Titanium Alloys	0.015	0.03	0.04	0.06	0.08	0.10	0.11	0.13	0.016	0.18
	0.0006	0.0012	0.0015	0.0024	0.003	0.004	0.0043	0.005	0.006	0.007
Non Ferrous	0.06	0.08	0.10	0.13	0.18	0.2	0.20	0.25	0.30	0.35
	0.0024	0.003	0.004	0.005	0.007	0.008	0.008	0.01	0.012	0.014
Mg Alloys	0.07	0.09	0.125	0.16	0.18	0.20	0.23	0.25	0.28	0.32
	0.003	0.004	0.005	0.006	0.007	0.008	0.009	0.010	0.011	0.013



Shank Dia: h6
Cut Dia: h7

JOBBER LENGTH DRILLS

INCH, LETTER, NUMBER AND METRIC

BENEFITS & FEATURES

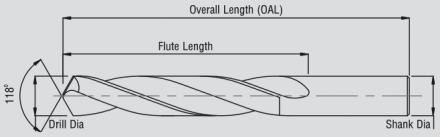
- Manufactured from premium submicron grain carbide
- Precision ground carbide drills are designed for high feed rate and good chip evacuation
- 118° four facet point angle, right hand cut-right hand spiral

JOBBER LENGTH DRILLS

Fraction Size	Letter/Wire	Metric	Decimal Equiv.	Flute Length	OAL	Uncoated	AlTiN
-	76	0.51	0.0200	1/4	1-1/4	30030	30032
-	75	0.53	0.0210	1/4	1-1/4	30034	30036
-	74	0.57	0.0225	1/4	1-1/4	30038	30040
-	73	0.61	0.0240	1/4	1-1/4	30042	30044
-	72	0.64	0.0250	5/16	1-1/4	30046	30048
-	71	0.66	0.0260	5/16	1-1/4	30050	30052
-	70	0.71	0.0280	5/16	1-1/4	30054	30056
-	69	0.74	0.0292	5/16	1-1/4	30058	30060
-	68	0.79	0.0310	5/16	1-1/4	30062	30063
1/32	-	0.80	0.0312	5/16	1-1/4	30066	30068
-	-	0.80	0.0315	7.9mm	31mm	30067	30069
-	67	0.81	0.0320	5/16	1-1/4	30064	30065
-	66	0.84	0.0330	5/16	1-1/4	30074	30076
-	65	0.89	0.0350	5/8	1-3/8	30078	30080
-	-	0.90	0.0354	16mm	35mm	30081	30083
-	64	0.91	0.0360	5/8	1-3/8	30082	30084
-	63	0.94	0.0370	5/8	1-3/8	30086	30088
-	62	0.97	0.0380	5/8	1-3/8	30090	30092
-	61	0.99	0.0390	5/8	1-3/8	30094	30096
-	-	1.00	0.0393	16mm	38mm	30098	30100
-	60	1.02	0.0400	3/4	1-1/2	30102	30104
-	59	1.04	0.0410	3/4	1-1/2	30106	30108
-	58	1.07	0.0420	3/4	1-1/2	30110	30112
-	57	1.09	0.0430	3/4	1-1/2	30114	30116
-	-	1.10	0.0433	19mm	38mm	30118	30120
-	56	1.18	0.0465	3/4	1-1/2	30122	30123
3/64	-	1.19	0.0469	3/4	1-1/2	30126	30128
-	-	1.20	0.0472	19mm	38mm	30130	30131
-	-	1.25	0.0492	19mm	38mm	30132	30133
-	-	1.30	0.0512	19mm	38mm	30134	30136
-	55	1.32	0.0520	3/4	1-1/2	30138	30139
-	54	1.40	0.0550	3/4	1-1/2	30142	30143
-	-	1.40	0.0551	19mm	38mm	30146	30147
-	-	1.45	0.0571	19mm	38mm	30148	30149
-	-	1.50	0.0591	19mm	38mm	30150	30152
-	53	1.51	0.0595	3/4	1-1/2	30154	30155
1/16	-	1.59	0.0625	3/4	1-1/2	30158	30159
-	-	1.60	0.0630	19mm	38mm	30162	30164

CARBIDE DRILLS

Jobber Length



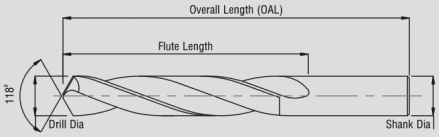
JOBBER LENGTH DRILLS

Fraction Size	Letter/Wire	Metric	Decimal Equiv.	Flute Length	OAL	Uncoated	AlTiN
-	52	1.61	0.0635	3/4	1-1/2	30166	30167
-	-	1.70	0.0669	19mm	38mm	30170	30172
-	51	1.70	0.0670	3/4	1-1/2	30174	30175
-	50	1.78	0.0700	7/8	1-3/4	30178	30179
-	-	1.80	0.0709	22mm	44mm	30182	30184
-	49	1.85	0.0730	11/16	1-11/16	30186	30187
-	-	1.90	0.0748	22mm	44mm	30190	30192
-	48	1.93	0.0760	7/8	1-3/4	30194	30195
5/64	-	1.98	0.0781	7/8	1-3/4	30198	30199
-	47	1.99	0.0785	7/8	1-3/4	30202	30203
-	-	2.00	0.0787	22mm	44mm	30206	30208
-	46	2.06	0.0810	7/8	1-3/4	30210	30211
-	45	2.08	0.0820	7/8	1-3/4	30214	30215
-	-	2.10	0.0827	22mm	44mm	30218	30220
-	44	2.18	0.0860	1	2	30222	30223
-	-	2.20	0.0866	25mm	50mm	30226	30228
-	43	2.26	0.0890	1	2	30230	30231
-	-	2.30	0.0906	25mm	50mm	30234	30236
-	42	2.37	0.0935	1	2	30238	30239
3/32	-	2.38	0.0938	1	2	30242	30243
-	-	2.40	0.0945	25mm	50mm	30246	30248
-	41	2.44	0.0960	1	2	30250	30251
-	40	2.49	0.0980	1	2	30254	30255
-	-	2.50	0.0984	25mm	50mm	30258	30260
-	39	2.53	0.0995	1-1/4	2-1/4	30262	30263
-	38	2.58	0.1015	1-1/4	2-1/4	30266	30267
-	-	2.60	0.1024	32mm	57mm	30270	30272
-	37	2.64	0.1040	1-1/4	2-1/4	30274	30275
-	-	2.70	0.1063	32mm	57mm	30278	30280
-	36	2.71	0.1065	1-1/4	2-1/4	30282	30283
7/64	-	2.78	0.1094	1-1/4	2-1/4	30286	30287
-	35	2.79	0.1100	1-1/4	2-1/4	30290	30291
-	-	2.80	0.1102	32mm	57mm	30294	30296
-	34	2.82	0.1110	1-1/4	2-1/4	30298	30299
-	33	2.87	0.1130	1-1/4	2-1/4	30302	30303
-	-	2.90	0.1142	32mm	57mm	30306	30308
-	32	2.95	0.1160	1-1/4	2-1/4	30310	30311
-	-	3.00	0.1181	32mm	57mm	30314	30316
-	31	3.05	0.1200	1-1/4	2-1/4	30318	30319
-	-	3.10	0.1220	32mm	57mm	30322	30324
1/8	-	3.18	0.1250	1-1/4	2-1/4	30326	30329
-	-	3.20	0.1260	32mm	57mm	30330	30332
-	30	3.26	0.1285	1-1/4	2-1/4	30334	30335
-	-	3.30	0.1299	32mm	57mm	30338	30340
-	-	3.40	0.1339	35mm	63mm	30342	30344
-	29	3.45	0.1360	1-3/8	2-1/2	30346	30347
-	-	3.50	0.1378	35mm	63mm	30350	30352

Shank Dia: h6
Cut Dia: h7

CARBIDE DRILLS

Jobber Length



118°

22°

Shank Dia: h6
Cut Dia: h7

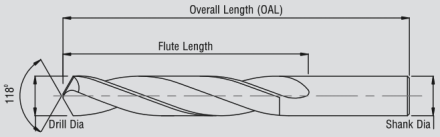
DRILLS

JOBBER LENGTH DRILLS

Fraction Size	Letter/Wire	Metric	Decimal Equiv.	Flute Length	OAL	Uncoated	AlTiN
-	28	3.57	0.1405	1-3/8	2-1/2	30354	30355
9/64	-	3.57	0.1406	1-3/8	2-1/2	30358	30359
-	-	3.60	0.1417	35mm	63mm	30362	30364
-	27	3.66	0.1440	1-3/8	2-1/2	30366	30367
-	-	3.70	0.1457	35mm	63mm	30370	30372
-	26	3.73	0.1470	1-3/8	2-1/2	30374	30375
-	25	3.80	0.1495	1-3/8	2-1/2	30378	30379
-	-	3.80	0.1496	35mm	63mm	30382	30384
-	24	3.86	0.1520	1-3/8	2-1/2	30386	30387
-	-	3.90	0.1535	35mm	63mm	30390	30392
-	23	3.91	0.1540	1-3/8	2-1/2	30394	30395
5/32	-	3.97	0.1562	1-3/8	2-1/2	30398	30399
-	22	3.99	0.1570	1-3/8	2-1/2	30402	30403
-	-	4.00	0.1575	35mm	63mm	30406	30408
-	21	4.04	0.1590	1-3/8	2-1/2	30410	30411
-	20	4.09	0.1610	1-3/8	2-1/2	30414	30415
-	-	4.10	0.1614	35mm	63mm	30418	30420
-	-	4.20	0.1654	41mm	70mm	30422	30424
-	19	4.22	0.1660	1-5/8	2-3/4	30426	30427
-	-	4.30	0.1693	41mm	70mm	30430	30432
-	18	4.31	0.1695	1-5/8	2-3/4	30434	30435
11/64	-	4.37	0.1719	1-5/8	2-3/4	30438	30439
-	17	4.39	0.1730	1-5/8	2-3/4	30442	30443
-	-	4.40	0.1732	41mm	70mm	30446	30448
-	16	4.50	0.1770	1-5/8	2-3/4	30450	30451
-	-	4.50	0.1772	41mm	70mm	30454	30456
-	15	4.57	0.1800	1-5/8	2-3/4	30458	30459
-	-	4.60	0.1811	41mm	70mm	30462	30464
-	14	4.62	0.1820	1-5/8	2-3/4	30466	30467
-	-	4.70	0.1850	41mm	70mm	30470	30472
-	13	4.70	0.1850	1-5/8	2-3/4	30474	30475
3/16	-	4.76	0.1875	1-5/8	2-3/4	30478	30480
-	-	4.80	0.1890	41mm	70mm	30482	30484
-	12	4.80	0.1890	1-5/8	2-3/4	30486	30487
-	11	4.85	0.1910	1-5/8	2-3/4	30490	30491
-	-	4.90	0.1929	41mm	70mm	30494	30496
-	10	4.91	0.1935	1-5/8	2-3/4	30498	30499
-	9	4.98	0.1960	1-3/4	3	30502	30503
-	-	5.00	0.1968	44mm	75mm	30506	30508
-	8	5.05	0.1990	1-3/4	3	30510	30511
-	-	5.10	0.2008	44mm	75mm	30514	30516
-	7	5.11	0.2010	1-3/4	3	30518	30519
13/64	-	5.16	0.2031	1-3/4	3	30522	30523
-	6	5.18	0.2040	1-3/4	3	30526	30527
-	-	5.20	0.2047	44mm	75mm	30530	30532
-	5	5.22	0.2055	1-3/4	3	30534	30535
-	-	5.30	0.2087	44mm	75mm	30538	30540

CARBIDE DRILLS

Jobber Length



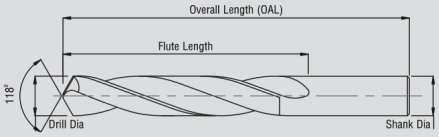
JOBBER LENGTH DRILLS

Fraction Size	Letter/Wire	Metric	Decimal Equiv.	Flute Length	OAL	Uncoated	AlTiN
-	4	5.31	0.2090	1-3/4	3	30542	30543
-	-	5.40	0.2126	44mm	75mm	30546	30548
-	3	5.41	0.2130	1-3/4	3	30550	30551
-	-	5.50	0.2165	44mm	75mm	30554	30556
7/32	-	5.55	0.2187	1-3/4	3	30558	30559
-	-	5.60	0.2205	44mm	75mm	30562	30564
-	2	5.61	0.2210	1-3/4	3	30566	30567
-	-	5.70	0.2244	44mm	75mm	30570	30572
-	1	5.79	0.2280	1-3/4	3	30574	30575
-	-	5.80	0.2283	50mm	82mm	30578	30580
-	-	5.90	0.2323	50mm	82mm	30582	30584
-	A	5.94	0.2340	2.0	3-1/4	30590	30591
15/64	-	5.95	0.2344	2.0	3-1/4	30594	30595
-	-	6.00	0.2362	50mm	82mm	30598	30600
-	B	6.04	0.2380	2.0	3-1/4	30602	30603
-	-	6.10	0.2402	50mm	82mm	30606	30608
-	C	6.15	0.2420	2.0	3-1/4	30610	30611
-	-	6.20	0.2441	50mm	82mm	30614	30616
-	D	6.25	0.2460	2.0	3-1/4	30618	30619
-	-	6.30	0.2480	50mm	82mm	30622	30624
1/4	E	6.35	0.2500	2.0	3-1/4	30626	30628
-	-	6.40	0.2520	50mm	82mm	30630	30632
-	-	6.50	0.2559	50mm	82mm	30634	30636
-	F	6.53	0.2570	2.0	3-1/4	30638	30639
-	-	6.60	0.2598	50mm	82mm	30642	30644
-	G	6.63	0.2610	2-1/8	3-1/2	30646	30647
-	-	6.70	0.2638	54mm	89mm	30650	30652
17/64	-	6.75	0.2656	2-1/8	3-1/2	30654	30655
-	H	6.76	0.2660	2-1/8	3-1/2	30658	30659
-	-	6.80	0.2677	54mm	89mm	30662	30664
-	-	6.90	0.2717	54mm	89mm	30666	30668
-	I	6.91	0.2720	2-1/8	3-1/2	30670	30671
-	-	7.00	0.2756	54mm	89mm	30674	30676
-	J	7.04	0.2770	2-1/8	3-1/2	30678	30679
-	-	7.10	0.2795	54mm	89mm	30682	30684
-	K	7.14	0.2810	2-1/8	3-1/2	30686	30687
9/32	-	7.14	0.2812	2-1/8	3-1/2	30690	30691
-	-	7.20	0.2835	54mm	89mm	30694	30695
-	-	7.25	0.2854	54mm	89mm	30696	30697
-	-	7.30	0.2874	54mm	89mm	30698	30700
-	L	7.37	0.2900	2-1/8	3-1/2	30702	30703
-	-	7.40	0.2913	54mm	89mm	30706	30708
-	M	7.49	0.2950	2-3/8	3-3/4	30710	30711
-	-	7.50	0.2953	60mm	95mm	30714	30716
19/64	-	7.54	0.2969	2-3/8	3-3/4	30718	30719
-	-	7.60	0.2992	60mm	95mm	30722	30724
-	N	7.67	0.3020	2-3/8	3-3/4	30726	30727

Shank Dia: h6
Cut Dia: h7

CARBIDE DRILLS

Jobber Length



Shank Dia: h6
Cut Dia: h7

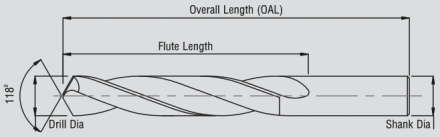
DRILLS

JOBBER LENGTH DRILLS

Fraction Size	Letter/Wire	Metric	Decimal Equiv.	Flute Length	OAL	Uncoated	AlTiN
-	-	7.70	0.3031	60mm	95mm	30730	30732
-	-	7.80	0.3071	60mm	95mm	30734	30736
-	-	7.90	0.3110	60mm	95mm	30738	30740
5/16	-	7.94	0.3125	2-3/8	3-3/4	30742	30744
-	-	8.00	0.3150	60mm	95mm	30746	30748
-	O	8.03	0.3160	2-3/8	3-3/4	30750	30751
-	-	8.10	0.3189	60mm	95mm	30754	30756
-	-	8.20	0.3228	60mm	95mm	30758	30760
-	P	8.21	0.3230	2-3/8	3-3/4	30762	30763
-	-	8.30	0.3268	60mm	95mm	30766	30768
21/64	-	8.33	0.3281	2-1/2	4	30770	30771
-	-	8.40	0.3307	63mm	100mm	30774	30776
-	Q	8.43	0.3320	2-1/2	4	30778	30779
-	-	8.50	0.3346	63mm	100mm	30782	30784
-	-	8.60	0.3386	63mm	100mm	30786	30788
-	R	8.61	0.3390	2-1/2	4	30790	30791
-	-	8.70	0.3425	63mm	100mm	30794	30796
11/32	-	8.73	0.3438	2-1/2	4	30798	30799
-	-	8.80	0.3465	63mm	100mm	30802	30804
-	S	8.84	0.3480	2-1/2	4	30806	30807
-	-	8.90	0.3504	63mm	100mm	30810	30812
-	-	9.00	0.3543	70mm	100mm	30814	30816
-	T	9.09	0.3580	2-3/4	4-1/4	30818	30819
-	-	9.10	0.3583	70mm	108mm	30822	30824
23/64	-	9.13	0.3594	2-3/4	4-1/4	30826	30827
-	-	9.20	0.3622	70mm	108mm	30830	30832
-	-	9.30	0.3661	70mm	108mm	30834	30836
-	U	9.35	0.3680	2-3/4	4-1/4	30838	30839
-	-	9.40	0.3701	70mm	108mm	30842	30844
-	-	9.50	0.3740	70mm	108mm	30846	30848
3/8	-	9.53	0.3750	2-3/4	4-1/4	30850	30851
-	V	9.58	0.3770	2-3/4	4-1/4	30854	30855
-	-	9.60	0.3780	70mm	108mm	30858	30860
-	-	9.70	0.3819	70mm	108mm	30862	30864
-	-	9.80	0.3858	70mm	108mm	30866	30868
-	W	9.81	0.3860	2-7/8	4-1/2	30870	30871
-	-	9.90	0.3898	73mm	114mm	30874	30876
25/64	-	9.92	0.3906	2-7/8	4-1/2	30878	30879
-	-	10.00	0.3937	73mm	114mm	30882	30884
-	X	10.08	0.3970	2-7/8	4-1/2	30886	30887
-	-	10.20	0.4016	73mm	114mm	30894	30896
-	Y	10.26	0.4040	2-7/8	4-1/2	30898	30899
-	-	10.30	0.4055	73mm	114mm	30900	30902
13/32	-	10.32	0.4062	2-7/8	4-1/2	30906	30907
-	Z	10.49	0.4130	2-7/8	4-1/2	30914	30915
-	-	10.50	0.4134	73mm	114mm	30918	30920
27/64	-	10.72	0.4219	2-7/8	4-1/2	30930	30931

CARBIDE DRILLS

Jobber Length



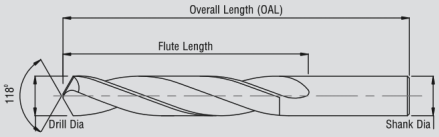
JOBBER LENGTH DRILLS

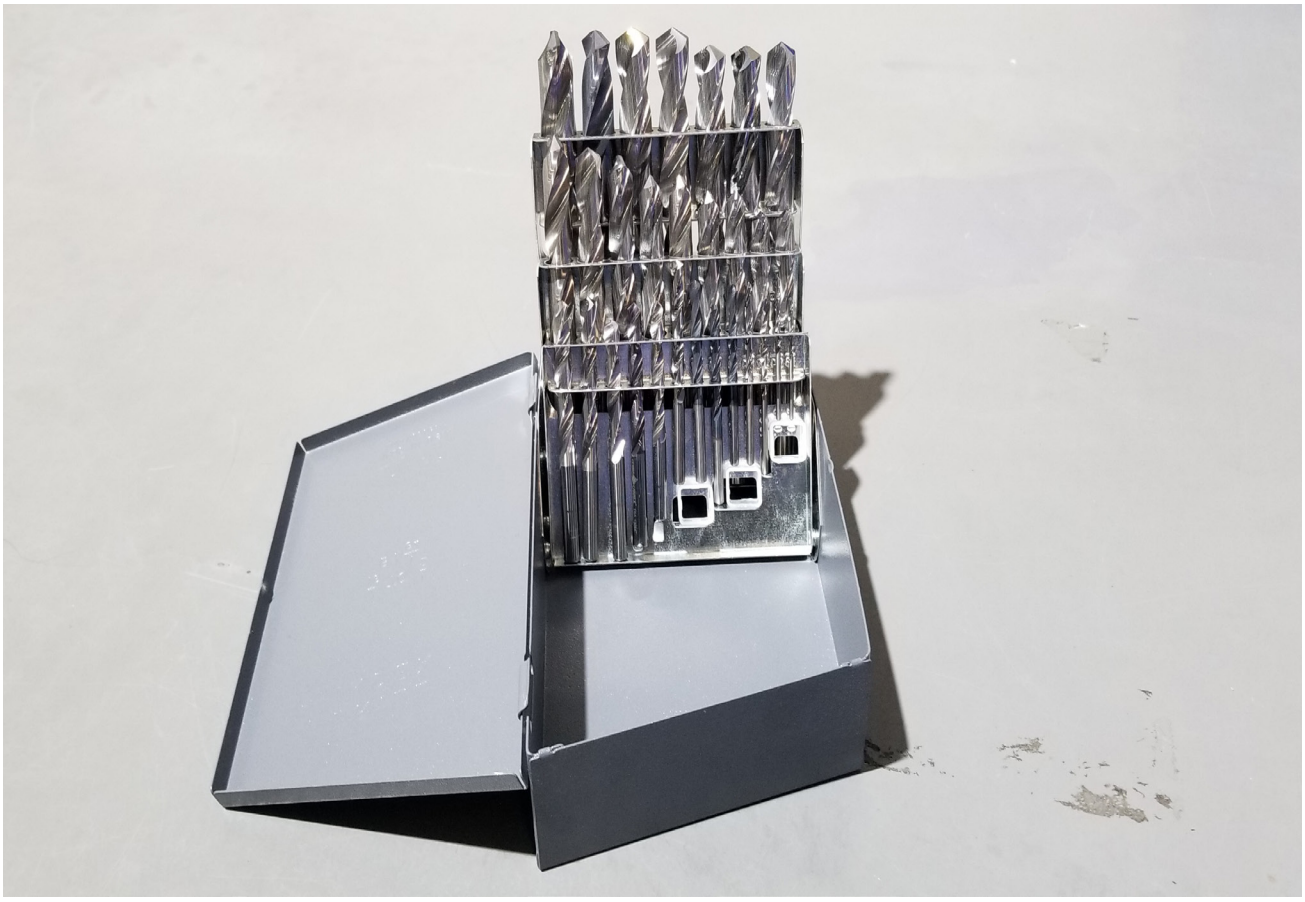
Fraction Size	Letter/Wire	Metric	Decimal Equiv.	Flute Length	OAL	Uncoated	AlTiN
-	-	10.75	0.4232	73mm	114mm	30936	30937
-	-	11.00	0.4331	73mm	114mm	30942	30944
7/16	-	11.11	0.4375	2-7/8	4-1/2	30950	30952
-	-	11.50	0.4528	76mm	120mm	30966	30968
29/64	-	11.51	0.4531	3	4-3/4	30970	30971
15/32	-	11.91	0.4688	3	4-3/4	30990	30991
-	-	12.00	0.4724	76mm	120mm	30994	30996
31/64	-	12.30	0.4844	3	4-3/4	31010	31011
-	-	12.50	0.4920	76mm	120mm	31014	31016
1/2	-	12.70	0.5000	3	4-3/4	31026	31028
-	-	12.90	0.5079	76mm	120mm	31029	31033
-	-	13.00	0.5118	76mm	120mm	31030	31031
17/32	-	13.49	0.5313	3	4-3/4	31036	31032
-	-	13.50	0.5315	76mm	120mm	31041	31044
-	-	14.00	0.5512	76mm	120mm	31052	31056
9/16	-	14.29	0.5625	4	6	31034	31035
-	-	14.50	0.5709	100mm	150mm	31059	31060
37/64	-	14.68	0.5781	4	6	31061	31064
-	-	15.00	0.5906	100mm	150mm	31062	31063
19/32	-	15.08	0.5937	4	6	31038	31039
39/64	-	15.47	0.6094	4	6	31040	31045
-	-	15.50	0.6102	100mm	150mm	31065	31098
5/8	-	15.88	0.6250	4	6	31042	31043
-	-	16.00	0.6299	100mm	150mm	31071	31072
-	-	16.50	0.6496	100mm	150mm	31080	31081
21/32	-	16.67	0.6562	4	6	31046	31047
-	-	17.00	0.6693	100mm	150mm	31083	31084
43/64	-	17.06	0.6719	4	6	31085	31088
11/16	-	17.46	0.6875	4	6	31050	31051
-	-	17.50	0.6890	100mm	150mm	31086	31087
45/64	-	17.85	0.7031	4	6	31091	31094
-	-	18.00	0.7087	100mm	150mm	31089	31090
23/32	-	18.25	0.7187	4	6	31054	31055
-	-	18.50	0.7283	100mm	150mm	31092	31093
47/64		18.65	0.7344	4	6	31070	31120
-	-	19.00	0.7480	100mm	150mm	31095	31096
3/4	-	19.05	0.7500	4	6	31066	31099
49/64		19.44	0.7656	4	6	31190	31194
25/32	-	19.87	0.7812	4	6	31067	31068
-	-	20.00	0.7874	100mm	150mm	31101	31102
13/16		20.63	0.8125	4	6	31107	31132
7/8	-	22.22	0.8750	4	6	31104	31105
1.0	-	25.40	1.0000	4	6	31074	31075

Shank Dia: h6
Cut Dia: h7

CARBIDE DRILLS

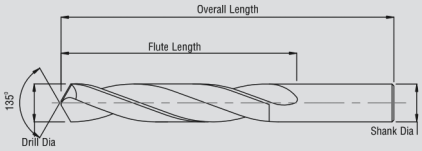
Jobber Length - Set





DRILLS

JOBBER LENGTH DRILLS	
Jobber Drills - Sets 1/8" and 1/4"	-
EDP # 31078 29 Piece Set Sizes 1/16 to 1/2" by 64ths Includes Metal Case	EDP # 31150 60 Piece Set Sizes 1 to 60 Complete Includes Metal Case
EDP # 31148 25 Piece Set Sizes 1.0 to 13.0mm by .5mm Includes Metal Case	
EDP # 31140 26 Piece Set Sizes A to Z Complete Includes Metal Case	-



SCREW MACHINE LENGTH DRILLS

INCH, LETTER, NUMBER AND METRIC

BENEFITS & FEATURES

- Produces very close hole size and location, often eliminating a reaming operation
- For use in drilling alloy steels, Stainless steels, and high strength alloys
- Produces a tight, double curl chip for excellent chip flow
- Stubby design provides for more rigidity and higher feed rates

135°

15°

Shank Dia: h6
Cut Dia: h7

SCREW MACHINE LENGTH DRILLS

Fraction Size	Letter/Wire	Metric	Decimal Equiv.	Flute Length	OAL	Uncoated	Coated AlTiN
-	60	1.02	0.0400	1/2	1-1/2	35000	35001
-	59	1.04	0.0410	1/2	1-1/2	35002	35003
-	58	1.07	0.0420	1/2	1-1/2	35004	35005
-	57	1.09	0.0430	1/2	1-1/2	35006	35007
-	56	1.18	0.0465	1/2	1-1/2	35018	35019
3/64	-	1.19	0.0469	1/2	1-1/2	35022	35023
-	-	1.20	0.0473	12.7mm	38mm	35024	35025
-	55	1.32	0.0520	1/2	1-1/2	35034	35035
-	54	1.40	0.0550	1/2	1-1/2	35038	35039
-	-	1.50	0.0591	13mm	38mm	35046	35047
-	53	1.51	0.0595	1/2	1-1/2	35050	35051
1/16	-	1.59	0.0625	5/8	1-5/8	35054	35055
-	-	1.60	0.0630	16mm	41mm	35058	35059
-	52	1.61	0.0635	11/16	1-11/16	35062	35063
-	-	1.70	0.0669	17mm	43mm	35066	35067
-	51	1.70	0.0670	11/16	1-11/16	35070	35071
-	50	1.78	0.0700	11/16	1-11/16	35074	35075
-	-	1.80	0.0709	17mm	43mm	35078	35079
-	49	1.85	0.0730	11/16	1-11/16	35082	35083
-	-	1.90	0.0748	17mm	43mm	35086	35087
-	48	1.93	0.0760	11/16	1-11/16	35090	35091
5/64	-	1.98	0.0781	11/16	1-11/16	35094	35095
-	47	1.99	0.0785	3/4	1-3/4	35098	35099
-	-	2.00	0.0787	19mm	45mm	35102	35103
-	46	2.06	0.0810	3/4	1-3/4	35106	35107
-	45	2.08	0.0820	3/4	1-3/4	35110	35111
-	-	2.10	0.0827	19mm	45mm	35114	35115
-	44	2.18	0.0860	3/4	1-3/4	35118	35119
-	-	2.20	0.0866	19mm	45mm	35122	35123
-	43	2.26	0.0890	3/4	1-3/4	35126	35127
-	-	2.30	0.0906	19mm	45mm	35130	35131
-	42	2.37	0.0935	3/4	1-3/4	35134	35135
3/32	-	2.38	0.0938	3/4	1-3/4	35138	35139
-	-	2.40	0.0945	19mm	45mm	35142	35143
-	41	2.44	0.0960	13/16	1-13/16	35146	35147
-	40	2.49	0.0980	13/16	1-13/16	35150	35151

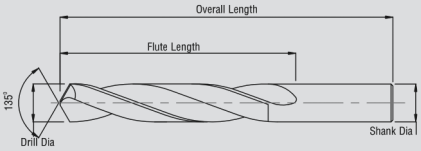
135°

15°

Shank Dia: h6
Cut Dia: h7

CARBIDE DRILLS

Screw Machine



135°

15°

Shank Dia: h6
Cut Dia: h7

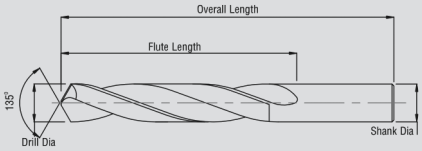
DRILLS

SCREW MACHINE LENGTH DRILLS

Fraction Size	Letter/Wire	Metric	Decimal Equiv.	Flute Length	OAL	Uncoated	Coated AlTiN
-	-	2.50	0.0984	21mm	46mm	35154	35155
-	39	2.53	0.0995	13/16	1-13/16	35158	35159
-	38	2.58	0.1015	13/16	1-13/16	35162	35163
-	-	2.60	0.1024	21mm	46mm	35166	35167
-	37	2.64	0.1040	13/16	1-13/16	35170	35171
-	-	2.70	0.1063	21mm	46mm	35174	35175
-	36	2.71	0.1065	13/16	1-13/16	35178	35179
7/64	-	2.78	0.1094	13/16	1-13/16	35182	35183
-	35	2.79	0.1100	7/8	1-7/8	35186	35187
-	-	2.80	0.1102	22mm	48mm	35190	35191
-	34	2.82	0.1110	7/8	1-7/8	35194	35195
-	33	2.87	0.1130	7/8	1-7/8	35198	35199
-	-	2.90	0.1142	22mm	48mm	35202	35203
-	32	2.95	0.1160	7/8	1-7/8	35206	35207
-	-	3.00	0.1181	22mm	48mm	35210	35211
-	31	3.05	0.1200	7/8	1-7/8	35214	35215
-	-	3.10	0.1220	22mm	48mm	35218	35219
1/8	-	3.18	0.1250	7/8	1-7/8	35222	35223
-	-	3.20	0.1260	22mm	48mm	35226	35227
-	30	3.26	0.1285	15/16	1-15/16	35230	35231
-	-	3.30	0.1299	24mm	49mm	35234	35235
-	-	3.40	0.1339	24mm	49mm	35238	35239
-	29	3.45	0.1360	15/16	1-15/16	35242	35243
-	-	3.50	0.1378	24mm	52mm	35246	35247
-	28	3.57	0.1405	15/16	1-15/16	35250	35251
9/64	-	3.57	0.1406	15/16	1-15/16	35254	35255
-	-	3.60	0.1417	24mm	49mm	35258	35259
-	27	3.66	0.1440	1	2-1/16	35262	35263
-	-	3.70	0.1457	25.4mm	52mm	35266	35267
-	26	3.73	0.1470	1	2-1/16	35270	35271
-	25	3.80	0.1495	1	2-1/16	35274	35275
-	-	3.80	0.1496	25.4mm	52mm	35278	35279
-	24	3.86	0.1520	1	2-1/16	35282	35283
-	-	3.90	0.1535	25.4mm	52mm	35286	35287
-	23	3.91	0.1540	1	2-1/16	35290	35291
5/32	-	3.97	0.1562	1	2-1/16	35294	35295
-	22	3.99	0.1570	1-1/16	2-1/8	35298	35299
-	-	4.00	0.1575	27mm	54mm	35302	35303
-	21	4.04	0.1590	1-1/16	2-1/8	35306	35307
-	20	4.09	0.1610	1-1/16	2-1/8	35310	35311
-	-	4.10	0.1614	27mm	54mm	35314	35315
-	-	4.20	0.1654	27mm	54mm	35318	35319
-	19	4.22	0.1660	1-1/16	2-1/8	35322	35323
-	-	4.30	0.1693	27mm	54mm	35326	35327
-	18	4.31	0.1695	1-1/16	2-1/8	35330	35331

CARBIDE DRILLS

Screw Machine



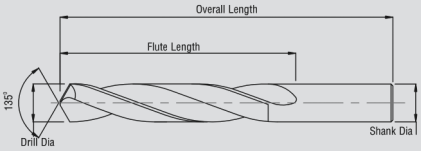
SCREW MACHINE LENGTH DRILLS

Fraction Size	Letter/Wire	Metric	Decimal Equiv.	Flute Length	OAL	Uncoated	Coated AlTiN
11/64	-	4.37	0.1719	1-1/16	2-1/8	35334	35335
-	17	4.39	0.1730	1-1/8	2-3/16	35338	35339
-	-	4.40	0.1732	29mm	56mm	35342	35343
-	16	4.50	0.1770	1-1/8	2-3/16	35346	35347
-	-	4.50	0.1772	29mm	56mm	35350	35351
-	15	4.57	0.1800	1-1/8	2-3/16	35354	35355
-	-	4.60	0.1811	29mm	56mm	35358	35359
-	14	4.62	0.1820	1-1/8	2-3/16	35362	35363
-	-	4.70	0.1850	29mm	56mm	35366	35367
-	13	4.70	0.1850	1-1/8	2-3/16	35370	35371
3/16	-	4.76	0.1875	1-1/8	2-3/16	35374	35375
-	-	4.80	0.1890	30mm	57mm	35378	35379
-	12	4.80	0.1890	1-3/16	2-1/4	35382	35383
-	11	4.85	0.1910	1-3/16	2-1/4	35386	35387
-	-	4.90	0.1929	30mm	57mm	35390	35391
-	10	4.91	0.1935	1-3/16	2-1/4	35394	35395
-	9	4.98	0.1960	1-3/16	2-1/4	35398	35399
-	-	5.00	0.1968	30mm	57mm	35402	35403
-	8	5.05	0.1990	1-3/16	2-1/4	35406	35407
-	-	5.10	0.2008	30mm	57mm	35410	35411
-	7	5.11	0.2010	1-3/16	2-1/4	35414	35415
13/64	-	5.16	0.2031	1-3/16	2-1/4	35418	35419
-	6	5.18	0.2040	1-1/4	2-3/8	35422	35423
-	-	5.20	0.2047	32mm	60mm	35426	35427
-	5	5.22	0.2055	1-1/4	2-3/8	35430	35431
-	-	5.30	0.2087	32mm	60mm	35434	35435
-	4	5.31	0.2090	1-1/4	2-3/8	35438	35439
-	-	5.40	0.2126	32mm	60mm	35442	35443
-	3	5.41	0.2130	1-1/4	2-3/8	35446	35447
-	-	5.50	0.2165	32mm	60mm	35450	35451
7/32	-	5.55	0.2188	1-1/4	2-3/8	35454	35455
-	-	5.60	0.2205	33mm	62mm	35458	35459
-	2	5.61	0.2210	1-5/16	2-7/16	35462	35463
-	-	5.70	0.2244	33mm	62mm	35466	35467
-	1	5.79	0.2280	1-5/16	2-7/16	35470	35471
-	-	5.80	0.2283	33mm	62mm	35474	35475
-	-	5.90	0.2323	33mm	62mm	35478	35479
-	A	5.94	0.2340	1-5/16	2-7/16	35482	35483
15/64	-	5.95	0.2344	1-5/16	2-7/16	35486	35487
-	-	6.00	0.2362	35mm	64mm	35490	35491
-	B	6.05	0.2380	1-3/8	2-1/2	35494	35495
-	-	6.10	0.2402	35mm	64mm	35498	35499
-	C	6.15	0.2420	1-3/8	2-1/2	35502	35503
-	-	6.20	0.2441	35mm	64mm	35506	35507
-	D	6.25	0.2460	1-3/8	2-1/2	35510	35511

Shank Dia: h6
Cut Dia: h7

CARBIDE DRILLS

Screw Machine



Shank Dia: h6
Cut Dia: h7

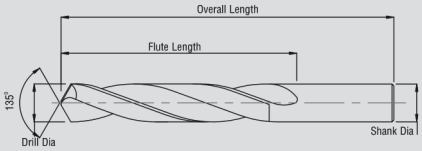
DRILLS

SCREW MACHINE LENGTH DRILLS

Fraction Size	Letter/Wire	Metric	Decimal Equiv.	Flute Length	OAL	Uncoated	Coated AlTiN
-	-	6.30	0.2480	35mm	64mm	35514	35515
1/4	E	6.35	0.2500	1-3/8	2-1/2	35518	35519
-	-	6.40	0.2520	35mm	64mm	35522	35523
-	-	6.50	0.2559	35mm	64mm	35526	35527
-	F	6.53	0.2570	1-7/16	2-5/8	35530	35531
-	G	6.63	0.2610	1-7/16	2-5/8	35538	35539
17/64	-	6.75	0.2656	1-7/16	2-5/8	35546	35547
-	H	6.76	0.2660	1-1/2	2-11/16	35550	35551
-	-	6.80	0.2677	38mm	68mm	35554	35555
-	I	6.91	0.2720	1-1/2	2-11/16	35562	35563
-	-	7.00	0.2756	38mm	68mm	35566	35567
-	J	7.04	0.2770	1-1/2	2-11/16	35570	35571
-	K	7.14	0.2810	1-1/2	2-11/16	35578	35579
9/32	-	7.14	0.2812	1-1/2	2-11/16	35582	35583
-	L	7.37	0.2900	1-9/16	2-3/4	35594	35595
-	M	7.49	0.2950	1-9/16	2-3/4	35602	35603
-	-	7.50	0.2953	40mm	70mm	35606	35607
19/64	-	7.54	0.2969	1-9/16	2-3/4	35610	35611
-	N	7.67	0.3020	1-5/8	2-13/16	35618	35619
5/16	-	7.94	0.3125	1-5/8	2-13/16	35634	35635
-	-	8.00	0.3150	41mm	71mm	35638	35639
-	O	8.03	0.3160	1-11/16	2-15/16	35642	35643
-	P	8.21	0.3230	1-11/16	2-15/16	35654	35655
21/64	-	8.33	0.3281	1-11/16	2-15/16	35662	35663
-	Q	8.43	0.3320	1-11/16	3	35670	35671
-	-	8.50	0.3346	43mm	76mm	35674	35675
-	R	8.61	0.3390	1-11/16	3	35682	35683
11/32	-	8.73	0.3438	1-11/16	3	35690	35691
	-	8.80	0.3607	44mm	78mm	35640	35641
-	S	8.84	0.3480	1-3/4	3-1/16	35698	35699
-	-	9.00	0.3543	44mm	78mm	35706	35707
-	T	9.09	0.3580	1-3/4	3-1/16	35710	35711
23/64	-	9.13	0.3594	1-3/4	3-1/16	35718	35719
-	U	9.35	0.3680	1-13/16	3-1/8	35730	35731
-	-	9.50	0.3740	46mm	79mm	35738	35739
3/8	-	9.53	0.3750	1-13/16	3-1/8	35742	35743
-	V	9.58	0.3770	1-7/8	3-1/4	35746	35747
-	W	9.81	0.3860	1-7/8	3-1/4	35762	35763
25/64	-	9.92	0.3906	1-7/8	3-1/4	35770	35771
-	-	10.00	0.3937	48mm	83mm	35774	35775
-	X	10.08	0.3970	1-15/16	3-5/16	35778	35779
-	Y	10.26	0.4040	1-15/16	3-5/16	35790	35791
13/32	-	10.32	0.4062	1-15/16	3-5/16	35798	35799
-	Z	10.49	0.4130	2	3-3/8	35806	35807
-	-	10.50	0.4134	51mm	86mm	35810	35811

CARBIDE DRILLS

Screw Machine



SCREW MACHINE LENGTH DRILLS

Fraction Size	Letter/Wire	Metric	Decimal Equiv.	Flute Length	OAL	Uncoated	Coated AlTiN
27/64	-	10.72	0.4219	2	3-3/8	35822	35823
-	-	11.00	0.4331	52mm	87mm	35834	35835
7/16	-	11.11	0.4375	2-1/16	3-7/16	35842	35843
-	-	11.50	0.4528	54mm	90mm	35858	35859
29/64	-	11.51	0.4531	2-1/8	3-9/16	35862	35863
15/32	-	11.91	0.4688	2-1/8	3-5/8	35882	35883
-	-	12.00	0.4724	54mm	92mm	35886	35887
31/64	-	12.30	0.4844	2-3/16	3-11/16	35902	35903
-	-	12.50	0.4921	55mm	95mm	35910	35911
1/2	-	12.70	0.5000	2-1/4	3-3/4	35918	35919

135°

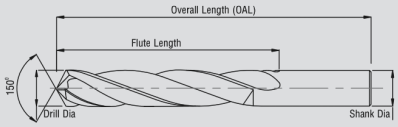
15°

Shank Dia: h6
Cut Dia: h7

DRILLS

CARBIDE DRILLS

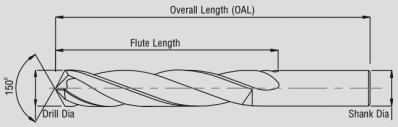
Speeds & Feeds



3FL DRILLS			
Material Group	Material Type	Cutting Speed 3 Flute Drills	
		m/min	SFM
Steel	Structural Steel		
	Free Cutting Steel		
	Unalloyed Heat Treatable Steel		
	Unalloyed Case Hardened Steel		
	Alloyed Case Hardened Steel		
	Nitriding Steel		
Acid Resistant /	Stainless Steel,		
Stainless Steel	Sulphured Austenitic Steel, Martensitic		
High Tensile Steel	Low Carbon Steel		
	Medium Carbon Steel		
	Alloyed Heat Treatable Steel		
	Tool Steel		
	High Speed Steel		
	Spring Steel		
Cast Materials	Cast Iron		
	Spheroidal Graphite & Malleable Ci		
	Chilled Ci		
Aluminum &	Aluminum Alloys	200 - 215	654 - 703
Aluminum Alloys	Al Wrought Alloys	200 - 215	654 - 703
	Al Cast Alloys < 10%si	200 - 215	654 - 703
	Al Cast Alloys > 10%si	150 - 165	491 - 540
Special Alloys	Special Alloys		
	Ti Alloys		
Non Ferrous Metals	Copper Low Alloyed	70 - 80	229 - 262
	Brass	70 - 80	229 - 262
	Bronze	70 - 80	229 - 262
Plastics	Duro Plastics	90 - 100	294 - 327
	Thermo Plastics	90 - 100	294 - 327
Magnesium Alloys	Mg Alloys		

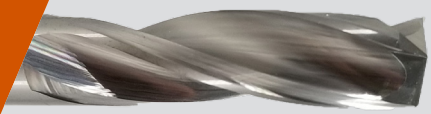
CARBIDE DRILLS

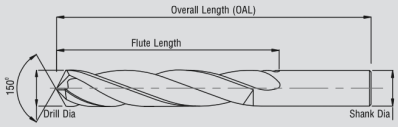
Speeds & Feeds



3 FLUTE DRILL DIAMETER										
Material	2.00	3.00	5.00	6.00	8.00	10.00	12.00	16.00	20.00	25.00
	5/64″	7/64″	3/16″	15/64″	5/16″	25/64″	15/32″	5/8″	3/4″	1″
	Feed Rate mm/rev									
	Feed Rate IPR									
Steel	0.05	0.08	0.10	0.125	0.15	0.18	0.20	0.23	0.25	0.30
	0.002	0.0032	0.004	0.005	0.006	0.007	0.008	0.009	0.010	0.012
High Tensile Steels/acid Resistant	0.03	0.05	0.07	0.085	0.12	0.14	0.15	0.18	0.21	0.25
	0.0016	0.002	0.003	0.004	0.005	0.0055	0.006	0.007	0.0083	0.010
Cast Material	0.06	0.09	0.12	0.15	0.18	0.20	0.22	0.25	0.28	0.30
	0.0024	0.004	0.005	0.006	0.007	0.008	0.009	0.010	0.011	0.012
Aluminum Alloys	0.09	0.12	0.18	0.22	0.26	0.3	0.30	0.35	0.40	0.43
	0.004	0.005	0.007	0.009	0.01	0.012	0.012	0.014	0.016	0.017
Titanium Alloys	0.015	0.03	0.04	0.06	0.08	0.10	0.11	0.13	0.016	0.18
	0.0006	0.0012	0.0015	0.0024	0.003	0.004	0.0043	0.005	0.006	0.007
Non Ferrous	0.06	0.08	0.10	0.13	0.18	0.2	0.20	0.25	0.30	0.35
	0.0024	0.003	0.004	0.005	0.007	0.008	0.008	0.01	0.012	0.014
Mg Alloys	0.07	0.09	0.125	0.16	0.18	0.20	0.23	0.25	0.28	0.32
	0.003	0.004	0.005	0.006	0.007	0.008	0.009	0.010	0.011	0.013

All other coatings available on request





150°

20°

Shank Dia: h6
Cut Dia: h7

3 FLUTE DRILLS

INCH AND METRIC

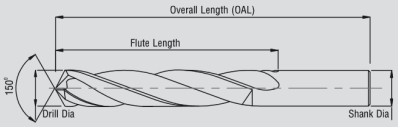
BENEFITS & FEATURES

- Ideal drill when precise hole dimension is required
- 3 Flute design allows higher MRR, produces more straight holes
- 150° six facet self-centering drill
- Manufactured from premium submicron grain carbide

3 FLUTE DRILLS						
Fraction Size	Metric	Decimal Equiv.	Flute Length	OAL	Uncoated	Coated AlTiN
-	3.00	0.1181	20mm	50mm	39560	39561
1/8	3.18	0.1250	3/4	1-7/8	39510	39563
-	3.30	0.1299	20mm	50mm	39565	39566
-	3.50	0.1378	20mm	50mm	39570	39571
9/64	3.57	0.1406	13/16	1-15/16	39511	39573
5/32	3.97	0.1562	7/8	2-1/16	39512	39574
-	4.00	0.1575	23mm	50mm	39575	39576
11/64	4.37	0.1719	7/8	2-1/8	39513	39578
-	4.50	0.1770	24mm	55mm	39580	39581
3/16	4.76	0.1875	15/16	2-3/16	39514	39583
-	4.80	0.1890	24mm	55mm	39585	39586
-	5.00	0.1968	24mm	55mm	39590	39591
13/64	5.16	0.2031	1	2-1/4	39515	39593
-	5.50	0.2165	29mm	63mm	39595	39596
7/32	5.55	0.2187	1-1/16	2-3/8	39516	39598
15/64	5.95	0.2344	1-1/8	2-7/16	39517	39599
-	6.00	0.2362	29mm	63mm	39600	39601
1/4	6.35	0.2500	1-3/16	2-1/2	39518	39603
-	6.50	0.2559	29mm	63mm	39605	39606
17/64	6.75	0.2656	1-1/4	2-5/8	39519	39609
-	6.80	0.2677	34mm	69mm	39610	39611
-	7.00	0.2756	34mm	69mm	39615	39616
9/32	7.14	0.2812	1-5/16	2-11/16	39520	39621
-	7.50	0.2953	34mm	69mm	39620	39624
19/64	7.54	0.2969	1-3/8	2-3/4	39521	39618
	7.70	0.3031	38mm	75mm	39623	39619
5/16	7.94	0.3125	1-7/16	2-13/16	39522	39628
-	8.00	0.3150	38mm	75mm	39625	39626
21/64	8.33	0.3281	1-1/2	2-15/16	39523	39629
-	8.50	0.3346	38mm	75mm	39630	39631
11/32	8.73	0.3438	1-1/2	3	39524	39633
-	9.00	0.3543	41mm	80mm	39635	39636
23/64	9.13	0.3594	1-9/16	3-1/16	39525	39638
-	9.50	0.3740	41mm	80mm	39640	39641
3/8	9.53	0.3750	1-5/8	3-1/8	39526	39634
25/64	9.92	0.3906	1-5/8	3-1/4	39527	39639

CARBIDE DRILLS

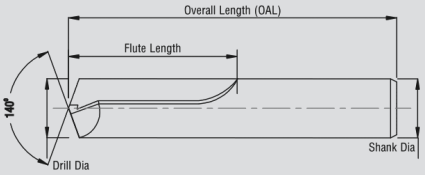
3 Flute



3 FLUTE DRILLS

Fraction Size	Metric	Decimal Equiv.	Flute Length	OAL	Uncoated	Coated AlTiN
-	10.00	0.3937	41mm	80mm	39645	39646
-	10.20	0.4016	41mm	80mm	39650	39651
13/32	10.32	0.4062	1-5/8	3-5/16	39528	39643
-	10.50	0.4134	41mm	80mm	39655	39656
27/64	10.72	0.4219	1-21/32	3-3/8	39529	39644
-	10.80	0.4252	45mm	88mm	39660	39661
-	11.00	0.4331	45mm	88mm	39665	39666
7/16	11.11	0.4375	1-3/4	3-7/16	39530	39648
-	11.50	0.4528	48mm	92mm	39670	39671
29/64	11.51	0.4531	1-7/8	3-7/16	39531	39649
15/32	11.91	0.4688	1-7/8	3-5/8	39532	39653
-	12.00	0.4724	48mm	92mm	39675	39676
31/64	12.30	0.4844	2	3-11/16	39533	39654
-	12.50	0.4920	58mm	102mm	39680	39681
1/2	12.70	0.5000	2	3-3/4	39534	39658
33/64	13.10	0.5156	2	3-7/8	39535	39659
17/32	13.49	0.5313	2	3-7/8	39536	39662
35/64	13.89	0.5469	2-1/8	4	39537	39663
9/16	14.29	0.5625	2-1/8	4	39538	39664
37/64	14.68	0.5781	2-1/8	4	39539	39668
19/32	15.08	0.5937	2-1/8	4	39540	39669
39/64	15.48	0.6094	2-1/8	4	39541	39673
5/8	15.88	0.6250	2-1/4	4-1/4	39542	39674
41/64	16.27	0.6406	2-1/4	4-1/4	39543	39678
21/32	16.67	0.6562	2-1/4	4-1/4	39544	39679
43/64	17.07	0.6719	2-1/4	4-1/4	39545	39683
11/16	17.46	0.6875	2-7/8	4-5/8	39546	39684
45/64	17.86	0.7031	2-7/8	4-5/8	39547	39685
23/32	18.25	0.7187	2-7/8	4-5/8	39548	39686
47/64	18.65	0.7344	2-7/8	4-5/8	39549	39687
3/4	19.05	0.7500	3-1/8	5	39550	39688

Shank Dia: h6
Cut Dia: h7



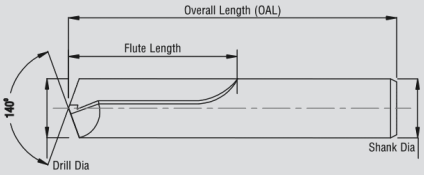
DRILLS

MICRO GRAIN SOLID CARBIDE

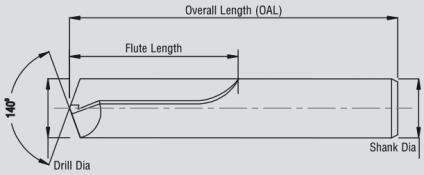
STRAIGHT FLUTE DRILL			
Material Group	Material Type	Cutting Speed Straight Flute Drills	
		m/min	SFM
Steel	Structural Steel	60	193
	Free Cutting Steel	60	193
	Unalloyed Heat Treatable Steel	45	147
	Unalloyed Case Hardened Steel	45	147
	Alloyed Case Hardened Steel	30	98
	Nitriding Steel	30	98
Acid Resistant /	Stainless Steel,	40	131
Stainless Steel	Sulphured Austenitic Steel, Martensitic		
High Tensile Steel	Low Carbon Steel	55	180
	MediumCarbon Steel	45	147
	Alloyed Heat Treatable Steel	30	98
	Tool Steel	30	98
	High Speed Steel	25	82
	Spring Steel	30	98
Cast Materials	Cast Iron		
	Spheroidal Graphite & Malleable Ci		
	Chilled Ci		
Aluminum &	Aluminum Alloys		
Aluminum Alloys	Al Wrought Alloys		
	Al Cast Alloys < 10%si		
	Al Cast Alloys > 10%si		
Special Alloys	Special Alloys		
	Ti Alloys		
Non Ferrous Metals	Copper Low Alloyed		
	Brass		
	Bronze		
Plastics	Duro Plastics		
	Thermo Plastics		
Magnesium Alloys	Mg Alloys		

CARBIDE DRILLS

Speeds & Feeds



STRAIGHT FLUTE DRILL DIAMETER										
Material	2.00	3.00	5.00	6.00	8.00	10.00	12.00	16.00	20.00	25.00
	5/64″	7/64″	3/16″	15/64″	5/16″	25/64″	15/32″	5/8″	3/4″	1″
	Feed Rate mm/rev									
	Feed Rate IPR									
Steel	0.05	0.08	0.10	0.125	0.15	0.18	0.20	0.23	0.25	0.30
	0.002	0.0032	0.004	0.005	0.006	0.007	0.008	0.009	0.010	0.012
High Tensile Steels / acid Resistant	0.03	0.05	0.07	0.085	0.12	0.14	0.15	0.18	0.21	0.25
	0.0016	0.002	0.003	0.004	0.005	0.0055	0.006	0.007	0.0083	0.010
Cast Material	0.06	0.09	0.12	0.15	0.18	0.20	0.22	0.25	0.28	0.30
	0.0024	0.004	0.005	0.006	0.007	0.008	0.009	0.010	0.011	0.012
Aluminum Alloys	0.09	0.12	0.18	0.22	0.26	0.3	0.30	0.35	0.40	0.43
	0.004	0.005	0.007	0.009	0.01	0.012	0.012	0.014	0.016	0.017
Titanium Alloys	0.015	0.03	0.04	0.06	0.08	0.10	0.11	0.13	0.016	0.18
	0.0006	0.0012	0.0015	0.0024	0.003	0.004	0.0043	0.005	0.006	0.007
Non Ferrous	0.06	0.08	0.10	0.13	0.18	0.2	0.20	0.25	0.30	0.35
	0.0024	0.003	0.004	0.005	0.007	0.008	0.008	0.01	0.012	0.014
Mg Alloys	0.07	0.09	0.125	0.16	0.18	0.20	0.23	0.25	0.28	0.32
		0.004	0.005	0.006	0.007	0.008	0.009	0.010	0.011	0.013



Shank Dia: h6
Cut Dia: h7

STRAIGHT FLUTE DRILLS

INCH, LETTER, NUMBER AND METRIC

BENEFITS & FEATURES

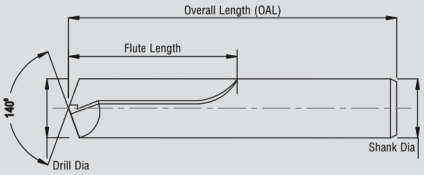
- The added web strength of the straight flutes and special point configuration easily penetrates work pieces with minimal deflection
- Designed to be used in hardened steel, Stainless steels, and other exotic materials 38-40 Rockwell "C" scale
- Accurately sized holes are produced without annealing or softening the work piece
- Reamer type finishes are easily produced

STRAIGHT FLUTE DRILLS

Fraction Size	Letter/Wire	Metric	Decimal Equiv.	Flute Length	OAL	Uncoated	Coated AlTiN
-	-	1.00	0.0394	12mm	38mm	32018	32019
-	60	-	0.0400	1/2	1-1/2	32000	32001
-	59	-	0.0410	1/2	1-1/2	32002	32003
-	58	-	0.0420	1/2	1-1/2	32004	32005
-	57	-	0.0430	1/2	1-1/2	32006	32007
-	-	1.10	0.0433	12mm	38mm	32020	32021
-	56	1.18	0.0465	1/2	1-1/2	32024	32025
3/64	-	1.19	0.0469	1/2	1-1/2	32028	32027
-	-	1.20	0.0472	12mm	38mm	32029	32026
-	-	1.30	0.0511	12mm	38mm	32030	32031
-	55	1.32	0.0520	1/2	1-1/2	32032	32033
-	54	-	0.0550	1/2	1-1/2	32036	32037
-	-	1.40	0.0551	12mm	38mm	32038	32039
-	-	1.50	0.0591	12mm	38mm	32040	32041
-	53	1.51	0.0595	1/2	1-1/2	32044	32045
1/16	-	1.59	0.0625	5/8	1-1/2	32048	32049
-	-	1.60	0.0630	16mm	38mm	32050	32051
-	52	1.61	0.0635	11/16"	1-11/16	32052	32053
-	-	1.70	0.0669	17mm	43mm	32054	32055
-	51	1.70	0.0670	11/16	1-11/16	32056	32057
-	50	1.78	0.0700	11/16	1-11/16	32060	32061
-	-	1.80	0.0708	17mm	43mm	32062	32063
-	49	1.85	0.0730	11/16	1-11/16	32064	32065
-	-	1.90	0.0748	17mm	43mm	32066	32067
-	48	1.93	0.0760	11/16	1-11/16	32068	32069
5/64	-	1.98	0.0781	11/16	1-11/16	32072	32073
-	47	1.99	0.0785	3/4	1-3/4	32076	32077
-	-	2.00	0.0787	19mm	44mm	32080	32081
-	46	2.06	0.0810	3/4	1-3/4	32084	32085
-	45	2.08	0.0820	3/4	1-3/4	32088	32089
-	-	2.10	0.0826	19mm	44mm	32090	32091
-	44	2.18	0.0860	3/4	1-3/4	32092	32093
-	-	2.20	0.0866	19mm	44mm	32094	32095
-	43	2.26	0.0890	3/4	1-3/4	32096	32097
-	-	2.30	0.0905	19mm	44mm	32098	32099
-	42	2.37	0.0935	3/4	1-3/4	32100	32101

CARBIDE DRILLS

Straight Flute



STRAIGHT FLUTE DRILLS

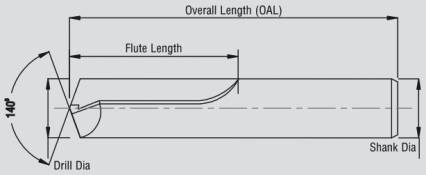
140°

Shank Dia: h6
Cut Dia: h7

Fraction Size	Letter/Wire	Metric	Decimal Equiv.	Flute Length	OAL	Uncoated	Coated AlTiN
3/32	-	2.38	0.0938	3/4	1-3/4	32104	32105
-	-	2.40	0.0944	19mm	44mm	32106	32107
-	41	2.44	0.0960	13/16	1-13/16	32108	32109
-	40	2.49	0.0980	13/16	1-13/16	32112	32113
-	-	2.50	0.0984	21mm	46mm	32116	32117
-	39	2.53	0.0995	13/16	1-13/16	32120	32121
-	38	2.58	0.1015	13/16	1-13/16	32124	32125
-	-	2.60	0.1024	21mm	46mm	32126	32127
-	37	2.64	0.1040	13/16	1-13/16	32128	32129
-	-	2.70	0.1063	21mm	46mm	32130	32131
-	36	2.71	0.1065	13/16	1-13/16	32132	32133
7/64	-	2.78	0.1094	13/16	1-13/16	32136	32137
-	35	2.79	0.1100	7/8	1-7/8	32140	32141
-	-	2.80	0.1103	22mm	48mm	32142	32143
-	34	2.82	0.1110	7/8	1-7/8	32144	32145
-	33	2.87	0.1130	7/8	1-7/8	32148	32149
-	-	2.90	0.1141	22mm	48mm	32150	32151
-	32	2.95	0.1160	7/8	1-7/8	32152	32153
-	-	3.00	0.1181	22mm	48mm	32156	32157
-	31	3.05	0.1200	7/8"	1-7/8	32160	32161
-	-	3.10	0.1221	22mm	48mm	32164	32165
1/8	-	3.18	0.1250	7/8	1-7/8	32168	32170
-	-	3.20	0.1260	22mm	48mm	32172	32173
-	30	3.26	0.1285	15/16	1-15/16	32176	32177
-	-	3.30	0.1290	24mm	50mm	32180	32181
-	-	3.40	0.1339	24mm	50mm	32184	32185
-	29	3.45	0.1360	15/16	1-15/16	32188	32189
-	-	3.50	0.1378	24mm	52mm	32192	32193
-	28	3.57	0.1405	15/16	1-15/16	32196	32197
9/64	-	3.57	0.1406	15/16	1-15/16	32200	32201
-	-	3.60	0.1418	24mm	50mm	32204	32205
-	27	3.66	0.1440	1	2-1/16	32208	32209
-	-	3.70	0.1457	25.4mm	51mm	32212	32213
-	26	3.73	0.1470	1	2-1/16	32216	32217
-	25	-	0.1495	1	2-1/16	32220	32221
-	-	3.80	0.1496	25.4mm	51mm	32224	32225
-	24	3.86	0.1520	1	2-1/16	32228	32229
-	-	3.90	0.1535	25.4mm	51mm	32232	32233
-	23	3.91	0.1540	1	2-1/16	32236	32237
5/32	-	3.97	0.1562	1	2-1/16	32240	32241
-	22	3.99	0.1570	1-1/16	2-1/8	32244	32245
-	-	4.00	0.1575	27mm	53mm	32248	32249
-	21	4.04	0.1590	1-1/16	2-1/8	32252	32253
-	20	4.09	0.1610	1-1/16	2-1/8	32256	32257
-	-	4.10	0.1614	27mm	53mm	32260	32261

CARBIDE DRILLS

Straight Flute



140°

Shank Dia: h6
Cut Dia: h7

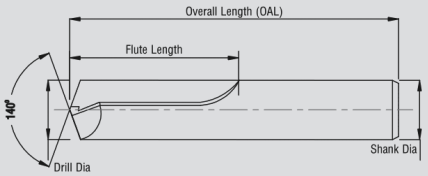
DRILLS

STRAIGHT FLUTE DRILLS

Fraction Size	Letter/Wire	Metric	Decimal Equiv.	Flute Length	OAL	Uncoated	Coated AlTiN
-	-	4.20	0.1654	27mm	53mm	32264	32265
-	19	4.22	0.1660	1-1/16	2-1/8	32268	32269
-	-	4.30	0.1693	27mm	53mm	32272	32273
-	18	4.31	0.1695	1-1/16	2-1/8	32276	32277
11/64	-	4.37	0.1719	1-1/16	2-1/8	32280	32281
-	17	4.39	0.1730	1-1/8	2-3/16	32284	32285
-	-	4.40	0.1732	29mm	55mm	32288	32289
-	16	4.50	0.1770	1-1/8	2-3/16	32292	32293
-	-	4.50	0.1772	29mm	55mm	32296	32297
-	15	4.57	0.1800	1-1/8	2-3/16	32300	32301
-	-	4.60	0.1811	29mm	55mm	32304	32305
-	14	4.62	0.1820	1-1/8	2-3/16	32308	32309
-	13	4.70	0.1850	1-1/8	2-3/16	32312	32313
3/16	-	4.76	0.1875	1-1/8	2-3/16	32316	32317
-	-	4.80	0.1890	29mm	55mm	32320	32321
-	12	-	0.1890	1-3/16	2-1/4	32324	32325
-	11	4.85	0.1910	1-3/16	2-1/4	32328	32329
-	-	4.90	0.1930	30mm	57mm	32332	32333
-	10	4.91	0.1935	1-3/16	2-1/4	32336	32337
-	9	4.98	0.1960	1-3/16	2-1/4	32340	32341
-	-	5.00	0.1969	30mm	57mm	32344	32345
-	8	5.05	0.1990	1-3/16	2-1/4	32348	32349
-	-	5.10	0.2008	30mm	57mm	32352	32353
-	7	5.11	0.2010	1-3/16	2-1/4	32356	32357
13/64	-	5.16	0.2031	1-3/16	2-1/4	32360	32361
-	6	5.18	0.2040	1-1/4	2-3/8	32364	32365
-	-	5.20	0.2047	32mm	60mm	32368	32369
-	5	5.22	0.2055	1-1/4	2-3/8	32372	32373
-	-	5.30	0.2087	32mm	60mm	32376	32377
-	4	5.31	0.2090	1-1/4	2-3/8	32380	32381
-	-	5.40	0.2126	32mm	60mm	32384	32385
-	3	5.41	0.2130	1-1/4	2-3/8	32388	32389
-	-	5.50	0.2165	32mm	60mm	32392	32393
7/32	-	5.55	0.2188	1-1/4	2-3/8	32396	32397
-	-	5.60	0.2205	32mm	60mm	32400	32401
-	2	5.61	0.2210	1-5/16	2-7/16	32404	32405
-	-	5.70	0.2244	33mm	62mm	32408	32409
-	1	5.79	0.2280	1-5/16	2-7/16	32412	32413
-	-	5.80	0.2284	33mm	62mm	32416	32417
-	-	5.90	0.2324	33mm	62mm	32420	32421
-	A	5.94	0.2340	1-5/16	2-7/16	32424	32425
15/64	-	5.95	0.2344	1-5/16	2-7/16	32428	32429
-	-	6.00	0.2362	33mm	62mm	32432	32433
-	B	6.05	0.2380	1-3/8	2-1/2	32436	32437
-	-	6.10	0.2411	35mm	64mm	32440	32441

CARBIDE DRILLS

Straight Flute



STRAIGHT FLUTE DRILLS

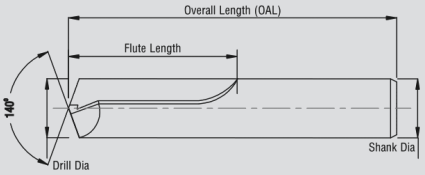
140°

Shank Dia: h6
Cut Dia: h7

Fraction Size	Letter/Wire	Metric	Decimal Equiv.	Flute Length	OAL	Uncoated	Coated AlTiN
-	C	6.15	0.2420	1-3/8	2-1/2	32444	32445
-	-	6.20	0.2441	35mm	64mm	32448	32449
-	D	6.25	0.2461	1-3/8	2-1/2	32452	32453
-	-	6.30	0.2480	35mm	64mm	32456	32457
1/4	E	6.35	0.2500	1-3/8	2-1/2	32460	32461
-	-	6.40	0.2518	35mm	64mm	32464	32465
-	-	6.50	0.2559	35mm	64mm	32468	32469
-	F	6.53	0.2570	1-7/16	2-5/8	32472	32473
-	G	6.53	0.2610	1-7/16	2-5/8	32480	32481
17/64	-	6.75	0.2656	1-7/16	2-5/8	32488	32489
-	H	6.76	0.2660	1-1/2	2-11/16	32492	32493
-	I	6.91	0.2720	1-1/2	2-11/16	32504	32505
-	-	7.00	0.2756	38mm	68mm	32508	32509
-	J	7.04	0.2770	1-1/2	2-11/16	32512	32513
-	K	7.14	0.2810	1-1/2	2-11/16	32518	32519
9/32	-	7.14	0.2812	1-1/2	2-11/16	32520	32521
-	L	7.37	0.2900	1-9/16	2-3/4	32532	32533
-	M	7.49	0.2950	1-9/16	2-3/4	32540	32541
-	-	7.50	0.2953	40mm	70mm	32544	32545
19/64	-	7.54	0.2969	1-9/16	2-3/4	32548	32549
-	N	7.67	0.3020	1-5/8	2-13/16	32556	32557
5/16	-	7.94	0.3125	1-5/8	2-13/16	32572	32573
-	-	8.00	0.3150	41mm	71mm	32576	32577
-	O	8.03	0.3160	1-11/16	2-15/16	32580	32581
-	P	8.21	0.3230	1-11/16	2-15/16	32592	32593
21/64	-	8.33	0.3281	1-11/16	2-15/16	32600	32601
-	Q	8.43	0.3320	1-11/16	3	32608	32609
-	-	8.50	0.3246	43mm	76mm	32612	32613
-	R	8.61	0.3390	1-11/16	3	32620	32621
11/32	-	8.73	0.3438	1-11/16	3	32628	32629
-	S	8.84	0.3480	1-3/4	3-1/16	32636	32637
-	-	9.00	0.3543	44mm	78mm	32644	32645
-	T	9.09	0.3580	1-3/4	3-1/16	32648	32649
23/64	-	9.13	0.3594	1-3/4	3-1/16	32656	32657
-	U	9.35	0.3680	1-3/4	3-1/16	32668	32669
-	-	9.50	0.3740	46mm	79mm	32676	32677
3/8	-	9.53	0.3750	1-13/16	3-1/8	32680	32681
-	V	9.58	0.3770	1-7/8	3-1/4	32684	32685
-	W	9.81	0.3860	1-7/8	3-1/4	32700	32701
25/64	-	9.92	0.3906	1-7/8	3-1/4	32708	32709
-	-	10.00	0.3937	48mm	83mm	32712	32713

CARBIDE DRILLS

Straight Flute

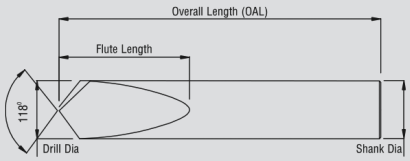


140°

Shank Dia: h6
Cut Dia: h7

STRAIGHT FLUTE DRILLS

Fraction Size	Letter/Wire	Metric	Decimal Equiv.	Flute Length	OAL	Uncoated	Coated AlTiN
-	X	10.08	0.3970	1-15/16	3-5/16	32716	32717
-	Y	10.26	0.4040	1-15/16	3-5/16	32728	32729
13/32	-	10.32	0.4062	1-15/16	3-5/16	32736	32737
-	Z	10.49	0.4130	2.0	3-3/8	32744	32745
-	-	10.50	0.4134	51mm	86mm	32748	32749
27/64	-	10.72	0.4219	2	3-3/8	32760	32761
-	-	11.00	0.4331	52mm	87mm	32772	32773
7/16	-	11.11	0.4375	2-1/16	3-7/16	32776	32777
-	-	11.50	0.4528	54mm	90mm	32780	32781
29/64	-	11.51	0.4531	2-1/8	3-9/16	32784	32785
15/32	-	11.91	0.4688	2-1/8	3-9/16	32788	32789
-	-	12.00	0.4724	54mm	92mm	32792	32793
31/64	-	12.30	0.4844	2-3/16	3-11/16	32796	32797
-	-	12.50	0.4921	57mm	95mm	32800	32801
1/2	-	12.70	0.5000	2-1/4	3-3/4	32804	32805



SPADE DRILLS

INCH AND METRIC

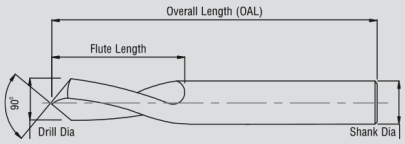
118°

Shank Dia: h6
Cut Dia: h7

BENEFITS & FEATURES

- Ideal for drilling thin sheet materials
- Designed for shallow hole drilling, do not exceed two diameters deep
- Heavy duty web reduces breakage
- Manufactured from premium submicron grain carbide

SPADE DRILLS					
Drill Dia	Decimal Equiv.	Shank Diameter	Flute Length	OAL	Uncoated
1/8	0.1250	1/8	7/16	1-1/2	32962
9/64	0.1406	9/64	1/2	2	32968
5/32	0.1562	5/32	9/16	2	32974
4mm	0.1575	4mm	12mm	50mm	32980
11/64	0.1719	11/64	9/16	2	32986
3/16	0.1875	3/16	9/16	2	32992
7/32	0.2188	7/32	19/32	2	32998
6mm	0.2362	6mm	16mm	50mm	33004
1/4	0.2500	1/4	11/16	2	33010
9/32	0.2812	9/32	7/8	2-1/2	33016
5/16	0.3125	5/16	7/8	2-1/2	33022
8mm	0.3150	8mm	22mm	63mm	33028
11/32	0.3438	11/32	15/16	2-1/2	33034
3/8	0.3750	3/8	1-1/8	2-1/2	33040
10mm	0.3937	10mm	25mm	63mm	33046
13/32	0.4062	13/32	1-1/8	2-1/2	33052
7/16	0.4375	7/16	1-3/16	2-1/2	33058
15/32	0.4687	15/32	1-3/16	2-1/2	33064
12mm	0.4724	12mm	28mm	63mm	33070
1/2	0.5000	1/2	1-3/16	2-1/2	33076



DRILLS

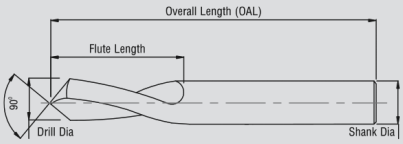
MICRO GRAIN SOLID CARBIDE

COMBINED DRILLS & SPOTTING DRILLS

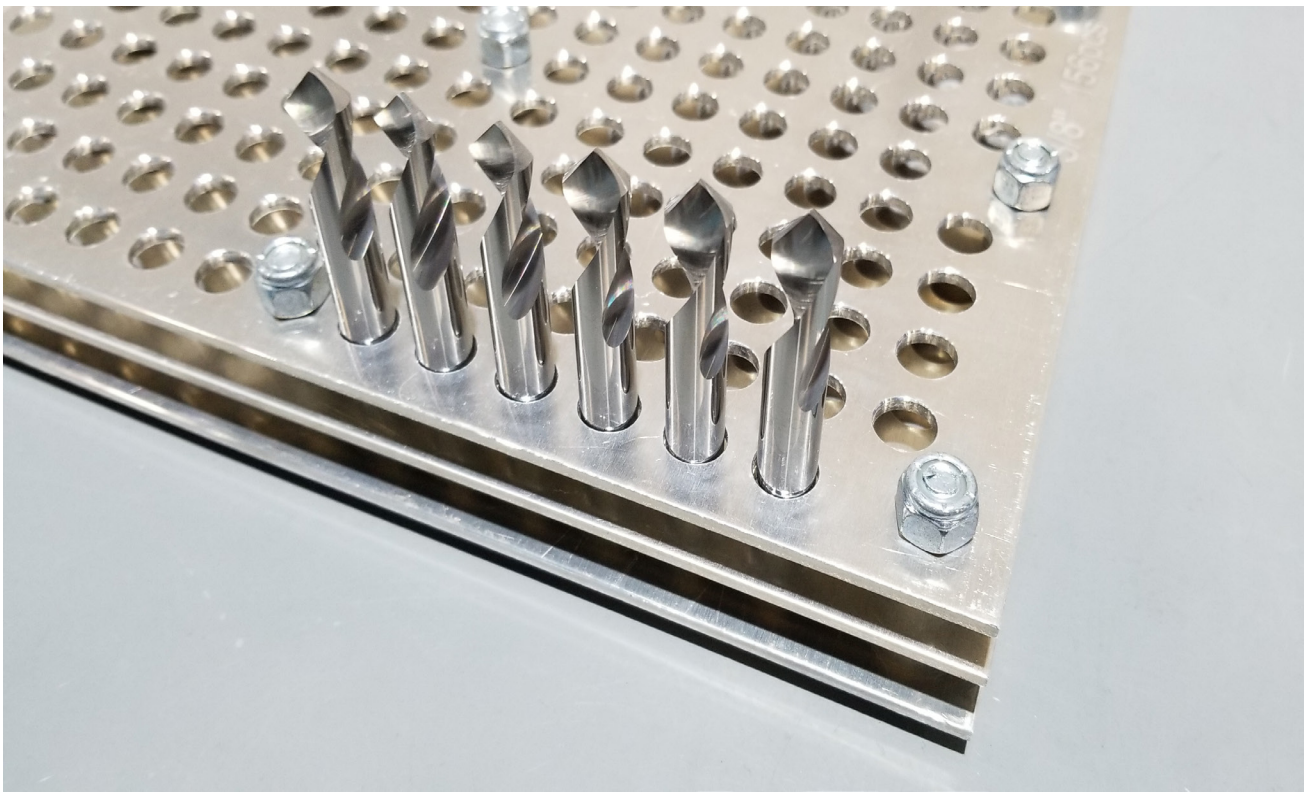
Material Group	Material Type	Cutting Speed - Combined Drill & Spotting Drill	
		m/min	SFM
Steel	Structural Steel	50 - 80	164 -262
	Free Cutting Steel	80 - 90	262 - 294
	Unalloyed Heat Treatable Steel	50 - 70	164 - 229
	Unalloyed Case Hardened Steel	30 - 40	98 - 131
	Alloyed Case Hardened Steel	40 - 50	131 - 164
	Nitriding Steel	30 - 40	98 - 131
Acid Resistant /	Stainless Steel,	35 - 50	114 - 164
Stainless Steel	Sulphured Austenitic Steel, Martensitic		
High Tensile Steel	Alloyed Heat Treatable Steel	40 - 60	131 - 196
	Tool Steel	30 - 50	98 - 164
	High Speed Steel	30 - 40	98 - 131
	Spring Steel		
Cast Materials	Cast Iron	50 - 80	164 - 262
	Spheroidal Graphite & Malleable Ci	50 - 80	164 - 262
	Chilled Ci	30 - 40	98 - 131
Aluminum &	Aluminum Alloys	100 - 150	327 - 491
Aluminum Alloys	Al Wrought Alloys	100 - 150	327 - 491
	Al Cast Alloys < 10%si	75 - 100	245 - 327
	Al Cast Alloys > 10%si	50 - 70	164 - 229
Special Alloys	Special Alloys	30 - 40	98 - 131
	Ti Alloys	20 - 30	65 - 98
Non Ferrous Metals	Copper Low Alloyed	120 - 150	393 - 491
	Brass	120 - 150	393 - 491
	Bronze	40 - 60	131 - 196
Magnesium Alloys	Mg Alloys	100 - 120	327 - 393

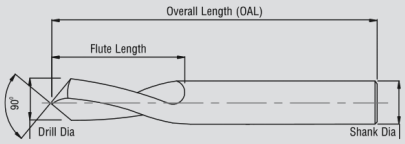
CARBIDE DRILLS

Speeds & Feeds



SPOTTING DRILL DIAMETER										
Material	2.00	3.00	5.00	6.00	8.00	10.00	12.00	16.00	20.00	25.00
	5/64″	7/64″	3/16″	15/64″	5/16"	25/64″	15/32″	5/8″	3/4″	1″
	Feed Rate mm/rev									
	Feed Rate IPR									
Steel	0.05	0.08	0.10	0.125	0.15	0.18	0.20	0.23	0.25	0.30
	0.002	0.0032	0.004	0.005	0.006	0.007	0.008	0.009	0.010	0.012
High Tensile Steels /Acid Resistant	0.03	0.05	0.07	0.085	0.12	0.14	0.15	0.18	0.21	0.25
	0.0016	0.002	0.003	0.004	0.005	0.0055	0.006	0.007	0.0083	0.010
Cast Material	0.06	0.09	0.12	0.15	0.18	0.20	0.22	0.25	0.28	0.30
	0.0024	0.004	0.005	0.006	0.007	0.008	0.009	0.010	0.011	0.012
Aluminum Alloys	0.09	0.12	0.18	0.22	0.26	0.3	0.30	0.35	0.40	0.43
	0.004	0.005	0.007	0.009	0.01	0.012	0.012	0.014	0.016	0.017
Titanium Alloys	0.015	0.03	0.04	0.06	0.08	0.10	0.11	0.13	0.016	0.18
	0.0006	0.0012	0.0015	0.0024	0.003	0.004	0.0043	0.005	0.006	0.007
Non Ferrous	0.06	0.08	0.10	0.13	0.18	0.2	0.20	0.25	0.30	0.35
	0.0024	0.003	0.004	0.005	0.007	0.008	0.008	0.01	0.012	0.014
Mg Alloys	0.07	0.09	0.125	0.16	0.18	0.20	0.23	0.25	0.28	0.32
	0.003	0.004	0.005	0.006	0.007	0.008	0.009	0.010	0.011	0.013





2 FLUTE N/C SPOTTING DRILLS

INCH AND METRIC

90°

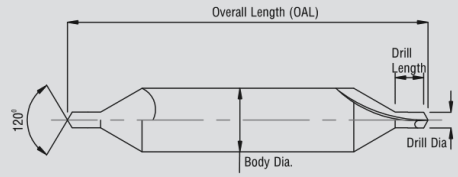
Shank Dia: h6
Cut Dia: h7

BENEFITS & FEATURES

- Ideal for chamfering or spot drilling
- For centering and countersinking on NC and CNC Machines
- Manufactured from premium submicron level carbide grain

SPOTTING DRILLS

Drill Dia	Decimal Equiv.	OAL	Uncoated 90 Deg	120 Deg	145 Deg
1/8	0.1250	1-1/2	31900	31902	31903
3/16	0.1875	2	31904	31906	31905
5mm	0.1969	62mm	31930	31932	31933
6mm	0.2362	66mm	31934	31936	31935
1/4	0.2500	2-1/2	31908	31910	31911
5/16	0.3125	2-1/2	31912	31914	31915
8mm	0.3150	79mm	31938	31940	31939
3/8	0.3750	2-1/2	31916	31918	31919
10mm	0.3937	89mm	31942	31944	31943
12mm	0.4724	102mm	31946	31948	31947
1/2	0.5000	3	31920	31922	31923
16mm	0.6299	115mm	31950	31952	31951
20mm	0.7874	131mm	31954	31956	31955



DRILLS

COMBINED DRILLS AND COUNTERSINK - CENTER DRILLS

INCHES

120°

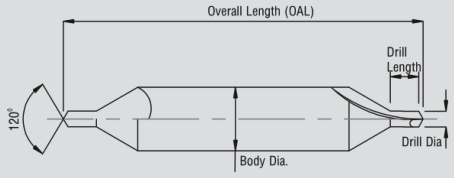
Shank Dia: h6
Cut Dia: h7

BENEFITS & FEATURES

- Ideal for chamfering
- For centering and countersinking on NC and CNC Machines
- Manufactured from premium submicron level carbide grain

60 DEG COMBINED DRILLS REGULAR LENGTH - FRACTION

Size	Body Dia	Drill Dia	OAL	Uncoated	AlTiN
00	0.025	1/8	1-1/2	31504	31544
0	1/32	1/8	1-1/2	31508	31548
1	3/64	1/8	1-1/2	31512	31552
2	5/64	3/16	2	31516	31556
3	7/64	1/4	2	31520	31560
4	1/8	5/16	2-1/8	31524	31564
5	3/16	7/16	2-3/4	31528	31568
6	7/32	1/2	3	31532	31572
7	1/4	5/8	3-1/4	31536	31576
8	5/16	3/4	3-1/2	31540	31580



COMBINED DRILLS AND COUNTERSINK - LONG

INCHES

BENEFITS & FEATURES

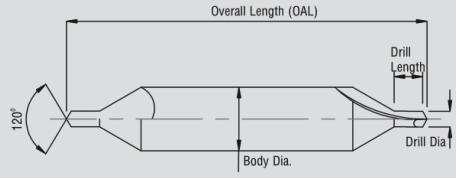
- Ideal for chamfering
- For centering and countersinking on NC and CNC Machines
- Manufactured from premium submicron level carbide grain

120°

Shank Dia: h6
Cut Dia: h7

60 DEG COMBINED DRILLS LONG LENGTH - FRACTION

Size	Body Dia	Drill Dia	OAL	Uncoated
1	3/64	1/8	4	31664
2	5/64	3/16	4	31668
3	7/64	1/4	4	31672
4	1/8	5/16	4	31676
5	3/16	7/16	6	31680
6	7/32	1/2	6	31684
7	1/4	5/8	6	31688
8	5/16	3/4	6	31692



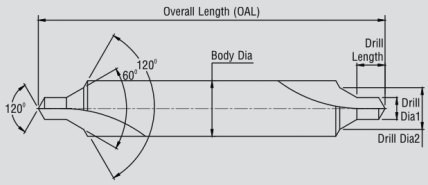
82 DEG AND 90 DEG COMBINED DRILLS REGULAR LENGTH - FRACTION

Size	Drill Dia	Body Dia	OAL	Uncoated	
				82 Deg	90 Deg
00	0.025	1/8	1-1/2	31584	31624
0	1/32	1/8	1-1/2	31588	31628
1	3/64	1/8	1-1/2	31592	31632
2	5/64	3/16	2	31596	31636
3	7/64	1/4	2	31600	31640
4	1/8	5/16	2-1/8	31604	31644
5	3/16	7/16	2-3/4	31608	31648
6	7/32	1/2	3	31612	31652

DRILLS

120°

Shank Dia: h6
Cut Dia: h7



COMBINED DRILL FORM B

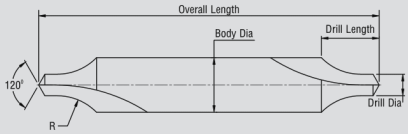
REGULAR LENGTH

Shank Dia: h6
Cut Dia: h7

BENEFITS & FEATURES

- Centerdrill is a dual-purpose drill which includes a 60° angle for burnishing and a 120° flare for chamfering
- This drill is used for the heaviest of work applications

COMBINED DRILL FORM B - FRACTION					
Drill Dia (d1)	Drill Dia (d2)	Drill Length	Body Dia	OAL	Uncoated
1.00	2.12	1.30	4.00	35.50	25950
1.25	2.65	1.60	5.00	40.00	25952
1.60	3.35	2.00	6.30	45.00	25954
2.00	4.25	2.50	8.00	50.00	25956
2.50	5.30	3.10	10.00	56.00	25958
3.15	6.70	3.90	11.20	60.00	25960
4.00	8.50	5.00	14.00	67.00	25962
5.00	10.60	6.30	18.00	75.00	25964



DRILLS

COMBINED DRILL FORM R

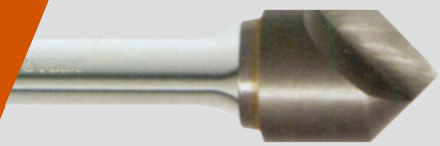
REGULAR LENGTH

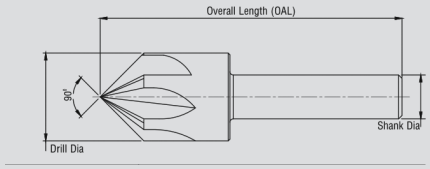
BENEFITS & FEATURES

- Special purpose drill for producing radius centre holes.
- This drill is used for the heaviest of work applications.

Shank Dia: h6
Cut Dia: h7

COMBINED DRILL FORM R - FRACTION						
Drill Dia (d1)	Drill Dia (d2)	Drill Length	OAL	Radius R		Uncoated
				MAX	MIN	
1.00	3.15	3.00	31.50	3.15	2.50	25966
1.25	3.15	3.35	31.50	4.00	3.15	25968
1.60	4.00	4.25	35.50	5.00	4.00	25970
2.00	5.00	5.30	40.00	6.30	5.00	25972
2.50	6.30	6.70	45.00	8.00	6.30	25974
3.15	8.00	8.50	50.00	10.00	8.00	25976
4.00	10.00	10.60	56.00	12.50	10.00	25978
5.00	12.50	13.20	63.00	16.00	12.50	25980





COUNTERSINK

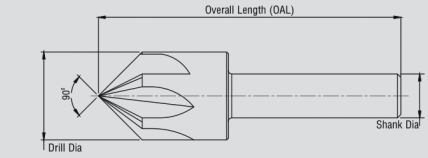
INCHES

BENEFITS & FEATURES

- Ideal for chamfering
- For centering and countersinking on NC and CNC Machines
- Manufactured from premium submicron level carbide grain

SINGLE FLUTE COUNTERSINK

Drill Dia	Shank Dia	OAL	60 Deg	82 Deg	90 Deg
1/8	1/8	1-1/2	38000	38004	38008
3/16	3/16	2	38020	38024	38028
1/4	1/4	2	38040	38044	38048
3/8	1/4	2	38060	38064	38068
1/2	1/4	2-1/2	38080	38084	38088
5/8	1/2	2-3/4	38100	38104	38108
3/4	1/2	2-3/4	38120	38124	38128
1	1/2	3	38140	38144	38148
1-1/4	3/4	3-1/4	38160	38164	38168

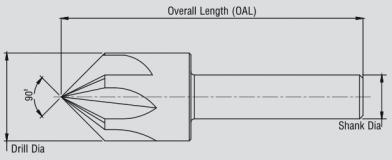


THREE FLUTE COUNTERSINK

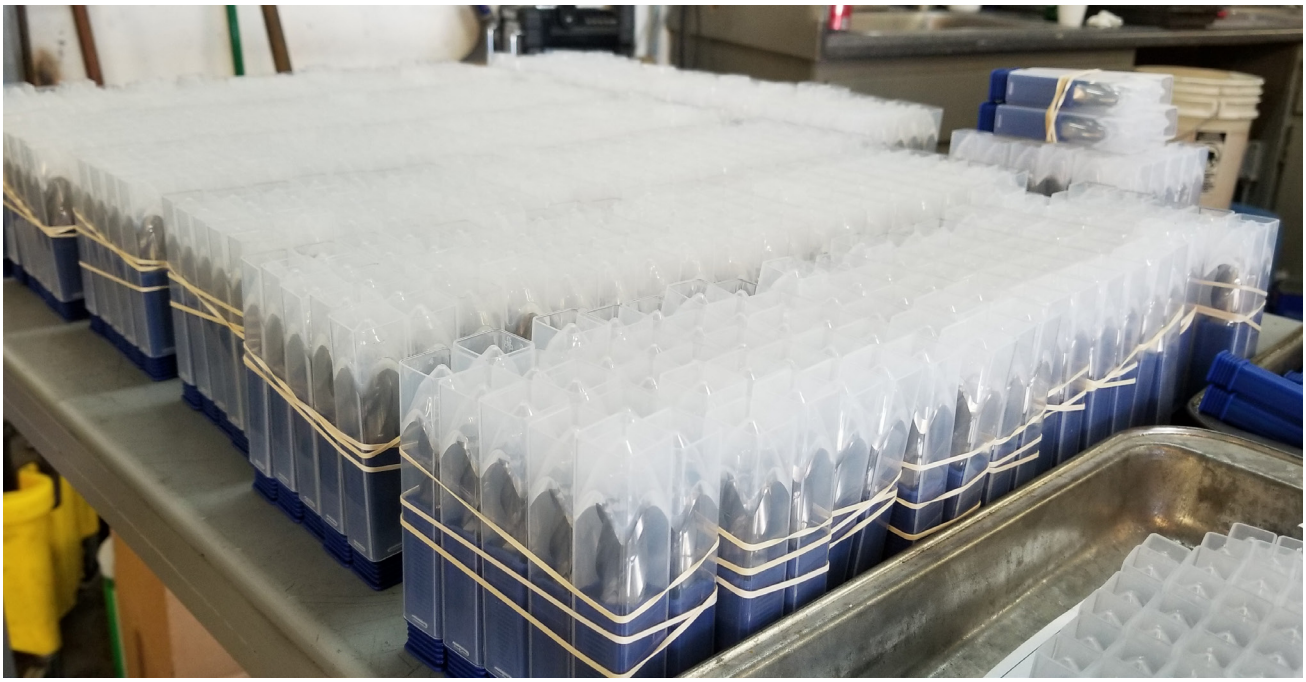
Drill Dia	Shank Dia	OAL	60 Deg	82 Deg	90 Deg
1/8	1/8	1-1/2	38331	38300	38400
3/16	3/16	2	38332	38304	38404
1/4	1/4	2	38333	38308	38408
5/16	3/8	2-1/2	38334	38312	38412
3/8	1/4	2-1/2	38335	38316	38416
1/2	1/4	2-3/4	38337	38320	38420
5/8	3/8	3	38338	38324	38424
3/4	3/8	3	38339	38328	38428
1	1/2	3-1/2	38340	38344	38436

CARBIDE DRILLS

Countersinks

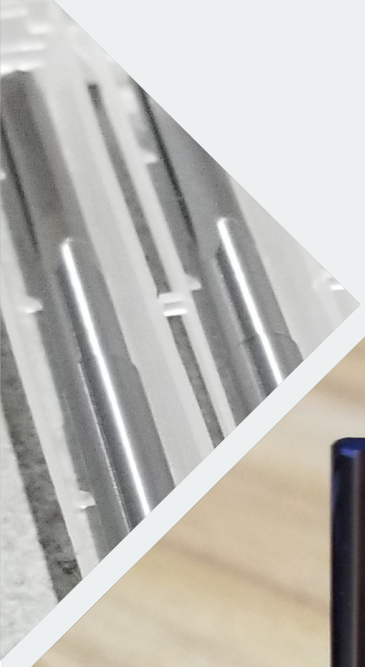


SIX FLUTE COUNTERSINK					
Drill Dia	Shank Dia	OAL	60 Deg	82 Deg	90 Deg
1/8	1/8	1-1/2	38600	38604	38608
3/16	3/16	2	38620	38624	38628
1/4	1/4	2	38640	38644	38648
5/16	1/4	2-1/2	38660	38664	38668
3/8	1/4	2-1/2	38680	38684	38688
1/2	1/4	2-1/2	38700	38704	38708
5/8	1/2	2-5/8	38720	38724	38728
3/4	1/2	2-3/4	38740	38744	38748
7/8	1/2	3	38760	38764	38768
1	1/2	3	38780	38784	38788
1-1/4	3/4	3-1/4	38800	38804	38808
1-1/2	3/4	3-1/2	38820	38824	38828

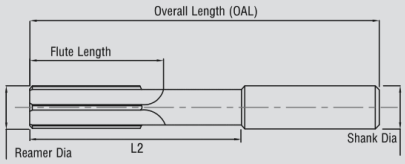


COBRA CARBIDE®

Power. Precision. Performance.



REAMERS



CHUCKING REAMERS

INCH, LETTER, NUMBER AND METRIC

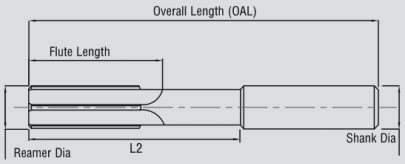
BENEFITS & FEATURES

- 4 Flutes in sizes up to .2550"; 6 Flutes in sizes .2555" and up
- General purpose reaming in all materials including steel and alloys up to RC40, Stainless, Aluminum, Brass, Bronze, and Plastics

CARBIDE CHUCKING REAMERS

	Diameter				Shank		Flute Length		OAL		
Part #	Wire/ Inch	Decimal	Wire	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Flutes
36000	70	.0280	-	-	.0280	-	1/4	-	1-1/2	-	4
36005	-	.0285	-	-	.0285	-	1/4	-	1-1/2	-	4
36007	-	.0290	-	-	.0290	-	1/4	-	1-1/2	-	4
36002	69	.0292	-	-	.0292	-	1/4	-	1-1/2	-	4
36011	-	.0295	-	0.75	.0295	0.75	-	6.5	-	38	4
36003	-	.0300	-	-	.0300	-	1/4	-	1-1/2	-	4
36012	-	.0305	-	-	.0305	-	1/4	-	1-1/2	-	4
36004	68	.0310	-	-	.0310	-	1/4	-	1-1/2	-	4
36006	1/32	.0312	-	-	.0312	-	1/4	-	1-1/2	-	4
36016	-	.0315	-	0.80	.0315	0.80	-	6.5	-	38	4
36008	67	.0320	-	-	.0320	-	1/4	-	1-1/2	-	4
36009	-	.0325	-	-	.0325	-	1/4	-	1-1/2	-	4
36010	66	.0330	-	-	.0330	-	1/4	-	1-1/2	-	4
36017	-	.0335	-	0.85	.0335	0.85	-	6.5	-	38	4
36013	-	.0340	-	-	.0340	-	1/4	-	1-1/2	-	4
36015	-	.0345	-	-	.0345	-	1/4	-	1-1/2	-	4
36022	65	.0350	-	-	.0350	-	1/4	-	1-1/2	-	4
36023	-	.0354	-	0.90	.0354	0.90	-	6.5	-	-	4
36024	-	.0355	-	-	.0355	-	1/4	-	1-1/2	-	4
36026	64	.0360	-	-	.0360	-	1/4	-	1-1/2	-	-
36027	-	.0365	-	-	.0365	-	1/4	-	1-1/2	-	4
36030	63	.0370	-	-	.0370	-	1/4	-	1-1/2	-	4
36031	-	.0374	-	0.95	.0374	0.95	-	6.5	-	38	4
36032	-	.0375	-	-	.0375	-	1/4	-	1-1/2	-	4
36034	62	.0380	-	-	.0380	-	1/4	-	1-1/2	-	4
36036	-	.0385	-	-	.0385	-	1/4	-	1-1/2	-	4
36038	61	.0390	-	-	.0390	-	1/4	-	1-1/2	-	4
36042	-	.0394	-	1.0	.0394	1.0	-	6.5	-	38	4
36044	-	.0395	-	-	.0395	-	1/4	-	1-1/2	-	4
36046	60	.0400	-	-	.0400	-	1/4	-	1-1/2	-	4
36047	-	.0405	-	-	.0405	-	1/4	-	1-1/2	-	4
36050	59	.0410	-	-	.0410	-	1/4	-	1-1/2	-	4
36051	-	.0413	-	1.05	.0413	1.05	-	6.5	-	38	4
36052	-	.0415	-	-	.0415	-	1/4	-	1-1/2	-	4
36054	58	.0420	-	-	.0420	-	3/8	-	1-1/2	-	4

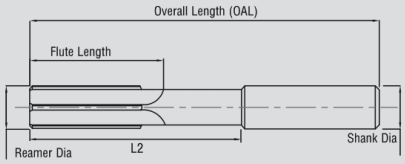
CARBIDE REAMERS
Chucking



CARBIDE CHUCKING REAMERS

	Diameter				Shank		Flute Length		OAL		
Part #	Wire/ Inch	Decimal	Wire	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Flutes
36053	-	.0425	-	-	.0425	-	3/8	-	1-1/2	-	4
36058	57	.0430	-	-	.0430	-	3/8	-	1-1/2	-	4
36055	-	.0433	-	1.10	.0433	1.10	-	9.5	-	38	4
36057	-	.0435	-	-	.0435	-	3/8	-	1-1/2	-	4
36056	-	.0440	-	-	.0440	-	3/8	-	1-1/2	-	4
36061	-	.0445	-	-	.0445	-	3/8	-	1-1/2	-	4
36063	-	.0450	-	-	.0450	-	3/8	-	1-1/2	-	4
36064	-	.0452	-	1.15	.0452	1.15	-	9.5	-	38	4
36065	-	.0455	-	-	.0455	-	3/8	-	1-1/2	-	4
36060	-	.0460	-	-	.0460	-	3/8	-	1-1/2	-	4
36062	56	.0465	-	-	.0465	-	3/8	-	1-1/2	-	4
36066	3/64	.0469	-	-	.0469	-	3/8	-	1-1/2	-	4
36267	-	.0470	-	-	.0470	-	3/8	-	1-1/2	-	4
36070	-	.0472	1.20	1.20	.0472	1.20	-	9.5	-	38	4
36071	-	.0475	-	-	.0475	-	3/8	-	1-1/2	-	4
36072	-	.0480	-	-	.0480	-	3/8	-	1-1/2	-	4
36279	-	.0485	-	-	.0485	-	3/8	-	1-1/2	-	4
36073	-	.0490	-	-	.0490	-	3/8	-	1-1/2	-	4
36074	-	.0492	-	1.25	.0492	1.25	-	9.5	-	38	4
36079	-	.0495	-	-	.0495	-	3/8	-	1-1/2	-	4
36076	-	.0500	-	-	.0500	-	3/8	-	1-1/2	-	4
36077	-	.0505	-	-	.0505	-	3/8	-	1-1/2	-	4
36075	-	.0510	-	-	.0510	-	3/8	-	1-1/2	-	4
36078	-	.0511	-	1.30	.0511	1.30	-	9.5	-	38	4
36080	-	.0515	-	-	.0515	-	3/8	-	1-1/2	-	4
36082	55	.0520	-	-	.0520	-	3/8	-	1-1/2	-	4
36084	-	.0525	-	-	.0525	-	3/8	-	1-1/2	-	4
36085	-	.0530	-	-	.0530	-	3/8	-	1-1/2	-	4
36086	-	.0531	-	1.35	.0531	1.35	-	9.5	-	38	-
36087	-	.0535	-	-	.0535	-	3/8	-	1-1/2	-	4
36083	-	.0540	-	-	.0540	-	3/8	-	1-1/2	-	4
36091	-	.0545	-	-	.0545	-	3/8	-	1-1/2	-	4
36090	54	.0550	-	-	.0550	-	3/8	-	1-1/2	-	4
36094	-	.0511	-	1.40	.0551	1.40	-	9.5	1-1/2	38	4
36092	-	.0555	-	-	.0555	-	3/8	-	1-1/2	-	4
36096	-	.0560	-	-	.0560	-	3/8	-	1-1/2	-	4
36093	-	.0565	-	-	.0565	-	3/8	-	1-1/2	-	4
36095	-	.0570	-	1.45	.0570	1.45	-	9.5	-	38	4
36097	-	.0575	-	-	.0575	-	3/8	-	1-1/2	-	4
36099	-	.0580	-	-	.0580	-	3/8	-	1-1/2	-	4
36396	-	.0585	-	-	.0585	-	3/8	-	1-1/2	-	4
36399	-	.0590	-	-	.0590	-	-	-	1-1/2	38	4

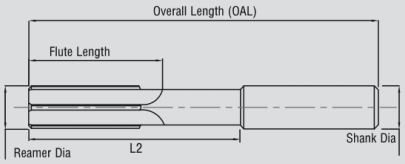
CARBIDE REAMERS
Chucking



CARBIDE CHUCKING REAMERS

	Diameter				Shank		Flute Length		OAL		
Part #	Wire/ Inch	Decimal	Wire	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Flutes
36102	-	.0591	-	1.50	.0591	1.50	3/8	9.5	-	-	4
36106	53	.0595	-	-	.0595	-	3/8	-	1-1/2	-	4
36108	-	.0600	-	-	.0600	-	3/8	-	1-1/2	-	4
36109	-	.0605	-	-	.0605	-	3/8	-	1-1/2	-	4
36110	-	.0610	-	1.55	.0610	1.55	-	9.5	-	38	4
36111	-	.0615	-	-	.0615	-	3/8	-	1-1/2	-	4
36112	-	.0620	-	-	.0620	-	3/8	-	1-1/2	-	4
36113	-	.0622	-	-	.0622	-	3/8	-	1-1/2	-	4
36117	-	.0623	-	-	.0623	-	3/8	-	1-1/2	-	4
36114	1/16	.0625	-	-	.0625	-	3/8	-	1-1/2	-	4
36118	-	.0630	-	1.60	.0630	1.60	-	9.5	-	38	4
36122	52	.0635	-	-	.0635	-	3/8	-	1-1/2	-	4
36124	-	.0640	-	-	.0640	-	3/8	-	1-1/2	-	4
36125	-	.0645	-	-	.0645	-	3/8	-	1-1/2	-	4
36123	-	.0649	-	1.65	.0649	1.65	-	9.5	-	38	4
36126	-	.0650	-	-	.0650	-	1/2	-	1-3/4	-	4
36127	-	.0655	-	-	.0655	-	1/2	-	1-3/4	-	4
36128	-	.0660	-	-	.0660	-	1/2	-	1-3/4	-	4
36129	-	.0665	-	-	.0665	-	1/2	-	1-3/4	-	4
36130	-	.0669	-	1.70	.0669	1.70	–	12.5	-	44	4
36134	51	.0670	-	-	.0670	-	1/2	-	1-3/4	-	4
36135	-	.0675	-	-	.0675	-	1/2	-	1-3/4	-	4
36136	-	.0680	-	-	.0680	-	1/2	-	1-3/4	-	4
36132	-	.0685	-	-	.0685	-	1/2	-	1-3/4	-	4
36138	-	.0689	-	1.75	.0689	-	-	12.5	-	44	4
36133	-	.0690	-	-	.0690	-	1/2	-	1-3/4	-	4
36140	-	.0695	-	-	.0695	-	1/2	-	1-3/4	-	4
36142	50	.0700	-	-	.0700	-	1/2	-	1-3/4	-	4
36143	-	.0705	-	-	.0705	-	1/2	-	1-3/4	-	4
36141	-	.0708	-	1.80	.708	1.80	-	12.5	-	44	4
36146	-	.0710	-	-	.0710	-	1/2	-	1-3/4	-	4
36145	-	.0715	-	-	.0715	-	1/2	-	1-3/4	-	4
36144	-	.0720	-	-	.0720	-	1/2	-	1-3/4	-	4
36149	-	.0725	-	-	.0725	-	1/2	-	1-3/4	-	4
36150	-	.0728	-	1.85	.0728	1.85	-	12.5	-	44	4
36154	49	.0730	-	-	.0730	-	1/2	-	1-3/4	-	4
36148	-	.0735	-	-	.0735	-	1/2	-	1-3/4	-	4
36156	-	.0740	-	-	.0740	-	1/2	-	1-3/4	-	4
36153	-	.0745	-	-	.0745	-	1/2	-	1-3/4	-	4
36158	-	.0748	-	1.90	.0748	1.90	–	12.5	-	44	4
36159	-	.0750	-	-	.0750	-	1/2	-	1-3/4	-	4
36155	-	.0755	-	-	.0755	-	1/2	-	1-3/4	-	4

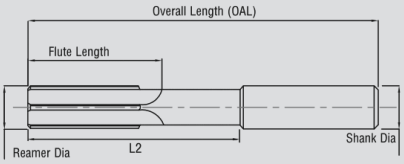
CARBIDE REAMERS
Chucking



CARBIDE CHUCKING REAMERS

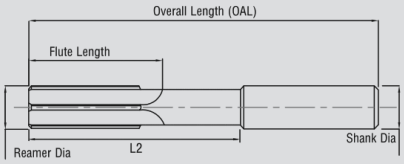
	Diameter				Shank		Flute Length		OAL		
Part #	Wire/ Inch	Decimal	Wire	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Flutes
36162	48	.0760	-	-	.0760	-	1/2	-	1-3/4	-	4
36164	-	.0765	-	-	.0765	-	1/2	-	1-3/4	-	4
36166	-	.0767	-	1.95	.0767	1.95	-	12.5	-	44	4
36167	-	.0770	-	-	.0770	-	1/2	-	1-3/4	-	4
36168	-	.0775	-	-	.0775	-	1/2	-	1-3/4	-	4
36169	-	.0780	-	-	.0780	-	1/2	-	1-3/4	-	4
36170	5/64	.0781	-	-	.0781	-	1/2	-	1-3/4	-	4
36174	47	.0785	-	-	.0785	-	1/2	-	1-3/4	-	4
36178	-	.0787	-	2.00	.0787	2.00	–	12.5	-	44	4
36544	-	.0790	-	-	.0790	-	1/2	-	1-3/4	-	4
36177	-	.0795	-	-	.0795	-	1/2	-	1-3/4	-	4
36180	-	.0800	-	-	.0800	-	1/2	-	1-3/4	-	4
36181	-	.0805	-	-	.0805	-	1/2	-	1-3/4	-	4
36182	-	.0807	-	2.05	.0807	2.05	–	12.5	-	44	4
36186	46	.0810	-	-	.0810	-	1/2	-	1-3/4	-	4
36187	-	.0815	-	-	.0815	-	1/2	-	2	-	4
36190	45	.0820	-	-	.0820	-	1/2	-	2	-	4
36191	-	.0825	-	-	.0825	-	1/2	-	2	-	4
36194	-	.0827	-	2.10	.0827	2.10	–	12.5	-	51	4
36192	-	.0830	-	-	.0830	-	1/2	-	2	-	4
36193	-	.0835	-	-	.0835	-	1/2	-	2	-	4
36195	-	.0840	-	-	.0840	-	1/2	-	2	-	4
36196	-	.0845	-	-	.0845	-	1/2	-	2	-	4
36198	-	.0846	-	2.15	.0846	2.15	-	12.5	-	51	4
36199	-	.0850	-	-	.0850	-	1/2	-	2	-	4
36197	-	.0855	-	-	.0855	-	1/2	-	2	-	4
36202	44	.0860	-	-	.0860	-	1/2	-	2	-	4
36204	-	.0865	-	-	.0865	-	1/2	-	2	-	4
36206	-	.0866	-	2.20	.0866	2.20	–	12.5	-	51	4
36201	-	.0870	-	-	.0870	-	1/2	-	2	-	4
36203	-	.0880	-	-	.0880	-	1/2	-	2	-	4
36205	-	.0885	-	-	.0885	-	1/2	-	2	-	4
36210	-	.0886	-	2.25	.0886	2.25	–	12.5	-	51	4
36214	43	.0890	-	-	.0890	-	1/2	-	2	-	4
36216	-	.0895	-	-	.0895	-	1/2	-	2	-	4
36215	-	.0900	-	-	.0900	-	1/2	-	2	-	4
36218	-	.0905	-	-	.0905	-	1/2	-	2	-	4
36211	-	.0906	-	2.30	.0906	2.30	-	12.5	-	51	4
36217	-	.0910	-	-	.0910	-	1/2	-	2	-	4
36220	-	.0915	-	-	.0915	-	1/2	-	2	-	4
36221	-	.0920	-	-	.0920	-	1/2	-	2	-	4
36222	-	.0925	-	2.35	.0925	2.35	-	12.5	-	51	4

CARBIDE REAMERS
Chucking



CARBIDE CHUCKING REAMERS

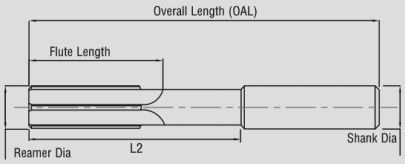
	Diameter				Shank		Flute Length		OAL		
Part #	Wire/ Inch	Decimal	Wire	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Flutes
36224	-	.0930	-	-	.0930	-	1/2	-	2	-	4
36225	-	.0933	-	-	.0933	-	1/2	-	2	-	4
36226	42	.0935	-	-	.0935	-	1/2	-	2	-	4
36231	-	.0937	-	-	.0937	-	1/2	-	2	-	4
36230	3/32	.0938	-	-	.0938	-	1/2	-	2	-	4
36232	-	.0940	-	-	.0940	-	1/2	-	2	-	4
36234	-	.0945	-	2.40	.0945	2.40	-	12.5	-	51	4
36236	-	.0950	-	-	.0950	-	1/2	-	2	-	4
36237	-	.0955	-	-	.0955	-	1/2	-	2	-	4
36238	41	.0960	-	-	.0960	-	1/2	-	2	-	4
36242	-	.0965	-	2.45	.0965	2.45	–	12.5	-	51	4
36243	-	.0970	-	-	.0970	-	5/8	-	2-1/4	-	4
36244	-	.0975	-	-	.0975	-	5/8	-	2-1/4	-	4
36246	40	.0980	-	-	.0980	-	5/8	-	2-1/4	-	4
36250	-	.0984	-	2.50	.0984	2.50	-	16.0	-	57	4
36257	-	.0985	-	-	.0985	-	5/8	-	2-1/4	-	4
36252	-	.0990	-	-	.0990	-	5/8	-	2-1/4	-	4
36254	39	.0995	-	-	.0995	-	5/8	-	2-1/4	-	4
36255	-	.1000	-	-	.1000	-	5/8	-	2-1/4	-	4
36251	-	.1004	-	2.55	.1004	2.55	-	16.0	-	57	4
36253	-	.1005	-	-	.1005	-	5/8	-	2-1/4	-	4
36256	-	.1010	-	-	.1010	-	5/8	-	2-1/4	-	4
36258	38	.1015	-	-	.1015	-	5/8	-	2-1/4	-	4
36259	-	.1020	-	-	.1020	-	5/8	-	2-1/4	-	4
36262	-	.1025	-	2.60	.1025	2.60	-	16.0	-	57	4
36263	-	.1030	-	-	.1030	-	5/8	-	2-1/4	-	4
36264	-	.1035	-	-	.1035	-	5/8	-	2-1/4	-	4
36266	37	.1040	-	-	.1040	-	5/8	-	2-1/4	-	4
36265	-	.1043	-	2.65	.1043	2.65	-	16.0	-	57	4
36268	-	.1045	-	-	.1045	-	5/8	-	2-1/4	-	4
36269	-	.1050	-	-	.1050	-	5/8	-	2-1/4	-	4
36272	-	.1055	-	-	.1055	-	5/8	-	2-1/4	-	4
36261	-	.1060	-	-	.1060	-	5/8	-	2-1/4	-	4
36270	-	.1063	-	2.70	.1063	2.70	-	16.0	-	57	4
36274	36	.1065	-	-	.1065	-	5/8	-	2-1/4	-	4
36275	-	.1070	-	-	.1070	-	5/8	-	2-1/4	-	4
36276	-	.1075	-	-	.1075	-	5/8	-	2-1/4	-	4
36277	-	.1080	-	-	.1080	-	5/8	-	2-1/4	-	4
36278	-	.1083	-	2.75	.1083	2.75	-	16.0	-	57	-
36281	-	.1085	-	-	.1085	-	5/8	-	2-1/4	-	4
36280	-	.1090	-	-	.1090	-	5/8	-	2-1/4	-	4
36282	7/64	.1094	-	-	.1094	-	5/8	-	2-1/4	-	4



CARBIDE CHUCKING REAMERS

	Diameter				Shank		Flute Length		OAL		
Part #	Wire/ Inch	Decimal	Wire	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Flutes
36283	-	.1095	-	-	.1095	-	5/8	-	2-1/4	-	4
36286	35	.1100	-	-	.1100	-	5/8	-	2-1/4	-	4
36290	-	.1102	-	2.80	.1102	2.80	-	16.0	-	57	4
36284	-	.1105	-	-	.1105	-	5/8	-	2-1/4	-	4
36294	34	.1110	-	-	.1110	-	5/8	-	2-1/4	-	4
36285	-	.1115	-	-	.1115	-	5/8	-	2-1/4	-	4
36296	-	.1120	-	-	.1120	-	5/8	-	2-1/4	-	4
36287	-	.1122	-	2.85	.1122	2.85	-	16.0	-	57	4
36297	-	.1125	-	-	.1125	-	5/8	-	2-1/4	-	4
36298	33	.1130	-	-	.1130	-	5/8	-	2-1/4	-	4
36299	-	.1135	-	-	.1135	-	5/8	-	2-1/4	-	4
36301	-	.1140	-	-	.1140	-	5/8	-	2-1/4	-	4
36302	-	.1142	-	2.90	.1142	2.90	-	16.0	-	57	4
36288	-	.1145	-	-	.1145	-	5/8	-	2-1/4	-	4
36304	-	.1150	-	-	.1150	-	5/8	-	2-1/4	-	4
36305	-	.1155	-	-	.1155	-	5/8	-	2-1/4	-	4
36306	32	.1160	-	-	.1160	-	5/8	-	2-1/4	-	4
36289	-	.1161	-	2.95	.1161	2.95	-	16.0	-	57	4
36323	-	.1165	-	-	.1165	-	5/8	-	2-1/4	-	4
36311	-	.1170	-	-	.1170	-	5/8	-	2-1/4	-	4
36804	-	.1180	-	-	.1180	-	5/8	-	2-1/4	-	4
36310	-	.1181	-	3.00	.1181	3.00	-	16.0	-	57	4
36808	-	.1185	-	-	.1185	-	5/8	-	2-1/4	-	4
36313	-	.1195	-	-	.1195	-	5/8	-	2-1/4	-	4
36314	31	.1200	-	-	.1200	-	5/8	-	2-1/4	-	4
36324	-	.1201	-	3.05	.1201	3.05	-	16.0	-	57	4
36316	-	.1205	-	-	.1205	-	5/8	-	2-1/4	-	4
36315	-	.1210	-	-	.1210	-	5/8	-	2-1/4	-	4
36325	-	.1215	-	-	.1215	-	5/8	-	2-1/4	-	4
36318	-	.1220	-	3.10	.1220	3.10	-	16.0	-	57	4
36319	-	.1225	-	-	.1225	-	5/8	-	2-1/4	-	4
36320	-	.1230	-	-	.1230	-	5/8	-	2-1/4	-	4
36321	-	.1235	-	-	.1235	-	5/8	-	2-1/4	-	4
36322	-	.1240	-	3.15	.1240	3.15	-	16.0	-	57	4
36326	-	.1245	-	-	.1245	-	5/8	-	2-1/4	-	4
36328	-	.1247	-	-	.1247	-	5/8	-	2-1/4	-	4
36330	1/8	.1250	-	-	.1250	-	5/8	-	2-1/4	-	4
36331	-	.1255	-	-	.1255	-	5/8	-	2-1/4	-	4
36334	-	.1260	-	3.20	.1260	3.20	-	16.0	-	57	4
36335	-	.1265	-	-	.1265	-	5/8	-	2-1/4	-	4
36336	-	.1270	-	-	.1270	-	5/8	-	2-1/4	-	4
36337	-	.1275	-	-	.1275	-	5/8	-	2-1/4	-	4

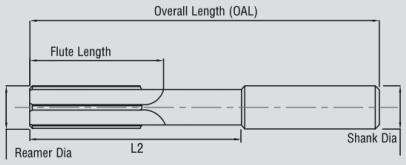
CARBIDE REAMERS
Chucking



CARBIDE CHUCKING REAMERS

	Diameter				Shank		Flute Length		OAL		
Part #	Wire/ Inch	Decimal	Wire	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Flutes
36339	-	.1280	-	3.25	.1280	3.25	-	16.0	-	57	4
36338	30	.1285	-	-	.1285	-	5/8	-	2-1/4	-	4
36340	-	.1290	-	-	.1290	-	5/8	-	2-1/4	-	4
36343	-	.1295	-	-	.1295	-	5/8	-	2-1/4	-	4
36342	-	.1299	-	3.30	.1299	3.30	-	19.0	-	63	4
36341	-	.1300	-	-	.1300	-	3/4	-	2-1/2	-	4
36345	-	.1305	-	-	.1305	-	3/4	-	2-1/2	-	4
36344	-	.1310	-	-	.1310	-	3/4	-	2-1/2	-	4
36351	-	.1315	-	-	.1315	-	3/4	-	2-1/2	-	4
36346	-	.1319	-	3.35	.1319	3.35	–	19.0	-	63	4
36347	-	.1320	-	-	.1320	-	3/4	-	2-1/2	-	4
36348	-	.1325	-	-	.1325	-	3/4	-	2-1/2	-	4
36349	-	.1330	-	-	.1330	-	3/4	-	2-1/2	-	4
36355	-	.1335	-	-	.1335	-	3/4	-	2-1/2	-	4
36350	-	.1339	-	3.40	.1339	3.40	–	19.0	-	63	4
36361	-	.1340	-	-	.1340	-	3/4	-	2-1/2	-	4
36921	-	.1345	-	-	.1345	-	3/4	-	2-1/2	-	4
36352	-	.1350	-	-	.1350	-	3/4	-	2-1/2	-	4
36353	-	.1355	-	-	.1355	-	3/4	-	2-1/2	-	4
36354	-	.1358	-	3.45	.1358	3.40	–	19.0	-	63	4
36358	29	.1360	-	-	.1360	-	3/4	-	2-1/2	-	4
36357	-	.1365	-	-	.1365	-	3/4	-	2-1/2	-	4
36359	-	.1370	-	-	.1370	-	3/4	-	2-1/2	-	4
36360	-	.1375	-	-	.1375	-	3/4	-	2-1/2	-	4
36362	-	.1378	-	3.50	.1378	3.50	–	19.0	-	63	4
36363	-	.1380	-	-	.1380	-	3/4	-	2-1/2	-	4
36364	-	.1385	-	-	.1385	-	3/4	-	2-1/2	-	4
36365	-	.1390	-	-	.1390	-	3/4	-	2-1/2	-	4
36367	-	.1395	-	-	.1395	-	3/4	-	2-1/2	-	4
36366	-	.1398	-	3.55	.1398	3.55	–	19.0	-	63	4
36368	-	.1400	-	-	.1400	-	3/4	-	2-1/2	-	4
36370	28	.1405	-	-	.1405	-	3/4	-	2-1/2	-	4
36374	9/64	.1406	-	-	.1406	-	3/4	-	2-1/2	-	4
36384	-	.1410	-	-	.1410	-	3/4	-	2-1/2	-	4
36372	-	.1415	-	-	.1415	-	3/4	-	2-1/2	-	4
36378	-	.1417	-	3.60	.1417	3.60	–	19.0	-	63	4
36376	-	.1420	-	-	.1420	-	3/4	-	2-1/2	-	4
36377	-	.1425	-	-	.1425	-	3/4	-	2-1/2	-	4
36379	-	.1430	-	-	.1430	-	3/4	-	2-1/2	-	4
36380	-	.1435	-	-	.1435	-	3/4	-	2-1/2	-	4
36382	-	.1437	-	3.65	.1437	3.65	–	19.0	-	63	4
36386	27	.1440	-	-	.1440	-	3/4	-	2-1/2	-	4

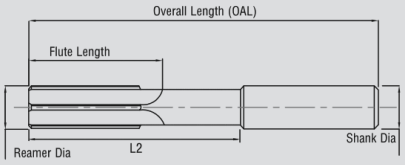
CARBIDE REAMERS
Chucking



CARBIDE CHUCKING REAMERS

	Diameter				Shank		Flute Length		OAL		
Part #	Wire/ Inch	Decimal	Wire	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Flutes
36381	-	.1445	-	-	.1445	-	3/4	-	2-1/2	-	4
36383	-	.1450	-	-	.1450	-	3/4	-	2-1/2	-	4
36387	-	.1455	-	-	.1455	-	3/4	-	2-1/2	-	4
36390	-	.1457	-	3.70	.1457	3.70	–	19.0	-	63	4
36391	-	.1460	-	-	.1460	-	3/4	-	2-1/2	-	4
36392	-	.1465	-	-	.1465	-	3/4	-	2-1/2	-	4
36394	26	.1470	-	-	.1470	-	3/4	-	2-1/2	-	4
36393	-	.1475	-	-	.1475	-	3/4	-	2-1/2	-	4
36398	-	.1476	-	3.75	.1476	3.75	–	19.0	-	63	4
36413	-	.1480	-	-	.1480	-	3/4	-	2-1/2	-	4
36415	-	.1485	-	-	.1485	-	3/4	-	2-1/2	-	4
36416	-	.1490	-	-	.1490	-	3/4	-	2-1/2	-	4
36402	-	.1495	-	-	.1495	-	3/4	-	2-1/2	-	4
36406	-	.1496	-	3.80	.1496	3.80	–	19.0	-	63	4
36407	-	.1500	-	-	.1500	-	3/4	-	2-1/2	-	4
36403	-	.1505	-	-	.1505	-	3/4	-	2-1/2	-	4
36405	-	.1507	-	-	.1507	-	3/4	-	2-1/2	-	4
36408	-	.1510	-	-	.1510	-	3/4	-	2-1/2	-	4
36401	-	.1515	-	-	.1515	-	3/4	-	2-1/2	-	4
36404	-	.1516	-	3.85	.1516	3.85	–	19.0	-	63	-
36410	24	.1520	-	-	.1520	-	3/4	-	2-1/2	-	4
36409	-	.1525	-	-	.1525	-	3/4	-	2-1/2	-	4
37050	-	.1530	-	-	.1530	-	3/4	-	2-1/2	-	4
36414	-	.1535	-	3.90	.1535	3.90	3/4	19.0	-	63	4
36418	23	.1540	-	-	.1540	-	3/4	-	2-1/2	-	4
36411	-	.1541	-	-	.1541	-	3/4	-	2-1/2	-	4
36412	-	.1545	-	-	.1545	-	3/4	-	2-1/2	-	4
36420	-	.1550	-	-	.1550	-	3/4	-	2-1/2	-	4
36422	-	.1555	-	3.95	.1555	3.95	–	19.0	-	63	4
36425	-	.1560	-	-	.1560	-	3/4	-	2-1/2	-	4
36426	5/32	.1562	-	-	.1562	-	3/4	-	2-1/2	-	4
36428	-	.1565	-	-	.1565	-	3/4	-	2-1/2	-	4
36430	22	.1570	-	-	.1570	-	3/4	-	2-1/2	-	4
36434	-	.1575	-	4.00	.1575	4.00	–	19.0	-	63	4
36437	-	.1580	-	-	.1580	-	3/4	-	2-1/2	-	4
36439	-	.1585	-	-	.1585	-	3/4	-	2-1/2	-	4
36438	21	.1590	-	-	.1590	-	3/4	-	2-1/2	-	4
36442	-	.1594	-	4.05	.1594	4.05	–	22.0	-	70	4
36443	-	.1595	-	-	.1595	-	3/4	-	2-1/2	-	4
36444	-	.1600	-	-	.1600	-	3/4	-	2-1/2	-	4
36445	-	.1605	-	-	.1605	-	3/4	-	2-1/2	-	4
36446	20	.1610	-	-	.1610	-	7/8	-	2-3/4	-	4

CARBIDE REAMERS
Chucking

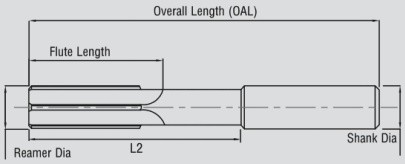


REAMERS

CARBIDE CHUCKING REAMERS

	Diameter				Shank		Flute Length		OAL		
Part #	Wire/ Inch	Decimal	Wire	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Flutes
36450	-	.1614	-	4.10	.1614	4.10	-	22.0	-	70	4
36448	-	.1615	-	-	.1615	-	7/8	-	2-3/4	-	4
36452	-	.1620	-	-	.1620	-	7/8	-	2-3/4	-	4
36453	-	.1625	-	-	.1625	-	7/8	-	2-3/4	-	4
36451	-	.1630	-	-	.1630	-	7/8	-	2-3/4	-	4
36454	-	.1634	-	4.15	.1634	4.15	-	22.0	-	70	4
36455	-	.1635	-	-	.1635	-	7/8	-	2-3/4	-	4
36456	-	.1640	-	-	.1640	-	7/8	-	2-3/4	-	4
36460	-	.1645	-	-	.1645	-	7/8	-	2-3/4	-	4
36457	-	.1650	-	-	.1650	-	7/8	-	2-3/4	-	4
36458	-	.1654	-	4.20	.1654	4.20	-	22.0	-	70	4
36461	-	.1655	-	-	.1655	-	7/8	-	2-3/4	-	4
36462	19	.1660	-	-	.1660	-	7/8	-	2-3/4	-	4
36463	-	.1665	-	-	.1665	-	7/8	-	2-3/4	-	4
36464	-	.1670	-	-	.1670	-	7/8	-	2-3/4	-	4
36466	-	.1673	-	4.25	.1673	4.25	-	22.0	-	70	4
36465	-	.1675	-	-	.1675	-	7/8	-	2-3/4	-	4
36467	-	.1680	-	-	.1680	-	7/8	-	2-3/4	-	4
36468	-	.1685	-	-	.1685	-	7/8	-	2-3/4	-	4
36471	-	.1690	-	-	.1690	-	7/8	-	2-3/4	-	4
36470	-	.1693	-	4.30	.1693	4.30	-	22.0	-	70	4
36474	18	.1695	-	-	.1695	-	7/8	-	2-3/4	-	4
36475	-	.1700	-	-	.1700	-	7/8	-	2-3/4	-	4
36477	-	.1705	-	-	.1705	-	7/8	-	2-3/4	-	4
36478	-	.1713	-	4.35	.1713	4.35	-	22.0	-	70	4
36481	-	.1715	-	-	.1715	-	7/8	-	2-3/4	-	4
36482	11/64	.1719	-	-	.1719	-	7/8	-	2-3/4	-	4
36483	-	.1720	-	-	.1720	-	7/8	-	2-3/4	-	4
36484	-	.1725	-	-	.1725	-	7/8	-	2-3/4	-	4
36486	17	.1730	-	-	.1730	-	7/8	-	2-3/4	-	4
36490	-	.1732	-	4.40	.1732	4.40	-	22.0	-	70	4
36489	-	.1735	-	-	.1735	-	7/8	-	2-3/4	-	4
36488	-	.1740	-	-	.1740	-	7/8	-	2-3/4	-	4
36491	-	.1745	-	-	.1745	-	7/8	-	2-3/4	-	4
36493	-	.1750	-	-	.1750	-	7/8	-	2-3/4	-	4
36494	-	.1752	-	4.45	.1752	4.45	-	22.0	-	70	4
36496	-	.1755	-	-	.1755	-	7/8	-	2-3/4	-	4
36492	-	.1760	-	-	.1760	-	7/8	-	2-3/4	-	4
36499	-	.1765	-	-	.1765	-	7/8	-	2-3/4	-	4
36498	16	.1770	-	-	.1770	-	7/8	-	2-3/4	-	4
36502	-	.1772	-	4.50	.1772	4.50	-	22.0	-	70	4
36503	-	.1775	-	-	.1775	-	7/8	-	2-3/4	-	4

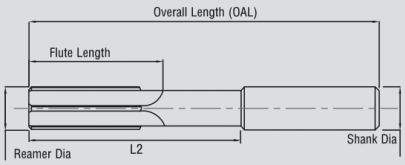
CARBIDE REAMERS
Chucking



CARBIDE CHUCKING REAMERS

	Diameter				Shank		Flute Length		OAL		
Part #	Wire/ Inch	Decimal	Wire	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Flutes
36504	-	.1780	-	-	.1780	-	7/8	-	2-3/4	-	4
36505	-	.1785	-	-	.1785	-	7/8	-	2-3/4	-	4
36507	-	.1790	-	-	.1790	-	7/8	-	2-3/4	-	4
36506	-	.1791	-	4.55	.1791	4.55	-	22.0	-	70	4
36508	-	.1795	-	-	.1795	-	7/8	-	2-3/4	-	4
36510	15	.1800	-	-	.1800	-	7/8	-	2-3/4	-	4
36512	-	.1805	-	-	.1805	-	7/8	-	2-3/4	-	4
36513	-	.1810	-	-	.1810	-	7/8	-	2-3/4	-	4
36514	-	.1811	-	4.60	.1811	4.60	-	22.0	-	70	4
36515	-	.1815	-	-	.1815	-	7/8	-	2-3/4	-	4
36518	14	.1820	-	-	.1820	-	7/8	-	2-3/4	-	4
36519	-	.1825	-	-	.1825	-	7/8	-	2-3/4	-	4
36521	-	.1830	-	-	.1830	-	7/8	-	2-3/4	-	4
36522	-	.1831	-	4.65	.1831	4.65	-	22.0	-	70	4
36524	-	.1835	-	-	.1835	-	7/8	-	2-3/4	-	4
36525	-	.1840	-	-	.1840	-	7/8	-	2-3/4	-	4
36527	-	.1845	-	-	.1845	-	7/8	-	2-3/4	-	4
36530	13	.1850	-	4.70	.1850	4.70	-	22.0	-	70	4
36532	-	.1855	-	-	.1855	-	7/8	-	2-3/4	-	4
37156	-	.1860	-	-	.1860	-	7/8	-	2-3/4	-	4
36533	-	.1865	-	-	.1865	-	7/8	-	2-3/4	-	4
36535	-	.1867	-	-	.1867	-	7/8	-	2-3/4	-	4
36534	-	.1870	-	4.75	.1870	4.75	-	22.0	-	70	4
36536	-	.1872	-	-	.1872	-	7/8	-	2-3/4	-	4
36538	3/16	.1875	-	-	.1875	-	7/8	-	2-3/4	-	4
36537	-	.1877	-	-	.1877	-	7/8	-	2-3/4	-	4
36540	-	.1880	-	-	.1880	-	7/8	-	2-3/4	-	4
36542	-	.1885	-	-	.1885	-	7/8	-	2-3/4	-	4
36546	-	.1889	-	4.80	.1889	4.80	-	22.0	-	70	-
36550	12	.1890	-	-	.1890	-	7/8	-	2-3/4	-	4
36551	-	.1895	-	-	.1895	-	7/8	-	2-3/4	-	4
36552	-	.1900	-	-	.1900	-	7/8	-	2-3/4	-	4
36553	-	.1905	-	-	.1905	-	7/8	-	2-3/4	-	4
36554	-	.1909	-	4.85	.1909	4.85	-	22.0	-	70	4
36558	11	.1910	-	-	.1910	-	7/8	-	2-3/4	-	4
36555	-	.1915	-	-	.1915	-	7/8	-	2-3/4	-	4
36560	-	.1920	-	-	.1920	-	1	-	3	-	4
36561	-	.1925	-	-	.1925	-	1	-	3	-	4
36562	-	.1929	-	4.90	.1929	4.90	-	25.5	-	76	4
37174	-	.1930	-	-	.1930	-	1	-	3	-	4
36566	10	.1935	-	-	.1935	-	1	-	3	-	4
36568	-	.1940	-	-	.1940	-	1	-	3	-	4

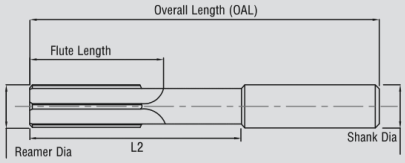
CARBIDE REAMERS
Chucking



CARBIDE CHUCKING REAMERS

	Diameter				Shank		Flute Length		OAL		
Part #	Wire/ Inch	Decimal	Wire	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Flutes
36569	-	.1945	-	-	.1945	-	1	-	3	-	4
36570	-	.1949	-	4.95	.1949	4.95	-	25.5	-	76	-
36571	-	.1950	-	-	.1950	-	1	-	3	-	4
36576	-	.1955	-	-	.1955	-	1	-	3	-	4
36574	9	.1960	-	-	.1960	-	1	-	3	-	4
36578	-	.1969	-	5.00	.1969	5.00	-	25.5	3	76	4
37182	-	.1970	-	-	.1970	-	1	-	3	-	4
37184	-	.1975	-	-	.1975	-	1	-	3	-	4
37186	-	.1980	-	-	.1980	-	1	-	3	-	4
36581	-	.1985	-	-	.1985	-	1	-	3	-	4
36582	-	.1988	-	5.05	.1988	5.05	-	25.5	-	76	4
36586	8	.1990	-	-	.1990	-	1	-	3	-	4
36587	-	.1995	-	-	.1995	-	1	-	3	-	4
36588	-	.2000	-	-	.2000	-	1	-	3	-	4
36590	-	.2005	-	-	.2005	-	1	-	3	-	4
36591	-	.2008	-	5.10	.2008	5.10	-	25.5	-	76	4
36594	7	.2010	-	-	.2010	-	1	-	3	-	4
36596	-	.2015	-	-	.2015	-	1	-	3	-	4
36597	-	.2020	-	-	.2020	-	1	-	3	-	4
36599	-	.2025	-	-	.2025	-	1	-	3	-	4
36598	-	.2028	-	5.15	.2028	5.15	-	25.5	-	76	4
36603	-	.2030	-	-	.2030	-	1	-	3	-	4
36602	13/64	.2031	-	-	.2031	-	1	-	3	-	4
36604	-	.2035	-	-	.2035	-	1	-	3	-	4
36606	6	.2040	-	-	.2040	-	1	-	3	-	4
36608	-	.2045	-	-	.2045	-	1	-	3	-	4
36610	-	.2047	-	5.20	.2047	5.20	-	25.5	-	76	4
36611	-	.2050	-	-	.2050	-	1	-	3	-	4
36614	5	.2055	-	-	.2055	-	1	-	3	-	4
36615	-	.2060	-	-	.2060	-	1	-	3	-	4
36616	-	.2065	-	-	.2065	-	1	-	3	-	4
36618	-	.2067	-	5.25	.2067	5.25	-	25.5	-	76	4
36617	-	.2070	-	-	.2070	-	1	-	3	-	4
36619	-	.2075	-	-	.2075	-	1	-	3	-	4
36620	-	.2080	-	-	.2080	-	1	-	3	-	4
36623	-	.2085	-	-	.2085	-	1	-	3	-	4
36622	-	.2087	-	5.30	.2087	5.30	-	25.5	-	76	4
36626	4	.2090	-	-	.2090	-	1	-	3	-	4
36628	-	.2095	-	-	.2095	-	1	-	3	-	4
36629	-	.2100	-	-	.2100	-	1	-	3	-	4
36627	-	.2105	-	-	.2105	-	1	-	3	-	4
36630	-	.2106	-	5.35	.2106	5.35	-	25.5	-	76	4

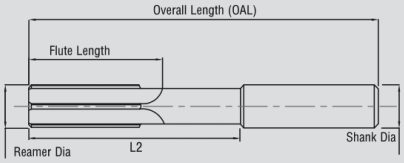
CARBIDE REAMERS
Chucking



CARBIDE CHUCKING REAMERS

	Diameter				Shank		Flute Length		OAL		
Part #	Wire/ Inch	Decimal	Wire	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Flutes
36631	-	.2110	-	-	.2110	-	1	-	3	-	4
36632	-	.2115	-	-	.2115	-	1	-	3	-	4
36633	-	.2120	-	-	.2120	-	1	-	3	-	4
36635	-	.2125	-	-	.2125	-	1	-	3	-	4
36634	-	.2126	-	5.40	.2126	5.40	-	25.5	-	76	4
36638	3	.2130	-	-	.2130	-	1	-	3	-	4
36639	-	.2135	-	-	.2135	-	1	-	3	-	4
36640	-	.2140	-	-	.2140	-	1	-	3	-	4
36641	-	.2145	-	-	.2145	-	1	-	3	-	4
36642	-	.2146	-	5.45	.2146	5.45	-	25.5	-	76	4
36643	-	.2150	-	-	.2150	-	1	-	3	-	4
36647	-	.2155	-	-	.2155	-	1	-	3	-	4
36644	-	.2160	-	-	.2160	-	1	-	3	-	4
36646	-	.2165	-	5.50	.2165	5.50	-	25.5	-	76	4
36648	-	.2170	-	-	.2170	-	1	-	3	-	4
36651	-	.2175	-	-	.2175	-	1	-	3	-	4
36645	-	.2177	-	-	.2177	-	1	-	3	-	4
36649	-	.2180	-	-	.2180	-	1	-	3	-	4
36650	-	.2185	-	5.55	.2185	5.55	-	25.5	-	76	4
36654	7/32	.2187	-	-	.2187	-	1	-	3	-	4
36655	-	.2190	-	-	.2190	-	1	-	3	-	4
36656	-	.2195	-	-	.2195	-	1	-	3	-	4
36657	-	.2200	-	-	.2200	-	1	-	3	-	4
36658	-	.2205	-	5.60	.2205	5.60	-	25.5	-	76	4
36662	2	.2210	-	-	.2210	-	1	-	3	-	4
36663	-	.2215	-	-	.2215	-	1	-	3	-	4
36664	-	.2220	-	-	.2220	-	1	-	3	-	4
36666	-	.2224	-	5.65	.2224	5.65	-	25.5	-	76	4
36667	-	.2225	-	-	.2225	-	1	-	3	-	4
36668	-	.2230	-	-	.2230	-	1	-	3	-	4
36665	-	.2235	-	-	.2235	-	1	-	3	-	4
36669	-	.2240	-	-	.2240	-	1	-	3	-	4
36670	-	.2244	-	5.70	.2244	5.70	-	25.5	-	76	4
36671	-	.2245	-	-	.2245	-	1	-	3	-	4
36672	-	.2250	-	-	.2250	-	1	-	3	-	4
36675	-	.2255	-	-	.2255	-	1	-	3	-	4
36673	-	.2260	-	-	.2260	-	1	-	3	-	4
36674	-	.2264	-	5.75	.2264	5.75	-	25.5	-	76	4
36677	-	.2265	-	-	.2265	-	1	-	3	-	4
36676	-	.2270	-	-	.2270	-	1	-	3	-	4
36679	-	.2275	-	-	.2275	-	1	-	3	-	4
36678	1	.2280	-	-	.2280	-	1	-	3	-	4

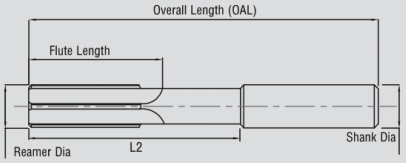
CARBIDE REAMERS
Chucking



CARBIDE CHUCKING REAMERS

	Diameter				Shank		Flute Length		OAL		
Part #	Wire/ Inch	Decimal	Wire	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Flutes
36682	-	.2283	-	5.80	.2283	5.80	-	25.5	-	76	4
36680	-	.2285	-	-	.2285	-	1	-	3	-	4
36683	-	.2290	-	-	.2290	-	1	-	3	-	4
36684	-	.2295	-	-	.2295	-	1	-	3	-	4
36685	-	.2300	-	-	.2300	-	1	-	3	-	4
36686	-	.2303	-	5.85	.2303	5.85	-	25.5	-	76	4
36687	-	.2305	-	-	.2305	-	1	-	3	-	4
37297	-	.2310	-	-	.2310	-	1	-	3	-	4
36688	-	.2315	-	-	.2315	-	1	-	3	-	4
36689	-	.2320	-	-	.2320	-	1	-	3	-	4
36690	-	.2323	-	5.90	.2323	5.90	-	25.5	-	76	4
36692	-	.2325	-	-	.2325	-	1	-	3	-	4
36693	-	.2330	-	-	.2330	-	1	-	3	-	4
36695	-	.2335	-	-	.2335	-	1	-	3	-	4
36694	A	.2340	-	-	.2340	-	1	-	3	-	4
36698	-	.2343	-	5.95	.2343	5.95	-	25.5	-	76	4
36702	15/64	.2344	-	-	.2344	-	1	-	3	-	4
37310	-	.2345	-	-	.2345	-	1	-	3	-	4
36712	-	.2350	-	-	.2350	-	1	-	3	-	4
36715	-	.2355	-	-	.2355	-	1	-	3	-	4
36704	-	.2360	-	-	.2360	-	1	-	3	-	4
36706	-	.2362	-	6.00	.2362	6.00	-	25.5	-	76	4
37318	-	.2365	-	-	.2365	-	1	-	3	-	4
36717	-	.2370	-	-	.2370	-	1	-	3	-	4
36716	-	.2375	-	-	.2375	-	1	-	3	-	4
36710	B	.2380	-	-	.2380	-	1	-	3	-	4
36705	-	.2382	-	6.05	.2382	6.05	-	25.5	-	76	4
36713	-	.2385	-	-	.2385	-	1	-	3	-	4
36719	-	.2390	-	-	.2390	-	1	-	3	-	4
36723	-	.2395	-	-	.2395	-	1	-	3	-	4
36720	-	.2400	-	-	.2400	-	1	-	3	-	4
36714	-	.2402	-	6.10	.2402	6.10	-	25.5	-	76	4
36727	-	.2405	-	-	.2405	-	1	-	3	-	4
36721	-	.2410	-	-	.2410	-	1	-	3	-	4
36728	-	.2415	-	-	.2415	-	1	-	3	-	4
36718	C	.2420	-	-	.2420	-	1	-	3	-	4
36729	-	.2421	-	6.15	.2421	6.15	-	25.5	-	76	4
36731	-	.2425	-	-	.2425	-	1	-	3	-	4
36737	-	.2430	-	-	.2430	-	1	-	3	-	4
36739	-	.2435	-	-	.2435	-	1	-	3	-	4
36741	-	.2440	-	-	.2440	-	1	-	3	-	4
36722	-	.2441	-	6.20	.2441	6.20	-	25.5	-	76	4

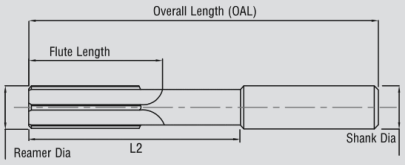
CARBIDE REAMERS
Chucking



CARBIDE CHUCKING REAMERS

	Diameter				Shank		Flute Length		OAL		
Part #	Wire/ Inch	Decimal	Wire	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Flutes
36744	-	.2445	-	-	.2445	-	1	-	3	-	4
36724	-	.2450	-	-	.2450	-	1	-	3	-	4
36745	-	.2455	-	-	.2455	-	1	-	3	-	4
36726	D	.2460	-	-	.2460	-	1	-	3	-	4
36730	-	.2461	-	6.25	.2461	6.25	-	25.5	-	76	4
36747	-	.2465	-	-	.2465	-	1	-	3	-	4
36732	-	.2470	-	-	.2470	-	1	-	3	-	4
36733	-	.2475	-	-	.2475	-	1	-	3	-	4
36734	-	.2480	-	6.30	.2480	6.30	-	25.5	-	76	4
36735	-	.2485	-	-	.2485	-	1	-	3	-	4
36736	-	.2490	-	-	.2490	-	1	-	3	-	4
36738	-	.2495	-	-	.2495	-	1	-	3	-	4
36740	-	.2498	-	-	.2498	-	1	-	3	-	4
36742	1/4 (E)	.2500	-	6.35	.2500	6.35	1	-	3	-	4
36762	-	.2502	-	-	.2502	-	1	-	3	-	4
36743	-	.2505	-	-	.2505	-	1	-	3	-	4
36746	-	.2510	-	-	.2510	-	1	-	3	-	4
36748	-	.2515	-	-	.2515	-	1	-	3	-	4
36756	-	.2519	-	6.40	.2519	6.40	-	25.5	-	76	4
36750	-	.2520	-	-	.2520	-	1	-	3	-	4
36753	-	.2525	-	-	.2525	-	1	-	3	-	4
36749	-	.2530	-	-	.2530	-	1	-	3	-	4
36765	-	.2535	-	-	.2535	-	1	-	3	-	4
36751	-	.2540	-	-	.2540	-	1	-	3	-	4
36755	-	.2545	-	-	.2545	-	1	-	3	-	4
36752	-	.2550	-	-	.2550	-	1	-	3	-	4
36757	-	.2555	-	-	.2555	-	1-1/8	-	3-1/4	-	6
36754	-	.2559	-	6.50	.2559	6.50	-	28.5	-	83	6
37382	-	.2560	-	-	.2560	-	1-1/8	-	3-1/4	-	6
36767	-	.2565	-	-	.2565	-	1-1/8	-	3-1/4	-	6
36758	F	.2570	-	-	.2570	-	1-1/8	-	3-1/4	-	6
36781	-	.2575	-	-	.2575	-	1-1/8	-	3-1/4	-	6
36759	-	.2580	-	-	.2580	-	1-1/8	-	3-1/4	-	6
36760	-	.2590	-	-	.2590	-	1-1/8	-	3-1/4	-	6
36761	-	.2600	-	-	.2600	-	1-1/8	-	3-1/4	-	6
36762	G	.2610	-	-	.2610	-	1-1/8	-	3-1/4	-	6
36772	-	.2620	-	-	.2620	-	1-1/8	-	3-1/4	-	6
36789	-	.2630	-	-	.2630	-	1-1/8	-	3-1/4	-	6
36791	-	.2635	-	-	.2635	-	1-1/8	-	3-1/4	-	6
36763	-	.2640	-	-	.2640	-	1-1/8	-	3-1/4	-	6
36792	-	.2650	-	-	.2650	-	1-1/8	-	3-1/4	-	6
36769	-	.2655	-	-	.2655	-	1-1/8	-	3-1/4	-	6

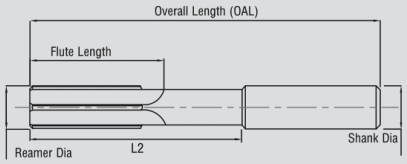
CARBIDE REAMERS
Chucking



CARBIDE CHUCKING REAMERS

	Diameter				Shank		Flute Length		OAL		
Part #	Wire/ Inch	Decimal	Wire	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Flutes
36766	17/64	.2656	-	6.75	.2656	6.75	-	28.5	-	83	6
36770	H	.2660	-	-	.2660	-	1-1/8	-	3-1/4	-	6
36793	-	.2670	-	-	.2670	-	1-1/8	-	3-1/4	-	6
36799	-	.2680	-	-	.2680	-	1-1/8	-	3-1/4	-	6
36795	-	.2685	-	-	.2685	-	1-1/8	-	3-1/4	-	6
36800	-	.2690	-	-	.2690	-	1-1/8	-	3-1/4	-	6
36773	-	.2700	-	-	.2700	-	1-1/8	-	3-1/4	-	6
36768	-	.2710	-	-	.2710	-	1-1/8	-	3-1/4	-	6
36774	I	.2720	-	-	.2720	-	1-1/8	-	3-1/4	-	6
36771	-	.2730	-	-	.2730	-	1-1/8	-	3-1/4	-	6
36776	-	.2740	-	-	.2740	-	1-1/8	-	3-1/4	-	6
36780	-	.2750	-	-	.2750	-	1-1/8	-	3-1/4	-	6
36778	-	.2756	-	7.00	.2756	7.00	-	28.5	-	83	6
36696	-	.2760	-	-	.2760	-	1-1/8	-	3-1/4	-	6
36777	-	.2765	-	-	.2765	-	1-1/8	-	3-1/4	-	6
36782	J	.2770	-	-	.2770	-	1-1/8	-	3-1/4	-	6
36801	-	.2780	-	-	.2780	-	1-1/8	-	3-1/4	-	6
36797	-	.2785	-	-	.2785	-	1-1/8	-	3-1/4	-	6
36783	-	.2790	-	-	.2790	-	1-1/8	-	3-1/4	-	6
36784	-	.2800	-	-	.2800	-	1-1/8	-	3-1/4	-	6
36785	-	.2805	-	-	.2805	-	1-1/8	-	3-1/4	-	6
36786	K	.2810	-	-	.2810	-	1-1/8	-	3-1/4	-	6
36790	9/32	.2812	-	-	.2812	-	1-1/8	-	3-1/4	-	6
36803	-	.2818	-	-	.2818	-	1-1/8	-	3-1/4	-	6
36805	-	.2820	-	-	.2820	-	1-1/8	-	3-1/4	-	6
36787	-	.2830	-	-	.2830	-	1-1/8	-	3-1/4	-	6
36788	-	.2840	-	-	.2840	-	1-1/8	-	3-1/4	-	6
36817	-	.2850	-	-	.2850	-	1-1/8	-	3-1/4	-	6
36819	-	.2854	-	7.25	.2854	7.25	-	28.5	-	83	6
36831	-	.2860	-	-	.2860	-	1-1/8	-	3-1/4	-	6
37698	-	.2870	-	-	.2870	-	1-1/8	-	3-1/4	-	6
36832	-	.2880	-	-	.2880	-	1-1/8	-	3-1/4	-	6
36833	-	.2890	-	-	.2890	-	1-1/8	-	3-1/4	-	6
36794	L	.2900	-	-	.2900	-	1-1/8	-	3-1/4	-	6
36841	-	.2910	-	-	.2910	-	1-1/8	-	3-1/4	-	6
36796	-	.2920	-	-	.2920	-	1-1/8	-	3-1/4	-	6
36844	-	.2930	-	-	.2930	-	1-1/8	-	3-1/4	-	6
36848	-	.2940	-	-	.2940	-	1-1/8	-	3-1/4	-	6
36798	M	.2950	-	-	.2950	-	1-1/8	-	3-1/4	-	6
36802		.2953	-	7.50	.2953	7.50	1-1/8	28.5	-	83	6
36849		.2960	-	-	.2960	-	1-1/8	-	3-1/4	-	6
36806	19/64	.2969	-	-	.2969	-	1-1/8	-	3-1/4	-	6

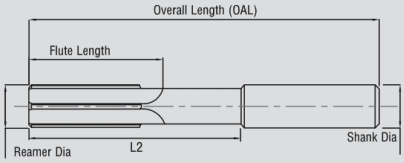
CARBIDE REAMERS
Chucking



CARBIDE CHUCKING REAMERS

	Diameter				Shank		Flute Length		OAL		
Part #	Wire/ Inch	Decimal	Wire	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Flutes
36855	-	.2970	-	-	.2970	-	1-1/8	-	3-1/4	-	6
36856	-	.2980	-	-	.2980	-	1-1/8	-	3-1/4	-	6
36859	-	.2990	-	-	.2990	-	1-1/8	-	3-1/4	-	6
36860	-	.3000	-	-	.3000	-	1-1/8	-	3-1/4	-	6
36861	-	.3010	-	-	.3010	-	1-1/8	-	3-1/4	-	6
36810	N	.3020	-	-	.3020	-	1-1/8	-	3-1/4	-	6
36863	-	.3030	-	-	.3030	-	1-1/8	-	3-1/4	-	6
37755	-	.3040	-	-	.3040	-	1-1/8	-	3-1/4	-	6
36864	-	.3050	-	-	.3050	-	1-1/8	-	3-1/4	-	6
36865	-	.3060	-	-	.3060	-	1-1/8	-	3-1/4	-	6
36867	-	.3070	-	-	.3070	-	1-1/8	-	3-1/4	-	6
36873	-	.3080	-	-	.3080	-	1-1/8	-	3-1/4	-	6
36877	-	.3090	-	-	.3090	-	1-1/8	-	3-1/4	-	6
36809	-	.3100	-	-	.3100	-	1-1/8	-	3-1/4	-	6
36811	-	.3105	-	-	.3105	-	1-1/8	-	3-1/4	-	6
36807	-	.3110	-	-	.3110	-	1-1/8	-	3-1/4	-	6
36812	-	.3115	-	-	.3115	-	1-1/8	-	3-1/4	-	6
36813	-	.3120	-	-	.3120	-	1-1/8	-	3-1/4	-	6
36814	5/16	.3125	-	7.75	.3125	7.75	-	28.5	-	83	6
36816	-	.3130	-	-	.3130	-	1-1/8	-	3-1/4	-	6
36818	-	.3135	-	-	.3135	-	1-1/8	-	3-1/4	-	6
36820	-	.3140	-	-	.3140	-	1-1/8	-	3-1/4	-	6
36821	-	.3145	-	-	.3145	-	1-1/8	-	3-1/4	-	6
36822	-	.3150	-	8.00	.3150	8.00	-	28.5	-	83	6
36825	-	.3155	-	-	.3155	-	1-1/8	-	3-1/4	-	6
36826	O	.3160	-	-	.3160	-	1-1/8	-	3-1/4	-	6
36829	-	.3165	-	-	.3165	-	1-1/8	-	3-1/4	-	6
36828	-	.3170	-	-	.3170	-	1-1/4	-	3-1/2	-	6
36840	-	.3175	-	-	.3175	-	1-1/4	-	3-1/2	-	6
36843	-	.3177	-	-	.3177	-	1-1/4	-	3-1/2	-	6
36827	-	.3180	-	-	.3180	-	1-1/4	-	3-1/2	-	6
36849	-	.3185	-	-	.3185	-	1-1/4	-	3-1/2	-	6
36985	-	.3190	-	-	.3190	-	1-1/4	-	3-1/2	-	6
36851	-	.3195	-	-	.3195	-	1-1/4	-	3-1/2	-	6
36986	-	.3200	-	-	.3200	-	1-1/4	-	3-1/2	-	6
36823	-	.3210	-	-	.3210	-	1-1/4	-	3-1/2	-	6
36987	-	.3220	-	-	.3220	-	1-1/4	-	3-1/2	-	6
36830	P	.3230	-	-	.3230	-	1-1/4	-	3-1/2	-	6
36988	-	.3240	-	-	.3240	-	1-1/4	-	3-1/2	-	6
36992	-	.3248	-	8.25	.3248	8.25	-	32.0	-	89	6
36835	-	.3250	-	-	.3250	-	1-1/4	-	3-1/2	-	6
36837	-	.3255	-	-	.3255	-	1-1/4	-	3-1/2	-	6

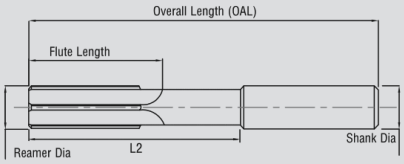
CARBIDE REAMERS
Chucking



CARBIDE CHUCKING REAMERS

	Diameter				Shank		Flute Length		OAL		
Part #	Wire/ Inch	Decimal	Wire	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Flutes
36993	-	.3260	-	-	.3260	-	1-1/4	-	3-1/2	-	6
36994	-	.3270	-	-	.3270	-	1-1/4	-	3-1/2	-	6
36995	-	.3280	-	-	.3280	-	1-1/4	-	3-1/2	-	6
36834	21/64	.3281	-	-	.3281	-	1-1/4	-	3-1/2	-	6
36996	-	.3290	-	-	.3290	-	1-1/4	-	3-1/2	-	6
36997	-	.3300	-	-	.3300	-	1-1/4	-	3-1/2	-	6
36836	-	.3310	-	-	.3310	-	1-1/4	-	3-1/2	-	6
36838	Q	.3320	-	-	.3320	-	1-1/4	-	3-1/2	-	6
36839	-	.3330	-	-	.3330	-	1-1/4	-	3-1/2	-	6
37000	-	.3340	-	-	.3340	-	1-1/4	-	3-1/2	-	6
36842	-	.3346	-	8.50	.3346	8.50	-	32.0	-	89	6
37891	-	.3350	-	-	.3350	-	1-1/4	-	3-1/2	-	6
37895	-	.3360	-	-	.3360	-	1-1/4	-	3-1/2	-	6
36845	-	.3365	-	-	.3365	-	1-1/4	-	3-1/2	-	6
37063	-	.3370	-	-	.3370	-	1-1/4	-	3-1/2	-	6
37064	-	.3380	-	-	.3380	-	1-1/4	-	3-1/2	-	6
36846	R	.3390	-	-	.3390	-	1-1/4	-	3-1/2	-	6
37065	-	.3400	-	-	.3400	-	1-1/4	-	3-1/2	-	6
37927	-	.3410	-	-	.3410	-	1-1/4	-	3-1/2	-	6
37066	-	.3420	-	-	.3420	-	1-1/4	-	3-1/2	-	6
37067	-	3430	-	-	.3430	-	1-1/4	-	3-1/2	-	6
36850	11/32	.3437	-	-	.3437	-	1-1/4	-	3-1/2	-	6
37068	-	.3440	-	-	.3440	-	1-1/4	-	3-1/2	-	6
37069	-	.3445	-	8.75	.3445	8.75	-	32.0	-	89	6
36852	-	.3450	-	-	.3450	-	1-1/4	-	3-1/2	-	6
36853	-	.3460	-	-	.3460	-	1-1/4	-	3-1/2	-	6
36857	-	.3465	-	-	.3465	-	1-1/4	-	3-1/2	-	6
37070	-	.3470	-	-	.3470	-	1-1/4	-	3-1/2	-	6
36854	S	.3480	-	-	.3480	-	1-1/4	-	3-1/2	-	6
35997	-	.3490	-	-	.3490	-	1-1/4	-	3-1/2	-	6
35998	-	.3500	-	-	.3500	-	1-1/4	-	3-1/2	-	6
35999	-	.3510	-	-	.3510	-	1-1/4	-	3-1/2	-	6
36014	-	.3520	-	-	.3520	-	1-1/4	-	3-1/2	-	6
36018	-	.3530	-	-	.3530	-	1-1/4	-	3-1/2	-	6
36019	-	.3540	-	-	.3540	-	1-1/4	-	3-1/2	-	6
36858	-	.3543	-	9.00	.3543	9.00	-	32.0	-	89	6
37970	-	.3550	-	-	.3550	-	1-1/4	-	3-1/2	-	6
36020	-	.3560	-	-	.3560	-	1-1/4	-	3-1/2	-	6
36021	-	.3570	-	-	.3570	-	1-1/4	-	3-1/2	-	6
36862	T	.3580	-	-	.3580	-	1-1/4	-	3-1/2	-	6
36043	-	.3590	-	-	.3590	-	1-1/4	-	3-1/2	-	6
36866	23/64	.3594	-	-	.3594	-	1-1/4	-	3-1/2	-	6

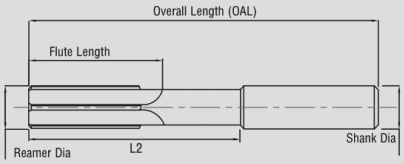
CARBIDE REAMERS
Chucking



CARBIDE CHUCKING REAMERS

	Diameter				Shank		Flute Length		OAL		
Part #	Wire/ Inch	Decimal	Wire	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Flutes
36028	-	.3600	-	-	.3600	-	1-1/4	-	3-1/2	-	6
36029	-	.3610	-	-	.3610	-	1-1/4	-	3-1/2	-	6
36869	-	.3620	-	-	.3620	-	1-1/4	-	3-1/2	-	6
36868	-	.3630	-	-	.3630	-	1-1/4	-	3-1/2	-	6
36035	-	.3640	-	-	.3640	-	1-1/4	-	3-1/2	-	6
36037	-	.3650	-	-	.3650	-	1-1/4	-	3-1/2	-	6
36871	-	.3660	-	-	.3660	-	1-1/4	-	3-1/2	-	6
36039	-	.3670	-	-	.3670	-	1-1/4	-	3-1/2	-	6
36040	-	.3675	-	-	.3675	-	1-1/4	-	3-1/2	-	6
36870	U	.3680	-	-	.3680	-	1-1/4	-	3-1/2	-	6
36041	-	.3690	-	-	.3690	-	1-1/4	-	3-1/2	-	6
36045	-	.3700	-	-	.3700	-	1-1/4	-	3-1/2	-	6
36048	-	.3710	-	-	.3710	-	1-1/4	-	3-1/2	-	6
36049	-	.3720	-	-	.3720	-	1-1/4	-	3-1/2	-	6
36872	-	.3730	-	-	.3730	-	1-1/4	-	3-1/2	-	6
36875	-	.3735	-	-	.3735	-	1-1/4	-	3-1/2	-	6
36874	-	.3740	-	9.50	.3740	9.50	-	32.0	3-1/2	89	6
36876	-	.3745	-	-	.3745	-	1-1/4	-	3-1/2	-	6
36878	3/8	.3750	-	-	.3750	-	1-1/4	-	3-1/2	-	6
36880	-	.3755	-	-	.3755	-	1-1/4	-	3-1/2	-	6
36882	-	.3760	-	-	.3760	-	1-1/4	-	3-1/2	-	6
38018	-	.3765	-	-	.3765	-	1-1/4	-	3-1/2	-	6
36886	V	.3770	-	-	.3770	-	1-1/4	-	3-1/2	-	6
36887	-	.3780	-	-	.3780	-	1-1/4	-	3-1/2	-	6
38026	-	.3790	-	-	.3790	-	1-1/4	-	3-1/2	-	6
36891	-	.3795	-	-	.3795	-	1-1/4	-	3-1/2	-	6
36889	-	.3800	-	-	.3800	-	1-1/4	-	3-1/2	-	6
36059	-	.3810	-	-	.3810	-	1-1/4	-	3-1/2	-	6
36888	-	.3820	-	-	.3820	-	1-1/4	-	3-1/2	-	6
36067	-	.3830	-	-	.3830	-	1-1/4	-	3-1/2	-	6
36068	-	.3840	-	-	.3840	-	1-1/4	-	3-1/2	-	6
36069	-	.3850	-	-	.3850	-	1-1/4	-	3-1/2	-	6
36890	W	.3860	-	-	.3860	-	1-1/4	-	3-1/2	-	6
36081	-	.3870	-	-	.3870	-	1-1/4	-	3-1/2	-	6
36892	-	.3880	-	-	.3880	-	1-1/4	-	3-1/2	-	6
36089	-	.3890	-	-	.3890	-	1-1/4	-	3-1/2	-	6
36893	-	.3900	-	-	.3900	-	1-1/4	-	3-1/2	-	6
36894	25/64	.3906	-	-	.3906	-	1-1/4	-	3-1/2	-	6
37001	-	.3910	-	-	.3910	-	1-1/4	-	3-1/2	-	6
37002	-	.3920	-	-	.3920	-	1-1/4	-	3-1/2	-	6
36896	-	.3930	-	-	.3930	-	1-1/4	-	3-1/2	-	6
36898	-	.3937	-	10.00	.3937	10.00	-	32.0	-	89	6

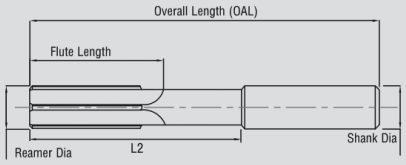
CARBIDE REAMERS
Chucking



CARBIDE CHUCKING REAMERS

	Diameter				Shank		Flute Length		OAL		
Part #	Wire/ Inch	Decimal	Wire	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Flutes
36899	-	.3940	-	-	.3940	-	1-1/4	-	3-1/2	-	6
36901	-	.3950	-	-	.3950	-	1-1/4	-	3-1/2	-	6
36900	-	.3960	-	-	.3960	-	1-1/4	-	3-1/2	-	6
36902	X	.3970	-	-	.3970	-	1-1/4	-	3-1/2	-	6
37003	-	.3980	-	-	.3980	-	1-1/4	-	3-1/2	-	6
37004	-	.3990	-	-	.3990	-	1-1/4	-	3-1/2	-	6
38110	-	.4000	-	-	.4000	-	1-1/4	-	3-1/2	-	6
37005	-	.4010	-	-	.4010	-	1-1/4	-	3-1/2	-	6
36904	-	.4020	-	-	.4020	-	1-1/4	-	3-1/2	-	6
37006	-	.4030	-	-	.4030	-	1-1/4	-	3-1/2	-	6
36906	Y	.4040	-	-	.4040	-	1-1/4	-	3-1/2	-	6
37007	-	.4050	-	-	.4050	-	1-1/4	-	3-1/2	-	6
36907	-	.4060	-	-	.4060	-	1-1/4	-	3-1/2	-	6
36910	13/32	.4062	-	-	.4062	-	1-1/4	-	3-1/2	-	6
37009	-	.4070	-	-	.4070	-	1-1/4	-	3-1/2	-	6
37011	-	.4080	-	-	.4080	-	1-1/4	-	3-1/2	-	6
36912	-	.4090	-	-	.4090	-	1-1/4	-	3-1/2	-	6
37012	-	.4100	-	-	.4100	-	1-1/4	-	3-1/2	-	6
37013	-	.4110	-	-	.4110	-	1-1/4	-	3-1/2	-	6
37014	-	.4120	-	-	.4120	-	1-1/4	-	3-1/2	-	6
36914	Z	.4130	-	-	.4130	-	1-1/4	-	3-1/2	-	6
36918	-	.4134	-	10.50	.4134	10.50	-	32.0	-	89	6
36919	-	.4140	-	-	.4140	-	1-1/4	-	3-1/2	-	6
37015	-	.4150	-	-	.4150	-	1-1/4	-	3-1/2	-	6
37016	-	.4160	-	-	.4160	-	1-1/4	-	3-1/2	-	6
37017	-	.4170	-	-	.4170	-	1-3/8	-	4	-	6
37018	-	.4180	-	-	.4180	-	1-3/8	-	4	-	6
37019	-	.4190	-	-	.4190	-	1-3/8	-	4	-	6
37020	-	.4200	-	-	.4200	-	1-3/8	-	4	-	6
36923	-	.4210	-	-	.4210	-	1-3/8	-	4	-	6
36922	27/64	.4219	-	-	.4219	-	1-3/8	-	4	-	6
37021	-	.4230	-	-	.4230	-	1-3/8	-	4	-	6
37022	-	.4240	-	-	.4240	-	1-3/8	-	4	-	6
36924	-	.4250	-	-	.4250	-	1-3/8	-	4	-	6
37024	-	.4260	-	-	.4260	-	1-3/8	-	4	-	6
37025	-	.4270	-	-	.4270	-	1-3/8	-	4	-	6
37026	-	.4280	-	-	.4280	-	1-3/8	-	4	-	6
36920	-	.4290	-	-	.4290	-	1-3/8	-	4	-	6
37027	-	.4300	-	-	.4300	-	1-3/8	-	4	-	6
37028	-	.4310	-	-	.4310	-	1-3/8	-	4	-	6
36939	-	.4320	-	-	.4320	-	1-3/8	-	4	-	6
37029	-	.4330	-	-	.4330	-	1-3/8	-	4	-	6

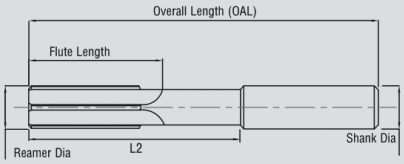
CARBIDE REAMERS
Chucking



CARBIDE CHUCKING REAMERS

	Diameter				Shank		Flute Length		OAL		
Part #	Wire/ Inch	Decimal	Wire	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Flutes
36926	-	.4331	-	11.00	.4331	11.00	-	35.0	-	101.5	6
37030	-	.4340	-	-	.4340	-	1-3/8	-	4	-	6
36925	-	.4350	-	-	.4350	-	1-3/8	-	4	-	6
36927	-	.4355	-	-	.4355	-	1-3/8	-	4	-	6
36931	-	.4360	-	-	.4360	-	1-3/8	-	4	-	6
36928	-	.4365	-	-	.4365	-	1-3/8	-	4	-	6
36929	-	.4370	-	-	.4370	-	1-3/8	-	4	-	6
36930	7/16	.4375	-	-	.4375	-	1-3/8	-	4	-	6
38278	-	.4380	-	-	.4380	-	1-3/8	-	4	-	6
36932	-	.4385	-	-	.4385	-	1-3/8	-	4	-	6
36935	-	.4390	-	-	.4360	-	1-3/8	-	4	-	6
36936	-	.4400	-	-	.4400	-	1-3/8	-	4	-	6
37034	-	.4410	-	-	.4410	-	1-3/8	-	4	-	6
36933	-	.4420	-	-	.4420	-	1-3/8	-	4	-	6
36937	-	.4425	-	-	.4425	-	1-3/8	-	4	-	6
37035	-	.4430	-	-	.4430	-	1-3/8	-	4	-	6
37036	-	.4440	-	-	.4440	-	1-3/8	-	4	-	6
37037	-	.4450	-	-	.4450	-	1-3/8	-	4	-	6
37038	-	.4460	-	-	.4460	-	1-3/8	-	4	-	6
38292	-	.4470	-	-	.4470	-	1-3/8	-	4	-	6
37039	-	.4480	-	-	.4480	-	1-3/8	-	4	-	6
37040	-	.4490	-	-	.4490	-	1-3/8	-	4	-	6
37041	-	.4500	-	-	.4500	-	1-3/8	-	4	-	6
37033	-	.4510	-	-	.4510	-	1-3/8	-	4	-	6
37042	-	.4520	-	-	.4520	-	1-3/8	-	4	-	6
36934	-	.4527	-	11.50	.4527	11.50	-	35.0	-	101.5	6
37043	-	.4530	-	-	.4530	-	1-3/8	-	4	-	6
36938	29/64	.4531	-	-	.4531	-	1-3/8	-	4	-	6
37044	-	.4540	-	-	.4540	-	1-3/8	-	4	-	6
37045	-	.4560	-	-	.4560	-	1-3/8	-	4	-	6
37046	-	.4570	-	-	.4570	-	1-3/8	-	4	-	6
36940	-	.4580	-	-	.4580	-	1-3/8	-	4	-	6
37048	-	.4590	-	-	.4590	-	1-3/8	-	4	-	6
37048	-	.4600	-	-	.4600	-	1-3/8	-	4	-	6
37049	-	.4610	-	-	.4610	-	1-3/8	-	4	-	6
37051	-	.4620	-	-	.4620	-	1-3/8	-	4	-	6
37052	-	.4630	-	-	.4630	-	1-3/8	-	4	-	6
37053	-	.4640	-	-	.4640	-	1-3/8	-	4	-	6
36943	-	.4646	-	-	.4646	-	1-3/8	-	4	-	6
37055	-	.4650	-	-	.4650	-	1-3/8	-	4	-	6
37056	-	.4660	-	-	.4660	-	1-3/8	-	4	-	6
37057	-	.4670	-	-	.4670	-	1-3/8	-	4	-	6

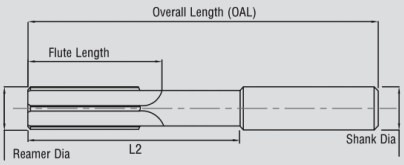
CARBIDE REAMERS
Chucking



CARBIDE CHUCKING REAMERS

	Diameter				Shank		Flute Length		OAL		
Part #	Wire/ Inch	Decimal	Wire	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Flutes
37058	-	.4680	-	-	.4680	-	1-3/8	-	4	-	6
36942	15/32	.4688	-	-	.4688	-	1-3/8	-	4	-	6
37059	-	.4690	-	-	.4690	-	1-3/8	-	4	-	6
37060	-	.4700	-	-	.4700	-	1-3/8	-	4	-	6
37061	-	.4710	-	-	.4710	-	1-3/8	-	4	-	6
37062	-	.4720	-	-	.4720	-	1-3/8	-	4	-	6
36946	-	.4724	-	12.00	.4724	12.00	-	35.0	-	101.5	6
36699	-	.4730	-	-	.4730	-	1-3/8	-	4	-	6
38375	-	.4740	-	-	.4740	-	1-3/8	-	4	-	6
36701	-	.4750	-	-	.4750	-	1-3/8	-	4	-	6
36703	-	.4760	-	-	.4760	-	1-3/8	-	4	-	6
36881	-	.4770	-	-	.4770	-	1-3/8	-	4	-	6
36883	-	.4780	-	-	.4780	-	1-3/8	-	4	-	6
36884	-	.4790	-	-	.4790	-	1-1/2	-	4	-	6
36948	-	.4800	-	-	.4800	-	1-1/2	-	4	-	6
36885	-	.4805	-	-	.4805	-	1-1/2	-	4	-	6
36895	-	.4810	-	-	.4810	-	1-1/2	-	4	-	6
36897	-	.4820	-	-	.4820	-	1-1/2	-	4	-	6
36903	-	.4830	-	-	.4830	-	1-1/2	-	4	-	6
36905	-	.4840	-	-	.4840	-	1-1/2	-	4	-	6
36950	31/64	.4844	-	-	.4844	-	1-1/2	-	4	-	6
36909	-	.4850	-	-	.4850	-	1-1/2	-	4	-	6
36911	-	.4860	-	-	.4860	-	1-1/2	-	4	-	6
36913	-	.4870	-	-	.4870	-	1-1/2	-	4	-	6
36915	-	.4880	-	-	.4880	-	1-1/2	-	4	-	6
36916	-	.4900	-	-	.4900	-	1-1/2	-	4	-	6
36917	-	.4910	-	-	.4910	-	1-1/2	-	4	-	6
36941	-	.4921	-	12.50	.4921	12.50	-	35.0	-	101.5	6
36955	-	.4930	-	-	.4930	-	1-1/2	-	4	-	6
36944	-	.4940	-	-	.4940	-	1-1/2	-	4	-	6
36975	-	.4950	-	-	.4950	-	1-1/2	-	4	-	6
36945	-	.4960	-	-	.4960	-	1-1/2	-	4	-	6
36949	-	.4970	-	-	.4970	-	1-1/2	-	4	-	6
36951	-	.4980	-	-	.4980	-	1-1/2	-	4	-	6
36952	-	.4990	-	-	.4990	-	1-1/2	-	4	-	6
36953	-	.4995	-	-	.4995	-	1-1/2	-	4	-	6
36954	1/2	.5000	-	-	.5000	-	1-1/2	-	4	-	6
36956	-	.5005	-	-	.5005	-	1-1/2	-	4	-	6
36958	-	.5010	-	-	.5010	-	1-1/2	-	4	-	6
36964	-	.5015	-	-	.5015	-	1-1/2	-	4	-	6
36959	-	.5020	-	-	.5020	-	1-1/2	-	4	-	6

CARBIDE REAMERS
Chucking



CARBIDE CHUCKING REAMERS

	Diameter				Shank		Flute Length		OAL		
Part #	Wire/ Inch	Decimal	Wire	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Flutes
36960	-	.5030	-	-	.5030	-	1-1/2	-	4	-	6
36961	-	.5040	-	-	.5040	-	1-1/2	-	4	-	6
36962	-	.5050	-	-	.5050	-	1-1/2	-	4	-	6
36968	-	.5118	-	13.00	.5118	13.00	-	35.0	-	101.5	6
36963	-	.5512	-	14.00	.5512	14.00	-	35.0	-	101.5	6
36970	9/16	.5625	-	-	.5625	-	1-1/2	-	4	-	6
36974	-	.5905	-	15.00	.5905	15.00	-	35.0	-	101.5	6
36971	-	.5935	-	-	.5935	-	1-3/4	-	4	-	6
36972	19/32	.5938	-	-	.5938	-	1-3/4	-	4	-	6
36976	-	.6235	-	-	.6235	-	1-3/4	-	4	-	6
36977	-	.6240	-	-	.6240	-	1-3/4	-	4	-	6
36981	-	.6245	-	-	.6245	-	1-3/4	-	4	-	6
36978	5/8	.6250	-	-	.6250	-	1-3/4	-	4	-	6
38464	-	.6255	-	-	.6255	-	1-3/4	-	4	-	6
38466	-	.6260	-	-	.6260	-	1-3/4	-	4	-	6
38468	-	.6270	-	-	.6270	-	1-3/4	-	4	-	6
36980	-	.6299	-	16.00	.6299	16.00	-	35.0	-	101.5	6
36979	-	.6310	-	-	.6310	-	1-3/4	-	4	-	6
36982	11/16	.6875	-	-	.6875	-	1-3/4	-	4	-	6
36989	-	.7490	-	-	.7490	-	1-3/4	-	4	-	6
36991	-	.7495	-	-	.7495	-	1-3/4	-	4	-	6
36990	3/4	.7500	-	-	.7500	-	1-3/4	-	4	-	6
36998	-	.7505	-	-	.7505	-	1-3/4	-	4	-	6
36999	-	.7510	-	-	.7510	-	1-3/4	-	4	-	6

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Power. Precision. Performance.