

Your #1 Source for American-Made Premium Cutting Tools



MADE IN THE USA

# 2013 PRODUCT CATALOG

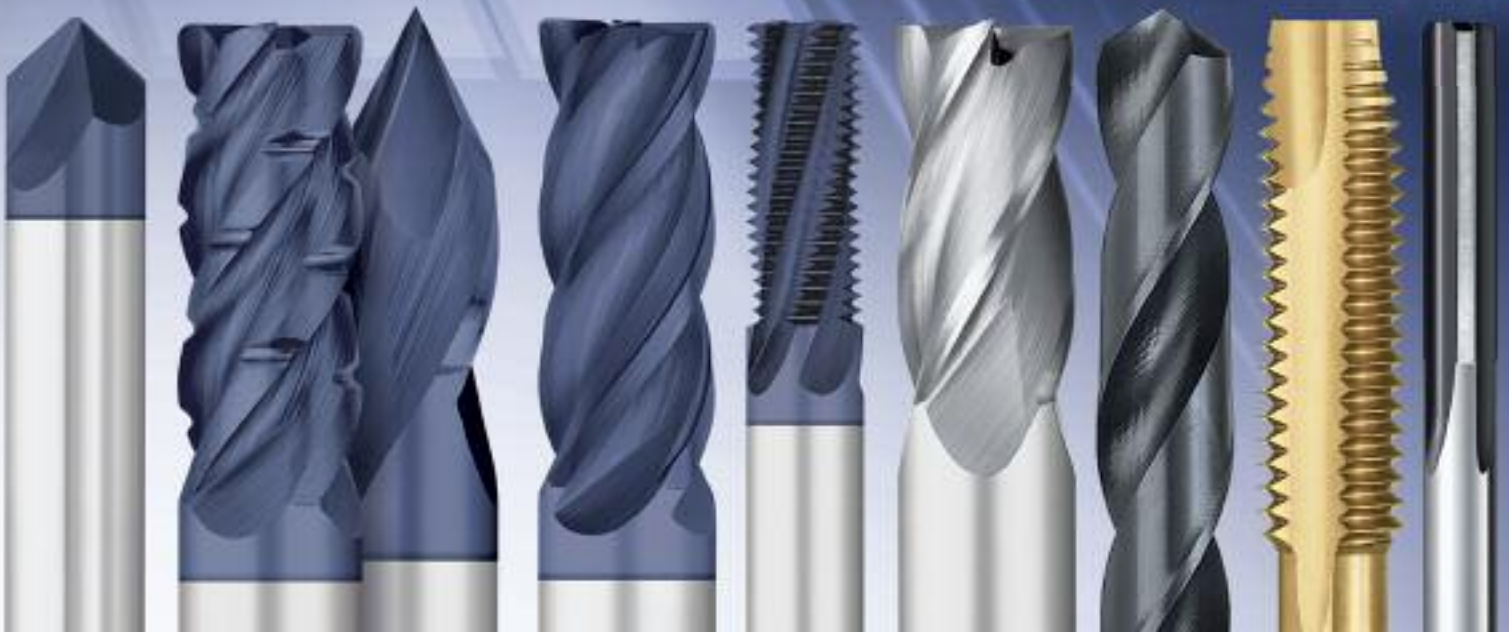
PREMIUM QUALITY SOLID CARBIDE,  
HIGH SPEED STEEL AND COBALT  
CUTTING TOOLS

FULL OFFERING OF **HIGH PERFORMANCE** TOOLS

ENDMILLS \\\ MICRO ENDMILLS \\\ THREADMILLS \\\ DRILLS \\\ TAPS & DIES  
CHAMFER MILLS \\\ DRILL MILLS \\\ BURS \\\ COUNTERSINKS \\\ REAMERS

AUTHORIZED DISTRIBUTOR

**Hemly**  
TOOL SUPPLY INC.





MADE IN THE U.S.A.

*Your #1 Source for American Made Cutting Tools*

**Our commitment to serving Industrial Distributors** with premium quality, American-Made cutting tools endures as our number one priority. We strive to provide exceptional customer service and aggressive pricing, to ensure the profitability of our customers.

For over 41 years we've worked continuously to achieve these goals. We're proud to uphold this commitment to our valued distributors throughout North America. The "Titan Team" is rapidly growing; we invite you to join us today.

*ALL TITAN USA TOOLS*  *100% MADE IN THE USA*







**CUTTING EDGE MANUFACTURING ■ STATE-OF-THE-ART COATING FACILITY ■ WORLD CLASS DISTRIBUTION CENTER**



## **Our commitment to you**

- 100% Made in the USA
- Premium Quality Products
- Over 13,000 Items in Stock
- Solid Carbide, HSS & Cobalt Tools
- On-site Platit PVD Coating Center
- Exceptional Customer Service
- All Orders Acknowledged Via Email Within 15 Minutes
- Online, Phone or Email Orders
- No Minimum Order
- 95% Same Day Shipping until 6pm EST
- UPS Blue @ Ground Rates
- UPS Red @ Blue Rates per Request
- Private Brand Program
- Custom Catalogs
- Blind Shipping
- Bar-Coding
- Live Stock Check & Net Pricing
- Online Cross Reference Feature
- Comprehensive Description Search
- Individual Account Log-in Feature
- Online Company Tour

**World class website – [titanman.com](http://titanman.com)**



# TITAN USA utilizes the latest technology in high capacity cutting tool PVD coatings.

Partnering with PLATIT®, TITAN USA is able to control and maintain the consistent quality of all of our coatings and the ability to quickly replenish stock as needed. TITAN USA currently has 2 high capacity PLATIT PL1001 COMPACT coating machines that provide our customers & TITAN USA with uninterrupted tool coating production.



## PLATIT PL1001 COMPACT

- High capacity hard coating machine
- Based on PLATIT's patented cathode ARC technology
- PVD Coating on HSS, Cobalt & Tungsten Carbide
- Produces the highest quality and consistent coating

## PLATIT DEGASSER

- Vaporizes oils or any other fluids from blind or coolant fed holes after cleaning process
- Removes trapped gases from brazed cutting tools
- Helps ensure proper coating adhesion

## TITAN's PVD Coatings

### ALTIN

ALTIN is a high performance coating for milling, tapping and drilling in stainless steels, carbon steels, alloy steels, titanium and cast iron. This coating is extremely heat resistant and can be used with or without coolant. It is exceptional in difficult to machine materials where adhesive wear is particularly high.

### ALCRO-MAX

ALCRO-MAX is a Triple Platit Coating based on AlCrN with a titanium addition. Triple Coatings are deposited with 3 sections freely programmed in one batch. ALCRO-MAX has been engineered to give an optimum balance between the toughness of the core layer and the abrasion resistance of the top nano-layer. Titanium's addition reduces the adhesive wear compared to conventional AlCrN coatings, increases the micro-hardness up to 3500Hv and stops the crack propagation through the coating. ALCRO-MAX is mostly suitable when machining tool steel and shows excellent behavior for wet and MQL (minimum quantity lubrication) conditions.

### TICN

TICN is a general purpose coating used for milling a wide variety of materials. This would be an option when ALTIN cannot be used, as in applications that can't generate the speeds and feeds required for higher cutting temperatures.

### ZRN

ZRN is a high performance coating for milling non-ferrous materials such as aluminum. It prevents edge build up that is typical in soft and sticky materials.

### TIN

TIN is a special multilayer coating for tapping and drilling in a wide variety of materials. It's generally used in applications with lower cutting speeds.



# PVD Coatings increase cutting tool performance in terms of wear resistance, abrasion prevention, corrosion and oxidation at high temperatures.



With PLATIT's easy loading carousel tool holder, different tool types and sizes can be mixed and coated in one load maximizing cycle times.



After coating, to help maintain our clean-room environment, a cool-down box is used to contain and remove any excess coating dust particles.



EUROCOLD Pluritank® is a state-of-the-art completely automated tool cleaning system that removes all oils and contaminants from tools prior to coating.



We have a Platit quality control system that allows us to check coating thickness and adhesion. A test piece is inspected and documented after each load.

Please visit us online at [titanman.com](http://titanman.com) for a tour and more information about our Coating Center.

***ALL TITAN USA TOOLS ARE 100% MADE IN THE USA***



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PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.



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HIGH VANADIUM POWDERED METAL

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» HIGH PERFORMANCE «

# Solid Carbide Endmills



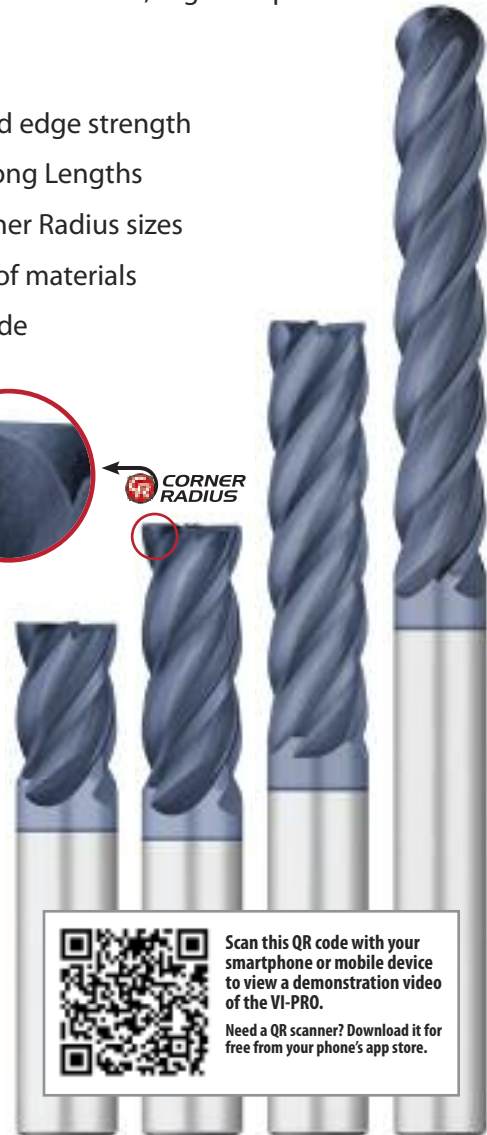
## VI-PRO

TITAN's **VI-PRO** is a High Performance, solid carbide endmill, that incorporates the ultimate in variable index geometry. Our flute configuration produces a harmonics shift, resulting in minimal chatter and an exceptional finish.

- Used in all slotting, roughing, profiling and finishing applications
- High Performance, chatter free machining provides versatility in use for all ferrous materials
- Designed for use in Alloy Steels, Cast Iron, Titanium, Stainless Steel, High Temp and all other ferrous materials up to 50HRc
- Enables higher SFM and heavier chip loads
- Eccentric Relief on the cutting edge provides enhanced edge strength
- Available in 4 & 5 Flute - Stub, Regular, Long & Extra Long Lengths
- Available in Square End, Ball Nose and various  Corner Radius sizes
- Offered in ALTiN & ALCRO-MAX to cover a wide range of materials
- Made in the USA from premium solid micrograin carbide

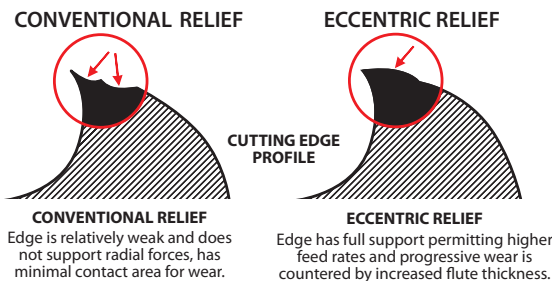
### Why use TITAN's Corner Radius tools?

- The tools improve productivity and reduce costs.
- A sharp corner of an endmill is its weakest point. The corner radius design strengthens the endmill by reducing chipping and providing longer tool life.
- Extensive offering of Corner Radius tools: Stub, Regular, Long & Extra Long Lengths, with radius starting at 0.008 up to 0.120.



TITAN's High-Performance VI-PRO carbide endmill utilizes a Eccentric Relief on the cutting edge that provides enhanced edge strength and a smoother cutting action.

### Advantages of Eccentric Relief vs Conventional Relief



Scan this QR code with your smartphone or mobile device to view a demonstration video of the VI-PRO.

Need a QR scanner? Download it for free from your phone's app store.

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILLS  
CARBIDE CHAMFER MILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# Solid Carbide Endmills

## VI-PRO

### VARIABLE INDEX

#### STUB LENGTH - 4 FLUTE - SQUARE END



**SERIES V41S**  
ALTIN COATED

**SERIES V42S**  
ALCRO-MAX COATED

VI-PRO					ALTIN COATED				ALCRO-MAX COATED			
SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLTS	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE
1/8	1/8	1/4	1-1/2	4	TC20901	10.92	-	-	-	-	-	-
3/16	3/16	3/8	2	4	TC20904	14.05	-	-	-	-	-	-
1/4	1/4	3/8	2	4	TC20907	15.90	-	-	TC21139	17.49	-	-
5/16	5/16	7/16	2	4	TC20910	23.13	-	-	TC21142	25.44	-	-
3/8	3/8	1/2	2	4	TC20913	25.64	-	-	TC21145	28.20	-	-
1/2	1/2	5/8	2-1/2	4	TC20916	38.34	TC20951	40.52	TC21148	42.17	TC21173	44.57
5/8	5/8	3/4	3	4	TC20919	75.47	TC20954	77.65	TC21151	79.24	TC21176	81.54
3/4	3/4	1	3	4	TC20922	99.54	TC20957	101.72	TC21154	104.51	TC21179	106.80

### VARIABLE INDEX

#### REGULAR LENGTH - 4 FLUTE - SQUARE END



**SERIES V41R**  
ALTIN COATED

**SERIES V42R**  
ALCRO-MAX COATED

VI-PRO					ALTIN COATED				ALCRO-MAX COATED			
SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLTS	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE
1/8	1/8	1/2	2	4	TC21706	13.05	-	-	-	-	-	-
3/16	3/16	9/16	2	4	TC21709	14.91	-	-	-	-	-	-
1/4	1/4	3/4	2-1/2	4	TC21712	18.93	-	-	TC21827	20.82	-	-
5/16	5/16	13/16	2-1/2	4	TC21715	25.07	-	-	TC21830	27.58	-	-
3/8	3/8	1	2-1/2	4	TC21718	29.37	-	-	TC21833	32.31	-	-
1/2	1/2	1	3	4	TC21721	44.05	TC21755	46.23	TC21836	48.46	TC21863	50.85
1/2	1/2	1-1/4	3	4	TC21724	44.05	TC21758	46.23	TC21839	48.46	TC21866	50.85
5/8	5/8	1-5/8	3-1/2	4	TC21727	79.74	TC21761	81.93	TC21842	83.73	TC21869	86.02
3/4	3/4	1-5/8	4	4	TC21730	110.18	TC21764	112.37	TC21845	115.69	TC21872	117.98
1	1	2	4	4	TC21733	205.68	TC21767	207.86	TC21848	215.96	TC21875	218.25

The VI-PRO performs very well in a wide range of materials including:

HIGH TEMP ALLOYS ▪ STAINLESS STEELS ▪ ALLOY STEELS ▪ CAST IRON ▪ HIGH TEMP NICKEL BASE ALLOYS ▪ TITANIUM ALLOYS ▪ EXOTICS

FOR VI PRO TECHNICAL AND COATING INFORMATION, PLEASE SEE PAGES 179-181.

TOLERANCES	DIAMETER	SHANK
1/8" - 1/2"	+0.000, -0.002	-0.001, -0.004
5/8" - 1"	+0.000, -0.003	-0.001, -0.004

HIGH PERFORMANCE - CARBIDE ENDMILLS



HIGH PERFORMANCE

# Solid Carbide Endmills



## VI-PRO

### VARIABLE INDEX

#### LONG LENGTH - 4 FLUTE - SQUARE END



**SERIES V41L**  
ALTIN COATED

**SERIES V42L**  
ALCRO-MAX COATED

VI-PRO					ALTIN COATED				ALCRO-MAX COATED			
SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLTS	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE
1/4	1/4	1-1/8	3	4	TC23000	21.56	-	-	TC23201	23.72	-	-
5/16	5/16	1-1/8	3	4	TC23003	29.83	-	-	TC23204	32.81	-	-
3/8	3/8	1-1/4	3	4	TC23006	40.06	-	-	TC23207	44.06	-	-
1/2	1/2	1-1/2	4	4	TC23009	55.31	TC23134	57.49	TC23210	60.84	TC23331	63.24
1/2	1/2	2	4	4	TC23012	61.33	TC23137	63.51	TC23213	67.46	TC23334	69.86
5/8	5/8	2-1/4	5	4	TC23015	114.07	TC23140	116.25	TC23216	119.77	TC23337	122.06
3/4	3/4	2-1/4	5	4	TC23018	138.02	TC23143	140.20	TC23219	144.92	TC23340	147.21
1	1	2-1/4	5	4	TC23021	227.48	TC23146	229.66	TC23222	238.85	TC23343	241.14

### VARIABLE INDEX

#### EXTRA LONG LENGTH - 4 FLUTE - SQUARE END



**SERIES V41XL**  
ALTIN COATED

**SERIES V42XL**  
ALCRO-MAX COATED

VI-PRO					ALTIN COATED				ALCRO-MAX COATED			
SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLTS	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE
1/4	1/4	1-1/2	4	4	TC24209	25.75	-	-	TC24408	28.33	-	-
3/8	3/8	2	4	4	TC24211	45.14	-	-	TC24411	49.66	-	-
1/2	1/2	3	6	4	TC24213	86.49	TC24348	88.67	TC24414	95.13	TC24543	97.54
5/8	5/8	3	6	4	TC24215	123.01	TC24351	125.19	TC24417	129.16	TC24546	131.45
3/4	3/4	3	6	4	TC24217	162.37	TC24354	164.55	TC24420	170.49	TC24549	172.78
3/4	3/4	4	7	4	TC24219	266.64	TC24357	268.82	TC24423	279.97	TC24552	282.26
1	1	3	6	4	TC24221	264.72	TC24360	266.90	TC24426	277.96	TC24555	280.25
1	1	4-1/4	7	4	TC24223	390.78	TC24363	393.12	TC24429	409.97	TC24558	412.31

The VI-PRO performs very well in a wide range of materials including:

HIGH TEMP ALLOYS ■ STAINLESS STEELS ■ ALLOY STEELS ■ CAST IRON ■ HIGH TEMP NICKEL BASE ALLOYS ■ TITANIUM ALLOYS ■ EXOTICS

FOR VI PRO TECHNICAL AND COATING INFORMATION, PLEASE SEE PAGES 179-181.

TOLERANCES	DIAMETER	SHANK
1/4" - 1/2"	+0.00, -0.02	-0.001, -0.004
5/8" - 1"	+0.00, -0.03	-0.001, -0.004

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
COBALT ENDMILLS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



**HIGH PERFORMANCE**

# Solid Carbide Endmills



## VI-PRO

**VARIABLE INDEX**

**STUB LENGTH - 4 FLUTE -  CORNER RADIUS**



**SERIES V41SR**  
ALTiN COATED

**SERIES V42SR**  
ALCRO-MAX COATED

SIZE	VI-PRO					ALTiN COATED				ALCRO-MAX COATED			
	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLTS	CORNER RADIUS	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE
1/8	1/8	1/4	1-1/2	4	0.008	TC21435	12.59	-	-	-	-	-	-
3/16	3/16	3/8	2	4	0.008	TC21438	15.72	-	-	-	-	-	-
1/4	1/4	3/8	2	4	0.015	TC21441	18.53	-	-	TC21509	20.38	-	-
5/16	5/16	7/16	2	4	0.015	TC21444	24.94	-	-	TC21512	27.43	-	-
3/8	3/8	1/2	2	4	0.015	TC21447	27.45	-	-	TC21515	30.19	-	-
1/2	1/2	5/8	2-1/2	4	0.030	TC21450	41.96	TC21468	44.14	TC21518	46.15	TC21541	48.55
5/8	5/8	3/4	3	4	0.030	TC21453	79.09	TC21471	81.27	TC21521	83.05	TC21544	85.34
3/4	3/4	1	3	4	0.030	TC21456	103.16	TC21474	105.34	TC21524	108.32	TC21547	110.61

**The VI-PRO performs very well in a wide range of materials including:**

HIGH TEMP ALLOYS ▪ STAINLESS STEELS ▪ ALLOY STEELS ▪ CAST IRON ▪ HIGH TEMP NICKEL BASE ALLOYS ▪ TITANIUM ALLOYS ▪ EXOTICS



**ALL TITAN USA TOOLS ARE 100% MADE IN THE USA**

**FOR VI PRO TECHNICAL AND COATING INFORMATION, PLEASE SEE PAGES 179-181.**

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.00, -0.02	-0.001, -0.004	+0.02, -0.02
5/8" - 3/4"	+0.00, -0.03	-0.001, -0.004	+0.02, -0.02

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION

HIGH PERFORMANCE - CARBIDE ENDMILLS





HIGH PERFORMANCE

# Solid Carbide Endmills



## VI-PRO

### VARIABLE INDEX

REGULAR LENGTH - 4 FLUTE - CORNER RADIUS



**SERIES V41RR**  
ALTIM COATED

**SERIES V42RR**  
ALCRO-MAX COATED

VI-PRO						ALTIM COATED				ALCRO-MAX COATED			
SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLTS	CORNER RADIUS	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE
1/8	1/8	1/2	2	4	0.010	TC22211	14.72	-	-	-	-	-	-
1/8	1/8	1/2	2	4	0.020	TC22214	14.72	-	-	-	-	-	-
1/8	1/8	1/2	2	4	0.030	TC22217	14.72	-	-	-	-	-	-
3/16	3/16	9/16	2	4	0.010	TC22220	16.58	-	-	-	-	-	-
3/16	3/16	9/16	2	4	0.020	TC22223	16.58	-	-	-	-	-	-
3/16	3/16	9/16	2	4	0.030	TC22226	16.58	-	-	-	-	-	-
1/4	1/4	3/4	2-1/2	4	0.015	TC22229	20.60	-	-	TC22635	22.65	-	-
1/4	1/4	3/4	2-1/2	4	0.030	TC22232	20.60	-	-	TC22638	22.65	-	-
1/4	1/4	3/4	2-1/2	4	0.060	TC22235	20.60	-	-	TC22641	22.65	-	-
5/16	5/16	13/16	2-1/2	4	0.015	TC22238	26.53	-	-	TC22644	29.18	-	-
5/16	5/16	13/16	2-1/2	4	0.030	TC22241	26.53	-	-	TC22647	29.18	-	-
5/16	5/16	13/16	2-1/2	4	0.060	TC22244	26.53	-	-	TC22650	29.18	-	-
3/8	3/8	1	2-1/2	4	0.015	TC22247	30.98	-	-	TC22653	34.08	-	-
3/8	3/8	1	2-1/2	4	0.030	TC22250	30.98	-	-	TC22656	34.08	-	-
3/8	3/8	1	2-1/2	4	0.060	TC22253	30.98	-	-	TC22659	34.08	-	-
1/2	1/2	1	3	4	0.015	TC22256	49.50	TC22452	51.97	TC22662	54.45	TC22801	57.17
1/2	1/2	1	3	4	0.030	TC22259	49.50	TC22455	51.97	TC22665	54.45	TC22804	57.17
1/2	1/2	1	3	4	0.060	TC22262	49.50	TC22458	51.97	TC22668	54.45	TC22807	57.17
1/2	1/2	1	3	4	0.090	TC22265	49.50	TC22461	51.97	TC22671	54.45	TC22810	57.17
1/2	1/2	1	3	4	0.120	TC22268	49.50	TC22464	51.97	TC22674	54.45	TC22813	57.17
1/2	1/2	1-1/4	3	4	0.015	TC22271	49.50	TC22467	51.97	TC22677	54.45	TC22816	57.17
1/2	1/2	1-1/4	3	4	0.030	TC22274	49.50	TC22470	51.97	TC22680	54.45	TC22819	57.17
1/2	1/2	1-1/4	3	4	0.060	TC22277	49.50	TC22473	51.97	TC22683	54.45	TC22822	57.17
1/2	1/2	1-1/4	3	4	0.090	TC22280	49.50	TC22476	51.97	TC22686	54.45	TC22825	57.17
1/2	1/2	1-1/4	3	4	0.120	TC22283	49.50	TC22479	51.97	TC22689	54.45	TC22828	57.17
5/8	5/8	1-5/8	3-1/2	4	0.030	TC22286	83.39	TC22482	85.57	TC22692	87.56	TC22831	89.85
5/8	5/8	1-5/8	3-1/2	4	0.060	TC22289	83.39	TC22485	85.57	TC22695	87.56	TC22834	89.85
5/8	5/8	1-5/8	3-1/2	4	0.090	TC22292	83.39	TC22488	85.57	TC22698	87.56	TC22837	89.85
5/8	5/8	1-5/8	3-1/2	4	0.120	TC22295	83.39	TC22491	85.57	TC22701	87.56	TC22840	89.85
3/4	3/4	1-5/8	4	4	0.030	TC22298	115.64	TC22494	117.82	TC22704	121.42	TC22843	123.71
3/4	3/4	1-5/8	4	4	0.060	TC22301	115.64	TC22497	117.82	TC22707	121.42	TC22846	123.71
3/4	3/4	1-5/8	4	4	0.090	TC22304	115.64	TC22500	117.82	TC22710	121.42	TC22849	123.71
3/4	3/4	1-5/8	4	4	0.120	TC22307	115.64	TC22503	117.82	TC22713	121.42	TC22852	123.71
1	1	2	4	4	0.030	TC22310	211.14	TC22506	213.32	TC22716	221.69	TC22855	223.98
1	1	2	4	4	0.060	TC22313	211.14	TC22509	213.32	TC22719	221.69	TC22858	223.98
1	1	2	4	4	0.090	TC22316	211.14	TC22512	213.32	TC22722	221.69	TC22861	223.98
1	1	2	4	4	0.120	TC22319	211.14	TC22515	213.32	TC22725	221.69	TC22864	223.98

FOR VI PRO TECHNICAL AND COATING INFORMATION, PLEASE SEE PAGES 179-181.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.00, -0.02	-0.001, -0.004	+0.02, -0.02
5/8" - 1"	+0.00, -0.03	-0.001, -0.004	+0.02, -0.02

HIGH PERFORMANCE - CARBIDE ENDMILLS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



**HIGH PERFORMANCE**

# Solid Carbide Endmills



## VI-PRO

**VARIABLE INDEX**

**LONG LENGTH - 4 FLUTE - CORNER RADIUS**



**SERIES V41LR**  
ALTIM COATED

**SERIES V42LR**  
ALCRO-MAX COATED

VI-PRO						ALTIM COATED				ALCRO-MAX COATED			
SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLTS	CORNER RADIUS	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE
1/4	1/4	1-1/8	3	4	0.015	TC23624	23.22	-	-	TC23820	25.55	-	-
1/4	1/4	1-1/8	3	4	0.030	TC23627	23.22	-	-	TC23823	25.55	-	-
5/16	5/16	1-1/8	3	4	0.015	TC23630	31.64	-	-	TC23826	34.80	-	-
5/16	5/16	1-1/8	3	4	0.030	TC23633	31.64	-	-	TC23829	34.80	-	-
3/8	3/8	1-1/4	3	4	0.030	TC23636	41.87	-	-	TC23832	46.06	-	-
3/8	3/8	1-1/4	3	4	0.060	TC23639	41.87	-	-	TC23835	46.06	-	-
1/2	1/2	1-1/2	4	4	0.030	TC23642	58.93	TC23780	61.11	TC23838	64.82	TC23905	67.23
1/2	1/2	1-1/2	4	4	0.060	TC23645	58.93	TC23783	61.11	TC23841	64.82	TC23908	67.23
1/2	1/2	2	4	4	0.030	TC23648	64.95	TC23786	67.14	TC23844	71.45	TC23911	73.85
1/2	1/2	2	4	4	0.060	TC23651	64.95	TC23789	67.14	TC23847	71.45	TC23914	73.85
5/8	5/8	2-1/4	5	4	0.030	TC23654	117.69	TC23792	119.87	TC23850	123.57	TC23917	125.86
5/8	5/8	2-1/4	5	4	0.060	TC23657	117.69	TC23795	119.87	TC23853	123.57	TC23920	125.86
3/4	3/4	2-1/4	5	4	0.030	TC23660	148.20	TC23798	151.04	TC23856	155.61	TC23923	158.59
3/4	3/4	2-1/4	5	4	0.060	TC23663	148.20	TC23801	151.04	TC23859	155.61	TC23926	158.59
1	1	2-1/4	5	4	0.030	TC23666	231.10	TC23804	233.28	TC23862	242.65	TC23929	244.94
1	1	2-1/4	5	4	0.060	TC23669	231.10	TC23807	233.28	TC23865	242.65	TC23932	244.94

The VI-PRO performs very well in a wide range of materials including:

HIGH TEMP ALLOYS • STAINLESS STEELS • ALLOY STEELS • CAST IRON • HIGH TEMP NICKEL BASE ALLOYS • TITANIUM ALLOYS • EXOTICS



**PVD COATINGS INCREASE CUTTING TOOL PERFORMANCE**

FOR VI PRO TECHNICAL AND COATING INFORMATION, PLEASE SEE PAGES 179-181.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/4" - 1/2"	+0.00, -0.02	-0.001, -0.004	+0.02, -0.02
5/8" - 1"	+0.00, -0.03	-0.001, -0.004	+0.02, -0.02

CARBIDE ENDMILLS  
 CARBIDE MICRO ENDMILLS  
 CARBIDE THREADMILLS  
 CARBIDE DRILL MILLS  
 CARBIDE CHAMFER MILLS  
 CARBIDE DRILLS  
 CARBIDE REAMERS  
 CARBIDE BURS  
 COUNTERSINKS  
 HSS & COBALT ENDMILLS  
 TAPS & DIES  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION



HIGH PERFORMANCE

# Solid Carbide Endmills



## VI-PRO

### VARIABLE INDEX

EXTRA LONG LENGTH - 4 FLUTE - CORNER RADIUS



**SERIES V41XLR**  
ALTiN COATED

**SERIES V42XLR**  
ALCRO-MAX COATED

VI-PRO						ALTiN COATED				ALCRO-MAX COATED			
SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLTS	CORNER RADIUS	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE
1/4	1/4	1-1/2	4	4	0.015	TC24913	28.26	-	-	TC25217	31.09	-	-
1/4	1/4	1-1/2	4	4	0.030	TC24916	28.26	-	-	TC25220	31.09	-	-
3/8	3/8	2	4	4	0.030	TC24919	47.87	-	-	TC25223	52.65	-	-
3/8	3/8	2	4	4	0.060	TC24922	47.87	-	-	TC25226	52.65	-	-
1/2	1/2	3	6	4	0.030	TC24925	89.21	TC25070	91.40	TC25229	98.14	TC25302	100.53
1/2	1/2	3	6	4	0.060	TC24928	89.21	TC25073	91.40	TC25232	98.14	TC25305	100.53
5/8	5/8	3	6	4	0.030	TC24931	125.72	TC25076	127.90	TC25235	132.00	TC25308	134.29
5/8	5/8	3	6	4	0.060	TC24934	125.72	TC25079	127.90	TC25238	132.00	TC25311	134.29
3/4	3/4	3	6	4	0.030	TC24937	165.99	TC25082	168.17	TC25241	174.29	TC25314	176.58
3/4	3/4	3	6	4	0.060	TC24940	165.99	TC25085	168.17	TC25244	174.29	TC25317	176.58
3/4	3/4	4	7	4	0.030	TC24943	270.26	TC25088	272.44	TC25247	283.77	TC25320	286.07
3/4	3/4	4	7	4	0.060	TC24946	270.26	TC25091	272.44	TC25250	283.77	TC25323	286.07
1	1	3	6	4	0.030	TC24949	271.70	TC25094	273.88	TC25253	285.29	TC25326	287.58
1	1	3	6	4	0.060	TC24952	271.70	TC25097	273.88	TC25256	285.29	TC25329	287.58
1	1	4-1/4	7	4	0.030	TC24955	394.52	TC25100	396.86	TC25259	413.71	TC25332	416.05
1	1	4-1/4	7	4	0.060	TC24958	394.52	TC25103	396.86	TC25262	413.71	TC25335	416.05

The VI-PRO performs very well in a wide range of materials including:

HIGH TEMP ALLOYS ■ STAINLESS STEELS ■ ALLOY STEELS ■ CAST IRON ■ HIGH TEMP NICKEL BASE ALLOYS ■ TITANIUM ALLOYS ■ EXOTICS



TITAN HAS OVER 13,000 ITEMS IN STOCK & READY TO SHIP

FOR VI PRO TECHNICAL AND COATING INFORMATION, PLEASE SEE PAGES 179-181.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/4" - 1/2"	+0.00, -.002	-.0001, -.0004	+0.02, -.002
5/8" - 1"	+0.00, -.003	-.0001, -.0004	+0.02, -.002

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



## VI-PRO

**VARIABLE INDEX**  
STUB LENGTH - 4 FLUTE - BALL NOSE



**SERIES V41SB**  
ALTIM COATED

**SERIES V42SB**  
ALCRO-MAX COATED

VI-PRO					ALTIM COATED				ALCRO-MAX COATED			
SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLTS	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE
1/8	1/8	1/4	1-1/2	4	TC25480	12.60	-	-	-	-	-	-
3/16	3/16	3/8	2	4	TC25482	16.21	-	-	-	-	-	-
1/4	1/4	3/8	2	4	TC25484	18.34	-	-	TC25502	20.18	-	-
5/16	5/16	7/16	2	4	TC25486	26.69	-	-	TC25504	29.35	-	-
3/8	3/8	1/2	2	4	TC25488	29.58	-	-	TC25506	32.54	-	-
1/2	1/2	5/8	2-1/2	4	TC25490	44.23	TC25496	46.75	TC25508	48.65	TC25514	51.43
5/8	5/8	3/4	3	4	TC25492	87.08	TC25498	89.60	TC25510	91.43	TC25516	94.08
3/4	3/4	1	3	4	TC25494	114.85	TC25500	117.36	TC25512	120.59	TC25518	123.23

## VARIABLE INDEX

REGULAR LENGTH - 4 FLUTE - BALL NOSE



**SERIES V41RB**  
ALTIM COATED

**SERIES V42RB**  
ALCRO-MAX COATED

VI-PRO					ALTIM COATED				ALCRO-MAX COATED			
SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLTS	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE
1/8	1/8	1/2	2	4	TC25520	15.06	-	-	-	-	-	-
3/16	3/16	9/16	2	4	TC25522	17.21	-	-	-	-	-	-
1/4	1/4	3/4	2-1/2	4	TC25524	21.84	-	-	TC25550	24.03	-	-
5/16	5/16	13/16	2-1/2	4	TC25526	28.93	-	-	TC25552	31.82	-	-
3/8	3/8	1	2-1/2	4	TC25528	33.89	-	-	TC25554	37.28	-	-
1/2	1/2	1	3	4	TC25530	50.83	TC25540	53.35	TC25556	55.91	TC25566	58.68
1/2	1/2	1-1/4	3	4	TC25532	50.83	TC25542	53.35	TC25558	55.91	TC25568	58.68
5/8	5/8	1-5/8	3-1/2	4	TC25534	92.02	TC25544	94.53	TC25560	96.62	TC25570	99.26
3/4	3/4	1-5/8	4	4	TC25536	127.13	TC25546	129.65	TC25562	133.49	TC25572	136.13
1	1	2	4	4	TC25538	237.33	TC25548	239.84	TC25564	249.19	TC25574	251.83

The VI-PRO performs very well in a wide range of materials including:

HIGH TEMP ALLOYS • STAINLESS STEELS • ALLOY STEELS • CAST IRON • HIGH TEMP NICKEL BASE ALLOYS • TITANIUM ALLOYS • EXOTICS

FOR VI PRO TECHNICAL AND COATING INFORMATION, PLEASE SEE PAGES 179-181.

TOLERANCES	DIAMETER	SHANK
1/8" - 1/2"	+0.00, -0.002	-0.001, -0.0004
5/8" - 1"	+0.00, -0.003	-0.001, -0.0004

HIGH PERFORMANCE - CARBIDE ENDMILLS

CARBIDE ENDMILLS

CARBIDE MICRO ENDMILLS

CARBIDE THREADMILLS

CARBIDE DRILL MILLS

CARBIDE CHAMFER MILLS

CARBIDE DRILLS

CARBIDE REAMERS

CARBIDE BURS

COUNTERSINKS

HSS & COBALT ENDMILLS

TAPS & DIES

HSS & COBALT DRILLS

HSS & COBALT REAMERS

TECHNICAL INFORMATION



» HIGH PERFORMANCE «

# Solid Carbide Endmills



## VI-PRO

### VARIABLE INDEX

LONG LENGTH - 4 FLUTE - BALL NOSE



**SERIES V41LB**  
ALTIM COATED

**SERIES V42LB**  
ALCRO-MAX COATED

VI-PRO					ALTIM COATED				ALCRO-MAX COATED			
SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLTS	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE
1/4	1/4	1-1/8	3	4	TC25576	24.87	-	-	TC25602	27.36	-	-
5/16	5/16	1-1/8	3	4	TC25578	34.42	-	-	TC25604	37.85	-	-
3/8	3/8	1-1/4	3	4	TC25580	46.22	-	-	TC25606	50.84	-	-
1/2	1/2	1-1/2	4	4	TC25582	63.82	TC25592	66.33	TC25608	70.20	TC25618	72.97
1/2	1/2	2	4	4	TC25584	70.77	TC25594	73.28	TC25610	77.84	TC25620	80.61
5/8	5/8	2-1/4	5	4	TC25586	131.62	TC25596	134.13	TC25612	138.20	TC25622	140.84
3/4	3/4	2-1/4	5	4	TC25588	159.26	TC25598	161.78	TC25614	167.22	TC25624	169.86
1	1	2-1/4	5	4	TC25590	262.47	TC25600	264.99	TC25616	275.59	TC25626	278.24

### VARIABLE INDEX

EXTRA LONG LENGTH - 4 FLUTE - BALL NOSE



**SERIES V41XLB**  
ALTIM COATED

**SERIES V42XLB**  
ALCRO-MAX COATED

VI-PRO					ALTIM COATED				ALCRO-MAX COATED			
SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLTS	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE
1/4	1/4	1-1/2	4	4	TC25628	29.72	-	-	TC25656	32.69	-	-
3/8	3/8	2	4	4	TC25630	52.09	-	-	TC25658	57.29	-	-
1/2	1/2	3	6	4	TC25632	99.79	TC25644	102.31	TC25660	109.77	TC25672	112.54
5/8	5/8	3	6	4	TC25634	141.93	TC25646	144.45	TC25662	149.04	TC25674	151.68
3/4	3/4	3	6	4	TC25636	187.35	TC25648	189.87	TC25664	196.72	TC25676	199.36
3/4	3/4	4	7	4	TC25638	307.66	TC25650	310.18	TC25666	323.05	TC25678	325.69
1	1	3	6	4	TC25640	305.45	TC25652	307.96	TC25668	320.72	TC25680	323.36
1	1	4-1/4	7	4	TC25642	450.90	TC25654	453.60	TC25670	473.04	TC25682	475.74

The VI-PRO performs very well in a wide range of materials including:

HIGH TEMP ALLOYS ■ STAINLESS STEELS ■ ALLOY STEELS ■ CAST IRON ■ HIGH TEMP NICKEL BASE ALLOYS ■ TITANIUM ALLOYS ■ EXOTICS

FOR VI PRO TECHNICAL AND COATING INFORMATION, PLEASE SEE PAGES 179-181.

TOLERANCES	DIAMETER	SHANK
1/4" - 1/2"	+0.000, -0.002	-0.001, -0.0004
5/8" - 1"	+0.000, -0.003	-0.001, -0.0004

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
COBALT ENDMILLS  
HSS & COBALT DRILLS  
TAPS & DIES  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION

**VI-PRO**

**VARIABLE INDEX**  
**STUB LENGTH - 5 FLUTE - SQUARE END**



**SERIES V51S**  
**ALTiN COATED**

**SERIES V52S**  
**ALCRO-MAX COATED**

VI-PRO					ALTiN COATED				ALCRO-MAX COATED			
SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLTS	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE
1/8	1/8	1/4	1-1/2	5	TC25785	12.01	-	-	-	-	-	-
3/16	3/16	3/8	2	5	TC25786	15.45	-	-	-	-	-	-
1/4	1/4	3/8	2	5	TC25787	17.49	-	-	TC25796	19.24	-	-
5/16	5/16	7/16	2	5	TC25788	25.44	-	-	TC25797	27.99	-	-
3/8	3/8	1/2	2	5	TC25789	28.20	-	-	TC25798	31.02	-	-
1/2	1/2	5/8	2-1/2	5	TC25790	42.17	TC25793	44.57	TC25799	46.38	TC25802	49.02
5/8	5/8	3/4	3	5	TC25791	83.02	TC25794	85.41	TC25800	87.17	TC25803	89.69
3/4	3/4	1	3	5	TC25792	109.49	TC25795	111.89	TC25801	114.96	TC25804	117.48

**VARIABLE INDEX**  
**REGULAR LENGTH - 5 FLUTE - SQUARE END**



**SERIES V51R**  
**ALTiN COATED**

**SERIES V52R**  
**ALCRO-MAX COATED**

VI-PRO					ALTiN COATED				ALCRO-MAX COATED			
SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLTS	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE
1/8	1/8	1/2	2	5	TC25806	14.35	-	-	-	-	-	-
3/16	3/16	9/16	2	5	TC25808	16.41	-	-	-	-	-	-
1/4	1/4	3/4	2-1/2	5	TC25810	20.83	-	-	TC25836	22.91	-	-
5/16	5/16	13/16	2-1/2	5	TC25812	27.58	-	-	TC25838	30.33	-	-
3/8	3/8	1	2-1/2	5	TC25814	32.31	-	-	TC25840	35.54	-	-
1/2	1/2	1	3	5	TC25816	48.46	TC25826	50.86	TC25842	53.30	TC25852	55.94
1/2	1/2	1-1/4	3	5	TC25818	48.46	TC25828	50.86	TC25844	53.30	TC25854	55.94
5/8	5/8	1-5/8	3-1/2	5	TC25820	87.72	TC25830	90.12	TC25846	92.11	TC25856	94.63
3/4	3/4	1-5/8	4	5	TC25822	121.20	TC25832	123.60	TC25848	127.26	TC25858	129.78
1	1	2	4	5	TC25824	226.25	TC25834	228.65	TC25850	237.56	TC25860	240.08

**The VI-PRO performs very well in a wide range of materials including:**

HIGH TEMP ALLOYS • STAINLESS STEELS • ALLOY STEELS • CAST IRON • HIGH TEMP NICKEL BASE ALLOYS • TITANIUM ALLOYS • EXOTICS

**FOR VI PRO TECHNICAL AND COATING INFORMATION, PLEASE SEE PAGES 179-181.**

TOLERANCES	DIAMETER	SHANK
1/8" - 1/2"	+0.00, -0.02	-0.001, -0.004
5/8" - 1"	+0.00, -0.03	-0.001, -0.004

CARBIDE ENDMILLS  
 CARBIDE MICRO ENDMILLS  
 CARBIDE THREADMILLS  
 CARBIDE DRILL MILLS  
 CARBIDE CHAMFER MILLS  
 CARBIDE DRILLS  
 CARBIDE REAMERS  
 CARBIDE BURS  
 COUNTERSINKS  
 HSS & COBALT ENDMILLS  
 TAPS & DIES  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION





HIGH PERFORMANCE

# Solid Carbide Endmills



## VI-PRO

### VARIABLE INDEX

#### LONG LENGTH - 5 FLUTE - SQUARE END



**SERIES V51L**  
ALTIM COATED

**SERIES V52L**  
ALCRO-MAX COATED

VI-PRO					ALTIM COATED				ALCRO-MAX COATED			
SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLTS	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE
1/4	1/4	1-1/8	3	5	TC25862	23.72	-	-	TC25888	26.09	-	-
5/16	5/16	1-1/8	3	5	TC25864	32.81	-	-	TC25890	36.09	-	-
3/8	3/8	1-1/4	3	5	TC25866	44.06	-	-	TC25892	48.47	-	-
1/2	1/2	1-1/2	4	5	TC25868	60.84	TC25878	63.23	TC25894	66.92	TC25904	69.57
1/2	1/2	2	4	5	TC25870	67.47	TC25880	69.86	TC25896	74.21	TC25906	76.85
5/8	5/8	2-1/4	5	5	TC25872	125.47	TC25882	127.87	TC25898	131.75	TC25908	134.27
3/4	3/4	2-1/4	5	5	TC25874	151.83	TC25884	154.22	TC25900	159.42	TC25910	161.94
1	1	2-1/4	5	5	TC25876	250.23	TC25886	252.62	TC25902	262.74	TC25912	265.26

### VARIABLE INDEX

#### EXTRA LONG LENGTH - 5 FLUTE - SQUARE END



**SERIES V51XL**  
ALTIM COATED

**SERIES V52XL**  
ALCRO-MAX COATED

VI-PRO					ALTIM COATED				ALCRO-MAX COATED			
SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLTS	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE
1/4	1/4	1-1/2	4	5	TC25914	28.33	-	-	TC25942	31.16	-	-
3/8	3/8	2	4	5	TC25916	49.66	-	-	TC25944	54.62	-	-
1/2	1/2	3	6	5	TC25918	95.13	TC25930	97.54	TC25946	104.65	TC25958	107.29
5/8	5/8	3	6	5	TC25920	135.31	TC25932	137.71	TC25948	142.08	TC25960	144.60
3/4	3/4	3	6	5	TC25922	178.61	TC25934	181.01	TC25950	187.54	TC25962	190.06
3/4	3/4	4	7	5	TC25924	293.30	TC25936	295.70	TC25952	307.97	TC25964	310.49
1	1	3	6	5	TC25926	291.19	TC25938	293.59	TC25954	305.75	TC25966	308.27
1	1	4-1/4	7	5	TC25928	429.86	TC25940	432.43	TC25956	450.96	TC25968	453.54

The VI-PRO performs very well in a wide range of materials including:

HIGH TEMP ALLOYS - STAINLESS STEELS - ALLOY STEELS - CAST IRON - HIGH TEMP NICKEL BASE ALLOYS - TITANIUM ALLOYS - EXOTICS

FOR VI PRO TECHNICAL AND COATING INFORMATION, PLEASE SEE PAGES 179-181.

TOLERANCES	DIAMETER	SHANK
1/4" - 1/2"	+0.000, -0.002	-0.001, -0.004
5/8" - 1"	+0.000, -0.003	-0.001, -0.004

HIGH PERFORMANCE - CARBIDE ENDMILLS

CARBIDE ENDMILLS

CARBIDE MICRO ENDMILLS

CARBIDE THREADMILLS

CARBIDE DRILL MILLS

CARBIDE DRILL MILLS

CARBIDE CHAMFER MILLS

CARBIDE CHAMFER MILLS

CARBIDE DRILLS

CARBIDE REAMERS

CARBIDE BURS

COUNTERSINKS

CARBIDE BURS

HSS & COBALT ENDMILLS

HSS & COBALT DRILLS

HSS & COBALT REAMERS

TECHNICAL INFORMATION



» HIGH PERFORMANCE «

# Solid Carbide Endmills



## VI-PRO

VARIABLE INDEX

STUB LENGTH - 5 FLUTE - CORNER RADIUS



**SERIES V51SR**  
ALTiN COATED

**SERIES V52SR**  
ALCRO-MAX COATED

VI-PRO						ALTiN COATED				ALCRO-MAX COATED			
SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLTS	CORNER RADIUS	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE
1/8	1/8	1/4	1-1/2	5	0.008	TC25975	13.84	-	-	-	-	-	-
3/16	3/16	3/8	2	5	0.008	TC25976	17.29	-	-	-	-	-	-
1/4	1/4	3/8	2	5	0.015	TC25977	20.38	-	-	TC25986	22.42	-	-
5/16	5/16	7/16	2	5	0.015	TC25978	27.43	-	-	TC25987	30.18	-	-
3/8	3/8	1/2	2	5	0.015	TC25979	30.20	-	-	TC25988	33.21	-	-
1/2	1/2	5/8	2-1/2	5	0.030	TC25980	46.15	TC25983	48.55	TC25989	50.77	TC25992	53.41
5/8	5/8	3/4	3	5	0.030	TC25981	87.00	TC25984	89.40	TC25990	91.35	TC25993	93.87
3/4	3/4	1	3	5	0.030	TC25982	113.47	TC25985	115.87	TC25991	119.15	TC25994	121.67

The VI-PRO performs very well in a wide range of materials including:

HIGH TEMP ALLOYS • STAINLESS STEELS • ALLOY STEELS • CAST IRON • HIGH TEMP NICKEL BASE ALLOYS • TITANIUM ALLOYS • EXOTICS



2 HIGH CAPACITY PLATIT PL1001 COMPACT COATING MACHINES ENABLE TITAN USA TO PROVIDE UNINTERRUPTED TOOL COATING PRODUCTION.

FOR VI PRO TECHNICAL AND COATING INFORMATION, PLEASE SEE PAGES 179-181.

TOLERANCES	DIAMETER	SHANK
1/8" - 1/2"	+0.00, -0.002	-0.001, -0.0004
5/8" - 3/4"	+0.00, -0.003	-0.001, -0.0004

CARBIDE ENDMILLS  
 CARBIDE MICRO ENDMILLS  
 CARBIDE THREADMILLS  
 CARBIDE DRILL MILLS  
 CARBIDE CHAMFER MILLS  
 CARBIDE DRILLS  
 CARBIDE REAMERS  
 CARBIDE BURS  
 COUNTERSINKS  
 HSS & COBALT ENDMILLS  
 TAPS & DIES  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION



HIGH PERFORMANCE

# Solid Carbide Endmills



## VI-PRO

### VARIABLE INDEX

REGULAR LENGTH - 5 FLUTE - CORNER RADIUS



**SERIES V51RR**  
ALTIM COATED

**SERIES V52RR**  
ALCRO-MAX COATED

SIZE	VI-PRO						ALTIM COATED				ALCRO-MAX COATED			
	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLTS	CORNER RADIUS	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE	
1/4	1/4	3/4	2-1/2	5	0.015	TC26201	22.65	-	-	TC26416	24.92	-	-	
1/4	1/4	3/4	2-1/2	5	0.030	TC26204	22.65	-	-	TC26419	24.92	-	-	
1/4	1/4	3/4	2-1/2	5	0.060	TC26207	22.65	-	-	TC26422	24.92	-	-	
5/16	5/16	13/16	2-1/2	5	0.015	TC26210	29.18	-	-	TC26425	32.10	-	-	
5/16	5/16	13/16	2-1/2	5	0.030	TC26213	29.18	-	-	TC26428	32.10	-	-	
5/16	5/16	13/16	2-1/2	5	0.060	TC26216	29.18	-	-	TC26431	32.10	-	-	
3/8	3/8	1	2-1/2	5	0.015	TC26219	34.08	-	-	TC26434	37.49	-	-	
3/8	3/8	1	2-1/2	5	0.030	TC26222	34.08	-	-	TC26437	37.49	-	-	
3/8	3/8	1	2-1/2	5	0.060	TC26225	34.08	-	-	TC26440	37.49	-	-	
1/2	1/2	1	3	5	0.015	TC26228	54.45	TC26321	57.17	TC26443	59.89	TC26625	62.89	
1/2	1/2	1	3	5	0.030	TC26231	54.45	TC26324	57.17	TC26446	59.89	TC26628	62.89	
1/2	1/2	1	3	5	0.060	TC26234	54.45	TC26327	57.17	TC26449	59.89	TC26631	62.89	
1/2	1/2	1	3	5	0.090	TC26237	54.45	TC26330	57.17	TC26452	59.89	TC26634	62.89	
1/2	1/2	1	3	5	0.120	TC26240	54.45	TC26333	57.17	TC26455	59.89	TC26637	62.89	
1/2	1/2	1-1/4	3	5	0.015	TC26243	54.45	TC26336	57.17	TC26458	59.89	TC26640	62.89	
1/2	1/2	1-1/4	3	5	0.030	TC26246	54.45	TC26339	57.17	TC26461	59.89	TC26643	62.89	
1/2	1/2	1-1/4	3	5	0.060	TC26249	54.45	TC26342	57.17	TC26464	59.89	TC26646	62.89	
1/2	1/2	1-1/4	3	5	0.090	TC26252	54.45	TC26345	57.17	TC26467	59.89	TC26649	62.89	
1/2	1/2	1-1/4	3	5	0.120	TC26255	54.45	TC26348	57.17	TC26470	59.89	TC26652	62.89	
5/8	5/8	1-5/8	3-1/2	5	0.030	TC26258	91.73	TC26351	94.13	TC26473	96.31	TC26655	98.83	
5/8	5/8	1-5/8	3-1/2	5	0.060	TC26261	91.73	TC26354	94.13	TC26476	96.31	TC26658	98.83	
5/8	5/8	1-5/8	3-1/2	5	0.090	TC26264	91.73	TC26357	94.13	TC26479	96.31	TC26661	98.83	
5/8	5/8	1-5/8	3-1/2	5	0.120	TC26267	91.73	TC26360	94.13	TC26482	96.31	TC26664	98.83	
3/4	3/4	1-5/8	4	5	0.030	TC26270	127.20	TC26363	129.60	TC26485	133.56	TC26667	136.08	
3/4	3/4	1-5/8	4	5	0.060	TC26273	127.20	TC26366	129.60	TC26488	133.56	TC26670	136.08	
3/4	3/4	1-5/8	4	5	0.090	TC26276	127.20	TC26369	129.60	TC26491	133.56	TC26673	136.08	
3/4	3/4	1-5/8	4	5	0.120	TC26279	127.20	TC26372	129.60	TC26494	133.56	TC26676	136.08	
1	1	2	4	5	0.030	TC26282	232.25	TC26375	234.65	TC26497	243.86	TC26679	246.38	
1	1	2	4	5	0.060	TC26285	232.25	TC26378	234.65	TC26500	243.86	TC26682	246.38	
1	1	2	4	5	0.090	TC26288	232.25	TC26381	234.65	TC26503	243.86	TC26685	246.38	
1	1	2	4	5	0.120	TC26291	232.25	TC26384	234.65	TC26506	243.86	TC26688	246.38	

The VI-PRO performs very well in a wide range of materials including:

HIGH TEMP ALLOYS - STAINLESS STEELS - ALLOY STEELS - CAST IRON - HIGH TEMP NICKEL BASE ALLOYS - TITANIUM ALLOYS - EXOTICS

FOR VI PRO TECHNICAL AND COATING INFORMATION, PLEASE SEE PAGES 179-181.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/4" - 1/2"	+0.00, -.002	-.0001, -.0004	+0.02, -.002
5/8" - 1"	+0.00, -.003	-.0001, -.0004	+0.02, -.002

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



## VI-PRO

### VARIABLE INDEX

LONG LENGTH - 5 FLUTE - CORNER RADIUS



**SERIES V51LR**  
ALTiN COATED

**SERIES V52LR**  
ALCRO-MAX COATED

SIZE	VI-PRO					ALTiN COATED				ALCRO-MAX COATED			
	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLTS	CORNER RADIUS	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE
1/4	1/4	1-1/8	3	5	0.015	TC26928	25.55	-	-	TC27109	28.10	-	-
1/4	1/4	1-1/8	3	5	0.030	TC26931	25.55	-	-	TC27112	28.10	-	-
5/16	5/16	1-1/8	3	5	0.015	TC26934	34.80	-	-	TC27115	38.28	-	-
5/16	5/16	1-1/8	3	5	0.030	TC26937	34.80	-	-	TC27118	38.28	-	-
3/8	3/8	1-1/4	3	5	0.030	TC26940	46.06	-	-	TC27121	50.66	-	-
3/8	3/8	1-1/4	3	5	0.060	TC26943	46.06	-	-	TC27124	50.66	-	-
1/2	1/2	2	4	5	0.030	TC26946	71.45	TC27000	73.85	TC27127	78.59	TC27262	81.23
1/2	1/2	2	4	5	0.060	TC26949	71.45	TC27003	73.85	TC27130	78.59	TC27265	81.23
5/8	5/8	2-1/4	5	5	0.030	TC26952	129.46	TC27006	131.85	TC27133	135.93	TC27268	138.45
5/8	5/8	2-1/4	5	5	0.060	TC26955	129.46	TC27009	131.85	TC27136	135.93	TC27271	138.45
3/4	3/4	2-1/4	5	5	0.030	TC26958	163.02	TC27012	166.14	TC27139	171.17	TC27274	174.45
3/4	3/4	2-1/4	5	5	0.060	TC26961	163.02	TC27015	166.14	TC27142	171.17	TC27277	174.45
1	1	2-1/4	5	5	0.030	TC26964	254.21	TC27018	256.61	TC27145	266.92	TC27280	269.44
1	1	2-1/4	5	5	0.060	TC26967	254.21	TC27021	256.61	TC27148	266.92	TC27283	269.44



*"The achievements of an organization are the results of the combined effort of each individual"*

~ TITAN USA ~

FOR VI PRO TECHNICAL AND COATING INFORMATION, PLEASE SEE PAGES 179-181.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/4" - 1/2"	+0.00, -.002	-.0001, -.0004	+0.02, -.002
5/8" - 1"	+0.00, -.003	-.0001, -.0004	+0.02, -.002

HIGH PERFORMANCE - CARBIDE ENDMILLS



HIGH PERFORMANCE

# Solid Carbide Endmills



## VI-PRO

### VARIABLE INDEX

EXTRA LONG LENGTH - 5 FLUTE - CORNER RADIUS



**SERIES V51XLR**  
ALTiN COATED

**SERIES V52XLR**  
ALCRO-MAX COATED

VI-PRO						ALTiN COATED				ALCRO-MAX COATED			
SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLTS	CORNER RADIUS	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE
1/4	1/4	1-1/2	4	5	0.015	TC27604	31.09	-	-	TC27928	34.20	-	-
1/4	1/4	1-1/2	4	5	0.030	TC27607	31.09	-	-	TC27931	34.20	-	-
3/8	3/8	2	4	5	0.030	TC27610	52.65	-	-	TC27934	57.92	-	-
3/8	3/8	2	4	5	0.060	TC27613	52.65	-	-	TC27937	57.92	-	-
1/2	1/2	3	6	5	0.030	TC27616	98.14	TC27768	100.53	TC27940	107.95	TC28002	110.59
1/2	1/2	3	6	5	0.060	TC27619	98.14	TC27771	100.53	TC27943	107.95	TC28005	110.59
5/8	5/8	3	6	5	0.030	TC27622	138.29	TC27774	140.69	TC27946	145.20	TC28008	147.72
5/8	5/8	3	6	5	0.060	TC27625	138.29	TC27777	140.69	TC27949	145.20	TC28011	147.72
3/4	3/4	3	6	5	0.030	TC27628	182.59	TC27780	184.99	TC27952	191.72	TC28014	194.24
3/4	3/4	3	6	5	0.060	TC27631	182.59	TC27783	184.99	TC27955	191.72	TC28017	194.24
3/4	3/4	4	7	5	0.030	TC27634	297.29	TC27786	299.69	TC27958	312.15	TC28020	314.67
3/4	3/4	4	7	5	0.060	TC27637	297.29	TC27789	299.69	TC27961	312.15	TC28023	314.67
1	1	3	6	5	0.030	TC27640	298.87	TC27792	301.27	TC27964	313.82	TC28026	316.34
1	1	3	6	5	0.060	TC27643	298.87	TC27795	301.27	TC27967	313.82	TC28029	316.34
1	1	4-1/4	7	5	0.030	TC27646	433.98	TC27798	436.55	TC27970	454.90	TC28032	457.70
1	1	4-1/4	7	5	0.060	TC27649	433.98	TC27801	436.55	TC27973	454.90	TC28035	457.70



TITAN USA - AMERICA'S TOOLING PARTNER FOR OVER 40 YEARS

FOR VI PRO TECHNICAL AND COATING INFORMATION, PLEASE SEE PAGES 179-181.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/4" - 1/2"	+0.00, -0.02	-0.001, -0.004	+0.02, -0.02
5/8" - 1"	+0.00, -0.03	-0.001, -0.004	+0.02, -0.02

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION

# Terminator

**REGULAR LENGTH - 6 FLUTE - SQUARE END - 40° HELIX**



**SERIES 605**  
ALTiN COATED

**SERIES 645**  
ALCRO-MAX COATED

Terminator					ALTiN COATED				ALCRO-MAX COATED			
SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLTS	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE
1/4	1/4	3/4	2-1/2	6	TC60516	37.01	-	-	TC64516	40.71	-	-
5/16	5/16	13/16	2-1/2	6	TC60520	43.96	-	-	TC64520	48.35	-	-
3/8	3/8	1	2-1/2	6	TC60524	47.37	-	-	TC64524	52.11	-	-
1/2	1/2	1-1/4	3	6	TC60532	63.33	TC60569	66.50	TC64532	69.66	TC64579	73.15
5/8	5/8	1-5/8	3-1/2	6	TC60540	105.54	TC60571	108.71	TC64540	110.82	TC64581	114.14
3/4	3/4	1-5/8	4	6	TC60548	132.48	TC60573	136.45	TC64548	139.10	TC64583	143.28
1	1	2	4	6	TC60564	202.91	TC60575	206.97	TC64564	213.05	TC64585	217.31

**LONG LENGTH - 6 FLUTE - SQUARE END - 40° HELIX**



**SERIES 610**  
ALTiN COATED

**SERIES 613**  
ALCRO-MAX COATED

Terminator					ALTiN COATED				ALCRO-MAX COATED			
SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLTS	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE
1/4	1/4	1-1/8	3	6	TC61016	40.80	-	-	TC61316	44.88	-	-
5/16	5/16	1-1/8	3	6	TC61020	47.61	-	-	TC61320	52.36	-	-
3/8	3/8	1-1/4	3	6	TC61024	54.10	-	-	TC61324	59.52	-	-
1/2	1/2	2	4	6	TC61032	84.15	TC61067	88.36	TC61332	92.57	TC61384	97.19
5/8	5/8	2-1/4	5	6	TC61040	130.73	TC61069	134.65	TC61340	137.26	TC61386	141.39
3/4	3/4	2-1/4	5	6	TC61048	163.26	TC61071	168.15	TC61348	171.42	TC61388	176.56
1	1	3	6	6	TC61064	330.89	TC61073	337.50	TC61364	347.43	TC61390	354.38

**The Terminator features Eccentric Relief and stronger core diameter for added strength. Excellent for:**

**HIGH TEMP ALLOYS ■ STAINLESS STEELS ■ ALLOY STEELS ■ CAST IRON  
HIGH TEMP NICKEL BASE ALLOYS ■ TITANIUM ALLOYS ■ EXOTICS**

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION, PLEASE SEE PAGES 182-183.

TOLERANCES	DIAMETER	SHANK
ALL SIZES	+0.000, -0.002	-0.0001, -0.0004

HIGH PERFORMANCE - CARBIDE ENDMILLS





HIGH PERFORMANCE

# Solid Carbide Endmills



## Terminator

REGULAR LENGTH - 6 FLUTE - CORNER RADIUS - 40° HELIX



**SERIES 606**  
ALTiN COATED

**SERIES 607**  
ALCRO-MAX COATED

Terminator						ALTiN COATED				ALCRO-MAX COATED			
SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLTS	CORNER RADIUS	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE
1/4	1/4	3/4	2-1/2	6	.020	TC60616	41.31	-	-	TC67116	45.45	-	-
5/16	5/16	13/16	2-1/2	6	.020	TC60620	49.08	-	-	TC67120	53.99	-	-
3/8	3/8	1	2-1/2	6	.040	TC60624	52.90	-	-	TC67124	58.19	-	-
1/2	1/2	1-1/4	3	6	.040	TC60632	70.71	TC60682	74.25	TC67132	77.78	TC67184	81.67
5/8	5/8	1-5/8	3-1/2	6	.040	TC60640	112.72	TC60684	116.09	TC67140	118.35	TC67186	121.90
3/4	3/4	1-5/8	4	6	.040	TC60648	141.49	TC60686	145.73	TC67148	148.56	TC67188	153.01
1	1	2	4	6	.040	TC60664	216.70	TC60688	223.20	TC67164	227.53	TC67190	234.36

LONG LENGTH - 6 FLUTE - CORNER RADIUS - 40° HELIX



**SERIES 611**  
ALTiN COATED

**SERIES 612**  
ALCRO-MAX COATED

Terminator						ALTiN COATED				ALCRO-MAX COATED			
SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLTS	CORNER RADIUS	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE	ROUND SHANK ITEM #	PRICE	WELDON FLAT ITEM #	PRICE
1/4	1/4	1-1/8	3	6	.020	TC61116	45.56	-	-	TC61216	50.11	-	-
5/16	5/16	1-1/8	3	6	.020	TC61120	53.15	-	-	TC61220	58.46	-	-
3/8	3/8	1-1/4	3	6	.040	TC61124	60.42	-	-	TC61224	66.46	-	-
1/2	1/2	2	4	6	.040	TC61132	93.96	TC61167	98.64	TC61232	103.34	TC61287	108.51
5/8	5/8	2-1/4	5	6	.040	TC61140	139.61	TC61169	143.80	TC61240	146.60	TC61289	150.99
3/4	3/4	2-1/4	5	6	.040	TC61148	174.35	TC61171	179.59	TC61248	183.07	TC61291	188.56
1	1	3	6	6	.040	TC61164	353.36	TC61173	360.43	TC61264	371.03	TC61293	378.45

The Terminator features Eccentric Relief and stronger core diameter for added strength. Excellent for:

HIGH TEMP ALLOYS ■ STAINLESS STEELS ■ ALLOY STEELS ■ CAST IRON  
HIGH TEMP NICKEL BASE ALLOYS ■ TITANIUM ALLOYS ■ EXOTICS

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION, PLEASE SEE PAGES 182-183.

TOLERANCES	DIAMETER	SHANK	RADIUS
ALL SIZES	+ .000, -.002	-.0001, -.0004	+ .002, -.002

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION  
TAPS & DIES  
HSS & COBALT DRILLS



**HIGH PERFORMANCE**

**Solid Carbide Endmills**



**REGULAR LENGTH - 3 FLUTE - SQUARE END - 60° HELIX**



**SERIES 305**  
UNCOATED



**SERIES 395**  
ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	PRICE
1/8	1/8	1/2	1-1/2	3	TC30508	9.61
3/16	3/16	5/8	2	3	TC30512	11.50
1/4	1/4	3/4	2-1/2	3	TC30516	12.33
5/16	5/16	13/16	2-1/2	3	TC30520	14.91
3/8	3/8	1	2-1/2	3	TC30524	19.96
1/2	1/2	1-1/4	3	3	TC30532	34.05
5/8	5/8	1-5/8	3-1/2	3	TC30540	67.78
3/4	3/4	1-5/8	4	3	TC30548	95.13

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	PRICE
1/8	1/8	1/2	1-1/2	3	TC39508	12.00
3/16	3/16	5/8	2	3	TC39512	14.37
1/4	1/4	3/4	2-1/2	3	TC39516	15.41
5/16	5/16	13/16	2-1/2	3	TC39520	18.64
3/8	3/8	1	2-1/2	3	TC39524	24.95
1/2	1/2	1-1/4	3	3	TC39532	42.57
5/8	5/8	1-5/8	3-1/2	3	TC39540	84.73
3/4	3/4	1-5/8	4	3	TC39548	118.89

**REGULAR LENGTH - 3 FLUTE -  CORNER RADIUS - 60° HELIX**



**SERIES 306**  
UNCOATED



**SERIES 396**  
ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	PRICE
1/8	1/8	1/2	1-1/2	3	.010	TC30608	10.72
3/16	3/16	5/8	2	3	.010	TC30612	12.84
1/4	1/4	3/4	2-1/2	3	.020	TC30616	13.77
5/16	5/16	13/16	2-1/2	3	.020	TC30620	16.64
3/8	3/8	1	2-1/2	3	.020	TC30624	22.29
1/2	1/2	1-1/4	3	3	.040	TC30632	38.02
5/8	5/8	1-5/8	3-1/2	3	.040	TC30640	72.38
3/4	3/4	1-5/8	4	3	.040	TC30648	101.57

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	PRICE
1/8	1/8	1/2	1-1/2	3	.010	TC39608	13.39
3/16	3/16	5/8	2	3	.010	TC39612	16.04
1/4	1/4	3/4	2-1/2	3	.020	TC39616	17.20
5/16	5/16	13/16	2-1/2	3	.020	TC39620	20.80
3/8	3/8	1	2-1/2	3	.020	TC39624	27.87
1/2	1/2	1-1/4	3	3	.040	TC39632	47.52
5/8	5/8	1-5/8	3-1/2	3	.040	TC39640	90.48
3/4	3/4	1-5/8	4	3	.040	TC39648	126.98

These 60 degree tools are designed to machine all high temperature alloys such as inconels, hastalloy, waspalloys and titanium. This 3 flute high shear design geometry will slot and profile while giving excellent surface finishes.

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION, PLEASE SEE PAGES 182-183.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.000, -.002	-.0001, -.0004	+0.002, -.002
5/8" - 3/4"	+0.000, -.003	-.0001, -.0004	+0.002, -.002

CARBIDE ENDMILLS  
 CARBIDE MICRO ENDMILLS  
 CARBIDE THREADMILLS  
 CARBIDE DRILL MILLS  
 CARBIDE CHAMFER MILLS  
 CARBIDE DRILLS  
 CARBIDE REAMERS  
 CARBIDE BURS  
 COUNTERSINKS  
 HSS & CARBID ENDMILLS  
 TAPS & DIES  
 HSS & CARBID DRILLS  
 HSS & CARBID REAMERS  
 TECHNICAL INFORMATION



# Solid Carbide Endmills



## REGULAR LENGTH - 3 FLUTE - SQUARE END - 45° HELIX



**SERIES 405**  
UNCOATED



**SERIES 495**  
ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	PRICE
1/8	1/8	1/2	1-1/2	3	TC40508	9.61
3/16	3/16	5/8	2	3	TC40512	11.50
1/4	1/4	3/4	2-1/2	3	TC40516	12.33
5/16	5/16	13/16	2-1/2	3	TC40520	14.91
3/8	3/8	1	2-1/2	3	TC40524	19.96
1/2	1/2	1-1/4	3	3	TC40532	34.05
5/8	5/8	1-5/8	3-1/2	3	TC40540	67.78
3/4	3/4	1-5/8	4	3	TC40548	95.13

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	PRICE
1/8	1/8	1/2	1-1/2	3	TC49508	12.00
3/16	3/16	5/8	2	3	TC49512	14.37
1/4	1/4	3/4	2-1/2	3	TC49516	15.41
5/16	5/16	13/16	2-1/2	3	TC49520	18.64
3/8	3/8	1	2-1/2	3	TC49524	24.95
1/2	1/2	1-1/4	3	3	TC49532	42.57
5/8	5/8	1-5/8	3-1/2	3	TC49540	84.73
3/4	3/4	1-5/8	4	3	TC49548	118.89

## REGULAR LENGTH - 3 FLUTE - CORNER RADIUS - 45° HELIX



**SERIES 407**  
UNCOATED



**SERIES 497**  
ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	PRICE
1/8	1/8	1/2	1-1/2	3	.010	TC40708	10.72
3/16	3/16	5/8	2	3	.010	TC40712	12.84
1/4	1/4	3/4	2-1/2	3	.020	TC40716	13.77
5/16	5/16	13/16	2-1/2	3	.020	TC40720	16.64
3/8	3/8	1	2-1/2	3	.020	TC40724	22.29
1/2	1/2	1-1/4	3	3	.040	TC40732	38.02
5/8	5/8	1-5/8	3-1/2	3	.040	TC40740	72.38
3/4	3/4	1-5/8	4	3	.040	TC40748	101.57

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	PRICE
1/8	1/8	1/2	1-1/2	3	.010	TC49708	13.39
3/16	3/16	5/8	2	3	.010	TC49712	16.04
1/4	1/4	3/4	2-1/2	3	.020	TC49716	17.20
5/16	5/16	13/16	2-1/2	3	.020	TC49720	20.80
3/8	3/8	1	2-1/2	3	.020	TC49724	27.87
1/2	1/2	1-1/4	3	3	.040	TC49732	47.52
5/8	5/8	1-5/8	3-1/2	3	.040	TC49740	90.48
3/4	3/4	1-5/8	4	3	.040	TC49748	126.98

These 45 degree tools are designed to slot and profile in stainless steel and other similar alloys. The 3 flute geometry is designed for higher speeds and feeds while providing a shearing action that produces excellent finishes.

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION, PLEASE SEE PAGES 182-183.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.00, -.002	-.0001, -.0004	+0.02, -.002
5/8" - 3/4"	+0.00, -.003	-.0001, -.0004	+0.02, -.002

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION





# Solid Carbide Endmills



## STUB LENGTH - 5 FLUTE - SQUARE END - 45° HELIX



**SERIES 614**  
UNCOATED



**SERIES 615**  
ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	PRICE
1/8	1/8	1/4	1-1/2	5	TC61408	4.71
3/16	3/16	3/8	2	5	TC61412	8.24
1/4	1/4	1/2	2	5	TC61416	9.94
5/16	5/16	1/2	2	5	TC61420	11.93
3/8	3/8	5/8	2	5	TC61424	19.63
7/16	7/16	5/8	2-1/2	5	TC61428	22.45
1/2	1/2	5/8	2-1/2	5	TC61432	25.92
5/8	5/8	3/4	3	5	TC61440	46.03
3/4	3/4	1	3	5	TC61448	62.02

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	PRICE
1/8	1/8	1/4	1-1/2	5	TC61508	5.94
3/16	3/16	3/8	2	5	TC61512	9.86
1/4	1/4	1/2	2	5	TC61516	11.80
5/16	5/16	1/2	2	5	TC61520	14.91
3/8	3/8	5/8	2	5	TC61524	23.36
7/16	7/16	5/8	2-1/2	5	TC61528	26.71
1/2	1/2	5/8	2-1/2	5	TC61532	30.88
5/8	5/8	3/4	3	5	TC61540	55.73
3/4	3/4	1	3	5	TC61548	76.56

## STUB LENGTH - 5 FLUTE - CORNER RADIUS - 45° HELIX



**SERIES 616**  
UNCOATED



**SERIES 617**  
ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	PRICE
1/8	1/8	1/4	1-1/2	5	.010	TC61608	5.25
3/16	3/16	3/8	2	5	.010	TC61612	9.20
1/4	1/4	1/2	2	5	.020	TC61616	11.09
5/16	5/16	1/2	2	5	.020	TC61620	13.32
3/8	3/8	5/8	2	5	.020	TC61624	21.92
7/16	7/16	5/8	2-1/2	5	.020	TC61628	25.06
1/2	1/2	5/8	2-1/2	5	.040	TC61632	28.94
5/8	5/8	3/4	3	5	.040	TC61640	49.16
3/4	3/4	1	3	5	.040	TC61648	66.24

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	PRICE
1/8	1/8	1/4	1-1/2	5	.010	TC61708	6.63
3/16	3/16	3/8	2	5	.010	TC61712	11.02
1/4	1/4	1/2	2	5	.020	TC61716	13.19
5/16	5/16	1/2	2	5	.020	TC61720	16.64
3/8	3/8	5/8	2	5	.020	TC61724	26.08
7/16	7/16	5/8	2-1/2	5	.020	TC61728	29.84
1/2	1/2	5/8	2-1/2	5	.040	TC61732	34.47
5/8	5/8	3/4	3	5	.040	TC61740	59.50
3/4	3/4	1	3	5	.040	TC61748	81.77

These 5 flute 45° tools are designed for profiling and finishing in all exotic materials, stainless steel, carbon steels and other similar materials. This geometry allows the tool to be run 20 - 40% faster than conventional endmills while providing an excellent finish.

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION, PLEASE SEE PAGES 182-183.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.00, -0.002	-0.0001, -0.0004	+0.002, -0.002
5/8" - 3/4"	+0.00, -0.003	-0.0001, -0.0004	+0.002, -0.002

CARBIDE ENDMILLS  
 CARBIDE MICRO ENDMILLS  
 CARBIDE THREADMILLS  
 CARBIDE DRILL MILLS  
 CARBIDE CHAMFER MILLS  
 CARBIDE DRILLS  
 CARBIDE REAMERS  
 CARBIDE BURS  
 COUNTERSINKS  
 HSS & COBALT ENDMILLS  
 TAPS & DIES  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION



HIGH PERFORMANCE

# Solid Carbide Endmills



## REGULAR LENGTH - 5 FLUTE - SQUARE END - 45° HELIX



**SERIES 618**  
UNCOATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	PRICE
1/8	1/8	1/2	1-1/2	5	TC61808	10.01
3/16	3/16	3/4	2	5	TC61812	12.60
1/4	1/4	3/4	2-1/2	5	TC61816	13.56
5/16	5/16	7/8	2-1/2	5	TC61820	16.37
3/8	3/8	1	2-1/2	5	TC61824	21.90
1/2	1/2	1-1/4	3	5	TC61832	40.89
5/8	5/8	1-5/8	3-1/2	5	TC61840	77.53
3/4	3/4	1-5/8	4	5	TC61848	109.02



**SERIES 619**  
ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	PRICE
1/8	1/8	1/2	1-1/2	5	TC61908	12.52
3/16	3/16	3/4	2	5	TC61912	15.02
1/4	1/4	3/4	2-1/2	5	TC61916	16.16
5/16	5/16	7/8	2-1/2	5	TC61920	19.45
3/8	3/8	1	2-1/2	5	TC61924	26.10
1/2	1/2	1-1/4	3	5	TC61932	50.87
5/8	5/8	1-5/8	3-1/2	5	TC61940	98.36
3/4	3/4	1-5/8	4	5	TC61948	133.73

## REGULAR LENGTH - 5 FLUTE - CORNER RADIUS - 45° HELIX



**SERIES 638**  
UNCOATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	PRICE
1/8	1/8	1/2	1-1/2	5	.010	TC63808	11.18
3/16	3/16	3/4	2	5	.010	TC63812	14.07
1/4	1/4	3/4	2-1/2	5	.020	TC63816	15.15
5/16	5/16	7/8	2-1/2	5	.020	TC63820	18.27
3/8	3/8	1	2-1/2	5	.020	TC63824	24.46
1/2	1/2	1-1/4	3	5	.040	TC63832	45.65
5/8	5/8	1-5/8	3-1/2	5	.040	TC63840	82.80
3/4	3/4	1-5/8	4	5	.040	TC63848	116.43



**SERIES 639**  
ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	PRICE
1/8	1/8	1/2	1-1/2	5	.010	TC63908	13.98
3/16	3/16	3/4	2	5	.010	TC63912	16.76
1/4	1/4	3/4	2-1/2	5	.020	TC63916	18.02
5/16	5/16	7/8	2-1/2	5	.020	TC63920	21.72
3/8	3/8	1	2-1/2	5	.020	TC63924	29.13
1/2	1/2	1-1/4	3	5	.040	TC63932	56.79
5/8	5/8	1-5/8	3-1/2	5	.040	TC63940	105.05
3/4	3/4	1-5/8	4	5	.040	TC63948	142.81

These 5 flute 45° tools are designed for profiling and finishing in all exotic materials, stainless steel, carbon steels and other similar materials. This geometry allows the tool to be run 20 - 40% faster than conventional endmills while providing an excellent finish.

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION, PLEASE SEE PAGES 182-183.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.00, -.002	-.0001, -.0004	+0.02, -.002
5/8" - 3/4"	+0.00, -.003	-.0001, -.0004	+0.02, -.002

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION

**FOR ALUMINUM  
REGULAR LENGTH - 2 FLUTE - SQUARE END - 45° HELIX**



**SERIES 626  
UNCOATED**



**SERIES 627  
ZRN (ZIRCONIUM NITRIDE) COATED**

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	PRICE
1/8	1/8	1/2	1-1/2	2	TC62608	9.43
3/16	3/16	5/8	2	2	TC62612	13.14
1/4	1/4	3/4	2-1/2	2	TC62616	18.96
5/16	5/16	13/16	2-1/2	2	TC62620	22.38
3/8	3/8	1	2-1/2	2	TC62624	23.71
1/2	1/2	1-1/4	3	2	TC62632	39.24
5/8	5/8	1-5/8	3-1/2	2	TC62640	75.04
3/4	3/4	1-3/4	4	2	TC62648	107.56
1	1	1-3/4	4	2	TC62664	177.34

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	PRICE
1/8	1/8	1/2	1-1/2	2	TC62708	11.79
3/16	3/16	5/8	2	2	TC62712	16.43
1/4	1/4	3/4	2-1/2	2	TC62716	22.92
5/16	5/16	13/16	2-1/2	2	TC62720	27.07
3/8	3/8	1	2-1/2	2	TC62724	28.65
1/2	1/2	1-1/4	3	2	TC62732	45.50
5/8	5/8	1-5/8	3-1/2	2	TC62740	90.95
3/4	3/4	1-3/4	4	2	TC62748	130.62
1	1	1-3/4	4	2	TC62764	215.01

**FOR ALUMINUM  
REGULAR LENGTH - 2 FLUTE - CORNER RADIUS - 45° HELIX**



**SERIES 646  
UNCOATED**



**SERIES 647  
ZRN (ZIRCONIUM NITRIDE) COATED**

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	PRICE
1/8	1/8	1/2	1-1/2	2	.020	TC64608	11.26
3/16	3/16	5/8	2	2	.020	TC64612	15.45
1/4	1/4	3/4	2-1/2	2	.020	TC64616	21.17
5/16	5/16	13/16	2-1/2	2	.020	TC64620	25.00
3/8	3/8	1	2-1/2	2	.020	TC64624	26.47
1/2	1/2	1-1/4	3	2	.040	TC64632	43.81
5/8	5/8	1-5/8	3-1/2	2	.040	TC64640	80.14
3/4	3/4	1-3/4	4	2	.040	TC64648	114.88
1	1	1-3/4	4	2	.040	TC64664	189.40

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	PRICE
1/8	1/8	1/2	1-1/2	2	.020	TC64708	14.09
3/16	3/16	5/8	2	2	.020	TC64712	19.32
1/4	1/4	3/4	2-1/2	2	.020	TC64716	25.59
5/16	5/16	13/16	2-1/2	2	.020	TC64720	30.23
3/8	3/8	1	2-1/2	2	.020	TC64724	31.99
1/2	1/2	1-1/4	3	2	.040	TC64732	50.80
5/8	5/8	1-5/8	3-1/2	2	.040	TC64740	97.13
3/4	3/4	1-3/4	4	2	.040	TC64748	139.50
1	1	1-3/4	4	2	.040	TC64764	229.63

These 2 flute tools are designed specifically for high speed machining in aluminum. This roughing tool will plunge, slot and profile in all non-ferrous materials. ZRN coating does not have an affinity for aluminum and will also work well in brass and bronze applications. Use our ZRN coated tools for higher speed rates and better tool life.

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION, PLEASE SEE PAGES 182-183.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.001, -0.002	-0.0001, -0.0004	+0.002, -0.002
5/8" - 1"	+0.001, -0.003	-0.0001, -0.0004	+0.002, -0.002





# Solid Carbide Endmills



## FOR ALUMINUM LONG LENGTH - 2 FLUTE - SQUARE END - 45° HELIX



**SERIES 632**  
UNCOATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	PRICE
1/8	1/8	3/4	2-1/4	2	TC63208	16.01
3/16	3/16	3/4	2-1/2	2	TC63212	18.46
1/4	1/4	1-1/4	3	2	TC63216	26.02
5/16	5/16	1-3/8	3	2	TC63220	33.69
3/8	3/8	1-1/2	4	2	TC63224	42.20
1/2	1/2	2	4	2	TC63232	59.13
5/8	5/8	2-3/8	5	2	TC63240	122.59
3/4	3/4	2-1/2	5	2	TC63248	134.71
1	1	2-1/4	5	2	TC63264	221.43



**SERIES 633**  
ZRN (ZIRCONIUM NITRIDE) COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	PRICE
1/8	1/8	3/4	2-1/4	2	TC63308	20.01
3/16	3/16	3/4	2-1/2	2	TC63312	23.08
1/4	1/4	1-1/4	3	2	TC63316	31.45
5/16	5/16	1-3/8	3	2	TC63320	42.78
3/8	3/8	1-1/2	4	2	TC63324	51.03
1/2	1/2	2	4	2	TC63332	71.69
5/8	5/8	2-3/8	5	2	TC63340	156.02
3/4	3/4	2-1/2	5	2	TC63348	168.62
1	1	2-1/4	5	2	TC63364	265.52

## FOR ALUMINUM LONG LENGTH - 2 FLUTE - CORNER RADIUS - 45° HELIX



**SERIES 652**  
UNCOATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	PRICE
1/8	1/8	3/4	2-1/4	2	.020	TC65208	19.20
3/16	3/16	3/4	2-1/2	2	.020	TC65212	22.14
1/4	1/4	1-1/4	3	2	.020	TC65216	29.06
5/16	5/16	1-3/8	3	2	.020	TC65220	37.61
3/8	3/8	1-1/2	4	2	.020	TC65224	47.11
1/2	1/2	2	4	2	.040	TC65232	65.99
5/8	5/8	2-3/8	5	2	.040	TC65240	130.92
3/4	3/4	2-1/2	5	2	.040	TC65248	143.85
1	1	2-1/4	5	2	.040	TC65264	236.49



**SERIES 653**  
ZRN (ZIRCONIUM NITRIDE) COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	PRICE
1/8	1/8	3/4	2-1/4	2	.020	TC65308	24.01
3/16	3/16	3/4	2-1/2	2	.020	TC65312	27.69
1/4	1/4	1-1/4	3	2	.020	TC65316	35.12
5/16	5/16	1-3/8	3	2	.020	TC65320	47.76
3/8	3/8	1-1/2	4	2	.020	TC65324	56.99
1/2	1/2	2	4	2	.040	TC65332	80.05
5/8	5/8	2-3/8	5	2	.040	TC65340	166.62
3/4	3/4	2-1/2	5	2	.040	TC65348	180.08
1	1	2-1/4	5	2	.040	TC65364	283.58

These 2 flute tools are designed specifically for high speed machining in aluminum. This roughing tool will plunge, slot and profile in all non-ferrous materials. ZRN coating does not have an affinity for aluminum and will also work well in brass and bronze applications. Use our ZRN coated tools for higher speed rates and better tool life.

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION, PLEASE SEE PAGES 182-183.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.001, -0.002	-0.0001, -0.0004	+0.002, -0.002
5/8" - 1"	+0.001, -0.003	-0.0001, -0.0004	+0.002, -0.002

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



**» HIGH PERFORMANCE «**

# Solid Carbide Endmills



## FOR ALUMINUM REGULAR LENGTH - 3 FLUTE - SQUARE END - 45° HELIX



**SERIES 628**  
UNCOATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	PRICE
1/8	1/8	1/2	1-1/2	3	TC62808	9.43
3/16	3/16	5/8	2	3	TC62812	13.14
1/4	1/4	3/4	2-1/2	3	TC62816	18.96
5/16	5/16	13/16	2-1/2	3	TC62820	22.38
3/8	3/8	1	2-1/2	3	TC62824	23.71
1/2	1/2	1-1/4	3	3	TC62832	39.24
5/8	5/8	1-5/8	3-1/2	3	TC62840	75.04
3/4	3/4	1-3/4	4	3	TC62848	107.56
1	1	1-3/4	4	3	TC62864	177.34



**SERIES 629**  
ZRN (ZIRCONIUM NITRIDE) COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	PRICE
1/8	1/8	1/2	1-1/2	3	TC62908	11.79
3/16	3/16	5/8	2	3	TC62912	16.43
1/4	1/4	3/4	2-1/2	3	TC62916	22.92
5/16	5/16	13/16	2-1/2	3	TC62920	27.07
3/8	3/8	1	2-1/2	3	TC62924	28.65
1/2	1/2	1-1/4	3	3	TC62932	45.50
5/8	5/8	1-5/8	3-1/2	3	TC62940	90.95
3/4	3/4	1-3/4	4	3	TC62948	130.62
1	1	1-3/4	4	3	TC62964	215.01

## FOR ALUMINUM REGULAR LENGTH - 3 FLUTE - CORNER RADIUS - 45° HELIX



**SERIES 658**  
UNCOATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	PRICE
1/8	1/8	1/2	1-1/2	3	.020	TC65808	11.26
3/16	3/16	5/8	2	3	.020	TC65812	15.45
1/4	1/4	3/4	2-1/2	3	.020	TC65816	21.17
5/16	5/16	13/16	2-1/2	3	.020	TC65820	25.00
3/8	3/8	1	2-1/2	3	.020	TC65824	26.47
1/2	1/2	1-1/4	3	3	.040	TC65832	43.81
5/8	5/8	1-5/8	3-1/2	3	.040	TC65840	80.14
3/4	3/4	1-3/4	4	3	.040	TC65848	114.88
1	1	1-3/4	4	3	.040	TC65864	189.40



**SERIES 659**  
ZRN (ZIRCONIUM NITRIDE) COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	PRICE
1/8	1/8	1/2	1-1/2	3	.020	TC65908	14.09
3/16	3/16	5/8	2	3	.020	TC65912	19.32
1/4	1/4	3/4	2-1/2	3	.020	TC65916	25.59
5/16	5/16	13/16	2-1/2	3	.020	TC65920	30.23
3/8	3/8	1	2-1/2	3	.020	TC65924	31.99
1/2	1/2	1-1/4	3	3	.040	TC65932	50.80
5/8	5/8	1-5/8	3-1/2	3	.040	TC65940	97.13
3/4	3/4	1-3/4	4	3	.040	TC65948	139.50
1	1	1-3/4	4	3	.040	TC65964	229.63

These 3 flute tools are designed specifically for high speed machining in aluminum. This roughing-finishing tool will plunge, slot and profile in all non-ferrous materials. ZRN coating does not have an affinity for aluminum and will also work well in brass and bronze applications. Use our ZRN coated tools for higher speed rates and better tool life.

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION, PLEASE SEE PAGES 182-183.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+ .000, -.002	-.0001, -.0004	+ .002, -.002
5/8" - 1"	+ .000, -.003	-.0001, -.0004	+ .002, -.002

CARBIDE ENDMILLS  
 CARBIDE MICRO ENDMILLS  
 CARBIDE THREADMILLS  
 CARBIDE DRILL MILLS  
 CARBIDE CHAMFER MILLS  
 CARBIDE DRILLS  
 CARBIDE REAMERS  
 CARBIDE BURS  
 COUNTERSINKS  
 HSS & COBALT ENDMILLS  
 TAPS & DIES  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION



# Solid Carbide Endmills



## FOR ALUMINUM LONG LENGTH - 3 FLUTE - SQUARE END - 45° HELIX



**SERIES 634**  
UNCOATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	PRICE
1/8	1/8	3/4	2-1/4	3	TC63408	16.01
3/16	3/16	3/4	2-1/2	3	TC63412	18.46
1/4	1/4	1-1/4	3	3	TC63416	26.02
5/16	5/16	1-3/8	3	3	TC63420	33.69
3/8	3/8	1-1/2	4	3	TC63424	42.20
1/2	1/2	2	4	3	TC63432	59.13
5/8	5/8	2-3/8	5	3	TC63440	122.59
3/4	3/4	2-1/2	5	3	TC63448	134.71
1	1	2-1/4	5	3	TC63464	221.43



**SERIES 635**  
ZRN (ZIRCONIUM NITRIDE) COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	PRICE
1/8	1/8	3/4	2-1/4	3	TC63508	19.96
3/16	3/16	3/4	2-1/2	3	TC63512	23.08
1/4	1/4	1-1/4	3	3	TC63516	31.45
5/16	5/16	1-3/8	3	3	TC63520	42.78
3/8	3/8	1-1/2	4	3	TC63524	51.03
1/2	1/2	2	4	3	TC63532	71.69
5/8	5/8	2-3/8	5	3	TC63540	156.02
3/4	3/4	2-1/2	5	3	TC63548	168.62
1	1	2-1/4	5	3	TC63564	265.52

## FOR ALUMINUM LONG LENGTH - 3 FLUTE - CORNER RADIUS - 45° HELIX



**SERIES 664**  
UNCOATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	PRICE
1/8	1/8	3/4	2-1/4	3	.020	TC66408	19.20
3/16	3/16	3/4	2-1/2	3	.020	TC66412	22.14
1/4	1/4	1-1/4	3	3	.020	TC66416	29.06
5/16	5/16	1-3/8	3	3	.020	TC66420	37.61
3/8	3/8	1-1/2	4	3	.020	TC66424	47.11
1/2	1/2	2	4	3	.040	TC66432	65.99
5/8	5/8	2-3/8	5	3	.040	TC66440	130.92
3/4	3/4	2-1/2	5	3	.040	TC66448	143.85
1	1	2-1/4	5	3	.040	TC66464	236.49



**SERIES 665**  
ZRN (ZIRCONIUM NITRIDE) COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	PRICE
1/8	1/8	3/4	2-1/4	3	.020	TC66508	24.01
3/16	3/16	3/4	2-1/2	3	.020	TC66512	27.69
1/4	1/4	1-1/4	3	3	.020	TC66516	35.12
5/16	5/16	1-3/8	3	3	.020	TC66520	47.76
3/8	3/8	1-1/2	4	3	.020	TC66524	56.99
1/2	1/2	2	4	3	.040	TC66532	80.05
5/8	5/8	2-3/8	5	3	.040	TC66540	166.62
3/4	3/4	2-1/2	5	3	.040	TC66548	180.08
1	1	2-1/4	5	3	.040	TC66564	283.58

These 3 flute tools are designed specifically for high speed machining in aluminum. This roughing-finishing tool will plunge, slot and profile in all non-ferrous materials. ZRN coating does not have an affinity for aluminum and will also work well in brass and bronze applications. Use our ZRN coated tools for higher speed rates and better tool life.

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION, PLEASE SEE PAGES 182-183.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+ .000, -.002	-.0001, -.0004	+ .002, -.002
5/8" - 1"	+ .000, -.003	-.0001, -.0004	+ .002, -.002

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION





**HIGH PERFORMANCE**

# Solid Carbide Endmills



## FINE PITCH ROUGHER - REGULAR LENGTH - 4 FLUTE - 30° HELIX



**SERIES 205**  
UNCOATED



**SERIES 295**  
ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	PRICE
1/4	1/4	3/4	2-1/2	4	TC20516	20.47
5/16	5/16	13/16	2-1/2	4	TC20520	28.73
3/8	3/8	7/8	2-1/2	4	TC20524	33.51
1/2	1/2	1-1/4	3	4	TC20532	41.89
5/8	5/8	1-5/8	3-1/2	4	TC20540	90.49
3/4	3/4	1-5/8	4	4	TC20548	108.59
1	1	2	4	4	TC20564	201.65

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	PRICE
1/4	1/4	3/4	2-1/2	4	TC29516	25.57
5/16	5/16	13/16	2-1/2	4	TC29520	35.91
3/8	3/8	7/8	2-1/2	4	TC29524	41.89
1/2	1/2	1-1/4	3	4	TC29532	52.35
5/8	5/8	1-5/8	3-1/2	4	TC29540	113.11
3/4	3/4	1-5/8	4	4	TC29548	135.74
1	1	2	4	4	TC29564	252.06

## FINE PITCH ROUGHER - LONG LENGTH - 4 FLUTE - 30° HELIX



**SERIES 206**  
UNCOATED



**SERIES 296**  
ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	PRICE
1/4	1/4	1-1/2	4	4	TC20616	29.57
5/16	5/16	1-1/2	4	4	TC20620	37.92
3/8	3/8	1-3/4	4	4	TC20624	47.41
1/2	1/2	2	4	4	TC20632	53.72
5/8	5/8	2-1/2	5	4	TC20640	128.30
3/4	3/4	2-1/2	5	4	TC20648	154.40
1	1	2-1/2	5	4	TC20664	258.79

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	PRICE
1/4	1/4	1-1/2	4	4	TC29616	36.97
5/16	5/16	1-1/2	4	4	TC29620	47.41
3/8	3/8	1-3/4	4	4	TC29624	59.27
1/2	1/2	2	4	4	TC29632	67.20
5/8	5/8	2-1/2	5	4	TC29640	161.14
3/4	3/4	2-1/2	5	4	TC29648	193.55
1	1	2-1/2	5	4	TC29664	324.03

Our fine pitch rougher is designed to remove maximum material with minimum vibration or chatter, while milling faster than conventional finishing endmills.

This tool will work in hardened steels, titanium, inconel and other space age materials.

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION, PLEASE SEE PAGE 184.

TOLERANCES	DIAMETER	SHANK
1/4" - 1/2"	+0.000, -0.002	-0.0001, -0.0004
5/8" - 1"	+0.000, -0.003	-0.0001, -0.0004

CARBIDE ENDMILLS  
 CARBIDE MICRO ENDMILLS  
 CARBIDE THREADMILLS  
 CARBIDE DRILL MILLS  
 CARBIDE CHAMFER MILLS  
 CARBIDE DRILLS  
 CARBIDE REAMERS  
 CARBIDE BURS  
 COUNTERSINKS  
 HSS & COBALT ENDMILLS  
 TAPS & DIES  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION



# HIGH PERFORMANCE

## Solid Carbide Endmills



**ROUGHER / FINISHER - REGULAR LENGTH - 4 FLUTE -  CORNER RADIUS - 40° HELIX**



**SERIES 297**  
UNCOATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLUTES	CORNER RADIUS	ITEM#	PRICE
1/4	1/4	3/4	2-1/2	4	.020	TC29716	35.78
5/16	5/16	13/16	2-1/2	4	.020	TC29720	38.75
3/8	3/8	7/8	2-1/2	4	.020	TC29724	42.11
1/2	1/2	1-1/4	3	4	.040	TC29732	48.66
5/8*	5/8	1-5/8	3-1/2	4	.040	TC29740	96.91
3/4*	3/4	1-5/8	4	4	.040	TC29748	129.47
1*	1	1-5/8	4	4	.040	TC29764	211.29

\* WITH WELDON FLATS



**SERIES 298**  
ALTiN COATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLUTES	CORNER RADIUS	ITEM#	PRICE
1/4	1/4	3/4	2-1/2	4	.020	TC29816	44.73
5/16	5/16	13/16	2-1/2	4	.020	TC29820	48.43
3/8	3/8	7/8	2-1/2	4	.020	TC29824	52.63
1/2	1/2	1-1/4	3	4	.040	TC29832	60.84
5/8*	5/8	1-5/8	3-1/2	4	.040	TC29840	121.14
3/4*	3/4	1-5/8	4	4	.040	TC29848	161.84
1*	1	1-5/8	4	4	.040	TC29864	264.12

\* WITH WELDON FLATS

The radius chipbreakers in this high performance tool allow for higher feed rates than a finishing endmill yet does not appreciably degrade the finish that the tool produces.

Works well in hard to machine materials such as stainless steel and titanium.

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION, PLEASE SEE PAGE 184.

TOLERANCES	DIAMETER	SHANK	RADIUS
ALL SIZES	+0.000, -.002	-.0001, -.0004	+0.002, -.002

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# Solid Carbide Endmills

## REGULAR LENGTH - 4 FLUTE - SQUARE END - 30° HELIX

**SERIES 105**  
UNCOATED



**SERIES 995**  
ALTiN COATED



**SERIES 905**  
TiCN COATED



SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	UNCOATED	PRICE	ALTiN	PRICE	TiCN	PRICE
1/64	1/8	1/32	1-1/2	TC10501	10.66	TC99501	14.28	TC90501	14.28
1/32	1/8	1/8	1-1/2	TC10502	7.14	TC99502	9.65	TC90502	9.65
3/64	1/8	1/8	1-1/2	TC10503	6.10	TC99503	8.22	TC90503	8.22
1/16	1/8	1/4	1-1/2	TC10504	6.09	TC99504	6.99	TC90504	6.99
5/64	1/8	1/4	1-1/2	TC10505	6.28	TC99505	8.48	TC90505	8.48
3/32	1/8	3/8	1-1/2	TC10506	5.53	TC99506	6.99	TC90506	6.99
7/64	1/8	3/8	1-1/2	TC10507	5.77	TC99507	7.79	TC90507	7.79
1/8	1/8	1/2	1-1/2	TC10508	5.31	TC99508	6.49	TC90508	6.49
9/64	3/16	9/16	2	TC10509	7.77	TC99509	10.49	TC90509	10.49
5/32	3/16	9/16	2	TC10510	7.82	TC99510	9.06	TC90510	9.06
11/64	3/16	5/8	2	TC10511	7.43	TC99511	10.04	TC90511	10.04
3/16	3/16	5/8	2	TC10512	7.23	TC99512	9.06	TC90512	9.06
13/64	1/4	5/8	2-1/2	TC10513	10.55	TC99513	13.83	TC90513	13.83
7/32	1/4	5/8	2-1/2	TC10514	10.78	TC99514	12.52	TC90514	12.52
15/64	1/4	3/4	2-1/2	TC10515	12.18	TC99515	15.70	TC90515	15.70
1/4	1/4	3/4	2-1/2	TC10516	8.93	TC99516	12.52	TC90516	12.52
17/64	5/16	3/4	2-1/2	TC10517	16.10	TC99517	20.69	TC90517	20.69
9/32	5/16	3/4	2-1/2	TC10518	16.10	TC99518	20.69	TC90518	20.69
19/64	5/16	13/16	2-1/2	TC10519	16.10	TC99519	20.69	TC90519	20.69
5/16	5/16	13/16	2-1/2	TC10520	11.62	TC99520	14.99	TC90520	14.99
21/64	3/8	1	2-1/2	TC10521	18.05	TC99521	23.21	TC90521	23.21
11/32	3/8	1	2-1/2	TC10522	18.05	TC99522	23.21	TC90522	23.21
23/64	3/8	1	2-1/2	TC10523	18.05	TC99523	23.21	TC90523	23.21
3/8	3/8	1	2-1/2	TC10524	13.86	TC99524	17.14	TC90524	17.14
25/64	7/16	1	2-3/4	TC10525	23.63	TC99525	30.50	TC90525	30.50
13/32	7/16	1	2-3/4	TC10526	23.63	TC99526	30.50	TC90526	30.50
27/64	7/16	1	2-3/4	TC10527	24.40	TC99527	31.51	TC90527	31.51
7/16	7/16	1	2-3/4	TC10528	21.27	TC99528	26.19	TC90528	26.19
29/64	1/2	1	3	TC10529	35.12	TC99529	44.95	TC90529	44.95
15/32	1/2	1	3	TC10530	35.12	TC99530	44.95	TC90530	44.95
31/64	1/2	1	3	TC10531	35.12	TC99531	44.95	TC90531	44.95
1/2	1/2	1	3	TC10532	25.54	TC99532	31.87	TC90532	31.87
1/2	1/2	1-1/4	3	TC10533	25.54	TC99533	31.87	TC90533	31.87
9/16	9/16	1-1/4	3-1/2	TC10536	48.27	TC99536	63.74	TC90536	63.74
5/8	5/8	1-1/4	3-1/2	TC10540	48.83	TC99540	62.25	TC90540	62.25
3/4	3/4	1-1/2	4	TC10548	68.58	TC99548	88.33	TC90548	88.33
7/8	7/8	1-1/2	4	TC10556	125.43	TC99556	158.76	TC90556	158.76
1	1	1-1/2	4	TC10564	112.19	TC99564	143.50	TC90564	143.50
1-1/4	1-1/4	2	4-1/2	TC10580	394.23	TC99580	447.99	TC90580	447.99

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION SEE PAGES 184, 186-187.

TOLERANCES	DIAMETER	SHANK
1/64" - 7/64"	+0.00, -0.01	-0.001, -0.004
1/8" - 1/2"	+0.00, -0.002	-0.001, -0.004
9/16" - 1-1/4"	+0.00, -0.003	-0.001, -0.004

CARBIDE ENDMILLS



# Solid Carbide Endmills

## LONG LENGTH - 4 FLUTE - SQUARE END - 30° HELIX



**SERIES 155**  
UNCOATED



**SERIES 156**  
ALTIM COATED



**SERIES 955**  
TICN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	UNCOATED	PRICE	ALTIM	PRICE	TICN	PRICE
1/8	1/8	3/4	2-1/4	TC15508	8.57	TC15608	11.02	TC95508	11.02
3/16	3/16	3/4	2-1/2	TC15512	10.06	TC15612	12.93	TC95512	12.93
1/4	1/4	1-1/8	3	TC15516	14.40	TC15616	18.57	TC95516	18.57
1/4	1/4	1	4	TC15517	15.17	TC15617	19.56	TC95517	19.56
5/16	5/16	1-1/8	3	TC15520	16.25	TC15620	21.93	TC95520	21.93
3/8	3/8	1-1/8	3	TC15524	18.64	TC15624	25.16	TC95524	25.16
3/8	3/8	1	4	TC15525	21.77	TC15625	28.01	TC95525	28.01
7/16	7/16	2	4	TC15528	29.38	TC15628	38.20	TC95528	38.20
1/2	1/2	1	4	TC15532	31.81	TC15632	40.96	TC95532	40.96
1/2	1/2	2	4	TC15533	33.69	TC15633	43.24	TC95533	43.24
5/8	5/8	2-1/4	5	TC15540	75.30	TC15640	93.19	TC95540	93.19
3/4	3/4	2-1/4	5	TC15548	104.00	TC15648	125.89	TC95548	125.89
7/8	7/8	2-1/4	5	TC15556	197.11	TC15656	232.95	TC95556	232.95
1	1	2-1/4	5	TC15564	142.38	TC15664	183.76	TC95564	183.76

## EXTRA LONG LENGTH - 4 FLUTE - SQUARE END - 30° HELIX



**SERIES 175**  
UNCOATED



**SERIES 176**  
ALTIM COATED



**SERIES 975**  
TICN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	UNCOATED	PRICE	ALTIM	PRICE	TICN	PRICE
1/8	1/8	1	3	TC17508	9.58	TC17608	12.93	TC97508	12.93
3/16	3/16	1-1/8	3	TC17512	10.42	TC17612	13.38	TC97512	13.38
1/4	1/4	1-1/2	4	TC17516	14.72	TC17616	18.96	TC97516	18.96
1/4	1/4	1-1/2	6	TC17517	19.90	TC17617	25.60	TC97517	25.60
5/16	5/16	1-5/8	4	TC17520	20.08	TC17620	25.92	TC97520	25.92
3/8	3/8	1-3/4	4	TC17524	22.81	TC17624	29.21	TC97524	29.21
3/8	3/8	1-1/2	6	TC17525	34.53	TC17625	44.51	TC97525	44.51
7/16	7/16	3	6	TC17528	46.51	TC17628	59.63	TC97528	59.63
1/2	1/2	1-1/2	6	TC17532	52.56	TC17632	65.23	TC97532	65.23
1/2	1/2	3	6	TC17533	55.17	TC17633	67.84	TC97533	67.84
5/8	5/8	3	6	TC17540	81.25	TC17640	99.89	TC97540	99.89
3/4	3/4	3	6	TC17548	120.76	TC17648	141.80	TC97548	141.80
3/4	3/4	4	7	TC17549	207.24	TC17649	234.94	TC97549	234.94
7/8	7/8	3	6	TC17556	215.03	TC17656	268.80	TC97556	268.80
1	1	3	6	TC17564	205.00	TC17664	228.85	TC97564	228.85
1	1	4	7	TC17565	268.74	TC17665	329.86	TC97565	329.86

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION SEE PAGES 184, 186-187.

TOLERANCES	DIAMETER	SHANK
1/8" - 1/2"	+0.00, -0.02	-0.001, -0.004
5/8" - 1"	+0.00, -0.03	-0.001, -0.004

CARBIDE ENDMILLS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION





# Solid Carbide Endmills

## REGULAR LENGTH - 4 FLUTE - BALL NOSE - 30° HELIX

**SERIES 115**  
UNCOATED



**SERIES 116**  
ALTiN COATED



**SERIES 915**  
TiCN COATED



SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	UNCOATED	PRICE	ALTiN	PRICE	TiCN	PRICE
1/64	1/8	1/32	1-1/2	TC11501	11.93	TC11601	15.99	TC91501	15.99
1/32	1/8	1/8	1-1/2	TC11502	7.64	TC11602	9.92	TC91502	9.92
3/64	1/8	1/8	1-1/2	TC11503	7.64	TC11603	9.92	TC91503	9.92
1/16	1/8	1/4	1-1/2	TC11504	7.08	TC11604	9.56	TC91504	9.56
5/64	1/8	1/4	1-1/2	TC11505	7.08	TC11605	9.56	TC91505	9.56
3/32	1/8	3/8	1-1/2	TC11506	7.43	TC11606	10.04	TC91506	10.04
7/64	1/8	3/8	1-1/2	TC11507	7.43	TC11607	10.04	TC91507	10.04
1/8	1/8	1/2	1-1/2	TC11508	6.81	TC11608	9.20	TC91508	9.20
9/64	3/16	9/16	2	TC11509	9.98	TC11609	13.49	TC91509	13.49
5/32	3/16	9/16	2	TC11510	9.98	TC11610	13.49	TC91510	13.49
11/64	3/16	5/8	2	TC11511	9.98	TC11611	13.49	TC91511	13.49
3/16	3/16	5/8	2	TC11512	8.97	TC11612	12.12	TC91512	12.12
13/64	1/4	5/8	2-1/2	TC11513	11.64	TC11613	16.49	TC91513	16.49
7/32	1/4	5/8	2-1/2	TC11514	11.64	TC11614	16.49	TC91514	16.49
15/64	1/4	3/4	2-1/2	TC11515	11.64	TC11615	16.49	TC91515	16.49
1/4	1/4	3/4	2-1/2	TC11516	12.19	TC11616	15.71	TC91516	15.71
17/64	5/16	3/4	2-1/2	TC11517	16.49	TC11617	21.21	TC91517	21.21
9/32	5/16	3/4	2-1/2	TC11518	16.52	TC11618	21.24	TC91518	21.24
19/64	5/16	13/16	2-1/2	TC11519	17.95	TC11619	23.56	TC91519	23.56
5/16	5/16	13/16	2-1/2	TC11520	15.20	TC11620	19.54	TC91520	19.54
21/64	3/8	1	2-1/2	TC11521	20.88	TC11621	28.19	TC91521	28.19
11/32	3/8	1	2-1/2	TC11522	21.92	TC11622	28.19	TC91522	28.19
23/64	3/8	1	2-1/2	TC11523	20.88	TC11623	28.19	TC91523	28.19
3/8	3/8	1	2-1/2	TC11524	16.27	TC11624	22.99	TC91524	22.99
25/64	7/16	1	2-3/4	TC11525	28.28	TC11625	36.44	TC91525	36.44
13/32	7/16	1	2-3/4	TC11526	28.28	TC11626	36.44	TC91526	36.44
27/64	7/16	1	2-3/4	TC11527	28.28	TC11627	36.44	TC91527	36.44
7/16	7/16	1	2-3/4	TC11528	24.07	TC11628	31.03	TC91528	31.03
29/64	1/2	1	3	TC11529	37.28	TC11629	48.07	TC91529	48.07
15/32	1/2	1	3	TC11530	37.28	TC11630	48.07	TC91530	48.07
31/64	1/2	1	3	TC11531	37.28	TC11631	48.07	TC91531	48.07
1/2	1/2	1	3	TC11532	33.01	TC11632	42.54	TC91532	42.54
9/16	9/16	1-1/4	3-1/2	TC11536	50.31	TC11636	61.92	TC91536	61.92
5/8	5/8	1-1/4	3-1/2	TC11540	53.38	TC11640	68.81	TC91540	68.81
3/4	3/4	1-1/2	4	TC11548	78.65	TC11648	102.49	TC91548	102.49
7/8	7/8	1-1/2	4	TC11556	152.31	TC11656	193.53	TC91556	193.53
1	1	1-1/2	4	TC11564	140.48	TC11664	181.03	TC91564	181.03

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION SEE PAGES 184, 186-187.

TOLERANCES	DIAMETER	SHANK
1/64" - 7/64"	+0.00, -0.01	-0.001, -0.004
1/8" - 1/2"	+0.00, -0.02	-0.001, -0.004
9/16" - 1"	+0.00, -0.03	-0.001, -0.004

CARBIDE ENDMILLS



# Solid Carbide Endmills

## LONG LENGTH - 4 FLUTE - BALL NOSE - 30° HELIX



**SERIES 165**  
UNCOATED



**SERIES 166**  
ALTIN COATED



**SERIES 965**  
TICN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	UNCOATED	PRICE	ALTIN	PRICE	TICN	PRICE
1/8	1/8	3/4	2-1/4	TC16508	10.19	TC16608	13.11	TC96508	13.11
3/16	3/16	3/4	2-1/2	TC16512	11.73	TC16612	15.06	TC96512	15.06
1/4	1/4	1-1/8	3	TC16516	16.49	TC16616	21.23	TC96516	21.23
1/4	1/4	1	4	TC16517	18.20	TC16617	23.47	TC96517	23.47
5/16	5/16	1-1/8	3	TC16520	19.39	TC16620	26.17	TC96520	26.17
3/8	3/8	1-1/8	3	TC16524	22.38	TC16624	30.23	TC96524	30.23
3/8	3/8	1	4	TC16525	27.42	TC16625	35.63	TC96525	35.63
7/16	7/16	2	4	TC16528	37.49	TC16628	48.75	TC96528	48.75
1/2	1/2	1	4	TC16532	38.39	TC16632	48.83	TC96532	48.83
1/2	1/2	2	4	TC16533	38.77	TC16633	49.20	TC96533	49.20
5/8	5/8	2-1/4	5	TC16540	88.33	TC16640	112.19	TC96540	112.19
3/4	3/4	2-1/4	5	TC16548	123.00	TC16648	155.80	TC96548	155.80
7/8	7/8	2-1/4	5	TC16556	211.45	TC16656	259.84	TC96556	259.84
1	1	2-1/4	5	TC16564	243.38	TC16664	299.30	TC96564	299.30

## EXTRA LONG LENGTH - 4 FLUTE - BALL NOSE - 30° HELIX



**SERIES 185**  
UNCOATED



**SERIES 186**  
ALTIN COATED



**SERIES 985**  
TICN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	UNCOATED	PRICE	ALTIN	PRICE	TICN	PRICE
1/8	1/8	1	3	TC18508	11.41	TC18608	15.39	TC98508	15.39
3/16	3/16	1-1/8	3	TC18512	12.49	TC18612	16.07	TC98512	16.07
1/4	1/4	1-1/2	4	TC18516	16.85	TC18616	21.68	TC98516	21.68
1/4	1/4	1-1/2	6	TC18517	20.37	TC18617	26.20	TC98517	26.20
5/16	5/16	1-5/8	4	TC18520	24.23	TC18620	31.28	TC98520	31.28
3/8	3/8	1-3/4	4	TC18524	26.08	TC18624	33.34	TC98524	33.34
3/8	3/8	1-1/2	6	TC18525	36.76	TC18625	45.85	TC98525	45.85
7/16	7/16	3	6	TC18528	55.17	TC18628	70.82	TC98528	70.82
1/2	1/2	1-1/2	6	TC18532	58.52	TC18632	74.93	TC98532	74.93
1/2	1/2	3	6	TC18533	58.88	TC18633	76.04	TC98533	76.04
5/8	5/8	3	6	TC18540	92.81	TC18640	114.05	TC98540	114.05
3/4	3/4	3	6	TC18548	131.61	TC18648	177.67	TC98548	177.67
3/4	3/4	4	7	TC18549	216.71	TC18649	274.08	TC98549	274.08
7/8	7/8	3	6	TC18556	232.95	TC18656	290.30	TC98556	290.30
1	1	3	6	TC18564	234.81	TC18664	302.31	TC98564	302.31
1	1	4	7	TC18565	284.01	TC18665	338.25	TC98565	338.25

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION SEE PAGES 184, 186-187.

TOLERANCES	DIAMETER	SHANK
1/8" - 1/2"	+0.00, -0.02	-0.001, -0.004
5/8" - 1"	+0.00, -0.03	-0.001, -0.004

CARBIDE ENDMILLS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# Solid Carbide Endmills

## REGULAR LENGTH - 2 FLUTE - SQUARE END - 30° HELIX

**SERIES 100**  
UNCOATED



**SERIES 101**  
ALTiN COATED



**SERIES 900**  
TiCN COATED



SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	UNCOATED	PRICE	ALTiN	PRICE	TiCN	PRICE
1/64	1/8	1/32	1-1/2	TC10001	10.66	TC10101	14.28	TC90001	14.28
1/32	1/8	1/8	1-1/2	TC10002	7.14	TC10102	9.65	TC90002	9.65
3/64	1/8	1/8	1-1/2	TC10003	6.10	TC10103	8.22	TC90003	8.22
1/16	1/8	1/4	1-1/2	TC10004	6.09	TC10104	6.99	TC90004	6.99
5/64	1/8	1/4	1-1/2	TC10005	6.28	TC10105	8.48	TC90005	8.48
3/32	1/8	3/8	1-1/2	TC10006	5.53	TC10106	6.99	TC90006	6.99
7/64	1/8	3/8	1-1/2	TC10007	5.77	TC10107	7.79	TC90007	7.79
1/8	1/8	1/2	1-1/2	TC10008	5.31	TC10108	6.49	TC90008	6.49
9/64	3/16	9/16	2	TC10009	7.77	TC10109	10.49	TC90009	10.49
5/32	3/16	9/16	2	TC10010	7.82	TC10110	9.06	TC90010	9.06
11/64	3/16	5/8	2	TC10011	7.43	TC10111	10.04	TC90011	10.04
3/16	3/16	5/8	2	TC10012	7.23	TC10112	9.06	TC90012	9.06
13/64	1/4	5/8	2-1/2	TC10013	10.55	TC10113	13.83	TC90013	13.83
7/32	1/4	5/8	2-1/2	TC10014	10.78	TC10114	12.52	TC90014	12.52
15/64	1/4	3/4	2-1/2	TC10015	12.18	TC10115	15.70	TC90015	15.70
1/4	1/4	3/4	2-1/2	TC10016	8.93	TC10116	12.52	TC90016	12.52
17/64	5/16	3/4	2-1/2	TC10017	16.10	TC10117	20.69	TC90017	20.69
9/32	5/16	3/4	2-1/2	TC10018	16.10	TC10118	20.69	TC90018	20.69
19/64	5/16	13/16	2-1/2	TC10019	16.10	TC10119	20.69	TC90019	20.69
5/16	5/16	13/16	2-1/2	TC10020	11.62	TC10120	14.99	TC90020	14.99
21/64	3/8	1	2-1/2	TC10021	18.05	TC10121	23.21	TC90021	23.21
11/32	3/8	1	2-1/2	TC10022	18.05	TC10122	23.21	TC90022	23.21
23/64	3/8	1	2-1/2	TC10023	18.05	TC10123	23.21	TC90023	23.21
3/8	3/8	1	2-1/2	TC10024	13.86	TC10124	17.14	TC90024	17.14
25/64	7/16	1	2-3/4	TC10025	23.63	TC10125	30.50	TC90025	30.50
13/32	7/16	1	2-3/4	TC10026	23.63	TC10126	30.50	TC90026	30.50
27/64	7/16	1	2-3/4	TC10027	24.40	TC10127	31.51	TC90027	31.51
7/16	7/16	1	2-3/4	TC10028	21.27	TC10128	26.19	TC90028	26.19
29/64	1/2	1	3	TC10029	35.12	TC10129	44.95	TC90029	44.95
15/32	1/2	1	3	TC10030	35.12	TC10130	44.95	TC90030	44.95
31/64	1/2	1	3	TC10031	35.12	TC10131	44.95	TC90031	44.95
1/2	1/2	1	3	TC10032	25.54	TC10132	31.87	TC90032	31.87
9/16	9/16	1-1/4	3-1/2	TC10036	48.27	TC10136	63.74	TC90036	63.74
5/8	5/8	1-1/4	3-1/2	TC10040	48.83	TC10140	62.25	TC90040	62.25
3/4	3/4	1-1/2	4	TC10048	68.58	TC10148	88.33	TC90048	88.33
7/8	7/8	1-1/2	4	TC10056	125.43	TC10156	158.76	TC90056	158.76
1	1	1-1/2	4	TC10064	112.19	TC10164	143.50	TC90064	143.50

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION SEE PAGES 184, 186-187.

TOLERANCES	DIAMETER	SHANK
1/64" - 7/64"	+0.00, -0.01	-0.001, -.0004
1/8" - 1/2"	+0.00, -0.002	-0.001, -.0004
9/16" - 1"	+0.00, -0.003	-0.001, -.0004

CARBIDE ENDMILLS



# Solid Carbide Endmills

## LONG LENGTH - 2 FLUTE - SQUARE END - 30° HELIX



**SERIES 150**  
UNCOATED



**SERIES 151**  
ALTIN COATED



**SERIES 950**  
TICN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	UNCOATED	PRICE	ALTIN	PRICE	TICN	PRICE
1/8	1/8	3/4	2-1/4	TC15008	8.57	TC15108	11.02	TC95008	11.02
3/16	3/16	3/4	2-1/2	TC15012	10.06	TC15112	12.93	TC95012	12.93
1/4	1/4	1-1/8	3	TC15016	14.40	TC15116	18.57	TC95016	18.57
1/4	1/4	1	4	TC15017	15.17	TC15117	19.56	TC95017	19.56
5/16	5/16	1-1/8	3	TC15020	16.25	TC15120	21.93	TC95020	21.93
3/8	3/8	1-1/8	3	TC15024	18.64	TC15124	25.16	TC95024	25.16
3/8	3/8	1	4	TC15025	21.77	TC15125	28.01	TC95025	28.01
7/16	7/16	2	4	TC15028	29.38	TC15128	38.20	TC95028	38.20
1/2	1/2	1	4	TC15032	31.81	TC15132	40.96	TC95032	40.96
1/2	1/2	2	4	TC15033	33.69	TC15133	43.24	TC95033	43.24
5/8	5/8	2-1/4	5	TC15040	75.30	TC15140	93.19	TC95040	93.19
3/4	3/4	2-1/4	5	TC15048	104.00	TC15148	134.18	TC95048	134.18
7/8	7/8	2-1/4	5	TC15056	197.11	TC15156	232.95	TC95056	232.95
1	1	2-1/4	5	TC15064	142.38	TC15164	183.76	TC95064	183.76

## EXTRA LONG LENGTH - 2 FLUTE - SQUARE END - 30° HELIX



**SERIES 170**  
UNCOATED



**SERIES 171**  
ALTIN COATED



**SERIES 970**  
TICN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	UNCOATED	PRICE	ALTIN	PRICE	TICN	PRICE
1/8	1/8	1	3	TC17008	9.58	TC17108	12.93	TC97008	12.93
3/16	3/16	1-1/8	3	TC17012	10.42	TC17112	13.38	TC97012	13.38
1/4	1/4	1-1/2	4	TC17016	14.72	TC17116	18.96	TC97016	18.96
1/4	1/4	1-1/2	6	TC17017	19.90	TC17117	25.60	TC97017	25.60
5/16	5/16	1-5/8	4	TC17020	20.08	TC17120	25.92	TC97020	25.92
3/8	3/8	1-3/4	4	TC17024	22.81	TC17124	29.21	TC97024	29.21
3/8	3/8	1-1/2	6	TC17025	34.53	TC17125	44.51	TC97025	44.51
7/16	7/16	3	6	TC17028	46.51	TC17128	59.63	TC97028	59.63
1/2	1/2	1-1/2	6	TC17032	52.56	TC17132	65.23	TC97032	65.23
1/2	1/2	3	6	TC17033	55.17	TC17133	67.84	TC97033	67.84
5/8	5/8	3	6	TC17040	81.25	TC17140	99.89	TC97040	99.89
3/4	3/4	3	6	TC17048	120.76	TC17148	148.34	TC97048	148.34
7/8	7/8	3	6	TC17056	215.03	TC17156	268.80	TC97056	268.80
1	1	3	6	TC17064	205.00	TC17164	251.92	TC97064	251.92

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION SEE PAGES 184, 186-187.

TOLERANCES	DIAMETER	SHANK
1/8" - 1/2"	+0.000, -0.002	-0.0001, -0.0004
5/8" - 1"	+0.000, -0.003	-0.0001, -0.0004

CARBIDE ENDMILLS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE REAMERS  
CARBIDE BURS  
CARBIDE BURS  
COUNTERSINKS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION  
TECHNICAL INFORMATION



# Solid Carbide Endmills

## REGULAR LENGTH - 2 FLUTE - BALL NOSE - 30° HELIX

**SERIES 110**  
UNCOATED



**SERIES 111**  
ALTiN COATED



**SERIES 910**  
TiCN COATED



SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	UNCOATED	PRICE	ALTiN	PRICE	TiCN	PRICE
1/64	1/8	1/32	1-1/2	TC11001	11.93	TC11101	15.99	TC91001	15.99
1/32	1/8	1/8	1-1/2	TC11002	7.64	TC11102	9.92	TC91002	9.92
3/64	1/8	1/8	1-1/2	TC11003	7.64	TC11103	9.92	TC91003	9.92
1/16	1/8	1/4	1-1/2	TC11004	7.08	TC11104	9.56	TC91004	9.56
5/64	1/8	1/4	1-1/2	TC11005	7.08	TC11105	9.56	TC91005	9.56
3/32	1/8	3/8	1-1/2	TC11006	7.43	TC11106	10.04	TC91006	10.04
7/64	1/8	3/8	1-1/2	TC11007	7.43	TC11107	10.04	TC91007	10.04
1/8	1/8	1/2	1-1/2	TC11008	6.81	TC11108	9.20	TC91008	9.20
9/64	3/16	9/16	2	TC11009	9.98	TC11109	13.49	TC91009	13.49
5/32	3/16	9/16	2	TC11010	9.98	TC11110	13.49	TC91010	13.49
11/64	3/16	5/8	2	TC11011	9.98	TC11111	13.49	TC91011	13.49
3/16	3/16	5/8	2	TC11012	8.97	TC11112	12.12	TC91012	12.12
13/64	1/4	5/8	2-1/2	TC11013	11.64	TC11113	16.49	TC91013	16.49
7/32	1/4	5/8	2-1/2	TC11014	11.64	TC11114	16.49	TC91014	16.49
15/64	1/4	3/4	2-1/2	TC11015	11.64	TC11115	16.49	TC91015	16.49
1/4	1/4	3/4	2-1/2	TC11016	12.19	TC11116	15.71	TC91016	15.71
17/64	5/16	3/4	2-1/2	TC11017	16.49	TC11117	21.21	TC91017	21.21
9/32	5/16	3/4	2-1/2	TC11018	16.52	TC11118	21.24	TC91018	21.24
19/64	5/16	13/16	2-1/2	TC11019	17.95	TC11119	23.56	TC91019	23.56
5/16	5/16	13/16	2-1/2	TC11020	15.20	TC11120	19.54	TC91020	19.54
21/64	3/8	1	2-1/2	TC11021	20.88	TC11121	28.19	TC91021	28.19
11/32	3/8	1	2-1/2	TC11022	21.92	TC11122	28.19	TC91022	28.19
23/64	3/8	1	2-1/2	TC11023	20.88	TC11123	28.19	TC91023	28.19
3/8	3/8	1	2-1/2	TC11024	16.27	TC11124	22.99	TC91024	22.99
25/64	7/16	1	2-3/4	TC11025	28.28	TC11125	36.44	TC91025	36.44
13/32	7/16	1	2-3/4	TC11026	28.28	TC11126	36.44	TC91026	36.44
27/64	7/16	1	2-3/4	TC11027	28.28	TC11127	36.44	TC91027	36.44
7/16	7/16	1	2-3/4	TC11028	24.07	TC11128	31.03	TC91028	31.03
29/64	1/2	1	3	TC11029	37.28	TC11129	48.07	TC91029	48.07
15/32	1/2	1	3	TC11030	37.28	TC11130	48.07	TC91030	48.07
31/64	1/2	1	3	TC11031	37.28	TC11131	48.07	TC91031	48.07
1/2	1/2	1	3	TC11032	33.01	TC11132	42.54	TC91032	42.54
9/16	9/16	1-1/4	3-1/2	TC11036	50.31	TC11136	61.92	TC91036	61.92
5/8	5/8	1-1/4	3-1/2	TC11040	53.38	TC11140	68.81	TC91040	68.81
3/4	3/4	1-1/2	4	TC11048	78.65	TC11148	102.49	TC91048	102.49
7/8	7/8	1-1/2	4	TC11056	152.31	TC11156	193.53	TC91056	193.53
1	1	1-1/2	4	TC11064	140.48	TC11164	181.03	TC91064	181.03

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION SEE PAGES 184, 186-187.

TOLERANCES	DIAMETER	SHANK
1/64" - 7/64"	+0.00, -0.01	-0.001, -.0004
1/8" - 1/2"	+0.00, -.002	-0.001, -.0004
9/16" - 1"	+0.00, -.003	-0.001, -.0004

CARBIDE ENDMILLS



# Solid Carbide Endmills

## LONG LENGTH - 2 FLUTE - BALL NOSE - 30° HELIX



**SERIES 160**  
UNCOATED



**SERIES 161**  
ALTIN COATED



**SERIES 960**  
TICN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	UNCOATED	PRICE	ALTIN	PRICE	TICN	PRICE
1/8	1/8	3/4	2-1/4	TC16008	10.19	TC16108	13.11	TC96008	13.11
3/16	3/16	3/4	2-1/2	TC16012	11.73	TC16112	15.06	TC96012	15.06
1/4	1/4	1-1/8	3	TC16016	16.49	TC16116	21.23	TC96016	21.23
1/4	1/4	1	4	TC16017	18.20	TC16117	23.47	TC96017	23.47
5/16	5/16	1-1/8	3	TC16020	19.39	TC16120	26.17	TC96020	26.17
3/8	3/8	1-1/8	3	TC16024	22.38	TC16124	30.23	TC96024	30.23
3/8	3/8	1	4	TC16025	27.42	TC16125	35.63	TC96025	35.63
7/16	7/16	2	4	TC16028	37.49	TC16128	48.75	TC96028	48.75
1/2	1/2	1	4	TC16032	38.39	TC16132	48.83	TC96032	48.83
1/2	1/2	2	4	TC16033	38.77	TC16133	49.20	TC96033	49.20
5/8	5/8	2-1/4	5	TC16040	88.33	TC16140	112.19	TC96040	112.19
3/4	3/4	2-1/4	5	TC16048	123.00	TC16148	155.80	TC96048	155.80
7/8	7/8	2-1/4	5	TC16056	211.45	TC16156	259.84	TC96056	259.84
1	1	2-1/4	5	TC16064	243.38	TC16164	299.30	TC96064	299.30

## EXTRA LONG LENGTH - 2 FLUTE - BALL NOSE - 30° HELIX



**SERIES 180**  
UNCOATED



**SERIES 181**  
ALTIN COATED



**SERIES 980**  
TICN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	UNCOATED	PRICE	ALTIN	PRICE	TICN	PRICE
1/8	1/8	1	3	TC18008	11.41	TC18108	15.39	TC98008	15.39
3/16	3/16	1-1/8	3	TC18012	12.49	TC18112	16.07	TC98012	16.07
1/4	1/4	1-1/2	4	TC18016	16.85	TC18116	21.68	TC98016	21.68
1/4	1/4	1-1/2	6	TC18017	20.37	TC18117	26.20	TC98017	26.20
5/16	5/16	1-5/8	4	TC18020	24.23	TC18120	31.28	TC98020	31.28
3/8	3/8	1-3/4	4	TC18024	26.08	TC18124	33.34	TC98024	33.34
3/8	3/8	1-1/2	6	TC18025	36.76	TC18125	45.11	TC98025	45.11
7/16	7/16	3	6	TC18028	55.17	TC18128	70.82	TC98028	70.82
1/2	1/2	1-1/2	6	TC18032	58.52	TC18132	74.93	TC98032	74.93
1/2	1/2	3	6	TC18033	58.88	TC18133	75.30	TC98033	75.30
5/8	5/8	3	6	TC18040	92.81	TC18140	114.05	TC98040	114.05
3/4	3/4	3	6	TC18048	131.61	TC18148	177.67	TC98048	177.67
7/8	7/8	3	6	TC18056	232.95	TC18156	290.30	TC98056	290.30
1	1	3	6	TC18064	234.81	TC18164	302.31	TC98064	302.31

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION SEE PAGES 184, 186-187.

TOLERANCES	DIAMETER	SHANK
1/8" - 1/2"	+0.00, -.002	-.0001, -.0004
5/8" - 1"	+0.00, -.003	-.0001, -.0004

CARBIDE ENDMILLS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE REAMERS  
CARBIDE BURS  
CARBIDE BURS  
COUNTERSINKS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION  
TECHNICAL INFORMATION



# Solid Carbide Endmills

REGULAR LENGTH - 2 FLUTE -  CORNER RADIUS - 30° HELIX



**SERIES 720**  
UNCOATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	PRICE
1/8	1/8	1/2	1-1/2	.015	TC72003	7.68
1/8	1/8	1/2	1-1/2	.020	TC72005	7.68
1/8	1/8	1/2	1-1/2	.030	TC72007	7.68
3/16	3/16	5/8	2	.015	TC72009	7.68
3/16	3/16	5/8	2	.020	TC72011	7.68
3/16	3/16	5/8	2	.030	TC72013	7.68
1/4	1/4	3/4	2-1/2	.015	TC72015	11.18
1/4	1/4	3/4	2-1/2	.020	TC72017	11.18
1/4	1/4	3/4	2-1/2	.030	TC72019	11.18
1/4	1/4	3/4	2-1/2	.045	TC72021	11.18
1/4	1/4	3/4	2-1/2	.060	TC72023	11.18
5/16	5/16	13/16	2-1/2	.015	TC72025	17.15
5/16	5/16	13/16	2-1/2	.020	TC72027	17.15
5/16	5/16	13/16	2-1/2	.030	TC72029	17.15
5/16	5/16	13/16	2-1/2	.045	TC72031	17.15
5/16	5/16	13/16	2-1/2	.060	TC72033	17.15
3/8	3/8	1	2-1/2	.015	TC72035	22.99
3/8	3/8	1	2-1/2	.020	TC72037	22.99
3/8	3/8	1	2-1/2	.030	TC72039	22.99
3/8	3/8	1	2-1/2	.045	TC72041	22.99
3/8	3/8	1	2-1/2	.060	TC72043	22.99
1/2	1/2	1	3	.015	TC72045	39.54
1/2	1/2	1	3	.020	TC72047	39.54
1/2	1/2	1	3	.030	TC72049	39.54

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	PRICE
1/2	1/2	1	3	.045	TC72051	39.54
1/2	1/2	1	3	.060	TC72053	39.54
1/2	1/2	1	3	.090	TC72055	39.54
1/2	1/2	1	3	.125	TC72057	39.54
5/8	5/8	1-1/4	3-1/2	.015	TC72059	55.94
5/8	5/8	1-1/4	3-1/2	.020	TC72061	55.94
5/8	5/8	1-1/4	3-1/2	.030	TC72063	55.94
5/8	5/8	1-1/4	3-1/2	.045	TC72065	55.94
5/8	5/8	1-1/4	3-1/2	.060	TC72067	55.94
5/8	5/8	1-1/4	3-1/2	.090	TC72069	55.94
3/4	3/4	1-1/2	4	.015	TC72071	82.76
3/4	3/4	1-1/2	4	.020	TC72073	82.76
3/4	3/4	1-1/2	4	.030	TC72075	82.76
3/4	3/4	1-1/2	4	.045	TC72077	82.76
3/4	3/4	1-1/2	4	.060	TC72079	82.76
3/4	3/4	1-1/2	4	.090	TC72081	82.76
3/4	3/4	1-1/2	4	.125	TC72083	82.76
1	1	1-1/2	4	.015	TC72085	156.58
1	1	1-1/2	4	.020	TC72087	156.58
1	1	1-1/2	4	.030	TC72089	156.58
1	1	1-1/2	4	.045	TC72091	156.58
1	1	1-1/2	4	.060	TC72093	156.58
1	1	1-1/2	4	.090	TC72095	156.58
1	1	1-1/2	4	.125	TC72097	156.58

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION SEE PAGES 184, 186-187.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.00, -.002	-.0001, -.0004	+0.02, -.002
5/8" - 1"	+0.00, -.003	-.0001, -.0004	+0.02, -.002

CARBIDE ENDMILLS  
 CARBIDE MICRO ENDMILLS  
 CARBIDE THREADMILLS  
 CARBIDE DRILL MILLS  
 CARBIDE CHAMFER MILLS  
 CARBIDE DRILLS  
 CARBIDE REAMERS  
 CARBIDE BURS  
 COUNTERSINKS  
 HSS & COBALT ENDMILLS  
 TAPS & DIES  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION



# Solid Carbide Endmills

REGULAR LENGTH - 2 FLUTE -  CORNER RADIUS - 30° HELIX



**SERIES 721**  
ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	PRICE
1/8	1/8	1/2	1-1/2	.015	TC72104	11.93
1/8	1/8	1/2	1-1/2	.020	TC72106	11.93
1/8	1/8	1/2	1-1/2	.030	TC72108	11.93
3/16	3/16	5/8	2	.015	TC72110	11.93
3/16	3/16	5/8	2	.020	TC72112	11.93
3/16	3/16	5/8	2	.030	TC72114	11.93
1/4	1/4	3/4	2-1/2	.015	TC72116	16.40
1/4	1/4	3/4	2-1/2	.020	TC72118	16.40
1/4	1/4	3/4	2-1/2	.030	TC72120	16.40
1/4	1/4	3/4	2-1/2	.045	TC72122	16.40
1/4	1/4	3/4	2-1/2	.060	TC72124	16.40
5/16	5/16	13/16	2-1/2	.015	TC72126	23.58
5/16	5/16	13/16	2-1/2	.020	TC72128	23.58
5/16	5/16	13/16	2-1/2	.030	TC72130	23.58
5/16	5/16	13/16	2-1/2	.045	TC72132	23.58
5/16	5/16	13/16	2-1/2	.060	TC72134	23.58
3/8	3/8	1	2-1/2	.015	TC72136	25.56
3/8	3/8	1	2-1/2	.020	TC72138	25.56
3/8	3/8	1	2-1/2	.030	TC72140	25.56
3/8	3/8	1	2-1/2	.045	TC72142	25.56
3/8	3/8	1	2-1/2	.060	TC72144	25.56
1/2	1/2	1	3	.015	TC72146	42.80
1/2	1/2	1	3	.020	TC72148	42.80
1/2	1/2	1	3	.030	TC72150	42.80

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	PRICE
1/2	1/2	1	3	.045	TC72152	42.80
1/2	1/2	1	3	.060	TC72154	42.80
1/2	1/2	1	3	.090	TC72156	42.80
1/2	1/2	1	3	.125	TC72158	42.80
5/8	5/8	1-1/4	3-1/2	.015	TC72160	61.59
5/8	5/8	1-1/4	3-1/2	.020	TC72162	61.59
5/8	5/8	1-1/4	3-1/2	.030	TC72164	61.59
5/8	5/8	1-1/4	3-1/2	.045	TC72166	61.59
5/8	5/8	1-1/4	3-1/2	.060	TC72168	61.59
5/8	5/8	1-1/4	3-1/2	.090	TC72170	61.59
3/4	3/4	1-1/2	4	.015	TC72172	86.49
3/4	3/4	1-1/2	4	.020	TC72174	86.49
3/4	3/4	1-1/2	4	.030	TC72176	86.49
3/4	3/4	1-1/2	4	.045	TC72178	86.49
3/4	3/4	1-1/2	4	.060	TC72180	86.49
3/4	3/4	1-1/2	4	.090	TC72182	86.49
3/4	3/4	1-1/2	4	.125	TC72184	86.49
1	1	1-1/2	4	.015	TC72186	180.50
1	1	1-1/2	4	.020	TC72188	180.50
1	1	1-1/2	4	.030	TC72190	180.50
1	1	1-1/2	4	.045	TC72192	180.50
1	1	1-1/2	4	.060	TC72194	180.50
1	1	1-1/2	4	.090	TC72196	180.50
1	1	1-1/2	4	.125	TC72198	180.50

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION SEE PAGES 184, 186-187.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.000, -.002	-.0001, -.0004	+0.002, -.002
5/8" - 1"	+0.000, -.003	-.0001, -.0004	+0.002, -.002

CARBIDE ENDMILLS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION





# Solid Carbide Endmills

REGULAR LENGTH - 4 FLUTE -  CORNER RADIUS - 30° HELIX



**SERIES 740**  
UNCOATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	PRICE
1/8	1/8	1/2	1-1/2	.015	TC74003	7.68
1/8	1/8	1/2	1-1/2	.020	TC74005	7.68
1/8	1/8	1/2	1-1/2	.030	TC74007	7.68
3/16	3/16	5/8	2	.015	TC74009	7.68
3/16	3/16	5/8	2	.020	TC74011	7.68
3/16	3/16	5/8	2	.030	TC74013	7.68
1/4	1/4	3/4	2-1/2	.015	TC74015	11.18
1/4	1/4	3/4	2-1/2	.020	TC74017	11.18
1/4	1/4	3/4	2-1/2	.030	TC74019	11.18
1/4	1/4	3/4	2-1/2	.045	TC74021	11.18
1/4	1/4	3/4	2-1/2	.060	TC74023	11.18
5/16	5/16	13/16	2-1/2	.015	TC74025	17.78
5/16	5/16	13/16	2-1/2	.020	TC74027	17.78
5/16	5/16	13/16	2-1/2	.030	TC74029	17.78
5/16	5/16	13/16	2-1/2	.045	TC74031	17.78
5/16	5/16	13/16	2-1/2	.060	TC74033	17.78
3/8	3/8	1	2-1/2	.015	TC74035	21.06
3/8	3/8	1	2-1/2	.020	TC74037	21.06
3/8	3/8	1	2-1/2	.030	TC74039	21.06
3/8	3/8	1	2-1/2	.045	TC74041	21.06
3/8	3/8	1	2-1/2	.060	TC74043	21.06
1/2	1/2	1	3	.015	TC74045	36.04
1/2	1/2	1	3	.020	TC74047	36.04
1/2	1/2	1	3	.030	TC74049	36.04

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	PRICE
1/2	1/2	1	3	.045	TC74051	36.04
1/2	1/2	1	3	.060	TC74053	36.04
1/2	1/2	1	3	.090	TC74055	36.04
1/2	1/2	1	3	.125	TC74057	36.04
5/8	5/8	1-1/4	3-1/2	.015	TC74059	55.94
5/8	5/8	1-1/4	3-1/2	.020	TC74061	55.94
5/8	5/8	1-1/4	3-1/2	.030	TC74063	55.94
5/8	5/8	1-1/4	3-1/2	.045	TC74065	55.94
5/8	5/8	1-1/4	3-1/2	.060	TC74067	55.94
5/8	5/8	1-1/4	3-1/2	.090	TC74069	55.94
3/4	3/4	1-1/2	4	.015	TC74071	82.76
3/4	3/4	1-1/2	4	.020	TC74073	82.76
3/4	3/4	1-1/2	4	.030	TC74075	82.76
3/4	3/4	1-1/2	4	.045	TC74077	82.76
3/4	3/4	1-1/2	4	.060	TC74079	82.76
3/4	3/4	1-1/2	4	.090	TC74081	82.76
3/4	3/4	1-1/2	4	.125	TC74083	82.76
1	1	1-1/2	4	.015	TC74085	156.58
1	1	1-1/2	4	.020	TC74087	156.58
1	1	1-1/2	4	.030	TC74089	156.58
1	1	1-1/2	4	.045	TC74091	156.58
1	1	1-1/2	4	.060	TC74093	156.58
1	1	1-1/2	4	.090	TC74095	156.58
1	1	1-1/2	4	.125	TC74097	156.58

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION SEE PAGES 184, 186-187.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.00, -.002	-.0001, -.0004	+0.02, -.002
5/8" - 1"	+0.00, -.003	-.0001, -.0004	+0.02, -.002

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# Solid Carbide Endmills

REGULAR LENGTH - 4 FLUTE -  CORNER RADIUS - 30° HELIX



**SERIES 741**  
ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	PRICE
1/8	1/8	1/2	1-1/2	.015	TC74104	11.93
1/8	1/8	1/2	1-1/2	.020	TC74106	11.93
1/8	1/8	1/2	1-1/2	.030	TC74108	11.93
3/16	3/16	5/8	2	.015	TC74110	11.93
3/16	3/16	5/8	2	.020	TC74112	11.93
3/16	3/16	5/8	2	.030	TC74114	11.93
1/4	1/4	3/4	2-1/2	.015	TC74116	16.40
1/4	1/4	3/4	2-1/2	.020	TC74118	16.40
1/4	1/4	3/4	2-1/2	.030	TC74120	16.40
1/4	1/4	3/4	2-1/2	.045	TC74122	16.40
1/4	1/4	3/4	2-1/2	.060	TC74124	16.40
5/16	5/16	13/16	2-1/2	.015	TC74126	22.00
5/16	5/16	13/16	2-1/2	.020	TC74128	22.00
5/16	5/16	13/16	2-1/2	.030	TC74130	22.00
5/16	5/16	13/16	2-1/2	.045	TC74132	22.00
5/16	5/16	13/16	2-1/2	.060	TC74134	22.00
3/8	3/8	1	2-1/2	.015	TC74136	27.61
3/8	3/8	1	2-1/2	.020	TC74138	27.61
3/8	3/8	1	2-1/2	.030	TC74140	27.61
3/8	3/8	1	2-1/2	.045	TC74142	27.61
3/8	3/8	1	2-1/2	.060	TC74144	27.61
1/2	1/2	1	3	.015	TC74146	41.65
1/2	1/2	1	3	.020	TC74148	41.65
1/2	1/2	1	3	.030	TC74150	41.65

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	PRICE
1/2	1/2	1	3	.045	TC74152	41.65
1/2	1/2	1	3	.060	TC74154	41.65
1/2	1/2	1	3	.090	TC74156	41.65
1/2	1/2	1	3	.125	TC74158	41.65
5/8	5/8	1-1/4	3-1/2	.015	TC74160	67.86
5/8	5/8	1-1/4	3-1/2	.020	TC74162	67.86
5/8	5/8	1-1/4	3-1/2	.030	TC74164	67.86
5/8	5/8	1-1/4	3-1/2	.045	TC74166	67.86
5/8	5/8	1-1/4	3-1/2	.060	TC74168	67.86
5/8	5/8	1-1/4	3-1/2	.090	TC74170	67.86
3/4	3/4	1-1/2	4	.015	TC74172	93.13
3/4	3/4	1-1/2	4	.020	TC74174	93.13
3/4	3/4	1-1/2	4	.030	TC74176	93.13
3/4	3/4	1-1/2	4	.045	TC74178	93.13
3/4	3/4	1-1/2	4	.060	TC74180	93.13
3/4	3/4	1-1/2	4	.090	TC74182	93.13
3/4	3/4	1-1/2	4	.125	TC74184	93.13
1	1	1-1/2	4	.015	TC74186	180.50
1	1	1-1/2	4	.020	TC74188	180.50
1	1	1-1/2	4	.030	TC74190	180.50
1	1	1-1/2	4	.045	TC74192	180.50
1	1	1-1/2	4	.060	TC74194	180.50
1	1	1-1/2	4	.090	TC74196	180.50
1	1	1-1/2	4	.125	TC74198	180.50

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION SEE PAGES 184, 186-187.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.000, -.002	-.0001, -.0004	+0.002, -.002
5/8" - 1"	+0.000, -.003	-.0001, -.0004	+0.002, -.002

CARBIDE ENDMILLS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TAPS & DIES  
HSS & COBALT DRILLS  
TECHNICAL INFORMATION



# Solid Carbide Endmills

LONG LENGTH - 4 FLUTE - CORNER RADIUS - 30° HELIX



**SERIES 743**  
UNCOATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	PRICE
1/8	1/8	3/4	2-1/4	0.015	TC74301	10.49
1/8	1/8	3/4	2-1/4	0.020	TC74302	10.49
1/8	1/8	3/4	2-1/4	0.030	TC74303	10.49
3/16	3/16	3/4	2-1/2	0.015	TC74304	12.20
3/16	3/16	3/4	2-1/2	0.020	TC74305	12.20
3/16	3/16	3/4	2-1/2	0.030	TC74306	12.20
1/4	1/4	1-1/8	3	0.015	TC74307	17.02
1/4	1/4	1-1/8	3	0.020	TC74308	17.02
1/4	1/4	1-1/8	3	0.030	TC74309	17.02
1/4	1/4	1-1/8	3	0.045	TC74310	17.02
1/4	1/4	1-1/8	3	0.060	TC74311	17.02
1/4	1/4	1	4	0.015	TC74312	17.87
1/4	1/4	1	4	0.020	TC74313	17.87
1/4	1/4	1	4	0.030	TC74314	17.87
1/4	1/4	1	4	0.045	TC74315	17.87
1/4	1/4	1	4	0.060	TC74316	17.87
5/16	5/16	1-1/8	3	0.015	TC74317	19.29
5/16	5/16	1-1/8	3	0.020	TC74318	19.29
5/16	5/16	1-1/8	3	0.030	TC74319	19.29
5/16	5/16	1-1/8	3	0.045	TC74320	19.29
5/16	5/16	1-1/8	3	0.060	TC74321	19.29
3/8	3/8	1-1/8	3	0.015	TC74322	24.80
3/8	3/8	1-1/8	3	0.020	TC74323	24.80
3/8	3/8	1-1/8	3	0.030	TC74324	24.80
3/8	3/8	1-1/8	3	0.045	TC74325	24.80
3/8	3/8	1-1/8	3	0.060	TC74326	24.80
3/8	3/8	1	4	0.015	TC74327	30.33
3/8	3/8	1	4	0.020	TC74328	30.33
3/8	3/8	1	4	0.030	TC74329	30.33
3/8	3/8	1	4	0.045	TC74330	30.33
3/8	3/8	1	4	0.060	TC74331	30.33
1/2	1/2	1	4	0.015	TC74332	42.59
1/2	1/2	1	4	0.020	TC74333	42.59

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	PRICE
1/2	1/2	1	4	0.030	TC74334	42.59
1/2	1/2	1	4	0.045	TC74335	42.59
1/2	1/2	1	4	0.060	TC74336	42.59
1/2	1/2	1	4	0.090	TC74337	42.59
1/2	1/2	1	4	0.125	TC74338	42.59
1/2	1/2	2	4	0.015	TC74339	45.40
1/2	1/2	2	4	0.020	TC74340	45.40
1/2	1/2	2	4	0.030	TC74341	45.40
1/2	1/2	2	4	0.045	TC74342	45.40
1/2	1/2	2	4	0.060	TC74343	45.40
1/2	1/2	2	4	0.090	TC74344	45.40
1/2	1/2	2	4	0.125	TC74345	45.40
5/8	5/8	2-1/4	5	0.015	TC74346	80.55
5/8	5/8	2-1/4	5	0.020	TC74347	80.55
5/8	5/8	2-1/4	5	0.030	TC74348	80.55
5/8	5/8	2-1/4	5	0.045	TC74349	80.55
5/8	5/8	2-1/4	5	0.060	TC74350	80.55
5/8	5/8	2-1/4	5	0.090	TC74351	80.55
3/4	3/4	2-1/4	5	0.015	TC74352	112.32
3/4	3/4	2-1/4	5	0.020	TC74353	112.32
3/4	3/4	2-1/4	5	0.030	TC74354	112.32
3/4	3/4	2-1/4	5	0.045	TC74355	112.32
3/4	3/4	2-1/4	5	0.060	TC74356	112.32
3/4	3/4	2-1/4	5	0.090	TC74357	112.32
3/4	3/4	2-1/4	5	0.125	TC74358	112.32
1	1	2-1/4	5	0.015	TC74359	164.74
1	1	2-1/4	5	0.020	TC74360	164.74
1	1	2-1/4	5	0.030	TC74361	164.74
1	1	2-1/4	5	0.045	TC74362	164.74
1	1	2-1/4	5	0.060	TC74363	164.74
1	1	2-1/4	5	0.090	TC74364	164.74
1	1	2-1/4	5	0.125	TC74365	164.74
-	-	-	-	-	-	-

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION SEE PAGES 184, 186-187.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.00, -0.02	-0.001, -0.004	+0.02, -0.02
5/8" - 1"	+0.00, -0.03	-0.001, -0.004	+0.02, -0.02

CARBIDE ENDMILLS  
 CARBIDE MICRO ENDMILLS  
 CARBIDE THREADMILLS  
 CARBIDE DRILL MILLS  
 CARBIDE CHAMFER MILLS  
 CARBIDE DRILLS  
 CARBIDE REAMERS  
 CARBIDE BURS  
 COUNTERSINKS  
 HSS & COBALT ENDMILLS  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION



# Solid Carbide Endmills

LONG LENGTH - 4 FLUTE -  CORNER RADIUS - 30° HELIX



**SERIES 744**  
ALTiN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	PRICE
1/8	1/8	3/4	2-1/4	0.015	TC74401	13.12
1/8	1/8	3/4	2-1/4	0.020	TC74402	13.12
1/8	1/8	3/4	2-1/4	0.030	TC74403	13.12
3/16	3/16	3/4	2-1/2	0.015	TC74404	15.25
3/16	3/16	3/4	2-1/2	0.020	TC74405	15.25
3/16	3/16	3/4	2-1/2	0.030	TC74406	15.25
1/4	1/4	1-1/8	3	0.015	TC74407	21.27
1/4	1/4	1-1/8	3	0.020	TC74408	21.27
1/4	1/4	1-1/8	3	0.030	TC74409	21.27
1/4	1/4	1-1/8	3	0.045	TC74410	21.27
1/4	1/4	1-1/8	3	0.060	TC74411	21.27
1/4	1/4	1	4	0.015	TC74412	22.34
1/4	1/4	1	4	0.020	TC74413	22.34
1/4	1/4	1	4	0.030	TC74414	22.34
1/4	1/4	1	4	0.045	TC74415	22.34
1/4	1/4	1	4	0.060	TC74416	22.34
5/16	5/16	1-1/8	3	0.015	TC74417	24.11
5/16	5/16	1-1/8	3	0.020	TC74418	24.11
5/16	5/16	1-1/8	3	0.030	TC74419	24.11
5/16	5/16	1-1/8	3	0.045	TC74420	24.11
5/16	5/16	1-1/8	3	0.060	TC74421	24.11
3/8	3/8	1-1/8	3	0.015	TC74422	30.42
3/8	3/8	1-1/8	3	0.020	TC74423	30.42
3/8	3/8	1-1/8	3	0.030	TC74424	30.42
3/8	3/8	1-1/8	3	0.045	TC74425	30.42
3/8	3/8	1-1/8	3	0.060	TC74426	30.42
3/8	3/8	1	4	0.015	TC74427	37.91
3/8	3/8	1	4	0.020	TC74428	37.91
3/8	3/8	1	4	0.030	TC74429	37.91
3/8	3/8	1	4	0.045	TC74430	37.91
3/8	3/8	1	4	0.060	TC74431	37.91
1/2	1/2	1	4	0.015	TC74432	52.42
1/2	1/2	1	4	0.020	TC74433	52.42

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	PRICE
1/2	1/2	1	4	0.030	TC74434	52.42
1/2	1/2	1	4	0.045	TC74435	52.42
1/2	1/2	1	4	0.060	TC74436	52.42
1/2	1/2	1	4	0.090	TC74437	52.42
1/2	1/2	1	4	0.125	TC74438	52.42
1/2	1/2	2	4	0.015	TC74439	55.69
1/2	1/2	2	4	0.020	TC74440	55.69
1/2	1/2	2	4	0.030	TC74441	55.69
1/2	1/2	2	4	0.045	TC74442	55.69
1/2	1/2	2	4	0.060	TC74443	55.69
1/2	1/2	2	4	0.090	TC74444	55.69
1/2	1/2	2	4	0.125	TC74445	55.69
5/8	5/8	2-1/4	5	0.015	TC74446	100.69
5/8	5/8	2-1/4	5	0.020	TC74447	100.69
5/8	5/8	2-1/4	5	0.030	TC74448	100.69
5/8	5/8	2-1/4	5	0.045	TC74449	100.69
5/8	5/8	2-1/4	5	0.060	TC74450	100.69
5/8	5/8	2-1/4	5	0.090	TC74451	100.69
3/4	3/4	2-1/4	5	0.015	TC74452	131.04
3/4	3/4	2-1/4	5	0.020	TC74453	131.04
3/4	3/4	2-1/4	5	0.030	TC74454	131.04
3/4	3/4	2-1/4	5	0.045	TC74455	131.04
3/4	3/4	2-1/4	5	0.060	TC74456	131.04
3/4	3/4	2-1/4	5	0.090	TC74457	131.04
3/4	3/4	2-1/4	5	0.125	TC74458	131.04
1	1	2-1/4	5	0.015	TC74459	205.92
1	1	2-1/4	5	0.020	TC74460	205.92
1	1	2-1/4	5	0.030	TC74461	205.92
1	1	2-1/4	5	0.045	TC74462	205.92
1	1	2-1/4	5	0.060	TC74463	205.92
1	1	2-1/4	5	0.090	TC74464	205.92
1	1	2-1/4	5	0.125	TC74465	205.92
-	-	-	-	-	-	-

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION SEE PAGES 184, 186-187.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.000, -0.002	-0.0001, -0.0004	+0.002, -0.002
5/8" - 1"	+0.000, -0.003	-0.0001, -0.0004	+0.002, -0.002

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION





# Solid Carbide Endmills

**EXTRA LONG LENGTH - 4 FLUTE -  CORNER RADIUS - 30° HELIX**



**SERIES 745  
UNCOATED**

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	PRICE
1/8	1/8	1	3	0.015	TC74501	11.91
1/8	1/8	1	3	0.020	TC74502	11.91
1/8	1/8	1	3	0.030	TC74503	11.91
3/16	3/16	1-1/8	3	0.015	TC74504	13.05
3/16	3/16	1-1/8	3	0.020	TC74505	13.05
3/16	3/16	1-1/8	3	0.030	TC74506	13.05
1/4	1/4	1-1/2	4	0.015	TC74507	18.15
1/4	1/4	1-1/2	4	0.020	TC74508	18.15
1/4	1/4	1-1/2	4	0.030	TC74509	18.15
1/4	1/4	1-1/2	4	0.045	TC74510	18.15
1/4	1/4	1-1/2	4	0.060	TC74511	18.15
1/4	1/4	1-1/2	6	0.015	TC74512	24.39
1/4	1/4	1-1/2	6	0.020	TC74513	24.39
1/4	1/4	1-1/2	6	0.030	TC74514	24.39
1/4	1/4	1-1/2	6	0.045	TC74515	24.39
1/4	1/4	1-1/2	6	0.060	TC74516	24.39
5/16	5/16	1-5/8	4	0.015	TC74517	24.96
5/16	5/16	1-5/8	4	0.020	TC74518	24.96
5/16	5/16	1-5/8	4	0.030	TC74519	24.96
5/16	5/16	1-5/8	4	0.045	TC74520	24.96
5/16	5/16	1-5/8	4	0.060	TC74521	24.96
3/8	3/8	1-3/4	4	0.015	TC74522	27.23
3/8	3/8	1-3/4	4	0.020	TC74523	27.23
3/8	3/8	1-3/4	4	0.030	TC74524	27.23
3/8	3/8	1-3/4	4	0.045	TC74525	27.23
3/8	3/8	1-3/4	4	0.060	TC74526	27.23
3/8	3/8	1-1/2	6	0.015	TC74527	38.57
3/8	3/8	1-1/2	6	0.020	TC74528	38.57
3/8	3/8	1-1/2	6	0.030	TC74529	38.57
3/8	3/8	1-1/2	6	0.045	TC74530	38.57
3/8	3/8	1-1/2	6	0.060	TC74531	38.57
1/2	1/2	1-1/2	6	0.015	TC74532	58.43
1/2	1/2	1-1/2	6	0.020	TC74533	58.43
1/2	1/2	1-1/2	6	0.030	TC74534	58.43
1/2	1/2	1-1/2	6	0.045	TC74535	58.43
1/2	1/2	1-1/2	6	0.060	TC74536	58.43
1/2	1/2	1-1/2	6	0.090	TC74537	58.43
1/2	1/2	1-1/2	6	0.125	TC74538	58.43
1/2	1/2	3	6	0.015	TC74539	61.27
1/2	1/2	3	6	0.020	TC74540	61.27

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	PRICE
1/2	1/2	3	6	0.030	TC74541	61.27
1/2	1/2	3	6	0.045	TC74542	61.27
1/2	1/2	3	6	0.060	TC74543	61.27
1/2	1/2	3	6	0.090	TC74544	61.27
1/2	1/2	3	6	0.125	TC74545	61.27
5/8	5/8	3	6	0.015	TC74546	86.22
5/8	5/8	3	6	0.020	TC74547	86.22
5/8	5/8	3	6	0.030	TC74548	86.22
5/8	5/8	3	6	0.045	TC74549	86.22
5/8	5/8	3	6	0.060	TC74550	86.22
5/8	5/8	3	6	0.090	TC74551	86.22
3/4	3/4	3	6	0.015	TC74552	120.28
3/4	3/4	3	6	0.020	TC74553	120.28
3/4	3/4	3	6	0.030	TC74554	120.28
3/4	3/4	3	6	0.045	TC74555	120.28
3/4	3/4	3	6	0.060	TC74556	120.28
3/4	3/4	3	6	0.090	TC74557	120.28
3/4	3/4	3	6	0.125	TC74558	120.28
3/4	3/4	4	7	0.015	TC74559	194.31
3/4	3/4	4	7	0.020	TC74560	194.31
3/4	3/4	4	7	0.030	TC74561	194.31
3/4	3/4	4	7	0.045	TC74562	194.31
3/4	3/4	4	7	0.060	TC74563	194.31
3/4	3/4	4	7	0.090	TC74564	194.31
3/4	3/4	4	7	0.125	TC74565	194.31
1	1	3	6	0.015	TC74566	203.09
1	1	3	6	0.020	TC74567	203.09
1	1	3	6	0.030	TC74568	203.09
1	1	3	6	0.045	TC74569	203.09
1	1	3	6	0.060	TC74570	203.09
1	1	3	6	0.090	TC74571	203.09
1	1	3	6	0.125	TC74572	203.09
1	1	4	7	0.015	TC74573	277.97
1	1	4	7	0.020	TC74574	277.97
1	1	4	7	0.030	TC74575	277.97
1	1	4	7	0.045	TC74576	277.97
1	1	4	7	0.060	TC74577	277.97
1	1	4	7	0.090	TC74578	277.97
1	1	4	7	0.125	TC74579	277.97
-	-	-	-	-	-	-

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION SEE PAGES 184, 186-187.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.00, -0.02	-0.001, -0.004	+0.02, -0.02
5/8" - 1"	+0.00, -0.03	-0.001, -0.004	+0.02, -0.02

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



Premium Quality American-Made Cutting Tools

# Solid Carbide Endmills



**EXTRA LONG LENGTH - 4 FLUTE -  CORNER RADIUS - 30° HELIX**



**SERIES 746**  
**ALTIN COATED**

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	PRICE
1/8	1/8	1	3	0.015	TC74601	14.89
1/8	1/8	1	3	0.020	TC74602	14.89
1/8	1/8	1	3	0.030	TC74603	14.89
3/16	3/16	1-1/8	3	0.015	TC74604	16.31
3/16	3/16	1-1/8	3	0.020	TC74605	16.31
3/16	3/16	1-1/8	3	0.030	TC74606	16.31
1/4	1/4	1-1/2	4	0.015	TC74607	22.69
1/4	1/4	1-1/2	4	0.020	TC74608	22.69
1/4	1/4	1-1/2	4	0.030	TC74609	22.69
1/4	1/4	1-1/2	4	0.045	TC74610	22.69
1/4	1/4	1-1/2	4	0.060	TC74611	22.69
1/4	1/4	1-1/2	6	0.015	TC74612	30.49
1/4	1/4	1-1/2	6	0.020	TC74613	30.49
1/4	1/4	1-1/2	6	0.030	TC74614	30.49
1/4	1/4	1-1/2	6	0.045	TC74615	30.49
1/4	1/4	1-1/2	6	0.060	TC74616	30.49
5/16	5/16	1-5/8	4	0.015	TC74617	31.20
5/16	5/16	1-5/8	4	0.020	TC74618	31.20
5/16	5/16	1-5/8	4	0.030	TC74619	31.20
5/16	5/16	1-5/8	4	0.045	TC74620	31.20
5/16	5/16	1-5/8	4	0.060	TC74621	31.20
3/8	3/8	1-3/4	4	0.015	TC74622	34.04
3/8	3/8	1-3/4	4	0.020	TC74623	34.04
3/8	3/8	1-3/4	4	0.030	TC74624	34.04
3/8	3/8	1-3/4	4	0.045	TC74625	34.04
3/8	3/8	1-3/4	4	0.060	TC74626	34.04
3/8	3/8	1-1/2	6	0.015	TC74627	48.22
3/8	3/8	1-1/2	6	0.020	TC74628	48.22
3/8	3/8	1-1/2	6	0.030	TC74629	48.22
3/8	3/8	1-1/2	6	0.045	TC74630	48.22
3/8	3/8	1-1/2	6	0.060	TC74631	48.22
1/2	1/2	1-1/2	6	0.015	TC74632	73.04
1/2	1/2	1-1/2	6	0.020	TC74633	73.04
1/2	1/2	1-1/2	6	0.030	TC74634	73.04
1/2	1/2	1-1/2	6	0.045	TC74635	73.04
1/2	1/2	1-1/2	6	0.060	TC74636	73.04
1/2	1/2	1-1/2	6	0.090	TC74637	73.04
1/2	1/2	1-1/2	6	0.125	TC74638	73.04
1/2	1/2	3	6	0.015	TC74639	76.58
1/2	1/2	3	6	0.020	TC74640	76.58

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	PRICE
1/2	1/2	3	6	0.030	TC74641	76.58
1/2	1/2	3	6	0.045	TC74642	76.58
1/2	1/2	3	6	0.060	TC74643	76.58
1/2	1/2	3	6	0.090	TC74644	76.58
1/2	1/2	3	6	0.125	TC74645	76.58
5/8	5/8	3	6	0.015	TC74646	107.78
5/8	5/8	3	6	0.020	TC74647	107.78
5/8	5/8	3	6	0.030	TC74648	107.78
5/8	5/8	3	6	0.045	TC74649	107.78
5/8	5/8	3	6	0.060	TC74650	107.78
5/8	5/8	3	6	0.090	TC74651	107.78
3/4	3/4	3	6	0.015	TC74652	147.89
3/4	3/4	3	6	0.020	TC74653	147.89
3/4	3/4	3	6	0.030	TC74654	147.89
3/4	3/4	3	6	0.045	TC74655	147.89
3/4	3/4	3	6	0.060	TC74656	147.89
3/4	3/4	3	6	0.090	TC74657	147.89
3/4	3/4	3	6	0.125	TC74658	147.89
3/4	3/4	4	7	0.015	TC74659	242.89
3/4	3/4	4	7	0.020	TC74660	242.89
3/4	3/4	4	7	0.030	TC74661	242.89
3/4	3/4	4	7	0.045	TC74662	242.89
3/4	3/4	4	7	0.060	TC74663	242.89
3/4	3/4	4	7	0.090	TC74664	242.89
3/4	3/4	4	7	0.125	TC74665	242.89
1	1	3	6	0.015	TC74666	241.02
1	1	3	6	0.020	TC74667	241.02
1	1	3	6	0.030	TC74668	241.02
1	1	3	6	0.045	TC74669	241.02
1	1	3	6	0.060	TC74670	241.02
1	1	3	6	0.090	TC74671	241.02
1	1	3	6	0.125	TC74672	241.02
1	1	4	7	0.015	TC74673	347.45
1	1	4	7	0.020	TC74674	347.45
1	1	4	7	0.030	TC74675	347.45
1	1	4	7	0.045	TC74676	347.45
1	1	4	7	0.060	TC74677	347.45
1	1	4	7	0.090	TC74678	347.45
1	1	4	7	0.125	TC74679	347.45
-	-	-	-	-	-	-

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION SEE PAGES 184, 186-187.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.00, -0.02	-0.001, -0.004	+0.02, -0.02
5/8" - 1"	+0.00, -0.03	-0.001, -0.004	+0.02, -0.02

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION

# Solid Carbide Endmills

## REGULAR LENGTH - 4 FLUTE - SQUARE END - 30° HELIX



**SERIES 118**  
UNCOATED  
METRIC



**SERIES 119**  
ALTiN COATED  
METRIC

SIZE (mm)	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	ITEM#	PRICE
1.0	3	3	38	TC11859	8.39
1.5	3	4.2	38	TC11860	8.39
2.0	3	6	38	TC11861	8.39
2.5	3	8	38	TC11862	8.39
3.0	3	12	38	TC11863	8.39
3.5	4	12	50	TC11864	10.34
4.0	4	14	50	TC11865	10.34
4.5	6	16	50	TC11866	12.64
5.0	6	16	50	TC11867	12.64
6.0	6	19	50	TC11868	13.21
7.0	8	19	63	TC11869	14.37
8.0	8	20	63	TC11870	14.94
9.0	10	22	75	TC11871	21.83
10.0	10	22	75	TC11872	27.58
11.0	12	25	75	TC11873	30.45
12.0	12	25	75	TC11874	31.59
14.0	14	32	89	TC11875	53.44
16.0	16	32	89	TC11876	60.90
18.0	18	38	100	TC11877	83.32
20.0	20	38	100	TC11878	132.16
25.0	25	38	100	TC11879	172.38

NOTE: ALL DIMENSIONS IN TABLE ARE METRIC (mm)

SIZE (mm)	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	ITEM#	PRICE
1.0	3	3	38	TC11959	10.48
1.5	3	4.2	38	TC11960	10.48
2.0	3	6	38	TC11961	10.48
2.5	3	8	38	TC11962	10.48
3.0	3	12	38	TC11963	10.48
3.5	4	12	50	TC11964	12.93
4.0	4	14	50	TC11965	12.93
4.5	6	16	50	TC11966	15.80
5.0	6	16	50	TC11967	15.80
6.0	6	19	50	TC11968	16.52
7.0	8	19	63	TC11969	17.96
8.0	8	20	63	TC11970	18.68
9.0	10	22	75	TC11971	27.28
10.0	10	22	75	TC11972	34.47
11.0	12	25	75	TC11973	38.07
12.0	12	25	75	TC11974	39.51
14.0	14	32	89	TC11975	66.81
16.0	16	32	89	TC11976	76.14
18.0	18	38	100	TC11977	104.15
20.0	20	38	100	TC11978	165.19
25.0	25	38	100	TC11979	215.48

NOTE: ALL DIMENSIONS IN TABLE ARE METRIC (mm)

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION SEE PAGES 184, 186-187.

TOLERANCES	DIAMETER	SHANK
ALL SIZES	+0.00mm, -0.05mm	-0.0025, -0.01mm

CARBIDE ENDMILLS



# Solid Carbide Endmills

## STUB LENGTH - 2 FLUTE - 30° HELIX



**SERIES 102**  
SQUARE END - UNCOATED



**SERIES 103**  
BALL NOSE - UNCOATED



**SERIES 112**  
SQUARE END - ALTIN COATED



**SERIES 113**  
BALL NOSE - ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	SQUARE END UNCOATED	PRICE	SQUARE END ALTIN	PRICE	BALL NOSE UNCOATED	PRICE	BALL NOSE ALTIN	PRICE
1/64	1/8	0.023	1-1/2	TC10201	9.66	TC11201	12.06	TC10301	12.05	TC11301	15.07
1/32	1/8	1/16	1-1/2	TC10202	5.95	TC11202	7.71	TC10302	7.74	TC11302	9.90
3/64	1/8	3/32	1-1/2	TC10203	5.95	TC11203	7.71	TC10303	7.74	TC11303	9.90
1/16	1/8	1/8	1-1/2	TC10204	4.45	TC11204	5.81	TC10304	5.82	TC11304	7.45
5/64	1/8	1/8	1-1/2	TC10205	7.52	TC11205	9.41	TC10305	9.42	TC11305	11.77
3/32	1/8	3/16	1-1/2	TC10206	4.45	TC11206	5.81	TC10306	5.82	TC11306	7.45
1/8	1/8	1/4	1-1/2	TC10208	4.25	TC11208	5.55	TC10308	5.52	TC11308	7.07
5/32	3/16	5/16	2	TC10210	7.07	TC11210	8.74	TC10310	9.19	TC11310	11.77
3/16	3/16	3/8	2	TC10212	6.64	TC11212	8.24	TC10312	8.62	TC11312	11.03
7/32	1/4	7/16	2	TC10214	8.93	TC11214	11.08	TC10314	11.59	TC11314	14.83
1/4	1/4	1/2	2	TC10216	7.83	TC11216	9.73	TC10316	10.15	TC11316	12.99
5/16	5/16	1/2	2	TC10220	10.58	TC11220	13.77	TC10320	13.73	TC11320	17.58
3/8	3/8	5/8	2	TC10224	13.66	TC11224	16.92	TC10324	17.73	TC11324	21.63
7/16	7/16	5/8	2-1/2	TC10228	17.04	TC11228	21.15	TC10328	22.19	TC11328	27.05
1/2	1/2	5/8	2-1/2	TC10232	21.52	TC11232	26.73	TC10332	27.95	TC11332	35.77
5/8	5/8	3/4	3	TC10240	45.56	TC11240	53.83	TC10340	53.38	TC11340	65.35
3/4	3/4	1	3	TC10248	63.78	TC11248	78.92	TC10348	81.16	TC11348	103.89

## STUB LENGTH - 4 FLUTE - 30° HELIX



**SERIES 106**  
SQUARE END - UNCOATED



**SERIES 107**  
BALL NOSE - UNCOATED



**SERIES 109**  
SQUARE END - ALTIN COATED



**SERIES 117**  
BALL NOSE - ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	SQUARE END UNCOATED	PRICE	SQUARE END ALTIN	PRICE	BALL NOSE UNCOATED	PRICE	BALL NOSE ALTIN	PRICE
1/64	1/8	0.023	1-1/2	TC10601	9.66	TC10901	12.06	TC10701	12.05	TC11701	15.07
1/32	1/8	1/16	1-1/2	TC10602	5.95	TC10902	7.71	TC10702	7.74	TC11702	9.90
3/64	1/8	3/32	1-1/2	TC10603	5.95	TC10903	7.71	TC10703	7.74	TC11703	9.90
1/16	1/8	1/8	1-1/2	TC10604	4.45	TC10904	5.81	TC10704	5.82	TC11704	7.45
5/64	1/8	1/8	1-1/2	TC10605	7.52	TC10905	9.41	TC10705	9.42	TC11705	11.77
3/32	1/8	3/16	1-1/2	TC10606	4.45	TC10906	5.81	TC10706	5.82	TC11706	7.45
1/8	1/8	1/4	1-1/2	TC10608	4.25	TC10908	5.55	TC10708	5.52	TC11708	7.07
5/32	3/16	5/16	2	TC10610	7.07	TC10910	8.74	TC10710	9.19	TC11710	11.77
3/16	3/16	3/8	2	TC10612	6.64	TC10912	8.24	TC10712	8.62	TC11712	11.03
7/32	1/4	7/16	2	TC10614	8.93	TC10914	11.08	TC10714	11.59	TC11714	14.83
1/4	1/4	1/2	2	TC10616	7.83	TC10916	9.73	TC10716	10.15	TC11716	12.99
5/16	5/16	1/2	2	TC10620	10.58	TC10920	13.77	TC10720	13.73	TC11720	17.58
3/8	3/8	5/8	2	TC10624	13.66	TC10924	16.92	TC10724	17.73	TC11724	21.63
7/16	7/16	5/8	2-1/2	TC10628	17.04	TC10928	21.15	TC10728	22.19	TC11728	27.05
1/2	1/2	5/8	2-1/2	TC10632	21.52	TC10932	26.81	TC10732	27.95	TC11732	35.77
5/8	5/8	3/4	3	TC10640	45.56	TC10940	53.84	TC10740	53.38	TC11740	65.35
3/4	3/4	1	3	TC10648	63.78	TC10948	78.92	TC10748	81.16	TC11748	103.89

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION SEE PAGES 184, 186-187.

TOLERANCES	DIAMETER	SHANK
1/64" - 1/2"	+0.00, -0.002	-0.001, -0.004
5/8" - 3/4"	+0.00, -0.003	-0.001, -0.004

CARBIDE ENDMILLS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# Solid Carbide Endmills

## DOUBLE END - STUB LENGTH - 2 FLUTE - 30° HELIX



**SERIES 140**  
SQUARE END - UNCOATED



**SERIES 141**  
BALL NOSE - UNCOATED



**SERIES 148**  
SQUARE END - ALTIN COATED



**SERIES 142**  
BALL NOSE - ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	SQUARE END UNCOATED	PRICE	SQUARE END ALTIN	PRICE	BALL NOSE UNCOATED	PRICE	BALL NOSE ALTIN	PRICE
1/16	1/8	1/8	1-1/2	TC14004	8.49	TC14804	11.47	TC14104	10.62	TC14204	14.34
3/32	1/8	3/16	1-1/2	TC14006	8.74	TC14806	11.81	TC14106	10.92	TC14206	14.76
1/8	1/8	1/4	1-1/2	TC14008	7.06	TC14808	9.52	TC14108	8.82	TC14208	11.91
5/32	3/16	5/16	2	TC14010	9.92	TC14810	12.82	TC14110	12.40	TC14210	16.01
3/16	3/16	3/8	2	TC14012	9.92	TC14812	12.82	TC14112	12.40	TC14212	16.01
7/32	1/4	1/2	2-1/2	TC14014	13.61	TC14814	17.59	TC14114	16.28	TC14214	21.97
1/4	1/4	1/2	2-1/2	TC14016	13.61	TC14816	17.59	TC14116	16.28	TC14216	21.97
5/16	5/16	1/2	2-1/2	TC14020	17.60	TC14820	21.61	TC14120	22.01	TC14220	27.00
3/8	3/8	9/16	2-1/2	TC14024	19.43	TC14824	23.83	TC14124	24.28	TC14224	29.79
7/16	7/16	9/16	2-3/4	TC14028	27.45	TC14828	33.69	TC14128	34.31	TC14228	42.12
1/2	1/2	5/8	3	TC14032	33.60	TC14832	45.35	TC14132	41.99	TC14232	56.70

## DOUBLE END - STUB LENGTH - 4 FLUTE - 30° HELIX



**SERIES 145**  
SQUARE END - UNCOATED



**SERIES 146**  
BALL NOSE - UNCOATED



**SERIES 149**  
SQUARE END - ALTIN COATED



**SERIES 147**  
BALL NOSE - ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	SQUARE END UNCOATED	PRICE	SQUARE END ALTIN	PRICE	BALL NOSE UNCOATED	PRICE	BALL NOSE ALTIN	PRICE
1/16	1/8	1/8	1-1/2	TC14504	8.49	TC14904	11.47	TC14604	10.62	TC14704	14.34
3/32	1/8	3/16	1-1/2	TC14506	8.74	TC14906	11.81	TC14606	10.92	TC14706	14.76
1/8	1/8	1/4	1-1/2	TC14508	7.06	TC14908	9.52	TC14608	8.82	TC14708	11.91
5/32	3/16	5/16	2	TC14510	9.92	TC14910	12.82	TC14610	12.40	TC14710	16.01
3/16	3/16	3/8	2	TC14512	9.92	TC14912	12.82	TC14612	12.40	TC14712	16.01
7/32	1/4	1/2	2-1/2	TC14514	13.61	TC14914	17.59	TC14614	16.28	TC14714	21.97
1/4	1/4	1/2	2-1/2	TC14516	13.61	TC14916	17.59	TC14616	16.28	TC14716	21.97
5/16	5/16	1/2	2-1/2	TC14520	17.60	TC14920	21.61	TC14620	22.01	TC14720	27.00
3/8	3/8	9/16	2-1/2	TC14524	19.43	TC14924	23.83	TC14624	24.28	TC14724	29.79
7/16	7/16	9/16	2-3/4	TC14528	27.45	TC14928	33.69	TC14628	34.31	TC14728	42.12
1/2	1/2	5/8	3	TC14532	33.60	TC14932	45.35	TC14632	41.99	TC14732	56.70

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION SEE PAGES 184, 186-187.

TOLERANCES	DIAMETER	SHANK
ALL SIZES	+ .000, -.002	-.0001, -.0004



# Solid Carbide Endmills

## DOUBLE END - REGULAR LENGTH - 2 FLUTE - 30° HELIX



**SERIES 120**  
SQUARE END - UNCOATED



**SERIES 130**  
BALL NOSE - UNCOATED



**SERIES 121**  
SQUARE END - ALTIN COATED



**SERIES 131**  
BALL NOSE - ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	SQUARE END UNCOATED	PRICE	SQUARE END ALTIN	PRICE	BALL NOSE UNCOATED	PRICE	BALL NOSE ALTIN	PRICE
1/8	3/8	3/8	3-1/8	TC12008	31.07	TC12108	41.02	TC13008	35.33	TC13108	46.13
5/32	3/8	7/16	3-1/4	TC12010	33.53	TC12110	39.72	TC13010	35.33	TC13110	46.13
3/16	3/8	1/2	3-1/4	TC12012	31.07	TC12112	39.72	TC13012	35.33	TC13112	46.13
7/32	3/8	9/16	3-1/2	TC12014	31.57	TC12114	41.98	TC13014	35.81	TC13114	46.13
1/4	3/8	5/8	3-1/2	TC12016	31.57	TC12116	40.86	TC13016	35.81	TC13116	46.13
9/32	3/8	11/16	3-1/2	TC12018	33.36	TC12118	45.05	TC13018	39.24	TC13118	52.98
5/16	3/8	3/4	3-1/2	TC12020	33.36	TC12120	45.05	TC13020	39.24	TC13120	52.98
11/32	3/8	3/4	3-1/2	TC12022	33.36	TC12122	45.05	TC13022	39.24	TC13122	52.98
3/8	3/8	3/4	3-1/2	TC12024	33.36	TC12124	45.05	TC13024	39.24	TC13124	52.98
7/16	1/2	7/8	4	TC12028	49.63	TC12128	67.02	TC13028	56.79	TC13128	72.10
1/2	1/2	1	4	TC12032	55.76	TC12132	75.27	TC13032	58.06	TC13132	78.38

NOTE: ALL TOOLS WITH WELDON FLATS

## DOUBLE END - REGULAR LENGTH - 4 FLUTE - 30° HELIX



**SERIES 125**  
SQUARE END - UNCOATED



**SERIES 135**  
BALL NOSE - UNCOATED



**SERIES 126**  
SQUARE END - ALTIN COATED



**SERIES 136**  
BALL NOSE - ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	SQUARE END UNCOATED	PRICE	SQUARE END ALTIN	PRICE	BALL NOSE UNCOATED	PRICE	BALL NOSE ALTIN	PRICE
1/8	3/8	3/8	3-1/8	TC12508	31.07	TC12608	38.79	TC13508	35.33	TC13608	46.13
5/32	3/8	7/16	3-1/4	TC12510	31.07	TC12610	37.55	TC13510	35.33	TC13610	46.13
3/16	3/8	1/2	3-1/4	TC12512	31.07	TC12612	37.55	TC13512	35.33	TC13612	46.13
7/32	3/8	9/16	3-1/2	TC12514	31.57	TC12614	39.68	TC13514	35.81	TC13614	46.13
1/4	3/8	5/8	3-1/2	TC12516	31.57	TC12616	38.63	TC13516	35.81	TC13616	46.13
9/32	3/8	11/16	3-1/2	TC12518	31.55	TC12618	42.59	TC13518	39.24	TC13618	52.98
5/16	3/8	3/4	3-1/2	TC12520	31.55	TC12620	42.59	TC13520	39.24	TC13620	52.98
11/32	3/8	3/4	3-1/2	TC12522	31.55	TC12622	42.59	TC13522	39.24	TC13622	52.98
3/8	3/8	3/4	3-1/2	TC12524	31.55	TC12624	42.59	TC13524	39.24	TC13624	52.98
7/16	1/2	7/8	4	TC12528	46.93	TC12628	63.36	TC13528	56.79	TC13628	72.10
1/2	1/2	1	4	TC12532	52.72	TC12632	71.18	TC13532	58.06	TC13632	78.38

NOTE: ALL TOOLS WITH WELDON FLATS

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION SEE PAGES 184, 186-187.

TOLERANCES	DIAMETER	SHANK
ALL SIZES	+0.00, -0.02	-.0001, -.0004

CARBIDE ENDMILLS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
HSS & COBALT DRILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# Solid Carbide Micro Endmills

## 2 FLUTE - 30° HELIX



**SERIES 560**  
SQUARE END - UNCOATED



**SERIES 570**  
BALL NOSE - UNCOATED



**SERIES 562**  
SQUARE END - ALTIN COATED



**SERIES 572**  
BALL NOSE - ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	SQUARE END UNCOATED	PRICE	SQUARE END ALTIN	PRICE	BALL NOSE UNCOATED	PRICE	BALL NOSE ALTIN	PRICE
0.005	0.125	0.015	1-1/2	TC56005	21.08	TC56205	25.29	TC57005	26.35	TC57205	31.62
0.006	0.125	0.018	1-1/2	TC56006	21.08	TC56206	25.29	TC57006	26.35	TC57206	31.62
0.007	0.125	0.021	1-1/2	TC56007	21.08	TC56207	25.29	TC57007	26.35	TC57207	31.62
0.008	0.125	0.024	1-1/2	TC56008	21.08	TC56208	25.29	TC57008	26.35	TC57208	31.62
0.009	0.125	0.027	1-1/2	TC56009	18.89	TC56209	22.67	TC57009	23.63	TC57209	28.35
0.010	0.125	0.030	1-1/2	TC56010	18.89	TC56210	22.67	TC57010	23.63	TC57210	28.35
0.011	0.125	0.033	1-1/2	TC56011	16.91	TC56211	20.30	TC57011	21.14	TC57211	25.38
0.012	0.125	0.036	1-1/2	TC56012	16.91	TC56212	20.30	TC57012	21.14	TC57212	25.38
0.013	0.125	0.039	1-1/2	TC56013	13.99	TC56213	16.79	TC57013	17.51	TC57213	21.01
0.014	0.125	0.042	1-1/2	TC56014	13.99	TC56214	16.79	TC57014	17.51	TC57214	21.01
0.015	0.125	0.045	1-1/2	TC56015	11.83	TC56215	14.18	TC57015	14.78	TC57215	17.73
0.016	0.125	0.048	1-1/2	TC56016	11.83	TC56216	14.18	TC57016	14.78	TC57216	17.73
0.017	0.125	0.051	1-1/2	TC56017	11.83	TC56217	14.18	TC57017	14.78	TC57217	17.73
0.018	0.125	0.054	1-1/2	TC56018	11.83	TC56218	14.18	TC57018	14.78	TC57218	17.73
0.019	0.125	0.057	1-1/2	TC56019	11.83	TC56219	14.18	TC57019	14.78	TC57219	17.73
0.020	0.125	0.060	1-1/2	TC56020	10.75	TC56220	12.89	TC57020	13.44	TC57220	16.12
0.021	0.125	0.063	1-1/2	TC56021	10.75	TC56221	12.89	TC57021	13.44	TC57221	16.12
0.022	0.125	0.066	1-1/2	TC56022	10.75	TC56222	12.89	TC57022	13.44	TC57222	16.12
0.023	0.125	0.069	1-1/2	TC56023	10.75	TC56223	12.89	TC57023	13.44	TC57223	16.12
0.024	0.125	0.072	1-1/2	TC56024	10.75	TC56224	12.89	TC57024	13.44	TC57224	16.12
0.025	0.125	0.075	1-1/2	TC56025	10.75	TC56225	12.89	TC57025	13.44	TC57225	16.12
0.026	0.125	0.078	1-1/2	TC56026	10.08	TC56226	12.11	TC57026	12.61	TC57226	15.13
0.027	0.125	0.081	1-1/2	TC56027	10.08	TC56227	12.11	TC57027	12.61	TC57227	15.13
0.028	0.125	0.084	1-1/2	TC56028	10.08	TC56228	12.11	TC57028	12.61	TC57228	15.13
0.029	0.125	0.087	1-1/2	TC56029	10.08	TC56229	12.11	TC57029	12.61	TC57229	15.13
0.030	0.125	0.090	1-1/2	TC56030	10.08	TC56230	12.11	TC57030	12.61	TC57230	15.13
0.031	0.125	0.093	1-1/2	TC56031	9.45	TC56231	11.34	TC57031	11.83	TC57231	14.18
0.032	0.125	0.096	1-1/2	TC56032	9.45	TC56232	11.34	TC57032	11.83	TC57232	14.18
0.033	0.125	0.099	1-1/2	TC56033	9.45	TC56233	11.34	TC57033	11.83	TC57233	14.18
0.034	0.125	0.102	1-1/2	TC56034	9.45	TC56234	11.34	TC57034	11.83	TC57234	14.18
0.035	0.125	0.105	1-1/2	TC56035	9.45	TC56235	11.34	TC57035	11.83	TC57235	14.18
0.036	0.125	0.108	1-1/2	TC56036	9.45	TC56236	11.34	TC57036	11.83	TC57236	14.18
0.037	0.125	0.111	1-1/2	TC56037	9.45	TC56237	11.34	TC57037	11.83	TC57237	14.18
0.038	0.125	0.114	1-1/2	TC56038	9.45	TC56238	11.34	TC57038	11.83	TC57238	14.18
0.039	0.125	0.117	1-1/2	TC56039	9.45	TC56239	11.34	TC57039	11.83	TC57239	14.18
0.040	0.125	0.120	1-1/2	TC56040	9.45	TC56240	11.34	TC57040	11.83	TC57240	14.18
0.041	0.125	0.123	1-1/2	TC56041	9.45	TC56241	11.34	TC57041	11.83	TC57241	14.18
0.042	0.125	0.126	1-1/2	TC56042	9.45	TC56242	11.34	TC57042	11.83	TC57242	14.18
0.043	0.125	0.129	1-1/2	TC56043	9.45	TC56243	11.34	TC57043	11.83	TC57243	14.18
0.044	0.125	0.132	1-1/2	TC56044	9.22	TC56244	11.07	TC57044	11.53	TC57244	13.85
0.045	0.125	0.135	1-1/2	TC56045	9.22	TC56245	11.07	TC57045	11.53	TC57245	13.85
0.046	0.125	0.138	1-1/2	TC56046	9.22	TC56246	11.07	TC57046	11.53	TC57246	13.85
0.047	0.125	0.141	1-1/2	TC56047	9.22	TC56247	11.07	TC57047	11.53	TC57247	13.85
0.048	0.125	0.144	1-1/2	TC56048	9.22	TC56248	11.07	TC57048	11.53	TC57248	13.85
0.049	0.125	0.147	1-1/2	TC56049	9.22	TC56249	11.07	TC57049	11.53	TC57249	13.85
0.050	0.125	0.150	1-1/2	TC56050	9.22	TC56250	11.07	TC57050	11.53	TC57250	13.85
0.051	0.125	0.153	1-1/2	TC56051	9.22	TC56251	11.07	TC57051	11.53	TC57251	13.85
0.052	0.125	0.156	1-1/2	TC56052	9.22	TC56252	11.07	TC57052	11.53	TC57252	13.85
0.053	0.125	0.159	1-1/2	TC56053	9.22	TC56253	11.07	TC57053	11.53	TC57253	13.85
0.054	0.125	0.162	1-1/2	TC56054	9.22	TC56254	11.07	TC57054	11.53	TC57254	13.85
0.055	0.125	0.165	1-1/2	TC56055	9.22	TC56255	11.07	TC57055	11.53	TC57255	13.85
0.056	0.125	0.168	1-1/2	TC56056	9.22	TC56256	11.07	TC57056	11.53	TC57256	13.85
0.057	0.125	0.171	1-1/2	TC56057	9.22	TC56257	11.07	TC57057	11.53	TC57257	13.85
0.058	0.125	0.174	1-1/2	TC56058	9.22	TC56258	11.07	TC57058	11.53	TC57258	13.85

LENGTH OF CUT = 3 X DIAMETER. FOR COATING INFORMATION SEE PAGE 2. CONT ON NEXT PAGE

TOLERANCES	DIAMETER	SHANK
ALL SIZES	+0.005, -0.005	-0.001, -0.003

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE CHAMFER DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
HSS & COBALT TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# Solid Carbide Micro Endmills



## 2 FLUTE - 30° HELIX



**SERIES 560**  
SQUARE END - UNCOATED



**SERIES 570**  
BALL NOSE - UNCOATED



**SERIES 562**  
SQUARE END - ALTIN COATED



**SERIES 572**  
BALL NOSE - ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	SQUARE END UNCOATED	PRICE	SQUARE END ALTIN	PRICE	BALL NOSE UNCOATED	PRICE	BALL NOSE ALTIN	PRICE
0.059	0.125	0.177	1-1/2	TC56059	9.22	TC56259	11.07	TC57059	11.53	TC57259	13.85
0.060	0.125	0.180	1-1/2	TC56060	9.22	TC56260	11.07	TC57060	11.53	TC57260	13.85
0.061	0.125	0.183	1-1/2	TC56061	9.22	TC56261	11.07	TC57061	11.53	TC57261	13.85
0.062	0.125	0.186	1-1/2	TC56062	9.22	TC56262	11.07	TC57062	11.53	TC57262	13.85
0.063	0.125	0.189	1-1/2	TC56063	9.22	TC56263	11.07	TC57063	11.53	TC57263	13.85
0.064	0.125	0.192	1-1/2	TC56064	9.22	TC56264	11.07	TC57064	11.53	TC57264	13.85
0.065	0.125	0.195	1-1/2	TC56065	9.22	TC56265	11.07	TC57065	11.53	TC57265	13.85
0.066	0.125	0.198	1-1/2	TC56066	9.22	TC56266	11.07	TC57066	11.53	TC57266	13.85
0.067	0.125	0.201	1-1/2	TC56067	9.22	TC56267	11.07	TC57067	11.53	TC57267	13.85
0.068	0.125	0.204	1-1/2	TC56068	9.22	TC56268	11.07	TC57068	11.53	TC57268	13.85
0.069	0.125	0.207	1-1/2	TC56069	9.22	TC56269	11.07	TC57069	11.53	TC57269	13.85
0.070	0.125	0.210	1-1/2	TC56070	9.22	TC56270	11.07	TC57070	11.53	TC57270	13.85
0.071	0.125	0.213	1-1/2	TC56071	9.22	TC56271	11.07	TC57071	11.53	TC57271	13.85
0.072	0.125	0.216	1-1/2	TC56072	9.22	TC56272	11.07	TC57072	11.53	TC57272	13.85
0.073	0.125	0.219	1-1/2	TC56073	9.22	TC56273	11.07	TC57073	11.53	TC57273	13.85
0.074	0.125	0.222	1-1/2	TC56074	9.22	TC56274	11.07	TC57074	11.53	TC57274	13.85
0.075	0.125	0.225	1-1/2	TC56075	9.22	TC56275	11.07	TC57075	11.53	TC57275	13.85
0.076	0.125	0.228	1-1/2	TC56076	9.22	TC56276	11.07	TC57076	11.53	TC57276	13.85
0.077	0.125	0.231	1-1/2	TC56077	9.22	TC56277	11.07	TC57077	11.53	TC57277	13.85
0.078	0.125	0.234	1-1/2	TC56078	9.22	TC56278	11.07	TC57078	11.53	TC57278	13.85
0.079	0.125	0.237	1-1/2	TC56079	9.22	TC56279	11.07	TC57079	11.53	TC57279	13.85
0.080	0.125	0.240	1-1/2	TC56080	9.22	TC56280	11.07	TC57080	11.53	TC57280	13.85
0.081	0.125	0.243	1-1/2	TC56081	9.22	TC56281	11.07	TC57081	11.53	TC57281	13.85
0.082	0.125	0.246	1-1/2	TC56082	9.22	TC56282	11.07	TC57082	11.53	TC57282	13.85
0.083	0.125	0.249	1-1/2	TC56083	9.22	TC56283	11.07	TC57083	11.53	TC57283	13.85
0.084	0.125	0.252	1-1/2	TC56084	9.22	TC56284	11.07	TC57084	11.53	TC57284	13.85
0.085	0.125	0.255	1-1/2	TC56085	9.22	TC56285	11.07	TC57085	11.53	TC57285	13.85
0.086	0.125	0.258	1-1/2	TC56086	9.22	TC56286	11.07	TC57086	11.53	TC57286	13.85
0.087	0.125	0.261	1-1/2	TC56087	9.22	TC56287	11.07	TC57087	11.53	TC57287	13.85
0.088	0.125	0.264	1-1/2	TC56088	9.22	TC56288	11.07	TC57088	11.53	TC57288	13.85
0.089	0.125	0.267	1-1/2	TC56089	9.22	TC56289	11.07	TC57089	11.53	TC57289	13.85
0.090	0.125	0.270	1-1/2	TC56090	9.22	TC56290	11.07	TC57090	11.53	TC57290	13.85
0.091	0.125	0.273	1-1/2	TC56091	9.22	TC56291	11.07	TC57091	11.53	TC57291	13.85
0.092	0.125	0.276	1-1/2	TC56092	9.22	TC56292	11.07	TC57092	11.53	TC57292	13.85
0.093	0.125	0.279	1-1/2	TC56093	9.22	TC56293	11.07	TC57093	11.53	TC57293	13.85
0.094	0.125	0.282	1-1/2	TC56094	9.22	TC56294	11.07	TC57094	11.53	TC57294	13.85
0.095	0.125	0.285	1-1/2	TC56095	9.22	TC56295	11.07	TC57095	11.53	TC57295	13.85
0.096	0.125	0.288	1-1/2	TC56096	9.22	TC56296	11.07	TC57096	11.53	TC57296	13.85
0.097	0.125	0.291	1-1/2	TC56097	9.22	TC56297	11.07	TC57097	11.53	TC57297	13.85
0.098	0.125	0.294	1-1/2	TC56098	9.22	TC56298	11.07	TC57098	11.53	TC57298	13.85
0.099	0.125	0.297	1-1/2	TC56099	9.22	TC56299	11.07	TC57099	11.53	TC57299	13.85
0.100	0.125	0.300	1-1/2	TC56100	9.22	TC56300	11.07	TC57100	11.53	TC57300	13.85
0.101	0.125	0.303	1-1/2	TC56101	9.22	TC56301	11.07	TC57101	11.53	TC57301	13.85
0.102	0.125	0.306	1-1/2	TC56102	9.22	TC56302	11.07	TC57102	11.53	TC57302	13.85
0.103	0.125	0.309	1-1/2	TC56103	9.22	TC56303	11.07	TC57103	11.53	TC57303	13.85
0.104	0.125	0.312	1-1/2	TC56104	9.22	TC56304	11.07	TC57104	11.53	TC57304	13.85
0.105	0.125	0.315	1-1/2	TC56105	9.22	TC56305	11.07	TC57105	11.53	TC57305	13.85
0.106	0.125	0.318	1-1/2	TC56106	9.22	TC56306	11.07	TC57106	11.53	TC57306	13.85
0.107	0.125	0.321	1-1/2	TC56107	9.22	TC56307	11.07	TC57107	11.53	TC57307	13.85
0.108	0.125	0.324	1-1/2	TC56108	9.22	TC56308	11.07	TC57108	11.53	TC57308	13.85
0.109	0.125	0.327	1-1/2	TC56109	9.22	TC56309	11.07	TC57109	11.53	TC57309	13.85
0.110	0.125	0.330	1-1/2	TC56110	9.22	TC56310	11.07	TC57110	11.53	TC57310	13.85
0.115	0.125	0.345	1-1/2	TC56115	9.22	TC56315	11.07	TC57115	11.53	TC57315	13.85
0.120	0.125	0.360	1-1/2	TC56120	9.22	TC56320	11.07	TC57120	11.53	TC57320	13.85

LENGTH OF CUT = 3 X DIAMETER. FOR COATING INFORMATION SEE PAGE 2.

TOLERANCES	DIAMETER	SHANK
ALL SIZES	+.0005, -.0005	-.0001, -.0003

CARBIDE MICRO ENDMILLS





# Solid Carbide Micro Endmills

## 4 FLUTE - 30° HELIX



**SERIES 580**  
SQUARE END - UNCOATED



**SERIES 590**  
BALL NOSE - UNCOATED



**SERIES 582**  
SQUARE END - ALTIN COATED



**SERIES 592**  
BALL NOSE - ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	SQUARE END UNCOATED	PRICE	SQUARE END ALTIN	PRICE	BALL NOSE UNCOATED	PRICE	BALL NOSE ALTIN	PRICE
0.010	0.125	0.030	1-1/2	TC58010	18.89	TC58210	22.67	TC59010	23.63	TC59210	28.35
0.011	0.125	0.033	1-1/2	TC58011	16.91	TC58211	20.30	TC59011	21.14	TC59211	25.38
0.012	0.125	0.036	1-1/2	TC58012	16.91	TC58212	20.30	TC59012	21.14	TC59212	25.38
0.013	0.125	0.039	1-1/2	TC58013	13.99	TC58213	16.79	TC59013	17.51	TC59213	21.01
0.014	0.125	0.042	1-1/2	TC58014	13.99	TC58214	16.79	TC59014	17.51	TC59214	21.01
0.015	0.125	0.045	1-1/2	TC58015	11.83	TC58215	14.18	TC59015	14.78	TC59215	17.73
0.016	0.125	0.048	1-1/2	TC58016	11.83	TC58216	14.18	TC59016	14.78	TC59216	17.73
0.017	0.125	0.051	1-1/2	TC58017	11.83	TC58217	14.18	TC59017	14.78	TC59217	17.73
0.018	0.125	0.054	1-1/2	TC58018	11.83	TC58218	14.18	TC59018	14.78	TC59218	17.73
0.019	0.125	0.057	1-1/2	TC58019	11.83	TC58219	14.18	TC59019	14.78	TC59219	17.73
0.020	0.125	0.060	1-1/2	TC58020	10.75	TC58220	12.89	TC59020	13.44	TC59220	16.12
0.021	0.125	0.063	1-1/2	TC58021	10.75	TC58221	12.89	TC59021	13.44	TC59221	16.12
0.022	0.125	0.066	1-1/2	TC58022	10.75	TC58222	12.89	TC59022	13.44	TC59222	16.12
0.023	0.125	0.069	1-1/2	TC58023	10.75	TC58223	12.89	TC59023	13.44	TC59223	16.12
0.024	0.125	0.072	1-1/2	TC58024	10.75	TC58224	12.89	TC59024	13.44	TC59224	16.12
0.025	0.125	0.075	1-1/2	TC58025	10.75	TC58225	12.89	TC59025	13.44	TC59225	16.12
0.026	0.125	0.078	1-1/2	TC58026	10.08	TC58226	12.11	TC59026	12.61	TC59226	15.13
0.027	0.125	0.081	1-1/2	TC58027	10.08	TC58227	12.11	TC59027	12.61	TC59227	15.13
0.028	0.125	0.084	1-1/2	TC58028	10.08	TC58228	12.11	TC59028	12.61	TC59228	15.13
0.029	0.125	0.087	1-1/2	TC58029	10.08	TC58229	12.11	TC59029	12.61	TC59229	15.13
0.030	0.125	0.090	1-1/2	TC58030	10.08	TC58230	12.11	TC59030	12.61	TC59230	15.13
0.031	0.125	0.093	1-1/2	TC58031	9.45	TC58231	11.34	TC59031	11.83	TC59231	14.18
0.032	0.125	0.096	1-1/2	TC58032	9.45	TC58232	11.34	TC59032	11.83	TC59232	14.18
0.033	0.125	0.099	1-1/2	TC58033	9.45	TC58233	11.34	TC59033	11.83	TC59233	14.18
0.034	0.125	0.102	1-1/2	TC58034	9.45	TC58234	11.34	TC59034	11.83	TC59234	14.18
0.035	0.125	0.105	1-1/2	TC58035	9.45	TC58235	11.34	TC59035	11.83	TC59235	14.18
0.036	0.125	0.108	1-1/2	TC58036	9.45	TC58236	11.34	TC59036	11.83	TC59236	14.18
0.037	0.125	0.111	1-1/2	TC58037	9.45	TC58237	11.34	TC59037	11.83	TC59237	14.18
0.038	0.125	0.114	1-1/2	TC58038	9.45	TC58238	11.34	TC59038	11.83	TC59238	14.18
0.039	0.125	0.117	1-1/2	TC58039	9.45	TC58239	11.34	TC59039	11.83	TC59239	14.18
0.040	0.125	0.120	1-1/2	TC58040	9.45	TC58240	11.34	TC59040	11.83	TC59240	14.18
0.041	0.125	0.123	1-1/2	TC58041	9.45	TC58241	11.34	TC59041	11.83	TC59241	14.18
0.042	0.125	0.126	1-1/2	TC58042	9.45	TC58242	11.34	TC59042	11.83	TC59242	14.18
0.043	0.125	0.129	1-1/2	TC58043	9.45	TC58243	11.34	TC59043	11.83	TC59243	14.18
0.044	0.125	0.132	1-1/2	TC58044	9.22	TC58244	11.07	TC59044	11.53	TC59244	13.85
0.045	0.125	0.135	1-1/2	TC58045	9.22	TC58245	11.07	TC59045	11.53	TC59245	13.85
0.046	0.125	0.138	1-1/2	TC58046	9.22	TC58246	11.07	TC59046	11.53	TC59246	13.85
0.047	0.125	0.141	1-1/2	TC58047	9.22	TC58247	11.07	TC59047	11.53	TC59247	13.85
0.048	0.125	0.144	1-1/2	TC58048	9.22	TC58248	11.07	TC59048	11.53	TC59248	13.85
0.049	0.125	0.147	1-1/2	TC58049	9.22	TC58249	11.07	TC59049	11.53	TC59249	13.85
0.050	0.125	0.150	1-1/2	TC58050	9.22	TC58250	11.07	TC59050	11.53	TC59250	13.85
0.051	0.125	0.153	1-1/2	TC58051	9.22	TC58251	11.07	TC59051	11.53	TC59251	13.85
0.052	0.125	0.156	1-1/2	TC58052	9.22	TC58252	11.07	TC59052	11.53	TC59252	13.85
0.053	0.125	0.159	1-1/2	TC58053	9.22	TC58253	11.07	TC59053	11.53	TC59253	13.85
0.054	0.125	0.162	1-1/2	TC58054	9.22	TC58254	11.07	TC59054	11.53	TC59254	13.85
0.055	0.125	0.165	1-1/2	TC58055	9.22	TC58255	11.07	TC59055	11.53	TC59255	13.85
0.056	0.125	0.168	1-1/2	TC58056	9.22	TC58256	11.07	TC59056	11.53	TC59256	13.85
0.057	0.125	0.171	1-1/2	TC58057	9.22	TC58257	11.07	TC59057	11.53	TC59257	13.85
0.058	0.125	0.174	1-1/2	TC58058	9.22	TC58258	11.07	TC59058	11.53	TC59258	13.85

CONTINUED ON NEXT PAGE

LENGTH OF CUT = 3 X DIAMETER  
FOR COATING INFORMATION SEE PAGE 2.

TOLERANCES	DIAMETER	SHANK
ALL SIZES	+ .0005, -.0005	-.0001, -.0003

CARBIDE ENDMILLS  
 CARBIDE MICRO ENDMILLS  
 CARBIDE THREADMILLS  
 CARBIDE DRILL MILLS  
 CARBIDE CHAMFER MILLS  
 CARBIDE DRILLS  
 CARBIDE REAMERS  
 CARBIDE BURS  
 COUNTERSINKS  
 HSS & COBALT ENDMILLS  
 TAPS & DIES  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION





# Solid Carbide Micro Endmills

## 2 FLUTE - STUB FLUTE - 30° HELIX



**SERIES 520**  
SQUARE END - UNCOATED



**SERIES 530**  
BALL NOSE - UNCOATED



**SERIES 522**  
SQUARE END - ALTiN COATED



**SERIES 532**  
BALL NOSE - ALTiN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	SQUARE END UNCOATED	PRICE	SQUARE END ALTiN	PRICE	BALL NOSE UNCOATED	PRICE	BALL NOSE ALTiN	PRICE
0.005	0.125	0.008	1-1/2	TC52005	24.24	TC52205	29.09	TC53005	30.29	TC53205	36.36
0.010	0.125	0.015	1-1/2	TC52010	21.73	TC52210	26.07	TC53010	27.16	TC53210	32.58
0.015	0.125	0.023	1-1/2	TC52015	13.59	TC52215	16.32	TC53015	17.00	TC53215	20.39
0.020	0.125	0.030	1-1/2	TC52020	12.36	TC52220	14.83	TC53020	15.45	TC53220	18.54
0.025	0.125	0.038	1-1/2	TC52025	12.36	TC52225	14.83	TC53025	15.45	TC53225	18.54
0.030	0.125	0.045	1-1/2	TC52030	11.60	TC52230	13.92	TC53030	14.49	TC53230	17.39
0.031	0.125	0.047	1-1/2	TC52031	10.87	TC52231	13.03	TC53031	13.59	TC53231	16.32
0.035	0.125	0.053	1-1/2	TC52035	10.87	TC52235	13.03	TC53035	13.59	TC53235	16.32
0.040	0.125	0.060	1-1/2	TC52040	10.87	TC52240	13.03	TC53040	13.59	TC53240	16.32
0.045	0.125	0.068	1-1/2	TC52045	10.61	TC52245	12.73	TC53045	13.26	TC53245	15.93
0.047	0.125	0.071	1-1/2	TC52047	10.61	TC52247	12.73	TC53047	13.26	TC53247	15.93
0.050	0.125	0.075	1-1/2	TC52050	10.61	TC52250	12.73	TC53050	13.26	TC53250	15.93
0.055	0.125	0.083	1-1/2	TC52055	10.61	TC52255	12.73	TC53055	13.26	TC53255	15.93
0.060	0.125	0.090	1-1/2	TC52060	10.61	TC52260	12.73	TC53060	13.26	TC53260	15.93
0.062	0.125	0.093	1-1/2	TC52062	10.61	TC52262	12.73	TC53062	13.26	TC53262	15.93
0.065	0.125	0.098	1-1/2	TC52065	10.61	TC52265	12.73	TC53065	13.26	TC53265	15.93
0.070	0.125	0.105	1-1/2	TC52070	10.61	TC52270	12.73	TC53070	13.26	TC53270	15.93
0.075	0.125	0.113	1-1/2	TC52075	10.61	TC52275	12.73	TC53075	13.26	TC53275	15.93
0.078	0.125	0.117	1-1/2	TC52078	10.61	TC52278	12.73	TC53078	13.26	TC53278	15.93
0.080	0.125	0.120	1-1/2	TC52080	10.61	TC52280	12.73	TC53080	13.26	TC53280	15.93
0.085	0.125	0.128	1-1/2	TC52085	10.61	TC52285	12.73	TC53085	13.26	TC53285	15.93
0.090	0.125	0.135	1-1/2	TC52090	10.61	TC52290	12.73	TC53090	13.26	TC53290	15.93
0.093	0.125	0.140	1-1/2	TC52093	10.61	TC52293	12.73	TC53093	13.26	TC53293	15.93
0.095	0.125	0.143	1-1/2	TC52095	10.61	TC52295	12.73	TC53095	13.26	TC53295	15.93
0.100	0.125	0.150	1-1/2	TC52100	10.61	TC52300	12.73	TC53100	13.26	TC53300	15.93

LENGTH OF CUT = 1.5 X DIAMETER  
FOR COATING INFORMATION SEE PAGE 2.

TOLERANCES	DIAMETER	SHANK
ALL SIZES	+0.005, -0.005	-0.001, -0.003

CARBIDE MICRO ENDMILLS



# Solid Carbide Micro Endmills



## 4 FLUTE - STUB FLUTE - 30° HELIX



**SERIES 540**  
SQUARE END - UNCOATED



**SERIES 551**  
BALL NOSE - UNCOATED



**SERIES 542**  
SQUARE END - ALTiN COATED



**SERIES 552**  
BALL NOSE - ALTiN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	SQUARE END UNCOATED	PRICE	SQUARE END ALTiN	PRICE	BALL NOSE UNCOATED	PRICE	BALL NOSE ALTiN	PRICE
0.010	0.125	0.015	1-1/2	TC54010	21.73	TC54210	26.07	TC55010	23.63	TC55210	32.58
0.015	0.125	0.023	1-1/2	TC54015	13.59	TC54215	16.32	TC55015	14.78	TC55215	20.39
0.020	0.125	0.030	1-1/2	TC54020	12.36	TC54220	14.83	TC55020	13.44	TC55220	18.54
0.025	0.125	0.038	1-1/2	TC54025	12.36	TC54225	14.83	TC55025	13.44	TC55225	18.54
0.030	0.125	0.045	1-1/2	TC54030	11.60	TC54230	13.92	TC55030	12.61	TC55230	17.39
0.031	0.125	0.047	1-1/2	TC54031	10.87	TC54231	13.03	TC55031	11.83	TC55231	16.32
0.035	0.125	0.053	1-1/2	TC54035	10.87	TC54235	13.03	TC55035	11.83	TC55235	16.32
0.040	0.125	0.060	1-1/2	TC54040	10.87	TC54240	13.03	TC55040	11.83	TC55240	16.32
0.045	0.125	0.068	1-1/2	TC54045	10.61	TC54245	12.73	TC55045	11.53	TC55245	15.93
0.047	0.125	0.071	1-1/2	TC54047	10.61	TC54247	12.73	TC55047	11.53	TC55247	15.93
0.050	0.125	0.075	1-1/2	TC54050	10.61	TC54250	12.73	TC55050	11.53	TC55250	15.93
0.055	0.125	0.083	1-1/2	TC54055	10.61	TC54255	12.73	TC55055	11.53	TC55255	15.93
0.060	0.125	0.090	1-1/2	TC54060	10.61	TC54260	12.73	TC55060	11.53	TC55260	15.93
0.062	0.125	0.093	1-1/2	TC54062	10.61	TC54262	12.73	TC55062	11.53	TC55262	15.93
0.065	0.125	0.098	1-1/2	TC54065	10.61	TC54265	12.73	TC55065	11.53	TC55265	15.93
0.070	0.125	0.105	1-1/2	TC54070	10.61	TC54270	12.73	TC55070	11.53	TC55270	15.93
0.075	0.125	0.113	1-1/2	TC54075	10.61	TC54275	12.73	TC55075	11.53	TC55275	15.93
0.078	0.125	0.117	1-1/2	TC54078	10.61	TC54278	12.73	TC55078	11.53	TC55278	15.93
0.080	0.125	0.120	1-1/2	TC54080	10.61	TC54280	12.73	TC55080	11.53	TC55280	15.93
0.085	0.125	0.128	1-1/2	TC54085	10.61	TC54285	12.73	TC55085	11.53	TC55285	15.93
0.090	0.125	0.135	1-1/2	TC54090	10.61	TC54290	12.73	TC55090	11.53	TC55290	15.93
0.093	0.125	0.140	1-1/2	TC54093	10.61	TC54293	12.73	TC55093	11.53	TC55293	15.93
0.095	0.125	0.143	1-1/2	TC54095	10.61	TC54295	12.73	TC55095	11.53	TC55295	15.93
0.100	0.125	0.150	1-1/2	TC54100	10.61	TC54300	12.73	TC55100	11.53	TC55300	15.93

LENGTH OF CUT = 1.5 X DIAMETER  
FOR COATING INFORMATION SEE PAGE 2.

TOLERANCES	DIAMETER	SHANK
ALL SIZES	+0.005, -0.005	-0.001, -0.003

CARBIDE MICRO ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADED MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION





# Solid Carbide Micro Endmills

4 FLUTE - STUB FLUTE - CORNER RADIUS - 30° HELIX



**SERIES 502**  
UNCOATED



**SERIES 504**  
ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	UNCOATED PRICE	ALTIN PRICE
0.015	0.125	0.023	1-1/2	0.003	TC50203 28.75	TC50404 35.65
0.020	0.125	0.030	1-1/2	0.005	TC50205 26.84	TC50406 33.27
0.025	0.125	0.038	1-1/2	0.005	TC50207 26.84	TC50408 33.27
0.030	0.125	0.045	1-1/2	0.005	TC50209 19.17	TC50410 23.76
0.030	0.125	0.045	1-1/2	0.010	TC50211 19.17	TC50412 23.76
0.031	0.125	0.047	1-1/2	0.005	TC50213 19.17	TC50414 23.76
0.031	0.125	0.047	1-1/2	0.010	TC50215 19.17	TC50416 23.76
0.035	0.125	0.053	1-1/2	0.005	TC50217 19.17	TC50418 23.76
0.035	0.125	0.053	1-1/2	0.010	TC50219 19.17	TC50420 23.76
0.040	0.125	0.060	1-1/2	0.005	TC50221 19.17	TC50422 23.76
0.040	0.125	0.060	1-1/2	0.010	TC50223 19.17	TC50424 23.76
0.045	0.125	0.068	1-1/2	0.005	TC50225 19.17	TC50426 23.76
0.045	0.125	0.068	1-1/2	0.010	TC50227 19.17	TC50428 23.76
0.045	0.125	0.068	1-1/2	0.015	TC50229 19.17	TC50430 23.76
0.047	0.125	0.071	1-1/2	0.005	TC50231 19.17	TC50432 23.76
0.047	0.125	0.071	1-1/2	0.010	TC50233 19.17	TC50434 23.76
0.047	0.125	0.071	1-1/2	0.015	TC50235 19.17	TC50436 23.76
0.050	0.125	0.075	1-1/2	0.005	TC50237 19.17	TC50438 23.76
0.050	0.125	0.075	1-1/2	0.010	TC50239 19.17	TC50440 23.76
0.050	0.125	0.075	1-1/2	0.015	TC50241 19.17	TC50442 23.76
0.060	0.125	0.090	1-1/2	0.005	TC50249 19.17	TC50450 23.76
0.060	0.125	0.090	1-1/2	0.010	TC50251 19.17	TC50452 23.76
0.060	0.125	0.090	1-1/2	0.015	TC50253 19.17	TC50454 23.76
0.062	0.125	0.093	1-1/2	0.005	TC50255 19.17	TC50456 23.76
0.062	0.125	0.093	1-1/2	0.010	TC50257 19.17	TC50458 23.76
0.062	0.125	0.093	1-1/2	0.015	TC50259 19.17	TC50460 23.76
0.075	0.125	0.113	1-1/2	0.005	TC50273 19.17	TC50474 23.76
0.075	0.125	0.113	1-1/2	0.010	TC50275 19.17	TC50476 23.76
0.075	0.125	0.113	1-1/2	0.015	TC50277 19.17	TC50478 23.76
0.078	0.125	0.117	1-1/2	0.005	TC50279 19.17	TC50480 23.76
0.078	0.125	0.117	1-1/2	0.010	TC50281 19.17	TC50482 23.76
0.078	0.125	0.117	1-1/2	0.015	TC50283 19.17	TC50484 23.76
0.090	0.125	0.135	1-1/2	0.005	TC50297 19.17	TC50498 23.76
0.090	0.125	0.135	1-1/2	0.010	TC50299 19.17	TC50500 23.76
0.090	0.125	0.135	1-1/2	0.015	TC50301 19.17	TC50502 23.76
0.093	0.125	0.140	1-1/2	0.005	TC50303 19.17	TC50504 23.76
0.093	0.125	0.140	1-1/2	0.010	TC50305 19.17	TC50506 23.76
0.093	0.125	0.140	1-1/2	0.015	TC50307 19.17	TC50508 23.76
0.100	0.125	0.150	1-1/2	0.005	TC50315 19.17	TC50516 23.76
0.100	0.125	0.150	1-1/2	0.010	TC50317 19.17	TC50518 23.76
0.100	0.125	0.150	1-1/2	0.015	TC50319 19.17	TC50520 23.76

LENGTH OF CUT = 1.5 X DIAMETER  
FOR COATING INFORMATION SEE PAGE 2.

TOLERANCES	DIAMETER	SHANK	RADIUS
ALL SIZES	+ .0005, - .0005	- .0001, - .0003	+ .0003, - .0003

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION

CARBIDE MICRO ENDMILLS



# Solid Carbide Micro Endmills



4 FLUTE - CORNER RADIUS - 30° HELIX



**SERIES 506**  
UNCOATED



**SERIES 508**  
ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	UNCOATED	PRICE	ALTIN	PRICE
0.015	0.125	0.045	1-1/2	0.003	TC50603	28.75	TC50804	35.65
0.020	0.125	0.060	1-1/2	0.005	TC50605	26.84	TC50806	33.27
0.025	0.125	0.075	1-1/2	0.005	TC50607	26.84	TC50808	33.27
0.030	0.125	0.090	1-1/2	0.005	TC50609	19.17	TC50810	23.76
0.030	0.125	0.090	1-1/2	0.010	TC50611	19.17	TC50812	23.76
0.031	0.125	0.093	1-1/2	0.005	TC50613	19.17	TC50814	23.76
0.031	0.125	0.093	1-1/2	0.010	TC50615	19.17	TC50816	23.76
0.035	0.125	0.105	1-1/2	0.005	TC50617	19.17	TC50818	23.76
0.035	0.125	0.105	1-1/2	0.010	TC50619	19.17	TC50820	23.76
0.040	0.125	0.120	1-1/2	0.005	TC50621	19.17	TC50822	23.76
0.040	0.125	0.120	1-1/2	0.010	TC50623	19.17	TC50824	23.76
0.045	0.125	0.135	1-1/2	0.005	TC50625	19.17	TC50826	23.76
0.045	0.125	0.135	1-1/2	0.010	TC50627	19.17	TC50828	23.76
0.045	0.125	0.135	1-1/2	0.015	TC50629	19.17	TC50830	23.76
0.047	0.125	0.141	1-1/2	0.005	TC50631	19.17	TC50832	23.76
0.047	0.125	0.141	1-1/2	0.010	TC50633	19.17	TC50834	23.76
0.047	0.125	0.141	1-1/2	0.015	TC50635	19.17	TC50836	23.76
0.050	0.125	0.150	1-1/2	0.005	TC50637	19.17	TC50838	23.76
0.050	0.125	0.150	1-1/2	0.010	TC50639	19.17	TC50840	23.76
0.050	0.125	0.150	1-1/2	0.015	TC50641	19.17	TC50842	23.76
0.060	0.125	0.180	1-1/2	0.005	TC50649	19.17	TC50850	23.76
0.060	0.125	0.180	1-1/2	0.010	TC50651	19.17	TC50852	23.76
0.060	0.125	0.180	1-1/2	0.015	TC50653	19.17	TC50854	23.76
0.062	0.125	0.186	1-1/2	0.005	TC50655	19.17	TC50856	23.76
0.062	0.125	0.186	1-1/2	0.010	TC50657	19.17	TC50858	23.76
0.062	0.125	0.186	1-1/2	0.015	TC50659	19.17	TC50860	23.76
0.075	0.125	0.225	1-1/2	0.005	TC50673	19.17	TC50874	23.76
0.075	0.125	0.225	1-1/2	0.010	TC50675	19.17	TC50876	23.76
0.075	0.125	0.225	1-1/2	0.015	TC50677	19.17	TC50878	23.76
0.078	0.125	0.234	1-1/2	0.005	TC50679	19.17	TC50880	23.76
0.078	0.125	0.234	1-1/2	0.010	TC50681	19.17	TC50882	23.76
0.078	0.125	0.234	1-1/2	0.015	TC50683	19.17	TC50884	23.76
0.090	0.125	0.270	1-1/2	0.005	TC50697	19.17	TC50898	23.76
0.090	0.125	0.270	1-1/2	0.010	TC50699	19.17	TC50900	23.76
0.090	0.125	0.270	1-1/2	0.015	TC50701	19.17	TC50902	23.76
0.093	0.125	0.279	1-1/2	0.005	TC50703	19.17	TC50904	23.76
0.093	0.125	0.279	1-1/2	0.010	TC50705	19.17	TC50906	23.76
0.093	0.125	0.279	1-1/2	0.015	TC50707	19.17	TC50908	23.76
0.100	0.125	0.300	1-1/2	0.005	TC50715	19.17	TC50916	23.76
0.100	0.125	0.300	1-1/2	0.010	TC50717	19.17	TC50918	23.76
0.100	0.125	0.300	1-1/2	0.015	TC50719	19.17	TC50920	23.76

LENGTH OF CUT = 3.0 X DIAMETER  
FOR COATING INFORMATION SEE PAGE 2.

TOLERANCES	DIAMETER	SHANK	RADIUS
ALL SIZES	+0.005, -0.005	-0.001, -0.003	+0.003, -0.003

CARBIDE MICRO ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# Solid Carbide Threadmills

## INTERNAL / EXTERNAL - UN THREADS



**SERIES 840**  
ALTIN COATED

SIZE	SHANK DIAMETER	CUTTING DIAMETER	THREAD LENGTH	OVERALL LENGTH	NUMBER OF FLUTES	ITEM#	PRICE
6 - 32	1/8	0.100	0.218	2	3	TC84001	72.03
8 - 32	1/8	0.115	0.250	2	3	TC84003	72.03
8 - 36	1/8	0.115	0.250	2	3	TC84005	72.03
10 - 24	3/16	0.120	0.312	2	3	TC84007	72.03
10 - 32	3/16	0.120	0.312	2	3	TC84009	72.03
1/4 - 20	3/16	0.180	0.500	2-1/2	3	TC84011	81.47
1/4 - 28	3/16	0.180	0.500	2-1/2	3	TC84013	81.47
5/16 - 18	1/4	0.240	0.625	2-1/2	3	TC84015	95.88
5/16 - 24	1/4	0.240	0.625	2-1/2	3	TC84017	95.88
3/8 - 16	5/16	0.290	0.750	3	4	TC84019	114.24
3/8 - 24	5/16	0.290	0.750	3	4	TC84021	114.24
7/16 - 14	3/8	0.340	0.875	3	4	TC84023	123.19
7/16 - 20	3/8	0.340	0.875	3	4	TC84025	123.19
1/2 - 13	3/8	0.350	0.875	3-1/2	4	TC84027	123.19
1/2 - 20	3/8	0.350	0.875	3-1/2	4	TC84029	123.19
9/16 - 12	1/2	0.370	0.875	3-1/2	4	TC84031	123.19
9/16 - 18	1/2	0.370	0.875	3-1/2	4	TC84033	123.19
5/8 - 11	1/2	0.470	1.250	3-1/2	5	TC84035	153.99
5/8 - 18	1/2	0.470	1.250	3-1/2	5	TC84037	153.99
3/4 - 10	1/2	0.495	1.250	3-1/2	5	TC84039	153.99
3/4 - 16	1/2	0.495	1.250	3-1/2	5	TC84041	153.99
7/8 - 9	5/8	0.620	1.250	3-1/2	5	TC84043	192.74
7/8 - 14	5/8	0.620	1.250	3-1/2	5	TC84045	192.74
1 - 8	3/4	0.620	1.375	4	5	TC84047	192.74
1 - 12	3/4	0.620	1.375	4	5	TC84049	192.74

## INTERNAL / EXTERNAL - NPT PIPE THREADS



**SERIES 842**  
ALTIN COATED

SIZE	SHANK DIAMETER	CUTTING DIAMETER	THREAD LENGTH	OVERALL LENGTH	NUMBER OF FLUTES	ITEM#	PRICE
1/16 - 27	1/4	0.245	0.437	2-1/2	3	TC84200	95.88
1/8 - 27	5/16	0.310	0.437	2-1/2	4	TC84202	95.88
1/4 - 18	3/8	0.370	0.625	3	4	TC84204	109.28
3/8 - 18	3/8	0.370	0.625	3	4	TC84206	109.28
1/2 - 14	1/2	0.495	0.875	3-1/2	4	TC84208	153.99
3/4 - 14	1/2	0.495	0.875	3-1/2	4	TC84210	153.99
1 - 11-1/2	3/4	0.620	1.125	4	5	TC84212	192.74

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION PLEASE SEE PAGE 185.

THREADMILL CUTTING DIAMETER TOLERANCE

+ .000, -.002

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION

CARBIDE THREADMILLS



# Solid Carbide Threadmills

## INTERNAL / EXTERNAL - NPTF PIPE THREADS



**SERIES 844**  
ALTIN COATED

SIZE	SHANK DIAMETER	CUTTING DIAMETER	THREAD LENGTH	OVERALL LENGTH	NUMBER OF FLUTES	ITEM#	PRICE
1/16 - 27	1/4	0.245	0.437	2-1/2	3	TC84401	95.88
1/8 - 27	5/16	0.310	0.437	2-1/2	4	TC84403	95.88
1/4 - 18	3/8	0.370	0.625	3	4	TC84405	109.28
3/8 - 18	3/8	0.370	0.625	3	4	TC84407	109.28
1/2 - 14	1/2	0.495	0.875	3-1/2	4	TC84409	153.99
3/4 - 14	1/2	0.495	0.875	3-1/2	4	TC84411	153.99
1 - 11-1/2	3/4	0.620	1.125	4	5	TC84413	192.74

## INTERNAL / EXTERNAL - METRIC THREADS



**SERIES 846**  
ALTIN COATED

SIZE	SHANK DIAMETER	CUTTING DIAMETER	THREAD LENGTH	OVERALL LENGTH	NUMBER OF FLUTES	ITEM#	PRICE
M4 x 0.70	1/8	0.115	0.250	2	3	TC84620	73.52
M4.5 x 0.75	1/8	0.120	0.250	2	3	TC84622	73.52
M5 x 0.80	3/16	0.120	0.312	2	3	TC84624	73.52
M6 x 1.00	3/16	0.170	0.500	2-1/2	3	TC84626	80.97
M8 x 0.75	1/4	0.235	0.625	2-1/2	3	TC84628	95.88
M8 x 1.00	1/4	0.235	0.625	2-1/2	3	TC84630	95.88
M8 x 1.25	1/4	0.235	0.625	2-1/2	3	TC84632	95.88
M10 x 1.25	5/16	0.300	0.750	3	4	TC84634	114.24
M10 x 1.50	5/16	0.300	0.750	3	4	TC84636	114.24
M12 x 1.00	3/8	0.360	0.875	3-1/2	4	TC84638	123.68
M12 x 1.25	3/8	0.360	0.875	3-1/2	4	TC84640	123.68
M12 x 1.75	3/8	0.360	0.875	3-1/2	4	TC84642	123.68
M14 x 1.50	3/8	0.360	0.875	3-1/2	4	TC84644	123.68
M16 x 2.00	1/2	0.470	1.250	3-1/2	5	TC84646	153.99
M18 x 2.50	1/2	0.470	1.250	3-1/2	5	TC84648	153.99
M20 x 3.00	5/8	0.470	1.250	3-1/2	5	TC84650	153.99

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION PLEASE SEE PAGE 185.

THREADMILL CUTTING DIAMETER TOLERANCE

+ .000, -.002





# Solid Carbide Drill Mills

## 2 FLUTE - 60° POINT - 30° HELIX



**SERIES 316**  
UNCOATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLUTES	ITEM#	PRICE
1/32	1/8	1/8	1-1/2	2	TC31602	9.61
1/16	1/8	3/16	1-1/2	2	TC31604	9.61
3/32	1/8	3/8	1-1/2	2	TC31606	9.61
1/8	1/8	1/2	1-1/2	2	TC31608	9.22
3/16	3/16	5/8	2	2	TC31612	12.97
1/4	1/4	3/4	2-1/2	2	TC31616	16.24
5/16	5/16	13/16	2-1/2	2	TC31620	20.16
3/8	3/8	1	2-1/2	2	TC31624	25.33
7/16	7/16	1	2-3/4	2	TC31628	34.25
1/2	1/2	1	3	2	TC31632	41.99
5/8	5/8	1-1/4	3-1/2	2	TC31640	80.17
3/4	3/4	1-1/2	4	2	TC31648	118.08



**SERIES 318**  
ALTIN COATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLUTES	ITEM#	PRICE
1/32	1/8	1/8	1-1/2	2	TC31802	12.01
1/16	1/8	3/16	1-1/2	2	TC31804	12.01
3/32	1/8	3/8	1-1/2	2	TC31806	12.01
1/8	1/8	1/2	1-1/2	2	TC31808	11.53
3/16	3/16	5/8	2	2	TC31812	16.22
1/4	1/4	3/4	2-1/2	2	TC31816	20.30
5/16	5/16	13/16	2-1/2	2	TC31820	25.20
3/8	3/8	1	2-1/2	2	TC31824	31.68
7/16	7/16	1	2-3/4	2	TC31828	42.81
1/2	1/2	1	3	2	TC31832	52.49
5/8	5/8	1-1/4	3-1/2	2	TC31840	100.22
3/4	3/4	1-1/2	4	2	TC31848	147.60

Drill mills enjoy great popularity in job shop environments because of their versatility in performing a wide range of applications.

The following applications can be performed with drill mills:  
Drilling • Chamfering • Countersinking • Spotting • Profile Milling

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION SEE PAGES 184, 186-187.

TOLERANCES	DIAMETER	SHANK
1/32" - 3/32"	+0.000, -0.001	-0.0001, -0.0004
1/8" - 1/2"	+0.000, -0.002	-0.0001, -0.0004
5/8" - 3/4"	+0.000, -0.003	-0.0001, -0.0004

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# Solid Carbide Drill Mills

## 4 FLUTE - 60° POINT - 30° HELIX



**SERIES 347**  
UNCOATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLUTES	ITEM#	PRICE
1/32	1/8	1/8	1-1/2	4	TC34702	9.61
1/16	1/8	3/16	1-1/2	4	TC34704	9.61
3/32	1/8	3/8	1-1/2	4	TC34706	9.61
1/8	1/8	1/2	1-1/2	4	TC34708	9.22
3/16	3/16	5/8	2	4	TC34712	12.97
1/4	1/4	3/4	2-1/2	4	TC34716	16.24
5/16	5/16	13/16	2-1/2	4	TC34720	20.16
3/8	3/8	1	2-1/2	4	TC34724	25.33
7/16	7/16	1	2-3/4	4	TC34728	34.25
1/2	1/2	1	3	4	TC34732	41.99
5/8	5/8	1-1/4	3-1/2	4	TC34740	80.17
3/4	3/4	1-1/2	4	4	TC34748	118.08



**SERIES 349**  
ALTIN COATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLUTES	ITEM#	PRICE
1/32	1/8	1/8	1-1/2	4	TC34902	12.01
1/16	1/8	3/16	1-1/2	4	TC34904	12.01
3/32	1/8	3/8	1-1/2	4	TC34906	12.01
1/8	1/8	1/2	1-1/2	4	TC34908	11.53
3/16	3/16	5/8	2	4	TC34912	16.22
1/4	1/4	3/4	2-1/2	4	TC34916	20.30
5/16	5/16	13/16	2-1/2	4	TC34920	25.20
3/8	3/8	1	2-1/2	4	TC34924	31.68
7/16	7/16	1	2-3/4	4	TC34928	42.81
1/2	1/2	1	3	4	TC34932	52.49
5/8	5/8	1-1/4	3-1/2	4	TC34940	100.22
3/4	3/4	1-1/2	4	4	TC34948	147.60

Drill mills enjoy great popularity in job shop environments because of their versatility in performing a wide range of applications.

The following applications can be performed with drill mills:  
Drilling • Chamfering • Countersinking • Spotting • Profile Milling

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION SEE PAGES 184, 186-187.

TOLERANCES	DIAMETER	SHANK
1/32" - 3/32"	+0.000, -0.001	-0.0001, -0.0004
1/8" - 1/2"	+0.000, -0.002	-0.0001, -0.0004
5/8" - 3/4"	+0.000, -0.003	-0.0001, -0.0004

CARBIDE DRILL MILLS

CARBIDE ENDMILLS

CARBIDE MICRO ENDMILLS

CARBIDE THREADMILLS

CARBIDE DRILL MILLS

CARBIDE CHAMFER MILLS

CARBIDE DRILLS

CARBIDE REAMERS

CARBIDE BURS

COUNTERSINKS

HSS & COBALT ENDMILLS

TAPS & DIES

HSS & COBALT DRILLS

HSS & COBALT REAMERS

TECHNICAL INFORMATION



# Solid Carbide Drill Mills

## 2 FLUTE - 90° POINT - 30° HELIX



**SERIES 320**  
UNCOATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLUTES	ITEM#	PRICE
1/32	1/8	1/8	1-1/2	2	TC32002	9.61
1/16	1/8	3/16	1-1/2	2	TC32004	9.61
3/32	1/8	3/8	1-1/2	2	TC32006	9.61
1/8	1/8	1/2	1-1/2	2	TC32008	9.22
3/16	3/16	5/8	2	2	TC32012	12.97
1/4	1/4	3/4	2-1/2	2	TC32016	16.24
5/16	5/16	13/16	2-1/2	2	TC32020	20.16
3/8	3/8	1	2-1/2	2	TC32024	25.33
7/16	7/16	1	2-3/4	2	TC32028	34.25
1/2	1/2	1	3	2	TC32032	41.99
5/8	5/8	1-1/4	3-1/2	2	TC32040	80.17
3/4	3/4	1-1/2	4	2	TC32048	118.08



**SERIES 322**  
ALTIN COATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLUTES	ITEM#	PRICE
1/32	1/8	1/8	1-1/2	2	TC32202	12.01
1/16	1/8	3/16	1-1/2	2	TC32204	12.01
3/32	1/8	3/8	1-1/2	2	TC32206	12.01
1/8	1/8	1/2	1-1/2	2	TC32208	11.53
3/16	3/16	5/8	2	2	TC32212	16.22
1/4	1/4	3/4	2-1/2	2	TC32216	20.30
5/16	5/16	13/16	2-1/2	2	TC32220	25.20
3/8	3/8	1	2-1/2	2	TC32224	31.68
7/16	7/16	1	2-3/4	2	TC32228	42.81
1/2	1/2	1	3	2	TC32232	52.49
5/8	5/8	1-1/4	3-1/2	2	TC32240	100.22
3/4	3/4	1-1/2	4	2	TC32248	147.60

Drill mills enjoy great popularity in job shop environments because of their versatility in performing a wide range of applications.

The following applications can be performed with drill mills:  
Drilling • Chamfering • Countersinking • Spotting • Profile Milling

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION SEE PAGES 184, 186-187.

TOLERANCES	DIAMETER	SHANK
1/32" - 3/32"	+0.000, -0.001	-0.0001, -0.0004
1/8" - 1/2"	+0.000, -0.002	-0.0001, -0.0004
5/8" - 3/4"	+0.000, -0.003	-0.0001, -0.0004

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# Solid Carbide Drill Mills

## 4 FLUTE - 90° POINT - 30° HELIX



**SERIES 341**  
UNCOATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLUTES	ITEM#	PRICE
1/32	1/8	1/8	1-1/2	4	TC34102	9.61
1/16	1/8	3/16	1-1/2	4	TC34104	9.61
3/32	1/8	3/8	1-1/2	4	TC34106	9.61
1/8	1/8	1/2	1-1/2	4	TC34108	9.22
3/16	3/16	5/8	2	4	TC34112	12.97
1/4	1/4	3/4	2-1/2	4	TC34116	16.24
5/16	5/16	13/16	2-1/2	4	TC34120	20.16
3/8	3/8	1	2-1/2	4	TC34124	25.33
7/16	7/16	1	2-3/4	4	TC34128	34.25
1/2	1/2	1	3	4	TC34132	41.99
5/8	5/8	1-1/4	3-1/2	4	TC34140	80.17
3/4	3/4	1-1/2	4	4	TC34148	118.08



**SERIES 343**  
ALTIN COATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLUTES	ITEM#	PRICE
1/32	1/8	1/8	1-1/2	4	TC34302	12.01
1/16	1/8	3/16	1-1/2	4	TC34304	12.01
3/32	1/8	3/8	1-1/2	4	TC34306	12.01
1/8	1/8	1/2	1-1/2	4	TC34308	11.53
3/16	3/16	5/8	2	4	TC34312	16.22
1/4	1/4	3/4	2-1/2	4	TC34316	20.30
5/16	5/16	13/16	2-1/2	4	TC34320	25.20
3/8	3/8	1	2-1/2	4	TC34324	31.68
7/16	7/16	1	2-3/4	4	TC34328	42.81
1/2	1/2	1	3	4	TC34332	52.49
5/8	5/8	1-1/4	3-1/2	4	TC34340	100.22
3/4	3/4	1-1/2	4	4	TC34348	147.60

Drill mills enjoy great popularity in job shop environments because of their versatility in performing a wide range of applications.

The following applications can be performed with drill mills:  
Drilling • Chamfering • Countersinking • Spotting • Profile Milling

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION SEE PAGES 184, 186-187.

TOLERANCES	DIAMETER	SHANK
1/32" - 3/32"	+0.000, -0.001	-0.0001, -0.0004
1/8" - 1/2"	+0.000, -0.002	-0.0001, -0.0004
5/8" - 3/4"	+0.000, -0.003	-0.0001, -0.0004

CARBIDE DRILL MILLS

CARBIDE ENDMILLS

CARBIDE MICRO ENDMILLS

CARBIDE THREADMILLS

CARBIDE DRILL MILLS

CARBIDE CHAMFER MILLS

CARBIDE DRILLS

CARBIDE REAMERS

CARBIDE BURS

COUNTERSINKS

HSS & COBALT ENDMILLS

TAPS & DIES

HSS & COBALT DRILLS

HSS & COBALT REAMERS

TECHNICAL INFORMATION





# Solid Carbide Chamfer Mills



**2 FLUTE - SINGLE END**  
60° • 82° • 90° • 100° • 120°

**SERIES 850**

UNCOATED

SIZE	SHANK DIA.	OVERALL LENGTH	PKG. QTY.	60° - ITEM#	82° - ITEM#	90° - ITEM#	100° - ITEM#	120° - ITEM#	PRICE
1/8	1/8	1-1/2	1	TC87600	TC87612	TC87624	TC87636	TC87648	8.23
1/4	1/4	2-1/2	1	TC87603	TC87615	TC87627	TC87639	TC87651	14.49
3/8	3/8	2-1/2	1	TC87606	TC87618	TC87630	TC87642	TC87654	22.59
1/2	1/2	3	1	TC87609	TC87621	TC87633	TC87645	TC87657	37.40



**2 FLUTE - SINGLE END**  
60° • 82° • 90° • 100° • 120°

**SERIES 852**

ALTiN COATED

SIZE	SHANK DIA.	OVERALL LENGTH	PKG. QTY.	60° - ITEM#	82° - ITEM#	90° - ITEM#	100° - ITEM#	120° - ITEM#	PRICE
1/8	1/8	1-1/2	1	TC87660	TC87672	TC87684	TC87696	TC87708	10.29
1/4	1/4	2-1/2	1	TC87663	TC87675	TC87687	TC87699	TC87711	18.08
3/8	3/8	2-1/2	1	TC87666	TC87678	TC87690	TC87702	TC87714	28.25
1/2	1/2	3	1	TC87669	TC87681	TC87693	TC87705	TC87717	46.79



**4 FLUTE - SINGLE END**  
60° • 82° • 90° • 100° • 120°

**SERIES 854**

UNCOATED

SIZE	SHANK DIA.	OVERALL LENGTH	PKG. QTY.	60° - ITEM#	82° - ITEM#	90° - ITEM#	100° - ITEM#	120° - ITEM#	PRICE
1/8	1/8	1-1/2	1	TC87720	TC87732	TC87744	TC87756	TC87768	8.23
1/4	1/4	2-1/2	1	TC87723	TC87735	TC87747	TC87759	TC87771	14.49
3/8	3/8	2-1/2	1	TC87726	TC87738	TC87750	TC87762	TC87774	22.59
1/2	1/2	3	1	TC87729	TC87741	TC87753	TC87765	TC87777	37.40



**4 FLUTE - SINGLE END**  
60° • 82° • 90° • 100° • 120°

**SERIES 856**

ALTiN COATED

SIZE	SHANK DIA.	OVERALL LENGTH	PKG. QTY.	60° - ITEM#	82° - ITEM#	90° - ITEM#	100° - ITEM#	120° - ITEM#	PRICE
1/8	1/8	1-1/2	1	TC87780	TC87792	TC87804	TC87816	TC87828	10.29
1/4	1/4	2-1/2	1	TC87783	TC87795	TC87807	TC87819	TC87831	18.08
3/8	3/8	2-1/2	1	TC87786	TC87798	TC87810	TC87822	TC87834	28.25
1/2	1/2	3	1	TC87789	TC87801	TC87813	TC87825	TC87837	46.79

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION SEE PAGES 184, 186-187.

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION

CARBIDE CHAMFER MILLS



# Solid Carbide Chamfer Mills



**2 FLUTE - DOUBLE END**  
**60° • 82° • 90° • 100° • 120°**  
**SERIES 858**  
**UNCOATED**

SIZE	SHANK DIA.	OVERALL LENGTH	PKG. QTY.	60° - ITEM#	82° - ITEM#	90° - ITEM#	100° - ITEM#	120° - ITEM#	PRICE
1/8	1/8	2	1	TC87840	TC87858	TC87876	TC87894	TC87912	14.81
3/16	3/16	2-1/2	1	TC87843	TC87861	TC87879	TC87897	TC87915	20.39
1/4	1/4	2-1/2	1	TC87846	TC87864	TC87882	TC87900	TC87918	26.07
5/16	5/16	2-1/2	1	TC87849	TC87867	TC87885	TC87903	TC87921	33.37
3/8	3/8	2-1/2	1	TC87852	TC87870	TC87888	TC87906	TC87924	40.67
1/2	1/2	3	1	TC87855	TC87873	TC87891	TC87909	TC87927	67.33



**2 FLUTE - DOUBLE END**  
**60° • 82° • 90° • 100° • 120°**  
**SERIES 860**  
**ALTIN COATED**

SIZE	SHANK DIA.	OVERALL LENGTH	PKG. QTY.	60° - ITEM#	82° - ITEM#	90° - ITEM#	100° - ITEM#	120° - ITEM#	PRICE
1/8	1/8	2	1	TC87930	TC87948	TC87966	TC87984	TC88002	18.52
3/16	3/16	2-1/2	1	TC87933	TC87951	TC87969	TC87987	TC88005	25.49
1/4	1/4	2-1/2	1	TC87936	TC87954	TC87972	TC87990	TC88008	32.54
5/16	5/16	2-1/2	1	TC87939	TC87957	TC87975	TC87993	TC88011	41.69
3/8	3/8	2-1/2	1	TC87942	TC87960	TC87978	TC87996	TC88014	50.89
1/2	1/2	3	1	TC87945	TC87963	TC87981	TC87999	TC88017	84.24



**4 FLUTE - DOUBLE END**  
**60° • 82° • 90° • 100° • 120°**  
**SERIES 862**  
**UNCOATED**

SIZE	SHANK DIA.	OVERALL LENGTH	PKG. QTY.	60° - ITEM#	82° - ITEM#	90° - ITEM#	100° - ITEM#	120° - ITEM#	PRICE
1/8	1/8	2	1	TC88020	TC88038	TC88056	TC88074	TC88092	14.81
3/16	3/16	2-1/2	1	TC88023	TC88041	TC88059	TC88077	TC88095	20.39
1/4	1/4	2-1/2	1	TC88026	TC88044	TC88062	TC88080	TC88098	26.07
5/16	5/16	2-1/2	1	TC88029	TC88047	TC88065	TC88083	TC88101	33.37
3/8	3/8	2-1/2	1	TC88032	TC88050	TC88068	TC88086	TC88104	40.67
1/2	1/2	3	1	TC88035	TC88053	TC88071	TC88089	TC88107	67.33



**4 FLUTE - DOUBLE END**  
**60° • 82° • 90° • 100° • 120°**  
**SERIES 864**  
**ALTIN COATED**

SIZE	SHANK DIA.	OVERALL LENGTH	PKG. QTY.	60° - ITEM#	82° - ITEM#	90° - ITEM#	100° - ITEM#	120° - ITEM#	PRICE
1/8	1/8	2	1	TC88110	TC88128	TC88146	TC88164	TC88182	18.52
3/16	3/16	2-1/2	1	TC88113	TC88131	TC88149	TC88167	TC88185	25.49
1/4	1/4	2-1/2	1	TC88116	TC88134	TC88152	TC88170	TC88188	32.54
5/16	5/16	2-1/2	1	TC88119	TC88137	TC88155	TC88173	TC88191	41.69
3/8	3/8	2-1/2	1	TC88122	TC88140	TC88158	TC88176	TC88194	50.89
1/2	1/2	3	1	TC88125	TC88143	TC88161	TC88179	TC88197	84.24

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION SEE PAGES 184, 186-187.

CARBIDE ENDMILLS  
 CARBIDE MICRO ENDMILLS  
 CARBIDE THREADMILLS  
 CARBIDE DRILL MILLS  
 CARBIDE CHAMFER MILLS  
 CARBIDE DRILLS  
 CARBIDE REAMERS  
 CARBIDE BURS  
 COUNTERSINKS  
 HSS & COBALT ENDMILLS  
 TAPS & DIES  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION



# Solid Carbide Drills

## N/C SPOTTING DRILLS



**SERIES 187 - 90° POINT  
UNCOATED**

SIZE	SHANK DIAMETER	FLUTE LENGTH	OVERALL LENGTH	ITEM #	PRICE
1/8	1/8	1/4	2	TC18708	11.52
3/16	3/16	3/8	2	TC18712	13.71
1/4	1/4	3/8	3	TC18716	16.65
3/8	3/8	1/2	4	TC18724	26.48
1/2	1/2	3/4	4	TC18732	44.25
5/8	5/8	1	4	TC18740	78.77
3/4	3/4	1	4	TC18748	105.77



**SERIES 188 - 120° POINT  
UNCOATED**

SIZE	SHANK DIAMETER	FLUTE LENGTH	OVERALL LENGTH	ITEM #	PRICE
1/8	1/8	1/4	2	TC18808	11.52
3/16	3/16	3/8	2	TC18812	13.71
1/4	1/4	3/8	3	TC18816	16.65
3/8	3/8	1/2	4	TC18824	26.48
1/2	1/2	3/4	4	TC18832	44.25
5/8	5/8	1	4	TC18840	78.77
3/4	3/4	1	4	TC18848	105.77



**SERIES 189 - 140° POINT  
UNCOATED**

### N/C SPOTTING FOR HIGH PERFORMANCE DRILLING

SIZE	SHANK DIAMETER	FLUTE LENGTH	OVERALL LENGTH	ITEM #	PRICE
1/8	1/8	1/4	2	TC18908	11.52
3/16	3/16	3/8	2	TC18912	13.71
1/4	1/4	3/8	3	TC18916	16.65
3/8	3/8	1/2	4	TC18924	26.48
1/2	1/2	3/4	4	TC18932	44.25
5/8	5/8	1	4	TC18940	78.77
3/4	3/4	1	4	TC18948	105.77

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 188.

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION

CARBIDE N/C SPOTTING DRILLS



# Solid Carbide Drills

## N/C SPOTTING DRILLS



**SERIES 287 - 90° POINT**  
ALTiN COATED

SIZE	SHANK DIAMETER	FLUTE LENGTH	OVERALL LENGTH	ITEM #	PRICE
1/8	1/8	1/4	2	TC28708	14.40
3/16	3/16	3/8	2	TC28712	17.15
1/4	1/4	3/8	3	TC28716	20.92
3/8	3/8	1/2	4	TC28724	33.09
1/2	1/2	3/4	4	TC28732	57.61
5/8	5/8	1	4	TC28740	100.71
3/4	3/4	1	4	TC28748	132.21



**SERIES 288 - 120° POINT**  
ALTiN COATED

SIZE	SHANK DIAMETER	FLUTE LENGTH	OVERALL LENGTH	ITEM #	PRICE
1/8	1/8	1/4	2	TC28808	14.40
3/16	3/16	3/8	2	TC28812	17.15
1/4	1/4	3/8	3	TC28816	20.92
3/8	3/8	1/2	4	TC28824	33.09
1/2	1/2	3/4	4	TC28832	57.61
5/8	5/8	1	4	TC28840	100.71
3/4	3/4	1	4	TC28848	132.21



**SERIES 289 - 140° POINT**  
ALTiN COATED

N/C SPOTTING FOR HIGH PERFORMANCE DRILLING					
SIZE	SHANK DIAMETER	FLUTE LENGTH	OVERALL LENGTH	ITEM #	PRICE
1/8	1/8	1/4	2	TC28908	14.40
3/16	3/16	3/8	2	TC28912	17.15
1/4	1/4	3/8	3	TC28916	20.92
3/8	3/8	1/2	4	TC28924	33.09
1/2	1/2	3/4	4	TC28932	57.61
5/8	5/8	1	4	TC28940	100.71
3/4	3/4	1	4	TC28948	132.21

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION PLEASE SEE PAGE 188.

CARBIDE N/C SPOTTING DRILLS

CARBIDE ENDMILLS  
 CARBIDE MICRO ENDMILLS  
 CARBIDE THREADMILLS  
 CARBIDE DRILL MILLS  
 CARBIDE DRILL MILLS  
 CARBIDE CHAMFER MILLS  
 CARBIDE DRILLS  
 CARBIDE REAMERS  
 CARBIDE BURS  
 COUNTERSINKS  
 HSS & COBALT ENDMILLS  
 TAPS & DIES  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION





# Solid Carbide Drills

## JOBBER LENGTH - 118° SPLIT POINT - 25° HELIX

**SERIES 190**  
UNCOATED



**SERIES 191**  
ALTiN COATED



### FRACTIONAL SIZES

SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	PRICE	ALTiN	PRICE
1/32	5/16	1-1/4	TC19002	6.62	TC79002	8.27
3/64	3/4	1-1/2	TC19003	6.62	TC79003	8.27
1/16	3/4	1-1/2	TC19004	6.26	TC79004	7.82
5/64	7/8	1-3/4	TC19005	6.62	TC79005	8.27
3/32	1	2	TC19006	7.29	TC79006	9.11
7/64	1-1/4	2-1/4	TC19007	8.28	TC79007	10.36
1/8	1-1/4	2-1/4	TC19008	8.83	TC79008	11.04
9/64	1-3/8	2-1/2	TC19009	9.78	TC79009	12.23
5/32	1-3/8	2-1/2	TC19010	10.97	TC79010	13.71
11/64	1-5/8	2-3/4	TC19011	12.95	TC79011	16.19
3/16	1-5/8	2-3/4	TC19012	13.32	TC79012	16.65
13/64	1-3/4	3	TC19013	15.38	TC79013	19.23
7/32	1-3/4	3	TC19014	17.07	TC79014	21.34
15/64	2	3-1/4	TC19015	19.33	TC79015	24.15
1/4	2	3-1/4	TC19016	20.31	TC79016	25.38
17/64	2-1/8	3-1/2	TC19017	22.87	TC79017	28.59

### FRACTIONAL SIZES

SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	PRICE	ALTiN	PRICE
9/32	2-1/8	3-1/2	TC19018	23.85	TC79018	29.83
19/64	2-3/8	3-3/4	TC19019	26.80	TC79019	33.49
5/16	2-3/8	3-3/4	TC19020	28.19	TC79020	35.23
21/64	2-1/2	4	TC19021	30.76	TC79021	38.45
11/32	2-1/2	4	TC19022	33.63	TC79022	42.04
23/64	2-3/4	4-1/4	TC19023	37.61	TC79023	47.02
3/8	2-3/4	4-1/4	TC19024	39.89	TC79024	49.86
25/64	2-7/8	4-1/2	TC19025	46.71	TC79025	58.37
13/32	2-7/8	4-1/2	TC19026	51.15	TC79026	63.95
27/64	2-7/8	4-1/2	TC19027	55.63	TC79027	69.53
7/16	2-7/8	4-1/2	TC19028	58.20	TC79028	72.77
29/64	3	4-3/4	TC19029	67.53	TC79029	84.41
15/32	3	4-3/4	TC19030	70.36	TC79030	87.94
31/64	3	4-3/4	TC19031	72.34	TC79031	90.43
1/2	3	4-3/4	TC19032	72.50	TC79032	90.62
-	-	-	-	-	-	-

NOTE: SIZES 7/64" AND UNDER ARE NOT SPLIT.

### METRIC SIZES

SIZE (mm)	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	PRICE	ALTiN	PRICE
0.7	12	31	TC19307	8.22	TC79307	10.28
0.8	12	31	TC19308	8.22	TC79308	10.28
0.9	16	38	TC19309	8.22	TC79309	10.28
1.0	16	38	TC19310	8.22	TC79310	10.28
1.1	19	38	TC19311	8.22	TC79311	10.28
1.2	19	38	TC19312	8.22	TC79312	10.28
1.3	19	38	TC19313	8.22	TC79313	10.28
1.4	19	38	TC19314	8.22	TC79314	10.28
1.5	19	38	TC19315	8.28	TC79315	10.36
1.6	19	38	TC19316	8.28	TC79316	10.36
1.7	19	38	TC19317	8.28	TC79317	10.36
1.8	22	38	TC19318	8.28	TC79318	10.36
1.9	22	38	TC19319	8.28	TC79319	10.36
2.0	22	44	TC19320	8.80	TC79320	11.00
2.1	22	44	TC19321	8.80	TC79321	11.00
2.2	25	50	TC19322	8.80	TC79322	11.00
2.3	25	50	TC19323	8.80	TC79323	11.00
2.4	25	50	TC19324	8.80	TC79324	11.00
2.5	25	50	TC19325	10.11	TC79325	12.64
2.6	32	57	TC19326	10.11	TC79326	12.64
2.7	32	57	TC19327	10.11	TC79327	12.64
2.8	32	57	TC19328	10.11	TC79328	12.64
2.9	32	57	TC19329	10.11	TC79329	12.64

### METRIC SIZES

SIZE (mm)	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	PRICE	ALTiN	PRICE
3.0	32	57	TC19330	11.33	TC79330	14.15
3.1	32	57	TC19331	11.33	TC79331	14.15
3.2	32	57	TC19332	11.33	TC79332	14.15
3.3	32	57	TC19333	11.33	TC79333	14.15
3.4	35	63	TC19334	12.29	TC79334	15.38
3.5	35	63	TC19335	12.29	TC79335	15.38
4.0	35	63	TC19340	15.13	TC79340	18.91
4.5	41	70	TC19345	16.21	TC79345	20.26
5.0	44	75	TC19350	17.92	TC79350	22.42
5.5	44	75	TC19355	21.23	TC79355	26.54
6.0	50	82	TC19360	22.45	TC79360	28.05
6.5	50	82	TC19365	35.76	TC79365	44.69
7.0	54	89	TC19370	39.15	TC79370	48.95
7.5	60	95	TC19375	40.44	TC79375	50.54
8.0	60	95	TC19380	42.78	TC79380	53.46
8.5	63	100	TC19385	52.81	TC79385	66.00
9.0	70	100	TC19390	59.95	TC79390	74.94
9.5	70	108	TC19395	68.40	TC79395	85.52
10.0	73	114	TC19400	78.56	TC79400	98.20
10.5	73	114	TC19405	87.86	TC79405	109.82
11.0	73	114	TC19410	104.54	TC79410	130.68
11.5	76	120	TC19415	107.67	TC79415	134.60
12.0	76	120	TC19420	119.50	TC79420	149.39

NOTE: ALL DIMENSIONS IN TABLE ARE METRIC (mm)

NOTE: SIZES 3.1mm AND UNDER ARE NOT SPLIT.

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION PLEASE SEE PAGE 188.

DIAMETER TOLERANCE +.0000, -.0005

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE JOBBER DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# Solid Carbide Drills

## JOBBER LENGTH - 118° SPLIT POINT - 25° HELIX



**SERIES 190**  
UNCOATED

**SERIES 191**  
ALTIN COATED

### LETTER SIZES

SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	PRICE	ALTIN	PRICE
A	2	3-1/4	TC19101	19.50	TC79101	24.37
B	2	3-1/4	TC19102	20.31	TC79102	25.38
C	2	3-1/4	TC19103	20.47	TC79103	25.58
D	2	3-1/4	TC19104	20.72	TC79104	25.90
E	2	3-1/4	TC19105	20.31	TC79105	25.38
F	2	3-1/4	TC19106	22.59	TC79106	28.24
G	2-1/8	3-1/2	TC19107	23.96	TC79107	29.94
H	2-1/8	3-1/2	TC19108	24.48	TC79108	30.59
I	2-1/8	3-1/2	TC19109	24.87	TC79109	31.09
J	2-1/8	3-1/2	TC19110	25.54	TC79110	31.93
K	2-1/8	3-1/2	TC19111	25.75	TC79111	32.20
L	2-1/8	3-1/2	TC19112	27.22	TC79112	34.04
M	2-3/8	3-3/4	TC19113	27.78	TC79113	34.73

### LETTER SIZES

SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	PRICE	ALTIN	PRICE
N	2-3/8	3-3/4	TC19114	29.53	TC79114	36.91
O	2-3/8	3-3/4	TC19115	31.12	TC79115	38.91
P	2-3/8	3-3/4	TC19116	32.31	TC79116	40.39
Q	2-1/2	4	TC19117	33.49	TC79117	41.85
R	2-1/2	4	TC19118	34.96	TC79118	43.70
S	2-1/2	4	TC19119	37.24	TC79119	46.55
T	2-3/4	4-1/4	TC19120	38.58	TC79120	48.20
U	2-3/4	4-1/4	TC19121	40.48	TC79121	50.59
V	2-3/4	4-1/4	TC19122	44.83	TC79122	56.03
W	2-7/8	4-1/2	TC19123	48.28	TC79123	60.36
X	2-7/8	4-1/2	TC19124	52.70	TC79124	65.86
Y	2-7/8	4-1/2	TC19125	54.46	TC79125	68.08
Z	2-7/8	4-1/2	TC19126	59.01	TC79126	73.77

### WIRE SIZES

SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	PRICE	ALTIN	PRICE
1	1-3/4	3	TC19201	17.68	TC79201	22.09
2	1-3/4	3	TC19202	17.68	TC79202	22.09
3	1-3/4	3	TC19203	17.68	TC79203	22.09
4	1-3/4	3	TC19204	17.49	TC79204	21.86
5	1-3/4	3	TC19205	15.60	TC79205	19.52
6	1-3/4	3	TC19206	15.60	TC79206	19.52
7	1-3/4	3	TC19207	15.17	TC79207	18.95
8	1-3/4	3	TC19208	15.08	TC79208	18.86
9	1-3/4	3	TC19209	15.08	TC79209	18.86
10	1-5/8	2-3/4	TC19210	15.08	TC79210	18.86
11	1-5/8	2-3/4	TC19211	14.73	TC79211	18.39
12	1-5/8	2-3/4	TC19212	14.73	TC79212	18.39
13	1-5/8	2-3/4	TC19213	14.20	TC79213	17.75
14	1-5/8	2-3/4	TC19214	13.84	TC79214	17.30
15	1-5/8	2-3/4	TC19215	13.62	TC79215	17.02
16	1-5/8	2-3/4	TC19216	13.62	TC79216	17.02
17	1-5/8	2-3/4	TC19217	12.95	TC79217	16.19
18	1-5/8	2-3/4	TC19218	12.18	TC79218	15.22
19	1-5/8	2-3/4	TC19219	11.92	TC79219	14.90
20	1-3/8	2-1/2	TC19220	11.40	TC79220	14.26
21	1-3/8	2-1/2	TC19221	11.40	TC79221	14.26
22	1-3/8	2-1/2	TC19222	10.97	TC79222	13.71
23	1-3/8	2-1/2	TC19223	10.97	TC79223	13.71
24	1-3/8	2-1/2	TC19224	10.89	TC79224	13.62
25	1-3/8	2-1/2	TC19225	10.30	TC79225	12.88
26	1-3/8	2-1/2	TC19226	10.30	TC79226	12.88
27	1-3/8	2-1/2	TC19227	10.30	TC79227	12.88
28	1-3/8	2-1/2	TC19228	9.78	TC79228	12.23
29	1-3/8	2-1/2	TC19229	9.78	TC79229	12.23
30	1-1/4	2-1/4	TC19230	9.27	TC79230	11.59

### WIRE SIZES

SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	PRICE	ALTIN	PRICE
31	1-1/4	2-1/4	TC19231	8.61	TC79231	10.76
32	1-1/4	2-1/4	TC19232	8.61	TC79232	10.76
33	1-1/4	2-1/4	TC19233	8.53	TC79233	10.67
34	1-1/4	2-1/4	TC19234	8.47	TC79234	10.58
35	1-1/4	2-1/4	TC19235	8.47	TC79235	10.58
36	1-1/4	2-1/4	TC19236	8.47	TC79236	10.58
37	1-1/4	2-1/4	TC19237	8.02	TC79237	10.03
38	1-1/4	2-1/4	TC19238	7.88	TC79238	9.84
39	1-1/4	2-1/4	TC19239	7.88	TC79239	9.84
40	1	2	TC19240	7.58	TC79240	9.47
41	1	2	TC19241	7.58	TC79241	9.47
42	1	2	TC19242	7.36	TC79242	9.20
43	1	2	TC19243	7.36	TC79243	9.20
44	1	2	TC19244	6.99	TC79244	8.73
45	7/8	1-3/4	TC19245	6.79	TC79245	8.47
46	7/8	1-3/4	TC19246	6.79	TC79246	8.47
47	7/8	1-3/4	TC19247	6.79	TC79247	8.47
48	7/8	1-3/4	TC19248	6.79	TC79248	8.47
49	7/8	1-3/4	TC19249	6.48	TC79249	8.10
50	7/8	1-3/4	TC19250	6.48	TC79250	8.10
51	3/4	1-1/2	TC19251	6.26	TC79251	7.82
52	3/4	1-1/2	TC19252	6.26	TC79252	7.82
53	3/4	1-1/2	TC19253	6.62	TC79253	8.27
54	3/4	1-1/2	TC19254	6.62	TC79254	8.27
55	3/4	1-1/2	TC19255	6.62	TC79255	8.27
56	3/4	1-1/2	TC19256	6.62	TC79256	8.27
57	3/4	1-1/2	TC19257	6.62	TC79257	8.27
58	3/4	1-1/2	TC19258	6.62	TC79258	8.27
59	3/4	1-1/2	TC19259	6.62	TC79259	8.27
60	3/4	1-1/2	TC19260	6.62	TC79260	8.27

NOTE: SIZES 31 AND UNDER ARE NOT SPLIT.

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION PLEASE SEE PAGE 188.

DIAMETER TOLERANCE      +.0000, -.0005

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# Solid Carbide Drills

## STUB LENGTH - 135° SPLIT POINT - 15° HELIX

**SERIES 200**  
UNCOATED



**SERIES 201**  
ALTIM COATED



### FRACTIONAL SIZES

SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	PRICE	ALTIM	PRICE
1/32	3/8	1-1/2	TC20002	7.03	TC29002	8.80
3/64	3/8	1-1/2	TC20003	7.03	TC29003	8.80
1/16	13/32	1-1/2	TC20004	6.65	TC29004	8.30
5/64	7/16	1-1/2	TC20005	7.03	TC29005	8.80
3/32	1/2	1-1/2	TC20006	7.75	TC29006	9.69
7/64	5/8	2	TC20007	8.80	TC29007	11.00
1/8	3/4	2	TC20008	9.39	TC29008	11.73
9/64	3/4	2	TC20009	10.40	TC29009	13.00
5/32	7/8	2	TC20010	11.66	TC29010	14.55
11/64	7/8	2	TC20011	13.76	TC29011	17.21
3/16	7/8	2	TC20012	14.15	TC29012	17.69
13/64	1-1/8	2-1/2	TC20013	16.35	TC29013	20.43
7/32	1-1/8	2-1/2	TC20014	18.14	TC29014	22.68
15/64	1-1/4	2-1/2	TC20015	20.53	TC29015	25.66
1/4	1-1/4	2-1/2	TC20016	21.57	TC29016	26.97
17/64	1-1/4	2-1/2	TC20017	24.32	TC29017	30.39

### FRACTIONAL SIZES

SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	PRICE	ALTIM	PRICE
9/32	1-1/4	2-1/2	TC20018	25.34	TC29018	31.67
19/64	1-1/4	2-1/2	TC20019	28.45	TC29019	35.58
5/16	1-1/4	2-1/2	TC20020	29.97	TC29020	37.44
21/64	1-3/8	3	TC20021	32.68	TC29021	40.86
11/32	1-3/8	3	TC20022	35.74	TC29022	44.66
23/64	1-3/8	3	TC20023	39.95	TC29023	49.94
3/8	1-3/8	3	TC20024	42.37	TC29024	52.96
25/64	1-3/8	3	TC20025	49.62	TC29025	62.02
13/32	1-3/8	3	TC20026	54.35	TC29026	67.94
27/64	1-3/8	3	TC20027	59.13	TC29027	73.90
7/16	1-3/8	3	TC20028	61.84	TC29028	77.30
29/64	1-3/8	3	TC20029	71.74	TC29029	89.69
15/32	1-3/8	3	TC20030	74.75	TC29030	93.44
31/64	1-3/8	3	TC20031	76.86	TC29031	96.08
1/2	1-3/8	3	TC20032	77.03	TC29032	96.28
-	-	-	-	-	-	-

NOTE: SIZES 7/64" AND UNDER ARE NOT SPLIT.

### LETTER SIZES

SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	PRICE	ALTIM	PRICE
A	1-1/4	2-1/2	TC20101	20.72	TC29101	25.90
B	1-1/4	2-1/2	TC20102	21.57	TC29102	26.97
C	1-1/4	2-1/2	TC20103	21.73	TC29103	27.18
D	1-1/4	2-1/2	TC20104	22.01	TC29104	27.50
E	1-1/4	2-1/2	TC20105	21.57	TC29105	26.97
F	1-1/4	2-1/2	TC20106	24.01	TC29106	30.00
G	1-1/4	2-1/2	TC20107	25.44	TC29107	31.81
H	1-1/4	2-1/2	TC20108	25.99	TC29108	32.49
I	1-1/4	2-1/2	TC20109	26.43	TC29109	33.04
J	1-1/4	2-1/2	TC20110	27.13	TC29110	33.92
K	1-1/4	2-1/2	TC20111	27.38	TC29111	34.21
L	1-1/4	2-1/2	TC20112	28.94	TC29112	36.16
M	1-1/4	2-1/2	TC20113	29.52	TC29113	36.91

### LETTER SIZES

SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	PRICE	ALTIM	PRICE
N	1-1/4	2-1/2	TC20114	31.37	TC29114	39.20
O	1-3/8	3	TC20115	33.07	TC29115	41.34
P	1-3/8	3	TC20116	34.34	TC29116	42.92
Q	1-3/8	3	TC20117	35.58	TC29117	44.47
R	1-3/8	3	TC20118	37.14	TC29118	46.43
S	1-3/8	3	TC20119	39.56	TC29119	49.47
T	1-3/8	3	TC20120	40.98	TC29120	51.23
U	1-3/8	3	TC20121	43.01	TC29121	53.76
V	1-3/8	3	TC20122	47.63	TC29122	59.53
W	1-3/8	3	TC20123	51.29	TC29123	64.12
X	1-3/8	3	TC20124	55.99	TC29124	69.98
Y	1-3/8	3	TC20125	57.86	TC29125	72.32
Z	1-3/8	3	TC20126	62.71	TC29126	78.38

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION PLEASE SEE PAGE 188.

DIAMETER TOLERANCE +.0000, -.0005

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# Solid Carbide Drills

## STUB LENGTH - 135° SPLIT POINT - 15° HELIX



**SERIES 200**  
UNCOATED



**SERIES 201**  
ALTIN COATED

WIRE SIZES						WIRE SIZES							
SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	PRICE	ALTIN	PRICE	SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	PRICE	ALTIN	PRICE
1	1-1/4	2-1/2	TC20201	18.77	TC29201	23.46	31	3/4	2	TC20231	9.16	TC29231	11.43
2	1-1/4	2-1/2	TC20202	18.77	TC29202	23.46	32	3/4	2	TC20232	9.16	TC29232	11.43
3	1-1/8	2-1/2	TC20203	18.77	TC29203	23.46	33	3/4	2	TC20233	9.06	TC29233	11.34
4	1-1/8	2-1/2	TC20204	18.56	TC29204	23.21	34	3/4	2	TC20234	8.99	TC29234	11.23
5	1-1/8	2-1/2	TC20205	16.58	TC29205	20.72	35	3/4	2	TC20235	8.99	TC29235	11.23
6	1-1/8	2-1/2	TC20206	16.58	TC29206	20.72	36	5/8	2	TC20236	8.99	TC29236	11.23
7	1-1/8	2-1/2	TC20207	16.10	TC29207	20.12	37	5/8	2	TC20237	8.52	TC29237	10.66
8	1-1/8	2-1/2	TC20208	16.04	TC29208	20.05	38	5/8	2	TC20238	8.36	TC29238	10.45
9	1-1/8	2-1/2	TC20209	16.04	TC29209	20.05	39	5/8	2	TC20239	8.36	TC29239	10.45
10	1-1/8	2-1/2	TC20210	16.04	TC29210	20.05	40	5/8	2	TC20240	8.05	TC29240	10.08
11	1-1/8	2-1/2	TC20211	15.63	TC29211	19.55	41	5/8	2	TC20241	8.05	TC29241	10.08
12	1-1/8	2-1/2	TC20212	15.63	TC29212	19.55	42	1/2	1-1/2	TC20242	7.83	TC29242	9.78
13	7/8	2	TC20213	15.08	TC29213	18.86	43	1/2	1-1/2	TC20243	7.83	TC29243	9.78
14	7/8	2	TC20214	14.71	TC29214	18.39	44	1/2	1-1/2	TC20244	7.43	TC29244	9.28
15	7/8	2	TC20215	14.48	TC29215	18.08	45	1/2	1-1/2	TC20245	7.19	TC29245	8.99
16	7/8	2	TC20216	14.48	TC29216	18.08	46	1/2	1-1/2	TC20246	7.19	TC29246	8.99
17	7/8	2	TC20217	13.76	TC29217	17.21	47	1/2	1-1/2	TC20247	7.19	TC29247	8.99
18	7/8	2	TC20218	12.93	TC29218	16.18	48	7/16	1-1/2	TC20248	7.19	TC29248	8.99
19	7/8	2	TC20219	12.67	TC29219	15.84	49	7/16	1-1/2	TC20249	6.88	TC29249	8.60
20	7/8	2	TC20220	12.12	TC29220	15.17	50	7/16	1-1/2	TC20250	6.88	TC29250	8.60
21	7/8	2	TC20221	12.12	TC29221	15.17	51	7/16	1-1/2	TC20251	6.65	TC29251	8.30
22	7/8	2	TC20222	11.66	TC29222	14.55	52	7/16	1-1/2	TC20252	6.65	TC29252	8.30
23	7/8	2	TC20223	11.66	TC29223	14.55	53	13/32	1-1/2	TC20253	7.03	TC29253	8.80
24	7/8	2	TC20224	11.57	TC29224	14.48	54	13/32	1-1/2	TC20254	7.03	TC29254	8.80
25	7/8	2	TC20225	10.95	TC29225	13.68	55	13/32	1-1/2	TC20255	7.03	TC29255	8.80
26	7/8	2	TC20226	10.95	TC29226	13.68	56	3/8	1-1/2	TC20256	7.03	TC29256	8.80
27	7/8	2	TC20227	10.95	TC29227	13.68	57	3/8	1-1/2	TC20257	7.03	TC29257	8.80
28	3/4	2	TC20228	10.40	TC29228	13.00	58	3/8	1-1/2	TC20258	7.03	TC29258	8.80
29	3/4	2	TC20229	10.40	TC29229	13.00	59	3/8	1-1/2	TC20259	7.03	TC29259	8.80
30	3/4	2	TC20230	9.84	TC29230	12.31	60	3/8	1-1/2	TC20260	7.03	TC29260	8.80

NOTE: SIZES 31 AND UNDER ARE NOT SPLIT.

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION PLEASE SEE PAGE 188.

DIAMETER TOLERANCE +.0000, -.0005





# Solid Carbide Drills

## STRAIGHT FLUTE - 140° SPLIT POINT

**SERIES 195**  
UNCOATED



**SERIES 196**  
ALTIM COATED



FRACTIONAL SIZES						
SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	PRICE	ALTIM	PRICE
1/32	3/8	1-1/2	TC19502	8.41	TC79502	10.52
3/64	3/8	1-1/2	TC19503	8.41	TC79503	10.52
1/16	13/32	1-1/2	TC19504	8.66	TC79504	10.81
5/64	7/16	1-1/2	TC19505	9.03	TC79505	11.30
3/32	1/2	1-1/2	TC19506	9.95	TC79506	12.45
7/64	5/8	2	TC19507	10.86	TC79507	13.57
1/8	3/4	2	TC19508	10.30	TC79508	12.87
9/64	3/4	2	TC19509	11.78	TC79509	14.71
5/32	7/8	2	TC19510	13.18	TC79510	16.49
11/64	7/8	2	TC19511	14.63	TC79511	18.28
3/16	7/8	2	TC19512	13.51	TC79512	16.88
13/64	1-1/8	2-1/2	TC19513	17.56	TC79513	21.98
7/32	1-1/8	2-1/2	TC19514	19.73	TC79514	24.68
15/64	1-1/4	2-1/2	TC19515	20.83	TC79515	26.04
1/4	1-1/4	2-1/2	TC19516	19.70	TC79516	24.63

FRACTIONAL SIZES						
SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	PRICE	ALTIM	PRICE
17/64	1-1/4	2-1/2	TC19517	27.39	TC79517	34.23
9/32	1-1/4	2-1/2	TC19518	28.47	TC79518	35.60
19/64	1-1/4	2-1/2	TC19519	30.14	TC79519	37.67
5/16	1-1/4	2-1/2	TC19520	31.22	TC79520	39.02
21/64	1-3/8	3	TC19521	33.56	TC79521	41.93
11/32	1-3/8	3	TC19522	37.22	TC79522	46.52
23/64	1-3/8	3	TC19523	40.72	TC79523	50.90
3/8	1-3/8	3	TC19524	40.37	TC79524	50.47
25/64	1-3/8	3	TC19525	49.94	TC79525	62.42
13/32	1-3/8	3	TC19526	47.78	TC79526	59.73
27/64	1-3/8	3	TC19527	60.59	TC79527	75.72
7/16	1-3/8	3	TC19528	59.09	TC79528	73.87
15/32	1-3/8	3	TC19530	65.75	TC79530	82.20
1/2	1-3/8	3	TC19532	71.24	TC79532	89.06
-	-	-	-	-	-	-

NOTE: SIZES 7/64" AND UNDER ARE NOT SPLIT.

LETTER SIZES						
SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	PRICE	ALTIM	PRICE
A	1-1/4	2-1/2	TC19601	20.83	TC79601	26.04
B	1-1/4	2-1/2	TC19602	20.83	TC79602	26.04
C	1-1/4	2-1/2	TC19603	20.83	TC79603	26.04
D	1-1/4	2-1/2	TC19604	20.83	TC79604	26.04
E	1-1/4	2-1/2	TC19605	19.70	TC79605	24.63
F	1-1/4	2-1/2	TC19606	27.39	TC79606	34.23
G	1-1/4	2-1/2	TC19607	27.39	TC79607	34.23
H	1-1/4	2-1/2	TC19608	27.39	TC79608	34.23
I	1-1/4	2-1/2	TC19609	28.47	TC79609	35.60
J	1-1/4	2-1/2	TC19610	28.47	TC79610	35.60
K	1-1/4	2-1/2	TC19611	28.47	TC79611	35.60
L	1-1/4	2-1/2	TC19612	30.14	TC79612	37.67
M	1-1/4	2-1/2	TC19613	30.14	TC79613	37.67

LETTER SIZES						
SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	PRICE	ALTIM	PRICE
N	1-1/4	2-1/2	TC19614	31.22	TC79614	39.02
O	1-3/8	3	TC19615	31.22	TC79615	39.02
P	1-3/8	3	TC19616	33.56	TC79616	41.95
Q	1-3/8	3	TC19617	37.22	TC79617	46.52
R	1-3/8	3	TC19618	37.22	TC79618	46.52
S	1-3/8	3	TC19619	40.72	TC79619	50.90
T	1-3/8	3	TC19620	40.72	TC79620	50.90
U	1-3/8	3	TC19621	45.16	TC79621	56.44
V	1-3/8	3	TC19622	45.16	TC79622	56.44
W	1-3/8	3	TC19623	49.94	TC79623	62.42
X	1-3/8	3	TC19624	55.26	TC79624	69.08
Y	1-3/8	3	TC19625	57.92	TC79625	72.40
Z	1-3/8	3	TC19626	60.59	TC79626	75.72

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION PLEASE SEE PAGE 188.

DIAMETER TOLERANCE +.0000, -.0005

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# Solid Carbide Drills

## STRAIGHT FLUTE - 140° SPLIT POINT



**SERIES 195**  
UNCOATED

**SERIES 196**  
ALTiN COATED

WIRE SIZES							WIRE SIZES						
SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	PRICE	ALTiN	PRICE	SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	PRICE	ALTiN	PRICE
1	1-1/4	2-1/2	TC19701	20.26	TC79701	25.34	31	3/4	2	TC19731	11.57	TC79731	14.49
2	1-1/4	2-1/2	TC19702	19.90	TC79702	24.88	32	3/4	2	TC19732	11.48	TC79732	14.35
3	1-1/8	2-1/2	TC19703	19.11	TC79703	23.88	33	3/4	2	TC19733	11.19	TC79733	14.00
4	1-1/8	2-1/2	TC19704	18.05	TC79704	22.56	34	3/4	2	TC19734	11.14	TC79734	13.93
5	1-1/8	2-1/2	TC19705	18.25	TC79705	22.81	35	3/4	2	TC19735	10.86	TC79735	13.57
6	1-1/8	2-1/2	TC19706	17.99	TC79706	22.48	36	5/8	2	TC19736	10.75	TC79736	13.43
7	1-1/8	2-1/2	TC19707	17.32	TC79707	21.65	37	5/8	2	TC19737	10.75	TC79737	13.43
8	1-1/8	2-1/2	TC19708	17.07	TC79708	21.33	38	5/8	2	TC19738	10.64	TC79738	13.29
9	1-1/8	2-1/2	TC19709	16.55	TC79709	20.69	39	5/8	2	TC19739	10.22	TC79739	12.78
10	1-1/8	2-1/2	TC19710	16.30	TC79710	20.39	40	5/8	2	TC19740	10.22	TC79740	12.78
11	1-1/8	2-1/2	TC19711	16.02	TC79711	20.02	41	5/8	2	TC19741	10.22	TC79741	12.78
12	1-1/8	2-1/2	TC19712	15.72	TC79712	19.66	42	1/2	1-1/2	TC19742	9.84	TC79742	12.29
13	7/8	2	TC19713	15.46	TC79713	19.31	43	1/2	1-1/2	TC19743	9.67	TC79743	12.09
14	7/8	2	TC19714	15.35	TC79714	19.20	44	1/2	1-1/2	TC19744	9.55	TC79744	11.93
15	7/8	2	TC19715	15.21	TC79715	19.00	45	1/2	1-1/2	TC19745	9.33	TC79745	11.67
16	7/8	2	TC19716	15.15	TC79716	18.94	46	1/2	1-1/2	TC19746	9.03	TC79746	11.30
17	7/8	2	TC19717	14.79	TC79717	18.49	47	1/2	1-1/2	TC19747	9.03	TC79747	11.30
18	7/8	2	TC19718	14.37	TC79718	17.96	48	7/16	1-1/2	TC19748	9.03	TC79748	11.30
19	7/8	2	TC19719	14.27	TC79719	17.85	49	7/16	1-1/2	TC19749	8.82	TC79749	11.01
20	7/8	2	TC19720	13.79	TC79720	17.24	50	7/16	1-1/2	TC19750	8.70	TC79750	10.87
21	7/8	2	TC19721	13.70	TC79721	17.13	51	7/16	1-1/2	TC19751	8.66	TC79751	10.81
22	7/8	2	TC19722	13.43	TC79722	16.80	52	7/16	1-1/2	TC19752	8.66	TC79752	10.81
23	7/8	2	TC19723	12.87	TC79723	16.08	53	13/32	1-1/2	TC19753	8.53	TC79753	10.67
24	7/8	2	TC19724	12.51	TC79724	15.65	54	13/32	1-1/2	TC19754	8.53	TC79754	10.67
25	7/8	2	TC19725	12.14	TC79725	15.18	55	13/32	1-1/2	TC19755	8.41	TC79755	10.52
26	7/8	2	TC19726	12.00	TC79726	14.99	56	3/8	1-1/2	TC19756	8.41	TC79756	10.52
27	7/8	2	TC19727	11.76	TC79727	14.71	57	3/8	1-1/2	TC19757	8.41	TC79757	10.52
28	3/4	2	TC19728	11.37	TC79728	14.20	58	3/8	1-1/2	TC19758	8.41	TC79758	10.52
29	3/4	2	TC19729	11.12	TC79729	13.90	59	3/8	1-1/2	TC19759	8.41	TC79759	10.52
30	3/4	2	TC19730	10.95	TC79730	13.70	60	3/8	1-1/2	TC19760	8.41	TC79760	10.52

NOTE: SIZES 31 AND UNDER ARE NOT SPLIT.

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION PLEASE SEE PAGE 188.

DIAMETER TOLERANCE      +.0000, -.0005



# Solid Carbide Reamers



SERIES 870

DEC. EQUIV.	SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	# OF FLUTES	ITEM#	PRICE
.0400	N60	.0400	1/4	1-1/2	4	TC87046	16.58
.0410	N59	.0410	3/8	1-1/2	4	TC87047	16.58
.0420	N58	.0420	3/8	1-1/2	4	TC87048	16.58
.0430	N57	.0430	3/8	1-1/2	4	TC87049	16.58
.0440		.0440	3/8	1-1/2	4	TC87050	17.51
.0450		.0450	3/8	1-1/2	4	TC87051	17.51
.0460		.0460	3/8	1-1/2	4	TC87052	17.51
.0465	N56	.0465	3/8	1-1/2	4	TC87053	16.58
.0469	3/64	.0469	3/8	1-1/2	4	TC87054	15.75
.0470		.0470	3/8	1-1/2	4	TC87055	17.51
.0480		.0480	3/8	1-1/2	4	TC87056	17.51
.0490		.0490	3/8	1-1/2	4	TC87057	17.51
.0500		.0500	3/8	1-1/2	4	TC87058	17.51
.0510		.0510	3/8	1-1/2	4	TC87059	17.51
.0520	N55	.0520	3/8	1-1/2	4	TC87060	16.58
.0530		.0530	3/8	1-1/2	4	TC87061	17.51
.0540		.0540	3/8	1-1/2	4	TC87062	17.51
.0550	N54	.0550	3/8	1-1/2	4	TC87063	16.58
.0560		.0560	3/8	1-1/2	4	TC87064	17.51
.0570		.0570	3/8	1-1/2	4	TC87065	17.51
.0580		.0580	3/8	1-1/2	4	TC87066	17.51
.0590		.0590	3/8	1-1/2	4	TC87067	17.51
.0591	1.5mm	.0591	3/8	1-1/2	4	TC87068	17.51
.0595	N53	.0595	3/8	1-1/2	4	TC87069	16.58
.0600		.0600	3/8	1-1/2	4	TC87070	17.51
.0605		.0605	3/8	1-1/2	4	TC87071	23.29
.0610		.0610	3/8	1-1/2	4	TC87072	17.51
.0615		.0615	3/8	1-1/2	4	TC87073	19.37
.0620		.0620	3/8	1-1/2	4	TC87074	17.51
.0625	1/16	.0625	3/8	1-1/2	4	TC87075	15.75
.0630		.0630	3/8	1-1/2	4	TC87076	17.51
.0635	N52	.0635	3/8	1-1/2	4	TC87077	16.58
.0640		.0640	3/8	1-1/2	4	TC87078	17.51
.0645		.0645	3/8	1-1/2	4	TC87079	23.29
.0650		.0650	3/8	1-1/2	4	TC87080	17.51
.0660		.0660	1/2	1-3/4	4	TC87081	17.51
.0670	N51	.0670	1/2	1-3/4	4	TC87082	16.58
.0680		.0680	1/2	1-3/4	4	TC87083	17.51
.0690		.0690	1/2	1-3/4	4	TC87084	17.51
.0700	N50	.0700	1/2	1-3/4	4	TC87085	16.58
.0710		.0710	1/2	1-3/4	4	TC87086	17.51
.0720		.0720	1/2	1-3/4	4	TC87087	17.51
.0730	N49	.0730	1/2	1-3/4	4	TC87088	16.58
.0740		.0740	1/2	1-3/4	4	TC87089	17.51
.0750		.0750	1/2	1-3/4	4	TC87090	17.51
.0760	N48	.0760	1/2	1-3/4	4	TC87091	16.58
.0770		.0770	1/2	1-3/4	4	TC87092	17.51
.0780		.0780	1/2	1-3/4	4	TC87093	17.51
.0781	5/64	.0781	1/2	1-3/4	4	TC87094	15.75
.0785	N47	.0785	1/2	1-3/4	4	TC87095	16.58
.0787	2mm	.0787	1/2	1-3/4	4	TC87096	17.51
.0790		.0790	1/2	1-3/4	4	TC87097	17.51
.0800		.0800	1/2	1-3/4	4	TC87098	17.51
.0810	N46	.0810	1/2	2	4	TC87099	16.58
.0820	N45	.0820	1/2	2	4	TC87100	16.58
.0830		.0830	1/2	2	4	TC87101	17.51

DEC. EQUIV.	SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	# OF FLUTES	ITEM#	PRICE
.0840		.0840	1/2	2	4	TC87102	17.51
.0850		.0850	1/2	2	4	TC87103	17.51
.0860	N44	.0860	1/2	2	4	TC87104	16.58
.0870		.0870	1/2	2	4	TC87105	17.51
.0880		.0880	1/2	2	4	TC87106	17.51
.0890	N43	.0890	1/2	2	4	TC87107	16.58
.0900		.0900	1/2	2	4	TC87108	17.51
.0910		.0910	1/2	2	4	TC87109	17.51
.0915		.0915	1/2	2	4	TC87110	23.10
.0920		.0920	1/2	2	4	TC87111	17.51
.0925		.0925	1/2	2	4	TC87112	19.37
.0930		.0930	1/2	2	4	TC87113	17.51
.0935	N42	.0935	1/2	2	4	TC87114	16.58
.0938	3/32	.0938	1/2	2	4	TC87115	15.75
.0940		.0940	1/2	2	4	TC87116	17.51
.0945		.0945	1/2	2	4	TC87117	19.37
.0950		.0950	1/2	2	4	TC87118	17.51
.0960	N41	.0960	5/8	2	4	TC87119	16.58
.0970		.0970	5/8	2	4	TC87120	17.51
.0980	N40	.0980	5/8	2	4	TC87121	16.58
.0984	2.5mm	.0984	5/8	2	4	TC87122	17.51
.0990		.0990	5/8	2-1/4	4	TC87123	17.51
.0995	N39	.0995	5/8	2-1/4	4	TC87124	16.58
.1000		.1000	5/8	2-1/4	4	TC87125	17.51
.1010		.1010	5/8	2-1/4	4	TC87126	17.51
.1015	N38	.1015	5/8	2-1/4	4	TC87127	16.58
.1020		.1020	5/8	2-1/4	4	TC87128	17.51
.1030		.1030	5/8	2-1/4	4	TC87129	17.51
.1040	N37	.1040	5/8	2-1/4	4	TC87130	16.58
.1050		.1050	5/8	2-1/4	4	TC87131	17.51
.1060		.1060	5/8	2-1/4	4	TC87132	17.51
.1065	N36	.1065	5/8	2-1/4	4	TC87133	16.58
.1070		.1070	5/8	2-1/4	4	TC87134	17.51
.1080		.1080	5/8	2-1/4	4	TC87135	17.51
.1090		.1090	5/8	2-1/4	4	TC87136	18.25
.1094	7/64	.1094	5/8	2-1/4	4	TC87137	15.75
.1100	N35	.1100	5/8	2-1/4	4	TC87138	16.58
.1110	N34	.1110	5/8	2-1/4	4	TC87139	16.58
.1120		.1120	5/8	2-1/4	4	TC87140	17.51
.1130	N33	.1130	5/8	2-1/4	4	TC87141	16.58
.1140		.1140	5/8	2-1/4	4	TC87142	17.51
.1150		.1150	5/8	2-1/4	4	TC87143	17.51
.1160	N32	.1160	5/8	2-1/4	4	TC87144	17.44
.1170		.1170	5/8	2-1/4	4	TC87145	18.54
.1180		.1180	5/8	2-1/4	4	TC87146	18.54
.1181	3mm	.1181	5/8	2-1/4	4	TC87147	17.05
.1190		.1190	5/8	2-1/4	4	TC87148	18.54
.1200	N31	.1200	5/8	2-1/4	4	TC87149	17.44
.1210		.1210	5/8	2-1/4	4	TC87150	18.54
.1220		.1220	5/8	2-1/4	4	TC87151	18.54
.1230		.1230	5/8	2-1/4	4	TC87152	18.54
.1235		.1235	5/8	2-1/4	4	TC87153	24.70
.1240		.1240	5/8	2-1/4	4	TC87154	18.54
.1245		.1245	5/8	2-1/4	4	TC87155	20.50
.1250	1/8	.1250	5/8	2-1/4	4	TC87156	16.77
.1255		.1255	5/8	2-1/4	4	TC87157	20.50

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TOLERANCES	DIAMETER	SHANK
ALL SIZES	+ .0003, -.0000	+ .0003, -.0002

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION

**CARBIDE REAMERS**



Your #1 Source for American-Made Premium Cutting Tools



# Solid Carbide Reamers



SERIES 870

DEC. EQUIV.	SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	# OF FLUTES	ITEM#	PRICE
.1260		.1260	5/8	2-1/4	4	TC87158	18.54
.1265		.1265	5/8	2-1/4	4	TC87159	24.70
.1270		.1270	5/8	2-1/4	4	TC87160	18.54
.1275		.1275	5/8	2-1/4	4	TC87161	24.70
.1280		.1280	5/8	2-1/4	4	TC87162	18.54
.1285	N30	.1285	5/8	2-1/4	4	TC87163	18.54
.1290		.1290	5/8	2-1/4	4	TC87164	18.54
.1300		.1300	5/8	2-1/2	4	TC87165	18.54
.1310		.1310	3/4	2-1/2	4	TC87166	21.23
.1320		.1320	3/4	2-1/2	4	TC87167	21.23
.1330		.1330	3/4	2-1/2	4	TC87168	21.23
.1340		.1340	3/4	2-1/2	4	TC87169	21.23
.1350		.1350	3/4	2-1/2	4	TC87170	21.23
.1360	N29	.1360	3/4	2-1/2	4	TC87171	19.86
.1370		.1370	3/4	2-1/2	4	TC87172	21.23
.1378	3.5mm	.1378	3/4	2-1/2	4	TC87173	21.23
.1380		.1380	3/4	2-1/2	4	TC87174	21.23
.1390		.1390	3/4	2-1/2	4	TC87175	21.23
.1400		.1400	3/4	2-1/2	4	TC87176	21.23
.1405	N28	.1405	3/4	2-1/2	4	TC87177	19.86
.1406	9/64	.1406	3/4	2-1/2	4	TC87178	19.11
.1410		.1410	3/4	2-1/2	4	TC87179	21.23
.1420		.1420	3/4	2-1/2	4	TC87180	21.23
.1430		.1430	3/4	2-1/2	4	TC87181	21.23
.1440	N27	.1440	3/4	2-1/2	4	TC87182	19.86
.1450		.1450	3/4	2-1/2	4	TC87183	21.23
.1460		.1460	3/4	2-1/2	4	TC87184	22.17
.1470	N26	.1470	3/4	2-1/2	4	TC87185	20.69
.1480		.1480	3/4	2-1/2	4	TC87186	22.17
.1490		.1490	3/4	2-1/2	4	TC87187	22.17
.1495	N25	.1495	3/4	2-1/2	4	TC87188	20.69
.1500		.1500	3/4	2-1/2	4	TC87189	22.17
.1510		.1510	3/4	2-1/2	4	TC87190	22.17
.1520	N24	.1520	3/4	2-1/2	4	TC87191	20.69
.1530		.1530	3/4	2-1/2	4	TC87192	22.17
.1540	N23	.1540	3/4	2-1/2	4	TC87193	20.69
.1545		.1545	3/4	2-1/2	4	TC87194	25.63
.1550		.1550	3/4	2-1/2	4	TC87195	22.17
.1555		.1555	3/4	2-1/2	4	TC87196	25.63
.1560		.1560	3/4	2-1/2	4	TC87197	22.17
.1562	5/32	.1562	3/4	2-1/2	4	TC87198	20.04
.1565		.1565	3/4	2-1/2	4	TC87199	25.63
.1570	N22	.1570	3/4	2-1/2	4	TC87200	20.69
.1575	4mm	.1575	3/4	2-1/2	4	TC87201	22.17
.1580		.1580	3/4	2-1/2	4	TC87202	22.17
.1590	N21	.1590	3/4	2-1/2	4	TC87203	20.69
.1600		.1600	3/4	2-1/2	4	TC87204	22.17
.1610	N20	.1610	7/8	2-1/2	4	TC87205	23.29
.1620		.1620	7/8	2-3/4	4	TC87206	24.96
.1630		.1630	7/8	2-3/4	4	TC87207	24.96
.1640		.1640	7/8	2-3/4	4	TC87208	24.96
.1650		.1650	7/8	2-3/4	4	TC87209	23.29
.1660	N19	.1660	7/8	2-3/4	4	TC87210	23.29
.1670		.1670	7/8	2-3/4	4	TC87211	24.96
.1680		.1680	7/8	2-3/4	4	TC87212	24.96
.1690		.1690	7/8	2-3/4	4	TC87213	24.96

DEC. EQUIV.	SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	# OF FLUTES	ITEM#	PRICE
.1695	N18	.1695	7/8	2-3/4	4	TC87214	23.29
.1700		.1700	7/8	2-3/4	4	TC87215	24.96
.1710		.1710	7/8	2-3/4	4	TC87216	24.96
.1719	11/64	.1719	7/8	2-3/4	4	TC87217	22.45
.1720		.1720	7/8	2-3/4	4	TC87218	24.96
.1730	N17	.1730	7/8	2-3/4	4	TC87219	23.29
.1740		.1740	7/8	2-3/4	4	TC87220	24.96
.1750		.1750	7/8	2-3/4	4	TC87221	24.96
.1760		.1760	7/8	2-3/4	4	TC87222	24.96
.1770	N16	.1770	7/8	2-3/4	4	TC87223	23.29
.1772	4.5mm	.1772	7/8	2-3/4	4	TC87224	25.99
.1780		.1780	7/8	2-3/4	4	TC87225	24.96
.1790		.1790	7/8	2-3/4	4	TC87226	24.96
.1800	N15	.1800	7/8	2-3/4	4	TC87227	23.29
.1810		.1810	7/8	2-3/4	4	TC87228	24.96
.1820	N14	.1820	7/8	2-3/4	4	TC87229	23.29
.1830		.1830	7/8	2-3/4	4	TC87230	24.96
.1840		.1840	7/8	2-3/4	4	TC87231	24.96
.1850	N13	.1850	7/8	2-3/4	4	TC87232	23.29
.1855		.1855	7/8	2-3/4	4	TC87233	30.01
.1860		.1860	7/8	2-3/4	4	TC87234	24.96
.1865		.1865	7/8	2-3/4	4	TC87235	26.83
.1870		.1870	7/8	2-3/4	4	TC87236	24.96
.1875	3/16	.1875	7/8	2-3/4	4	TC87237	22.45
.1880		.1880	7/8	2-3/4	4	TC87238	24.96
.1885		.1885	7/8	2-3/4	4	TC87239	26.83
.1890	N12	.1890	7/8	2-3/4	4	TC87240	23.29
.1900		.1900	7/8	2-3/4	4	TC87241	24.96
.1910	N11	.1910	7/8	2-3/4	4	TC87242	28.32
.1920		.1920	7/8	2-3/4	4	TC87243	30.29
.1930		.1930	7/8	2-3/4	4	TC87244	30.29
.1935	N10	.1935	7/8	2-3/4	4	TC87245	28.32
.1940		.1940	7/8	2-3/4	4	TC87246	30.29
.1950		.1950	7/8	2-3/4	4	TC87247	30.29
.1960	N9	.1960	1	3	4	TC87248	28.32
.1969	5mm	.1969	1	3	4	TC87249	30.29
.1970		.1970	1	3	4	TC87250	30.29
.1980		.1980	1	3	4	TC87251	30.29
.1990	N8	.1990	1	3	4	TC87252	28.32
.2000		.2000	1	3	4	TC87253	30.29
.2010	N7	.2010	1	3	4	TC87254	28.32
.2020		.2020	1	3	4	TC87255	30.29
.2030		.2030	1	3	4	TC87256	30.29
.2031	13/64	.2031	1	3	4	TC87257	27.19
.2040	N6	.2040	1	3	4	TC87258	28.32
.2050		.2050	1	3	4	TC87259	30.29
.2055	N5	.2055	1	3	4	TC87260	28.32
.2060		.2060	1	3	4	TC87261	30.29
.2070		.2070	1	3	4	TC87262	30.29
.2080		.2080	1	3	4	TC87263	30.29
.2090	N4	.2090	1	3	4	TC87264	28.32
.2100		.2100	1	3	4	TC87265	30.29
.2110		.2110	1	3	4	TC87266	30.29
.2120		.2120	1	3	4	TC87267	30.29
.2130	N3	.2130	1	3	4	TC87268	28.32
.2140		.2140	1	3	4	TC87269	30.29

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TOLERANCES	DIAMETER	SHANK
ALL SIZES	+ .0003, -.0000	+ .0003, -.0002

CARBIDE REAMERS

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION





# Solid Carbide Reamers



SERIES 870

DEC. EQUIV.	SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	# OF FLUTES	ITEM#	PRICE
.2150		.2150	1	3	4	TC87270	30.29
.2160		.2160	1	3	4	TC87271	30.29
.2165	5.5mm	.2165	1	3	4	TC87272	31.95
.2170		.2170	1	3	4	TC87273	30.29
.2180		.2180	1	3	4	TC87274	30.29
.2188	7/32	.2188	1	3	4	TC87275	27.19
.2190		.2190	1	3	4	TC87276	30.29
.2200		.2200	1	3	4	TC87277	30.29
.2210	N2	.2210	1	3	4	TC87278	28.32
.2220		.2220	1	3	4	TC87279	30.29
.2230		.2230	1	3	4	TC87280	30.29
.2240		.2240	1	3	4	TC87281	30.29
.2250		.2250	1	3	4	TC87282	30.29
.2260		.2260	1	3	4	TC87283	33.27
.2270		.2270	1	3	4	TC87284	33.27
.2280	N1	.2280	1	3	4	TC87285	31.04
.2290		.2290	1	3	4	TC87286	31.04
.2300		.2300	1	3	4	TC87287	33.27
.2310		.2310	1	3	4	TC87288	33.27
.2320		.2320	1	3	4	TC87289	33.27
.2330		.2330	1	3	4	TC87290	33.27
.2340	A	.2340	1	3	4	TC87291	33.27
.2344	15/64	.2344	1	3	4	TC87292	29.91
.2350		.2350	1	3	4	TC87293	33.27
.2360		.2360	1	3	4	TC87294	33.27
.2362	6mm	.2362	1	3	4	TC87295	31.68
.2370		.2370	1	3	4	TC87296	33.27
.2380	B	.2380	1	3	4	TC87297	33.27
.2390		.2390	1	3	4	TC87298	33.27
.2400		.2400	1	3	4	TC87299	33.27
.2410		.2410	1	3	4	TC87300	33.27
.2420	C	.2420	1	3	4	TC87301	33.27
.2430		.2430	1	3	4	TC87302	33.27
.2440		.2440	1	3	4	TC87303	33.27
.2450		.2450	1	3	4	TC87304	33.27
.2460	D	.2460	1	3	4	TC87305	33.27
.2470		.2470	1	3	4	TC87306	33.27
.2480		.2480	1	3	4	TC87307	33.27
.2485		.2485	1	3	4	TC87308	37.17
.2490		.2490	1	3	4	TC87309	33.27
.2495		.2495	1	3	4	TC87310	35.31
.2500	1/4	.2500	1	3	4	TC87311	29.91
.2505		.2505	1	3	4	TC87312	35.31
.2510		.2510	1	3	4	TC87313	33.27
.2515		.2515	1	3	4	TC87314	41.37
.2520		.2520	1	3	4	TC87315	33.27
.2530		.2530	1	3	4	TC87316	33.27
.2540		.2540	1	3	4	TC87317	33.27
.2550		.2550	1	3	6	TC87318	33.27
.2559	6.5mm	.2559	1-1/8	3-1/4	6	TC87319	35.22
.2560		.2560	1-1/8	3-1/4	6	TC87320	40.24
.2570	F	.2570	1-1/8	3-1/4	6	TC87321	40.24
.2580		.2580	1-1/8	3-1/4	6	TC87322	40.24
.2590		.2590	1-1/8	3-1/4	6	TC87323	40.24
.2600		.2600	1-1/8	3-1/4	6	TC87324	40.24
.2610	G	.2610	1-1/8	3-1/4	6	TC87325	40.24

DEC. EQUIV.	SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	# OF FLUTES	ITEM#	PRICE
.2620		.2620	1-1/8	3-1/4	6	TC87326	40.24
.2630		.2630	1-1/8	3-1/4	6	TC87327	40.24
.2640		.2640	1-1/8	3-1/4	6	TC87328	40.24
.2650		.2650	1-1/8	3-1/4	6	TC87329	40.24
.2656	17/64	.2656	1-1/8	3-1/4	6	TC87330	36.25
.2660	H	.2660	1-1/8	3-1/4	6	TC87331	40.24
.2670		.2670	1-1/8	3-1/4	6	TC87332	40.24
.2680		.2680	1-1/8	3-1/4	6	TC87333	40.24
.2690		.2690	1-1/8	3-1/4	6	TC87334	40.24
.2700		.2700	1-1/8	3-1/4	6	TC87335	40.24
.2710		.2710	1-1/8	3-1/4	6	TC87336	40.24
.2720	I	.2720	1-1/8	3-1/4	6	TC87337	40.24
.2730		.2730	1-1/8	3-1/4	6	TC87338	40.24
.2740		.2740	1-1/8	3-1/4	6	TC87339	40.24
.2750		.2750	1-1/8	3-1/4	6	TC87340	40.24
.2756	7mm	.2756	1-1/8	3-1/4	6	TC87341	43.96
.2760		.2760	1-1/8	3-1/4	6	TC87342	40.24
.2770	J	.2770	1-1/8	3-1/4	6	TC87343	40.24
.2780		.2780	1-1/8	3-1/4	6	TC87344	40.24
.2790		.2790	1-1/8	3-1/4	6	TC87345	40.24
.2800		.2800	1-1/8	3-1/4	6	TC87346	40.24
.2810	K	.2810	1-1/8	3-1/4	6	TC87347	40.24
.2812	9/32	.2812	1-1/8	3-1/4	6	TC87348	36.25
.2820		.2820	1-1/8	3-1/4	6	TC87349	40.24
.2830		.2830	1-1/8	3-1/4	6	TC87350	40.24
.2840		.2840	1-1/8	3-1/4	6	TC87351	40.24
.2850		.2850	1-1/8	3-1/4	6	TC87352	40.24
.2860		.2860	1-1/8	3-1/4	6	TC87353	40.24
.2870		.2870	1-1/8	3-1/4	6	TC87354	40.24
.2880		.2880	1-1/8	3-1/4	6	TC87355	40.24
.2890		.2890	1-1/8	3-1/4	6	TC87356	40.24
.2900	L	.2900	1-1/8	3-1/4	6	TC87357	40.24
.2910		.2910	1-1/8	3-1/4	6	TC87358	40.24
.2920		.2920	1-1/8	3-1/4	6	TC87359	40.24
.2930		.2930	1-1/8	3-1/4	6	TC87360	40.24
.2940		.2940	1-1/8	3-1/4	6	TC87361	40.24
.2950	M	.2950	1-1/8	3-1/4	6	TC87362	40.24
.2953	7.5mm	.2953	1-1/8	3-1/4	6	TC87363	43.96
.2960		.2960	1-1/8	3-1/4	6	TC87364	40.24
.2969	19/64	.2969	1-1/8	3-1/4	6	TC87365	40.24
.2970		.2970	1-1/8	3-1/4	6	TC87366	40.24
.2980		.2980	1-1/8	3-1/4	6	TC87367	40.24
.2990		.2990	1-1/8	3-1/4	6	TC87368	40.24
.3000		.3000	1-1/8	3-1/4	6	TC87369	40.24
.3010		.3010	1-1/8	3-1/4	6	TC87370	40.24
.3020	N	.3020	1-1/8	3-1/4	6	TC87371	40.24
.3030		.3030	1-1/8	3-1/4	6	TC87372	40.24
.3040		.3040	1-1/8	3-1/4	6	TC87373	40.24
.3050		.3050	1-1/8	3-1/4	6	TC87374	40.24
.3060		.3060	1-1/8	3-1/4	6	TC87375	40.24
.3070		.3070	1-1/8	3-1/4	6	TC87376	40.24
.3080		.3080	1-1/8	3-1/4	6	TC87377	40.24
.3090		.3090	1-1/8	3-1/4	6	TC87378	40.24
.3100		.3100	1-1/8	3-1/4	6	TC87379	40.24
.3110		.3110	1-1/8	3-1/4	6	TC87380	40.24
.3115		.3115	1-1/8	3-1/4	6	TC87381	46.21

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TOLERANCES	DIAMETER	SHANK
ALL SIZES	+ .0003, -.0000	+ .0003, -.0002

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION

**CARBIDE REAMERS**



# Solid Carbide Reamers



SERIES 870

DEC. EQUIV.	SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	# OF FLUTES	ITEM#	PRICE
.3120		.3120	1-1/8	3-1/4	6	TC87382	40.24
.3125	5/16	.3125	1-1/8	3-1/4	6	TC87383	40.24
.3130		.3130	1-1/8	3-1/4	6	TC87384	40.24
.3135		.3135	1-1/8	3-1/4	6	TC87385	46.21
.3140		.3140	1-1/8	3-1/4	6	TC87386	40.24
.3150	8mm	.3150	1-1/8	3-1/4	6	TC87387	40.24
.3160	O	.3160	1-1/8	3-1/4	6	TC87388	45.00
.3170		.3170	1-1/8	3-1/4	6	TC87389	45.00
.3180		.3180	1-1/8	3-1/4	6	TC87390	45.00
.3190		.3190	1-1/8	3-1/4	6	TC87391	45.00
.3200		.3200	1-1/8	3-1/4	6	TC87392	45.00
.3210		.3210	1-1/4	3-1/2	6	TC87393	45.00
.3220		.3220	1-1/4	3-1/2	6	TC87394	45.00
.3230	P	.3230	1-1/4	3-1/2	6	TC87395	45.00
.3240		.3240	1-1/4	3-1/2	6	TC87396	45.00
.3250		.3250	1-1/4	3-1/2	6	TC87397	45.00
.3260		.3260	1-1/4	3-1/2	6	TC87398	45.00
.3270		.3270	1-1/4	3-1/2	6	TC87399	45.00
.3280		.3280	1-1/4	3-1/2	6	TC87400	45.00
.3281	21/64	.3281	1-1/4	3-1/2	6	TC87401	45.46
.3290		.3290	1-1/4	3-1/2	6	TC87402	45.00
.3300		.3300	1-1/4	3-1/2	6	TC87403	45.00
.3310		.3310	1-1/4	3-1/2	6	TC87404	45.00
.3320	Q	.3320	1-1/4	3-1/2	6	TC87405	45.00
.3330		.3330	1-1/4	3-1/2	6	TC87406	45.00
.3340		.3340	1-1/4	3-1/2	6	TC87407	45.00
.3346	8.5mm	.3346	1-1/4	3-1/2	6	TC87408	45.00
.3350		.3350	1-1/4	3-1/2	6	TC87409	45.00
.3360		.3360	1-1/4	3-1/2	6	TC87410	45.00
.3370		.3370	1-1/4	3-1/2	6	TC87411	45.00
.3380		.3380	1-1/4	3-1/2	6	TC87412	45.00
.3390	R	.3390	1-1/4	3-1/2	6	TC87413	45.30
.3400		.3400	1-1/4	3-1/2	6	TC87414	45.00
.3410		.3410	1-1/4	3-1/2	6	TC87415	45.00
.3420		.3420	1-1/4	3-1/2	6	TC87416	45.00
.3430		.3430	1-1/4	3-1/2	6	TC87417	45.00
.3438	11/32	.3438	1-1/4	3-1/2	6	TC87418	45.46
.3440		.3440	1-1/4	3-1/2	6	TC87419	45.00
.3450		.3450	1-1/4	3-1/2	6	TC87420	45.00
.3460		.3460	1-1/4	3-1/2	6	TC87421	45.00
.3470		.3470	1-1/4	3-1/2	6	TC87422	45.00
.3480	S	.3480	1-1/4	3-1/2	6	TC87423	45.00
.3490		.3490	1-1/4	3-1/2	6	TC87424	45.00
.3500		.3500	1-1/4	3-1/2	6	TC87425	45.00
.3510		.3510	1-1/4	3-1/2	6	TC87426	49.10
.3520		.3520	1-1/4	3-1/2	6	TC87427	49.10
.3530		.3530	1-1/4	3-1/2	6	TC87428	49.10
.3540		.3540	1-1/4	3-1/2	6	TC87429	49.10
.3543	9mm	.3543	1-1/4	3-1/2	6	TC87430	51.24
.3550		.3550	1-1/4	3-1/2	6	TC87431	49.10
.3560		.3560	1-1/4	3-1/2	6	TC87432	49.10
.3570		.3570	1-1/4	3-1/2	6	TC87433	49.10
.3580	T	.3580	1-1/4	3-1/2	6	TC87434	49.10
.3590		.3590	1-1/4	3-1/2	6	TC87435	49.94
.3594	23/64	.3594	1-1/4	3-1/2	6	TC87436	48.44
.3600		.3600	1-1/4	3-1/2	6	TC87437	49.10

DEC. EQUIV.	SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	# OF FLUTES	ITEM#	PRICE
.3610		.3610	1-1/4	3-1/2	6	TC87438	49.10
.3620		.3620	1-1/4	3-1/2	6	TC87439	49.10
.3630		.3630	1-1/4	3-1/2	6	TC87440	49.10
.3640		.3640	1-1/4	3-1/2	6	TC87441	49.10
.3650		.3650	1-1/4	3-1/2	6	TC87442	49.10
.3660		.3660	1-1/4	3-1/2	6	TC87443	49.10
.3670		.3670	1-1/4	3-1/2	6	TC87444	49.10
.3680	U	.3680	1-1/4	3-1/2	6	TC87445	49.10
.3690		.3690	1-1/4	3-1/2	6	TC87446	49.10
.3700		.3700	1-1/4	3-1/2	6	TC87447	49.10
.3710		.3710	1-1/4	3-1/2	6	TC87448	49.10
.3720		.3720	1-1/4	3-1/2	6	TC87449	49.10
.3730		.3730	1-1/4	3-1/2	6	TC87450	49.10
.3740	9.5mm	.3740	1-1/4	3-1/2	6	TC87451	41.00
.3745		.3745	1-1/4	3-1/2	6	TC87452	59.62
.3750	3/8	.3750	1-1/4	3-1/2	6	TC87453	48.44
.3755		.3755	1-1/4	3-1/2	6	TC87454	59.62
.3760		.3760	1-1/4	3-1/2	6	TC87455	61.66
.3765		.3765	1-1/4	3-1/2	6	TC87456	64.69
.3770	V	.3770	1-1/4	3-1/2	6	TC87457	61.66
.3780		.3780	1-1/4	3-1/2	6	TC87458	61.66
.3790		.3790	1-1/4	3-1/2	6	TC87459	61.66
.3800		.3800	1-1/4	3-1/2	6	TC87460	61.66
.3810		.3810	1-1/4	3-1/2	6	TC87461	61.66
.3820		.3820	1-1/4	3-1/2	6	TC87462	61.66
.3830		.3830	1-1/4	3-1/2	6	TC87463	61.66
.3840		.3840	1-1/4	3-1/2	6	TC87464	61.66
.3850		.3850	1-1/4	3-1/2	6	TC87465	61.66
.3860	W	.3860	1-1/4	3-1/2	6	TC87466	61.66
.3870		.3870	1-1/4	3-1/2	6	TC87467	76.50
.3880		.3880	1-1/4	3-1/2	6	TC87468	76.50
.3890		.3890	1-1/4	3-1/2	6	TC87469	76.50
.3900		.3900	1-1/4	3-1/2	6	TC87470	76.50
.3906	25/64	.3906	1-1/4	3-1/2	6	TC87471	55.53
.3910		.3910	1-1/4	3-1/2	6	TC87472	76.50
.3920		.3920	1-1/4	3-1/2	6	TC87473	76.50
.3930		.3930	1-1/4	3-1/2	6	TC87474	76.50
.3937	10mm	.3937	1-1/4	3-1/2	6	TC87475	57.95
.3940		.3940	1-1/4	3-1/2	6	TC87476	76.50
.3950		.3950	1-1/4	3-1/2	6	TC87477	76.50
.3960		.3960	1-1/4	3-1/2	6	TC87478	76.50
.3970	X	.3970	1-1/4	3-1/2	6	TC87479	76.50
.3980		.3980	1-1/4	3-1/2	6	TC87480	76.50
.3990		.3990	1-1/4	3-1/2	6	TC87481	76.50
.4000		.4000	1-1/4	3-1/2	6	TC87482	76.50
.4010		.4010	1-1/4	3-1/2	6	TC87483	76.50
.4020		.4020	1-1/4	3-1/2	6	TC87484	76.50
.4030		.4030	1-1/4	3-1/2	6	TC87485	76.50
.4040	Y	.4040	1-1/4	3-1/2	6	TC87486	76.50
.4050		.4050	1-1/4	3-1/2	6	TC87487	76.50
.4060		.4060	1-1/4	3-1/2	6	TC87488	76.50
.4062	13/32	.4062	1-1/4	3-1/2	6	TC87489	55.53
.4070		.4070	1-1/4	3-1/2	6	TC87490	76.50
.4080		.4080	1-1/4	3-1/2	6	TC87491	76.50
.4090		.4090	1-1/4	3-1/2	6	TC87492	76.50
.4100		.4100	1-1/4	3-1/2	6	TC87493	76.50

CONTINUED ON NEXT PAGE

TOLERANCES	DIAMETER	SHANK
ALL SIZES	+ .0003, -.0000	+ .0003, -.0002

CARBIDE REAMERS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE REAMERS  
CARBIDE BURS  
CARBIDE BURS  
COUNTERSINKS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# Solid Carbide Reamers



**SERIES 870**

DEC. EQUIV.	SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	# OF FLUTES	ITEM#	PRICE
.4110		.4110	1-1/4	3-1/2	6	TC87494	76.50
.4120		.4120	1-1/4	3-1/2	6	TC87495	76.50
.4130	Z	.4130	1-1/4	3-1/2	6	TC87496	76.50
.4134	10.5mm	.4134	1-1/4	3-1/2	6	TC87497	69.67
.4140		.4140	1-1/4	3-1/2	6	TC87498	76.50
.4150		.4150	1-1/4	3-1/2	6	TC87499	76.50
.4160		.4160	1-3/8	4	6	TC87500	76.50
.4170		.4170	1-3/8	4	6	TC87501	76.50
.4180		.4180	1-3/8	4	6	TC87502	76.50
.4190		.4190	1-3/8	4	6	TC87503	76.50
.4200		.4200	1-3/8	4	6	TC87504	76.50
.4210		.4210	1-3/8	4	6	TC87505	76.50
.4219	27/64	.4219	1-3/8	4	6	TC87506	62.96
.4220		.4220	1-3/8	4	6	TC87507	76.50
.4230		.4230	1-3/8	4	6	TC87508	76.50
.4240		.4240	1-3/8	4	6	TC87509	76.50
.4250		.4250	1-3/8	4	6	TC87510	76.50
.4260		.4260	1-3/8	4	6	TC87511	76.50
.4270		.4270	1-3/8	4	6	TC87512	76.50
.4280		.4280	1-3/8	4	6	TC87513	76.50
.4290		.4290	1-3/8	4	6	TC87514	76.50
.4300		.4300	1-3/8	4	6	TC87515	76.50
.4310		.4310	1-3/8	4	6	TC87516	76.50
.4320		.4320	1-3/8	4	6	TC87517	76.50
.4330		.4330	1-3/8	4	6	TC87518	76.50
.4331	11mm	.4331	1-3/8	4	6	TC87519	69.67
.4340		.4340	1-3/8	4	6	TC87520	76.50
.4350		.4350	1-3/8	4	6	TC87521	76.50
.4360		.4360	1-3/8	4	6	TC87522	76.50
.4365		.4365	1-3/8	4	6	TC87523	76.50
.4370		.4370	1-3/8	4	6	TC87524	76.50
.4375	7/16	.4375	1-3/8	4	6	TC87525	62.96
.4380		.4380	1-3/8	4	6	TC87526	76.50
.4385		.4385	1-3/8	4	6	TC87527	91.40
.4390		.4390	1-3/8	4	6	TC87528	76.50
.4400		.4400	1-3/8	4	6	TC87529	76.50
.4410		.4410	1-3/8	4	6	TC87530	86.80
.4420		.4420	1-3/8	4	6	TC87531	86.80
.4430		.4430	1-3/8	4	6	TC87532	86.80
.4440		.4440	1-3/8	4	6	TC87533	86.80
.4450		.4450	1-3/8	4	6	TC87534	86.80
.4460		.4460	1-3/8	4	6	TC87535	86.80
.4470		.4470	1-3/8	4	6	TC87536	86.80
.4480		.4480	1-3/8	4	6	TC87537	86.80
.4490		.4490	1-3/8	4	6	TC87538	86.80
.4500		.4500	1-3/8	4	6	TC87539	86.80
.4510		.4510	1-3/8	4	6	TC87540	86.80
.4520		.4520	1-3/8	4	6	TC87541	86.80
.4528	11.5mm	.4528	1-3/8	4	6	TC87542	86.80
.4530		.4530	1-3/8	4	6	TC87543	79.55
.4531	29/64	.4531	1-3/8	4	6	TC87544	69.41
.4540		.4540	1-3/8	4	6	TC87545	86.80
.4550		.4550	1-3/8	4	6	TC87546	86.80

DEC. EQUIV.	SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	# OF FLUTES	ITEM#	PRICE
.4560		.4560	1-3/8	4	6	TC87547	86.80
.4570		.4570	1-3/8	4	6	TC87548	86.80
.4580		.4580	1-3/8	4	6	TC87549	86.80
.4590		.4590	1-3/8	4	6	TC87550	86.80
.4600		.4600	1-3/8	4	6	TC87551	86.80
.4610		.4610	1-3/8	4	6	TC87552	86.80
.4620		.4620	1-3/8	4	6	TC87553	86.80
.4630		.4630	1-3/8	4	6	TC87554	86.80
.4640		.4640	1-3/8	4	6	TC87555	86.80
.4650		.4650	1-3/8	4	6	TC87556	86.80
.4660		.4660	1-3/8	4	6	TC87557	86.80
.4670		.4670	1-3/8	4	6	TC87558	86.80
.4680		.4680	1-3/8	4	6	TC87559	86.80
.4688	15/32	.4688	1-3/8	4	6	TC87560	69.41
.4690		.4690	1-3/8	4	6	TC87561	91.46
.4700		.4700	1-3/8	4	6	TC87562	91.46
.4710		.4710	1-3/8	4	6	TC87563	91.46
.4720		.4720	1-3/8	4	6	TC87564	91.46
.4724	12mm	.4724	1-3/8	4	6	TC87565	88.12
.4730		.4730	1-3/8	4	6	TC87566	91.46
.4740		.4740	1-3/8	4	6	TC87567	91.46
.4750		.4750	1-3/8	4	6	TC87568	91.46
.4760		.4760	1-1/2	4	6	TC87569	91.46
.4770		.4770	1-1/2	4	6	TC87570	91.46
.4780		.4780	1-1/2	4	6	TC87571	91.46
.4790		.4790	1-1/2	4	6	TC87572	91.46
.4800		.4800	1-1/2	4	6	TC87573	91.46
.4810		.4810	1-1/2	4	6	TC87574	91.46
.4820		.4820	1-1/2	4	6	TC87575	91.46
.4830		.4830	1-1/2	4	6	TC87576	91.46
.4840		.4840	1-1/2	4	6	TC87577	91.46
.4844	31/64	.4844	1-1/2	4	6	TC87578	78.63
.4850		.4850	1-1/2	4	6	TC87579	91.46
.4860		.4860	1-1/2	4	6	TC87580	91.46
.4870		.4870	1-1/2	4	6	TC87581	110.29
.4880		.4880	1-1/2	4	6	TC87582	110.29
.4890		.4890	1-1/2	4	6	TC87583	110.29
.4900		.4900	1-1/2	4	6	TC87584	110.29
.4910		.4910	1-1/2	4	6	TC87585	110.29
.4920		.4920	1-1/2	4	6	TC87586	110.29
.4921	12.5mm	.4921	1-1/2	4	6	TC87587	110.29
.4930		.4930	1-1/2	4	6	TC87588	110.29
.4940		.4940	1-1/2	4	6	TC87589	110.29
.4950		.4950	1-1/2	4	6	TC87590	110.29
.4960		.4960	1-1/2	4	6	TC87591	110.29
.4970		.4970	1-1/2	4	6	TC87592	110.29
.4980		.4980	1-1/2	4	6	TC87593	110.29
.4990		.4990	1-1/2	4	6	TC87594	110.29
.4995		.4995	1-1/2	4	6	TC87595	110.29
.5000	1/2	.5000	1-1/2	4	6	TC87596	78.63
.5005		.5005	1-1/2	4	6	TC87597	110.29
.5010		.5010	1-1/2	4	6	TC87598	110.29
.5020		.5020	1-1/2	4	6	TC87599	110.29

TOLERANCES	DIAMETER	SHANK
ALL SIZES	+ .0003, -.0000	+ .0003, -.0002

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION

**CARBIDE REAMERS**





# Solid Carbide Reamers

## SPECIAL SIZES

PRICES INCLUDE THE FOLLOWING STYLES:

STRAIGHT FLUTE - RIGHT HAND CUT ■ RIGHT HAND SPIRAL - RIGHT HAND CUT ■ LEFT HAND SPIRAL - RIGHT HAND CUT

SIZE RANGE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	1 PIECE	2 PIECES	3-5 PIECES	6-11 PIECES	12-17 PIECES	18-23 PIECES	24-35 PIECES	36-49 PIECES	50-74 PIECES
.0401 - .0450	0.037	3/8	1-1/2	106.07	70.17	61.20	39.17	31.01	27.74	26.11	24.48	22.85
.0451 - .0500	0.042	3/8	1-1/2	106.07	70.17	61.20	39.17	31.01	27.74	26.11	24.48	22.85
.0501 - .0570	0.046	3/8	1-1/2	106.88	70.98	62.01	39.98	31.82	28.56	26.92	25.29	23.67
.0571 - .0650	0.053	3/8	1-1/2	106.07	70.17	61.20	39.17	31.01	27.74	26.11	24.48	22.85
.0651 - .0800	0.060	1/2	1-3/4	106.88	70.98	62.01	39.98	31.82	28.56	26.92	25.29	23.67
.0801 - .0950	0.075	1/2	2	107.71	71.80	62.82	40.80	32.64	29.38	27.74	26.11	24.48
.0951 - .1150	0.090	5/8	2-1/4	109.33	73.43	64.46	42.43	34.26	31.01	29.38	27.74	26.11
.1151 - .1300	0.110	5/8	2-1/4	110.15	74.25	65.27	43.25	35.09	31.82	30.19	28.56	26.92
.1301 - .1450	0.125	3/4	2-1/2	112.59	76.69	67.73	45.69	37.54	34.26	32.64	31.01	29.38
.1451 - .1600	0.140	3/4	2-1/2	115.05	79.15	70.17	48.14	39.98	36.72	35.09	33.45	31.82
.1601 - .1750	0.155	7/8	2-3/4	117.49	81.59	72.61	50.58	42.43	39.17	37.54	35.90	34.26
.1751 - .1950	0.170	7/8	2-3/4	120.76	84.86	75.88	53.85	45.69	42.43	40.80	39.17	37.54
.1951 - .2100	0.188	1	3	127.28	91.39	82.41	60.38	52.22	48.96	47.33	45.69	44.06
.2101 - .2250	0.205	1	3	129.74	93.83	84.86	62.82	54.67	51.40	49.77	48.14	46.50
.2251 - .2400	0.220	1	3	133.81	97.92	88.94	66.91	58.75	55.48	53.85	52.22	50.58
.2401 - .2550	0.235	1	3	137.07	101.17	92.20	70.17	62.01	58.75	57.11	55.48	53.85
.2551 - .2750	0.250	1	3-1/4	145.24	109.33	100.35	78.33	70.17	66.91	65.27	63.64	62.01
.2751 - .2950	0.270	1-1/8	3-1/4	146.05	110.15	101.17	79.15	70.98	67.73	66.09	64.46	62.82
.2951 - .3150	0.290	1-1/8	3-1/4	154.21	118.31	109.33	87.30	79.15	75.88	74.25	72.61	70.98
.3151 - .3350	0.313	1-1/4	3-1/2	165.63	129.74	120.76	98.73	90.57	87.30	85.68	84.04	82.41
.3351 - .3550	0.330	1-1/4	3-1/2	167.26	133.00	122.39	100.35	92.20	88.94	87.30	85.68	84.04
.3551 - .3800	0.350	1-1/4	3-1/2	170.53	136.26	125.65	103.63	95.46	92.20	90.57	88.94	87.30
.3801 - .4100	0.375	1-1/4	4	182.76	146.87	137.89	115.86	107.71	104.44	102.81	101.17	99.54
.4101 - .4400	0.405	1-3/8	4	189.29	153.40	144.42	122.39	114.23	110.97	109.33	107.71	106.07
.4401 - .4700	0.438	1-3/8	4	199.08	163.19	154.21	132.18	124.02	120.76	119.13	117.49	115.86
.4701 - .5050	0.465	1-1/2	4	215.41	179.51	170.53	148.50	140.34	137.07	135.45	133.81	132.18
.5051 - .5400	0.500	1-1/2	4-1/2	236.62	200.72	191.75	169.72	161.55	158.29	156.66	155.03	153.40
.5401 - .5800	0.535	1-1/2	4-1/2	269.26	233.35	224.38	202.35	194.19	190.93	189.29	187.66	186.03
.5801 - .6260	0.575	1-3/4	4-1/2	295.37	259.47	250.49	228.46	220.30	217.04	215.41	213.77	212.14
.6261 - .6600	0.615	1-3/4	4-1/2	334.53	298.63	289.66	267.63	259.47	256.20	254.57	252.94	251.31
.6601 - .7050	0.655	2	5	383.49	347.59	338.61	316.58	308.43	305.15	303.53	301.90	300.26
.7051 - .7550	0.700	2	5	416.12	380.23	371.25	349.22	341.06	337.79	336.16	334.53	332.90
.7551 - .7950	0.750	2	5	448.76	412.86	403.88	381.86	373.69	370.44	368.80	367.17	365.54
.7951 - .8450	0.750	2-1/4	5	481.40	445.50	436.53	414.49	406.34	403.07	401.44	399.81	398.17
.8451 - .9000	0.750	2-1/4	5	546.67	510.78	501.80	479.77	471.61	468.34	466.71	465.08	463.46
.9001 - .9600	0.875	2-1/4	5	628.27	592.37	583.39	561.36	553.20	549.94	548.30	546.67	545.04
.9601 - 1.025	0.875	2-1/4	5	693.54	657.64	648.67	626.64	618.48	615.21	613.58	611.95	610.31

FOR .0001" TOLERANCE, ALL SIZES ADD 20% TO ABOVE PRICING  
FOR .0002" TOLERANCE FROM .5001" - 1.025", ADD 10% TO ABOVE PRICING

DIAMETER TOLERANCE      +.0003, -.0000

CARBIDE REAMERS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION





# Solid Carbide Burs

## SA - CYLINDRICAL



### SA - CYLINDRICAL

SIZE	DIAMETER	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	DOUBLE CUT ITEM #	PRICE	STANDARD CUT ITEM #	PRICE
SA-41	1/16	1/8	3/16	1-1/2	TB19316	4.03	TB19301	4.03
SA-42	3/32	1/8	7/16	1-1/2	TB19317	4.03	TB19302	4.03
SA-43	1/8	1/8	9/16	1-1/2	TB19318	4.03	TB19303	4.03
SA-52	5/32	1/8	1/2	1-1/2	TB19319	13.47	TB19304	13.47
SA-53	3/16	1/8	1/2	1-1/2	TB19320	13.47	TB19305	13.47
SA-51	1/4	1/8	1/2	1-3/4	TB19321	5.99	TB19306	5.99
SA-11	1/8	1/4	1/2	2	TB19322	9.58	TB19307	9.58
SA-13	5/32	1/4	5/8	2	TB19652	11.10	TB19630	11.10
SA-14	3/16	1/4	5/8	2	TB19323	9.58	TB19308	9.58
SA-1	1/4	1/4	5/8	2	TB19324	6.79	TB19309	6.79
SA-2	5/16	1/4	3/4	2-1/2	TB19325	12.53	TB19310	12.53
SA-3	3/8	1/4	3/4	2-1/2	TB19326	8.40	TB19311	8.40
SA-4	7/16	1/4	1	2-3/4	TB19327	19.47	TB19312	19.47
SA-5	1/2	1/4	1	2-3/4	TB19328	13.40	TB19313	13.40
SA-6	5/8	1/4	1	2-3/4	TB19329	19.32	TB19314	19.32
SA-7	3/4	1/4	1	2-3/4	TB19330	30.12	TB19315	30.12
SA-9	1	1/4	1	2-3/4	TB19654	47.57	TB19632	47.57

### SA - CYLINDRICAL - EXTENDED SHANK LENGTHS

SIZE	DIAMETER	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	DOUBLE CUT ITEM #	PRICE	STANDARD CUT ITEM #	PRICE
SA-1L6	1/4	1/4	1/2	6-3/4	TB19565	13.75	TB19562	13.75
SA-3L6	3/8	1/4	3/4	6-3/4	TB19566	19.37	TB19563	19.37
SA-5L6	1/2	1/4	1	7	TB19567	30.27	TB19564	30.27

### SA - CYLINDRICAL - FOR ALUMINUM

SIZE	DIAMETER	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	—	—	ALUMA CUT ITEM #	PRICE
SA-1NF	1/4	1/4	3/4	2	—	—	TB19592	9.82
SA-3NF	3/8	1/4	3/4	2-1/2	—	—	TB19593	13.72
SA-5NF	1/2	1/4	1	2-3/4	—	—	TB19594	22.92
SA-6NF	5/8	1/4	1	2-3/4	—	—	TB19595	34.07
SA-7NF	3/4	1/4	1	2-3/4	—	—	TB19596	44.76

## SB - CYLINDRICAL END CUT



### SB - CYLINDRICAL END CUT

SIZE	DIAMETER	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	DOUBLE CUT ITEM #	PRICE	STANDARD CUT ITEM #	PRICE
SB-41	1/16	1/8	1/4	1-1/2	TB19660	5.44	TB19331	5.44
SB-42	3/32	1/8	7/16	1-1/2	TB19658	4.30	TB19332	4.30
SB-43	1/8	1/8	9/16	1-1/2	TB19656	3.93	TB19333	3.93
SB-51	1/4	1/8	3/16	1-7/16	TB19342	6.00	TB19334	6.00
SB-51	1/4	1/8	1/2	1-3/4	TB19343	6.53	TB19335	6.53
SB-11	1/8	1/4	1/2	2	TB19344	10.36	TB19336	10.36
SB-13	5/32	1/4	5/8	2	TB19662	12.51	TB19634	12.51
SB-14	3/16	1/4	5/8	2	TB19345	10.36	TB19337	10.36
SB-1	1/4	1/4	5/8	2	TB19346	8.05	TB19338	8.05
SB-2	5/16	1/4	3/4	2-1/2	TB19347	13.78	TB19339	13.78
SB-3	3/8	1/4	3/4	2-1/2	TB19348	9.61	TB19340	9.61
SB-4	7/16	1/4	1	2-3/4	TB19349	22.12	TB19636	22.12
SB-5	1/2	1/4	1	2-3/4	TB19350	14.75	TB19341	14.75
SB-6	5/8	1/4	1	2-3/4	TB19351	21.61	TB19692	21.61
SB-7	3/4	1/4	1	2-3/4	TB19352	33.19	TB19638	33.19
SB-9	1	1/4	1	2-3/4	TB19664	51.91	TB19640	51.91

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 185.

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# Solid Carbide Burs

## SC - CYLINDRICAL BALL NOSE



SC - CYLINDRICAL BALL NOSE								
SIZE	DIAMETER	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	DOUBLE CUT ITEM #	PRICE	STANDARD CUT ITEM #	PRICE
SC-41	3/32	1/8	7/16	1-1/2	TB19367	4.03	TB19353	4.03
SC-42	1/8	1/8	9/16	1-1/2	TB19368	4.03	TB19354	4.03
SC-52	5/32	1/8	1/2	1-1/2	TB19369	13.47	TB19355	13.47
SC-53	3/16	1/8	1/2	1-1/2	TB19370	13.47	TB19356	13.47
SC-51	1/4	1/8	1/2	1-3/4	TB19371	6.00	TB19357	6.00
SC-11	1/8	1/4	1/2	2	TB19372	11.14	TB19358	11.14
SC-13	5/32	1/4	5/8	2	TB19666	12.74	TB19642	12.74
SC-14	3/16	1/4	5/8	2	TB19373	11.14	TB19359	11.14
SC-1	1/4	1/4	5/8	1-3/4	TB19374	8.06	TB19360	8.06
SC-2	5/16	1/4	3/4	2-1/2	TB19375	13.54	TB19361	13.54
SC-3	3/8	1/4	3/4	2-1/2	TB19376	9.75	TB19362	9.75
SC-4	7/16	1/4	1	2-3/4	TB19377	21.39	TB19363	21.39
SC-5	1/2	1/4	1	2-3/4	TB19378	15.11	TB19364	15.11
SC-6	5/8	1/4	1	2-3/4	TB19379	22.52	TB19365	22.52
SC-7	3/4	1/4	1	2-3/4	TB19380	32.45	TB19366	32.45
SC-9	1	1/4	1	2-3/4	TB19782	49.07	TB19780	49.07

## SC - CYLINDRICAL BALL NOSE - EXTENDED SHANK LENGTHS

SIZE	DIAMETER	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	DOUBLE CUT ITEM #	PRICE	STANDARD CUT ITEM #	PRICE
SC-1L6	1/4	1/4	1/2	6-3/4	TB19571	16.01	TB19568	16.01
SC-3L6	3/8	1/4	3/4	6-3/4	TB19572	21.57	TB19569	21.57
SC-5L6	1/2	1/4	1	7	TB19573	33.95	TB19570	33.95

## SC - CYLINDRICAL BALL NOSE - FOR ALUMINUM

SIZE	DIAMETER	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	—	—	ALUMA CUT ITEM #	PRICE
SC-1NF	1/4	1/4	3/4	2	—	—	TB19597	9.66
SC-3NF	3/8	1/4	3/4	2-1/2	—	—	TB19598	12.88
SC-5NF	1/2	1/4	1	2-3/4	—	—	TB19599	18.26
SC-7NF	3/4	1/4	1	2-3/4	—	—	TB19600	44.26

## SE - EGG SHAPE



SE - EGG SHAPE								
SIZE	DIAMETER	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	DOUBLE CUT ITEM #	PRICE	STANDARD CUT ITEM #	PRICE
SE-41	1/8	1/8	7/32	1-1/2	TB19464	4.03	TB19456	4.03
SE-53	3/16	1/8	9/32	1-1/2	TB19465	13.47	TB19457	13.47
SE-51	1/4	1/8	3/8	1-5/8	TB19466	5.99	TB19458	5.99
SE-1	1/4	1/4	3/8	2	TB19467	9.58	TB19459	9.58
SE-3	3/8	1/4	5/8	2-3/8	TB19468	10.08	TB19460	10.08
SE-5	1/2	1/4	7/8	2-5/8	TB19469	14.10	TB19461	14.10
SE-6	5/8	1/4	1	2-3/4	TB19470	22.28	TB19462	22.28
SE-7	3/4	1/4	1	2-3/4	TB19471	31.16	TB19463	31.16

## SE - EGG SHAPE - FOR ALUMINUM

SIZE	DIAMETER	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	—	—	ALUMA CUT ITEM #	PRICE
SE-3NF	3/8	1/4	5/8	2-3/8	—	—	TB19606	13.37
SE-5NF	1/2	1/4	7/8	2-5/8	—	—	TB19607	23.27
SE-6NF	5/8	1/4	1	2-3/4	—	—	TB19608	32.97
SE-7NF	3/4	1/4	1	2-3/4	—	—	TB19609	47.18

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 185.

CARBIDE BURS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# Solid Carbide Burs

## SD - BALL SHAPE



SD - BALL SHAPE								
SIZE	DIAMETER	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	DOUBLE CUT ITEM#	PRICE	STANDARD CUT ITEM#	PRICE
SD-40	1/16	1/8	1/16	1-1/2	-	-	TB19492	5.44
SD-41	3/32	1/8	3/32	1-1/2	TB19506	4.03	TB19493	4.03
SD-42	1/8	1/8	1/8	1-1/2	TB19507	4.03	TB19644	4.03
SD-53	3/16	1/8	3/16	1-1/2	TB19508	13.47	-	-
SD-51	1/4	1/8	1/4	1-3/4	TB19509	5.99	TB19496	5.99
SD-11	1/8	1/4	1/8	2	TB19510	10.22	TB19497	10.22
SD-14	3/16	1/4	3/16	2	TB19511	10.22	TB19498	10.22
SD-1	1/4	1/4	1/4	2	TB19512	7.84	TB19499	7.84
SD-2	5/16	1/4	5/16	2-1/32	TB19513	11.01	TB19500	11.01
SD-3	3/8	1/4	3/8	2-5/64	TB19514	8.40	TB19501	8.40
SD-4	7/16	1/4	7/16	2-9/64	TB19515	14.22	TB19502	14.22
SD-5	1/2	1/4	1/2	2-13/64	TB19516	11.39	TB19503	11.39
SD-6	5/8	1/4	5/8	2-5/16	TB19517	17.73	TB19504	17.73
SD-7	3/4	1/4	3/4	2-7/16	TB19518	24.47	TB19505	24.47
SD-9	1	1/4	1	2-11/16	TB19668	51.91	TB19646	51.91

## SD - BALL SHAPE - EXTENDED SHANK LENGTHS

SIZE	DIAMETER	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	DOUBLE CUT ITEM#	PRICE	STANDARD CUT ITEM#	PRICE
SD-1L6	1/4	1/4	1/4	6-1/4	TB19577	14.76	TB19574	14.76
SD-3L6	3/8	1/4	3/8	6-3/8	TB19578	17.75	TB19575	17.75
SD-5L6	1/2	1/4	1/2	6-1/2	TB19579	23.92	TB19576	23.92

## SD - BALL SHAPE - FOR ALUMINUM

SIZE	DIAMETER	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	-	-	ALUMA CUT ITEM#	PRICE
SD-1NF	1/4	1/4	1/4	2	-	-	TB19613	9.52
SD-3NF	3/8	1/4	3/8	2-1/2	-	-	TB19614	12.04
SD-5NF	1/2	1/4	1/2	2-13/64	-	-	TB19615	19.75
SD-6NF	5/8	1/4	5/8	2-5/16	-	-	TB19616	29.74

## SG - POINTED TREE



## SG - POINTED TREE

SIZE	DIAMETER	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	DOUBLE CUT ITEM#	PRICE	STANDARD CUT ITEM#	PRICE
SG-41	1/8	1/8	1/4	1-1/2	TB19421	4.02	TB19408	4.02
SG-42	1/8	1/8	5/16	1-1/2	TB19422	4.02	TB19409	4.02
SG-43	1/8	1/8	3/8	1-1/2	TB19423	4.02	TB19410	4.02
SG-44	1/8	1/8	1/2	1-1/2	TB19424	5.59	TB19411	5.59
SG-53	3/16	1/8	1/2	1-1/2	TB19425	13.47	TB19412	13.47
SG-51	1/4	1/8	1/2	1-3/4	TB19426	5.99	TB19413	5.99
SG-1	1/4	1/4	5/8	2	TB19427	8.91	TB19414	8.91
SG-2	5/16	1/4	3/4	2-1/2	TB19428	14.12	TB19415	14.12
SG-3	3/8	1/4	3/4	2-1/2	TB19429	10.04	TB19416	10.04
SG-13	1/2	1/4	3/4	2-1/2	TB19430	21.29	TB19417	21.29
SG-5	1/2	1/4	1	2-3/4	TB19431	14.75	TB19418	14.75
SG-6	5/8	1/4	1	2-3/4	TB19432	22.87	TB19419	22.87
SG-7	3/4	1/4	1	2-3/4	TB19433	30.61	TB19420	30.61

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 185.

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION

CARBIDE BURS



# Solid Carbide Burs

## SF - ROUND NOSE TREE



SF - ROUND NOSE TREE								
SIZE	DIAMETER	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	DOUBLE CUT ITEM #	PRICE	STANDARD CUT ITEM #	PRICE
SF-41	1/8	1/8	1/4	1-1/2	TB19395	4.03	TB19381	4.03
SF-42	1/8	1/8	1/2	1-1/2	TB19396	4.03	TB19382	4.03
SF-53	3/16	1/8	1/2	1-1/2	TB19397	13.47	TB19383	13.47
SF-51	1/4	1/8	1/2	1-3/4	TB19398	5.99	TB19384	5.99
SF-1	1/4	1/4	3/4	2	TB19399	8.73	TB19385	8.73
SF-3	3/8	1/4	3/4	2-1/2	TB19400	9.75	TB19386	9.75
SF-4	7/16	1/4	1	2-3/4	TB19401	20.38	TB19387	20.38
SF-13	1/2	1/4	3/4	2-1/2	TB19402	21.70	TB19389	21.70
SF-5	1/2	1/4	1	2-3/4	TB19403	14.63	TB19390	14.63
SF-6	5/8	1/4	1	2-3/4	TB19404	22.40	TB19391	22.40
SF-7	3/4	1/4	1	2-3/4	TB19405	31.30	TB19392	31.30
SF-14	3/4	1/4	1-1/4	3	TB19406	57.00	TB19393	57.00
SF-15	3/4	1/4	1-1/2	3	TB19407	66.93	TB19394	66.93

SF - ROUND NOSE TREE - EXTENDED SHANK LENGTHS								
SIZE	DIAMETER	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	DOUBLE CUT ITEM #	PRICE	STANDARD CUT ITEM #	PRICE
SF-1L6	1/4	1/4	5/8	6-3/4	TB19583	16.70	TB19580	16.70
SF-3L6	3/8	1/4	3/4	6-3/4	TB19584	21.15	TB19581	21.15
SF-5L6	1/2	1/4	1	7	TB19585	31.19	TB19582	31.19

SF - ROUND NOSE TREE - FOR ALUMINUM								
SIZE	DIAMETER	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	—	—	ALUMA CUT ITEM #	PRICE
SF-1NF	1/4	1/4	3/4	2	—	—	TB19601	9.85
SF-3NF	3/8	1/4	3/4	2-1/2	—	—	TB19602	13.02
SF-5NF	1/2	1/4	1	2-3/4	—	—	TB19603	23.04
SF-6NF	5/8	1/4	1	2-3/4	—	—	TB19604	35.15
SF-14NF	3/4	1/4	1-1/4	3	—	—	TB19605	42.75

## SH - FLAME SHAPE



SH - FLAME SHAPE								
SIZE	DIAMETER	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	DOUBLE CUT ITEM #	PRICE	STANDARD CUT ITEM #	PRICE
SH-41	1/8	1/8	1/4	1-1/2	TB19525	4.03	TB19519	4.03
SH-53	3/16	1/8	3/8	1-1/2	TB19526	13.47	TB19520	13.47
SH-1	1/4	1/4	5/8	2	TB19812	9.47	TB19810	9.47
SH-2	5/16	1/4	3/4	2-1/2	TB19527	10.91	TB19521	10.91
SH-5	1/2	1/4	1-1/4	3	TB19528	21.15	TB19522	21.15
SH-6	5/8	1/4	1-7/16	3-3/16	TB19529	49.86	TB19523	49.86
SH-7	3/4	1/4	1-5/8	3-3/8	TB19530	63.35	TB19524	63.35

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 185.

CARBIDE BURS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION





# Solid Carbide Burs

## SJ - 60° INCLUDED ANGLE



### SJ - 60° INCLUDED ANGLE

SIZE	DIAMETER	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	DOUBLE CUT ITEM #	PRICE	STANDARD CUT ITEM #	PRICE
<b>SJ-42</b>	1/8	1/8	3/32	1-1/2	<b>TB19558</b>	4.03	<b>TB19554</b>	4.03
<b>SJ-1</b>	1/4	1/4	3/16	2	<b>TB19559</b>	7.84	<b>TB19555</b>	7.84
<b>SJ-3</b>	3/8	1/4	5/16	2-3/16	<b>TB19560</b>	9.61	<b>TB19556</b>	9.61
<b>SJ-5</b>	1/2	1/4	7/16	2-19/64	<b>TB19561</b>	13.18	<b>TB19557</b>	13.18

## SK - 90° INCLUDED ANGLE



### SK - 90° INCLUDED ANGLE

SIZE	DIAMETER	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	DOUBLE CUT ITEM #	PRICE	STANDARD CUT ITEM #	PRICE
<b>SK-42</b>	1/8	1/8	1/16	1-1/2	<b>TB19550</b>	4.03	<b>TB19546</b>	4.03
<b>SK-1</b>	1/4	1/4	1/8	2	<b>TB19551</b>	7.84	<b>TB19547</b>	7.84
<b>SK-3</b>	3/8	1/4	3/16	2-1/16	<b>TB19552</b>	8.10	<b>TB19548</b>	8.10
<b>SK-5</b>	1/2	1/4	1/4	2-1/8	<b>TB19553</b>	12.70	<b>TB19549</b>	12.70
<b>SK-7</b>	3/4	1/4	3/8	2-1/4	<b>TB19695</b>	25.86	<b>TB19694</b>	25.86

## SL - INCLUDED ANGLE WITH RADIUS END



### SL - INCLUDED ANGLE WITH RADIUS END

SIZE	DIA.	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	INCL. ANGLE	DOUBLE CUT ITEM #	PRICE	STANDARD CUT ITEM #	PRICE
<b>SL-41</b>	1/8	1/8	3/8	1-1/2	8°	<b>TB19482</b>	4.02	<b>TB19472</b>	4.02
<b>SL-42</b>	1/8	1/8	1/2	1-1/2	8°	<b>TB19483</b>	4.02	<b>TB19473</b>	4.02
<b>SL-53</b>	3/16	1/8	1/2	1-1/2	14°	<b>TB19484</b>	13.47	<b>TB19474</b>	13.47
<b>SL-1</b>	1/4	1/4	5/8	2	14°	<b>TB19485</b>	8.16	<b>TB19475</b>	8.16
<b>SL-2</b>	5/16	1/4	7/8	2-3/4	14°	<b>TB19486</b>	15.61	<b>TB19476</b>	15.61
<b>SL-3</b>	3/8	1/4	1-1/16	2-15/16	14°	<b>TB19487</b>	11.29	<b>TB19477</b>	11.29
<b>SL-4</b>	1/2	1/4	1-1/4	3	14°	<b>TB19488</b>	22.88	<b>TB19478</b>	22.88
<b>SL-6</b>	5/8	1/4	1-5/16	3-3/16	14°	<b>TB19490</b>	36.70	<b>TB19480</b>	36.70
<b>SL-7</b>	3/4	1/4	1-1/2	3-3/8	14°	<b>TB19491</b>	50.22	<b>TB19481</b>	50.22

### SL - INCL. ANGLE WITH RAD. END - EXTENDED SHANK LENGTHS

SIZE	DIA.	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	INCL. ANGLE	DOUBLE CUT ITEM #	PRICE	STANDARD CUT ITEM #	PRICE
<b>SL-1L6</b>	1/4	1/4	5/8	6-5/8	14°	<b>TB19589</b>	17.11	<b>TB19586</b>	17.11
<b>SL-3L6</b>	3/8	1/4	1-1/16	7-1/16	14°	<b>TB19590</b>	26.96	<b>TB19587</b>	26.96
<b>SL-4L6</b>	1/2	1/4	1-1/4	7-1/4	14°	<b>TB19591</b>	33.02	<b>TB19588</b>	33.02

### SL - INCL. ANGLE WITH RADIUS END - FOR ALUMINUM

SIZE	DIA.	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	INCL. ANGLE	—	—	ALUMA CUT ITEM #	PRICE
<b>SL-4NF</b>	1/2	1/4	1-1/4	3	14°	—	—	<b>TB19610</b>	23.09
<b>SL-6NF</b>	5/8	1/4	1-5/16	3-3/16	14°	—	—	<b>TB19611</b>	46.50
<b>SL-7NF</b>	3/4	1/4	1-1/2	3-3/8	14°	—	—	<b>TB19612</b>	57.76

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 185.

CARBIDE BURS

CARBIDE ENDMILLS  
 CARBIDE MICRO ENDMILLS  
 CARBIDE THREADMILLS  
 CARBIDE DRILL MILLS  
 CARBIDE CHAMFER MILLS  
 CARBIDE DRILLS  
 CARBIDE REAMERS  
 CARBIDE BURS  
 COUNTERSINKS  
 HSS & COBALT ENDMILLS  
 TAPS & DIES  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION



# Solid Carbide Burs

## SM - POINTED CONE



SM - POINTED CONE								
SIZE	DIAMETER	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	DOUBLE CUT ITEM#	PRICE	STANDARD CUT ITEM#	PRICE
SM-41	1/8	1/8	11/32	1-1/2	TB19445	4.03	TB19434	4.03
SM-42	1/8	1/8	7/16	1-1/2	TB19446	4.03	TB19435	4.03
SM-43	1/8	1/8	5/8	1-1/2	TB19447	4.03	TB19436	4.03
SM-53	3/16	1/8	1/2	1-1/2	TB19448	13.47	TB19437	13.47
SM-51	1/4	1/8	1/2	1-7/8	TB19449	5.99	TB19438	5.99
SM-1	1/4	1/4	1/2	2	TB19450	7.67	TB19439	7.67
SM-2	1/4	1/4	3/4	2	TB19451	11.88	TB19440	11.88
SM-3	1/4	1/4	1	2	TB19452	8.57	TB19441	8.57
SM-4	3/8	1/4	5/8	2-1/2	TB19453	11.42	TB19442	11.42
SM-5	1/2	1/4	7/8	2-3/4	TB19454	15.98	TB19443	15.98
SM-6	5/8	1/4	1	2-7/8	TB19455	36.10	TB19444	36.10

## SN - INVERTED TAPER



SN - INVERTED TAPER								
SIZE	DIAMETER	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	DOUBLE CUT ITEM#	PRICE	STANDARD CUT ITEM#	PRICE
SN-41	3/32	1/8	3/16	1-1/2	-	-	TB19531	3.93
SN-42	1/8	1/8	3/16	1-1/2	TB19537	4.03	TB19532	4.03
SN-53	3/16	1/8	1/4	1-1/2	TB19538	13.47	TB19533	13.47
SN-51	1/4	1/8	1/4	1-1/2	TB19539	5.99	TB19534	5.99
SN-1	1/4	1/4	5/16	2	TB19540	7.79	TB19535	7.79
SN-4	1/2	1/4	1/2	2-1/4	TB19541	22.75	TB19536	22.75

## CARBIDE BUR SETS

SET SIZES	# OF PCS. IN SET	DIA.	SHANK DIAMETER	CASE TYPE	TYPE	ITEM#	PRICE
SA-42, SA-43, SC-41, SC-42, SD-42, SE-41, SF-42, SG-42, SM-43	9 PCS.	1/8	1/8	WOOD	DOUBLE CUT	TB19542	59.38
SA-51, SB-51, SC-51, SD-51, SE-51, SF-51, SG-51, SM-51, SN-51	9 PCS.	1/4	1/8	WOOD	DOUBLE CUT	TB19543	63.85
SA-1, SC-1, SD-1, SE-1, SF-1, SG-1, SL-1, SM-2	8 PCS.	1/4	1/4	WOOD	DOUBLE CUT	TB19544	97.28
SA-5, SC-5, SD-5, SE-5, SF-5, SG-5, SL-4, SM-5	8 PCS.	1/2	1/4	WOOD	DOUBLE CUT	TB19545	174.56
SC-3, SD-3, SF-3, SG-3, SA-5, SC-5, SF-5, SL-4	8 PCS.	-	1/4	WOOD	DOUBLE CUT	TB19800	112.41
SA-1, SC-1, SD-3, SH-1, SF-3, SA-3, SC-3, SC-5, SF-5, SA-5	10 PCS.	-	1/4	METAL	DOUBLE CUT	TB19850	111.82

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 185.

CARBIDE BURS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILLS  
CARBIDE CHAMFER MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION

# Solid Carbide Countersinks

CARBIDE ENDMILLS  
 CARBIDE MICRO ENDMILLS  
 CARBIDE THREADMILLS  
 CARBIDE DRILL MILLS  
 CARBIDE CHAMFER MILLS  
 CARBIDE DRILLS  
 CARBIDE REAMERS  
 CARBIDE BURS  
**COUNTERSINKS**  
 HSS & COBALT ENDMILLS  
 TAPS & DIES  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION



**SINGLE FLUTE**  
**SERIES 310 - 60°**  
**SERIES 311 - 82°**  
**SERIES 312 - 90°**  
**SERIES 313 - 100°**

SIZE	SHANK DIA.	OVERALL LENGTH	PKG. QTY.	60° - ITEM#	82° - ITEM#	90° - ITEM#	100° - ITEM#	PRICE
1/8	1/8	1-1/2	1	CS31008	CS31108	CS31208	CS31308	8.86
3/16	3/16	2	1	CS31012	CS31112	CS31212	CS31312	9.46
1/4	1/4	2	1	CS31016	CS31116	CS31216	CS31316	10.75
3/8	1/4	2-5/8	1	CS31024	CS31124	CS31224	CS31324	19.46
1/2	1/4	2-5/8	1	CS31032	CS31132	CS31232	CS31332	24.11
5/8	3/8	2-3/4	1	CS31040	CS31140	CS31240	CS31340	35.22
3/4	3/8	2-3/4	1	CS31048	CS31148	CS31248	CS31348	48.21
1	1/2	3	1	CS31064	CS31164	CS31264	CS31364	73.79



**THREE FLUTE**  
**SERIES 331 - 60°**  
**SERIES 332 - 82°**  
**SERIES 333 - 90°**  
**SERIES 334 - 100°**

SIZE	SHANK DIA.	OVERALL LENGTH	PKG. QTY.	60° - ITEM#	82° - ITEM#	90° - ITEM#	100° - ITEM#	PRICE
1/8	1/8	1-1/2	1	CS33108	CS33208	CS33308	CS33408	8.86
3/16	3/16	2	1	CS33112	CS33212	CS33312	CS33412	9.46
1/4	1/4	2	1	CS33116	CS33216	CS33316	CS33416	10.75
3/8	1/4	2-5/8	1	CS33124	CS33224	CS33324	CS33424	19.46
1/2	1/4	2-5/8	1	CS33132	CS33232	CS33332	CS33432	24.11
5/8	3/8	2-3/4	1	CS33140	CS33240	CS33340	CS33440	35.22
3/4	3/8	2-3/4	1	CS33148	CS33248	CS33348	CS33448	48.21
1	1/2	3	1	CS33164	CS33264	CS33364	CS33464	73.79



**SIX FLUTE - CHATTERLESS**  
**SERIES 366 - 60°**  
**SERIES 367 - 82°**  
**SERIES 368 - 90°**  
**SERIES 369 - 100°**

SIZE	SHANK DIA.	OVERALL LENGTH	PKG. QTY.	60° - ITEM#	82° - ITEM#	90° - ITEM#	100° - ITEM#	PRICE
1/8	1/8	1-1/2	1	CS36608	CS36708	CS36808	CS36908	8.86
3/16	3/16	2	1	CS36612	CS36712	CS36812	CS36912	9.46
1/4	1/4	2	1	CS36616	CS36716	CS36816	CS36916	10.75
3/8	1/4	2-5/8	1	CS36624	CS36724	CS36824	CS36924	19.46
1/2	1/4	2-5/8	1	CS36632	CS36732	CS36832	CS36932	24.11
5/8	3/8	2-3/4	1	CS36640	CS36740	CS36840	CS36940	35.22
3/4	3/8	2-3/4	1	CS36648	CS36748	CS36848	CS36948	48.21
1	1/2	3	1	CS36664	CS36764	CS36864	CS36964	73.79



# Combined Drill & Countersinks



**SERIES 3000**  
SOLID CARBIDE - REGULAR - 60°  
UNCOATED

SIZE	DRILL DIA.	BODY DIA.	OVERALL LENGTH	PKG. QTY.	ITEM#	PRICE
00	.025	1/8	1-1/2	1	CS30020	12.25
0	1/32	1/8	1-1/2	1	CS30010	11.71
1	3/64	1/8	1-1/2	1	CS30001	10.66
2	5/64	3/16	2	1	CS30002	15.86
3	7/64	1/4	2	1	CS30003	17.89
4	1/8	5/16	2-1/8	1	CS30004	23.09
5	3/16	7/16	2-3/4	1	CS30005	36.60
6	7/32	1/2	3	1	CS30006	45.56



**SERIES 3600**  
SOLID CARBIDE - REGULAR - 60°  
ALTiN COATED

SIZE	DRILL DIA.	BODY DIA.	OVERALL LENGTH	PKG. QTY.	ITEM#	PRICE
00	.025	1/8	1-1/2	1	CS36020	15.30
0	1/32	1/8	1-1/2	1	CS36010	14.64
1	3/64	1/8	1-1/2	1	CS36001	13.32
2	5/64	3/16	2	1	CS36002	19.83
3	7/64	1/4	2	1	CS36003	22.35
4	1/8	5/16	2-1/8	1	CS36004	28.86
5	3/16	7/16	2-3/4	1	CS36005	45.76
6	7/32	1/2	3	1	CS36006	56.96



**SERIES 1000**  
HIGH SPEED STEEL - REGULAR - 60°  
UNCOATED

SIZE	DRILL DIA.	BODY DIA.	OVERALL LENGTH	PKG. QTY.	ITEM#	PRICE
0	1/32	1/8	1-1/4	12	CS10010	5.32
1	3/64	1/8	1-1/4	12	CS10001	3.72
2	5/64	3/16	1-7/8	12	CS10002	3.89
3	7/64	1/4	2	12	CS10003	4.06
4	1/8	5/16	2-1/8	12	CS10004	4.18
5	3/16	7/16	2-3/4	12	CS10005	6.62
6	7/32	1/2	3	1	CS10006	9.94
7	1/4	5/8	3-1/4	1	CS10007	15.10
8	5/16	3/4	3-1/2	1	CS10008	20.73



**SERIES 350**  
HIGH SPEED STEEL - REGULAR - 60°  
TiN COATED

SIZE	DRILL DIA.	BODY DIA.	OVERALL LENGTH	PKG. QTY.	ITEM#	PRICE
00	.025	1/8	1-1/4	12	CS35020	7.39
0	1/32	1/8	1-1/4	12	CS35010	7.39
1	3/64	1/8	1-1/4	12	CS35001	5.90
2	5/64	3/16	1-7/8	12	CS35002	6.06
3	7/64	1/4	2	12	CS35003	8.25
4	1/8	5/16	2-1/8	12	CS35004	8.51
5	3/16	7/16	2-3/4	12	CS35005	11.84
6	7/32	1/2	3	1	CS35006	18.90
7	1/4	5/8	3-1/4	1	CS35007	27.17
8	5/16	3/4	3-1/2	1	CS35008	43.73

**SERIES 50**  
HIGH SPEED STEEL - MINIATURE - 60°

SIZE	DRILL DIA.	BODY DIA.	OVERALL LENGTH	PKG. QTY.	ITEM#	PRICE
00000	.010	1/8	1-1/4	12	CS00050	6.12
0000	.015	1/8	1-1/4	12	CS00040	5.63
000	.020	1/8	1-1/4	12	CS00030	5.32
00	.025	1/8	1-1/4	12	CS00020	5.32

**SERIES 1500**  
HIGH SPEED STEEL - 90°

SIZE	DRILL DIA.	BODY DIA.	OVERALL LENGTH	PKG. QTY.	ITEM#	PRICE
1	3/64	1/8	1-1/4	12	CS15001	11.17
2	5/64	3/16	1-7/8	12	CS15002	11.49
3	7/64	1/4	2	12	CS15003	11.97
4	1/8	5/16	2-1/8	12	CS15004	12.29

**SERIES 2000**  
M42 COBALT - 60°

SIZE	DRILL DIA.	BODY DIA.	OVERALL LENGTH	PKG. QTY.	ITEM#	PRICE
1	3/64	1/8	1-1/4	12	CS20001	10.53
2	5/64	3/16	1-7/8	12	CS20002	10.88
3	7/64	1/4	2	12	CS20003	11.23
4	1/8	5/16	2-1/8	12	CS20004	11.69

**COMBINED DRILL & COUNTERSINK SET - 60°**

SIZE	SET ITEM#	PRICE
#1 - #5 HSS - 60	CS10015	32.32

FOR COATING INFORMATION SEE PAGE 2.

COUNTERSINKS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# Combined Drill & Countersinks

## COMBINED DRILL & COUNTERSINKS



### SERIES 5000

HIGH SPEED STEEL - LONG LENGTH - 60°

SIZE	DRILL DIA.	BODY DIA.	PKG. QTY.	ITEM#	PRICE
1x3	3/64	1/8	1	CS50013	8.98
1x4	3/64	1/8	1	CS50014	9.37
1x5	3/64	1/8	1	CS50015	13.02
1x6	3/64	1/8	1	CS50016	17.06
2x3	5/64	3/16	1	CS50023	9.09
2x4	5/64	3/16	1	CS50024	10.28
2x5	5/64	3/16	1	CS50025	13.16
2x6	5/64	3/16	1	CS50026	17.11
3x3	7/64	1/4	1	CS50033	9.50
3x4	7/64	1/4	1	CS50034	10.82
3x5	7/64	1/4	1	CS50035	14.23
3x6	7/64	1/4	1	CS50036	17.27
4x4	1/8	5/16	1	CS50044	12.00

SIZE	DRILL DIA.	BODY DIA.	PKG. QTY.	ITEM#	PRICE
4x5	1/8	5/16	1	CS50045	15.32
4x6	1/8	5/16	1	CS50046	17.71
4-1/2x4	9/64	3/8	1	CS50040	13.48
4-1/2x5	9/64	3/8	1	CS50050	19.62
4-1/2x6	9/64	3/8	1	CS50060	21.92
5x4	3/16	7/16	1	CS50054	15.75
5x5	3/16	7/16	1	CS50055	18.24
5x6	3/16	7/16	1	CS50056	20.47
6x5	7/32	1/2	1	CS50065	19.60
6x6	7/32	1/2	1	CS50066	23.69
7x6	1/4	5/8	1	CS50076	44.13
8x6	5/16	3/4	1	CS50086	53.36
-	-	-	-	-	-

## COMBINED DRILL & COUNTERSINKS



### SERIES 4000

HIGH SPEED STEEL - BELL TYPE - 60°

SIZE	DRILL DIAMETER	BODY DIAMETER	OVERALL LENGTH	PACKAGE QUANTITY	ITEM#	PRICE
11	3/64	1/8	1-1/4	12	CS40011	4.43
12	1/16	3/16	1-7/8	12	CS40012	4.65
13	3/32	1/4	2	12	CS40013	4.70
14	7/64	5/16	2-1/8	12	CS40014	4.86
15	5/32	7/16	2-3/4	12	CS40015	7.40
16	3/16	1/2	3	1	CS40016	11.42
17	7/32	5/8	3-1/4	1	CS40017	21.62
18	1/4	3/4	3-1/2	1	CS40018	28.67



# Countersinks

## FOUR-FLUTE MACHINE COUNTERSINKS



HIGH SPEED STEEL

### SERIES 521 - 60°

SIZE	SHANK DIA.	OVERALL LENGTH	PKG. QTY.	60° - ITEM#	PRICE
1/2	1/2	3-7/8	1	CD52032	31.91
5/8	1/2	4	1	CD52040	35.93
3/4	1/2	4-1/8	1	CD52048	45.85
7/8	1/2	4-1/4	1	CD52056	53.89
1	1/2	4-3/8	1	CD52064	55.70

### SERIES 523 - 82°

SIZE	SHANK DIA.	OVERALL LENGTH	PKG. QTY.	82° - ITEM#	PRICE
1/2	1/2	3-7/8	1	CD52232	31.91
5/8	1/2	4	1	CD52240	35.93
3/4	1/2	4-1/8	1	CD52248	45.85
7/8	1/2	4-1/4	1	CD52256	53.89
1	1/2	4-3/8	1	CD52264	55.70

## SINGLE-FLUTE COUNTERSINKS



HIGH SPEED STEEL

### SERIES 505 - 60°

SIZE	SHANK DIA.	OVERALL LENGTH	PKG. QTY.	60° - ITEM#	PRICE
1/4 - 60	3/16	1-7/16	1	CD50501	10.00
3/8 - 60	1/4	1-21/32	1	CD50502	11.38
1/2 - 60	1/4	1-13/32	1	CD50503	14.55
3/4 - 60	1/2	1-27/32	1	CD50504	20.10
1 - 60	1/2	2-13/16	1	CD50505	31.22

### SERIES 510 - 82°

SIZE	SHANK DIA.	OVERALL LENGTH	PKG. QTY.	82° - ITEM#	PRICE
1/4 - 82	3/16	1-7/16	1	CD51014	10.00
3/8 - 82	1/4	1-21/32	1	CD51015	11.38
1/2 - 82	1/4	1-13/32	1	CD51016	14.55
3/4 - 82	1/2	1-27/32	1	CD51017	20.10
1 - 82	1/2	2-13/16	1	CD51018	31.22

### SERIES 515 - 90°

SIZE	SHANK DIA.	OVERALL LENGTH	PKG. QTY.	90° - ITEM#	PRICE
1/4 - 90	3/16	1-7/16	1	CD51523	10.00
3/8 - 90	1/4	1-21/32	1	CD51524	11.38
1/2 - 90	1/4	1-13/32	1	CD51525	14.55
3/4 - 90	1/2	1-27/32	1	CD51526	20.10
1 - 90	1/2	2-13/16	1	CD51527	31.22

COUNTERSINKS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# High Speed Steel Endmills

## SQUARE END - 30° HELIX - HSS



**SERIES 805**  
2 FLUTE - UNCOATED



**SERIES 806**  
2 FLUTE - ALTIN COATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	#OF FLTS	UNCOATED	PRICE
1/8	3/8	3/8	2-5/16	2	TE64001	13.31
5/32	3/8	3/8	2-5/16	2	TE64002	17.35
3/16	3/8	9/32	2-5/16	2	TE64004	13.31
7/32	3/8	7/16	2-5/16	2	TE64005	17.35
1/4	3/8	1/2	2-5/16	2	TE64007	13.31
9/32	3/8	1/2	2-5/16	2	TE64008	17.35
5/16	3/8	9/16	2-5/16	2	TE64009	13.31
3/8	3/8	9/16	2-5/16	2	TE64014	13.31
7/16	3/8	13/16	2-1/2	2	TE64020	18.40
1/2	3/8	13/16	2-1/2	2	TE64027	18.40
1/2	1/2	1	3	2	TE64028	19.44
9/16	1/2	1-1/8	3-1/8	2	TE64033	23.74
5/8	1/2	1-1/8	3-1/8	2	TE64035	26.59
5/8	5/8	1-5/16	3-7/16	2	TE64036	27.00
3/4	1/2	1-5/16	3-5/16	2	TE64043	30.86
3/4	5/8	1-5/16	3-7/16	2	TE64044	30.86
3/4	3/4	1-5/16	3-9/16	2	TE64045	30.86
13/16	5/8	1-1/2	3-5/8	2	TE64049	37.95
13/16	3/4	1-1/2	3-3/4	2	TE64050	38.18
7/8	5/8	1-1/2	3-5/8	2	TE64052	37.95
7/8	3/4	1-1/2	3-3/4	2	TE64053	42.30
7/8	7/8	1-1/2	3-3/4	2	TE64054	42.30
15/16	5/8	1-1/2	3-5/8	2	TE64058	45.97
15/16	3/4	1-1/2	3-3/4	2	TE64059	48.69
15/16	7/8	1-1/2	3-3/4	2	TE64060	45.97
1	5/8	1-1/2	3-5/8	2	TE64062	43.04
1	3/4	1-1/2	3-3/4	2	TE64063	43.04
1	1	1-5/8	4-1/8	2	TE64066	49.01
1-1/8	7/8	1-5/8	3-7/8	2	TE64070	75.42
1-1/8	1	1-5/8	4-1/8	2	TE64071	71.66
1-1/4	7/8	1-5/8	3-7/8	2	TE64073	75.42
1-1/4	1	1-5/8	4-1/8	2	TE64074	79.90
1-1/4	1-1/4	1-5/8	4-1/8	2	TE64075	85.30
1-3/8	1	1-5/8	4-1/8	2	TE64079	88.91
1-1/2	1	1-5/8	4-1/8	2	TE64082	95.54
1-1/2	1-1/4	1-5/8	4-1/8	2	TE64083	95.54

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	#OF FLTS	ALTIN	PRICE
1/8	3/8	3/8	2-5/16	2	TE64101	16.63
5/32	3/8	3/8	2-5/16	2	TE64102	21.67
3/16	3/8	9/32	2-5/16	2	TE64104	16.63
7/32	3/8	7/16	2-5/16	2	TE64105	21.67
1/4	3/8	1/2	2-5/16	2	TE64107	16.63
9/32	3/8	1/2	2-5/16	2	TE64108	21.67
5/16	3/8	9/16	2-5/16	2	TE64109	16.63
3/8	3/8	9/16	2-5/16	2	TE64114	16.63
7/16	3/8	13/16	2-1/2	2	TE64120	22.99
1/2	3/8	13/16	2-1/2	2	TE64127	22.99
1/2	1/2	1	3	2	TE64128	24.33
9/16	1/2	1-1/8	3-1/8	2	TE64133	29.67
5/8	1/2	1-1/8	3-1/8	2	TE64135	33.23
5/8	5/8	1-5/16	3-7/16	2	TE64136	33.75
3/4	1/2	1-5/16	3-5/16	2	TE64143	38.62
3/4	5/8	1-5/16	3-7/16	2	TE64144	38.62
3/4	3/4	1-5/16	3-9/16	2	TE64145	38.62
13/16	5/8	1-1/2	3-5/8	2	TE64149	47.43
13/16	3/4	1-1/2	3-3/4	2	TE64150	47.59
7/8	5/8	1-1/2	3-5/8	2	TE64152	47.43
7/8	3/4	1-1/2	3-3/4	2	TE64153	52.87
7/8	7/8	1-1/2	3-3/4	2	TE64154	52.87
15/16	5/8	1-1/2	3-5/8	2	TE64158	57.46
15/16	3/4	1-1/2	3-3/4	2	TE64159	60.87
15/16	7/8	1-1/2	3-3/4	2	TE64160	57.46
1	5/8	1-1/2	3-5/8	2	TE64162	53.79
1	3/4	1-1/2	3-3/4	2	TE64163	53.79
1	1	1-5/8	4-1/8	2	TE64166	61.25
1-1/8	7/8	1-5/8	3-7/8	2	TE64170	94.27
1-1/8	1	1-5/8	4-1/8	2	TE64171	89.58
1-1/4	7/8	1-5/8	3-7/8	2	TE64173	94.24
1-1/4	1	1-5/8	4-1/8	2	TE64174	99.87
1-1/4	1-1/4	1-5/8	4-1/8	2	TE64175	106.64
1-3/8	1	1-5/8	4-1/8	2	TE64179	111.14
1-1/2	1	1-5/8	4-1/8	2	TE64182	119.44
1-1/2	1-1/4	1-5/8	4-1/8	2	TE64183	119.44

FOR COATING INFORMATION SEE PAGE 2.

TOLERANCES	DIAMETER	SHANK
ALL SIZES	+0.015, -0.000	+0.000, -0.005

CARBIDE ENDMILLS  
 CARBIDE MICRO ENDMILLS  
 CARBIDE THREADMILLS  
 CARBIDE DRILL MILLS  
 CARBIDE CHAMFER MILLS  
 CARBIDE DRILLS  
 CARBIDE REAMERS  
 CARBIDE BURS  
 COUNTERSINKS  
 HSS & COBALT ENDMILLS  
 TAPS & DIES  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION



# High Speed Steel Endmills



## SQUARE END - 30° HELIX - HSS



**SERIES 810**

**4 & 6 FLUTE - NON CENTER CUTTING - UNCOATED**



**SERIES 811**

**4 & 6 FLUTE - NON CENTER CUTTING - ALTIN COATED**

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	#OF FLTS	UNCOATED	PRICE
1/8	3/8	3/8	2-5/16	4	TE69400	13.59
5/32	3/8	3/8	2-5/16	4	TE69401	18.60
3/16	3/8	1/2	2-3/8	4	TE69403	13.59
7/32	3/8	1/2	2-3/8	4	TE69404	18.60
1/4	3/8	5/8	2-7/16	4	TE69406	13.59
9/32	3/8	11/16	2-1/2	4	TE69408	18.60
5/16	3/8	3/4	2-1/2	4	TE69409	13.59
11/32	3/8	3/4	2-1/2	4	TE69413	19.00
3/8	3/8	3/4	2-1/2	4	TE69414	13.59
13/32	3/8	3/4	2-1/2	4	TE69419	27.78
7/16	3/8	1	2-11/16	4	TE69420	18.35
15/32	3/8	1	2-11/16	4	TE69425	32.56
1/2	3/8	1	2-11/16	4	TE69427	18.35
1/2	1/2	1-1/4	3-1/4	4	TE69428	18.35
17/32	1/2	1-1/4	3-1/4	4	TE69432	37.30
9/16	1/2	1-3/8	3-3/8	4	TE69433	23.88
5/8	1/2	1-3/8	3-3/8	4	TE69435	26.00
5/8	5/8	1-5/8	3-3/4	4	TE69436	28.89
11/16	1/2	1-5/8	3-5/8	4	TE69440	30.13
11/16	5/8	1-5/8	3-3/4	4	TE69441	30.70
3/4	1/2	1-5/8	3-5/8	4	TE69443	31.19
3/4	5/8	1-5/8	3-3/4	4	TE69444	31.19
3/4	3/4	1-5/8	3-7/8	4	TE69445	32.36
13/16	3/4	1-7/8	4-1/8	4	TE69450	41.26
7/8	3/4	1-7/8	4-1/8	4	TE69453	41.12
7/8	7/8	1-7/8	4-1/8	4	TE69454	41.12
15/16	3/4	1-7/8	4-1/8	4	TE69459	52.80
15/16	7/8	1-7/8	4-1/8	4	TE69460	49.97
1	3/4	1-7/8	4-1/8	4	TE69463	46.81
1	7/8	1-7/8	4-1/8	4	TE69465	49.97
1	1	2	4-1/2	4	TE69466	49.56
1-1/8	7/8	2	4-1/4	6	TE69470	71.85
1-1/8	1	2	4-1/2	6	TE69471	70.72
1-1/4	7/8	2	4-1/4	6	TE69473	78.05
1-1/4	1	2	4-1/2	6	TE69474	75.79
1-1/4	1-1/4	2	4-1/2	6	TE69476	77.27
1-3/8	1	2	4-1/2	6	TE69479	87.74
1-1/2	1	2	4-1/2	6	TE69482	94.68
1-1/2	1-1/4	2	4-1/2	4	TE69483	99.50
1-1/2	1-1/4	2	4-1/2	6	TE69484	108.36
1-5/8	1-1/4	2	4-1/2	6	TE69487	108.37
1-3/4	1-1/4	2	4-1/2	4	TE69488	131.36
1-3/4	1-1/4	2	4-1/2	6	TE69489	120.63
2	1-1/4	2	4-1/2	6	TE69493	176.03

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	#OF FLTS	ALTIN	PRICE
1/8	3/8	3/8	2-5/16	4	TE69500	16.98
5/32	3/8	3/8	2-5/16	4	TE69501	23.26
3/16	3/8	1/2	2-3/8	4	TE69503	16.98
7/32	3/8	1/2	2-3/8	4	TE69504	23.26
1/4	3/8	5/8	2-7/16	4	TE69506	16.98
9/32	3/8	11/16	2-1/2	4	TE69508	23.26
5/16	3/8	3/4	2-1/2	4	TE69509	16.98
11/32	3/8	3/4	2-1/2	4	TE69513	23.76
3/8	3/8	3/4	2-1/2	4	TE69514	16.98
13/32	3/8	3/4	2-1/2	4	TE69519	34.73
7/16	3/8	1	2-11/16	4	TE69520	22.95
15/32	3/8	1	2-11/16	4	TE69525	36.63
1/2	3/8	1	2-11/16	4	TE69527	22.95
1/2	1/2	1-1/4	3-1/4	4	TE69528	22.95
17/32	1/2	1-1/4	3-1/4	4	TE69532	46.63
9/16	1/2	1-3/8	3-3/8	4	TE69533	29.84
5/8	1/2	1-3/8	3-3/8	4	TE69535	32.50
5/8	5/8	1-5/8	3-3/4	4	TE69536	36.11
11/16	1/2	1-5/8	3-5/8	4	TE69540	37.67
11/16	5/8	1-5/8	3-3/4	4	TE69541	38.38
3/4	1/2	1-5/8	3-5/8	4	TE69543	38.99
3/4	5/8	1-5/8	3-3/4	4	TE69544	38.99
3/4	3/4	1-5/8	3-7/8	4	TE69545	38.99
13/16	3/4	1-7/8	4-1/8	4	TE69550	51.60
7/8	3/4	1-7/8	4-1/8	4	TE69553	51.42
7/8	7/8	1-7/8	4-1/8	4	TE69554	51.42
15/16	3/4	1-7/8	4-1/8	4	TE69559	66.02
15/16	7/8	1-7/8	4-1/8	4	TE69560	60.15
1	3/4	1-7/8	4-1/8	4	TE69563	58.51
1	7/8	1-7/8	4-1/8	4	TE69565	62.47
1	1	2	4-1/2	4	TE69566	61.96
1-1/8	7/8	2	4-1/4	6	TE69570	89.80
1-1/8	1	2	4-1/2	6	TE69571	88.15
1-1/4	7/8	2	4-1/4	6	TE69573	97.56
1-1/4	1	2	4-1/2	6	TE69574	94.75
1-1/4	1-1/4	2	4-1/2	6	TE69576	96.57
1-3/8	1	2	4-1/2	6	TE69579	106.75
1-1/2	1	2	4-1/2	6	TE69582	118.71
1-1/2	1-1/4	2	4-1/2	4	TE69583	124.42
1-1/2	1-1/4	2	4-1/2	6	TE69584	135.44
1-5/8	1-1/4	2	4-1/2	6	TE69587	136.06
1-3/4	1-1/4	2	4-1/2	4	TE69588	164.21
1-3/4	1-1/4	2	4-1/2	6	TE69589	150.22
2	1-1/4	2	4-1/2	6	TE69593	218.31

FOR COATING INFORMATION SEE PAGE 2.

TOLERANCES	DIAMETER	SHANK
ALL SIZES	+ .0015, -.0000	+ .0000, -.0005

HSS ENDMILLS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# High Speed Steel Endmills

## DOUBLE END - 2 FLUTE - SQUARE END - 30° HELIX



**SERIES 815**  
UNCOATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLUTES	UNCOATED	PRICE
1/8	3/8	3/8	3-1/16	2	TE62206	20.37
5/32	3/8	7/16	3-1/8	2	TE62208	21.62
3/16	3/8	7/16	3-1/8	2	TE62210	20.39
7/32	3/8	1/2	3-1/8	2	TE62212	21.64
1/4	3/8	1/2	3-1/8	2	TE62214	20.39
9/32	3/8	9/16	3-1/8	2	TE62216	21.64
5/16	3/8	9/16	3-1/8	2	TE62218	20.39
11/32	3/8	9/16	3-1/8	2	TE62220	21.64
3/8	3/8	9/16	3-1/8	2	TE62222	20.39
13/32	1/2	13/16	3-3/4	2	TE62224	32.96
7/16	1/2	13/16	3-3/4	2	TE62226	31.01
1/2	1/2	13/16	3-3/4	2	TE62230	31.01
9/16	5/8	1-1/8	4-1/2	2	TE62234	42.18
5/8	5/8	1-1/8	4-1/2	2	TE62238	42.18
11/16	3/4	1-5/16	5	2	TE62242	53.12
3/4	3/4	1-5/16	5	2	TE62246	53.12
13/16	7/8	1-9/16	5-1/2	2	TE62250	66.83
7/8	7/8	1-9/16	5-1/2	2	TE62254	66.83
15/16	1	1-5/8	5-7/8	2	TE62258	86.10
1	1	1-5/8	5-7/8	2	TE62262	82.20



**SERIES 816**  
ALTIN COATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLUTES	ALTIN	PRICE
1/8	3/8	3/8	3-1/16	2	TE62306	25.46
5/32	3/8	7/16	3-1/8	2	TE62308	27.03
3/16	3/8	7/16	3-1/8	2	TE62310	25.47
7/32	3/8	1/2	3-1/8	2	TE62312	27.03
1/4	3/8	1/2	3-1/8	2	TE62314	25.47
9/32	3/8	9/16	3-1/8	2	TE62316	27.03
5/16	3/8	9/16	3-1/8	2	TE62318	25.47
11/32	3/8	9/16	3-1/8	2	TE62320	27.03
3/8	3/8	9/16	3-1/8	2	TE62322	25.47
13/32	1/2	13/16	3-3/4	2	TE62324	41.20
7/16	1/2	13/16	3-3/4	2	TE62326	38.75
1/2	1/2	13/16	3-3/4	2	TE62330	38.75
9/16	5/8	1-1/8	4-1/2	2	TE62334	52.73
5/8	5/8	1-1/8	4-1/2	2	TE62338	52.73
11/16	3/4	1-5/16	5	2	TE62342	66.40
3/4	3/4	1-5/16	5	2	TE62346	66.40
13/16	7/8	1-9/16	5-1/2	2	TE62350	83.52
7/8	7/8	1-9/16	5-1/2	2	TE62354	83.52
15/16	1	1-5/8	5-7/8	2	TE62358	107.63
1	1	1-5/8	5-7/8	2	TE62362	102.74

FOR COATING INFORMATION SEE PAGE 2.

TOLERANCES	DIAMETER		SHANK
	IF SIZE & SHANK DIA. ARE NOT THE SAME	IF SIZE & SHANK DIA. ARE THE SAME	
ALL SIZES	+0.000, -0.015	+0.000, -0.025	+0.001, -0.005

HSS ENDMILLS

CARBIDE ENDMILLS

CARBIDE MICRO ENDMILLS

CARBIDE THREADMILLS

CARBIDE DRILL MILLS

CARBIDE CHAMFER MILLS

CARBIDE DRILLS

CARBIDE REAMERS

CARBIDE BURS

COUNTERSINKS

HSS & COBALT ENDMILLS

TAPS & DIES

HSS & COBALT DRILLS

HSS & COBALT REAMERS

TECHNICAL INFORMATION



# High Speed Steel Endmills



**DOUBLE END - 4 FLUTE - SQUARE END - 30° HELIX - NON CENTER CUTTING**



**SERIES 820  
UNCOATED**

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLUTES	UNCOATED	PRICE
1/8	3/8	3/8	3-1/16	4	TE68006	20.57
5/32	3/8	7/16	3-1/8	4	TE68008	21.74
3/16	3/8	1/2	3-1/8	4	TE68010	20.57
7/32	3/8	9/16	3-1/4	4	TE68012	21.74
1/4	3/8	5/8	3-3/8	4	TE68014	20.57
9/32	3/8	11/16	3-3/8	4	TE68016	21.74
5/16	3/8	3/4	3-1/2	4	TE68018	20.57
11/32	3/8	3/4	3-1/2	4	TE68020	21.74
3/8	3/8	3/4	3-1/2	4	TE68022	20.57
13/32	1/2	1	4-1/8	4	TE68024	31.94
7/16	1/2	1	4-1/8	4	TE68026	31.07
15/32	1/2	1	4-1/8	4	TE68028	31.94
1/2	1/2	1	4-1/8	4	TE68030	31.07
9/16	5/8	1-3/8	5	4	TE68034	41.47
5/8	5/8	1-3/8	5	4	TE68038	41.47
11/16	3/4	1-5/8	5-5/8	4	TE68042	52.21
3/4	3/4	1-5/8	5-5/8	4	TE68046	52.21
13/16	7/8	1-7/8	6-1/8	4	TE68050	69.72
7/8	7/8	1-7/8	6-1/8	4	TE68054	69.72
15/16	1	1-7/8	6-3/8	4	TE68058	84.43
1	1	1-7/8	6-3/8	4	TE68062	80.96



**SERIES 821  
ALTIN COATED**

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLUTES	ALTIN	PRICE
1/8	3/8	3/8	3-1/16	4	TE68106	25.73
5/32	3/8	7/16	3-1/8	4	TE68108	27.16
3/16	3/8	1/2	3-1/8	4	TE68110	25.73
7/32	3/8	9/16	3-1/4	4	TE68112	27.16
1/4	3/8	5/8	3-3/8	4	TE68114	25.73
9/32	3/8	11/16	3-3/8	4	TE68116	27.16
5/16	3/8	3/4	3-1/2	4	TE68118	25.73
11/32	3/8	3/4	3-1/2	4	TE68120	27.16
3/8	3/8	3/4	3-1/2	4	TE68122	25.73
13/32	1/2	1	4-1/8	4	TE68124	39.92
7/16	1/2	1	4-1/8	4	TE68126	38.83
15/32	1/2	1	4-1/8	4	TE68128	39.92
1/2	1/2	1	4-1/8	4	TE68130	38.83
9/16	5/8	1-3/8	5	4	TE68134	51.84
5/8	5/8	1-3/8	5	4	TE68138	51.84
11/16	3/4	1-5/8	5-5/8	4	TE68142	65.29
3/4	3/4	1-5/8	5-5/8	4	TE68146	65.29
13/16	7/8	1-7/8	6-1/8	4	TE68150	87.17
7/8	7/8	1-7/8	6-1/8	4	TE68154	87.17
15/16	1	1-7/8	6-3/8	4	TE68158	105.54
1	1	1-7/8	6-3/8	4	TE68162	101.14

**FOR COATING INFORMATION SEE PAGE 2.**

TOLERANCES	DIAMETER		SHANK
	IF SIZE & SHANK DIA. ARE NOT THE SAME	IF SIZE & SHANK DIA. ARE THE SAME	
ALL SIZES	+0.000, -0.015	+0.000, -0.025	+0.001, -0.005

HSS ENDMILLS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# M42 Cobalt Endmills

## SQUARE END - 30° HELIX - M42 COBALT



**SERIES 807**  
2 FLUTE - UNCOATED



**SERIES 808**  
2 FLUTE - ALTIN COATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	#OF FLTS	UNCOATED	PRICE
1/8	3/8	3/8	2-5/16	2	TE82701	16.20
5/32	3/8	3/8	2-5/16	2	TE82703	21.11
3/16	3/8	9/32	2-5/16	2	TE82705	16.20
7/32	3/8	7/16	2-5/16	2	TE82707	21.11
1/4	3/8	1/2	2-5/16	2	TE82709	16.20
5/16	3/8	9/16	2-5/16	2	TE82713	16.20
3/8	3/8	9/16	2-5/16	2	TE82715	16.20
7/16	3/8	13/16	2-1/2	2	TE82717	22.39
1/2	3/8	13/16	2-1/2	2	TE82719	22.39
1/2	1/2	1	3	2	TE82721	23.67
9/16	1/2	1-1/8	3-1/8	2	TE82723	28.89
5/8	1/2	1-1/8	3-1/8	2	TE82725	32.36
5/8	5/8	1-5/16	3-7/16	2	TE82727	32.86
3/4	1/2	1-5/16	3-5/16	2	TE82729	37.57
3/4	5/8	1-5/16	3-7/16	2	TE82731	37.57
3/4	3/4	1-5/16	3-9/16	2	TE82733	37.57
13/16	5/8	1-1/2	3-5/8	2	TE82735	46.19
13/16	3/4	1-1/2	3-3/4	2	TE82737	46.46
7/8	5/8	1-1/2	3-5/8	2	TE82739	46.19
7/8	3/4	1-1/2	3-3/4	2	TE82741	51.48
7/8	7/8	1-1/2	3-3/4	2	TE82743	51.48
15/16	5/8	1-1/2	3-5/8	2	TE82745	55.95
15/16	3/4	1-1/2	3-3/4	2	TE82747	59.26
15/16	7/8	1-1/2	3-3/4	2	TE82749	55.95
1	5/8	1-1/2	3-5/8	2	TE82751	52.38
1	3/4	1-1/2	3-3/4	2	TE82753	52.38
1	1	1-5/8	4-1/8	2	TE82757	59.64
1-1/8	1	1-5/8	4-1/8	2	TE82761	87.23
1-1/4	1	1-5/8	4-1/8	2	TE82765	97.25
1-1/2	1-1/4	1-5/8	4-1/8	2	TE82773	116.31

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	#OF FLTS	ALTIN	PRICE
1/8	3/8	3/8	2-5/16	2	TE82802	20.25
5/32	3/8	3/8	2-5/16	2	TE82804	26.38
3/16	3/8	9/32	2-5/16	2	TE82806	20.25
7/32	3/8	7/16	2-5/16	2	TE82808	26.38
1/4	3/8	1/2	2-5/16	2	TE82810	20.25
5/16	3/8	9/16	2-5/16	2	TE82814	20.25
3/8	3/8	9/16	2-5/16	2	TE82816	20.25
7/16	3/8	13/16	2-1/2	2	TE82818	27.99
1/2	3/8	13/16	2-1/2	2	TE82820	27.99
1/2	1/2	1	3	2	TE82822	29.61
9/16	1/2	1-1/8	3-1/8	2	TE82824	36.13
5/8	1/2	1-1/8	3-1/8	2	TE82826	40.45
5/8	5/8	1-5/16	3-7/16	2	TE82828	41.09
3/4	1/2	1-5/16	3-5/16	2	TE82830	47.02
3/4	5/8	1-5/16	3-7/16	2	TE82832	47.02
3/4	3/4	1-5/16	3-9/16	2	TE82834	47.02
13/16	5/8	1-1/2	3-5/8	2	TE82836	57.74
13/16	3/4	1-1/2	3-3/4	2	TE82838	57.94
7/8	5/8	1-1/2	3-5/8	2	TE82840	57.74
7/8	3/4	1-1/2	3-3/4	2	TE82842	64.35
7/8	7/8	1-1/2	3-3/4	2	TE82844	64.35
15/16	5/8	1-1/2	3-5/8	2	TE82846	69.93
15/16	3/4	1-1/2	3-3/4	2	TE82848	74.09
15/16	7/8	1-1/2	3-3/4	2	TE82850	69.93
1	5/8	1-1/2	3-5/8	2	TE82852	65.48
1	3/4	1-1/2	3-3/4	2	TE82854	65.48
1	1	1-5/8	4-1/8	2	TE82858	74.56
1-1/8	1	1-5/8	4-1/8	2	TE82862	109.04
1-1/4	1	1-5/8	4-1/8	2	TE82866	121.55
1-1/2	1-1/4	1-5/8	4-1/8	2	TE82874	145.39

FOR COATING INFORMATION SEE PAGE 2.

TOLERANCES	DIAMETER	SHANK
ALL SIZES	+0.003, -.0000	+0.0000, -.0004

COBALT ENDMILLS

CARRIBE ENDMILLS

CARRIBE MICRO ENDMILLS

CARRIBE THREADMILLS

CARRIBE DRILL MILLS

CARRIBE CHAMFER MILLS

CARRIBE DRILLS

CARRIBE REAMERS

CARRIBE BURS

COUNTERSINKS

HSS & COBALT ENDMILLS

TAPS & DIES

HSS & COBALT DRILLS

HSS & COBALT REAMERS

TECHNICAL INFORMATION



# M42 Cobalt Endmills

## SQUARE END - 30° HELIX - M42 COBALT



### SERIES 812

4 & 6 FLUTE - CENTER CUTTING - UNCOATED

### SERIES 813

4 & 6 FLUTE - CENTER CUTTING - ALTIN COATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	#OF FLTS	UNCOATED	PRICE
1/8	3/8	3/8	2-5/16	4	TE81201	16.54
5/32	3/8	3/8	2-5/16	4	TE81203	22.66
3/16	3/8	1/2	2-3/8	4	TE81205	16.54
7/32	3/8	1/2	2-3/8	4	TE81207	22.66
1/4	3/8	5/8	2-7/16	4	TE81209	16.54
9/32	3/8	11/16	2-1/2	4	TE81211	22.66
5/16	3/8	3/4	2-1/2	4	TE81213	16.54
11/32	3/8	3/4	2-1/2	4	TE81215	23.13
3/8	3/8	3/4	2-1/2	4	TE81217	16.54
13/32	3/8	3/4	2-1/2	4	TE81219	33.80
7/16	3/8	1	2-11/16	4	TE81221	22.34
15/32	3/8	1	2-11/16	4	TE81223	39.64
1/2	3/8	1	2-11/16	4	TE81225	22.34
1/2	1/2	1-1/4	3-1/4	4	TE81227	22.34
17/32	1/2	1-1/4	3-1/4	4	TE81229	45.41
9/16	1/2	1-3/8	3-3/8	4	TE81231	29.07
5/8	1/2	1-3/8	3-3/8	4	TE81233	31.66
5/8	5/8	1-5/8	3-3/4	4	TE81235	35.15
11/16	1/2	1-5/8	3-5/8	4	TE81237	36.68
11/16	5/8	1-5/8	3-3/4	4	TE81239	37.38
3/4	1/2	1-5/8	3-5/8	4	TE81241	37.95
3/4	5/8	1-5/8	3-3/4	4	TE81243	37.95
3/4	3/4	1-5/8	3-7/8	4	TE81245	39.38
13/16	3/4	1-7/8	4-1/8	4	TE81247	50.23
7/8	3/4	1-7/8	4-1/8	4	TE81249	50.05
7/8	7/8	1-7/8	4-1/8	4	TE81251	50.05
15/16	3/4	1-7/8	4-1/8	4	TE81253	64.28
1	3/4	1-7/8	4-1/8	4	TE81257	56.97
1	7/8	1-7/8	4-1/8	4	TE81259	60.85
1	1	2	4-1/2	4	TE81261	60.34
1-1/8	1	2	4-1/2	6	TE81265	86.08
1-1/4	1	2	4-1/2	6	TE81269	92.27
1-1/4	1-1/4	2	4-1/2	6	TE81273	94.05
1-3/8	1	2	4-1/2	6	TE81275	106.79
1-1/2	1	2	4-1/2	6	TE81277	115.26
1-1/2	1-1/4	2	4-1/2	4	TE81279	121.11
1-5/8	1-1/4	2	4-1/2	6	TE81283	131.92
2	1-1/4	2	4-1/2	6	TE81291	214.29

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	#OF FLTS	ALTIN	PRICE
1/8	3/8	3/8	2-5/16	4	TE81302	20.67
5/32	3/8	3/8	2-5/16	4	TE81304	28.32
3/16	3/8	1/2	2-3/8	4	TE81306	20.67
7/32	3/8	1/2	2-3/8	4	TE81308	28.32
1/4	3/8	5/8	2-7/16	4	TE81310	20.67
9/32	3/8	11/16	2-1/2	4	TE81312	28.32
5/16	3/8	3/4	2-1/2	4	TE81314	20.67
11/32	3/8	3/4	2-1/2	4	TE81316	28.92
3/8	3/8	3/4	2-1/2	4	TE81318	20.67
13/32	3/8	3/4	2-1/2	4	TE81320	42.26
7/16	3/8	1	2-11/16	4	TE81322	27.94
15/32	3/8	1	2-11/16	4	TE81324	44.60
1/2	3/8	1	2-11/16	4	TE81326	27.94
1/2	1/2	1-1/4	3-1/4	4	TE81328	27.94
17/32	1/2	1-1/4	3-1/4	4	TE81330	56.76
9/16	1/2	1-3/8	3-3/8	4	TE81332	36.33
5/8	1/2	1-3/8	3-3/8	4	TE81334	39.56
5/8	5/8	1-5/8	3-3/4	4	TE81336	43.95
11/16	1/2	1-5/8	3-5/8	4	TE81338	45.86
11/16	5/8	1-5/8	3-3/4	4	TE81340	46.73
3/4	1/2	1-5/8	3-5/8	4	TE81342	47.44
3/4	5/8	1-5/8	3-3/4	4	TE81344	47.44
3/4	3/4	1-5/8	3-7/8	4	TE81346	47.44
13/16	3/4	1-7/8	4-1/8	4	TE81348	62.81
7/8	3/4	1-7/8	4-1/8	4	TE81350	62.58
7/8	7/8	1-7/8	4-1/8	4	TE81352	62.58
15/16	3/4	1-7/8	4-1/8	4	TE81354	80.36
1	3/4	1-7/8	4-1/8	4	TE81358	71.22
1	7/8	1-7/8	4-1/8	4	TE81360	76.05
1	1	2	4-1/2	4	TE81362	75.42
1-1/8	1	2	4-1/2	6	TE81366	107.29
1-1/4	1	2	4-1/2	6	TE81370	115.34
1-1/4	1-1/4	2	4-1/2	6	TE81374	117.56
1-3/8	1	2	4-1/2	6	TE81376	129.95
1-1/2	1	2	4-1/2	6	TE81378	144.50
1-1/2	1-1/4	2	4-1/2	4	TE81380	151.45
1-5/8	1-1/4	2	4-1/2	6	TE81384	165.61
2	1-1/4	2	4-1/2	6	TE81392	265.74

FOR COATING INFORMATION SEE PAGE 2.

TOLERANCES	DIAMETER	SHANK
ALL SIZES	+ .003, - .0000	+ .0000, - .0004

COBALT ENDMILLS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# M42 Cobalt Endmills

## DOUBLE END - 2 FLUTE - SQUARE END - 30° HELIX



**SERIES 817**  
UNCOATED



**SERIES 818**  
ALTIN COATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLUTES	UNCOATED	PRICE	ALTIN	PRICE
1/8	3/8	3/8	3-1/16	2	TE81701	24.79	TE81802	30.99
5/32	3/8	7/16	3-1/8	2	TE81703	26.32	TE81804	32.90
3/16	3/8	7/16	3-1/8	2	TE81705	24.82	TE81806	31.01
7/32	3/8	1/2	3-1/8	2	TE81707	26.33	TE81808	32.91
1/4	3/8	1/2	3-1/8	2	TE81709	24.82	TE81810	31.01
9/32	3/8	9/16	3-1/8	2	TE81711	26.33	TE81812	32.91
5/16	3/8	9/16	3-1/8	2	TE81713	24.82	TE81814	31.01
11/32	3/8	9/16	3-1/8	2	TE81715	26.33	TE81816	32.91
3/8	3/8	9/16	3-1/8	2	TE81717	24.82	TE81818	31.01
13/32	1/2	13/16	3-3/4	2	TE81719	40.12	TE81820	21.53
7/16	1/2	13/16	3-3/4	2	TE81721	37.73	TE81822	47.16
1/2	1/2	13/16	3-3/4	2	TE81725	37.73	TE81826	47.16
9/16	5/8	1-1/8	4-1/2	2	TE81727	51.34	TE81828	64.17
5/8	5/8	1-1/8	4-1/2	2	TE81729	51.34	TE81830	64.17
3/4	3/4	1-5/16	5	2	TE81733	64.65	TE81834	80.83
7/8	7/8	1-9/16	5-1/2	2	TE81737	81.35	TE81838	101.68
1	1	1-5/8	5-7/8	2	TE81741	100.06	TE81842	125.07

## DOUBLE END - 4 FLUTE - SQUARE END - 30° HELIX - CENTER CUTTING



**SERIES 823**  
UNCOATED



**SERIES 824**  
ALTIN COATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLUTES	UNCOATED	PRICE	ALTIN	PRICE
1/8	3/8	3/8	3-1/16	4	TE82301	25.04	TE82402	31.31
5/32	3/8	7/16	3-1/8	4	TE82303	26.44	TE82404	33.06
3/16	3/8	1/2	3-1/8	4	TE82305	25.04	TE82406	31.31
7/32	3/8	9/16	3-1/4	4	TE82307	26.44	TE82408	33.06
1/4	3/8	5/8	3-3/8	4	TE82309	25.04	TE82410	31.31
9/32	3/8	11/16	3-3/8	4	TE82311	26.44	TE82412	33.06
5/16	3/8	3/4	3-1/2	4	TE82313	25.04	TE82414	31.31
11/32	3/8	3/4	3-1/2	4	TE82315	26.44	TE82416	33.06
3/8	3/8	3/4	3-1/2	4	TE82317	25.04	TE82418	31.31
13/32	1/2	1	4-1/8	4	TE82319	38.88	TE82420	48.59
7/16	1/2	1	4-1/8	4	TE82321	37.81	TE82422	47.27
1/2	1/2	1	4-1/8	4	TE82325	37.81	TE82426	47.27
9/16	5/8	1-3/8	5	4	TE82327	50.47	TE82428	63.09
5/8	5/8	1-3/8	5	4	TE82329	50.47	TE82430	63.09
11/16	3/4	1-5/8	5-5/8	4	TE82331	63.57	TE82432	79.47
3/4	3/4	1-5/8	5-5/8	4	TE82333	63.57	TE82434	79.47
13/16	7/8	1-7/8	6-1/8	4	TE82335	84.87	TE82436	106.10
7/8	7/8	1-7/8	6-1/8	4	TE82337	84.87	TE82438	106.10
15/16	1	1-7/8	6-3/8	4	TE82339	102.78	TE82440	128.47
1	1	1-7/8	6-3/8	4	TE82341	98.55	TE82442	123.12

FOR COATING INFORMATION SEE PAGE 2.

TOLERANCES	DIAMETER		SHANK
	IF SIZE & SHANK DIA. ARE NOT THE SAME	IF SIZE & SHANK DIA. ARE THE SAME	
ALL SIZES	+0.000, -0.015	+0.000, -0.025	+0.001, -0.005

COBALT ENDMILLS  
 CARRIIDE ENDMILLS  
 CARRIIDE MICRO ENDMILLS  
 CARRIIDE THREADMILLS  
 CARRIIDE DRILL MILLS  
 CARRIIDE CHAMFER MILLS  
 CARRIIDE DRILLS  
 CARRIIDE REAMERS  
 CARRIIDE BURS  
 COUNTERSINKS  
 HSS & COBALT ENDMILLS  
 TAPS & DIES  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION



# M42 Cobalt Roughing Endmills



## COARSE PITCH - 30° HELIX - NON CENTER CUTTING - M42 COBALT



**SERIES 825**  
UNCOATED



**SERIES 826**  
ALTIN COATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLUTES	UNCOATED	PRICE	ALTIN	PRICE
1/4	3/8	5/8	2-7/16	3	TE63404	30.53	TE63504	38.14
5/16	3/8	3/4	2-1/2	3	TE63409	33.31	TE63509	41.66
3/8	3/8	3/4	2-1/2	4	TE63414	34.80	TE63514	43.52
7/16	3/8	1	2-11/16	4	TE63419	35.20	TE63519	43.77
1/2	1/2	1	3	4	TE63428	35.65	TE63528	44.57
1/2	1/2	1-1/4	3-1/4	4	TE63429	36.87	TE63529	46.09
5/8	5/8	1-5/8	3-3/4	4	TE63436	46.92	TE63536	58.65
3/4	3/4	1-5/8	3-7/8	4	TE63445	51.64	TE63545	64.55
7/8	3/4	1-7/8	4-1/8	5	TE63454	66.11	TE63554	89.46
1	1	2	4-1/2	5	TE63466	69.18	TE63566	86.46
1-1/8	1	2	4-1/2	6	TE63471	107.47	TE63571	134.28
1-1/4	1-1/4	2	4-1/2	6	TE63475	116.61	TE63575	145.72
1-1/2	1-1/4	2	4-1/2	6	TE63483	136.72	TE63583	170.91
1-3/4	1-1/4	2-1/2	5	6	TE63489	206.24	TE63589	257.80
2	1-1/4	2	4-1/2	8	TE63492	189.99	TE63592	237.48

## FINE PITCH - 30° HELIX - NON CENTER CUTTING - M42 COBALT



**SERIES 830**  
UNCOATED



**SERIES 831**  
ALTIN COATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLUTES	UNCOATED	PRICE	ALTIN	PRICE
1/4	3/8	5/8	2-7/16	3	TE66104	30.53	TE66204	38.14
5/16	3/8	3/4	2-1/2	3	TE66109	33.33	TE66209	41.66
3/8	3/8	3/4	2-1/2	4	TE66114	35.03	TE66214	43.77
7/16	3/8	1	2-11/16	4	TE66119	35.20	TE66219	44.00
1/2	1/2	1-1/4	3-1/4	4	TE66129	36.87	TE66229	44.57
5/8	5/8	1-5/8	3-3/4	4	TE66136	46.92	TE66236	58.65
3/4	3/4	1-5/8	3-7/8	4	TE66145	51.64	TE66245	64.55
7/8	3/4	1-7/8	4-1/8	5	TE66154	67.56	TE66254	84.45
1	1	2	4-1/2	5	TE66166	69.21	TE66266	86.53
1-1/8	1	2	4-1/2	6	TE66171	114.77	TE66271	143.45
1-1/4	1-1/4	2	4-1/2	6	TE66175	116.61	TE66275	145.72
1-1/2	1-1/4	2	4-1/2	6	TE66183	144.05	TE66283	180.07
1-3/4	1-1/4	2-1/2	5	6	TE66189	206.24	TE66289	257.80
2	1-1/4	2	4-1/2	8	TE66192	202.87	TE66292	253.83

FOR COATING INFORMATION SEE PAGE 2.

TOLERANCES	DIAMETER	SHANK
ALL SIZES	+ .005, - .005	+ .0000, - .0005

COBALT ROUGHING ENDMILLS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



HIGH PERFORMANCE



# Spiral Point Taps

## Predator

HIGH VANADIUM POWDERED METAL



**SERIES 772**  
UNCOATED



**SERIES 771**  
STEAM OXIDE



**SERIES 773**  
ALTIN COATED

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	UNCOATED	PRICE	STEAM OXIDE	PRICE	ALTIN	PRICE
4 - 40	H2	2	1	TT97015	10.86	TT96915	12.50	TT97115	16.71
6 - 32	H3	2	1	TT97024	10.86	TT96924	12.50	TT97124	16.71
8 - 32	H3	3	1	TT97030	10.86	TT96930	12.50	TT97130	16.71
10 - 24	H3	3	1	TT97036	10.86	TT96936	12.50	TT97136	16.71
10 - 32	H3	3	1	TT97040	10.86	TT96940	12.50	TT97140	16.71
1/4 - 20	H3	3	1	TT97048	11.87	TT96948	13.65	TT97148	18.26
1/4 - 28	H3	3	1	TT97054	11.87	TT96954	13.65	TT97154	18.26
5/16 - 18	H3	3	1	TT97060	12.97	TT96960	14.93	TT97160	19.97
5/16 - 24	H3	3	1	TT97066	12.97	TT96966	14.93	TT97166	19.97
3/8 - 16	H3	3	1	TT97071	15.44	TT96971	17.74	TT97171	23.75
3/8 - 24	H3	3	1	TT97075	15.44	TT96975	17.74	TT97175	23.75
7/16 - 14	H3	3	1	TT97078	19.77	TT96978	22.73	TT97178	30.41
7/16 - 20	H3	3	1	TT97081	19.77	TT96981	22.73	TT97181	30.41
1/2 - 13	H3	3	1	TT97085	23.59	TT96985	27.14	TT97185	36.30
1/2 - 20	H3	3	1	TT97089	23.59	TT96989	27.14	TT97189	36.30
5/8 - 11	H3	4	1	TT97093	44.96	TT96993	51.71	TT97193	69.17
5/8 - 18	H3	4	1	TT97095	44.96	TT96995	51.71	TT97195	69.17
3/4 - 10	H3	4	1	TT97096	58.13	TT96996	66.84	TT97196	89.42
3/4 - 16	H3	4	1	TT97098	58.13	TT96998	66.84	TT97198	89.42

- **CNC STYLE**
- **FOR THROUGH HOLE TAPPING**
- **MATERIALS: STEEL, STEEL ALLOYS, STAINLESS STEELS, TITANIUM ALLOYS, AND A VARIETY OF OTHER STEELS WITH A MAXIMUM OF RC 32**

FOR COATING INFORMATION SEE PAGE 2.

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 189-190, OR GO TO: TITANMAN.COM

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION

HIGH PERFORMANCE - SPIRAL POINT TAPS



» HIGH PERFORMANCE «



# Spiral Point Taps

## Predator

HIGH VANADIUM POWDERED METAL  
METRIC



**SERIES 711**  
UNCOATED



**SERIES 712**  
STEAM OXIDE



**SERIES 713**  
ALTiN COATED

SIZE	D LIMIT	# OF FLUTES	PKG. QTY.	UNCOATED	PRICE	STEAM OXIDE	PRICE	ALTiN	PRICE
M3 x 0.5	D3	2	1	TT98210	12.33	TT98303	14.18	TT98420	18.48
M4 x 0.7	D4	3	1	TT98211	12.33	TT98304	14.18	TT98421	18.48
M5 x 0.8	D4	3	1	TT98212	12.33	TT98305	14.18	TT98422	18.48
M6 x 1.0	D5	3	1	TT98213	13.55	TT98306	15.57	TT98423	20.31
M8 x 1.25	D5	3	1	TT98214	14.73	TT98308	16.95	TT98424	22.12
M10 x 1.5	D6	3	1	TT98215	17.50	TT98310	20.11	TT98425	26.04
M12 x 1.75	D6	3	1	TT98216	26.82	TT98312	30.83	TT98426	40.09
M14 x 2.0	D7	3	1	TT98218	40.89	TT98314	47.01	TT98428	55.15
M16 x 2.0	D7	3	1	TT98220	48.02	TT98316	55.22	TT98430	64.80

- **CNC STYLE**
- **FOR THROUGH HOLE TAPPING**
- **MATERIALS: STEEL, STEEL ALLOYS, STAINLESS STEELS, TITANIUM ALLOYS, AND A VARIETY OF OTHER STEELS WITH A MAXIMUM OF RC 32**



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FOR COATING INFORMATION SEE PAGE 2.

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 189-190, OR GO TO: [TITANMAN.COM](http://TITANMAN.COM)

HIGH PERFORMANCE - SPIRAL POINT TAPS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION





HIGH PERFORMANCE



# Spiral Flute Taps

## Predator

HIGH VANADIUM POWDERED METAL

37° HELIX - SEMI BOTTOMING  
2 - 2-1/2 THREAD CHAMFER



**SERIES 774**  
UNCOATED



**SERIES 799**  
STEAM OXIDE



**SERIES 779**  
ALTIN COATED

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	UNCOATED	PRICE	STEAM OXIDE	PRICE	ALTIN	PRICE
4 - 40	H2	3	1	TT97207	16.80	TT97507	19.32	TT97307	25.83
6 - 32	H3	3	1	TT97215	16.80	TT97515	19.32	TT97315	25.83
8 - 32	H3	3	1	TT97223	16.80	TT97523	19.32	TT97323	25.83
10 - 24	H3	3	1	TT97227	16.80	TT97527	19.32	TT97327	25.83
10 - 32	H3	3	1	TT97231	16.80	TT97531	19.32	TT97331	25.83
1/4 - 20	H3	3	1	TT97239	17.31	TT97539	19.90	TT97339	26.63
1/4 - 28	H3	3	1	TT97243	17.31	TT97543	19.90	TT97343	26.63
5/16 - 18	H3	3	1	TT97247	18.96	TT97547	21.79	TT97347	29.16
5/16 - 24	H3	3	1	TT97251	18.96	TT97551	21.79	TT97351	29.16
3/8 - 16	H3	3	1	TT97255	22.46	TT97555	25.83	TT97355	34.56
3/8 - 24	H3	3	1	TT97259	22.46	TT97559	25.83	TT97359	34.56
7/16 - 14	H3	3	1	TT97263	28.41	TT97563	32.68	TT97363	43.71
7/16 - 20	H3	3	1	TT97267	28.41	TT97567	32.68	TT97367	43.71
1/2 - 13	H3	3	1	TT97271	33.69	TT97571	38.76	TT97371	51.84
1/2 - 20	H3	3	1	TT97275	33.69	TT97575	38.76	TT97375	51.84
5/8 - 11	H3	3	1	TT97279	64.36	TT97579	74.03	TT97379	99.03
5/8 - 18	H3	3	1	TT97283	64.36	TT97583	74.03	TT97383	99.03
3/4 - 10	H3	4	1	TT97287	75.23	TT97587	86.52	TT97387	115.75
3/4 - 16	H3	4	1	TT97291	75.23	TT97591	86.52	TT97391	115.75

- **CNC STYLE**
- **SUITED FOR BLIND HOLE TAPPING**
- **MATERIALS: STEEL, STEEL ALLOYS, STAINLESS STEELS, TITANIUM ALLOYS, AND A VARIETY OF OTHER STEELS WITH A MAXIMUM OF RC 32**

FOR COATING INFORMATION SEE PAGE 2.

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 189-190, OR GO TO: TITANMAN.COM

HIGH PERFORMANCE - SPIRAL FLUTE TAPS

CARBIDE ENDMILLS

CARBIDE MICRO ENDMILLS

CARBIDE THREADMILLS

CARBIDE DRILL MILLS

CARBIDE CHAMFER MILLS

CARBIDE DRILLS

CARBIDE REAMERS

CARBIDE BURS

COUNTERSINKS

HSS & COBALT ENDMILLS

TAPS & DIES

HSS & COBALT DRILLS

HSS & COBALT REAMERS

TECHNICAL INFORMATION



» HIGH PERFORMANCE «



# Spiral Flute Taps

## Predator

HIGH VANADIUM POWDERED METAL  
METRIC

37° HELIX - SEMI BOTTOMING  
2 - 2-1/2 THREAD CHAMFER



**SERIES 716**  
UNCOATED



**SERIES 717**  
STEAM OXIDE



**SERIES 718**  
ALTIN COATED

SIZE	D LIMIT	# OF FLUTES	PKG. QTY.	UNCOATED	PRICE	STEAM OXIDE	PRICE	ALTIN	PRICE
M3 x 0.5	D3	2	1	TT98510	19.06	TT98603	21.91	TT98720	28.12
M4 x 0.7	D4	3	1	TT98511	19.06	TT98604	21.91	TT98721	28.12
M5 x 0.8	D4	3	1	TT98512	19.06	TT98605	21.91	TT98722	28.12
M6 x 1.0	D5	3	1	TT98513	19.63	TT98606	22.58	TT98723	29.16
M8 x 1.25	D5	3	1	TT98514	21.56	TT98608	24.79	TT98724	32.28
M10 x 1.5	D6	3	1	TT98515	25.48	TT98610	29.31	TT98725	38.01
M12 x 1.75	D6	3	1	TT98516	38.25	TT98612	43.98	TT98726	57.28
M14 x 2.0	D7	3	1	TT98518	54.20	TT98614	62.34	TT98728	73.18
M16 x 2.0	D7	3	1	TT98520	63.42	TT98616	72.94	TT98730	85.62

- **CNC STYLE**
- **SUITED FOR BLIND HOLE TAPPING**
- **MATERIALS: STEEL, STEEL ALLOYS, STAINLESS STEELS, TITANIUM ALLOYS, AND A VARIETY OF OTHER STEELS WITH A MAXIMUM OF RC 32**



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HIGH PERFORMANCE - SPIRAL FLUTE TAPS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION

# Hand Taps



**SERIES 725**  
HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	TAPER ITEM#	PLUG ITEM#	BOTTOM ITEM#	PRICE	SET-ITEM#	PRICE
0 - 80	H1	2	1	TT90000	TT90001	TT90002	7.09	TT90003	21.26
0 - 80	H2	2	1	-	TT90005	TT90006	7.09	-	-
1 - 64	H1	2	1	TT90008	TT90009	TT90010	6.59	TT90011	19.77
1 - 64	H2	2	1	-	TT90013	-	6.59	-	-
1 - 72	H1	2	1	TT90016	TT90017	TT90018	6.59	TT90019	19.77
1 - 72	H2	2	1	-	TT90021	TT90022	6.59	-	-
2 - 56	H1	3	1	TT90028	TT90029	TT90030	6.10	TT90031	18.28
2 - 56	H2	2	1	-	TT90033	TT90034	6.10	-	-
2 - 56	H2	3	1	TT90036	TT90037	TT90038	5.67	TT90039	17.02
2 - 64	H2	3	1	TT90044	TT90045	TT90046	6.10	TT90047	18.28
3 - 48	H1	3	1	-	TT90049	-	4.96	-	-
3 - 48	H2	2	1	-	TT90053	TT90054	4.96	-	-
3 - 48	H2	3	1	TT90056	TT90057	TT90058	4.37	TT90059	13.09
3 - 56	H2	3	1	TT90060	TT90061	TT90062	4.91	TT90063	14.71
4 - 40	H1	2	1	-	TT90065	-	4.01	-	-
4 - 40	H1	3	1	TT90068	TT90069	TT90070	3.86	TT90071	11.54
4 - 40	H2	2	1	-	TT90073	TT90074	3.86	-	-
4 - 40	H2	3	1	TT90076	TT90077	TT90078	3.59	TT90079	10.75
4 - 48	H1	3	1	-	TT90081	-	4.01	-	-
4 - 48	H2	3	1	TT90084	TT90085	TT90086	3.86	TT90087	11.54
4 - 36	H2	3	1	TT90088	TT90089	TT90090	3.86	TT90091	11.54
5 - 40	H1	3	1	-	TT90093	TT90094	3.86	-	-
5 - 40	H2	2	1	-	TT90097	TT90098	3.86	-	-
5 - 40	H2	3	1	TT90100	TT90101	TT90102	3.59	TT90103	10.75
5 - 44	H2	2	1	-	TT90105	-	3.86	-	-
5 - 44	H2	3	1	TT90108	TT90109	TT90110	3.86	TT90111	11.59
6 - 32	H1	2	1	-	TT90113	-	3.39	-	-
6 - 32	H1	3	1	TT90116	TT90117	TT90118	3.39	TT90119	10.15
6 - 32	H2	2	1	-	TT90121	TT90122	3.39	-	-
6 - 32	H2	3	1	TT90124	TT90125	TT90126	2.91	TT90127	8.75
6 - 32	H3	2	1	-	TT90129	TT90130	2.91	-	-
6 - 32	H3	3	1	TT90132	TT90133	TT90134	2.75	TT90135	8.24
6 - 32	H7	3	1	-	TT90137	TT90138	3.39	-	-
6 - 40	H1	3	1	-	TT90141	-	3.39	-	-
6 - 40	H2	2	1	-	TT90145	-	3.39	-	-
6 - 40	H2	3	1	TT90148	TT90149	TT90150	2.91	TT90151	8.75
8 - 32	H1	2	1	-	TT90153	-	3.39	-	-
8 - 32	H1	3	1	-	TT90157	TT90158	3.39	-	-
8 - 32	H1	4	1	TT90160	TT90161	TT90162	3.39	TT90163	10.15
8 - 32	H2	2	1	-	TT90165	TT90166	3.39	-	-
8 - 32	H2	3	1	-	TT90169	TT90170	3.39	-	-
8 - 32	H2	4	1	TT90172	TT90173	TT90174	2.91	TT90175	8.75
8 - 32	H3	2	1	-	TT90177	TT90178	2.91	-	-
8 - 32	H3	3	1	-	TT90181	TT90182	2.91	-	-
8 - 32	H3	4	1	TT90184	TT90185	TT90186	2.81	TT90187	8.44

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 TECHNICAL INFORMATION

**HAND TAPS**



# Hand Taps



**SERIES 725**  
HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	TAPER ITEM#	PLUG ITEM#	BOTTOM ITEM#	PRICE	SET-ITEM#	PRICE
8 - 32	H7	3	1	-	TT90189	TT90190	3.39	-	-
8 - 32	H7	4	1	-	TT90193	TT90194	3.39	-	-
8 - 36	H1	4	1	-	TT90197	-	3.39	-	-
8 - 36	H2	4	1	TT90200	TT90201	TT90202	2.91	TT90203	8.75
10 - 24	H1	3	1	-	TT90205	-	3.39	-	-
10 - 24	H1	4	1	TT90208	TT90209	TT90210	3.01	TT90211	9.00
10 - 24	H2	2	1	-	TT90213	TT90214	3.39	-	-
10 - 24	H2	3	1	-	TT90217	-	3.39	-	-
10 - 24	H2	4	1	TT90220	TT90221	TT90222	3.01	TT90223	9.00
10 - 24	H3	2	1	-	TT90225	TT90226	3.01	-	-
10 - 24	H3	3	1	-	TT90229	TT90230	3.01	-	-
10 - 24	H3	4	1	TT90232	TT90233	TT90234	2.91	TT90235	8.75
10 - 24	H7	3	1	-	TT90237	TT90238	3.39	-	-
10 - 24	H7	4	1	-	TT90241	TT90242	3.39	-	-
10 - 32	H1	2	1	-	TT90245	TT90246	3.39	-	-
10 - 32	H1	3	1	-	TT90249	-	3.39	-	-
10 - 32	H1	4	1	TT90252	TT90253	TT90254	3.01	TT90255	9.00
10 - 32	H2	2	1	-	TT90257	TT90258	3.39	-	-
10 - 32	H2	3	1	-	TT90261	TT90262	3.39	-	-
10 - 32	H2	4	1	TT90264	TT90265	TT90266	3.01	TT90267	9.00
10 - 32	H3	2	1	-	TT90269	TT90270	3.01	-	-
10 - 32	H3	3	1	-	TT90273	TT90274	3.01	-	-
10 - 32	H3	4	1	TT90276	TT90277	TT90278	2.91	TT90279	8.75
10 - 32	H7	3	1	-	TT90281	TT90282	3.39	-	-
10 - 32	H7	4	1	-	TT90285	TT90286	3.39	-	-
12 - 24	H3	4	1	TT90288	TT90289	TT90290	3.08	TT90291	9.23
12 - 28	H1	4	1	-	TT90293	-	3.57	-	-
12 - 28	H3	4	1	TT90296	TT90297	TT90298	3.39	TT90299	10.15
1/4 - 20	H1	3	1	-	TT90301	-	3.92	-	-
1/4 - 20	H1	4	1	TT90304	TT90305	TT90306	3.92	TT90307	11.74
1/4 - 20	H2	3	1	-	TT90309	-	3.92	-	-
1/4 - 20	H2	4	1	TT90311	TT90312	TT90313	3.73	TT90314	11.19
1/4 - 20	H3	2	1	-	TT90316	TT90317	3.92	-	-
1/4 - 20	H3	3	1	-	TT90320	TT90321	3.73	-	-
1/4 - 20	H3	4	1	TT90323	TT90324	TT90325	3.13	TT90326	9.40
1/4 - 20	H5	3	1	-	TT90328	TT90329	3.92	-	-
1/4 - 20	H5	4	1	-	TT90332	TT90333	3.73	-	-
1/4 - 28	H1	4	1	-	TT90336	TT90337	3.73	-	-
1/4 - 28	H2	4	1	-	TT90340	TT90341	3.92	-	-
1/4 - 28	H3	2	1	-	TT90344	TT90345	3.92	-	-
1/4 - 28	H3	3	1	-	TT90348	TT90349	3.92	-	-
1/4 - 28	H3	4	1	TT90351	TT90352	TT90353	3.13	TT90354	9.40
1/4 - 28	H4	4	1	-	TT90356	TT90357	3.92	-	-
5/16 - 18	H1	4	1	TT90359	TT90360	TT90361	4.34	-	-
5/16 - 18	H2	4	1	TT90363	TT90364	TT90365	4.34	TT90366	13.02

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TECHNICAL INFORMATION



# Hand Taps



**SERIES 725**  
HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	TAPER ITEM#	PLUG ITEM#	BOTTOM ITEM#	PRICE	SET-ITEM#	PRICE
5/16 - 18	H3	2	1	-	TT90368	TT90369	4.88	-	-
5/16 - 18	H3	3	1	-	TT90372	TT90373	4.34	-	-
5/16 - 18	H3	4	1	TT90375	TT90376	TT90377	3.86	TT90378	11.57
5/16 - 18	H5	3	1	-	TT90380	TT90381	4.88	-	-
5/16 - 18	H5	4	1	-	TT90384	TT90385	4.34	-	-
5/16 - 24	H1	4	1	TT90387	TT90388	TT90389	4.34	-	-
5/16 - 24	H2	4	1	-	TT90392	TT90393	4.34	-	-
5/16 - 24	H3	3	1	-	TT90396	TT90397	4.34	-	-
5/16 - 24	H3	4	1	TT90399	TT90400	TT90401	3.86	TT90402	11.57
5/16 - 24	H4	4	1	-	TT90404	TT90405	4.34	-	-
3/8 - 16	H1	3	1	-	TT90408	-	5.56	-	-
3/8 - 16	H1	4	1	-	TT90411	TT90412	5.56	-	-
3/8 - 16	H2	4	1	TT90414	TT90415	TT90416	4.88	TT90417	14.65
3/8 - 16	H3	3	1	-	TT90419	TT90420	4.88	-	-
3/8 - 16	H3	4	1	TT90422	TT90423	TT90424	4.36	TT90425	13.06
3/8 - 16	H5	3	1	-	TT90427	TT90428	5.56	-	-
3/8 - 16	H5	4	1	-	TT90431	TT90432	4.88	-	-
3/8 - 24	H1	4	1	TT90434	TT90435	TT90436	5.56	-	-
3/8 - 24	H2	4	1	-	TT90439	TT90440	4.88	-	-
3/8 - 24	H3	3	1	-	TT90443	TT90444	5.56	-	-
3/8 - 24	H3	4	1	TT90446	TT90447	TT90448	4.36	TT90449	13.06
3/8 - 24	H4	4	1	-	TT90451	TT90452	4.88	-	-
7/16 - 14	H1	4	1	-	TT90455	TT90456	8.23	-	-
7/16 - 14	H2	4	1	-	TT90459	TT90460	8.23	-	-
7/16 - 14	H3	3	1	-	TT90463	-	8.23	-	-
7/16 - 14	H3	4	1	TT90465	TT90466	TT90467	7.49	TT90468	22.45
7/16 - 14	H5	4	1	-	TT90470	TT90471	8.23	-	-
7/16 - 20	H1	4	1	-	TT90474	TT90475	8.23	-	-
7/16 - 20	H2	4	1	-	TT90478	TT90479	8.23	-	-
7/16 - 20	H3	3	1	-	TT90482	-	8.23	-	-
7/16 - 20	H3	4	1	TT90484	TT90485	TT90486	7.49	TT90487	22.45
7/16 - 20	H5	4	1	-	TT90489	TT90490	8.23	-	-
1/2 - 13	H1	4	1	-	TT90493	TT90494	9.60	-	-
1/2 - 13	H2	4	1	-	TT90497	TT90498	9.60	-	-
1/2 - 13	H3	3	1	-	TT90501	TT90502	9.60	-	-
1/2 - 13	H3	4	1	TT90504	TT90505	TT90506	7.80	TT90507	23.41
1/2 - 13	H5	4	1	-	TT90509	TT90510	9.74	-	-
1/2 - 20	H1	4	1	TT90512	TT90513	TT90514	9.60	-	-
1/2 - 20	H2	4	1	-	TT90517	TT90518	9.60	-	-
1/2 - 20	H3	3	1	-	TT90521	-	9.60	-	-
1/2 - 20	H3	4	1	TT90523	TT90524	TT90525	8.82	TT90526	26.46
1/2 - 20	H5	4	1	-	TT90528	TT90529	9.60	-	-
9/16 - 12	H2	4	1	-	TT90532	-	14.27	-	-
9/16 - 12	H3	4	1	TT90535	TT90536	TT90537	13.09	TT90538	39.29
9/16 - 12	H5	4	1	-	TT90540	TT90541	14.27	-	-

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 TECHNICAL INFORMATION



# Hand Taps



**SERIES 725**  
HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	TAPER ITEM#	PLUG ITEM#	BOTTOM ITEM#	PRICE	SET-ITEM#	PRICE
9/16 - 18	H2	4	1	-	TT90544	-	14.27	-	-
9/16 - 18	H3	4	1	TT90546	TT90547	TT90548	13.09	TT90549	39.29
9/16 - 18	H5	4	1	-	TT90551	TT90552	14.27	-	-
5/8 - 11	H1	4	1	-	TT90555	-	18.07	-	-
5/8 - 11	H2	4	1	-	TT90558	-	18.07	-	-
5/8 - 11	H3	4	1	TT90561	TT90562	TT90563	15.71	TT90564	47.12
5/8 - 11	H5	4	1	-	TT90566	TT90567	18.07	-	-
5/8 - 18	H1	4	1	-	TT90570	-	18.07	-	-
5/8 - 18	H2	4	1	-	TT90574	TT90575	18.07	-	-
5/8 - 18	H3	4	1	TT90577	TT90578	TT90579	15.71	TT90580	47.12
5/8 - 18	H5	4	1	-	TT90582	TT90583	18.07	-	-
11/16 - 11	H3	4	1	TT90585	TT90586	TT90587	19.51	TT90588	58.54
11/16 - 16	H3	4	1	TT90589	TT90590	TT90591	19.51	TT90592	58.54
3/4 - 10	H1	4	1	-	TT90594	-	23.76	-	-
3/4 - 10	H2	4	1	-	TT90597	-	23.76	-	-
3/4 - 10	H3	4	1	TT90600	TT90601	TT90602	22.00	TT90603	65.95
3/4 - 10	H5	4	1	-	TT90605	TT90606	23.76	-	-
3/4 - 16	H1	4	1	-	TT90609	-	23.76	-	-
3/4 - 16	H2	4	1	-	TT90612	-	23.76	-	-
3/4 - 16	H3	4	1	TT90615	TT90616	TT90617	22.00	TT90618	65.95
3/4 - 16	H5	4	1	-	TT90620	TT90621	23.76	-	-
7/8 - 9	H2	4	1	-	TT90624	-	32.18	-	-
7/8 - 9	H4	4	1	TT90626	TT90627	TT90628	30.65	TT90629	91.94
7/8 - 9	H6	4	1	-	TT90631	-	32.18	-	-
7/8 - 14	H2	4	1	-	TT90634	-	32.18	-	-
7/8 - 14	H4	4	1	TT90636	TT90637	TT90638	30.65	TT90639	91.94
7/8 - 14	H6	4	1	-	TT90641	-	32.18	-	-
1 - 8	H2	4	1	-	TT90644	-	41.96	-	-
1 - 8	H4	4	1	TT90646	TT90647	TT90648	40.74	TT90649	122.25
1 - 8	H6	4	1	-	TT90651	-	41.96	-	-
1 - 12	H4	4	1	TT90653	TT90654	TT90655	40.74	TT90656	122.25
1 - 14	H2	4	1	-	TT90658	-	41.96	-	-
1 - 14	H4	4	1	TT90660	TT90661	TT90662	40.74	TT90663	122.25
1 - 14	H6	4	1	TT90664	TT90665	TT90666	41.96	-	-
1-1/8 - 7	H4	4	1	TT90668	TT90669	TT90670	65.95	TT90671	197.84
1-1/8 - 12	H4	4	1	TT90672	TT90673	TT90674	69.84	TT90675	209.54
1-1/4 - 7	H4	4	1	TT90676	TT90677	TT90678	86.57	TT90679	259.67
1-1/4 - 12	H4	6	1	TT90680	TT90681	TT90682	88.07	TT90683	264.21
1-3/8 - 6	H4	4	1	TT90684	TT90685	TT90686	108.76	TT90687	326.27
1-3/8 - 12	H4	6	1	TT90688	TT90689	TT90690	109.53	TT90691	328.56
1-1/2 - 6	H4	4	1	TT90692	TT90693	TT90694	125.60	TT90695	376.78
1-1/2 - 12	H4	6	1	TT90696	TT90697	TT90698	127.91	TT90699	383.70

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TECHNICAL INFORMATION

# Hand Taps

## STEAM OXIDE



### SERIES 726 HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	TAPER ITEM#	PLUG ITEM#	BOTTOM ITEM#	PRICE
0 - 80	H1	2	1	TT90000S	TT90001S	TT90002S	8.15
1 - 64	H1	2	1	TT90008S	TT90009S	TT90010S	7.59
2 - 56	H2	3	1	TT90036S	TT90037S	TT90038S	6.54
2 - 64	H2	3	1	TT90044S	TT90045S	TT90046S	7.02
3 - 48	H2	3	1	TT90056S	TT90057S	TT90058S	5.04
4 - 40	H2	3	1	TT90076S	TT90077S	TT90078S	4.13
4 - 48	H2	3	1	TT90084S	TT90085S	TT90086S	4.44
4 - 36	H2	3	1	TT90088S	TT90089S	TT90090S	4.44
5 - 40	H2	3	1	TT90100S	TT90101S	TT90102S	4.13
5 - 44	H2	3	1	TT90108S	TT90109S	TT90110S	4.46
6 - 32	H2	3	1	TT90124S	TT90125S	TT90126S	3.36
6 - 40	H2	3	1	TT90148S	TT90149S	TT90150S	3.36
8 - 32	H3	4	1	TT90184S	TT90185S	TT90186S	3.25
8 - 36	H2	4	1	TT90200S	TT90201S	TT90202S	3.36
10 - 24	H3	4	1	TT90232S	TT90233S	TT90234S	3.36
10 - 32	H3	4	1	TT90276S	TT90277S	TT90278S	3.36
12 - 24	H3	4	1	TT90288S	TT90289S	TT90290S	3.55
12 - 28	H3	4	1	TT90296S	TT90297S	TT90298S	3.90
1/4 - 20	H3	4	1	TT90323S	TT90324S	TT90325S	3.60
1/4 - 28	H3	4	1	TT90351S	TT90352S	TT90353S	3.60
5/16 - 18	H3	4	1	TT90375S	TT90376S	TT90377S	4.44
5/16 - 24	H3	4	1	TT90399S	TT90400S	TT90401S	4.44
3/8 - 16	H3	4	1	TT90422S	TT90423S	TT90424S	5.00
3/8 - 24	H3	4	1	TT90446S	TT90447S	TT90448S	5.00
7/16 - 14	H3	4	1	TT90465S	TT90466S	TT90467S	8.62
7/16 - 20	H3	4	1	TT90484S	TT90485S	TT90486S	8.62
1/2 - 13	H3	4	1	TT90504S	TT90505S	TT90506S	8.98
1/2 - 20	H3	4	1	TT90523S	TT90524S	TT90525S	10.15
9/16 - 12	H3	4	1	TT90535S	TT90536S	TT90537S	15.05
9/16 - 18	H3	4	1	TT90546S	TT90547S	TT90548S	15.05
5/8 - 11	H3	4	1	TT90561S	TT90562S	TT90563S	18.07
5/8 - 18	H3	4	1	TT90577S	TT90578S	TT90579S	18.07
11/16 - 11	H3	4	1	TT90585S	TT90586S	TT90587S	22.44
11/16 - 16	H3	4	1	TT90589S	TT90590S	TT90591S	22.44
3/4 - 10	H3	4	1	TT90600S	TT90601S	TT90602S	25.29
3/4 - 16	H3	4	1	TT90615S	TT90616S	TT90617S	25.29
7/8 - 9	H4	4	1	TT90626S	TT90627S	TT90628S	35.26
7/8 - 14	H4	4	1	TT90636S	TT90637S	TT90638S	35.26
1 - 8	H4	4	1	TT90646S	TT90647S	TT90648S	46.83
1 - 12	H4	4	1	TT90653S	TT90654S	TT90655S	46.83
1 - 14	H4	4	1	TT90660S	TT90661S	TT90662S	46.83
1-1/8 - 7	H4	4	1	TT90668S	TT90669S	TT90670S	75.83
1-1/8 - 12	H4	4	1	TT90672S	TT90673S	TT90674S	80.33
1-1/4 - 7	H4	4	1	TT90676S	TT90677S	TT90678S	99.54
1-1/4 - 12	H4	6	1	TT90680S	TT90681S	TT90682S	101.27
1-3/8 - 6	H4	4	1	TT90684S	TT90685S	TT90686S	125.07
1-3/8 - 12	H4	6	1	TT90688S	TT90689S	TT90690S	125.95
1-1/2 - 6	H4	4	1	TT90692S	TT90693S	TT90694S	144.43
1-1/2 - 12	H4	6	1	TT90696S	TT90697S	TT90698S	147.10

**STEAM OXIDE:** A BLACK OXIDE COATING OF NON-MEASURABLE THICKNESS IS USED TO INCREASE TAP SURFACE CAPILLARY WHERE LUBRICANT PROPERTIES ARE REQUIRED.

**MATERIALS:** STEEL, STEEL ALLOYS, STAINLESS STEELS, TITANIUM ALLOYS AND A WIDE RANGE OF FERROUS MATERIALS (IRON BASED).

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TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION

HAND TAPS



# Hand Taps

## NITRIDE & STEAM OXIDE



### SERIES 727 HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	PLUG ITEM#	BOTTOM ITEM#	PRICE
4 - 40	H2	3	1	TT90077NS	TT90078NS	4.13
4 - 48	H2	3	1	TT90085NS	TT90086NS	4.44
4 - 36	H2	3	1	TT90089NS	TT90090NS	4.44
5 - 40	H2	3	1	TT90101NS	TT90102NS	4.13
5 - 44	H2	3	1	TT90109NS	TT90110NS	4.46
6 - 32	H2	3	1	TT90125NS	TT90126NS	3.36
6 - 40	H2	3	1	TT90149NS	TT90150NS	3.36
8 - 32	H3	4	1	TT90185NS	TT90186NS	3.25
8 - 36	H2	4	1	TT90201NS	TT90202NS	3.36
10 - 24	H3	4	1	TT90233NS	TT90234NS	3.36
10 - 32	H3	4	1	TT90277NS	TT90278NS	3.36
12 - 24	H3	4	1	TT90289NS	TT90290NS	3.55
12 - 28	H3	4	1	TT90297NS	TT90298NS	3.90
1/4 - 20	H3	4	1	TT90324NS	TT90325NS	3.60
1/4 - 28	H3	4	1	TT90352NS	TT90353NS	3.60
5/16 - 18	H3	4	1	TT90376NS	TT90377NS	4.44
5/16 - 24	H3	4	1	TT90400NS	TT90401NS	4.44
3/8 - 16	H3	4	1	TT90423NS	TT90424NS	5.00
3/8 - 24	H3	4	1	TT90447NS	TT90448NS	5.00
7/16 - 14	H3	4	1	TT90466NS	TT90467NS	8.62
7/16 - 20	H3	4	1	TT90485NS	TT90486NS	8.62
1/2 - 13	H3	4	1	TT90505NS	TT90506NS	8.98
1/2 - 20	H3	4	1	TT90524NS	TT90525NS	10.15
9/16 - 12	H3	4	1	TT90536NS	TT90537NS	15.05
9/16 - 18	H3	4	1	TT90547NS	TT90548NS	15.05
5/8 - 11	H3	4	1	TT90562NS	TT90563NS	18.07
5/8 - 18	H3	4	1	TT90578NS	TT90579NS	18.07
11/16 - 11	H3	4	1	TT90586NS	TT90587NS	22.44
11/16 - 16	H3	4	1	TT90590NS	TT90591NS	22.44
3/4 - 10	H3	4	1	TT90601NS	TT90602NS	25.29
3/4 - 16	H3	4	1	TT90616NS	TT90617NS	25.29
7/8 - 9	H4	4	1	TT90627NS	TT90628NS	35.26
7/8 - 14	H4	4	1	TT90637NS	TT90638NS	35.26
1 - 8	H4	4	1	TT90647NS	TT90648NS	46.83
1 - 12	H4	4	1	TT90654NS	TT90655NS	46.83
1 - 14	H4	4	1	TT90661NS	TT90662NS	46.83
1-1/8 - 7	H4	4	1	TT90669NS	TT90670NS	75.83
1-1/8 - 12	H4	4	1	TT90673NS	TT90674NS	80.33
1-1/4 - 7	H4	4	1	TT90677NS	TT90678NS	99.54
1-1/4 - 12	H4	6	1	TT90681NS	TT90682NS	101.27
1-3/8 - 6	H4	4	1	TT90685NS	TT90686NS	125.07
1-3/8 - 12	H4	6	1	TT90689NS	TT90690NS	125.95
1-1/2 - 6	H4	4	1	TT90693NS	TT90694NS	144.43
1-1/2 - 12	H4	6	1	TT90697NS	TT90698NS	147.10

**NITRIDE & STEAM OXIDE:** A NITRIDED SURFACE FOLLOWED BY A STEAM OXIDE TREATMENT PROVIDES THE BENEFITS OF WEAR AND DUCTILITY.

**MATERIALS:** ALL TYPES OF GRAY, DUCTILE AND MALLEABLE CAST IRON FERROUS MATERIALS (IRON BASED).

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 189, OR GO TO: TITANMAN.COM

HAND TAPS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# Hand Taps



**SERIES 729**  
HIGH SPEED STEEL  
TIN COATED

SIZE	H-LIMIT	# OF FLUTES	PKG. QTY.	TAPER ITEM#	PLUG ITEM#	BOTTOM ITEM#	PRICE	SET-ITEM#	PRICE
0 - 80	H1	2	1	TT75200	TT75201	TT75202	12.76	TT75203	38.30
2 - 56	H2	3	1	TT75223	TT75224	TT75225	10.22	TT75226	30.65
4 - 40	H2	3	1	TT75249	TT75250	TT75251	6.45	TT75252	19.36
5 - 40	H2	3	1	TT75266	TT75267	TT75268	6.45	TT75269	19.36
6 - 32	H3	3	1	TT75288	TT75289	TT75290	4.95	TT75291	14.84
8 - 32	H3	4	1	TT75319	TT75320	TT75321	5.07	TT75322	15.21
10 - 24	H3	4	1	TT75348	TT75349	TT75350	5.25	TT75351	15.77
10 - 32	H3	4	1	TT75375	TT75376	TT75377	5.25	TT75378	15.77
12 - 24	H3	4	1	TT75383	TT75384	TT75385	5.55	TT75386	16.63
12 - 28	H3	4	1	TT75388	TT75389	TT75390	6.10	TT75391	18.31
1/4 - 20	H3	4	1	TT75406	TT75407	TT75408	5.64	TT75409	16.94
1/4 - 28	H3	4	1	TT75422	TT75423	TT75424	5.64	TT75425	16.94
5/16 - 18	H3	4	1	TT75439	TT75440	TT75441	6.96	TT75442	20.87
5/16 - 24	H3	4	1	TT75454	TT75455	TT75456	6.96	TT75457	20.87
3/8 - 16	H3	4	1	TT75469	TT75470	TT75471	7.85	TT75472	23.53
3/8 - 24	H3	4	1	TT75484	TT75485	TT75486	7.85	TT75487	23.53
7/16 - 14	H3	4	1	TT75495	TT75496	TT75497	13.49	TT75498	40.47
7/16 - 20	H3	4	1	TT75506	TT75507	TT75508	13.49	TT75509	40.47
1/2 - 13	H3	4	1	TT75518	TT75519	TT75520	14.05	TT75521	42.18
1/2 - 20	H3	4	1	TT75530	TT75531	TT75532	15.89	TT75533	47.68
9/16 - 18	H3	4	1	TT75544	TT75545	TT75546	21.59	TT75547	64.84
5/8 - 11	H3	4	1	TT75552	TT75553	TT75554	28.32	TT75555	84.91
5/8 - 18	H3	4	1	TT75561	TT75562	TT75563	28.32	TT75564	84.91
3/4 - 10	H3	4	1	TT75577	TT75578	TT75579	39.63	TT75580	118.83
3/4 - 16	H3	4	1	TT75585	TT75586	TT75587	39.63	TT75588	118.83
1 - 8	H4	4	1	TT75604	TT75605	TT75606	67.24	TT75607	201.77

FOR COATING INFORMATION SEE PAGE 2.

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CARBIDE ENDMILLS  
 CARBIDE MICRO ENDMILLS  
 CARBIDE THREADMILLS  
 CARBIDE DRILL MILLS  
 CARBIDE CHAMFER MILLS  
 CARBIDE DRILLS  
 CARBIDE REAMERS  
 CARBIDE BURS  
 COUNTERSINKS  
 HSS & COBALT ENDMILLS  
 TAPS & DIES  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION

**HAND TAPS**



# Hand Taps



**SERIES 755**  
HIGH SPEED STEEL  
METRIC  
UNCOATED

SIZE	D-LIMIT	# OF FLUTES	PKG. QTY.	TAPER ITEM#	PLUG ITEM#	BOTTOM ITEM#	PRICE	SET-ITEM#	PRICE
M1.6 x 0.35	D3	2	1	-	TT93002	-	9.47	-	-
M2 x 0.4	D3	3	1	TT93007	TT93008	TT93009	9.47	TT93100	28.40
M2.5 x 0.45	D3	3	1	-	TT93014	-	5.83	-	-
M3 x 0.5	D3	3	1	TT93016	TT93017	TT93018	4.85	TT93102	14.57
M3.5 x 0.6	D4	3	1	-	TT93020	-	4.01	-	-
M4 x 0.7	D4	4	1	TT93022	TT93023	TT93024	4.01	TT93104	12.04
M4.5 x 0.75	D4	4	1	-	TT93026	-	4.01	-	-
M5 x 0.8	D4	4	1	TT93028	TT93029	TT93030	4.01	TT93106	12.04
M6 x 1.0	D5	4	1	TT93031	TT93032	TT93033	4.24	TT93108	12.71
M7 x 1.0	D5	4	1	TT93037	TT93038	TT93039	4.24	TT93110	12.72
M8 x 1.25	D5	4	1	TT93043	TT93044	TT93045	4.24	TT93112	12.72
M10 x 1.25	D5	4	1	TT93046	TT93047	TT93048	8.71	TT93114	26.11
M10 x 1.50	D6	4	1	TT93049	TT93050	TT93051	8.71	TT93116	26.11
M12 x 1.25	D5	4	1	TT93052	TT93053	TT93054	10.21	TT93118	30.62
M12 x 1.75	D6	4	1	TT93055	TT93056	TT93057	10.21	TT93120	30.62
M14 x 1.5	D6	4	1	TT93058	TT93059	TT93060	15.26	TT93122	45.78
M14 x 2.0	D7	4	1	TT93061	TT93062	TT93063	15.26	TT93124	45.78
M16 x 1.5	D6	4	1	TT93064	TT93065	TT93066	18.59	TT93126	55.78
M16 x 2.0	D7	4	1	TT93067	TT93068	TT93069	18.59	TT93128	55.78
M18 x 1.5	D6	4	1	TT93070	TT93071	TT93072	25.05	TT93130	75.12
M18 x 2.5	D7	4	1	TT93073	TT93074	TT93075	25.05	TT93132	75.12
M20 x 2.5	D7	4	1	TT93076	TT93077	TT93078	32.39	TT93134	97.16
M24 x 3.0	D8	4	1	TT93082	TT93083	TT93084	47.39	TT93136	142.17
M27 x 3.0	D8	4	1	TT93085	TT93086	TT93087	81.91	TT93138	245.74
M30 x 3.5	D9	4	1	TT93088	TT93089	TT93090	104.62	TT93140	313.83
M33 x 3.5	D9	4	1	TT93091	TT93092	TT93093	104.34	TT93142	313.01
M36 x 4.0	D9	4	1	TT93094	TT93095	TT93096	132.32	TT93144	396.96

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HAND TAPS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION

# Hand Taps



**SERIES 757**  
HIGH SPEED STEEL  
METRIC  
TIN COATED

SIZE	D-LIMIT	# OF FLUTES	PKG. QTY.	TAPER ITEM#	PLUG ITEM#	BOTTOM ITEM#	PRICE	SET-ITEM#	PRICE
M1.6 x 0.35	D3	2	1	-	TT75700	-	17.06	-	-
M2 x 0.4	D3	3	1	TT75702	TT75704	TT75706	17.06	TT75846	51.19
M2.5 x 0.45	D3	3	1	-	TT75708	-	10.49	-	-
M3 x 0.5	D3	3	1	TT75710	TT75712	TT75714	8.75	TT75848	26.26
M3.5 x 0.6	D4	3	1	-	TT75716	-	7.23	-	-
M4 x 0.7	D4	4	1	TT75718	TT75720	TT75722	7.23	TT75850	21.69
M4.5 x 0.75	D4	4	1	-	TT75724	-	7.23	-	-
M5 x 0.8	D4	4	1	TT75726	TT75728	TT75730	7.23	TT75852	21.69
M6 x 1.0	D5	4	1	TT75732	TT75734	TT75736	7.64	TT75854	22.90
M7 x 1.0	D5	4	1	TT75738	TT75740	TT75742	7.65	TT75856	22.91
M8 x 1.25	D5	4	1	TT75744	TT75746	TT75748	7.65	TT75858	22.91
M10 x 1.25	D5	4	1	TT75750	TT75752	TT75754	15.68	TT75860	47.05
M10 x 1.50	D6	4	1	TT75756	TT75758	TT75760	15.68	TT75862	47.05
M12 x 1.25	D5	4	1	TT75762	TT75764	TT75766	18.39	TT75864	55.17
M12 x 1.75	D6	4	1	TT75768	TT75770	TT75772	18.39	TT75866	55.17
M14 x 1.5	D6	4	1	TT75774	TT75776	TT75778	27.50	TT75868	82.49
M14 x 2.0	D7	4	1	TT75780	TT75782	TT75784	27.50	TT75870	82.49
M16 x 1.5	D6	4	1	TT75786	TT75788	TT75790	33.51	TT75872	100.53
M16 x 2.0	D7	4	1	TT75792	TT75794	TT75796	33.51	TT75874	100.53
M18 x 1.5	D6	4	1	TT75798	TT75800	TT75802	45.11	TT75876	135.36
M18 x 2.5	D7	4	1	TT75804	TT75806	TT75808	45.11	TT75878	135.36
M20 x 2.5	D7	4	1	TT75810	TT75812	TT75814	58.36	TT75880	175.09
M24 x 3.0	D8	4	1	TT75816	TT75818	TT75820	85.40	TT75882	256.20
M27 x 3.0	D8	4	1	TT75822	TT75824	TT75826	147.60	TT75884	442.84
M30 x 3.5	D9	4	1	TT75828	TT75830	TT75832	188.51	TT75886	565.53
M33 x 3.5	D9	4	1	TT75834	TT75836	TT75838	188.01	TT75888	564.04
M36 x 4.0	D9	4	1	TT75840	TT75842	TT75844	238.45	TT75890	715.33

HAND TAPS

FOR COATING INFORMATION SEE PAGE 2.

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 189, OR GO TO: TITANMAN.COM



# Spiral Point Plug Taps



**SERIES 750**  
HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	ITEM#	PRICE
0 - 80	H1	2	1	TT91000	8.73
0 - 80	H2	2	1	TT91001	8.73
1 - 64	H1	2	1	TT91002	7.88
1 - 64	H2	2	1	TT91003	7.88
1 - 72	H1	2	1	TT91004	7.88
1 - 72	H2	2	1	TT91005	7.88
2 - 56	H1	2	1	TT91006	7.50
2 - 56	H2	2	1	TT91007	6.70
2 - 64	H1	2	1	TT91008	7.50
2 - 64	H2	2	1	TT91009	7.50
3 - 48	H1	2	1	TT91010	5.37
3 - 48	H2	2	1	TT91011	5.37
3 - 56	H1	2	1	TT91012	6.58
3 - 56	H2	2	1	TT91013	5.99
4 - 40	H1	2	1	TT91014	4.91
4 - 40	H2	2	1	TT91015	4.31
4 - 48	H1	2	1	TT91016	4.99
4 - 48	H2	2	1	TT91017	4.91
4 - 36	H2	2	1	TT91018	4.91
5 - 40	H1	2	1	TT91019	4.91
5 - 40	H2	2	1	TT91020	4.31
5 - 44	H2	2	1	TT91021	4.91
6 - 32	H1	2	1	TT91022	4.31
6 - 32	H2	2	1	TT91023	3.63
6 - 32	H3	2	1	TT91024	3.63
6 - 32	H7	2	1	TT91025	4.11
6 - 40	H1	2	1	TT91026	4.11
6 - 40	H2	2	1	TT91027	4.11
8 - 32	H1	2	1	TT91028	4.11
8 - 32	H2	2	1	TT91029	3.63
8 - 32	H3	2	1	TT91030	3.63
8 - 32	H7	2	1	TT91031	4.11
8 - 36	H1	2	1	TT91032	4.11
8 - 36	H2	2	1	TT91033	4.11
10 - 24	H1	2	1	TT91034	4.50
10 - 24	H2	2	1	TT91035	4.11
10 - 24	H3	2	1	TT91036	3.63
10 - 24	H7	2	1	TT91037	4.50
10 - 32	H1	2	1	TT91038	4.11
10 - 32	H2	2	1	TT91039	3.63
10 - 32	H3	2	1	TT91040	3.63
10 - 32	H7	2	1	TT91041	4.50
12 - 24	H1	2	1	TT91042	4.11
12 - 24	H3	2	1	TT91043	4.11
12 - 28	H3	2	1	TT91044	4.11
1/4 - 20	H1	2	1	TT91045	4.11
1/4 - 20	H2	2	1	TT91046	4.11
1/4 - 20	H3	2	1	TT91047	3.63
1/4 - 20	H3	3	1	TT91048	4.50
1/4 - 20	H5	2	1	TT91049	4.10

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	ITEM#	PRICE
1/4 - 20	H5	3	1	TT91050	4.50
1/4 - 28	H1	2	1	TT91051	4.50
1/4 - 28	H2	2	1	TT91052	4.10
1/4 - 28	H2	3	1	TT91053	4.50
1/4 - 28	H3	2	1	TT91054	3.63
1/4 - 28	H4	2	1	TT91055	4.50
1/4 - 28	H4	3	1	TT91056	4.50
5/16 - 18	H1	2	1	TT91057	5.18
5/16 - 18	H2	2	1	TT91058	4.50
5/16 - 18	H3	2	1	TT91059	3.92
5/16 - 18	H3	3	1	TT91060	5.18
5/16 - 18	H5	2	1	TT91061	4.50
5/16 - 18	H5	3	1	TT91062	5.18
5/16 - 24	H1	2	1	TT91063	5.18
5/16 - 24	H2	2	1	TT91064	5.18
5/16 - 24	H2	3	1	TT91065	5.18
5/16 - 24	H3	2	1	TT91066	3.92
5/16 - 24	H4	2	1	TT91067	5.18
5/16 - 24	H4	3	1	TT91068	5.18
3/8 - 16	H1	3	1	TT91069	5.80
3/8 - 16	H2	3	1	TT91070	5.39
3/8 - 16	H3	3	1	TT91071	4.64
3/8 - 16	H5	3	1	TT91072	5.84
3/8 - 24	H1	3	1	TT91073	5.89
3/8 - 24	H2	3	1	TT91074	5.89
3/8 - 24	H3	3	1	TT91075	4.99
3/8 - 24	H4	3	1	TT91076	5.89
7/16 - 14	H2	3	1	TT91077	8.61
7/16 - 14	H3	3	1	TT91078	7.88
7/16 - 14	H5	3	1	TT91079	8.61
7/16 - 20	H2	3	1	TT91080	8.61
7/16 - 20	H3	3	1	TT91081	7.88
7/16 - 20	H5	3	1	TT91082	8.61
1/2 - 13	H1	3	1	TT91083	10.54
1/2 - 13	H2	3	1	TT91084	10.54
1/2 - 13	H3	3	1	TT91085	8.04
1/2 - 13	H5	3	1	TT91086	9.49
1/2 - 20	H1	3	1	TT91087	10.54
1/2 - 20	H2	3	1	TT91088	10.54
1/2 - 20	H3	3	1	TT91089	9.45
1/2 - 20	H5	3	1	TT91090	10.54
9/16 - 12	H3	3	1	TT91091	13.13
9/16 - 18	H3	3	1	TT91092	13.13
5/8 - 11	H3	3	1	TT91093	17.93
5/8 - 11	H5	3	1	TT91094	17.93
5/8 - 18	H3	3	1	TT91095	17.93
3/4 - 10	H3	3	1	TT91096	25.29
3/4 - 10	H5	3	1	TT91097	25.29
3/4 - 16	H3	3	1	TT91098	25.29
-	-	-	-	-	-

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SPIRAL POINT PLUG TAPS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# Spiral Point Plug Taps

## STEAM OXIDE



**SERIES 751**  
HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	ITEM#	PRICE
0 - 80	H2	2	1	TT91001S	10.05
1 - 64	H2	2	1	TT91003S	9.09
1 - 72	H2	2	1	TT91005S	9.09
2 - 56	H2	2	1	TT91007S	7.71
2 - 64	H2	2	1	TT91009S	8.64
3 - 48	H2	2	1	TT91011S	6.18
3 - 56	H2	2	1	TT91013S	6.89
4 - 40	H2	2	1	TT91015S	4.96
4 - 48	H2	2	1	TT91017S	5.66
4 - 36	H2	2	1	TT91018S	5.66
5 - 40	H2	2	1	TT91020S	4.96
5 - 44	H2	2	1	TT91021S	5.66
6 - 32	H3	2	1	TT91024S	4.17
6 - 40	H2	2	1	TT91027S	4.74
8 - 32	H3	2	1	TT91030S	4.17
8 - 36	H2	2	1	TT91033S	4.74
10 - 24	H3	2	1	TT91036S	4.17
10 - 32	H3	2	1	TT91040S	4.17
12 - 24	H3	2	1	TT91043S	4.74
1/4 - 20	H3	2	1	TT91047S	4.17
1/4 - 28	H3	2	1	TT91054S	4.17
5/16 - 18	H3	2	1	TT91059S	4.51
5/16 - 24	H3	2	1	TT91066S	4.51
3/8 - 16	H3	3	1	TT91071S	5.35
3/8 - 24	H3	3	1	TT91075S	5.74
7/16 - 14	H3	3	1	TT91078S	9.09
7/16 - 20	H3	3	1	TT91081S	9.09
1/2 - 13	H3	3	1	TT91085S	9.26
1/2 - 20	H3	3	1	TT91089S	10.86
9/16 - 12	H3	3	1	TT91091S	15.10
9/16 - 18	H3	3	1	TT91092S	15.10
5/8 - 11	H3	3	1	TT91093S	20.62
5/8 - 18	H3	3	1	TT91095S	20.62
3/4 - 10	H3	3	1	TT91096S	29.09
3/4 - 16	H3	3	1	TT91098S	29.09

## NITRIDE & STEAM OXIDE



**SERIES 752**  
HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	ITEM#	PRICE
4 - 40	H2	2	1	TT91015NS	4.96
4 - 48	H2	2	1	TT91017NS	5.66
4 - 36	H2	2	1	TT91018NS	5.66
5 - 40	H2	2	1	TT91020NS	4.96
5 - 44	H2	2	1	TT91021NS	5.66
6 - 32	H3	2	1	TT91024NS	4.17
6 - 40	H2	2	1	TT91027NS	4.74
8 - 32	H3	2	1	TT91030NS	4.17
8 - 36	H2	2	1	TT91033NS	4.74
10 - 24	H3	2	1	TT91036NS	4.17
10 - 32	H3	2	1	TT91040NS	4.17
12 - 24	H3	2	1	TT91043NS	4.74
1/4 - 20	H3	2	1	TT91047NS	4.17
1/4 - 28	H3	2	1	TT91054NS	4.17
5/16 - 18	H3	2	1	TT91059NS	4.51
5/16 - 24	H3	2	1	TT91066NS	4.51
3/8 - 16	H3	3	1	TT91071NS	5.35
3/8 - 24	H3	3	1	TT91075NS	5.74
7/16 - 14	H3	3	1	TT91078NS	9.09
7/16 - 20	H3	3	1	TT91081NS	9.09
1/2 - 13	H3	3	1	TT91085NS	9.26
1/2 - 20	H3	3	1	TT91089NS	10.86
9/16 - 12	H3	3	1	TT91091NS	15.10
9/16 - 18	H3	3	1	TT91092NS	15.10
5/8 - 11	H3	3	1	TT91093NS	20.62
5/8 - 18	H3	3	1	TT91095NS	20.62
3/4 - 10	H3	3	1	TT91096NS	29.09
3/4 - 16	H3	3	1	TT91098NS	29.09

**STEAM OXIDE:** A BLACK OXIDE COATING OF NON-MEASURABLE THICKNESS IS USED TO INCREASE TAP SURFACE CAPILLARY WHERE LUBRICANT PROPERTIES ARE REQUIRED.

**MATERIALS:** STEEL, STEEL ALLOYS, STAINLESS STEELS, TITANIUM ALLOYS AND A WIDE RANGE OF FERROUS MATERIALS (IRON BASED).

**NITRIDE & STEAM OXIDE:** A NITRIDED SURFACE FOLLOWED BY A STEAM OXIDE TREATMENT PROVIDES THE BENEFITS OF WEAR AND DUCTILITY.

**MATERIALS:** ALL TYPES OF GRAY, DUCTILE AND MALLEABLE CAST IRON FERROUS MATERIALS (IRON BASED).

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 189, OR GO TO: TITANMAN.COM

CARBIDE ENDMILLS  
 CARBIDE MICRO ENDMILLS  
 CARBIDE THREADMILLS  
 CARBIDE DRILL MILLS  
 CARBIDE CHAMFER MILLS  
 CARBIDE DRILLS  
 CARBIDE REAMERS  
 CARBIDE BURS  
 COUNTERSINKS  
 HSS & COBALT ENDMILLS  
 TAPS & DIES  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION



# Spiral Point Plug Taps



**SERIES 760**  
HIGH SPEED STEEL  
TIN COATED



**SERIES 762**  
HIGH SPEED STEEL  
ALTiN COATED

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	ITEM#	PRICE
0-80	H2	2	1	TT99401	12.93
2-56	H2	2	1	TT99407	10.37
4-40	H2	2	1	TT99415	7.34
5-40	H2	2	1	TT99420	7.34
6-32	H3	2	1	TT99424	6.85
8-32	H3	2	1	TT99430	6.85
10-24	H3	2	1	TT99436	6.85
10-32	H3	2	1	TT99440	6.85
12-24	H3	2	1	TT99443	7.49
12-28	H3	2	1	TT99444	7.49
1/4-20	H3	2	1	TT99447	6.85
1/4-28	H3	2	1	TT99454	6.85
5/16-18	H3	2	1	TT99459	7.50
5/16-24	H3	2	1	TT99466	7.50
3/8-16	H3	3	1	TT99471	8.81
3/8-24	H3	3	1	TT99475	9.26
7/16-14	H3	3	1	TT99478	14.57
7/16-20	H3	3	1	TT99481	14.57
1/2-13	H3	3	1	TT99485	14.76
1/2-20	H3	3	1	TT99489	16.49
5/8-11	H3	3	1	TT99493	34.12
5/8-18	H3	3	1	TT99495	34.12
3/4-10	H3	3	1	TT99496	44.56
3/4-16	H3	3	1	TT99498	44.56

**TIN COATED:** IT IS AN EXCELLENT MULTI-PURPOSE WEAR COATING WITH GOOD LUBRICITY.

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	ITEM#	PRICE
0-80	H2	2	1	TT98001	12.93
2-56	H2	2	1	TT98002	10.37
4-40	H2	2	1	TT98003	7.34
5-40	H2	2	1	TT98004	7.34
6-32	H3	2	1	TT98005	6.85
8-32	H3	2	1	TT98006	6.85
10-24	H3	2	1	TT98007	6.85
10-32	H3	2	1	TT98008	6.85
12-24	H3	2	1	TT98009	7.49
12-28	H3	2	1	TT98010	7.49
1/4-20	H3	2	1	TT98011	6.85
1/4-28	H3	2	1	TT98012	6.85
5/16-18	H3	2	1	TT98013	7.50
5/16-24	H3	2	1	TT98014	7.50
3/8-16	H3	3	1	TT98015	8.81
3/8-24	H3	3	1	TT98016	9.26
7/16-14	H3	3	1	TT98017	14.57
7/16-20	H3	3	1	TT98018	14.57
1/2-13	H3	3	1	TT98019	14.76
1/2-20	H3	3	1	TT98020	16.49
5/8-11	H3	3	1	TT98021	34.12
5/8-18	H3	3	1	TT98022	34.12
3/4-10	H3	3	1	TT98023	44.56
3/4-16	H3	3	1	TT98024	44.56

**ALTiN COATED:** A MULTI-LAYERED COATING FOR A WIDE RANGE OF HIGH SPEED STEEL APPLICATIONS FOR CAST IRON, STAINLESS STEEL, NICKEL BASED HIGH TEMPERATURE ALLOYS AND TITANIUM ALLOYS.

FOR COATING INFORMATION SEE PAGE 2.  
FOR TECHNICAL INFORMATION PLEASE SEE PAGE 189, OR GO TO: TITANMAN.COM

SPIRAL POINT PLUG TAPS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION

# Spiral Point Plug Taps



**SERIES 780**  
HIGH SPEED STEEL  
METRIC  
UNCOATED

SIZE	D-LIMIT	# OF FLUTES	PKG. QTY.	ITEM#	PRICE
M2 x 0.4	D3	2	1	TT93208	9.67
M2.5 x 0.45	D3	2	1	TT93214	6.93
M3 x 0.5	D3	2	1	TT93217	5.58
M3.5 x 0.6	D4	2	1	TT93220	4.81
M4 x 0.7	D4	2	1	TT93223	4.81
M4.5 x 0.75	D4	2	1	TT93226	4.81
M5 x 0.8	D4	2	1	TT93229	4.81
M6 x 1.0	D5	2	1	TT93232	4.81
M7 x 1.0	D5	2	1	TT93238	5.56
M8 x 1.25	D5	2	1	TT93244	5.56
M10 x 1.50	D6	3	1	TT93250	9.23
M12 x 1.75	D6	3	1	TT93256	11.56
M14 x 2.0	D7	3	1	TT93262	17.94
M16 x 2.0	D7	3	1	TT93268	20.32
M18 x 2.5	D7	3	1	TT93274	29.89
M20 x 2.5	D7	3	1	TT93277	39.46



**SERIES 882**  
HIGH SPEED STEEL  
METRIC  
TIN COATED

SIZE	D-LIMIT	# OF FLUTES	PKG. QTY.	ITEM#	PRICE
M2 x 0.4	D3	2	1	TT93208TIN	13.33
M2.5 x 0.45	D3	2	1	TT93214TIN	9.56
M3 x 0.5	D3	2	1	TT93217TIN	7.70
M3.5 x 0.6	D4	2	1	TT93220TIN	6.63
M4 x 0.7	D4	2	1	TT93223TIN	6.63
M4.5 x 0.75	D4	2	1	TT93226TIN	6.63
M5 x 0.8	D4	2	1	TT93229TIN	6.63
M6 x 1.0	D5	2	1	TT93232TIN	6.63
M7 x 1.0	D5	2	1	TT93238TIN	7.65
M8 x 1.25	D5	2	1	TT93244TIN	7.65
M10 x 1.50	D6	3	1	TT93250TIN	12.72
M12 x 1.75	D6	3	1	TT93256TIN	15.93
M14 x 2.0	D7	3	1	TT93262TIN	24.71
M16 x 2.0	D7	3	1	TT93268TIN	28.01
M18 x 2.5	D7	3	1	TT93274TIN	41.19
M20 x 2.5	D7	3	1	TT93277TIN	54.37

FOR COATING INFORMATION SEE PAGE 2.  
FOR TECHNICAL INFORMATION PLEASE SEE PAGE 189, OR GO TO: TITANMAN.COM

SPIRAL POINT PLUG TAPS

CARRIIDE ENDMILLS  
 CARRIIDE MICRO ENDMILLS  
 CARRIIDE THREADMILLS  
 CARRIIDE DRILL MILLS  
 CARRIIDE CHAMFER MILLS  
 CARRIIDE DRILLS  
 CARRIIDE REAMERS  
 CARRIIDE BURS  
 COUNTERSINKS  
 HSS & COBALT ENDMILLS  
 TAPS & DIES  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION



# Hi Spiral Flute Taps

## 52° HELIX - SEMI BOTTOMING - 2 TO 2-1/2 THREAD CHAMFER HIGH SPEED STEEL



**SERIES 761**



**SERIES 763  
METRIC**

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	ITEM#	PRICE
3 - 48	H2	2	1	TT76101	14.76
3 - 56	H2	2	1	TT76103	14.76
4 - 40	H2	2	1	TT76105	12.15
4 - 48	H2	2	1	TT76107	12.15
5 - 40	H3	2	1	TT76109	12.15
5 - 44	H3	2	1	TT76111	12.15
6 - 32	H3	2	1	TT76113	9.86
6 - 40	H3	2	1	TT76115	9.86
8 - 32	H3	3	1	TT76117	9.86
8 - 36	H3	3	1	TT76119	9.86
10 - 24	H3	3	1	TT76121	9.86
10 - 32	H3	3	1	TT76123	9.86
12 - 24	H3	3	1	TT76125	10.71
12 - 28	H3	3	1	TT76127	10.71
1/4 - 20	H3	3	1	TT76129	10.71
1/4 - 28	H3	3	1	TT76131	10.71
5/16 - 18	H3	3	1	TT76133	13.19
5/16 - 24	H3	3	1	TT76135	13.19
3/8 - 16	H3	3	1	TT76137	15.21
3/8 - 24	H3	3	1	TT76139	15.21
7/16 - 14	H3	3	1	TT76141	22.81
7/16 - 20	H3	3	1	TT76143	22.81
1/2 - 13	H3	3	1	TT76145	27.45
1/2 - 20	H3	3	1	TT76147	27.45
9/16 - 12	H3	4	1	TT76149	45.79
9/16 - 18	H3	4	1	TT76151	45.79
5/8 - 11	H3	4	1	TT76153	59.76
5/8 - 18	H3	4	1	TT76155	59.76
3/4 - 10	H3	4	1	TT76157	76.49
3/4 - 16	H3	4	1	TT76159	76.49

SIZE	D-LIMIT	# OF FLUTES	PKG. QTY.	ITEM#	PRICE
M3 x 0.5	D3	2	1	TT76349	12.49
M3.5 x 0.6	D4	3	1	TT76351	10.12
M4 x 0.7	D4	3	1	TT76353	10.12
M4.5 x 0.75	D4	3	1	TT76355	10.12
M5 x 0.8	D4	3	1	TT76357	10.12
M6 x 1.0	D5	3	1	TT76359	11.05
M8 x 1.25	D5	3	1	TT76361	13.62
M10 x 1.5	D6	3	1	TT76363	23.54
M12 x 1.75	D6	3	1	TT76365	28.34

- CAN BE USED FOR PLUG OR BOTTOMING APPLICATIONS
- ALLOWS FOR THREADING CLOSE TO BOTTOM IN BLIND HOLES
- CAN BE USED FOR THROUGH OR BLIND HOLES
- CUTS MORE EFFICIENTLY THAN BOTTOMING TAPS
- SLIGHTLY LONGER CHAMFER DISTRIBUTES CUTTING OVER GREATER NUMBER OF TEETH FOR INCREASED PRODUCTION
- MATERIALS: FOR TAPPING IN RELATIVELY DEEP HOLES IN COPPER, BRASS, ALUMINUM AND OTHER SOFT DUCTILE MATERIALS

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 189, OR GO TO: TITANMAN.COM

HI SPIRAL FLUTE TAPS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# Thread Forming Taps

## PLUG & BOTTOMING HIGH SPEED STEEL



**SERIES 776**  
TIN COATED



**SERIES 798**  
METRIC  
TIN COATED

SIZE	H LIMIT	# OF LUBE GROOVES	PKG. QTY.	PLUG ITEM#	BOTTOM ITEM#	PRICE
0 - 80	H2	1	1	-	TT92800	14.13
0 - 80	H3	1	1	-	TT92802	14.13
1 - 64	H2	1	1	-	TT92804	14.13
1 - 72	H2	1	1	-	TT92806	14.13
2 - 56	H2	1	1	-	TT92808	14.04
2 - 56	H3	1	1	-	TT92810	14.04
2 - 64	H2	1	1	-	TT92812	14.04
2 - 64	H3	1	1	-	TT92814	14.04
3 - 48	H2	1	1	-	TT92816	14.04
3 - 48	H3	1	1	-	TT92818	14.04
3 - 56	H2	1	1	-	TT92820	14.04
3 - 56	H3	1	1	-	TT92822	14.04
4 - 40	H3	1	1	TT92823	TT92824	12.66
4 - 40	H5	1	1	TT92825	TT92826	12.66
4 - 48	H3	1	1	TT92827	TT92828	12.66
4 - 48	H5	1	1	TT92829	TT92830	12.66
5 - 40	H3	1	1	TT92831	TT92832	12.66
5 - 40	H5	1	1	TT92833	TT92834	12.66
5 - 44	H3	1	1	TT92835	TT92836	12.66
5 - 44	H5	1	1	TT92837	TT92838	12.66
6 - 32	H3	1	1	TT92839	TT92840	10.43
6 - 32	H5	1	1	TT92841	TT92842	10.43
6 - 32	H7	1	1	TT92843	TT92844	10.43
6 - 40	H3	1	1	TT92845	TT92846	10.43
6 - 40	H5	1	1	TT92847	TT92848	10.43
8 - 32	H3	1	1	TT92849	TT92850	10.43
8 - 32	H5	1	1	TT92851	TT92852	10.43
8 - 32	H7	1	1	TT92853	TT92854	10.43
8 - 36	H3	1	1	TT92855	TT92856	10.43
10 - 24	H4	1	1	TT92857	TT92858	10.04
10 - 24	H6	1	1	TT92859	TT92860	10.04
10 - 32	H4	1	1	TT92861	TT92862	10.04
10 - 32	H6	1	1	TT92863	TT92864	10.04
12 - 24	H4	2	1	TT92865	TT92866	10.04
12 - 24	H6	2	1	TT92867	TT92868	10.04
12 - 28	H4	2	1	TT92869	TT92870	10.04
1/4 - 20	H3	2	1	TT92871	TT92872	10.65
1/4 - 20	H4	2	1	TT92873	TT92874	10.65
1/4 - 20	H6	2	1	TT92875	TT92876	10.65
1/4 - 28	H4	2	1	TT92877	TT92878	10.65
1/4 - 28	H6	2	1	TT92879	TT92880	10.65
5/16 - 18	H5	2	1	TT92881	TT92882	11.83
5/16 - 18	H7	2	1	TT92883	TT92884	11.83
5/16 - 24	H5	2	1	TT92885	TT92886	11.83
5/16 - 24	H7	2	1	TT92887	TT92888	11.83
3/8 - 16	H5	2	1	TT92889	TT92890	11.83
3/8 - 16	H7	2	1	TT92891	TT92892	13.50
3/8 - 24	H5	2	1	TT92893	TT92894	13.50
3/8 - 24	H7	2	1	TT92895	TT92896	13.50
7/16 - 14	H5	2	1	TT92897	TT92898	20.54
7/16 - 14	H8	2	1	TT92901	TT92902	20.54
7/16 - 20	H5	2	1	TT92903	TT92904	20.54
7/16 - 20	H8	2	1	TT92905	TT92906	20.54
1/2 - 13	H5	2	1	TT92907	TT92908	22.98
1/2 - 13	H8	2	1	TT92909	TT92910	22.98
1/2 - 20	H5	2	1	TT92911	TT92912	22.98
1/2 - 20	H8	2	1	TT92913	TT92914	22.98

SIZE	D LIMIT	# OF LUBE GROOVES	PKG. QTY.	PLUG ITEM#	BOTTOM ITEM#	PRICE
M3 x 0.5	D5	1	1	TT79801	TT79802	10.49
M4 x 0.7	D6	1	1	TT79803	TT79804	10.49
M5 x 0.8	D7	1	1	TT79805	TT79806	10.49
M6 x 1.0	D8	2	1	TT79807	TT79808	11.13
M8 x 1.25	D9	2	1	TT79809	TT79810	12.74
M10 x 1.5	D10	2	1	TT79811	TT79812	14.33
M12 x 1.75	D11	2	1	TT79813	TT79814	24.72

- **THREAD FORMING TAPS HAVE NO FLUTES OR CUTTING EDGES AND PROVIDE CHIP-LESS TAPPING**
- **"LUBE GROOVES" FOR LUBRICATION AND VENTING IN BLIND HOLES**
- **PLUG STYLE - 4 THREADS TAPERED, REQUIRES LESS TORQUE INCREASING TOOL LIFE IN THROUGH HOLES**
- **BOTTOMING STYLE - 2 THREADS TAPERED FOR BLIND HOLES**
- **TOOL LIFE 3-4 TIMES OR MORE THAN CUTTING TAPS**
- **TIN COATED FOR INCREASED TOOL LIFE**
- **MATERIALS: BRASS, COPPER, LEAD, STAINLESS STEELS, CARBON STEEL, LEADED STEEL AND ZINC. DUCTILE MATERIALS PRODUCING STRINGY CHIPS ARE A GOOD CANDIDATE FOR FORMING.**

FOR COATING INFORMATION SEE PAGE 2.  
FOR TECHNICAL INFORMATION PLEASE SEE PAGE 189, OR GO TO: [TITANMAN.COM](http://TITANMAN.COM)

THREAD FORMING TAPS

CARBIDE ENDMILLS  
 CARBIDE MICRO ENDMILLS  
 CARBIDE THREADMILLS  
 CARBIDE DRILL MILLS  
 CARBIDE CHAMFER MILLS  
 CARBIDE DRILLS  
 CARBIDE REAMERS  
 CARBIDE BURS  
 COUNTERSINKS  
 HSS & COBALT ENDMILLS  
 TAPS & DIES  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION



# Spiral Point Bottoming Taps



**SERIES 754**  
HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	PACKAGE QUANTITY	ITEM#	PRICE
0 - 80	H2	2	1	TT91201	16.08
2 - 56	H2	2	1	TT91207	12.33
3 - 48	H2	2	1	TT91211	9.89
4 - 40	H2	2	1	TT91215	7.94
5 - 40	H2	2	1	TT91220	7.94
6 - 32	H2	2	1	TT91223	6.67
6 - 32	H3	2	1	TT91224	6.67
6 - 40	H2	2	1	TT91227	7.59
8 - 32	H2	2	1	TT91229	6.67
8 - 32	H3	2	1	TT91230	6.67
10 - 24	H2	2	1	TT91235	7.59
10 - 24	H3	2	1	TT91236	6.67
10 - 32	H2	2	1	TT91239	6.67
10 - 32	H3	2	1	TT91240	6.67
12 - 24	H3	2	1	TT91243	7.59
1/4 - 20	H3	2	1	TT91247	6.67
1/4 - 28	H3	2	1	TT91254	6.67
5/16 - 18	H3	2	1	TT91259	7.20
5/16 - 24	H3	2	1	TT91266	7.20

**SPIRAL POINT BOTTOMING TAPS ARE RECOMMENDED FOR USE WHERE CLOSE GAGING IS REQUIRED.**



**ALL TITAN USA TOOLS ARE 100% MADE IN THE USA**

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 189, OR GO TO: [TITANMAN.COM](http://TITANMAN.COM)

SPIRAL POINT BOTTOMING TAPS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION

# Combination Drill & Taps



**SERIES 707**  
HIGH SPEED STEEL

SIZE	SHANK DIA.	OVERALL LENGTH	DRILL LENGTH	DRILL SIZE	THREAD LENGTH	# OF FLUTES	PACKAGE QUANTITY	ITEM#	PRICE
4-40	0.141	1-7/8	1/4	0.0910	3/8	2	1	TT70701	16.17
5-40	0.141	1-15/16	9/32	0.1040	13/32	2	1	TT70703	16.17
6-32	0.141	2	5/16	0.1115	7/16	2	1	TT70705	16.17
8-32	0.168	2-1/8	3/8	0.1375	1/2	2	1	TT70707	16.17
10-24	0.194	2-3/8	13/32	0.1545	5/8	2	1	TT70709	16.17
10-32	0.194	2-3/8	13/32	0.1635	5/8	2	1	TT70711	16.17
12-24	0.220	2-3/8	15/32	0.1805	21/32	2	1	TT70713	17.48
1/4-20	0.255	2-1/2	17/32	0.2080	25/32	2	1	TT70715	16.17
1/4-28	0.255	2-1/2	17/32	0.2200	25/32	2	1	TT70717	16.17
5/16-18	0.318	2-27/32	11/16	0.2660	15/16	2	1	TT70719	23.89
5/16-24	0.318	2-27/32	11/16	0.2770	15/16	2	1	TT70721	23.89
3/8-16	0.381	3-3/8	13/16	0.3225	1-1/16	2	1	TT70723	29.03
3/8-24	0.381	3-3/8	13/16	0.3395	1-1/16	2	1	TT70725	29.03
7/16-14	0.323	3-3/4	1	0.3770	1-1/4	2	1	TT70727	34.74
7/16-20	0.323	3-3/4	1	0.3955	1-1/4	2	1	TT70729	34.74
1/2-13	0.367	4-1/16	1-1/8	0.4350	1-3/8	2	1	TT70731	39.20
1/2-20	0.367	4-1/16	1-1/8	0.4580	1-3/8	2	1	TT70733	39.20

PITCH DIAMETER AND THREAD TOLERANCES ARE DESIGNED TO PRODUCE A CLASS 2B FIT.



**SERIES 708**  
HIGH SPEED STEEL  
METRIC

SIZE	SHANK DIA.	OVERALL LENGTH	DRILL LENGTH	DRILL SIZE	THREAD LENGTH	# OF FLUTES	PACKAGE QUANTITY	ITEM#	PRICE
M4 x 0.7	0.168	2-1/8	3/8	0.1340	1/2	2	1	TT70830	17.80
M5 x 0.8	0.194	2-3/8	13/32	0.1700	5/8	2	1	TT70832	17.80
M6 x 1.0	0.255	2-1/2	17/32	0.2030	25/32	2	1	TT70834	17.80
M8 x 1.25	0.318	2-27/32	11/16	0.2730	15/16	2	1	TT70836	32.25
M10 x 1.50	0.381	3.38	13/16	0.3440	0.69	2	1	TT70838	36.85
M12 x 1.75	0.367	4-1/16	1-1/8	0.4140	1-3/8	2	1	TT70840	36.85

PITCH DIAMETER AND THREAD TOLERANCES ARE DESIGNED TO PRODUCE A CLASS 6H FIT.

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 189, OR GO TO: TITANMAN.COM



# Taper Pipe Taps

## NPT HIGH SPEED STEEL



**SERIES 775**  
UNCOATED



**SERIES 777**  
STEAM OXIDE



**SERIES 878**  
TIN COATED

SIZE	# OF FLUTES	PKG. QTY.	UNCOATED	PRICE	STEAM OXIDE	PRICE	TIN	PRICE
1/16 - 27	4	1	TT93400	13.87	TT93400S	15.97	TT93400TIN	18.05
1/8 - 27*	4	1	TT93401	13.87	TT93401S	15.97	TT93401TIN	18.05
1/8 - 27	4	1	TT93402	13.87	TT93402S	15.97	TT93402TIN	18.05
1/4 - 18	4	1	TT93406	15.36	TT93406S	17.66	TT93406TIN	19.98
3/8 - 18	4	1	TT93408	20.22	TT93408S	23.26	TT93408TIN	26.28
1/2 - 14	4	1	TT93410	32.16	TT93410S	36.98	TT93410TIN	41.79
3/4 - 14	5	1	TT93412	44.98	TT93412S	51.73	TT93412TIN	58.48
1 - 11-1/2	5	1	TT93414	68.36	TT93414S	78.59	TT93414TIN	81.95
1-1/4 - 11-1/2	5	1	TT93416	97.43	TT93416S	112.04	TT93416TIN	126.65
1-1/2 - 11-1/2	7	1	TT93418	130.68	TT93418S	150.30	TT93418TIN	169.88
2 - 11-1/2	7	1	TT93420	177.76	TT93420S	204.43	TT93420TIN	231.10

\* SMALL SHANK

## NPT - INTERRUPTED HIGH SPEED STEEL



**SERIES 785**  
UNCOATED



**SERIES 786**  
STEAM OXIDE



**SERIES 880**  
TIN COATED

SIZE	# OF FLUTES	PKG. QTY.	UNCOATED	PRICE	STEAM OXIDE	PRICE	TIN	PRICE
1/8 - 27*	5	1	TT93601	21.53	TT93601S	24.76	TT93601TIN	27.99
1/8 - 27	5	1	TT93602	21.53	TT93602S	24.76	TT93602TIN	27.99
1/4 - 18	5	1	TT93606	23.81	TT93606S	27.37	TT93606TIN	30.95
3/8 - 18	5	1	TT93608	30.13	TT93608S	34.64	TT93608TIN	39.16
1/2 - 14	5	1	TT93610	47.91	TT93610S	55.09	TT93610TIN	62.28
3/4 - 14	5	1	TT93612	69.72	TT93612S	80.17	TT93612TIN	90.63
1 - 11-1/2	5	1	TT93614	105.95	TT93614S	121.84	TT93614TIN	137.73
1-1/4 - 11-1/2	5	1	TT93616	150.04	TT93616S	172.54	TT93616TIN	195.05
1-1/2 - 11-1/2	7	1	TT93618	201.26	TT93618S	231.44	TT93618TIN	261.63
2 - 11-1/2	7	1	TT93620	271.99	TT93620S	312.79	TT93620TIN	353.57

\* SMALL SHANK

FOR COATING INFORMATION SEE PAGE 2.  
FOR TECHNICAL INFORMATION PLEASE SEE PAGE 189, OR GO TO: TITANMAN.COM

TAPER PIPE TAPS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# Taper Pipe Taps

CARBIDE ENDMILLS  
 CARBIDE MICRO ENDMILLS  
 CARBIDE THREADMILLS  
 CARBIDE DRILL MILLS  
 CARBIDE CHAMFER MILLS  
 CARBIDE DRILLS  
 CARBIDE REAMERS  
 CARBIDE BURS  
 COUNTERSINKS  
 HSS & COBALT ENDMILLS  
 TAPS & DIES  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION

TAPER PIPE TAPS

## NPTF DRYSEAL HIGH SPEED STEEL



**SERIES 787**  
UNCOATED



**SERIES 883**  
TIN COATED

SIZE	# OF FLUTES	PKG. QTY.	ITEM#	PRICE
1/16 - 27	4	1	TT93800	15.27
1/8 - 27*	4	1	TT93801	15.27
1/8 - 27	4	1	TT93802	15.27
1/4 - 18	4	1	TT93806	16.90
3/8 - 18	4	1	TT93808	22.23
1/2 - 14	4	1	TT93810	35.37
3/4 - 14	5	1	TT93812	49.47
1 - 11-1/2	5	1	TT93814	75.18
1-1/4 - 11-1/2	5	1	TT93816	107.17
1-1/2 - 11-1/2	7	1	TT93818	143.74
2 - 11-1/2	7	1	TT93820	195.55

\* SMALL SHANK

SIZE	# OF FLUTES	PKG. QTY.	ITEM#	PRICE
1/16 - 27	4	1	TT93800TIN	22.88
1/8 - 27*	4	1	TT93801TIN	22.88
1/8 - 27	4	1	TT93802TIN	22.88
1/4 - 18	4	1	TT93806TIN	25.32
3/8 - 18	4	1	TT93808TIN	33.31
1/2 - 14	4	1	TT93810TIN	52.97
3/4 - 14	5	1	TT93812TIN	74.11
1 - 11-1/2	5	1	TT93814TIN	112.63
1-1/4 - 11-1/2	5	1	TT93816TIN	160.53
1-1/2 - 11-1/2	7	1	TT93818TIN	215.34
2 - 11-1/2	7	1	TT93820TIN	292.93

\* SMALL SHANK

## NPTF DRYSEAL - INTERRUPTED HIGH SPEED STEEL



**SERIES 788**  
UNCOATED



**SERIES 884**  
TIN COATED

SIZE	# OF FLUTES	PKG. QTY.	ITEM#	PRICE
1/8 - 27*	5	1	TT94001	23.67
1/8 - 27	5	1	TT94002	23.67
1/4 - 18	5	1	TT94006	26.19
3/8 - 18	5	1	TT94008	33.13
1/2 - 14	5	1	TT94010	52.70
3/4 - 14	5	1	TT94012	76.68
1 - 11-1/2	5	1	TT94014	116.53
1-1/4 - 11-1/2	5	1	TT94016	165.03
1-1/2 - 11-1/2	7	1	TT94018	221.39
2 - 11-1/2	7	1	TT94020	299.18

\* SMALL SHANK

SIZE	# OF FLUTES	PKG. QTY.	ITEM#	PRICE
1/8 - 27*	5	1	TT94001TIN	35.48
1/8 - 27	5	1	TT94002TIN	35.48
1/4 - 18	5	1	TT94006TIN	39.24
3/8 - 18	5	1	TT94008TIN	49.64
1/2 - 14	5	1	TT94010TIN	78.94
3/4 - 14	5	1	TT94012TIN	114.88
1 - 11-1/2	5	1	TT94014TIN	174.57
1-1/4 - 11-1/2	5	1	TT94016TIN	247.23
1-1/2 - 11-1/2	7	1	TT94018TIN	331.62
2 - 11-1/2	7	1	TT94020TIN	448.17

\* SMALL SHANK

FOR COATING INFORMATION SEE PAGE 2.  
FOR TECHNICAL INFORMATION PLEASE SEE PAGE 189, OR GO TO: TITANMAN.COM



# Pipe Taps

## STRAIGHT PIPE - NPS HIGH SPEED STEEL



**SERIES 792**  
UNCOATED



**SERIES 888**  
TIN COATED

SIZE	# OF FLUTES	PKG. QTY.	ITEM#	PRICE
1/8 - 27	4	1	TT94201	22.17
1/4 - 18	4	1	TT94202	24.53
3/8 - 18	4	1	TT94203	32.29
1/2 - 14	4	1	TT94204	51.37
3/4 - 14	5	1	TT94205	71.84
1 - 11-1/2	5	1	TT94206	109.17

SIZE	# OF FLUTES	PKG. QTY.	ITEM#	PRICE
1/8 - 27	4	1	TT94201TIN	33.22
1/4 - 18	4	1	TT94202TIN	36.76
3/8 - 18	4	1	TT94203TIN	48.38
1/2 - 14	4	1	TT94204TIN	76.94
3/4 - 14	5	1	TT94205TIN	107.62
1 - 11-1/2	5	1	TT94206TIN	163.54

## EXTENSION TAPER PIPE - NPT HIGH SPEED STEEL



**SERIES 793**  
UNCOATED

SIZE	# OF FLUTES	OVERALL LENGTH	PKG. QTY.	ITEM#	PRICE
1/8 - 27	4	6	1	TT94221	41.57
1/4 - 18	4	6	1	TT94223	47.91
3/8 - 18	4	6	1	TT94225	64.82
1/2 - 14	4	6	1	TT94227	104.03



**SERIES 890**  
TIN COATED

SIZE	# OF FLUTES	OVERALL LENGTH	PKG. QTY.	ITEM#	PRICE
1/8 - 27	4	6	1	TT94221TIN	62.27
1/4 - 18	4	6	1	TT94223TIN	71.78
3/8 - 18	4	6	1	TT94225TIN	97.11
1/2 - 14	4	6	1	TT94227TIN	155.83

FOR COATING INFORMATION SEE PAGE 2.  
FOR TECHNICAL INFORMATION PLEASE SEE PAGE 189, OR GO TO: TITANMAN.COM

PIPE TAPS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION

# Taps

## STI - SPIRAL POINT PLUG



**SERIES 770**  
HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	ITEM#	PRICE
4 - 40	H1	2	1	TT92315	10.52
5 - 40	H1	2	1	TT92320	10.52
6 - 32	H2	2	1	TT92324	10.60
6 - 40	H2	2	1	TT92327	10.60
8 - 32	H2	2	1	TT92330	10.71
10 - 24	H2	2	1	TT92336	10.90
10 - 32	H2	2	1	TT92340	11.09
12 - 24	H2	2	1	TT92343	11.09
1/4 - 20	H2	2	1	TT92347	11.09
1/4 - 28	H2	2	1	TT92354	11.27
5/16 - 18	H3	3	1	TT92360	14.25
5/16 - 24	H2	3	1	TT92368	14.43
3/8 - 16	H3	3	1	TT92371	17.54
3/8 - 24	H2	3	1	TT92375	17.75
7/16 - 14	H3	3	1	TT92378	19.24
7/16 - 20	H3	3	1	TT92381	19.24
1/2 - 13	H3	3	1	TT92385	21.42
1/2 - 20	H3	3	1	TT92389	21.42

## STI - HAND PLUG & BOTTOMING



**SERIES 783**  
HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	PLUG ITEM#	BOTTOM ITEM#	PRICE
4 - 40	H1	3	1	TT78302	TT78303	9.38
5 - 40	H1	3	1	TT78304	TT78305	9.38
6 - 32	H2	3	1	TT78306	TT78307	9.54
6 - 40	H1	3	1	TT78308	TT78309	9.54
8 - 32	H2	3	1	TT78310	TT78311	9.77
10 - 24	H2	3	1	TT78312	TT78313	9.77
10 - 32	H2	3	1	TT78314	TT78315	10.16
12 - 24	H2	3	1	TT78316	TT78317	10.16
1/4 - 20	H2	3	1	TT78318	TT78319	10.21
1/4 - 28	H2	3	1	TT78320	TT78321	10.21
5/16 - 18	H3	4	1	TT78322	TT78323	11.02
5/16 - 24	H2	4	1	TT78324	TT78325	11.02
3/8 - 16	H3	4	1	TT78326	TT78327	11.97
3/8 - 24	H2	4	1	TT78328	TT78329	11.97
7/16 - 14	H3	4	1	TT78330	TT78331	16.46
7/16 - 20	H3	4	1	TT78332	TT78333	16.46
1/2 - 13	H3	4	1	TT78334	TT78335	18.48
1/2 - 20	H3	4	1	TT78336	TT78337	18.48

STI TAPS ARE OVERSIZE SO THAT THEY WILL PRODUCE THREADS THAT WILL ACCEPT HELICAL COIL WIRE SCREW THREAD INSERTS THAT HAVE THE SAME SIZE AND PITCH. MATERIALS: ALUMINUM AND NON-FERROUS MATERIALS

## +.005 OVERSIZE SPIRAL POINT PLUG



**SERIES 764**  
HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	ITEM#	PRICE
6 - 32	H11	2	1	TT91732	5.44
8 - 32	H11	2	1	TT91734	5.44
10 - 24	H11	2	1	TT91736	5.92
10 - 32	H11	2	1	TT91738	5.92
1/4 - 20	H11	2	1	TT91749	6.75
5/16 - 18	H11	2	1	TT91761	7.76
3/8 - 16	H11	3	1	TT91772	8.81
7/16 - 14	H11	3	1	TT91779	13.23
1/2 - 13	H11	3	1	TT91786	16.10
5/8 - 11	H11	3	1	TT91794	27.44

## +.005 OVERSIZE HAND PLUG



**SERIES 766**  
HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	ITEM#	PRICE
6 - 32	H11	3	1	TT90931	4.53
8 - 32	H11	4	1	TT90933	4.53
10 - 24	H11	4	1	TT90935	5.00
10 - 32	H11	4	1	TT90937	5.00
1/4 - 20	H11	4	1	TT90940	5.97
5/16 - 18	H11	4	1	TT90946	7.52
3/8 - 16	H11	4	1	TT90950	8.63
7/16 - 14	H11	4	1	TT90954	12.49
1/2 - 13	H11	4	1	TT90958	14.66
5/8 - 11	H11	4	1	TT90966	27.60

THESE OVERSIZE TAPS CAN BE USED ON A WIDE RANGE OF MATERIALS. PRIMARILY USED WHERE PARTS ARE GOING TO BE PLATED AFTER TAPPING.

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 189, OR GO TO: TITANMAN.COM

TAPS  
CARRIIDE ENDMILLS  
CARRIIDE MICRO ENDMILLS  
CARRIIDE THREADMILLS  
CARRIIDE DRILL MILLS  
CARRIIDE CHAMFER MILLS  
CARRIIDE DRILLS  
CARRIIDE REAMERS  
CARRIIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# Taps

## PULLEY - PLUG



**SERIES 747**  
HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	OVERALL LENGTH	PKG. QTY.	ITEM#	PRICE
1/4 - 20	H3	4	6	1	TT92722	31.93
1/4 - 20	H3	4	8	1	TT92723	39.47
5/16 - 18	H3	4	6	1	TT92730	33.67
5/16 - 18	H3	4	8	1	TT92731	40.65
3/8 - 16	H3	4	6	1	TT92738	37.73
3/8 - 16	H3	4	8	1	TT92739	45.28
3/8 - 16	H3	4	10	1	TT92740	56.90
7/16 - 14	H3	4	6	1	TT92746	40.06
7/16 - 14	H3	4	8	1	TT92747	52.25
1/2 - 13	H3	4	6	1	TT92754	40.65

SIZE	H LIMIT	# OF FLUTES	OVERALL LENGTH	PKG. QTY.	ITEM#	PRICE
1/2 - 13	H3	4	8	1	TT92755	53.41
1/2 - 13	H3	4	10	1	TT92756	65.60
1/2 - 13	H3	4	12	1	TT92757	80.69
5/8 - 11	H3	4	6	1	TT92762	54.00
5/8 - 11	H3	4	8	1	TT92763	70.25
5/8 - 11	H3	4	10	1	TT92764	88.26
5/8 - 11	H3	4	12	1	TT92765	103.35
3/4 - 10	H3	4	10	1	TT92772	103.35
3/4 - 10	H3	4	12	1	TT92773	123.09
-	-	-	-	-	-	-

## SMALL SHANK EXTENSION - SPIRAL POINT PLUG



**SERIES 749**  
HIGH SPEED STEEL

SIZE	H LIMIT	OVERALL LENGTH	NC/NF	THREAD LENGTH	SQUARE LENGTH	SHANK DIAMETER	SQUARE	# OF FLUTES	PKG. QTY.	ITEM#	PRICE
6 - 32	H3	6	NC	11/16	3/16	0.097	0.073	2	1	TT94101	32.40
8 - 32	H3	6	NC	3/4	1/4	0.123	0.092	2	1	TT94102	31.73
10 - 24	H3	6	NC	7/8	1/4	0.136	0.102	2	1	TT94103	29.75
10 - 32	H3	6	NF	7/8	1/4	0.136	0.102	2	1	TT94104	29.75
1/4 - 20	H3	6	NC	1	5/16	0.185	0.139	2	1	TT94105	40.59
1/4 - 28	H3	6	NF	1	5/16	0.185	0.139	2	1	TT94106	40.59
5/16 - 18	H3	6	NC	1-1/8	3/8	0.240	0.180	2	1	TT94107	42.60
5/16 - 24	H3	6	NF	1-1/8	3/8	0.240	0.180	2	1	TT94108	42.60
3/8 - 16	H3	6	NC	1-1/4	7/16	0.275	0.206	3	1	TT94109	45.90
3/8 - 24	H3	6	NF	1-1/4	7/16	0.275	0.206	3	1	TT94110	45.90
7/16 - 14	H3	6	NC	1-7/16	13/32	0.323	0.242	3	1	TT94111	52.61
7/16 - 20	H3	6	NF	1-7/16	13/32	0.323	0.242	3	1	TT94112	52.61
1/2 - 13	H3	6	NC	1-21/32	7/16	0.367	0.275	3	1	TT94113	55.23
1/2 - 20	H3	6	NF	1-21/32	7/16	0.367	0.275	3	1	TT94114	55.23
5/8 - 11	H3	6	NC	1-13/16	9/16	0.480	0.360	3	1	TT94115	71.36
5/8 - 18	H3	6	NF	1-13/16	9/16	0.480	0.360	3	1	TT94116	71.36
3/4 - 10	H3	6	NC	2	11/16	0.590	0.442	3	1	TT94117	92.68
3/4 - 16	H3	6	NF	2	11/16	0.590	0.442	3	1	TT94118	92.68

SMALL SHANK EXTENSIONS: LONG REACH SMALL SHANKS ALLOW FOR DEEPER TAPPING

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 189, OR GO TO: TITANMAN.COM

TAPS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# HSS Dies & Die Stocks

## ADJUSTABLE ROUND SPLIT



**SERIES 794**  
HIGH SPEED STEEL

SIZE	OUTSIDE DIA.	ITEM#	PRICE
4-40	1	TE80810	25.30
5-40	13/16	TE80811	20.89
5-44	13/16	TE80812	20.89
6-32	13/16	TE80813	20.89
6-32	1	TE80814	25.30
6-40	13/16	TE80815	20.89
8-32	13/16	TE80816	20.89
8-32	1	TE80817	25.30
10-24	13/16	TE80818	20.89
10-24	1	TE80819	25.30
10-32	13/16	TE80820	20.89
10-32	1	TE80821	25.30
12-24	13/16	TE80822	20.89
12-24	1	TE80823	25.30
12-28	13/16	TE80824	20.89
1/4-20	13/16	TE80825	20.89
1/4-20	1	TE80826	25.30

SIZE	OUTSIDE DIA.	ITEM#	PRICE
1/4-20	1-1/2	TE80827	41.37
1/4-28	13/16	TE80828	20.89
1/4-28	1	TE80829	25.30
1/4-28	1-1/2	TE80830	41.37
5/16-18	13/16	TE80831	20.89
5/16-18	1	TE80832	25.30
5/16-18	1-1/2	TE80833	41.37
5/16-24	13/16	TE80834	20.89
5/16-24	1	TE80835	25.30
5/16-24	1-1/2	TE80836	41.37
3/8-16	1	TE80837	25.30
3/8-16	1-1/2	TE80838	41.37
3/8-24	1	TE80839	25.30
3/8-24	1-1/2	TE80840	41.37
7/16-14	1	TE80841	25.30
7/16-14	1-1/2	TE80842	41.37
7/16-20	1	TE80843	25.30

SIZE	OUTSIDE DIA.	ITEM#	PRICE
7/16-20	1-1/2	TE80844	41.37
1/2-13	1	TE80845	25.30
1/2-13	1-1/2	TE80846	41.37
1/2-20	1	TE80847	25.30
1/2-20	1-1/2	TE80848	41.37
9/16-12	1-1/2	TE80849	41.37
9/16-18	1-1/2	TE80850	41.37
5/8-11	1-1/2	TE80851	41.37
5/8-11	2	TE80852	56.23
5/8-18	1-1/2	TE80853	41.37
5/8-18	2	TE80854	56.23
3/4-10	1-1/2	TE80855	41.37
3/4-10	2	TE80856	56.23
3/4-16	1-1/2	TE80857	41.37
3/4-16	2	TE80858	56.23
7/8-9	2	TE80859	56.23
7/8-14	2	TE80860	56.23

## DIE STOCKS



**SERIES 789**

SIZE	ITEM#	PRICE
1 OD	TE78909	18.83
1-1/2 OD	TE78910	30.85
2 OD	TE78911	54.30

HSS DIES • DIE STOCKS

CARBIDE ENDMILLS

CARBIDE MICRO ENDMILLS

CARBIDE THREADMILLS

CARBIDE DRILL MILLS

CARBIDE CHAMFER MILLS

CARBIDE DRILLS

CARBIDE REAMERS

CARBIDE BURS

COUNTERSINKS

HSS & COBALT ENDMILLS

TAPS & DIES

HSS & COBALT DRILLS

HSS & COBALT REAMERS

TECHNICAL INFORMATION



# Carbon Steel Dies

## ADJUSTABLE ROUND SPLIT



**SERIES 790**  
CARBON STEEL

SIZE	OUTSIDE DIA.	ITEM#	PRICE
6-32	1	TE80113	16.45
8-32	1	TE80116	16.45
10-24	1	TE80119	16.45
10-32	1	TE80121	16.45
1/4-20	1	TE80127	16.45
1/4-20	1-1/2	TE80128	26.92
1/4-28	1	TE80130	16.45
1/4-32	1	TE80134	16.45
5/16-18	1	TE80135	16.45
5/16-18	1-1/2	TE80136	26.92
5/16-24	1	TE80138	16.45
5/16-24	1-1/2	TE80139	26.92
5/16-32	1	TE80141	16.45
3/8-16	1	TE80142	16.45
3/8-16	1-1/2	TE80143	26.92

SIZE	OUTSIDE DIA.	ITEM#	PRICE
3/8-24	1	TE80145	16.45
3/8-24	1-1/2	TE80146	26.92
7/16-14	1	TE80148	16.45
7/16-14	1-1/2	TE80149	26.92
7/16-20	1	TE80151	16.45
1/2-13	1-1/2	TE80154	26.92
1/2-20	1-1/2	TE80156	26.92
9/16-12	1-1/2	TE80158	26.92
9/16-18	1-1/2	TE80160	26.92
5/8-11	1-1/2	TE80162	26.92
5/8-11	2-1/2	TE80164	68.29
5/8-18	1-1/2	TE80165	26.92
3/4-10	2-1/2	TE80171	68.29
3/4-16	2-1/2	TE80173	68.29
7/8-9	2-1/2	TE80175	68.29

## HEXAGON RETHREADING



**SERIES 795**  
CARBON STEEL

SIZE	ACROSS FLATS	THICKNESS	ITEM#	PRICE
1/4-20	19/32	1/4	TE80529	9.64
1/4-28	19/32	1/4	TE80532	9.64
5/16-18	11/16	5/16	TE80537	11.25
5/16-24	11/16	5/16	TE80540	11.25
3/8-16	25/32	3/8	TE80544	12.45
3/8-24	25/32	3/8	TE80547	12.45
7/16-14	7/8	7/16	TE80550	15.26
7/16-20	7/8	7/16	TE80553	15.26
1/2-13	1-1/16	1/2	TE80555	16.88
1/2-20	1-1/16	1/2	TE80557	16.88
9/16-12	1-1/16	1/2	TE80559	18.07
9/16-18	1-1/16	1/2	TE80561	18.07
5/8-11	1-1/4	5/8	TE80563	18.88
5/8-18	1-1/4	5/8	TE80566	18.88
11/16-11	1-7/16	3/4	TE80568	20.89
11/16-16	1-7/16	3/4	TE80569	20.89

SIZE	ACROSS FLATS	THICKNESS	ITEM#	PRICE
3/4-10	1-7/16	3/4	TE80571	23.30
3/4-16	1-7/16	3/4	TE80573	23.30
7/8-9	1-5/8	7/8	TE80575	25.30
7/8-14	1-5/8	7/8	TE80577	25.30
1-8	1-13/16	1	TE80579	28.52
1-12	1-13/16	1	TE80581	28.52
1-14	1-13/16	1	TE80583	28.52
1-1/8-7	2	1	TE80584	32.93
1-1/8-12	2	1	TE80585	32.93
1-1/4-7	2-3/16	1	TE80586	36.15
1-1/4-12	2-3/16	1	TE80587	36.15
1-3/8-6	2-3/8	1	TE80588	68.29
1-3/8-12	2-3/8	1	TE80589	68.29
1-1/2-6	2-9/16	1	TE80590	76.31
1-1/2-12	2-9/16	1	TE80591	76.31
-	-	-	-	-

CARBON STEEL DIES  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION

# Dies & Accessories

CARBIDE ENDMILLS  
 CARBIDE MICRO ENDMILLS  
 CARBIDE THREADMILLS  
 CARBIDE DRILL MILLS  
 CARBIDE CHAMFER MILLS  
 CARBIDE DRILLS  
 CARBIDE REAMERS  
 CARBIDE BURS  
 COUNTERSINKS  
 HSS & COBALT ENDMILLS  
 TAPS & DIES  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION



## NPT HEXAGON RETHREADING

**SERIES 797**  
CARBON STEEL

SIZE	ACROSS THE FLATS	THICKNESS	ITEM#	PRICE
1/8 - 27 NPT	1-1/16	3/8	TE80701	13.33
1/4 - 18 NPT	1-1/4	5/8	TE80702	14.78
3/8 - 18 NPT	1-7/16	5/8	TE80703	20.43
1/2 - 14 NPT	1-5/8	3/4	TE80704	29.52
3/4 - 14 NPT	2	13/16	TE80705	36.50
1 - 11-1/2 NPT	2-3/8	1	TE80706	70.67



## METRIC HEXAGON RETHREADING

**SERIES 796**  
CARBON STEEL

SIZE	ACROSS THE FLATS	ITEM#	PRICE
M3 x 0.5	1	TE80601	7.34
M4 x 0.7	1	TE80602	7.15
M5 x 0.8	1	TE80603	7.15
M6 x 1.0	1	TE80604	7.15
M7 x 1.0	1	TE80605	7.34
M8 x 1.25	1	TE80606	7.15
M10 x 1.25	1	TE80607	7.15
M10 x 1.50	1	TE80608	7.15
M12 x 1.25	1	TE80609	7.15

SIZE	ACROSS THE FLATS	ITEM#	PRICE
M12 x 1.75	1	TE80610	7.15
M14 x 1.50	1-7/16	TE80611	11.09
M14 x 2.0	1-7/16	TE80612	11.09
M16 x 1.50	1-7/16	TE80613	11.09
M16 x 2.0	1-7/16	TE80614	11.09
M18 x 1.50	1-7/16	TE80615	11.09
M18 x 2.50	1-7/16	TE80616	11.09
M20 x 2.5	1-13/16	TE80617	23.16
M24 x 3.0	1-13/16	TE80618	23.16

## T - HANDLE TAP WRENCHES



**SERIES 801**

SIZE	ITEM#	PRICE
0 - 1/4	TE78701	6.10
1/4 - 1/2	TE78702	9.14

## ADJUSTABLE HANDLE TAP WRENCHES



**SERIES 802**

SIZE	ITEM#	PRICE
0 - 1/2	TE78805	19.41
1/2 - 1	TE78806	50.69



# Drill Sets



**ITEM# MS99028**  
29 PC. JOBBER DRILL SET - BRIGHT FINISH  
HIGH SPEED STEEL



**ITEM# MS99030**  
29 PC. HEAVY DUTY DRILL SET - BLACK/GOLD  
HIGH SPEED STEEL

## HIGH SPEED STEEL - JOBBER DRILL SETS

DESCRIPTION	ITEM#	PRICE
13Pc. • 1/16" - 1/4" by 64ths • 118° Point • Oxided	MS99010	16.42
13Pc. • 1/16" - 1/4" by 64ths • 118° Point • Bright	MS99011	16.42
15Pc. • 1/16" - 1/2" by 32nds • 118° Point • Oxided	MS99014	45.84
15Pc. • 1/16" - 1/2" by 32nds • 118° Point • Bright	MS99016	45.84
15Pc. • 1/16" - 1/2" by 32nds • Heavy Duty • 135° SP/PT • Oxided	MS99017	50.55
21Pc. • 1/16" - 3/8" by 64ths • 118° Point • Oxided	MS99018	38.74
21Pc. • 1/16" - 3/8" by 64ths • 118° Point • Bright	MS99020	38.74
25Pc. • 1.0mm - 13.0mm by 0.5mm • 118° Point • Oxided	MS99050	88.47
26Pc. • A-Z • 118° Point • Oxided	MS99022	64.84
26Pc. • A-Z • 118° Point • Bright	MS99024	64.84
29Pc. • 1/16" - 1/2" by 64ths • 118° Point • Oxided	MS99026	62.99
29Pc. • 1/16" - 1/2" by 64ths • 118° Point • Bright	MS99028	62.99
29Pc. • 1/16" - 1/2" by 64ths • Heavy Duty • 135° SP/PT • Oxided	MS99032	78.39
29Pc. • 1/16" - 1/2" by 64ths • 3/8" Reduced Shank • 118° Point • Oxided	MS99034	67.12
29Pc. • 1/16" - 1/2" by 64ths • 118° Point • TIN Coated	MS99036	155.77
60Pc. • #1 - #60 • 118° Point • Oxided	MS99038	56.97
60Pc. • #1 - #60 • 118° Point • Bright	MS99040	56.97
115Pc. • 1/16" - 1/2" by 64ths • #1 - #60 • A - Z • 118° Point • Oxided	MS99042	181.04
115Pc. • 1/16" - 1/2" by 64ths • #1 - #60 • A - Z • 118° Point • Bright	MS99044	181.04

## HIGH SPEED STEEL - BLACK & GOLD SETS

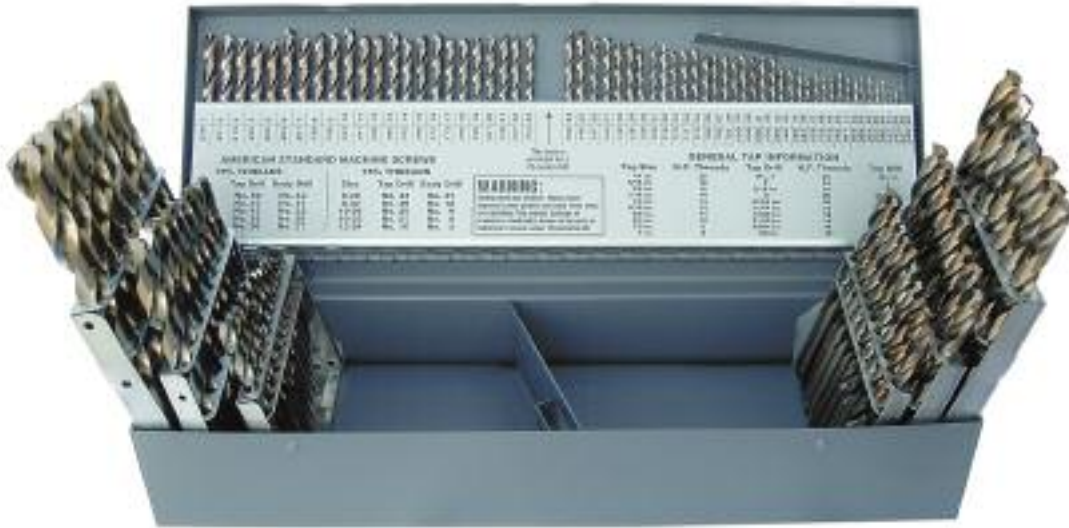
DESCRIPTION	ITEM#	PRICE
13Pc. • 1/16" - 1/4" by 64ths • Heavy Duty • 135° SP/PT • Black/Gold	MS99012	20.48
15Pc. • 1/16" - 1/2" by 32nds • Heavy Duty • 135° SP/PT • Black/Gold	MS99015	59.31
21Pc. • 1/16" - 3/8" by 64ths • Heavy Duty • 135° SP/PT • Black/Gold	MS99021	58.09
29Pc. • 1/16" - 1/2" by 64ths • Heavy Duty • 135° SP/PT • Black/Gold	MS99030	94.89
29Pc. • 1/16" - 1/2" by 64ths • H.D. • 135° SP/PT • Black/Gold • Plastic Case	MS99431	94.89
115Pc. • 1/16" - 1/2" by 64ths • Heavy Duty • 135° SP/PT • Black/Gold	MS99046	226.60

NOTE: SIZES BELOW 1/16" ARE NOT SPLIT POINT.

FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION PLEASE SEE PAGES 191-192.

HSS DRILL SETS  
CARRIAGE ENDMILLS  
CARRIAGE MICRO ENDMILLS  
CARRIAGE THREADMILLS  
CARRIAGE DRILL MILLS  
CARRIAGE CHAMFER MILLS  
CARRIAGE DRILLS  
CARRIAGE REAMERS  
CARRIAGE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION

# Drill Sets



**ITEM# MS99163**  
**115 PC. JOBBER DRILL SET - M42 COBALT - STRAW FINISH**

### M42 COBALT - JOBBER DRILL SETS

DESCRIPTION	ITEM#	PRICE
13Pc. • 1/16" - 1/4" by 64ths • Heavy Duty • 135° SP/PT • Straw Finish	MS99151	22.13
15Pc. • 1/16" - 1/2" by 32nds • Heavy Duty • 135° SP/PT • Straw Finish	MS99153	74.67
21Pc. • 1/16" - 3/8" by 64ths • Heavy Duty • 135° SP/PT • Straw Finish	MS99155	81.33
26Pc. • A - Z • Heavy Duty • 135° SP/PT • Straw Finish	MS99157	123.84
29Pc. • 1/16" - 1/2" by 64ths • Heavy Duty • 135° SP/PT • Straw Finish	MS99159	121.21
60Pc. • #1 - #60 • Heavy Duty • 135° SP/PT • Straw Finish	MS99161	105.80
115Pc. • 1/16" - 1/2" by 64ths • #1 - #60 • A - Z • H.D. • 135° SP/PT • Straw Finish	MS99163	446.20

### DRILL INDEXES ONLY

DESCRIPTION	ITEM#	PRICE
21Pc. • 1/16" - 3/8" by 64ths • Metal Case	MS99320	6.01
26Pc. • A - Z • Metal Case	MS99323	6.48
29Pc. • 1/16" - 1/2" by 64ths • Metal Case	MS99326	6.48
60Pc. • #1 - #60 • Metal Case	MS99329	6.44
115Pc. • 1/16" - 1/2" by 64ths, A - Z, #1 - #60 • Metal Case	MS99332	39.75

### HIGH SPEED STEEL - TAP & DRILL SETS

DESCRIPTION	ITEM#	PRICE
18Pc. • (6-32, #36), (8-32, #29), (10-24, #25), (10-32, #21), (1/4-20, #7) (5/16-18,"F"), (3/8-16, 5/16"), (7/16-14,"U"), (1/2-13, 27/64)	MS99201	84.46

**NOTE: SIZES BELOW 1/16" ARE NOT SPLIT POINT.  
 FOR TECHNICAL INFORMATION PLEASE SEE PAGES 191-192.**

**HSS & COBALT DRILL SETS**  
 CARRIDE ENDMILLS  
 CARRIDE MICRO ENDMILLS  
 CARRIDE THREADMILLS  
 CARRIDE DRILL MILLS  
 CARRIDE CHAMFER MILLS  
 CARRIDE DRILLS  
 CARRIDE REAMERS  
 CARRIDE BURS  
 COUNTERSINKS  
 HSS & COBALT ENDMILLS  
 TAPS & DIES  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION





# Drill Sets



**ITEM# MS99302**  
**8 PC. SILVER & DEMING DRILL SET**  
**HIGH SPEED STEEL**

### SILVER & DEMING SETS - 1/2" SHANK

DESCRIPTION	ITEM#	PRICE
8Pc. • HSS • 9/16", 5/8", 11/16", 3/4", 13/16", 7/8", 15/16", 1" • 118° Point • In Plastic Case	MS99302	153.08
8Pc. • HSS • Black & Gold • 118° Split Point • In Plastic Case	MS99313	688.68
8Pc. • M42 Cobalt • 118° Split Point • In Plastic Case	MS99310	223.64
33Pc. • HSS • 1/2" - 1" by 64ths • 118° Point • Metal Stand	MS99304	194.40



**ITEM# MS99442**  
**29 PC. MECHANICS LENGTH DRILL SET**  
**HIGH SPEED STEEL - BLACK/GOLD**

### HIGH SPEED STEEL - MECHANICS LENGTH SETS

DESCRIPTION	ITEM#	PRICE
15Pc. • 1/16" - 1/2" by 32ths • Black/Gold • Heavy Duty • 135° SP/PT • Metal Case	MS99425	55.82
29Pc. • 1/16" - 1/2" by 64ths • Black/Gold • Heavy Duty • 135° SP/PT • Metal Case	MS99405	103.01
29Pc. • 1/16" - 1/2" by 64ths • Black/Gold • Heavy Duty • 135° SP/PT • Plastic Case	MS99442	103.01

**MECHANICS LENGTH: SIZES 3/16" TO 1/2" - HAVE 3 FLATS;**  
**SIZES 27/64" AND HIGHER - HAVE 3/8" REDUCED FLATTED SHANKS**

**FOR TECHNICAL INFORMATION PLEASE SEE PAGES 191-192.**

**HSS & COBALT DRILL SETS**

CARBIDE  
ENDMILLS

CARBIDE  
MICRO ENDMILLS

CARBIDE  
THREADMILLS

CARBIDE  
DRILL MILLS

CARBIDE  
CHAMFER MILLS

CARBIDE  
DRILLS

CARBIDE  
REAMERS

CARBIDE  
BURS

COUNTERSINKS

HSS & COBALT  
ENDMILLS

TAPS & DIES

HSS & COBALT  
DRILLS

HSS & COBALT  
REAMERS

TECHNICAL  
INFORMATION

# High Speed Steel Drills

## JOBBER LENGTH - 118° POINT



**SERIES 406**  
BRIGHT FINISH

### FRACTIONAL SIZES

SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
1/64	3/16	3/4	12	CD40601	1.54
1/32	1/2	1-3/8	12	CD40602	1.09
3/64	3/4	1-3/4	12	CD40603	1.09
1/16	7/8	1-7/8	12	CD40604	0.67
5/64	1	2	12	CD40605	0.67
3/32	1-1/4	2-1/4	12	CD40606	0.67
7/64	1-1/2	2-5/8	12	CD40607	0.67
1/8	1-5/8	2-3/4	12	CD40608	0.67
9/64	1-3/4	2-7/8	12	CD40609	0.71
5/32	2	3-1/8	12	CD40610	0.74
11/64	2-1/8	3-1/4	12	CD40611	0.79

### FRACTIONAL SIZES

SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
3/16	2-5/16	3-1/2	12	CD40612	0.86
13/64	2-7/16	3-5/8	12	CD40613	0.98
7/32	2-1/2	3-3/4	12	CD40614	1.08
15/64	2-5/8	3-7/8	12	CD40615	1.21
1/4	2-3/4	4	12	CD40616	1.23
17/64	2-7/8	4-1/8	6	CD40617	1.77
9/32	2-15/16	4-1/4	6	CD40618	1.89
19/64	3-1/16	4-3/8	6	CD40619	2.07
5/16	3-3/16	4-1/2	6	CD40620	2.16
21/64	3-5/16	4-5/8	6	CD40621	2.41
11/32	3-7/16	4-3/4	6	CD40622	2.58

### FRACTIONAL SIZES

SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
23/64	3-1/2	4-7/8	6	CD40623	2.84
3/8	3-5/8	5	6	CD40624	2.98
25/64	3-3/4	5-1/8	6	CD40625	3.22
13/32	3-7/8	5-1/4	6	CD40626	3.52
27/64	3-15/16	5-3/8	6	CD40627	3.74
7/16	4-1/16	5-1/2	6	CD40628	4.09
29/64	4-3/16	5-5/8	6	CD40629	4.36
15/32	4-5/16	5-3/4	6	CD40630	4.74
31/64	4-3/8	5-7/8	6	CD40631	5.00
1/2	4-1/2	6	6	CD40632	5.22
-	-	-	-	-	-

### LETTER SIZES

SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
A	2-5/8	3-7/8	12	CD40901	1.21
B	2-3/4	4	12	CD40902	1.23
C	2-3/4	4	12	CD40903	1.23
D	2-3/4	4	12	CD40904	1.28
E	2-3/4	4	12	CD40905	1.29
F	2-7/8	4-1/8	6	CD40906	1.79
G	2-7/8	4-1/8	6	CD40907	1.71
H	2-7/8	4-1/8	6	CD40908	1.75
I	2-7/8	4-1/8	6	CD40909	1.79

### LETTER SIZES

SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
J	2-7/8	4-1/8	6	CD40910	1.85
K	2-15/16	4-1/4	6	CD40911	1.89
L	2-15/16	4-1/4	6	CD40912	1.97
M	3-1/16	4-3/8	6	CD40913	2.08
N	3-1/16	4-3/8	6	CD40914	2.16
O	3-3/16	4-1/2	6	CD40915	2.34
P	3-5/16	4-5/8	6	CD40916	2.51
Q	3-7/16	4-3/4	6	CD40917	2.61
R	3-7/16	4-3/4	6	CD40918	2.71

### LETTER SIZES

SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
S	3-1/2	4-7/8	6	CD40919	2.84
T	3-1/2	4-7/8	6	CD40920	2.98
U	3-5/8	5	6	CD40921	3.22
V	3-5/8	5	6	CD40922	3.33
W	3-3/4	5-1/8	6	CD40923	3.55
X	3-3/4	5-1/8	6	CD40924	3.76
Y	3-7/8	5-1/4	6	CD40925	3.94
Z	3-7/8	5-1/4	6	CD40926	4.03
-	-	-	-	-	-

### WIRE SIZES

SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
1	2-5/8	3-7/8	12	CD40801	1.32
2	2-5/8	3-7/8	12	CD40802	1.32
3	2-1/2	3-3/4	12	CD40803	1.21
4	2-1/2	3-3/4	12	CD40804	1.21
5	2-1/2	3-3/4	12	CD40805	1.19
6	2-1/2	3-3/4	12	CD40806	1.19
7	2-7/16	3-5/8	12	CD40807	1.15
8	2-7/16	3-5/8	12	CD40808	1.15
9	2-7/16	3-5/8	12	CD40809	1.13
10	2-7/16	3-5/8	12	CD40810	1.04
11	2-5/16	3-1/2	12	CD40811	1.04
12	2-5/16	3-1/2	12	CD40812	1.04
13	2-5/16	3-1/2	12	CD40813	1.04
14	2-3/16	3-3/8	12	CD40814	0.98
15	2-3/16	3-3/8	12	CD40815	0.98
16	2-3/16	3-3/8	12	CD40816	0.98
17	2-3/16	3-3/8	12	CD40817	0.94
18	2-1/8	3-1/4	12	CD40818	0.94
19	2-1/8	3-1/4	12	CD40819	0.94
20	2-1/8	3-1/4	12	CD40820	0.84
21	2-1/8	3-1/4	12	CD40821	0.84
22	2	3-1/8	12	CD40822	0.79
23	2	3-1/8	12	CD40823	0.79
24	2	3-1/8	12	CD40824	0.79
25	1-7/8	3	12	CD40825	0.69
26	1-7/8	3	12	CD40826	0.69
27	1-7/8	3	12	CD40827	0.69

### WIRE SIZES

SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
28	1-3/4	2-7/8	12	CD40828	0.64
29	1-3/4	2-7/8	12	CD40829	0.64
30	1-5/8	2-3/4	12	CD40830	0.63
31	1-5/8	2-3/4	12	CD40831	0.61
32	1-5/8	2-3/4	12	CD40832	0.61
33	1-1/2	2-5/8	12	CD40833	0.61
34	1-1/2	2-5/8	12	CD40834	0.61
35	1-1/2	2-5/8	12	CD40835	0.61
36	1-7/16	2-1/2	12	CD40836	0.61
37	1-7/16	2-1/2	12	CD40837	0.61
38	1-7/16	2-1/2	12	CD40838	0.61
39	1-3/8	2-3/8	12	CD40839	0.61
40	1-3/8	2-3/8	12	CD40840	0.61
41	1-3/8	2-3/8	12	CD40841	0.61
42	1-1/4	2-1/4	12	CD40842	0.61
43	1-1/4	2-1/4	12	CD40843	0.61
44	1-1/8	2-1/8	12	CD40844	0.61
45	1-1/8	2-1/8	12	CD40845	0.64
46	1-1/8	2-1/8	12	CD40846	0.64
47	1	2	12	CD40847	0.64
48	1	2	12	CD40848	0.64
49	1	2	12	CD40849	0.64
50	1	2	12	CD40850	0.64
51	1	2	12	CD40851	0.64
52	7/8	1-7/8	12	CD40852	0.64
53	7/8	1-7/8	12	CD40853	0.64
54	7/8	1-7/8	12	CD40854	0.68

### WIRE SIZES

SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
55	7/8	1-7/8	12	CD40855	0.68
56	3/4	1-3/4	12	CD40856	0.68
57	3/4	1-3/4	12	CD40857	0.75
58	11/16	1-5/8	12	CD40858	0.75
59	11/16	1-5/8	12	CD40859	0.75
60	11/16	1-5/8	12	CD40860	0.75
61	11/16	1-5/8	12	CD40861	0.89
62	5/8	1-1/2	12	CD40862	0.89
63	5/8	1-1/2	12	CD40863	0.89
64	5/8	1-1/2	12	CD40864	0.89
65	5/8	1-1/2	12	CD40865	0.89
66	1/2	1-3/8	12	CD40866	0.89
67	1/2	1-3/8	12	CD40867	0.89
68	1/2	1-3/8	12	CD40868	0.89
69	1/2	1-3/8	12	CD40869	0.89
70	3/8	1-1/4	12	CD40870	0.89
71	3/8	1-1/4	12	CD40871	0.89
72	5/16	1-1/8	12	CD40872	0.89
73	5/16	1-1/8	12	CD40873	1.16
74	1/4	1	12	CD40874	1.16
75	1/4	1	12	CD40875	1.16
76	3/16	7/8	12	CD40876	1.16
77	3/16	7/8	12	CD40877	1.32
78	3/16	7/8	12	CD40878	1.32
79	1/8	3/4	12	CD40879	1.32
80	1/8	3/4	12	CD40880	1.32
-	-	-	-	-	-

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 191-192.

CARBIDE ENDMILLS  
 CARBIDE MICRO ENDMILLS  
 CARBIDE THREADMILLS  
 CARBIDE DRILL MILLS  
 CARBIDE CHAMFER MILLS  
 CARBIDE DRILLS  
 CARBIDE REAMERS  
 CARBIDE BURS  
 COUNTERSINKS  
 HSS & COBALT ENDMILLS  
 TAPS & DIES  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION



# High Speed Steel Drills

## JOBBER LENGTH - 118° POINT



**SERIES 475**  
TIN COATED

FRACTIONAL SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
1/16	7/8	1-7/8	12	CD47504	1.89
5/64	1	2	12	CD47505	1.89
3/32	1-1/4	2-1/4	12	CD47506	1.89
7/64	1-1/2	2-5/8	12	CD47507	1.92
1/8	1-5/8	2-3/4	12	CD47508	1.92
9/64	1-3/4	2-7/8	12	CD47509	2.01
5/32	2	3-1/8	12	CD47510	2.24
11/64	2-1/8	3-1/4	12	CD47511	2.27
3/16	2-5/16	3-1/2	12	CD47512	2.39
13/64	2-7/16	3-5/8	12	CD47513	3.40

FRACTIONAL SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
7/32	2-1/2	3-3/4	12	CD47514	3.49
15/64	2-5/8	3-7/8	12	CD47515	3.65
1/4	2-3/4	4	12	CD47516	3.74
17/64	2-7/8	4-1/8	6	CD47517	5.31
9/32	2-15/16	4-1/4	6	CD47518	5.90
19/64	3-1/16	4-3/8	6	CD47519	6.02
5/16	3-3/16	4-1/2	6	CD47520	6.36
21/64	3-5/16	4-5/8	6	CD47521	7.25
11/32	3-7/16	4-3/4	6	CD47522	7.63
23/64	3-1/2	4-7/8	6	CD47523	8.61

FRACTIONAL SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
3/8	3-5/8	5	6	CD47524	8.70
25/64	3-3/4	5-1/8	6	CD47525	10.77
13/32	3-7/8	5-1/4	6	CD47526	11.02
27/64	3-15/16	5-3/8	6	CD47527	11.40
7/16	4-1/16	5-1/2	6	CD47528	11.65
29/64	4-3/16	5-5/8	6	CD47529	12.79
15/32	4-5/16	5-3/4	6	CD47530	13.16
31/64	4-3/8	5-7/8	6	CD47531	13.27
1/2	4-1/2	6	6	CD47532	13.55
-	-	-	-	-	-

LETTER SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
A	2-5/8	3-7/8	12	CD47601	3.80
B	2-3/4	4	12	CD47602	3.89
C	2-3/4	4	12	CD47603	3.89
D	2-3/4	4	12	CD47604	3.89
E	2-3/4	4	12	CD47605	3.74
F	2-7/8	4-1/8	6	CD47606	6.42
G	2-7/8	4-1/8	6	CD47607	6.42
H	2-7/8	4-1/8	6	CD47608	6.42
I	2-7/8	4-1/8	6	CD47609	6.42

LETTER SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
J	2-7/8	4-1/8	6	CD47610	6.47
K	2-15/16	4-1/4	6	CD47611	6.96
L	2-15/16	4-1/4	6	CD47612	6.96
M	3-1/16	4-3/8	6	CD47613	7.08
N	3-1/16	4-3/8	6	CD47614	7.20
O	3-3/16	4-1/2	6	CD47615	7.20
P	3-5/16	4-5/8	6	CD47616	7.51
Q	3-7/16	4-3/4	6	CD47617	7.51
R	3-7/16	4-3/4	6	CD47618	7.71

LETTER SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
S	3-1/2	4-7/8	6	CD47619	9.72
T	3-1/2	4-7/8	6	CD47620	10.17
U	3-5/8	5	6	CD47621	10.17
V	3-5/8	5	6	CD47622	10.31
W	3-3/4	5-1/8	6	CD47623	11.93
X	3-3/4	5-1/8	6	CD47624	12.86
Y	3-7/8	5-1/4	6	CD47625	13.70
Z	3-7/8	5-1/4	6	CD47626	13.85
-	-	-	-	-	-

WIRE SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
1	2-5/8	3-7/8	12	CD47701	3.80
2	2-5/8	3-7/8	12	CD47702	3.80
3	2-1/2	3-3/4	12	CD47703	3.65
4	2-1/2	3-3/4	12	CD47704	3.65
5	2-1/2	3-3/4	12	CD47705	3.65
6	2-1/2	3-3/4	12	CD47706	3.65
7	2-7/16	3-5/8	12	CD47707	3.47
8	2-7/16	3-5/8	12	CD47708	3.47
9	2-7/16	3-5/8	12	CD47709	3.47
10	2-7/16	3-5/8	12	CD47710	3.47
11	2-5/16	3-1/2	12	CD47711	3.47
12	2-5/16	3-1/2	12	CD47712	2.84
13	2-5/16	3-1/2	12	CD47713	2.79
14	2-3/16	3-3/8	12	CD47714	2.79
15	2-3/16	3-3/8	12	CD47715	2.79
16	2-3/16	3-3/8	12	CD47716	2.79
17	2-3/16	3-3/8	12	CD47717	2.79
18	2-1/8	3-1/4	12	CD47718	2.48
19	2-1/8	3-1/4	12	CD47719	2.48
20	2-1/8	3-1/4	12	CD47720	2.48

WIRE SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
21	2-1/8	3-1/4	12	CD47721	2.45
22	2	3-1/8	12	CD47722	2.45
23	2	3-1/8	12	CD47723	2.42
24	2	3-1/8	12	CD47724	2.42
25	1-7/8	3	12	CD47725	2.38
26	1-7/8	3	12	CD47726	2.38
27	1-7/8	3	12	CD47727	2.38
28	1-3/4	2-7/8	12	CD47728	2.30
29	1-3/4	2-7/8	12	CD47729	2.30
30	1-5/8	2-3/4	12	CD47730	1.92
31	1-5/8	2-3/4	12	CD47731	1.92
32	1-5/8	2-3/4	12	CD47732	1.92
33	1-1/2	2-5/8	12	CD47733	1.92
34	1-1/2	2-5/8	12	CD47734	1.92
35	1-1/2	2-5/8	12	CD47735	1.92
36	1-7/16	2-1/2	12	CD47736	1.89
37	1-7/16	2-1/2	12	CD47737	1.89
38	1-7/16	2-1/2	12	CD47738	1.89
39	1-3/8	2-3/8	12	CD47739	1.89
40	1-3/8	2-3/8	12	CD47740	1.89

WIRE SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
41	1-3/8	2-3/8	12	CD47741	1.89
42	1-1/4	2-1/4	12	CD47742	1.89
43	1-1/4	2-1/4	12	CD47743	1.89
44	1-1/8	2-1/8	12	CD47744	1.89
45	1-1/8	2-1/8	12	CD47745	1.89
46	1-1/8	2-1/8	12	CD47746	1.89
47	1	2	12	CD47747	1.89
48	1	2	12	CD47748	1.89
49	1	2	12	CD47749	1.89
50	1	2	12	CD47750	1.89
51	1	2	12	CD47751	1.89
52	7/8	1-7/8	12	CD47752	1.89
53	7/8	1-7/8	12	CD47753	1.89
54	7/8	1-7/8	12	CD47754	1.89
55	7/8	1-7/8	12	CD47755	1.89
56	3/4	1-3/4	12	CD47756	1.89
57	3/4	1-3/4	12	CD47757	1.89
58	11/16	1-5/8	12	CD47758	1.89
59	11/16	1-5/8	12	CD47759	1.89
60	11/16	1-5/8	12	CD47760	1.89

FOR COATING INFORMATION SEE PAGE 2.  
FOR TECHNICAL INFORMATION PLEASE SEE PAGES 191-192.

HSS JOBBER DRILLS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# High Speed Steel Drills

## JOBBER LENGTH - 118° POINT



### SERIES 400 OXIDE FINISH

FRACTIONAL SIZES						FRACTIONAL SIZES						FRACTIONAL SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
1/64	3/16	3/4	12	CD40001	1.54	1/4	2-3/4	4	12	CD40016	1.23	31/64	4-3/8	5-7/8	6	CD40031	5.00
1/32	1/2	1-3/8	12	CD40002	1.09	17/64	2-7/8	4-1/8	6	CD40017	1.77	1/2	4-1/2	6	6	CD40032	5.22
3/64	3/4	1-3/4	12	CD40003	1.09	9/32	2-15/16	4-1/4	6	CD40018	1.89	33/64	4-13/16	6-5/8	1	CD40033	12.47
1/16	7/8	1-7/8	12	CD40004	0.67	19/64	3-1/16	4-3/8	6	CD40019	2.07	17/32	4-13/16	6-5/8	1	CD40034	13.06
5/64	1	2	12	CD40005	0.67	5/16	3-3/16	4-1/2	6	CD40020	2.16	35/64	4-13/16	6-5/8	1	CD40035	14.14
3/32	1-1/4	2-1/4	12	CD40006	0.67	21/64	3-5/16	4-5/8	6	CD40021	2.41	9/16	4-13/16	6-5/8	1	CD40036	14.81
7/64	1-1/2	2-5/8	12	CD40007	0.67	11/32	3-7/16	4-3/4	6	CD40022	2.58	37/64	4-13/16	6-5/8	1	CD40037	14.85
1/8	1-5/8	2-3/4	12	CD40008	0.67	23/64	3-1/2	4-7/8	6	CD40023	2.84	19/32	5-3/16	7-1/8	1	CD40038	15.26
9/64	1-3/4	2-7/8	12	CD40009	0.71	3/8	3-5/8	5	6	CD40024	2.98	39/64	5-3/16	7-1/8	1	CD40039	16.76
5/32	2	3-1/8	12	CD40010	0.74	25/64	3-3/4	5-1/8	6	CD40025	3.22	5/8	5-3/16	7-1/8	1	CD40040	16.37
11/64	2-1/8	3-1/4	12	CD40011	0.79	13/32	3-7/8	5-1/4	6	CD40026	3.52	41/64	5-3/16	7-1/8	1	CD40041	17.90
3/16	2-5/16	3-1/2	12	CD40012	0.86	27/64	3-15/16	5-3/8	6	CD40027	3.74	21/32	5-3/16	7-1/8	1	CD40042	17.29
13/64	2-7/16	3-5/8	12	CD40013	0.98	7/16	4-1/16	5-1/2	6	CD40028	4.09	43/64	5-5/8	7-5/8	1	CD40043	20.32
7/32	2-1/2	3-3/4	12	CD40014	1.08	29/64	4-3/16	5-5/8	6	CD40029	4.36	11/16	5-5/8	7-5/8	1	CD40044	19.88
15/64	2-5/8	3-7/8	12	CD40015	1.21	15/32	4-5/16	5-3/4	6	CD40030	4.74	-	-	-	-	-	-

LETTER SIZES						LETTER SIZES						LETTER SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
A	2-5/8	3-7/8	12	CD40301	1.21	J	2-7/8	4-1/8	6	CD40310	1.85	S	3-1/2	4-7/8	6	CD40319	2.84
B	2-3/4	4	12	CD40302	1.23	K	2-15/16	4-1/4	6	CD40311	1.89	T	3-1/2	4-7/8	6	CD40320	2.98
C	2-3/4	4	12	CD40303	1.23	L	2-15/16	4-1/4	6	CD40312	1.97	U	3-5/8	5	6	CD40321	3.22
D	2-3/4	4	12	CD40304	1.28	M	3-1/16	4-3/8	6	CD40313	2.08	V	3-5/8	5	6	CD40322	3.33
E	2-3/4	4	12	CD40305	1.29	N	3-1/16	4-3/8	6	CD40314	2.16	W	3-3/4	5-1/8	6	CD40323	3.55
F	2-7/8	4-1/8	6	CD40306	1.79	O	3-3/16	4-1/2	6	CD40315	2.34	X	3-3/4	5-1/8	6	CD40324	3.76
G	2-7/8	4-1/8	6	CD40307	1.71	P	3-5/16	4-5/8	6	CD40316	2.51	Y	3-7/8	5-1/4	6	CD40325	3.94
H	2-7/8	4-1/8	6	CD40308	1.75	Q	3-7/16	4-3/4	6	CD40317	2.61	Z	3-7/8	5-1/4	6	CD40326	4.03
I	2-7/8	4-1/8	6	CD40309	1.79	R	3-7/16	4-3/4	6	CD40318	2.71	-	-	-	-	-	-

WIRE SIZES						WIRE SIZES						WIRE SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
1	2-5/8	3-7/8	12	CD40201	1.32	28	1-3/4	2-7/8	12	CD40228	0.64	55	7/8	1-7/8	12	CD40255	0.68
2	2-5/8	3-7/8	12	CD40202	1.32	29	1-3/4	2-7/8	12	CD40229	0.64	56	3/4	1-3/4	12	CD40256	0.68
3	2-1/2	3-3/4	12	CD40203	1.21	30	1-5/8	2-3/4	12	CD40230	0.63	57	3/4	1-3/4	12	CD40257	0.75
4	2-1/2	3-3/4	12	CD40204	1.21	31	1-5/8	2-3/4	12	CD40231	0.61	58	11/16	1-5/8	12	CD40258	0.75
5	2-1/2	3-3/4	12	CD40205	1.19	32	1-5/8	2-3/4	12	CD40232	0.61	59	11/16	1-5/8	12	CD40259	0.75
6	2-1/2	3-3/4	12	CD40206	1.19	33	1-1/2	2-5/8	12	CD40233	0.61	60	11/16	1-5/8	12	CD40260	0.75
7	2-7/16	3-5/8	12	CD40207	1.15	34	1-1/2	2-5/8	12	CD40234	0.61	61	11/16	1-5/8	12	CD40261	0.89
8	2-7/16	3-5/8	12	CD40208	1.15	35	1-1/2	2-5/8	12	CD40235	0.61	62	5/8	1-1/2	12	CD40262	0.89
9	2-7/16	3-5/8	12	CD40209	1.13	36	1-7/16	2-1/2	12	CD40236	0.61	63	5/8	1-1/2	12	CD40263	0.89
10	2-7/16	3-5/8	12	CD40210	1.04	37	1-7/16	2-1/2	12	CD40237	0.61	64	5/8	1-1/2	12	CD40264	0.89
11	2-5/16	3-1/2	12	CD40211	1.04	38	1-7/16	2-1/2	12	CD40238	0.61	65	5/8	1-1/2	12	CD40265	0.89
12	2-5/16	3-1/2	12	CD40212	1.04	39	1-3/8	2-3/8	12	CD40239	0.61	66	1/2	1-3/8	12	CD40266	0.89
13	2-5/16	3-1/2	12	CD40213	1.04	40	1-3/8	2-3/8	12	CD40240	0.61	67	1/2	1-3/8	12	CD40267	0.89
14	2-3/16	3-3/8	12	CD40214	0.98	41	1-3/8	2-3/8	12	CD40241	0.61	68	1/2	1-3/8	12	CD40268	0.89
15	2-3/16	3-3/8	12	CD40215	0.98	42	1-1/4	2-1/4	12	CD40242	0.61	69	1/2	1-3/8	12	CD40269	0.89
16	2-3/16	3-3/8	12	CD40216	0.98	43	1-1/4	2-1/4	12	CD40243	0.61	70	3/8	1-1/4	12	CD40270	0.89
17	2-3/16	3-3/8	12	CD40217	0.94	44	1-1/8	2-1/8	12	CD40244	0.61	71	3/8	1-1/4	12	CD40271	0.89
18	2-1/8	3-1/4	12	CD40218	0.94	45	1-1/8	2-1/8	12	CD40245	0.64	72	5/16	1-1/8	12	CD40272	0.89
19	2-1/8	3-1/4	12	CD40219	0.94	46	1-1/8	2-1/8	12	CD40246	0.64	73	5/16	1-1/8	12	CD40273	1.16
20	2-1/8	3-1/4	12	CD40220	0.84	47	1	2	12	CD40247	0.64	74	1/4	1	12	CD40274	1.16
21	2-1/8	3-1/4	12	CD40221	0.84	48	1	2	12	CD40248	0.64	75	1/4	1	12	CD40275	1.16
22	2	3-1/8	12	CD40222	0.81	49	1	2	12	CD40249	0.64	76	3/16	7/8	12	CD40276	1.16
23	2	3-1/8	12	CD40223	0.81	50	1	2	12	CD40250	0.64	77	3/16	7/8	12	CD40277	1.32
24	2	3-1/8	12	CD40224	0.81	51	1	2	12	CD40251	0.64	78	3/16	7/8	12	CD40278	1.32
25	1-7/8	3	12	CD40225	0.69	52	7/8	1-7/8	12	CD40252	0.64	79	1/8	3/4	12	CD40279	1.32
26	1-7/8	3	12	CD40226	0.69	53	7/8	1-7/8	12	CD40253	0.64	80	1/8	3/4	12	CD40280	1.32
27	1-7/8	3	12	CD40227	0.69	54	7/8	1-7/8	12	CD40254	0.68	-	-	-	-	-	-

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 191-192.

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION

HSS JOBBER DRILLS





# High Speed Steel Drills

JOBBER LENGTH - 118° POINT



**SERIES 420**  
OXIDE FINISH

METRIC SIZES						METRIC SIZES					
SIZE (mm)	FLUTE LENGTH	OVERALL LENGTH	PKG. QTY.	ITEM#	PRICE	SIZE (mm)	FLUTE LENGTH	OVERALL LENGTH	PKG. QTY.	ITEM#	PRICE
1.00	12	34	12	CD42100	0.87	5.20	52	86	12	CD42520	1.64
1.05	12	34	12	CD42105	0.96	5.30	52	86	12	CD42530	1.68
1.10	14	36	12	CD42110	0.92	5.40	57	93	12	CD42540	1.80
1.15	14	36	12	CD42115	0.93	5.50	57	93	12	CD42550	1.59
1.20	16	38	12	CD42120	0.92	5.60	57	93	12	CD42560	1.88
1.25	16	38	12	CD42125	0.93	5.70	57	93	12	CD42570	1.89
1.30	16	38	12	CD42130	0.92	5.80	57	93	12	CD42580	1.94
1.35	18	40	12	CD42135	0.96	5.90	57	93	12	CD42590	1.94
1.40	18	40	12	CD42140	0.92	6.00	57	93	12	CD42600	1.73
1.45	18	40	12	CD42145	0.96	6.10	63	101	12	CD42610	2.04
1.50	18	40	12	CD42150	0.92	6.20	63	101	12	CD42620	2.15
1.55	20	43	12	CD42155	0.96	6.30	63	101	12	CD42630	2.16
1.60	20	43	12	CD42160	0.92	6.40	63	101	6	CD42640	2.25
1.65	20	43	12	CD42165	0.93	6.50	63	101	6	CD42650	2.21
1.70	20	43	12	CD42170	0.93	6.60	63	101	6	CD42660	2.34
1.75	22	46	12	CD42175	0.96	6.70	63	101	6	CD42670	2.39
1.80	22	46	12	CD42180	0.93	6.80	69	109	6	CD42680	2.43
1.85	22	46	12	CD42185	0.96	6.90	69	109	6	CD42690	2.61
1.90	22	46	12	CD42190	0.93	7.00	69	109	6	CD42700	2.30
1.95	24	49	12	CD42195	0.96	7.10	69	109	6	CD42710	2.69
2.00	24	49	12	CD42200	0.93	7.20	69	109	6	CD42720	2.74
2.05	24	49	12	CD42205	0.96	7.30	69	109	6	CD42730	2.87
2.10	24	49	12	CD42210	0.96	7.40	69	109	6	CD42740	2.92
2.15	27	53	12	CD42215	0.98	7.50	69	109	6	CD42750	2.74
2.20	27	53	12	CD42220	0.96	7.60	75	117	6	CD42760	3.05
2.25	27	53	12	CD42225	1.01	7.70	75	117	6	CD42770	3.17
2.30	27	53	12	CD42230	0.96	7.80	75	117	6	CD42780	3.26
2.35	27	53	12	CD42235	1.05	7.90	75	117	6	CD42790	3.28
2.40	30	57	12	CD42240	0.98	8.00	75	117	6	CD42800	3.01
2.45	30	57	12	CD42245	1.10	8.10	75	117	6	CD42810	3.28
2.50	30	57	12	CD42250	0.98	8.20	75	117	6	CD42820	3.37
2.60	30	57	12	CD42260	1.07	8.30	75	117	6	CD42830	3.44
2.70	33	61	12	CD42270	1.07	8.40	75	117	6	CD42840	3.53
2.80	33	61	12	CD42280	1.10	8.50	75	117	6	CD42850	3.44
2.90	33	61	12	CD42290	1.10	8.60	81	125	6	CD42860	3.67
3.00	33	61	12	CD42300	1.02	8.70	81	125	6	CD42870	3.76
3.10	36	65	12	CD42310	1.16	8.80	81	125	6	CD42880	3.80
3.20	36	65	12	CD42320	1.23	8.90	81	125	6	CD42890	4.01
3.30	36	65	12	CD42330	1.16	9.00	81	125	6	CD42900	3.88
3.40	39	70	12	CD42340	1.19	9.10	81	125	6	CD42910	4.23
3.50	39	70	12	CD42350	1.07	9.20	81	125	6	CD42920	4.32
3.60	39	70	12	CD42360	1.25	9.30	81	125	6	CD42930	4.37
3.70	39	70	12	CD42370	1.28	9.40	81	125	6	CD42940	4.37
3.80	43	75	12	CD42380	1.31	9.50	81	125	6	CD42950	4.06
3.90	43	75	12	CD42390	1.32	9.60	87	133	6	CD42960	4.41
4.00	43	75	12	CD42400	1.11	9.70	87	133	6	CD42970	4.54
4.10	43	75	12	CD42410	1.35	9.80	87	133	6	CD42980	4.54
4.20	43	75	12	CD42420	1.35	9.90	87	133	6	CD42990	4.59
4.30	47	80	12	CD42430	1.37	10.00	87	133	6	CD43100	4.36
4.40	47	80	12	CD42440	1.46	10.20	87	133	6	CD43102	4.72
4.50	47	80	12	CD42450	1.25	10.50	87	133	6	CD43105	4.96
4.60	47	80	12	CD42460	1.50	11.00	94	142	6	CD43110	5.09
4.70	47	80	12	CD42470	1.37	11.20	94	142	6	CD43112	5.82
4.80	52	86	12	CD42480	1.50	11.50	94	142	6	CD43115	5.73
4.90	52	86	12	CD42490	1.55	12.00	101	151	6	CD43120	6.31
5.00	52	86	12	CD42500	1.41	12.50	101	151	6	CD43125	6.45
5.10	52	86	12	CD42510	1.64	13.00	101	151	6	CD43130	10.69

NOTE: ALL DIMENSIONS IN TABLE ARE METRIC (mm)

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 191-192.





# High Speed Steel Drills

## JOBBER LENGTH - HEAVY DUTY - 135° SPLIT POINT - TYPE "B"



**SERIES 440**  
OXIDE FINISH

FRACTIONAL SIZES						FRACTIONAL SIZES						FRACTIONAL SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
1/16	7/8	1-7/8	12	CD44004	0.67	7/32	2-1/2	3-3/4	12	CD44014	1.26	3/8	3-5/8	5	6	CD44024	3.42
5/64	1	2	12	CD44005	0.67	15/64	2-5/8	3-7/8	12	CD44015	1.38	25/64	3-3/4	5-1/8	6	CD44025	3.72
3/32	1-1/4	2-1/4	12	CD44006	0.67	1/4	2-3/4	4	12	CD44016	1.46	13/32	3-7/8	5-1/4	6	CD44026	4.03
7/64	1-1/2	2-5/8	12	CD44007	0.67	17/64	2-7/8	4-1/8	6	CD44017	2.02	27/64	3-15/16	5-3/8	6	CD44027	4.34
1/8	1-5/8	2-3/4	12	CD44008	0.67	9/32	2-15/16	4-1/4	6	CD44018	2.18	7/16	4-1/16	5-1/2	6	CD44028	4.71
9/64	1-3/4	2-7/8	12	CD44009	0.72	19/64	3-1/16	4-3/8	6	CD44019	2.41	29/64	4-3/16	5-5/8	6	CD44029	5.02
5/32	2	3-1/8	12	CD44010	0.88	5/16	3-3/16	4-1/2	6	CD44020	2.48	15/32	4-5/16	5-3/4	6	CD44030	5.46
11/64	2-1/8	3-1/4	12	CD44011	0.94	21/64	3-5/16	4-5/8	6	CD44021	2.81	31/64	4-3/8	5-7/8	6	CD44031	5.77
3/16	2-5/16	3-1/2	12	CD44012	1.06	11/32	3-7/16	4-3/4	6	CD44022	2.98	1/2	4-1/2	6	6	CD44032	6.07
13/64	2-7/16	3-5/8	12	CD44013	1.15	23/64	3-1/2	4-7/8	6	CD44023	3.13	-	-	-	-	-	-

LETTER SIZES						LETTER SIZES						LETTER SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
A	2-5/8	3-7/8	12	CD44301	1.58	J	2-7/8	4-1/8	6	CD44310	2.43	S	3-1/2	4-7/8	6	CD44319	3.83
B	2-3/4	4	12	CD44302	1.58	K	2-15/16	4-1/4	6	CD44311	2.43	T	3-1/2	4-7/8	6	CD44320	3.83
C	2-3/4	4	12	CD44303	1.58	L	2-15/16	4-1/4	6	CD44312	2.43	U	3-5/8	5	6	CD44321	4.07
D	2-3/4	4	12	CD44304	1.58	M	3-1/16	4-3/8	6	CD44313	2.98	V	3-5/8	5	6	CD44322	4.07
E	2-3/4	4	12	CD44305	1.58	N	3-1/16	4-3/8	6	CD44314	2.98	W	3-3/4	5-1/8	6	CD44323	4.62
F	2-7/8	4-1/8	6	CD44306	2.00	O	3-3/16	4-1/2	6	CD44315	2.98	X	3-3/4	5-1/8	6	CD44324	4.62
G	2-7/8	4-1/8	6	CD44307	2.00	P	3-5/16	4-5/8	6	CD44316	3.36	Y	3-7/8	5-1/4	6	CD44325	5.04
H	2-7/8	4-1/8	6	CD44308	2.00	Q	3-7/16	4-3/4	6	CD44317	3.36	Z	3-7/8	5-1/4	6	CD44326	5.04
I	2-7/8	4-1/8	6	CD44309	2.00	R	3-7/16	4-3/4	6	CD44318	3.36	-	-	-	-	-	-

WIRE SIZES						WIRE SIZES						WIRE SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
1	2-5/8	3-7/8	12	CD44201	1.36	21	2-1/8	3-1/4	12	CD44221	1.08	41	1-3/8	2-3/8	12	CD44241	0.91
2	2-5/8	3-7/8	12	CD44202	1.36	22	2	3-1/8	12	CD44222	1.08	42	1-1/4	2-1/4	12	CD44242	0.91
3	2-1/2	3-3/4	12	CD44203	1.26	23	2	3-1/8	12	CD44223	1.08	43	1-1/4	2-1/4	12	CD44243	0.91
4	2-1/2	3-3/4	12	CD44204	1.26	24	2	3-1/8	12	CD44224	1.08	44	1-1/8	2-1/8	12	CD44244	0.91
5	2-1/2	3-3/4	12	CD44205	1.26	25	1-7/8	3	12	CD44225	1.08	45	1-1/8	2-1/8	12	CD44245	0.91
6	2-1/2	3-3/4	12	CD44206	1.26	26	1-7/8	3	12	CD44226	1.08	46	1-1/8	2-1/8	12	CD44246	0.91
7	2-7/16	3-5/8	12	CD44207	1.19	27	1-7/8	3	12	CD44227	1.08	47	1	2	12	CD44247	0.91
8	2-7/16	3-5/8	12	CD44208	1.21	28	1-3/4	2-7/8	12	CD44228	1.08	48	1	2	12	CD44248	0.91
9	2-7/16	3-5/8	12	CD44209	1.21	29	1-3/4	2-7/8	12	CD44229	0.86	49	1	2	12	CD44249	0.91
10	2-7/16	3-5/8	12	CD44210	1.09	30	1-5/8	2-3/4	12	CD44230	0.86	50	1	2	12	CD44250	0.91
11	2-5/16	3-1/2	12	CD44211	1.09	31	1-5/8	2-3/4	12	CD44231	0.95	51	1	2	12	CD44251	0.91
12	2-5/16	3-1/2	12	CD44212	1.09	32	1-5/8	2-3/4	12	CD44232	0.95	52	7/8	1-7/8	12	CD44252	0.91
13	2-5/16	3-1/2	12	CD44213	1.21	33	1-1/2	2-5/8	12	CD44233	0.95	53	7/8	1-7/8	12	CD44253	0.91
14	2-3/16	3-3/8	12	CD44214	1.21	34	1-1/2	2-5/8	12	CD44234	0.95	54	7/8	1-7/8	12	CD44254	0.91
15	2-3/16	3-3/8	12	CD44215	1.21	35	1-1/2	2-5/8	12	CD44235	0.95	55	7/8	1-7/8	12	CD44255	0.91
16	2-3/16	3-3/8	12	CD44216	1.21	36	1-7/16	2-1/2	12	CD44236	0.95	56	3/4	1-3/4	12	CD44256	0.91
17	2-3/16	3-3/8	12	CD44217	1.21	37	1-7/16	2-1/2	12	CD44237	0.95	57	3/4	1-3/4	12	CD44257	0.91
18	2-1/8	3-1/4	12	CD44218	1.21	38	1-7/16	2-1/2	12	CD44238	0.95	58	11/16	1-5/8	12	CD44258	0.91
19	2-1/8	3-1/4	12	CD44219	1.15	39	1-3/8	2-3/8	12	CD44239	0.95	59	11/16	1-5/8	12	CD44259	0.91
20	2-1/8	3-1/4	12	CD44220	1.15	40	1-3/8	2-3/8	12	CD44240	0.95	60	11/16	1-5/8	12	CD44260	0.91

NOTE: SIZES BELOW 1/16" ARE NOT SPLIT POINT.  
FOR TECHNICAL INFORMATION PLEASE SEE PAGES 191-192.

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
HSS JOBBER DRILLS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# High Speed Steel Drills

## JOBBER LENGTH - HEAVY DUTY - 135° SPLIT POINT - TYPE "B"



**SERIES 445  
BLACK & GOLD**

### FRACTIONAL SIZES

SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
1/16	7/8	1-7/8	12	CD44504	0.77
5/64	1	2	12	CD44505	0.84
3/32	1-1/4	2-1/4	12	CD44506	0.77
7/64	1-1/2	2-5/8	12	CD44507	0.79
1/8	1-5/8	2-3/4	12	CD44508	0.88
9/64	1-3/4	2-7/8	12	CD44509	0.92
5/32	2	3-1/8	12	CD44510	1.11
11/64	2-1/8	3-1/4	12	CD44511	1.16
3/16	2-5/16	3-1/2	12	CD44512	1.29
13/64	2-7/16	3-5/8	12	CD44513	1.40

### FRACTIONAL SIZES

SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
7/32	2-1/2	3-3/4	12	CD44514	1.53
15/64	2-5/8	3-7/8	12	CD44515	1.69
1/4	2-3/4	4	12	CD44516	1.77
17/64	2-7/8	4-1/8	6	CD44517	2.38
9/32	2-15/16	4-1/4	6	CD44518	2.57
19/64	3-1/16	4-3/8	6	CD44519	2.82
5/16	3-3/16	4-1/2	6	CD44520	2.92
21/64	3-5/16	4-5/8	6	CD44521	3.22
11/32	3-7/16	4-3/4	6	CD44522	3.45
23/64	3-1/2	4-7/8	6	CD44523	3.73

### FRACTIONAL SIZES

SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
3/8	3-5/8	5	6	CD44524	3.90
25/64	3-3/4	5-1/8	6	CD44525	4.24
13/32	3-7/8	5-1/4	6	CD44526	4.67
27/64	3-15/16	5-3/8	6	CD44527	4.98
7/16	4-1/16	5-1/2	6	CD44528	5.36
29/64	4-3/16	5-5/8	6	CD44529	5.70
15/32	4-5/16	5-3/4	6	CD44530	6.20
31/64	4-3/8	5-7/8	6	CD44531	6.54
1/2	4-1/2	6	6	CD44532	6.84
-	-	-	-	-	-

### LETTER SIZES

SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
A	2-5/8	3-7/8	12	CD44801	2.48
B	2-3/4	4	12	CD44802	2.48
C	2-3/4	4	12	CD44803	2.48
D	2-3/4	4	12	CD44804	2.41
E	2-3/4	4	12	CD44805	2.00
F	2-7/8	4-1/8	6	CD44806	2.69
G	2-7/8	4-1/8	6	CD44807	2.91
H	2-7/8	4-1/8	6	CD44808	2.97
I	2-7/8	4-1/8	6	CD44809	2.97

### LETTER SIZES

SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
J	2-7/8	4-1/8	6	CD44810	3.15
K	2-15/16	4-1/4	6	CD44811	3.51
L	2-15/16	4-1/4	6	CD44812	3.39
M	3-1/16	4-3/8	6	CD44813	3.73
N	3-1/16	4-3/8	6	CD44814	3.73
O	3-3/16	4-1/2	6	CD44815	3.73
P	3-5/16	4-5/8	6	CD44816	4.17
Q	3-7/16	4-3/4	6	CD44817	4.29
R	3-7/16	4-3/4	6	CD44818	4.47

### LETTER SIZES

SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
S	3-1/2	4-7/8	6	CD44819	4.83
T	3-1/2	4-7/8	6	CD44820	5.43
U	3-5/8	5	6	CD44821	5.43
V	3-5/8	5	6	CD44822	5.53
W	3-3/4	5-1/8	6	CD44823	6.78
X	3-3/4	5-1/8	6	CD44824	8.00
Y	3-7/8	5-1/4	6	CD44825	8.10
Z	3-7/8	5-1/4	6	CD44826	8.28
-	-	-	-	-	-

### WIRE SIZES

SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
1	2-5/8	3-7/8	12	CD44701	2.30
2	2-5/8	3-7/8	12	CD44702	2.30
3	2-1/2	3-3/4	12	CD44703	2.15
4	2-1/2	3-3/4	12	CD44704	2.15
5	2-1/2	3-3/4	12	CD44705	2.15
6	2-1/2	3-3/4	12	CD44706	2.15
7	2-7/16	3-5/8	12	CD44707	1.89
8	2-7/16	3-5/8	12	CD44708	1.89
9	2-7/16	3-5/8	12	CD44709	1.89
10	2-7/16	3-5/8	12	CD44710	1.85
11	2-5/16	3-1/2	12	CD44711	1.71
12	2-5/16	3-1/2	12	CD44712	1.71
13	2-5/16	3-1/2	12	CD44713	1.64
14	2-3/16	3-3/8	12	CD44714	1.64
15	2-3/16	3-3/8	12	CD44715	1.64
16	2-3/16	3-3/8	12	CD44716	1.64
17	2-3/16	3-3/8	12	CD44717	1.64
18	2-1/8	3-1/4	12	CD44718	1.44
19	2-1/8	3-1/4	12	CD44719	1.44
20	2-1/8	3-1/4	12	CD44720	1.44

### WIRE SIZES

SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
21	2-1/8	3-1/4	12	CD44721	1.43
22	2	3-1/8	12	CD44722	1.43
23	2	3-1/8	12	CD44723	1.39
24	2	3-1/8	12	CD44724	1.39
25	1-7/8	3	12	CD44725	1.39
26	1-7/8	3	12	CD44726	1.39
27	1-7/8	3	12	CD44727	1.35
28	1-3/4	2-7/8	12	CD44728	1.35
29	1-3/4	2-7/8	12	CD44729	1.32
30	1-5/8	2-3/4	12	CD44730	1.15
31	1-5/8	2-3/4	12	CD44731	1.15
32	1-5/8	2-3/4	12	CD44732	1.15
33	1-1/2	2-5/8	12	CD44733	1.15
34	1-1/2	2-5/8	12	CD44734	1.15
35	1-1/2	2-5/8	12	CD44735	1.15
36	1-7/16	2-1/2	12	CD44736	1.11
37	1-7/16	2-1/2	12	CD44737	1.11
38	1-7/16	2-1/2	12	CD44738	1.11
39	1-3/8	2-3/8	12	CD44739	1.11
40	1-3/8	2-3/8	12	CD44740	1.11

### WIRE SIZES

SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
41	1-3/8	2-3/8	12	CD44741	1.11
42	1-1/4	2-1/4	12	CD44742	1.11
43	1-1/4	2-1/4	12	CD44743	1.11
44	1-1/8	2-1/8	12	CD44744	1.11
45	1-1/8	2-1/8	12	CD44745	1.11
46	1-1/8	2-1/8	12	CD44746	1.11
47	1	2	12	CD44747	1.11
48	1	2	12	CD44748	1.11
49	1	2	12	CD44749	1.11
50	1	2	12	CD44750	1.11
51	1	2	12	CD44751	1.11
52	7/8	1-7/8	12	CD44752	1.04
53	7/8	1-7/8	12	CD44753	1.04
54	7/8	1-7/8	12	CD44754	1.04
55	7/8	1-7/8	12	CD44755	1.04
56	3/4	1-3/4	12	CD44756	1.04
57	3/4	1-3/4	12	CD44757	1.04
58	11/16	1-5/8	12	CD44758	1.04
59	11/16	1-5/8	12	CD44759	1.04
60	11/16	1-5/8	12	CD44760	1.04

NOTE: SIZES BELOW 1/16" ARE NOT SPLIT POINT.  
FOR TECHNICAL INFORMATION PLEASE SEE PAGES 191-192.

HSS JOBBER DRILLS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION

# High Speed Steel Drills

**MECHANICS LENGTH - HEAVY DUTY - 135° SPLIT POINT - TYPE "B"**



**SERIES 455  
BLACK & GOLD**

FRACTIONAL SIZES					
SIZE	FLUTE LENGTH	OVERALL LENGTH	PACKAGE QUANTITY	ITEM#	PRICE
1/16	7/8	1-7/8	12	CD45504	0.91
5/64	1	2	12	CD45505	0.98
3/32	1-1/4	2-1/4	12	CD45506	0.98
7/64	1-5/16	2-3/8	12	CD45507	1.01
1/8	1-7/16	2-1/2	12	CD45508	1.05
9/64	1-9/16	2-5/8	12	CD45509	1.08
5/32	1-11/16	2-3/4	12	CD45510	1.29
11/64	1-13/16	2-7/8	12	CD45511	1.32
3/16	1-7/8	3	12	CD45512	1.50
13/64	1-15/16	3-1/8	12	CD45513	1.63
7/32	2	3-1/4	12	CD45514	1.81
15/64	2-1/16	3-3/8	12	CD45515	1.94
1/4	2	3-1/2	12	CD45516	2.06
17/64	2-1/8	3-5/8	6	CD45517	2.58
9/32	2-1/4	3-3/4	6	CD45518	2.58
19/64	2-3/8	3-7/8	6	CD45519	3.06
5/16	2-1/2	4	6	CD45520	3.28
21/64	2-9/16	4-1/16	6	CD45521	3.49
11/32	2-5/8	4-1/8	6	CD45522	3.80
23/64	2-11/16	4-3/16	6	CD45523	4.04
3/8	2-11/16	4-1/4	6	CD45524	4.28
25/64	2-3/4	4-5/16	6	CD45525	4.55
13/32	2-13/16	4-3/8	6	CD45526	4.91
27/64	2-7/8	4-7/16	6	CD45527	5.53
7/16	2-15/16	4-1/2	6	CD45528	5.84
29/64	3	4-5/8	6	CD45529	6.37
15/32	3-1/8	4-3/4	6	CD45530	6.82
31/64	3-1/4	4-7/8	6	CD45531	6.96
1/2	3-3/8	5	6	CD45532	7.15

**SIZES 3/16" TO 1/2" - HAVE 3 FLATS;  
SIZES 27/64" AND HIGHER - HAVE 3/8" REDUCED FLATTED SHANKS**

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 191-192.

**HSS MECHANICS LENGTH DRILLS**

CARBIDE ENDMILLS

CARBIDE MICRO ENDMILLS

CARBIDE THREADMILLS

CARBIDE DRILL MILLS

CARBIDE CHAMFER MILLS

CARBIDE DRILLS

CARBIDE REAMERS

CARBIDE BURS

COUNTERSINKS

HSS & COBALT ENDMILLS

TAPS & DIES

HSS & COBALT DRILLS

HSS & COBALT REAMERS

TECHNICAL INFORMATION



# High Speed Steel Drills

## SCREW MACHINE LENGTH - HEAVY DUTY - 135° SPLIT POINT - TYPE "C"



**SERIES 300**  
OXIDE FINISH

FRACTIONAL SIZES						FRACTIONAL SIZES						FRACTIONAL SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
1/16	5/8	1-5/8	12	CD30004	0.78	7/32	1-1/4	2-3/8	12	CD30014	1.18	3/8	1-13/16	3-1/8	6	CD30024	2.61
5/64	11/16	1-11/16	12	CD30005	0.79	15/64	1-5/16	2-7/16	12	CD30015	1.36	25/64	1-7/8	3-1/4	6	CD30025	2.77
3/32	3/4	1-3/4	12	CD30006	0.79	1/4	1-3/8	2-1/2	12	CD30016	1.50	13/32	1-15/16	3-5/16	6	CD30026	3.03
7/64	13/16	1-13/16	12	CD30007	0.79	17/64	1-7/16	2-5/8	6	CD30017	1.55	27/64	2	3-3/8	6	CD30027	3.20
1/8	7/8	1-7/8	12	CD30008	0.79	9/32	1-1/2	2-11/16	6	CD30018	1.63	7/16	1-1/16	3-7/16	6	CD30028	3.50
9/64	15/16	1-15/16	12	CD30009	0.79	19/64	1-9/16	2-3/4	6	CD30019	1.77	29/64	2-1/8	3-9/16	6	CD30029	3.72
5/32	1	2-1/16	12	CD30010	0.86	5/16	1-5/8	2-13/16	6	CD30020	1.89	15/32	2-1/8	3-5/8	6	CD30030	4.09
11/64	1-1/16	2-1/8	12	CD30011	0.86	21/64	1-11/16	2-15/16	6	CD30021	2.12	31/64	2-3/16	3-11/16	6	CD30031	4.24
3/16	1-1/8	2-3/16	12	CD30012	1.01	11/32	1-11/16	3	6	CD30022	2.25	1/2	2-1/4	3-3/4	6	CD30032	4.47
13/64	1-3/16	2-1/4	12	CD30013	1.04	23/64	1-3/4	3-1/16	6	CD30023	2.40	-	-	-	-	-	-

LETTER SIZES						LETTER SIZES						LETTER SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
A	1-5/16	2-7/16	12	CD30301	1.63	J	1-1/2	2-11/16	6	CD30310	2.52	S	1-3/4	3-1/16	6	CD30319	3.69
B	1-3/8	2-1/2	12	CD30302	1.71	K	1-1/2	2-11/16	6	CD30311	2.57	T	1-3/4	3-1/16	6	CD30320	3.77
C	1-3/8	2-1/2	12	CD30303	1.71	L	1-9/16	2-3/4	6	CD30312	2.62	U	1-13/16	3-1/8	6	CD30321	4.07
D	1-3/8	2-1/2	12	CD30304	1.73	M	1-9/16	2-3/4	6	CD30313	2.75	V	1-7/8	3-1/4	6	CD30322	4.32
E	1-3/8	2-1/2	12	CD30305	1.73	N	1-5/8	2-13/16	6	CD30314	2.87	W	1-7/8	3-1/4	6	CD30323	4.48
F	1-7/16	2-5/8	6	CD30306	2.23	O	1-11/16	2-15/16	6	CD30315	3.22	X	1-15/16	3-5/16	6	CD30324	4.75
G	1-7/16	2-5/8	6	CD30307	2.38	P	1-11/16	2-15/16	6	CD30316	3.30	Y	1-15/16	3-5/16	6	CD30325	4.85
H	1-1/2	2-11/16	6	CD30308	2.45	Q	1-11/16	3	6	CD30317	3.45	Z	2	3-3/8	6	CD30326	5.02
I	1-1/2	2-11/16	6	CD30309	2.47	R	1-11/16	3	6	CD30318	3.55	-	-	-	-	-	-

WIRE SIZES						WIRE SIZES						WIRE SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
1	1-5/16	2-7/16	12	CD30201	1.36	21	1-1/16	2-1/8	12	CD30221	1.15	41	13/16	1-13/16	12	CD30241	0.88
2	1-5/16	2-7/16	12	CD30202	1.36	22	1-1/16	2-1/8	12	CD30222	1.12	42	3/4	1-3/4	12	CD30242	0.88
3	1-1/4	2-3/8	12	CD30203	1.40	23	1	2-1/16	12	CD30223	1.12	43	3/4	1-3/4	12	CD30243	0.88
4	1-1/4	2-3/8	12	CD30204	1.40	24	1	2-1/16	12	CD30224	1.12	44	3/4	1-3/4	12	CD30244	0.88
5	1-1/4	2-3/8	12	CD30205	1.40	25	1	2-1/16	12	CD30225	1.12	45	3/4	1-3/4	12	CD30245	0.88
6	1-1/4	2-3/8	12	CD30206	1.40	26	1	2-1/16	12	CD30226	1.12	46	3/4	1-3/4	12	CD30246	0.88
7	1-3/16	2-1/4	12	CD30207	1.21	27	1	2-1/16	12	CD30227	1.12	47	11/16	1-11/16	12	CD30247	0.88
8	1-3/16	2-1/4	12	CD30208	1.21	28	15/16	1-15/16	12	CD30228	1.12	48	11/16	1-11/16	12	CD30248	0.88
9	1-3/16	2-1/4	12	CD30209	1.21	29	15/16	1-15/16	12	CD30229	1.12	49	11/16	1-11/16	12	CD30249	0.88
10	1-3/16	2-1/4	12	CD30210	1.21	30	15/16	1-15/16	12	CD30230	0.88	50	11/16	1-11/16	12	CD30250	0.88
11	1-3/16	2-1/4	12	CD30211	1.21	31	7/8	1-7/8	12	CD30231	0.88	51	11/16	1-11/16	12	CD30251	0.88
12	1-3/16	2-1/4	12	CD30212	1.21	32	7/8	1-7/8	12	CD30232	0.88	52	11/16	1-11/16	12	CD30252	0.88
13	1-1/8	2-3/16	12	CD30213	1.21	33	7/8	1-7/8	12	CD30233	0.88	53	5/8	1-5/8	12	CD30253	0.88
14	1-1/8	2-3/16	12	CD30214	1.21	34	7/8	1-7/8	12	CD30234	0.88	54	5/8	1-5/8	12	CD30254	0.88
15	1-1/8	2-3/16	12	CD30215	1.21	35	7/8	1-7/8	12	CD30235	0.88	55	5/8	1-5/8	12	CD30255	0.88
16	1-1/8	2-3/16	12	CD30216	1.21	36	13/16	1-13/16	12	CD30236	0.88	56	1/2	1-3/8	12	CD30256	0.88
17	1-1/8	2-3/16	12	CD30217	1.21	37	13/16	1-13/16	12	CD30237	0.88	57	1/2	1-3/8	12	CD30257	0.88
18	1-1/16	2-1/8	12	CD30218	1.15	38	13/16	1-13/16	12	CD30238	0.88	58	1/2	1-3/8	12	CD30258	0.88
19	1-1/16	2-1/8	12	CD30219	1.15	39	13/16	1-13/16	12	CD30239	0.88	59	1/2	1-3/8	12	CD30259	0.88
20	1-1/16	2-1/8	12	CD30220	1.15	40	13/16	1-13/16	12	CD30240	0.88	60	1/2	1-3/8	12	CD30260	0.88

NOTE: SIZES BELOW 1/16" ARE NOT SPLIT POINT.  
FOR TECHNICAL INFORMATION PLEASE SEE PAGES 191-192.

HSS SCREW MACHINE DRILLS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION





# High Speed Steel Drills

## TAPER LENGTH - 118° POINT



**SERIES 525  
OXIDE FINISH**

FRACTIONAL SIZES						FRACTIONAL SIZES						FRACTIONAL SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
3/64	1-1/8	2-1/4	12	CD52503	3.20	15/32	4-3/4	7-1/2	6	CD52530	14.02	57/64	6-1/8	10	1	CD52557	51.22
1/16	1-3/4	3	12	CD52504	3.33	31/64	4-3/4	7-3/4	6	CD52531	14.83	29/32	6-1/8	10	1	CD52558	51.22
5/64	2	3-3/4	12	CD52505	3.44	1/2	4-3/4	7-3/4	6	CD52532	14.83	59/64	6-1/8	10-3/4	1	CD52559	55.68
3/32	2-1/4	4-1/4	12	CD52506	3.65	33/64	4-3/4	8	1	CD52533	19.71	15/16	6-1/8	10-3/4	1	CD52560	55.68
7/64	2-1/2	4-5/8	12	CD52507	4.26	17/32	4-3/4	8	1	CD52534	19.71	61/64	6-3/8	11	1	CD52561	61.46
1/8	2-3/4	5-1/8	12	CD52508	4.38	35/64	4-7/8	8-1/4	1	CD52535	20.70	31/32	6-3/8	11	1	CD52562	61.46
9/64	3	5-3/8	12	CD52509	5.85	9/16	4-7/8	8-1/4	1	CD52536	20.70	63/64	6-3/8	11	1	CD52563	64.06
5/32	3	5-3/8	12	CD52510	5.91	37/64	4-7/8	8-3/4	1	CD52537	24.22	1	6-3/8	11	1	CD52564	64.06
11/64	3-3/8	5-3/4	12	CD52511	6.21	19/32	4-7/8	8-3/4	1	CD52538	24.22	1-1/32	6-1/2	11-1/8	1	CD52566	76.73
3/16	3-3/8	5-3/4	12	CD52512	5.78	39/64	4-7/8	8-3/4	1	CD52539	25.10	1-1/16	6-5/8	11-1/4	1	CD52568	79.38
13/64	3-5/8	6	12	CD52513	7.05	5/8	4-7/8	8-3/4	1	CD52540	25.10	1-3/32	6-7/8	11-1/2	1	CD52570	85.14
7/32	3-5/8	6	12	CD52514	7.60	41/64	5-1/8	9	1	CD52541	28.58	1-1/8	7-1/8	11-3/4	1	CD52572	88.36
15/64	3-3/4	6-1/8	12	CD52515	7.60	21/32	5-1/8	9	1	CD52542	28.58	1-5/32	7-1/4	11-7/8	1	CD52574	96.17
1/4	3-3/4	6-1/8	12	CD52516	6.56	43/64	5-3/8	9-1/4	1	CD52543	33.80	1-3/16	7-3/8	12	1	CD52576	103.56
17/64	3-7/8	6-1/4	6	CD52517	7.95	11/16	5-3/8	9-1/4	1	CD52544	33.80	1-7/32	7-1/2	12-1/8	1	CD52578	106.64
9/32	3-7/8	6-1/4	6	CD52518	7.95	45/64	5-5/8	9-1/2	1	CD52545	35.35	1-1/4	7-7/8	12-1/2	1	CD52580	110.92
19/64	4	6-3/8	6	CD52519	8.66	23/32	5-5/8	9-1/2	1	CD52546	35.35	1-9/32	8-1/2	14-1/8	1	CD52582	132.35
5/16	4	6-3/8	6	CD52520	8.66	47/64	5-7/8	9-3/4	1	CD52547	38.01	1-5/16	8-5/8	14-1/4	1	CD52584	132.35
21/64	4-1/8	6-1/2	6	CD52521	8.66	3/4	5-7/8	9-3/4	1	CD52548	38.01	1-11/32	8-3/4	14-3/8	1	CD52586	141.94
11/32	4-1/8	6-1/2	6	CD52522	8.66	49/64	6	9-7/8	1	CD52549	41.18	1-3/8	8-7/8	14-1/2	1	CD52588	141.94
23/64	4-1/4	6-3/4	6	CD52523	10.21	25/32	6	9-7/8	1	CD52550	41.18	1-13/32	9	14-5/8	1	CD52590	161.64
3/8	4-1/4	6-3/4	6	CD52524	10.21	51/64	6-1/8	10	1	CD52551	44.46	1-7/16	9-1/8	14-3/4	1	CD52592	168.68
25/64	4-3/8	6-3/4	6	CD52525	11.61	13/16	6-1/8	10	1	CD52552	44.46	1-15/32	9-1/4	14-7/8	1	CD52594	173.40
13/32	4-3/8	7	6	CD52526	11.61	53/64	6-1/8	10	1	CD52553	46.82	1-1/2	9-3/8	15	1	CD52596	173.40
27/64	4-5/8	7-1/4	6	CD52527	12.32	27/32	6-1/8	10	1	CD52554	46.82	1-9/16	9-5/8	15-1/4	1	CD52597	194.02
7/16	4-5/8	7-1/4	6	CD52528	12.32	55/64	6-1/8	10	1	CD52555	49.14	1-5/8	9-7/8	15-5/8	1	CD52598	219.10
29/64	4-3/4	7-1/2	6	CD52529	14.02	7/8	6-1/8	10	1	CD52556	49.14	1-3/4	10-1/2	16-1/4	1	CD52599	264.00

WIRE SIZES						WIRE SIZES						WIRE SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
1	3-3/4	6-1/8	12	CD52701	7.97	15	3-3/8	5-3/4	12	CD52715	7.00	29	3	5-3/8	12	CD52729	7.00
2	3-3/4	6-1/8	12	CD52702	7.97	16	3-3/8	5-3/4	12	CD52716	7.00	30	3	5-3/8	12	CD52730	7.00
3	3-5/8	6	12	CD52703	7.71	17	3-3/8	5-3/4	12	CD52717	7.00	31	2-3/4	5-1/8	12	CD52731	6.86
4	3-5/8	6	12	CD52704	7.71	18	3-3/8	5-3/4	12	CD52718	7.00	32	2-3/4	5-1/8	12	CD52732	6.86
5	3-5/8	6	12	CD52705	7.71	19	3-3/8	5-3/4	12	CD52719	7.00	33	2-3/4	5-1/8	12	CD52733	6.86
6	3-5/8	6	12	CD52706	7.71	20	3-3/8	5-3/4	12	CD52720	7.00	34	2-3/4	5-1/8	12	CD52734	6.86
7	3-5/8	6	12	CD52707	7.71	21	3-3/8	5-3/4	12	CD52721	7.00	35	2-3/4	5-1/8	12	CD52735	6.86
8	3-5/8	6	12	CD52708	7.71	22	3-3/8	5-3/4	12	CD52722	7.00	36	2-1/2	4-5/8	12	CD52736	5.13
9	3-5/8	6	12	CD52709	7.71	23	3	5-3/8	12	CD52723	7.00	37	2-1/2	4-5/8	12	CD52737	5.13
10	3-5/8	6	12	CD52710	7.71	24	3	5-3/8	12	CD52724	7.00	38	2-1/2	4-5/8	12	CD52738	5.13
11	3-5/8	6	12	CD52711	7.71	25	3	5-3/8	12	CD52725	7.00	39	2-1/2	4-5/8	12	CD52739	4.50
12	3-5/8	6	12	CD52712	7.71	26	3	5-3/8	12	CD52726	7.00	40	2-1/2	4-5/8	12	CD52740	4.50
13	3-3/8	5-3/4	12	CD52713	7.00	27	3	5-3/8	12	CD52727	7.00	-	-	-	-	-	-
14	3-3/8	5-3/4	12	CD52714	7.00	28	3	5-3/8	12	CD52728	7.00	-	-	-	-	-	-

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 191-192.





# High Speed Steel Drills

## TAPER SHANK - 118° POINT



**SERIES 550**  
OXIDE FINISH

FRACTIONAL SIZES						FRACTIONAL SIZES					
SIZE	MORSE TAPER #	FLUTE LENGTH	OVERALL LENGTH	ITEM#	PRICE	SIZE	MORSE TAPER #	FLUTE LENGTH	OVERALL LENGTH	ITEM#	PRICE
3/16	#1	2-1/2	5-3/4	CD55012	15.49	13/16	#3	6-1/8	10-3/4	CD55052	51.93
13/64	#1	2-3/4	6	CD55013	15.49	53/64	#3	6-1/8	10-3/4	CD55053	57.52
7/32	#1	2-3/4	6	CD55014	15.49	27/32	#3	6-1/8	10-3/4	CD55054	55.97
15/64	#1	2-7/8	6-1/8	CD55015	15.49	55/64	#3	6-1/8	10-3/4	CD55055	63.16
1/4	#1	2-7/8	6-1/8	CD55016	15.49	7/8	#3	6-1/8	10-3/4	CD55056	57.67
17/64	#1	3	6-1/4	CD55017	15.49	57/64	#3	6-1/8	10-3/4	CD55057	60.90
9/32	#1	3	6-1/4	CD55018	15.49	29/32	#3	6-1/8	10-3/4	CD55058	60.90
19/64	#1	3-1/8	6-3/8	CD55019	16.41	59/64	#3	6-1/8	10-3/4	CD55059	61.75
5/16	#1	3-1/8	6-3/8	CD55020	17.25	15/16	#3	6-1/8	10-3/4	CD55060	57.87
21/64	#1	3-1/4	6-1/2	CD55021	17.25	61/64	#3	6-3/8	11	CD55061	63.43
11/32	#1	3-1/4	6-1/2	CD55022	17.25	31/32	#3	6-3/8	11	CD55062	63.00
23/64	#1	3-1/2	6-3/4	CD55023	17.60	63/64	#3	6-3/8	11	CD55063	67.31
3/8	#1	3-1/2	6-3/4	CD55024	17.60	1	#3	6-3/8	11	CD55064	64.06
25/64	#1	3-5/8	7	CD55025	20.92	1-1/64	#3	6-1/2	11-1/8	CD55065	74.48
13/32	#1	3-5/8	7	CD55026	20.92	1-1/32	#3	6-1/2	11-1/8	CD55066	73.93
27/64	#1	3-7/8	7-1/4	CD55027	22.52	1-3/64	#3	6-5/8	11-1/4	CD55067	77.45
7/16	#1	3-7/8	7-1/4	CD55028	22.52	1-1/16	#3	6-5/8	11-1/4	CD55068	73.93
29/64	#1	4-1/8	7-1/2	CD55029	22.52	1-5/64	#4	6-7/8	12-1/2	CD55069	87.99
15/32	#2	4-1/8	7-1/2	CD55030	22.52	1-3/32	#4	6-7/8	12-1/2	CD55070	87.99
31/64	#2	4-3/8	8-1/4	CD55031	24.64	1-7/64	#4	7-1/8	12-3/4	CD55071	91.52
1/2	#2	4-3/8	8-1/4	CD55032	23.06	1-1/8	#4	7-1/8	12-3/4	CD55072	91.52
33/64	#2	4-5/8	8-1/2	CD55033	26.58	1-9/64	#4	7-1/4	12-7/8	CD55073	98.56
17/32	#2	4-5/8	8-1/2	CD55034	27.45	1-5/32	#4	7-1/4	12-7/8	CD55074	95.04
35/64	#2	4-7/8	8-3/4	CD55035	28.93	1-11/64	#4	7-3/8	13	CD55075	98.56
9/16	#2	4-7/8	8-3/4	CD55036	28.16	1-3/16	#4	7-3/8	13	CD55076	98.56
37/64	#2	4-7/8	8-3/4	CD55037	30.80	1-13/64	#4	7-1/2	13-1/8	CD55077	105.60
19/32	#2	4-7/8	8-3/4	CD55038	30.28	1-7/32	#4	7-1/2	13-1/8	CD55078	105.60
39/64	#2	4-7/8	8-3/4	CD55039	32.04	1-1/4	#4	7-7/8	13-1/2	CD55080	110.53
5/8	#2	4-7/8	8-3/4	CD55040	30.63	1-5/16	#4	8-5/8	14-1/4	CD55084	135.87
41/64	#2	5-1/8	9	CD55041	35.21	1-3/8	#4	8-7/8	14-1/2	CD55088	145.02
21/32	#2	5-1/8	9	CD55042	34.51	1-7/16	#4	9-1/8	14-3/4	CD55092	159.10
43/64	#2	5-3/8	9-1/4	CD55043	38.01	1-1/2	#4	9-3/8	15	CD55096	166.86
11/16	#2	5-3/8	9-1/4	CD55044	35.90	1-9/16	#5	9-5/8	16-5/8	CD55102	203.46
45/64	#2	5-5/8	9-1/2	CD55045	39.42	1-5/8	#5	10	17	CD55106	219.65
23/32	#2	5-5/8	9-1/2	CD55046	38.09	1-11/16	#5	10-1/8	17-1/8	CD55110	242.19
47/64	#2	5-7/8	9-3/4	CD55047	42.24	1-3/4	#5	10-1/8	17-1/8	CD55114	257.68
3/4	#2	5-7/8	9-3/4	CD55048	41.89	1-13/16	#5	10-1/8	17-1/8	CD55118	276.68
49/64	#2	6	9-7/8	CD55049	50.49	1-7/8	#5	10-3/8	17-3/8	CD55122	288.65
25/32	#2	6	9-7/8	CD55050	50.19	1-15/16	#5	10-3/8	17-3/8	CD55126	311.18
51/64	#3	6-1/8	10-3/4	CD55051	55.26	2	#5	10-3/8	17-3/8	CD55130	322.45

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 191-192.

HSS TAPER SHANK DRILLS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# M42 Cobalt Drills

## SCREW MACHINE LENGTH - HEAVY DUTY - 135° SPLIT POINT - TYPE "J"



**SERIES 325**  
**NAS 907 - M42 COBALT**  
**STRAW FINISH**

FRACTIONAL SIZES						FRACTIONAL SIZES						FRACTIONAL SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
1/16	5/8	1-5/8	12	CD32504	0.96	7/32	1-1/4	2-3/8	12	CD32514	2.33	3/8	1-13/16	3-1/8	6	CD32524	5.52
5/64	11/16	1-11/16	12	CD32505	0.96	15/64	1-5/16	2-7/16	12	CD32515	2.50	25/64	1-7/8	3-1/4	6	CD32525	6.31
3/32	3/4	1-3/4	12	CD32506	0.96	1/4	1-3/8	2-1/2	12	CD32516	2.60	13/32	1-15/16	3-5/16	6	CD32526	6.53
7/64	13/16	1-13/16	12	CD32507	1.09	17/64	1-7/16	2-5/8	6	CD32517	2.97	27/64	2	3-3/8	6	CD32527	7.23
1/8	7/8	1-7/8	12	CD32508	1.26	9/32	1-1/2	2-11/16	6	CD32518	3.22	7/16	1-1/16	3-7/16	6	CD32528	7.43
9/64	15/16	1-15/16	12	CD32509	1.26	19/64	1-9/16	2-3/4	6	CD32519	3.73	29/64	2-1/8	3-9/16	6	CD32529	8.92
5/32	1	2-1/16	12	CD32510	1.39	5/16	1-5/8	2-13/16	6	CD32520	4.00	15/32	2-1/8	3-5/8	6	CD32530	8.92
11/64	1-1/16	2-1/8	12	CD32511	1.58	21/64	1-11/16	2-15/16	6	CD32521	4.44	31/64	2-3/16	3-11/16	6	CD32531	8.92
3/16	1-1/8	2-3/16	12	CD32512	1.85	11/32	1-11/16	3	6	CD32522	4.79	1/2	2-1/4	3-3/4	6	CD32532	8.92
13/64	1-3/16	2-1/4	12	CD32513	2.12	23/64	1-3/4	3-1/16	6	CD32523	5.52	-	-	-	-	-	-

LETTER SIZES						LETTER SIZES						LETTER SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
A	1-5/16	2-7/16	12	CD32701	2.98	J	1-1/2	2-11/16	6	CD32710	3.55	S	1-3/4	3-1/16	6	CD32719	6.74
B	1-3/8	2-1/2	12	CD32702	3.16	K	1-1/2	2-11/16	6	CD32711	3.55	T	1-3/4	3-1/16	6	CD32720	6.74
C	1-3/8	2-1/2	12	CD32703	3.16	L	1-9/16	2-3/4	6	CD32712	4.21	U	1-13/16	3-1/8	6	CD32721	6.74
D	1-3/8	2-1/2	12	CD32704	3.16	M	1-9/16	2-3/4	6	CD32713	4.21	V	1-7/8	3-1/4	6	CD32722	7.49
E	1-3/8	2-1/2	12	CD32705	2.88	N	1-5/8	2-13/16	6	CD32714	4.52	W	1-7/8	3-1/4	6	CD32723	7.49
F	1-7/16	2-5/8	6	CD32706	3.35	O	1-11/16	2-15/16	6	CD32715	5.00	X	1-15/16	3-5/16	6	CD32724	7.49
G	1-7/16	2-5/8	6	CD32707	3.35	P	1-11/16	2-15/16	6	CD32716	5.00	Y	1-15/16	3-5/16	6	CD32725	7.49
H	1-1/2	2-11/16	6	CD32708	3.55	Q	1-11/16	3	6	CD32717	5.42	Z	2	3-3/8	6	CD32726	8.58
I	1-1/2	2-11/16	6	CD32709	3.55	R	1-11/16	3	6	CD32718	5.42	-	-	-	-	-	-

WIRE SIZES						WIRE SIZES						WIRE SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
1	1-5/16	2-7/16	12	CD32601	2.87	21	1-1/16	2-1/8	12	CD32621	1.49	41	13/16	1-13/16	12	CD32641	1.01
2	1-5/16	2-7/16	12	CD32602	2.87	22	1-1/16	2-1/8	12	CD32622	1.49	42	3/4	1-3/4	12	CD32642	0.99
3	1-1/4	2-3/8	12	CD32603	2.87	23	1	2-1/16	12	CD32623	1.49	43	3/4	1-3/4	12	CD32643	0.99
4	1-1/4	2-3/8	12	CD32604	2.55	24	1	2-1/16	12	CD32624	1.49	44	3/4	1-3/4	12	CD32644	0.99
5	1-1/4	2-3/8	12	CD32605	2.55	25	1	2-1/16	12	CD32625	1.39	45	3/4	1-3/4	12	CD32645	0.99
6	1-1/4	2-3/8	12	CD32606	2.55	26	1	2-1/16	12	CD32626	1.39	46	3/4	1-3/4	12	CD32646	0.99
7	1-3/16	2-1/4	12	CD32607	2.02	27	1	2-1/16	12	CD32627	1.39	47	11/16	1-11/16	12	CD32647	0.99
8	1-3/16	2-1/4	12	CD32608	2.02	28	15/16	1-15/16	12	CD32628	1.26	48	11/16	1-11/16	12	CD32648	0.99
9	1-3/16	2-1/4	12	CD32609	2.02	29	15/16	1-15/16	12	CD32629	1.26	49	11/16	1-11/16	12	CD32649	0.99
10	1-3/16	2-1/4	12	CD32610	2.02	30	15/16	1-15/16	12	CD32630	1.19	50	11/16	1-11/16	12	CD32650	0.99
11	1-3/16	2-1/4	12	CD32611	1.96	31	7/8	1-7/8	12	CD32631	1.19	51	11/16	1-11/16	12	CD32651	0.99
12	1-3/16	2-1/4	12	CD32612	1.96	32	7/8	1-7/8	12	CD32632	1.19	52	11/16	1-11/16	12	CD32652	0.99
13	1-1/8	2-3/16	12	CD32613	1.91	33	7/8	1-7/8	12	CD32633	1.15	53	5/8	1-5/8	12	CD32653	1.12
14	1-1/8	2-3/16	12	CD32614	1.91	34	7/8	1-7/8	12	CD32634	1.15	54	5/8	1-5/8	12	CD32654	1.12
15	1-1/8	2-3/16	12	CD32615	1.91	35	7/8	1-7/8	12	CD32635	1.15	55	5/8	1-5/8	12	CD32655	1.12
16	1-1/8	2-3/16	12	CD32616	1.91	36	13/16	1-13/16	12	CD32636	1.15	56	1/2	1-3/8	12	CD32656	1.12
17	1-1/8	2-3/16	12	CD32617	1.85	37	13/16	1-13/16	12	CD32637	1.15	57	1/2	1-3/8	12	CD32657	1.12
18	1-1/16	2-1/8	12	CD32618	1.58	38	13/16	1-13/16	12	CD32638	1.05	58	1/2	1-3/8	12	CD32658	1.19
19	1-1/16	2-1/8	12	CD32619	1.49	39	13/16	1-13/16	12	CD32639	1.05	59	1/2	1-3/8	12	CD32659	1.19
20	1-1/16	2-1/8	12	CD32620	1.49	40	13/16	1-13/16	12	CD32640	1.05	60	1/2	1-3/8	12	CD32660	1.19

NOTE: ALL COBALT DRILLS HAVE IDENTIFICATION RING ON SHANK

NOTE: SIZES BELOW 1/16" ARE NOT SPLIT POINT.  
 FOR TECHNICAL INFORMATION PLEASE SEE PAGES 191-192.

COBALT SCREW MACHINE DRILLS  
 CARBIDE ENDMILLS  
 CARBIDE MICRO ENDMILLS  
 CARBIDE THREADMILLS  
 CARBIDE DRILL MILLS  
 CARBIDE CHAMFER MILLS  
 CARBIDE DRILLS  
 CARBIDE REAMERS  
 CARBIDE BURS  
 COUNTERSINKS  
 HSS & COBALT ENDMILLS  
 TAPS & DIES  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION



# M42 Cobalt Drills

## SCREW MACHINE LENGTH - HEAVY DUTY - 135° SPLIT POINT - TYPE "J"



**SERIES 602**  
**NAS 907 - M42 COBALT**  
**ALTIN COATED**

FRACTIONAL SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
1/16	5/8	1-5/8	12	CD60204	1.75
5/64	11/16	1-11/16	12	CD60205	1.75
3/32	3/4	1-3/4	12	CD60206	1.75
7/64	13/16	1-13/16	12	CD60207	1.98
1/8	7/8	1-7/8	12	CD60208	2.30
9/64	15/16	1-15/16	12	CD60209	2.30
5/32	1	2-1/16	12	CD60210	2.52
11/64	1-1/16	2-1/8	12	CD60211	2.84
3/16	1-1/8	2-3/16	12	CD60212	3.34
13/64	1-3/16	2-1/4	12	CD60213	3.80

FRACTIONAL SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
7/32	1-1/4	2-3/8	12	CD60214	4.21
15/64	1-5/16	2-7/16	12	CD60215	4.52
1/4	1-3/8	2-1/2	12	CD60216	4.70
17/64	1-7/16	2-5/8	6	CD60217	5.35
9/32	1-1/2	2-11/16	6	CD60218	5.82
19/64	1-9/16	2-3/4	6	CD60219	6.74
5/16	1-5/8	2-13/16	6	CD60220	7.23
21/64	1-11/16	2-15/16	6	CD60221	8.02
11/32	1-11/16	3	6	CD60222	8.67
23/64	1-3/4	3-1/16	6	CD60223	9.97

FRACTIONAL SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
3/8	1-13/16	3-1/8	6	CD60224	9.97
25/64	1-7/8	3-1/4	6	CD60225	11.42
13/32	1-15/16	3-5/16	6	CD60226	11.78
27/64	2	3-3/8	6	CD60227	13.05
7/16	1-1/16	3-7/16	6	CD60228	13.43
29/64	2-1/8	3-9/16	6	CD60229	16.10
15/32	2-1/8	3-5/8	6	CD60230	16.10
31/64	2-3/16	3-11/16	6	CD60231	16.10
1/2	2-1/4	3-3/4	6	CD60232	16.10
-	-	-	-	-	-

LETTER SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
A	1-5/16	2-7/16	12	CD60401	5.38
B	1-3/8	2-1/2	12	CD60402	5.71
C	1-3/8	2-1/2	12	CD60403	5.71
D	1-3/8	2-1/2	12	CD60404	5.71
E	1-3/8	2-1/2	12	CD60405	5.22
F	1-7/16	2-5/8	6	CD60406	6.04
G	1-7/16	2-5/8	6	CD60407	6.04
H	1-1/2	2-11/16	6	CD60408	6.42
I	1-1/2	2-11/16	6	CD60409	6.42

LETTER SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
J	1-1/2	2-11/16	6	CD60410	6.42
K	1-1/2	2-11/16	6	CD60411	6.42
L	1-9/16	2-3/4	6	CD60412	7.61
M	1-9/16	2-3/4	6	CD60413	7.61
N	1-5/8	2-13/16	6	CD60414	8.17
O	1-11/16	2-15/16	6	CD60415	9.05
P	1-11/16	2-15/16	6	CD60416	9.05
Q	1-11/16	3	6	CD60417	9.79
R	1-11/16	3	6	CD60418	9.79

LETTER SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
S	1-3/4	3-1/16	6	CD60419	12.19
T	1-3/4	3-1/16	6	CD60420	12.19
U	1-13/16	3-1/8	6	CD60421	12.19
V	1-7/8	3-1/4	6	CD60422	13.51
W	1-7/8	3-1/4	6	CD60423	13.51
X	1-15/16	3-5/16	6	CD60424	13.51
Y	1-15/16	3-5/16	6	CD60425	13.51
Z	2	3-3/8	6	CD60426	15.51
-	-	-	-	-	-

WIRE SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
1	1-5/16	2-7/16	12	CD60301	5.18
2	1-5/16	2-7/16	12	CD60302	5.18
3	1-1/4	2-3/8	12	CD60303	5.18
4	1-1/4	2-3/8	12	CD60304	4.63
5	1-1/4	2-3/8	12	CD60305	4.63
6	1-1/4	2-3/8	12	CD60306	4.63
7	1-3/16	2-1/4	12	CD60307	3.63
8	1-3/16	2-1/4	12	CD60308	3.63
9	1-3/16	2-1/4	12	CD60309	3.63
10	1-3/16	2-1/4	12	CD60310	3.63
11	1-3/16	2-1/4	12	CD60311	3.53
12	1-3/16	2-1/4	12	CD60312	3.53
13	1-1/8	2-3/16	12	CD60313	3.47
14	1-1/8	2-3/16	12	CD60314	3.47
15	1-1/8	2-3/16	12	CD60315	3.47
16	1-1/8	2-3/16	12	CD60316	3.46
17	1-1/8	2-3/16	12	CD60317	3.34
18	1-1/16	2-1/8	12	CD60318	2.84
19	1-1/16	2-1/8	12	CD60319	2.69
20	1-1/16	2-1/8	12	CD60320	2.69

WIRE SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
21	1-1/16	2-1/8	12	CD60321	2.69
22	1-1/16	2-1/8	12	CD60322	2.69
23	1	2-1/16	12	CD60323	2.69
24	1	2-1/16	12	CD60324	2.69
25	1	2-1/16	12	CD60325	2.52
26	1	2-1/16	12	CD60326	2.52
27	1	2-1/16	12	CD60327	2.52
28	15/16	1-15/16	12	CD60328	2.30
29	15/16	1-15/16	12	CD60329	2.30
30	15/16	1-15/16	12	CD60330	2.16
31	7/8	1-7/8	12	CD60331	2.16
32	7/8	1-7/8	12	CD60332	2.16
33	7/8	1-7/8	12	CD60333	2.08
34	7/8	1-7/8	12	CD60334	2.08
35	7/8	1-7/8	12	CD60335	2.08
36	13/16	1-13/16	12	CD60336	2.08
37	13/16	1-13/16	12	CD60337	2.08
38	13/16	1-13/16	12	CD60338	1.89
39	13/16	1-13/16	12	CD60339	1.89
40	13/16	1-13/16	12	CD60340	1.89

WIRE SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
41	13/16	1-13/16	12	CD60341	1.84
42	3/4	1-3/4	12	CD60342	1.81
43	3/4	1-3/4	12	CD60343	1.81
44	3/4	1-3/4	12	CD60344	1.81
45	3/4	1-3/4	12	CD60345	1.81
46	3/4	1-3/4	12	CD60346	1.81
47	11/16	1-11/16	12	CD60347	1.81
48	11/16	1-11/16	12	CD60348	1.81
49	11/16	1-11/16	12	CD60349	1.81
50	11/16	1-11/16	12	CD60350	1.81
51	11/16	1-11/16	12	CD60351	1.81
52	11/16	1-11/16	12	CD60352	1.81
53	5/8	1-5/8	12	CD60353	2.03
54	5/8	1-5/8	12	CD60354	2.03
55	5/8	1-5/8	12	CD60355	2.03
56	1/2	1-3/8	12	CD60356	2.03
57	1/2	1-3/8	12	CD60357	2.03
58	1/2	1-3/8	12	CD60358	2.16
59	1/2	1-3/8	12	CD60359	2.16
60	1/2	1-3/8	12	CD60360	2.16

- For use where extreme temperatures are found
- Coating allows for increased machining speeds from 50% up to 200%
- Used in machining Stainless Steels, Nickel-based and Titanium alloys
- Not recommended for aluminum

NOTE: SIZES BELOW 1/16" ARE NOT SPLIT POINT. ALL COBALT DRILLS HAVE IDENTIFICATION RING ON SHANK.  
FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION PLEASE SEE PAGES 191-192.

COBALT SCREW MACHINE DRILLS

CARBIDE ENDMILLS

CARBIDE MICRO ENDMILLS

CARBIDE THREADMILLS

CARBIDE DRILL MILLS

CARBIDE CHAMFER MILLS

CARBIDE DRILLS

CARBIDE REAMERS

CARBIDE BURS

HSS & COBALT COUNTERSINKS

HSS & COBALT ENDMILLS

TAPS & DIES

HSS & COBALT DRILLS

HSS & COBALT REAMERS

TECHNICAL INFORMATION



# M42 Cobalt Drills

**JOBBER LENGTH - HEAVY DUTY - 135° SPLIT POINT - TYPE "J"**



**SERIES 500**  
**NAS 907 - M42 COBALT**  
**STRAW FINISH**

### FRACTIONAL SIZES

SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
3/64	3/4	1-3/4	12	CD50003	1.62
1/16	7/8	1-7/8	12	CD50004	1.12
5/64	1	2	12	CD50005	1.12
3/32	1-1/4	2-1/4	12	CD50006	1.12
7/64	1-1/2	2-5/8	12	CD50007	1.18
1/8	1-5/8	2-3/4	12	CD50008	1.44
9/64	1-3/4	2-7/8	12	CD50009	1.44
5/32	2	3-1/8	12	CD50010	1.62
11/64	2-1/8	3-1/4	12	CD50011	1.70
3/16	2-5/16	3-1/2	12	CD50012	1.91

### FRACTIONAL SIZES

SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
13/64	2-7/16	3-5/8	12	CD50013	2.30
7/32	2-1/2	3-3/4	12	CD50014	2.51
15/64	2-5/8	3-7/8	12	CD50015	2.66
1/4	2-3/4	4	12	CD50016	2.85
17/64	2-7/8	4-1/8	6	CD50017	3.24
9/32	2-15/16	4-1/4	6	CD50018	3.39
19/64	3-1/16	4-3/8	6	CD50019	4.13
5/16	3-3/16	4-1/2	6	CD50020	4.40
21/64	3-5/16	4-5/8	6	CD50021	4.86
11/32	3-7/16	4-3/4	6	CD50022	5.35

### FRACTIONAL SIZES

SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
23/64	3-1/2	4-7/8	6	CD50023	6.12
3/8	3-5/8	5	6	CD50024	6.12
25/64	3-3/4	5-1/8	6	CD50025	6.96
13/32	3-7/8	5-1/4	6	CD50026	7.26
27/64	3-15/16	5-3/8	6	CD50027	8.03
7/16	4-1/16	5-1/2	6	CD50028	8.21
29/64	4-3/16	5-5/8	6	CD50029	9.86
15/32	4-5/16	5-3/4	6	CD50030	10.04
31/64	4-3/8	5-7/8	6	CD50031	10.10
1/2	4-1/2	6	6	CD50032	10.10

### LETTER SIZES

SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
A	2-5/8	3-7/8	12	CD50301	3.02
B	2-3/4	4	12	CD50302	3.49
C	2-3/4	4	12	CD50303	3.49
D	2-3/4	4	12	CD50304	3.93
E	2-3/4	4	12	CD50305	2.85
F	2-7/8	4-1/8	6	CD50306	3.49
G	2-7/8	4-1/8	6	CD50307	3.49
H	2-7/8	4-1/8	6	CD50308	3.93
I	2-7/8	4-1/8	6	CD50309	3.93

### LETTER SIZES

SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
J	2-7/8	4-1/8	6	CD50310	3.93
K	2-15/16	4-1/4	6	CD50311	3.93
L	2-15/16	4-1/4	6	CD50312	4.46
M	3-1/16	4-3/8	6	CD50313	4.72
N	3-1/16	4-3/8	6	CD50314	4.72
O	3-3/16	4-1/2	6	CD50315	5.22
P	3-5/16	4-5/8	6	CD50316	5.54
Q	3-7/16	4-3/4	6	CD50317	5.76
R	3-7/16	4-3/4	6	CD50318	5.76

### LETTER SIZES

SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
S	3-1/2	4-7/8	6	CD50319	7.05
T	3-1/2	4-7/8	6	CD50320	7.05
U	3-5/8	5	6	CD50321	7.05
V	3-5/8	5	6	CD50322	7.77
W	3-3/4	5-1/8	6	CD50323	7.77
X	3-3/4	5-1/8	6	CD50324	7.77
Y	3-7/8	5-1/4	6	CD50325	8.24
Z	3-7/8	5-1/4	6	CD50326	8.96
-	-	-	-	-	-

### WIRE SIZES

SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
1	2-5/8	3-7/8	12	CD50201	3.05
2	2-5/8	3-7/8	12	CD50202	3.05
3	2-1/2	3-3/4	12	CD50203	2.85
4	2-1/2	3-3/4	12	CD50204	2.85
5	2-1/2	3-3/4	12	CD50205	2.85
6	2-1/2	3-3/4	12	CD50206	2.85
7	2-7/16	3-5/8	12	CD50207	2.23
8	2-7/16	3-5/8	12	CD50208	2.23
9	2-7/16	3-5/8	12	CD50209	2.23
10	2-7/16	3-5/8	12	CD50210	2.23
11	2-5/16	3-1/2	12	CD50211	2.23
12	2-5/16	3-1/2	12	CD50212	2.23
13	2-5/16	3-1/2	12	CD50213	2.18
14	2-3/16	3-3/8	12	CD50214	2.18
15	2-3/16	3-3/8	12	CD50215	2.18
16	2-3/16	3-3/8	12	CD50216	1.98
17	2-3/16	3-3/8	12	CD50217	1.94
18	2-1/8	3-1/4	12	CD50218	1.77
19	2-1/8	3-1/4	12	CD50219	1.73
20	2-1/8	3-1/4	12	CD50220	1.73
21	2-1/8	3-1/4	12	CD50221	1.71
22	2	3-1/8	12	CD50222	1.71
23	2	3-1/8	12	CD50223	1.71
24	2	3-1/8	12	CD50224	1.71
25	1-7/8	3	12	CD50225	1.58
26	1-7/8	3	12	CD50226	1.55
27	1-7/8	3	12	CD50227	1.55

### WIRE SIZES

SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
28	1-3/4	2-7/8	12	CD50228	1.44
29	1-3/4	2-7/8	12	CD50229	1.40
30	1-5/8	2-3/4	12	CD50230	1.33
31	1-5/8	2-3/4	12	CD50231	1.29
32	1-5/8	2-3/4	12	CD50232	1.28
33	1-1/2	2-5/8	12	CD50233	1.23
34	1-1/2	2-5/8	12	CD50234	1.23
35	1-1/2	2-5/8	12	CD50235	1.23
36	1-7/16	2-1/2	12	CD50236	1.22
37	1-7/16	2-1/2	12	CD50237	1.22
38	1-7/16	2-1/2	12	CD50238	1.13
39	1-3/8	2-3/8	12	CD50239	1.13
40	1-3/8	2-3/8	12	CD50240	1.13
41	1-3/8	2-3/8	12	CD50241	1.12
42	1-1/4	2-1/4	12	CD50242	1.11
43	1-1/4	2-1/4	12	CD50243	1.11
44	1-1/8	2-1/8	12	CD50244	1.11
45	1-1/8	2-1/8	12	CD50245	1.11
46	1-1/8	2-1/8	12	CD50246	1.11
47	1	2	12	CD50247	1.11
48	1	2	12	CD50248	1.11
49	1	2	12	CD50249	1.11
50	1	2	12	CD50250	1.11
51	1	2	12	CD50251	1.11
52	7/8	1-7/8	12	CD50252	1.11
53	7/8	1-7/8	12	CD50253	1.23
54	7/8	1-7/8	12	CD50254	1.23

### WIRE SIZES

SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
55	7/8	1-7/8	12	CD50255	1.23
56	3/4	1-3/4	12	CD50256	1.39
57	3/4	1-3/4	12	CD50257	1.39
58	11/16	1-5/8	12	CD50258	1.39
59	11/16	1-5/8	12	CD50259	1.39
60	11/16	1-5/8	12	CD50260	1.39
61	11/16	1-5/8	12	CD50261	1.67
62	5/8	1-1/2	12	CD50262	1.67
63	5/8	1-1/2	12	CD50263	1.67
64	5/8	1-1/2	12	CD50264	1.67
65	5/8	1-1/2	12	CD50265	1.67
66	1/2	1-3/8	12	CD50266	1.81
67	1/2	1-3/8	12	CD50267	1.81
68	1/2	1-3/8	12	CD50268	1.81
69	1/2	1-3/8	12	CD50269	1.81
70	3/8	1-1/4	12	CD50270	1.81
71	3/8	1-1/4	12	CD50271	1.81
72	5/16	1-1/8	12	CD50272	1.81
73	5/16	1-1/8	12	CD50273	1.81
74	1/4	1	12	CD50274	1.81
75	1/4	1	12	CD50275	1.89
76	3/16	7/8	12	CD50276	1.89
77	3/16	7/8	12	CD50277	1.89
78	3/16	7/8	12	CD50278	1.89
79	1/8	3/4	12	CD50279	1.89
80	1/8	3/4	12	CD50280	1.89
-	-	-	-	-	-

**NOTE: SIZES BELOW 1/16" ARE NOT SPLIT POINT. ALL COBALT DRILLS HAVE IDENTIFICATION RING ON SHANK. FOR TECHNICAL INFORMATION PLEASE SEE PAGES 191-192.**

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COBALT JOBBER DRILLS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION





# M42 Cobalt Drills

**JOBBER LENGTH - HEAVY DUTY - 135° SPLIT POINT - TYPE "J"**



**SERIES 608**  
**NAS 907 - M42 COBALT**  
**ALTIN COATED**

FRACTIONAL SIZES						FRACTIONAL SIZES						FRACTIONAL SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
1/16	7/8	1-7/8	12	CD60704	2.01	7/32	2-1/2	3-3/4	12	CD60714	4.54	3/8	3-5/8	5	6	CD60724	11.06
5/64	1	2	12	CD60705	2.01	15/64	2-5/8	3-7/8	12	CD60715	4.82	25/64	3-3/4	5-1/8	6	CD60725	12.58
3/32	1-1/4	2-1/4	12	CD60706	2.01	1/4	2-3/4	4	12	CD60716	5.16	13/32	3-7/8	5-1/4	6	CD60726	13.13
7/64	1-1/2	2-5/8	12	CD60707	2.12	17/64	2-7/8	4-1/8	6	CD60717	5.84	27/64	3-15/16	5-3/8	6	CD60727	14.51
1/8	1-5/8	2-3/4	12	CD60708	2.60	9/32	2-15/16	4-1/4	6	CD60718	6.13	7/16	4-1/16	5-1/2	6	CD60728	14.85
9/64	1-3/4	2-7/8	12	CD60709	2.60	19/64	3-1/16	4-3/8	6	CD60719	7.46	29/64	4-3/16	5-5/8	6	CD60729	17.81
5/32	2	3-1/8	12	CD60710	2.92	5/16	3-3/16	4-1/2	6	CD60720	7.93	15/32	4-5/16	5-3/4	6	CD60730	18.14
11/64	2-1/8	3-1/4	12	CD60711	3.08	21/64	3-5/16	4-5/8	6	CD60721	8.79	31/64	4-3/8	5-7/8	6	CD60731	18.24
3/16	2-5/16	3-1/2	12	CD60712	3.46	11/32	3-7/16	4-3/4	6	CD60722	9.66	1/2	4-1/2	6	6	CD60732	18.24
13/64	2-7/16	3-5/8	12	CD60713	4.15	23/64	3-1/2	4-7/8	6	CD60723	11.06	-	-	-	-	-	-

LETTER SIZES						LETTER SIZES						LETTER SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
A	2-5/8	3-7/8	12	CD60901	5.45	J	2-7/8	4-1/8	6	CD60910	7.08	S	3-1/2	4-7/8	6	CD60919	12.75
B	2-3/4	4	12	CD60902	6.29	K	2-15/16	4-1/4	6	CD60911	7.08	T	3-1/2	4-7/8	6	CD60920	12.75
C	2-3/4	4	12	CD60903	6.29	L	2-15/16	4-1/4	6	CD60912	8.05	U	3-5/8	5	6	CD60921	12.75
D	2-3/4	4	12	CD60904	7.08	M	3-1/16	4-3/8	6	CD60913	8.54	V	3-5/8	5	6	CD60922	14.05
E	2-3/4	4	12	CD60905	5.16	N	3-1/16	4-3/8	6	CD60914	8.54	W	3-3/4	5-1/8	6	CD60923	14.05
F	2-7/8	4-1/8	6	CD60906	6.29	O	3-3/16	4-1/2	6	CD60915	9.44	X	3-3/4	5-1/8	6	CD60924	14.05
G	2-7/8	4-1/8	6	CD60907	6.29	P	3-5/16	4-5/8	6	CD60916	10.03	Y	3-7/8	5-1/4	6	CD60925	14.89
H	2-7/8	4-1/8	6	CD60908	7.08	Q	3-7/16	4-3/4	6	CD60917	10.40	Z	3-7/8	5-1/4	6	CD60926	16.19
I	2-7/8	4-1/8	6	CD60909	7.08	R	3-7/16	4-3/4	6	CD60918	10.40	-	-	-	-	-	-

WIRE SIZES						WIRE SIZES						WIRE SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	PRICE
1	2-5/8	3-7/8	12	CD60801	5.52	21	2-1/8	3-1/4	12	CD60821	3.09	41	1-3/8	2-3/8	12	CD60841	2.01
2	2-5/8	3-7/8	12	CD60802	5.52	22	2	3-1/8	12	CD60822	3.09	42	1-1/4	2-1/4	12	CD60842	1.99
3	2-1/2	3-3/4	12	CD60803	5.16	23	2	3-1/8	12	CD60823	3.09	43	1-1/4	2-1/4	12	CD60843	1.99
4	2-1/2	3-3/4	12	CD60804	5.16	24	2	3-1/8	12	CD60824	3.09	44	1-1/8	2-1/8	12	CD60844	1.99
5	2-1/2	3-3/4	12	CD60805	5.16	25	1-7/8	3	12	CD60825	2.84	45	1-1/8	2-1/8	12	CD60845	1.99
6	2-1/2	3-3/4	12	CD60806	5.16	26	1-7/8	3	12	CD60826	2.80	46	1-1/8	2-1/8	12	CD60846	1.99
7	2-7/16	3-5/8	12	CD60807	4.02	27	1-7/8	3	12	CD60827	2.80	47	1	2	12	CD60847	1.99
8	2-7/16	3-5/8	12	CD60808	4.02	28	1-3/4	2-7/8	12	CD60828	2.63	48	1	2	12	CD60848	1.99
9	2-7/16	3-5/8	12	CD60809	4.02	29	1-3/4	2-7/8	12	CD60829	2.54	49	1	2	12	CD60849	1.99
10	2-7/16	3-5/8	12	CD60810	4.02	30	1-5/8	2-3/4	12	CD60830	2.39	50	1	2	12	CD60850	1.99
11	2-5/16	3-1/2	12	CD60811	4.02	31	1-5/8	2-3/4	12	CD60831	2.34	51	1	2	12	CD60851	1.99
12	2-5/16	3-1/2	12	CD60812	4.02	32	1-5/8	2-3/4	12	CD60832	2.31	52	7/8	1-7/8	12	CD60852	1.99
13	2-5/16	3-1/2	12	CD60813	3.95	33	1-1/2	2-5/8	12	CD60833	2.23	53	7/8	1-7/8	12	CD60853	2.24
14	2-3/16	3-3/8	12	CD60814	3.95	34	1-1/2	2-5/8	12	CD60834	2.23	54	7/8	1-7/8	12	CD60854	2.24
15	2-3/16	3-3/8	12	CD60815	3.95	35	1-1/2	2-5/8	12	CD60835	2.23	55	7/8	1-7/8	12	CD60855	2.24
16	2-3/16	3-3/8	12	CD60816	3.60	36	1-7/16	2-1/2	12	CD60836	2.20	56	3/4	1-3/4	12	CD60856	2.53
17	2-3/16	3-3/8	12	CD60817	3.51	37	1-7/16	2-1/2	12	CD60837	2.20	57	3/4	1-3/4	12	CD60857	2.53
18	2-1/8	3-1/4	12	CD60818	3.21	38	1-7/16	2-1/2	12	CD60838	2.04	58	11/16	1-5/8	12	CD60858	2.53
19	2-1/8	3-1/4	12	CD60819	3.12	39	1-3/8	2-3/8	12	CD60839	2.04	59	11/16	1-5/8	12	CD60859	2.53
20	2-1/8	3-1/4	12	CD60820	3.12	40	1-3/8	2-3/8	12	CD60840	2.04	60	11/16	1-5/8	12	CD60860	2.53

- For use where extreme temperatures are found
- Coating allows for increased machining speeds from 50% up to 200%
- Used in machining Stainless Steels, Nickel-based and Titanium alloys
- Not recommended for aluminum

**NOTE: SIZES BELOW 1/16" ARE NOT SPLIT POINT. ALL COBALT DRILLS HAVE IDENTIFICATION RING ON SHANK. FOR COATING INFORMATION SEE PAGE 2. FOR TECHNICAL INFORMATION PLEASE SEE PAGES 191-192.**

COBALT JOBBER DRILLS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION

# Silver & Deming Drills



## SERIES 625

HIGH SPEED STEEL

1/2" ROUND SHANK - 118° POINT



## SERIES 620

HIGH SPEED STEEL

1/2" SHANK - 3 FLATS - 118° POINT

SIZE	OVERALL LENGTH	ITEM#	PRICE
33/64	6	SD91433	12.76
17/32	6	SD91434	12.76
35/64	6	SD91435	13.47
9/16	6	SD91436	13.47
37/64	6	SD91437	14.47
19/32	6	SD91438	14.47
39/64	6	SD91439	15.20
5/8	6	SD91440	15.20
41/64	6	SD91441	15.93
21/32	6	SD91442	15.93
43/64	6	SD91443	16.93
11/16	6	SD91444	16.93
45/64	6	SD91445	17.01
23/32	6	SD91446	17.01
47/64	6	SD91447	18.55
3/4	6	SD91448	18.61
49/64	6	SD91449	19.73
25/32	6	SD91450	19.73
51/64	6	SD91451	20.74
13/16	6	SD91452	20.74
53/64	6	SD91453	21.54
27/32	6	SD91454	21.54
55/64	6	SD91455	22.25
7/8	6	SD91456	22.25
57/64	6	SD91457	23.16
29/32	6	SD91458	23.16
59/64	6	SD91459	25.21
15/16	6	SD91460	25.21
61/64	6	SD91461	26.43
31/32	6	SD91462	26.43
63/64	6	SD91463	29.47
1	6	SD91464	29.47
1-1/32	6	SD91466	39.54
1-1/16	6	SD91468	39.54
1-3/32	6	SD91470	42.16
1-1/8	6	SD91472	45.04
1-5/32	6	SD91474	45.04
1-3/16	6	SD91476	49.86
1-7/32	6	SD91478	55.18
1-1/4	6	SD91480	55.18
1-5/16	6	SD91484	58.37
1-3/8	6	SD91488	67.23
1-7/16	6	SD91492	73.93
1-1/2	6	SD91496	81.23

SIZE	OVERALL LENGTH	ITEM#	PRICE
33/64	6	SD92533	13.91
17/32	6	SD92534	13.91
35/64	6	SD92535	14.79
9/16	6	SD92536	14.79
37/64	6	SD92537	15.90
19/32	6	SD92538	15.90
39/64	6	SD92539	16.64
5/8	6	SD92540	16.64
41/64	6	SD92541	17.74
21/32	6	SD92542	17.74
43/64	6	SD92543	18.45
11/16	6	SD92544	18.45
45/64	6	SD92545	18.69
23/32	6	SD92546	18.69
47/64	6	SD92547	20.37
3/4	6	SD92548	20.37
49/64	6	SD92549	21.73
25/32	6	SD92550	21.73
51/64	6	SD92551	23.81
13/16	6	SD92552	23.81
53/64	6	SD92553	24.80
27/32	6	SD92554	24.80
55/64	6	SD92555	26.46
7/8	6	SD92556	26.46
57/64	6	SD92557	27.45
29/32	6	SD92558	27.45
59/64	6	SD92559	28.11
15/16	6	SD92560	28.11
61/64	6	SD92561	29.43
31/32	6	SD92562	29.43
63/64	6	SD92563	32.25
1	6	SD92564	32.25

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 191-192

CARBIDE ENDMILLS  
 CARBIDE MICRO ENDMILLS  
 CARBIDE THREADMILLS  
 CARBIDE DRILL MILLS  
 CARBIDE CHAMFER MILLS  
 CARBIDE DRILLS  
 CARBIDE REAMERS  
 CARBIDE BURS  
 COUNTERSINKS  
 HSS & COBALT ENDMILLS  
 TAPS & DIES  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION



# Silver & Deming Drills



### SERIES 623

HIGH SPEED STEEL - BLACK & GOLD  
1/2" SHANK - 3 FLATS - 118° SPLIT POINT

### SERIES 622

M42 COBALT - STRAW FINISH  
1/2" ROUND SHANK - 118° SPLIT POINT

SIZE	OVERALL LENGTH	ITEM#	PRICE
33/64	6	SD94733	16.29
17/32	6	SD94734	16.29
35/64	6	SD94735	17.26
9/16	6	SD94736	17.26
37/64	6	SD94737	18.32
19/32	6	SD94738	18.32
39/64	6	SD94739	19.04
5/8	6	SD94740	19.04
41/64	6	SD94741	20.21
21/32	6	SD94742	20.21
43/64	6	SD94743	21.07
11/16	6	SD94744	21.07
45/64	6	SD94745	21.96
23/32	6	SD94746	21.96
47/64	6	SD94747	22.91
3/4	6	SD94748	22.91
49/64	6	SD94749	24.18
25/32	6	SD94750	24.18
51/64	6	SD94751	25.73
13/16	6	SD94752	25.73
53/64	6	SD94753	26.85
27/32	6	SD94754	26.85
55/64	6	SD94755	27.57
7/8	6	SD94756	27.57
57/64	6	SD94757	28.77
29/32	6	SD94758	28.77
59/64	6	SD94759	30.93
15/16	6	SD94760	30.93
61/64	6	SD94761	33.31
31/32	6	SD94762	33.31
63/64	6	SD94763	34.99
1	6	SD94764	34.99

SIZE	OVERALL LENGTH	ITEM#	PRICE
33/64	6	SD93633	25.38
17/32	6	SD93634	25.38
35/64	6	SD93635	30.55
9/16	6	SD93636	30.55
37/64	6	SD93637	31.58
19/32	6	SD93638	31.58
39/64	6	SD93639	32.39
5/8	6	SD93640	32.39
41/64	6	SD93641	33.98
21/32	6	SD93642	33.98
43/64	6	SD93643	34.67
11/16	6	SD93644	34.67
45/64	6	SD93645	36.58
23/32	6	SD93646	36.58
47/64	6	SD93647	38.16
3/4	6	SD93648	38.16
49/64	6	SD93649	39.91
25/32	6	SD93650	39.91
51/64	6	SD93651	40.97
13/16	6	SD93652	40.97
53/64	6	SD93653	44.28
27/32	6	SD93654	44.28
55/64	6	SD93655	44.28
7/8	6	SD93656	44.28
57/64	6	SD93657	45.96
29/32	6	SD93658	45.96
59/64	6	SD93659	47.95
15/16	6	SD93660	47.95
61/64	6	SD93661	50.60
31/32	6	SD93662	50.60
63/64	6	SD93663	52.59
1	6	SD93664	52.59

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 191-192.

# A/C Extension Drills

## 6" OVERALL LENGTH - 135° SPLIT POINT



**SERIES 675**  
HIGH SPEED STEEL - NAS 907 - TYPE "B"  
OXIDE FINISH



**SERIES 677**  
M42 COBALT - NAS 907 - TYPE "J"  
STRAW FINISH

### FRACTIONAL SIZES

SIZE	OVERALL LENGTH	FLUTE LENGTH	PACKAGE QUANTITY	HSS	PRICE	COBALT	PRICE
3/32	6	1-1/4	12	CD67506	2.61	CD67706	4.05
7/64	6	1-1/2	12	CD67507	2.82	CD67707	4.55
1/8	6	1-5/8	12	CD67508	2.77	CD67708	4.35
9/64	6	1-3/4	12	CD67509	3.31	CD67709	5.16
5/32	6	2	12	CD67510	3.31	CD67710	5.12
11/64	6	2-1/8	12	CD67511	3.62	CD67711	5.67
3/16	6	2-5/16	12	CD67512	3.62	CD67712	5.55
13/64	6	2-7/16	12	CD67513	4.40	CD67713	7.02
7/32	6	2-1/2	12	CD67514	4.40	CD67714	6.96
15/64	6	2-5/8	12	CD67515	4.91	CD67715	7.63
1/4	6	2-3/4	12	CD67516	4.81	CD67716	7.49
17/64	6	2-7/8	6	CD67517	11.00	-	-
9/32	6	2-15/16	6	CD67518	11.43	-	-
19/64	6	3-1/16	6	CD67519	13.42	-	-
5/16	6	3-3/16	6	CD67520	14.57	-	-
21/64	6	3-5/16	6	CD67521	15.83	-	-
11/32	6	3-7/16	6	CD67522	15.66	-	-
23/64	6	3-1/2	6	CD67523	17.57	-	-
3/8	6	3-5/8	6	CD67524	17.91	-	-

### WIRE SIZES

SIZE	OVERALL LENGTH	FLUTE LENGTH	PACKAGE QUANTITY	HSS	PRICE	COBALT	PRICE
1	6	2-5/8	12	CD67601	5.18	CD67801	8.01
2	6	2-5/8	12	CD67602	5.18	CD67802	8.01
10	6	2-7/16	12	CD67610	4.20	CD67810	6.31
11	6	2-5/16	12	CD67611	3.86	CD67811	6.07
20	6	2-1/8	12	CD67620	3.48	CD67820	5.29
21	6	2-1/8	12	CD67621	3.48	CD67821	5.29
29	6	1-3/4	12	CD67629	3.52	CD67829	5.44
30	6	1-5/8	12	CD67630	2.82	CD67830	4.29
40	6	1-5/8	12	CD67640	2.56	CD67840	3.97

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 191-192.

CARBIDE ENDMILLS  
 CARBIDE MICRO ENDMILLS  
 CARBIDE THREADMILLS  
 CARBIDE DRILL MILLS  
 CARBIDE CHAMFER MILLS  
 CARBIDE DRILLS  
 CARBIDE REAMERS  
 CARBIDE BURS  
 COUNTERSINKS  
 HSS & COBALT ENDMILLS  
 TAPS & DIES  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION





# A/C Extension Drills

## 12" OVERALL LENGTH - 135° SPLIT POINT



### SERIES 680

HIGH SPEED STEEL - NAS 907 - TYPE "B"  
OXIDE FINISH



### SERIES 688

M42 COBALT - NAS 907 - TYPE "J"  
STRAW FINISH

### FRACTIONAL SIZES

SIZE	OVERALL LENGTH	FLUTE LENGTH	PACKAGE QUANTITY	HSS	PRICE	COBALT	PRICE
1/8	12	1-5/8	12	CD68008	8.03	CD68808	12.53
9/64	12	1-3/4	12	CD68009	8.10	CD68809	14.07
5/32	12	2	12	CD68010	8.10	CD68810	12.83
11/64	12	2-1/8	12	CD68011	9.13	CD68811	13.94
3/16	12	2-5/16	12	CD68012	9.04	CD68812	13.56
13/64	12	2-7/16	12	CD68013	10.37	CD68813	17.74
7/32	12	2-1/2	12	CD68014	10.26	CD68814	16.00
15/64	12	2-5/8	12	CD68015	11.57	CD68815	17.13
1/4	12	2-3/4	12	CD68016	11.03	CD68816	16.36
17/64	12	2-7/8	6	CD68017	13.74	-	-
9/32	12	2-15/16	6	CD68018	14.04	-	-
19/64	12	3-1/16	6	CD68019	16.18	-	-
5/16	12	3-3/16	6	CD68020	17.71	-	-
21/64	12	3-5/16	6	CD68021	19.24	-	-
11/32	12	3-7/16	6	CD68022	19.03	-	-
23/64	12	3-1/2	6	CD68023	21.56	-	-
3/8	12	3-5/8	6	CD68024	21.76	-	-
25/64	12	3-3/4	6	CD68025	24.27	-	-
13/32	12	3-7/8	6	CD68026	23.40	-	-
27/64	12	3-15/16	6	CD68027	25.80	-	-
7/16	12	4-1/16	6	CD68028	25.85	-	-
29/64	12	4-3/16	6	CD68029	29.16	-	-
15/32	12	4-5/16	6	CD68030	30.21	-	-
31/64	12	4-3/8	6	CD68031	31.33	-	-
1/2	12	4-1/2	6	CD68032	31.00	-	-

### WIRE SIZES

SIZE	OVERALL LENGTH	FLUTE LENGTH	PACKAGE QUANTITY	HSS	PRICE	COBALT	PRICE
1	12	2-5/8	12	CD68101	12.60	CD68901	17.74
10	12	2-7/16	12	CD68110	10.13	CD68910	14.19
11	12	2-5/16	12	CD68111	10.22	CD68911	14.19
20	12	2-1/8	12	CD68120	9.19	CD68920	13.01
21	12	2-1/8	12	CD68121	9.02	CD68921	13.01
29	12	1-3/4	12	CD68129	9.56	CD68929	13.65
30	12	1-5/8	12	CD68130	9.02	CD68930	13.01
40	12	1-3/8	12	CD68140	9.02	CD68940	13.01

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 191-192.

A/C EXTENSION DRILLS

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION

# Drills

## EXTRA LENGTH DRILL - STRAIGHT SHANK - 118° POINT - 12" O.A.L. HIGH SPEED STEEL



**SERIES 686 - BRIGHT FINISH**

FRACTIONAL SIZES				
SIZE	FLUTE LENGTH	O.A.L.	ITEM#	PRICE
1/8	9	12	CD68608	17.30
9/64	9	12	CD68609	25.07
5/32	9	12	CD68610	22.80
11/64	9	12	CD68611	19.44
3/16	9	12	CD68612	19.44
13/64	9	12	CD68613	23.56
7/32	9	12	CD68614	21.10
15/64	9	12	CD68615	21.10
1/4	9	12	CD68616	21.82
17/64	9	12	CD68617	22.58
9/32	9	12	CD68618	22.58
19/64	9	12	CD68619	23.40
5/16	9	12	CD68620	23.40
21/64	9	12	CD68621	33.45
11/32	9	12	CD68622	25.07
23/64	9	12	CD68623	25.07

FRACTIONAL SIZES				
SIZE	FLUTE LENGTH	O.A.L.	ITEM#	PRICE
3/8	9	12	CD68624	23.10
25/64	9	12	CD68625	34.97
13/32	9	12	CD68626	34.97
27/64	9	12	CD68627	34.97
7/16	9	12	CD68628	29.86
29/64	9	12	CD68629	36.49
15/32	9	12	CD68630	32.83
31/64	9	12	CD68631	33.60
1/2	9	12	CD68632	33.60
17/32	9	12	CD68634	42.57
9/16	9	12	CD68636	42.57
19/32	9	12	CD68638	53.20
5/8	9	12	CD68640	51.69
11/16	9	12	CD68644	54.73
3/4	9	12	CD68648	61.65
-	-	-	-	-

## 1/4" REDUCED SHANK - 118° POINT HIGH SPEED STEEL



**SERIES 660 - OXIDE FINISH**

SIZE	SHANK DIAMETER	PKG. QTY.	ITEM#	PRICE
9/32	1/4	6	CD66018	3.07
5/16	1/4	6	CD66020	3.69
11/32	1/4	6	CD66022	3.69
3/8	1/4	6	CD66024	4.86
13/32	1/4	6	CD66026	5.61
7/16	1/4	6	CD66028	6.47
15/32	1/4	6	CD66030	7.19
1/2	1/4	6	CD66032	7.98

## 3/8" REDUCED SHANK - 118° POINT HIGH SPEED STEEL



**SERIES 650 - OXIDE FINISH**

SIZE	SHANK DIAMETER	PKG. QTY.	ITEM#	PRICE
25/64	3/8	6	CD65025	5.03
13/32	3/8	6	CD65026	5.67
27/64	3/8	6	CD65027	5.88
7/16	3/8	6	CD65028	6.28
29/64	3/8	6	CD65029	6.76
15/32	3/8	6	CD65030	7.24
31/64	3/8	6	CD65031	7.54
1/2	3/8	6	CD65032	7.78

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 191-192.

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 HSS & COBALT ENDMILLS  
 TAPS & DIES  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION



## SCREW EXTRACTORS HIGH SPEED STEEL



### SERIES 531

SIZE	FOR SCREW & BOLT SIZES	PIPE SIZE	PKG. QTY.	ITEM#	PRICE
1	3/16 - 1/4	-	1	CD53101	2.88
2	1/4 - 5/16	-	1	CD53102	3.07
3	5/16 - 7/16	-	1	CD53103	3.72
4	7/16 - 9/16	1/8	1	CD53104	3.94
5	9/16 - 3/4	1/4	1	CD53105	4.93
6	3/4 - 1	3/8	1	CD53106	10.83
7	1 - 1-3/8	1/2	1	CD53107	17.43
8	1-3/8 - 1-3/4	3/4	1	CD53108	23.71
9	1-3/4 - 2-1/8	1	1	CD53109	41.23
10	2-1/8 - 2-1/2	1-1/4	1	CD53110	106.99
11	2-1/2 - 3	1-1/2	1	CD53111	113.89
12	3 - 3-1/2	2	1	CD53112	151.08
SET	SIZES 1-5	-	1	CD53113	18.52

## DRILL DRIFTS



### SERIES 534 - OXIDE FINISH

SIZE	FOR USE WITH TAPER#	ITEM#	PRICE
1	1	CD53401	10.26
2	2	CD53402	12.16
3	3	CD53403	13.93
4	4,5,6	CD53404	15.36



OVER 13,000 "AMERICAN-MADE" PRODUCTS IN STOCK AND READY TO SHIP

SCREW EXTRACTORS • DRILL DRIFTS

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CARBIDE THREADMILLS

CARBIDE DRILL MILLS

CARBIDE DRILL MILLS

CARBIDE CHAMFER MILLS

CARBIDE DRILLS

CARBIDE REAMERS

CARBIDE BURS

COUNTERSINKS

HSS & COBALT ENDMILLS

TAPS & DIES

HSS & COBALT DRILLS

HSS & COBALT REAMERS

TECHNICAL INFORMATION

# Chucking Reamers

## STRAIGHT SHANK - STRAIGHT FLUTE



SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	SERIES 933		SERIES 1933	
						HSS	PRICE	M42 COBALT	PRICE
#80	.0135	3/8	2	3/4	.0135	TR96001	14.15	TR96310	15.66
#79	.0145	3/8	2	3/4	.0145	TR96002	14.15	TR96311	15.66
1/64	.0156	3/8	2	3/4	.0156	TR96003	14.15	TR96312	15.66
#78	.0160	3/8	2	7/8	.0160	TR96004	14.15	TR96313	15.66
#77	.0180	3/8	2	7/8	.0180	TR96005	14.15	TR96314	15.66
#76	.0200	3/8	2	7/8	.0200	TR96006	14.15	TR96315	15.66
#75	.0210	1/2	3	1	.0210	TR96007	14.15	TR96316	15.66
#74	.0225	1/2	3	1	.0225	TR96008	14.15	TR96317	15.66
#73	.0240	1/2	3	1-1/8	.0240	TR96009	14.15	TR96318	15.66
#72	.0250	1/2	3	1-1/8	.0250	TR96010	14.15	TR96319	15.66
#71	.0260	1/2	3	1-1/4	.0260	TR96011	14.15	TR96320	15.66
#70	.0280	1/2	3	1-1/4	.0280	TR96012	14.15	TR96321	15.66
#69	.0292	1/2	3	1-3/8	.0292	TR96013	14.15	TR96322	15.66
#68	.0310	1/2	3	1-3/8	.0310	TR96014	14.15	TR96323	15.66
1/32	.0312	1/2	3	1-3/8	.0312	TR96015	11.16	TR96324	12.89
#67	.0320	1/2	3	1-3/8	.0320	TR96016	11.85	TR96325	12.89
#66	.0330	1/2	3	1-3/8	.0330	TR96017	11.85	TR96326	12.89
#65	.0350	1/2	3	1-1/2	.0350	TR96018	11.85	TR96327	12.89
#64	.0360	1/2	3	1-1/2	.0360	TR96019	11.85	TR96328	12.89
#63	.0370	1/2	3	1-1/2	.0370	TR96020	11.85	TR96329	12.89
#62	.0380	1/2	3	1-1/2	.0380	TR96021	11.85	TR96330	12.89
#61	.0390	1/2	3	1-1/2	.0390	TR96022	11.85	TR96331	12.89
1.0mm	.0394	1/2	4	2-1/2	.0394	TR96023	11.85	TR96332	12.69
#60	.0400	1/2	4	2-1/2	.0390	TR96024	11.85	TR96333	12.69
#59	.0410	1/2	4	2-1/2	.0390	TR96025	11.85	TR96334	12.69
#58	.0420	1/2	4	2-1/2	.0390	TR96026	11.85	TR96335	12.69
#57	.0430	1/2	4	2-1/2	.0390	TR96027	11.85	TR96336	12.69
#56	.0465	1/2	4	2-1/2	.0455	TR96028	11.85	TR96337	12.69
3/64	.0469	1/2	4	2-1/2	.0455	TR96029	11.85	TR96338	12.69
#55	.0520	1/2	4	2-1/2	.0510	TR96030	11.85	TR96339	12.69
#54	.0550	1/2	4	2-1/2	.0510	TR96031	11.85	TR96340	12.69
1.5mm	.0591	1/2	4	2-1/2	.0510	TR96032	11.85	TR96341	12.69
#53	.0595	1/2	4	2-1/2	.0585	TR96033	11.85	TR96342	12.69
1/16	.0625	1/2	4	2-1/2	.0585	TR96034	10.65	TR96343	12.69
#52	.0635	1/2	4	2-1/2	.0585	TR96035	10.65	TR96344	12.69
#51	.0670	3/4	4	3	.0660	TR96036	9.54	TR96345	10.21
#50	.0700	3/4	4	3	.0660	TR96037	9.54	TR96346	10.21
#49	.0730	3/4	4	3	.0660	TR96038	9.54	TR96347	10.21
#48	.0760	3/4	4	3	.0720	TR96039	9.54	TR96348	10.21
5/64	.0781	3/4	4	3	.0720	TR96040	9.54	TR96349	10.21
#47	.0785	3/4	4	3	.0720	TR96041	9.54	TR96350	10.21
2.0mm	.0787	3/4	4	3	.0720	TR96042	9.54	TR96351	10.21
#46	.0810	3/4	4	3	.0771	TR96043	9.54	TR96352	10.21
#45	.0820	3/4	4	3	.0771	TR96044	9.54	TR96353	10.21
#44	.0860	3/4	4	3	.0810	TR96045	9.54	TR96354	10.21
#43	.0890	3/4	4	3	.0810	TR96046	9.54	TR96355	10.21

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THRU 1/2" DIAMETER	1/2" TO 5/8"	5/8" TO 1-1/2"	1-1/2" TO 2"
+ .0002, -.0000	+ .0003, -.0000	+ .0001, +.0004	+ .0002, +.0006

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 TECHNICAL INFORMATION

HSS & COBALT REAMERS





# Chucking Reamers

## STRAIGHT SHANK - STRAIGHT FLUTE



SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	SERIES 933		SERIES 1933	
						HSS	PRICE	M42 COBALT	PRICE
#42	.0935	3/4	4	3	.0880	TR96047	9.54	TR96356	10.21
3/32	.0938	3/4	4	3	.0880	TR96048	8.57	TR96357	10.21
#41	.0960	7/8	4	3-1/2	.0928	TR96049	9.63	TR96358	10.29
#40	.0980	7/8	4	3-1/2	.0928	TR96050	9.63	TR96359	10.29
2.5mm	.0984	7/8	4	3-1/2	.0928	TR96051	9.63	TR96360	10.29
#39	.0995	7/8	4	3-1/2	.0928	TR96052	9.63	TR96361	10.29
#38	.1015	7/8	4	3-1/2	.0950	TR96053	9.63	TR96362	10.29
#37	.1040	7/8	4	3-1/2	.0950	TR96054	9.63	TR96363	10.29
#36	.1065	7/8	4	3-1/2	.1030	TR96055	9.63	TR96364	10.29
7/64	.1094	7/8	4	3-1/2	.1030	TR96056	9.93	TR96365	10.61
#35	.1100	7/8	4	3-1/2	.1030	TR96057	9.93	TR96366	10.61
#34	.1110	7/8	4	3-1/2	.1055	TR96058	9.93	TR96367	10.61
#33	.1130	7/8	4	3-1/2	.1055	TR96059	9.93	TR96368	10.61
#32	.1160	7/8	4	3-1/2	.1120	TR96060	9.93	TR96369	10.61
3.0mm	.1181	7/8	4	3-1/2	.1120	TR96061	9.93	TR96370	10.61
#31	.1200	7/8	4	3-1/2	.1120	TR96062	9.93	TR96371	10.61
o/u	.1240	7/8	4	3-1/2	.1190	TR96063	9.93	TR96372	10.61
1/8	.1250	7/8	4	3-1/2	.1190	TR96064	7.91	TR96373	8.48
o/u	.1260	7/8	4	3-1/2	.1190	TR96065	9.93	TR96374	10.61
#30	.1285	7/8	4	3-1/2	.1190	TR96066	9.93	TR96375	10.61
#29	.1360	1	4	4	.1275	TR96067	11.85	TR96376	12.69
3.5mm	.1378	1	4	4	.1350	TR96068	11.85	TR96377	12.69
#28	.1405	1	4	4	.1350	TR96069	11.85	TR96378	12.69
9/64	.1406	1	4	4	.1350	TR96070	11.85	TR96379	12.69
#27	.1440	1	4	4	.1350	TR96071	11.85	TR96380	12.69
#26	.1470	1	4	4	.1430	TR96072	11.85	TR96381	12.69
#25	.1495	1	4	4	.1430	TR96073	11.85	TR96382	12.69
#24	.1520	1	4	4	.1460	TR96074	11.85	TR96383	12.69
#23	.1540	1	4	4	.1460	TR96075	11.85	TR96384	12.69
5/32	.1562	1	4	4	.1510	TR96076	11.85	TR96385	12.69
#22	.1570	1	6	4	.1510	TR96077	11.85	TR96386	12.69
4.0mm	.1575	1	6	4	.1510	TR96078	11.85	TR96387	12.69
#21	.1590	1-1/8	6	4-1/2	.1530	TR96079	12.65	TR96388	13.54
#20	.1610	1-1/8	6	4-1/2	.1530	TR96080	12.65	TR96389	13.54
#19	.1660	1-1/8	6	4-1/2	.1595	TR96081	12.65	TR96390	13.54
#18	.1695	1-1/8	6	4-1/2	.1595	TR96082	12.65	TR96391	13.54
11/64	.1719	1-1/8	6	4-1/2	.1645	TR96083	12.65	TR96392	13.54
#17	.1730	1-1/8	6	4-1/2	.1645	TR96084	12.65	TR96393	13.54
#16	.1770	1-1/8	6	4-1/2	.1704	TR96085	12.65	TR96394	13.54
4.5mm	.1772	1-1/8	6	4-1/2	.1704	TR96086	12.65	TR96395	13.54
#15	.1800	1-1/8	6	4-1/2	.1755	TR96087	12.65	TR96396	13.54
#14	.1820	1-1/8	6	4-1/2	.1755	TR96088	12.65	TR96397	13.54
#13	.1850	1-1/8	6	4-1/2	.1805	TR96089	12.65	TR96398	13.54
o/u	.1865	1-1/8	6	4-1/2	.1805	TR96090	12.65	TR96399	13.54
3/16	.1875	1-1/8	6	4-1/2	.1805	TR96091	11.38	TR96400	13.08
o/u	.1885	1-1/8	6	4-1/2	.1805	TR96092	12.65	TR96401	13.54

CONTINUED ON NEXT PAGE

THRU 1/2" DIAMETER	1/2" TO 5/8"	5/8" TO 1-1/2"	1-1/2" TO 2"
+ .0002, -.0000	+ .0003, -.0000	+ .0001, +.0004	+ .0002, +.0006

HSS & COBALT REAMERS

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 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION

# Chucking Reamers

## STRAIGHT SHANK - STRAIGHT FLUTE



SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	SERIES 933		SERIES 1933	
						HSS	PRICE	M42 COBALT	PRICE
#12	.1890	1-1/8	6	4-1/2	.1805	TR96093	12.65	TR96402	13.54
#11	.1910	1-1/4	6	5	.1860	TR96094	14.17	TR96403	16.36
#10	.1935	1-1/4	6	5	.1860	TR96095	14.17	TR96404	16.36
#9	.1960	1-1/4	6	5	.1895	TR96096	14.17	TR96405	16.36
5.0mm	.1969	1-1/4	6	5	.1895	TR96097	14.17	TR96406	16.36
#8	.1990	1-1/4	6	5	.1895	TR96098	14.17	TR96407	16.36
#7	.2010	1-1/4	6	5	.1895	TR96099	14.17	TR96408	16.36
13/64	.2031	1-1/4	6	5	.1945	TR96100	14.17	TR96409	16.36
#6	.2040	1-1/4	6	5	.1945	TR96101	14.17	TR96410	16.36
#5	.2055	1-1/4	6	5	.2016	TR96102	14.17	TR96411	16.36
#4	.2090	1-1/4	6	5	.2016	TR96103	14.17	TR96412	16.36
#3	.2130	1-1/4	6	5	.2075	TR96104	14.17	TR96413	16.36
5.5mm	.2165	1-1/4	6	5	.2075	TR96105	14.17	TR96414	16.36
7/32	.2188	1-1/4	6	5	.2075	TR96106	14.17	TR96415	16.36
#2	.2210	1-1/2	6	6	.2173	TR96107	14.56	TR96416	16.83
#1	.2280	1-1/2	6	6	.2173	TR96108	14.56	TR96417	16.83
A	.2340	1-1/2	6	6	.2265	TR96109	14.56	TR96418	16.83
15/64	.2344	1-1/2	6	6	.2265	TR96110	14.56	TR96419	16.83
6.0mm	.2362	1-1/2	6	6	.2265	TR96111	15.35	TR96420	16.91
B	.2380	1-1/2	6	6	.2329	TR96112	15.35	TR96421	16.91
C	.2420	1-1/2	6	6	.2329	TR96113	15.35	TR96422	16.91
D	.2460	1-1/2	6	6	.2329	TR96114	15.35	TR96423	15.36
o/u	.2490	1-1/2	6	6	.2405	TR96115	13.82	TR96424	15.21
1/4	.2500	1-1/2	6	6	.2405	TR96116	13.03	TR96425	14.37
o/u	.2510	1-1/2	6	6	.2405	TR96117	13.82	TR96426	15.22
6.5mm	.2559	1-1/2	6	6	.2405	TR96118	15.35	TR96427	16.91
F	.2570	1-1/2	6	6	.2485	TR96119	15.35	TR96428	16.91
G	.2610	1-1/2	6	6	.2485	TR96120	15.35	TR96429	16.91
17/64	.2656	1-1/2	6	6	.2485	TR96121	17.10	TR96430	22.93
H	.2660	1-1/2	6	6	.2485	TR96122	17.10	TR96431	22.93
I	.2720	1-1/2	6	6	.2485	TR96123	17.10	TR96432	22.93
7.0mm	.2756	1-1/2	6	6	.2485	TR96124	17.10	TR96433	22.93
J	.2770	1-1/2	6	6	.2485	TR96125	17.10	TR96434	22.93
K	.2810	1-1/2	6	6	.2485	TR96126	17.10	TR96435	22.93
9/32	.2812	1-1/2	6	6	.2485	TR96127	16.23	TR96436	21.78
L	.2900	1-1/2	6	6	.2792	TR96128	17.10	TR96437	22.93
M	.2950	1-1/2	6	6	.2792	TR96129	17.10	TR96438	22.93
7.5mm	.2953	1-1/2	6	6	.2792	TR96130	17.10	TR96439	22.93
19/64	.2969	1-1/2	6	6	.2792	TR96131	17.10	TR96440	22.93
N	.3020	1-1/2	6	6	.2792	TR96132	17.10	TR96441	22.93
o/u	.3115	1-1/2	6	6	.2792	TR96133	16.23	TR96442	21.78
5/16	.3125	1-1/2	6	6	.2792	TR96134	15.41	TR96443	20.63
o/u	.3135	1-1/2	6	6	.2792	TR96135	16.23	TR96444	21.78
8.0mm	.3150	1-1/2	6	6	.2792	TR96136	17.10	TR96445	22.93
O	.3160	1-1/2	6	6	.2792	TR96137	17.10	TR96446	22.93
P	.3230	1-1/2	6	6	.2792	TR96138	18.28	TR96447	24.71

CONTINUED ON NEXT PAGE

THRU 1/2" DIAMETER	1/2" TO 5/8"	5/8" TO 1-1/2"	1-1/2" TO 2"
+ .0002, -.0000	+ .0003, -.0000	+ .0001, +.0004	+ .0002, +.0006

CARBIDE ENDMILLS  
 CARBIDE MICRO ENDMILLS  
 CARBIDE THREADMILLS  
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 TECHNICAL INFORMATION

HSS & COBALT REAMERS



# Chucking Reamers

## STRAIGHT SHANK - STRAIGHT FLUTE



SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	SERIES 933		SERIES 1933	
						HSS	PRICE	M42 COBALT	PRICE
21/64	.3281	1-1/2	6	6	.2792	TR96139	18.28	TR96448	24.71
Q	.3320	1-1/2	6	6	.2792	TR96140	18.28	TR96449	24.71
8.5mm	.3346	1-1/2	6	6	.2792	TR96141	18.28	TR96450	24.71
R	.3390	1-1/2	6	6	.2792	TR96142	18.28	TR96451	24.71
11/32	.3438	1-1/2	6	6	.2792	TR96143	18.28	TR96452	24.71
S	.3480	1-3/4	6	6	.3105	TR96144	18.47	TR96453	25.12
9.0mm	.3543	1-3/4	6	7	.3105	TR96145	18.47	TR96454	25.12
T	.3580	1-3/4	6	7	.3105	TR96146	18.47	TR96455	25.12
23/64	.3594	1-3/4	6	7	.3105	TR96147	18.47	TR96456	25.12
U	.3680	1-3/4	6	7	.3105	TR96148	18.47	TR96457	25.12
9.5mm-o/u	.3740	1-3/4	6	7	.3105	TR96149	17.54	TR96458	23.84
3/8	.3750	1-3/4	6	7	.3105	TR96150	16.59	TR96459	22.60
o/u	.3760	1-3/4	6	7	.3105	TR96151	17.54	TR96460	23.84
V	.3770	1-3/4	6	7	.3105	TR96152	20.07	TR96461	30.62
W	.3860	1-3/4	6	7	.3105	TR96153	20.07	TR96462	30.62
25/64	.3906	1-3/4	6	7	.3105	TR96154	20.07	TR96463	30.62
10.0mm	.3937	1-3/4	6	7	.3105	TR96155	20.07	TR96464	30.62
X	.3970	1-3/4	6	7	.3105	TR96156	20.07	TR96465	30.62
Y	.4040	1-3/4	6	7	.3105	TR96157	20.83	TR96466	30.62
13/32	.4062	1-3/4	6	7	.3105	TR96158	20.83	TR96467	30.62
Z	.4130	1-3/4	6	7	.3730	TR96159	20.83	TR96468	30.62
10.5mm	.4134	1-3/4	6	7	.3730	TR96160	21.04	TR96469	30.62
27/64	.4219	1-3/4	6	7	.3730	TR96161	20.83	TR96470	30.62
11.0mm	.4331	1-3/4	6	7	.3730	TR96162	20.83	TR96471	30.62
o/u	.4365	1-3/4	6	7	.3730	TR96163	19.79	TR96472	30.62
7/16	.4375	1-3/4	6	7	.3730	TR96164	19.79	TR96473	30.62
o/u	.4385	1-3/4	6	7	.3730	TR96165	19.79	TR96474	30.62
11.5mm	.4528	1-3/4	6	7	.3730	TR96166	22.69	TR96475	35.10
29/64	.4531	1-3/4	6	7	.3730	TR96167	22.69	TR96476	35.10
15/32	.4688	1-3/4	6	7	.3730	TR96168	22.69	TR96477	35.10
12.0mm	.4724	2	6	8	.4355	TR96169	22.69	TR96478	35.10
31/64	.4844	2	6	8	.4355	TR96170	22.69	TR96479	35.10
12.5mm	.4921	2	6	8	.4355	TR96171	22.69	TR96480	35.10
o/u	.4990	2	6	8	.4355	TR96172	21.54	TR96481	35.10
1/2	.5000	2	6	8	.4355	TR96173	21.54	TR96482	35.10
o/u	.5010	2	6	8	.4355	TR96174	21.54	TR96483	35.10
13.0mm	.5118	2	6	8	.4355	TR96175	28.11	-	-
33/64	.5156	2	6	8	.4355	TR96176	28.11	-	-
17/32	.5312	2	6	8	.4355	TR96177	26.78	TR96484	39.37
13.5mm	.5315	2	6	8	.4355	TR96178	28.11	-	-
35/64	.5469	2	8	8	.4355	TR96179	28.11	-	-
14.0mm	.5512	2	8	8	.4355	TR96180	28.11	-	-
o/u	.5615	2	8	8	.4355	TR96181	28.11	-	-
9/16	.5625	2	8	8	.4355	TR96182	26.78	TR96485	39.37
o/u	.5635	2	8	8	.4355	TR96183	28.11	-	-
14.5mm	.5709	2	8	8	.4355	TR96184	28.11	-	-

CONTINUED ON NEXT PAGE

THRU 1/2" DIAMETER	1/2" TO 5/8"	5/8" TO 1-1/2"	1-1/2" TO 2"
+ .0002, -.0000	+ .0003, -.0000	+ .0001, +.0004	+ .0002, +.0006

HSS & COBALT REAMERS

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 TECHNICAL INFORMATION



# Chucking Reamers

## STRAIGHT SHANK - STRAIGHT FLUTE



SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	SERIES 933		SERIES 1933	
						HSS	PRICE	M42 COBALT	PRICE
37/64	.5781	2	8	8	.4355	TR96185	28.11	-	-
15.0mm	.5906	2	8	8	.4355	TR96186	28.11	-	-
19/32	.5938	2	8	8	.4355	TR96187	26.78	TR96486	39.37
39/64	.6094	2-1/4	8	9	.5615	TR96188	32.81	-	-
15.5mm	.6102	2-1/4	8	9	.5615	TR96189	32.81	-	-
o/u	.6240	2-1/4	8	9	.5615	TR96190	32.81	-	-
5/8	.6250	2-1/4	8	9	.5615	TR96191	31.36	TR96487	45.94
o/u	.6260	2-1/4	8	9	.5615	TR96192	32.81	-	-
16.0mm	.6299	2-1/4	8	9	.5615	TR96193	32.81	-	-
41/64	.6406	2-1/4	8	9	.5615	TR96194	32.81	-	-
16.5mm	.6496	2-1/4	8	9	.5615	TR96195	32.81	-	-
21/32	.6562	2-1/4	8	9	.5615	TR96196	35.33	TR96488	51.92
17.0mm	.6693	2-1/4	8	9	.5615	TR96197	37.08	-	-
43/64	.6719	2-1/4	8	9	.5615	TR96198	37.08	-	-
o/u	.6865	2-1/4	8	9	.5615	TR96199	37.08	-	-
11/16	.6875	2-1/4	8	9	.5615	TR96200	35.33	TR96489	51.92
o/u	.6885	2-1/4	8	9	.5615	TR96201	39.81	-	-
17.5mm	.6890	2-1/4	8	9	.5615	TR96202	39.81	-	-
45/64	.7031	2-1/4	8	9	.5615	TR96203	39.81	-	-
18.0mm	.7087	2-1/4	8	9	.5615	TR96204	39.81	-	-
23/32	.7188	2-1/4	8	9	.5615	TR96205	39.43	TR96490	57.96
18.5mm	.7283	2-1/2	8	9	.6240	TR96206	41.38	-	-
47/64	.7344	2-1/2	8	9	.6240	TR96207	45.84	-	-
19.0mm	.7480	2-1/2	8	9	.6240	TR96208	45.84	-	-
o/u	.7490	2-1/2	8	9	.6240	TR96209	45.84	-	-
3/4	.7500	2-1/2	8	9	.6240	TR96210	39.66	TR96491	58.29
o/u	.7510	2-1/2	8	9	.6240	TR96211	44.12	-	-
49/64	.7656	2-1/2	8	9	.6240	TR96212	44.12	-	-
19.5mm	.7677	2-1/2	8	9	.6240	TR96213	44.12	-	-
25/32	.7812	2-1/2	8	9	.6240	TR96214	42.77	TR96492	62.86
20.0mm	.7874	2-1/2	8	9	.6240	TR96215	47.24	-	-
51/64	.7969	2-1/2	8	9	.6240	TR96216	47.24	-	-
20.5mm	.8071	2-1/2	8	9	.6240	TR96217	47.24	-	-
o/u	.8115	2-1/2	8	9	.6240	TR96218	47.24	-	-
13/16	.8125	2-1/2	8	9	.6240	TR96219	42.77	TR96493	62.86
o/u	.8135	2-1/2			.6240	TR96220	47.24	-	-
21.0mm	.8268	2-1/2	8	9-1/2	.6240	TR96221	47.24	-	-
53/64	.8281	2-1/2	8	9-1/2	.6240	TR96222	47.24	-	-
27/32	.8438	2-1/2	8	9-1/2	.6240	TR96223	50.60	TR96494	74.38
21.5mm	.8465	2-5/8	8	10	.7490	TR96224	55.08	-	-
55/64	.8594	2-5/8	8	10	.7490	TR96225	55.08	-	-
22.0mm	.8661	2-5/8	8	10	.7490	TR96226	55.08	-	-
o/u	.8740	2-5/8	8	10	.7490	TR96227	55.08	-	-
7/8	.8750	2-5/8	8	10	.7490	TR96228	51.76	TR96495	76.11
o/u	.8760	2-5/8	8	10	.7490	TR96229	56.25	-	-
22.5mm	.8858	2-5/8	8	10	.7490	TR96230	56.25	-	-

CONTINUED ON NEXT PAGE

THRU 1/2" DIAMETER	1/2" TO 5/8"	5/8" TO 1-1/2"	1-1/2" TO 2"
+ .0002, -.0000	+ .0003, -.0000	+ .0001, +.0004	+ .0002, +.0006

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HSS & COBALT REAMERS





# Chucking Reamers

## STRAIGHT SHANK - STRAIGHT FLUTE



SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	SERIES 933		SERIES 1933	
						HSS	PRICE	M42 COBALT	PRICE
57/64	.8906	2-5/8	8	10	.7490	TR96231	56.25	-	-
23.0mm	.9055	2-5/8	8	10	.7490	TR96232	56.25	-	-
29/32	.9062	2-5/8	8	10	.7490	TR96233	55.80	TR96496	82.00
59/64	.9219	2-5/8	8	10	.7490	TR96234	60.24	-	-
23.5mm	.9252	2-5/8	8	10	.7490	TR96235	60.24	-	-
o/u	.9365	2-5/8	8	10	.7490	TR96236	60.24	-	-
15/16	.9375	2-5/8	8	10	.7490	TR96237	55.80	TR96497	82.00
o/u	.9385	2-5/8	8	10	.7490	TR96238	60.24	-	-
24.0mm	.9449	2-5/8	8	10	.7490	TR96239	60.24	-	-
61/64	.9531	2-5/8	8	10	.7490	TR96240	60.24	-	-
24.5mm	.9646	2-5/8	8	10	.7490	TR96241	60.24	-	-
31/32	.9688	2-5/8	8	10	.7490	TR96242	62.50	TR96498	91.84
25.0mm	.9843	2-3/4	8	10-1/2	.8740	TR96243	63.96	-	-
63/64	.9844	2-3/4	8	10-1/2	.8740	TR96244	63.96	-	-
o/u	.9990	2-3/4	8	10-1/2	.8740	TR96245	63.96	-	-
1	1.0000	2-3/4	8	10-1/2	.8740	TR96246	63.08	TR96499	92.70
o/u	1.0010	2-3/4	8	10-1/2	.8740	TR96247	67.54	-	-
1-1/32	1.0312	2-3/4	8	10-1/2	.8740	TR96248	87.76	-	-
1-1/16	1.0625	2-3/4	8	10-1/2	.8740	TR96249	69.92	TR96500	102.78
1-3/32	1.0938	2-7/8	8	11	.8740	TR96250	92.17	-	-
1-1/8	1.1250	2-7/8	8	11	.8740	TR96251	74.32	TR96501	109.22
1-5/32	1.1562	2-7/8	10	11	.9990	TR96252	104.87	-	-
1-3/16	1.1875	2-7/8	10	11	.9990	TR96253	87.03	TR96502	127.94
1-7/32	1.2188	3	10	11-1/2	.9990	TR96254	110.09	-	-
1-1/4	1.2500	3	10	11-1/2	.9990	TR96255	92.23	TR96503	135.57
1-9/32	1.2812	3	10	11-1/2	.9990	TR96256	125.45	-	-
1-5/16	1.3125	3	10	11-1/2	.9990	TR96257	107.58	TR96504	158.12
1-11/32	1.3438	3-1/4	10	12	.9990	TR96258	130.91	-	-
1-3/8	1.3750	3-1/4	10	12	.9990	TR96259	113.05	TR96505	166.19
1-13/32	1.4062	3-1/4	10	12	1.2490	TR96260	139.08	-	-
1-7/16	1.4375	3-1/4	10	12	1.2490	TR96261	121.23	TR96506	178.24
1-15/32	1.4688	3-1/2	10	12-1/2	1.2490	TR96262	148.41	-	-
1-1/2	1.5000	3-1/2	10	12-1/2	1.2490	TR96263	130.54	TR96507	191.90
1-9/16	1.5625	3-1/2	12	13	1.2490	TR96910	184.81	-	-
1-5/8	1.6250	3-1/2	12	13	1.2490	TR96911	184.81	-	-
1-11/16	1.6875	4	12	13-1/2	1.2490	TR96912	212.25	-	-
1-3/4	1.7500	4	12	13-1/2	1.2490	TR96913	212.25	-	-
1-13/16	1.8125	4	12	14	1.4990	TR96914	244.46	-	-
1-7/8	1.8750	4	12	14	1.4990	TR96915	244.46	-	-
1-15/16	1.9375	4	12	14	1.4990	TR96916	286.67	-	-
2	2.0000	4	12	14	1.4990	TR96917	286.67	-	-

HSS & COBALT REAMERS

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TECHNICAL INFORMATION

THRU 1/2" DIAMETER	1/2" TO 5/8"	5/8" TO 1-1/2"	1-1/2" TO 2"
+0.0002, -0.0000	+0.0003, -0.0000	+0.0001, +0.0004	+0.0002, +0.0006



Premium Quality American-Made Cutting Tools

# Chucking Reamers



## STOCKED INTERMEDIATE SIZES - HIGH SPEED STEEL

DEC SIZE	ITEM#	PRICE	DEC SIZE	ITEM#	PRICE	DEC SIZE	ITEM#	PRICE	DEC SIZE	ITEM#	PRICE	DEC SIZE	ITEM#	PRICE	DEC SIZE	ITEM#	PRICE			
0.0100	TR94000	17.62	0.0570	TR94068	13.87	0.0985	TR94136	12.43	0.1390	TR94204	14.58	0.1805	TR94272	13.69	0.2230	TR94340	17.13	0.2620	TR94408	19.70
0.0105	TR94001	17.62	0.0575	TR94069	13.87	0.0990	TR94137	12.43	0.1395	TR94205	14.58	0.1810	TR94273	13.69	0.2235	TR94341	17.13	0.2625	TR94409	19.70
0.0110	TR94002	17.62	0.0580	TR94070	13.87	0.1000	TR94138	12.43	0.1400	TR94206	14.58	0.1815	TR94274	13.69	0.2240	TR94342	17.13	0.2630	TR94410	19.70
0.0115	TR94003	17.62	0.0585	TR94071	13.87	0.1005	TR94139	12.43	0.1410	TR94207	13.87	0.1825	TR94275	13.69	0.2245	TR94343	17.13	0.2635	TR94411	19.70
0.0120	TR94004	17.62	0.0590	TR94072	13.87	0.1010	TR94140	12.43	0.1415	TR94208	13.87	0.1830	TR94276	13.69	0.2250	TR94344	17.13	0.2640	TR94412	19.70
0.0125	TR94005	17.62	0.0600	TR94073	13.87	0.1020	TR94141	12.43	0.1420	TR94209	13.87	0.1835	TR94277	13.69	0.2255	TR94345	17.13	0.2645	TR94413	19.70
0.0130	TR94006	17.62	0.0605	TR94074	13.87	0.1025	TR94142	12.43	0.1425	TR94210	13.87	0.1840	TR94278	13.69	0.2260	TR94346	17.13	0.2650	TR94414	19.70
0.0140	TR94007	17.62	0.0610	TR94075	13.87	0.1030	TR94143	12.43	0.1430	TR94211	13.87	0.1845	TR94279	13.69	0.2265	TR94347	17.13	0.2655	TR94415	19.70
0.0150	TR94008	17.62	0.0615	TR94076	13.87	0.1035	TR94144	12.43	0.1435	TR94212	13.87	0.1855	TR94280	13.69	0.2270	TR94348	17.13	0.2665	TR94416	19.70
0.0155	TR94009	17.62	0.0620	TR94077	13.87	0.1045	TR94145	12.43	0.1445	TR94213	13.87	0.1860	TR94281	13.69	0.2275	TR94349	17.13	0.2670	TR94417	19.70
0.0165	TR94010	17.62	0.0630	TR94078	12.43	0.1050	TR94146	12.43	0.1450	TR94214	13.87	0.1870	TR94282	13.69	0.2285	TR94350	17.13	0.2675	TR94418	19.70
0.0170	TR94011	17.62	0.0640	TR94079	12.43	0.1055	TR94147	12.43	0.1455	TR94215	13.87	0.1880	TR94283	17.28	0.2290	TR94351	17.13	0.2680	TR94419	19.70
0.0175	TR94012	17.62	0.0645	TR94080	12.43	0.1060	TR94148	12.43	0.1460	TR94216	13.87	0.1895	TR94284	17.28	0.2295	TR94352	17.13	0.2685	TR94420	19.70
0.0185	TR94013	17.62	0.0650	TR94081	12.43	0.1070	TR94149	12.43	0.1465	TR94217	13.87	0.1900	TR94285	17.28	0.2300	TR94353	17.13	0.2690	TR94421	19.70
0.0190	TR94014	17.62	0.0655	TR94082	12.43	0.1075	TR94150	12.43	0.1475	TR94218	13.87	0.1905	TR94286	17.28	0.2305	TR94354	17.13	0.2695	TR94422	19.70
0.0195	TR94015	17.62	0.0660	TR94083	12.43	0.1080	TR94151	12.43	0.1480	TR94219	13.87	0.1915	TR94287	17.28	0.2310	TR94355	17.13	0.2700	TR94423	19.70
0.0205	TR94016	16.04	0.0665	TR94084	12.43	0.1085	TR94152	12.43	0.1485	TR94220	13.87	0.1920	TR94288	17.28	0.2315	TR94356	17.13	0.2705	TR94424	19.70
0.0215	TR94017	16.04	0.0675	TR94085	12.43	0.1090	TR94153	12.43	0.1490	TR94221	13.87	0.1925	TR94289	17.28	0.2320	TR94357	17.13	0.2710	TR94425	19.70
0.0220	TR94018	16.04	0.0680	TR94086	12.43	0.1095	TR94154	10.75	0.1500	TR94222	13.87	0.1930	TR94290	17.28	0.2325	TR94358	17.13	0.2715	TR94426	19.70
0.0230	TR94019	16.04	0.0685	TR94087	12.43	0.1105	TR94155	10.75	0.1505	TR94223	13.87	0.1940	TR94291	17.28	0.2330	TR94359	17.13	0.2720	TR94427	19.70
0.0235	TR94020	16.04	0.0690	TR94088	12.43	0.1115	TR94156	10.75	0.1510	TR94224	13.87	0.1945	TR94292	17.28	0.2335	TR94360	17.13	0.2725	TR94428	19.70
0.0245	TR94021	16.04	0.0695	TR94089	12.43	0.1120	TR94157	10.75	0.1515	TR94225	13.87	0.1950	TR94293	17.28	0.2345	TR94361	15.44	0.2735	TR94429	19.70
0.0255	TR94022	16.04	0.0705	TR94090	12.43	0.1125	TR94158	10.75	0.1525	TR94226	13.87	0.1955	TR94294	17.28	0.2350	TR94362	15.44	0.2740	TR94430	19.70
0.0265	TR94023	16.04	0.0710	TR94091	12.43	0.1135	TR94159	10.75	0.1530	TR94227	13.87	0.1965	TR94295	17.28	0.2355	TR94363	15.44	0.2745	TR94431	19.70
0.0270	TR94024	16.04	0.0715	TR94092	12.43	0.1140	TR94160	10.75	0.1535	TR94228	13.87	0.1970	TR94296	17.28	0.2360	TR94364	15.44	0.2750	TR94432	19.70
0.0275	TR94025	16.04	0.0720	TR94093	12.43	0.1145	TR94161	10.75	0.1545	TR94229	13.87	0.1975	TR94297	17.28	0.2365	TR94365	15.44	0.2755	TR94433	19.70
0.0285	TR94026	16.04	0.0725	TR94094	12.43	0.1150	TR94162	10.75	0.1550	TR94230	13.87	0.1980	TR94298	17.28	0.2370	TR94366	15.44	0.2760	TR94434	19.70
0.0290	TR94027	16.04	0.0735	TR94095	12.43	0.1155	TR94163	10.75	0.1555	TR94231	13.87	0.1985	TR94299	17.28	0.2375	TR94367	15.44	0.2765	TR94435	19.70
0.0295	TR94028	14.58	0.0740	TR94096	12.43	0.1165	TR94164	10.75	0.1560	TR94232	13.87	0.1995	TR94300	17.28	0.2385	TR94368	15.44	0.2775	TR94436	19.70
0.0300	TR94029	14.58	0.0745	TR94097	12.43	0.1170	TR94165	10.75	0.1565	TR94233	14.58	0.2000	TR94301	17.28	0.2390	TR94369	15.44	0.2780	TR94437	19.70
0.0305	TR94030	14.58	0.0750	TR94098	12.43	0.1175	TR94166	10.75	0.1580	TR94234	14.58	0.2005	TR94302	17.28	0.2395	TR94370	15.44	0.2785	TR94438	19.70
0.0315	TR94031	14.58	0.0755	TR94099	12.43	0.1180	TR94167	10.75	0.1585	TR94235	14.58	0.2015	TR94303	17.28	0.2400	TR94371	15.44	0.2790	TR94439	19.70
0.0325	TR94032	14.58	0.0765	TR94100	12.43	0.1185	TR94168	10.75	0.1595	TR94236	14.58	0.2020	TR94304	17.28	0.2405	TR94372	15.44	0.2795	TR94440	19.70
0.0335	TR94033	14.58	0.0770	TR94101	12.43	0.1190	TR94169	10.75	0.1600	TR94237	14.58	0.2025	TR94305	17.28	0.2410	TR94373	15.44	0.2800	TR94441	19.70
0.0340	TR94034	14.58	0.0775	TR94102	12.43	0.1195	TR94170	10.75	0.1605	TR94238	14.58	0.2030	TR94306	17.28	0.2415	TR94374	15.44	0.2805	TR94442	19.70
0.0345	TR94035	14.58	0.0780	TR94103	12.43	0.1200	TR94171	10.75	0.1615	TR94239	14.58	0.2035	TR94307	16.85	0.2425	TR94375	15.44	0.2815	TR94443	19.70
0.0355	TR94036	14.58	0.0790	TR94104	12.43	0.1205	TR94172	10.75	0.1620	TR94240	14.58	0.2045	TR94308	16.85	0.2430	TR94376	15.44	0.2820	TR94444	19.70
0.0365	TR94037	14.58	0.0795	TR94105	12.43	0.1215	TR94173	10.75	0.1625	TR94241	14.58	0.2050	TR94309	16.85	0.2435	TR94377	15.44	0.2825	TR94445	19.70
0.0375	TR94038	14.58	0.0800	TR94106	12.43	0.1220	TR94174	10.75	0.1630	TR94242	14.58	0.2060	TR94310	16.85	0.2440	TR94378	15.44	0.2830	TR94446	19.70
0.0385	TR94039	14.58	0.0805	TR94107	12.43	0.1225	TR94175	10.75	0.1635	TR94243	14.58	0.2065	TR94311	16.85	0.2445	TR94379	15.44	0.2835	TR94447	19.70
0.0395	TR94040	13.87	0.0815	TR94108	12.43	0.1230	TR94176	10.75	0.1640	TR94244	14.58	0.2070	TR94312	16.85	0.2450	TR94380	15.44	0.2840	TR94448	19.70
0.0405	TR94041	13.87	0.0825	TR94109	12.43	0.1235	TR94177	10.75	0.1645	TR94245	14.58	0.2075	TR94313	16.85	0.2455	TR94381	15.44	0.2845	TR94449	19.70
0.0415	TR94042	13.87	0.0830	TR94110	12.43	0.1245	TR94178	10.75	0.1650	TR94246	14.58	0.2080	TR94314	16.85	0.2465	TR94382	15.44	0.2850	TR94450	19.70
0.0425	TR94043	13.87	0.0835	TR94111	12.43	0.1247	TR94179	10.75	0.1655	TR94247	14.58	0.2085	TR94315	16.85	0.2470	TR94383	15.44	0.2855	TR94451	19.70
0.0435	TR94044	13.87	0.0840	TR94112	12.43	0.1255	TR94180	14.58	0.1665	TR94248	14.58	0.2095	TR94316	16.85	0.2475	TR94384	15.44	0.2860	TR94452	19.70
0.0440	TR94045	13.87	0.0845	TR94113	12.43	0.1265	TR94181	14.58	0.1670	TR94249	14.58	0.2100	TR94317	16.85	0.2480	TR94385	15.44	0.2865	TR94453	19.70
0.0445	TR94046	13.87	0.0850	TR94114	12.43	0.1270	TR94182	14.58	0.1675	TR94250	14.58	0.2105	TR94318	16.85	0.2485	TR94386	15.44	0.2870	TR94454	19.70
0.0450	TR94047	13.87	0.0855	TR94115	12.43	0.1275	TR94183	14.58	0.1680	TR94251	14.58	0.2110	TR94319	16.85	0.2495	TR94387	15.44	0.2875	TR94455	19.70
0.0455	TR94048	13.87	0.0865	TR94116	12.43	0.1280	TR94184	14.58	0.1685	TR94252	14.58	0.2115	TR94320	16.85	0.2505	TR94388	19.70	0.2880	TR94456	19.70
0.0460	TR94049	13.87	0.0870	TR94117	12.43	0.1290	TR94185	14.58	0.1690	TR94253	14.58	0.2120	TR94321	16.85	0.2515	TR94389	19.70	0.2885	TR94457	19.70
0.0470	TR94050	13.87	0.0875	TR94118	12.43	0.1295	TR94186	14.58	0.1700	TR94254	14.58	0.2125	TR94322	16.85	0.2520	TR94390	19.70	0.2890	TR94458	19.70
0.0475	TR94051	13.87	0.0880	TR94119	12.43	0.1300	TR94187	14.58	0.1705	TR94255	14.58	0.2135	TR94323	16.85	0.2525	TR94391	19.70	0.2895	TR94459	19.70
0.0480	TR94052	13.87	0.0885	TR94120	12.43</															



# Chucking Reamers

## STOCKED INTERMEDIATE SIZES - HIGH SPEED STEEL

DEC SIZE	ITEM#	PRICE	DEC SIZE	ITEM#	PRICE	DEC SIZE	ITEM#	PRICE	DEC SIZE	ITEM#	PRICE	DEC SIZE	ITEM#	PRICE	DEC SIZE	ITEM#	PRICE			
0.2990	TR94476	17.63	0.3370	TR94544	20.77	0.3730	TR94612	18.88	0.4105	TR94680	23.31	0.4465	TR94748	24.79	0.4805	TR94816	24.79	0.6270	TR94884	39.57
0.2995	TR94477	17.63	0.3375	TR94545	20.77	0.3735	TR94613	18.88	0.4110	TR94681	23.31	0.4470	TR94749	24.79	0.4810	TR94817	24.79	0.6275	TR94885	39.57
0.3000	TR94478	17.63	0.3380	TR94546	20.77	0.3745	TR94614	18.88	0.4115	TR94682	23.31	0.4475	TR94750	24.79	0.4815	TR94818	24.79	0.6280	TR94886	39.57
0.3005	TR94479	17.63	0.3385	TR94547	20.77	0.3755	TR94615	22.72	0.4120	TR94683	23.31	0.4480	TR94751	24.79	0.4820	TR94819	24.79	0.6300	TR94949	39.57
0.3010	TR94480	17.63	0.3395	TR94548	20.77	0.3765	TR94616	22.72	0.4125	TR94684	23.31	0.4485	TR94752	24.79	0.4825	TR94820	24.79	0.6845	TR94887	39.57
0.3015	TR94481	17.63	0.3400	TR94549	20.77	0.3775	TR94617	22.72	0.4135	TR94685	23.31	0.4490	TR94753	24.79	0.4830	TR94821	24.79	0.6850	TR94888	39.57
0.3025	TR94482	17.63	0.3405	TR94550	20.77	0.3780	TR94618	22.72	0.4140	TR94686	23.31	0.4495	TR94754	24.79	0.4835	TR94822	24.79	0.6855	TR94889	39.57
0.3030	TR94483	17.63	0.3410	TR94551	20.77	0.3785	TR94619	22.72	0.4145	TR94687	23.31	0.4500	TR94755	24.79	0.4840	TR94823	24.79	0.6860	TR94890	39.57
0.3035	TR94484	17.63	0.3415	TR94552	20.77	0.3790	TR94620	22.72	0.4150	TR94688	23.31	0.4505	TR94756	24.79	0.4845	TR94824	23.31	0.6870	TR94891	39.57
0.3040	TR94485	17.63	0.3420	TR94553	20.77	0.3795	TR94621	22.72	0.4155	TR94689	23.31	0.4510	TR94757	24.79	0.4850	TR94825	23.31	0.6880	TR94892	43.62
0.3045	TR94486	17.63	0.3425	TR94554	20.77	0.3800	TR94622	22.72	0.4160	TR94690	23.31	0.4515	TR94758	24.79	0.4855	TR94826	23.31	0.6895	TR94893	43.62
0.3050	TR94487	17.63	0.3430	TR94555	20.77	0.3805	TR94623	22.72	0.4165	TR94691	23.31	0.4520	TR94759	24.79	0.4860	TR94827	23.31	0.6900	TR94894	43.62
0.3055	TR94488	17.63	0.3435	TR94556	20.77	0.3810	TR94624	22.72	0.4170	TR94692	23.31	0.4525	TR94760	24.79	0.4865	TR94828	23.31	0.6905	TR94895	43.62
0.3060	TR94489	17.63	0.3440	TR94557	21.07	0.3815	TR94625	22.72	0.4175	TR94693	23.31	0.4530	TR94761	24.79	0.4870	TR94829	23.31	0.7470	TR94896	46.35
0.3065	TR94490	17.63	0.3445	TR94558	21.07	0.3820	TR94626	22.72	0.4180	TR94694	23.31	0.4535	TR94762	24.79	0.4875	TR94830	23.31	0.7475	TR94897	46.35
0.3070	TR94491	17.63	0.3450	TR94559	21.07	0.3825	TR94627	22.72	0.4185	TR94695	23.31	0.4540	TR94763	24.79	0.4880	TR94831	23.31	0.7485	TR94898	46.35
0.3075	TR94492	17.63	0.3455	TR94560	21.07	0.3830	TR94628	22.72	0.4190	TR94696	23.31	0.4545	TR94764	24.79	0.4885	TR94832	23.31	0.7495	TR94899	46.35
0.3080	TR94493	17.63	0.3460	TR94561	21.07	0.3835	TR94629	22.72	0.4195	TR94697	23.31	0.4550	TR94765	24.79	0.4890	TR94833	23.31	0.7505	TR94900	50.30
0.3085	TR94494	17.63	0.3465	TR94562	21.07	0.3840	TR94630	22.72	0.4200	TR94698	23.31	0.4555	TR94766	24.79	0.4895	TR94834	23.31	0.7515	TR94901	50.30
0.3090	TR94495	17.63	0.3470	TR94563	21.07	0.3845	TR94631	22.72	0.4205	TR94699	23.31	0.4560	TR94767	24.79	0.4900	TR94835	23.31	0.7520	TR94902	50.30
0.3095	TR94496	17.63	0.3475	TR94564	21.07	0.3850	TR94632	22.72	0.4210	TR94700	23.31	0.4565	TR94768	24.79	0.4905	TR94836	23.31	0.7525	TR94903	50.30
0.3100	TR94497	17.63	0.3485	TR94565	21.07	0.3855	TR94633	22.72	0.4215	TR94701	23.31	0.4570	TR94769	24.79	0.4910	TR94837	23.31	0.7530	TR94904	50.30
0.3105	TR94498	17.63	0.3490	TR94566	21.07	0.3865	TR94634	22.72	0.4220	TR94702	21.86	0.4575	TR94770	24.79	0.4915	TR94838	23.31	0.7540	TR94905	50.30
0.3110	TR94499	17.63	0.3495	TR94567	21.07	0.3870	TR94635	22.72	0.4225	TR94703	21.86	0.4580	TR94771	24.79	0.4920	TR94839	23.31	0.7550	TR94906	50.30
0.3120	TR94500	17.63	0.3500	TR94568	21.07	0.3875	TR94636	22.72	0.4230	TR94704	21.86	0.4585	TR94772	24.79	0.4925	TR94840	23.31	0.8095	TR94907	50.30
0.3130	TR94501	20.77	0.3505	TR94569	21.07	0.3880	TR94637	22.72	0.4235	TR94705	21.86	0.4590	TR94773	24.79	0.4930	TR94841	23.31	0.8100	TR94908	50.30
0.3140	TR94502	20.77	0.3510	TR94570	21.07	0.3885	TR94638	22.72	0.4240	TR94706	21.86	0.4595	TR94774	24.79	0.4935	TR94842	23.31	0.8105	TR94909	50.30
0.3145	TR94503	20.77	0.3515	TR94571	21.07	0.3890	TR94639	22.72	0.4245	TR94707	21.86	0.4600	TR94775	24.79	0.4940	TR94843	23.31	0.8110	TR94910	50.30
0.3155	TR94504	20.77	0.3520	TR94572	21.07	0.3895	TR94640	22.72	0.4250	TR94708	21.86	0.4605	TR94776	24.79	0.4945	TR94844	23.31	0.8120	TR94911	50.30
0.3165	TR94505	20.77	0.3525	TR94573	21.07	0.3900	TR94641	22.72	0.4255	TR94709	21.86	0.4610	TR94777	24.79	0.4950	TR94845	23.31	0.8130	TR94912	55.39
0.3170	TR94506	20.77	0.3530	TR94574	21.07	0.3905	TR94642	22.72	0.4260	TR94710	21.86	0.4615	TR94778	24.79	0.4955	TR94846	23.31	0.8140	TR94913	55.39
0.3175	TR94507	20.77	0.3535	TR94575	21.07	0.3910	TR94643	23.31	0.4265	TR94711	21.86	0.4620	TR94779	24.79	0.4960	TR94847	23.31	0.8145	TR94914	55.39
0.3180	TR94508	20.77	0.3540	TR94576	21.07	0.3915	TR94644	23.31	0.4270	TR94712	21.86	0.4625	TR94780	24.79	0.4965	TR94848	23.31	0.8150	TR94915	55.39
0.3185	TR94509	20.77	0.3545	TR94577	21.07	0.3920	TR94645	23.31	0.4275	TR94713	21.86	0.4630	TR94781	24.79	0.4970	TR94849	23.31	0.8155	TR94916	55.39
0.3190	TR94510	20.77	0.3550	TR94578	21.07	0.3925	TR94646	23.31	0.4280	TR94714	21.86	0.4635	TR94782	24.79	0.4975	TR94850	23.31	0.8720	TR94917	56.82
0.3195	TR94511	20.77	0.3555	TR94579	21.07	0.3930	TR94647	23.31	0.4285	TR94715	21.86	0.4640	TR94783	24.79	0.4980	TR94851	23.31	0.8725	TR94918	56.82
0.3200	TR94512	20.77	0.3560	TR94580	21.07	0.3935	TR94648	23.31	0.4290	TR94716	21.86	0.4645	TR94784	24.79	0.4985	TR94852	23.31	0.8730	TR94919	56.82
0.3205	TR94513	20.77	0.3565	TR94581	21.07	0.3940	TR94649	23.31	0.4295	TR94717	21.86	0.4650	TR94785	24.79	0.4995	TR94853	23.31	0.8735	TR94920	56.82
0.3210	TR94514	20.77	0.3570	TR94582	21.07	0.3945	TR94650	23.31	0.4300	TR94718	21.86	0.4655	TR94786	24.79	0.5005	TR94854	31.36	0.8745	TR94921	56.82
0.3215	TR94515	20.77	0.3575	TR94583	21.07	0.3950	TR94651	23.31	0.4305	TR94719	21.86	0.4660	TR94787	24.79	0.5015	TR94855	31.36	0.8755	TR94922	61.92
0.3220	TR94516	20.77	0.3585	TR94584	21.07	0.3955	TR94652	23.31	0.4310	TR94720	21.86	0.4665	TR94788	24.79	0.5020	TR94856	31.36	0.8765	TR94923	61.92
0.3225	TR94517	20.77	0.3590	TR94585	21.07	0.3960	TR94653	23.31	0.4315	TR94721	21.86	0.4670	TR94789	24.79	0.5025	TR94857	31.36	0.8770	TR94924	61.92
0.3235	TR94518	20.77	0.3595	TR94586	18.88	0.3965	TR94654	23.31	0.4320	TR94722	21.86	0.4675	TR94790	24.79	0.5030	TR94858	31.36	0.8775	TR94925	61.92
0.3240	TR94519	20.77	0.3600	TR94587	18.88	0.3975	TR94655	23.31	0.4325	TR94723	21.86	0.4680	TR94791	24.79	0.5035	TR94859	31.36	0.8780	TR94926	61.92
0.3245	TR94520	20.77	0.3605	TR94588	18.88	0.3980	TR94656	23.31	0.4330	TR94724	21.86	0.4685	TR94792	24.79	0.5040	TR94860	31.36	0.9340	TR94927	61.92
0.3250	TR94521	20.77	0.3610	TR94589	18.88	0.3985	TR94657	23.31	0.4335	TR94725	21.86	0.4690	TR94793	24.79	0.5045	TR94861	31.36	0.9345	TR94928	61.92
0.3255	TR94522	20.77	0.3615	TR94590	18.88	0.3990	TR94658	23.31	0.4340	TR94726	21.86	0.4695	TR94794	24.79	0.5050	TR94862	31.36	0.9350	TR94929	61.92
0.3260	TR94523	20.77	0.3620	TR94591	18.88	0.3995	TR94659	23.31	0.4345	TR94727	21.86	0.4700	TR94795	24.79	0.5060	TR94863	31.36	0.9355	TR94930	61.92
0.3265	TR94524	20.77	0.3625	TR94592	18.88	0.4000	TR94660	23.31	0.4350	TR94728	21.86	0.4705	TR94796	24.79	0.5070	TR94864	31.36	0.9360	TR94931	61.92
0.3270	TR94525	20.77	0.3630	TR94593	18.88	0.4005	TR94661	23.31	0.4355	TR94729	21.86	0.4710	TR94797	24.79	0.5080	TR94865	31.36	0.9370	TR94932	61.92
0.3275	TR94526	20.77	0.3635	TR94594	18.88	0.4010	TR94662	23.31	0.4360	TR94730	21.86	0.4715	TR94798	24.79	0.5090	TR94866	31.36	0.9380	TR94933	67.96
0.3280	TR94527	20.77	0.3640	TR94595	18.88	0.4015	TR94663	23.31	0.4370	TR94731	21.86	0.4720	TR94799	24.79	0.5100	TR94867	31.36	0.9390	TR94934	67.96
0.3285	TR94528	20.77	0.3645	TR94596	18.88	0.4020														





# Chucking Reamers

## STRAIGHT SHANK - STRAIGHT FLUTE



**SERIES 933**  
HIGH SPEED STEEL

### SPECIAL SIZES - QUANTITY PRICING

SIZE RANGE	1	2	3-5	6-7	8-11	12-17	18-23	24-35	36-47	48-59	60-71	72-95	96+
.0100 - .0195	84.85	55.45	41.31	27.27	24.63	20.93	18.94	17.62	17.16	15.72	15.25	15.05	14.69
.0196 - .0290	77.14	50.41	37.59	24.79	22.38	19.62	17.21	16.04	14.88	14.28	14.22	14.19	14.14
.0291 - .0390	70.12	45.75	34.16	22.51	20.34	17.86	15.66	14.58	13.51	12.99	12.62	12.44	12.15
.0391 - .0624	63.38	42.20	34.16	21.71	19.58	16.97	14.93	13.87	12.79	12.01	11.82	11.77	11.70
.0626 - .1093	66.74	42.72	32.94	20.52	17.99	14.92	13.51	12.43	11.39	10.75	10.49	10.30	9.95
.1095 - .1249	65.85	41.80	30.96	17.94	15.75	14.41	11.82	10.75	10.59	10.42	10.24	10.06	9.98
.1251 - .1405	70.12	45.75	30.88	22.51	21.20	17.86	15.66	14.58	13.51	12.99	12.65	12.44	12.02
.1407 - .1561	69.06	45.03	34.19	21.83	19.58	17.10	14.93	13.87	13.09	12.79	12.50	12.20	11.90
.1563 - .1718	70.12	43.76	34.00	22.51	20.39	17.86	15.66	14.58	13.51	13.30	13.09	12.99	12.73
.1720 - .1874	67.25	41.98	33.98	20.97	18.85	16.84	14.81	13.69	13.55	13.34	13.15	12.82	12.65
.1876 - .2030	72.01	47.97	37.65	25.20	23.05	20.49	18.33	17.28	16.11	15.25	14.92	14.81	14.70
.2032 - .2187	72.01	47.97	37.24	24.81	22.68	20.07	17.88	16.85	15.75	14.81	14.63	14.46	14.39
.2189 - .2343	72.30	48.35	37.55	25.13	22.97	20.39	18.21	17.13	16.07	15.42	15.19	15.05	14.93
.2345 - .2499	72.30	48.35	35.74	23.31	21.14	18.65	16.52	15.44	14.30	14.22	14.03	13.88	13.82
.2501 - .2968	75.10	51.05	40.22	27.80	25.66	22.92	20.77	19.70	18.56	17.59	17.42	17.27	17.10
.2970 - .3124	73.01	48.99	38.15	25.68	23.52	20.93	18.73	17.63	17.56	17.41	17.32	17.20	17.10
.3126 - .3437	76.69	52.28	41.39	26.81	25.99	23.98	21.89	20.77	19.60	18.75	18.56	18.43	18.28
.3439 - .3593	76.59	52.56	41.70	29.25	27.09	25.43	21.89	21.07	19.99	19.04	18.85	18.70	18.56
.3595 - .3749	74.39	50.29	39.46	26.95	24.81	22.19	20.05	18.88	18.78	18.75	18.62	18.53	18.46
.3751 - .3905	77.86	53.87	43.09	30.53	28.39	26.02	23.81	22.72	21.67	20.52	20.42	20.25	20.07
.3907 - .4218	78.84	54.79	43.92	31.49	29.34	26.51	24.36	23.31	22.20	21.24	21.03	20.93	20.88
.4220 - .4374	77.36	53.36	42.44	30.05	27.91	25.13	22.92	21.86	21.67	21.60	21.51	21.06	20.83
.4376 - .4843	80.94	56.88	46.04	33.61	31.46	28.50	25.30	24.79	24.24	23.49	23.31	23.05	22.85
.4845 - .4999	79.03	54.99	44.13	31.65	29.55	26.62	23.38	23.31	23.12	23.03	22.85	22.77	22.69
.5001 - .5311	114.68	71.23	56.79	42.24	38.67	35.01	32.62	31.36	30.15	29.59	29.21	28.98	28.69
.5313 - .5624	114.04	70.56	56.09	41.57	37.99	34.33	31.97	30.72	29.48	28.88	28.52	28.25	28.13
.5626 - .5937	118.53	75.05	60.55	46.04	43.28	38.83	37.56	35.27	33.98	33.42	33.03	32.79	32.45
.5939 - .6249	118.69	75.17	60.68	46.17	42.60	38.98	36.57	35.42	34.11	33.57	33.16	32.94	32.81
.6251 - .6874	122.93	79.45	64.95	50.45	46.83	44.95	40.77	39.57	38.38	37.76	37.40	37.19	37.08
.6876 - .7187	126.90	83.47	68.95	54.27	50.73	47.19	44.80	43.62	42.42	41.80	41.40	41.11	40.88
.7189 - .7499	128.51	85.03	70.61	56.06	52.51	48.86	46.40	46.35	46.30	46.25	46.08	45.99	45.84
.7501 - .8124	133.57	90.13	75.69	61.16	57.55	53.94	51.52	50.30	49.10	48.50	48.15	47.87	47.54
.8126 - .8437	138.69	95.20	80.78	66.25	62.63	59.06	56.60	55.39	54.21	53.58	53.19	52.97	52.67
.8439 - .8749	139.98	96.51	81.99	67.48	63.88	60.28	57.83	56.82	56.29	54.79	54.41	54.18	53.15
.8751 - .9374	145.24	101.76	87.27	72.77	69.17	65.60	63.12	61.92	60.75	60.56	60.45	60.36	60.25
.9376 - .9687	151.27	107.15	93.32	78.84	75.23	71.61	69.17	67.96	66.78	66.21	65.76	65.62	65.26
.9689 - .9999	152.53	109.07	94.59	80.06	76.48	72.86	70.46	69.27	68.00	67.44	67.04	66.78	66.50
1.0001 - 1.0624	163.69	122.27	117.94	113.62	109.24	104.91	100.57	96.22	91.90	91.33	89.24	88.51	87.76
1.0626 - 1.1249	172.86	131.66	126.90	122.13	117.36	112.60	107.86	103.10	98.34	93.59	93.15	92.68	92.16
1.1251 - 1.1874	184.60	144.00	139.05	134.33	129.60	124.87	120.28	115.42	111.56	105.94	101.21	96.49	91.76
1.1876 - 1.2499	194.86	153.68	148.52	143.41	138.29	133.17	128.05	122.93	117.81	112.70	107.58	102.45	97.34
1.2501 - 1.3749	221.65	178.52	172.95	167.50	162.06	155.79	151.17	145.76	140.28	134.83	133.43	132.04	130.90
1.3751 - 1.4999	245.19	203.45	197.37	191.32	185.23	179.15	173.12	167.02	160.97	154.88	153.23	150.98	148.40

THRU 1/2" DIAMETER	ABOVE 1/2" TO 5/8"	ABOVE 5/8" TO 1-1/2"
+0.002, -0.000	+0.003, -0.000	+0.001, +0.004

HSS REAMERS

CARBIDE ENDMILLS

CARBIDE MICRO ENDMILLS

CARBIDE THREADMILLS

CARBIDE DRILL MILLS

CARBIDE CHAMFER MILLS

CARBIDE DRILLS

CARBIDE REAMERS

CARBIDE BURS

COUNTERSINKS

HSS & COBALT ENDMILLS

TAPS & DIES

HSS & COBALT DRILLS

HSS & COBALT REAMERS

TECHNICAL INFORMATION





# Chucking Reamers

## STRAIGHT SHANK - STRAIGHT FLUTE



**SERIES 1933**  
M42 COBALT

### SPECIAL SIZES - QUANTITY PRICING

SIZE RANGE	1	2	3-5	6-7	8-11	12-17	18-23	24-35	36-47	48-59	60-71	72-95	96+
.0100 - .0195	122.57	64.80	48.03	31.35	27.17	22.96	20.19	18.79	17.39	16.70	16.30	15.72	15.66
.0196 - .0290	111.44	58.87	43.66	28.49	24.70	20.88	18.33	17.07	15.83	15.75	15.73	15.72	15.66
.0291 - .0390	101.32	53.56	39.71	25.88	22.43	20.07	16.67	15.54	14.39	13.82	13.48	13.23	12.92
.0391 - .0624	92.24	52.75	38.92	25.07	21.61	18.16	15.87	14.72	13.56	12.99	12.92	12.81	12.69
.0626 - .1093	92.88	51.57	37.74	23.90	20.47	16.97	14.69	13.54	12.38	11.82	11.75	11.70	11.60
.1095 - .1249	90.75	49.41	35.62	21.78	18.32	14.89	12.58	11.89	11.22	11.03	10.87	10.73	10.60
.1251 - .1405	94.86	53.53	39.55	25.88	22.43	18.99	16.67	15.54	14.39	13.82	13.48	13.23	12.92
.1407 - .1561	94.07	52.75	38.92	25.07	21.61	18.16	15.87	14.72	13.56	12.99	12.82	12.78	12.68
.1563 - .1718	94.94	53.58	39.75	25.95	22.50	19.04	16.75	15.59	14.43	13.84	13.74	13.64	13.54
.1720 - .1874	94.24	52.95	39.10	25.30	22.43	18.39	16.07	14.93	13.77	13.74	13.66	13.56	13.55
.1876 - .2030	98.11	56.79	42.92	29.12	25.68	22.19	19.92	18.76	17.60	17.02	16.67	16.46	16.37
.2032 - .2343	97.69	56.39	42.57	28.73	25.30	21.86	19.53	18.92	18.31	18.12	18.00	17.86	17.58
.2345 - .2499	96.02	54.79	40.97	27.17	23.69	20.24	17.94	17.83	17.72	17.58	17.41	17.10	16.88
.2501 - .2968	104.58	63.27	49.39	35.62	32.14	28.70	26.34	25.22	24.08	23.51	23.33	22.99	22.92
.2970 - .3124	101.94	60.59	46.76	32.94	29.46	26.02	23.75	23.60	23.45	23.35	23.14	23.12	22.95
.3126 - .3437	105.87	64.52	50.68	36.87	33.42	29.95	27.66	26.51	25.33	25.24	25.09	24.85	24.72
.3439 - .3593	106.06	64.75	50.91	37.09	33.65	30.21	27.87	26.75	25.62	25.44	25.29	25.24	25.07
.3595 - .3749	103.64	62.30	48.48	34.63	31.18	27.72	25.43	25.36	25.29	25.20	25.15	25.15	25.04
.3751 - .3905	113.20	71.89	58.07	44.24	40.77	37.33	34.93	33.83	32.73	32.14	31.79	31.58	31.28
.3907 - .4218	114.65	73.36	59.50	45.68	42.25	38.78	36.47	35.33	34.18	33.65	33.22	33.02	32.73
.4220 - .4374	112.40	71.07	57.26	43.43	39.99	36.52	34.20	33.07	31.91	31.36	31.00	30.78	30.49
.4376 - .4843	117.86	76.55	62.72	48.91	45.46	41.99	39.73	38.58	37.41	36.82	36.47	36.26	35.96
.4845 - .4999	114.89	73.54	59.73	45.90	42.42	38.99	36.71	36.08	35.45	35.36	35.23	35.15	35.10
.5001 - .5311	121.23	79.31	65.62	50.67	49.27	47.95	46.65	45.34	44.03	42.72	41.40	40.10	38.81
.5313 - .5624	122.13	80.64	67.43	52.30	50.76	49.27	47.80	46.32	44.85	43.38	41.90	40.44	38.96
.5626 - .5937	124.45	82.72	69.12	53.90	52.22	50.58	48.94	51.46	45.67	44.03	42.39	40.75	39.10
.5939 - .6249	128.38	86.87	73.67	58.41	56.84	55.39	53.94	52.49	51.04	49.55	48.11	46.65	45.20
.6251 - .6874	132.47	90.79	78.26	62.93	61.51	60.17	58.84	57.50	56.16	54.84	54.02	52.13	50.82
.6876 - .7187	136.49	94.76	81.41	65.99	64.84	63.77	62.63	61.59	60.55	59.49	58.41	58.07	57.96
.7189 - .7499	141.31	100.03	87.59	72.05	70.37	68.70	67.06	65.42	63.77	62.11	60.45	58.81	57.14
.7501 - .8124	148.77	107.15	94.16	79.15	74.20	72.61	71.01	69.42	67.85	66.25	64.65	63.06	61.48
.8126 - .8437	156.26	115.09	101.47	87.46	83.31	81.88	80.52	79.15	77.76	76.36	74.97	73.61	72.23
.8439 - .8749	164.38	122.73	109.35	94.61	89.10	87.21	85.38	83.54	81.70	79.86	78.00	76.19	74.34
.8751 - .9374	170.94	129.12	115.90	100.46	94.86	92.97	91.13	89.26	87.40	85.54	83.66	82.85	81.99
.9376 - .9687	179.70	137.01	123.94	108.90	106.63	104.61	102.45	100.34	98.19	96.03	93.91	92.84	91.83
.9689 - .9999	185.95	144.34	131.54	116.82	113.90	111.03	108.18	105.34	102.51	99.68	96.84	93.98	91.14
1.0001 - 1.0624	200.08	158.43	144.90	129.87	126.68	124.67	120.26	117.08	113.89	110.68	107.49	104.27	101.10
1.0626 - 1.1249	214.35	172.85	159.60	144.91	140.71	136.65	132.56	128.49	124.39	120.34	116.27	112.19	108.12
1.1251 - 1.1874	228.18	185.95	173.89	157.76	154.09	150.50	146.94	143.35	139.77	136.17	132.57	129.02	125.41
1.1876 - 1.2499	242.64	201.77	188.74	173.01	168.36	163.99	159.61	155.26	150.92	146.56	142.20	137.83	133.50
1.2501 - 1.3749	257.21	214.83	200.83	186.56	183.72	183.72	178.06	175.24	172.41	169.58	166.76	166.57	166.19
1.3751 - 1.4999	271.48	229.73	216.72	201.61	199.62	197.75	195.87	194.68	193.49	193.08	192.74	192.28	191.89

THRU 1/2" DIAMETER	ABOVE 1/2" TO 5/8"	ABOVE 5/8" TO 1-1/2"
+ .0002, - .0000	+ .0003, - .0000	+ .0001, + .0004

COBALT REAMERS

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION

# Chucking Reamers

## STRAIGHT SHANK - RIGHT HAND SPIRAL - RIGHT HAND CUT



SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	SERIES 935R		SERIES 1935R	
						HSS	PRICE	M42 COBALT	PRICE
1.0mm	.0394	1/2	4	2-1/2	.0394	TR96550	13.63	TR96726	14.91
#60	.0400	1/2	4	2-1/2	.0390	TR96551	13.63	TR96727	14.91
#59	.0410	1/2	4	2-1/2	.0390	TR96552	13.63	TR96728	14.91
#58	.0420	1/2	4	2-1/2	.0390	TR96553	13.63	TR96729	14.91
#57	.0430	1/2	4	2-1/2	.0390	TR96554	13.63	TR96730	14.91
#56	.0465	1/2	4	2-1/2	.0455	TR96555	13.63	TR96731	14.91
3/64	.0469	1/2	4	2-1/2	.0455	TR96556	13.63	TR96732	14.91
#55	.0520	1/2	4	2-1/2	.0510	TR96557	13.63	TR96733	14.91
#54	.0550	1/2	4	2-1/2	.0510	TR96558	13.63	TR96734	14.91
1.5mm	.0591	1/2	4	2-1/2	.0510	TR96559	13.63	TR96735	14.91
#53	.0595	1/2	4	2-1/2	.0585	TR96560	13.63	TR96736	14.91
1/16	.0625	1/2	4	2-1/2	.0585	TR96561	13.63	TR96737	14.91
#52	.0635	1/2	4	2-1/2	.0585	TR96562	13.63	TR96738	14.91
#51	.0670	3/4	4	3	.0660	TR96563	10.97	TR96739	12.01
#50	.0700	3/4	4	3	.0660	TR96564	10.97	TR96740	12.01
#49	.0730	3/4	4	3	.0660	TR96565	10.97	TR96741	12.01
#48	.0760	3/4	4	3	.0720	TR96566	10.97	TR96742	12.01
5/64	.0781	3/4	4	3	.0720	TR96567	10.97	TR96743	12.01
#47	.0785	3/4	4	3	.0720	TR96568	10.97	TR96744	12.01
2.0mm	.0787	3/4	4	3	.0720	TR96569	10.97	TR96745	12.01
#46	.0810	3/4	4	3	.0771	TR96570	10.97	TR96746	12.01
#45	.0820	3/4	4	3	.0771	TR96571	10.97	TR96747	12.01
#44	.0860	3/4	4	3	.0810	TR96572	10.97	TR96748	12.01
#43	.0890	3/4	4	3	.0810	TR96573	10.97	TR96749	12.01
#42	.0935	3/4	4	3	.0880	TR96574	10.97	TR96750	12.01
3/32	.0938	3/4	4	3	.0880	TR96575	10.87	TR96751	12.01
#41	.0960	7/8	4	3-1/2	.0928	TR96576	11.05	TR96752	12.12
#40	.0980	7/8	4	3-1/2	.0928	TR96577	11.05	TR96753	12.12
2.5mm	.0984	7/8	4	3-1/2	.0928	TR96578	11.05	TR96754	12.12
#39	.0995	7/8	4	3-1/2	.0928	TR96579	11.05	TR96755	12.12
#38	.1015	7/8	4	3-1/2	.0950	TR96580	11.05	TR96756	12.12
#37	.1040	7/8	4	3-1/2	.0950	TR96581	11.05	TR96757	12.12
#36	.1065	7/8	4	3-1/2	.1030	TR96582	11.05	TR96758	12.12
7/64	.1094	7/8	4	3-1/2	.1030	TR96583	11.38	TR96759	12.50
#35	.1100	7/8	4	3-1/2	.1030	TR96584	11.38	TR96760	12.50
#34	.1110	7/8	4	3-1/2	.1055	TR96585	11.38	TR96761	12.50
#33	.1130	7/8	4	3-1/2	.1055	TR96586	11.38	TR96762	12.50
#32	.1160	7/8	4	3-1/2	.1120	TR96587	11.38	TR96763	12.50
3.0mm	.1181	7/8	4	3-1/2	.1120	TR96588	11.38	TR96764	12.50
#31	.1200	7/8	4	3-1/2	.1120	TR96589	11.38	TR96765	12.50
o/u	.1240	7/8	4	3-1/2	.1190	TR96590	11.38	TR96766	12.50
1/8	.1250	7/8	4	3-1/2	.1190	TR96591	10.26	TR96767	11.24
o/u	.1260	7/8	4	3-1/2	.1190	TR96592	11.38	TR96768	12.50
#30	.1285	7/8	4	3-1/2	.1190	TR96593	11.38	TR96769	12.50
#29	.1360	1	4	4	.1275	TR96594	13.63	TR96770	14.92
3.5mm	.1378	1	4	4	.1350	TR96595	13.63	TR96771	14.92

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THRU 1/2" DIAMETER	1/2" TO 5/8"	5/8" TO 1-1/2"	1-1/2" TO 2"
+0.002, -.0000	+0.003, -.0000	+0.001, +.0004	+0.002, +.0006

CARBIDE ENDMILLS  
 CARBIDE MICRO ENDMILLS  
 CARBIDE THREADMILLS  
 CARBIDE DRILL MILLS  
 CARBIDE CHAMFER MILLS  
 CARBIDE DRILLS  
 CARBIDE REAMERS  
 CARBIDE BURS  
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 HSS & COBALT ENDMILLS  
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 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION

HSS & COBALT REAMERS



# Chucking Reamers

**STRAIGHT SHANK - RIGHT HAND SPIRAL - RIGHT HAND CUT**



SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	SERIES 935R		SERIES 1935R	
						HSS	PRICE	M42 COBALT	PRICE
#28	.1405	1	4	4	.1350	TR96596	13.63	TR96772	14.92
9/64	.1406	1	4	4	.1350	TR96597	13.63	TR96773	14.92
#27	.1440	1	4	4	.1350	TR96598	13.63	TR96774	14.92
#26	.1470	1	4	4	.1430	TR96599	13.63	TR96775	14.92
#25	.1495	1	4	4	.1430	TR96600	13.63	TR96776	14.92
#24	.1520	1	4	4	.1460	TR96601	14.18	TR96777	14.92
#23	.1540	1	4	4	.1460	TR96602	14.18	TR96778	14.92
5/32	.1562	1	4	4	.1510	TR96603	14.18	TR96779	14.92
#22	.1570	1	6	4	.1510	TR96604	14.18	TR96780	14.92
4.0mm	.1575	1	6	4	.1510	TR96605	14.18	TR96781	14.92
#21	.1590	1-1/8	6	4-1/2	.1530	TR96606	14.54	TR96782	15.93
#20	.1610	1-1/8	6	4-1/2	.1530	TR96607	14.54	TR96783	15.93
#19	.1660	1-1/8	6	4-1/2	.1595	TR96608	14.54	TR96784	15.93
#18	.1695	1-1/8	6	4-1/2	.1595	TR96609	14.54	TR96785	15.93
11/64	.1719	1-1/8	6	4-1/2	.1645	TR96610	14.54	TR96786	15.93
#17	.1730	1-1/8	6	4-1/2	.1645	TR96611	14.54	TR96787	15.93
#16	.1770	1-1/8	6	4-1/2	.1704	TR96612	14.54	TR96788	15.93
4.5mm	.1772	1-1/8	6	4-1/2	.1704	TR96613	14.54	TR96789	15.93
#15	.1800	1-1/8	6	4-1/2	.1755	TR96614	14.54	TR96790	15.93
#14	.1820	1-1/8	6	4-1/2	.1755	TR96615	14.54	TR96791	15.93
#13	.1850	1-1/8	6	4-1/2	.1805	TR96616	14.54	TR96792	15.93
o/u	.1865	1-1/8	6	4-1/2	.1805	TR96617	14.54	TR96793	15.93
3/16	.1875	1-1/8	6	4-1/2	.1805	TR96618	13.82	TR96794	15.13
o/u	.1885	1-1/8	6	4-1/2	.1805	TR96619	14.54	TR96795	15.93
#12	.1890	1-1/8	6	4-1/2	.1805	TR96620	14.54	TR96796	15.93
#11	.1910	1-1/4	6	5	.1860	TR96621	16.29	TR96797	17.86
#10	.1935	1-1/4	6	5	.1860	TR96622	16.29	TR96798	17.86
#9	.1960	1-1/4	6	5	.1895	TR96623	16.29	TR96799	17.86
5.0mm	.1969	1-1/4	6	5	.1895	TR96624	16.29	TR96800	17.86
#8	.1990	1-1/4	6	5	.1895	TR96625	16.29	TR96801	17.86
#7	.2010	1-1/4	6	5	.1895	TR96626	16.29	TR96802	17.86
13/64	.2031	1-1/4	6	5	.1945	TR96627	16.29	TR96803	17.86
#6	.2040	1-1/4	6	5	.1945	TR96628	16.29	TR96804	17.86
#5	.2055	1-1/4	6	5	.2016	TR96629	16.29	TR96805	17.86
#4	.2090	1-1/4	6	5	.2016	TR96630	16.29	TR96806	17.86
#3	.2130	1-1/4	6	5	.2075	TR96631	16.29	TR96807	17.86
5.5mm	.2165	1-1/4	6	5	.2075	TR96632	16.29	TR96808	17.86
7/32	.2188	1-1/4	6	5	.2075	TR96633	16.29	TR96809	17.86
#2	.2210	1-1/2	6	6	.2173	TR96634	16.75	TR96810	18.36
#1	.2280	1-1/2	6	6	.2173	TR96635	16.75	TR96811	18.36
A	.2340	1-1/2	6	6	.2265	TR96636	16.75	TR96812	18.36
15/64	.2344	1-1/2	6	6	.2265	TR96637	16.75	TR96813	18.36
6.0mm	.2362	1-1/2	6	6	.2265	TR96638	16.86	TR96814	19.32
B	.2380	1-1/2	6	6	.2329	TR96639	16.86	TR96815	19.32
C	.2420	1-1/2	6	6	.2329	TR96640	16.86	TR96816	19.32
D	.2460	1-1/2	6	6	.2329	TR96641	16.86	TR96817	17.57

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THRU 1/2" DIAMETER	1/2" TO 5/8"	5/8" TO 1-1/2"	1-1/2" TO 2"
+0.002, -.0000	+0.003, -.0000	+0.001, +.0004	+0.002, +.0006

HSS & COBALT REAMERS

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 HSS & COBALT ENDMILLS  
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 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION



# Chucking Reamers

## STRAIGHT SHANK - RIGHT HAND SPIRAL - RIGHT HAND CUT



SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	SERIES 935R		SERIES 1935R	
						HSS	PRICE	M42 COBALT	PRICE
<b>o/u</b>	.2490	1-1/2	6	6	.2405	TR96642	18.00	TR96818	20.69
<b>1/4</b>	.2500	1-1/2	6	6	.2405	TR96643	14.36	TR96819	16.42
<b>o/u</b>	.2510	1-1/2	6	6	.2405	TR96644	18.00	TR96820	20.69
<b>6.5mm</b>	.2559	1-1/2	6	6	.2405	TR96645	16.86	TR96821	19.32
<b>F</b>	.2570	1-1/2	6	6	.2485	TR96646	16.86	TR96822	19.32
<b>G</b>	.2610	1-1/2	6	6	.2485	TR96647	16.86	TR96823	19.32
<b>17/64</b>	.2656	1-1/2	6	6	.2485	TR96648	18.81	TR96824	23.86
<b>H</b>	.2660	1-1/2	6	6	.2485	TR96649	18.81	TR96825	23.86
<b>I</b>	.2720	1-1/2	6	6	.2485	TR96650	18.81	TR96826	23.86
<b>7.0mm</b>	.2756	1-1/2	6	6	.2485	TR96651	18.81	TR96827	23.86
<b>J</b>	.2770	1-1/2	6	6	.2485	TR96652	18.81	TR96828	23.86
<b>K</b>	.2810	1-1/2	6	6	.2485	TR96653	18.81	TR96829	23.86
<b>9/32</b>	.2812	1-1/2	6	6	.2485	TR96654	17.86	TR96830	22.68
<b>L</b>	.2900	1-1/2	6	6	.2792	TR96655	18.81	TR96831	23.86
<b>M</b>	.2950	1-1/2	6	6	.2792	TR96656	18.81	TR96832	23.86
<b>7.5mm</b>	.2953	1-1/2	6	6	.2792	TR96657	18.81	TR96833	23.86
<b>19/64</b>	.2969	1-1/2	6	6	.2792	TR96658	18.81	TR96834	23.86
<b>N</b>	.3020	1-1/2	6	6	.2792	TR96659	18.81	TR96835	23.86
<b>o/u</b>	.3115	1-1/2	6	6	.2792	TR96660	17.86	TR96836	22.68
<b>5/16</b>	.3125	1-1/2	6	6	.2792	TR96661	16.92	TR96837	21.48
<b>o/u</b>	.3135	1-1/2	6	6	.2792	TR96662	17.86	TR96838	22.68
<b>8.0mm</b>	.3150	1-1/2	6	6	.2792	TR96663	18.81	TR96839	23.86
<b>O</b>	.3160	1-1/2	6	6	.2792	TR96664	18.81	TR96840	23.86
<b>P</b>	.3230	1-1/2	6	6	.2792	TR96665	20.12	TR96841	25.70
<b>21/64</b>	.3281	1-1/2	6	6	.2792	TR96666	20.12	TR96842	25.70
<b>Q</b>	.3320	1-1/2	6	6	.2792	TR96667	20.12	TR96843	25.70
<b>8.5mm</b>	.3346	1-1/2	6	6	.2792	TR96668	20.12	TR96844	25.70
<b>R</b>	.3390	1-1/2	6	6	.2792	TR96669	20.12	TR96845	25.70
<b>11/32</b>	.3438	1-1/2	6	6	.2792	TR96670	20.12	TR96846	25.70
<b>S</b>	.3480	1-3/4	6	6	.3105	TR96671	20.30	TR96847	26.05
<b>9.0mm</b>	.3543	1-3/4	6	7	.3105	TR96672	20.30	TR96848	26.05
<b>T</b>	.3580	1-3/4	6	7	.3105	TR96673	20.30	TR96849	26.05
<b>23/64</b>	.3594	1-3/4	6	7	.3105	TR96674	20.30	TR96850	26.05
<b>U</b>	.3680	1-3/4	6	7	.3105	TR96675	20.30	TR96851	26.05
<b>9.5mm-o/u</b>	.3740	1-3/4	6	7	.3105	TR96676	19.29	TR96852	24.72
<b>3/8</b>	.3750	1-3/4	6	7	.3105	TR96677	18.28	TR96853	23.45
<b>o/u</b>	.3760	1-3/4	6	7	.3105	TR96678	19.29	TR96854	24.72
<b>V</b>	.3770	1-3/4	6	7	.3105	TR96679	22.10	TR96855	32.81
<b>W</b>	.3860	1-3/4	6	7	.3105	TR96680	22.10	TR96856	32.81
<b>25/64</b>	.3906	1-3/4	6	7	.3105	TR96681	22.10	TR96857	32.81
<b>10.0mm</b>	.3937	1-3/4	6	7	.3105	TR96682	22.10	TR96858	32.81
<b>X</b>	.3970	1-3/4	6	7	.3105	TR96683	22.10	TR96859	32.81
<b>Y</b>	.4040	1-3/4	6	7	.3105	TR96684	22.91	TR96860	32.81
<b>13/32</b>	.4062	1-3/4	6	7	.3105	TR96685	22.91	TR96861	32.81
<b>Z</b>	.4130	1-3/4	6	7	.3730	TR96686	22.91	TR96862	32.81
<b>10.5mm</b>	.4134	1-3/4	6	7	.3730	TR96687	22.91	TR96863	32.81

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THRU 1/2" DIAMETER	1/2" TO 5/8"	5/8" TO 1-1/2"	1-1/2" TO 2"
+ .0002, -.0000	+ .0003, -.0000	+ .0001, +.0004	+ .0002, +.0006

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 TECHNICAL INFORMATION

HSS & COBALT REAMERS





# Chucking Reamers

STRAIGHT SHANK - RIGHT HAND SPIRAL - RIGHT HAND CUT



SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	SERIES 935R		SERIES 1935R	
						HSS	PRICE	M42 COBALT	PRICE
27/64	.4219	1-3/4	6	7	.3730	TR96688	22.91	TR96864	32.81
11.0mm	.4331	1-3/4	6	7	.3730	TR96689	22.91	TR96865	32.81
o/u	.4365	1-3/4	6	7	.3730	TR96690	22.91	TR96866	32.81
7/16	.4375	1-3/4	6	7	.3730	TR96691	21.76	TR96867	31.15
o/u	.4385	1-3/4	6	7	.3730	TR96692	22.91	TR96868	32.81
11.5mm	.4528	1-3/4	6	7	.3730	TR96693	24.98	TR96869	37.60
29/64	.4531	1-3/4	6	7	.3730	TR96694	24.98	TR96870	37.60
15/32	.4688	1-3/4	6	7	.3730	TR96695	24.98	TR96871	37.60
12.0mm	.4724	2	6	8	.4355	TR96696	24.98	TR96872	37.60
31/64	.4844	2	6	8	.4355	TR96697	24.98	TR96873	37.60
12.5mm	.4921	2	6	8	.4355	TR96698	24.98	TR96874	37.60
o/u	.4990	2	6	8	.4355	TR96699	24.98	TR96875	37.60
1/2	.5000	2	6	8	.4355	TR96700	23.68	TR96876	35.71
o/u	.5010	2	6	8	.4355	TR96701	24.98	TR96877	37.60
17/32	.5312	2	6	8	.4355	TR96702	29.45	TR96878	42.18
9/16	.5625	2	8	8	.4355	TR96703	29.45	TR96880	42.18
19/32	.5938	2	8	8	.4355	TR96704	29.45	TR96881	42.18
5/8	.6250	2-1/4	8	9	.5615	TR96705	34.37	TR96882	49.21
21/32	.6562	2-1/4	8	9	.5615	TR96706	36.15	TR96883	55.64
11/16	.6875	2-1/4	8	9	.5615	TR96707	38.86	TR96884	55.64
23/32	.7188	2-1/4	8	9	.5615	TR96708	43.38	TR96885	62.09
3/4	.7500	2-1/2	8	9-1/2	.6240	TR96709	43.38	TR96886	62.43
25/32	.7812	2-1/2	8	9-1/2	.6240	TR96710	47.02	TR96887	67.37
13/16	.8125	2-1/2	8	9-1/2	.6240	TR96711	47.02	TR96888	67.37
27/32	.8438	2-1/2	8	9-1/2	.6240	TR96712	55.66	TR96889	79.70
7/8	.8750	2-5/8	8	10	.7490	TR96713	56.93	TR96890	81.55
29/32	.9062	2-5/8	8	10	.7490	TR96714	61.38	TR96891	87.87
15/16	.9375	2-5/8	8	10	.7490	TR96715	61.38	TR96892	87.87
31/32	.9688	2-5/8	8	10	.7490	TR96716	68.72	TR96893	98.41
1	1.0000	2-3/4	8	10-1/2	.8740	TR96717	69.39	TR96894	99.20
1-1/16	1.0625	2-3/4	8	10-1/2	.8740	TR96718	76.91	-	-
1-1/8	1.1250	2-7/8	8	11	.8740	TR96719	81.74	-	-
1-3/16	1.1875	2-7/8	8	11	.9990	TR96720	95.72	-	-
1-1/4	1.2500	3	8	11-1/2	.9990	TR96721	101.45	-	-
1-5/16	1.3125	3	10	11-1/2	.9990	TR96722	118.35	-	-
1-3/8	1.3750	3-1/4	10	12	.9990	TR96723	124.38	-	-
1-7/16	1.4375	3-1/4	10	12	1.2490	TR96724	133.36	-	-
1-1/2	1.5000	3-1/2	10	12-1/2	1.2490	TR96725	143.57	-	-
1-9/16	1.5625	3-1/2	12	13	1.2490	TR96900	203.34	-	-
1-5/8	1.6250	3-1/2	12	13	1.2490	TR96901	203.34	-	-
1-11/16	1.6875	4	12	13-1/2	1.2490	TR96902	233.49	-	-
1-3/4	1.7500	4	12	13-1/2	1.2490	TR96903	233.49	-	-
1-13/16	1.8125	4	12	14	1.4990	TR96904	268.92	-	-
1-7/8	1.8750	4	12	14	1.4990	TR96905	268.92	-	-
1-15/16	1.9375	4	12	14	1.4990	TR96906	314.82	-	-
2	2.0000	4	12	14	1.4990	TR96907	314.82	-	-

THRU 1/2" DIAMETER	1/2" TO 5/8"	5/8" TO 1-1/2"	1-1/2" TO 2"
+0.002, -.0000	+0.003, -.0000	+0.001, +.0004	+0.002, +.0006

HSS & COBALT REAMERS

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 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION



# Chucking Reamers

## STRAIGHT SHANK - LEFT HAND SPIRAL - RIGHT HAND CUT



**SERIES 940L**  
HIGH SPEED STEEL

HSS REAMERS

SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	ITEM#	PRICE
1.0mm	.0394	1/2	4	2-1/2	.0394	TR97010	13.63
#60	.0400	1/2	4	2-1/2	.0390	TR97011	13.63
#59	.0410	1/2	4	2-1/2	.0390	TR97012	13.63
#58	.0420	1/2	4	2-1/2	.0390	TR97013	13.63
#57	.0430	1/2	4	2-1/2	.0390	TR97014	13.63
#56	.0465	1/2	4	2-1/2	.0455	TR97015	13.63
3/64	.0469	1/2	4	2-1/2	.0455	TR97016	13.63
#55	.0520	1/2	4	2-1/2	.0510	TR97017	13.63
#54	.0550	1/2	4	2-1/2	.0510	TR97018	13.63
1.5mm	.0591	1/2	4	2-1/2	.0510	TR97019	13.63
#53	.0595	1/2	4	2-1/2	.0585	TR97020	13.63
1/16	.0625	1/2	4	2-1/2	.0585	TR97021	13.63
#52	.0635	1/2	4	2-1/2	.0585	TR97022	13.63
#51	.0670	3/4	4	3	.0660	TR97023	10.97
#50	.0700	3/4	4	3	.0660	TR97024	10.97
#49	.0730	3/4	4	3	.0660	TR97025	10.97
#48	.0760	3/4	4	3	.0720	TR97026	10.97
5/64	.0781	3/4	4	3	.0720	TR97027	10.97
#47	.0785	3/4	4	3	.0720	TR97028	10.97
2.0mm	.0787	3/4	4	3	.0720	TR97029	10.97
#46	.0810	3/4	4	3	.0771	TR97030	10.97
#45	.0820	3/4	4	3	.0771	TR97031	10.97
#44	.0860	3/4	4	3	.0810	TR97032	10.97
#43	.0890	3/4	4	3	.0810	TR97033	10.97
#42	.0935	3/4	4	3	.0880	TR97034	10.97
3/32	.0938	3/4	4	3	.0880	TR97035	10.87
#41	.0960	7/8	4	3-1/2	.0928	TR97036	11.05
#40	.0980	7/8	4	3-1/2	.0928	TR97037	11.05
2.5mm	.0984	7/8	4	3-1/2	.0928	TR97038	11.05
#39	.0995	7/8	4	3-1/2	.0928	TR97039	11.05
#38	.1015	7/8	4	3-1/2	.0950	TR97040	11.05
#37	.1040	7/8	4	3-1/2	.0950	TR97041	11.05
#36	.1065	7/8	4	3-1/2	.1030	TR97042	11.05
7/64	.1094	7/8	4	3-1/2	.1030	TR97043	11.38
#35	.1100	7/8	4	3-1/2	.1030	TR97044	11.38
#34	.1110	7/8	4	3-1/2	.1055	TR97045	11.38
#33	.1130	7/8	4	3-1/2	.1055	TR97046	11.38
#32	.1160	7/8	4	3-1/2	.1120	TR97047	11.38
3.0mm	.1181	7/8	4	3-1/2	.1120	TR97048	11.38
#31	.1200	7/8	4	3-1/2	.1120	TR97049	11.38
o/u	.1240	7/8	4	3-1/2	.1190	TR97050	11.38
1/8	.1250	7/8	4	3-1/2	.1190	TR97051	10.26
o/u	.1260	7/8	4	3-1/2	.1190	TR97052	11.38
#30	.1285	7/8	4	3-1/2	.1190	TR97053	11.38

SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	ITEM#	PRICE
#29	.1360	1	4	4	.1275	TR97054	13.63
3.5mm	.1378	1	4	4	.1350	TR97055	13.63
#28	.1405	1	4	4	.1350	TR97056	13.63
9/64	.1406	1	4	4	.1350	TR97057	13.63
#27	.1440	1	4	4	.1350	TR97058	13.63
#26	.1470	1	4	4	.1430	TR97059	13.63
#25	.1495	1	4	4	.1430	TR97060	13.63
#24	.1520	1	4	4	.1460	TR97061	13.63
#23	.1540	1	4	4	.1460	TR97062	13.63
5/32	.1562	1	4	4	.1510	TR97063	13.63
#22	.1570	1	6	4	.1510	TR97064	13.63
4.0mm	.1575	1	6	4	.1510	TR97065	13.63
#21	.1590	1-1/8	6	4-1/2	.1530	TR97066	14.54
#20	.1610	1-1/8	6	4-1/2	.1530	TR97067	14.54
#19	.1660	1-1/8	6	4-1/2	.1595	TR97068	14.54
#18	.1695	1-1/8	6	4-1/2	.1595	TR97069	14.54
11/64	.1719	1-1/8	6	4-1/2	.1645	TR97070	14.54
#17	.1730	1-1/8	6	4-1/2	.1645	TR97071	14.54
#16	.1770	1-1/8	6	4-1/2	.1704	TR97072	14.54
4.5mm	.1772	1-1/8	6	4-1/2	.1704	TR97073	14.54
#15	.1800	1-1/8	6	4-1/2	.1755	TR97074	14.54
#14	.1820	1-1/8	6	4-1/2	.1755	TR97075	14.54
#13	.1850	1-1/8	6	4-1/2	.1805	TR97076	14.54
o/u	.1865	1-1/8	6	4-1/2	.1805	TR97077	14.54
3/16	.1875	1-1/8	6	4-1/2	.1805	TR97078	13.82
o/u	.1885	1-1/8	6	4-1/2	.1805	TR97079	14.54
#12	.1890	1-1/8	6	4-1/2	.1805	TR97080	14.54
#11	.1910	1-1/4	6	5	.1860	TR97081	16.29
#10	.1935	1-1/4	6	5	.1860	TR97082	16.29
#9	.1960	1-1/4	6	5	.1895	TR97083	16.29
5.0mm	.1969	1-1/4	6	5	.1895	TR97084	16.29
#8	.1990	1-1/4	6	5	.1895	TR97085	16.29
#7	.2010	1-1/4	6	5	.1895	TR97086	16.29
13/64	.2031	1-1/4	6	5	.1945	TR97087	16.29
#6	.2040	1-1/4	6	5	.1945	TR97088	16.29
#5	.2055	1-1/4	6	5	.2016	TR97089	16.29
#4	.2090	1-1/4	6	5	.2016	TR97090	16.29
#3	.2130	1-1/4	6	5	.2075	TR97091	16.29
5.5mm	.2165	1-1/4	6	5	.2075	TR97092	16.29
7/32	.2188	1-1/4	6	5	.2075	TR97093	16.29
#2	.2210	1-1/2	6	6	.2173	TR97094	16.75
#1	.2280	1-1/2	6	6	.2173	TR97095	16.75
A	.2340	1-1/2	6	6	.2265	TR97096	16.75
15/64	.2344	1-1/2	6	6	.2265	TR97097	16.75

CONTINUED ON NEXT PAGE

THRU 1/2" DIAMETER	ABOVE 1/2" TO 5/8"	ABOVE 5/8" TO 1-1/2"
+0.002, -0.000	+0.003, -0.000	+0.001, +0.004



# Chucking Reamers

STRAIGHT SHANK - LEFT HAND SPIRAL - RIGHT HAND CUT



**SERIES 940L**  
HIGH SPEED STEEL

SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	ITEM#	PRICE
6.0mm	.2362	1-1/2	6	6	.2265	TR97098	16.86
B	.2380	1-1/2	6	6	.2329	TR97099	16.86
C	.2420	1-1/2	6	6	.2329	TR97100	16.86
D	.2460	1-1/2	6	6	.2329	TR97101	16.86
o/u	.2490	1-1/2	6	6	.2405	TR97102	18.00
1/4	.2500	1-1/2	6	6	.2405	TR97103	14.36
o/u	.2510	1-1/2	6	6	.2405	TR97104	18.00
6.5mm	.2559	1-1/2	6	6	.2405	TR97105	16.86
F	.2570	1-1/2	6	6	.2485	TR97106	16.86
G	.2610	1-1/2	6	6	.2485	TR97107	16.86
17/64	.2656	1-1/2	6	6	.2485	TR97108	18.81
H	.2660	1-1/2	6	6	.2485	TR97109	18.81
I	.2720	1-1/2	6	6	.2485	TR97110	18.81
7.0mm	.2756	1-1/2	6	6	.2485	TR97111	18.81
J	.2770	1-1/2	6	6	.2485	TR97112	18.81
K	.2810	1-1/2	6	6	.2485	TR97113	18.81
9/32	.2812	1-1/2	6	6	.2485	TR97114	17.87
L	.2900	1-1/2	6	6	.2792	TR97115	18.81
M	.2950	1-1/2	6	6	.2792	TR97116	18.81
7.5mm	.2953	1-1/2	6	6	.2792	TR97117	18.81
19/64	.2969	1-1/2	6	6	.2792	TR97118	18.81
N	.3020	1-1/2	6	6	.2792	TR97119	18.81
o/u	.3115	1-1/2	6	6	.2792	TR97120	17.87
5/16	.3125	1-1/2	6	6	.2792	TR97121	16.92
o/u	.3135	1-1/2	6	6	.2792	TR97122	17.87
8.0mm	.3150	1-1/2	6	6	.2792	TR97123	18.81
O	.3160	1-1/2	6	6	.2792	TR97124	18.81
P	.3230	1-1/2	6	6	.2792	TR97125	20.12
21/64	.3281	1-1/2	6	6	.2792	TR97126	20.12
Q	.3320	1-1/2	6	6	.2792	TR97127	20.12
8.5mm	.3346	1-1/2	6	6	.2792	TR97128	20.12
R	.3390	1-1/2	6	6	.2792	TR97129	20.12
11/32	.3438	1-1/2	6	6	.2792	TR97130	20.12
S	.3480	1-3/4	6	6	.3105	TR97131	20.30
9.0mm	.3543	1-3/4	6	7	.3105	TR97132	20.30
T	.3580	1-3/4	6	7	.3105	TR97133	20.30
23/64	.3594	1-3/4	6	7	.3105	TR97134	20.30
U	.3680	1-3/4	6	7	.3105	TR97135	20.30
9.5mm-o/u	.3740	1-3/4	6	7	.3105	TR97136	19.29
3/8	.3750	1-3/4	6	7	.3105	TR97137	18.28
o/u	.3760	1-3/4	6	7	.3105	TR97138	19.29
V	.3770	1-3/4	6	7	.3105	TR97139	22.10
W	.3860	1-3/4	6	7	.3105	TR97140	22.10
25/64	.3906	1-3/4	6	7	.3105	TR97141	22.10

SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	ITEM#	PRICE
10.0mm	.3937	1-3/4	6	7	.3105	TR97142	22.10
X	.3970	1-3/4	6	7	.3105	TR97143	22.10
Y	.4040	1-3/4	6	7	.3105	TR97144	22.91
13/32	.4062	1-3/4	6	7	.3105	TR97145	22.91
Z	.4130	1-3/4	6	7	.3730	TR97146	22.91
10.5mm	.4134	1-3/4	6	7	.3730	TR97147	22.91
27/64	.4219	1-3/4	6	7	.3730	TR97148	22.91
11.0mm	.4331	1-3/4	6	7	.3730	TR97149	22.91
o/u	.4365	1-3/4	6	7	.3730	TR97150	22.91
7/16	.4375	1-3/4	6	7	.3730	TR97151	21.76
o/u	.4385	1-3/4	6	7	.3730	TR97152	22.91
11.5mm	.4528	1-3/4	6	7	.3730	TR97153	24.96
29/64	.4531	1-3/4	6	7	.3730	TR97154	24.96
15/32	.4688	1-3/4	6	7	.3730	TR97155	24.96
12.0mm	.4724	2	6	8	.4355	TR97156	24.96
31/64	.4844	2	6	8	.4355	TR97157	24.96
12.5mm	.4921	2	6	8	.4355	TR97158	24.96
o/u	.4990	2	6	8	.4355	TR97159	24.96
1/2	.5000	2	6	8	.4355	TR97160	23.68
o/u	.5010	2	6	8	.4355	TR97161	24.96
17/32	.5312	2	6	8	.4355	TR97162	29.45
9/16	.5625	2	8	8	.4355	TR97163	29.45
19/32	.5938	2	8	8	.4355	TR97164	29.45
5/8	.6250	2-1/4	8	9	.5615	TR97165	34.37
21/32	.6562	2-1/4	8	9	.5615	TR97166	36.14
11/16	.6875	2-1/4	8	9	.5615	TR97167	38.86
23/32	.7188	2-1/4	8	9	.5615	TR97168	43.37
3/4	.7500	2-1/2	8	9-1/2	.6240	TR97169	43.37
25/32	.7812	2-1/2	8	9-1/2	.6240	TR97170	47.02
13/16	.8125	2-1/2	8	9-1/2	.6240	TR97171	47.02
27/32	.8438	2-1/2	8	9-1/2	.6240	TR97172	55.66
7/8	.8750	2-5/8	8	10	.7490	TR97173	56.93
29/32	.9062	2-5/8	8	10	.7490	TR97174	61.38
15/16	.9375	2-5/8	8	10	.7490	TR97175	61.38
31/32	.9688	2-5/8	8	10	.7490	TR97176	68.72
1	1.0000	2-3/4	8	10-1/2	.8740	TR97177	69.39
1-1/16	1.0625	2-3/4	8	10-1/2	.8740	TR97178	76.90
1-1/8	1.1250	2-7/8	8	11	.8740	TR97179	81.74
1-3/16	1.1875	2-7/8	8	11	.9990	TR97180	95.72
1-1/4	1.2500	3	8	11-1/2	.9990	TR97181	101.45
1-5/16	1.3125	3	10	11-1/2	.9990	TR97182	118.35
1-3/8	1.3750	3-1/4	10	12	.9990	TR97183	124.36
1-7/16	1.4375	3-1/4	10	12	1.2490	TR97184	133.36
1-1/2	1.5000	3-1/2	10	12-1/2	1.2490	TR97185	143.57

THRU 1/2" DIAMETER	ABOVE 1/2" TO 5/8"	ABOVE 5/8" TO 1-1/2"
+0.002, -0.000	+0.003, -0.000	+0.001, +0.004

CARBIDE ENDMILLS  
 CARBIDE MICRO ENDMILLS  
 CARBIDE THREADMILLS  
 CARBIDE DRILL MILLS  
 CARBIDE CHAMFER MILLS  
 CARBIDE DRILLS  
 CARBIDE REAMERS  
 CARBIDE BURS  
 COUNTERSINKS  
 HSS & COBALT ENDMILLS  
 TAPS & DIES  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION



# Dowel Pin • Taper Shank

## DOWEL PIN SIZES

### STRAIGHT SHANK - STRAIGHT FLUTE



**SERIES 9700**  
HIGH SPEED STEEL

**SERIES 1970**  
M42 COBALT

### STRAIGHT SHANK - RIGHT HAND SPIRAL - RIGHT HAND CUT



**SERIES 9750**  
HIGH SPEED STEEL

**SERIES 1975**  
M42 COBALT

SIZE	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	9700-ITEM#	PRICE	1970-ITEM#	PRICE	9750-ITEM#	PRICE	1975-ITEM#	PRICE
.1230	7/8	4	3-1/2	.1190	TR96264	9.93	TR96508	10.27	TR96950	11.38	TR96970	11.87
.1247	7/8	4	3-1/2	.1190	TR96265	9.93	TR96509	10.27	TR96951	11.38	TR96971	11.87
.1855	1-1/8	6	4-1/2	.1805	TR96266	12.67	TR96510	12.91	TR96952	14.54	TR96972	15.26
.1870	1-1/8	6	4-1/2	.1805	TR96267	12.67	TR96511	12.91	TR96953	14.54	TR96973	15.26
.2480	1-1/2	6	6	.2405	TR96268	13.82	TR96512	14.48	TR96954	15.19	TR96974	16.56
.2495	1-1/2	6	6	.2405	TR96269	13.82	TR96513	14.48	TR96955	15.19	TR96975	16.56
.3105	1-1/2	6	6	.2792	TR96270	16.23	TR96514	20.74	TR96956	17.87	TR96976	21.51
.3120	1-1/2	6	6	.2792	TR96271	16.23	TR96515	20.74	TR96957	17.87	TR96977	21.51
.3730	1-3/4	6	7	.3105	TR96272	17.52	TR96516	22.73	TR96958	19.29	TR96978	23.56
.3745	1-3/4	6	7	.3105	TR96273	17.52	TR96517	22.73	TR96959	19.29	TR96979	23.56
.4355	1-3/4	6	7	.3730	TR96274	19.78	TR96518	29.15	TR96960	22.91	TR96980	31.25
.4370	1-3/4	6	7	.3730	TR96275	19.78	TR96519	29.15	TR96961	22.91	TR96981	31.25
.4980	2	6	8	.4355	TR96276	21.54	TR96520	33.44	TR96962	24.96	TR96982	35.82
.4995	2	6	8	.4355	TR96277	21.54	TR96521	33.44	TR96963	24.96	TR96983	35.82

DIAMETER TOLERANCES FOR DOWEL PIN SIZES

+0.000, -0.002

## TAPER SHANK - STRAIGHT FLUTE



**SERIES 936**  
HIGH SPEED STEEL

SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	MORSE TAPER #	ITEM#	PRICE
1/4	.2500	1-1/2	6	6	1	TR97801	23.26
9/32	.2812	1-1/2	6	6	1	TR97802	24.35
5/16	.3125	1-1/2	6	6	1	TR97803	23.94
11/32	.3438	1-1/2	6	6	1	TR97804	25.94
3/8	.3750	1-3/4	6	7	1	TR97805	26.76
13/32	.4062	1-3/4	6	7	1	TR97806	27.23
7/16	.4375	1-3/4	6	7	1	TR97807	27.36
15/32	.4688	1-3/4	6	7	1	TR97808	29.55
1/2	.5000	2	6	8	1	TR97809	29.96
17/32	.5312	2	6	8	1	TR97810	33.35
9/16	.5625	2	8	8	1	TR97811	35.57
19/32	.5938	2	8	8	1	TR97812	36.20
5/8	.6250	2-1/4	8	9	2	TR97813	38.56
21/32	.6562	2-1/4	8	9	2	TR97814	38.92
11/16	.6875	2-1/4	8	9	2	TR97815	38.92
23/32	.7188	2-1/4	8	9	2	TR97816	43.89
3/4	.7500	2-1/2	8	9-1/2	2	TR97817	43.89
25/32	.7182	2-1/2	8	9-1/2	2	TR97818	50.16
13/16	.8125	2-1/2	8	9-1/2	2	TR97819	50.16
27/32	.8438	2-1/2	8	9-1/2	2	TR97820	56.00
7/8	.8750	2-5/8	8	10	2	TR97821	56.61

SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	MORSE TAPER #	ITEM#	PRICE
29/32	.9062	2-5/8	8	10	2	TR97822	62.31
15/16	.9375	2-5/8	8	10	3	TR97823	62.31
31/32	.9688	2-5/8	8	10	3	TR97824	68.37
1	1.0000	2-3/4	8	10-1/2	3	TR97825	68.97
1-1/16	1.0625	2-3/4	8	10-1/2	3	TR97826	75.40
1-1/8	1.1250	2-7/8	8	11	3	TR97827	83.68
1-3/16	1.1875	2-7/8	10	11	3	TR97828	93.78
1-1/4	1.2500	3	10	11-1/2	4	TR97829	101.53
1-5/16	1.3125	3	10	11-1/2	4	TR97830	111.03
1-3/8	1.3750	3-1/4	10	12	4	TR97831	120.00
1-7/16	1.4375	3-1/4	10	12	4	TR97832	130.07
1-1/2	1.5000	3-1/2	10	12-1/2	4	TR97833	138.24
1-9/16	1.5625	3-1/2	12	13	4	TR97834	194.11
1-5/8	1.6250	3-1/2	12	13	4	TR97835	194.11
1-11/16	1.6875	4	12	13-1/2	5	TR97836	222.89
1-3/4	1.7500	4	12	13-1/2	5	TR97837	222.89
1-13/16	1.8125	4	12	14	5	TR97838	256.70
1-7/8	1.8750	4	12	14	5	TR97839	256.70
1-15/16	1.9375	4	12	14	5	TR97840	300.52
2	2.0000	4	12	14	5	TR97841	300.52
-	-	-	-	-	-	-	-

THRU 1/2" DIAMETER

1/2" TO 5/8"

5/8" TO 1-1/2"

1-1/2" TO 2"

+0.002, -0.000

+0.003, -0.000

+0.001, +0.004

+0.002, +0.006

DOWEL PIN • TAPER SHANK REAMERS





# Expansion Reamers

## STRAIGHT SHANK



**SERIES 931**  
HIGH SPEED STEEL

SIZE	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	ITEM#	PRICE
3/8	3/4	6	7	5/16	TR97201	60.21
13/32	3/4	6	7	5/16	TR97202	64.13
7/16	7/8	6	7	3/8	TR97203	64.13
15/32	7/8	6	8	27/64	TR97204	66.61
1/2	1	6	8	7/16	TR97205	67.79
17/32	1	6	8	7/16	TR97206	70.66
9/16	1-1/8	6	8	7/16	TR97207	72.45
19/32	1-1/8	6	8	7/16	TR97208	73.56
5/8	1-1/4	6	9	9/16	TR97209	75.80
21/32	1-1/4	6	9	9/16	TR97210	78.82
11/16	1-1/4	6	9	9/16	TR97211	79.38
23/32	1-1/4	6	9	9/16	TR97212	84.53
3/4	1-3/8	6	9-1/2	5/8	TR97213	87.44
25/32	1-3/8	8	9-1/2	5/8	TR97214	92.58
13/16	1-3/8	8	9-1/2	5/8	TR97215	96.12
27/32	1-3/8	8	9-1/2	5/8	TR97216	101.28
7/8	1-1/2	8	10	3/4	TR97217	103.12

SIZE	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	ITEM#	PRICE
29/32	1-1/2	8	10	3/4	TR97218	108.59
15/16	1-1/2	8	10	3/4	TR97219	113.68
31/32	1-1/2	8	10	3/4	TR97220	118.82
1	1-5/8	8	10-1/2	7/8	TR97221	125.33
1-1/32	1-5/8	8	10-1/2	7/8	TR97222	174.37
1-1/16	1-5/8	8	10-1/2	7/8	TR97223	138.51
1-3/32	1-5/8	8	10-1/2	7/8	TR97224	145.10
1-1/8	1-3/4	8	11	7/8	TR97225	151.58
1-5/32	1-3/4	8	11	7/8	TR97226	153.64
1-3/16	1-3/4	8	11	1	TR97227	159.65
1-7/32	1-3/4	8	11	1	TR97228	165.46
1-1/4	1-7/8	8	11-1/2	1	TR97229	172.06
1-5/16	1-7/8	8	11-1/2	1	TR97230	177.82
1-3/8	2	8	12	1	TR97231	184.36
1-7/16	2	8	12	1-1/4	TR97232	191.65
1-1/2	2-1/8	8	12-1/2	1-1/4	TR97233	199.74
-	-	-	-	-	-	-

## TAPER SHANK



**SERIES 932**  
HIGH SPEED STEEL

SIZE	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	MORSE TAPER#	ITEM#	PRICE
3/8	3/4	6	7	5/16	1	TR97250	68.31
13/32	3/4	6	7	5/16	1	TR97251	79.22
7/16	7/8	6	7	3/8	1	TR97252	72.33
15/32	7/8	6	8	27/64	1	TR97253	74.05
1/2	1	6	8	7/16	1	TR97254	75.53
17/32	1	6	8	7/16	1	TR97255	78.53
9/16	1-1/8	6	8	7/16	1	TR97256	78.53
19/32	1-1/8	6	8	7/16	1	TR97257	81.39
5/8	1-1/4	6	9	9/16	2	TR97258	84.31
21/32	1-1/4	6	9	9/16	2	TR97259	86.62
11/16	1-1/4	6	9	9/16	2	TR97260	87.14
23/32	1-1/4	6	9	9/16	2	TR97261	92.96
3/4	1-3/8	6	9-1/2	5/8	2	TR97262	95.83
25/32	1-3/8	8	9-1/2	5/8	2	TR97263	100.24
13/16	1-3/8	8	9-1/2	5/8	2	TR97264	101.74
27/32	1-3/8	8	9-1/2	5/8	2	TR97265	107.66
7/8	1-1/2	8	10	3/4	2	TR97266	111.90

SIZE	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	MORSE TAPER#	ITEM#	PRICE
29/32	1-1/2	8	10	3/4	2	TR97267	117.72
15/16	1-1/2	8	10	3/4	3	TR97268	120.65
31/32	1-1/2	8	10	3/4	3	TR97269	125.73
1	1-5/8	8	10-1/2	7/8	3	TR97270	132.98
1-1/32	1-5/8	8	10-1/2	7/8	3	TR97271	138.07
1-1/16	1-5/8	8	10-1/2	7/8	3	TR97272	144.68
1-3/32	1-5/8	8	10-1/2	7/8	3	TR97273	151.14
1-1/8	1-3/4	8	11	7/8	3	TR97274	156.35
1-5/32	1-3/4	8	11	7/8	3	TR97275	162.80
1-3/16	1-3/4	8	11	1	3	TR97276	169.31
1-7/32	1-3/4	8	11	1	3	TR97277	175.83
1-1/4	1-7/8	8	11-1/2	1	4	TR97278	183.96
1-5/16	1-7/8	8	11-1/2	1	4	TR97279	191.16
1-3/8	2	8	12	1	4	TR97280	199.09
1-7/16	2	8	12	1-1/4	4	TR97281	210.77
1-1/2	2-1/8	8	12-1/2	1-1/4	4	TR97282	217.97
-	-	-	-	-	-	-	-

THRU 1/2" DIAMETER	ABOVE 1/2" TO 5/8"	ABOVE 5/8" TO 1-1/2"
+0.002, -.0000	+0.003, -.0000	+0.001, +0.004

HSS EXPANSION REAMERS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# Hand Reamers

## STRAIGHT SHANK - STRAIGHT FLUTE



**SERIES 9000**  
HIGH SPEED STEEL

SIZE	DECIMAL EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	ITEM#	PRICE
1/16	.0625	1	4	2	.0625	TR97606	28.10
5/64	.0781	1	4	2	.0781	TR97607	28.10
3/32	.0938	1-1/4	4	2-1/2	.0938	TR97608	28.10
7/64	.1094	1-1/4	4	2-1/2	.1094	TR97609	28.10
1/8	.1250	1-1/2	4	3	.1250	TR97610	26.49
9/64	.1406	1-5/8	4	3-1/4	.1406	TR97611	26.49
5/32	.1562	1-5/8	4	3-1/4	.1562	TR97612	28.63
11/64	.1719	1-3/4	6	3-1/2	.1719	TR97613	28.63
3/16	.1875	1-3/4	6	3-1/2	.1875	TR97614	28.10
13/64	.2031	1-7/8	6	3-3/4	.2031	TR97615	28.10
7/32	.2188	1-7/8	6	3-3/4	.2188	TR97616	30.96
15/64	.2344	2	6	4	.2344	TR97617	30.96
1/4	.2500	2	6	4	.2500	TR97618	30.78
17/64	.2656	2-1/8	6	4-1/4	.2656	TR97619	30.96
9/32	.2812	2-1/8	6	4-1/4	.2812	TR97620	33.31
19/64	.2969	2-1/4	6	4-1/2	.2969	TR97621	33.31
5/16	.3125	2-1/4	6	4-1/2	.3125	TR97622	32.57
11/32	.3438	2-3/8	6	4-3/4	.3438	TR97623	37.80
3/8	.3750	2-1/2	6	5	.3750	TR97624	36.90
13/32	.4062	2-5/8	6	5-1/4	.4062	TR97625	42.83
7/16	.4375	2-3/4	6	5-1/2	.4375	TR97626	41.96
15/32	.4688	2-7/8	6	5-3/4	.4688	TR97627	46.42

SIZE	DECIMAL EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	ITEM#	PRICE
1/2	.5000	3	6	6	.5000	TR97628	44.63
17/32	.5312	3-1/8	8	6-1/4	.5312	TR97629	48.22
9/16	.5625	3-1/4	8	6-1/2	.5625	TR97630	51.57
19/32	.5938	3-3/8	8	6-3/4	.5938	TR97631	57.33
5/8	.6250	3-1/2	8	7	.6250	TR97632	55.58
21/32	.6562	3-11/16	8	7-3/8	.6562	TR97633	62.29
11/16	.6875	3-7/8	8	7-3/4	.6875	TR97634	61.07
23/32	.7188	4-1/16	8	8-1/8	.7188	TR97635	66.89
3/4	.7500	4-3/16	8	8-3/8	.7500	TR97636	65.12
25/32	.7812	4-3/8	8	8-3/4	.7812	TR97637	71.45
13/16	.8125	4-9/16	8	9-1/8	.8125	TR97638	65.12
27/32	.8438	4-11/16	8	9-3/8	.8438	TR97639	78.22
7/8	.8750	4-7/8	8	9-3/4	.8750	TR97640	78.90
29/32	.9062	5	8	10	.9062	TR97641	87.19
15/16	.9375	5-1/8	8	10-1/4	.9375	TR97642	78.97
31/32	.9688	5-5/16	8	10-5/8	.9688	TR97643	96.00
1	1.0000	5-7/16	8	10-7/8	1.0000	TR97644	95.58
1-1/8	1.1250	5-13/16	8	11-5/8	1.1250	TR97645	124.90
1-1/4	1.2500	6-1/8	8	12-1/4	1.2500	TR97646	153.37
1-3/8	1.3750	6-5/16	10	12-5/8	1.3750	TR97647	181.28
1-1/2	1.5000	6-1/2	10	13	1.5000	TR97648	213.97
-	-	-	-	-	-	-	-

## STRAIGHT SHANK - LEFT HAND SPIRAL - RIGHT HAND CUT



**SERIES 9050**  
HIGH SPEED STEEL

SIZE	DECIMAL EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	ITEM#	PRICE
1/16	.0625	1	4	2	.0625	TR97350	32.97
5/64	.0781	1	4	2	.0781	TR97351	32.97
3/32	.0938	1-1/4	4	2-1/2	.0938	TR97352	32.97
7/64	.1094	1-1/4	4	2-1/2	.1094	TR97353	32.97
1/8	.1250	1-1/2	4	3	.1250	TR97354	32.57
9/64	.1406	1-5/8	4	3-1/4	.1406	TR97355	32.57
5/32	.1562	1-5/8	4	3-1/4	.1562	TR97356	35.13
11/64	.1719	1-3/4	6	3-1/2	.1719	TR97357	35.13
3/16	.1875	1-3/4	6	3-1/2	.1875	TR97358	35.13
13/64	.2031	1-7/8	6	3-3/4	.2031	TR97359	35.13
7/32	.2188	1-7/8	6	3-3/4	.2188	TR97360	34.20
15/64	.2344	2	6	4	.2344	TR97361	34.20
1/4	.2500	2	6	4	.2500	TR97362	34.04
17/64	.2656	2-1/8	6	4-1/4	.2656	TR97363	34.20
9/32	.2812	2-1/8	6	4-1/4	.2812	TR97364	37.80
19/64	.2969	2-1/4	6	4-1/2	.2969	TR97365	37.80
5/16	.3125	2-1/4	6	4-1/2	.3125	TR97366	37.44
11/32	.3438	2-3/8	6	4-3/4	.3438	TR97367	42.11
3/8	.3750	2-1/2	6	5	.3750	TR97368	41.98
13/32	.4062	2-5/8	6	5-1/4	.4062	TR97369	46.64
7/16	.4375	2-3/4	6	5-1/2	.4375	TR97370	46.80
15/32	.4688	2-7/8	6	5-3/4	.4688	TR97371	51.67

SIZE	DECIMAL EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	ITEM#	PRICE
1/2	.5000	3	6	6	.5000	TR97372	50.41
17/32	.5312	3-1/8	8	6-1/4	.5312	TR97373	58.86
9/16	.5625	3-1/4	8	6-1/2	.5625	TR97374	59.19
19/32	.5938	3-3/8	8	6-3/4	.5938	TR97375	64.37
5/8	.6250	3-1/2	8	7	.6250	TR97376	63.19
21/32	.6562	3-11/16	8	7-3/8	.6562	TR97377	69.29
11/16	.6875	3-7/8	8	7-3/4	.6875	TR97378	69.08
23/32	.7188	4-1/16	8	8-1/8	.7188	TR97379	74.49
3/4	.7500	4-3/16	8	8-3/8	.7500	TR97380	73.05
25/32	.7812	4-3/8	8	8-3/4	.7812	TR97381	79.39
13/16	.8125	4-9/16	8	9-1/8	.8125	TR97382	79.39
27/32	.8438	4-11/16	8	9-3/8	.8438	TR97383	86.89
7/8	.8750	4-7/8	8	9-3/4	.8750	TR97384	86.89
29/32	.9062	5	8	10	.9062	TR97385	96.87
15/16	.9375	5-1/8	8-10	10-1/4	.9375	TR97386	96.87
31/32	.9688	5-5/16	8-10	10-5/8	.9688	TR97387	106.67
1	1.0000	5-7/16	8-10	10-7/8	1.0000	TR97388	106.67
1-1/8	1.1250	5-13/16	8-10	11-5/8	1.1250	TR97389	137.30
1-1/4	1.2500	6-1/8	8-10	12-1/4	1.2500	TR97390	168.94
1-3/8	1.3750	6-5/16	8-10	12-5/8	1.3750	TR97391	199.33
1-1/2	1.5000	6-1/2	8-10	13	1.5000	TR97392	236.09
-	-	-	-	-	-	-	-

THRU 1/2" DIAMETER	ABOVE 1/2" TO 5/8"	ABOVE 5/8" TO 1-1/2"
+0.002, -0.000	+0.003, -0.000	+0.001, +0.004



# Reamers

## TAPER PIPE REAMERS - LEFT HAND SPIRAL - RIGHT HAND CUT



**SERIES 906**  
HIGH SPEED STEEL

SIZE	DIAMETER SMALL END	DIAMETER LARGE END	# OF FLUTES	THREAD OR FLUTE LENGTH	OVERALL LENGTH	SHANK DIA.	SIZE OF SQUARE	ITEM#	PRICE
1/16	.2320	.2750	6	3/4	2-1/8	.3125	.235	TR97649	36.75
1/8	.3160	.3620	6	3/4	2-1/8	.4375	.328	TR97650	34.26
1/4	.4060	.4720	6	1-1/16	2-7/16	.5625	.421	TR97651	39.22
3/8	.5400	.6060	6	1-1/16	2-9/16	.7000	.531	TR97652	44.41
1/2	.6650	.7510	6	1-3/8	3-1/8	.6875	.515	TR97653	56.10
3/4	.8760	.9620	8	1-3/8	3-1/4	.9063	.679	TR97654	77.78
1	1.1030	1.2120	8	1-3/4	3-3/4	1.1250	.843	TR97655	114.45
1-1/4	1.4440	1.5530	10	1-3/4	4	1.3125	.984	TR97656	192.77
1-1/2	1.6840	1.7930	12	1-3/4	4-1/4	1.5000	1.125	TR97657	243.75
2	2.1590	2.2680	12	1-3/4	4-1/2	1.8750	1.406	TR97658	325.58

## TAPER PIN REAMERS HIGH SPEED STEEL



**SERIES 987**  
STRAIGHT FLUTE

**SERIES 991**  
LEFT HAND SPIRAL  
RIGHT HAND CUT

**SERIES 988**  
LEFT HAND HELICAL  
RIGHT HAND CUT

SIZE	DIAMETER SMALL END	DIAMETER LARGE END	# OF FLUTES	STRAIGHT	PRICE	LH-SPIRAL	PRICE	LH-HELICAL	PRICE
7/0	.0497	.0666	4	TR97525	29.39	TR97567	30.49	TR97546	27.26
6/0	.0611	.0806	4	TR97526	29.39	TR97568	30.49	TR97547	25.67
5/0	.0719	.0966	4	TR97527	26.79	TR97569	29.39	TR97548	26.63
4/0	.0869	.1142	4	TR97528	26.79	TR97570	29.39	TR97549	26.63
3/0	.1029	.1302	4	TR97529	26.79	TR97571	29.39	TR97550	24.05
2/0	.1137	.1462	4	TR97530	23.95	TR97572	25.67	TR97551	24.33
0	.1287	.1638	4	TR97531	23.04	TR97573	24.53	TR97552	24.91
1	.1447	.1798	6	TR97532	22.32	TR97574	24.91	TR97553	25.29
2	.1605	.2008	6	TR97533	22.32	TR97575	24.91	TR97554	28.63
3	.1813	.2294	6	TR97534	22.32	TR97576	24.91	TR97555	29.59
4	.2071	.2604	6	TR97535	24.91	TR97577	27.17	TR97556	33.31
5	.2409	.2994	6	TR97536	26.79	TR97578	28.98	TR97557	36.45
6	.2773	.3540	6	TR97537	32.34	TR97579	35.71	TR97558	42.78
7	.3297	.4220	6	TR97538	41.65	TR97580	45.15	TR97559	52.81
8	.3971	.5050	6	TR97539	43.57	TR97581	58.38	TR97560	61.96
9	.4805	.6066	6	TR97540	64.72	TR97582	70.46	TR97561	68.08
10	.5799	.7216	6	TR97541	71.06	TR97583	78.10	TR97562	86.43
11	.7060	.8780	8	TR97542	75.72	TR97584	83.31	TR97563	91.62
12	.8420	1.0500	8	TR97543	117.16	TR97585	128.87	TR97564	141.82
13	1.0090	1.2590	10	TR97544	227.25	TR97586	249.97	TR97565	274.73
14	1.2500	1.5420	10	TR97545	364.13	TR97587	404.10	TR97566	443.72

HSS - TAPER PIPE & TAPER PIN REAMERS

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION

# Reamers

## CAPSCREW COUNTERBORES HIGH SPEED STEEL



**SERIES 901 - STANDARD • SERIES 902 - 1/64 o/s • SERIES 903 - 1/32 o/s**

SIZE	TOLERANCE	SERIES NUMBER	PILOT SIZE	PILOT LENGTH	FLUTE SIZE	BODY LENGTH	OVERALL LENGTH	ITEM#	PRICE
4	std.	901	.1120	1/8	.1830	9/16	3-7/8	TR97470	16.86
4	1/64 o/s	902	.1270	1/8	.1990	9/16	3-7/8	TR97484	16.86
4	1/32 o/s	903	.1430	1/8	.2150	9/16	3-7/8	TR97501	16.86
5	std.	901	.1250	5/32	.2050	5/8	4-1/8	TR97471	16.86
5	1/64 o/s	902	.1400	5/32	.2210	5/8	4-1/8	TR97485	16.86
5	1/32 o/s	903	.1560	5/32	.2370	5/8	4-1/8	TR97502	16.86
6	std.	901	.1380	3/16	.2270	3/4	4-5/8	TR97472	17.86
6	1/64 o/s	902	.1530	3/16	.2430	3/4	4-5/8	TR97486	17.86
6	1/32 o/s	903	.1690	3/16	.2590	3/4	4-5/8	TR97503	17.86
8	std.	901	.1640	7/32	.2700	3/4	5	TR97473	19.13
8	1/64 o/s	902	.1790	7/32	.2860	3/4	5	TR97487	19.13
8	1/32 o/s	903	.1950	7/32	.3020	3/4	5	TR97504	19.13
10	std.	901	.1900	1/4	.3120	7/8	5-1/4	TR97474	19.54
10	1/64 o/s	902	.2050	1/4	.3280	7/8	5-1/4	TR97488	19.54
10	1/32 o/s	903	.2210	1/4	.3440	7/8	5-1/4	TR97505	19.54
1/4	std.	901	.2500	9/32	.3800	1	5-5/8	TR97475	20.55
1/4	1/64 o/s	902	.2650	9/32	.3960	1	5-5/8	TR97489	20.55
1/4	1/32 o/s	903	.2810	9/32	.4120	1	5-5/8	TR97506	20.55
5/16	std.	901	.3125	5/16	.4740	1	6-1/8	TR97476	25.67
5/16	1/64 o/s	902	.3280	5/16	.4890	1	6-1/8	TR97490	25.67
5/16	1/32 o/s	903	.3430	5/16	.5040	1	6-1/8	TR97507	25.67
3/8	std.	901	.3750	3/8	.5690	1-1/4	6-1/2	TR97477	28.04
3/8	1/64 o/s	902	.3900	3/8	.5850	1-1/4	6-1/2	TR97491	28.04
3/8	1/32 o/s	903	.4060	3/8	.6010	1-1/4	6-1/2	TR97508	28.04
7/16	std.	901	.4370	7/16	.6610	1-1/4	7	TR97478	33.72
7/16	1/64 o/s	902	.4520	7/16	.6760	1-1/4	7	TR97492	33.72
7/16	1/32 o/s	903	.4680	7/16	.6910	1-1/4	7	TR97509	33.72
1/2	std.	901	.5000	1/2	.7550	1-1/2	7-1/2	TR97479	38.59
1/2	1/64 o/s	902	.5150	1/2	.7710	1-1/2	7-1/2	TR97493	38.59
1/2	1/32 o/s	903	.5310	1/2	.7870	1-1/2	7-1/2	TR97510	38.59
5/8	std.	901	.6250	5/8	.9690	1-1/2	7-5/8	TR97480	62.97
5/8	1/64 o/s	902	.6400	5/8	.9840	1-1/2	7-5/8	TR97494	62.97
5/8	1/32 o/s	903	.6560	5/8	1.0000	1-1/2	7-5/8	TR97511	62.97
3/4	std.	901	.7500	3/4	1.1560	1-5/8	7-3/4	TR97481	73.26
3/4	1/64 o/s	902	.7650	3/4	1.1720	1-5/8	7-3/4	TR97495	73.26
3/4	1/32 o/s	903	.7810	3/4	1.1880	1-5/8	7-3/4	TR97512	73.26
7/8	std.	901	.8750	7/8	1.3440	1-7/8	8	TR97482	89.24
7/8	1/64 o/s	902	.8910	7/8	1.3590	1-7/8	8	TR97496	89.24
7/8	1/32 o/s	903	.9060	7/8	1.3750	1-7/8	8	TR97513	89.24
1	std.	901	1.0000	1	1.5310	2	8-1/2	TR97483	113.21
1	1/64 o/s	902	1.0150	1	1.5470	2	8-1/2	TR97497	113.21
1	1/32 o/s	903	1.0310	1	1.5630	2	8-1/2	TR97514	113.21

HSS CAPSCREW COUNTERBORES





# Reamers



## CONSTRUCTION REAMERS

SIZE	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	ITEM#	PRICE
3/8	2-1/2	5	4-5/8	3/8	TR97595	34.96
7/16	3-1/4	5	5-3/8	7/16	TR97596	37.72
1/2	3-3/4	5	5-7/8	1/2	TR97597	41.75
9/16	3-3/4	5	5-7/8	1/2	TR97598	43.45
5/8	4-1/4	5	6-3/8	1/2	TR97599	48.33
11/16	4-1/4	5	6-3/8	1/2	TR97600	52.69
3/4	4-1/2	5	6-7/8	1/2	TR97601	61.01
13/16	4-1/2	5	6-7/8	1/2	TR97602	61.01
7/8	4-1/2	5	6-7/8	1/2	TR97603	69.21
15/16	4-1/2	5	6-7/8	1/2	TR97604	69.21
1	4-1/2	5	6-7/8	1/2	TR97605	79.02
1-1/16	4-1/2	5	6-7/8	1/2	TR97660	92.96

**SERIES 9950**  
HIGH SPEED STEEL  
LEFT HAND SPIRAL  
RIGHT HAND CUT  
BLACK & GOLD  
3 FLATS



## SAFETY REAMERS WITH MAGNETIC HEX SHANK

SIZE	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	HEX SHANK DIAMETER	ITEM#	PRICE
9/16	4	5	5-1/2	1-1/16	TR99050	69.51
11/16	4-1/2	5	6-3/8	1-1/16	TR99052	84.06
13/16	5	5	7	1-1/4	TR99054	100.52
15/16	5	5	7	1-7/16	TR99056	113.58
1-1/16	5	5	7	1-5/8	TR99058	150.43
1-3/16	5	5	7	1-13/16	TR99060	193.78
1-5/16	5	5	7-7/8	2	TR99062	231.48

**SERIES 996**  
HIGH SPEED STEEL  
LEFT HAND SPIRAL  
RIGHT HAND CUT

Magnetic Hex Shank has been designed to protect against danger and loss of falling objects such as reamers.

See OSHA 29CFR Part 1926.759 (falling object protection)



## BRIDGE REAMERS

SIZE	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	MORSE TAPER #	SMALL DIAMETER	ITEM#	PRICE
7/16	5-1/8	5	9	2	.3050	TR98974	35.51
1/2	5-1/8	5	9	2	.3125	TR98976	39.52
9/16	5-1/8	5	9	2	.3430	TR97589	39.52
5/8	6-1/8	5	10	2	.3750	TR98978	42.67
11/16	7-1/8	5	11-3/4	3	.3906	TR97590	45.65
3/4	7-3/8	5	12	3	.5000	TR97591	59.44
13/16	7-3/8	5	12	3	.5000	TR97592	59.44
7/8	7-3/8	5	12	3	.5625	TR98980	65.16
15/16	7-3/8	5	12	3	.6250	TR97593	69.56
1	7-3/8	5	12	3	.6875	TR98982	75.59
1-1/16	7-3/8	5	12	3	.7500	TR97594	78.48
1-1/8	7-3/8	5	12	3	.8125	TR98984	95.76
1-3/16	7-3/8	5	12	3	.8750	TR98986	122.41
1-1/4	7-3/8	5	13	4	.9375	TR98988	139.29
1-5/16	7-3/8	5	13	4	1.0000	TR98990	164.58
1-3/8	7-3/8	5	13	4	1.0625	TR99000	170.88
1-7/16	7-3/8	6	13	4	1.1250	TR99001	177.66
1-1/2	7-3/8	6	13	4	1.1875	TR99002	201.70
1-9/16	7-3/8	6	13	4	1.2500	TR99003	242.41
1-5/8	7-3/8	6	13	4	1.3125	TR99008	279.49

**SERIES 9850**  
HIGH SPEED STEEL  
LEFT HAND SPIRAL  
RIGHT HAND CUT

HSS - CONSTRUCTION • SAFETY • BRIDGE REAMERS

CARBIDE ENDMILLS

CARBIDE MICRO ENDMILLS

CARBIDE THREADMILLS

CARBIDE DRILL MILLS

CARBIDE CHAMFER MILLS

CARBIDE DRILLS

CARBIDE REAMERS

CARBIDE BURS

COUNTERSINKS

HSS & COBALT ENDMILLS

TAPS & DIES

HSS & COBALT DRILLS

HSS & COBALT REAMERS

TECHNICAL INFORMATION

# Reamer Sets



**ITEM# TR96286**  
60 Pc. #1 - #60  
HIGH SPEED STEEL



**ITEM# TR96283**  
29 Pc. 1/16" - 1/2" BY 64ths  
HIGH SPEED STEEL

## HSS & COBALT - REAMER SETS

DESCRIPTION	FLUTE STYLE	ITEM#	PRICE
29Pc • 1/16" - 1/2" by 64ths • HSS	Straight	<a href="#">TR96283</a>	490.19
29Pc • 1/16" - 1/2" by 64ths • M42 Cobalt	Straight	<a href="#">TR96284</a>	642.15
60Pc • #1 - #60 • HSS	Straight	<a href="#">TR96286</a>	727.22
60Pc • #1 - #60 • M42 Cobalt	Straight	<a href="#">TR96287</a>	789.57
26Pc • A-Z • HSS	Straight	<a href="#">TR96290</a>	453.60
26Pc • A-Z • M42 Cobalt	Straight	<a href="#">TR96291</a>	631.41
14Pc • Dowel Pin • .1230 - .4995 • HSS	Straight	<a href="#">TR96279</a>	254.24
14Pc • Dowel Pin • .1230 - .4995 • M42 Cobalt	Straight	<a href="#">TR96280</a>	333.49
14Pc • O/U • .1240 - .5010 • HSS	Straight	<a href="#">TR96293</a>	254.24
14Pc • O/U • .1240 - .5010 • M42 Cobalt	Straight	<a href="#">TR96294</a>	318.68
20Pc • #61 - #80 • HSS	Straight	<a href="#">TR96305</a>	298.02
10Pc • #4 - 1/2" • Std • Ctr Bore Set • HSS	RH Spiral	<a href="#">TR96307</a>	249.91
10Pc • #4 - 1/2" • 1/64" OS • Ctr Bore Set • HSS	RH Spiral	<a href="#">TR96308</a>	249.91
10Pc • #4 - 1/2" • 1/32" OS • Ctr Bore Set • HSS	RH Spiral	<a href="#">TR96309</a>	249.91

HSS & COBALT REAMER SETS

CARBIDE ENDMILLS  
 CARBIDE MICRO ENDMILLS  
 CARBIDE THREADMILLS  
 CARBIDE DRILL MILLS  
 CARBIDE CHAMFER MILLS  
 CARBIDE DRILLS  
 CARBIDE REAMERS  
 CARBIDE BURS  
 COUNTERSINKS  
 HSS & COBALT ENDMILLS  
 TAPS & DIES  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION



# Technical Information

## VI-PRO ENDMILLS - SOLID MICROGRAIN CARBIDE

### VI-PRO

- Running @ higher SFM; heavier chip loads than conventional endmills
- Speed and feed chart parameters are for full diameter slotting
- Recommended slotting depth 1/2 diameter
- Tool holding important for maximizing tool life. Minimize TIR
- Max ramp angle recommended 3° or less

#### Speed and Feed Calculation:

$$\text{RPM} = (3.82 \times \text{SFM}) \div \text{Dia.}$$

$$\text{IPR} = \text{IPM} \div \text{RPM}$$

$$\text{SFM} = (\text{RPM} \times \text{Dia.}) \div 3.82$$

$$\text{IPM} = \text{IPT}(\text{chip load}) \times \text{No. of Teeth} \times \text{RPM}$$

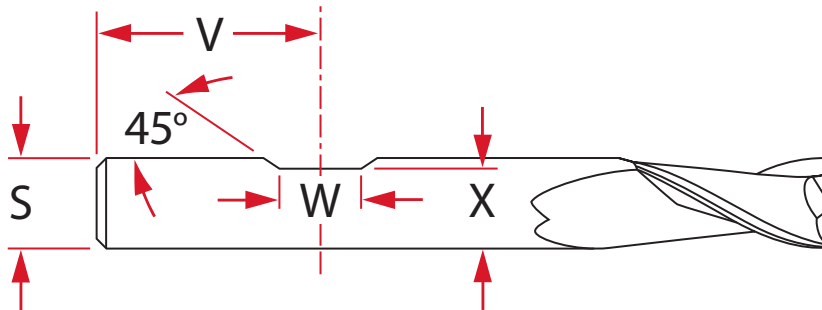
$$\text{IPT}(\text{chip load}) = \text{IPM} \div (\text{No. of teeth} \times \text{RPM})$$

### ALTIN & ALCRO-MAX coating for the VI-PRO

**ALTIN** - is a high performance coating for milling, tapping and drilling in stainless steels, carbon steels, alloy steels, titanium and cast iron. This coating is extremely heat resistant and can be used with or without coolant. It is exceptional in difficult to machine materials where adhesive wear is particularly high.

**ALCRO-MAX** - has remarkable wear resistance at lower feeds and speeds and under high mechanical loads, and can be used for roughing and finishing operations. Because of its titanium addition, surface finish of the work piece (Ra, Rz) remains consistent and low during the life of the tool. ALCRO-MAX particularly excels when machining under wet or MQL (minimum quantity lubrication) conditions, cold and hot working steel, hardened and tempered up to 54 HRC.

### Weldon Flat specifications for the VI-PRO



STUB LENGTH				
S SHANK DIAMETER	V	W MIN	MAX	X
1/2"	.750"	.330"	.332"	.440"
5/8"	.750"	.400"	.402"	.560"
3/4"	.750"	.455"	.457"	.675"

REGULAR LENGTH				
S SHANK DIAMETER	V	W MIN	MAX	X
1/2" (1-1/4" LOC)	.750"	.330"	.332"	.440"
1/2"	.875"	.330"	.332"	.440"
5/8"	.875"	.400"	.402"	.560"
3/4"	.875"	.455"	.457"	.675"
1"	.875"	.515"	.517"	.925"

LONG LENGTH				
S SHANK DIAMETER	V	W MIN	MAX	X
1/2" (2" LOC)	.875"	.330"	.332"	.440"
1/2"	1.250"	.330"	.332"	.440"
5/8"	1.250"	.400"	.402"	.560"
3/4"	1.250"	.455"	.457"	.675"
1"	1.250"	.515"	.517"	.925"

EXTRA LONG LENGTH				
S SHANK DIAMETER	V	W MIN	MAX	X
1/2"	1.5"	.330"	.332"	.440"
5/8"	1.5"	.400"	.402"	.560"
3/4"	1.5"	.455"	.457"	.675"
1"	1.5"	.515"	.517"	.925"
-	-	-	-	-

TECHNICAL INFORMATION - VI-PRO

CARBIDE ENDMILLS  
 CARBIDE MICRO ENDMILLS  
 CARBIDE THREADMILLS  
 CARBIDE DRILL MILLS  
 CARBIDE CHAMFER MILLS  
 CARBIDE DRILLS  
 CARBIDE REAMERS  
 CARBIDE BURS  
 COUNTERSINKS  
 HSS & COBALT ENDMILLS  
 TAPS & DIES  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION



# Technical Information

## VI-PRO ENDMILLS - SOLID MICROGRAIN CARBIDE

# VI-PRO

### SFM FOR ALTiN, FOR ALcRO-MAX +20%

MATERIAL / TYPE	Rc HARDNESS	4 FLUTE STUB LENGTH	4 FLUTE REG LENGTH	4 FLUTE LONG LENGTH	4 FLUTE EXTRA LONG	5 FLUTE STUB LENGTH	5 FLUTE REG LENGTH	5 FLUTE LONG LENGTH	5 FLUTE EXTRA LONG
<b>COBALT BASE ALLOYS</b>									
STELLITE, HS-21,	UNDER 32	125 - 175	125 - 175	80 - 125	80 - 125	550 - 570	550 - 570	385 - 400	385 - 400
HAYNES 25/188, X-40, L-605	OVER 32	80 - 100	80 - 100	55 - 70	55 - 70	200 - 225	200 - 225	140 - 160	140 - 160
<b>NICKEL BASE ALLOYS</b>									
INCONEL-625/718, WASPALLOY,	UNDER 32	125 - 175	125 - 175	80 - 125	80 - 125	550 - 570	550 - 570	385 - 400	385 - 400
RENE, HASTELLOY	OVER 32	80 - 100	80 - 100	55 - 70	55 - 70	200 - 225	200 - 225	140 - 160	140 - 160
<b>IRON BASE ALLOYS</b>									
INCOLOY 800-802, MULTIMET N-155,	UNDER 32	125 - 175	125 - 175	80 - 125	80 - 125	550 - 570	550 - 570	385 - 400	385 - 400
TIMKIN 16-25-6, CARPENTER 22-b3	OVER 32	80 - 100	80 - 100	55 - 70	55 - 70	200 - 225	200 - 225	140 - 160	140 - 160
<b>MONEL</b>									
MONEL-65% NICKEL	-	150 - 200	150 - 200	105 - 140	105 - 140	550 - 570	550 - 570	385 - 400	385 - 400
<b>TITANIUM ALLOYS</b>									
COMMERCIALLY PURE, 6Al-4V,	-	-	-	-	-	-	-	-	-
ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si	-	200 - 325	200 - 325	140 - 230	140 - 230	550 - 570	550 - 570	385 - 400	385 - 400
<b>STAINLESS STEEL (PRECIPITATION)</b>									
12/8, 15/5, 17/4, AM-350/355	UNDER 32	250 - 300	250 - 300	175 - 210	175 - 210	600 - 625	600 - 625	420 - 440	420 - 440
	OVER 32	200 - 250	200 - 250	140 - 175	140 - 175	550 - 570	550 - 570	385 - 400	385 - 400
<b>STAINLESS STEEL (AUSTENITIC)</b>									
200 SERIES, 302, 303, 304, 316	-	290 - 375	290 - 375	200 - 260	200 - 260	600 - 625	600 - 625	420 - 440	420 - 440
<b>STAINLESS STEEL (AUSTENITIC)</b>									
304L, 316L	UNDER 32	250 - 300	250 - 300	175 - 210	175 - 210	600 - 625	600 - 625	420 - 440	420 - 440
	OVER 32	200 - 250	200 - 250	140 - 175	140 - 175	550 - 570	550 - 570	385 - 400	385 - 400
<b>STAINLESS STEEL (MARTENSITIC)</b>									
403, 410, 416, 440	-	250 - 300	250 - 300	175 - 210	175 - 210	600 - 625	600 - 625	420 - 440	420 - 440
<b>HIGH STRENGTH TOOL STEELS</b>									
4140, 4340, 6150, 5210, A2,	UNDER 32	250 - 350	250 - 350	175 - 210	175 - 210	600 - 625	600 - 625	420 - 440	420 - 440
D2, P20, H11, H13, S2, 01	OVER 32	150 - 200	150 - 200	100 - 140	100 - 140	550 - 570	550 - 570	385 - 400	385 - 400
<b>CARBON STEELS</b>									
1000's, 1100's, 1300's	-	560 - 595	560 - 595	300 - 500	300 - 500	800 - 850	800 - 850	560 - 595	560 - 595
<b>DUCTILE</b>									
DUCTILE CAST IRONS	-	560 - 595	560 - 595	400 - 500	400 - 500	800 - 850	800 - 850	560 - 595	560 - 595
<b>CAST IRONS</b>									
GRAY CAST IRONS	-	560 - 595	560 - 595	400 - 500	400 - 500	800 - 850	800 - 850	560 - 595	560 - 595

TECHNICAL INFORMATION - VI-PRO

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION





VI-PRO ENDMILLS - SOLID MICROGRAIN CARBIDE

VI-PRO

CHIP LOAD										
MATERIAL / TYPE	1/8"	3/16"	1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	1"
<b>COBALT BASE ALLOYS</b>										
STELLITE, HS-21, HAYNES 25/188, X-40, L-605	.0004-.0008	.0005-.0011	.0009-.0016	.0010-.0018	.0012-.0019	.0014-.0021	.0016-.0028	.0019-.0031	.0024-.0037	.0029-.0041
<b>NICKEL BASE ALLOYS</b>										
INCONEL-625/718, WASPALLOY, RENE, HASTELLOY	.0004-.0008	.0005-.0011	.0009-.0016	.0010-.0018	.0012-.0019	.0014-.0021	.0016-.0028	.0019-.0031	.0024-.0037	.0029-.0041
<b>IRON BASE ALLOYS</b>										
INCOLOY 800-802, MULTIMET N-155, TIMKIN 16-25-6, CARPENTER 22-b3	.0004-.0008	.0005-.0011	.0009-.0016	.0010-.0018	.0012-.0019	.0014-.0021	.0016-.0028	.0019-.0031	.0024-.0037	.0029-.0041
<b>MONEL</b>										
MONEL-65% NICKEL	.0004-.0008	.0009-.0011	.0014-.0016	.0018-.0020	.0017-.0019	.0019-.0021	.0026-.0028	.0029-.0031	.0035-.0037	.0039-.0041
<b>TITANIUM ALLOYS</b>										
COMMERCIALLY PURE, 6Al-4V, ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si	.0004-.0008	.0009-.0011	.0014-.0016	.0018-.0020	.0017-.0019	.0019-.0021	.0026-.0028	.0029-.0031	.0035-.0037	.0039-.0041
<b>STAINLESS STEEL (PRECIPITATION)</b>										
12/8, 15/5, 17/4, AM-350/355	.0004-.0008	.0009-.0011	.0014-.0016	.0016-.0020	.0017-.0025	.0019-.0031	.0026-.0032	.0029-.0037	.0035-.0039	.0039-.0041
<b>STAINLESS STEEL (AUSTENITIC)</b>										
200 SERIES, 302, 303, 304, 316	.0004-.0008	.0009-.0011	.0014-.0016	.0016-.0020	.0017-.0025	.0019-.0031	.0026-.0032	.0029-.0037	.0035-.0039	.0039-.0041
<b>STAINLESS STEEL (AUSTENITIC)</b>										
304L, 316L	.0004-.0008	.0009-.0011	.0014-.0016	.0016-.0020	.0017-.0025	.0019-.0031	.0026-.0032	.0029-.0037	.0035-.0039	.0039-.0041
<b>STAINLESS STEEL (MARTENSITIC)</b>										
403, 410, 416, 440	.0004-.0008	.0009-.0011	.0014-.0016	.0016-.0020	.0017-.0025	.0019-.0031	.0026-.0032	.0029-.0037	.0035-.0039	.0039-.0041
<b>HIGH STRENGTH TOOL STEELS</b>										
4140, 4340, 6150, 5210, A2, D2, P20, H11, H13, S2, O1	.0004-.0008	.0009-.0011	.0014-.0016	.0016-.0020	.0017-.0025	.0019-.0031	.0026-.0032	.0029-.0037	.0035-.0039	.0039-.0041
<b>CARBON STEELS</b>										
1000's, 1100's, 1300's	.0004-.0008	.0011-.0013	.0018-.0020	.0024-.0026	.0030-.0032	.0033-.0035	.0035-.0037	.0039-.0041	.0041-.0043	.0054-.0056
<b>DUCTILE</b>										
DUCTILE CAST IRONS	.0004-.0008	.0011-.0013	.0018-.0020	.0024-.0026	.0030-.0032	.0033-.0035	.0035-.0037	.0039-.0041	.0041-.0043	.0054-.0056
<b>CAST IRONS</b>										
GRAY CAST IRONS	.0004-.0008	.0011-.0013	.0018-.0020	.0024-.0026	.0030-.0032	.0033-.0035	.0035-.0037	.0039-.0041	.0041-.0043	.0054-.0056

**Chip Thinning recommended to optimize tool life:**

- 5% of Diameter Radial engaged: Multiply Feed 3X
- 10% of Diameter Radial engaged: Multiply Feed 2X
- 20% of Diameter Radial engaged: Multiply Feed 1.5X

TECHNICAL INFORMATION - VI-PRO

CARBIDE ENDMILLS  
 CARBIDE MICRO ENDMILLS  
 CARBIDE THREADMILLS  
 CARBIDE DRILL MILLS  
 CARBIDE CHAMFER MILLS  
 CARBIDE DRILLS  
 CARBIDE REAMERS  
 CARBIDE BURS  
 COUNTERSINKS  
 HSS & COBALT ENDMILLS  
 TAPS & DIES  
 HSS & COBALT DRILLS  
 HSS & COBALT REAMERS  
 TECHNICAL INFORMATION



# Technical Information

## HIGH PERFORMANCE ENDMILLS - SOLID MICROGRAIN CARBIDE

THESE VALUES ARE FOR UNCOATED TOOLS (EXCEPT FOR TERMINATOR).  
FOR COATED TOOLS INCREASE SFM: ZRN = +30% ALTIN = +40%

### SFM FOR HIGH PERFORMANCE CARBIDE ENDMILLS

MATERIAL / TYPE	Rc HARDNESS	2 Fl, 3 Fl 45° Helix Aluminum	3 Flute 45° & 60° Helix	5 Flute 45° Helix	TERMINATOR FOR ALCRO-MAX COATING +20%
<b>COBALT BASE ALLOYS</b>					
STELLITE, HS-21, HAYNES 25/188, X-40, L-605	UNDER 32 OVER 32	- -	200 - 275 125 - 175	250 - 300 150 - 200	315 - 385 210 - 280
<b>NICKEL BASE ALLOYS</b>					
INCONEL-625/718, WASSPALLOY, RENE, HASTELLOY	UNDER 32 OVER 32	- -	150 - 200 90 - 125	250 - 300 150 - 200	315 - 385 210 - 280
<b>IRON BASE ALLOYS</b>					
INCOLOY 800-802, MULTIMET N-155, TIMKIN 16-25-6, CARPENTER 22-b3	UNDER 32 OVER 32	- -	250 - 300 150 - 200	250 - 300 150 - 200	315 - 385 210 - 280
<b>MONEL</b>					
MONEL-65% NICKEL	-	-	200 - 300	225 - 350	280 - 350
<b>TITANIUM ALLOYS</b>					
COMMERCIAL PURE, 6Al-4V, ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si	- -	500 min. -	250 - 400 -	250 - 400 -	350 - 560 -
<b>STAINLESS STEEL (PRECIPITATION)</b>					
12/8, 15/5, 17/4, AM-350/355	UNDER 32 OVER 32	- -	200 - 350 150 - 250	200 - 350 150 - 250	280 - 490 210 - 350
<b>STAINLESS STEEL (AUSTENITIC)</b>					
200 SERIES, 302, 303, 304, 316	UNDER 32 OVER 32	- -	250 - 350 175 - 275	250 - 350 175 - 275	350 - 490 245 - 385
<b>STAINLESS STEEL (AUSTENITIC)</b>					
304L, 316L	UNDER 32 OVER 32	- -	125 - 200 90 - 125	125 - 200 90 - 125	175 - 280 125 - 175
<b>STAINLESS STEEL (MARTENSITIC)</b>					
403, 410, 416, 440	UNDER 32 OVER 32	- -	200 - 350 150 - 250	200 - 350 150 - 250	280 - 490 210 - 350
<b>HIGH STRENGTH TOOL STEELS</b>					
4140, 4340, 6150, 5210, A2, D2, P20, H11, H13, S2, 01	UNDER 32 OVER 32	- -	225 - 300 125 - 200	225 - 300 125 - 200	315 - 420 175 - 280
<b>MEDIUM ALLOY STEELS</b>					
200, 250, 300	UNDER 32 OVER 32	- -	250 - 350 150 - 200	250 - 350 150 - 200	350 - 490 210 - 280
<b>CARBON STEELS</b>					
1000's, 1100's, 1300's	UNDER 32 OVER 32	- -	250 - 350 150 - 200	250 - 350 150 - 200	350 - 490 210 - 280
<b>DUCTILE</b>					
DUCTILE CAST IRONS	-	-	350 - 450	300 - 400	280 - 420
<b>CAST IRONS</b>					
GRAY CAST IRONS	-	-	300 - 400	250 - 350	245 - 350
<b>ALUMINUM</b>					
2014, 2024, 6061-(T1-T6) 7075, DIE CAST, EXTRUDED	- -	500 min. -	500 min. -	500 min. -	- -
<b>MAGNESIUM</b>					
	-	500 min.	500 min.	500 min.	-
<b>COPPER, COPPER ALLOYS</b>					
	-	400 - 500	400 - 500	250 - 350	-
<b>BRASS BRONZE</b>					
BRASS, ALUM/BRONZE, LOW SILICON BRONZE	- -	300 - 400 -	300 - 400 -	- -	- -
<b>COMPOSITES</b>					
G-10 FIBERGLASS, GRAPHITE, GRAPHITE/EPOXY, PLASTICS	- -	250 - 1000 -	- -	- -	- -

TECHNICAL INFORMATION - HIGH PERFORMANCE CARBIDE ENDMILLS

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



Technical Information

HIGH PERFORMANCE ENDMILLS - SOLID MICROGRAIN CARBIDE

CHIP LOAD FOR HIGH PERFORMANCE CARBIDE ENDMILLS

Table with columns: MATERIAL / TYPE, Rc HARDNESS, UP TO 1/8", 1/8" - 1/4", 1/4" - 1/2", 1/2" - 1", 1" - 1-1/4". Rows include COBALT BASE ALLOYS, NICKEL BASE ALLOYS, IRON BASE ALLOYS, MONEL, TITANIUM ALLOYS, STAINLESS STEEL (PRECIPITATION), STAINLESS STEEL (AUSTENITIC), HIGH STRENGTH TOOL STEELS, MEDIUM ALLOY STEELS, CARBON STEELS, DUCTILE, CAST IRONS, ALUMINUM, MAGNESIUM, COPPER, COPPER ALLOYS, BRASS BRONZE, COMPOSITES.

TECHNICAL INFORMATION - HIGH PERFORMANCE CARBIDE ENDMILLS



# Technical Information

## HIGH PERFORMANCE ROUGHING ENDMILLS - SOLID MICROGRAIN CARBIDE

### SOLID CARBIDE ROUGHERS - SFM & CHIP LOAD

MATERIAL	HARDNESS HRc	SFM UNCOATED	SFM ALTIN	CHIP LOAD PER TOOTH	
				1/4" - 1/2"	1/2" - 1"
LOW AND PLAIN CARBON, ALLOY & TOOL STEELS	<19	258 - 345	430 - 575	.0015 - .003	.003 - .0045
LOW AND PLAIN CARBON, ALLOY & TOOL STEELS	20 - 30	210 - 258	350 - 430	.0015 - .003	.003 - .0045
LOW AND PLAIN CARBON, ALLOY & TOOL STEELS	31 - 40	126 - 192	210 - 320	.0011 - .0021	.0021 - .0032
AUSTENITIC STAINLESS STEELS, 200 AND 300 SERIES 135-275	<28	150 - 300	250 - 500	.0010 - .0025	.0025 - .0040
FERRITIC, MARTENSITIC 400, 500, & PH STAINLESS STEELS	<35	135 - 258	225 - 430	.0015 - .0030	.0030 - .0045
TITANIUM ALLOYS	32 - 43	75 - 129	125 - 215	.0009 - .0018	.0018 - .0027
NICKEL-BASED HIGH TEMPERATURE ALLOYS	<32	39 - 87	65 - 145	.0009 - .0018	.0018 - .0027
NICKEL-BASED HIGH TEMPERATURE ALLOYS	32 - 50	33 - 66	55 - 110	.0009 - .0018	.0018 - .0027
COBALT-BASED HIGH TEMPERATURE ALLOYS	<45	27 - 45	45 - 75	.0009 - .0018	.0018 - .0027

For the long length carbide rougher the SFM should be reduced by 20%.

## ENDMILLS - SOLID MICROGRAIN CARBIDE

### GENERAL RECOMMENDATIONS

All speed and feed recommendations should be considered only as a starting point. The suggested speed & feed values are recommended for uncoated tools only (except for those of the TERMINATOR whose values are for its Altin coating). When various coatings are applied, SFM may be increased accordingly. These general percentages are as follows under optimal conditions:

**TICN = +25%   ZRN = +30%   ALTIN = +40%   ALCRO-MAX = +60%**

### RIGIDITY

Maximize rigidity to reduce chatter and increase tool life. Ways to improve rigidity include choosing the largest diameter possible to perform your milling task, use the shortest LOC (Length of Cut) available, and always use the tool holder which offers the shortest gage line (Shortest Tool Holder Length).

### CHATTER

If chatter is present increase feed or reduce speed.

#### Speed and Feed Calculations:

$$\text{RPM} = (3.82 \times \text{SFM}) \div \text{Dia.}$$

$$\text{IPR} = \text{IPM} \div \text{RPM}$$

$$\text{SFM} = (\text{RPM} \times \text{Dia.}) \div 3.82$$

$$\text{IPM} = \text{IPT}(\text{chip load}) \times \text{No. of Teeth} \times \text{RPM}$$

$$\text{IPT}(\text{chip load}) = \text{IPM} \div (\text{No. of teeth} \times \text{RPM})$$

TECHNICAL INFORMATION - CARBIDE ENDMILLS





# Technical Information

## THREADMILLS - SOLID MICROGRAIN CARBIDE

THREADMILLS - SFM & CHIP LOAD								
MATERIAL	SPEED SFM	FEEDRATE (INCHES/TOOTH) PER CUTTING TOOL DIAMETER						
		1/8	3/16	1/4	5/16	3/8	1/2	5/8
ALUMINUM	800 - 1400	.0005-.0010	.0010-.0015	.0015-.0025	.0020-.0030	.0030-.0045	.0035-.0055	.0050-.0070
MAGNESIUM	800 - 1400	.0005-.0010	.0010-.0015	.0015-.0025	.0020-.0030	.0030-.0045	.0035-.0055	.0050-.0070
BRASS	600 - 800	.0005-.0010	.0010-.0015	.0015-.0025	.0020-.0030	.0030-.0045	.0035-.0045	.0050-.0060
BRONZE	500 - 600	.0005-.0010	.0010-.0015	.0015-.0025	.0020-.0030	.0030-.0045	.0035-.0045	.0050-.0060
HARD BRONZE	200 - 300	.0004-.0008	.0007-.0012	.0010-.0020	.0010-.0020	.0015-.0025	.0020-.0030	.0030-.0040
LOW ALLOY STEEL <25RC	350 - 500	.0005-.0010	.0010-.0015	.0015-.0025	.0020-.0030	.0025-.0035	.0030-.0040	.0040-.0050
HIGH ALLOY STEEL >25RC	250 - 400	.0003-.0006	.0005-.0010	.0008-.0015	.0010-.0020	.0015-.0025	.0020-.0030	.0030-.0040
STAINLESS	150 - 250	.0004-.0008	.0006-.0010	.0010-.0015	.0015-.0020	.0015-.0030	.0020-.0035	.0030-.0040
CAST IRON - SOFT	250 - 350	.0004-.0008	.0007-.0013	.0007-.0013	.0015-.0020	.0020-.0030	.0020-.0040	.0030-.0050
CAST IRON - HARD	200 - 300	.0003-.0006	.0005-.0010	.0008-.0015	.0010-.0020	.0015-.0025	.0020-.0030	.0030-.0040
TITANIUM	80 - 150	.0003-.0006	.0005-.0010	.0008-.0015	.0010-.0020	.0015-.0025	.0015-.0025	.0025-.0035
INCONEL	60 - 100	.0003-.0006	.0005-.0010	.0008-.0015	.0010-.0020	.0015-.0025	.0015-.0025	.0020-.0030

THREADMILLS - CALCULATION FORMULAS	
TO CALCULATE	USE THIS FORMULA
FEEDRATE ADJUSTMENT	$\frac{(\text{THREAD MAJOR DIA. TO BE CUT}) - (\text{THREADMILL DIA.})}{(\text{THREAD MAJOR DIA. TO BE CUT})} \times \text{LINEAR FEEDRATE}$
RPM	$\frac{3.8}{(\text{THREADMILL DIAMETER})} \times \text{SFM}$
LINEAR IPM	$(\text{INCHES PER TOOTH}) \times (\text{NUMBER OF FLUTES}) \times \text{RPM}$

## BURS - SOLID MICROGRAIN CARBIDE

### SELECTION BY CUT

#### SINGLE CUT:

- Provides the best surface finish and largest contact patch on the work piece.
- Demands greater operator skill since the single flute direction pulls the bur into the work piece.

#### DOUBLE CUT:

- Most popular geometry as the dual flute direction reduces the contact patch on the work piece and therefore provides easier operator control while still maintaining a good surface finish.

#### ALUMINUM CUT:

- These burs employ a Coarser flute which results in improved cutting performance for Aluminum and Aluminum Alloys.

CARBIDE BURS - SPEEDS		
CUTTING DIA.	SUGGESTED RPM	MAXIMUM RPM
1/16	55,000 – 85,000	90,000
1/8	35,000 – 65,000	80,000
3/16	30,000 – 55,000	70,000
1/4	25,000 – 50,000	70,000
5/16	20,000 – 40,000	67,000
3/8	18,000 – 40,000	63,000
7/16	16,000 – 38,000	58,000
1/2	14,000 – 36,000	50,000
5/8	12,000 – 25,000	40,000
3/4	10,000 – 20,000	33,000
1	7,500 – 20,000	25,000

When using double cut: Reduce speeds by 25% approximately.  
For stainless steel material: Increase speeds by 50% approximately.

TECHNICAL INFORMATION - CARBIDE THREADMILLS & BURS



# Technical Information

## GENERAL PURPOSE ENDMILLS - SOLID MICROGRAIN CARBIDE

THESE VALUES ARE FOR UNCOATED TOOLS.  
 FOR COATED TOOLS INCREASE SFM: TICN = +25% ALTIN = +40%

### SFM FOR GENERAL PURPOSE CARBIDE ENDMILLS

MATERIAL / TYPE	Rc HARDNESS	2 Flute 30° Helix Stub, Reg	2 Flute 30° Helix Long, X-Long	4 Flute 30° Helix Stub, Reg	4 Flute 30° Helix Long, X-Long
<b>COBALT BASE ALLOYS</b>					
STELLITE, HS-21, HAYNES 25/188, X-40, L-605	UNDER 32 OVER 32	- -	- -	175 - 225 125 - 175	150 - 200 100 - 150
<b>NICKEL BASE ALLOYS</b>					
INCONEL-625/718, WASPALLOY, RENE, HASTELLOY	UNDER 32 OVER 32	- -	- -	125 - 175 70 - 115	150 - 200 100 - 150
<b>IRON BASE ALLOYS</b>					
INCOLOY 800-802, MULTIMET N-155, TIMKIN 16-25-6, CARPENTER 22-b3	UNDER 32 OVER 32	- -	- -	175 - 225 125 - 175	150 - 200 100 - 150
<b>MONEL</b>					
MONEL-65% NICKEL	-	175 - 300	125 - 175	175 - 300	125 - 175
<b>TITANIUM ALLOYS</b>					
COMMERCIALLY PURE, 6Al-4V, ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si	- -	200 - 300 -	125 - 250 -	200 - 300 -	125 - 250 -
<b>STAINLESS STEEL (PRECIPITATION)</b>					
12/8, 15/5, 17/4, AM-350/355	UNDER 32 OVER 32	- -	- -	150 - 250 125 - 175	100 - 150 80 - 150
<b>STAINLESS STEEL (AUSTENITIC)</b>					
200 SERIES, 302, 303, 304, 316	UNDER 32 OVER 32	- -	- -	200 - 250 150 - 200	125 - 175 100 - 150
<b>STAINLESS STEEL (AUSTENITIC)</b>					
304L, 316L	UNDER 32 OVER 32	- -	- -	90 - 125 75 - 110	80 - 120 60 - 90
<b>STAINLESS STEEL (MARTENSITIC)</b>					
403, 410, 416, 440	UNDER 32 OVER 32	- -	- -	150 - 250 125 - 175	100 - 150 80 - 150
<b>HIGH STRENGTH TOOL STEELS</b>					
4140, 4340, 6150, 5210, A2, D2, P20, H11, H13, S2, 01	UNDER 32 OVER 32	- -	- -	150 - 225 60 - 125	125 - 175 80 - 120
<b>MEDIUM ALLOY STEELS</b>					
200, 250, 300	UNDER 32 OVER 32	- -	- -	200 - 250 125 - 175	150 - 200 100 - 150
<b>CARBON STEELS</b>					
1000's, 1100's, 1300's	UNDER 32 OVER 32	- -	- -	200 - 250 125 - 175	150 - 200 100 - 150
<b>DUCTILE</b>					
DUCTILE CAST IRONS	-	250 - 350	200 - 300	300 - 400	200 - 300
<b>CAST IRONS</b>					
GRAY CAST IRONS	-	225 - 325	175 - 250	250 - 350	175 - 250
<b>ALUMINUM</b>					
2014, 2024, 6061-(T1-T6) 7075, DIE CAST, EXTRUDED	- -	500 min. -	500 min. -	500 min. -	500 min. -
<b>MAGNESIUM</b>					
	-	500 min.	500 min.	500 min.	500 min.
<b>COPPER, COPPER ALLOYS</b>					
	-	400 - 500	400 - 500	300 - 400	250 - 350
<b>BRASS BRONZE</b>					
BRASS, ALUM/BRONZE, LOW SILICON BRONZE	- -	300 - 400 -	300 - 400 -	250 - 350 -	200 - 300 -
<b>COMPOSITES</b>					
G-10 FIBERGLASS, GRAPHITE, GRAPHITE/EPOXY, PLASTICS	- -	250 - 1000 -	250 - 1000 -	250 - 1000 -	250 - 1000 -

TECHNICAL INFORMATION - GENERAL PURPOSE CARBIDE ENDMILLS

CARBIDE ENDMILLS

CARBIDE MICRO ENDMILLS

CARBIDE THREADMILLS

CARBIDE DRILL MILLS

CARBIDE CHAMFER MILLS

CARBIDE DRILLS

CARBIDE REAMERS

CARBIDE BURS

COUNTERSINKS

HSS & COBALT ENDMILLS

TAPS & DIES

HSS & COBALT DRILLS

HSS & COBALT REAMERS

TECHNICAL INFORMATION



# Technical Information

## GENERAL PURPOSE ENDMILLS - SOLID MICROGRAIN CARBIDE

### CHIP LOAD FOR GENERAL PURPOSE CARBIDE ENDMILLS

MATERIAL / TYPE	Rc HARDNESS	UP TO 1/8"	1/8" - 1/4"	1/4" - 1/2"	1/2" - 1"	1" - 1-1/4"
<b>COBALT BASE ALLOYS</b>						
STELLITE, HS-21, HAYNES 25/188, X-40, L-605	UNDER 32	.0005"-.0010"	.0005"-.0010"	.0008"-.0020"	.0020"-.0040"	.0030"-.0050"
	OVER 32	.0003"-.0005"	.0003"-.0005"	.0005"-.0015"	.0010"-.0030"	.0020"-.0040"
<b>NICKEL BASE ALLOYS</b>						
INCONEL-625/718, WASPALLOY, RENE, HASTELLOY	UNDER 32	.0005"-.0010"	.0005"-.0010"	.0008"-.0020"	.0020"-.0040"	.0030"-.0050"
	OVER 32	.0003"-.0005"	.0003"-.0005"	.0005"-.0015"	.0010"-.0030"	.0020"-.0040"
<b>IRON BASE ALLOYS</b>						
INCOLOY 800-802, MULTIMET N-155, TIMKIN 16-25-6, CARPENTER 22-b3	UNDER 32	.0005"-.0010"	.0005"-.0010"	.0008"-.0020"	.0020"-.0040"	.0030"-.0050"
	OVER 32	.0003"-.0005"	.0003"-.0005"	.0005"-.0015"	.0010"-.0030"	.0020"-.0040"
<b>MONEL</b>						
MONEL-65% NICKEL	-	.0007"-.0015"	.0007"-.0015"	.0010"-.0025"	.0030"-.0050"	.0040"-.0060"
<b>TITANIUM ALLOYS</b>						
COMMERCIALLY PURE, 6AI-4V, ASTM 1/2/3, 6AI-25N-4Zr-2Mo-Si	-	.0007"-.0015"	.0007"-.0015"	.0010"-.0025"	.0030"-.0050"	.0040"-.0060"
	-	-	-	-	-	-
<b>STAINLESS STEEL (PRECIPITATION)</b>						
12/8, 15/5, 17/4, AM-350/355	UNDER 32	.0005"-.0010"	.0005"-.0010"	.0008"-.0020"	.0020"-.0040"	.0030"-.0050"
	OVER 32	.0003"-.0005"	.0003"-.0005"	.0005"-.0015"	.0010"-.0030"	.0020"-.0040"
<b>STAINLESS STEEL (AUSTENITIC)</b>						
200 SERIES, 302, 303, 304, 316	UNDER 32	.0005"-.0010"	.0005"-.0010"	.0008"-.0020"	.0020"-.0040"	.0030"-.0050"
	OVER 32	.0003"-.0005"	.0003"-.0005"	.0005"-.0015"	.0010"-.0030"	.0020"-.0040"
<b>STAINLESS STEEL (AUSTENITIC)</b>						
304L, 316L	UNDER 32	.0005"-.0008"	.0005"-.0008"	.0008"-.0015"	.0015"-.0030"	.0020"-.0040"
	OVER 32	.0003"-.0005"	.0003"-.0005"	.0005"-.0010"	.0010"-.0020"	.0015"-.0030"
<b>STAINLESS STEEL (MARTENSITIC)</b>						
403, 410, 416, 440	UNDER 32	.0005"-.0010"	.0005"-.0010"	.0008"-.0020"	.0020"-.0040"	.0030"-.0050"
	OVER 32	.0003"-.0005"	.0003"-.0005"	.0005"-.0015"	.0010"-.0030"	.0020"-.0040"
<b>HIGH STRENGTH TOOL STEELS</b>						
4140, 4340, 6150, 5210, A2, D2, P20, H11, H13, S2, O1	UNDER 32	.0005"-.0010"	.0005"-.0010"	.0008"-.0020"	.0020"-.0040"	.0030"-.0050"
	OVER 32	.0003"-.0005"	.0003"-.0005"	.0005"-.0015"	.0010"-.0030"	.0020"-.0040"
<b>MEDIUM ALLOY STEELS</b>						
200, 250, 300	UNDER 32	.0007"-.0015"	.0007"-.0015"	.0010"-.0025"	.0030"-.0050"	.0040"-.0060"
	OVER 32	.0005"-.0010"	.0005"-.0010"	.0008"-.0020"	.0020"-.0040"	.0030"-.0050"
<b>CARBON STEELS</b>						
1000's, 1100's, 1300's	UNDER 32	.0007"-.0015"	.0007"-.0015"	.0010"-.0025"	.0030"-.0050"	.0040"-.0060"
	OVER 32	.0005"-.0010"	.0005"-.0010"	.0008"-.0020"	.0020"-.0040"	.0030"-.0050"
<b>DUCTILE</b>						
DUCTILE CAST IRONS	-	.0010"-.0020"	.0010"-.0020"	.0015"-.0040"	.0030"-.0100"	.0050"-.0100"
<b>CAST IRONS</b>						
GRAY CAST IRONS	-	.0010"-.0020"	.0010"-.0020"	.0015"-.0040"	.0030"-.0100"	.0050"-.0100"
<b>ALUMINUM</b>						
2014, 2024, 6061-(T1-T6) 7075, DIE CAST, EXTRUDED	-	.0010"-.0020"	.0010"-.0020"	.0015"-.0040"	.0030"-.0150"	.0050"-.0150"
	-	-	-	-	-	-
<b>MAGNESIUM</b>						
	-	.0010"-.0020"	.0010"-.0020"	.0015"-.0040"	.0030"-.0100"	.0050"-.0100"
<b>COPPER, COPPER ALLOYS</b>						
	-	.0007"-.0015"	.0007"-.0015"	.0010"-.0025"	.0020"-.0080"	.0040"-.0100"
<b>BRASS BRONZE</b>						
BRASS, ALUM/BRONZE, LOW SILICON BRONZE	-	.0007"-.0015"	.0007"-.0015"	.0010"-.0025"	.0020"-.0080"	.0040"-.0100"
	-	-	-	-	-	-
<b>COMPOSITES</b>						
G-10 FIBERGLASS, GRAPHITE, GRAPHITE/EPOXY, PLASTICS	-	.0010"-.0020"	.0010"-.0020"	.0015"-.0040"	.0030"-.0100"	.0050"-.0100"
	-	-	-	-	-	-

TECHNICAL INFORMATION - GENERAL PURPOSE CARBIDE ENDMILLS



# Technical Information

## DRILLS - SOLID MICROGRAIN CARBIDE

THESE VALUES ARE FOR UNCOATED TOOLS. FOR ALTiN COATED TOOLS INCREASE SFM +40%

### SOLID CARBIDE DRILLING - SFM & CHIP LOAD

MATERIAL / TYPE	Rc HARDNESS	25° HELIX	15° HELIX STR FLT	SUGGESTED CHIP LOAD PER TOOTH				
				1/16" - 1/8"	1/8" - 1/4"	1/4" - 3/8"	3/8" - 1/2"	1/2" - 5/8"
<b>COBALT BASE ALLOYS</b>								
STELLITE, HS-21, HAYNES 25/188, X-40, L-605	UNDER 32 OVER 32	100 - 150 80 - 110	100 - 150 80 - 110	.0004"-.0010" .0004"-.0010"	.0008"-.0020" .0005"-.0010"	.0015"-.0025" .0010"-.0015"	.0020"-.0040" .0010"-.0020"	.0025"-.0050" .0015"-.0030"
<b>NICKEL BASE ALLOYS</b>								
INCONEL-625/718, WASPALLOY, RENE, HASTELLOY	UNDER 32 OVER 32	125 - 150 100 - 125	125 - 175 100 - 125	.0005"-.0015" .0004"-.0010"	.0010"-.0015" .0008"-.0015"	.0015"-.0025" .0010"-.0015"	.0020"-.0040" .0015"-.0030"	.0025"-.0050" .0020"-.0040"
<b>IRON BASE ALLOYS</b>								
INCOLOY 800-802, MULTIMET N-155, TIMKIN 16-25-6, CARPENTER 22-b3	UNDER 32 OVER 32	150 - 200 150 - 175	175 - 200 150 - 200	.0010"-.0015" .0008"-.0015"	.0010"-.0020" .0010"-.0020"	.0015"-.0035" .0015"-.0025"	.0020"-.0020" .0020"-.0040"	.0030"-.0060" .0025"-.0050"
<b>MONEL</b>								
MONEL-65% NICKEL	-	100 - 150	100 - 150	.0004"-.0010"	.0008"-.0015"	.0010"-.0015"	.0015"-.0030"	.0020"-.0040"
<b>TITANIUM ALLOYS</b>								
COMMERCIALLY PURE, 6Al-4V, ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si	- -	150 - 200 -	150 - 200 -	.0008"-.0015" -	.0010"-.0020" -	.0015"-.0030" -	.0020"-.0040" -	.0025"-.0050" -
<b>STAINLESS STEEL (PRECIPITATION)</b>								
12/8, 15/5, 17/4, AM-350/355	UNDER 32 OVER 32	125 - 175 80 - 125	150 - 200 100 - 150	.0005"-.0015" .0004"-.0010"	.0010"-.0020" .0008"-.0015"	.0015"-.0035" .0010"-.0015"	.0020"-.0040" .0015"-.0030"	.0025"-.0050" .0020"-.0040"
<b>STAINLESS STEEL (AUSTENITIC)</b>								
200 SERIES, 302, 303, 304, 316	UNDER 32 OVER 32	100 - 175 100 - 125	150 - 200 125 - 150	.0005"-.0015" .0004"-.0010"	.0010"-.0020" .0008"-.0015"	.0015"-.0035" .0010"-.0015"	.0020"-.0040" .0015"-.0030"	.0025"-.0050" .0020"-.0040"
<b>STAINLESS STEEL (AUSTENITIC)</b>								
304L, 316L	UNDER 32 OVER 32	80 - 100 60 - 90	90 - 125 80 - 100	.0004"-.0010" .0003"-.0008"	.0008"-.0015" .0005"-.0010"	.0010"-.0015" .0010"-.0015"	.0015"-.0030" .0010"-.0020"	.0020"-.0040" .0015"-.0030"
<b>STAINLESS STEEL (MARTENSITIC)</b>								
403, 410, 416, 440	UNDER 32 OVER 32	100 - 150 80 - 125	125 - 175 100 - 140	.0005"-.0015" .0004"-.0010"	.0010"-.0020" .0008"-.0015"	.0015"-.0035" .0010"-.0015"	.0020"-.0040" .0015"-.0030"	.0025"-.0050" .0020"-.0040"
<b>HIGH STRENGTH TOOL STEELS</b>								
4140, 4340, 6150, 5210, A2, D2, P20, H11, H13, S2, 01	UNDER 32 OVER 32	100 - 175 80 - 130	125 - 175 80 - 130	.0005"-.0015" .0004"-.0010"	.0010"-.0020" .0010"-.0020"	.0015"-.0025" .0010"-.0020"	.0015"-.0030" .0015"-.0030"	.0020"-.0040" .0020"-.0040"
<b>MEDIUM ALLOY STEELS</b>								
200, 250, 300	UNDER 32 OVER 32	125 - 175 100 - 150	125 - 175 100 - 150	.0010"-.0015" .0005"-.0010"	.0015"-.0025" .0010"-.0020"	.0020"-.0030" .0010"-.0025"	.0020"-.0040" .0015"-.0030"	.0025"-.0050" .0020"-.0040"
<b>CARBON STEELS</b>								
1000's, 1100's, 1300's	UNDER 32 OVER 32	125 - 175 100 - 125	150 - 200 100 - 175	.0010"-.0015" .0005"-.0010"	.0015"-.0025" .0010"-.0020"	.0020"-.0030" .0010"-.0025"	.0020"-.0040" .0015"-.0035"	.0025"-.0050" .0020"-.0040"
<b>DUCTILE</b>								
DUCTILE CAST IRONS	-	125 - 200	150 - 250	.0010"-.0020"	.0010"-.0030"	.0015"-.0035"	.0025"-.0040"	.0030"-.0050"
<b>CAST IRONS</b>								
GRAY CAST IRONS	-	100 - 200	150 - 250	.0010"-.0020"	.0010"-.0030"	.0015"-.0035"	.0025"-.0040"	.0030"-.0050"
<b>ALUMINUM</b>								
2014, 2024, 6061-(T1-T6) 7075, DIE CAST, EXTRUDED	- -	150 - 300 -	- -	.0010"-.0020" -	.0015"-.0040" -	.0020"-.0020" -	.0030"-.0060" -	.0035"-.0070" -
<b>MAGNESIUM</b>								
	-	200 - 500	-	.0010"-.0020"	.0010"-.0030"	.0015"-.0035"	.0025"-.0040"	.0030"-.0050"
<b>COPPER, COPPER ALLOYS</b>								
	-	150 - 300	-	.0010"-.0020"	.0010"-.0030"	.0015"-.0035"	.0025"-.0040"	.0030"-.0050"
<b>BRASS BRONZE</b>								
BRASS, ALUM/BRONZE	-	150 - 300	-	.0010"-.0020"	.0010"-.0030"	.0015"-.0035"	.0025"-.0040"	.0030"-.0050"
<b>BRASS BRONZE</b>								
LOW SILICON BRONZE	-	125 - 200	-	.0008"-.0015"	.0010"-.0020"	.0015"-.0030"	.0020"-.0040"	.0025"-.0050"
<b>COMPOSITES</b>								
G-10 FIBERGLASS, GRAPHITE, GRAPHITE/EPOXY, PLASTICS	- -	150 - 300 -	150 - 300 -	.0010"-.0020" -	.0010"-.0030" -	.0015"-.0035" -	.0025"-.0040" -	.0030"-.0050" -

TECHNICAL INFORMATION - CARBIDE DRILLS





# Technical Information

## GENERAL PURPOSE TAPS

### MACHINE SCREW TAPS (NC & NF)

SIZE	OVERALL LENGTH	THREAD LENGTH	SQUARE LENGTH	SHANK DIAMETER	SQUARE
#0 (.060)	1-5/8	5/16	3/16	.141	.110
#1 (.073)	1-11/16	3/8	3/16	.141	.110
#2 (.066)	1-3/4	7/16	3/16	.141	.110
#3 (.099)	1-13/16	1/2	3/16	.141	.110
#4 (.112)	1-7/8	9/16	3/16	.141	.110
#5 (.125)	1-15/16	5/8	3/16	.141	.110
#6 (.138)	2	11/16	3/16	.141	.110
#8 (.164)	2-1/8	3/4	1/4	.168	.131
#10 (.190)	2-3/8	7/8	1/4	.194	.152
#12 (.216)	2-3/8	15/16	9/32	.220	.165

### FRACTIONAL SIZE TAPS (NC & NF)

SIZE	OVERALL LENGTH	THREAD LENGTH	SQUARE LENGTH	SHANK DIAMETER	SQUARE
1/4	2-1/2	1	5/16	.255	.191
5/16	2-23/32	1-1/8	3/8	.318	.238
3/8	2-15/16	1-1/4	7/16	.381	.286
7/16	3-5/32	1-7/16	13/32	.323	.242
1/2	3-3/8	1-21/32	7/16	.367	.275
9/16	3-19/32	1-21/32	1/2	.429	.322
5/8	3-13/16	1-13/16	9/16	.480	.360
11/16	4-1/32	1-13/16	5/8	.542	.406
3/4	4-1/4	2	11/16	.590	.442
7/8	4-11/16	2-7/32	3/4	.697	.523
1	5-1/8	2-1/2	13/16	.800	.600
1-1/8	5-7/16	2-9/16	7/8	.896	.672
1-1/4	5-3/4	2-9/16	1	1.021	.766
1-3/8	6-1/16	3	1-1/16	1.108	.831
1-1/2	6-3/8	3	1-1/8	1.233	.925

### PIPE TAPS - STRAIGHT & TAPER

SIZE	OVERALL LENGTH	THREAD LENGTH	SQUARE LENGTH	SHANK DIAMETER	SQUARE
1/16 - 27	2-1/8	11/16	3/8	.3125	.234
1/8 - 27	2-1/8	3/4	3/8	.3125(SS)	.234
1/8 - 27	2-1/8	3/4	3/8	.4375(LS)	.328
1/4 - 18	2-7/16	1-1/16	7/16	.5625	.421
3/8 - 18	2-9/16	1-1/16	1/2	.7000	.531
1/2 - 14	3-1/8	1-3/8	5/8	.6875	.515
3/4 - 14	3-1/4	1-3/8	11/16	.9063	.679
1 - 11-1/2	3-3/4	1-3/4	13/16	1.1250	.843
1-1/4 - 11-1/2	4	1-3/4	15/16	1.3125	.984
1-1/2 - 11-1/2	4-1/4	1-3/4	1	1.5000	1.125
2 - 11-1/2	4-1/2	1-3/4	1-1/8	1.8750	1.406

(SS) = SMALL SHANK (LS) = LARGE SHANK

### PULLEY TAPS

SIZE	THREAD LENGTH	SQUARE LENGTH	SHANK DIAMETER	SQUARE	NECK LENGTH	GROUND LENGTH
1/4	1	5/16	.255	.191	3/8	1-1/2
5/16	1-1/8	3/8	.318	.238	3/8	1-9/16
3/8	1-1/4	7/16	.381	.286	3/8	1-5/8
7/16	1-7/16	1/2	.444	.333	7/16	1-11/16
1/2	1-21/32	9/16	.507	.380	1/2	1-11/16
5/8	1-13/16	11/16	.633	.475	5/8	2
3/4	2	3/4	.759	.569	3/4	2-1/4

SEE PAGE 129 FOR OVERALL LENGTHS AVAILABLE.

### SMALL SHANK EXTENSION TAPS

SIZE	NC/NF	THREAD LENGTH	SQUARE LENGTH	SHANK DIAMETER	SQUARE
6 - 32	NC	11/16	3/16	0.097	0.073
8 - 32	NC	3/4	1/4	0.123	0.092
10 - 24	NC	7/8	1/4	0.136	0.102
10 - 32	NF	7/8	1/4	0.136	0.102
1/4 - 20	NC	1	5/16	0.185	0.139
1/4 - 28	NF	1	5/16	0.185	0.139
5/16 - 18	NC	1-1/8	3/8	0.240	0.180
5/16 - 24	NF	1-1/8	3/8	0.240	0.180
3/8 - 16	NC	1-1/4	7/16	0.275	0.206
3/8 - 24	NF	1-1/4	7/16	0.275	0.206
7/16 - 14	NC	1-7/16	13/32	0.323	0.242
7/16 - 20	NF	1-7/16	13/32	0.323	0.242
1/2 - 13	NC	1-21/32	7/16	0.367	0.275
1/2 - 20	NF	1-21/32	7/16	0.367	0.275
5/8 - 11	NC	1-13/16	9/16	0.480	0.360
5/8 - 18	NF	1-13/16	9/16	0.480	0.360
3/4 - 10	NC	2	11/16	0.590	0.442
3/4 - 16	NF	2	11/16	0.590	0.442

### METRIC TAPS

SIZE	OVERALL LENGTH	THREAD LENGTH	SQUARE LENGTH	SHANK DIAMETER	SQUARE	INCH BLANK
M1.6 x 0.35	1-5/8	5/16	3/16	.141	.110	#0
M2 x 0.40	1-3/4	7/16	3/16	.141	.110	#2
M2.5 x 0.45	1-13/16	1/2	3/16	.141	.110	#3
M3 x 0.50	1-15/16	5/8	3/16	.141	.110	#5
M3.5 x 0.60	2	11/16	3/16	.141	.110	#6
M4 x 0.70	2-1/8	3/4	1/4	.168	.131	#8
M4.5 x 0.75	2-3/8	7/8	1/4	.194	.152	#10
M5 x 0.80	2-3/8	7/8	1/4	.194	.152	#10
M6 x 1	2-1/2	1	5/16	.255	.191	1/4
M6.3 x 1	2-1/2	1	5/16	.255	.191	1/4
M7 x 1	2-23/32	1-1/8	3/8	.318	.238	5/16
M8 x 1.25	2-23/32	1-1/8	3/8	.318	.238	5/16
M10 x 1.50	2-15/16	1-1/4	7/16	.381	.286	3/8
M12 x 1.75	3-3/8	1-21/32	7/16	.367	.275	1/2
M14 x 2	3-19/32	1-21/32	1/2	.429	.322	9/16
M16 x 2	3-13/16	1-13/16	9/16	.480	.360	5/8
M18 x 2.50	4-1/32	1-13/16	5/8	.542	.406	11/16
M20 x 2.50	4-15/32	2	11/16	.652	.489	13/16
M24 x 3	4-29/32	2-7/32	3/4	.760	.570	15/16
M30 x 3.50	5-7/16	2-9/16	1	1.021	.766	1-3/16
M36 x 4	6-1/16	3	1-1/8	1.233	.925	1-7/16

FOR ADDITIONAL PRODUCT INFORMATION GO TO [TITANMAN.COM](http://TITANMAN.COM)

TECHNICAL INFORMATION - GENERAL PURPOSE TAPS  
CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



## PREDATOR TAPS - HIGH VANADIUM POWDERED METAL

SPEED CHART FOR THE PREDATOR TAPS				
MATERIAL / TYPE	HARDNESS		CUTTING SPEED (fpm)	CUTTING FLUID*
	Bhn	Rc		
<b>ALUMINUM ALLOYS</b>				
UNALLOYED - 1000 SERIES	-	-	40 - 65	WS, CO
CAST - 360, A380	-	-	30 - 65	WS, CO
WROUGHT - 2000-7000 SERIES	-	-	25 - 40	WS, CO
<b>BRASS</b>				
HIGH-LEADED, FREE CUTTING - C34000, C36000	-	-	30 - 50	WS
NAVAL, RED - C46400-C46700, C23000	-	-	25 - 40	WS
<b>CAST IRON</b>				
PEARLITIC, GRAY CAST IRON, FERRITIC - A48 CLASS 20, CLASS 25, CLASS 40	< 253	< 25	20 - 50	WS
MALLEABLE - ASTM A47 GRADE 32510, SAE J158 GRADE M3210	< 253	< 25	15 - 40	CO
<b>NICKEL ALLOYS</b>				
NICKEL BASE ALLOY, WROUGHT & CAST - NICKEL 200, MONEL ALLOY 400	< 253	< 25	20 - 30	CO
HIGH TEMPERATURE ALLOY, WROUGHT & CAST - INCONEL 600, 718, HASTALLOY B & C	253 - 390	25 - 42	15 - 20	CO
<b>STEEL</b>				
LOW CARBON - 1010, 1018, 1029, 1513, 1522	< 190	< 10	25 - 50	WS, CO
MEDIUM CARBON - 1030, 1040, 1045, 1050	< 208	< 15	20 - 40	WS, CO
HIGH CARBON - 1050, 1070, 1080, 1090, 1561, 1572	< 253	< 25	20 - 30	CO
HIGH STRENGTH STEEL - 4140, 4340	327 - 390	35 - 42	15 - 20	CO
<b>STAINLESS STEEL</b>				
AUSTENITIC - SAE (300 SERIES)	< 253	< 25	20 - 30	CO
MARTENSITIC & FERRITIC - 400 SERIES, 416, 420F, 446	253 - 301	25 - 32	15 - 25	CO
HARDENED - 15-5PH, 17-4PH, A286	< 327 - 390	< 35 - 42	12 - 20	CO
<b>TITANIUM ALLOYS</b>				
ALPHA & ALPHA-BETA ALLOYS ANNEALED - Ti-6Al-4V	253 - 301	25 - 32	15 - 20	CO
ALPHA & ALPHA-BETA ALLOYS SOLUTION TREATED & AGED - Ti-6Al-6V	327 - 390	35 - 42	8 - 15	CO
<b>TOOL STEEL</b>				
HOT WORK, COLD WORK & MOLD - A2, D2, H10, H14, P2, P13	190 - 253	10 - 25	15 - 20	CO
HOT WORK, COLD WORK & MOLD - A2, D2, H10, H14, P2, P13	327 - 390	35 - 42	12 - 20	CO

Your individual manufacturing conditions will greatly influence speeds.

\* WS - Water Soluble  
CO - Cutting Oil

In most instances cutting fluid manufacturers recommend specific fluid for different materials.

TECHNICAL INFORMATION - PREDATOR TAPS

CARBIDE ENDMILLS  
CARBIDE MICRO ENDMILLS  
CARBIDE THREADMILLS  
CARBIDE DRILL MILLS  
CARBIDE CHAMFER MILLS  
CARBIDE DRILLS  
CARBIDE REAMERS  
CARBIDE BURS  
COUNTERSINKS  
HSS & COBALT ENDMILLS  
TAPS & DIES  
HSS & COBALT DRILLS  
HSS & COBALT REAMERS  
TECHNICAL INFORMATION



# Technical Information

## DRILLS - HIGH SPEED STEEL

### ELEMENT & DIMENSIONAL TOLERANCES FOR 2, 3 & 4 FLUTE DRILLS

#### DIAMETER AT POINT

SIZE (INCLUSIVE)	TOLERANCE
OVER #81 TO 1/8	+0.000 TO -0.005
OVER 1/8 TO 1/4	+0.000 TO -0.007
OVER 1/4 TO 1/2	+0.000 TO -0.010
OVER 1/2 TO 1	+0.000 TO -0.012
OVER 1 TO 2	+0.000 TO -0.015
OVER 2 TO 3-1/2	+0.000 TO -0.020

#### SHANK DIAMETER

SIZE (INCLUSIVE)	TOLERANCE
OVER #81 TO 1/8	-0.000 TO -0.025
OVER 1/8 TO 1/4	-0.005 TO -0.030
OVER 1/4 TO 1/2	-0.005 TO -0.045
OVER 1/2 TO 2	-0.005 TO -0.030

#### BACK TAPER

SIZE (INCLUSIVE)	TOLERANCE PER INCH
OVER #81 TO 1/8	.0000 TO .0008
OVER 1/8 TO 1/4	.0002 TO .0008
OVER 1/4 TO 1/2	.0002 TO .0009
OVER 1/2 TO 1	.0003 TO .0011
OVER 1 TO 3-1/2	.0004 TO .0015

#### FLUTE LENGTH

SIZE (INCLUSIVE)	TOLERANCE
OVER #81 TO 1/8	+1/8 TO -1/16
OVER 1/8 TO 1/2	+1/8 TO -1/8
OVER 1/2 TO 1	+1/4 TO -1/8
OVER 1 TO 2	+1/4 TO -1/4
OVER 2 TO 3-1/2	+3/8 TO -3/8

#### OVERALL LENGTH

SIZE (INCLUSIVE)	TOLERANCE
OVER #81 TO 1/8	+1/8 TO -1/16
OVER 1/8 TO 1/2	+1/8 TO -1/8
OVER 1/2 TO 1	+1/4 TO -1/8
OVER 1 TO 2	+1/4 TO -1/4
OVER 2 TO 3-1/2	+3/8 TO -3/8

#### INCLUDED POINT ANGLE

SIZE (INCLUSIVE)	INCLUDED ANGLE	TOLERANCE
1/16 TO 1/2	118°	±5°
OVER 1/2 TO 1-1/2	118°	±3°
OVER 1-1/2 TO 3-1/2	118°	±2°

#### LIP HEIGHT

SIZE (INCLUSIVE)	TIV (TOTAL INDICATOR VARIATION)
1/16 TO 1/8	.0020
OVER 1/8 TO 1/4	.0030
OVER 1/4 TO 1/2	.0040
OVER 1/2 TO 1	.0050
OVER 1 TO 3-1/2	.0060

NOTE: 95% of drills in any one lot to fall within tolerances above.

#### SUGGESTED METHOD OF MEASUREMENT:

1. Rotate the drill in a vee block against a back end stop.
2. Measure the cutting lip height variation on a comparator, or with an indicator set at allocation approximately 75% of the distance from the center to the periphery of the drill.

#### CENTRALITY OF WEB

SIZE (INCLUSIVE)	TIV (TOTAL INDICATOR VARIATION)
1/16 TO 1/8	.0030
OVER 1/8 TO 1/4	.0040
OVER 1/4 TO 1/2	.0050
OVER 1/2 TO 1	.0070
OVER 1 TO 3-1/2	.0100

NOTE: 95% of drills in any one lot to fall within tolerances above.

#### SUGGESTED METHOD OF MEASUREMENT:

1. Rotate the drill in a close fitting bushing.
2. Record the difference in indicator readings of the web at the point as the drill is indexed 180°.

#### FLUTE SPACING

SIZE (INCLUSIVE)	TOLERANCE (TIV)	ACTUAL DEVIATION
1/16 TO 1/8	.0030	.0015
OVER 1/8 TO 1/4	.0060	.0030
OVER 1/4 TO 1/2	.0100	.0050
OVER 1/2 TO 1	.0140	.0070
OVER 1 TO 3-1/2	.0260	.0130

NOTE: 95% of drills in any one lot to fall within tolerances above.

#### SUGGESTED METHOD OF MEASUREMENT:

1. Place the drill in a vee block against a back end stop, and rotate it against a radial finger stop.
2. Take an indicator reading at the leading edge of the margin on the opposite flute.
3. Repeat for the other flute and note the difference between the two readings.
4. The deviation in flute spacing is equal to one-half the difference between the two readings.

FOR ADDITIONAL PRODUCT INFORMATION GO TO [TITANMAN.COM](http://TITANMAN.COM)



# Technical Information

## DRILLS - HIGH SPEED STEEL

### SFM & CHIP LOAD

MATERIAL / TYPE	SFM			FEED in INCHES PER REVOLUTION (IPR) +/-25%									
	GENERAL PURPOSE	HSS HEAVY DUTY	COBALT	1/32"	3/32"	1/8"	5/32"	3/16"	1/4"	5/16"	3/8"	1/2"	9/16"
<b>STEEL</b>													
12L14, 12L15	115	115	115	.0008-.0009	.0026-.0033	.0040-.0053	.0046-.0060	.0051-.0067	.0059-.0078	.0075-.0098	.009-.0117	.0096-.0124	.0107-.0137
1005-1025, 1214, 1215, A36	98	98	98	0.0008	0.0026	0.004	0.0046	0.0051	0.0059	0.0075	0.009	0.0096	0.0107
1000'S, 1100'S	82	89	89	0.0007	.0020-.0022	.0029-.0033	.0033-.0038	.0037-.0043	.0043-.0050	.0054-.0063	.0065-.0075	.0070-.0081	.0080-.0091
4140, 4340, 52100, 8620, H11-H41, A2, D2, 01, P20, 420	30-66	33-79	33-79	.0006-.0007	.0015-.0020	.0021-.0029	.0024-.0033	.0027-.0037	.0031-.0043	.0039-.0054	.0047-.0065	.0051-.0070	.0059-.0080
<b>STAINLESS STEEL</b>													
200, 303, 416, 440	49	72	72	0.0007	0.0017	0.0024	0.0028	0.0031	0.0037	0.0045	0.0055	0.0059	0.0068
300 SERIES	26	36	36	0.0007	0.0022	0.0033	0.0038	0.0043	0.005	0.0063	0.0075	0.0081	0.0091
318-329, 400-446, DUPLEX	30	49	49	0.0006	0.0013	0.0017	0.002	0.0022	0.0025	0.0031	0.0039	0.0043	0.0049
<b>CAST IRON</b>													
GREY, G10, Gg40, J431C, A48 CLASS 20	79-98	92-115	92-115	.0006-.0008	.0013-.0026	.0021-.0040	.0024-.0046	.0027-.0051	.0031-.0059	.0039-.0075	.0047-.009	.0051-.0096	.0059-.0107
A220, A436, A439, A602, BLACK	66	72	72	0.0007	0.0017	0.0024	0.0028	0.0031	0.0037	0.0045	0.0055	0.0059	0.0068
BLACK Gts/Gtw, J434C	46	56	56	0.0007	0.0017	0.0024	0.0028	0.0031	0.0037	0.0045	0.0055	0.0059	0.0068
<b>TITANIUM</b>													
COMMERCIALLY PURE	75	92	92	0.0007	.0017-.0020	.0024-.0029	.0028-.0033	.0031-.0037	.0037-.0043	.0045-.0054	.0055-.0065	.0059-.0070	.0068-.0080
6Al4V, 6A14V-2SnMonel, Monel K	20-39	36-66	36-66	0.0006	.0011-.0015	.0015-.0021	.0016-.0024	.0018-.0027	.0021-.0031	.0026-.0039	.0031-.0047	.0035-.0051	.0041-.0059
<b>NICKEL</b>													
COMMERCIALLY PURE, 17644, 200, 5553	33	49	49	0.0007	0.0022	0.0033	0.0038	0.0043	0.005	0.0063	0.0075	0.0081	0.0091
Monel 400, Hastelloy C, Inconel 625, Waspalloy	20	23	23	0.0007	0.0017	0.0024	0.0028	0.0031	0.0037	0.0045	0.0055	0.0059	0.0068
Inconel 718, Nimonic 75-95, Rene 41, Inconel 825, A286	10	20	20	.0004-.0006	.0009-.0011	.0011-.0015	.0013-.0016	.0014-.0018	.0017-.0021	.0021-.0026	.0024-.0031	.0027-.0035	.0032-.0041
<b>COPPER</b>													
COMMERCIALLY PURE	108	125	125	.0007-.0008	.0022-.0026	.0033-.0040	.0038-.0046	.0043-.0051	.0050-.0059	.0063-.0075	.0075-.0090	.0081-.0096	.0091-.0107
BRASS, BRONZE 314-340, 350-370	115	131	131	.0007-.0008	.0020-.0030	.0029-.0047	.0033-.0053	.0037-.0059	.0043-.0068	.0054-.0087	.0065-.0104	.0070-.0110	.008-.0122
BRASS ALLOYED Cu+Al+Fe, LONG CHIPPING	89	89	89	0.0008	0.0026	0.004	0.0046	0.0051	0.0059	0.0075	0.009	0.0096	0.0107
High Strength Bronze	52	69	69	0.0007	.0020-.0022	.0029-.0033	.0033-.0038	.0037-.0043	.0043-.0050	.0054-.0063	.0065-.0075	.0070-.0081	.0080-.0091
<b>ALUMINUM, MAGNESIUM</b>													
Commercially Pure	108	108	108	0.0009	0.0033	0.0053	0.006	0.0067	0.0078	0.0098	0.0117	0.0124	0.0137
6061, T6	89-98	98	98	.0007-.0009	.0022-.0033	.0033-.0053	.0038-.0060	.0043-.0067	.0050-.0078	.0063-.0098	.0075-.0117	.0081-.0124	.0091-.0137
<b>SYNTHETIC MATERIALS</b>													
Thermoplastics	98	-	-	0.0009	0.0033	0.0053	0.006	0.0067	0.0078	0.0098	0.0117	0.0124	0.0137
Thermosetting Plastics	92	-	-	0.0008	0.0026	0.004	0.0046	0.0051	0.0059	0.0075	0.009	0.0096	0.0107
Reinforced Plastic Material	46	-	-	0.0007	0.002	0.0029	0.0033	0.0037	0.0043	0.0054	0.0065	0.007	0.008

TECHNICAL INFORMATION - HSS DRILLS



# Decimal Equivalent Chart

## DECIMAL EQUIVALENTS AND TAP SIZES OF FRACTION, WIRE, LETTER AND METRIC SIZES

DRILL SIZE	DECIMAL INCHES	DRILL SIZE	DECIMAL INCHES	TAP SIZE	DRILL SIZE	DECIMAL INCHES	TAP SIZE	DRILL SIZE	DECIMAL INCHES	TAP SIZE	DRILL SIZE	DECIMAL INCHES	TAP SIZE
.97	.0059	.58	.0420		.27	.1440		H	.2660		17/32	.5312	5/8-11
.15mm	.0059	.57	.0430		3.7mm	.1457		6.8mm	.2677		13.5mm	.5315	
.96	.0063	1.1mm	.0433		.26	.1470	3/16-24NS	6.9mm	.2717		35/64	.5469	
.16mm	.0063	1.15mm	.0453		3.75mm	.1476	m4.5x0.75	I	.2720	5/16-24NF	14mm	.5512	m16x2
.95	.0067	.56	.0465		.25	.1495	#10-24	7mm	.2756	m8x1	9/16	.5625	
.17mm	.0067	3/64	.0469	#0-80	3.8mm	.1496		J	.2770		14.5mm	.5709	m16x1.5
.94	.0071	1.2mm	.0472		.24	.1520		7.1mm	.2795		37/64	.5781	3/8-18NPT 5/8-18NF
.18mm	.0071	1.25mm	.0492	m1.6x0.35	3.9mm	.1535		K	.2810		15mm	.5906	
.93	.0075	1.3mm	.0512		.23	.1540		9/32	.2812	5/16-32NS	19/32	.5938	3/8-18 NPS PIPE
.19mm	.0075	.55	.0520		5/32	.1562		7.2mm	.2835		39/64	.6094	
.92	.0079	1.35mm	.0531		.22	.1570	3/16-32NS	7.25mm	.2854		15.5mm	.6102	m18x2.5
.2mm	.0079	.54	.0550		4mm	.1575		7.3mm	.2874		5/8	.6250	11/16-16NS
.91	.0083	1.4mm	.0551		.21	.1590	#10-32	L	.2900		16mm	.6299	m18x2.0
.21mm	.0083	1.45mm	.0571	m1.8x0.35	.20	.1610		7.4mm	.2913		41/64	.6406	
.90	.0087	1.5mm	.0591		4.1mm	.1614		M	.2950		16.5mm	.6496	
.22mm	.0087	.53	.0595	#1-64,72	4.2mm	.1654	m5x0.8	7.5mm	.2953		21/32	.6562	3/4-10NC
.89	.0091	1.55mm	.0610		.19	.1660		19/64	.2969		17mm	.6693	
.23mm	.0091	1/16	.0625		4.25mm	.1673		7.6mm	.2992		43/64	.6719	
.24mm	.0094	1.6mm	.0630	m2x0.4	4.3mm	.1693		N	.3020		11/16	.6875	3/4-16NF
.88	.0095	.52	.0635		.18	.1695		7.7mm	.3031		17.5mm	.6890	m20x2.5
.25mm	.0098	1.65mm	.0650		11/64	.1719		7.75mm	.3051	m9x1.25	45/64	.7031	
.87	.0100	1.7mm	.0669		.17	.1730		7.8mm	.3071		18mm	.7087	m20x2.0
.26mm	.0102	.51	.0670	#2-56	4.4mm	.1732		7.9mm	.3110		23/32	.7188	1/2-14NPT PIPE
.86	.0105	1.75mm	.0689	m2.2x0.45	.16	.1770	#12-24	5/16	.3125	3/8-16NC	18.5mm	.7283	m20x1.5
.27mm	.0106	.50	.0700	#2-64	4.5mm	.1772		8mm	.3150		47/64	.7344	1/2-14NPS PIPE
.85	.0110	1.8mm	.0709		.15	.1800		O	.3160		19mm	.7480	
.28mm	.0110	1.85mm	.0728		4.6mm	.1811		8.1mm	.3189		3/4	.7500	
.29mm	.0114	.49	.0730		.14	.1820	#12-28	8.2mm	.3228		49/64	.7656	7/8-9NC
.84	.0115	1.9mm	.0748	m2.3x.04	.13	.1850		P	.3230		19.5mm	.7677	m22x2.5
.3mm	.0118	.48	.0760		4.7mm	.1850		8.25mm	.3248		25/32	.7812	
.83	.0120	1.95mm	.0768		4.75mm	.1870		8.3mm	.3268		20mm	.7874	m22x2.0
.82	.0125	5/64	.0781		3/16	.1875		21/64	.3281		51/64	.7969	
.32mm	.0126	.47	.0785	#3-48	4.8mm	.1890		8.4mm	.3307		20.5mm	.8071	m22x1.5
.81	.0130	.2mm	.0787		.12	.1890	7/32-32NS	Q	.3320	3/8-24NF	13/16	.8125	7/8-14NF
.34mm	.0134	2.05mm	.0807	m2.5x0.45	.11	.1910		8.5mm	.3346	m10x1.5	21mm	.8268	m24x3
.80	.0135	.46	.0810		4.9mm	.1929		8.6mm	.3386		53/64	.8281	
.35mm	.0138	.45	.0820	#3-56	.10	.1935		R	.3390	1/8-27NPT PIPE	27/32	.8438	
.36mm	.0142	2.1mm	.0827		.9	.1960		8.7mm	.3425		21.5mm	.8465	
.79	.0145	2.15mm	.0846	m2.6x0.45	5mm	.1969	m6x1	11/32	.3438		55/64	.8594	
.38mm	.0150	.44	.0860	#4-36	.8	.1990		8.75mm	.3445	m10x1.25	22mm	.8661	m24x2
1/64	.0156	2.2mm	.0866		5.1mm	.2008		8.8mm	.3465		7/8	.8750	1-8NC
.4mm	.0157	2.25mm	.0886		.7	.2010	1/4-20	S	.3480	1/8-27NPT PIPE	22.25mm	.8760	
.78	.0160	.43	.0890	#4-40	13/64	.2031		8.9mm	.3504		22.5mm	.8858	m24x1.50
.42mm	.0165	2.3mm	.0906		.6	.2040		9mm	.3543	m10x1.00	57/64	.8906	
.44mm	.0173	2.35mm	.0925		5.2mm	.2047		T	.3580		23mm	.9055	
.45mm	.0177	.42	.0935	#4-48	.5	.2055		9.1mm	.3583		29/32	.9062	
.77	.0180	3/32	.0938		5.25mm	.2067	m6x0.75	23/64	.3594		59/64	.9219	3/4-14NPT PIPE
.46mm	.0181	2.4mm	.0945		5.3mm	.2087		9.2mm	.3622		23.5mm	.9252	
.48mm	.0189	.41	.0960		.4	.2090	1/4-24	9.25mm	.3642		15/16	.9375	3/4-14 NPS 1-14 NF
.5mm	.0197	2.45mm	.0965		5.4mm	.2126		9.3mm	.3661		24mm	.9449	m27x3
.76	.0200	.40	.0980		.3	.2130	1/4-28	U	.3680	7/16-14NC	61/64	.9531	
.75	.0210	2.5mm	.0984	m3x0.5	5.5mm	.2165		9.4mm	.3701		24.5mm	.9646	
.55mm	.0217	.39	.0995	#5-40	7/32	.2188		9.5mm	.3740	m11x1.50	31/32	.9688	
.74	.0225	.38	.1015		5.6mm	.2205		3/8	.3750		25mm	.9843	m27x2
.6mm	.0236	2.6mm	.1024		.2	.2210		V	.3770		63/64	.9844	1-1/8-7NC
.73	.0240	.37	.1040	#5-44	5.7mm	.2244		9.6mm	.3780		1	1.0000	
.72	.0250	2.7mm	.1063		5.75mm	.2264		9.7mm	.3819		25.5mm	1.0039	
.65mm	.0256	.36	.1065	#6-32	.1	.2280		9.75mm	.3839		1-1/64	1.0156	
.71	.0260	2.75mm	.1083		5.8mm	.2283		9.8mm	.3858		26mm	1.0236	
.7mm	.0276	7/64	.1094		5.9mm	.2323		W	.3860		1-1/32	1.0312	
.70	.0280	.35	.1100		A	.2340		9.9mm	.3898		26.5mm	1.0433	m30x3.5
.69	.0292	2.8mm	.1102		15/64	.2344		25/64	.3906	7/16-20	1-3/64	1.0469	1-1/8-12NF
.75mm	.0295	.34	.1110		6mm	.2362	m7x1	10mm	.3937	m12x1.75	1-1/16	1.0625	
.68	.0310	.33	.1130	#6-40	B	.2380		X	.3970		27mm	1.0630	
1/32	.0312	2.9mm	.1142	m3.5x0.6	6.1mm	.2402		Y	.4040		1-5/64	1.0781	
.8mm	.0315	.32	.1160		C	.2420		13/32	.4062		27.5mm	1.0827	
.67	.0320	3mm	.1181		6.2mm	.2441		Z	.4130		1-3/32	1.0938	
.66	.0330	.31	.1200		D	.2460		10.5mm	.4134	m12x1.25	28mm	1.1024	m30x2.0
.85mm	.0335	3.1mm	.1220		6.25mm	.2461	1/16-27 NPT PIPE	27/64	.4219	1/2-13	1-7/64	1.1094	1-1/4-7NC
.65	.0350	1/8	.1250	5/32-32NS	6.3mm	.2480		11mm	.4331		28.5mm	1.1220	
.9mm	.0354	3.2mm	.1260		E	.2500	1/16-27 NPS PIPE	7/16	.4375	1/4-18 NPT PIPE	1-1/8	1.1250	
.64	.0360	3.25mm	.1280		1/4	.2500		11.5mm	.4528		1-9/64	1.1406	
.63	.0370	.30	.1285	5/32-36NS	6.4mm	.2520		29/64	.4531	1/4-18 <sup>NPS</sup> PIPE 1/2-20	29mm	1.1417	
.95mm	.0374	3.3mm	.1299	m4x0.70	6.5mm	.2559		15/32	.4688		1-5/32	1.1562	1-11/2NPT PIPE
.62	.0380	3.4mm	.1339		F	.2570	5/16-18NC	12mm	.4724	m14x2	29.5mm	1.1614	
.61	.0390	.29	.1360	#8-32	6.6mm	.2598		31/64	.4844	9/16-12	1-11/64	1.1719	1-1/4-12NF
1mm	.0394	3.5mm	.1378		G	.2610		12.5mm	.4921	m14x1.5			
.60	.0400	.28	.1405		6.7mm	.2638		1/2	.5000				
.59	.0410	9/64	.1406		17/64	.2656		13mm	.5118	m14x1.25			
1.05mm	.0413	3.6mm	.1417		6.75mm	.2657	m8x1.25	33/64	.5156	9/16-18			



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