



YOUR #1 SOURCE FOR
AMERICAN-MADE
PREMIUM CUTTING TOOLS

2015 list price catalog

PREMIUM QUALITY CARBIDE,
HIGH SPEED STEEL AND COBALT
CUTTING TOOLS

Full offering of
HIGH PERFORMANCE
MADE IN THE USA tools

Hemly
TOOL SUPPLY INC.

TAKE 55%
OFF LIST
PRICES



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



MADE IN THE USA

Your #1 Source for American Made Cutting Tools

Our commitment to only serve 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 dealers.

For over 43 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
- 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
- Freight Prepaid Over \$500
- Private Brand Program
- Custom Catalogs
- Bar-Coding
- Live Stock Check & Net Pricing
- Online Cross Reference Feature
- Comprehensive Description Search
- Individual Account Log-in Feature
- Online Company Tour

Visit our website at titanman.com





TITAN USA

PVD Coating Center



2014 saw a tremendous expansion of TITAN USA's PVD Coating Center. Our new and expanded 13,000 sq/ft coating facility will provide TITAN USA and our customers with unprecedented capacity with three high production PLATIT PL1001 PVD coating machines and another online in the beginning of 2015.

This investment ensures our continued commitment to uncompromising quality and our ability to service our distributors throughout North America.





The latest technology in high capacity **cutting tool PVD coatings**



Partnering with PLATIT®, TITAN USA is able to offer their distributors the industry's highest quality PVD coatings. Having four high production PVD coating machines will allow TITAN USA uninterrupted tool coating production, and the ability to continue to maintain a robust level of inventory.



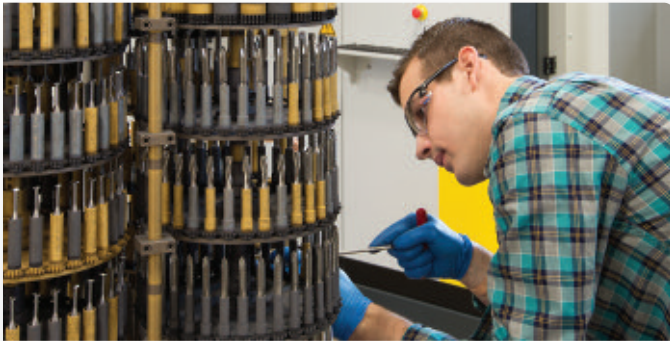
PVD Coatings

Increases cutting tool performance in terms of wear resistance, abrasion prevention, corrosion and oxidation at high temperatures.



PLATIT PL1001

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



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



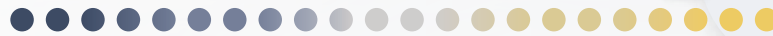
Two completely automated, state-of-the-art EUROCOLD Pluritank® cleaning systems, removes oils and contaminants from tools prior to coating.



PLATIT's Degasser vaporizes oils and fluids from blind or coolant fed holes after the cleaning process, removes trapped gases from brazed cutting tools, and helps ensure proper coating adhesion.

TITAN USA

PVD Coatings



ALTIN

ALTIN is a high performance coating for milling, tapping and drilling in stainless steels, carbon steels, alloy steels, 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 Platin 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. This coating is highly recommended for titanium, high temperature alloys, and hardened and tempered tool steels with 35 HRC or greater.

TICN

TICN is a general purpose coating used for milling, drilling and tapping 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, and generally used in applications with lower cutting speeds.



**TITAN "High Performance" CARBIDE ENDMILLS**

pages 11 - 41

HP HIGH PERFORMANCE ENDMILLS

HP VI-PRO - Information Page	11
HP VI-PRO - Variable Index - 4 Flute - Stub & Regular Length - Square End - ALTIN & ALCRO-MAX	12
HP VI-PRO - Variable Index - 4 Flute - Long & Extra Long Length - Square End - ALTIN & ALCRO-MAX	13
HP VI-PRO - Variable Index - 4 Flute - Stub Length - Corner Radius - ALTIN & ALCRO-MAX	14
HP VI-PRO - Variable Index - 4 Flute - Regular Length - Corner Radius - ALTIN & ALCRO-MAX	15
HP VI-PRO - Variable Index - 4 Flute - Long Length - Corner Radius - ALTIN & ALCRO-MAX	16
HP VI-PRO - Variable Index - 4 Flute - Extra Long Length - Corner Radius - ALTIN & ALCRO-MAX	17
HP VI-PRO - Variable Index - 4 Flute - Stub & Regular Length - Ball Nose - ALTIN & ALCRO-MAX	18
HP VI-PRO - Variable Index - 4 Flute - Long & Extra Long Length - Ball Nose - ALTIN & ALCRO-MAX	19
HP VI-PRO - Variable Index - 5 Flute - Stub & Regular Length - Square End - ALTIN & ALCRO-MAX	20
HP VI-PRO - Variable Index - 5 Flute - Long & Extra Long Length - Square End - ALTIN & ALCRO-MAX	21
HP VI-PRO - Variable Index - 5 Flute - Stub Length - Corner Radius - ALTIN & ALCRO-MAX	22
HP VI-PRO - Variable Index - 5 Flute - Regular Length - Corner Radius - ALTIN & ALCRO-MAX	23
HP VI-PRO - Variable Index - 5 Flute - Long Length - Corner Radius - ALTIN & ALCRO-MAX	24
HP VI-PRO - Variable Index - 5 Flute - Extra Long Length - Corner Radius - ALTIN & ALCRO-MAX	25
HP TERMINATOR - 6 Flute - 40° - Regular Length - Square End & Corner Radius - ALTIN & ALCRO-MAX	26
HP TERMINATOR - 6 Flute - 40° - Long Length - Square End & Corner Radius - ALTIN & ALCRO-MAX	27
HP Fine Pitch Roughers - Stub Length - 4 Flute - 30° - Uncoated, ALTIN & ALCRO-MAX	28 - 29
HP Fine Pitch Roughers - Regular Length - 4 Flute - 30° - Uncoated, ALTIN & ALCRO-MAX	30
HP Fine Pitch Roughers - Long Length - 4 Flute - 30° - Uncoated, ALTIN & ALCRO-MAX	31
HP Fine Pitch Roughers - Regular Length - 4 Flute - 30° - Ball Nose - Uncoated, ALTIN & ALCRO-MAX	32
HP Rougher/Finisher - Regular Length - 4 Flute - 40° - Corner Radius - Uncoated & ALTIN	33
HP Regular Length - 3 Flute - 60° - Square End & Corner Radius - Uncoated & ALTIN	34
HP Regular Length - 3 Flute - 45° - Square End & Corner Radius - Uncoated & ALTIN	35
HP Stub Length - 5 Flute - 45° - Square End & Corner Radius - Uncoated & ALTIN	36
HP Regular Length - 5 Flute - 45° - Square End & Corner Radius - Uncoated & ALTIN	37
HP Regular Length - 2 Flute - 45° - For Aluminum - Uncoated & ZRN	38
HP Regular Length - 2 Flute - 45° - For Aluminum - Corner Radius - Uncoated & ZRN	38
HP Long Length - 2 Flute - 45° - For Aluminum - Square End - Uncoated & ZRN	39
HP Long Length - 2 Flute - 45° - For Aluminum - Corner Radius - Uncoated & ZRN	39
HP Regular Length - 3 Flute - 45° - For Aluminum - Square End - Uncoated & ZRN	40
HP Regular Length - 3 Flute - 45° - For Aluminum - Corner Radius - Uncoated & ZRN	40
HP Long Length - 3 Flute - 45° - For Aluminum - Square End - Uncoated & ZRN	41
HP Long Length - 3 Flute - 45° - For Aluminum - Corner Radius - Uncoated & ZRN	41

PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

TITAN "Tuff Karb" PREMIUM CARBIDE

pages 42 - 103

GENERAL PURPOSE ENDMILLS**SINGLE END**

Regular Length - 4 Flute - Square End - Uncoated, ALTIN & TICN	42
Long & Extra Long Length - 4 Flute - Square End - Uncoated, ALTIN & TICN	43
Regular Length - 4 Flute - Ball Nose - Uncoated, ALTIN & TICN	44
Long & Extra Long Length - 4 Flute - Ball Nose - Uncoated, ALTIN & TICN	45
Regular Length - 2 Flute - Square End - Uncoated, ALTIN & TICN	46
Long & Extra Long Length - 2 Flute - Square End - Uncoated, ALTIN & TICN	47
Regular Length - 2 Flute - Ball Nose - Uncoated, ALTIN & TICN	48
Long & Extra Long Length - 2 Flute - Ball Nose - Uncoated, ALTIN & TICN	49
Regular Length - 2 Flute -  Corner Radius - Uncoated	50
Regular Length - 2 Flute -  Corner Radius - ALTIN	51
Regular Length - 4 Flute -  Corner Radius - Uncoated	52
Regular Length - 4 Flute -  Corner Radius - ALTIN	53
Long Length - 4 Flute -  Corner Radius - Uncoated	54
Long Length - 4 Flute -  Corner Radius - ALTIN	55
Extra Long Length - 4 Flute -  Corner Radius - Uncoated	56
Extra Long Length - 4 Flute -  Corner Radius - ALTIN	57
Regular Length - Metric - 4 Flute - Square End - Uncoated & ALTIN	58
Stub Length - 2 Flute & 4 Flute - Square End & Ball Nose - Uncoated & ALTIN	59

GENERAL PURPOSE ENDMILLS**DOUBLE END**

Stub Length - 2 Flute & 4 Flute - Square End & Ball Nose - Uncoated & ALTIN	60 - 61
Regular Length - 2 Flute & 4 Flute - Square End & Ball Nose - Uncoated & ALTIN	62 - 63

MICRO ENDMILLS

2 Flute - Square End & Ball Nose - Uncoated & ALTIN	64 - 65
4 Flute - Square End & Ball Nose - Uncoated & ALTIN	66 - 67
2 Flute - Stub Flute - Square End & Ball Nose - Uncoated & ALTIN	68
4 Flute - Stub Flute - Square End & Ball Nose - Uncoated & ALTIN	69
4 Flute - Stub Flute -  Corner Radius - Uncoated & ALTIN	70
4 Flute -  Corner Radius - Uncoated & ALTIN	71

THREADMILLS

Internal/External Threads - UN Thread - ALTIN	72
Internal/External Threads - UN Threads - Coolant Fed - ALTIN	72
Internal/External Threads - NPT Pipe Threads - ALTIN	72
Internal/External Threads - NPTF Pipe Threads & Metric Threads - ALTIN	73

PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.



INDEX

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TITAN "Tuff Karb" PREMIUM CARBIDE

pages 42 - 103

DRILL MILLS

2 & 4 Flute - 60° Point - Uncoated & ALTIN	74 - 75
2 & 4 Flute - 90° Point - Uncoated & ALTIN	76 - 77

CHAMFER MILLS

Single End - 2 & 4 Flute - 60°, 82°, 90°, 100°, 120° Point - Uncoated & ALTIN	78
Double End - 2 & 4 Flute - 60°, 82°, 90°, 100°, 120° Point - Uncoated & ALTIN	79

CARBIDE DRILLS

N/C Spotting - 90°, 120° & 140° - Uncoated & ALTIN	80 - 81
Jobber Length - 118° Split Point - Fractional, Letter, Wire & Metric Sizes - Uncoated & ALTIN	82 - 83
Stub Length - 135° Split Point - Fractional, Letter & Wire Sizes - Uncoated & ALTIN	84 - 85
Straight Flute - 140° Split Point - Fractional, Letter & Wire Sizes - Uncoated & ALTIN	86 - 87

CARBIDE REAMERS

Straight Flute - Fractional, Wire, Letter, Metric & Decimal	88 - 92
Special Sizes - Quantity Pricing	93

BURS

Cylindrical SA • Cylindrical End Cut SB	94 - 95
Cylindrical Ball Nose SC • Ball Shape SD	96 - 97
Egg Shape SE • Round Nose Tree SF	98 - 99
Pointed Tree SG • Flame Shape SH	100
Included Angle SJ • SK	101
Included Angle With Radius SL • Pointed Cone SM • Inverted Taper SN • Bur Sets	102 - 103

TITAN COUNTERSINKS

pages 104 - 107

Single Flute, 3 Flute & 6 Flute - Carbide - 60°, 82°, 90° & 100°	104
Combined Drill & Countersinks - Carbide 60° • HSS 60° • M42 Cobalt 60°	105
Combined Drill & Countersinks - HSS - Long Length 60° • Bell Type 60°	106
Combined Drill & Countersinks - HSS • Four Flute Machine • Single Flute	107

TITAN HSS & M42 COBALT ENDMILLS

pages 108 - 115

Single End - 2 Flute, 4 Flute & 6 Flute - Square End - 30° Helix - HSS - Uncoated & ALTIN	108 - 109
Double End - 2 Flute & 4 Flute - Square End - 30° Helix - HSS - Uncoated & ALTIN	110 - 111
Single End - 2 Flute, 4 Flute & 6 Flute - Square End - 30° Helix - M42 Cobalt - Uncoated & ALTIN	112 - 113
Double End - 2 Flute & 4 Flute - Square End - 30° Helix - M42 Cobalt - Uncoated & ALTIN	114
Roughing - Coarse & Fine Pitch - M42 Cobalt - Uncoated & ALTIN	115

PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

TITAN "Thread-Rite" TAPS & DIES

pages 116 - 144

HP HIGH PERFORMANCE TAPS

HP PREDATOR - Spiral Point - Uncoated, Steam Oxide, ALTiN & TiCN	116
HP PREDATOR - Metric - Spiral Point - Uncoated, Steam Oxide, ALTiN & TiCN	117
HP PREDATOR - Spiral Flute Semi Bottoming - Uncoated, Steam Oxide, ALTiN & TiCN	118
HP PREDATOR - Metric - Spiral Flute Semi Bottoming - Uncoated, Steam Oxide, ALTiN & TiCN	119

GENERAL PURPOSE GROUND THREAD TAPS

Hand - Taper, Plug, Bottom & Sets - HSS	120 - 123
Hand - Taper, Plug & Bottom - HSS - Steam Oxide	124
Hand - Plug & Bottom - HSS - Nitride & Steam Oxide	125
Hand - Taper, Plug, Bottom & Sets - HSS - TiN	126
Hand - Metric - Taper, Plug, Bottom & Sets - HSS - Uncoated	127
Hand - Metric - Taper, Plug, Bottom & Sets - HSS - TiN	128
Spiral Point Plug - HSS	129
Spiral Point Plug - HSS - Steam Oxide, Nitride & Steam Oxide	130
Spiral Point Plug - HSS - TiN & ALTiN	131
Spiral Point Plug - Metric - HSS - Uncoated & TiN	132
Spiral Point Bottoming - HSS - Uncoated & TiN	132
Hi Spiral Flute Semi Bottoming - HSS	133
Hi Spiral Flute Semi Bottoming - Metric - HSS	133
Thread Forming - Single Thread Chamfer, Bottom, Plug - HSS	134
Thread Forming - Metric - Single Thread Chamfer, Bottom, Plug - HSS	134
Thread Forming - Single Thread Chamfer, Bottom, Plug - HSS - TiN	135
Thread Forming - Metric - Single Thread Chamfer, Bottom, Plug - HSS - TiN	135
Combination Drill & Tap - HSS	136
Combination Drill & Tap - Metric - HSS	136
Taper Pipe NPT • Taper Pipe NPT Interrupted - HSS - Uncoated, Steam Oxide & TiN	137
Taper Pipe NPTF • Taper Pipe NPTF Interrupted - HSS - Uncoated & TiN	138
Straight Pipe NPS • NPT Extension Taper Pipe - HSS - Uncoated & TiN	139
STI - Screw Thread Insert • +.005 Oversize - HSS	140
Pulley - Plug • Small Shank Extension - Spiral Point Plug - HSS	141

DIES

Adjustable Round Split - HSS • Die Stocks	142
Adjustable Round Split • Hexagon Rethreading - Carbon Steel	143
NPT Hexagon Rethreading • Metric Hexagon Rethreading - Carbon Steel	144
T-Handle Tap Wrenches	144

PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.



INDEX

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YOUR #1 SOURCE FOR AMERICAN-MADE PREMIUM CUTTING TOOLS

TITAN TWIST DRILL pages 145 - 167

Drill Sets	145 - 147
Jobber Length - 118° Point - HSS - Bright, TIN & Oxided	148 - 150
Jobber Length - Metric - 118° Point - HSS - Oxided	151
Jobber Length - Heavy Duty - 135° Split Point - HSS - Oxided & Black/Gold	152 - 153
Mechanics Length - Heavy Duty - 135° Split Point - Black/Gold - Flatted Shank - HSS	154
Screw Machine Length - Heavy Duty - 135° Split Point - HSS - Oxided	155
Taper Length - 118° Point - HSS - Oxided	156
Taper Shank - 118° Point - HSS - Oxided	157
Screw Machine Length - Heavy Duty - 135° Split Point - M42 Cobalt - Straw Finish & ALTIN	158 - 159
Jobber Length - Heavy Duty - 135° Split Point - M42 Cobalt - Straw Finish & ALTIN	160 - 161
Silver & Deming - HSS, Cobalt & Black/Gold	162 - 163
A/C Extension - 6" & 12" Overall Length - HSS & M42 Cobalt	164 - 165
Extra Length - 12" Overall Length - HSS - Bright	166
Reduced Shank - 1/4" & 3/8" - 118° Point - HSS - Oxided	166
Screw Extractors • Drill Drifts - HSS - Oxided	167

TITAN "Clean Ream" REAMERS pages 168 - 190

Chuckling - Straight Shank - Straight Flute - HSS & M42 Cobalt	168 - 173
Chuckling - Stocked Intermediate Sizes (Series 933 Only) - HSS	174 - 177
Chuckling - Straight Shank - Straight Flute - Special Sizes - HSS & M42 Cobalt	178 - 179
Chuckling - Straight Shank - Right Hand Spiral - Right Hand Cut - HSS & M42 Cobalt	180 - 183
Dowel Pin Sizes - HSS & M42 Cobalt	184
Taper Shank - Straight Flute - HSS	184
Expansion - HSS	185
Hand - Straight Shank - Straight Flute & Left Hand Spiral - Right Hand Cut - HSS	186
Taper Pipe • Taper Pin - HSS	187
Capscrew Counterbores - HSS	188
Construction - Black/Gold • Safety Reamers • Bridge Reamers - HSS	189
Reamer Sets - HSS & M42 Cobalt	190

TECHNICAL INFORMATION pages 191 - 208

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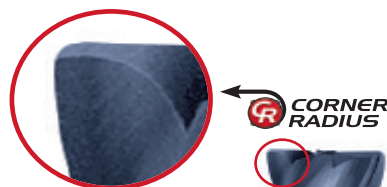
VI-PRO

TITAN's **VI-PRO** is a High Performance, 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 micrograin carbide

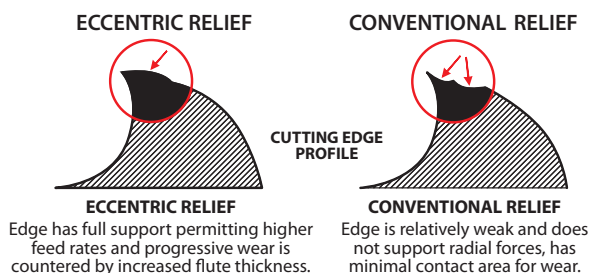
Why use TITAN's Corner Radius tools?

- 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 0.250.



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

HIGH PERFORMANCE

HP CARBIDE ENDMILLS

VI-PRO

VARIABLE INDEX
STUB LENGTH - 4 FLUTE - SQUARE END



SERIES V41S
ALTiN COATED

SERIES V42S
ALCRO-MAX COATED

**TAKE 55%
OFF LIST
PRICES**

VI-PRO					ALTiN COATED				ALCRO-MAX COATED			
SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLTS	ROUND SHANK ITEM #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE	ROUND SHANK ITEM #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE
1/8	1/8	1/4	1-1/2	4	TC20901	25.99	-	-	TC21133	28.51	-	-
3/16	3/16	3/8	2	4	TC20904	33.45	-	-	TC21136	36.79	-	-
1/4	1/4	3/8	2	4	TC20907	37.84	-	-	TC21139	41.63	-	-
5/16	5/16	7/16	2	4	TC20910	55.05	-	-	TC21142	60.56	-	-
3/8	3/8	1/2	2	4	TC20913	61.03	-	-	TC21145	67.13	-	-
7/16	7/16	5/8	2-1/2	4	TC20915	79.50	-	-	TC21147	87.45	-	-
1/2	1/2	5/8	2-1/2	4	TC20916	91.25	TC20951	96.45	TC21148	100.38	TC21173	106.09
5/8	5/8	3/4	3	4	TC20919	179.65	TC20954	184.84	TC21151	188.63	TC21176	194.09
3/4	3/4	1	3	4	TC20922	236.94	TC20957	242.13	TC21154	248.78	TC21179	254.24

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 #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE	ROUND SHANK ITEM #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE
1/8	1/8	1/2	2	4	TC21706	31.06	-	-	TC21821	34.16	-	-
3/16	3/16	9/16	2	4	TC21709	35.50	-	-	TC21824	39.05	-	-
1/4	1/4	3/4	2-1/2	4	TC21712	45.06	-	-	TC21827	49.56	-	-
5/16	5/16	13/16	2-1/2	4	TC21715	59.68	-	-	TC21830	65.64	-	-
3/8	3/8	1	2-1/2	4	TC21718	69.91	-	-	TC21833	76.90	-	-
7/16	7/16	1	2-3/4	4	TC21720	86.69	-	-	TC21835	95.36	-	-
1/2	1/2	1	3	4	TC21721	104.86	TC21755	110.05	TC21836	115.35	TC21863	121.06
1/2	1/2	1-1/4	3	4	TC21724	104.86	TC21758	110.05	TC21839	115.35	TC21866	121.06
5/8	5/8	1-5/8	3-1/2	4	TC21727	189.83	TC21761	195.02	TC21842	199.32	TC21869	204.77
3/4	3/4	1-5/8	4	4	TC21730	262.28	TC21764	267.48	TC21845	275.40	TC21872	280.85
1	1	2	4	4	TC21733	489.61	TC21767	494.80	TC21848	514.09	TC21875	519.54

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 191-193.

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

HIGH PERFORMANCE



**TAKE 55%
OFF LIST
PRICES**

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 #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE	ROUND SHANK ITEM #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE
1/4	1/4	1-1/8	3	4	TC23000	51.32	-	-	TC23201	56.45	-	-
5/16	5/16	1-1/8	3	4	TC23003	71.00	-	-	TC23204	78.10	-	-
3/8	3/8	1-1/4	3	4	TC23006	95.36	-	-	TC23207	104.89	-	-
7/16	7/16	2	4	4	TC23008	120.95	-	-	TC23209	133.05	-	-
1/2	1/2	1-1/2	4	4	TC23009	131.66	TC23134	136.85	TC23210	144.83	TC23331	150.54
1/2	1/2	2	4	4	TC23012	145.99	TC23137	151.19	TC23213	160.59	TC23334	166.31
5/8	5/8	2-1/4	5	4	TC23015	271.53	TC23140	276.72	TC23216	285.10	TC23337	290.56
3/4	3/4	2-1/4	5	4	TC23018	328.55	TC23143	333.75	TC23219	344.98	TC23340	350.43
1	1	2-1/4	5	4	TC23021	541.49	TC23146	546.69	TC23222	568.57	TC23343	574.02

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 #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE	ROUND SHANK ITEM #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE
1/4	1/4	1-1/2	4	4	TC24209	61.30	-	-	TC24408	67.43	-	-
3/8	3/8	2	4	4	TC24211	107.46	-	-	TC24411	118.20	-	-
7/16	7/16	3	6	4	TC24212	176.20	-	-	TC24413	193.82	-	-
1/2	1/2	3	6	4	TC24213	205.88	TC24348	211.07	TC24414	226.47	TC24543	232.18
5/8	5/8	3	6	4	TC24215	292.82	TC24351	298.01	TC24417	307.46	TC24546	312.92
3/4	3/4	3	6	4	TC24217	386.51	TC24354	391.71	TC24420	405.84	TC24549	411.29
3/4	3/4	4	7	4	TC24219	634.72	TC24357	639.92	TC24423	666.46	TC24552	671.91
1	1	3	6	4	TC24221	630.15	TC24360	635.34	TC24426	661.66	TC24555	667.11
1	1	4-1/4	7	4	TC24223	930.23	TC24363	935.80	TC24429	975.91	TC24558	981.48

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 191-193.

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



YOUR #1 SOURCE FOR AMERICAN-MADE PREMIUM CUTTING TOOLS

MADE IN THE
USA

Carbide Endmills

HIGH PERFORMANCE

HP CARBIDE ENDMILLS

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OFF LIST
PRICES**

VI-PRO

VARIABLE INDEX

STUB LENGTH - 4 FLUTE -  CORNER RADIUS



SERIES V41SR
ALTiN COATED

SERIES V42SR
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 #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE	ROUND SHANK ITEM #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE
1/8	1/8	1/4	1-1/2	4	0.008	TC21435	29.96	-	-	TC21503	32.96	-	-
3/16	3/16	3/8	2	4	0.008	TC21438	37.41	-	-	TC21506	41.15	-	-
1/4	1/4	3/8	2	4	0.015	TC21441	44.10	-	-	TC21509	48.51	-	-
5/16	5/16	7/16	2	4	0.015	TC21444	59.36	-	-	TC21512	65.30	-	-
3/8	3/8	1/2	2	4	0.015	TC21447	65.34	-	-	TC21515	71.87	-	-
7/16	7/16	5/8	2-1/2	4	0.030	TC21449	83.72	-	-	TC21517	92.09	-	-
1/2	1/2	5/8	2-1/2	4	0.030	TC21450	99.87	TC21468	105.07	TC21518	109.86	TC21541	115.58
5/8	5/8	3/4	3	4	0.030	TC21453	188.27	TC21471	193.47	TC21521	197.69	TC21544	203.14
3/4	3/4	1	3	4	0.030	TC21456	245.56	TC21474	250.75	TC21524	257.84	TC21547	263.29

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 191-193.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.000, -.002	-.0001, -.0004	+0.001, -.001
5/8" - 3/4"	+0.000, -.003	-.0001, -.0004	+0.001, -.001

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HIGH PERFORMANCE



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VI-PRO**VARIABLE INDEX****REGULAR LENGTH - 4 FLUTE -  CORNER RADIUS****SERIES V41RR**
ALTIN COATED**SERIES V42RR**
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 #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE	ROUND SHANK ITEM #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE
1/8	1/8	1/2	2	4	0.010	TC22211	35.02	-	-	TC22617	38.53	-	-
1/8	1/8	1/2	2	4	0.020	TC22214	35.02	-	-	TC22620	38.53	-	-
1/8	1/8	1/2	2	4	0.030	TC22217	35.02	-	-	TC22623	38.53	-	-
3/16	3/16	9/16	2	4	0.010	TC22220	39.47	-	-	TC22626	43.41	-	-
3/16	3/16	9/16	2	4	0.020	TC22223	39.47	-	-	TC22629	43.41	-	-
3/16	3/16	9/16	2	4	0.030	TC22226	39.47	-	-	TC22632	43.41	-	-
1/4	1/4	3/4	2-1/2	4	0.015	TC22229	49.02	-	-	TC22635	53.93	-	-
1/4	1/4	3/4	2-1/2	4	0.030	TC22232	49.02	-	-	TC22638	53.93	-	-
1/4	1/4	3/4	2-1/2	4	0.060	TC22235	49.02	-	-	TC22641	53.93	-	-
5/16	5/16	13/16	2-1/2	4	0.015	TC22238	63.16	-	-	TC22644	69.47	-	-
5/16	5/16	13/16	2-1/2	4	0.030	TC22241	63.16	-	-	TC22647	69.47	-	-
5/16	5/16	13/16	2-1/2	4	0.060	TC22244	63.16	-	-	TC22650	69.47	-	-
3/8	3/8	1	2-1/2	4	0.015	TC22247	73.75	-	-	TC22653	81.13	-	-
3/8	3/8	1	2-1/2	4	0.030	TC22250	73.75	-	-	TC22656	81.13	-	-
3/8	3/8	1	2-1/2	4	0.060	TC22253	73.75	-	-	TC22659	81.13	-	-
7/16	7/16	1	2-3/4	4	0.015	TC22254	96.25	-	-	TC22660	105.88	-	-
7/16	7/16	1	2-3/4	4	0.030	TC22255	96.25	-	-	TC22661	105.88	-	-
7/16	7/16	1	2-3/4	4	0.060	TC22257	96.25	-	-	TC22663	105.88	-	-
1/2	1/2	1	3	4	0.015	TC22256	117.82	TC22452	123.72	TC22662	129.60	TC22801	136.09
1/2	1/2	1	3	4	0.030	TC22259	117.82	TC22455	123.72	TC22665	129.60	TC22804	136.09
1/2	1/2	1	3	4	0.060	TC22262	117.82	TC22458	123.72	TC22668	129.60	TC22807	136.09
1/2	1/2	1	3	4	0.090	TC22265	117.82	TC22461	123.72	TC22671	129.60	TC22810	136.09
1/2	1/2	1	3	4	0.120	TC22268	117.82	TC22464	123.72	TC22674	129.60	TC22813	136.09
1/2	1/2	1-1/4	3	4	0.015	TC22271	117.82	TC22467	123.72	TC22677	129.60	TC22816	136.09
1/2	1/2	1-1/4	3	4	0.030	TC22274	117.82	TC22470	123.72	TC22680	129.60	TC22819	136.09
1/2	1/2	1-1/4	3	4	0.060	TC22277	117.82	TC22473	123.72	TC22683	129.60	TC22822	136.09
1/2	1/2	1-1/4	3	4	0.090	TC22280	117.82	TC22476	123.72	TC22686	129.60	TC22825	136.09
1/2	1/2	1-1/4	3	4	0.120	TC22283	117.82	TC22479	123.72	TC22689	129.60	TC22828	136.09
5/8	5/8	1-5/8	3-1/2	4	0.030	TC22286	198.50	TC22482	203.70	TC22692	208.43	TC22831	213.88
5/8	5/8	1-5/8	3-1/2	4	0.060	TC22289	198.50	TC22485	203.70	TC22695	208.43	TC22834	213.88
5/8	5/8	1-5/8	3-1/2	4	0.090	TC22292	198.50	TC22488	203.70	TC22698	208.43	TC22837	213.88
5/8	5/8	1-5/8	3-1/2	4	0.120	TC22295	198.50	TC22491	203.70	TC22701	208.43	TC22840	213.88
3/4	3/4	1-5/8	4	4	0.030	TC22298	275.27	TC22494	280.46	TC22704	289.03	TC22843	294.48
3/4	3/4	1-5/8	4	4	0.060	TC22301	275.27	TC22497	280.46	TC22707	289.03	TC22846	294.48
3/4	3/4	1-5/8	4	4	0.090	TC22304	275.27	TC22500	280.46	TC22710	289.03	TC22849	294.48
3/4	3/4	1-5/8	4	4	0.120	TC22307	275.27	TC22503	280.46	TC22713	289.03	TC22852	294.48
3/4	3/4	1-5/8	4	4	0.190	TC22308	275.27	TC22504	280.46	TC22714	289.03	TC22853	294.49
3/4	3/4	1-5/8	4	4	0.250	TC22309	275.27	TC22505	280.46	TC22715	289.03	TC22854	294.49
1	1	2	4	4	0.030	TC22310	502.59	TC22506	507.79	TC22716	527.72	TC22855	533.18
1	1	2	4	4	0.060	TC22313	502.59	TC22509	507.79	TC22719	527.72	TC22858	533.18
1	1	2	4	4	0.090	TC22316	502.59	TC22512	507.79	TC22722	527.72	TC22861	533.18
1	1	2	4	4	0.120	TC22319	502.59	TC22515	507.79	TC22725	527.72	TC22864	533.18
1	1	2	4	4	0.190	TC22322	502.60	TC22518	507.79	TC22728	527.72	TC22867	533.18
1	1	2	4	4	0.250	TC22325	502.60	TC22521	507.79	TC22731	527.72	TC22870	533.18

FOR VI PRO TECHNICAL AND COATING INFORMATION, PLEASE SEE PAGES 191-193.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.00, -0.02	-0.001, -0.004	+0.01, -0.01
5/8" - 1"	+0.00, -0.03	-0.001, -0.004	+0.01, -0.01

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VARIABLE INDEX

LONG LENGTH - 4 FLUTE -  CORNER RADIUS



 **CORNER RADIUS**

SERIES V41LR
ALTiN COATED

SERIES V42LR
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 #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE	ROUND SHANK ITEM #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE
1/4	1/4	1-1/8	3	4	0.015	TC23624	55.28	-	-	TC23820	60.81	-	-
1/4	1/4	1-1/8	3	4	0.030	TC23627	55.28	-	-	TC23823	60.81	-	-
5/16	5/16	1-1/8	3	4	0.015	TC23630	75.31	-	-	TC23826	82.84	-	-
5/16	5/16	1-1/8	3	4	0.030	TC23633	75.31	-	-	TC23829	82.84	-	-
3/8	3/8	1-1/4	3	4	0.030	TC23636	99.67	-	-	TC23832	109.63	-	-
3/8	3/8	1-1/4	3	4	0.060	TC23639	99.67	-	-	TC23835	109.63	-	-
7/16	7/16	2	4	4	0.030	TC23640	128.01	-	-	TC23836	140.81	-	-
7/16	7/16	2	4	4	0.060	TC23641	128.01	-	-	TC23837	140.81	-	-
1/2	1/2	1-1/2	4	4	0.030	TC23642	140.28	TC23780	145.48	TC23838	154.31	TC23905	160.02
1/2	1/2	1-1/2	4	4	0.060	TC23645	140.28	TC23783	145.48	TC23841	154.31	TC23908	160.02
1/2	1/2	2	4	4	0.030	TC23648	154.62	TC23786	159.81	TC23844	170.08	TC23911	175.79
1/2	1/2	2	4	4	0.060	TC23651	154.62	TC23789	159.81	TC23847	170.08	TC23914	175.79
5/8	5/8	2-1/4	5	4	0.030	TC23654	280.15	TC23792	285.34	TC23850	294.16	TC23917	299.61
5/8	5/8	2-1/4	5	4	0.060	TC23657	280.15	TC23795	285.34	TC23853	294.16	TC23920	299.61
3/4	3/4	2-1/4	5	4	0.030	TC23660	352.78	TC23798	359.53	TC23856	370.42	TC23923	377.51
3/4	3/4	2-1/4	5	4	0.060	TC23663	352.78	TC23801	359.53	TC23859	370.42	TC23926	377.51
1	1	2-1/4	5	4	0.030	TC23666	550.12	TC23804	555.31	TC23862	577.62	TC23929	583.08
1	1	2-1/4	5	4	0.060	TC23669	550.12	TC23807	555.31	TC23865	577.62	TC23932	583.08

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



PVD coatings increase cutting tool performance

FOR VI PRO TECHNICAL AND COATING INFORMATION, PLEASE SEE PAGES 191-193.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/4" - 1/2"	+0.00, -.002	-.0001, -.0004	+0.01, -.001
5/8" - 1"	+0.00, -.003	-.0001, -.0004	+0.01, -.001

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VI-PRO**VARIABLE INDEX****EXTRA LONG LENGTH - 4 FLUTE -  CORNER RADIUS**


CORNER
RADIUS
SERIES V41XLR
ALTIM COATED**SERIES V42XLR**
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 #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE	ROUND SHANK ITEM #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE
1/4	1/4	1-1/2	4	4	0.015	TC24913	67.28	-	-	TC25217	74.00	-	-
1/4	1/4	1-1/2	4	4	0.030	TC24916	67.28	-	-	TC25220	74.00	-	-
3/8	3/8	2	4	4	0.030	TC24919	113.95	-	-	TC25223	125.34	-	-
3/8	3/8	2	4	4	0.060	TC24922	113.95	-	-	TC25226	125.34	-	-
7/16	7/16	3	6	4	0.030	TC24923	180.48	-	-	TC25227	198.52	-	-
7/16	7/16	3	6	4	0.060	TC24924	180.48	-	-	TC25228	198.53	-	-
1/2	1/2	3	6	4	0.030	TC24925	212.37	TC25070	217.56	TC25229	233.61	TC25302	239.32
1/2	1/2	3	6	4	0.060	TC24928	212.37	TC25073	217.56	TC25232	233.61	TC25305	239.32
5/8	5/8	3	6	4	0.030	TC24931	299.26	TC25076	304.45	TC25235	314.22	TC25308	319.68
5/8	5/8	3	6	4	0.060	TC24934	299.26	TC25079	304.45	TC25238	314.22	TC25311	319.68
3/4	3/4	3	6	4	0.030	TC24937	395.14	TC25082	400.33	TC25241	414.89	TC25314	420.35
3/4	3/4	3	6	4	0.060	TC24940	395.14	TC25085	400.33	TC25244	414.89	TC25317	420.35
3/4	3/4	4	7	4	0.030	TC24943	643.34	TC25088	648.54	TC25247	675.51	TC25320	680.96
3/4	3/4	4	7	4	0.060	TC24946	643.34	TC25091	648.54	TC25250	675.51	TC25323	680.96
1	1	3	6	4	0.030	TC24949	646.77	TC25094	651.96	TC25253	679.11	TC25326	684.56
1	1	3	6	4	0.060	TC24952	646.77	TC25097	651.96	TC25256	679.11	TC25329	684.56
1	1	4-1/4	7	4	0.030	TC24955	939.14	TC25100	944.71	TC25259	984.82	TC25332	990.39
1	1	4-1/4	7	4	0.060	TC24958	939.14	TC25103	944.71	TC25262	984.82	TC25335	990.39

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 USA - America's tooling partner for over 43 years****FOR VI PRO TECHNICAL AND COATING INFORMATION, PLEASE SEE PAGES 191-193.**

TOLERANCES	DIAMETER	SHANK	RADIUS
1/4" - 1/2"	+0.00, -0.02	-0.001, -0.004	+0.01, -0.01
5/8" - 1"	+0.00, -0.03	-0.001, -0.004	+0.01, -0.01

Carbide Endmills

HIGH PERFORMANCE

VI-PRO

VARIABLE INDEX
STUB LENGTH - 4 FLUTE - BALL NOSE



SERIES V41SB
ALTIM COATED

SERIES V42SB
ALCRO-MAX COATED

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PRICES**

VI-PRO					ALTIM COATED				ALCRO-MAX COATED			
SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLTS	ROUND SHANK ITEM #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE	ROUND SHANK ITEM #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE
1/8	1/8	1/4	1-1/2	4	TC25480	29.99	-	-	TC25499	32.99	-	-
3/16	3/16	3/8	2	4	TC25482	38.59	-	-	TC25501	42.45	-	-
1/4	1/4	3/8	2	4	TC25484	43.67	-	-	TC25502	48.04	-	-
5/16	5/16	7/16	2	4	TC25486	63.53	-	-	TC25504	69.88	-	-
3/8	3/8	1/2	2	4	TC25488	70.42	-	-	TC25506	77.46	-	-
7/16	7/16	5/8	2-1/2	4	TC25489	94.80	-	-	TC25507	104.28	-	-
1/2	1/2	5/8	2-1/2	4	TC25490	105.29	TC25496	111.28	TC25508	115.82	TC25514	122.41
5/8	5/8	3/4	3	4	TC25492	207.29	TC25498	213.28	TC25510	217.65	TC25516	223.95
3/4	3/4	1	3	4	TC25494	273.39	TC25500	279.38	TC25512	287.05	TC25518	293.35

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 #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE	ROUND SHANK ITEM #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE
1/8	1/8	1/2	2	4	TC25520	35.84	-	-	TC25547	39.42	-	-
3/16	3/16	9/16	2	4	TC25522	40.97	-	-	TC25549	45.06	-	-
1/4	1/4	3/4	2-1/2	4	TC25524	52.00	-	-	TC25550	57.19	-	-
5/16	5/16	13/16	2-1/2	4	TC25526	68.86	-	-	TC25552	75.74	-	-
3/8	3/8	1	2-1/2	4	TC25528	80.66	-	-	TC25554	88.73	-	-
7/16	7/16	1	2-3/4	4	TC25529	110.33	-	-	TC25555	121.37	-	-
1/2	1/2	1	3	4	TC25530	121.00	TC25540	126.99	TC25556	133.09	TC25566	139.69
1/2	1/2	1-1/4	3	4	TC25532	121.00	TC25542	126.99	TC25558	133.09	TC25568	139.69
5/8	5/8	1-5/8	3-1/2	4	TC25534	219.04	TC25544	225.03	TC25560	229.99	TC25570	236.28
3/4	3/4	1-5/8	4	4	TC25536	302.63	TC25546	308.62	TC25562	317.76	TC25572	324.06
1	1	2	4	4	TC25538	564.94	TC25548	570.93	TC25564	593.18	TC25574	599.48

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 191-193.

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

HIGH PERFORMANCE



**TAKE 55%
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PRICES**

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 #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE	ROUND SHANK ITEM #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE
1/4	1/4	1-1/8	3	4	TC25576	59.21	-	-	TC25602	65.13	-	-
5/16	5/16	1-1/8	3	4	TC25578	81.92	-	-	TC25604	90.11	-	-
3/8	3/8	1-1/4	3	4	TC25580	110.02	-	-	TC25606	121.02	-	-
7/16	7/16	2	4	4	TC25581	137.11	-	-	TC25607	150.82	-	-
1/2	1/2	1-1/2	4	4	TC25582	151.91	TC25592	157.90	TC25608	167.11	TC25618	173.70
1/2	1/2	2	4	4	TC25584	168.46	TC25594	174.45	TC25610	185.30	TC25620	191.89
5/8	5/8	2-1/4	5	4	TC25586	313.30	TC25596	319.29	TC25612	328.97	TC25622	335.26
3/4	3/4	2-1/4	5	4	TC25588	379.10	TC25598	385.09	TC25614	398.05	TC25624	404.35
1	1	2-1/4	5	4	TC25590	624.80	TC25600	630.79	TC25616	656.04	TC25626	662.34

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 #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE	ROUND SHANK ITEM #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE
1/4	1/4	1-1/2	4	4	TC25628	70.74	-	-	TC25656	77.81	-	-
3/8	3/8	2	4	4	TC25630	123.99	-	-	TC25658	136.39	-	-
7/16	7/16	3	6	4	TC25631	203.32	-	-	TC25659	223.65	-	-
1/2	1/2	3	6	4	TC25632	237.55	TC25644	243.54	TC25660	261.30	TC25672	267.90
5/8	5/8	3	6	4	TC25634	337.87	TC25646	343.87	TC25662	354.77	TC25674	361.05
3/4	3/4	3	6	4	TC25636	445.98	TC25648	451.97	TC25664	468.27	TC25676	474.57
3/4	3/4	4	7	4	TC25638	732.37	TC25650	738.37	TC25666	768.99	TC25678	775.29
1	1	3	6	4	TC25640	727.10	TC25652	733.09	TC25668	763.45	TC25680	769.75
1	1	4-1/4	7	4	TC25642	1,073.34	TC25654	1,079.77	TC25670	1,126.05	TC25682	1,132.47

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 191-193.

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

HIGH PERFORMANCE

VI-PRO VARIABLE INDEX STUB LENGTH - 5 FLUTE - SQUARE END



SERIES V51S
ALTIN COATED

SERIES V52S
ALCRO-MAX COATED

**TAKE 55%
OFF LIST
PRICES**

VI-PRO					ALTIN COATED				ALCRO-MAX COATED			
SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLTS	ROUND SHANK ITEM #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE	ROUND SHANK ITEM #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE
1/8	1/8	1/4	1-1/2	5	TC25785	28.59	-	-	TC25807	31.45	-	-
3/16	3/16	3/8	2	5	TC25786	36.79	-	-	TC25809	40.47	-	-
1/4	1/4	3/8	2	5	TC25787	41.63	-	-	TC25796	45.80	-	-
5/16	5/16	7/16	2	5	TC25788	60.56	-	-	TC25797	66.62	-	-
3/8	3/8	1/2	2	5	TC25789	67.13	-	-	TC25798	73.85	-	-
1/2	1/2	5/8	2-1/2	5	TC25790	100.38	TC25793	106.09	TC25799	110.41	TC25802	116.70
5/8	5/8	3/4	3	5	TC25791	197.62	TC25794	203.33	TC25800	207.49	TC25803	213.50
3/4	3/4	1	3	5	TC25792	260.63	TC25795	266.34	TC25801	273.66	TC25804	279.66

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 #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE	ROUND SHANK ITEM #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE
1/8	1/8	1/2	2	5	TC25806	34.17	-	-	TC25829	37.58	-	-
3/16	3/16	9/16	2	5	TC25808	39.06	-	-	TC25835	42.96	-	-
1/4	1/4	3/4	2-1/2	5	TC25810	49.58	-	-	TC25836	54.52	-	-
5/16	5/16	13/16	2-1/2	5	TC25812	65.65	-	-	TC25838	72.20	-	-
3/8	3/8	1	2-1/2	5	TC25814	76.90	-	-	TC25840	84.59	-	-
1/2	1/2	1	3	5	TC25816	115.35	TC25826	121.06	TC25842	126.88	TC25852	133.17
1/2	1/2	1-1/4	3	5	TC25818	115.35	TC25828	121.06	TC25844	126.88	TC25854	133.17
5/8	5/8	1-5/8	3-1/2	5	TC25820	208.82	TC25830	214.53	TC25846	219.26	TC25856	225.25
3/4	3/4	1-5/8	4	5	TC25822	288.51	TC25832	294.22	TC25848	302.93	TC25858	308.94
1	1	2	4	5	TC25824	538.58	TC25834	544.29	TC25850	565.50	TC25860	571.51

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 191, 194-195.

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

HIGH PERFORMANCE



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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 #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE	ROUND SHANK ITEM #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE
1/4	1/4	1-1/8	3	5	TC25862	56.45	-	-	TC25888	62.10	-	-
5/16	5/16	1-1/8	3	5	TC25864	78.09	-	-	TC25890	85.90	-	-
3/8	3/8	1-1/4	3	5	TC25866	104.89	-	-	TC25892	115.38	-	-
1/2	1/2	1-1/2	4	5	TC25868	144.83	TC25878	150.53	TC25894	159.31	TC25904	165.59
1/2	1/2	2	4	5	TC25870	160.60	TC25880	166.31	TC25896	176.65	TC25906	182.94
5/8	5/8	2-1/4	5	5	TC25872	298.68	TC25882	304.39	TC25898	313.62	TC25908	319.61
3/4	3/4	2-1/4	5	5	TC25874	361.41	TC25884	367.12	TC25900	379.48	TC25910	385.48
1	1	2-1/4	5	5	TC25876	595.65	TC25886	601.35	TC25902	625.43	TC25912	631.43

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 #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE	ROUND SHANK ITEM #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE
1/4	1/4	1-1/2	4	5	TC25914	67.43	-	-	TC25942	74.17	-	-
3/8	3/8	2	4	5	TC25916	118.21	-	-	TC25944	130.02	-	-
1/2	1/2	3	6	5	TC25918	226.46	TC25930	232.18	TC25946	249.11	TC25958	255.40
5/8	5/8	3	6	5	TC25920	322.09	TC25932	327.82	TC25948	338.21	TC25960	344.21
3/4	3/4	3	6	5	TC25922	425.18	TC25934	430.88	TC25950	446.42	TC25962	452.43
3/4	3/4	4	7	5	TC25924	698.18	TC25936	703.91	TC25952	733.10	TC25964	739.10
1	1	3	6	5	TC25926	693.16	TC25938	698.88	TC25954	727.82	TC25966	733.82
1	1	4-1/4	7	5	TC25928	1,023.25	TC25940	1,029.38	TC25956	1,073.50	TC25968	1,079.62

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 191, 194-195.

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



YOUR #1 SOURCE FOR AMERICAN-MADE PREMIUM CUTTING TOOLS

MADE IN THE
USA

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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 #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE	ROUND SHANK ITEM #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE
1/8	1/8	1/4	1-1/2	5	0.008	TC25975	32.95	-	-	TC25995	36.25	-	-
3/16	3/16	3/8	2	5	0.008	TC25976	41.15	-	-	TC25996	45.27	-	-
1/4	1/4	3/8	2	5	0.015	TC25977	48.52	-	-	TC25986	53.37	-	-
5/16	5/16	7/16	2	5	0.015	TC25978	65.30	-	-	TC25987	71.84	-	-
3/8	3/8	1/2	2	5	0.015	TC25979	71.87	-	-	TC25988	79.05	-	-
1/2	1/2	5/8	2-1/2	5	0.030	TC25980	109.86	TC25983	115.57	TC25989	120.85	TC25992	127.13
5/8	5/8	3/4	3	5	0.030	TC25981	207.10	TC25984	212.81	TC25990	217.46	TC25993	223.45
3/4	3/4	1	3	5	0.030	TC25982	270.11	TC25985	275.82	TC25991	283.62	TC25994	289.62

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



Four high capacity Platit PL1001 coating machines enables TITAN USA to provide uninterrupted tool coating production.

FOR VI PRO TECHNICAL AND COATING INFORMATION, PLEASE SEE PAGES 191, 194-195.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.000, -.002	-.0001, -.0004	+0.001, -.001
5/8" - 3/4"	+0.000, -.003	-.0001, -.0004	+0.001, -.001

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VI-PRO**VARIABLE INDEX****REGULAR LENGTH - 5 FLUTE -  CORNER RADIUS****SERIES V51RR**
ALTiN COATED**SERIES V52RR**
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 #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE	ROUND SHANK ITEM #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE
1/4	1/4	3/4	2-1/2	5	0.015	TC26201	53.93	-	-	TC26416	59.32	-	-
1/4	1/4	3/4	2-1/2	5	0.030	TC26204	53.93	-	-	TC26419	59.32	-	-
1/4	1/4	3/4	2-1/2	5	0.060	TC26207	53.93	-	-	TC26422	59.32	-	-
5/16	5/16	13/16	2-1/2	5	0.015	TC26210	69.47	-	-	TC26425	76.42	-	-
5/16	5/16	13/16	2-1/2	5	0.030	TC26213	69.47	-	-	TC26428	76.42	-	-
5/16	5/16	13/16	2-1/2	5	0.060	TC26216	69.47	-	-	TC26431	76.42	-	-
3/8	3/8	1	2-1/2	5	0.015	TC26219	81.13	-	-	TC26434	89.24	-	-
3/8	3/8	1	2-1/2	5	0.030	TC26222	81.13	-	-	TC26437	89.24	-	-
3/8	3/8	1	2-1/2	5	0.060	TC26225	81.13	-	-	TC26440	89.24	-	-
1/2	1/2	1	3	5	0.015	TC26228	129.60	TC26321	136.09	TC26443	142.56	TC26625	149.70
1/2	1/2	1	3	5	0.030	TC26231	129.60	TC26324	136.09	TC26446	142.56	TC26628	149.70
1/2	1/2	1	3	5	0.060	TC26234	129.60	TC26327	136.09	TC26449	142.56	TC26631	149.70
1/2	1/2	1	3	5	0.090	TC26237	129.60	TC26330	136.09	TC26452	142.56	TC26634	149.70
1/2	1/2	1	3	5	0.120	TC26240	129.60	TC26333	136.09	TC26455	142.56	TC26637	149.70
1/2	1/2	1-1/4	3	5	0.015	TC26243	129.60	TC26336	136.09	TC26458	142.56	TC26640	149.70
1/2	1/2	1-1/4	3	5	0.030	TC26246	129.60	TC26339	136.09	TC26461	142.56	TC26643	149.70
1/2	1/2	1-1/4	3	5	0.060	TC26249	129.60	TC26342	136.09	TC26464	142.56	TC26646	149.70
1/2	1/2	1-1/4	3	5	0.090	TC26252	129.60	TC26345	136.09	TC26467	142.56	TC26649	149.70
1/2	1/2	1-1/4	3	5	0.120	TC26255	129.60	TC26348	136.09	TC26470	142.56	TC26652	149.70
5/8	5/8	1-5/8	3-1/2	5	0.030	TC26258	218.35	TC26351	224.07	TC26473	229.27	TC26655	235.27
5/8	5/8	1-5/8	3-1/2	5	0.060	TC26261	218.35	TC26354	224.07	TC26476	229.27	TC26658	235.27
5/8	5/8	1-5/8	3-1/2	5	0.090	TC26264	218.35	TC26357	224.07	TC26479	229.27	TC26661	235.27
5/8	5/8	1-5/8	3-1/2	5	0.120	TC26267	218.35	TC26360	224.07	TC26482	229.27	TC26664	235.27
3/4	3/4	1-5/8	4	5	0.030	TC26270	302.79	TC26363	308.51	TC26485	317.93	TC26667	323.93
3/4	3/4	1-5/8	4	5	0.060	TC26273	302.79	TC26366	308.51	TC26488	317.93	TC26670	323.93
3/4	3/4	1-5/8	4	5	0.090	TC26276	302.79	TC26369	308.51	TC26491	317.93	TC26673	323.93
3/4	3/4	1-5/8	4	5	0.120	TC26279	302.79	TC26372	308.51	TC26494	317.93	TC26676	323.93
3/4	3/4	1-5/8	4	5	0.190	TC26280	302.79	TC26373	308.51	TC26495	317.93	TC26677	323.93
3/4	3/4	1-5/8	4	5	0.250	TC26281	302.79	TC26374	308.51	TC26496	317.93	TC26678	323.93
1	1	2	4	5	0.030	TC26282	552.85	TC26375	558.57	TC26497	580.50	TC26679	586.49
1	1	2	4	5	0.060	TC26285	552.85	TC26378	558.57	TC26500	580.50	TC26682	586.49
1	1	2	4	5	0.090	TC26288	552.85	TC26381	558.57	TC26503	580.50	TC26685	586.49
1	1	2	4	5	0.120	TC26291	552.85	TC26384	558.57	TC26506	580.50	TC26688	586.49
1	1	2	4	5	0.190	TC26292	552.85	TC26385	558.57	TC26507	580.50	TC26689	586.49
1	1	2	4	5	0.250	TC26293	552.85	TC26386	558.57	TC26508	580.50	TC26690	586.49

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 191, 194-195.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/4" - 1/2"	+0.00, -.002	-.0001, -.0004	+0.01, -.001
5/8" - 1"	+0.00, -.003	-.0001, -.0004	+0.01, -.001

Carbide Endmills

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VARIABLE INDEX

LONG LENGTH - 5 FLUTE -  CORNER RADIUS



 **CORNER RADIUS**

SERIES V51LR
ALTIN COATED

SERIES V52LR
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 #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE	ROUND SHANK ITEM #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE
1/4	1/4	1-1/8	3	5	0.015	TC26928	60.81	-	-	TC27109	66.89	-	-
1/4	1/4	1-1/8	3	5	0.030	TC26931	60.81	-	-	TC27112	66.89	-	-
5/16	5/16	1-1/8	3	5	0.015	TC26934	82.84	-	-	TC27115	91.12	-	-
5/16	5/16	1-1/8	3	5	0.030	TC26937	82.84	-	-	TC27118	91.12	-	-
3/8	3/8	1-1/4	3	5	0.030	TC26940	109.63	-	-	TC27121	120.60	-	-
3/8	3/8	1-1/4	3	5	0.060	TC26943	109.63	-	-	TC27124	120.60	-	-
1/2	1/2	2	4	5	0.030	TC26946	170.08	TC27000	175.79	TC27127	187.09	TC27262	193.37
1/2	1/2	2	4	5	0.060	TC26949	170.08	TC27003	175.79	TC27130	187.09	TC27265	193.37
5/8	5/8	2-1/4	5	5	0.030	TC26952	308.16	TC27006	313.88	TC27133	323.57	TC27268	329.57
5/8	5/8	2-1/4	5	5	0.060	TC26955	308.16	TC27009	313.88	TC27136	323.57	TC27271	329.57
3/4	3/4	2-1/4	5	5	0.030	TC26958	388.06	TC27012	395.49	TC27139	407.46	TC27274	415.26
3/4	3/4	2-1/4	5	5	0.060	TC26961	388.06	TC27015	395.49	TC27142	407.46	TC27277	415.26
1	1	2-1/4	5	5	0.030	TC26964	605.13	TC27018	610.84	TC27145	635.38	TC27280	641.38
1	1	2-1/4	5	5	0.060	TC26967	605.13	TC27021	610.84	TC27148	635.38	TC27283	641.38



Preparing tools in our state-of-the-art, PVD coating center

FOR VI PRO TECHNICAL AND COATING INFORMATION, PLEASE SEE PAGES 191, 194-195.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/4" - 1/2"	+0.00, -.002	-.0001, -.0004	+0.01, -.001
5/8" - 1"	+0.00, -.003	-.0001, -.0004	+0.01, -.001

Carbide Endmills

HIGH PERFORMANCE



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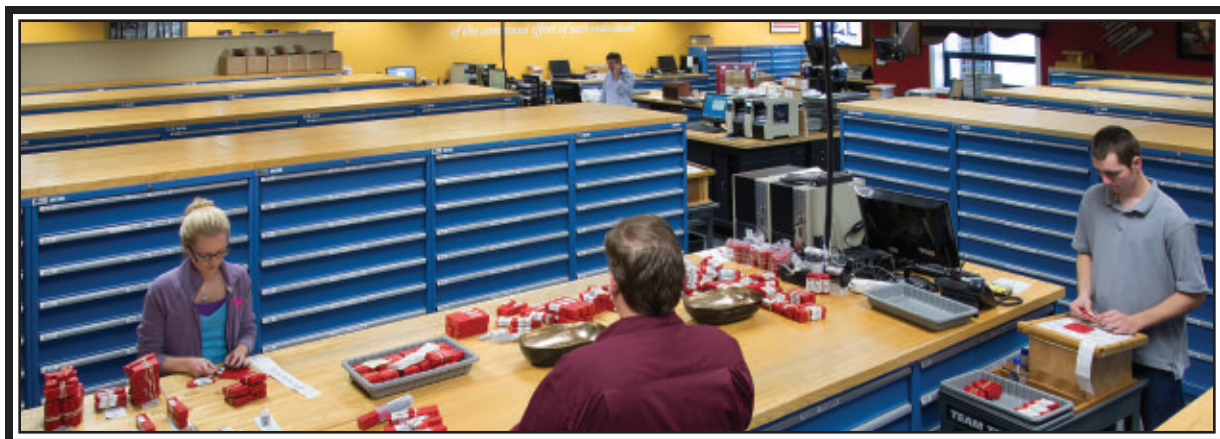
VARIABLE INDEX

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 #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE	ROUND SHANK ITEM #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE
1/4	1/4	1-1/2	4	5	0.015	TC27604	74.00	-	-	TC27928	81.41	-	-
1/4	1/4	1-1/2	4	5	0.030	TC27607	74.00	-	-	TC27931	81.41	-	-
3/8	3/8	2	4	5	0.030	TC27610	125.34	-	-	TC27934	137.88	-	-
3/8	3/8	2	4	5	0.060	TC27613	125.34	-	-	TC27937	137.88	-	-
1/2	1/2	3	6	5	0.030	TC27616	233.61	TC27768	239.32	TC27940	256.97	TC28002	263.25
1/2	1/2	3	6	5	0.060	TC27619	233.61	TC27771	239.32	TC27943	256.97	TC28005	263.25
5/8	5/8	3	6	5	0.030	TC27622	329.19	TC27774	334.90	TC27946	345.65	TC28008	351.64
5/8	5/8	3	6	5	0.060	TC27625	329.19	TC27777	334.90	TC27949	345.65	TC28011	351.64
3/4	3/4	3	6	5	0.030	TC27628	434.65	TC27780	440.36	TC27952	456.38	TC28014	462.38
3/4	3/4	3	6	5	0.060	TC27631	434.65	TC27783	440.36	TC27955	456.38	TC28017	462.38
3/4	3/4	4	7	5	0.030	TC27634	707.68	TC27786	713.39	TC27958	743.06	TC28020	749.06
3/4	3/4	4	7	5	0.060	TC27637	707.68	TC27789	713.39	TC27961	743.06	TC28023	749.06
1	1	3	6	5	0.030	TC27640	711.45	TC27792	717.16	TC27964	747.02	TC28026	753.02
1	1	3	6	5	0.060	TC27643	711.45	TC27795	717.16	TC27967	747.02	TC28029	753.02
1	1	4-1/4	7	5	0.030	TC27646	1,033.06	TC27798	1,039.18	TC27970	1,082.85	TC28032	1,089.54
1	1	4-1/4	7	5	0.060	TC27649	1,033.06	TC27801	1,039.18	TC27973	1,082.85	TC28035	1,089.54



TITAN USA has over 13,000 items in stock and ready to ship

FOR VI PRO TECHNICAL AND COATING INFORMATION, PLEASE SEE PAGES 191, 194-195.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/4" - 1/2"	+0.00, -.002	-.0001, -.0004	+.001, -.001
5/8" - 1"	+0.00, -.003	-.0001, -.0004	+.001, -.001

Carbide Endmills

HIGH PERFORMANCE

Terminator

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



SERIES 605
ALTIN COATED

SERIES 645
ALCRO-MAX COATED

**TAKE 55%
OFF LIST
PRICES**

Terminator					ALTIN COATED				ALCRO-MAX COATED			
SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLTS	ROUND SHANK ITEM #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE	ROUND SHANK ITEM #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE
1/4	1/4	3/4	2-1/2	6	TC60516	88.10	-	-	TC64516	96.90	-	-
5/16	5/16	13/16	2-1/2	6	TC60520	104.63	-	-	TC64520	115.10	-	-
3/8	3/8	1	2-1/2	6	TC60524	112.76	-	-	TC64524	124.04	-	-
1/2	1/2	1-1/4	3	6	TC60532	150.76	TC60569	158.29	TC64532	165.83	TC64579	174.12
5/8	5/8	1-5/8	3-1/2	6	TC60540	251.24	TC60571	258.77	TC64540	263.79	TC64581	271.71
3/4	3/4	1-5/8	4	6	TC60548	315.37	TC60573	324.82	TC64548	331.12	TC64583	341.06
1	1	2	4	6	TC60564	483.02	TC60575	492.67	TC64564	507.16	TC64585	517.31

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 #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE	ROUND SHANK ITEM #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE
1/4	1/4	3/4	2-1/2	6	.015	TC60616	98.34	-	-	TC67116	108.18	-	-
5/16	5/16	13/16	2-1/2	6	.015	TC60620	116.84	-	-	TC67120	128.51	-	-
3/8	3/8	1	2-1/2	6	.015	TC60624	125.93	-	-	TC67124	138.50	-	-
1/2	1/2	1-1/4	3	6	.030	TC60632	168.33	TC60682	176.73	TC67132	185.15	TC67184	194.41
5/8	5/8	1-5/8	3-1/2	6	.030	TC60640	268.31	TC60684	276.35	TC67140	281.72	TC67186	290.17
3/4	3/4	1-5/8	4	6	.060	TC60648	336.80	TC60686	346.90	TC67148	353.63	TC67188	364.24
1	1	2	4	6	.060	TC60664	515.83	TC60688	531.31	TC67164	541.63	TC67190	557.87

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 5. FOR TECHNICAL INFORMATION, PLEASE SEE PAGES 196-197.

TOLERANCES	DIAMETER	SHANK	RADIUS
ALL SIZES	+ .000, -.002	-.0001, -.0004	+ .001, -.001

**TAKE 55%
OFF LIST
PRICES**

Terminator

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 #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE	ROUND SHANK ITEM #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE
1/4	1/4	1-1/8	3	6	TC61016	97.12	-	-	TC61316	106.85	-	-
5/16	5/16	1-1/8	3	6	TC61020	113.33	-	-	TC61320	124.65	-	-
3/8	3/8	1-1/4	3	6	TC61024	128.79	-	-	TC61324	141.68	-	-
1/2	1/2	2	4	6	TC61032	200.32	TC61067	210.33	TC61332	220.34	TC61384	231.36
5/8	5/8	2-1/4	5	6	TC61040	311.18	TC61069	320.53	TC61340	326.75	TC61386	336.55
3/4	3/4	2-1/4	5	6	TC61048	388.62	TC61071	400.28	TC61348	408.05	TC61388	420.29
1	1	3	6	6	TC61064	787.65	TC61073	803.40	TC61364	827.03	TC61390	843.57

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 #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE	ROUND SHANK ITEM #	LIST PRICE	WELDON FLAT ITEM #	LIST PRICE
1/4	1/4	1-1/8	3	6	.015	TC61116	108.46	—	—	TC61216	119.29	—	—
5/16	5/16	1-1/8	3	6	.015	TC61120	126.53	—	—	TC61220	139.17	—	—
3/8	3/8	1-1/4	3	6	.015	TC61124	143.82	—	—	TC61224	158.19	—	—
1/2	1/2	2	4	6	.030	TC61132	223.65	TC61167	234.82	TC61232	246.00	TC61287	258.30
5/8	5/8	2-1/4	5	6	.030	TC61140	332.33	TC61169	342.32	TC61240	348.96	TC61289	359.43
3/4	3/4	2-1/4	5	6	.060	TC61148	415.03	TC61171	427.49	TC61248	435.79	TC61291	448.87
1	1	3	6	6	.060	TC61164	841.15	TC61173	857.99	TC61264	883.23	TC61293	900.89

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 5. FOR TECHNICAL INFORMATION, PLEASE SEE PAGES 196-197.

TOLERANCES	DIAMETER	SHANK	RADIUS
ALL SIZES	+.000, -.002	-.0001, -.0004	+.001, -.001



YOUR #1 SOURCE FOR AMERICAN-MADE PREMIUM CUTTING TOOLS

MADE IN THE
USA

Carbide Endmills

HIGH PERFORMANCE

FINE PITCH ROUGHER - STUB LENGTH - 4 FLUTE - 30° HELIX



SERIES 203
UNCOATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
1/4	1/4	3/8	2	4	TC20316	44.69
5/16	5/16	1/2	2	4	TC20320	61.55
3/8	3/8	9/16	2	4	TC20324	71.79
1/2	1/2	5/8	2-1/2	4	TC20332	91.47
5/8	5/8	3/4	3	4	TC20340	193.87
3/4	3/4	1	3	4	TC20348	237.12

**TAKE 55%
OFF LIST
PRICES**

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

HARDENED STEELS ■ TITANIUM ■ INCONEL ■ SPACE AGE MATERIALS



"Order today, will ship today" Same day shipping till 6pm EST

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION, PLEASE SEE PAGE 198.

TOLERANCES	DIAMETER	SHANK
1/4" - 1/2"	+.000, -.002	-.0001, -.0004
5/8" - 3/4"	+.000, -.003	-.0001, -.0004

FINE PITCH ROUGHER - STUB LENGTH - 4 FLUTE - 30° HELIX

**TAKE 55%
OFF LIST
PRICES**



SERIES 293
ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
1/4	1/4	3/8	2	4	TC29316	54.79
5/16	5/16	1/2	2	4	TC29320	76.94
3/8	3/8	9/16	2	4	TC29324	89.75
1/2	1/2	5/8	2-1/2	4	TC29332	112.17
5/8	5/8	3/4	3	4	TC29340	242.33
3/4	3/4	1	3	4	TC29348	290.83



SERIES 394
ALCRO-MAX COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
1/4	1/4	3/8	2	4	TC39416	60.28
5/16	5/16	1/2	2	4	TC39420	84.64
3/8	3/8	9/16	2	4	TC39424	98.72
1/2	1/2	5/8	2-1/2	4	TC39432	123.38
5/8	5/8	3/4	3	4	TC39440	266.56
3/4	3/4	1	3	4	TC39448	319.92

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

HARDENED STEELS ■ TITANIUM ■ INCONEL ■ SPACE AGE MATERIALS

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION, PLEASE SEE PAGE 198.

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

Carbide Endmills

HIGH PERFORMANCE

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



SERIES 205
UNCOATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
1/4	1/4	3/4	2-1/2	4	TC20516	49.66
5/16	5/16	13/16	2-1/2	4	TC20520	68.39
3/8	3/8	7/8	2-1/2	4	TC20524	79.77
1/2	1/2	1-1/4	3	4	TC20532	101.64
5/8	5/8	1-5/8	3-1/2	4	TC20540	215.41
3/4	3/4	1-5/8	4	4	TC20548	263.46
1	1	2	4	4	TC20564	489.26

**TAKE 55%
OFF LIST
PRICES**



SERIES 295
ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
1/4	1/4	3/4	2-1/2	4	TC29516	61.46
5/16	5/16	13/16	2-1/2	4	TC29520	85.49
3/8	3/8	7/8	2-1/2	4	TC29524	99.72
1/2	1/2	1-1/4	3	4	TC29532	125.83
5/8	5/8	1-5/8	3-1/2	4	TC29540	269.24
3/4	3/4	1-5/8	4	4	TC29548	326.22
1	1	2	4	4	TC29564	600.01



SERIES 399
ALCRO-MAX COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
1/4	1/4	3/4	2-1/2	4	TC39916	67.61
5/16	5/16	13/16	2-1/2	4	TC39920	94.04
3/8	3/8	7/8	2-1/2	4	TC39924	109.68
1/2	1/2	1-1/4	3	4	TC39932	138.41
5/8	5/8	1-5/8	3-1/2	4	TC39940	296.17
3/4	3/4	1-5/8	4	4	TC39948	358.84
1	1	2	4	4	TC39964	660.17

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

HARDENED STEELS ■ TITANIUM ■ INCONEL ■ SPACE AGE MATERIALS

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION, PLEASE SEE PAGE 198.

TOLERANCES	DIAMETER	SHANK
1/4" - 1/2"	+.000, -.002	-.0001, -.0004
5/8" - 1"	+.000, -.003	-.0001, -.0004

Carbide Endmills

HIGH PERFORMANCE



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

**TAKE 55%
OFF LIST
PRICES****SERIES 206**
UNCOATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
1/4	1/4	1-1/2	4	4	TC20616	70.39
5/16	5/16	1-1/2	4	4	TC20620	90.27
3/8	3/8	1-3/4	4	4	TC20624	112.85
1/2	1/2	2	4	4	TC20632	130.33
5/8	5/8	2-1/2	5	4	TC20640	305.42
3/4	3/4	2-1/2	5	4	TC20648	367.54
1	1	2-1/2	5	4	TC20664	627.87

**SERIES 296**
ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
1/4	1/4	1-1/2	4	4	TC29616	88.01
5/16	5/16	1-1/2	4	4	TC29620	112.85
3/8	3/8	1-3/4	4	4	TC29624	141.08
1/2	1/2	2	4	4	TC29632	163.05
5/8	5/8	2-1/2	5	4	TC29640	383.58
3/4	3/4	2-1/2	5	4	TC29648	460.72
1	1	2-1/2	5	4	TC29664	786.16

**SERIES 397**
ALCRO-MAX COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
1/4	1/4	1-1/2	4	4	TC39716	96.82
5/16	5/16	1-1/2	4	4	TC39720	124.14
3/8	3/8	1-3/4	4	4	TC39724	155.19
1/2	1/2	2	4	4	TC39732	179.24
5/8	5/8	2-1/2	5	4	TC39740	421.94
3/4	3/4	2-1/2	5	4	TC39748	506.79
1	1	2-1/2	5	4	TC39764	864.78

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

HARDENED STEELS ■ TITANIUM ■ INCONEL ■ SPACE AGE MATERIALS

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION, PLEASE SEE PAGE 198.

TOLERANCES	DIAMETER	SHANK
1/4" - 1/2"	+.000, -.002	-.0001, -.0004
5/8" - 1"	+.000, -.003	-.0001, -.0004



YOUR #1 SOURCE FOR AMERICAN-MADE PREMIUM CUTTING TOOLS

MADE IN THE
USA

Carbide Endmills

HIGH PERFORMANCE

FINE PITCH ROUGHER - REGULAR LENGTH - 4 FLUTE - BALL NOSE - 30° HELIX

**SERIES 207**
UNCOATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
1/4	1/4	3/4	2-1/2	4	TC20716	64.35
5/16	5/16	7/8	2-1/2	4	TC20720	82.50
3/8	3/8	1	2-1/2	4	TC20724	105.60
1/2	1/2	1-1/4	3	4	TC20732	145.20
5/8	5/8	1-5/8	3-1/2	4	TC20740	253.00
3/4	3/4	1-5/8	4	4	TC20748	353.10
1	1	2	4	4	TC20764	577.50

**TAKE 55%
OFF LIST
PRICES****SERIES 299**
ALTiN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
1/4	1/4	3/4	2-1/2	4	TC29916	77.00
5/16	5/16	7/8	2-1/2	4	TC29920	99.00
3/8	3/8	1	2-1/2	4	TC29924	126.50
1/2	1/2	1-1/4	3	4	TC29932	173.80
5/8	5/8	1-5/8	3-1/2	4	TC29940	303.60
3/4	3/4	1-5/8	4	4	TC29948	423.50
1	1	2	4	4	TC29964	687.50

**SERIES 393**
ALCrO-MAX COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
1/4	1/4	3/4	2-1/2	4	TC39316	84.70
5/16	5/16	7/8	2-1/2	4	TC39320	108.90
3/8	3/8	1	2-1/2	4	TC39324	139.15
1/2	1/2	1-1/4	3	4	TC39332	191.40
5/8	5/8	1-5/8	3-1/2	4	TC39340	333.30
3/4	3/4	1-5/8	4	4	TC39348	465.30
1	1	2	4	4	TC39364	748.00

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

HARDENED STEELS ■ TITANIUM ■ INCONEL ■ SPACE AGE MATERIALS

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION, PLEASE SEE PAGE 198.

TOLERANCES	DIAMETER	SHANK
1/4" - 1/2"	+ .000, - .002	- .0001, - .0004
5/8" - 1"	+ .000, - .003	- .0001, - .0004

Carbide Endmills

HIGH PERFORMANCE

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

**TAKE 55%
OFF LIST
PRICES**



SERIES 297
UNCOATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	LIST PRICE
1/4	1/4	3/4	2-1/2	4	0.020	TC29716	85.16
5/16	5/16	13/16	2-1/2	4	0.020	TC29720	92.24
3/8	3/8	7/8	2-1/2	4	0.020	TC29724	100.23
1/2	1/2	1-1/4	3	4	0.040	TC29732	115.84
5/8*	5/8	1-5/8	3-1/2	4	0.040	TC29740	230.69
3/4*	3/4	1-5/8	4	4	0.040	TC29748	308.19
1*	1	1-5/8	4	4	0.040	TC29764	502.96

* WITH WELDON FLATS



SERIES 298
ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	LIST PRICE
1/4	1/4	3/4	2-1/2	4	0.020	TC29816	106.46
5/16	5/16	13/16	2-1/2	4	0.020	TC29820	115.29
3/8	3/8	7/8	2-1/2	4	0.020	TC29824	125.28
1/2	1/2	1-1/4	3	4	0.040	TC29832	144.83
5/8*	5/8	1-5/8	3-1/2	4	0.040	TC29840	288.35
3/4*	3/4	1-5/8	4	4	0.040	TC29848	385.26
1*	1	1-5/8	4	4	0.040	TC29864	628.72

* 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 5. FOR TECHNICAL INFORMATION, PLEASE SEE PAGE 198.

TOLERANCES	DIAMETER	SHANK	RADIUS
ALL SIZES	+0.00, -.002	-.0001, -.0004	+0.02, -.002

Carbide Endmills

HIGH PERFORMANCE

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



SERIES 305
UNCOATED



SERIES 395
ALTIN COATED

**TAKE 55%
OFF LIST
PRICES**

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	3	TC30508	22.87
3/16	3/16	5/8	2	3	TC30512	27.38
1/4	1/4	3/4	2-1/2	3	TC30516	29.34
5/16	5/16	13/16	2-1/2	3	TC30520	35.50
3/8	3/8	1	2-1/2	3	TC30524	47.52
1/2	1/2	1-1/4	3	3	TC30532	81.05
5/8	5/8	1-5/8	3-1/2	3	TC30540	161.35
3/4	3/4	1-5/8	4	3	TC30548	226.44

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	3	TC39508	28.56
3/16	3/16	5/8	2	3	TC39512	34.21
1/4	1/4	3/4	2-1/2	3	TC39516	36.68
5/16	5/16	13/16	2-1/2	3	TC39520	44.37
3/8	3/8	1	2-1/2	3	TC39524	59.40
1/2	1/2	1-1/4	3	3	TC39532	101.34
5/8	5/8	1-5/8	3-1/2	3	TC39540	201.68
3/4	3/4	1-5/8	4	3	TC39548	283.02

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#	LIST PRICE
1/8	1/8	1/2	1-1/2	3	0.010	TC30608	25.51
3/16	3/16	5/8	2	3	0.010	TC30612	30.56
1/4	1/4	3/4	2-1/2	3	0.020	TC30616	32.78
5/16	5/16	13/16	2-1/2	3	0.020	TC30620	39.61
3/8	3/8	1	2-1/2	3	0.020	TC30624	53.07
1/2	1/2	1-1/4	3	3	0.040	TC30632	90.50
5/8	5/8	1-5/8	3-1/2	3	0.040	TC30640	172.30
3/4	3/4	1-5/8	4	3	0.040	TC30648	241.80

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	3	0.010	TC39608	31.88
3/16	3/16	5/8	2	3	0.010	TC39612	38.18
1/4	1/4	3/4	2-1/2	3	0.020	TC39616	40.94
5/16	5/16	13/16	2-1/2	3	0.020	TC39620	49.53
3/8	3/8	1	2-1/2	3	0.020	TC39624	66.34
1/2	1/2	1-1/4	3	3	0.040	TC39632	113.12
5/8	5/8	1-5/8	3-1/2	3	0.040	TC39640	215.39
3/4	3/4	1-5/8	4	3	0.040	TC39648	302.27

These 60° tools are designed to machine all high temperature alloys. This 3 flute high shear design geometry will slot and profile while giving excellent surface finishes.

Works well in all high temperature alloys such as inconels, hastalloy, waspalloys and titanium.

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION, PLEASE SEE PAGES 196-197.

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

Carbide Endmills

HIGH PERFORMANCE



**TAKE 55%
OFF LIST
PRICES**

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



SERIES 405
UNCOATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	3	TC40508	22.87
3/16	3/16	5/8	2	3	TC40512	27.38
1/4	1/4	3/4	2-1/2	3	TC40516	29.34
5/16	5/16	13/16	2-1/2	3	TC40520	35.50
3/8	3/8	1	2-1/2	3	TC40524	47.52
1/2	1/2	1-1/4	3	3	TC40532	81.05
5/8	5/8	1-5/8	3-1/2	3	TC40540	161.35
3/4	3/4	1-5/8	4	3	TC40548	226.44



SERIES 495
ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	3	TC49508	28.56
3/16	3/16	5/8	2	3	TC49512	34.21
1/4	1/4	3/4	2-1/2	3	TC49516	36.68
5/16	5/16	13/16	2-1/2	3	TC49520	44.37
3/8	3/8	1	2-1/2	3	TC49524	59.40
1/2	1/2	1-1/4	3	3	TC49532	101.34
5/8	5/8	1-5/8	3-1/2	3	TC49540	201.68
3/4	3/4	1-5/8	4	3	TC49548	283.02

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

SERIES 407
UNCOATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	3	0.010	TC40708	25.51
3/16	3/16	5/8	2	3	0.010	TC40712	30.56
1/4	1/4	3/4	2-1/2	3	0.020	TC40716	32.78
5/16	5/16	13/16	2-1/2	3	0.020	TC40720	39.61
3/8	3/8	1	2-1/2	3	0.020	TC40724	53.07
1/2	1/2	1-1/4	3	3	0.040	TC40732	90.50
5/8	5/8	1-5/8	3-1/2	3	0.040	TC40740	172.30
3/4	3/4	1-5/8	4	3	0.040	TC40748	241.80



SERIES 497
ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	3	0.010	TC49708	31.88
3/16	3/16	5/8	2	3	0.010	TC49712	38.18
1/4	1/4	3/4	2-1/2	3	0.020	TC49716	40.94
5/16	5/16	13/16	2-1/2	3	0.020	TC49720	49.53
3/8	3/8	1	2-1/2	3	0.020	TC49724	66.34
1/2	1/2	1-1/4	3	3	0.040	TC49732	113.12
5/8	5/8	1-5/8	3-1/2	3	0.040	TC49740	215.39
3/4	3/4	1-5/8	4	3	0.040	TC49748	302.27

These 3 flute 45° tools are designed to slot and profile at higher speeds and feeds while providing a shearing action that produces excellent finishes.

Works well in stainless steel and other similar alloys

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION, PLEASE SEE PAGES 196-197.

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

Carbide Endmills

HIGH PERFORMANCE

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



SERIES 614
UNCOATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
1/8	1/8	1/4	1-1/2	5	TC61408	11.20
3/16	3/16	3/8	2	5	TC61412	19.61
1/4	1/4	1/2	2	5	TC61416	23.65
5/16	5/16	1/2	2	5	TC61420	28.41
3/8	3/8	5/8	2	5	TC61424	46.73
7/16	7/16	5/8	2-1/2	5	TC61428	53.43
1/2	1/2	5/8	2-1/2	5	TC61432	61.69
5/8	5/8	3/4	3	5	TC61440	109.57
3/4	3/4	1	3	5	TC61448	147.65



SERIES 615
ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
1/8	1/8	1/4	1-1/2	5	TC61508	14.13
3/16	3/16	3/8	2	5	TC61512	23.47
1/4	1/4	1/2	2	5	TC61516	28.09
5/16	5/16	1/2	2	5	TC61520	35.50
3/8	3/8	5/8	2	5	TC61524	55.61
7/16	7/16	5/8	2-1/2	5	TC61528	63.59
1/2	1/2	5/8	2-1/2	5	TC61532	73.50
5/8	5/8	3/4	3	5	TC61540	132.65
3/4	3/4	1	3	5	TC61548	182.25

**TAKE 55%
OFF LIST
PRICES**

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



SERIES 616
UNCOATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	LIST PRICE
1/8	1/8	1/4	1-1/2	5	0.010	TC61608	12.49
3/16	3/16	3/8	2	5	0.010	TC61612	21.90
1/4	1/4	1/2	2	5	0.020	TC61616	26.41
5/16	5/16	1/2	2	5	0.020	TC61620	31.71
3/8	3/8	5/8	2	5	0.020	TC61624	52.17
7/16	7/16	5/8	2-1/2	5	0.020	TC61628	59.65
1/2	1/2	5/8	2-1/2	5	0.040	TC61632	68.89
5/8	5/8	3/4	3	5	0.040	TC61640	117.02
3/4	3/4	1	3	5	0.040	TC61648	157.67



SERIES 617
ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	LIST PRICE
1/8	1/8	1/4	1-1/2	5	0.010	TC61708	15.78
3/16	3/16	3/8	2	5	0.010	TC61712	26.23
1/4	1/4	1/2	2	5	0.020	TC61716	31.38
5/16	5/16	1/2	2	5	0.020	TC61720	39.61
3/8	3/8	5/8	2	5	0.020	TC61724	62.09
7/16	7/16	5/8	2-1/2	5	0.020	TC61728	71.03
1/2	1/2	5/8	2-1/2	5	0.040	TC61732	82.05
5/8	5/8	3/4	3	5	0.040	TC61740	141.64
3/4	3/4	1	3	5	0.040	TC61748	194.63

Designed for profiling and finishing, the 5 flute 45° geometry of this tool allows it to be run 20 - 40% faster than conventional endmills while providing an excellent finish.

Works well in all exotic materials, stainless steel, carbon steels and other similar materials.

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION, PLEASE SEE PAGES 196-197.

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

Carbide Endmills

HIGH PERFORMANCE



**TAKE 55%
OFF LIST
PRICES**

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



SERIES 618
UNCOATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	5	TC61808	23.83
3/16	3/16	3/4	2	5	TC61812	29.99
1/4	1/4	3/4	2-1/2	5	TC61816	32.28
5/16	5/16	7/8	2-1/2	5	TC61820	38.97
3/8	3/8	1	2-1/2	5	TC61824	52.14
1/2	1/2	1-1/4	3	5	TC61832	97.33
5/8	5/8	1-5/8	3-1/2	5	TC61840	184.54
3/4	3/4	1-5/8	4	5	TC61848	259.51



SERIES 619
ALTiN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	5	TC61908	29.81
3/16	3/16	3/4	2	5	TC61912	35.75
1/4	1/4	3/4	2-1/2	5	TC61916	38.47
5/16	5/16	7/8	2-1/2	5	TC61920	46.31
3/8	3/8	1	2-1/2	5	TC61924	62.12
1/2	1/2	1-1/4	3	5	TC61932	121.09
5/8	5/8	1-5/8	3-1/2	5	TC61940	234.14
3/4	3/4	1-5/8	4	5	TC61948	318.34

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

SERIES 638
UNCOATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	5	0.010	TC63808	26.62
3/16	3/16	3/4	2	5	0.010	TC63812	33.49
1/4	1/4	3/4	2-1/2	5	0.020	TC63816	36.07
5/16	5/16	7/8	2-1/2	5	0.020	TC63820	43.48
3/8	3/8	1	2-1/2	5	0.020	TC63824	58.22
1/2	1/2	1-1/4	3	5	0.040	TC63832	108.68
5/8	5/8	1-5/8	3-1/2	5	0.040	TC63840	197.10
3/4	3/4	1-5/8	4	5	0.040	TC63848	277.15



SERIES 639
ALTiN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	5	0.010	TC63908	33.28
3/16	3/16	3/4	2	5	0.010	TC63912	39.90
1/4	1/4	3/4	2-1/2	5	0.020	TC63916	42.91
5/16	5/16	7/8	2-1/2	5	0.020	TC63920	51.71
3/8	3/8	1	2-1/2	5	0.020	TC63924	69.35
1/2	1/2	1-1/4	3	5	0.040	TC63932	135.19
5/8	5/8	1-5/8	3-1/2	5	0.040	TC63940	250.06
3/4	3/4	1-5/8	4	5	0.040	TC63948	339.95

Designed for profiling and finishing, the 5 flute 45° geometry of this tool allows it to be run 20 - 40% faster than conventional endmills while providing an excellent finish.

Works well in all exotic materials, stainless steel, carbon steels and other similar materials.

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION, PLEASE SEE PAGES 196-197.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.00, -0.02	-0.001, -0.004	+0.01, -0.01
5/8" - 3/4"	+0.00, -0.03	-0.001, -0.004	+0.01, -0.01

Carbide Endmills

HIGH PERFORMANCE

HP CARBIDE ENDMILLS

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



SERIES 626
UNCOATED



SERIES 627
ZRN COATED

**TAKE 55%
OFF LIST
PRICES**

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	2	TC62608	22.44
3/16	3/16	5/8	2	2	TC62612	31.28
1/4	1/4	3/4	2-1/2	2	TC62616	45.12
5/16	5/16	13/16	2-1/2	2	TC62620	53.28
3/8	3/8	1	2-1/2	2	TC62624	56.43
1/2	1/2	1-1/4	3	2	TC62632	93.40
5/8	5/8	1-5/8	3-1/2	2	TC62640	178.64
3/4	3/4	1-3/4	4	2	TC62648	256.04
1	1	1-3/4	4	2	TC62664	422.15

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	2	TC62708	28.06
3/16	3/16	5/8	2	2	TC62712	39.11
1/4	1/4	3/4	2-1/2	2	TC62716	54.57
5/16	5/16	13/16	2-1/2	2	TC62720	64.45
3/8	3/8	1	2-1/2	2	TC62724	68.21
1/2	1/2	1-1/4	3	2	TC62732	108.32
5/8	5/8	1-5/8	3-1/2	2	TC62740	216.50
3/4	3/4	1-3/4	4	2	TC62748	310.93
1	1	1-3/4	4	2	TC62764	511.83

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



 CORNER RADIUS

SERIES 646
UNCOATED



 CORNER RADIUS

SERIES 647
ZRN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	2	0.020	TC64608	26.80
3/16	3/16	5/8	2	2	0.020	TC64612	36.79
1/4	1/4	3/4	2-1/2	2	0.020	TC64616	50.38
5/16	5/16	13/16	2-1/2	2	0.020	TC64620	59.51
3/8	3/8	1	2-1/2	2	0.020	TC64624	63.02
1/2	1/2	1-1/4	3	2	0.040	TC64632	104.28
5/8	5/8	1-5/8	3-1/2	2	0.040	TC64640	190.77
3/4	3/4	1-3/4	4	2	0.040	TC64648	273.47
1	1	1-3/4	4	2	0.040	TC64664	450.85

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	2	0.020	TC64708	33.53
3/16	3/16	5/8	2	2	0.020	TC64712	45.98
1/4	1/4	3/4	2-1/2	2	0.020	TC64716	60.91
5/16	5/16	13/16	2-1/2	2	0.020	TC64720	71.96
3/8	3/8	1	2-1/2	2	0.020	TC64724	76.15
1/2	1/2	1-1/4	3	2	0.040	TC64732	120.92
5/8	5/8	1-5/8	3-1/2	2	0.040	TC64740	231.20
3/4	3/4	1-3/4	4	2	0.040	TC64748	332.08
1	1	1-3/4	4	2	0.040	TC64764	546.61

These 2 flute roughing tools are designed specifically for high speed machining in aluminum. This tool will plunge, slot and profile in all non-ferrous materials. Our ZRN coating allows for higher speed rates and prolonged tool life and does not have an affinity for aluminum.

Works well in all non-ferrous materials as well as brass and bronze applications

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION, PLEASE SEE PAGES 196-197.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.000, -.002	-.0001, -.0004	+0.001, -.001
5/8" - 1"	+0.000, -.003	-.0001, -.0004	+0.001, -.001

Carbide Endmills

HIGH PERFORMANCE



**TAKE 55%
OFF LIST
PRICES**

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



SERIES 632
UNCOATED



SERIES 633
ZRN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
1/8	1/8	3/4	2-1/4	2	TC63208	38.11
3/16	3/16	3/4	2-1/2	2	TC63212	43.94
1/4	1/4	1-1/4	3	2	TC63216	61.94
5/16	5/16	1-3/8	3	2	TC63220	80.19
3/8	3/8	1-1/2	4	2	TC63224	100.45
1/2	1/2	2	4	2	TC63232	140.74
5/8	5/8	2-3/8	5	2	TC63240	291.82
3/4	3/4	2-1/2	5	2	TC63248	320.67
1	1	2-1/4	5	2	TC63264	527.11

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
1/8	1/8	3/4	2-1/4	2	TC63308	47.63
3/16	3/16	3/4	2-1/2	2	TC63312	54.93
1/4	1/4	1-1/4	3	2	TC63316	74.86
5/16	5/16	1-3/8	3	2	TC63320	101.84
3/8	3/8	1-1/2	4	2	TC63324	121.49
1/2	1/2	2	4	2	TC63332	170.66
5/8	5/8	2-3/8	5	2	TC63340	371.41
3/4	3/4	2-1/2	5	2	TC63348	401.40
1	1	2-1/4	5	2	TC63364	632.06

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



SERIES 652
UNCOATED



SERIES 653
ZRN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	LIST PRICE
1/8	1/8	3/4	2-1/4	2	0.020	TC65208	45.70
3/16	3/16	3/4	2-1/2	2	0.020	TC65212	52.71
1/4	1/4	1-1/4	3	2	0.020	TC65216	69.17
5/16	5/16	1-3/8	3	2	0.020	TC65220	89.53
3/8	3/8	1-1/2	4	2	0.020	TC65224	112.15
1/2	1/2	2	4	2	0.040	TC65232	157.09
5/8	5/8	2-3/8	5	2	0.040	TC65240	311.65
3/4	3/4	2-1/2	5	2	0.040	TC65248	342.42
1	1	2-1/4	5	2	0.040	TC65264	562.96

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	LIST PRICE
1/8	1/8	3/4	2-1/4	2	0.020	TC65308	57.15
3/16	3/16	3/4	2-1/2	2	0.020	TC65312	65.92
1/4	1/4	1-1/4	3	2	0.020	TC65316	83.59
5/16	5/16	1-3/8	3	2	0.020	TC65320	113.69
3/8	3/8	1-1/2	4	2	0.020	TC65324	135.66
1/2	1/2	2	4	2	0.040	TC65332	190.55
5/8	5/8	2-3/8	5	2	0.040	TC65340	396.64
3/4	3/4	2-1/2	5	2	0.040	TC65348	428.66
1	1	2-1/4	5	2	0.040	TC65364	675.04

These 2 flute roughing tools are designed specifically for high speed machining in aluminum. This tool will plunge, slot and profile in all non-ferrous materials. Our ZRN coating allows for higher speed rates and prolonged tool life and does not have an affinity for aluminum.

Works well in all non-ferrous materials as well as brass and bronze applications

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION, PLEASE SEE PAGES 196-197.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.00, -0.002	-0.0001, -0.0004	+0.001, -0.001
5/8" - 1"	+0.00, -0.003	-0.0001, -0.0004	+0.001, -0.001

Carbide Endmills

HIGH PERFORMANCE

**TAKE 55%
OFF LIST
PRICES**

HP 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#	LIST PRICE
1/8	1/8	1/2	1-1/2	3	TC62808	22.44
3/16	3/16	5/8	2	3	TC62812	31.28
1/4	1/4	3/4	2-1/2	3	TC62816	45.12
5/16	5/16	13/16	2-1/2	3	TC62820	53.28
3/8	3/8	1	2-1/2	3	TC62824	56.43
1/2	1/2	1-1/4	3	3	TC62832	93.40
5/8	5/8	1-5/8	3-1/2	3	TC62840	178.64
3/4	3/4	1-3/4	4	3	TC62848	256.04
1	1	1-3/4	4	3	TC62864	422.15



SERIES 629
ZrN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	3	TC62908	28.06
3/16	3/16	5/8	2	3	TC62912	39.11
1/4	1/4	3/4	2-1/2	3	TC62916	54.57
5/16	5/16	13/16	2-1/2	3	TC62920	64.45
3/8	3/8	1	2-1/2	3	TC62924	68.21
1/2	1/2	1-1/4	3	3	TC62932	108.32
5/8	5/8	1-5/8	3-1/2	3	TC62940	216.50
3/4	3/4	1-3/4	4	3	TC62948	310.93
1	1	1-3/4	4	3	TC62964	511.83

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#	LIST PRICE
1/8	1/8	1/2	1-1/2	3	0.020	TC65808	26.80
3/16	3/16	5/8	2	3	0.020	TC65812	36.79
1/4	1/4	3/4	2-1/2	3	0.020	TC65816	50.38
5/16	5/16	13/16	2-1/2	3	0.020	TC65820	59.51
3/8	3/8	1	2-1/2	3	0.020	TC65824	63.02
1/2	1/2	1-1/4	3	3	0.040	TC65832	104.28
5/8	5/8	1-5/8	3-1/2	3	0.040	TC65840	190.77
3/4	3/4	1-3/4	4	3	0.040	TC65848	273.47
1	1	1-3/4	4	3	0.040	TC65864	450.85



SERIES 659
ZrN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	3	0.020	TC65908	33.53
3/16	3/16	5/8	2	3	0.020	TC65912	45.98
1/4	1/4	3/4	2-1/2	3	0.020	TC65916	60.91
5/16	5/16	13/16	2-1/2	3	0.020	TC65920	71.96
3/8	3/8	1	2-1/2	3	0.020	TC65924	76.15
1/2	1/2	1-1/4	3	3	0.040	TC65932	120.92
5/8	5/8	1-5/8	3-1/2	3	0.040	TC65940	231.20
3/4	3/4	1-3/4	4	3	0.040	TC65948	332.08
1	1	1-3/4	4	3	0.040	TC65964	546.61

These 3 flute roughing tools are designed specifically for high speed machining in aluminum. This tool will plunge, slot and profile in all non-ferrous materials. Our ZrN coating allows for higher speed rates and prolonged tool life and does not have an affinity for aluminum.

Works well in all non-ferrous materials as well as brass and bronze applications

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION, PLEASE SEE PAGES 196-197.

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

Carbide Endmills

HIGH PERFORMANCE



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PRICES**

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



**SERIES 634
UNCOATED**

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
1/8	1/8	3/4	2-1/4	3	TC63408	38.11
3/16	3/16	3/4	2-1/2	3	TC63412	43.94
1/4	1/4	1-1/4	3	3	TC63416	61.94
5/16	5/16	1-3/8	3	3	TC63420	80.19
3/8	3/8	1-1/2	4	3	TC63424	100.45
1/2	1/2	2	4	3	TC63432	140.74
5/8	5/8	2-3/8	5	3	TC63440	291.82
3/4	3/4	2-1/2	5	3	TC63448	320.67
1	1	2-1/4	5	3	TC63464	527.11



**SERIES 635
ZRN COATED**

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
1/8	1/8	3/4	2-1/4	3	TC63508	47.52
3/16	3/16	3/4	2-1/2	3	TC63512	54.93
1/4	1/4	1-1/4	3	3	TC63516	74.86
5/16	5/16	1-3/8	3	3	TC63520	101.84
3/8	3/8	1-1/2	4	3	TC63524	121.49
1/2	1/2	2	4	3	TC63532	170.66
5/8	5/8	2-3/8	5	3	TC63540	371.41
3/4	3/4	2-1/2	5	3	TC63548	401.40
1	1	2-1/4	5	3	TC63564	632.06

**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#	LIST PRICE
1/8	1/8	3/4	2-1/4	3	0.020	TC66408	45.70
3/16	3/16	3/4	2-1/2	3	0.020	TC66412	52.71
1/4	1/4	1-1/4	3	3	0.020	TC66416	69.17
5/16	5/16	1-3/8	3	3	0.020	TC66420	89.53
3/8	3/8	1-1/2	4	3	0.020	TC66424	112.15
1/2	1/2	2	4	3	0.040	TC66432	157.09
5/8	5/8	2-3/8	5	3	0.040	TC66440	311.65
3/4	3/4	2-1/2	5	3	0.040	TC66448	342.42
1	1	2-1/4	5	3	0.040	TC66464	562.96



**SERIES 665
ZRN COATED**

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	# OF FLUTES	CORNER RADIUS	ITEM#	LIST PRICE
1/8	1/8	3/4	2-1/4	3	0.020	TC66508	57.15
3/16	3/16	3/4	2-1/2	3	0.020	TC66512	65.92
1/4	1/4	1-1/4	3	3	0.020	TC66516	83.59
5/16	5/16	1-3/8	3	3	0.020	TC66520	113.69
3/8	3/8	1-1/2	4	3	0.020	TC66524	135.66
1/2	1/2	2	4	3	0.040	TC66532	190.55
5/8	5/8	2-3/8	5	3	0.040	TC66540	396.64
3/4	3/4	2-1/2	5	3	0.040	TC66548	428.66
1	1	2-1/4	5	3	0.040	TC66564	675.04

These 3 flute roughing tools are designed specifically for high speed machining in aluminum. This tool will plunge, slot and profile in all non-ferrous materials. Our ZRN coating allows for higher speed rates and prolonged tool life and does not have an affinity for aluminum.

Works well in all non-ferrous materials as well as brass and bronze applications

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION, PLEASE SEE PAGES 196-197.

TOLERANCES	DIAMETER	SHANK	RADIUS
1/8" - 1/2"	+0.00, -0.002	-0.0001, -0.0004	+0.001, -0.001
5/8" - 1"	+0.00, -0.003	-0.0001, -0.0004	+0.001, -0.001

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

SERIES 105
UNCOATED



SERIES 995
ALTIN COATED



SERIES 905
TICN COATED



**TAKE 55%
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PRICES**

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	UNCOATED	LIST PRICE	ALTIN	LIST PRICE	TICN	LIST PRICE
1/64	1/8	1/32	1-1/2	TC10501	25.13	TC99501	33.67	TC90501	33.67
1/32	1/8	1/8	1-1/2	TC10502	16.83	TC99502	22.75	TC90502	22.75
3/64	1/8	1/8	1-1/2	TC10503	14.39	TC99503	19.39	TC90503	19.39
1/16	1/8	1/4	1-1/2	TC10504	14.35	TC99504	16.48	TC90504	16.48
5/64	1/8	1/4	1-1/2	TC10505	14.81	TC99505	19.99	TC90505	19.99
3/32	1/8	3/8	1-1/2	TC10506	13.04	TC99506	16.48	TC90506	16.48
7/64	1/8	3/8	1-1/2	TC10507	13.61	TC99507	18.36	TC90507	18.36
1/8	1/8	1/2	1-1/2	TC10508	12.51	TC99508	15.31	TC90508	15.31
9/64	3/16	9/16	2	TC10509	18.32	TC99509	24.74	TC90509	24.74
5/32	3/16	9/16	2	TC10510	18.43	TC99510	21.37	TC90510	21.37
11/64	3/16	5/8	2	TC10511	17.51	TC99511	23.67	TC90511	23.67
3/16	3/16	5/8	2	TC10512	17.05	TC99512	21.37	TC90512	21.37
13/64	1/4	5/8	2-1/2	TC10513	24.88	TC99513	32.61	TC90513	32.61
7/32	1/4	5/8	2-1/2	TC10514	25.41	TC99514	29.52	TC90514	29.52
15/64	1/4	3/4	2-1/2	TC10515	28.71	TC99515	37.00	TC90515	37.00
1/4	1/4	3/4	2-1/2	TC10516	21.05	TC99516	29.52	TC90516	29.52
17/64	5/16	3/4	2-1/2	TC10517	37.96	TC99517	48.77	TC90517	48.77
9/32	5/16	3/4	2-1/2	TC10518	37.96	TC99518	48.77	TC90518	48.77
19/64	5/16	13/16	2-1/2	TC10519	37.96	TC99519	48.77	TC90519	48.77
5/16	5/16	13/16	2-1/2	TC10520	27.40	TC99520	35.33	TC90520	35.33
21/64	3/8	1	2-1/2	TC10521	42.56	TC99521	54.72	TC90521	54.72
11/32	3/8	1	2-1/2	TC10522	42.56	TC99522	54.72	TC90522	54.72
23/64	3/8	1	2-1/2	TC10523	42.56	TC99523	54.72	TC90523	54.72
3/8	3/8	1	2-1/2	TC10524	32.68	TC99524	40.40	TC90524	40.40
25/64	7/16	1	2-3/4	TC10525	55.71	TC99525	71.91	TC90525	71.91
13/32	7/16	1	2-3/4	TC10526	55.71	TC99526	71.91	TC90526	71.91
27/64	7/16	1	2-3/4	TC10527	57.52	TC99527	74.28	TC90527	74.28
7/16	7/16	1	2-3/4	TC10528	50.15	TC99528	61.74	TC90528	61.74
29/64	1/2	1	3	TC10529	82.79	TC99529	105.97	TC90529	105.97
15/32	1/2	1	3	TC10530	82.79	TC99530	105.97	TC90530	105.97
31/64	1/2	1	3	TC10531	82.79	TC99531	105.97	TC90531	105.97
1/2	1/2	1	3	TC10532	60.21	TC99532	75.13	TC90532	75.13
1/2	1/2	1-1/4	3	TC10533	60.21	TC99533	75.13	TC90533	75.13
9/16	9/16	1-1/4	3-1/2	TC10536	113.80	TC99536	150.27	TC90536	150.27
5/8	5/8	1-1/4	3-1/2	TC10540	115.11	TC99540	146.76	TC90540	146.76
3/4	3/4	1-1/2	4	TC10548	161.68	TC99548	208.25	TC90548	208.25
7/8	7/8	1-1/2	4	TC10556	295.72	TC99556	374.29	TC90556	374.29
1	1	1-1/2	4	TC10564	272.20	TC99564	348.17	TC90564	348.17
1-1/4	1-1/4	2	4-1/2	TC10580	929.43	TC99580	1,056.16	TC90580	1,056.16

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION SEE PAGES 198, 200-201.

TOLERANCES	DIAMETER	SHANK
1/64" - 7/64"	+0.00, -.001	-.0001, -.0004
1/8" - 1/2"	+0.00, -.002	-.0001, -.0004
9/16" - 1-1/4"	+0.00, -.003	-.0001, -.0004

**TAKE 55%
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PRICES**

LONG LENGTH - 4 FLUTE - SQUARE END - 30° HELIX**SERIES 155**
UNCOATED**SERIES 156**
ALTIN COATED**SERIES 955**
TICN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	UNCOATED	LIST PRICE	ALTIN	LIST PRICE	TICN	LIST PRICE
1/8	1/8	3/4	2-1/4	TC15508	20.20	TC15608	25.98	TC95508	25.98
3/16	3/16	3/4	2-1/2	TC15512	23.71	TC15612	30.48	TC95512	30.48
1/4	1/4	1-1/8	3	TC15516	33.95	TC15616	43.77	TC95516	43.77
1/4	1/4	1	4	TC15517	35.76	TC15617	46.11	TC95517	46.11
5/16	5/16	1-1/8	3	TC15520	38.31	TC15620	51.71	TC95520	51.71
3/8	3/8	1-1/8	3	TC15524	43.95	TC15624	59.33	TC95524	59.33
3/8	3/8	1	4	TC15525	51.32	TC15625	66.03	TC95525	66.03
7/16	7/16	2	4	TC15528	69.25	TC15628	90.05	TC95528	90.05
1/2	1/2	1	4	TC15532	77.18	TC15632	99.39	TC95532	99.39
1/2	1/2	2	4	TC15533	81.74	TC15633	104.90	TC95533	104.90
5/8	5/8	2-1/4	5	TC15540	177.52	TC15640	219.70	TC95540	219.70
3/4	3/4	2-1/4	5	TC15548	245.18	TC15648	296.80	TC95548	296.80
7/8	7/8	2-1/4	5	TC15556	464.70	TC15656	549.19	TC95556	549.19
1	1	2-1/4	5	TC15564	335.66	TC15664	433.22	TC95564	433.22

EXTRA LONG LENGTH - 4 FLUTE - SQUARE END - 30° HELIX**SERIES 175**
UNCOATED**SERIES 176**
ALTIN COATED**SERIES 975**
TICN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	UNCOATED	LIST PRICE	ALTIN	LIST PRICE	TICN	LIST PRICE
1/8	1/8	1	3	TC17508	22.58	TC17608	30.48	TC97508	30.48
3/16	3/16	1-1/8	3	TC17512	24.56	TC17612	31.54	TC97512	31.54
1/4	1/4	1-1/2	4	TC17516	34.70	TC17616	44.69	TC97516	44.69
1/4	1/4	1-1/2	6	TC17517	46.92	TC17617	60.36	TC97517	60.36
5/16	5/16	1-5/8	4	TC17520	47.35	TC17620	61.10	TC97520	61.10
3/8	3/8	1-3/4	4	TC17524	53.76	TC17624	68.86	TC97524	68.86
3/8	3/8	1-1/2	6	TC17525	81.41	TC17625	104.94	TC97525	104.94
7/16	7/16	3	6	TC17528	109.65	TC17628	140.59	TC97528	140.59
1/2	1/2	1-1/2	6	TC17532	123.90	TC17632	153.78	TC97532	153.78
1/2	1/2	3	6	TC17533	130.07	TC17633	159.94	TC97533	159.94
5/8	5/8	3	6	TC17540	191.56	TC17640	235.50	TC97540	235.50
3/4	3/4	3	6	TC17548	284.69	TC17648	334.31	TC97548	334.31
3/4	3/4	4	7	TC17549	488.58	TC17649	553.87	TC97549	553.87
7/8	7/8	3	6	TC17556	506.94	TC17656	633.71	TC97556	633.71
1	1	3	6	TC17564	483.30	TC17664	539.53	TC97564	539.53
1	1	4	7	TC17565	633.57	TC17665	777.67	TC97565	777.67

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION SEE PAGES 198, 200-201.

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

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

SERIES 115
UNCOATED



SERIES 116
ALTiN COATED



SERIES 915
TiCN COATED



**TAKE 55%
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PRICES**

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	UNCOATED	LIST PRICE	ALTiN	LIST PRICE	TiCN	LIST PRICE
1/64	1/8	1/32	1-1/2	TC11501	28.14	TC11601	37.71	TC91501	37.71
1/32	1/8	1/8	1-1/2	TC11502	18.00	TC11602	23.39	TC91502	23.39
3/64	1/8	1/8	1-1/2	TC11503	18.00	TC11603	23.39	TC91503	23.39
1/16	1/8	1/4	1-1/2	TC11504	16.69	TC11604	22.54	TC91504	22.54
5/64	1/8	1/4	1-1/2	TC11505	16.69	TC11605	22.54	TC91505	22.54
3/32	1/8	3/8	1-1/2	TC11506	17.51	TC11606	23.67	TC91506	23.67
7/64	1/8	3/8	1-1/2	TC11507	17.51	TC11607	23.67	TC91507	23.67
1/8	1/8	1/2	1-1/2	TC11508	16.05	TC11608	21.69	TC91508	21.69
9/64	3/16	9/16	2	TC11509	23.53	TC11609	31.79	TC91509	31.79
5/32	3/16	9/16	2	TC11510	23.53	TC11610	31.79	TC91510	31.79
11/64	3/16	5/8	2	TC11511	23.53	TC11611	31.79	TC91511	31.79
3/16	3/16	5/8	2	TC11512	21.16	TC11612	28.57	TC91512	28.57
13/64	1/4	5/8	2-1/2	TC11513	27.43	TC11613	38.88	TC91513	38.88
7/32	1/4	5/8	2-1/2	TC11514	27.43	TC11614	38.88	TC91514	38.88
15/64	1/4	3/4	2-1/2	TC11515	27.43	TC11615	38.88	TC91515	38.88
1/4	1/4	3/4	2-1/2	TC11516	28.74	TC11616	37.04	TC91516	37.04
17/64	5/16	3/4	2-1/2	TC11517	38.88	TC11617	50.01	TC91517	50.01
9/32	5/16	3/4	2-1/2	TC11518	38.95	TC11618	50.08	TC91518	50.08
19/64	5/16	13/16	2-1/2	TC11519	42.32	TC11619	55.54	TC91519	55.54
5/16	5/16	13/16	2-1/2	TC11520	35.83	TC11620	46.07	TC91520	46.07
21/64	3/8	1	2-1/2	TC11521	49.23	TC11621	66.45	TC91521	66.45
11/32	3/8	1	2-1/2	TC11522	51.67	TC11622	66.45	TC91522	66.45
23/64	3/8	1	2-1/2	TC11523	49.23	TC11623	66.45	TC91523	66.45
3/8	3/8	1	2-1/2	TC11524	38.35	TC11624	54.19	TC91524	54.19
25/64	7/16	1	2-3/4	TC11525	66.66	TC11625	85.91	TC91525	85.91
13/32	7/16	1	2-3/4	TC11526	66.66	TC11626	85.91	TC91526	85.91
27/64	7/16	1	2-3/4	TC11527	66.66	TC11627	85.91	TC91527	85.91
7/16	7/16	1	2-3/4	TC11528	56.74	TC11628	73.15	TC91528	73.15
29/64	1/2	1	3	TC11529	87.89	TC11629	113.34	TC91529	113.34
15/32	1/2	1	3	TC11530	87.89	TC11630	113.34	TC91530	113.34
31/64	1/2	1	3	TC11531	87.89	TC11631	113.34	TC91531	113.34
1/2	1/2	1	3	TC11532	77.83	TC11632	100.30	TC91532	100.30
9/16	9/16	1-1/4	3-1/2	TC11536	118.62	TC11636	145.98	TC91536	145.98
5/8	5/8	1-1/4	3-1/2	TC11540	125.85	TC11640	162.21	TC91540	162.21
3/4	3/4	1-1/2	4	TC11548	185.42	TC11648	241.63	TC91548	241.63
7/8	7/8	1-1/2	4	TC11556	359.08	TC11656	456.26	TC91556	456.26
1	1	1-1/2	4	TC11564	331.19	TC11664	426.77	TC91564	426.77

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION SEE PAGES 198, 200-201.

TOLERANCES	DIAMETER	SHANK
1/64" - 7/64"	+0.000, -0.001	-0.0001, -0.0004
1/8" - 1/2"	+0.000, -0.002	-0.0001, -0.0004
9/16" - 1"	+0.000, -0.003	-0.0001, -0.0004

**TAKE 55%
OFF LIST
PRICES**

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	LIST PRICE	ALTIN	LIST PRICE	TICN	LIST PRICE
1/8	1/8	3/4	2-1/4	TC16508	24.03	TC16608	30.90	TC96508	30.90
3/16	3/16	3/4	2-1/2	TC16512	27.64	TC16612	35.51	TC96512	35.51
1/4	1/4	1-1/8	3	TC16516	38.88	TC16616	50.04	TC96516	50.04
1/4	1/4	1	4	TC16517	42.92	TC16617	55.32	TC96517	55.32
5/16	5/16	1-1/8	3	TC16520	45.72	TC16620	61.70	TC96520	61.70
3/8	3/8	1-1/8	3	TC16524	52.77	TC16624	71.27	TC96524	71.27
3/8	3/8	1	4	TC16525	64.64	TC16625	83.99	TC96525	83.99
7/16	7/16	2	4	TC16528	88.39	TC16628	114.93	TC96528	114.93
1/2	1/2	1	4	TC16532	90.52	TC16632	115.11	TC96532	115.11
1/2	1/2	2	4	TC16533	91.40	TC16633	116.00	TC96533	116.00
5/8	5/8	2-1/4	5	TC16540	208.25	TC16640	264.49	TC96540	264.49
3/4	3/4	2-1/4	5	TC16548	289.97	TC16648	367.31	TC96548	367.31
7/8	7/8	2-1/4	5	TC16556	498.51	TC16656	612.59	TC96556	612.59
1	1	2-1/4	5	TC16564	573.78	TC16664	705.62	TC96564	705.62

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	LIST PRICE	ALTIN	LIST PRICE	TICN	LIST PRICE
1/8	1/8	1	3	TC18508	26.90	TC18608	36.29	TC98508	36.29
3/16	3/16	1-1/8	3	TC18512	29.45	TC18612	37.89	TC98512	37.89
1/4	1/4	1-1/2	4	TC18516	40.89	TC18616	52.59	TC98516	52.59
1/4	1/4	1-1/2	6	TC18517	52.38	TC18617	65.40	TC98517	65.40
5/16	5/16	1-5/8	4	TC18520	57.13	TC18620	73.75	TC98520	73.75
3/8	3/8	1-3/4	4	TC18524	61.49	TC18624	78.61	TC98524	78.61
3/8	3/8	1-1/2	6	TC18525	86.65	TC18625	108.09	TC98525	108.09
7/16	7/16	3	6	TC18528	130.07	TC18628	166.96	TC98528	166.96
1/2	1/2	1-1/2	6	TC18532	137.97	TC18632	176.64	TC98532	176.64
1/2	1/2	3	6	TC18533	138.82	TC18633	179.26	TC98533	179.26
5/8	5/8	3	6	TC18540	218.81	TC18640	268.89	TC98540	268.89
3/4	3/4	3	6	TC18548	310.28	TC18648	418.87	TC98548	418.87
3/4	3/4	4	7	TC18549	510.91	TC18649	646.15	TC98549	646.15
7/8	7/8	3	6	TC18556	549.19	TC18656	684.39	TC98556	684.39
1	1	3	6	TC18564	553.58	TC18664	712.71	TC98564	712.71
1	1	4	7	TC18565	669.58	TC18665	797.45	TC98565	797.45

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION SEE PAGES 198, 200-201.

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

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

SERIES 100
UNCOATED



SERIES 101
ALTIN COATED



SERIES 900
TICN COATED



**TAKE 55%
OFF LIST
PRICES**

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	UNCOATED	LIST PRICE	ALTIN	LIST PRICE	TICN	LIST PRICE
1/64	1/8	1/32	1-1/2	TC10001	25.13	TC10101	33.67	TC90001	33.67
1/32	1/8	1/8	1-1/2	TC10002	16.83	TC10102	22.75	TC90002	22.75
3/64	1/8	1/8	1-1/2	TC10003	14.39	TC10103	19.39	TC90003	19.39
1/16	1/8	1/4	1-1/2	TC10004	14.35	TC10104	16.48	TC90004	16.48
5/64	1/8	1/4	1-1/2	TC10005	14.81	TC10105	19.99	TC90005	19.99
3/32	1/8	3/8	1-1/2	TC10006	13.04	TC10106	16.48	TC90006	16.48
7/64	1/8	3/8	1-1/2	TC10007	13.61	TC10107	18.36	TC90007	18.36
1/8	1/8	1/2	1-1/2	TC10008	12.51	TC10108	15.31	TC90008	15.31
9/64	3/16	9/16	2	TC10009	18.32	TC10109	24.74	TC90009	24.74
5/32	3/16	9/16	2	TC10010	18.43	TC10110	21.37	TC90010	21.37
11/64	3/16	5/8	2	TC10011	17.51	TC10111	23.67	TC90011	23.67
3/16	3/16	5/8	2	TC10012	17.05	TC10112	21.37	TC90012	21.37
13/64	1/4	5/8	2-1/2	TC10013	24.88	TC10113	32.61	TC90013	32.61
7/32	1/4	5/8	2-1/2	TC10014	25.41	TC10114	29.52	TC90014	29.52
15/64	1/4	3/4	2-1/2	TC10015	28.71	TC10115	37.00	TC90015	37.00
1/4	1/4	3/4	2-1/2	TC10016	21.05	TC10116	29.52	TC90016	29.52
17/64	5/16	3/4	2-1/2	TC10017	37.96	TC10117	48.77	TC90017	48.77
9/32	5/16	3/4	2-1/2	TC10018	37.96	TC10118	48.77	TC90018	48.77
19/64	5/16	13/16	2-1/2	TC10019	37.96	TC10119	48.77	TC90019	48.77
5/16	5/16	13/16	2-1/2	TC10020	27.40	TC10120	35.33	TC90020	35.33
21/64	3/8	1	2-1/2	TC10021	42.56	TC10121	54.72	TC90021	54.72
11/32	3/8	1	2-1/2	TC10022	42.56	TC10122	54.72	TC90022	54.72
23/64	3/8	1	2-1/2	TC10023	42.56	TC10123	54.72	TC90023	54.72
3/8	3/8	1	2-1/2	TC10024	32.68	TC10124	40.40	TC90024	40.40
25/64	7/16	1	2-3/4	TC10025	55.71	TC10125	71.91	TC90025	71.91
13/32	7/16	1	2-3/4	TC10026	55.71	TC10126	71.91	TC90026	71.91
27/64	7/16	1	2-3/4	TC10027	57.52	TC10127	74.28	TC90027	74.28
7/16	7/16	1	2-3/4	TC10028	50.15	TC10128	61.74	TC90028	61.74
29/64	1/2	1	3	TC10029	82.79	TC10129	105.97	TC90029	105.97
15/32	1/2	1	3	TC10030	82.79	TC10130	105.97	TC90030	105.97
31/64	1/2	1	3	TC10031	82.79	TC10131	105.97	TC90031	105.97
1/2	1/2	1	3	TC10032	60.21	TC10132	75.13	TC90032	75.13
9/16	9/16	1-1/4	3-1/2	TC10036	113.80	TC10136	150.27	TC90036	150.27
5/8	5/8	1-1/4	3-1/2	TC10040	115.11	TC10140	146.76	TC90040	146.76
3/4	3/4	1-1/2	4	TC10048	161.68	TC10148	208.25	TC90048	208.25
7/8	7/8	1-1/2	4	TC10056	295.72	TC10156	374.29	TC90056	374.29
1	1	1-1/2	4	TC10064	264.49	TC10164	338.31	TC90064	338.31

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION SEE PAGES 198, 200-201.

TOLERANCES	DIAMETER	SHANK
1/64" - 7/64"	+0.000, -0.001	-0.0001, -0.0004
1/8" - 1/2"	+0.000, -0.002	-0.0001, -0.0004
9/16" - 1"	+0.000, -0.003	-0.0001, -0.0004

**TAKE 55%
OFF LIST
PRICES**

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	LIST PRICE	ALTIN	LIST PRICE	TICN	LIST PRICE
1/8	1/8	3/4	2-1/4	TC15008	20.20	TC15108	25.98	TC95008	25.98
3/16	3/16	3/4	2-1/2	TC15012	23.71	TC15112	30.48	TC95012	30.48
1/4	1/4	1-1/8	3	TC15016	33.95	TC15116	43.77	TC95016	43.77
1/4	1/4	1	4	TC15017	35.76	TC15117	46.11	TC95017	46.11
5/16	5/16	1-1/8	3	TC15020	38.31	TC15120	51.71	TC95020	51.71
3/8	3/8	1-1/8	3	TC15024	43.95	TC15124	59.33	TC95024	59.33
3/8	3/8	1	4	TC15025	51.32	TC15125	66.03	TC95025	66.03
7/16	7/16	2	4	TC15028	69.25	TC15128	90.05	TC95028	90.05
1/2	1/2	1	4	TC15032	74.99	TC15132	96.58	TC95032	96.58
1/2	1/2	2	4	TC15033	79.42	TC15133	101.93	TC95033	101.93
5/8	5/8	2-1/4	5	TC15040	177.52	TC15140	219.70	TC95040	219.70
3/4	3/4	2-1/4	5	TC15048	245.18	TC15148	316.34	TC95048	316.34
7/8	7/8	2-1/4	5	TC15056	464.70	TC15156	549.19	TC95056	549.19
1	1	2-1/4	5	TC15064	335.66	TC15164	433.22	TC95064	433.22

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	LIST PRICE	ALTIN	LIST PRICE	TICN	LIST PRICE
1/8	1/8	1	3	TC17008	22.58	TC17108	30.48	TC97008	30.48
3/16	3/16	1-1/8	3	TC17012	24.56	TC17112	31.54	TC97012	31.54
1/4	1/4	1-1/2	4	TC17016	36.78	TC17116	47.37	TC97016	47.37
1/4	1/4	1-1/2	6	TC17017	46.92	TC17117	60.36	TC97017	60.36
5/16	5/16	1-5/8	4	TC17020	47.35	TC17120	61.10	TC97020	61.10
3/8	3/8	1-3/4	4	TC17024	53.76	TC17124	68.86	TC97024	68.86
3/8	3/8	1-1/2	6	TC17025	81.41	TC17125	104.94	TC97025	104.94
7/16	7/16	3	6	TC17028	109.65	TC17128	140.59	TC97028	140.59
1/2	1/2	1-1/2	6	TC17032	123.90	TC17132	153.78	TC97032	153.78
1/2	1/2	3	6	TC17033	130.07	TC17133	159.94	TC97033	159.94
5/8	5/8	3	6	TC17040	191.56	TC17140	235.50	TC97040	235.50
3/4	3/4	3	6	TC17048	284.69	TC17148	349.73	TC97048	349.73
7/8	7/8	3	6	TC17056	506.94	TC17156	633.71	TC97056	633.71
1	1	3	6	TC17064	483.30	TC17164	593.91	TC97064	593.91

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION SEE PAGES 198, 200-201.

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

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

SERIES 110
UNCOATED



SERIES 111
ALTiN COATED



SERIES 910
TiCN COATED



**TAKE 55%
OFF LIST
PRICES**

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	UNCOATED	LIST PRICE	ALTiN	LIST PRICE	TiCN	LIST PRICE
1/64	1/8	1/32	1-1/2	TC11001	28.14	TC11101	37.71	TC91001	37.71
1/32	1/8	1/8	1-1/2	TC11002	18.00	TC11102	23.39	TC91002	23.39
3/64	1/8	1/8	1-1/2	TC11003	18.00	TC11103	23.39	TC91003	23.39
1/16	1/8	1/4	1-1/2	TC11004	16.69	TC11104	22.54	TC91004	22.54
5/64	1/8	1/4	1-1/2	TC11005	16.69	TC11105	22.54	TC91005	22.54
3/32	1/8	3/8	1-1/2	TC11006	17.51	TC11106	23.67	TC91006	23.67
7/64	1/8	3/8	1-1/2	TC11007	17.51	TC11107	23.67	TC91007	23.67
1/8	1/8	1/2	1-1/2	TC11008	16.05	TC11108	21.69	TC91008	21.69
9/64	3/16	9/16	2	TC11009	23.53	TC11109	31.79	TC91009	31.79
5/32	3/16	9/16	2	TC11010	23.53	TC11110	31.79	TC91010	31.79
11/64	3/16	5/8	2	TC11011	23.53	TC11111	31.79	TC91011	31.79
3/16	3/16	5/8	2	TC11012	21.16	TC11112	28.57	TC91012	28.57
13/64	1/4	5/8	2-1/2	TC11013	27.43	TC11113	38.88	TC91013	38.88
7/32	1/4	5/8	2-1/2	TC11014	27.43	TC11114	38.88	TC91014	38.88
15/64	1/4	3/4	2-1/2	TC11015	27.43	TC11115	38.88	TC91015	38.88
1/4	1/4	3/4	2-1/2	TC11016	28.74	TC11116	37.04	TC91016	37.04
17/64	5/16	3/4	2-1/2	TC11017	38.88	TC11117	50.01	TC91017	50.01
9/32	5/16	3/4	2-1/2	TC11018	38.95	TC11118	50.08	TC91018	50.08
19/64	5/16	13/16	2-1/2	TC11019	42.32	TC11119	55.54	TC91019	55.54
5/16	5/16	13/16	2-1/2	TC11020	35.83	TC11120	46.07	TC91020	46.07
21/64	3/8	1	2-1/2	TC11021	49.23	TC11121	66.45	TC91021	66.45
11/32	3/8	1	2-1/2	TC11022	51.67	TC11122	66.45	TC91022	66.45
23/64	3/8	1	2-1/2	TC11023	49.23	TC11123	66.45	TC91023	66.45
3/8	3/8	1	2-1/2	TC11024	38.35	TC11124	54.19	TC91024	54.19
25/64	7/16	1	2-3/4	TC11025	66.66	TC11125	85.91	TC91025	85.91
13/32	7/16	1	2-3/4	TC11026	66.66	TC11126	85.91	TC91026	85.91
27/64	7/16	1	2-3/4	TC11027	66.66	TC11127	85.91	TC91027	85.91
7/16	7/16	1	2-3/4	TC11028	56.74	TC11128	73.15	TC91028	73.15
29/64	1/2	1	3	TC11029	87.89	TC11129	113.34	TC91029	113.34
15/32	1/2	1	3	TC11030	87.89	TC11130	113.34	TC91030	113.34
31/64	1/2	1	3	TC11031	87.89	TC11131	113.34	TC91031	113.34
1/2	1/2	1	3	TC11032	77.83	TC11132	100.30	TC91032	100.30
9/16	9/16	1-1/4	3-1/2	TC11036	118.62	TC11136	145.98	TC91036	145.98
5/8	5/8	1-1/4	3-1/2	TC11040	125.85	TC11140	162.21	TC91040	162.21
3/4	3/4	1-1/2	4	TC11048	185.42	TC11148	241.63	TC91048	241.63
7/8	7/8	1-1/2	4	TC11056	359.08	TC11156	456.26	TC91056	456.26
1	1	1-1/2	4	TC11064	331.19	TC11164	426.77	TC91064	426.77

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION SEE PAGES 198, 200-201.

TOLERANCES	DIAMETER	SHANK
1/64" - 7/64"	+0.000, -0.001	-0.0001, -0.0004
1/8" - 1/2"	+0.000, -0.002	-0.0001, -0.0004
9/16" - 1"	+0.000, -0.003	-0.0001, -0.0004

**TAKE 55%
OFF LIST
PRICES**

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	LIST PRICE	ALTIN	LIST PRICE	TICN	LIST PRICE
1/8	1/8	3/4	2-1/4	TC16008	24.03	TC16108	30.90	TC96008	30.90
3/16	3/16	3/4	2-1/2	TC16012	27.64	TC16112	35.51	TC96012	35.51
1/4	1/4	1-1/8	3	TC16016	38.88	TC16116	50.04	TC96016	50.04
1/4	1/4	1	4	TC16017	42.92	TC16117	55.32	TC96017	55.32
5/16	5/16	1-1/8	3	TC16020	45.72	TC16120	61.70	TC96020	61.70
3/8	3/8	1-1/8	3	TC16024	52.77	TC16124	71.27	TC96024	71.27
3/8	3/8	1	4	TC16025	64.64	TC16125	83.99	TC96025	83.99
7/16	7/16	2	4	TC16028	88.39	TC16128	114.93	TC96028	114.93
1/2	1/2	1	4	TC16032	90.52	TC16132	115.11	TC96032	115.11
1/2	1/2	2	4	TC16033	91.40	TC16133	116.00	TC96033	116.00
5/8	5/8	2-1/4	5	TC16040	208.25	TC16140	264.49	TC96040	264.49
3/4	3/4	2-1/4	5	TC16048	289.97	TC16148	367.31	TC96048	367.31
7/8	7/8	2-1/4	5	TC16056	498.51	TC16156	612.59	TC96056	612.59
1	1	2-1/4	5	TC16064	573.78	TC16164	705.62	TC96064	705.62

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	LIST PRICE	ALTIN	LIST PRICE	TICN	LIST PRICE
1/8	1/8	1	3	TC18008	26.90	TC18108	36.29	TC98008	36.29
3/16	3/16	1-1/8	3	TC18012	29.45	TC18112	37.89	TC98012	37.89
1/4	1/4	1-1/2	4	TC18016	40.89	TC18116	52.59	TC98016	52.59
1/4	1/4	1-1/2	6	TC18017	48.02	TC18117	61.77	TC98017	61.77
5/16	5/16	1-5/8	4	TC18020	57.13	TC18120	73.75	TC98020	73.75
3/8	3/8	1-3/4	4	TC18024	61.49	TC18124	78.61	TC98024	78.61
3/8	3/8	1-1/2	6	TC18025	86.65	TC18125	106.36	TC98025	106.36
7/16	7/16	3	6	TC18028	130.07	TC18128	166.96	TC98028	166.96
1/2	1/2	1-1/2	6	TC18032	137.97	TC18132	176.64	TC98032	176.64
1/2	1/2	3	6	TC18033	138.82	TC18133	177.52	TC98033	177.52
5/8	5/8	3	6	TC18040	218.81	TC18140	268.89	TC98040	268.89
3/4	3/4	3	6	TC18048	310.28	TC18148	418.87	TC98048	418.87
7/8	7/8	3	6	TC18056	549.19	TC18156	684.39	TC98056	684.39
1	1	3	6	TC18064	553.58	TC18164	712.71	TC98064	712.71

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION SEE PAGES 198, 200-201.

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

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



SERIES 720
UNCOATED

**TAKE 55%
OFF LIST
PRICES**

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	0.015	TC72003	18.29
1/8	1/8	1/2	1-1/2	0.020	TC72005	18.29
1/8	1/8	1/2	1-1/2	0.030	TC72007	18.29
3/16	3/16	5/8	2	0.015	TC72009	18.29
3/16	3/16	5/8	2	0.020	TC72011	18.29
3/16	3/16	5/8	2	0.030	TC72013	18.29
1/4	1/4	3/4	2-1/2	0.015	TC72015	26.62
1/4	1/4	3/4	2-1/2	0.020	TC72017	26.62
1/4	1/4	3/4	2-1/2	0.030	TC72019	26.62
1/4	1/4	3/4	2-1/2	0.045	TC72021	26.62
1/4	1/4	3/4	2-1/2	0.060	TC72023	26.62
5/16	5/16	13/16	2-1/2	0.015	TC72025	40.83
5/16	5/16	13/16	2-1/2	0.020	TC72027	40.83
5/16	5/16	13/16	2-1/2	0.030	TC72029	40.83
5/16	5/16	13/16	2-1/2	0.045	TC72031	40.83
5/16	5/16	13/16	2-1/2	0.060	TC72033	40.83
3/8	3/8	1	2-1/2	0.015	TC72035	54.71
3/8	3/8	1	2-1/2	0.020	TC72037	54.71
3/8	3/8	1	2-1/2	0.030	TC72039	54.71
3/8	3/8	1	2-1/2	0.045	TC72041	54.71
3/8	3/8	1	2-1/2	0.060	TC72043	54.71
1/2	1/2	1	3	0.015	TC72045	94.11
1/2	1/2	1	3	0.020	TC72047	94.11
1/2	1/2	1	3	0.030	TC72049	94.11

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	LIST PRICE
1/2	1/2	1	3	0.045	TC72051	94.11
1/2	1/2	1	3	0.060	TC72053	94.11
1/2	1/2	1	3	0.090	TC72055	94.11
1/2	1/2	1	3	0.125	TC72057	94.11
5/8	5/8	1-1/4	3-1/2	0.015	TC72059	133.15
5/8	5/8	1-1/4	3-1/2	0.020	TC72061	133.15
5/8	5/8	1-1/4	3-1/2	0.030	TC72063	133.15
5/8	5/8	1-1/4	3-1/2	0.045	TC72065	133.15
5/8	5/8	1-1/4	3-1/2	0.060	TC72067	133.15
5/8	5/8	1-1/4	3-1/2	0.090	TC72069	133.15
3/4	3/4	1-1/2	4	0.015	TC72071	196.99
3/4	3/4	1-1/2	4	0.020	TC72073	196.99
3/4	3/4	1-1/2	4	0.030	TC72075	196.99
3/4	3/4	1-1/2	4	0.045	TC72077	196.99
3/4	3/4	1-1/2	4	0.060	TC72079	196.99
3/4	3/4	1-1/2	4	0.090	TC72081	196.99
3/4	3/4	1-1/2	4	0.125	TC72083	196.99
1	1	1-1/2	4	0.015	TC72085	372.73
1	1	1-1/2	4	0.020	TC72087	372.73
1	1	1-1/2	4	0.030	TC72089	372.73
1	1	1-1/2	4	0.045	TC72091	372.73
1	1	1-1/2	4	0.060	TC72093	372.73
1	1	1-1/2	4	0.090	TC72095	372.73
1	1	1-1/2	4	0.125	TC72097	372.73

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION SEE PAGES 198, 200-201.

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

**TAKE 55%
OFF LIST
PRICES**

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



SERIES 721
ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	0.015	TC72104	28.41
1/8	1/8	1/2	1-1/2	0.020	TC72106	28.41
1/8	1/8	1/2	1-1/2	0.030	TC72108	28.41
3/16	3/16	5/8	2	0.015	TC72110	28.41
3/16	3/16	5/8	2	0.020	TC72112	28.41
3/16	3/16	5/8	2	0.030	TC72114	28.41
1/4	1/4	3/4	2-1/2	0.015	TC72116	39.04
1/4	1/4	3/4	2-1/2	0.020	TC72118	39.04
1/4	1/4	3/4	2-1/2	0.030	TC72120	39.04
1/4	1/4	3/4	2-1/2	0.045	TC72122	39.04
1/4	1/4	3/4	2-1/2	0.060	TC72124	39.04
5/16	5/16	13/16	2-1/2	0.015	TC72126	56.15
5/16	5/16	13/16	2-1/2	0.020	TC72128	56.15
5/16	5/16	13/16	2-1/2	0.030	TC72130	56.15
5/16	5/16	13/16	2-1/2	0.045	TC72132	56.15
5/16	5/16	13/16	2-1/2	0.060	TC72134	56.15
3/8	3/8	1	2-1/2	0.015	TC72136	60.83
3/8	3/8	1	2-1/2	0.020	TC72138	60.83
3/8	3/8	1	2-1/2	0.030	TC72140	60.83
3/8	3/8	1	2-1/2	0.045	TC72142	60.83
3/8	3/8	1	2-1/2	0.060	TC72144	60.83
1/2	1/2	1	3	0.015	TC72146	101.88
1/2	1/2	1	3	0.020	TC72148	101.88
1/2	1/2	1	3	0.030	TC72150	101.88

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	LIST PRICE
1/2	1/2	1	3	0.045	TC72152	101.88
1/2	1/2	1	3	0.060	TC72154	101.88
1/2	1/2	1	3	0.090	TC72156	101.88
1/2	1/2	1	3	0.125	TC72158	101.88
5/8	5/8	1-1/4	3-1/2	0.015	TC72160	146.61
5/8	5/8	1-1/4	3-1/2	0.020	TC72162	146.61
5/8	5/8	1-1/4	3-1/2	0.030	TC72164	146.61
5/8	5/8	1-1/4	3-1/2	0.045	TC72166	146.61
5/8	5/8	1-1/4	3-1/2	0.060	TC72168	146.61
5/8	5/8	1-1/4	3-1/2	0.090	TC72170	146.61
3/4	3/4	1-1/2	4	0.015	TC72172	205.87
3/4	3/4	1-1/2	4	0.020	TC72174	205.87
3/4	3/4	1-1/2	4	0.030	TC72176	205.87
3/4	3/4	1-1/2	4	0.045	TC72178	205.87
3/4	3/4	1-1/2	4	0.060	TC72180	205.87
3/4	3/4	1-1/2	4	0.090	TC72182	205.87
3/4	3/4	1-1/2	4	0.125	TC72184	205.87
1	1	1-1/2	4	0.015	TC72186	429.67
1	1	1-1/2	4	0.020	TC72188	429.67
1	1	1-1/2	4	0.030	TC72190	429.67
1	1	1-1/2	4	0.045	TC72192	429.67
1	1	1-1/2	4	0.060	TC72194	429.67
1	1	1-1/2	4	0.090	TC72196	429.67
1	1	1-1/2	4	0.125	TC72198	429.67

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION SEE PAGES 198, 200-201.

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

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



SERIES 740
UNCOATED

 CORNER RADIUS

**TAKE 55%
OFF LIST
PRICES**

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	0.015	TC74003	18.29
1/8	1/8	1/2	1-1/2	0.020	TC74005	18.29
1/8	1/8	1/2	1-1/2	0.030	TC74007	18.29
3/16	3/16	5/8	2	0.015	TC74009	18.29
3/16	3/16	5/8	2	0.020	TC74011	18.29
3/16	3/16	5/8	2	0.030	TC74013	18.29
1/4	1/4	3/4	2-1/2	0.015	TC74015	26.62
1/4	1/4	3/4	2-1/2	0.020	TC74017	26.62
1/4	1/4	3/4	2-1/2	0.030	TC74019	26.62
1/4	1/4	3/4	2-1/2	0.045	TC74021	26.62
1/4	1/4	3/4	2-1/2	0.060	TC74023	26.62
5/16	5/16	13/16	2-1/2	0.015	TC74025	42.33
5/16	5/16	13/16	2-1/2	0.020	TC74027	42.33
5/16	5/16	13/16	2-1/2	0.030	TC74029	42.33
5/16	5/16	13/16	2-1/2	0.045	TC74031	42.33
5/16	5/16	13/16	2-1/2	0.060	TC74033	42.33
3/8	3/8	1	2-1/2	0.015	TC74035	50.13
3/8	3/8	1	2-1/2	0.020	TC74037	50.13
3/8	3/8	1	2-1/2	0.030	TC74039	50.13
3/8	3/8	1	2-1/2	0.045	TC74041	50.13
3/8	3/8	1	2-1/2	0.060	TC74043	50.13
1/2	1/2	1	3	0.015	TC74045	85.78
1/2	1/2	1	3	0.020	TC74047	85.78
1/2	1/2	1	3	0.030	TC74049	85.78

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	LIST PRICE
1/2	1/2	1	3	0.045	TC74051	85.78
1/2	1/2	1	3	0.060	TC74053	85.78
1/2	1/2	1	3	0.090	TC74055	85.78
1/2	1/2	1	3	0.125	TC74057	85.78
5/8	5/8	1-1/4	3-1/2	0.015	TC74059	133.15
5/8	5/8	1-1/4	3-1/2	0.020	TC74061	133.15
5/8	5/8	1-1/4	3-1/2	0.030	TC74063	133.15
5/8	5/8	1-1/4	3-1/2	0.045	TC74065	133.15
5/8	5/8	1-1/4	3-1/2	0.060	TC74067	133.15
5/8	5/8	1-1/4	3-1/2	0.090	TC74069	133.15
3/4	3/4	1-1/2	4	0.015	TC74071	196.99
3/4	3/4	1-1/2	4	0.020	TC74073	196.99
3/4	3/4	1-1/2	4	0.030	TC74075	196.99
3/4	3/4	1-1/2	4	0.045	TC74077	196.99
3/4	3/4	1-1/2	4	0.060	TC74079	196.99
3/4	3/4	1-1/2	4	0.090	TC74081	196.99
3/4	3/4	1-1/2	4	0.125	TC74083	196.99
1	1	1-1/2	4	0.015	TC74085	372.73
1	1	1-1/2	4	0.020	TC74087	372.73
1	1	1-1/2	4	0.030	TC74089	372.73
1	1	1-1/2	4	0.045	TC74091	372.73
1	1	1-1/2	4	0.060	TC74093	372.73
1	1	1-1/2	4	0.090	TC74095	372.73
1	1	1-1/2	4	0.125	TC74097	372.73

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION SEE PAGES 198, 200-201.

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

**TAKE 55%
OFF LIST
PRICES**

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



SERIES 741
ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	LIST PRICE
1/8	1/8	1/2	1-1/2	0.015	TC74104	28.41
1/8	1/8	1/2	1-1/2	0.020	TC74106	28.41
1/8	1/8	1/2	1-1/2	0.030	TC74108	28.41
3/16	3/16	5/8	2	0.015	TC74110	28.41
3/16	3/16	5/8	2	0.020	TC74112	28.41
3/16	3/16	5/8	2	0.030	TC74114	28.41
1/4	1/4	3/4	2-1/2	0.015	TC74116	39.04
1/4	1/4	3/4	2-1/2	0.020	TC74118	39.04
1/4	1/4	3/4	2-1/2	0.030	TC74120	39.04
1/4	1/4	3/4	2-1/2	0.045	TC74122	39.04
1/4	1/4	3/4	2-1/2	0.060	TC74124	39.04
5/16	5/16	13/16	2-1/2	0.015	TC74126	52.36
5/16	5/16	13/16	2-1/2	0.020	TC74128	52.36
5/16	5/16	13/16	2-1/2	0.030	TC74130	52.36
5/16	5/16	13/16	2-1/2	0.045	TC74132	52.36
5/16	5/16	13/16	2-1/2	0.060	TC74134	52.36
3/8	3/8	1	2-1/2	0.015	TC74136	65.73
3/8	3/8	1	2-1/2	0.020	TC74138	65.73
3/8	3/8	1	2-1/2	0.030	TC74140	65.73
3/8	3/8	1	2-1/2	0.045	TC74142	65.73
3/8	3/8	1	2-1/2	0.060	TC74144	65.73
1/2	1/2	1	3	0.015	TC74146	99.15
1/2	1/2	1	3	0.020	TC74148	99.15
1/2	1/2	1	3	0.030	TC74150	99.15

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	LIST PRICE
1/2	1/2	1	3	0.045	TC74152	99.15
1/2	1/2	1	3	0.060	TC74154	99.15
1/2	1/2	1	3	0.090	TC74156	99.15
1/2	1/2	1	3	0.125	TC74158	99.15
5/8	5/8	1-1/4	3-1/2	0.015	TC74160	161.54
5/8	5/8	1-1/4	3-1/2	0.020	TC74162	161.54
5/8	5/8	1-1/4	3-1/2	0.030	TC74164	161.54
5/8	5/8	1-1/4	3-1/2	0.045	TC74166	161.54
5/8	5/8	1-1/4	3-1/2	0.060	TC74168	161.54
5/8	5/8	1-1/4	3-1/2	0.090	TC74170	161.54
3/4	3/4	1-1/2	4	0.015	TC74172	221.70
3/4	3/4	1-1/2	4	0.020	TC74174	221.70
3/4	3/4	1-1/2	4	0.030	TC74176	221.70
3/4	3/4	1-1/2	4	0.045	TC74178	221.70
3/4	3/4	1-1/2	4	0.060	TC74180	221.70
3/4	3/4	1-1/2	4	0.090	TC74182	221.70
3/4	3/4	1-1/2	4	0.125	TC74184	221.70
1	1	1-1/2	4	0.015	TC74186	429.67
1	1	1-1/2	4	0.020	TC74188	429.67
1	1	1-1/2	4	0.030	TC74190	429.67
1	1	1-1/2	4	0.045	TC74192	429.67
1	1	1-1/2	4	0.060	TC74194	429.67
1	1	1-1/2	4	0.090	TC74196	429.67
1	1	1-1/2	4	0.125	TC74198	429.67

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION SEE PAGES 198, 200-201.

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

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



SERIES 743
UNCOATED

**TAKE 55%
OFF LIST
PRICES**

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	LIST PRICE
1/8	1/8	3/4	2-1/4	0.015	TC74301	24.98
1/8	1/8	3/4	2-1/4	0.020	TC74302	24.98
1/8	1/8	3/4	2-1/4	0.030	TC74303	24.98
3/16	3/16	3/4	2-1/2	0.015	TC74304	29.03
3/16	3/16	3/4	2-1/2	0.020	TC74305	29.03
3/16	3/16	3/4	2-1/2	0.030	TC74306	29.03
1/4	1/4	1-1/8	3	0.015	TC74307	40.51
1/4	1/4	1-1/8	3	0.020	TC74308	40.51
1/4	1/4	1-1/8	3	0.030	TC74309	40.51
1/4	1/4	1-1/8	3	0.045	TC74310	40.51
1/4	1/4	1-1/8	3	0.060	TC74311	40.51
1/4	1/4	1	4	0.015	TC74312	42.54
1/4	1/4	1	4	0.020	TC74313	42.54
1/4	1/4	1	4	0.030	TC74314	42.54
1/4	1/4	1	4	0.045	TC74315	42.54
1/4	1/4	1	4	0.060	TC74316	42.54
5/16	5/16	1-1/8	3	0.015	TC74317	45.91
5/16	5/16	1-1/8	3	0.020	TC74318	45.91
5/16	5/16	1-1/8	3	0.030	TC74319	45.91
5/16	5/16	1-1/8	3	0.045	TC74320	45.91
5/16	5/16	1-1/8	3	0.060	TC74321	45.91
3/8	3/8	1-1/8	3	0.015	TC74322	59.04
3/8	3/8	1-1/8	3	0.020	TC74323	59.04
3/8	3/8	1-1/8	3	0.030	TC74324	59.04
3/8	3/8	1-1/8	3	0.045	TC74325	59.04
3/8	3/8	1-1/8	3	0.060	TC74326	59.04
3/8	3/8	1	4	0.015	TC74327	72.19
3/8	3/8	1	4	0.020	TC74328	72.19
3/8	3/8	1	4	0.030	TC74329	72.19
3/8	3/8	1	4	0.045	TC74330	72.19
3/8	3/8	1	4	0.060	TC74331	72.19
1/2	1/2	1	4	0.015	TC74332	101.38
1/2	1/2	1	4	0.020	TC74333	101.38

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	LIST PRICE
1/2	1/2	1	4	0.030	TC74334	101.38
1/2	1/2	1	4	0.045	TC74335	101.38
1/2	1/2	1	4	0.060	TC74336	101.38
1/2	1/2	1	4	0.090	TC74337	101.38
1/2	1/2	1	4	0.125	TC74338	101.38
1/2	1/2	2	4	0.015	TC74339	108.06
1/2	1/2	2	4	0.020	TC74340	108.06
1/2	1/2	2	4	0.030	TC74341	108.06
1/2	1/2	2	4	0.045	TC74342	108.06
1/2	1/2	2	4	0.060	TC74343	108.06
1/2	1/2	2	4	0.090	TC74344	108.06
1/2	1/2	2	4	0.125	TC74345	108.06
5/8	5/8	2-1/4	5	0.015	TC74346	191.75
5/8	5/8	2-1/4	5	0.020	TC74347	191.75
5/8	5/8	2-1/4	5	0.030	TC74348	191.75
5/8	5/8	2-1/4	5	0.045	TC74349	191.75
5/8	5/8	2-1/4	5	0.060	TC74350	191.75
5/8	5/8	2-1/4	5	0.090	TC74351	191.75
3/4	3/4	2-1/4	5	0.015	TC74352	267.37
3/4	3/4	2-1/4	5	0.020	TC74353	267.37
3/4	3/4	2-1/4	5	0.030	TC74354	267.37
3/4	3/4	2-1/4	5	0.045	TC74355	267.37
3/4	3/4	2-1/4	5	0.060	TC74356	267.37
3/4	3/4	2-1/4	5	0.090	TC74357	267.37
3/4	3/4	2-1/4	5	0.125	TC74358	267.37
1	1	2-1/4	5	0.015	TC74359	392.14
1	1	2-1/4	5	0.020	TC74360	392.14
1	1	2-1/4	5	0.030	TC74361	392.14
1	1	2-1/4	5	0.045	TC74362	392.14
1	1	2-1/4	5	0.060	TC74363	392.14
1	1	2-1/4	5	0.090	TC74364	392.14
1	1	2-1/4	5	0.125	TC74365	392.14
-	-	-	-	-	-	-

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION SEE PAGES 198, 200-201.

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

**TAKE 55%
OFF LIST
PRICES**

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



SERIES 744
ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	LIST PRICE
1/8	1/8	3/4	2-1/4	0.015	TC74401	31.23
1/8	1/8	3/4	2-1/4	0.020	TC74402	31.23
1/8	1/8	3/4	2-1/4	0.030	TC74403	31.23
3/16	3/16	3/4	2-1/2	0.015	TC74404	36.29
3/16	3/16	3/4	2-1/2	0.020	TC74405	36.29
3/16	3/16	3/4	2-1/2	0.030	TC74406	36.29
1/4	1/4	1-1/8	3	0.015	TC74407	50.64
1/4	1/4	1-1/8	3	0.020	TC74408	50.64
1/4	1/4	1-1/8	3	0.030	TC74409	50.64
1/4	1/4	1-1/8	3	0.045	TC74410	50.64
1/4	1/4	1-1/8	3	0.060	TC74411	50.64
1/4	1/4	1	4	0.015	TC74412	53.17
1/4	1/4	1	4	0.020	TC74413	53.17
1/4	1/4	1	4	0.030	TC74414	53.17
1/4	1/4	1	4	0.045	TC74415	53.17
1/4	1/4	1	4	0.060	TC74416	53.17
5/16	5/16	1-1/8	3	0.015	TC74417	57.39
5/16	5/16	1-1/8	3	0.020	TC74418	57.39
5/16	5/16	1-1/8	3	0.030	TC74419	57.39
5/16	5/16	1-1/8	3	0.045	TC74420	57.39
5/16	5/16	1-1/8	3	0.060	TC74421	57.39
3/8	3/8	1-1/8	3	0.015	TC74422	72.41
3/8	3/8	1-1/8	3	0.020	TC74423	72.41
3/8	3/8	1-1/8	3	0.030	TC74424	72.41
3/8	3/8	1-1/8	3	0.045	TC74425	72.41
3/8	3/8	1-1/8	3	0.060	TC74426	72.41
3/8	3/8	1	4	0.015	TC74427	90.24
3/8	3/8	1	4	0.020	TC74428	90.24
3/8	3/8	1	4	0.030	TC74429	90.24
3/8	3/8	1	4	0.045	TC74430	90.24
3/8	3/8	1	4	0.060	TC74431	90.24
1/2	1/2	1	4	0.015	TC74432	124.77
1/2	1/2	1	4	0.020	TC74433	124.77

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	LIST PRICE
1/2	1/2	1	4	0.030	TC74434	124.77
1/2	1/2	1	4	0.045	TC74435	124.77
1/2	1/2	1	4	0.060	TC74436	124.77
1/2	1/2	1	4	0.090	TC74437	124.77
1/2	1/2	1	4	0.125	TC74438	124.77
1/2	1/2	2	4	0.015	TC74439	132.57
1/2	1/2	2	4	0.020	TC74440	132.57
1/2	1/2	2	4	0.030	TC74441	132.57
1/2	1/2	2	4	0.045	TC74442	132.57
1/2	1/2	2	4	0.060	TC74443	132.57
1/2	1/2	2	4	0.090	TC74444	132.57
1/2	1/2	2	4	0.125	TC74445	132.57
5/8	5/8	2-1/4	5	0.015	TC74446	239.69
5/8	5/8	2-1/4	5	0.020	TC74447	239.69
5/8	5/8	2-1/4	5	0.030	TC74448	239.69
5/8	5/8	2-1/4	5	0.045	TC74449	239.69
5/8	5/8	2-1/4	5	0.060	TC74450	239.69
5/8	5/8	2-1/4	5	0.090	TC74451	239.69
3/4	3/4	2-1/4	5	0.015	TC74452	311.93
3/4	3/4	2-1/4	5	0.020	TC74453	311.93
3/4	3/4	2-1/4	5	0.030	TC74454	311.93
3/4	3/4	2-1/4	5	0.045	TC74455	311.93
3/4	3/4	2-1/4	5	0.060	TC74456	311.93
3/4	3/4	2-1/4	5	0.090	TC74457	311.93
3/4	3/4	2-1/4	5	0.125	TC74458	311.93
1	1	2-1/4	5	0.015	TC74459	490.18
1	1	2-1/4	5	0.020	TC74460	490.18
1	1	2-1/4	5	0.030	TC74461	490.18
1	1	2-1/4	5	0.045	TC74462	490.18
1	1	2-1/4	5	0.060	TC74463	490.18
1	1	2-1/4	5	0.090	TC74464	490.18
1	1	2-1/4	5	0.125	TC74465	490.18
-	-	-	-	-	-	-

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION SEE PAGES 198, 200-201.

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

**TAKE 55%
OFF LIST
PRICES**

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



**SERIES 745
UNCOATED**

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	LIST PRICE
1/8	1/8	1	3	0.015	TC74501	28.36
1/8	1/8	1	3	0.020	TC74502	28.36
1/8	1/8	1	3	0.030	TC74503	28.36
3/16	3/16	1-1/8	3	0.015	TC74504	31.06
3/16	3/16	1-1/8	3	0.020	TC74505	31.06
3/16	3/16	1-1/8	3	0.030	TC74506	31.06
1/4	1/4	1-1/2	4	0.015	TC74507	43.21
1/4	1/4	1-1/2	4	0.020	TC74508	43.21
1/4	1/4	1-1/2	4	0.030	TC74509	43.21
1/4	1/4	1-1/2	4	0.045	TC74510	43.21
1/4	1/4	1-1/2	4	0.060	TC74511	43.21
1/4	1/4	1-1/2	6	0.015	TC74512	58.07
1/4	1/4	1-1/2	6	0.020	TC74513	58.07
1/4	1/4	1-1/2	6	0.030	TC74514	58.07
1/4	1/4	1-1/2	6	0.045	TC74515	58.07
1/4	1/4	1-1/2	6	0.060	TC74516	58.07
5/16	5/16	1-5/8	4	0.015	TC74517	59.42
5/16	5/16	1-5/8	4	0.020	TC74518	59.42
5/16	5/16	1-5/8	4	0.030	TC74519	59.42
5/16	5/16	1-5/8	4	0.045	TC74520	59.42
5/16	5/16	1-5/8	4	0.060	TC74521	59.42
3/8	3/8	1-3/4	4	0.015	TC74522	64.82
3/8	3/8	1-3/4	4	0.020	TC74523	64.82
3/8	3/8	1-3/4	4	0.030	TC74524	64.82
3/8	3/8	1-3/4	4	0.045	TC74525	64.82
3/8	3/8	1-3/4	4	0.060	TC74526	64.82
3/8	3/8	1-1/2	6	0.015	TC74527	91.82
3/8	3/8	1-1/2	6	0.020	TC74528	91.82
3/8	3/8	1-1/2	6	0.030	TC74529	91.82
3/8	3/8	1-1/2	6	0.045	TC74530	91.82
3/8	3/8	1-1/2	6	0.060	TC74531	91.82
1/2	1/2	1-1/2	6	0.015	TC74532	139.09
1/2	1/2	1-1/2	6	0.020	TC74533	139.09
1/2	1/2	1-1/2	6	0.030	TC74534	139.09
1/2	1/2	1-1/2	6	0.045	TC74535	139.09
1/2	1/2	1-1/2	6	0.060	TC74536	139.09
1/2	1/2	1-1/2	6	0.090	TC74537	139.09
1/2	1/2	1-1/2	6	0.125	TC74538	139.09
1/2	1/2	3	6	0.015	TC74539	145.84
1/2	1/2	3	6	0.020	TC74540	145.84

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	LIST PRICE
1/2	1/2	3	6	0.030	TC74541	145.84
1/2	1/2	3	6	0.045	TC74542	145.84
1/2	1/2	3	6	0.060	TC74543	145.84
1/2	1/2	3	6	0.090	TC74544	145.84
1/2	1/2	3	6	0.125	TC74545	145.84
5/8	5/8	3	6	0.015	TC74546	205.25
5/8	5/8	3	6	0.020	TC74547	205.25
5/8	5/8	3	6	0.030	TC74548	205.25
5/8	5/8	3	6	0.045	TC74549	205.25
5/8	5/8	3	6	0.060	TC74550	205.25
5/8	5/8	3	6	0.090	TC74551	205.25
3/4	3/4	3	6	0.015	TC74552	286.31
3/4	3/4	3	6	0.020	TC74553	286.31
3/4	3/4	3	6	0.030	TC74554	286.31
3/4	3/4	3	6	0.045	TC74555	286.31
3/4	3/4	3	6	0.060	TC74556	286.31
3/4	3/4	3	6	0.090	TC74557	286.31
3/4	3/4	3	6	0.125	TC74558	286.31
3/4	3/4	4	7	0.015	TC74559	462.55
3/4	3/4	4	7	0.020	TC74560	462.55
3/4	3/4	4	7	0.030	TC74561	462.55
3/4	3/4	4	7	0.045	TC74562	462.55
3/4	3/4	4	7	0.060	TC74563	462.55
3/4	3/4	4	7	0.090	TC74564	462.55
3/4	3/4	4	7	0.125	TC74565	462.55
1	1	3	6	0.015	TC74566	483.43
1	1	3	6	0.020	TC74567	483.43
1	1	3	6	0.030	TC74568	483.43
1	1	3	6	0.045	TC74569	483.43
1	1	3	6	0.060	TC74570	483.43
1	1	3	6	0.090	TC74571	483.43
1	1	3	6	0.125	TC74572	483.43
1	1	4	7	0.015	TC74573	661.68
1	1	4	7	0.020	TC74574	661.68
1	1	4	7	0.030	TC74575	661.68
1	1	4	7	0.045	TC74576	661.68
1	1	4	7	0.060	TC74577	661.68
1	1	4	7	0.090	TC74578	661.68
1	1	4	7	0.125	TC74579	661.68
-	-	-	-	-	-	-

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION SEE PAGES 198, 200-201.

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

**TAKE 55%
OFF LIST
PRICES**

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



**SERIES 746
ALTiN COATED**

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	LIST PRICE
1/8	1/8	1	3	0.015	TC74601	35.45
1/8	1/8	1	3	0.020	TC74602	35.45
1/8	1/8	1	3	0.030	TC74603	35.45
3/16	3/16	1-1/8	3	0.015	TC74604	38.82
3/16	3/16	1-1/8	3	0.020	TC74605	38.82
3/16	3/16	1-1/8	3	0.030	TC74606	38.82
1/4	1/4	1-1/2	4	0.015	TC74607	54.01
1/4	1/4	1-1/2	4	0.020	TC74608	54.01
1/4	1/4	1-1/2	4	0.030	TC74609	54.01
1/4	1/4	1-1/2	4	0.045	TC74610	54.01
1/4	1/4	1-1/2	4	0.060	TC74611	54.01
1/4	1/4	1-1/2	6	0.015	TC74612	72.58
1/4	1/4	1-1/2	6	0.020	TC74613	72.58
1/4	1/4	1-1/2	6	0.030	TC74614	72.58
1/4	1/4	1-1/2	6	0.045	TC74615	72.58
1/4	1/4	1-1/2	6	0.060	TC74616	72.58
5/16	5/16	1-5/8	4	0.015	TC74617	74.27
5/16	5/16	1-5/8	4	0.020	TC74618	74.27
5/16	5/16	1-5/8	4	0.030	TC74619	74.27
5/16	5/16	1-5/8	4	0.045	TC74620	74.27
5/16	5/16	1-5/8	4	0.060	TC74621	74.27
3/8	3/8	1-3/4	4	0.015	TC74622	81.02
3/8	3/8	1-3/4	4	0.020	TC74623	81.02
3/8	3/8	1-3/4	4	0.030	TC74624	81.02
3/8	3/8	1-3/4	4	0.045	TC74625	81.02
3/8	3/8	1-3/4	4	0.060	TC74626	81.02
3/8	3/8	1-1/2	6	0.015	TC74627	114.78
3/8	3/8	1-1/2	6	0.020	TC74628	114.78
3/8	3/8	1-1/2	6	0.030	TC74629	114.78
3/8	3/8	1-1/2	6	0.045	TC74630	114.78
3/8	3/8	1-1/2	6	0.060	TC74631	114.78
1/2	1/2	1-1/2	6	0.015	TC74632	173.86
1/2	1/2	1-1/2	6	0.020	TC74633	173.86
1/2	1/2	1-1/2	6	0.030	TC74634	173.86
1/2	1/2	1-1/2	6	0.045	TC74635	173.86
1/2	1/2	1-1/2	6	0.060	TC74636	173.86
1/2	1/2	1-1/2	6	0.090	TC74637	173.86
1/2	1/2	1-1/2	6	0.125	TC74638	173.86
1/2	1/2	3	6	0.015	TC74639	182.30
1/2	1/2	3	6	0.020	TC74640	182.30

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	ITEM#	LIST PRICE
1/2	1/2	3	6	0.030	TC74641	182.30
1/2	1/2	3	6	0.045	TC74642	182.30
1/2	1/2	3	6	0.060	TC74643	182.30
1/2	1/2	3	6	0.090	TC74644	182.30
1/2	1/2	3	6	0.125	TC74645	182.30
5/8	5/8	3	6	0.015	TC74646	256.57
5/8	5/8	3	6	0.020	TC74647	256.57
5/8	5/8	3	6	0.030	TC74648	256.57
5/8	5/8	3	6	0.045	TC74649	256.57
5/8	5/8	3	6	0.060	TC74650	256.57
5/8	5/8	3	6	0.090	TC74651	256.57
3/4	3/4	3	6	0.015	TC74652	352.04
3/4	3/4	3	6	0.020	TC74653	352.04
3/4	3/4	3	6	0.030	TC74654	352.04
3/4	3/4	3	6	0.045	TC74655	352.04
3/4	3/4	3	6	0.060	TC74656	352.04
3/4	3/4	3	6	0.090	TC74657	352.04
3/4	3/4	3	6	0.125	TC74658	352.04
3/4	3/4	4	7	0.015	TC74659	578.19
3/4	3/4	4	7	0.020	TC74660	578.19
3/4	3/4	4	7	0.030	TC74661	578.19
3/4	3/4	4	7	0.045	TC74662	578.19
3/4	3/4	4	7	0.060	TC74663	578.19
3/4	3/4	4	7	0.090	TC74664	578.19
3/4	3/4	4	7	0.125	TC74665	578.19
1	1	3	6	0.015	TC74666	573.73
1	1	3	6	0.020	TC74667	573.73
1	1	3	6	0.030	TC74668	573.73
1	1	3	6	0.045	TC74669	573.73
1	1	3	6	0.060	TC74670	573.73
1	1	3	6	0.090	TC74671	573.73
1	1	3	6	0.125	TC74672	573.73
1	1	4	7	0.015	TC74673	827.10
1	1	4	7	0.020	TC74674	827.10
1	1	4	7	0.030	TC74675	827.10
1	1	4	7	0.045	TC74676	827.10
1	1	4	7	0.060	TC74677	827.10
1	1	4	7	0.090	TC74678	827.10
1	1	4	7	0.125	TC74679	827.10
-	-	-	-	-	-	-

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION SEE PAGES 198, 200-201.

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

**TAKE 55%
OFF LIST
PRICES**

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#	LIST PRICE
1.0	3	3	38	TC11859	20.74
1.5	3	4.2	38	TC11860	20.74
2.0	3	6	38	TC11861	20.74
2.5	3	8	38	TC11862	20.74
3.0	3	12	38	TC11863	20.74
3.5	4	12	50	TC11864	25.55
4.0	4	14	50	TC11865	25.55
4.5	6	16	50	TC11866	31.24
5.0	6	16	50	TC11867	31.24
6.0	6	19	50	TC11868	32.65
7.0	8	19	63	TC11869	35.52
8.0	8	20	63	TC11870	36.93
9.0	10	22	75	TC11871	53.97
10.0	10	22	75	TC11872	68.17
11.0	12	25	75	TC11873	75.28
12.0	12	25	75	TC11874	78.10
14.0	14	32	89	TC11875	132.11
16.0	16	32	89	TC11876	150.55
18.0	18	38	100	TC11877	205.97
20.0	20	38	100	TC11878	326.70
25.0	25	38	100	TC11879	426.11

NOTE: ALL DIMENSIONS IN TABLE ARE METRIC (mm)

SIZE (mm)	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	ITEM#	LIST PRICE
1.0	3	3	38	TC11959	25.89
1.5	3	4.2	38	TC11960	25.89
2.0	3	6	38	TC11961	25.89
2.5	3	8	38	TC11962	25.89
3.0	3	12	38	TC11963	25.89
3.5	4	12	50	TC11964	31.97
4.0	4	14	50	TC11965	31.97
4.5	6	16	50	TC11966	39.07
5.0	6	16	50	TC11967	39.07
6.0	6	19	50	TC11968	40.83
7.0	8	19	63	TC11969	44.38
8.0	8	20	63	TC11970	46.17
9.0	10	22	75	TC11971	67.45
10.0	10	22	75	TC11972	85.21
11.0	12	25	75	TC11973	94.11
12.0	12	25	75	TC11974	97.66
14.0	14	32	89	TC11975	165.14
16.0	16	32	89	TC11976	188.21
18.0	18	38	100	TC11977	257.45
20.0	20	38	100	TC11978	408.35
25.0	25	38	100	TC11979	532.67

NOTE: ALL DIMENSIONS IN TABLE ARE METRIC (mm)

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION SEE PAGES 198, 200-201.

TOLERANCES	DIAMETER	SHANK
ALL SIZES	+0.00mm, -.05mm	-.0025, -.01mm

**TAKE 55%
OFF LIST
PRICES**

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	LIST PRICE	SQUARE END ALTIN	LIST PRICE	BALL NOSE UNCOATED	LIST PRICE	BALL NOSE ALTIN	LIST PRICE
1/64	1/8	0.023	1-1/2	TC10201	23.43	TC11201	29.28	TC10301	29.24	TC11301	36.55
1/32	1/8	1/16	1-1/2	TC10202	14.43	TC11202	18.71	TC10302	18.78	TC11302	24.03
3/64	1/8	3/32	1-1/2	TC10203	14.43	TC11203	18.71	TC10303	18.78	TC11303	24.03
1/16	1/8	1/8	1-1/2	TC10204	10.80	TC11204	14.09	TC10304	14.13	TC11304	18.07
5/64	1/8	1/8	1-1/2	TC10205	18.26	TC11205	22.83	TC10305	22.87	TC11305	28.56
3/32	1/8	3/16	1-1/2	TC10206	10.80	TC11206	14.09	TC10306	14.13	TC11306	18.07
1/8	1/8	1/4	1-1/2	TC10208	10.31	TC11208	13.46	TC10308	13.38	TC11308	17.17
5/32	3/16	5/16	2	TC10210	17.17	TC11210	21.22	TC10310	22.30	TC11310	28.56
3/16	3/16	3/8	2	TC10212	16.12	TC11212	19.98	TC10312	20.92	TC11312	26.76
7/32	1/4	7/16	2	TC10214	21.67	TC11214	26.88	TC10314	28.11	TC11314	35.99
1/4	1/4	1/2	2	TC10216	19.00	TC11216	23.62	TC10316	24.63	TC11316	31.53
5/16	5/16	1/2	2	TC10220	25.68	TC11220	33.40	TC10320	33.32	TC11320	42.66
3/8	3/8	5/8	2	TC10224	33.14	TC11224	41.05	TC10324	43.03	TC11324	52.48
7/16	7/16	5/8	2-1/2	TC10228	41.35	TC11228	51.32	TC10328	53.83	TC11328	65.64
1/2	1/2	5/8	2-1/2	TC10232	52.22	TC11232	64.85	TC10332	67.81	TC11332	86.78
5/8	5/8	3/4	3	TC10240	110.54	TC11240	130.60	TC10340	129.51	TC11340	158.56
3/4	3/4	1	3	TC10248	154.74	TC11248	191.47	TC10348	196.91	TC11348	252.05

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	LIST PRICE	SQUARE END ALTIN	LIST PRICE	BALL NOSE UNCOATED	LIST PRICE	BALL NOSE ALTIN	LIST PRICE
1/64	1/8	0.023	1-1/2	TC10601	23.43	TC10901	29.28	TC10701	29.24	TC11701	36.55
1/32	1/8	1/16	1-1/2	TC10602	14.43	TC10902	18.71	TC10702	18.78	TC11702	24.03
3/64	1/8	3/32	1-1/2	TC10603	14.43	TC10903	18.71	TC10703	18.78	TC11703	24.03
1/16	1/8	1/8	1-1/2	TC10604	10.80	TC10904	14.09	TC10704	14.13	TC11704	18.07
5/64	1/8	1/8	1-1/2	TC10605	18.26	TC10905	22.83	TC10705	22.87	TC11705	28.56
3/32	1/8	3/16	1-1/2	TC10606	10.80	TC10906	14.09	TC10706	14.13	TC11706	18.07
1/8	1/8	1/4	1-1/2	TC10608	10.31	TC10908	13.46	TC10708	13.38	TC11708	17.17
5/32	3/16	5/16	2	TC10610	17.17	TC10910	21.22	TC10710	22.30	TC11710	28.56
3/16	3/16	3/8	2	TC10612	16.12	TC10912	19.98	TC10712	20.92	TC11712	26.76
7/32	1/4	7/16	2	TC10614	21.67	TC10914	26.88	TC10714	28.11	TC11714	35.99
1/4	1/4	1/2	2	TC10616	19.00	TC10916	23.62	TC10716	26.73	TC11716	34.68
5/16	5/16	1/2	2	TC10620	25.68	TC10920	33.40	TC10720	33.32	TC11720	42.66
3/8	3/8	5/8	2	TC10624	33.14	TC10924	41.05	TC10724	43.03	TC11724	52.48
7/16	7/16	5/8	2-1/2	TC10628	41.35	TC10928	51.32	TC10728	53.83	TC11728	65.64
1/2	1/2	5/8	2-1/2	TC10632	52.22	TC10932	65.04	TC10732	67.81	TC11732	86.78
5/8	5/8	3/4	3	TC10640	110.54	TC10940	130.64	TC10740	129.51	TC11740	158.56
3/4	3/4	1	3	TC10648	154.74	TC10948	191.47	TC10748	196.91	TC11748	252.05

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION SEE PAGES 198, 200-201.

TOLERANCES	DIAMETER	SHANK
1/64" - 1/2"	+0.000, -0.002	-0.0001, -0.0004
5/8" - 3/4"	+0.000, -0.003	-0.0001, -0.0004

**TAKE 55%
OFF LIST
PRICES**

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



SERIES 140
UNCOATED



SERIES 148
ALTiN COATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	ITEM#	LIST PRICE
1/16	1/8	1/8	1-1/2	TC14004	20.99
3/32	1/8	3/16	1-1/2	TC14006	21.62
1/8	1/8	1/4	1-1/2	TC14008	17.45
5/32	3/16	5/16	2	TC14010	24.53
3/16	3/16	3/8	2	TC14012	24.53
7/32	1/4	1/2	2-1/2	TC14014	33.65
1/4	1/4	1/2	2-1/2	TC14016	33.65
5/16	5/16	1/2	2-1/2	TC14020	43.51
3/8	3/8	9/16	2-1/2	TC14024	48.03
7/16	7/16	9/16	2-3/4	TC14028	67.84
1/2	1/2	5/8	3	TC14032	83.05

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	ITEM#	LIST PRICE
1/16	1/8	1/8	1-1/2	TC14804	28.34
3/32	1/8	3/16	1-1/2	TC14806	29.20
1/8	1/8	1/4	1-1/2	TC14808	23.54
5/32	3/16	5/16	2	TC14810	31.68
3/16	3/16	3/8	2	TC14812	31.68
7/32	1/4	1/2	2-1/2	TC14814	43.47
1/4	1/4	1/2	2-1/2	TC14816	43.47
5/16	5/16	1/2	2-1/2	TC14820	53.42
3/8	3/8	9/16	2-1/2	TC14824	58.92
7/16	7/16	9/16	2-3/4	TC14828	83.29
1/2	1/2	5/8	3	TC14832	112.10

DOUBLE END - STUB LENGTH - 2 FLUTE - BALL NOSE - 30° HELIX



SERIES 141
UNCOATED



SERIES 142
ALTiN COATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	ITEM#	LIST PRICE
1/16	1/8	1/8	1-1/2	TC14104	26.26
3/32	1/8	3/16	1-1/2	TC14106	27.00
1/8	1/8	1/4	1-1/2	TC14108	21.81
5/32	3/16	5/16	2	TC14110	30.65
3/16	3/16	3/8	2	TC14112	30.65
7/32	1/4	1/2	2-1/2	TC14114	40.25
1/4	1/4	1/2	2-1/2	TC14116	40.25
5/16	5/16	1/2	2-1/2	TC14120	54.40
3/8	3/8	9/16	2-1/2	TC14124	60.02
7/16	7/16	9/16	2-3/4	TC14128	84.82
1/2	1/2	5/8	3	TC14132	103.80

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	ITEM#	LIST PRICE
1/16	1/8	1/8	1-1/2	TC14204	35.45
3/32	1/8	3/16	1-1/2	TC14206	36.47
1/8	1/8	1/4	1-1/2	TC14208	29.44
5/32	3/16	5/16	2	TC14210	39.58
3/16	3/16	3/8	2	TC14212	39.58
7/32	1/4	1/2	2-1/2	TC14214	54.32
1/4	1/4	1/2	2-1/2	TC14216	54.32
5/16	5/16	1/2	2-1/2	TC14220	66.74
3/8	3/8	9/16	2-1/2	TC14224	73.66
7/16	7/16	9/16	2-3/4	TC14228	104.12
1/2	1/2	5/8	3	TC14232	140.16

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION SEE PAGES 198, 200-201.

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

**TAKE 55%
OFF LIST
PRICES**

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



SERIES 145
UNCOATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	ITEM#	LIST PRICE
1/16	1/8	1/8	1-1/2	TC14504	20.99
3/32	1/8	3/16	1-1/2	TC14506	21.62
1/8	1/8	1/4	1-1/2	TC14508	17.45
5/32	3/16	5/16	2	TC14510	24.53
3/16	3/16	3/8	2	TC14512	24.53
7/32	1/4	1/2	2-1/2	TC14514	33.65
1/4	1/4	1/2	2-1/2	TC14516	33.65
5/16	5/16	1/2	2-1/2	TC14520	43.51
3/8	3/8	9/16	2-1/2	TC14524	48.03
7/16	7/16	9/16	2-3/4	TC14528	67.84
1/2	1/2	5/8	3	TC14532	83.05



SERIES 149
ALTiN COATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	ITEM#	LIST PRICE
1/16	1/8	1/8	1-1/2	TC14904	28.34
3/32	1/8	3/16	1-1/2	TC14906	29.20
1/8	1/8	1/4	1-1/2	TC14908	23.54
5/32	3/16	5/16	2	TC14910	31.68
3/16	3/16	3/8	2	TC14912	31.68
7/32	1/4	1/2	2-1/2	TC14914	43.47
1/4	1/4	1/2	2-1/2	TC14916	43.47
5/16	5/16	1/2	2-1/2	TC14920	53.42
3/8	3/8	9/16	2-1/2	TC14924	58.92
7/16	7/16	9/16	2-3/4	TC14928	83.29
1/2	1/2	5/8	3	TC14932	112.10

DOUBLE END - STUB LENGTH - 4 FLUTE - BALL NOSE - 30° HELIX



SERIES 146
UNCOATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	ITEM#	LIST PRICE
1/16	1/8	1/8	1-1/2	TC14604	26.26
3/32	1/8	3/16	1-1/2	TC14606	27.00
1/8	1/8	1/4	1-1/2	TC14608	21.81
5/32	3/16	5/16	2	TC14610	30.65
3/16	3/16	3/8	2	TC14612	30.65
7/32	1/4	1/2	2-1/2	TC14614	40.25
1/4	1/4	1/2	2-1/2	TC14616	40.25
5/16	5/16	1/2	2-1/2	TC14620	54.40
3/8	3/8	9/16	2-1/2	TC14624	60.02
7/16	7/16	9/16	2-3/4	TC14628	84.82
1/2	1/2	5/8	3	TC14632	103.80



SERIES 147
ALTiN COATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	ITEM#	LIST PRICE
1/16	1/8	1/8	1-1/2	TC14704	35.45
3/32	1/8	3/16	1-1/2	TC14706	36.47
1/8	1/8	1/4	1-1/2	TC14708	29.44
5/32	3/16	5/16	2	TC14710	39.58
3/16	3/16	3/8	2	TC14712	39.58
7/32	1/4	1/2	2-1/2	TC14714	54.32
1/4	1/4	1/2	2-1/2	TC14716	54.32
5/16	5/16	1/2	2-1/2	TC14720	66.74
3/8	3/8	9/16	2-1/2	TC14724	73.66
7/16	7/16	9/16	2-3/4	TC14728	104.12
1/2	1/2	5/8	3	TC14732	140.16

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION SEE PAGES 198, 200-201.

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

**TAKE 55%
OFF LIST
PRICES**

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



SERIES 120
UNCOATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	ITEM#	LIST PRICE
1/8	3/8	3/8	3-1/8	TC12008	79.90
5/32	3/8	7/16	3-1/4	TC12010	79.90
3/16	3/8	1/2	3-1/4	TC12012	79.90
7/32	3/8	9/16	3-1/2	TC12014	79.90
1/4	3/8	5/8	3-1/2	TC12016	79.90
9/32	3/8	11/16	3-1/2	TC12018	84.00
5/16	3/8	3/4	3-1/2	TC12020	84.00
11/32	3/8	3/4	3-1/2	TC12022	84.00
3/8	3/8	3/4	3-1/2	TC12024	84.00
7/16	1/2	7/8	4	TC12028	124.96
1/2	1/2	1	4	TC12032	140.37

NOTE: ALL TOOLS WITH WELDON FLATS



SERIES 121
ALTiN COATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	ITEM#	LIST PRICE
1/8	3/8	3/8	3-1/8	TC12108	107.86
5/32	3/8	7/16	3-1/4	TC12110	107.86
3/16	3/8	1/2	3-1/4	TC12112	107.86
7/32	3/8	9/16	3-1/2	TC12114	107.86
1/4	3/8	5/8	3-1/2	TC12116	107.86
9/32	3/8	11/16	3-1/2	TC12118	113.41
5/16	3/8	3/4	3-1/2	TC12120	113.41
11/32	3/8	3/4	3-1/2	TC12122	113.41
3/8	3/8	3/4	3-1/2	TC12124	113.41
7/16	1/2	7/8	4	TC12128	168.75
1/2	1/2	1	4	TC12132	189.52

NOTE: ALL TOOLS WITH WELDON FLATS

DOUBLE END - REGULAR LENGTH - 2 FLUTE - BALL NOSE - 30° HELIX



SERIES 130
UNCOATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	ITEM#	LIST PRICE
1/8	3/8	3/8	3-1/8	TC13008	88.97
5/32	3/8	7/16	3-1/4	TC13010	88.97
3/16	3/8	1/2	3-1/4	TC13012	88.97
7/32	3/8	9/16	3-1/2	TC13014	90.17
1/4	3/8	5/8	3-1/2	TC13016	90.17
9/32	3/8	11/16	3-1/2	TC13018	98.79
5/16	3/8	3/4	3-1/2	TC13020	98.79
11/32	3/8	3/4	3-1/2	TC13022	98.79
3/8	3/8	3/4	3-1/2	TC13024	98.79
7/16	1/2	7/8	4	TC13028	143.00
1/2	1/2	1	4	TC13032	146.19

NOTE: ALL TOOLS WITH WELDON FLATS



SERIES 131
ALTiN COATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	ITEM#	LIST PRICE
1/8	3/8	3/8	3-1/8	TC13108	116.16
5/32	3/8	7/16	3-1/4	TC13110	116.16
3/16	3/8	1/2	3-1/4	TC13112	116.16
7/32	3/8	9/16	3-1/2	TC13114	120.00
1/4	3/8	5/8	3-1/2	TC13116	120.00
9/32	3/8	11/16	3-1/2	TC13118	133.40
5/16	3/8	3/4	3-1/2	TC13120	133.40
11/32	3/8	3/4	3-1/2	TC13122	133.40
3/8	3/8	3/4	3-1/2	TC13124	133.40
7/16	1/2	7/8	4	TC13128	181.54
1/2	1/2	1	4	TC13132	197.33

NOTE: ALL TOOLS WITH WELDON FLATS

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION SEE PAGES 198, 200-201.

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

**TAKE 55%
OFF LIST
PRICES**

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



SERIES 125
UNCOATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	ITEM#	LIST PRICE
1/8	3/8	3/8	3-1/8	TC12508	78.24
5/32	3/8	7/16	3-1/4	TC12510	78.24
3/16	3/8	1/2	3-1/4	TC12512	78.24
7/32	3/8	9/16	3-1/2	TC12514	79.48
1/4	3/8	5/8	3-1/2	TC12516	79.48
9/32	3/8	11/16	3-1/2	TC12518	81.50
5/16	3/8	3/4	3-1/2	TC12520	81.50
11/32	3/8	3/4	3-1/2	TC12522	81.50
3/8	3/8	3/4	3-1/2	TC12524	81.50
7/16	1/2	7/8	4	TC12528	118.15
1/2	1/2	1	4	TC12532	132.73

NOTE: ALL TOOLS WITH WELDON FLATS



SERIES 126
ALTiN COATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	ITEM#	LIST PRICE
1/8	3/8	3/8	3-1/8	TC12608	97.67
5/32	3/8	7/16	3-1/4	TC12610	97.67
3/16	3/8	1/2	3-1/4	TC12612	97.67
7/32	3/8	9/16	3-1/2	TC12614	99.91
1/4	3/8	5/8	3-1/2	TC12616	99.91
9/32	3/8	11/16	3-1/2	TC12618	107.22
5/16	3/8	3/4	3-1/2	TC12620	107.22
11/32	3/8	3/4	3-1/2	TC12622	107.22
3/8	3/8	3/4	3-1/2	TC12624	107.22
7/16	1/2	7/8	4	TC12628	159.53
1/2	1/2	1	4	TC12632	179.22

NOTE: ALL TOOLS WITH WELDON FLATS

DOUBLE END - REGULAR LENGTH - 4 FLUTE - BALL NOSE - 30° HELIX



SERIES 135
UNCOATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	ITEM#	LIST PRICE
1/8	3/8	3/8	3-1/8	TC13508	88.97
5/32	3/8	7/16	3-1/4	TC13510	88.97
3/16	3/8	1/2	3-1/4	TC13512	88.97
7/32	3/8	9/16	3-1/2	TC13514	90.17
1/4	3/8	5/8	3-1/2	TC13516	90.17
9/32	3/8	11/16	3-1/2	TC13518	98.79
5/16	3/8	3/4	3-1/2	TC13520	98.79
11/32	3/8	3/4	3-1/2	TC13522	98.79
3/8	3/8	3/4	3-1/2	TC13524	98.79
7/16	1/2	7/8	4	TC13528	143.00
1/2	1/2	1	4	TC13532	146.19

NOTE: ALL TOOLS WITH WELDON FLATS



SERIES 136
ALTiN COATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	ITEM#	LIST PRICE
1/8	3/8	3/8	3-1/8	TC13608	116.16
5/32	3/8	7/16	3-1/4	TC13610	116.16
3/16	3/8	1/2	3-1/4	TC13612	116.16
7/32	3/8	9/16	3-1/2	TC13614	120.00
1/4	3/8	5/8	3-1/2	TC13616	120.00
9/32	3/8	11/16	3-1/2	TC13618	133.40
5/16	3/8	3/4	3-1/2	TC13620	133.40
11/32	3/8	3/4	3-1/2	TC13622	133.40
3/8	3/8	3/4	3-1/2	TC13624	133.40
7/16	1/2	7/8	4	TC13628	181.54
1/2	1/2	1	4	TC13632	197.33

NOTE: ALL TOOLS WITH WELDON FLATS

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION SEE PAGES 198, 200-201.

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

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

**TAKE 55%
OFF LIST
PRICES**

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	SQUARE END UNCOATED	LIST PRICE	SQUARE END ALTIN	LIST PRICE	BALL NOSE UNCOATED	LIST PRICE	BALL NOSE ALTIN	LIST PRICE
0.005	0.125	0.015	1-1/2	TC56005	50.19	TC56205	60.22	TC57005	62.72	TC57205	75.26
0.006	0.125	0.018	1-1/2	TC56006	50.19	TC56206	60.22	TC57006	62.72	TC57206	75.26
0.007	0.125	0.021	1-1/2	TC56007	50.19	TC56207	60.22	TC57007	62.72	TC57207	75.26
0.008	0.125	0.024	1-1/2	TC56008	50.19	TC56208	60.22	TC57008	62.72	TC57208	75.26
0.009	0.125	0.027	1-1/2	TC56009	44.97	TC56209	53.96	TC57009	56.24	TC57209	67.47
0.010	0.125	0.030	1-1/2	TC56010	44.97	TC56210	53.96	TC57010	56.24	TC57210	67.47
0.011	0.125	0.033	1-1/2	TC56011	40.26	TC56211	48.31	TC57011	50.32	TC57211	60.42
0.012	0.125	0.036	1-1/2	TC56012	40.26	TC56212	48.31	TC57012	50.32	TC57212	60.42
0.013	0.125	0.039	1-1/2	TC56013	33.30	TC56213	39.95	TC57013	41.69	TC57213	50.02
0.014	0.125	0.042	1-1/2	TC56014	33.30	TC56214	39.95	TC57014	41.69	TC57214	50.02
0.015	0.125	0.045	1-1/2	TC56015	28.15	TC56215	33.77	TC57015	35.17	TC57215	42.19
0.016	0.125	0.048	1-1/2	TC56016	28.15	TC56216	33.77	TC57016	35.17	TC57216	42.19
0.017	0.125	0.051	1-1/2	TC56017	28.15	TC56217	33.77	TC57017	35.17	TC57217	42.19
0.018	0.125	0.054	1-1/2	TC56018	28.15	TC56218	33.77	TC57018	35.17	TC57218	42.19
0.019	0.125	0.057	1-1/2	TC56019	28.15	TC56219	33.77	TC57019	35.17	TC57219	42.19
0.020	0.125	0.060	1-1/2	TC56020	25.58	TC56220	30.69	TC57020	32.00	TC57220	38.38
0.021	0.125	0.063	1-1/2	TC56021	25.58	TC56221	30.69	TC57021	32.00	TC57221	38.38
0.022	0.125	0.066	1-1/2	TC56022	25.58	TC56222	30.69	TC57022	32.00	TC57222	38.38
0.023	0.125	0.069	1-1/2	TC56023	25.58	TC56223	30.69	TC57023	32.00	TC57223	38.38
0.024	0.125	0.072	1-1/2	TC56024	25.58	TC56224	30.69	TC57024	32.00	TC57224	38.38
0.025	0.125	0.075	1-1/2	TC56025	25.58	TC56225	30.69	TC57025	32.00	TC57225	38.38
0.026	0.125	0.078	1-1/2	TC56026	24.01	TC56226	28.82	TC57026	30.02	TC57226	36.01
0.027	0.125	0.081	1-1/2	TC56027	24.01	TC56227	28.82	TC57027	30.02	TC57227	36.01
0.028	0.125	0.084	1-1/2	TC56028	24.01	TC56228	28.82	TC57028	30.02	TC57228	36.01
0.029	0.125	0.087	1-1/2	TC56029	24.01	TC56229	28.82	TC57029	30.02	TC57229	36.01
0.030	0.125	0.090	1-1/2	TC56030	24.01	TC56230	28.82	TC57030	30.02	TC57230	36.01
0.031	0.125	0.093	1-1/2	TC56031	22.50	TC56231	26.98	TC57031	28.15	TC57231	33.77
0.032	0.125	0.096	1-1/2	TC56032	22.50	TC56232	26.98	TC57032	28.15	TC57232	33.77
0.033	0.125	0.099	1-1/2	TC56033	22.50	TC56233	26.98	TC57033	28.15	TC57233	33.77
0.034	0.125	0.102	1-1/2	TC56034	22.50	TC56234	26.98	TC57034	28.15	TC57234	33.77
0.035	0.125	0.105	1-1/2	TC56035	22.50	TC56235	26.98	TC57035	28.15	TC57235	33.77
0.036	0.125	0.108	1-1/2	TC56036	22.50	TC56236	26.98	TC57036	28.15	TC57236	33.77
0.037	0.125	0.111	1-1/2	TC56037	22.50	TC56237	26.98	TC57037	28.15	TC57237	33.77
0.038	0.125	0.114	1-1/2	TC56038	22.50	TC56238	26.98	TC57038	28.15	TC57238	33.77
0.039	0.125	0.117	1-1/2	TC56039	22.50	TC56239	26.98	TC57039	28.15	TC57239	33.77
0.040	0.125	0.120	1-1/2	TC56040	22.50	TC56240	26.98	TC57040	28.15	TC57240	33.77
0.041	0.125	0.123	1-1/2	TC56041	22.50	TC56241	26.98	TC57041	28.15	TC57241	33.77
0.042	0.125	0.126	1-1/2	TC56042	22.50	TC56242	26.98	TC57042	28.15	TC57242	33.77
0.043	0.125	0.129	1-1/2	TC56043	22.50	TC56243	26.98	TC57043	28.15	TC57243	33.77
0.044	0.125	0.132	1-1/2	TC56044	21.93	TC56244	26.35	TC57044	27.45	TC57244	32.97
0.045	0.125	0.135	1-1/2	TC56045	21.93	TC56245	26.35	TC57045	27.45	TC57245	32.97
0.046	0.125	0.138	1-1/2	TC56046	21.93	TC56246	26.35	TC57046	27.45	TC57246	32.97
0.047	0.125	0.141	1-1/2	TC56047	21.93	TC56247	26.35	TC57047	27.45	TC57247	32.97
0.048	0.125	0.144	1-1/2	TC56048	21.93	TC56248	26.35	TC57048	27.45	TC57248	32.97
0.049	0.125	0.147	1-1/2	TC56049	21.93	TC56249	26.35	TC57049	27.45	TC57249	32.97
0.050	0.125	0.150	1-1/2	TC56050	21.93	TC56250	26.35	TC57050	27.45	TC57250	32.97
0.051	0.125	0.153	1-1/2	TC56051	21.93	TC56251	26.35	TC57051	27.45	TC57251	32.97
0.052	0.125	0.156	1-1/2	TC56052	21.93	TC56252	26.35	TC57052	27.45	TC57252	32.97
0.053	0.125	0.159	1-1/2	TC56053	21.93	TC56253	26.35	TC57053	27.45	TC57253	32.97
0.054	0.125	0.162	1-1/2	TC56054	21.93	TC56254	26.35	TC57054	27.45	TC57254	32.97
0.055	0.125	0.165	1-1/2	TC56055	21.93	TC56255	26.35	TC57055	27.45	TC57255	32.97
0.056	0.125	0.168	1-1/2	TC56056	21.93	TC56256	26.35	TC57056	27.45	TC57256	32.97
0.057	0.125	0.171	1-1/2	TC56057	21.93	TC56257	26.35	TC57057	27.45	TC57257	32.97
0.058	0.125	0.174	1-1/2	TC56058	21.93	TC56258	26.35	TC57058	27.45	TC57258	32.97

LENGTH OF CUT = 3 X DIAMETER. FOR COATING INFORMATION SEE PAGE 5. CONT'N ON NEXT PAGE

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

**TAKE 55%
OFF LIST
PRICES**

2 FLUTE - 30° HELIX



SERIES 560
SQUARE END - UNCOATED



SERIES 562
SQUARE END - ALTiN COATED



SERIES 570
BALL NOSE - UNCOATED



SERIES 572
BALL NOSE - ALTiN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	SQUARE END UNCOATED	LIST PRICE	SQUARE END ALTiN	LIST PRICE	BALL NOSE UNCOATED	LIST PRICE	BALL NOSE ALTiN	LIST PRICE
0.059	0.125	0.177	1-1/2	TC56059	21.93	TC56259	26.35	TC57059	27.45	TC57259	32.97
0.060	0.125	0.180	1-1/2	TC56060	21.93	TC56260	26.35	TC57060	27.45	TC57260	32.97
0.061	0.125	0.183	1-1/2	TC56061	21.93	TC56261	26.35	TC57061	27.45	TC57261	32.97
0.062	0.125	0.186	1-1/2	TC56062	21.93	TC56262	26.35	TC57062	27.45	TC57262	32.97
0.063	0.125	0.189	1-1/2	TC56063	21.93	TC56263	26.35	TC57063	27.45	TC57263	32.97
0.064	0.125	0.192	1-1/2	TC56064	21.93	TC56264	26.35	TC57064	27.45	TC57264	32.97
0.065	0.125	0.195	1-1/2	TC56065	21.93	TC56265	26.35	TC57065	27.45	TC57265	32.97
0.066	0.125	0.198	1-1/2	TC56066	21.93	TC56266	26.35	TC57066	27.45	TC57266	32.97
0.067	0.125	0.201	1-1/2	TC56067	21.93	TC56267	26.35	TC57067	27.45	TC57267	32.97
0.068	0.125	0.204	1-1/2	TC56068	21.93	TC56268	26.35	TC57068	27.45	TC57268	32.97
0.069	0.125	0.207	1-1/2	TC56069	21.93	TC56269	26.35	TC57069	27.45	TC57269	32.97
0.070	0.125	0.210	1-1/2	TC56070	21.93	TC56270	26.35	TC57070	27.45	TC57270	32.97
0.071	0.125	0.213	1-1/2	TC56071	21.93	TC56271	26.35	TC57071	27.45	TC57271	32.97
0.072	0.125	0.216	1-1/2	TC56072	21.93	TC56272	26.35	TC57072	27.45	TC57272	32.97
0.073	0.125	0.219	1-1/2	TC56073	21.93	TC56273	26.35	TC57073	27.45	TC57273	32.97
0.074	0.125	0.222	1-1/2	TC56074	21.93	TC56274	26.35	TC57074	27.45	TC57274	32.97
0.075	0.125	0.225	1-1/2	TC56075	21.93	TC56275	26.35	TC57075	27.45	TC57275	32.97
0.076	0.125	0.228	1-1/2	TC56076	21.93	TC56276	26.35	TC57076	27.45	TC57276	32.97
0.077	0.125	0.231	1-1/2	TC56077	21.93	TC56277	26.35	TC57077	27.45	TC57277	32.97
0.078	0.125	0.234	1-1/2	TC56078	21.93	TC56278	26.35	TC57078	27.45	TC57278	32.97
0.079	0.125	0.237	1-1/2	TC56079	21.93	TC56279	26.35	TC57079	27.45	TC57279	32.97
0.080	0.125	0.240	1-1/2	TC56080	21.93	TC56280	26.35	TC57080	27.45	TC57280	32.97
0.081	0.125	0.243	1-1/2	TC56081	21.93	TC56281	26.35	TC57081	27.45	TC57281	32.97
0.082	0.125	0.246	1-1/2	TC56082	21.93	TC56282	26.35	TC57082	27.45	TC57282	32.97
0.083	0.125	0.249	1-1/2	TC56083	21.93	TC56283	26.35	TC57083	27.45	TC57283	32.97
0.084	0.125	0.252	1-1/2	TC56084	21.93	TC56284	26.35	TC57084	27.45	TC57284	32.97
0.085	0.125	0.255	1-1/2	TC56085	21.93	TC56285	26.35	TC57085	27.45	TC57285	32.97
0.086	0.125	0.258	1-1/2	TC56086	21.93	TC56286	26.35	TC57086	27.45	TC57286	32.97
0.087	0.125	0.261	1-1/2	TC56087	21.93	TC56287	26.35	TC57087	27.45	TC57287	32.97
0.088	0.125	0.264	1-1/2	TC56088	21.93	TC56288	26.35	TC57088	27.45	TC57288	32.97
0.089	0.125	0.267	1-1/2	TC56089	21.93	TC56289	26.35	TC57089	27.45	TC57289	32.97
0.090	0.125	0.270	1-1/2	TC56090	21.93	TC56290	26.35	TC57090	27.45	TC57290	32.97
0.091	0.125	0.273	1-1/2	TC56091	21.93	TC56291	26.35	TC57091	27.45	TC57291	32.97
0.092	0.125	0.276	1-1/2	TC56092	21.93	TC56292	26.35	TC57092	27.45	TC57292	32.97
0.093	0.125	0.279	1-1/2	TC56093	21.93	TC56293	26.35	TC57093	27.45	TC57293	32.97
0.094	0.125	0.282	1-1/2	TC56094	21.93	TC56294	26.35	TC57094	27.45	TC57294	32.97
0.095	0.125	0.285	1-1/2	TC56095	21.93	TC56295	26.35	TC57095	27.45	TC57295	32.97
0.096	0.125	0.288	1-1/2	TC56096	21.93	TC56296	26.35	TC57096	27.45	TC57296	32.97
0.097	0.125	0.291	1-1/2	TC56097	21.93	TC56297	26.35	TC57097	27.45	TC57297	32.97
0.098	0.125	0.294	1-1/2	TC56098	21.93	TC56298	26.35	TC57098	27.45	TC57298	32.97
0.099	0.125	0.297	1-1/2	TC56099	21.93	TC56299	26.35	TC57099	27.45	TC57299	32.97
0.100	0.125	0.300	1-1/2	TC56100	21.93	TC56300	26.35	TC57100	27.45	TC57300	32.97
0.101	0.125	0.303	1-1/2	TC56101	21.93	TC56301	26.35	TC57101	27.45	TC57301	32.97
0.102	0.125	0.306	1-1/2	TC56102	21.93	TC56302	26.35	TC57102	27.45	TC57302	32.97
0.103	0.125	0.309	1-1/2	TC56103	21.93	TC56303	26.35	TC57103	27.45	TC57303	32.97
0.104	0.125	0.312	1-1/2	TC56104	21.93	TC56304	26.35	TC57104	27.45	TC57304	32.97
0.105	0.125	0.315	1-1/2	TC56105	21.93	TC56305	26.35	TC57105	27.45	TC57305	32.97
0.106	0.125	0.318	1-1/2	TC56106	21.93	TC56306	26.35	TC57106	27.45	TC57306	32.97
0.107	0.125	0.321	1-1/2	TC56107	21.93	TC56307	26.35	TC57107	27.45	TC57307	32.97
0.108	0.125	0.324	1-1/2	TC56108	21.93	TC56308	26.35	TC57108	27.45	TC57308	32.97
0.109	0.125	0.327	1-1/2	TC56109	21.93	TC56309	26.35	TC57109	27.45	TC57309	32.97
0.110	0.125	0.330	1-1/2	TC56110	21.93	TC56310	26.35	TC57110	27.45	TC57310	32.97
0.115	0.125	0.345	1-1/2	TC56115	21.93	TC56315	26.35	TC57115	27.45	TC57315	32.97
0.120	0.125	0.360	1-1/2	TC56120	21.93	TC56320	26.35	TC57120	27.45	TC57320	32.97

LENGTH OF CUT = 3 X DIAMETER. FOR COATING INFORMATION SEE PAGE 5.

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

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

**TAKE 55%
OFF LIST
PRICES**

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	SQUARE END UNCOATED	LIST PRICE	SQUARE END ALTIN	LIST PRICE	BALL NOSE UNCOATED	LIST PRICE	BALL NOSE ALTIN	LIST PRICE
0.010	0.125	0.030	1-1/2	TC58010	44.97	TC58210	53.96	TC59010	56.24	TC59210	67.47
0.011	0.125	0.033	1-1/2	TC58011	40.26	TC58211	48.31	TC59011	50.32	TC59211	60.42
0.012	0.125	0.036	1-1/2	TC58012	40.26	TC58212	48.31	TC59012	50.32	TC59212	60.42
0.013	0.125	0.039	1-1/2	TC58013	33.30	TC58213	39.95	TC59013	41.69	TC59213	50.02
0.014	0.125	0.042	1-1/2	TC58014	33.30	TC58214	39.95	TC59014	41.69	TC59214	50.02
0.015	0.125	0.045	1-1/2	TC58015	28.15	TC58215	33.77	TC59015	35.17	TC59215	42.19
0.016	0.125	0.048	1-1/2	TC58016	28.15	TC58216	33.77	TC59016	35.17	TC59216	42.19
0.017	0.125	0.051	1-1/2	TC58017	28.15	TC58217	33.77	TC59017	35.17	TC59217	42.19
0.018	0.125	0.054	1-1/2	TC58018	28.15	TC58218	33.77	TC59018	35.17	TC59218	42.19
0.019	0.125	0.057	1-1/2	TC58019	28.15	TC58219	33.77	TC59019	35.17	TC59219	42.19
0.020	0.125	0.060	1-1/2	TC58020	25.58	TC58220	30.69	TC59020	32.00	TC59220	38.38
0.021	0.125	0.063	1-1/2	TC58021	25.58	TC58221	30.69	TC59021	32.00	TC59221	38.38
0.022	0.125	0.066	1-1/2	TC58022	25.58	TC58222	30.69	TC59022	32.00	TC59222	38.38
0.023	0.125	0.069	1-1/2	TC58023	25.58	TC58223	30.69	TC59023	32.00	TC59223	38.38
0.024	0.125	0.072	1-1/2	TC58024	25.58	TC58224	30.69	TC59024	32.00	TC59224	38.38
0.025	0.125	0.075	1-1/2	TC58025	25.58	TC58225	30.69	TC59025	32.00	TC59225	38.38
0.026	0.125	0.078	1-1/2	TC58026	24.01	TC58226	28.82	TC59026	30.02	TC59226	36.01
0.027	0.125	0.081	1-1/2	TC58027	24.01	TC58227	28.82	TC59027	30.02	TC59227	36.01
0.028	0.125	0.084	1-1/2	TC58028	24.01	TC58228	28.82	TC59028	30.02	TC59228	36.01
0.029	0.125	0.087	1-1/2	TC58029	24.01	TC58229	28.82	TC59029	30.02	TC59229	36.01
0.030	0.125	0.090	1-1/2	TC58030	24.01	TC58230	28.82	TC59030	30.02	TC59230	36.01
0.031	0.125	0.093	1-1/2	TC58031	22.50	TC58231	26.98	TC59031	28.15	TC59231	33.77
0.032	0.125	0.096	1-1/2	TC58032	22.50	TC58232	26.98	TC59032	28.15	TC59232	33.77
0.033	0.125	0.099	1-1/2	TC58033	22.50	TC58233	26.98	TC59033	28.15	TC59233	33.77
0.034	0.125	0.102	1-1/2	TC58034	22.50	TC58234	26.98	TC59034	28.15	TC59234	33.77
0.035	0.125	0.105	1-1/2	TC58035	22.50	TC58235	26.98	TC59035	28.15	TC59235	33.77
0.036	0.125	0.108	1-1/2	TC58036	22.50	TC58236	26.98	TC59036	28.15	TC59236	33.77
0.037	0.125	0.111	1-1/2	TC58037	22.50	TC58237	26.98	TC59037	28.15	TC59237	33.77
0.038	0.125	0.114	1-1/2	TC58038	22.50	TC58238	26.98	TC59038	28.15	TC59238	33.77
0.039	0.125	0.117	1-1/2	TC58039	22.50	TC58239	26.98	TC59039	28.15	TC59239	33.77
0.040	0.125	0.120	1-1/2	TC58040	22.50	TC58240	26.98	TC59040	28.15	TC59240	33.77
0.041	0.125	0.123	1-1/2	TC58041	22.50	TC58241	26.98	TC59041	28.15	TC59241	33.77
0.042	0.125	0.126	1-1/2	TC58042	22.50	TC58242	26.98	TC59042	28.15	TC59242	33.77
0.043	0.125	0.129	1-1/2	TC58043	22.50	TC58243	26.98	TC59043	28.15	TC59243	33.77
0.044	0.125	0.132	1-1/2	TC58044	21.93	TC58244	26.35	TC59044	27.45	TC59244	32.97
0.045	0.125	0.135	1-1/2	TC58045	21.93	TC58245	26.35	TC59045	27.45	TC59245	32.97
0.046	0.125	0.138	1-1/2	TC58046	21.93	TC58246	26.35	TC59046	27.45	TC59246	32.97
0.047	0.125	0.141	1-1/2	TC58047	21.93	TC58247	26.35	TC59047	27.45	TC59247	32.97
0.048	0.125	0.144	1-1/2	TC58048	21.93	TC58248	26.35	TC59048	27.45	TC59248	32.97
0.049	0.125	0.147	1-1/2	TC58049	21.93	TC58249	26.35	TC59049	27.45	TC59249	32.97
0.050	0.125	0.150	1-1/2	TC58050	21.93	TC58250	26.35	TC59050	27.45	TC59250	32.97
0.051	0.125	0.153	1-1/2	TC58051	21.93	TC58251	26.35	TC59051	27.45	TC59251	32.97
0.052	0.125	0.156	1-1/2	TC58052	21.93	TC58252	26.35	TC59052	27.45	TC59252	32.97
0.053	0.125	0.159	1-1/2	TC58053	21.93	TC58253	26.35	TC59053	27.45	TC59253	32.97
0.054	0.125	0.162	1-1/2	TC58054	21.93	TC58254	26.35	TC59054	27.45	TC59254	32.97
0.055	0.125	0.165	1-1/2	TC58055	21.93	TC58255	26.35	TC59055	27.45	TC59255	32.97
0.056	0.125	0.168	1-1/2	TC58056	21.93	TC58256	26.35	TC59056	27.45	TC59256	32.97
0.057	0.125	0.171	1-1/2	TC58057	21.93	TC58257	26.35	TC59057	27.45	TC59257	32.97
0.058	0.125	0.174	1-1/2	TC58058	21.93	TC58258	26.35	TC59058	27.45	TC59258	32.97

CONTINUED ON NEXT PAGE

LENGTH OF CUT = 3 X DIAMETER
FOR COATING INFORMATION SEE PAGE 5.

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

**TAKE 55%
OFF LIST
PRICES**

4 FLUTE - 30° HELIX



SERIES 580
SQUARE END - UNCOATED



SERIES 582
SQUARE END - ALTIN COATED



SERIES 590
BALL NOSE - UNCOATED



SERIES 592
BALL NOSE - ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	SQUARE END UNCOATED	LIST PRICE	SQUARE END ALTIN	LIST PRICE	BALL NOSE UNCOATED	LIST PRICE	BALL NOSE ALTIN	LIST PRICE
0.059	0.125	0.177	1-1/2	TC58059	21.93	TC58259	26.35	TC59059	27.45	TC59259	32.97
0.060	0.125	0.180	1-1/2	TC58060	21.93	TC58260	26.35	TC59060	27.45	TC59260	32.97
0.061	0.125	0.183	1-1/2	TC58061	21.93	TC58261	26.35	TC59061	27.45	TC59261	32.97
0.062	0.125	0.186	1-1/2	TC58062	21.93	TC58262	26.35	TC59062	27.45	TC59262	32.97
0.063	0.125	0.189	1-1/2	TC58063	21.93	TC58263	26.35	TC59063	27.45	TC59263	32.97
0.064	0.125	0.192	1-1/2	TC58064	21.93	TC58264	26.35	TC59064	27.45	TC59264	32.97
0.065	0.125	0.195	1-1/2	TC58065	21.93	TC58265	26.35	TC59065	27.45	TC59265	32.97
0.066	0.125	0.198	1-1/2	TC58066	21.93	TC58266	26.35	TC59066	27.45	TC59266	32.97
0.067	0.125	0.201	1-1/2	TC58067	21.93	TC58267	26.35	TC59067	27.45	TC59267	32.97
0.068	0.125	0.204	1-1/2	TC58068	21.93	TC58268	26.35	TC59068	27.45	TC59268	32.97
0.069	0.125	0.207	1-1/2	TC58069	21.93	TC58269	26.35	TC59069	27.45	TC59269	32.97
0.070	0.125	0.210	1-1/2	TC58070	21.93	TC58270	26.35	TC59070	27.45	TC59270	32.97
0.071	0.125	0.213	1-1/2	TC58071	21.93	TC58271	26.35	TC59071	27.45	TC59271	32.97
0.072	0.125	0.216	1-1/2	TC58072	21.93	TC58272	26.35	TC59072	27.45	TC59272	32.97
0.073	0.125	0.219	1-1/2	TC58073	21.93	TC58273	26.35	TC59073	27.45	TC59273	32.97
0.074	0.125	0.222	1-1/2	TC58074	21.93	TC58274	26.35	TC59074	27.45	TC59274	32.97
0.075	0.125	0.225	1-1/2	TC58075	21.93	TC58275	26.35	TC59075	27.45	TC59275	32.97
0.076	0.125	0.228	1-1/2	TC58076	21.93	TC58276	26.35	TC59076	27.45	TC59276	32.97
0.077	0.125	0.231	1-1/2	TC58077	21.93	TC58277	26.35	TC59077	27.45	TC59277	32.97
0.078	0.125	0.234	1-1/2	TC58078	21.93	TC58278	26.35	TC59078	27.45	TC59278	32.97
0.079	0.125	0.237	1-1/2	TC58079	21.93	TC58279	26.35	TC59079	27.45	TC59279	32.97
0.080	0.125	0.240	1-1/2	TC58080	21.93	TC58280	26.35	TC59080	27.45	TC59280	32.97
0.081	0.125	0.243	1-1/2	TC58081	21.93	TC58281	26.35	TC59081	27.45	TC59281	32.97
0.082	0.125	0.246	1-1/2	TC58082	21.93	TC58282	26.35	TC59082	27.45	TC59282	32.97
0.083	0.125	0.249	1-1/2	TC58083	21.93	TC58283	26.35	TC59083	27.45	TC59283	32.97
0.084	0.125	0.252	1-1/2	TC58084	21.93	TC58284	26.35	TC59084	27.45	TC59284	32.97
0.085	0.125	0.255	1-1/2	TC58085	21.93	TC58285	26.35	TC59085	27.45	TC59285	32.97
0.086	0.125	0.258	1-1/2	TC58086	21.93	TC58286	26.35	TC59086	27.45	TC59286	32.97
0.087	0.125	0.261	1-1/2	TC58087	21.93	TC58287	26.35	TC59087	27.45	TC59287	32.97
0.088	0.125	0.264	1-1/2	TC58088	21.93	TC58288	26.35	TC59088	27.45	TC59288	32.97
0.089	0.125	0.267	1-1/2	TC58089	21.93	TC58289	26.35	TC59089	27.45	TC59289	32.97
0.090	0.125	0.270	1-1/2	TC58090	21.93	TC58290	26.35	TC59090	27.45	TC59290	32.97
0.091	0.125	0.273	1-1/2	TC58091	21.93	TC58291	26.35	TC59091	27.45	TC59291	32.97
0.092	0.125	0.276	1-1/2	TC58092	21.93	TC58292	26.35	TC59092	27.45	TC59292	32.97
0.093	0.125	0.279	1-1/2	TC58093	21.93	TC58293	26.35	TC59093	27.45	TC59293	32.97
0.094	0.125	0.282	1-1/2	TC58094	21.93	TC58294	26.35	TC59094	27.45	TC59294	32.97
0.095	0.125	0.285	1-1/2	TC58095	21.93	TC58295	26.35	TC59095	27.45	TC59295	32.97
0.096	0.125	0.288	1-1/2	TC58096	21.93	TC58296	26.35	TC59096	27.45	TC59296	32.97
0.097	0.125	0.291	1-1/2	TC58097	21.93	TC58297	26.35	TC59097	27.45	TC59297	32.97
0.098	0.125	0.294	1-1/2	TC58098	21.93	TC58298	26.35	TC59098	27.45	TC59298	32.97
0.099	0.125	0.297	1-1/2	TC58099	21.93	TC58299	26.35	TC59099	27.45	TC59299	32.97
0.100	0.125	0.300	1-1/2	TC58100	21.93	TC58300	26.35	TC59100	27.45	TC59300	32.97
0.101	0.125	0.303	1-1/2	TC58101	21.93	TC58301	26.35	TC59101	27.45	TC59301	32.97
0.102	0.125	0.306	1-1/2	TC58102	21.93	TC58302	26.35	TC59102	27.45	TC59302	32.97
0.103	0.125	0.309	1-1/2	TC58103	21.93	TC58303	26.35	TC59103	27.45	TC59303	32.97
0.104	0.125	0.312	1-1/2	TC58104	21.93	TC58304	26.35	TC59104	27.45	TC59304	32.97
0.105	0.125	0.315	1-1/2	TC58105	21.93	TC58305	26.35	TC59105	27.45	TC59305	32.97
0.106	0.125	0.318	1-1/2	TC58106	21.93	TC58306	26.35	TC59106	27.45	TC59306	32.97
0.107	0.125	0.321	1-1/2	TC58107	21.93	TC58307	26.35	TC59107	27.45	TC59307	32.97
0.108	0.125	0.324	1-1/2	TC58108	21.93	TC58308	26.35	TC59108	27.45	TC59308	32.97
0.109	0.125	0.327	1-1/2	TC58109	21.93	TC58309	26.35	TC59109	27.45	TC59309	32.97
0.110	0.125	0.330	1-1/2	TC58110	21.93	TC58310	26.35	TC59110	27.45	TC59310	32.97
0.115	0.125	0.345	1-1/2	TC58115	21.93	TC58315	26.35	TC59115	27.45	TC59315	32.97
0.120	0.125	0.360	1-1/2	TC58120	21.93	TC58320	26.35	TC59120	27.45	TC59320	32.97

LENGTH OF CUT = 3 X DIAMETER. FOR COATING INFORMATION SEE PAGE 5.

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

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

**TAKE 55%
OFF LIST
PRICES**

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	SQUARE END UNCOATED	LIST PRICE	SQUARE END ALTIN	LIST PRICE	BALL NOSE UNCOATED	LIST PRICE	BALL NOSE ALTIN	LIST PRICE
0.005	0.125	0.008	1-1/2	TC52005	57.71	TC52205	69.24	TC53005	72.12	TC53205	86.56
0.010	0.125	0.015	1-1/2	TC52010	51.72	TC52210	62.05	TC53010	64.66	TC53210	77.57
0.015	0.125	0.023	1-1/2	TC52015	32.36	TC52215	38.85	TC53015	40.46	TC53215	48.55
0.020	0.125	0.030	1-1/2	TC52020	29.42	TC52220	35.31	TC53020	36.78	TC53220	44.13
0.025	0.125	0.038	1-1/2	TC52025	29.42	TC52225	35.31	TC53025	36.78	TC53225	44.13
0.030	0.125	0.045	1-1/2	TC52030	27.62	TC52230	33.13	TC53030	34.50	TC53230	41.39
0.031	0.125	0.047	1-1/2	TC52031	25.88	TC52231	31.03	TC53031	32.36	TC53231	38.85
0.035	0.125	0.053	1-1/2	TC52035	25.88	TC52235	31.03	TC53035	32.36	TC53235	38.85
0.040	0.125	0.060	1-1/2	TC52040	25.88	TC52240	31.03	TC53040	32.36	TC53240	38.85
0.045	0.125	0.068	1-1/2	TC52045	25.24	TC52245	30.29	TC53045	31.56	TC53245	37.91
0.047	0.125	0.071	1-1/2	TC52047	25.24	TC52247	30.29	TC53047	31.56	TC53247	37.91
0.050	0.125	0.075	1-1/2	TC52050	25.24	TC52250	30.29	TC53050	31.56	TC53250	37.91
0.055	0.125	0.083	1-1/2	TC52055	25.24	TC52255	30.29	TC53055	31.56	TC53255	37.91
0.060	0.125	0.090	1-1/2	TC52060	25.24	TC52260	30.29	TC53060	31.56	TC53260	37.91
0.062	0.125	0.093	1-1/2	TC52062	25.24	TC52262	30.29	TC53062	31.56	TC53262	37.91
0.065	0.125	0.098	1-1/2	TC52065	25.24	TC52265	30.29	TC53065	31.56	TC53265	37.91
0.070	0.125	0.105	1-1/2	TC52070	25.24	TC52270	30.29	TC53070	31.56	TC53270	37.91
0.075	0.125	0.113	1-1/2	TC52075	25.24	TC52275	30.29	TC53075	31.56	TC53275	37.91
0.078	0.125	0.117	1-1/2	TC52078	25.24	TC52278	30.29	TC53078	31.56	TC53278	37.91
0.080	0.125	0.120	1-1/2	TC52080	25.24	TC52280	30.29	TC53080	31.56	TC53280	37.91
0.085	0.125	0.128	1-1/2	TC52085	25.24	TC52285	30.29	TC53085	31.56	TC53285	37.91
0.090	0.125	0.135	1-1/2	TC52090	25.24	TC52290	30.29	TC53090	31.56	TC53290	37.91
0.093	0.125	0.140	1-1/2	TC52093	25.24	TC52293	30.29	TC53093	31.56	TC53293	37.91
0.095	0.125	0.143	1-1/2	TC52095	25.24	TC52295	30.29	TC53095	31.56	TC53295	37.91
0.100	0.125	0.150	1-1/2	TC52100	25.24	TC52300	30.29	TC53100	31.56	TC53300	37.91

LENGTH OF CUT = 1.5 X DIAMETER
FOR COATING INFORMATION SEE PAGE 5.

TOLERANCES	DIAMETER	SHANK
ALL SIZES	+0.0005, -0.0005	-0.0001, -0.0003

**TAKE 55%
OFF LIST
PRICES**

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	LIST PRICE	SQUARE END ALTIN	LIST PRICE	BALL NOSE UNCOATED	LIST PRICE	BALL NOSE ALTIN	LIST PRICE
0.010	0.125	0.015	1-1/2	TC54010	51.72	TC54210	62.05	TC55010	56.24	TC55210	77.57
0.015	0.125	0.023	1-1/2	TC54015	32.36	TC54215	38.85	TC55015	35.17	TC55215	48.55
0.020	0.125	0.030	1-1/2	TC54020	29.42	TC54220	35.31	TC55020	32.00	TC55220	44.13
0.025	0.125	0.038	1-1/2	TC54025	29.42	TC54225	35.31	TC55025	32.00	TC55225	44.13
0.030	0.125	0.045	1-1/2	TC54030	27.62	TC54230	33.13	TC55030	30.02	TC55230	41.39
0.031	0.125	0.047	1-1/2	TC54031	25.88	TC54231	31.03	TC55031	28.15	TC55231	38.85
0.035	0.125	0.053	1-1/2	TC54035	25.88	TC54235	31.03	TC55035	28.15	TC55235	38.85
0.040	0.125	0.060	1-1/2	TC54040	25.88	TC54240	31.03	TC55040	28.15	TC55240	38.85
0.045	0.125	0.068	1-1/2	TC54045	25.24	TC54245	30.29	TC55045	27.45	TC55245	37.91
0.047	0.125	0.071	1-1/2	TC54047	25.24	TC54247	30.29	TC55047	27.45	TC55247	37.91
0.050	0.125	0.075	1-1/2	TC54050	25.24	TC54250	30.29	TC55050	27.45	TC55250	37.91
0.055	0.125	0.083	1-1/2	TC54055	25.24	TC54255	30.29	TC55055	27.45	TC55255	37.91
0.060	0.125	0.090	1-1/2	TC54060	25.24	TC54260	30.29	TC55060	27.45	TC55260	37.91
0.062	0.125	0.093	1-1/2	TC54062	25.24	TC54262	30.29	TC55062	27.45	TC55262	37.91
0.065	0.125	0.098	1-1/2	TC54065	25.24	TC54265	30.29	TC55065	27.45	TC55265	37.91
0.070	0.125	0.105	1-1/2	TC54070	25.24	TC54270	30.29	TC55070	27.45	TC55270	37.91
0.075	0.125	0.113	1-1/2	TC54075	25.24	TC54275	30.29	TC55075	27.45	TC55275	37.91
0.078	0.125	0.117	1-1/2	TC54078	25.24	TC54278	30.29	TC55078	27.45	TC55278	37.91
0.080	0.125	0.120	1-1/2	TC54080	25.24	TC54280	30.29	TC55080	27.45	TC55280	37.91
0.085	0.125	0.128	1-1/2	TC54085	25.24	TC54285	30.29	TC55085	27.45	TC55285	37.91
0.090	0.125	0.135	1-1/2	TC54090	25.24	TC54290	30.29	TC55090	27.45	TC55290	37.91
0.093	0.125	0.140	1-1/2	TC54093	25.24	TC54293	30.29	TC55093	27.45	TC55293	37.91
0.095	0.125	0.143	1-1/2	TC54095	25.24	TC54295	30.29	TC55095	27.45	TC55295	37.91
0.100	0.125	0.150	1-1/2	TC54100	25.24	TC54300	30.29	TC55100	27.45	TC55300	37.91

LENGTH OF CUT = 1.5 X DIAMETER
FOR COATING INFORMATION SEE PAGE 5.

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

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

**TAKE 55%
OFF LIST
PRICES**



SERIES 502
UNCOATED



SERIES 504
ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	UNCOATED	LIST PRICE	ALTIN	LIST PRICE
0.015	0.125	0.023	1-1/2	0.003	TC50203	68.44	TC50404	84.86
0.020	0.125	0.030	1-1/2	0.005	TC50205	63.89	TC50406	79.21
0.025	0.125	0.038	1-1/2	0.005	TC50207	63.89	TC50408	79.21
0.030	0.125	0.045	1-1/2	0.005	TC50209	45.64	TC50410	56.57
0.030	0.125	0.045	1-1/2	0.010	TC50211	45.64	TC50412	56.57
0.031	0.125	0.047	1-1/2	0.005	TC50213	45.64	TC50414	56.57
0.031	0.125	0.047	1-1/2	0.010	TC50215	45.64	TC50416	56.57
0.035	0.125	0.053	1-1/2	0.005	TC50217	45.64	TC50418	56.57
0.035	0.125	0.053	1-1/2	0.010	TC50219	45.64	TC50420	56.57
0.040	0.125	0.060	1-1/2	0.005	TC50221	45.64	TC50422	56.57
0.040	0.125	0.060	1-1/2	0.010	TC50223	45.64	TC50424	56.57
0.045	0.125	0.068	1-1/2	0.005	TC50225	45.64	TC50426	56.57
0.045	0.125	0.068	1-1/2	0.010	TC50227	45.64	TC50428	56.57
0.045	0.125	0.068	1-1/2	0.015	TC50229	45.64	TC50430	56.57
0.047	0.125	0.071	1-1/2	0.005	TC50231	45.64	TC50432	56.57
0.047	0.125	0.071	1-1/2	0.010	TC50233	45.64	TC50434	56.57
0.047	0.125	0.071	1-1/2	0.015	TC50235	45.64	TC50436	56.57
0.050	0.125	0.075	1-1/2	0.005	TC50237	45.64	TC50438	56.57
0.050	0.125	0.075	1-1/2	0.010	TC50239	45.64	TC50440	56.57
0.050	0.125	0.075	1-1/2	0.015	TC50241	45.64	TC50442	56.57
0.060	0.125	0.090	1-1/2	0.005	TC50249	45.64	TC50450	56.57
0.060	0.125	0.090	1-1/2	0.010	TC50251	45.64	TC50452	56.57
0.060	0.125	0.090	1-1/2	0.015	TC50253	45.64	TC50454	56.57
0.062	0.125	0.093	1-1/2	0.005	TC50255	45.64	TC50456	56.57
0.062	0.125	0.093	1-1/2	0.010	TC50257	45.64	TC50458	56.57
0.062	0.125	0.093	1-1/2	0.015	TC50259	45.64	TC50460	56.57
0.075	0.125	0.113	1-1/2	0.005	TC50273	45.64	TC50474	56.57
0.075	0.125	0.113	1-1/2	0.010	TC50275	45.64	TC50476	56.57
0.075	0.125	0.113	1-1/2	0.015	TC50277	45.64	TC50478	56.57
0.078	0.125	0.117	1-1/2	0.005	TC50279	45.64	TC50480	56.57
0.078	0.125	0.117	1-1/2	0.010	TC50281	45.64	TC50482	56.57
0.078	0.125	0.117	1-1/2	0.015	TC50283	45.64	TC50484	56.57
0.090	0.125	0.135	1-1/2	0.005	TC50297	45.64	TC50498	56.57
0.090	0.125	0.135	1-1/2	0.010	TC50299	45.64	TC50500	56.57
0.090	0.125	0.135	1-1/2	0.015	TC50301	45.64	TC50502	56.57
0.093	0.125	0.140	1-1/2	0.005	TC50303	45.64	TC50504	56.57
0.093	0.125	0.140	1-1/2	0.010	TC50305	45.64	TC50506	56.57
0.093	0.125	0.140	1-1/2	0.015	TC50307	45.64	TC50508	56.57
0.100	0.125	0.150	1-1/2	0.005	TC50315	45.64	TC50516	56.57
0.100	0.125	0.150	1-1/2	0.010	TC50317	45.64	TC50518	56.57
0.100	0.125	0.150	1-1/2	0.015	TC50319	45.64	TC50520	56.57

LENGTH OF CUT = 1.5 X DIAMETER
FOR COATING INFORMATION SEE PAGE 5.

TOLERANCES	DIAMETER	SHANK	RADIUS
ALL SIZES	+0.0005, -0.0005	-0.0001, -0.0003	+0.0003, -0.0003

**TAKE 55%
OFF LIST
PRICES**

4 FLUTE - CORNER RADIUS - 30° HELIX

SERIES 506
UNCOATED

SERIES 508
ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	CORNER RADIUS	UNCOATED	LIST PRICE	ALTIN	LIST PRICE
0.015	0.125	0.045	1-1/2	0.003	TC50603	68.44	TC50804	84.86
0.020	0.125	0.060	1-1/2	0.005	TC50605	63.89	TC50806	79.21
0.025	0.125	0.075	1-1/2	0.005	TC50607	63.89	TC50808	79.21
0.030	0.125	0.090	1-1/2	0.005	TC50609	45.64	TC50810	56.57
0.030	0.125	0.090	1-1/2	0.010	TC50611	45.64	TC50812	56.57
0.031	0.125	0.093	1-1/2	0.005	TC50613	45.64	TC50814	56.57
0.031	0.125	0.093	1-1/2	0.010	TC50615	45.64	TC50816	56.57
0.035	0.125	0.105	1-1/2	0.005	TC50617	45.64	TC50818	56.57
0.035	0.125	0.105	1-1/2	0.010	TC50619	45.64	TC50820	56.57
0.040	0.125	0.120	1-1/2	0.005	TC50621	45.64	TC50822	56.57
0.040	0.125	0.120	1-1/2	0.010	TC50623	45.64	TC50824	56.57
0.045	0.125	0.135	1-1/2	0.005	TC50625	45.64	TC50826	56.57
0.045	0.125	0.135	1-1/2	0.010	TC50627	45.64	TC50828	56.57
0.045	0.125	0.135	1-1/2	0.015	TC50629	45.64	TC50830	56.57
0.047	0.125	0.141	1-1/2	0.005	TC50631	45.64	TC50832	56.57
0.047	0.125	0.141	1-1/2	0.010	TC50633	45.64	TC50834	56.57
0.047	0.125	0.141	1-1/2	0.015	TC50635	45.64	TC50836	56.57
0.050	0.125	0.150	1-1/2	0.005	TC50637	45.64	TC50838	56.57
0.050	0.125	0.150	1-1/2	0.010	TC50639	45.64	TC50840	56.57
0.050	0.125	0.150	1-1/2	0.015	TC50641	45.64	TC50842	56.57
0.060	0.125	0.180	1-1/2	0.005	TC50649	45.64	TC50850	56.57
0.060	0.125	0.180	1-1/2	0.010	TC50651	45.64	TC50852	56.57
0.060	0.125	0.180	1-1/2	0.015	TC50653	45.64	TC50854	56.57
0.062	0.125	0.186	1-1/2	0.005	TC50655	45.64	TC50856	56.57
0.062	0.125	0.186	1-1/2	0.010	TC50657	45.64	TC50858	56.57
0.062	0.125	0.186	1-1/2	0.015	TC50659	45.64	TC50860	56.57
0.075	0.125	0.225	1-1/2	0.005	TC50673	45.64	TC50874	56.57
0.075	0.125	0.225	1-1/2	0.010	TC50675	45.64	TC50876	56.57
0.075	0.125	0.225	1-1/2	0.015	TC50677	45.64	TC50878	56.57
0.078	0.125	0.234	1-1/2	0.005	TC50679	45.64	TC50880	56.57
0.078	0.125	0.234	1-1/2	0.010	TC50681	45.64	TC50882	56.57
0.078	0.125	0.234	1-1/2	0.015	TC50683	45.64	TC50884	56.57
0.090	0.125	0.270	1-1/2	0.005	TC50697	45.64	TC50898	56.57
0.090	0.125	0.270	1-1/2	0.010	TC50699	45.64	TC50900	56.57
0.090	0.125	0.270	1-1/2	0.015	TC50701	45.64	TC50902	56.57
0.093	0.125	0.279	1-1/2	0.005	TC50703	45.64	TC50904	56.57
0.093	0.125	0.279	1-1/2	0.010	TC50705	45.64	TC50906	56.57
0.093	0.125	0.279	1-1/2	0.015	TC50707	45.64	TC50908	56.57
0.100	0.125	0.300	1-1/2	0.005	TC50715	45.64	TC50916	56.57
0.100	0.125	0.300	1-1/2	0.010	TC50717	45.64	TC50918	56.57
0.100	0.125	0.300	1-1/2	0.015	TC50719	45.64	TC50920	56.57

LENGTH OF CUT = 3.0 X DIAMETER
FOR COATING INFORMATION SEE PAGE 5.

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

INTERNAL / EXTERNAL - UN THREADS



SERIES 840
ALTIN COATED

INTERNAL / EXTERNAL - UN THREADS COOLANT END FED



SERIES 848
ALTIN COATED



END VIEW

SIZE	SHANK DIA.	CUTTING DIA.	THREAD LENGTH	OVERALL LENGTH	# OF FLTS	ITEM#	LIST PRICE	COOLANT FED ITEM#	LIST PRICE
6 - 32	1/8	0.100	0.218	2	3	TC84001	171.47	—	—
8 - 32	1/8	0.115	0.250	2	3	TC84003	171.47	—	—
8 - 36	1/8	0.115	0.250	2	3	TC84005	171.47	—	—
10 - 24	3/16	0.120	0.312	2	3	TC84007	171.47	—	—
10 - 32	3/16	0.120	0.312	2	3	TC84009	171.47	TC84810	199.00
1/4 - 20	3/16	0.180	0.500	2-1/2	3	TC84011	193.94	TC84812	210.00
1/4 - 28	3/16	0.180	0.500	2-1/2	3	TC84013	193.94	TC84814	210.00
5/16 - 18	1/4	0.240	0.625	2-1/2	3	TC84015	228.22	TC84816	260.00
5/16 - 24	1/4	0.240	0.625	2-1/2	3	TC84017	228.22	TC84818	260.00
3/8 - 16	5/16	0.290	0.750	3	4	TC84019	271.94	TC84820	322.00
3/8 - 24	5/16	0.290	0.750	3	4	TC84021	271.94	TC84822	322.00
7/16 - 14	3/8	0.340	0.875	3	4	TC84023	293.26	TC84824	375.00
7/16 - 20	3/8	0.340	0.875	3	4	TC84025	293.26	TC84826	375.00
1/2 - 13	3/8	0.350	0.875	3-1/2	4	TC84027	293.26	TC84828	389.00
1/2 - 20	3/8	0.350	0.875	3-1/2	4	TC84029	293.26	TC84830	389.00
9/16 - 12	1/2	0.370	0.875	3-1/2	4	TC84031	293.26	—	—
9/16 - 18	1/2	0.370	0.875	3-1/2	4	TC84033	293.26	—	—
5/8 - 11	1/2	0.470	1.250	3-1/2	5	TC84035	366.56	—	—
5/8 - 18	1/2	0.470	1.250	3-1/2	5	TC84037	366.56	—	—
3/4 - 10	1/2	0.495	1.250	3-1/2	5	TC84039	366.56	TC84840*	499.00
3/4 - 16	1/2	0.495	1.250	3-1/2	5	TC84041	366.56	TC84842*	499.00
7/8 - 9	5/8	0.620	1.250	3-1/2	5	TC84043	458.80	—	—
7/8 - 14	5/8	0.620	1.250	3-1/2	5	TC84045	458.80	—	—
1 - 8	3/4	0.620	1.375	4	5	TC84047	458.80	—	—
1 - 12	3/4	0.620	1.375	4	5	TC84049	458.80	—	—

*THESE COOLANT FED THREADMILLS ARE AVAILABLE ONLY IN 4 FLUTE

INTERNAL / EXTERNAL - NPT PIPE THREADS



SERIES 842
ALTIN COATED

SIZE	SHANK DIAMETER	CUTTING DIAMETER	THREAD LENGTH	OVERALL LENGTH	NUMBER OF FLUTES	ITEM#	LIST PRICE
1/16 - 27	1/4	0.245	0.437	2-1/2	3	TC84200	228.22
1/8 - 27	5/16	0.310	0.437	2-1/2	4	TC84202	228.22
1/4 - 18	3/8	0.370	0.625	3	4	TC84204	260.13
3/8 - 18	3/8	0.370	0.625	3	4	TC84206	260.13
1/2 - 14	1/2	0.495	0.875	3-1/2	4	TC84208	366.56
3/4 - 14	1/2	0.495	0.875	3-1/2	4	TC84210	366.56
1 - 11-1/2	3/4	0.620	1.125	4	5	TC84212	458.80

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION PLEASE SEE PAGE 199.

THREADMILL CUTTING DIAMETER TOLERANCE

+ .000, - .002

**TAKE 55%
OFF LIST
PRICES**

**TAKE 55%
OFF LIST
PRICES**

INTERNAL / EXTERNAL - NPTF PIPE THREADS



SERIES 844
ALTIN COATED

SIZE	SHANK DIAMETER	CUTTING DIAMETER	THREAD LENGTH	OVERALL LENGTH	NUMBER OF FLUTES	ITEM#	LIST PRICE
1/16 - 27	1/4	0.245	0.437	2-1/2	3	TC84401	228.22
1/8 - 27	5/16	0.310	0.437	2-1/2	4	TC84403	228.22
1/4 - 18	3/8	0.370	0.625	3	4	TC84405	260.13
3/8 - 18	3/8	0.370	0.625	3	4	TC84407	260.13
1/2 - 14	1/2	0.495	0.875	3-1/2	4	TC84409	366.56
3/4 - 14	1/2	0.495	0.875	3-1/2	4	TC84411	366.56
1 - 11-1/2	3/4	0.620	1.125	4	5	TC84413	458.80

INTERNAL / EXTERNAL - METRIC THREADS



SERIES 846
ALTIN COATED

SIZE	SHANK DIAMETER	CUTTING DIAMETER	THREAD LENGTH	OVERALL LENGTH	NUMBER OF FLUTES	ITEM#	LIST PRICE
M4 x 0.70	1/8	0.115	0.250	2	3	TC84620	175.01
M4.5 x 0.75	1/8	0.120	0.250	2	3	TC84622	175.01
M5 x 0.80	3/16	0.120	0.312	2	3	TC84624	175.01
M6 x 1.00	3/16	0.170	0.500	2-1/2	3	TC84626	192.75
M8 x 0.75	1/4	0.235	0.625	2-1/2	3	TC84628	228.22
M8 x 1.00	1/4	0.235	0.625	2-1/2	3	TC84630	228.22
M8 x 1.25	1/4	0.235	0.625	2-1/2	3	TC84632	228.22
M10 x 1.25	5/16	0.300	0.750	3	4	TC84634	271.94
M10 x 1.50	5/16	0.300	0.750	3	4	TC84636	271.94
M12 x 1.00	3/8	0.360	0.875	3-1/2	4	TC84638	294.41
M12 x 1.25	3/8	0.360	0.875	3-1/2	4	TC84640	294.41
M12 x 1.75	3/8	0.360	0.875	3-1/2	4	TC84642	294.41
M14 x 1.50	3/8	0.360	0.875	3-1/2	4	TC84644	294.41
M16 x 2.00	1/2	0.470	1.250	3-1/2	5	TC84646	366.56
M18 x 2.50	1/2	0.470	1.250	3-1/2	5	TC84648	366.56
M20 x 3.00	5/8	0.470	1.250	3-1/2	5	TC84650	366.56

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION PLEASE SEE PAGE 199.

THREADMILL CUTTING DIAMETER TOLERANCE

+ .000, -.002

2 FLUTE - 60° POINT - 30° HELIX



SERIES 316
UNCOATED

**TAKE 55%
OFF LIST
PRICES**

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLUTES	ITEM#	LIST PRICE
1/32	1/8	1/8	1-1/2	2	TC31602	23.31
1/16	1/8	3/16	1-1/2	2	TC31604	23.31
3/32	1/8	3/8	1-1/2	2	TC31606	23.31
1/8	1/8	1/2	1-1/2	2	TC31608	22.36
3/16	3/16	5/8	2	2	TC31612	31.48
1/4	1/4	3/4	2-1/2	2	TC31616	39.39
5/16	5/16	13/16	2-1/2	2	TC31620	48.91
3/8	3/8	1	2-1/2	2	TC31624	61.46
7/16	7/16	1	2-3/4	2	TC31628	83.08
1/2	1/2	1	3	2	TC31632	101.87
5/8	5/8	1-1/4	3-1/2	2	TC31640	194.51
3/4	3/4	1-1/2	4	2	TC31648	286.49



SERIES 318
ALTIN COATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLUTES	ITEM#	LIST PRICE
1/32	1/8	1/8	1-1/2	2	TC31802	29.14
1/16	1/8	3/16	1-1/2	2	TC31804	29.14
3/32	1/8	3/8	1-1/2	2	TC31806	29.14
1/8	1/8	1/2	1-1/2	2	TC31808	27.97
3/16	3/16	5/8	2	2	TC31812	39.35
1/4	1/4	3/4	2-1/2	2	TC31816	49.24
5/16	5/16	13/16	2-1/2	2	TC31820	61.13
3/8	3/8	1	2-1/2	2	TC31824	76.85
7/16	7/16	1	2-3/4	2	TC31828	103.87
1/2	1/2	1	3	2	TC31832	127.36
5/8	5/8	1-1/4	3-1/2	2	TC31840	243.16
3/4	3/4	1-1/2	4	2	TC31848	358.13

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 5. FOR TECHNICAL INFORMATION SEE PAGES 198, 200-201.

TOLERANCES	DIAMETER	SHANK
1/32" - 3/32"	+ .000, -.001	-.0001, -.0004
1/8" - 1/2"	+ .000, -.002	-.0001, -.0004
5/8" - 3/4"	+ .000, -.003	-.0001, -.0004

**TAKE 55%
OFF LIST
PRICES**

4 FLUTE - 60° POINT - 30° HELIX**SERIES 347**
UNCOATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLUTES	ITEM#	LIST PRICE
1/32	1/8	1/8	1-1/2	4	TC34702	23.31
1/16	1/8	3/16	1-1/2	4	TC34704	23.31
3/32	1/8	3/8	1-1/2	4	TC34706	23.31
1/8	1/8	1/2	1-1/2	4	TC34708	22.36
3/16	3/16	5/8	2	4	TC34712	31.48
1/4	1/4	3/4	2-1/2	4	TC34716	39.39
5/16	5/16	13/16	2-1/2	4	TC34720	48.91
3/8	3/8	1	2-1/2	4	TC34724	61.46
7/16	7/16	1	2-3/4	4	TC34728	83.08
1/2	1/2	1	3	4	TC34732	101.87
5/8	5/8	1-1/4	3-1/2	4	TC34740	194.51
3/4	3/4	1-1/2	4	4	TC34748	286.49

**SERIES 349**
ALTIN COATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLUTES	ITEM#	LIST PRICE
1/32	1/8	1/8	1-1/2	4	TC34902	29.14
1/16	1/8	3/16	1-1/2	4	TC34904	29.14
3/32	1/8	3/8	1-1/2	4	TC34906	29.14
1/8	1/8	1/2	1-1/2	4	TC34908	27.97
3/16	3/16	5/8	2	4	TC34912	39.35
1/4	1/4	3/4	2-1/2	4	TC34916	49.24
5/16	5/16	13/16	2-1/2	4	TC34920	61.13
3/8	3/8	1	2-1/2	4	TC34924	76.85
7/16	7/16	1	2-3/4	4	TC34928	103.87
1/2	1/2	1	3	4	TC34932	127.36
5/8	5/8	1-1/4	3-1/2	4	TC34940	243.16
3/4	3/4	1-1/2	4	4	TC34948	358.13

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 5. FOR TECHNICAL INFORMATION SEE PAGES 198, 200-201.

TOLERANCES	DIAMETER	SHANK
1/32" - 3/32"	+ .000, -.001	-.0001, -.0004
1/8" - 1/2"	+ .000, -.002	-.0001, -.0004
5/8" - 3/4"	+ .000, -.003	-.0001, -.0004

2 FLUTE - 90° POINT - 30° HELIX



SERIES 320
UNCOATED

**TAKE 55%
OFF LIST
PRICES**

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLUTES	ITEM#	LIST PRICE
1/32	1/8	1/8	1-1/2	2	TC32002	23.31
1/16	1/8	3/16	1-1/2	2	TC32004	23.31
3/32	1/8	3/8	1-1/2	2	TC32006	23.31
1/8	1/8	1/2	1-1/2	2	TC32008	22.36
3/16	3/16	5/8	2	2	TC32012	31.48
1/4	1/4	3/4	2-1/2	2	TC32016	39.39
5/16	5/16	13/16	2-1/2	2	TC32020	48.91
3/8	3/8	1	2-1/2	2	TC32024	61.46
7/16	7/16	1	2-3/4	2	TC32028	83.08
1/2	1/2	1	3	2	TC32032	101.87
5/8	5/8	1-1/4	3-1/2	2	TC32040	194.51
3/4	3/4	1-1/2	4	2	TC32048	286.49



SERIES 322
ALTIN COATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLUTES	ITEM#	LIST PRICE
1/32	1/8	1/8	1-1/2	2	TC32202	29.14
1/16	1/8	3/16	1-1/2	2	TC32204	29.14
3/32	1/8	3/8	1-1/2	2	TC32206	29.14
1/8	1/8	1/2	1-1/2	2	TC32208	27.97
3/16	3/16	5/8	2	2	TC32212	39.35
1/4	1/4	3/4	2-1/2	2	TC32216	49.24
5/16	5/16	13/16	2-1/2	2	TC32220	61.13
3/8	3/8	1	2-1/2	2	TC32224	76.85
7/16	7/16	1	2-3/4	2	TC32228	103.87
1/2	1/2	1	3	2	TC32232	127.36
5/8	5/8	1-1/4	3-1/2	2	TC32240	243.16
3/4	3/4	1-1/2	4	2	TC32248	358.13

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 5. FOR TECHNICAL INFORMATION SEE PAGES 198, 200-201.

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

**TAKE 55%
OFF LIST
PRICES**

4 FLUTE - 90° POINT - 30° HELIX**SERIES 341**
UNCOATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLUTES	ITEM#	LIST PRICE
1/32	1/8	1/8	1-1/2	4	TC34102	23.31
1/16	1/8	3/16	1-1/2	4	TC34104	23.31
3/32	1/8	3/8	1-1/2	4	TC34106	23.31
1/8	1/8	1/2	1-1/2	4	TC34108	22.36
3/16	3/16	5/8	2	4	TC34112	31.48
1/4	1/4	3/4	2-1/2	4	TC34116	39.39
5/16	5/16	13/16	2-1/2	4	TC34120	48.91
3/8	3/8	1	2-1/2	4	TC34124	61.46
7/16	7/16	1	2-3/4	4	TC34128	83.08
1/2	1/2	1	3	4	TC34132	101.87
5/8	5/8	1-1/4	3-1/2	4	TC34140	194.51
3/4	3/4	1-1/2	4	4	TC34148	286.49

**SERIES 343**
ALTIN COATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLUTES	ITEM#	LIST PRICE
1/32	1/8	1/8	1-1/2	4	TC34302	29.14
1/16	1/8	3/16	1-1/2	4	TC34304	29.14
3/32	1/8	3/8	1-1/2	4	TC34306	29.14
1/8	1/8	1/2	1-1/2	4	TC34308	27.97
3/16	3/16	5/8	2	4	TC34312	39.35
1/4	1/4	3/4	2-1/2	4	TC34316	49.24
5/16	5/16	13/16	2-1/2	4	TC34320	61.13
3/8	3/8	1	2-1/2	4	TC34324	76.85
7/16	7/16	1	2-3/4	4	TC34328	103.87
1/2	1/2	1	3	4	TC34332	127.36
5/8	5/8	1-1/4	3-1/2	4	TC34340	243.16
3/4	3/4	1-1/2	4	4	TC34348	358.13

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 5. FOR TECHNICAL INFORMATION SEE PAGES 198, 200-201.

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

**TAKE 55%
OFF LIST
PRICES**



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#	LIST PRICE
1/8	1/8	1-1/2	1	TC87600	TC87612	TC87624	TC87636	TC87648	19.96
1/4	1/4	2-1/2	1	TC87603	TC87615	TC87627	TC87639	TC87651	35.14
3/8	3/8	2-1/2	1	TC87606	TC87618	TC87630	TC87642	TC87654	54.82
1/2	1/2	3	1	TC87609	TC87621	TC87633	TC87645	TC87657	90.75



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#	LIST PRICE
1/8	1/8	1-1/2	1	TC87660	TC87672	TC87684	TC87696	TC87708	24.97
1/4	1/4	2-1/2	1	TC87663	TC87675	TC87687	TC87699	TC87711	43.86
3/8	3/8	2-1/2	1	TC87666	TC87678	TC87690	TC87702	TC87714	68.54
1/2	1/2	3	1	TC87669	TC87681	TC87693	TC87705	TC87717	113.52



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#	LIST PRICE
1/8	1/8	1-1/2	1	TC87720	TC87732	TC87744	TC87756	TC87768	19.96
1/4	1/4	2-1/2	1	TC87723	TC87735	TC87747	TC87759	TC87771	35.14
3/8	3/8	2-1/2	1	TC87726	TC87738	TC87750	TC87762	TC87774	54.82
1/2	1/2	3	1	TC87729	TC87741	TC87753	TC87765	TC87777	90.75



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#	LIST PRICE
1/8	1/8	1-1/2	1	TC87780	TC87792	TC87804	TC87816	TC87828	24.97
1/4	1/4	2-1/2	1	TC87783	TC87795	TC87807	TC87819	TC87831	43.86
3/8	3/8	2-1/2	1	TC87786	TC87798	TC87810	TC87822	TC87834	68.54
1/2	1/2	3	1	TC87789	TC87801	TC87813	TC87825	TC87837	113.52

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION SEE PAGES 198, 200-201.

**TAKE 55%
OFF LIST
PRICES**



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#	LIST PRICE
1/8	1/8	2	1	TC87840	TC87858	TC87876	TC87894	TC87912	35.93
3/16	3/16	2-1/2	1	TC87843	TC87861	TC87879	TC87897	TC87915	49.48
1/4	1/4	2-1/2	1	TC87846	TC87864	TC87882	TC87900	TC87918	63.26
5/16	5/16	2-1/2	1	TC87849	TC87867	TC87885	TC87903	TC87921	80.97
3/8	3/8	2-1/2	1	TC87852	TC87870	TC87888	TC87906	TC87924	98.68
1/2	1/2	3	1	TC87855	TC87873	TC87891	TC87909	TC87927	163.35



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#	LIST PRICE
1/8	1/8	2	1	TC87930	TC87948	TC87966	TC87984	TC88002	44.94
3/16	3/16	2-1/2	1	TC87933	TC87951	TC87969	TC87987	TC88005	61.85
1/4	1/4	2-1/2	1	TC87936	TC87954	TC87972	TC87990	TC88008	78.94
5/16	5/16	2-1/2	1	TC87939	TC87957	TC87975	TC87993	TC88011	101.15
3/8	3/8	2-1/2	1	TC87942	TC87960	TC87978	TC87996	TC88014	123.48
1/2	1/2	3	1	TC87945	TC87963	TC87981	TC87999	TC88017	204.39



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#	LIST PRICE
1/8	1/8	2	1	TC88020	TC88038	TC88056	TC88074	TC88092	35.93
3/16	3/16	2-1/2	1	TC88023	TC88041	TC88059	TC88077	TC88095	49.48
1/4	1/4	2-1/2	1	TC88026	TC88044	TC88062	TC88080	TC88098	63.26
5/16	5/16	2-1/2	1	TC88029	TC88047	TC88065	TC88083	TC88101	80.97
3/8	3/8	2-1/2	1	TC88032	TC88050	TC88068	TC88086	TC88104	98.68
1/2	1/2	3	1	TC88035	TC88053	TC88071	TC88089	TC88107	163.35



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#	LIST PRICE
1/8	1/8	2	1	TC88110	TC88128	TC88146	TC88164	TC88182	44.94
3/16	3/16	2-1/2	1	TC88113	TC88131	TC88149	TC88167	TC88185	61.85
1/4	1/4	2-1/2	1	TC88116	TC88134	TC88152	TC88170	TC88188	78.94
5/16	5/16	2-1/2	1	TC88119	TC88137	TC88155	TC88173	TC88191	101.15
3/8	3/8	2-1/2	1	TC88122	TC88140	TC88158	TC88176	TC88194	123.48
1/2	1/2	3	1	TC88125	TC88143	TC88161	TC88179	TC88197	204.39

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION SEE PAGES 198, 200-201.

N/C SPOTTING DRILLS



SERIES 187 - 90° POINT
UNCOATED

SIZE	SHANK DIAMETER	FLUTE LENGTH	OVERALL LENGTH	ITEM #	LIST PRICE
1/8	1/8	1/4	2	TC18708	27.96
3/16	3/16	3/8	2	TC18712	33.27
1/4	1/4	3/8	3	TC18716	40.41
3/8	3/8	1/2	4	TC18724	64.24
1/2	1/2	3/4	4	TC18732	107.36
5/8	5/8	1	4	TC18740	191.11
3/4	3/4	1	4	TC18748	256.61



SERIES 188 - 120° POINT
UNCOATED

SIZE	SHANK DIAMETER	FLUTE LENGTH	OVERALL LENGTH	ITEM #	LIST PRICE
1/8	1/8	1/4	2	TC18808	27.96
3/16	3/16	3/8	2	TC18812	33.27
1/4	1/4	3/8	3	TC18816	40.41
3/8	3/8	1/2	4	TC18824	64.24
1/2	1/2	3/4	4	TC18832	107.36
5/8	5/8	1	4	TC18840	191.11
3/4	3/4	1	4	TC18848	256.61



SERIES 189 - 140° POINT
UNCOATED

N/C SPOTTING FOR HIGH PERFORMANCE DRILLING					
SIZE	SHANK DIAMETER	FLUTE LENGTH	OVERALL LENGTH	ITEM #	LIST PRICE
1/8	1/8	1/4	2	TC18908	27.96
3/16	3/16	3/8	2	TC18912	33.27
1/4	1/4	3/8	3	TC18916	40.41
3/8	3/8	1/2	4	TC18924	64.24
1/2	1/2	3/4	4	TC18932	107.36
5/8	5/8	1	4	TC18940	191.11
3/4	3/4	1	4	TC18948	256.61

**TAKE 55%
OFF LIST
PRICES**

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 202.

**TAKE 55%
OFF LIST
PRICES**

N/C SPOTTING DRILLS

SERIES 287 - 90° POINT
ALTIN COATED

SIZE	SHANK DIAMETER	FLUTE LENGTH	OVERALL LENGTH	ITEM #	LIST PRICE
1/8	1/8	1/4	2	TC28708	34.94
3/16	3/16	3/8	2	TC28712	41.60
1/4	1/4	3/8	3	TC28716	50.74
3/8	3/8	1/2	4	TC28724	80.30
1/2	1/2	3/4	4	TC28732	139.77
5/8	5/8	1	4	TC28740	244.35
3/4	3/4	1	4	TC28748	320.78



SERIES 288 - 120° POINT
ALTIN COATED

SIZE	SHANK DIAMETER	FLUTE LENGTH	OVERALL LENGTH	ITEM #	LIST PRICE
1/8	1/8	1/4	2	TC28808	34.94
3/16	3/16	3/8	2	TC28812	41.60
1/4	1/4	3/8	3	TC28816	50.74
3/8	3/8	1/2	4	TC28824	80.30
1/2	1/2	3/4	4	TC28832	139.77
5/8	5/8	1	4	TC28840	244.35
3/4	3/4	1	4	TC28848	320.78



SERIES 289 - 140° POINT
ALTIN COATED

N/C SPOTTING FOR HIGH PERFORMANCE DRILLING					
SIZE	SHANK DIAMETER	FLUTE LENGTH	OVERALL LENGTH	ITEM #	LIST PRICE
1/8	1/8	1/4	2	TC28908	34.94
3/16	3/16	3/8	2	TC28912	41.60
1/4	1/4	3/8	3	TC28916	50.74
3/8	3/8	1/2	4	TC28924	80.30
1/2	1/2	3/4	4	TC28932	139.77
5/8	5/8	1	4	TC28940	244.35
3/4	3/4	1	4	TC28948	320.78

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION PLEASE SEE PAGE 202.

JOBBER LENGTH - 118° SPLIT POINT - 25° HELIX

SERIES 190
UNCOATED



SERIES 191
ALTiN COATED



**TAKE 55%
OFF LIST
PRICES**

FRACTIONAL SIZES

SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	LIST PRICE	ALTiN	LIST PRICE
1/32	5/16	1-1/4	TC19002	15.75	TC79002	19.68
3/64	3/4	1-1/2	TC19003	15.75	TC79003	19.68
1/16	3/4	1-1/2	TC19004	14.89	TC79004	18.60
5/64	7/8	1-3/4	TC19005	15.75	TC79005	19.68
3/32	1	2	TC19006	17.34	TC79006	21.69
7/64	1-1/4	2-1/4	TC19007	19.72	TC79007	24.66
1/8	1-1/4	2-1/4	TC19008	21.02	TC79008	26.29
9/64	1-3/8	2-1/2	TC19009	23.28	TC79009	29.11
5/32	1-3/8	2-1/2	TC19010	26.11	TC79010	32.64
11/64	1-5/8	2-3/4	TC19011	30.82	TC79011	38.55
3/16	1-5/8	2-3/4	TC19012	31.71	TC79012	39.62
13/64	1-3/4	3	TC19013	36.62	TC79013	45.79
7/32	1-3/4	3	TC19014	40.63	TC79014	50.80
15/64	2	3-1/4	TC19015	46.01	TC79015	57.48
1/4	2	3-1/4	TC19016	48.35	TC79016	60.42
17/64	2-1/8	3-1/2	TC19017	54.44	TC79017	68.07

FRACTIONAL SIZES

SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	LIST PRICE	ALTiN	LIST PRICE
9/32	2-1/8	3-1/2	TC19018	56.78	TC79018	71.00
19/64	2-3/8	3-3/4	TC19019	63.80	TC79019	79.73
5/16	2-3/8	3-3/4	TC19020	67.10	TC79020	83.85
21/64	2-1/2	4	TC19021	73.23	TC79021	91.54
11/32	2-1/2	4	TC19022	80.06	TC79022	100.08
23/64	2-3/4	4-1/4	TC19023	89.53	TC79023	111.92
3/8	2-3/4	4-1/4	TC19024	94.95	TC79024	118.68
25/64	2-7/8	4-1/2	TC19025	111.18	TC79025	138.96
13/32	2-7/8	4-1/2	TC19026	121.77	TC79026	152.22
27/64	2-7/8	4-1/2	TC19027	132.42	TC79027	165.51
7/16	2-7/8	4-1/2	TC19028	138.55	TC79028	173.23
29/64	3	4-3/4	TC19029	160.76	TC79029	200.94
15/32	3	4-3/4	TC19030	167.48	TC79030	209.33
31/64	3	4-3/4	TC19031	172.19	TC79031	215.27
1/2	3	4-3/4	TC19032	172.57	TC79032	215.72
-	-	-	-	-	-	-

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

METRIC SIZES

SIZE (mm)	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	LIST PRICE	ALTiN	LIST PRICE
0.7	12	31	TC19307	19.57	TC79307	24.47
0.8	12	31	TC19308	19.57	TC79308	24.47
0.9	16	38	TC19309	19.57	TC79309	24.47
1.0	16	38	TC19310	19.57	TC79310	24.47
1.1	19	38	TC19311	19.57	TC79311	24.47
1.2	19	38	TC19312	19.57	TC79312	24.47
1.3	19	38	TC19313	19.57	TC79313	24.47
1.4	19	38	TC19314	19.57	TC79314	24.47
1.5	19	38	TC19315	19.72	TC79315	24.66
1.6	19	38	TC19316	19.72	TC79316	24.66
1.7	19	38	TC19317	19.72	TC79317	24.66
1.8	22	38	TC19318	19.72	TC79318	24.66
1.9	22	38	TC19319	19.72	TC79319	24.66
2.0	22	44	TC19320	20.94	TC79320	26.18
2.1	22	44	TC19321	20.94	TC79321	26.18
2.2	25	50	TC19322	20.94	TC79322	26.18
2.3	25	50	TC19323	20.94	TC79323	26.18
2.4	25	50	TC19324	20.94	TC79324	26.18
2.5	25	50	TC19325	24.06	TC79325	30.08
2.6	32	57	TC19326	24.06	TC79326	30.08
2.7	32	57	TC19327	24.06	TC79327	30.08
2.8	32	57	TC19328	24.06	TC79328	30.08
2.9	32	57	TC19329	24.06	TC79329	30.08

METRIC SIZES

SIZE (mm)	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	LIST PRICE	ALTiN	LIST PRICE
3.0	32	57	TC19330	26.96	TC79330	33.68
3.1	32	57	TC19331	26.96	TC79331	33.68
3.2	32	57	TC19332	26.96	TC79332	33.68
3.3	32	57	TC19333	26.96	TC79333	33.68
3.4	35	63	TC19334	29.26	TC79334	36.62
3.5	35	63	TC19335	29.26	TC79335	36.62
4.0	35	63	TC19340	36.02	TC79340	45.01
4.5	41	70	TC19345	38.58	TC79345	48.24
5.0	44	75	TC19350	42.67	TC79350	53.36
5.5	44	75	TC19355	50.54	TC79355	63.17
6.0	50	82	TC19360	53.44	TC79360	66.77
6.5	50	82	TC19365	85.11	TC79365	106.39
7.0	54	89	TC19370	93.21	TC79370	116.53
7.5	60	95	TC19375	96.25	TC79375	120.32
8.0	60	95	TC19380	101.82	TC79380	127.26
8.5	63	100	TC19385	125.70	TC79385	157.12
9.0	70	100	TC19390	142.71	TC79390	178.40
9.5	70	108	TC19395	162.84	TC79395	203.57
10.0	73	114	TC19400	187.01	TC79400	233.76
10.5	73	114	TC19405	209.14	TC79405	261.43
11.0	73	114	TC19410	248.84	TC79410	311.08
11.5	76	120	TC19415	256.31	TC79415	320.40
12.0	76	120	TC19420	284.45	TC79420	355.60

NOTE: ALL DIMENSIONS IN TABLE ARE METRIC (mm)

NOTE: SIZES 3.1mm AND UNDER ARE NOT SPLIT.

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION PLEASE SEE PAGE 202.

DIAMETER TOLERANCE +.0000, -.0005

**TAKE 55%
OFF LIST
PRICES**

JOBBER LENGTH - 118° SPLIT POINT - 25° HELIX



SERIES 190
UNCOATED

SERIES 191
ALTIN COATED

LETTER SIZES

SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	LIST PRICE	ALTIN	LIST PRICE
A	2	3-1/4	TC19101	46.42	TC79101	58.00
B	2	3-1/4	TC19102	48.35	TC79102	60.42
C	2	3-1/4	TC19103	48.72	TC79103	60.90
D	2	3-1/4	TC19104	49.32	TC79104	61.64
E	2	3-1/4	TC19105	48.35	TC79105	60.42
F	2	3-1/4	TC19106	53.77	TC79106	67.21
G	2-1/8	3-1/2	TC19107	57.04	TC79107	71.26
H	2-1/8	3-1/2	TC19108	58.26	TC79108	72.82
I	2-1/8	3-1/2	TC19109	59.19	TC79109	74.01
J	2-1/8	3-1/2	TC19110	60.79	TC79110	76.02
K	2-1/8	3-1/2	TC19111	61.31	TC79111	76.65
L	2-1/8	3-1/2	TC19112	64.80	TC79112	81.03
M	2-3/8	3-3/4	TC19113	66.14	TC79113	82.66

LETTER SIZES

SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	LIST PRICE	ALTIN	LIST PRICE
N	2-3/8	3-3/4	TC19114	70.30	TC79114	87.86
O	2-3/8	3-3/4	TC19115	74.08	TC79115	92.61
P	2-3/8	3-3/4	TC19116	76.91	TC79116	96.14
Q	2-1/2	4	TC19117	79.73	TC79117	99.63
R	2-1/2	4	TC19118	83.22	TC79118	104.01
S	2-1/2	4	TC19119	88.64	TC79119	110.81
T	2-3/4	4-1/4	TC19120	91.83	TC79120	114.75
U	2-3/4	4-1/4	TC19121	96.37	TC79121	120.43
V	2-3/4	4-1/4	TC19122	106.73	TC79122	133.39
W	2-7/8	4-1/2	TC19123	114.93	TC79123	143.68
X	2-7/8	4-1/2	TC19124	125.44	TC79124	156.78
Y	2-7/8	4-1/2	TC19125	129.64	TC79125	162.06
Z	2-7/8	4-1/2	TC19126	140.48	TC79126	175.61

WIRE SIZES

SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	LIST PRICE	ALTIN	LIST PRICE
1	1-3/4	3	TC19201	42.07	TC79201	52.58
2	1-3/4	3	TC19202	42.07	TC79202	52.58
3	1-3/4	3	TC19203	42.07	TC79203	52.58
4	1-3/4	3	TC19204	41.63	TC79204	52.03
5	1-3/4	3	TC19205	37.14	TC79205	46.46
6	1-3/4	3	TC19206	37.14	TC79206	46.46
7	1-3/4	3	TC19207	36.10	TC79207	45.12
8	1-3/4	3	TC19208	35.91	TC79208	44.90
9	1-3/4	3	TC19209	35.91	TC79209	44.90
10	1-5/8	2-3/4	TC19210	35.91	TC79210	44.90
11	1-5/8	2-3/4	TC19211	35.06	TC79211	43.78
12	1-5/8	2-3/4	TC19212	35.06	TC79212	43.78
13	1-5/8	2-3/4	TC19213	33.79	TC79213	42.26
14	1-5/8	2-3/4	TC19214	32.94	TC79214	41.18
15	1-5/8	2-3/4	TC19215	32.42	TC79215	40.51
16	1-5/8	2-3/4	TC19216	32.42	TC79216	40.51
17	1-5/8	2-3/4	TC19217	30.82	TC79217	38.55
18	1-5/8	2-3/4	TC19218	29.00	TC79218	36.24
19	1-5/8	2-3/4	TC19219	28.37	TC79219	35.46
20	1-3/8	2-1/2	TC19220	27.15	TC79220	33.94
21	1-3/8	2-1/2	TC19221	27.15	TC79221	33.94
22	1-3/8	2-1/2	TC19222	26.11	TC79222	32.64
23	1-3/8	2-1/2	TC19223	26.11	TC79223	32.64
24	1-3/8	2-1/2	TC19224	25.92	TC79224	32.42
25	1-3/8	2-1/2	TC19225	24.51	TC79225	30.67
26	1-3/8	2-1/2	TC19226	24.51	TC79226	30.67
27	1-3/8	2-1/2	TC19227	24.51	TC79227	30.67
28	1-3/8	2-1/2	TC19228	23.28	TC79228	29.11
29	1-3/8	2-1/2	TC19229	23.28	TC79229	29.11
30	1-1/4	2-1/4	TC19230	22.06	TC79230	27.59

WIRE SIZES

SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	LIST PRICE	ALTIN	LIST PRICE
31	1-1/4	2-1/4	TC19231	20.50	TC79231	25.62
32	1-1/4	2-1/4	TC19232	20.50	TC79232	25.62
33	1-1/4	2-1/4	TC19233	20.31	TC79233	25.40
34	1-1/4	2-1/4	TC19234	20.16	TC79234	25.18
35	1-1/4	2-1/4	TC19235	20.16	TC79235	25.18
36	1-1/4	2-1/4	TC19236	20.16	TC79236	25.18
37	1-1/4	2-1/4	TC19237	19.09	TC79237	23.88
38	1-1/4	2-1/4	TC19238	18.75	TC79238	23.43
39	1-1/4	2-1/4	TC19239	18.75	TC79239	23.43
40	1	2	TC19240	18.05	TC79240	22.54
41	1	2	TC19241	18.05	TC79241	22.54
42	1	2	TC19242	17.53	TC79242	21.91
43	1	2	TC19243	17.53	TC79243	21.91
44	1	2	TC19244	16.64	TC79244	20.80
45	7/8	1-3/4	TC19245	16.15	TC79245	20.16
46	7/8	1-3/4	TC19246	16.15	TC79246	20.16
47	7/8	1-3/4	TC19247	16.15	TC79247	20.16
48	7/8	1-3/4	TC19248	16.15	TC79248	20.16
49	7/8	1-3/4	TC19249	15.41	TC79249	19.27
50	7/8	1-3/4	TC19250	15.41	TC79250	19.27
51	3/4	1-1/2	TC19251	14.89	TC79251	18.60
52	3/4	1-1/2	TC19252	14.89	TC79252	18.60
53	3/4	1-1/2	TC19253	15.75	TC79253	19.68
54	3/4	1-1/2	TC19254	15.75	TC79254	19.68
55	3/4	1-1/2	TC19255	15.75	TC79255	19.68
56	3/4	1-1/2	TC19256	15.75	TC79256	19.68
57	3/4	1-1/2	TC19257	15.75	TC79257	19.68
58	3/4	1-1/2	TC19258	15.75	TC79258	19.68
59	3/4	1-1/2	TC19259	15.75	TC79259	19.68
60	3/4	1-1/2	TC19260	15.75	TC79260	19.68

NOTE: SIZES 31 AND UNDER ARE NOT SPLIT.

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION PLEASE SEE PAGE 202.

DIAMETER TOLERANCE

+0.0000, -0.0005

STUB LENGTH - 135° SPLIT POINT - 15° HELIX

SERIES 200
UNCOATED



SERIES 201
ALTIN COATED



**TAKE 55%
OFF LIST
PRICES**

FRACTIONAL SIZES						FRACTIONAL SIZES							
SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	LIST PRICE	ALTIN	LIST PRICE	SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	LIST PRICE	ALTIN	LIST PRICE
1/32	3/8	1-1/2	TC20002	16.75	TC29002	20.94	9/32	1-1/4	2-1/2	TC20018	60.31	TC29018	75.38
3/64	3/8	1-1/2	TC20003	16.75	TC29003	20.94	19/64	1-1/4	2-1/2	TC20019	67.73	TC29019	84.70
1/16	13/32	1-1/2	TC20004	15.82	TC29004	19.76	5/16	1-1/4	2-1/2	TC20020	71.34	TC29020	89.12
5/64	7/16	1-1/2	TC20005	16.75	TC29005	20.94	21/64	1-3/8	3	TC20021	77.80	TC29021	97.26
3/32	1/2	1-1/2	TC20006	18.46	TC29006	23.06	11/32	1-3/8	3	TC20022	85.08	TC29022	106.32
7/64	5/8	2	TC20007	20.94	TC29007	26.18	23/64	1-3/8	3	TC20023	95.10	TC29023	118.87
1/8	3/4	2	TC20008	22.36	TC29008	27.93	3/8	1-3/8	3	TC20024	100.86	TC29024	126.07
9/64	3/4	2	TC20009	24.77	TC29009	30.93	25/64	1-3/8	3	TC20025	118.13	TC29025	147.65
5/32	7/8	2	TC20010	27.74	TC29010	34.65	13/32	1-3/8	3	TC20026	129.38	TC29026	161.72
11/64	7/8	2	TC20011	32.75	TC29011	40.96	27/64	1-3/8	3	TC20027	140.74	TC29027	175.91
3/16	7/8	2	TC20012	33.68	TC29012	42.11	7/16	1-3/8	3	TC20028	147.20	TC29028	184.00
13/64	1-1/8	2-1/2	TC20013	38.92	TC29013	48.65	29/64	1-3/8	3	TC20029	170.78	TC29029	213.49
7/32	1-1/8	2-1/2	TC20014	43.19	TC29014	53.99	15/32	1-3/8	3	TC20030	177.95	TC29030	222.44
15/64	1-1/4	2-1/2	TC20015	48.87	TC29015	61.09	31/64	1-3/8	3	TC20031	182.96	TC29031	228.71
1/4	1-1/4	2-1/2	TC20016	51.36	TC29016	64.21	1/2	1-3/8	3	TC20032	183.37	TC29032	229.20
17/64	1-1/4	2-1/2	TC20017	57.89	TC29017	72.34	-	-	-	-	-	-	-

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

LETTER SIZES							LETTER SIZES						
SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	LIST PRICE	ALTIN	LIST PRICE	SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	LIST PRICE	ALTIN	LIST PRICE
A	1-1/4	2-1/2	TC20101	49.32	TC29101	61.64	N	1-1/4	2-1/2	TC20114	74.68	TC29114	93.32
B	1-1/4	2-1/2	TC20102	51.36	TC29102	64.21	O	1-3/8	3	TC20115	78.73	TC29115	98.41
C	1-1/4	2-1/2	TC20103	51.73	TC29103	64.69	P	1-3/8	3	TC20116	81.73	TC29116	102.16
D	1-1/4	2-1/2	TC20104	52.40	TC29104	65.47	Q	1-3/8	3	TC20117	84.70	TC29117	105.87
E	1-1/4	2-1/2	TC20105	51.36	TC29105	64.21	R	1-3/8	3	TC20118	88.42	TC29118	110.51
F	1-1/4	2-1/2	TC20106	57.15	TC29106	71.41	S	1-3/8	3	TC20119	94.17	TC29119	117.75
G	1-1/4	2-1/2	TC20107	60.57	TC29107	75.72	T	1-3/8	3	TC20120	97.55	TC29120	121.95
H	1-1/4	2-1/2	TC20108	61.87	TC29108	77.35	U	1-3/8	3	TC20121	102.38	TC29121	127.97
I	1-1/4	2-1/2	TC20109	62.91	TC29109	78.65	V	1-3/8	3	TC20122	113.37	TC29122	141.71
J	1-1/4	2-1/2	TC20110	64.58	TC29110	80.73	W	1-3/8	3	TC20123	122.10	TC29123	152.62
K	1-1/4	2-1/2	TC20111	65.17	TC29111	81.44	X	1-3/8	3	TC20124	133.28	TC29124	166.59
L	1-1/4	2-1/2	TC20112	68.89	TC29112	86.08	Y	1-3/8	3	TC20125	137.73	TC29125	172.16
M	1-1/4	2-1/2	TC20113	70.26	TC29113	87.86	Z	1-3/8	3	TC20126	149.28	TC29126	186.57

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION PLEASE SEE PAGE 202.

DIAMETER TOLERANCE +.0000, -.0005

**TAKE 55%
OFF LIST
PRICES**

STUB LENGTH - 135° SPLIT POINT - 15° HELIX**SERIES 200**
UNCOATED**SERIES 201**
ALTIN COATED

WIRE SIZES						WIRE SIZES							
SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	LIST PRICE	ALTIN	LIST PRICE	SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	LIST PRICE	ALTIN	LIST PRICE
1	1-1/4	2-1/2	TC20201	44.67	TC29201	55.85	31	3/4	2	TC20231	21.80	TC29231	27.22
2	1-1/4	2-1/2	TC20202	44.67	TC29202	55.85	32	3/4	2	TC20232	21.80	TC29232	27.22
3	1-1/8	2-1/2	TC20203	44.67	TC29203	55.85	33	3/4	2	TC20233	21.58	TC29233	27.00
4	1-1/8	2-1/2	TC20204	44.19	TC29204	55.26	34	3/4	2	TC20234	21.39	TC29234	26.74
5	1-1/8	2-1/2	TC20205	39.47	TC29205	49.32	35	3/4	2	TC20235	21.39	TC29235	26.74
6	1-1/8	2-1/2	TC20206	39.47	TC29206	49.32	36	5/8	2	TC20236	21.39	TC29236	26.74
7	1-1/8	2-1/2	TC20207	38.32	TC29207	47.90	37	5/8	2	TC20237	20.28	TC29237	25.36
8	1-1/8	2-1/2	TC20208	38.17	TC29208	47.72	38	5/8	2	TC20238	19.90	TC29238	24.88
9	1-1/8	2-1/2	TC20209	38.17	TC29209	47.72	39	5/8	2	TC20239	19.90	TC29239	24.88
10	1-1/8	2-1/2	TC20210	38.17	TC29210	47.72	40	5/8	2	TC20240	19.16	TC29240	23.99
11	1-1/8	2-1/2	TC20211	37.21	TC29211	46.53	41	5/8	2	TC20241	19.16	TC29241	23.99
12	1-1/8	2-1/2	TC20212	37.21	TC29212	46.53	42	1/2	1-1/2	TC20242	18.64	TC29242	23.28
13	7/8	2	TC20213	35.91	TC29213	44.90	43	1/2	1-1/2	TC20243	18.64	TC29243	23.28
14	7/8	2	TC20214	35.02	TC29214	43.78	44	1/2	1-1/2	TC20244	17.68	TC29244	22.10
15	7/8	2	TC20215	34.46	TC29215	43.04	45	1/2	1-1/2	TC20245	17.12	TC29245	21.39
16	7/8	2	TC20216	34.46	TC29216	43.04	46	1/2	1-1/2	TC20246	17.12	TC29246	21.39
17	7/8	2	TC20217	32.75	TC29217	40.96	47	1/2	1-1/2	TC20247	17.12	TC29247	21.39
18	7/8	2	TC20218	30.78	TC29218	38.51	48	7/16	1-1/2	TC20248	17.12	TC29248	21.39
19	7/8	2	TC20219	30.15	TC29219	37.69	49	7/16	1-1/2	TC20249	16.38	TC29249	20.46
20	7/8	2	TC20220	28.85	TC29220	36.10	50	7/16	1-1/2	TC20250	16.38	TC29250	20.46
21	7/8	2	TC20221	28.85	TC29221	36.10	51	7/16	1-1/2	TC20251	15.82	TC29251	19.76
22	7/8	2	TC20222	27.74	TC29222	34.65	52	7/16	1-1/2	TC20252	15.82	TC29252	19.76
23	7/8	2	TC20223	27.74	TC29223	34.65	53	13/32	1-1/2	TC20253	16.75	TC29253	20.94
24	7/8	2	TC20224	27.55	TC29224	34.46	54	13/32	1-1/2	TC20254	16.75	TC29254	20.94
25	7/8	2	TC20225	26.07	TC29225	32.57	55	13/32	1-1/2	TC20255	16.75	TC29255	20.94
26	7/8	2	TC20226	26.07	TC29226	32.57	56	3/8	1-1/2	TC20256	16.75	TC29256	20.94
27	7/8	2	TC20227	26.07	TC29227	32.57	57	3/8	1-1/2	TC20257	16.75	TC29257	20.94
28	3/4	2	TC20228	24.77	TC29228	30.93	58	3/8	1-1/2	TC20258	16.75	TC29258	20.94
29	3/4	2	TC20229	24.77	TC29229	30.93	59	3/8	1-1/2	TC20259	16.75	TC29259	20.94
30	3/4	2	TC20230	23.43	TC29230	29.30	60	3/8	1-1/2	TC20260	16.75	TC29260	20.94

NOTE: SIZES 31 AND UNDER ARE NOT SPLIT.

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION PLEASE SEE PAGE 202.

DIAMETER TOLERANCE +.0000, -.0005

STRAIGHT FLUTE - 140° SPLIT POINT

SERIES 195
UNCOATED



SERIES 196
ALTIN COATED



**TAKE 55%
OFF LIST
PRICES**

FRACTIONAL SIZES

SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	LIST PRICE	ALTIN	LIST PRICE
1/32	3/8	1-1/2	TC19502	20.02	TC79502	25.03
3/64	3/8	1-1/2	TC19503	20.02	TC79503	25.03
1/16	13/32	1-1/2	TC19504	20.61	TC79504	25.73
5/64	7/16	1-1/2	TC19505	21.50	TC79505	26.89
3/32	1/2	1-1/2	TC19506	23.69	TC79506	29.63
7/64	5/8	2	TC19507	25.85	TC79507	32.31
1/8	3/4	2	TC19508	24.51	TC79508	30.64
9/64	3/4	2	TC19509	28.04	TC79509	35.02
5/32	7/8	2	TC19510	31.38	TC79510	39.25
11/64	7/8	2	TC19511	34.83	TC79511	43.52
3/16	7/8	2	TC19512	32.16	TC79512	40.18
13/64	1-1/8	2-1/2	TC19513	41.81	TC79513	52.32
7/32	1-1/8	2-1/2	TC19514	46.98	TC79514	58.75
15/64	1-1/4	2-1/2	TC19515	49.58	TC79515	61.98
1/4	1-1/4	2-1/2	TC19516	46.90	TC79516	58.64

FRACTIONAL SIZES

SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	LIST PRICE	ALTIN	LIST PRICE
17/64	1-1/4	2-1/2	TC19517	65.21	TC79517	81.47
9/32	1-1/4	2-1/2	TC19518	67.77	TC79518	84.74
19/64	1-1/4	2-1/2	TC19519	71.74	TC79519	89.68
5/16	1-1/4	2-1/2	TC19520	74.31	TC79520	92.87
21/64	1-3/8	3	TC19521	79.88	TC79521	99.82
11/32	1-3/8	3	TC19522	88.60	TC79522	110.74
23/64	1-3/8	3	TC19523	96.92	TC79523	121.17
3/8	1-3/8	3	TC19524	96.11	TC79524	120.13
25/64	1-3/8	3	TC19525	118.87	TC79525	148.58
13/32	1-3/8	3	TC19526	113.74	TC79526	142.19
27/64	1-3/8	3	TC19527	144.23	TC79527	180.25
7/16	1-3/8	3	TC19528	140.67	TC79528	175.83
15/32	1-3/8	3	TC19530	156.52	TC79530	195.66
1/2	1-3/8	3	TC19532	169.60	TC79532	212.00
-	-	-	-	-	-	-

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

LETTER SIZES

SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	LIST PRICE	ALTIN	LIST PRICE
A	1-1/4	2-1/2	TC19601	49.58	TC79601	61.98
B	1-1/4	2-1/2	TC19602	49.58	TC79602	61.98
C	1-1/4	2-1/2	TC19603	49.58	TC79603	61.98
D	1-1/4	2-1/2	TC19604	49.58	TC79604	61.98
E	1-1/4	2-1/2	TC19605	46.90	TC79605	58.64
F	1-1/4	2-1/2	TC19606	65.21	TC79606	81.47
G	1-1/4	2-1/2	TC19607	65.21	TC79607	81.47
H	1-1/4	2-1/2	TC19608	65.21	TC79608	81.47
I	1-1/4	2-1/2	TC19609	67.77	TC79609	84.74
J	1-1/4	2-1/2	TC19610	67.77	TC79610	84.74
K	1-1/4	2-1/2	TC19611	67.77	TC79611	84.74
L	1-1/4	2-1/2	TC19612	71.74	TC79612	89.68
M	1-1/4	2-1/2	TC19613	71.74	TC79613	89.68

LETTER SIZES

SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	LIST PRICE	ALTIN	LIST PRICE
N	1-1/4	2-1/2	TC19614	74.31	TC79614	92.87
O	1-3/8	3	TC19615	74.31	TC79615	92.87
P	1-3/8	3	TC19616	79.88	TC79616	99.86
Q	1-3/8	3	TC19617	88.60	TC79617	110.74
R	1-3/8	3	TC19618	88.60	TC79618	110.74
S	1-3/8	3	TC19619	96.92	TC79619	121.17
T	1-3/8	3	TC19620	96.92	TC79620	121.17
U	1-3/8	3	TC19621	107.51	TC79621	134.35
V	1-3/8	3	TC19622	107.51	TC79622	134.35
W	1-3/8	3	TC19623	118.87	TC79623	148.58
X	1-3/8	3	TC19624	131.53	TC79624	164.43
Y	1-3/8	3	TC19625	137.88	TC79625	172.34
Z	1-3/8	3	TC19626	144.23	TC79626	180.25

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION PLEASE SEE PAGE 202.

DIAMETER TOLERANCE +.0000, -.0005

**TAKE 55%
OFF LIST
PRICES**

STRAIGHT FLUTE - 140° SPLIT POINT

**SERIES 195**
UNCOATED**SERIES 196**
ALUMINUM COATED

WIRE SIZES							WIRE SIZES						
SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	LIST PRICE	ALTIM	LIST PRICE	SIZE	FLUTE LENGTH	OVERALL LENGTH	UNCOATED	LIST PRICE	ALTIM	LIST PRICE
1	1-1/4	2-1/2	TC19701	48.24	TC79701	60.31	31	3/4	2	TC19731	27.55	TC79731	34.50
2	1-1/4	2-1/2	TC19702	47.38	TC79702	59.23	32	3/4	2	TC19732	27.33	TC79732	34.16
3	1-1/8	2-1/2	TC19703	45.49	TC79703	56.85	33	3/4	2	TC19733	26.63	TC79733	33.3
4	1-1/8	2-1/2	TC19704	42.97	TC79704	53.70	34	3/4	2	TC19734	26.51	TC79734	33.16
5	1-1/8	2-1/2	TC19705	43.45	TC79705	54.29	35	3/4	2	TC19735	25.85	TC79735	32.31
6	1-1/8	2-1/2	TC19706	42.82	TC79706	53.51	36	5/8	2	TC19736	25.59	TC79736	31.97
7	1-1/8	2-1/2	TC19707	41.22	TC79707	51.54	37	5/8	2	TC19737	25.59	TC79737	31.97
8	1-1/8	2-1/2	TC19708	40.63	TC79708	50.76	38	5/8	2	TC19738	25.33	TC79738	31.64
9	1-1/8	2-1/2	TC19709	39.40	TC79709	49.24	39	5/8	2	TC19739	24.32	TC79739	30.41
10	1-1/8	2-1/2	TC19710	38.81	TC79710	48.54	40	5/8	2	TC19740	24.32	TC79740	30.41
11	1-1/8	2-1/2	TC19711	38.14	TC79711	47.64	41	5/8	2	TC19741	24.32	TC79741	30.41
12	1-1/8	2-1/2	TC19712	37.43	TC79712	46.79	42	1/2	1-1/2	TC19742	23.43	TC79742	29.26
13	7/8	2	TC19713	36.80	TC79713	45.97	43	1/2	1-1/2	TC19743	23.02	TC79743	28.78
14	7/8	2	TC19714	36.54	TC79714	45.71	44	1/2	1-1/2	TC19744	22.73	TC79744	28.41
15	7/8	2	TC19715	36.21	TC79715	45.23	45	1/2	1-1/2	TC19745	22.21	TC79745	27.78
16	7/8	2	TC19716	36.06	TC79716	45.08	46	1/2	1-1/2	TC19746	21.50	TC79746	26.89
17	7/8	2	TC19717	35.20	TC79717	44.00	47	1/2	1-1/2	TC19747	21.50	TC79747	26.89
18	7/8	2	TC19718	34.20	TC79718	42.74	48	7/16	1-1/2	TC19748	21.50	TC79748	26.89
19	7/8	2	TC19719	33.98	TC79719	42.48	49	7/16	1-1/2	TC19749	20.98	TC79749	26.22
20	7/8	2	TC19720	32.83	TC79720	41.03	50	7/16	1-1/2	TC19750	20.72	TC79750	25.88
21	7/8	2	TC19721	32.60	TC79721	40.77	51	7/16	1-1/2	TC19751	20.61	TC79751	25.73
22	7/8	2	TC19722	31.97	TC79722	39.99	52	7/16	1-1/2	TC19752	20.61	TC79752	25.73
23	7/8	2	TC19723	30.64	TC79723	38.29	53	13/32	1-1/2	TC19753	20.31	TC79753	25.40
24	7/8	2	TC19724	29.78	TC79724	37.25	54	13/32	1-1/2	TC19754	20.31	TC79754	25.40
25	7/8	2	TC19725	28.89	TC79725	36.13	55	13/32	1-1/2	TC19755	20.02	TC79755	25.03
26	7/8	2	TC19726	28.56	TC79726	35.69	56	3/8	1-1/2	TC19756	20.02	TC79756	25.03
27	7/8	2	TC19727	28.00	TC79727	35.02	57	3/8	1-1/2	TC19757	20.02	TC79757	25.03
28	3/4	2	TC19728	27.07	TC79728	33.79	58	3/8	1-1/2	TC19758	20.02	TC79758	25.03
29	3/4	2	TC19729	26.48	TC79729	33.09	59	3/8	1-1/2	TC19759	20.02	TC79759	25.03
30	3/4	2	TC19730	26.07	TC79730	32.60	60	3/8	1-1/2	TC19760	20.02	TC79760	25.03

NOTE: SIZES 31 AND UNDER ARE NOT SPLIT.

FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION PLEASE SEE PAGE 202.

DIAMETER TOLERANCE +.0000, -.0005

**TAKE 55%
OFF LIST
PRICES**



SERIES 870

DEC. EQUIV.	SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
.0400	N60	.0400	1/4	1-1/2	4	TC87046	41.00
.0410	N59	.0410	3/8	1-1/2	4	TC87047	41.00
.0420	N58	.0420	3/8	1-1/2	4	TC87048	41.00
.0430	N57	.0430	3/8	1-1/2	4	TC87049	41.00
.0440		.0440	3/8	1-1/2	4	TC87050	43.32
.0450		.0450	3/8	1-1/2	4	TC87051	43.32
.0460		.0460	3/8	1-1/2	4	TC87052	43.32
.0465	N56	.0465	3/8	1-1/2	4	TC87053	41.00
.0469	3/64	.0469	3/8	1-1/2	4	TC87054	38.96
.0470		.0470	3/8	1-1/2	4	TC87055	43.32
.0480		.0480	3/8	1-1/2	4	TC87056	43.32
.0490		.0490	3/8	1-1/2	4	TC87057	43.32
.0500		.0500	3/8	1-1/2	4	TC87058	43.32
.0510		.0510	3/8	1-1/2	4	TC87059	43.32
.0520	N55	.0520	3/8	1-1/2	4	TC87060	41.00
.0530		.0530	3/8	1-1/2	4	TC87061	43.32
.0540		.0540	3/8	1-1/2	4	TC87062	43.32
.0550	N54	.0550	3/8	1-1/2	4	TC87063	41.00
.0560		.0560	3/8	1-1/2	4	TC87064	43.32
.0570		.0570	3/8	1-1/2	4	TC87065	43.32
.0580		.0580	3/8	1-1/2	4	TC87066	43.32
.0590		.0590	3/8	1-1/2	4	TC87067	43.32
.0591	1.5mm	.0591	3/8	1-1/2	4	TC87068	43.32
.0595	N53	.0595	3/8	1-1/2	4	TC87069	41.00
.0600		.0600	3/8	1-1/2	4	TC87070	43.32
.0605		.0605	3/8	1-1/2	4	TC87071	57.61
.0610		.0610	3/8	1-1/2	4	TC87072	43.32
.0615		.0615	3/8	1-1/2	4	TC87073	47.92
.0620		.0620	3/8	1-1/2	4	TC87074	43.32
.0625	1/16	.0625	3/8	1-1/2	4	TC87075	38.96
.0630		.0630	3/8	1-1/2	4	TC87076	43.32
.0635	N52	.0635	3/8	1-1/2	4	TC87077	41.00
.0640		.0640	3/8	1-1/2	4	TC87078	43.32
.0645		.0645	3/8	1-1/2	4	TC87079	57.61
.0650		.0650	3/8	1-1/2	4	TC87080	43.32
.0660		.0660	1/2	1-3/4	4	TC87081	43.32
.0670	N51	.0670	1/2	1-3/4	4	TC87082	41.00
.0680		.0680	1/2	1-3/4	4	TC87083	43.32
.0690		.0690	1/2	1-3/4	4	TC87084	43.32
.0700	N50	.0700	1/2	1-3/4	4	TC87085	41.00
.0710		.0710	1/2	1-3/4	4	TC87086	43.32
.0720		.0720	1/2	1-3/4	4	TC87087	43.32
.0730	N49	.0730	1/2	1-3/4	4	TC87088	41.00
.0740		.0740	1/2	1-3/4	4	TC87089	43.32
.0750		.0750	1/2	1-3/4	4	TC87090	43.32
.0760	N48	.0760	1/2	1-3/4	4	TC87091	41.00
.0770		.0770	1/2	1-3/4	4	TC87092	43.32
.0780		.0780	1/2	1-3/4	4	TC87093	43.32
.0781	5/64	.0781	1/2	1-3/4	4	TC87094	38.96
.0785	N47	.0785	1/2	1-3/4	4	TC87095	41.00
.0787	2mm	.0787	1/2	1-3/4	4	TC87096	43.32
.0790		.0790	1/2	1-3/4	4	TC87097	43.32
.0800		.0800	1/2	1-3/4	4	TC87098	43.32
.0810	N46	.0810	1/2	2	4	TC87099	41.00
.0820	N45	.0820	1/2	2	4	TC87100	41.00
.0830		.0830	1/2	2	4	TC87101	43.32

DEC. EQUIV.	SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
.0840		.0840	1/2	2	4	TC87102	43.32
.0850		.0850	1/2	2	4	TC87103	43.32
.0860	N44	.0860	1/2	2	4	TC87104	41.00
.0870		.0870	1/2	2	4	TC87105	43.32
.0880		.0880	1/2	2	4	TC87106	43.32
.0890	N43	.0890	1/2	2	4	TC87107	41.00
.0900		.0900	1/2	2	4	TC87108	43.32
.0910		.0910	1/2	2	4	TC87109	43.32
.0915		.0915	1/2	2	4	TC87110	57.14
.0920		.0920	1/2	2	4	TC87111	43.32
.0925		.0925	1/2	2	4	TC87112	47.92
.0930		.0930	1/2	2	4	TC87113	43.32
.0935	N42	.0935	1/2	2	4	TC87114	41.00
.0938	3/32	.0938	1/2	2	4	TC87115	38.96
.0940		.0940	1/2	2	4	TC87116	43.32
.0945		.0945	1/2	2	4	TC87117	47.92
.0950		.0950	1/2	2	4	TC87118	43.32
.0960	N41	.0960	5/8	2	4	TC87119	41.00
.0970		.0970	5/8	2	4	TC87120	43.32
.0980	N40	.0980	5/8	2	4	TC87121	41.00
.0984	2.5mm	.0984	5/8	2	4	TC87122	43.32
.0990		.0990	5/8	2-1/4	4	TC87123	43.32
.0995	N39	.0995	5/8	2-1/4	4	TC87124	41.00
.1000		.1000	5/8	2-1/4	4	TC87125	43.32
.1010		.1010	5/8	2-1/4	4	TC87126	43.32
.1015	N38	.1015	5/8	2-1/4	4	TC87127	41.00
.1020		.1020	5/8	2-1/4	4	TC87128	43.32
.1030		.1030	5/8	2-1/4	4	TC87129	43.32
.1040	N37	.1040	5/8	2-1/4	4	TC87130	41.00
.1050		.1050	5/8	2-1/4	4	TC87131	43.32
.1060		.1060	5/8	2-1/4	4	TC87132	43.32
.1065	N36	.1065	5/8	2-1/4	4	TC87133	41.00
.1070		.1070	5/8	2-1/4	4	TC87134	43.32
.1080		.1080	5/8	2-1/4	4	TC87135	43.32
.1090		.1090	5/8	2-1/4	4	TC87136	45.14
.1094	7/64	.1094	5/8	2-1/4	4	TC87137	38.96
.1100	N35	.1100	5/8	2-1/4	4	TC87138	41.00
.1110	N34	.1110	5/8	2-1/4	4	TC87139	41.00
.1120		.1120	5/8	2-1/4	4	TC87140	43.32
.1130	N33	.1130	5/8	2-1/4	4	TC87141	41.00
.1140		.1140	5/8	2-1/4	4	TC87142	43.32
.1150		.1150	5/8	2-1/4	4	TC87143	43.32
.1160	N32	.1160	5/8	2-1/4	4	TC87144	43.13
.1170		.1170	5/8	2-1/4	4	TC87145	45.87
.1180		.1180	5/8	2-1/4	4	TC87146	45.87
.1181	3mm	.1181	5/8	2-1/4	4	TC87147	42.16
.1190		.1190	5/8	2-1/4	4	TC87148	45.87
.1200	N31	.1200	5/8	2-1/4	4	TC87149	43.13
.1210		.1210	5/8	2-1/4	4	TC87150	45.87
.1220		.1220	5/8	2-1/4	4	TC87151	45.87
.1230		.1230	5/8	2-1/4	4	TC87152	45.87
.1235		.1235	5/8	2-1/4	4	TC87153	61.08
.1240		.1240	5/8	2-1/4	4	TC87154	45.87
.1245		.1245	5/8	2-1/4	4	TC87155	50.70
.1250	1/8	.1250	5/8	2-1/4	4	TC87156	41.47
.1255		.1255	5/8	2-1/4	4	TC87157	50.70

CONTINUED ON NEXT PAGE

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

**TAKE 55%
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PRICES**



SERIES 870

ENDMILLS

MICRO

THREADMILLS

DRILL MILLS

CHAMFER MILLS

DRILLS

REAMERS

BURS

DEC. EQUIV.	SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
.1260		.1260	5/8	2-1/4	4	TC87158	45.87
.1265		.1265	5/8	2-1/4	4	TC87159	61.08
.1270		.1270	5/8	2-1/4	4	TC87160	45.87
.1275		.1275	5/8	2-1/4	4	TC87161	61.08
.1280		.1280	5/8	2-1/4	4	TC87162	45.87
.1285	N30	.1285	5/8	2-1/4	4	TC87163	45.87
.1290		.1290	5/8	2-1/4	4	TC87164	45.87
.1300		.1300	5/8	2-1/2	4	TC87165	45.87
.1310		.1310	3/4	2-1/2	4	TC87166	52.51
.1320		.1320	3/4	2-1/2	4	TC87167	52.51
.1330		.1330	3/4	2-1/2	4	TC87168	52.51
.1340		.1340	3/4	2-1/2	4	TC87169	52.51
.1350		.1350	3/4	2-1/2	4	TC87170	52.51
.1360	N29	.1360	3/4	2-1/2	4	TC87171	49.11
.1370		.1370	3/4	2-1/2	4	TC87172	52.51
.1378	3.5mm	.1378	3/4	2-1/2	4	TC87173	52.51
.1380		.1380	3/4	2-1/2	4	TC87174	52.51
.1390		.1390	3/4	2-1/2	4	TC87175	52.51
.1400		.1400	3/4	2-1/2	4	TC87176	52.51
.1405	N28	.1405	3/4	2-1/2	4	TC87177	49.11
.1406	9/64	.1406	3/4	2-1/2	4	TC87178	47.26
.1410		.1410	3/4	2-1/2	4	TC87179	52.51
.1420		.1420	3/4	2-1/2	4	TC87180	52.51
.1430		.1430	3/4	2-1/2	4	TC87181	52.51
.1440	N27	.1440	3/4	2-1/2	4	TC87182	49.11
.1450		.1450	3/4	2-1/2	4	TC87183	52.51
.1460		.1460	3/4	2-1/2	4	TC87184	54.83
.1470	N26	.1470	3/4	2-1/2	4	TC87185	51.16
.1480		.1480	3/4	2-1/2	4	TC87186	54.83
.1490		.1490	3/4	2-1/2	4	TC87187	54.83
.1495	N25	.1495	3/4	2-1/2	4	TC87188	51.16
.1500		.1500	3/4	2-1/2	4	TC87189	54.83
.1510		.1510	3/4	2-1/2	4	TC87190	54.83
.1520	N24	.1520	3/4	2-1/2	4	TC87191	51.16
.1530		.1530	3/4	2-1/2	4	TC87192	54.83
.1540	N23	.1540	3/4	2-1/2	4	TC87193	51.16
.1545		.1545	3/4	2-1/2	4	TC87194	63.40
.1550		.1550	3/4	2-1/2	4	TC87195	54.83
.1555		.1555	3/4	2-1/2	4	TC87196	63.40
.1560		.1560	3/4	2-1/2	4	TC87197	54.83
.1562	5/32	.1562	3/4	2-1/2	4	TC87198	49.58
.1565		.1565	3/4	2-1/2	4	TC87199	63.40
.1570	N22	.1570	3/4	2-1/2	4	TC87200	51.16
.1575	4mm	.1575	3/4	2-1/2	4	TC87201	54.83
.1580		.1580	3/4	2-1/2	4	TC87202	54.83
.1590	N21	.1590	3/4	2-1/2	4	TC87203	51.16
.1600		.1600	3/4	2-1/2	4	TC87204	54.83
.1610	N20	.1610	7/8	2-1/2	4	TC87205	57.61
.1620		.1620	7/8	2-3/4	4	TC87206	61.74
.1630		.1630	7/8	2-3/4	4	TC87207	61.74
.1640		.1640	7/8	2-3/4	4	TC87208	61.74
.1650		.1650	7/8	2-3/4	4	TC87209	57.61
.1660	N19	.1660	7/8	2-3/4	4	TC87210	57.61
.1670		.1670	7/8	2-3/4	4	TC87211	61.74
.1680		.1680	7/8	2-3/4	4	TC87212	61.74
.1690		.1690	7/8	2-3/4	4	TC87213	61.74

DEC. EQUIV.	SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
.1695	N18	.1695	7/8	2-3/4	4	TC87214	57.61
.1700		.1700	7/8	2-3/4	4	TC87215	61.74
.1710		.1710	7/8	2-3/4	4	TC87216	61.74
.1719	11/64	.1719	7/8	2-3/4	4	TC87217	55.52
.1720		.1720	7/8	2-3/4	4	TC87218	61.74
.1730	N17	.1730	7/8	2-3/4	4	TC87219	57.61
.1740		.1740	7/8	2-3/4	4	TC87220	61.74
.1750		.1750	7/8	2-3/4	4	TC87221	61.74
.1760		.1760	7/8	2-3/4	4	TC87222	61.74
.1770	N16	.1770	7/8	2-3/4	4	TC87223	57.61
.1772	4.5mm	.1772	7/8	2-3/4	4	TC87224	64.29
.1780		.1780	7/8	2-3/4	4	TC87225	61.74
.1790		.1790	7/8	2-3/4	4	TC87226	61.74
.1800	N15	.1800	7/8	2-3/4	4	TC87227	57.61
.1810		.1810	7/8	2-3/4	4	TC87228	61.74
.1820	N14	.1820	7/8	2-3/4	4	TC87229	57.61
.1830		.1830	7/8	2-3/4	4	TC87230	61.74
.1840		.1840	7/8	2-3/4	4	TC87231	61.74
.1850	N13	.1850	7/8	2-3/4	4	TC87232	57.61
.1855		.1855	7/8	2-3/4	4	TC87233	74.21
.1860		.1860	7/8	2-3/4	4	TC87234	61.74
.1865		.1865	7/8	2-3/4	4	TC87235	66.37
.1870		.1870	7/8	2-3/4	4	TC87236	61.74
.1875	3/16	.1875	7/8	2-3/4	4	TC87237	55.52
.1880		.1880	7/8	2-3/4	4	TC87238	61.74
.1885		.1885	7/8	2-3/4	4	TC87239	66.37
.1890	N12	.1890	7/8	2-3/4	4	TC87240	57.61
.1900		.1900	7/8	2-3/4	4	TC87241	61.74
.1910	N11	.1910	7/8	2-3/4	4	TC87242	70.04
.1920		.1920	7/8	2-3/4	4	TC87243	74.91
.1930		.1930	7/8	2-3/4	4	TC87244	74.91
.1935	N10	.1935	7/8	2-3/4	4	TC87245	70.04
.1940		.1940	7/8	2-3/4	4	TC87246	74.91
.1950		.1950	7/8	2-3/4	4	TC87247	74.91
.1960	N9	.1960	1	3	4	TC87248	70.04
.1969	5mm	.1969	1	3	4	TC87249	74.91
.1970		.1970	1	3	4	TC87250	74.91
.1980		.1980	1	3	4	TC87251	74.91
.1990	N8	.1990	1	3	4	TC87252	70.04
.2000		.2000	1	3	4	TC87253	74.91
.2010	N7	.2010	1	3	4	TC87254	70.04
.2020		.2020	1	3	4	TC87255	74.91
.2030		.2030	1	3	4	TC87256	74.91
.2031	13/64	.2031	1	3	4	TC87257	67.26
.2040	N6	.2040	1	3	4	TC87258	70.04
.2050		.2050	1	3	4	TC87259	74.91
.2055	N5	.2055	1	3	4	TC87260	70.04
.2060		.2060	1	3	4	TC87261	74.91
.2070		.2070	1	3	4	TC87262	74.91
.2080		.2080	1	3	4	TC87263	74.91
.2090	N4	.2090	1	3	4	TC87264	70.04
.2100		.2100	1	3	4	TC87265	74.91
.2110		.2110	1	3	4	TC87266	74.91
.2120		.2120	1	3	4	TC87267	74.91
.2130	N3	.2130	1	3	4	TC87268	70.04
.2140		.2140	1	3	4	TC87269	74.91

CONTINUED ON NEXT PAGE

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

**TAKE 55%
OFF LIST
PRICES**



SERIES 870

DEC. EQUIV.	SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
.2150		.2150	1	3	4	TC87270	74.91
.2160		.2160	1	3	4	TC87271	74.91
.2165	5.5mm	.2165	1	3	4	TC87272	79.04
.2170		.2170	1	3	4	TC87273	74.91
.2180		.2180	1	3	4	TC87274	74.91
.2188	7/32	.2188	1	3	4	TC87275	67.26
.2190		.2190	1	3	4	TC87276	74.91
.2200		.2200	1	3	4	TC87277	74.91
.2210	N2	.2210	1	3	4	TC87278	70.04
.2220		.2220	1	3	4	TC87279	74.91
.2230		.2230	1	3	4	TC87280	74.91
.2240		.2240	1	3	4	TC87281	74.91
.2250		.2250	1	3	4	TC87282	74.91
.2260		.2260	1	3	4	TC87283	82.28
.2270		.2270	1	3	4	TC87284	82.28
.2280	N1	.2280	1	3	4	TC87285	76.76
.2290		.2290	1	3	4	TC87286	76.76
.2300		.2300	1	3	4	TC87287	82.28
.2310		.2310	1	3	4	TC87288	82.28
.2320		.2320	1	3	4	TC87289	82.28
.2330		.2330	1	3	4	TC87290	82.28
.2340	A	.2340	1	3	4	TC87291	82.28
.2344	15/64	.2344	1	3	4	TC87292	73.98
.2350		.2350	1	3	4	TC87293	82.28
.2360		.2360	1	3	4	TC87294	82.28
.2362	6mm	.2362	1	3	4	TC87295	78.34
.2370		.2370	1	3	4	TC87296	82.28
.2380	B	.2380	1	3	4	TC87297	82.28
.2390		.2390	1	3	4	TC87298	82.28
.2400		.2400	1	3	4	TC87299	82.28
.2410		.2410	1	3	4	TC87300	82.28
.2420	C	.2420	1	3	4	TC87301	82.28
.2430		.2430	1	3	4	TC87302	82.28
.2440		.2440	1	3	4	TC87303	82.28
.2450		.2450	1	3	4	TC87304	82.28
.2460	D	.2460	1	3	4	TC87305	82.28
.2470		.2470	1	3	4	TC87306	82.28
.2480		.2480	1	3	4	TC87307	82.28
.2485		.2485	1	3	4	TC87308	91.93
.2490		.2490	1	3	4	TC87309	82.28
.2495		.2495	1	3	4	TC87310	87.34
.2500	1/4	.2500	1	3	4	TC87311	73.98
.2505		.2505	1	3	4	TC87312	87.34
.2510		.2510	1	3	4	TC87313	82.28
.2515		.2515	1	3	4	TC87314	102.32
.2520		.2520	1	3	4	TC87315	82.28
.2530		.2530	1	3	4	TC87316	82.28
.2540		.2540	1	3	4	TC87317	82.28
.2550		.2550	1	3	6	TC87318	82.28
.2559	6.5mm	.2559	1-1/8	3-1/4	6	TC87319	87.11
.2560		.2560	1-1/8	3-1/4	6	TC87320	99.54
.2570	F	.2570	1-1/8	3-1/4	6	TC87321	99.54
.2580		.2580	1-1/8	3-1/4	6	TC87322	99.54
.2590		.2590	1-1/8	3-1/4	6	TC87323	99.54
.2600		.2600	1-1/8	3-1/4	6	TC87324	99.54
.2610	G	.2610	1-1/8	3-1/4	6	TC87325	99.54

DEC. EQUIV.	SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
.2620		.2620	1-1/8	3-1/4	6	TC87326	99.54
.2630		.2630	1-1/8	3-1/4	6	TC87327	99.54
.2640		.2640	1-1/8	3-1/4	6	TC87328	99.54
.2650		.2650	1-1/8	3-1/4	6	TC87329	99.54
.2656	17/64	.2656	1-1/8	3-1/4	6	TC87330	89.65
.2660	H	.2660	1-1/8	3-1/4	6	TC87331	99.54
.2670		.2670	1-1/8	3-1/4	6	TC87332	99.54
.2680		.2680	1-1/8	3-1/4	6	TC87333	99.54
.2690		.2690	1-1/8	3-1/4	6	TC87334	99.54
.2700		.2700	1-1/8	3-1/4	6	TC87335	99.54
.2710		.2710	1-1/8	3-1/4	6	TC87336	99.54
.2720	I	.2720	1-1/8	3-1/4	6	TC87337	99.54
.2730		.2730	1-1/8	3-1/4	6	TC87338	99.54
.2740		.2740	1-1/8	3-1/4	6	TC87339	99.54
.2750		.2750	1-1/8	3-1/4	6	TC87340	99.54
.2756	7mm	.2756	1-1/8	3-1/4	6	TC87341	108.73
.2760		.2760	1-1/8	3-1/4	6	TC87342	99.54
.2770	J	.2770	1-1/8	3-1/4	6	TC87343	99.54
.2780		.2780	1-1/8	3-1/4	6	TC87344	99.54
.2790		.2790	1-1/8	3-1/4	6	TC87345	99.54
.2800		.2800	1-1/8	3-1/4	6	TC87346	99.54
.2810	K	.2810	1-1/8	3-1/4	6	TC87347	99.54
.2812	9/32	.2812	1-1/8	3-1/4	6	TC87348	89.65
.2820		.2820	1-1/8	3-1/4	6	TC87349	99.54
.2830		.2830	1-1/8	3-1/4	6	TC87350	99.54
.2840		.2840	1-1/8	3-1/4	6	TC87351	99.54
.2850		.2850	1-1/8	3-1/4	6	TC87352	99.54
.2860		.2860	1-1/8	3-1/4	6	TC87353	99.54
.2870		.2870	1-1/8	3-1/4	6	TC87354	99.54
.2880		.2880	1-1/8	3-1/4	6	TC87355	99.54
.2890		.2890	1-1/8	3-1/4	6	TC87356	99.54
.2900	L	.2900	1-1/8	3-1/4	6	TC87357	99.54
.2910		.2910	1-1/8	3-1/4	6	TC87358	99.54
.2920		.2920	1-1/8	3-1/4	6	TC87359	99.54
.2930		.2930	1-1/8	3-1/4	6	TC87360	99.54
.2940		.2940	1-1/8	3-1/4	6	TC87361	99.54
.2950	M	.2950	1-1/8	3-1/4	6	TC87362	99.54
.2953	7.5mm	.2953	1-1/8	3-1/4	6	TC87363	108.73
.2960		.2960	1-1/8	3-1/4	6	TC87364	99.54
.2969	19/64	.2969	1-1/8	3-1/4	6	TC87365	99.54
.2970		.2970	1-1/8	3-1/4	6	TC87366	99.54
.2980		.2980	1-1/8	3-1/4	6	TC87367	99.54
.2990		.2990	1-1/8	3-1/4	6	TC87368	99.54
.3000		.3000	1-1/8	3-1/4	6	TC87369	99.54
.3010		.3010	1-1/8	3-1/4	6	TC87370	99.54
.3020	N	.3020	1-1/8	3-1/4	6	TC87371	99.54
.3030		.3030	1-1/8	3-1/4	6	TC87372	99.54
.3040		.3040	1-1/8	3-1/4	6	TC87373	99.54
.3050		.3050	1-1/8	3-1/4	6	TC87374	99.54
.3060		.3060	1-1/8	3-1/4	6	TC87375	99.54
.3070		.3070	1-1/8	3-1/4	6	TC87376	99.54
.3080		.3080	1-1/8	3-1/4	6	TC87377	99.54
.3090		.3090	1-1/8	3-1/4	6	TC87378	99.54
.3100		.3100	1-1/8	3-1/4	6	TC87379	99.54
.3110		.3110	1-1/8	3-1/4	6	TC87380	99.54
.3115		.3115	1-1/8	3-1/4	6	TC87381	114.29

CONTINUED ON NEXT PAGE

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

**TAKE 55%
OFF LIST
PRICES**



SERIES 870

DEC. EQUIV.	SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
.3120		.3120	1-1/8	3-1/4	6	TC87382	99.54
.3125	5/16	.3125	1-1/8	3-1/4	6	TC87383	99.54
.3130		.3130	1-1/8	3-1/4	6	TC87384	99.54
.3135		.3135	1-1/8	3-1/4	6	TC87385	114.29
.3140		.3140	1-1/8	3-1/4	6	TC87386	99.54
.3150	8mm	.3150	1-1/8	3-1/4	6	TC87387	99.54
.3160	O	.3160	1-1/8	3-1/4	6	TC87388	111.32
.3170		.3170	1-1/8	3-1/4	6	TC87389	111.32
.3180		.3180	1-1/8	3-1/4	6	TC87390	111.32
.3190		.3190	1-1/8	3-1/4	6	TC87391	111.32
.3200		.3200	1-1/8	3-1/4	6	TC87392	111.32
.3210		.3210	1-1/4	3-1/2	6	TC87393	111.32
.3220		.3220	1-1/4	3-1/2	6	TC87394	111.32
.3230	P	.3230	1-1/4	3-1/2	6	TC87395	111.32
.3240		.3240	1-1/4	3-1/2	6	TC87396	111.32
.3250		.3250	1-1/4	3-1/2	6	TC87397	111.32
.3260		.3260	1-1/4	3-1/2	6	TC87398	111.32
.3270		.3270	1-1/4	3-1/2	6	TC87399	111.32
.3280		.3280	1-1/4	3-1/2	6	TC87400	111.32
.3281	21/64	.3281	1-1/4	3-1/2	6	TC87401	112.44
.3290		.3290	1-1/4	3-1/2	6	TC87402	111.32
.3300		.3300	1-1/4	3-1/2	6	TC87403	111.32
.3310		.3310	1-1/4	3-1/2	6	TC87404	111.32
.3320	Q	.3320	1-1/4	3-1/2	6	TC87405	111.32
.3330		.3330	1-1/4	3-1/2	6	TC87406	111.32
.3340		.3340	1-1/4	3-1/2	6	TC87407	111.32
.3346	8.5mm	.3346	1-1/4	3-1/2	6	TC87408	111.32
.3350		.3350	1-1/4	3-1/2	6	TC87409	111.32
.3360		.3360	1-1/4	3-1/2	6	TC87410	111.32
.3370		.3370	1-1/4	3-1/2	6	TC87411	111.32
.3380		.3380	1-1/4	3-1/2	6	TC87412	111.32
.3390	R	.3390	1-1/4	3-1/2	6	TC87413	112.05
.3400		.3400	1-1/4	3-1/2	6	TC87414	111.32
.3410		.3410	1-1/4	3-1/2	6	TC87415	111.32
.3420		.3420	1-1/4	3-1/2	6	TC87416	111.32
.3430		.3430	1-1/4	3-1/2	6	TC87417	111.32
.3438	11/32	.3438	1-1/4	3-1/2	6	TC87418	112.44
.3440		.3440	1-1/4	3-1/2	6	TC87419	111.32
.3450		.3450	1-1/4	3-1/2	6	TC87420	111.32
.3460		.3460	1-1/4	3-1/2	6	TC87421	111.32
.3470		.3470	1-1/4	3-1/2	6	TC87422	111.32
.3480	S	.3480	1-1/4	3-1/2	6	TC87423	111.32
.3490		.3490	1-1/4	3-1/2	6	TC87424	111.32
.3500		.3500	1-1/4	3-1/2	6	TC87425	111.32
.3510		.3510	1-1/4	3-1/2	6	TC87426	121.43
.3520		.3520	1-1/4	3-1/2	6	TC87427	121.43
.3530		.3530	1-1/4	3-1/2	6	TC87428	121.43
.3540		.3540	1-1/4	3-1/2	6	TC87429	121.43
.3543	9mm	.3543	1-1/4	3-1/2	6	TC87430	126.72
.3550		.3550	1-1/4	3-1/2	6	TC87431	121.43
.3560		.3560	1-1/4	3-1/2	6	TC87432	121.43
.3570		.3570	1-1/4	3-1/2	6	TC87433	121.43
.3580	T	.3580	1-1/4	3-1/2	6	TC87434	121.43
.3590		.3590	1-1/4	3-1/2	6	TC87435	123.52
.3594	23/64	.3594	1-1/4	3-1/2	6	TC87436	119.81
.3600		.3600	1-1/4	3-1/2	6	TC87437	121.43

DEC. EQUIV.	SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
.3610		.3610	1-1/4	3-1/2	6	TC87438	121.43
.3620		.3620	1-1/4	3-1/2	6	TC87439	121.43
.3630		.3630	1-1/4	3-1/2	6	TC87440	121.43
.3640		.3640	1-1/4	3-1/2	6	TC87441	121.43
.3650		.3650	1-1/4	3-1/2	6	TC87442	121.43
.3660		.3660	1-1/4	3-1/2	6	TC87443	121.43
.3670		.3670	1-1/4	3-1/2	6	TC87444	121.43
.3680	U	.3680	1-1/4	3-1/2	6	TC87445	121.43
.3690		.3690	1-1/4	3-1/2	6	TC87446	121.43
.3700		.3700	1-1/4	3-1/2	6	TC87447	121.43
.3710		.3710	1-1/4	3-1/2	6	TC87448	121.43
.3720		.3720	1-1/4	3-1/2	6	TC87449	121.43
.3730		.3730	1-1/4	3-1/2	6	TC87450	121.43
.3740	9.5mm	.3740	1-1/4	3-1/2	6	TC87451	101.39
.3745		.3745	1-1/4	3-1/2	6	TC87452	147.46
.3750	3/8	.3750	1-1/4	3-1/2	6	TC87453	119.81
.3755		.3755	1-1/4	3-1/2	6	TC87454	147.46
.3760		.3760	1-1/4	3-1/2	6	TC87455	152.51
.3765		.3765	1-1/4	3-1/2	6	TC87456	160.00
.3770	V	.3770	1-1/4	3-1/2	6	TC87457	152.51
.3780		.3780	1-1/4	3-1/2	6	TC87458	152.51
.3790		.3790	1-1/4	3-1/2	6	TC87459	152.51
.3800		.3800	1-1/4	3-1/2	6	TC87460	152.51
.3810		.3810	1-1/4	3-1/2	6	TC87461	152.51
.3820		.3820	1-1/4	3-1/2	6	TC87462	152.51
.3830		.3830	1-1/4	3-1/2	6	TC87463	152.51
.3840		.3840	1-1/4	3-1/2	6	TC87464	152.51
.3850		.3850	1-1/4	3-1/2	6	TC87465	152.51
.3860	W	.3860	1-1/4	3-1/2	6	TC87466	152.51
.3870		.3870	1-1/4	3-1/2	6	TC87467	189.19
.3880		.3880	1-1/4	3-1/2	6	TC87468	189.19
.3890		.3890	1-1/4	3-1/2	6	TC87469	189.19
.3900		.3900	1-1/4	3-1/2	6	TC87470	189.19
.3906	25/64	.3906	1-1/4	3-1/2	6	TC87471	137.34
.3910		.3910	1-1/4	3-1/2	6	TC87472	189.19
.3920		.3920	1-1/4	3-1/2	6	TC87473	189.19
.3930		.3930	1-1/4	3-1/2	6	TC87474	189.19
.3937	10mm	.3937	1-1/4	3-1/2	6	TC87475	143.32
.3940		.3940	1-1/4	3-1/2	6	TC87476	189.19
.3950		.3950	1-1/4	3-1/2	6	TC87477	189.19
.3960		.3960	1-1/4	3-1/2	6	TC87478	189.19
.3970	X	.3970	1-1/4	3-1/2	6	TC87479	189.19
.3980		.3980	1-1/4	3-1/2	6	TC87480	189.19
.3990		.3990	1-1/4	3-1/2	6	TC87481	189.19
.4000		.4000	1-1/4	3-1/2	6	TC87482	189.19
.4010		.4010	1-1/4	3-1/2	6	TC87483	189.19
.4020		.4020	1-1/4	3-1/2	6	TC87484	189.19
.4030		.4030	1-1/4	3-1/2	6	TC87485	189.19
.4040	Y	.4040	1-1/4	3-1/2	6	TC87486	189.19
.4050		.4050	1-1/4	3-1/2	6	TC87487	189.19
.4060		.4060	1-1/4	3-1/2	6	TC87488	189.19
.4062	13/32	.4062	1-1/4	3-1/2	6	TC87489	137.34
.4070		.4070	1-1/4	3-1/2	6	TC87490	189.19
.4080		.4080	1-1/4	3-1/2	6	TC87491	189.19
.4090		.4090	1-1/4	3-1/2	6	TC87492	189.19
.4100		.4100	1-1/4	3-1/2	6	TC87493	189.19

CONTINUED ON NEXT PAGE

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

**TAKE 55%
OFF LIST
PRICES**



SERIES 870

ENDMILLS
MICRO
THREADMILLS
DRILL MILLS
CHAMFER MILLS
DRILLS
REAMERS
BURS

DEC. EQUIV.	SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
.4110		.4110	1-1/4	3-1/2	6	TC87494	189.19
.4120		.4120	1-1/4	3-1/2	6	TC87495	189.19
.4130	Z	.4130	1-1/4	3-1/2	6	TC87496	189.19
.4134	10.5mm	.4134	1-1/4	3-1/2	6	TC87497	172.32
.4140		.4140	1-1/4	3-1/2	6	TC87498	189.19
.4150		.4150	1-1/4	3-1/2	6	TC87499	189.19
.4160		.4160	1-3/8	4	6	TC87500	189.19
.4170		.4170	1-3/8	4	6	TC87501	189.19
.4180		.4180	1-3/8	4	6	TC87502	189.19
.4190		.4190	1-3/8	4	6	TC87503	189.19
.4200		.4200	1-3/8	4	6	TC87504	189.19
.4210		.4210	1-3/8	4	6	TC87505	189.19
.4219	27/64	.4219	1-3/8	4	6	TC87506	155.72
.4220		.4220	1-3/8	4	6	TC87507	189.19
.4230		.4230	1-3/8	4	6	TC87508	189.19
.4240		.4240	1-3/8	4	6	TC87509	189.19
.4250		.4250	1-3/8	4	6	TC87510	189.19
.4260		.4260	1-3/8	4	6	TC87511	189.19
.4270		.4270	1-3/8	4	6	TC87512	189.19
.4280		.4280	1-3/8	4	6	TC87513	189.19
.4290		.4290	1-3/8	4	6	TC87514	189.19
.4300		.4300	1-3/8	4	6	TC87515	189.19
.4310		.4310	1-3/8	4	6	TC87516	189.19
.4320		.4320	1-3/8	4	6	TC87517	189.19
.4330		.4330	1-3/8	4	6	TC87518	189.19
.4331	11mm	.4331	1-3/8	4	6	TC87519	172.32
.4340		.4340	1-3/8	4	6	TC87520	189.19
.4350		.4350	1-3/8	4	6	TC87521	189.19
.4360		.4360	1-3/8	4	6	TC87522	189.19
.4365		.4365	1-3/8	4	6	TC87523	189.19
.4370		.4370	1-3/8	4	6	TC87524	189.19
.4375	7/16	.4375	1-3/8	4	6	TC87525	155.72
.4380		.4380	1-3/8	4	6	TC87526	189.19
.4385		.4385	1-3/8	4	6	TC87527	226.07
.4390		.4390	1-3/8	4	6	TC87528	189.19
.4400		.4400	1-3/8	4	6	TC87529	189.19
.4410		.4410	1-3/8	4	6	TC87530	214.68
.4420		.4420	1-3/8	4	6	TC87531	214.68
.4430		.4430	1-3/8	4	6	TC87532	214.68
.4440		.4440	1-3/8	4	6	TC87533	214.68
.4450		.4450	1-3/8	4	6	TC87534	214.68
.4460		.4460	1-3/8	4	6	TC87535	214.68
.4470		.4470	1-3/8	4	6	TC87536	214.68
.4480		.4480	1-3/8	4	6	TC87537	214.68
.4490		.4490	1-3/8	4	6	TC87538	214.68
.4500		.4500	1-3/8	4	6	TC87539	214.68
.4510		.4510	1-3/8	4	6	TC87540	214.68
.4520		.4520	1-3/8	4	6	TC87541	214.68
.4528	11.5mm	.4528	1-3/8	4	6	TC87542	214.68
.4530		.4530	1-3/8	4	6	TC87543	196.76
.4531	29/64	.4531	1-3/8	4	6	TC87544	171.66
.4540		.4540	1-3/8	4	6	TC87545	214.68
.4550		.4550	1-3/8	4	6	TC87546	214.68

DEC. EQUIV.	SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	# OF FLUTES	ITEM#	LIST PRICE
.4560		.4560	1-3/8	4	6	TC87547	214.68
.4570		.4570	1-3/8	4	6	TC87548	214.68
.4580		.4580	1-3/8	4	6	TC87549	214.68
.4590		.4590	1-3/8	4	6	TC87550	214.68
.4600		.4600	1-3/8	4	6	TC87551	214.68
.4610		.4610	1-3/8	4	6	TC87552	214.68
.4620		.4620	1-3/8	4	6	TC87553	214.68
.4630		.4630	1-3/8	4	6	TC87554	214.68
.4640		.4640	1-3/8	4	6	TC87555	214.68
.4650		.4650	1-3/8	4	6	TC87556	214.68
.4660		.4660	1-3/8	4	6	TC87557	214.68
.4670		.4670	1-3/8	4	6	TC87558	214.68
.4680		.4680	1-3/8	4	6	TC87559	214.68
.4688	15/32	.4688	1-3/8	4	6	TC87560	171.66
.4690		.4690	1-3/8	4	6	TC87561	226.22
.4700		.4700	1-3/8	4	6	TC87562	226.22
.4710		.4710	1-3/8	4	6	TC87563	226.22
.4720		.4720	1-3/8	4	6	TC87564	226.22
.4724	12mm	.4724	1-3/8	4	6	TC87565	217.96
.4730		.4730	1-3/8	4	6	TC87566	226.22
.4740		.4740	1-3/8	4	6	TC87567	226.22
.4750		.4750	1-3/8	4	6	TC87568	226.22
.4760		.4760	1-1/2	4	6	TC87569	226.22
.4770		.4770	1-1/2	4	6	TC87570	226.22
.4780		.4780	1-1/2	4	6	TC87571	226.22
.4790		.4790	1-1/2	4	6	TC87572	226.22
.4800		.4800	1-1/2	4	6	TC87573	226.22
.4810		.4810	1-1/2	4	6	TC87574	226.22
.4820		.4820	1-1/2	4	6	TC87575	226.22
.4830		.4830	1-1/2	4	6	TC87576	226.22
.4840		.4840	1-1/2	4	6	TC87577	226.22
.4844	31/64	.4844	1-1/2	4	6	TC87578	194.48
.4850		.4850	1-1/2	4	6	TC87579	226.22
.4860		.4860	1-1/2	4	6	TC87580	226.22
.4870		.4870	1-1/2	4	6	TC87581	272.79
.4880		.4880	1-1/2	4	6	TC87582	272.79
.4890		.4890	1-1/2	4	6	TC87583	272.79
.4900		.4900	1-1/2	4	6	TC87584	272.79
.4910		.4910	1-1/2	4	6	TC87585	272.79
.4920		.4920	1-1/2	4	6	TC87586	272.79
.4921	12.5mm	.4921	1-1/2	4	6	TC87587	272.79
.4930		.4930	1-1/2	4	6	TC87588	272.79
.4940		.4940	1-1/2	4	6	TC87589	272.79
.4950		.4950	1-1/2	4	6	TC87590	272.79
.4960		.4960	1-1/2	4	6	TC87591	272.79
.4970		.4970	1-1/2	4	6	TC87592	272.79
.4980		.4980	1-1/2	4	6	TC87593	272.79
.4990		.4990	1-1/2	4	6	TC87594	272.79
.4995		.4995	1-1/2	4	6	TC87595	272.79
.5000	1/2	.5000	1-1/2	4	6	TC87596	194.48
.5005		.5005	1-1/2	4	6	TC87597	272.79
.5010		.5010	1-1/2	4	6	TC87598	272.79
.5020		.5020	1-1/2	4	6	TC87599	272.79

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

**TAKE 55%
OFF LIST
PRICES**



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	262.35	173.57	151.36	96.87	76.69	68.62	64.58	60.53	56.51
.0451 - .0500	0.042	3/8	1-1/2	262.35	173.57	151.36	96.87	76.69	68.62	64.58	60.53	56.51
.0501 - .0570	0.046	3/8	1-1/2	264.36	175.56	153.37	98.88	78.71	70.63	66.59	62.56	58.54
.0571 - .0650	0.053	3/8	1-1/2	262.35	173.57	151.36	96.87	76.69	68.62	64.58	60.53	56.51
.0651 - .0800	0.060	1/2	1-3/4	264.36	175.56	153.37	98.88	78.71	70.63	66.59	62.56	58.54
.0801 - .0950	0.075	1/2	2	266.40	177.59	155.39	100.91	80.72	72.66	68.62	64.58	60.53
.0951 - .1150	0.090	5/8	2-1/4	270.42	181.62	159.42	104.94	84.75	76.69	72.66	68.62	64.58
.1151 - .1300	0.110	5/8	2-1/4	272.44	183.63	161.44	106.96	86.78	78.71	74.66	70.63	66.59
.1301 - .1450	0.125	3/4	2-1/2	278.48	189.69	167.51	113.01	92.85	84.75	80.72	76.69	72.66
.1451 - .1600	0.140	3/4	2-1/2	284.56	195.75	173.57	119.07	98.88	90.81	86.78	82.74	78.71
.1601 - .1750	0.155	7/8	2-3/4	290.60	201.81	179.59	125.11	104.94	96.87	92.85	88.80	84.75
.1751 - .1950	0.170	7/8	2-3/4	298.68	209.87	187.69	133.19	113.01	104.94	100.91	96.87	92.85
.1951 - .2100	0.188	1	3	314.81	226.02	203.84	149.34	129.16	121.09	117.05	113.01	108.97
.2101 - .2250	0.205	1	3	320.88	232.08	209.87	155.39	135.22	127.13	123.11	119.07	115.01
.2251 - .2400	0.220	1	3	330.96	242.18	219.98	165.48	145.31	137.22	133.19	129.16	125.11
.2401 - .2550	0.235	1	3	339.03	250.23	228.04	173.57	153.37	145.31	141.25	137.22	133.19
.2551 - .2750	0.250	1	3-1/4	359.23	270.42	248.21	193.74	173.57	165.48	161.44	157.42	153.37
.2751 - .2950	0.270	1-1/8	3-1/4	361.22	272.44	250.23	195.75	175.56	167.51	163.46	159.42	155.39
.2951 - .3150	0.290	1-1/8	3-1/4	381.40	292.60	270.42	215.93	195.75	187.69	183.63	179.59	175.56
.3151 - .3350	0.313	1-1/4	3-1/2	409.66	320.88	298.68	244.19	224.01	215.93	211.90	207.86	203.84
.3351 - .3550	0.330	1-1/4	3-1/2	413.69	328.94	302.72	248.21	228.04	219.98	215.93	211.90	207.86
.3551 - .3800	0.350	1-1/4	3-1/2	421.77	337.02	310.78	256.31	236.11	228.04	224.01	219.98	215.93
.3801 - .4100	0.375	1-1/4	4	452.04	363.26	341.05	286.57	266.40	258.30	254.28	250.23	246.20
.4101 - .4400	0.405	1-3/8	4	468.18	379.41	357.20	302.72	282.53	274.46	270.42	266.40	262.35
.4401 - .4700	0.438	1-3/8	4	492.40	403.62	381.40	326.93	306.74	298.68	294.64	290.60	286.57
.4701 - .5050	0.465	1-1/2	4	532.77	443.98	421.77	367.28	347.10	339.03	335.01	330.96	326.93
.5051 - .5400	0.500	1-1/2	4-1/2	585.24	496.45	474.25	419.77	399.58	391.50	387.47	383.44	379.41
.5401 - .5800	0.535	1-1/2	4-1/2	665.96	577.15	554.98	500.48	480.30	472.24	468.18	464.15	460.12
.5801 - .6260	0.575	1-3/4	4-1/2	730.55	641.75	619.54	565.06	544.88	536.81	532.77	528.73	524.70
.6261 - .6600	0.615	1-3/4	4-1/2	827.41	738.61	716.42	661.93	641.75	633.66	629.63	625.61	621.57
.6601 - .7050	0.655	2	5	948.50	859.71	837.50	783.01	762.84	754.75	750.72	746.70	742.65
.7051 - .7550	0.700	2	5	1,029.20	940.43	918.21	863.73	843.55	835.46	831.44	827.41	823.38
.7551 - .7950	0.750	2	5	1,109.92	1,021.15	998.93	944.45	924.27	916.21	912.16	908.13	904.09
.7951 - .8450	0.750	2-1/4	5	1,190.66	1,101.87	1,079.67	1,025.18	1,005.01	996.92	992.88	988.86	984.82
.8451 - .9000	0.750	2-1/4	5	1,352.11	1,263.33	1,241.12	1,186.63	1,166.46	1,158.36	1,154.33	1,150.31	1,146.27
.9001 - .9600	0.875	2-1/4	5	1,553.92	1,465.12	1,442.93	1,388.43	1,368.24	1,360.17	1,356.14	1,352.11	1,348.07
.9601 - 1.025	0.875	2-1/4	5	1,715.35	1,626.57	1,604.37	1,549.88	1,529.69	1,521.63	1,517.59	1,513.54	1,509.51

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

**TAKE 55%
OFF LIST
PRICES**

SA - CYLINDRICAL



TOOL #	SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	DOUBLE CUT ITEM #	LIST PRICE	SINGLE CUT ITEM #	LIST PRICE
*SA-61	1/16	3/32	1/4	1-1/2	TB19280	10.13	TB19264	10.13
*SA-41	1/16	1/8	1/4	1-1/2	TB19316	9.60	TB19301	9.60
*SA-41L2	1/16	1/8	1/4	2	TB19281	14.38	TB19265	14.38
*SA-41L3	1/16	1/8	1/4	3	TB19282	15.92	TB19266	15.92
*SA-63	3/32	3/32	3/8	1-1/2	TB19283	10.13	TB19267	10.13
*SA-42	3/32	1/8	7/16	1-1/2	TB19317	9.60	TB19302	9.60
*SA-42L2	3/32	1/8	7/16	2	TB19284	14.38	TB19268	14.38
*SA-42L3	3/32	1/8	7/16	3	TB19285	15.92	TB19269	15.92
*SA-43	1/8	1/8	9/16	1-1/2	TB19318	9.60	TB19303	9.60
*SA-43L2	1/8	1/8	9/16	2	TB19286	14.38	TB19270	14.38
*SA-43L3	1/8	1/8	9/16	3	TB19287	15.92	TB19271	15.92
*SA-11	1/8	1/4	1/2	2	TB19322	19.06	TB19307	19.06
*SA-12	1/8	1/4	5/8	2	TB19288	19.15	TB19272	19.15
SA-52	5/32	1/8	1/2	2	TB19319	21.12	TB19304	21.12
*SA-13	5/32	1/4	5/8	2	TB19652	26.41	TB19630	26.41
SA-53	3/16	1/8	1/2	2	TB19320	21.12	TB19305	21.12
*SA-81	3/16	3/16	1/2	2	TB19289	23.19	TB19273	23.19
*SA-14	3/16	1/4	5/8	2	TB19323	22.80	TB19308	22.80
SA-51	1/4	1/8	1/2	2	TB19321	14.24	TB19306	14.24
*SA-1	1/4	1/4	5/8	2	TB19324	16.15	TB19309	16.15
SA-1L6	1/4	1/4	1/2	6-1/2	TB19565	32.73	TB19562	32.73
*SA-1L	1/4	1/4	1	2	TB19290	24.94	TB19274	24.94
SA-2	5/16	1/4	3/4	2-1/2	TB19325	29.82	TB19310	29.82
SA-3	3/8	1/4	3/4	2-1/2	TB19326	19.99	TB19311	19.99
SA-3L6	3/8	1/4	3/4	6-3/4	TB19566	46.11	TB19563	46.11
SA-3L	3/8	1/4	1	2-3/4	TB19291	30.78	TB19275	30.78
SA-3X	3/8	1/4	1-1/2	3-1/4	TB19292	43.78	TB19276	43.78
SA-4	7/16	1/4	1	2-3/4	TB19327	46.34	TB19312	46.34
SA-5	1/2	1/4	1	2-3/4	TB19328	31.90	TB19313	31.90
SA-5L6	1/2	1/4	1	7	TB19567	72.05	TB19564	72.05
SA-6	5/8	1/4	1	2-3/4	TB19329	45.99	TB19314	45.99
SA-15	3/4	1/4	1/2	2-1/4	TB19293	70.04	TB19277	70.04
SA-16	3/4	1/4	3/4	2-1/2	TB19294	70.04	TB19278	70.04
SA-7	3/4	1/4	1	2-3/4	TB19330	71.71	TB19315	71.71
SA-9	1	1/4	1	2-3/4	TB19654	113.23	TB19632	113.23

* Carbide One-Piece

SA - CYLINDRICAL - FOR ALUMINUM



TOOL #	SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	—	—	ALUMA CUT ITEM #	LIST PRICE
*SA-1NF	1/4	1/4	5/8	2	—	—	TB19592	23.37
SA-3NF	3/8	1/4	3/4	2-1/2	—	—	TB19593	32.67
SA-5NF	1/2	1/4	1	2-3/4	—	—	TB19594	54.56
SA-6NF	5/8	1/4	1	2-3/4	—	—	TB19595	81.09
SA-7NF	3/4	1/4	1	2-3/4	—	—	TB19596	106.54

* Carbide One-Piece

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 199.

**TAKE 55%
OFF LIST
PRICES**

SB - CYLINDRICAL END CUT

TOOL #	SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	DOUBLE CUT ITEM #	LIST PRICE	SINGLE CUT ITEM #	LIST PRICE
*SB-41	1/16	1/8	1/4	1-1/2	TB19660	12.94	TB19331	12.94
*SB-41L2	1/16	1/8	1/4	2	TB19834	15.81	TB19815	15.81
*SB-41L3	1/16	1/8	1/4	3	TB19835	17.51	TB19816	17.51
*SB-42	3/32	1/8	7/16	1-1/2	TB19658	10.23	TB19332	10.23
*SB-42L2	3/32	1/8	7/16	2	TB19836	15.81	TB19817	15.81
*SB-42L3	3/32	1/8	7/16	3	TB19837	17.51	TB19818	17.51
*SB-ECO	1/8	1/8	-	1-1/2	-	-	TB19819	7.43
*SB-43	1/8	1/8	9/16	1-1/2	TB19656	9.36	TB19333	9.36
*SB-43L2	1/8	1/8	9/16	2	TB19839	15.81	TB19820	15.81
*SB-43L3	1/8	1/8	9/16	3	TB19840	17.51	TB19821	17.51
*SB-11	1/8	1/4	1/2	2	TB19344	24.67	TB19336	24.67
*SB-12	1/8	1/4	5/8	2	TB19841	21.01	TB19822	21.01
*SB-13	5/32	1/4	5/8	2	TB19662	29.79	TB19634	29.79
*SB-14	3/16	1/4	5/8	2	TB19345	24.67	TB19337	24.67
SB-51	1/4	1/8	3/16	1-11/16	TB19342	14.28	TB19334	14.28
SB-51	1/4	1/8	1/2	2	TB19343	15.55	TB19335	15.55
*SB-1	1/4	1/4	5/8	2	TB19346	19.16	TB19338	19.16
*SB-1L	1/4	1/4	1	2	TB19842	27.43	TB19823	27.43
SB-2	5/16	1/4	3/4	2-1/2	TB19347	32.80	TB19339	32.80
SB-3	3/8	1/4	3/4	2-1/2	TB19348	22.87	TB19340	22.87
SB-3L	3/8	1/4	1	2-3/4	TB19843	33.80	TB19824	33.80
SB-3X	3/8	1/4	1-1/2	3-1/4	TB19844	44.68	TB19825	44.68
SB-4	7/16	1/4	1	2-3/4	TB19349	52.66	TB19636	52.66
SB-5	1/2	1/4	1	2-3/4	TB19350	35.11	TB19341	35.11
SB-6	5/8	1/4	1	2-3/4	TB19351	51.45	TB19692	51.45
SB-15	3/4	1/4	1/2	2-1/4	TB19845	76.74	TB19826	76.74
SB-16	3/4	1/4	3/4	2-1/2	TB19846	76.74	TB19827	76.74
SB-7	3/4	1/4	1	2-3/4	TB19352	79.01	TB19638	79.01
SB-9	1	1/4	1	2-3/4	TB19664	123.58	TB19640	123.58

* Carbide One-Piece

SB - CYLINDRICAL - FOR ALUMINUM

TOOL #	SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	—	—	ALUMA CUT ITEM #	LIST PRICE
SB-3NF	3/8	1/4	3/4	2-1/2	—	—	TB19852	36.93
SB-5NF	1/2	1/4	1	2-3/4	—	—	TB19853	56.65
SB-6NF	5/8	1/4	1	2-3/4	—	—	TB19854	78.28
SB-7NF	3/4	1/4	1	2-3/4	—	—	TB19855	114.61

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 199.

SC - CYLINDRICAL BALL NOSE



TOOL #	SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	DOUBLE CUT ITEM #	LIST PRICE	SINGLE CUT ITEM #	LIST PRICE
*SC-61	3/32	3/32	3/8	1-1/2	TB19772	10.13	TB19761	10.13
*SC-41	3/32	1/8	7/16	1-1/2	TB19367	9.60	TB19353	9.60
*SC-42	1/8	1/8	9/16	1-1/2	TB19368	9.60	TB19354	9.60
*SC-42L2	1/8	1/8	9/16	2	TB19773	14.38	TB19762	14.38
*SC-42L3	1/8	1/8	9/16	3	TB19774	15.92	TB19763	15.92
*SC-11	1/8	1/4	1/2	2	TB19372	26.51	TB19358	26.51
*SC-12	1/8	1/4	5/8	2	TB19775	20.32	TB19764	20.32
SC-52	5/32	1/8	1/2	2	TB19369	21.12	TB19355	21.12
*SC-13	5/32	1/4	5/8	2	TB19666	30.33	TB19642	30.33
SC-53	3/16	1/8	1/2	2	TB19370	21.12	TB19356	21.12
*SC-81	3/16	3/16	1/2	2	TB19777	23.19	TB19766	23.19
*SC-14	3/16	1/4	5/8	2	TB19373	26.51	TB19359	26.51
SC-51	1/4	1/8	1/2	2	TB19371	14.28	TB19357	14.28
*SC-1	1/4	1/4	5/8	2	TB19374	19.19	TB19360	19.19
*SC-1L	1/4	1/4	1	2	TB19778	24.94	TB19767	24.94
SC-1L6	1/4	1/4	1/2	6-1/2	TB19571	38.12	TB19568	38.12
SC-2	5/16	1/4	3/4	2-1/2	TB19375	32.23	TB19361	32.23
SC-3	3/8	1/4	3/4	2-1/2	TB19376	23.20	TB19362	23.20
SC-3L	3/8	1/4	1	2-3/4	TB19779	33.69	TB19768	33.69
SC-3L6	3/8	1/4	3/4	6-3/4	TB19572	51.36	TB19569	51.36
SC-3X	3/8	1/4	1-1/2	3-1/4	TB19788	39.58	TB19769	39.58
SC-4	7/16	1/4	1	2-3/4	TB19377	50.92	TB19363	50.92
SC-5	1/2	1/4	1	2-3/4	TB19378	35.98	TB19364	35.98
SC-5L6	1/2	1/4	1	7	TB19573	80.81	TB19570	80.81
SC-6	5/8	1/4	1	2-3/4	TB19379	53.60	TB19365	53.60
SC-15	3/4	1/4	1/2	2-1/4	TB19789	75.19	TB19770	75.19
SC-16	3/4	1/4	3/4	2-1/2	TB19792	75.19	TB19771	75.19
SC-7	3/4	1/4	1	2-3/4	TB19380	77.25	TB19366	77.25
SC-9	1	1/4	1	2-3/4	TB19782	116.81	TB19780	116.81

* Carbide One-Piece

SC - CYLINDRICAL BALL NOSE FOR ALUMINUM



TOOL #	SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	—	—	ALUMA CUT ITEM #	LIST PRICE
*SC-1NF	1/4	1/4	5/8	2	—	—	TB19597	23.00
SC-3NF	3/8	1/4	3/4	2-1/2	—	—	TB19598	30.66
SC-5NF	1/2	1/4	1	2-3/4	—	—	TB19599	43.46
SC-7NF	3/4	1/4	1	2-3/4	—	—	TB19600	105.35

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SD - BALL SHAPE

TOOL #	SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	DOUBLE CUT ITEM #	LIST PRICE	SINGLE CUT ITEM #	LIST PRICE
*SD-40	1/16	1/8	1/16	1-1/2	TB19136	10.14	TB19492	10.14
*SD-61	3/32	3/32	3/32	1-1/2	TB19137	10.13	TB19130	10.13
*SD-41	3/32	1/8	3/32	1-1/2	TB19506	9.60	TB19493	9.60
*SD-42	1/8	1/8	1/8	1-1/2	TB19507	9.60	TB19644	9.60
*SD-42L2	1/8	1/8	1/8	2	TB19138	14.38	TB19131	14.38
*SD-42L3	1/8	1/8	1/8	3	TB19139	15.92	TB19132	15.92
*SD-11	1/8	1/4	1/8	2	TB19510	24.34	TB19497	24.34
SD-52	5/32	1/8	5/32	1-21/32	TB19140	19.57	TB19133	19.57
SD-53	3/16	1/8	3/16	1-11/16	TB19508	21.12	TB19134	21.12
*SD-81	3/16	3/16	5/32	2	TB19141	23.19	TB19135	23.19
*SD-14	3/16	1/4	3/16	2	TB19511	24.34	TB19498	24.34
SD-51	1/4	1/8	1/4	1-3/4	TB19509	14.24	TB19496	14.24
*SD-1	1/4	1/4	1/4	2	TB19512	18.66	TB19499	18.66
SD-1L6	1/4	1/4	1/4	6-1/4	TB19577	35.14	TB19574	35.14
SD-2	5/16	1/4	5/16	2-1/16	TB19513	26.21	TB19500	26.21
SD-3	3/8	1/4	3/8	2-1/8	TB19514	19.99	TB19501	19.99
SD-3L6	3/8	1/4	3/8	6-3/8	TB19578	42.26	TB19575	42.26
SD-4	7/16	1/4	7/16	2-3/16	TB19515	33.84	TB19502	33.84
SD-5	1/2	1/4	1/2	2-1/2	TB19516	27.12	TB19503	27.12
SD-5L6	1/2	1/4	1/2	6-1/2	TB19579	56.94	TB19576	56.94
SD-6	5/8	1/4	5/8	2-3/8	TB19517	42.22	TB19504	42.22
SD-7	3/4	1/4	3/4	2-1/2	TB19518	58.25	TB19505	58.25
SD-9	1	1/4	1	2-3/4	TB19668	123.58	TB19646	123.58

* Carbide One-Piece

SD - BALL SHAPE FOR ALUMINUM

TOOL #	SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	—	—	ALUMA CUT ITEM #	LIST PRICE
*SD-1NF	1/4	1/4	1/4	2	—	—	TB19613	22.67
SD-3NF	3/8	1/4	3/8	2-1/8	—	—	TB19614	28.65
SD-5NF	1/2	1/4	1/2	2-13/64	—	—	TB19615	47.01
SD-6NF	5/8	1/4	5/8	2-5/16	—	—	TB19616	70.79

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SE - EGG SHAPE



TOOL #	SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	DOUBLE CUT ITEM #	LIST PRICE	SINGLE CUT ITEM #	LIST PRICE
*SE-61	3/32	3/32	1/8	1-1/2	TB19153	10.13	TB19145	10.13
*SE-41	1/8	1/8	7/32	1-1/2	TB19464	9.60	TB19456	9.60
*SE-41L2	1/8	1/8	7/32	2	TB19154	14.38	TB19146	14.38
*SE-41L3	1/8	1/8	7/32	3	TB19155	15.92	TB19147	15.92
SE-53	3/16	1/8	9/32	1-25/32	TB19465	21.12	TB19457	21.12
*SE-81	3/16	3/16	9/32	2	TB19156	23.19	TB19148	23.19
*SE-11	3/16	1/4	5/16	2	TB19157	20.85	TB19149	20.85
SE-51	1/4	1/8	3/8	1-7/8	TB19466	14.24	TB19458	14.24
*SE-1	1/4	1/4	3/8	2	TB19467	22.80	TB19459	22.80
SE-1L6	1/4	1/4	3/8	6-3/8	TB19158	30.78	TB19150	30.78
SE-3	3/8	1/4	5/8	2-3/8	TB19468	24.01	TB19460	24.01
SE-3L6	3/8	1/4	5/8	6-5/8	TB19159	34.49	TB19151	34.49
SE-5	1/2	1/4	7/8	2-5/8	TB19469	33.57	TB19461	33.57
SE-5L6	1/2	1/4	7/8	6-7/8	TB19160	51.73	TB19152	51.73
SE-6	5/8	1/4	1	2-3/4	TB19470	53.02	TB19462	53.02
SE-7	3/4	1/4	1	2-3/4	TB19471	74.17	TB19463	74.17

* Carbide One-Piece

SE - EGG SHAPE FOR ALUMINUM



TOOL #	SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	—	—	ALUMA CUT ITEM #	LIST PRICE
SE-3NF	3/8	1/4	5/8	2-3/8	—	—	TB19606	31.83
SE-5NF	1/2	1/4	7/8	2-5/8	—	—	TB19607	55.40
SE-6NF	5/8	1/4	1	2-3/4	—	—	TB19608	78.48
SE-7NF	3/4	1/4	1	2-3/4	—	—	TB19609	112.31



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SF - ROUND NOSE TREE



TOOL #	SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	DOUBLE CUT ITEM #	LIST PRICE	SINGLE CUT ITEM #	LIST PRICE
*SF-61	3/32	3/32	1/4	1-1/2	TB19165	10.13	TB19161	10.13
*SF-41	1/8	1/8	1/4	1-1/2	TB19395	9.60	TB19381	9.60
*SF-42	1/8	1/8	1/2	1-1/2	TB19396	9.60	TB19382	9.60
*SF-42L2	1/8	1/8	1/2	2	TB19166	14.38	TB19162	14.38
*SF-42L3	1/8	1/8	1/2	3	TB19167	15.92	TB19163	15.92
SF-53	3/16	1/8	1/2	2	TB19397	21.12	TB19383	21.12
*SF-81	3/16	3/16	1/2	2	TB19168	23.19	TB19164	23.19
SF-51	1/4	1/8	1/2	2	TB19398	14.24	TB19384	14.24
*SF-1	1/4	1/4	3/4	2	TB19399	20.80	TB19385	20.80
SF-1L6	1/4	1/4	1/2	6-1/2	TB19583	39.75	TB19580	39.75
SF-3	3/8	1/4	3/4	2-1/2	TB19400	23.20	TB19386	23.20
SF-3L6	3/8	1/4	3/4	6-3/4	TB19584	50.35	TB19581	50.35
SF-4	7/16	1/4	1	2-3/4	TB19401	48.51	TB19387	48.51
SF-13	1/2	1/4	3/4	2-1/2	TB19402	51.66	TB19389	51.66
SF-5	1/2	1/4	1	2-3/4	TB19403	34.84	TB19390	34.84
SF-5L6	1/2	1/4	1	7	TB19585	74.26	TB19582	74.26
SF-6	5/8	1/4	1	2-3/4	TB19404	53.33	TB19391	53.33
SF-7	3/4	1/4	1	2-3/4	TB19405	74.52	TB19392	74.52
SF-14	3/4	1/4	1-1/4	3	TB19406	135.69	TB19393	135.69
SF-15	3/4	1/4	1-1/2	3-1/4	TB19407	159.34	TB19394	159.34

* Carbide One-Piece

SF - ROUND NOSE TREE FOR ALUMINUM



TOOL #	SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	—	—	ALUMA CUT ITEM #	LIST PRICE
*SF-1NF	1/4	1/4	3/4	2	—	—	TB19601	23.44
SF-3NF	3/8	1/4	3/4	2-1/2	—	—	TB19602	30.99
SF-5NF	1/2	1/4	1	2-3/4	—	—	TB19603	54.83
SF-6NF	5/8	1/4	1	2-3/4	—	—	TB19604	83.67
SF-14NF	3/4	1/4	1-1/4	3	—	—	TB19605	101.78

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SG - POINTED TREE



TOOL #	SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	DOUBLE CUT ITEM #	LIST PRICE	SINGLE CUT ITEM #	LIST PRICE
*SG-61	3/32	3/32	1/4	1-1/2	TB19938	10.13	TB19930	10.13
*SG-41	1/8	1/8	1/4	1-1/2	TB19421	9.56	TB19408	9.56
*SG-42	1/8	1/8	5/16	1-1/2	TB19422	9.56	TB19409	9.56
*SG-43	1/8	1/8	3/8	1-1/2	TB19423	9.56	TB19410	9.56
*SG-44	1/8	1/8	1/2	1-1/2	TB19424	13.31	TB19411	13.31
*SG-44L2	1/8	1/8	1/2	2	TB19939	14.38	TB19931	14.38
*SG-44L3	1/8	1/8	1/2	3	TB19940	15.92	TB19932	15.92
SG-53	3/16	1/8	1/2	2	TB19425	21.12	TB19412	21.12
*SG-81	3/16	3/16	1/2	2	TB19941	23.19	TB19933	23.19
SG -51	1/4	1/8	1/2	2	TB19426	14.24	TB19413	14.24
*SG-1	1/4	1/4	5/8	2	TB19427	21.20	TB19414	21.20
SG-1L6	1/4	1/4	1/2	6-1/2	TB19942	29.08	TB19934	29.08
SG-2	5/16	1/4	3/4	2-1/2	TB19428	33.60	TB19415	33.60
SG-3	3/8	1/4	3/4	2-1/2	TB19429	23.91	TB19416	23.91
SG-3L6	3/8	1/4	3/4	6-3/4	TB19943	36.61	TB19935	36.61
SG-13	1/2	1/4	3/4	2-1/2	TB19430	50.69	TB19417	50.69
SG-5	1/2	1/4	1	2-3/4	TB19431	35.11	TB19418	35.11
SG-5L6	1/2	1/4	1	7	TB19944	47.75	TB19936	47.75
SG-6	5/8	1/4	1	2-3/4	TB19432	54.44	TB19419	54.44
SG-7	3/4	1/4	1	2-3/4	TB19433	72.86	TB19420	72.86
SG-15	3/4	1/4	1-1/2	3-1/4	TB19945	87.55	TB19937	87.55

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SH - FLAME SHAPE



TOOL #	SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	DOUBLE CUT ITEM #	LIST PRICE	SINGLE CUT ITEM #	LIST PRICE
*SH-41	1/8	1/8	1/4	1-1/2	TB19525	9.60	TB19519	9.60
*SH41L2	1/8	1/8	1/4	2	TB19954	14.38	TB19950	14.38
*SH41L3	1/8	1/8	1/4	3	TB19955	15.92	TB19951	15.92
SH-53	3/16	1/8	3/8	1-7/8	TB19526	21.12	TB19520	21.12
*SH-1	1/4	1/4	5/8	2	TB19812	22.53	TB19810	22.53
SH-2	5/16	1/4	3/4	2-1/2	TB19527	25.98	TB19521	25.98
SH-2L6	5/16	1/4	3/4	6-3/4	TB19956	34.48	TB19952	34.49
SH-5	1/2	1/4	1-1/4	3	TB19528	50.35	TB19522	50.35
SH-5L6	1/2	1/4	1-1/4	7-1/4	TB19957	55.71	TB19953	55.71
SH-6	5/8	1/4	1-7/16	3-3/16	TB19529	118.69	TB19523	118.69
SH-7	3/4	1/4	1-5/8	3-3/8	TB19530	150.80	TB19524	150.80

* Carbide One-Piece

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SJ - 60° INCLUDED ANGLE

TOOL #	SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	DOUBLE CUT ITEM #	LIST PRICE	SINGLE CUT ITEM #	LIST PRICE
*SJ-42	1/8	1/8	3/32	1-1/2	TB19558	9.60	TB19554	9.60
*SJ-1	1/4	1/4	3/16	2	TB19559	18.66	TB19555	18.66
SJ-3	3/8	1/4	5/16	2-3/16	TB19560	22.87	TB19556	22.87
SJ-5	1/2	1/4	7/16	2-19/64	TB19561	31.36	TB19557	31.36
SJ-6	5/8	1/4	9/16	2-5/16	TB19963	37.83	TB19960	37.83
SJ-7	3/4	1/4	11/16	2-7/16	TB19964	49.61	TB19961	49.61
SJ-9	1	1/4	15/16	2-11/16	TB19965	99.81	TB19962	99.81

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SK - 90° INCLUDED ANGLE

TOOL #	SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	DOUBLE CUT ITEM #	LIST PRICE	SINGLE CUT ITEM #	LIST PRICE
*SK-42	1/8	1/8	1/16	1-1/2	TB19550	9.60	TB19546	9.60
*SK-1	1/4	1/4	1/8	2	TB19551	18.66	TB19547	18.66
SK-3	3/8	1/4	3/16	2-1/16	TB19552	19.29	TB19548	19.29
SK-5	1/2	1/4	1/4	2-1/8	TB19553	30.22	TB19549	30.22
SK-6	5/8	1/4	5/16	2-3/16	TB19972	37.83	TB19970	37.83
SK-7	3/4	1/4	3/8	2-1/4	TB19695	61.56	TB19694	61.56
SK-9	1	1/4	1/2	2-1/4	TB19973	93.76	TB19971	93.76

* Carbide One-Piece



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SL - INCLUDED ANGLE WITH RADIUS END



TOOL #	SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	INCL. ANGLE	DOUBLE CUT ITEM #	LIST PRICE	SINGLE CUT ITEM #	LIST PRICE
*SL-41	1/8	1/8	3/8	1-1/2	8°	TB19482	9.56	TB19472	9.56
*SL-42	1/8	1/8	1/2	1-1/2	8°	TB19483	9.56	TB19473	9.56
*SL-42L2	1/8	1/8	1/2	2	8°	TB19992	14.38	TB19980	14.38
*SL-42L3	1/8	1/8	1/2	3	8°	TB19993	15.92	TB19981	15.92
SL-53	3/16	1/8	1/2	2	14°	TB19484	21.12	TB19474	21.12
*SL-81	3/16	3/16	7/16	2	14°	TB19994	23.19	TB19982	23.19
*SL-1	1/4	1/4	5/8	2	14°	TB19485	19.43	TB19475	19.43
SL-1L6	1/4	1/4	5/8	6-1/2	14°	TB19589	40.72	TB19586	40.72
SL-2	5/16	1/4	7/8	2-3/4	14°	TB19486	37.15	TB19476	37.15
SL-3	3/8	1/4	1-1/16	2-15/16	14°	TB19487	26.88	TB19477	26.88
SL-3L6	3/8	1/4	1-1/16	7-1/16	14°	TB19590	64.16	TB19587	64.16
SL-4	1/2	1/4	1-1/8	3	14°	TB19488	54.46	TB19478	54.46
SL-4L6	1/2	1/4	1-1/8	7-1/8	14°	TB19591	78.60	TB19588	78.60
SL-6	5/8	1/4	1-5/16	3-3/16	14°	TB19490	87.36	TB19480	87.36
SL-7	3/4	1/4	1-1/2	3-3/8	14°	TB19491	119.54	TB19481	119.54

* Carbide One-Piece

SL - INCLUDED ANGLE WITH RADIUS END - FOR ALUMINUM



TOOL #	SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	INCL. ANGLE	—	—	ALUMA CUT ITEM #	LIST PRICE
SL-4NF	1/2	1/4	1-1/8	3	14°	—	—	TB19610	54.97
SL-6NF	5/8	1/4	1-5/16	3-3/16	14°	—	—	TB19611	110.70
SL-7NF	3/4	1/4	1-1/2	3-3/8	14°	—	—	TB19612	137.50

SM - POINTED CONE



TOOL #	SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	DOUBLE CUT ITEM #	LIST PRICE	SINGLE CUT ITEM #	LIST PRICE
*SM-61	3/32	3/32	1/4	1-1/2	TB19064	10.13	TB19061	10.13
*SM-41	1/8	1/8	11/32	1-1/2	TB19445	9.60	TB19434	9.60
*SM-42	1/8	1/8	7/16	1-1/2	TB19446	9.60	TB19435	9.60
*SM-42L2	1/8	1/8	7/16	2	TB19065	14.38	TB19062	14.38
*SM-42L3	1/8	1/8	7/16	3	TB19066	15.92	TB19063	15.92
*SM-43	1/8	1/8	5/8	1-1/2	TB19447	9.60	TB19436	9.60
SM-53	3/16	1/8	1/2	2	TB19448	21.12	TB19437	21.12
SM-51	1/4	1/8	1/2	2-1/8	TB19449	14.24	TB19438	14.24
*SM-1	1/4	1/4	1/2	2	TB19450	18.26	TB19439	18.26
*SM-2	1/4	1/4	3/4	2	TB19451	28.29	TB19440	28.29
*SM-3	1/4	1/4	1	2	TB19452	20.40	TB19441	20.40
SM-4	3/8	1/4	5/8	2-1/2	TB19453	27.18	TB19442	27.18
SM-5	1/2	1/4	7/8	2-3/4	TB19454	38.05	TB19443	38.05
SM-6	5/8	1/4	1	2-7/8	TB19455	85.93	TB19444	85.93

* Carbide One-Piece

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SN - INVERTED TAPER

TOOL #	SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	DOUBLE CUT ITEM #	LIST PRICE	SINGLE CUT ITEM #	LIST PRICE
*SN-61	3/32	3/32	1/8	1-1/2	TB19075	10.13	TB19069	10.13
*SN-41	3/32	1/8	1/8	1-1/2	TB19076	9.60	TB19531	9.60
*SN-42	1/8	1/8	3/16	1-1/2	TB19537	9.60	TB19532	9.60
SN-53	3/16	1/8	1/4	1-3/4	TB19538	21.12	TB19533	21.12
*SN-81	3/16	3/16	1/4	2	TB19077	23.19	TB19070	23.19
SN-51	1/4	1/8	1/4	1-3/4	TB19539	14.24	TB19534	14.24
*SN-1	1/4	1/4	5/16	2	TB19540	18.56	TB19535	18.56
SN-2	3/8	1/4	3/8	2-1/8	TB19078	26.11	TB19071	26.11
SN-4	1/2	1/4	1/2	2-1/4	TB19541	54.16	TB19536	54.16
SN-6	5/8	1/4	3/4	2-1/2	TB19079	47.91	TB19072	47.91
SN-7	3/4	1/4	5/8	2-3/8	TB19080	57.84	TB19073	57.84

* Carbide One-Piece

CARBIDE BUR SETS

#TB19542



#TB19850

SET SIZES	# OF PCS. IN SET	DIA.	SHANK DIAMETER	CASE TYPE	TYPE	ITEM#	LIST 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	141.36
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	151.99
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	231.57
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	415.52
SC-3, SD-3, SF-3, SG-3, SA-5, SC-5, SF-5, SL-4	8 PCS.	-	1/4	WOOD	DOUBLE CUT	TB19800	267.58
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	266.17

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 199.

**TAKE 55%
OFF LIST
PRICES**



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#	LIST PRICE
1/8	1/8	1-1/2	1	CS31008	CS31108	CS31208	CS31308	21.89
3/16	3/16	2	1	CS31012	CS31112	CS31212	CS31312	23.39
1/4	1/4	2	1	CS31016	CS31116	CS31216	CS31316	26.57
3/8	1/4	2-5/8	1	CS31024	CS31124	CS31224	CS31324	48.11
1/2	1/4	2-5/8	1	CS31032	CS31132	CS31232	CS31332	59.59
5/8	3/8	2-3/4	1	CS31040	CS31140	CS31240	CS31340	87.06
3/4	3/8	2-3/4	1	CS31048	CS31148	CS31248	CS31348	119.17
1	1/2	3	1	CS31064	CS31164	CS31264	CS31364	182.41



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#	LIST PRICE
1/8	1/8	1-1/2	1	CS33108	CS33208	CS33308	CS33408	21.89
3/16	3/16	2	1	CS33112	CS33212	CS33312	CS33412	23.39
1/4	1/4	2	1	CS33116	CS33216	CS33316	CS33416	26.57
3/8	1/4	2-5/8	1	CS33124	CS33224	CS33324	CS33424	48.11
1/2	1/4	2-5/8	1	CS33132	CS33232	CS33332	CS33432	59.59
5/8	3/8	2-3/4	1	CS33140	CS33240	CS33340	CS33440	87.06
3/4	3/8	2-3/4	1	CS33148	CS33248	CS33348	CS33448	119.17
1	1/2	3	1	CS33164	CS33264	CS33364	CS33464	182.41



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#	LIST PRICE
1/8	1/8	1-1/2	1	CS36608	CS36708	CS36808	CS36908	21.89
3/16	3/16	2	1	CS36612	CS36712	CS36812	CS36912	23.39
1/4	1/4	2	1	CS36616	CS36716	CS36816	CS36916	26.57
3/8	1/4	2-5/8	1	CS36624	CS36724	CS36824	CS36924	48.11
1/2	1/4	2-5/8	1	CS36632	CS36732	CS36832	CS36932	59.59
5/8	3/8	2-3/4	1	CS36640	CS36740	CS36840	CS36940	87.06
3/4	3/8	2-3/4	1	CS36648	CS36748	CS36848	CS36948	119.17
1	1/2	3	1	CS36664	CS36764	CS36864	CS36964	182.41

**TAKE 55%
OFF LIST
PRICES**

CARBIDE

SERIES 3000
REGULAR - 60°
UNCOATED

SIZE	DRILL DIA.	BODY DIA.	OVERALL LENGTH	PKG. QTY.	ITEM#	LIST PRICE
00	.025	1/8	1-1/2	1	CS30020	29.73
0	1/32	1/8	1-1/2	1	CS30010	28.41
1	3/64	1/8	1-1/2	1	CS30001	25.86
2	5/64	3/16	2	1	CS30002	38.48
3	7/64	1/4	2	1	CS30003	43.40
4	1/8	5/16	2-1/8	1	CS30004	56.02
5	3/16	7/16	2-3/4	1	CS30005	88.81
6	7/32	1/2	3	1	CS30006	110.55



SERIES 3600
REGULAR - 60°
ALTiN COATED

SIZE	DRILL DIA.	BODY DIA.	OVERALL LENGTH	PKG. QTY.	ITEM#	LIST PRICE
00	.025	1/8	1-1/2	1	CS36020	37.13
0	1/32	1/8	1-1/2	1	CS36010	35.52
1	3/64	1/8	1-1/2	1	CS36001	32.31
2	5/64	3/16	2	1	CS36002	48.11
3	7/64	1/4	2	1	CS36003	54.23
4	1/8	5/16	2-1/8	1	CS36004	70.03
5	3/16	7/16	2-3/4	1	CS36005	111.02
6	7/32	1/2	3	1	CS36006	138.20

HIGH SPEED STEEL & COBALT

SERIES 1000
HIGH SPEED STEEL - REGULAR - 60°
UNCOATED

SIZE	DRILL DIA.	BODY DIA.	OVERALL LENGTH	PKG. QTY.	ITEM#	LIST PRICE
0	1/32	1/8	1-1/4	12	CS10010	12.90
1	3/64	1/8	1-1/4	12	CS10001	9.02
2	5/64	3/16	1-7/8	12	CS10002	9.43
3	7/64	1/4	2	12	CS10003	9.84
4	1/8	5/16	2-1/8	12	CS10004	10.13
5	3/16	7/16	2-3/4	12	CS10005	16.05
6	7/32	1/2	3	1	CS10006	24.11
7	1/4	5/8	3-1/4	1	CS10007	36.64
8	5/16	3/4	3-1/2	1	CS10008	50.29



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

SIZE	DRILL DIA.	BODY DIA.	OVERALL LENGTH	PKG. QTY.	ITEM#	LIST PRICE
00	.025	1/8	1-1/4	12	CS35020	17.94
0	1/32	1/8	1-1/4	12	CS35010	17.94
1	3/64	1/8	1-1/4	12	CS35001	14.31
2	5/64	3/16	1-7/8	12	CS35002	14.70
3	7/64	1/4	2	12	CS35003	20.02
4	1/8	5/16	2-1/8	12	CS35004	20.64
5	3/16	7/16	2-3/4	12	CS35005	28.74
6	7/32	1/2	3	1	CS35006	45.87
7	1/4	5/8	3-1/4	1	CS35007	65.93
8	5/16	3/4	3-1/2	1	CS35008	106.09

SERIES 50
HIGH SPEED STEEL - MINIATURE - 60°

SIZE	DRILL DIA.	BODY DIA.	OVERALL LENGTH	PKG. QTY.	ITEM#	LIST PRICE
00000	.010	1/8	1-1/4	12	CS00050	14.85
0000	.015	1/8	1-1/4	12	CS00040	13.65
000	.020	1/8	1-1/4	12	CS00030	12.90
00	.025	1/8	1-1/4	12	CS00020	12.90

SERIES 2000
M42 COBALT - 60°

SIZE	DRILL DIA.	BODY DIA.	OVERALL LENGTH	PKG. QTY.	ITEM#	LIST PRICE
1	3/64	1/8	1-1/4	12	CS20001	25.56
2	5/64	3/16	1-7/8	12	CS20002	26.39
3	7/64	1/4	2	12	CS20003	27.25
4	1/8	5/16	2-1/8	12	CS20004	28.37

FOR COATING INFORMATION SEE PAGE 5.

COMBINED DRILL & COUNTERSINKS



SERIES 5000

HIGH SPEED STEEL - LONG LENGTH - 60°

SIZE	DRILL DIA.	BODY DIA.	PKG. QTY.	ITEM#	LIST PRICE
1x3	3/64	1/8	1	CS50013	22.62
1x4	3/64	1/8	1	CS50014	23.60
1x5	3/64	1/8	1	CS50015	32.79
1x6	3/64	1/8	1	CS50016	42.96
2x3	5/64	3/16	1	CS50023	22.87
2x4	5/64	3/16	1	CS50024	25.88
2x5	5/64	3/16	1	CS50025	33.13
2x6	5/64	3/16	1	CS50026	43.09
3x3	7/64	1/4	1	CS50033	23.90
3x4	7/64	1/4	1	CS50034	27.25
3x5	7/64	1/4	1	CS50035	35.84
3x6	7/64	1/4	1	CS50036	43.47
4x4	1/8	5/16	1	CS50044	30.21

SIZE	DRILL DIA.	BODY DIA.	PKG. QTY.	ITEM#	LIST PRICE
4x5	1/8	5/16	1	CS50045	38.58
4x6	1/8	5/16	1	CS50046	44.59
4-1/2 x 4	9/64	3/8	1	CS50040	33.95
4-1/2 x 5	9/64	3/8	1	CS50050	49.40
4-1/2 x 6	9/64	3/8	1	CS50060	55.21
5x4	3/16	7/16	1	CS50054	39.66
5x5	3/16	7/16	1	CS50055	45.92
5x6	3/16	7/16	1	CS50056	51.54
6x5	7/32	1/2	1	CS50065	49.35
6x6	7/32	1/2	1	CS50066	59.65
7x6	1/4	5/8	1	CS50076	111.11
8x6	5/16	3/4	1	CS50086	134.35
-	-	-	-	-	-

COMBINED DRILL & COUNTERSINKS



SERIES 4000

HIGH SPEED STEEL - BELL TYPE - 60°

SIZE	DRILL DIAMETER	BODY DIAMETER	OVERALL LENGTH	PACKAGE QUANTITY	ITEM#	LIST PRICE
11	3/64	1/8	1-1/4	12	CS40011	11.16
12	1/16	3/16	1-7/8	12	CS40012	11.72
13	3/32	1/4	2	12	CS40013	11.85
14	7/64	5/16	2-1/8	12	CS40014	12.23
15	5/32	7/16	2-3/4	12	CS40015	18.63
16	3/16	1/2	3	1	CS40016	28.75
17	7/32	5/8	3-1/4	1	CS40017	54.44
18	1/4	3/4	3-1/2	1	CS40018	72.18

**TAKE 55%
OFF LIST
PRICES**

FOUR-FLUTE MACHINE COUNTERSINKS



HIGH SPEED STEEL

SERIES 521 - 60°

SIZE	SHANK DIA.	OVERALL LENGTH	PKG. QTY.	60° - ITEM#	LIST PRICE
1/2	1/2	3-7/8	1	CD52032	76.70
5/8	1/2	4	1	CD52040	86.35
3/4	1/2	4-1/8	1	CD52048	110.19
7/8	1/2	4-1/4	1	CD52056	129.52
1	1/2	4-3/8	1	CD52064	133.86

SERIES 523 - 82°

SIZE	SHANK DIA.	OVERALL LENGTH	PKG. QTY.	82° - ITEM#	LIST PRICE
1/2	1/2	3-7/8	1	CD52232	76.70
5/8	1/2	4	1	CD52240	86.35
3/4	1/2	4-1/8	1	CD52248	110.19
7/8	1/2	4-1/4	1	CD52256	129.52
1	1/2	4-3/8	1	CD52264	133.86

**TAKE 55%
OFF LIST
PRICES**

SINGLE-FLUTE COUNTERSINKS



HIGH SPEED STEEL

SERIES 505 - 60°

SIZE	SHANK DIA.	OVERALL LENGTH	PKG. QTY.	60° - ITEM#	LIST PRICE
1/4 - 60	3/16	1-7/16	1	CD50501	24.03
3/8 - 60	1/4	1-21/32	1	CD50502	27.35
1/2 - 60	1/4	1-13/32	1	CD50503	34.98
3/4 - 60	1/2	1-27/32	1	CD50504	48.30
1 - 60	1/2	2-13/16	1	CD50505	75.03

SERIES 510 - 82°

SIZE	SHANK DIA.	OVERALL LENGTH	PKG. QTY.	82° - ITEM#	LIST PRICE
1/4 - 82	3/16	1-7/16	1	CD51014	24.03
3/8 - 82	1/4	1-21/32	1	CD51015	27.35
1/2 - 82	1/4	1-13/32	1	CD51016	34.98
3/4 - 82	1/2	1-27/32	1	CD51017	48.30
1 - 82	1/2	2-13/16	1	CD51018	75.03

SERIES 515 - 90°

SIZE	SHANK DIA.	OVERALL LENGTH	PKG. QTY.	90° - ITEM#	LIST PRICE
1/4 - 90	3/16	1-7/16	1	CD51523	24.03
3/8 - 90	1/4	1-21/32	1	CD51524	27.35
1/2 - 90	1/4	1-13/32	1	CD51525	34.98
3/4 - 90	1/2	1-27/32	1	CD51526	48.30
1 - 90	1/2	2-13/16	1	CD51527	75.03

**TAKE 55%
OFF LIST
PRICES**

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	ITEM#	LIST PRICE
1/8	3/8	3/8	2-5/16	2	TE64001	31.68
5/32	3/8	3/8	2-5/16	2	TE64002	41.29
3/16	3/8	9/32	2-5/16	2	TE64004	31.68
7/32	3/8	7/16	2-5/16	2	TE64005	41.29
1/4	3/8	1/2	2-5/16	2	TE64007	31.68
9/32	3/8	1/2	2-5/16	2	TE64008	41.29
5/16	3/8	9/16	2-5/16	2	TE64009	31.68
3/8	3/8	9/16	2-5/16	2	TE64014	31.68
7/16	3/8	13/16	2-1/2	2	TE64020	43.79
1/2	3/8	13/16	2-1/2	2	TE64027	43.79
1/2	1/2	1	3	2	TE64028	46.29
9/16	1/2	1-1/8	3-1/8	2	TE64033	56.51
5/8	1/2	1-1/8	3-1/8	2	TE64035	63.28
5/8	5/8	1-5/16	3-7/16	2	TE64036	64.27
3/4	1/2	1-5/16	3-5/16	2	TE64043	73.47
3/4	5/8	1-5/16	3-7/16	2	TE64044	73.47
3/4	3/4	1-5/16	3-9/16	2	TE64045	73.47
13/16	5/8	1-1/2	3-5/8	2	TE64049	90.35
13/16	3/4	1-1/2	3-3/4	2	TE64050	90.88
7/8	5/8	1-1/2	3-5/8	2	TE64052	90.35
7/8	3/4	1-1/2	3-3/4	2	TE64053	100.68
7/8	7/8	1-1/2	3-3/4	2	TE64054	100.68
15/16	3/4	1-1/2	3-3/4	2	TE64059	115.89
15/16	7/8	1-1/2	3-3/4	2	TE64060	109.42
1	5/8	1-1/2	3-5/8	2	TE64062	102.46
1	3/4	1-1/2	3-3/4	2	TE64063	102.46
1	1	1-5/8	4-1/8	2	TE64066	116.65
1-1/8	7/8	1-5/8	3-7/8	2	TE64070	179.52
1-1/8	1	1-5/8	4-1/8	2	TE64071	170.59
1-1/4	7/8	1-5/8	3-7/8	2	TE64073	179.52
1-1/4	1	1-5/8	4-1/8	2	TE64074	190.19
1-1/4	1-1/4	1-5/8	4-1/8	2	TE64075	203.06
1-3/8	1	1-5/8	4-1/8	2	TE64079	211.65
1-1/2	1	1-5/8	4-1/8	2	TE64082	227.44
1-1/2	1-1/4	1-5/8	4-1/8	2	TE64083	227.44

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	#OF FLTS	ITEM#	LIST PRICE
1/8	3/8	3/8	2-5/16	2	TE64101	39.59
5/32	3/8	3/8	2-5/16	2	TE64102	51.59
3/16	3/8	9/32	2-5/16	2	TE64104	39.59
7/32	3/8	7/16	2-5/16	2	TE64105	51.59
1/4	3/8	1/2	2-5/16	2	TE64107	39.59
9/32	3/8	1/2	2-5/16	2	TE64108	51.59
5/16	3/8	9/16	2-5/16	2	TE64109	39.59
3/8	3/8	9/16	2-5/16	2	TE64114	39.59
7/16	3/8	13/16	2-1/2	2	TE64120	54.73
1/2	3/8	13/16	2-1/2	2	TE64127	54.73
1/2	1/2	1	3	2	TE64128	57.91
9/16	1/2	1-1/8	3-1/8	2	TE64133	70.63
5/8	1/2	1-1/8	3-1/8	2	TE64135	79.10
5/8	5/8	1-5/16	3-7/16	2	TE64136	80.35
3/4	1/2	1-5/16	3-5/16	2	TE64143	91.94
3/4	5/8	1-5/16	3-7/16	2	TE64144	91.94
3/4	3/4	1-5/16	3-9/16	2	TE64145	91.94
13/16	5/8	1-1/2	3-5/8	2	TE64149	112.90
13/16	3/4	1-1/2	3-3/4	2	TE64150	113.28
7/8	5/8	1-1/2	3-5/8	2	TE64152	112.90
7/8	3/4	1-1/2	3-3/4	2	TE64153	125.85
7/8	7/8	1-1/2	3-3/4	2	TE64154	125.85
15/16	3/4	1-1/2	3-3/4	2	TE64159	144.89
15/16	7/8	1-1/2	3-3/4	2	TE64160	136.79
1	5/8	1-1/2	3-5/8	2	TE64162	128.04
1	3/4	1-1/2	3-3/4	2	TE64163	128.04
1	1	1-5/8	4-1/8	2	TE64166	145.79
1-1/8	7/8	1-5/8	3-7/8	2	TE64170	224.41
1-1/8	1	1-5/8	4-1/8	2	TE64171	213.24
1-1/4	7/8	1-5/8	3-7/8	2	TE64173	224.33
1-1/4	1	1-5/8	4-1/8	2	TE64174	237.73
1-1/4	1-1/4	1-5/8	4-1/8	2	TE64175	253.85
1-3/8	1	1-5/8	4-1/8	2	TE64179	264.56
1-1/2	1	1-5/8	4-1/8	2	TE64182	284.32
1-1/2	1-1/4	1-5/8	4-1/8	2	TE64183	284.32

FOR COATING INFORMATION SEE PAGE 5.

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

**TAKE 55%
OFF LIST
PRICES**

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	ITEM#	LIST PRICE
1/8	3/8	3/8	2-5/16	4	TE69400	32.36
5/32	3/8	3/8	2-5/16	4	TE69401	44.28
3/16	3/8	1/2	2-3/8	4	TE69403	32.36
7/32	3/8	1/2	2-3/8	4	TE69404	44.28
1/4	3/8	5/8	2-7/16	4	TE69406	32.36
9/32	3/8	11/16	2-1/2	4	TE69408	44.28
5/16	3/8	3/4	2-1/2	4	TE69409	32.36
11/32	3/8	3/4	2-1/2	4	TE69413	45.23
3/8	3/8	3/4	2-1/2	4	TE69414	32.36
13/32	3/8	3/4	2-1/2	4	TE69419	66.12
7/16	3/8	1	2-11/16	4	TE69420	43.68
15/32	3/8	1	2-11/16	4	TE69425	77.51
1/2	3/8	1	2-11/16	4	TE69427	43.68
1/2	1/2	1-1/4	3-1/4	4	TE69428	43.68
17/32	1/2	1-1/4	3-1/4	4	TE69432	88.79
9/16	1/2	1-3/8	3-3/8	4	TE69433	56.85
5/8	1/2	1-3/8	3-3/8	4	TE69435	61.88
5/8	5/8	1-5/8	3-3/4	4	TE69436	68.77
11/16	1/2	1-5/8	3-5/8	4	TE69440	71.72
11/16	5/8	1-5/8	3-3/4	4	TE69441	73.09
3/4	1/2	1-5/8	3-5/8	4	TE69443	74.26
3/4	5/8	1-5/8	3-3/4	4	TE69444	74.26
3/4	3/4	1-5/8	3-7/8	4	TE69445	77.02
13/16	3/4	1-7/8	4-1/8	4	TE69450	98.22
7/8	3/4	1-7/8	4-1/8	4	TE69453	97.88
7/8	7/8	1-7/8	4-1/8	4	TE69454	97.88
15/16	3/4	1-7/8	4-1/8	4	TE69459	125.70
15/16	7/8	1-7/8	4-1/8	4	TE69460	118.96
1	3/4	1-7/8	4-1/8	4	TE69463	111.43
1	7/8	1-7/8	4-1/8	4	TE69465	118.96
1	1	2	4-1/2	4	TE69466	117.98
1-1/8	1	2	4-1/2	6	TE69471	168.35
1-1/4	1	2	4-1/2	6	TE69474	180.43
1-1/4	1-1/4	2	4-1/2	6	TE69476	183.95
1-3/8	1	2	4-1/2	6	TE69479	208.85
1-1/2	1	2	4-1/2	6	TE69482	225.39
1-1/2	1-1/4	2	4-1/2	4	TE69483	236.86
1-5/8	1-1/4	2	4-1/2	6	TE69487	257.98
1-3/4	1-1/4	2	4-1/2	4	TE69488	312.71
1-3/4	1-1/4	2	4-1/2	6	TE69489	287.16
2	1-1/4	2	4-1/2	6	TE69493	419.03

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	# OF FLTS	ITEM#	LIST PRICE
1/8	3/8	3/8	2-5/16	4	TE69500	40.42
5/32	3/8	3/8	2-5/16	4	TE69501	55.37
3/16	3/8	1/2	2-3/8	4	TE69503	40.42
7/32	3/8	1/2	2-3/8	4	TE69504	55.37
1/4	3/8	5/8	2-7/16	4	TE69506	40.42
9/32	3/8	11/16	2-1/2	4	TE69508	55.37
5/16	3/8	3/4	2-1/2	4	TE69509	40.42
11/32	3/8	3/4	2-1/2	4	TE69513	56.55
3/8	3/8	3/4	2-1/2	4	TE69514	40.42
13/32	3/8	3/4	2-1/2	4	TE69519	82.66
7/16	3/8	1	2-11/16	4	TE69520	54.62
15/32	3/8	1	2-11/16	4	TE69525	87.20
1/2	3/8	1	2-11/16	4	TE69527	54.62
1/2	1/2	1-1/4	3-1/4	4	TE69528	54.62
17/32	1/2	1-1/4	3-1/4	4	TE69532	111.01
9/16	1/2	1-3/8	3-3/8	4	TE69533	71.04
5/8	1/2	1-3/8	3-3/8	4	TE69535	77.36
5/8	5/8	1-5/8	3-3/4	4	TE69536	85.96
11/16	1/2	1-5/8	3-5/8	4	TE69540	89.66
11/16	5/8	1-5/8	3-3/4	4	TE69541	91.37
3/4	1/2	1-5/8	3-5/8	4	TE69543	92.81
3/4	5/8	1-5/8	3-3/4	4	TE69544	92.81
3/4	3/4	1-5/8	3-7/8	4	TE69545	92.81
13/16	3/4	1-7/8	4-1/8	4	TE69550	122.82
7/8	3/4	1-7/8	4-1/8	4	TE69553	122.40
7/8	7/8	1-7/8	4-1/8	4	TE69554	122.40
15/16	3/4	1-7/8	4-1/8	4	TE69559	157.15
15/16	7/8	1-7/8	4-1/8	4	TE69560	143.18
1	3/4	1-7/8	4-1/8	4	TE69563	139.28
1	7/8	1-7/8	4-1/8	4	TE69565	148.71
1	1	2	4-1/2	4	TE69566	147.50
1-1/8	1	2	4-1/2	6	TE69571	209.84
1-1/4	1	2	4-1/2	6	TE69574	225.54
1-1/4	1-1/4	2	4-1/2	6	TE69576	229.90
1-3/8	1	2	4-1/2	6	TE69579	254.12
1-1/2	1	2	4-1/2	6	TE69582	282.58
1-1/2	1-1/4	2	4-1/2	4	TE69583	296.17
1-5/8	1-1/4	2	4-1/2	6	TE69587	323.87
1-3/4	1-1/4	2	4-1/2	4	TE69588	390.91
1-3/4	1-1/4	2	4-1/2	6	TE69589	357.60
2	1-1/4	2	4-1/2	6	TE69593	519.67

FOR COATING INFORMATION SEE PAGE 5.

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

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



SERIES 815
UNCOATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLUTES	UNCOATED	LIST PRICE
1/8	3/8	3/8	3-1/16	2	TE62206	48.48
5/32	3/8	7/16	3-1/8	2	TE62208	51.47
3/16	3/8	7/16	3-1/8	2	TE62210	48.52
7/32	3/8	1/2	3-1/8	2	TE62212	51.51
1/4	3/8	1/2	3-1/8	2	TE62214	48.52
9/32	3/8	9/16	3-1/8	2	TE62216	51.51
5/16	3/8	9/16	3-1/8	2	TE62218	48.52
11/32	3/8	9/16	3-1/8	2	TE62220	51.51
3/8	3/8	9/16	3-1/2	2	TE62222	48.52
13/32	1/2	13/16	3-3/4	2	TE62224	78.46
7/16	1/2	13/16	3-3/4	2	TE62226	73.81
1/2	1/2	13/16	3-3/4	2	TE62230	73.81
9/16	5/8	1-1/8	4-1/2	2	TE62234	100.41
5/8	5/8	1-1/8	4-1/2	2	TE62238	100.41
11/16	3/4	1-5/16	5	2	TE62242	126.45
3/4	3/4	1-5/16	5	2	TE62246	126.45
13/16	7/8	1-9/16	5-1/2	2	TE62250	159.08
7/8	7/8	1-9/16	5-1/2	2	TE62254	159.08
15/16	1	1-5/8	5-7/8	2	TE62258	204.95
1	1	1-5/8	5-7/8	2	TE62262	195.68

**TAKE 55%
OFF LIST
PRICES**



SERIES 816
ALTIN COATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLUTES	ALTIN	LIST PRICE
1/8	3/8	3/8	3-1/16	2	TE62306	60.60
5/32	3/8	7/16	3-1/8	2	TE62308	64.34
3/16	3/8	7/16	3-1/8	2	TE62310	60.63
7/32	3/8	1/2	3-1/8	2	TE62312	64.34
1/4	3/8	1/2	3-1/8	2	TE62314	60.63
9/32	3/8	9/16	3-1/8	2	TE62316	64.34
5/16	3/8	9/16	3-1/8	2	TE62318	60.63
11/32	3/8	9/16	3-1/8	2	TE62320	64.34
3/8	3/8	9/16	3-1/2	2	TE62322	60.63
13/32	1/2	13/16	3-3/4	2	TE62324	98.07
7/16	1/2	13/16	3-3/4	2	TE62326	92.24
1/2	1/2	13/16	3-3/4	2	TE62330	92.24
9/16	5/8	1-1/8	4-1/2	2	TE62334	125.51
5/8	5/8	1-1/8	4-1/2	2	TE62338	125.51
11/16	3/4	1-5/16	5	2	TE62342	158.06
3/4	3/4	1-5/16	5	2	TE62346	158.06
13/16	7/8	1-9/16	5-1/2	2	TE62350	198.82
7/8	7/8	1-9/16	5-1/2	2	TE62354	198.82
15/16	1	1-5/8	5-7/8	2	TE62358	256.20
1	1	1-5/8	5-7/8	2	TE62362	244.58

FOR COATING INFORMATION SEE PAGE 5.

TOLERANCES	DIAMETER IF SIZE & SHANK DIA. ARE NOT THE SAME	DIAMETER IF SIZE & SHANK DIA. ARE THE SAME	SHANK
ALL SIZES	+.0000, -.0015	+.0000, -.0025	+.0001, -.0005

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

**TAKE 55%
OFF LIST
PRICES**



SERIES 820
UNCOATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLUTES	UNCOATED	LIST PRICE
1/8	3/8	3/8	3-1/16	4	TE68006	48.98
5/32	3/8	7/16	3-1/8	4	TE68008	51.74
3/16	3/8	1/2	3-1/8	4	TE68010	48.98
7/32	3/8	9/16	3-1/4	4	TE68012	51.74
1/4	3/8	5/8	3-3/8	4	TE68014	48.98
9/32	3/8	11/16	3-3/8	4	TE68016	51.74
5/16	3/8	3/4	3-1/2	4	TE68018	48.98
11/32	3/8	3/4	3-1/2	4	TE68020	51.74
3/8	3/8	3/4	3-1/2	4	TE68022	48.98
13/32	1/2	1	4-1/8	4	TE68024	76.04
7/16	1/2	1	4-1/8	4	TE68026	73.96
15/32	1/2	1	4-1/8	4	TE68028	76.04
1/2	1/2	1	4-1/8	4	TE68030	73.96
9/16	5/8	1-3/8	5	4	TE68034	98.71
5/8	5/8	1-3/8	5	4	TE68038	98.71
11/16	3/4	1-5/8	5-5/8	4	TE68042	124.30
3/4	3/4	1-5/8	5-5/8	4	TE68046	124.30
13/16	7/8	1-7/8	6-1/8	4	TE68050	165.97
7/8	7/8	1-7/8	6-1/8	4	TE68054	165.97
15/16	1	1-7/8	6-3/8	4	TE68058	200.98
1	1	1-7/8	6-3/8	4	TE68062	192.73



SERIES 821
ALTIN COATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLUTES	ALTIN	LIST PRICE
1/8	3/8	3/8	3-1/16	4	TE68106	61.24
5/32	3/8	7/16	3-1/8	4	TE68108	64.65
3/16	3/8	1/2	3-1/8	4	TE68110	61.24
7/32	3/8	9/16	3-1/4	4	TE68112	64.65
1/4	3/8	5/8	3-3/8	4	TE68114	61.24
9/32	3/8	11/16	3-3/8	4	TE68116	64.65
5/16	3/8	3/4	3-1/2	4	TE68118	61.24
11/32	3/8	3/4	3-1/2	4	TE68120	64.65
3/8	3/8	3/4	3-1/2	4	TE68122	61.24
13/32	1/2	1	4-1/8	4	TE68124	95.04
7/16	1/2	1	4-1/8	4	TE68126	92.43
15/32	1/2	1	4-1/8	4	TE68128	95.04
1/2	1/2	1	4-1/8	4	TE68130	92.43
9/16	5/8	1-3/8	5	4	TE68134	123.39
5/8	5/8	1-3/8	5	4	TE68138	123.39
11/16	3/4	1-5/8	5-5/8	4	TE68142	155.41
3/4	3/4	1-5/8	5-5/8	4	TE68146	155.41
13/16	7/8	1-7/8	6-1/8	4	TE68150	207.49
7/8	7/8	1-7/8	6-1/8	4	TE68154	207.49
15/16	1	1-7/8	6-3/8	4	TE68158	251.24
1	1	1-7/8	6-3/8	4	TE68162	240.76

FOR COATING INFORMATION SEE PAGE 5.

TOLERANCES	DIAMETER IF SIZE & SHANK DIA. ARE NOT THE SAME	DIAMETER IF SIZE & SHANK DIA. ARE THE SAME	SHANK
ALL SIZES	+.0000, -.0015	+.0000, -.0025	+.0001, -.0005

SQUARE END - 30° HELIX - M42 COBALT



SERIES 807
2 FLUTE - UNCOATED



SERIES 808
2 FLUTE - ALTiN COATED

**TAKE 55%
OFF LIST
PRICES**

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	#OF FLTS	ITEM#	LIST PRICE
1/8	3/8	3/8	2-5/16	2	TE82701	38.57
3/16	3/8	9/32	2-5/16	2	TE82705	38.57
1/4	3/8	1/2	2-5/16	2	TE82709	38.57
5/16	3/8	9/16	2-5/16	2	TE82713	38.57
3/8	3/8	9/16	2-5/16	2	TE82715	38.57
7/16	3/8	13/16	2-1/2	2	TE82717	53.29
1/2	3/8	13/16	2-1/2	2	TE82719	53.29
1/2	1/2	1	3	2	TE82721	56.36
9/16	1/2	1-1/8	3-1/8	2	TE82723	68.77
5/8	1/2	1-1/8	3-1/8	2	TE82725	77.02
5/8	5/8	1-5/16	3-7/16	2	TE82727	78.23
3/4	1/2	1-5/16	3-5/16	2	TE82729	89.44
3/4	5/8	1-5/16	3-7/16	2	TE82731	89.44
3/4	3/4	1-5/16	3-9/16	2	TE82733	89.44
13/16	5/8	1-1/2	3-5/8	2	TE82735	109.95
13/16	3/4	1-1/2	3-3/4	2	TE82737	110.60
7/8	3/4	1-1/2	3-3/4	2	TE82741	122.56
7/8	7/8	1-1/2	3-3/4	2	TE82743	122.56
15/16	5/8	1-1/2	3-5/8	2	TE82745	133.19
15/16	3/4	1-1/2	3-3/4	2	TE82747	141.06
1	3/4	1-1/2	3-3/4	2	TE82753	124.67
1	1	1-5/8	4-1/8	2	TE82757	141.97
1-1/8	1	1-5/8	4-1/8	2	TE82761	207.64
1-1/4	1	1-5/8	4-1/8	2	TE82765	231.48
1-1/2	1-1/4	1-5/8	4-1/8	2	TE82773	276.87

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	#OF FLTS	ITEM#	LIST PRICE
1/8	3/8	3/8	2-5/16	2	TE82802	48.22
3/16	3/8	9/32	2-5/16	2	TE82806	48.22
1/4	3/8	1/2	2-5/16	2	TE82810	48.22
5/16	3/8	9/16	2-5/16	2	TE82814	48.22
3/8	3/8	9/16	2-5/16	2	TE82816	48.22
7/16	3/8	13/16	2-1/2	2	TE82818	66.61
1/2	3/8	13/16	2-1/2	2	TE82820	66.61
1/2	1/2	1	3	2	TE82822	70.47
9/16	1/2	1-1/8	3-1/8	2	TE82824	85.99
5/8	1/2	1-1/8	3-1/8	2	TE82826	96.29
5/8	5/8	1-5/16	3-7/16	2	TE82828	97.80
3/4	1/2	1-5/16	3-5/16	2	TE82830	111.92
3/4	5/8	1-5/16	3-7/16	2	TE82832	111.92
3/4	3/4	1-5/16	3-9/16	2	TE82834	111.92
13/16	5/8	1-1/2	3-5/8	2	TE82836	137.43
13/16	3/4	1-1/2	3-3/4	2	TE82838	137.92
7/8	3/4	1-1/2	3-3/4	2	TE82842	153.18
7/8	7/8	1-1/2	3-3/4	2	TE82844	153.18
15/16	5/8	1-1/2	3-5/8	2	TE82846	166.46
15/16	3/4	1-1/2	3-3/4	2	TE82848	176.38
1	3/4	1-1/2	3-3/4	2	TE82854	155.86
1	1	1-5/8	4-1/8	2	TE82858	177.47
1-1/8	1	1-5/8	4-1/8	2	TE82862	259.57
1-1/4	1	1-5/8	4-1/8	2	TE82866	289.36
1-1/2	1-1/4	1-5/8	4-1/8	2	TE82874	346.09



All TITAN USA tools are 100% Made in the USA

FOR COATING INFORMATION SEE PAGE 5.

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

**TAKE 55%
OFF LIST
PRICES**

SQUARE END - 30° HELIX - M42 COBALT



SERIES 812

4 & 6 FLUTE - CENTER CUTTING - UNCOATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	#OF FLTS	UNCOATED	LIST PRICE
1/8	3/8	3/8	2-5/16	4	TE81201	39.36
5/32	3/8	3/8	2-5/16	4	TE81203	53.93
3/16	3/8	1/2	2-3/8	4	TE81205	39.36
7/32	3/8	1/2	2-3/8	4	TE81207	53.93
1/4	3/8	5/8	2-7/16	4	TE81209	39.36
9/32	3/8	11/16	2-1/2	4	TE81211	53.93
5/16	3/8	3/4	2-1/2	4	TE81213	39.36
11/32	3/8	3/4	2-1/2	4	TE81215	55.07
3/8	3/8	3/4	2-1/2	4	TE81217	39.36
13/32	3/8	3/4	2-1/2	4	TE81219	80.47
7/16	3/8	1	2-11/16	4	TE81221	53.18
15/32	3/8	1	2-11/16	4	TE81223	94.36
1/2	3/8	1	2-11/16	4	TE81225	53.18
1/2	1/2	1-1/4	3-1/4	4	TE81227	53.18
17/32	1/2	1-1/4	3-1/4	4	TE81229	108.10
9/16	1/2	1-3/8	3-3/8	4	TE81231	69.19
5/8	1/2	1-3/8	3-3/8	4	TE81233	75.36
5/8	5/8	1-5/8	3-3/4	4	TE81235	83.68
11/16	1/2	1-5/8	3-5/8	4	TE81237	87.32
11/16	5/8	1-5/8	3-3/4	4	TE81239	88.98
3/4	1/2	1-5/8	3-5/8	4	TE81241	90.35
3/4	5/8	1-5/8	3-3/4	4	TE81243	90.35
3/4	3/4	1-5/8	3-7/8	4	TE81245	93.75
13/16	3/4	1-7/8	4-1/8	4	TE81247	119.57
7/8	3/4	1-7/8	4-1/8	4	TE81249	119.15
7/8	7/8	1-7/8	4-1/8	4	TE81251	119.15
15/16	3/4	1-7/8	4-1/8	4	TE81253	153.02
1	3/4	1-7/8	4-1/8	4	TE81257	135.61
1	1	2	4-1/2	4	TE81261	143.64
1-1/8	1	2	4-1/2	6	TE81265	204.91
1-1/4	1	2	4-1/2	6	TE81269	219.64
1-1/4	1-1/4	2	4-1/2	6	TE81273	223.88
1-3/8	1	2	4-1/2	6	TE81275	254.19
1-1/2	1	2	4-1/2	6	TE81277	274.37
1-1/2	1-1/4	2	4-1/2	4	TE81279	288.30
1-5/8	1-1/4	2	4-1/2	6	TE81283	314.03
2	1-1/4	2	4-1/2	6	TE81291	510.09



SERIES 813

4 & 6 FLUTE - CENTER CUTTING - ALTiN COATED

SIZE	SHANK DIAMETER	LENGTH OF CUT	OVERALL LENGTH	#OF FLTS	ALTiN	LIST PRICE
1/8	3/8	3/8	2-5/16	4	TE81302	49.20
5/32	3/8	3/8	2-5/16	4	TE81304	67.41
3/16	3/8	1/2	2-3/8	4	TE81306	49.20
7/32	3/8	1/2	2-3/8	4	TE81308	67.41
1/4	3/8	5/8	2-7/16	4	TE81310	49.20
9/32	3/8	11/16	2-1/2	4	TE81312	67.41
5/16	3/8	3/4	2-1/2	4	TE81314	49.20
11/32	3/8	3/4	2-1/2	4	TE81316	68.85
3/8	3/8	3/4	2-1/2	4	TE81318	49.20
13/32	3/8	3/4	2-1/2	4	TE81320	100.60
7/16	3/8	1	2-11/16	4	TE81322	66.50
15/32	3/8	1	2-11/16	4	TE81324	106.17
1/2	3/8	1	2-11/16	4	TE81326	66.50
1/2	1/2	1-1/4	3-1/4	4	TE81328	66.50
17/32	1/2	1-1/4	3-1/4	4	TE81330	135.12
9/16	1/2	1-3/8	3-3/8	4	TE81332	86.49
5/8	1/2	1-3/8	3-3/8	4	TE81334	94.17
5/8	5/8	1-5/8	3-3/4	4	TE81336	104.61
11/16	1/2	1-5/8	3-5/8	4	TE81338	109.16
11/16	5/8	1-5/8	3-3/4	4	TE81340	111.24
3/4	1/2	1-5/8	3-5/8	4	TE81342	112.94
3/4	5/8	1-5/8	3-3/4	4	TE81344	112.94
3/4	3/4	1-5/8	3-7/8	4	TE81346	112.94
13/16	3/4	1-7/8	4-1/8	4	TE81348	149.50
7/8	3/4	1-7/8	4-1/8	4	TE81350	148.97
7/8	7/8	1-7/8	4-1/8	4	TE81352	148.97
15/16	3/4	1-7/8	4-1/8	4	TE81354	191.29
1	3/4	1-7/8	4-1/8	4	TE81358	169.53
1	1	2	4-1/2	4	TE81362	179.52
1-1/8	1	2	4-1/2	6	TE81366	255.41
1-1/4	1	2	4-1/2	6	TE81370	274.56
1-1/4	1-1/4	2	4-1/2	6	TE81374	279.86
1-3/8	1	2	4-1/2	6	TE81376	309.34
1-1/2	1	2	4-1/2	6	TE81378	343.97
1-1/2	1-1/4	2	4-1/2	4	TE81380	360.51
1-5/8	1-1/4	2	4-1/2	6	TE81384	394.24
2	1-1/4	2	4-1/2	6	TE81392	632.57

FOR COATING INFORMATION SEE PAGE 5.

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

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

**TAKE 55%
OFF LIST
PRICES**



**SERIES 817
UNCOATED**

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLTS	ITEM#	LIST PRICE
1/8	3/8	3/8	3-1/16	2	TE81701	59.01
5/32	3/8	7/16	3-1/8	2	TE81703	62.64
3/16	3/8	7/16	3-1/8	2	TE81705	59.08
7/32	3/8	1/2	3-1/8	2	TE81707	62.68
1/4	3/8	1/2	3-1/8	2	TE81709	59.08
9/32	3/8	9/16	3-1/8	2	TE81711	62.68
5/16	3/8	9/16	3-1/8	2	TE81713	59.08
11/32	3/8	9/16	3-1/8	2	TE81715	62.68
3/8	3/8	9/16	3-1/8	2	TE81717	59.08
13/32	1/2	13/16	3-3/4	2	TE81719	95.49
7/16	1/2	13/16	3-3/4	2	TE81721	89.82
1/2	1/2	13/16	3-3/4	2	TE81725	89.82
9/16	5/8	1-1/8	4-1/2	2	TE81727	122.21
5/8	5/8	1-1/8	4-1/2	2	TE81729	122.21
3/4	3/4	1-5/16	5	2	TE81733	153.89
7/8	7/8	1-9/16	5-1/2	2	TE81737	193.64
1	1	1-5/8	5-7/8	2	TE81741	238.18



**SERIES 818
ALTiN COATED**

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLTS	ITEM#	LIST PRICE
1/8	3/8	3/8	3-1/16	2	TE81802	73.77
5/32	3/8	7/16	3-1/8	2	TE81804	78.31
3/16	3/8	7/16	3-1/8	2	TE81806	73.81
7/32	3/8	1/2	3-1/8	2	TE81808	78.35
1/4	3/8	1/2	3-1/8	2	TE81810	73.81
9/32	3/8	9/16	3-1/8	2	TE81812	78.35
5/16	3/8	9/16	3-1/8	2	TE81814	73.81
11/32	3/8	9/16	3-1/8	2	TE81816	78.35
3/8	3/8	9/16	3-1/8	2	TE81818	73.81
13/32	1/2	13/16	3-3/4	2	TE81820	51.25
7/16	1/2	13/16	3-3/4	2	TE81822	112.26
1/2	1/2	13/16	3-3/4	2	TE81826	112.26
9/16	5/8	1-1/8	4-1/2	2	TE81828	152.76
5/8	5/8	1-1/8	4-1/2	2	TE81830	152.76
3/4	3/4	1-5/16	5	2	TE81834	192.42
7/8	7/8	1-9/16	5-1/2	2	TE81838	242.04
1	1	1-5/8	5-7/8	2	TE81842	297.72

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



**SERIES 823
UNCOATED**

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLTS	ITEM#	LIST PRICE
1/8	3/8	3/8	3-1/16	4	TE82301	59.61
5/32	3/8	7/16	3-1/8	4	TE82303	62.94
3/16	3/8	1/2	3-1/8	4	TE82305	59.61
7/32	3/8	9/16	3-1/4	4	TE82307	62.94
1/4	3/8	5/8	3-3/8	4	TE82309	59.61
9/32	3/8	11/16	3-3/8	4	TE82311	62.94
5/16	3/8	3/4	3-1/2	4	TE82313	59.61
11/32	3/8	3/4	3-1/2	4	TE82315	62.94
3/8	3/8	3/4	3-1/2	4	TE82317	59.61
13/32	1/2	1	4-1/8	4	TE82319	92.54
7/16	1/2	1	4-1/8	4	TE82321	90.01
1/2	1/2	1	4-1/8	4	TE82325	90.01
9/16	5/8	1-3/8	5	4	TE82327	120.13
5/8	5/8	1-3/8	5	4	TE82329	120.13
3/4	3/4	1-5/8	5-5/8	4	TE82333	151.32
7/8	7/8	1-7/8	6-1/8	4	TE82337	202.04
1	1	1-7/8	6-3/8	4	TE82341	234.59



**SERIES 824
ALTiN COATED**

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLTS	ITEM#	LIST PRICE
1/8	3/8	3/8	3-1/16	4	TE82402	74.52
5/32	3/8	7/16	3-1/8	4	TE82404	78.69
3/16	3/8	1/2	3-1/8	4	TE82406	74.52
7/32	3/8	9/16	3-1/4	4	TE82408	78.69
1/4	3/8	5/8	3-3/8	4	TE82410	74.52
9/32	3/8	11/16	3-3/8	4	TE82412	78.69
5/16	3/8	3/4	3-1/2	4	TE82414	74.52
11/32	3/8	3/4	3-1/2	4	TE82416	78.69
3/8	3/8	3/4	3-1/2	4	TE82418	74.52
13/32	1/2	1	4-1/8	4	TE82420	115.67
7/16	1/2	1	4-1/8	4	TE82422	112.53
1/2	1/2	1	4-1/8	4	TE82426	112.53
9/16	5/8	1-3/8	5	4	TE82428	150.19
5/8	5/8	1-3/8	5	4	TE82430	150.19
3/4	3/4	1-5/8	5-5/8	4	TE82434	189.17
7/8	7/8	1-7/8	6-1/8	4	TE82438	252.57
1	1	1-7/8	6-3/8	4	TE82442	293.07

FOR COATING INFORMATION SEE PAGE 5.

TOLERANCES	DIAMETER IF SIZE & SHANK DIA. ARE NOT THE SAME	DIAMETER IF SIZE & SHANK DIA. ARE THE SAME	SHANK
ALL SIZES	+.0000, -.0015	+.0000, -.0025	+.0001, -.0005

**TAKE 55%
OFF LIST
PRICES**

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



SERIES 825
UNCOATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLTS	ITEM#	LIST PRICE
1/4	3/8	5/8	2-7/16	3	TE63404	72.67
5/16	3/8	3/4	2-1/2	3	TE63409	79.29
3/8	3/8	3/4	2-1/2	4	TE63414	82.85
7/16	3/8	1	2-11/16	4	TE63419	83.80
1/2	1/2	1	3	4	TE63428	84.86
1/2	1/2	1-1/4	3-1/4	4	TE63429	87.77
5/8	5/8	1-5/8	3-3/4	4	TE63436	111.69
3/4	3/4	1-5/8	3-7/8	4	TE63445	122.93
7/8	3/4	1-7/8	4-1/8	5	TE63454	157.38
1	1	2	4-1/2	5	TE63466	164.68
1-1/8	1	2	4-1/2	6	TE63471	255.82
1-1/4	1-1/4	2	4-1/2	6	TE63475	277.59
1-1/2	1-1/4	2	4-1/2	6	TE63483	325.46
2	1-1/4	2	4-1/2	8	TE63492	452.26



SERIES 826
ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLTS	ITEM#	LIST PRICE
1/4	3/8	5/8	2-7/16	3	TE63504	90.80
5/16	3/8	3/4	2-1/2	3	TE63509	99.16
3/8	3/8	3/4	2-1/2	4	TE63514	103.59
7/16	3/8	1	2-11/16	4	TE63519	104.20
1/2	1/2	1	3	4	TE63528	106.09
1/2	1/2	1-1/4	3-1/4	4	TE63529	109.72
5/8	5/8	1-5/8	3-3/4	4	TE63536	139.63
3/4	3/4	1-5/8	3-7/8	4	TE63545	153.67
7/8	3/4	1-7/8	4-1/8	5	TE63554	212.94
1	1	2	4-1/2	5	TE63566	205.82
1-1/8	1	2	4-1/2	6	TE63571	319.64
1-1/4	1-1/4	2	4-1/2	6	TE63575	346.89
1-1/2	1-1/4	2	4-1/2	6	TE63583	406.84
2	1-1/4	2	4-1/2	8	TE63592	565.31

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



SERIES 830
UNCOATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLTS	ITEM#	LIST PRICE
1/4	3/8	5/8	2-7/16	3	TE66104	72.67
5/16	3/8	3/4	2-1/2	3	TE66109	79.33
3/8	3/8	3/4	2-1/2	4	TE66114	83.38
7/16	3/8	1	2-11/16	4	TE66119	83.80
1/2	1/2	1-1/4	3-1/4	4	TE66129	87.77
5/8	5/8	1-5/8	3-3/4	4	TE66136	111.69
3/4	3/4	1-5/8	3-7/8	4	TE66145	122.93
7/8	3/4	1-7/8	4-1/8	5	TE66154	160.82
1	1	2	4-1/2	5	TE66166	164.76
1-1/8	1	2	4-1/2	6	TE66171	273.19
1-1/4	1-1/4	2	4-1/2	6	TE66175	277.59
1-1/2	1-1/4	2	4-1/2	6	TE66183	342.91
2	1-1/4	2	4-1/2	8	TE66192	482.92



SERIES 831
ALTIN COATED

SIZE	SHANK DIA.	LENGTH OF CUT	OVERALL LENGTH	NUMBER OF FLTS	ITEM#	LIST PRICE
1/4	3/8	5/8	2-7/16	3	TE66204	90.80
5/16	3/8	3/4	2-1/2	3	TE66209	99.16
3/8	3/8	3/4	2-1/2	4	TE66214	104.20
7/16	3/8	1	2-11/16	4	TE66219	104.73
1/2	1/2	1-1/4	3-1/4	4	TE66229	106.09
5/8	5/8	1-5/8	3-3/4	4	TE66236	139.63
3/4	3/4	1-5/8	3-7/8	4	TE66245	153.67
7/8	3/4	1-7/8	4-1/8	5	TE66254	201.02
1	1	2	4-1/2	5	TE66266	205.97
1-1/8	1	2	4-1/2	6	TE66271	341.47
1-1/4	1-1/4	2	4-1/2	6	TE66275	346.89
1-1/2	1-1/4	2	4-1/2	6	TE66283	428.64
2	1-1/4	2	4-1/2	8	TE66292	604.22

FOR COATING INFORMATION SEE PAGE 5.

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

Spiral Point Taps

HIGH PERFORMANCE

Predator

PREMIUM POWDERED METAL

**TAKE 55%
OFF LIST
PRICES**



SERIES 772
UNCOATED



SERIES 771
STEAM OXIDE



SERIES 773
ALTIN COATED



SERIES 778
TICN COATED

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	UNCOATED	LIST PRICE	STM OXIDE	LIST PRICE	ALTIN	LIST PRICE	TICN	LIST PRICE
2 - 56	H2	3	1	TT97003	26.10	TT96903	30.03	TT97103	40.16	TT97903	40.16
4 - 40	H2	3	1	TT97015	26.10	TT96915	30.03	TT97115	40.16	TT97915	40.16
6 - 32	H3	3	1	TT97024	26.10	TT96924	30.03	TT97124	40.16	TT97924	40.16
8 - 32	H3	3	1	TT97030	26.10	TT96930	30.03	TT97130	40.16	TT97930	40.16
10 - 24	H3	3	1	TT97036	26.10	TT96936	30.03	TT97136	40.16	TT97936	40.16
10 - 32	H3	3	1	TT97040	26.10	TT96940	30.03	TT97140	40.16	TT97940	40.16
1/4 - 20	H5	3	1	TT97048	28.52	TT96948	32.81	TT97148	43.88	TT97948	43.88
1/4 - 28	H4	3	1	TT97054	28.52	TT96954	32.81	TT97154	43.88	TT97954	43.88
5/16 - 18	H5	3	1	TT97060	31.18	TT96960	35.87	TT97160	47.99	TT97960	47.99
5/16 - 24	H4	3	1	TT97066	31.18	TT96966	35.87	TT97166	47.99	TT97966	47.99
3/8 - 16	H5	3	1	TT97071	37.10	TT96971	42.65	TT97171	57.07	TT97971	57.07
3/8 - 24	H4	3	1	TT97075	37.10	TT96975	42.65	TT97175	57.07	TT97975	57.07
7/16 - 14	H5	3	1	TT97078	47.51	TT96978	54.62	TT97178	73.08	TT97978	73.08
7/16 - 20	H5	3	1	TT97081	47.51	TT96981	54.62	TT97181	73.08	TT97981	73.08
1/2 - 13	H5	4	1	TT97085	56.71	TT96985	65.21	TT97185	87.24	TT97985	87.24
1/2 - 20	H5	4	1	TT97089	56.71	TT96989	65.21	TT97189	87.24	TT97989	87.24
5/8 - 11	H6	4	1	TT97093	108.04	TT96993	124.26	TT97193	166.23	TT97993	166.23
5/8 - 18	H5	4	1	TT97095	108.04	TT96995	124.26	TT97195	166.23	TT97995	166.23
3/4 - 10	H6	4	1	TT97096	139.69	TT96996	160.64	TT97196	214.90	TT97996	214.90
3/4 - 16	H5	4	1	TT97098	139.69	TT96998	160.64	TT97198	214.90	TT97998	214.90

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

FOR COATING INFORMATION SEE PAGE 5.

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 203-204, OR GO TO: TITANMAN.COM

**TAKE 55%
OFF LIST
PRICES**

Predator

PREMIUM POWDERED METAL
METRIC



SERIES 711
UNCOATED



SERIES 712
STEAM OXIDE



SERIES 713
ALTIN COATED



SERIES 714
TiCN COATED

SIZE	D LIMIT	# OF FLUTES	PKG. QTY.	UNCOATED	LIST PRICE	STM OXIDE	LIST PRICE	ALTIN	LIST PRICE	TICN	LIST PRICE
M2.5 x .45	D3	2	1	TT98208	29.62	TT98301	34.08	TT98418	44.41	TT98955	44.41
M3 x 0.5	D3	2	1	TT98210	29.62	TT98303	34.08	TT98420	44.41	TT98961	44.41
M3.5 x 0.6	D4	3	1	TT98222	29.62	TT98318	34.08	TT98432	44.41	TT98962	44.41
M4 x 0.7	D4	3	1	TT98211	29.62	TT98304	34.08	TT98421	44.41	TT98963	44.41
M5 x 0.8	D4	3	1	TT98212	29.62	TT98305	34.08	TT98422	44.41	TT98965	44.41
M6 x 1.0	D5	3	1	TT98213	32.55	TT98306	37.42	TT98423	48.81	TT98967	48.81
M8 x 1.25	D5	3	1	TT98214	35.41	TT98308	40.73	TT98424	53.17	TT98969	53.17
M10 x 1.5	D6	3	1	TT98215	42.06	TT98310	48.33	TT98425	62.57	TT98971	62.57
M12 x 1.75	D6	4	1	TT98216	64.45	TT98312	74.10	TT98426	96.36	TT98973	96.36
M14 x 2.0	D7	4	1	TT98218	98.26	TT98314	112.99	TT98428	132.55	TT98975	132.55
M16 x 2.0	D7	4	1	TT98220	115.41	TT98316	132.72	TT98430	155.73	TT98977	155.73

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

FOR COATING INFORMATION SEE PAGE 5.

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 203-204, OR GO TO: TITANMAN.COM

Spiral Flute Taps

HIGH PERFORMANCE

Predator

HIGH VANADIUM POWDERED METAL

45° HELIX - SEMI BOTTOMING ■ 2 - 2-1/2 THREAD CHAMFER

**TAKE 55%
OFF LIST
PRICES**



SERIES 774
UNCOATED



SERIES 799
STEAM OXIDE



SERIES 779
ALTIN COATED



SERIES 781
TICN COATED

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	UNCOATED	LIST PRICE	STM OXIDE	LIST PRICE	ALTIN	LIST PRICE	TICN	LIST PRICE
2 - 56	H2	3	1	TT97203	40.38	TT97503	46.43	TT97303	62.08	TT97603	62.08
4 - 40	H2	3	1	TT97207	40.38	TT97507	46.43	TT97307	62.08	TT97607	62.08
6 - 32	H3	3	1	TT97215	40.38	TT97515	46.43	TT97315	62.08	TT97615	62.08
8 - 32	H3	3	1	TT97223	40.38	TT97523	46.43	TT97323	62.08	TT97623	62.08
10 - 24	H3	3	1	TT97227	40.38	TT97527	46.43	TT97327	62.08	TT97627	62.08
10 - 32	H3	3	1	TT97231	40.38	TT97531	46.43	TT97331	62.08	TT97631	62.08
1/4 - 20	H5	3	1	TT97239	41.60	TT97539	47.84	TT97339	63.99	TT97639	63.99
1/4 - 28	H4	3	1	TT97243	41.60	TT97543	47.84	TT97343	63.99	TT97643	63.99
5/16 - 18	H5	3	1	TT97247	45.57	TT97547	52.38	TT97347	70.08	TT97647	70.08
5/16 - 24	H4	3	1	TT97251	45.57	TT97551	52.38	TT97351	70.08	TT97651	70.08
3/8 - 16	H5	3	1	TT97255	53.97	TT97555	62.08	TT97355	83.06	TT97655	83.06
3/8 - 24	H4	3	1	TT97259	53.97	TT97559	62.08	TT97359	83.06	TT97659	83.06
7/16 - 14	H5	3	1	TT97263	68.28	TT97563	78.55	TT97363	105.05	TT97663	105.05
7/16 - 20	H5	3	1	TT97267	68.28	TT97567	78.55	TT97367	105.05	TT97667	105.05
1/2 - 13	H5	4	1	TT97271	80.97	TT97571	93.15	TT97371	124.59	TT97671	124.59
1/2 - 20	H5	4	1	TT97275	80.97	TT97575	93.15	TT97375	124.59	TT97675	124.59
5/8 - 11	H6	4	1	TT97279	154.69	TT97579	177.91	TT97379	238.00	TT97679	238.00
5/8 - 18	H5	4	1	TT97283	154.69	TT97583	177.91	TT97383	238.00	TT97683	238.00
3/4 - 10	H6	4	1	TT97287	180.79	TT97587	207.94	TT97387	278.20	TT97687	278.20
3/4 - 16	H5	4	1	TT97291	180.79	TT97591	207.94	TT97391	278.20	TT97691	278.20

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

FOR COATING INFORMATION SEE PAGE 5.

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 203-204, OR GO TO: TITANMAN.COM

Spiral Flute Taps

HIGH PERFORMANCE



**TAKE 55%
OFF LIST
PRICES**

Predator

**HIGH VANADIUM POWDERED METAL
METRIC**

45° HELIX - SEMI BOTTOMING ■ 2 - 2-1/2 THREAD CHAMFER



SERIES 716
UNCOATED



SERIES 717
STEAM OXIDE



SERIES 718
ALTIN COATED



SERIES 719
TICN COATED

SIZE	D LIMIT	# OF FLUTES	PKG. QTY.	UNCOATED	LIST PRICE	STM OXIDE	LIST PRICE	ALTIN	LIST PRICE	TICN	LIST PRICE
M2.5 x .45	D3	2	1	TT98508	45.80	TT98601	52.66	TT98715	67.59	TT98845	67.59
M3 x 0.5	D3	2	1	TT98510	45.81	TT98603	52.66	TT98720	67.59	TT98851	67.59
M3.5 x 0.6	D4	3	1	TT98522	45.80	TT98618	52.66	TT98732	67.59	TT98852	67.59
M4 x 0.7	D4	3	1	TT98511	45.81	TT98604	52.66	TT98721	67.59	TT98853	67.59
M5 x 0.8	D4	3	1	TT98512	45.81	TT98605	52.66	TT98722	67.59	TT98855	67.59
M6 x 1.0	D5	3	1	TT98513	47.17	TT98606	54.26	TT98723	70.08	TT98857	70.08
M8 x 1.25	D5	3	1	TT98514	51.81	TT98608	59.58	TT98724	77.57	TT98859	77.57
M10 x 1.5	D6	3	1	TT98515	61.25	TT98610	70.45	TT98725	91.34	TT98861	91.34
M12 x 1.75	D6	4	1	TT98516	91.92	TT98612	105.69	TT98726	137.66	TT98863	137.66
M14 x 2.0	D7	4	1	TT98518	130.27	TT98614	149.83	TT98728	175.87	TT98865	175.87
M16 x 2.0	D7	4	1	TT98520	152.42	TT98616	175.29	TT98730	205.76	TT98867	205.76

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

FOR COATING INFORMATION SEE PAGE 5.

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 203-204, OR GO TO: TITANMAN.COM



SERIES 725
HIGH SPEED STEEL

**TAKE 55%
OFF LIST
PRICES**

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	TAPER ITEM#	PLUG ITEM#	BOTTOM ITEM#	LIST PRICE	SET-ITEM#	LIST PRICE
0 - 80	H1	2	1	TT90000	TT90001	TT90002	17.04	TT90003	51.09
0 - 80	H2	2	1	-	TT90005	TT90006	17.04	-	-
1 - 64	H1	2	1	-	TT90009	TT90010	15.85	TT90011	47.51
1 - 72	H1	2	1	TT90016	TT90017	TT90018	15.85	TT90019	47.51
1 - 72	H2	2	1	-	TT90021	TT90022	15.85	-	-
2 - 56	H1	3	1	TT90028	TT90029	TT90030	14.66	TT90031	43.93
2 - 56	H2	2	1	-	TT90033	TT90034	14.66	-	-
2 - 56	H2	3	1	TT90036	TT90037	TT90038	13.63	TT90039	40.90
2 - 64	H2	3	1	TT90044	TT90045	TT90046	14.66	TT90047	43.93
3 - 48	H2	2	1	-	TT90053	-	11.93	-	-
3 - 48	H2	3	1	TT90056	TT90057	TT90058	10.50	TT90059	31.46
3 - 56	H2	3	1	TT90060	TT90061	TT90062	11.79	TT90063	35.34
4 - 40	H1	2	1	-	TT90065	-	9.65	-	-
4 - 40	H1	3	1	TT90068	TT90069	TT90070	9.27	TT90071	27.74
4 - 40	H2	2	1	-	TT90073	TT90074	9.27	-	-
4 - 40	H2	3	1	TT90076	TT90077	TT90078	8.62	TT90079	25.84
4 - 48	H2	3	1	TT90084	TT90085	TT90086	9.27	TT90087	27.74
4 - 36	H2	3	1	-	TT90089	-	9.27	-	-
5 - 40	H1	3	1	-	TT90093	TT90094	9.27	-	-
5 - 40	H2	2	1	-	TT90097	TT90098	9.27	-	-
5 - 40	H2	3	1	TT90100	TT90101	TT90102	8.62	TT90103	25.84
5 - 44	H2	3	1	TT90108	TT90109	TT90110	9.27	TT90111	27.85
6 - 32	H1	3	1	TT90116	TT90117	TT90118	8.15	TT90119	24.40
6 - 32	H2	2	1	-	TT90121	TT90122	8.15	-	-
6 - 32	H2	3	1	TT90124	TT90125	TT90126	6.99	TT90127	21.03
6 - 32	H3	2	1	-	TT90129	TT90130	6.99	-	-
6 - 32	H3	3	1	TT90132	TT90133	TT90134	6.61	TT90135	19.80
6 - 32	H7	3	1	-	TT90137	TT90138	8.15	-	-
6 - 40	H2	2	1	-	TT90145	-	8.15	-	-
6 - 40	H2	3	1	TT90148	TT90149	TT90150	6.99	TT90151	21.03
8 - 32	H1	3	1	-	TT90157	TT90158	8.15	-	-
8 - 32	H1	4	1	TT90160	TT90161	TT90162	8.15	TT90163	24.40
8 - 32	H2	2	1	-	TT90165	TT90166	8.15	-	-
8 - 32	H2	3	1	-	TT90169	TT90170	8.15	-	-
8 - 32	H2	4	1	TT90172	TT90173	TT90174	6.99	TT90175	21.03
8 - 32	H3	2	1	-	TT90177	TT90178	6.99	-	-
8 - 32	H3	3	1	-	TT90181	TT90182	6.99	-	-
8 - 32	H3	4	1	TT90184	TT90185	TT90186	6.75	TT90187	20.28

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**TAKE 55%
OFF LIST
PRICES**

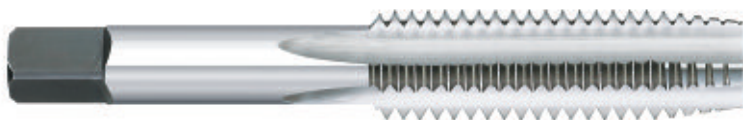


SERIES 725
HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	TAPER ITEM#	PLUG ITEM#	BOTTOM ITEM#	LIST PRICE	SET-ITEM#	LIST PRICE
8 - 32	H7	3	1	-	TT90189	TT90190	8.15	-	-
8 - 36	H1	4	1	-	TT90197	-	8.15	-	-
8 - 36	H2	4	1	TT90200	TT90201	TT90202	6.99	TT90203	21.03
10 - 24	H1	3	1	-	TT90205	-	8.15	-	-
10 - 24	H1	4	1	TT90208	TT90209	TT90210	7.23	TT90211	21.64
10 - 24	H2	2	1	-	TT90213	TT90214	8.15	-	-
10 - 24	H2	3	1	-	TT90217	-	8.15	-	-
10 - 24	H2	4	1	TT90220	TT90221	TT90222	7.23	TT90223	21.64
10 - 24	H3	2	1	-	TT90225	TT90226	7.23	-	-
10 - 24	H3	3	1	-	TT90229	TT90230	7.23	-	-
10 - 24	H3	4	1	TT90232	TT90233	TT90234	6.99	TT90235	21.03
10 - 24	H7	3	1	-	TT90237	TT90238	8.15	-	-
10 - 24	H7	4	1	-	TT90241	TT90242	8.15	-	-
10 - 32	H1	2	1	-	TT90245	TT90246	8.15	-	-
10 - 32	H1	3	1	-	TT90249	-	8.15	-	-
10 - 32	H1	4	1	TT90252	TT90253	TT90254	7.23	TT90255	21.64
10 - 32	H2	2	1	-	TT90257	TT90258	8.15	-	-
10 - 32	H2	3	1	-	TT90261	TT90262	8.15	-	-
10 - 32	H2	4	1	TT90264	TT90265	TT90266	7.23	TT90267	21.64
10 - 32	H3	2	1	-	TT90269	TT90270	7.23	-	-
10 - 32	H3	3	1	-	TT90273	TT90274	7.23	-	-
10 - 32	H3	4	1	TT90276	TT90277	TT90278	6.99	TT90279	21.03
12 - 24	H3	4	1	TT90288	TT90289	TT90290	7.40	TT90291	22.19
12 - 28	H3	4	1	TT90296	TT90297	TT90298	8.15	TT90299	24.40
1/4 - 20	H1	3	1	-	TT90301	-	9.41	-	-
1/4 - 20	H1	4	1	TT90304	TT90305	TT90306	9.41	TT90307	28.22
1/4 - 20	H2	3	1	-	TT90309	-	9.41	-	-
1/4 - 20	H2	4	1	TT90311	TT90312	TT90313	8.96	TT90314	26.89
1/4 - 20	H3	2	1	-	TT90316	TT90317	9.41	-	-
1/4 - 20	H3	3	1	-	TT90320	TT90321	8.96	-	-
1/4 - 20	H3	4	1	TT90323	TT90324	TT90325	7.53	TT90326	22.60
1/4 - 20	H5	3	1	-	TT90328	TT90329	9.41	-	-
1/4 - 20	H5	4	1	-	TT90332	TT90333	8.96	-	-
1/4 - 28	H1	4	1	-	TT90336	TT90337	8.96	-	-
1/4 - 28	H2	4	1	-	TT90340	TT90341	9.41	-	-
1/4 - 28	H3	2	1	-	TT90344	TT90345	9.41	-	-
1/4 - 28	H3	3	1	-	TT90348	TT90349	9.41	-	-
1/4 - 28	H3	4	1	TT90351	TT90352	TT90353	7.53	TT90354	22.60
1/4 - 28	H4	4	1	-	TT90356	TT90357	9.41	-	-
5/16 - 18	H1	4	1	TT90359	TT90360	TT90361	10.43	-	-
5/16 - 18	H2	4	1	TT90363	TT90364	TT90365	10.43	TT90366	31.29

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FOR TECHNICAL INFORMATION PLEASE SEE PAGE 203, OR GO TO: TITANMAN.COM



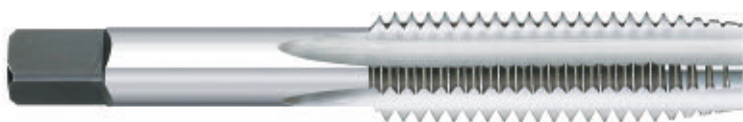
SERIES 725
HIGH SPEED STEEL

**TAKE 55%
OFF LIST
PRICES**

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	TAPER ITEM#	PLUG ITEM#	BOTTOM ITEM#	LIST PRICE	SET-ITEM#	LIST PRICE
5/16 - 18	H3	2	1	-	TT90368	TT90369	11.72	-	-
5/16 - 18	H3	3	1	-	TT90372	TT90373	10.43	-	-
5/16 - 18	H3	4	1	TT90375	TT90376	TT90377	9.27	TT90378	27.81
5/16 - 18	H5	3	1	-	TT90380	TT90381	11.72	-	-
5/16 - 18	H5	4	1	-	TT90384	TT90385	10.43	-	-
5/16 - 24	H1	4	1	-	TT90388	TT90389	10.43	-	-
5/16 - 24	H2	4	1	-	TT90392	-	10.43	-	-
5/16 - 24	H3	3	1	-	TT90396	TT90397	10.43	-	-
5/16 - 24	H3	4	1	TT90399	TT90400	TT90401	9.27	TT90402	27.81
5/16 - 24	H4	4	1	-	TT90404	TT90405	10.43	-	-
3/8 - 16	H1	3	1	-	TT90408	-	13.36	-	-
3/8 - 16	H2	4	1	TT90414	TT90415	TT90416	11.72	TT90417	35.21
3/8 - 16	H3	3	1	-	TT90419	TT90420	11.72	-	-
3/8 - 16	H3	4	1	TT90422	TT90423	TT90424	10.46	TT90425	31.39
3/8 - 16	H5	3	1	-	TT90427	TT90428	13.36	-	-
3/8 - 16	H5	4	1	-	TT90431	TT90432	11.72	-	-
3/8 - 24	H3	3	1	-	TT90443	TT90444	13.36	-	-
3/8 - 24	H3	4	1	TT90446	TT90447	TT90448	10.46	TT90449	31.39
3/8 - 24	H4	4	1	-	TT90451	TT90452	11.72	-	-
7/16 - 14	H2	4	1	-	TT90459	TT90460	19.77	-	-
7/16 - 14	H3	3	1	-	TT90463	-	19.77	-	-
7/16 - 14	H3	4	1	TT90465	TT90466	TT90467	18.00	TT90468	53.95
7/16 - 14	H5	4	1	-	TT90470	TT90471	19.77	-	-
7/16 - 20	H2	4	1	-	TT90478	TT90479	19.77	-	-
7/16 - 20	H3	3	1	-	TT90482	-	19.77	-	-
7/16 - 20	H3	4	1	TT90484	TT90485	TT90486	18.00	TT90487	53.95
7/16 - 20	H5	4	1	-	TT90489	TT90490	19.77	-	-
1/2 - 13	H1	4	1	-	TT90493	TT90494	23.07	-	-
1/2 - 13	H2	4	1	-	TT90497	TT90498	23.07	-	-
1/2 - 13	H3	3	1	-	TT90501	TT90502	23.07	-	-
1/2 - 13	H3	4	1	TT90504	TT90505	TT90506	18.75	TT90507	56.27
1/2 - 13	H5	4	1	-	TT90509	TT90510	23.42	-	-
1/2 - 20	H1	4	1	TT90512	TT90513	TT90514	23.07	-	-
1/2 - 20	H3	3	1	-	TT90521	-	23.07	-	-
1/2 - 20	H3	4	1	TT90523	TT90524	TT90525	21.20	TT90526	63.60
1/2 - 20	H5	4	1	-	TT90528	TT90529	23.07	-	-
9/16 - 12	H2	4	1	-	TT90532	-	34.29	-	-
9/16 - 12	H3	4	1	TT90535	TT90536	TT90537	31.46	TT90538	94.41
9/16 - 12	H5	4	1	-	TT90540	TT90541	34.29	-	-

CONTINUED ON NEXT PAGE

**TAKE 55%
OFF LIST
PRICES**



SERIES 725
HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	TAPER ITEM#	PLUG ITEM#	BOTTOM ITEM#	LIST PRICE	SET - ITEM#	LIST PRICE
9/16 - 18	H2	4	1	-	TT90544	-	34.29	-	-
9/16 - 18	H3	4	1	TT90546	TT90547	TT90548	31.46	TT90549	94.41
9/16 - 18	H5	4	1	-	TT90551	TT90552	34.29	-	-
5/8 - 11	H3	4	1	TT90561	TT90562	TT90563	37.76	TT90564	113.26
5/8 - 11	H5	4	1	-	TT90566	TT90567	43.42	-	-
5/8 - 18	H2	4	1	-	TT90574	TT90575	43.42	-	-
5/8 - 18	H3	4	1	TT90577	TT90578	TT90579	37.76	TT90580	113.26
11/16 - 11	H3	4	1	TT90585	TT90586	TT90587	46.90	TT90588	140.70
11/16 - 16	H3	4	1	TT90589	TT90590	TT90591	46.90	TT90592	140.70
3/4 - 10	H2	4	1	-	TT90597	-	57.09	-	-
3/4 - 10	H3	4	1	TT90600	TT90601	TT90602	52.86	TT90603	158.49
3/4 - 10	H5	4	1	-	TT90605	TT90606	57.09	-	-
3/4 - 16	H2	4	1	-	TT90612	-	57.09	-	-
3/4 - 16	H3	4	1	TT90615	TT90616	TT90617	52.86	TT90618	158.49
3/4 - 16	H5	4	1	-	TT90620	TT90621	57.09	-	-
7/8 - 9	H4	4	1	TT90626	TT90627	TT90628	73.65	TT90629	220.96
7/8 - 9	H6	4	1	-	TT90631	-	77.34	-	-
7/8 - 14	H2	4	1	-	TT90634	-	77.34	-	-
7/8 - 14	H4	4	1	TT90636	TT90637	TT90638	73.65	TT90639	220.96
7/8 - 14	H6	4	1	-	TT90641	-	77.34	-	-
1 - 8	H2	4	1	-	TT90644	-	100.85	-	-
1 - 8	H4	4	1	TT90646	TT90647	TT90648	97.92	TT90649	293.80
1 - 8	H6	4	1	-	TT90651	-	100.85	-	-
1 - 12	H4	4	1	TT90653	TT90654	TT90655	97.92	TT90656	293.80
1 - 14	H2	4	1	-	TT90658	-	100.85	-	-
1 - 14	H4	4	1	TT90660	TT90661	TT90662	97.92	TT90663	293.80
1 - 14	H6	4	1	TT90664	TT90665	TT90666	100.85	-	-
1-1/8 - 7	H4	4	1	TT90668	TT90669	TT90670	158.49	TT90671	475.47
1-1/8 - 12	H4	4	1	TT90672	TT90673	TT90674	167.86	TT90675	503.59
1-1/4 - 7	H4	4	1	TT90676	TT90677	TT90678	208.05	TT90679	624.07
1-1/4 - 12	H4	6	1	TT90680	TT90681	TT90682	211.66	TT90683	634.98
1-3/8 - 6	H4	4	1	TT90684	TT90685	TT90686	261.39	TT90687	784.13
1-3/8 - 12	H4	6	1	TT90688	TT90689	TT90690	263.23	TT90691	789.65
1-1/2 - 6	H4	4	1	TT90692	TT90693	TT90694	301.84	TT90695	905.53
1-1/2 - 12	H4	6	1	TT90696	TT90697	TT90698	307.40	TT90699	922.17

HP TAPS

TAPS

DIES

STEAM OXIDE



SERIES 726 HIGH SPEED STEEL

**TAKE 55%
OFF LIST
PRICES**

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	TAPER ITEM#	PLUG ITEM#	BOTTOM ITEM#	LIST PRICE
0 - 80	H1	2	1	TT90000S	TT90001S	TT90002S	19.60
2 - 56	H2	3	1	TT90036S	TT90037S	TT90038S	15.71
3 - 48	H2	3	1	TT90056S	TT90057S	TT90058S	12.10
4 - 40	H2	3	1	TT90076S	TT90077S	TT90078S	9.92
4 - 48	H2	3	1	TT90084S	TT90085S	TT90086S	10.67
5 - 40	H2	3	1	TT90100S	TT90101S	TT90102S	9.92
6 - 32	H2	3	1	TT90124S	TT90125S	TT90126S	8.08
6 - 40	H2	3	1	TT90148S	TT90149S	TT90150S	8.08
8 - 32	H3	4	1	TT90184S	TT90185S	TT90186S	7.81
8 - 36	H2	4	1	TT90200S	TT90201S	TT90202S	8.08
10 - 24	H3	4	1	TT90232S	TT90233S	TT90234S	8.08
10 - 32	H3	4	1	TT90276S	TT90277S	TT90278S	8.08
12 - 24	H3	4	1	TT90288S	TT90289S	TT90290S	8.52
12 - 28	H3	4	1	TT90296S	TT90297S	TT90298S	9.37
1/4 - 20	H3	4	1	TT90323S	TT90324S	TT90325S	8.66
1/4 - 28	H3	4	1	TT90351S	TT90352S	TT90353S	8.66
5/16 - 18	H3	4	1	TT90375S	TT90376S	TT90377S	10.67
5/16 - 24	H3	4	1	TT90399S	TT90400S	TT90401S	10.67
3/8 - 16	H3	4	1	TT90422S	TT90423S	TT90424S	12.03
3/8 - 24	H3	4	1	TT90446S	TT90447S	TT90448S	12.03
7/16 - 14	H3	4	1	TT90465S	TT90466S	TT90467S	20.72
7/16 - 20	H3	4	1	TT90484S	TT90485S	TT90486S	20.72
1/2 - 13	H3	4	1	TT90504S	TT90505S	TT90506S	21.57
1/2 - 20	H3	4	1	TT90523S	TT90524S	TT90525S	24.40
9/16 - 12	H3	4	1	TT90535S	TT90536S	TT90537S	36.16
9/16 - 18	H3	4	1	TT90546S	TT90547S	TT90548S	36.16
5/8 - 11	H3	4	1	TT90561S	TT90562S	TT90563S	43.42
5/8 - 18	H3	4	1	TT90577S	TT90578S	TT90579S	43.42
3/4 - 10	H3	4	1	TT90600S	TT90601S	TT90602S	60.77
3/4 - 16	H3	4	1	TT90615S	TT90616S	TT90617S	60.77
7/8 - 9	H4	4	1	TT90626S	TT90627S	TT90628S	84.73
7/8 - 14	H4	4	1	TT90636S	TT90637S	TT90638S	84.73
1 - 8	H4	4	1	TT90646S	TT90647S	TT90648S	112.54
1 - 12	H4	4	1	TT90653S	TT90654S	TT90655S	112.54
1 - 14	H4	4	1	TT90660S	TT90661S	TT90662S	112.54
1-1/8 - 7	H4	4	1	TT90668S	TT90669S	TT90670S	182.25
1-1/8 - 12	H4	4	1	TT90672S	TT90673S	TT90674S	193.05
1-1/4 - 7	H4	4	1	TT90676S	TT90677S	TT90678S	239.23
1-1/4 - 12	H4	6	1	TT90680S	TT90681S	TT90682S	243.39
1-3/8 - 6	H4	4	1	TT90684S	TT90685S	TT90686S	300.58
1-3/8 - 12	H4	6	1	TT90688S	TT90689S	TT90690S	302.70
1-1/2 - 6	H4	4	1	TT90692S	TT90693S	TT90694S	347.11
1-1/2 - 12	H4	6	1	TT90696S	TT90697S	TT90698S	353.52

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).

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 203, OR GO TO: TITANMAN.COM

**TAKE 55%
OFF LIST
PRICES**

NITRIDE & STEAM OXIDE
SERIES 727
HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	PLUG ITEM#	BOTTOM ITEM#	LIST PRICE
4 - 40	H2	3	1	TT90077NS	TT90078NS	9.92
6 - 32	H2	3	1	TT90125NS	TT90126NS	8.08
6 - 40	H2	3	1	TT90149NS	TT90150NS	8.08
8 - 32	H3	4	1	TT90185NS	TT90186NS	7.81
10 - 24	H3	4	1	TT90233NS	TT90234NS	8.08
10 - 32	H3	4	1	TT90277NS	TT90278NS	8.08
1/4 - 20	H3	4	1	TT90324NS	TT90325NS	8.66
1/4 - 28	H3	4	1	TT90352NS	TT90353NS	8.66
5/16 - 18	H3	4	1	TT90376NS	TT90377NS	10.67
3/8 - 16	H3	4	1	TT90423NS	TT90424NS	12.03
3/8 - 24	H3	4	1	TT90447NS	TT90448NS	12.03
7/16 - 14	H3	4	1	TT90466NS	TT90467NS	20.72
7/16 - 20	H3	4	1	TT90485NS	TT90486NS	20.72
1/2 - 13	H3	4	1	TT90505NS	TT90506NS	21.57
1/2 - 20	H3	4	1	TT90524NS	TT90525NS	24.40
9/16 - 12	H3	4	1	TT90536NS	TT90537NS	36.16
9/16 - 18	H3	4	1	TT90547NS	TT90548NS	36.16
5/8 - 11	H3	4	1	TT90562NS	TT90563NS	43.42
5/8 - 18	H3	4	1	TT90578NS	TT90579NS	43.42
3/4 - 10	H3	4	1	TT90601NS	TT90602NS	60.77
3/4 - 16	H3	4	1	TT90616NS	TT90617NS	60.77
7/8 - 9	H3	4	1	TT90627NS	TT90628NS	84.73
7/8 - 14	H4	4	1	TT90637NS	TT90638NS	84.73
1 - 8	H4	4	1	TT90647NS	TT90648NS	112.54
1-1/8 - 7	H4	4	1	TT90669NS	TT90670NS	182.25
1-1/4 - 7	H4	4	1	TT90677NS	TT90678NS	239.23
1-1/4 - 12	H4	6	1	TT90681NS	TT90682NS	243.39
1-1/2 - 6	H4	4	1	TT90693NS	TT90694NS	347.11
1-1/2 - 12	H4	6	1	TT90697NS	TT90698NS	353.52

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).

HP TAPS

TAPS

DIES



SERIES 729
HIGH SPEED STEEL
TIN COATED

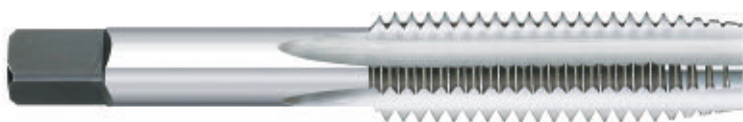
**TAKE 55%
OFF LIST
PRICES**

SIZE	H-LIMIT	# OF FLUTES	PKG. QTY.	TAPER ITEM#	PLUG ITEM#	BOTTOM ITEM#	LIST PRICE	SET-ITEM#	LIST PRICE
0 - 80	H1	2	1	TT75200	TT75201	TT75202	30.67	TT75203	92.06
2 - 56	H2	3	1	TT75223	TT75224	TT75225	24.57	TT75226	73.67
4 - 40	H2	3	1	TT75249	TT75250	TT75251	15.50	TT75252	46.53
5 - 40	H2	3	1	TT75266	TT75267	TT75268	15.50	TT75269	46.53
6 - 32	H3	3	1	TT75288	TT75289	TT75290	11.89	TT75291	35.66
8 - 32	H3	4	1	TT75319	TT75320	TT75321	12.18	TT75322	36.56
10 - 24	H3	4	1	TT75348	TT75349	TT75350	12.61	TT75351	37.90
10 - 32	H3	4	1	TT75375	TT75376	TT75377	12.61	TT75378	37.90
12 - 24	H3	4	1	TT75383	TT75384	TT75385	13.33	TT75386	39.96
12 - 28	H3	4	1	TT75388	TT75389	TT75390	14.67	TT75391	44.00
1/4 - 20	H3	4	1	TT75406	TT75407	TT75408	13.55	TT75409	40.72
1/4 - 28	H3	4	1	TT75422	TT75423	TT75424	13.55	TT75425	40.72
5/16 - 18	H3	4	1	TT75439	TT75440	TT75441	16.73	TT75442	50.15
5/16 - 24	H3	4	1	TT75454	TT75455	TT75456	16.73	TT75457	50.15
3/8 - 16	H3	4	1	TT75469	TT75470	TT75471	18.86	TT75472	56.54
3/8 - 24	H3	4	1	TT75484	TT75485	TT75486	18.86	TT75487	56.54
7/16 - 14	H3	4	1	TT75495	TT75496	TT75497	32.41	TT75498	97.26
7/16 - 20	H3	4	1	TT75506	TT75507	TT75508	32.41	TT75509	97.26
1/2 - 13	H3	4	1	TT75518	TT75519	TT75520	33.78	TT75521	101.38
1/2 - 20	H3	4	1	TT75530	TT75531	TT75532	38.19	TT75533	114.60
9/16 - 18	H3	4	1	TT75544	TT75545	TT75546	51.88	TT75547	155.82
5/8 - 11	H3	4	1	TT75552	TT75553	TT75554	68.07	TT75555	204.05
5/8 - 18	H3	4	1	TT75561	TT75562	TT75563	68.07	TT75564	204.05
3/4 - 10	H3	4	1	TT75577	TT75578	TT75579	95.24	TT75580	285.60
3/4 - 16	H3	4	1	TT75585	TT75586	TT75587	95.24	TT75588	285.60
1 - 8	H4	4	1	TT75604	TT75605	TT75606	161.60	TT75607	484.92

FOR COATING INFORMATION SEE PAGE 5.

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 203, OR GO TO: TITANMAN.COM

**TAKE 55%
OFF LIST
PRICES**



SERIES 755
HIGH SPEED STEEL
METRIC
UNCOATED

SIZE	D-LIMIT	# OF FLUTES	PKG. QTY.	TAPER ITEM#	PLUG ITEM#	BOTTOM ITEM#	LIST PRICE	SET-ITEM#	LIST PRICE
M1.6 x 0.35	D3	2	1	—	TT93002	—	22.77	—	—
M2 x 0.4	D3	3	1	TT93007	TT93008	TT93009	22.77	TT93100	68.27
M2.5 x 0.45	D3	3	1	—	TT93014	—	14.01	—	—
M3 x 0.5	D3	3	1	TT93016	TT93017	TT93018	11.66	TT93102	35.00
M3.5 x 0.6	D4	3	1	—	TT93020	—	9.65	—	—
M4 x 0.7	D4	4	1	TT93022	TT93023	TT93024	9.65	TT93104	28.94
M4.5 x 0.75	D4	4	1	—	TT93026	—	9.65	—	—
M5 x 0.8	D4	4	1	TT93028	TT93029	TT93030	9.65	TT93106	28.94
M6 x 1.0	D5	4	1	TT93031	TT93032	TT93033	10.19	TT93108	30.54
M7 x 1.0	D5	4	1	TT93037	TT93038	TT93039	10.19	TT93110	30.57
M8 x 1.25	D5	4	1	TT93043	TT93044	TT93045	10.19	TT93112	30.57
M10 x 1.25	D5	4	1	TT93046	TT93047	TT93048	20.93	TT93114	62.75
M10 x 1.50	D6	4	1	TT93049	TT93050	TT93051	20.93	TT93116	62.75
M12 x 1.25	D5	4	1	TT93052	TT93053	TT93054	24.54	TT93118	73.59
M12 x 1.75	D6	4	1	TT93055	TT93056	TT93057	24.54	TT93120	73.59
M14 x 1.5	D6	4	1	TT93058	TT93059	TT93060	36.67	TT93122	110.02
M14 x 2.0	D7	4	1	TT93061	TT93062	TT93063	36.67	TT93124	110.02
M16 x 1.5	D6	4	1	TT93064	TT93065	TT93066	44.68	TT93126	134.05
M16 x 2.0	D7	4	1	TT93067	TT93068	TT93069	44.68	TT93128	134.05
M18 x 1.5	D6	4	1	TT93070	TT93071	TT93072	60.19	TT93130	180.54
M18 x 2.5	D7	4	1	TT93073	TT93074	TT93075	60.19	TT93132	180.54
M20 x 2.5	D7	4	1	TT93076	TT93077	TT93078	77.85	TT93134	233.51
M24 x 3.0	D8	4	1	TT93082	TT93083	TT93084	113.91	TT93136	341.69
M27 x 3.0	D8	4	1	TT93085	TT93086	TT93087	196.87	TT93138	590.60
M30 x 3.5	D9	4	1	TT93088	TT93089	TT93090	251.44	TT93140	754.24
M33 x 3.5	D9	4	1	TT93091	TT93092	TT93093	250.75	TT93142	752.26
M36 x 4.0	D9	4	1	TT93094	TT93095	TT93096	318.00	TT93144	954.04

HP TAPS

TAPS

DIES



SERIES 757
HIGH SPEED STEEL
METRIC
TIN COATED

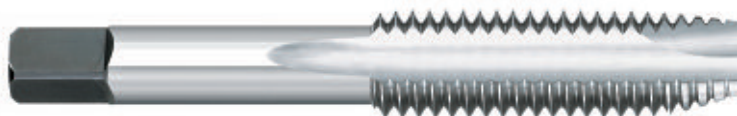
**TAKE 55%
OFF LIST
PRICES**

SIZE	D-LIMIT	# OF FLUTES	PKG. QTY.	TAPER ITEM#	PLUG ITEM#	BOTTOM ITEM#	LIST PRICE	SET-ITEM#	LIST PRICE
M1.6 x 0.35	D3	2	1	—	TT75700	—	41.01	—	—
M2 x 0.4	D3	3	1	TT75702	TT75704	TT75706	41.01	TT75846	123.02
M2.5 x 0.45	D3	3	1	—	TT75708	—	25.22	—	—
M3 x 0.5	D3	3	1	TT75710	TT75712	TT75714	21.03	TT75848	63.12
M3.5 x 0.6	D4	3	1	—	TT75716	—	17.38	—	—
M4 x 0.7	D4	4	1	TT75718	TT75720	TT75722	17.38	TT75850	52.13
M4.5 x 0.75	D4	4	1	—	TT75724	—	17.38	—	—
M5 x 0.8	D4	4	1	TT75726	TT75728	TT75730	17.38	TT75852	52.13
M6 x 1.0	D5	4	1	TT75732	TT75734	TT75736	18.35	TT75854	55.02
M7 x 1.0	D5	4	1	TT75738	TT75740	TT75742	18.39	TT75856	55.06
M8 x 1.25	D5	4	1	TT75744	TT75746	TT75748	18.39	TT75858	55.06
M10 x 1.25	D5	4	1	TT75750	TT75752	TT75754	37.68	TT75860	113.08
M10 x 1.50	D6	4	1	TT75756	TT75758	TT75760	37.68	TT75862	113.08
M12 x 1.25	D5	4	1	TT75762	TT75764	TT75766	44.19	TT75864	132.59
M12 x 1.75	D6	4	1	TT75768	TT75770	TT75772	44.19	TT75866	132.59
M14 x 1.5	D6	4	1	TT75774	TT75776	TT75778	66.08	TT75868	198.24
M14 x 2.0	D7	4	1	TT75780	TT75782	TT75784	66.08	TT75870	198.24
M16 x 1.5	D6	4	1	TT75786	TT75788	TT75790	80.53	TT75872	241.59
M16 x 2.0	D7	4	1	TT75792	TT75794	TT75796	80.53	TT75874	241.59
M18 x 1.5	D6	4	1	TT75798	TT75800	TT75802	108.42	TT75876	325.30
M18 x 2.5	D7	4	1	TT75804	TT75806	TT75808	108.42	TT75878	325.30
M20 x 2.5	D7	4	1	TT75810	TT75812	TT75814	140.25	TT75880	420.79
M24 x 3.0	D8	4	1	TT75816	TT75818	TT75820	205.25	TT75882	615.74
M27 x 3.0	D8	4	1	TT75822	TT75824	TT75826	354.75	TT75884	1,064.28
M30 x 3.5	D9	4	1	TT75828	TT75830	TT75832	453.05	TT75886	1,359.16
M33 x 3.5	D9	4	1	TT75834	TT75836	TT75838	451.86	TT75888	1,355.58
M36 x 4.0	D9	4	1	TT75840	TT75842	TT75844	573.07	TT75890	1,719.18

FOR COATING INFORMATION SEE PAGE 5.

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 203, OR GO TO: TITANMAN.COM

**TAKE 55%
OFF LIST
PRICES**



SERIES 750
HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	ITEM#	LIST PRICE
0 - 80	H1	2	1	TT91000	21.00
0 - 80	H2	2	1	TT91001	21.00
1 - 64	H1	2	1	TT91002	18.95
1 - 64	H2	2	1	TT91003	18.95
1 - 72	H1	2	1	TT91004	18.95
1 - 72	H2	2	1	TT91005	18.95
2 - 56	H1	2	1	TT91006	18.03
2 - 56	H2	2	1	TT91007	16.09
2 - 64	H1	2	1	TT91008	18.03
2 - 64	H2	2	1	TT91009	18.03
3 - 48	H1	2	1	TT91010	12.92
3 - 48	H2	2	1	TT91011	12.92
3 - 56	H1	2	1	TT91012	15.81
3 - 56	H2	2	1	TT91013	14.38
4 - 40	H1	2	1	TT91014	11.79
4 - 40	H2	2	1	TT91015	10.36
4 - 48	H1	2	1	TT91016	12.00
4 - 48	H2	2	1	TT91017	11.79
4 - 36	H2	2	1	TT91018	11.79
5 - 40	H1	2	1	TT91019	11.79
5 - 40	H2	2	1	TT91020	10.36
5 - 44	H2	2	1	TT91021	11.79
6 - 32	H1	2	1	TT91022	10.36
6 - 32	H2	2	1	TT91023	8.73
6 - 32	H3	2	1	TT91024	8.73
6 - 32	H7	2	1	TT91025	9.88
6 - 40	H1	2	1	TT91026	9.88
6 - 40	H2	2	1	TT91027	9.88
8 - 32	H1	2	1	TT91028	9.88
8 - 32	H2	2	1	TT91029	8.73
8 - 32	H3	2	1	TT91030	8.73
8 - 32	H7	2	1	TT91031	9.88
8 - 36	H1	2	1	TT91032	9.88
8 - 36	H2	2	1	TT91033	9.88
10 - 24	H1	2	1	TT91034	10.80
10 - 24	H2	2	1	TT91035	9.88
10 - 24	H3	2	1	TT91036	8.73
10 - 24	H7	2	1	TT91037	10.80
10 - 32	H1	2	1	TT91038	9.88
10 - 32	H2	2	1	TT91039	8.73
10 - 32	H3	2	1	TT91040	8.73
10 - 32	H7	2	1	TT91041	10.80
12 - 24	H1	2	1	TT91042	9.88
12 - 24	H3	2	1	TT91043	9.88
12 - 28	H3	2	1	TT91044	9.88
1/4 - 20	H1	2	1	TT91045	9.88
1/4 - 20	H2	2	1	TT91046	9.88
1/4 - 20	H3	2	1	TT91047	8.73
1/4 - 20	H3	3	1	TT91048	10.80
1/4 - 20	H5	2	1	TT91049	9.85

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	ITEM#	LIST PRICE
1/4 - 20	H5	3	1	TT91050	10.80
1/4 - 28	H1	2	1	TT91051	10.80
1/4 - 28	H2	2	1	TT91052	9.85
1/4 - 28	H2	3	1	TT91053	10.80
1/4 - 28	H3	2	1	TT91054	8.73
1/4 - 28	H4	2	1	TT91055	10.80
1/4 - 28	H4	3	1	TT91056	10.80
5/16 - 18	H1	2	1	TT91057	12.44
5/16 - 18	H2	2	1	TT91058	10.80
5/16 - 18	H3	2	1	TT91059	9.41
5/16 - 18	H3	3	1	TT91060	12.44
5/16 - 18	H5	2	1	TT91061	10.80
5/16 - 18	H5	3	1	TT91062	12.44
5/16 - 24	H1	2	1	TT91063	12.44
5/16 - 24	H2	2	1	TT91064	12.44
5/16 - 24	H2	3	1	TT91065	12.44
5/16 - 24	H3	2	1	TT91066	9.41
5/16 - 24	H4	2	1	TT91067	12.44
5/16 - 24	H4	3	1	TT91068	12.44
3/8 - 16	H1	3	1	TT91069	13.94
3/8 - 16	H2	3	1	TT91070	12.95
3/8 - 16	H3	3	1	TT91071	11.15
3/8 - 16	H5	3	1	TT91072	14.04
3/8 - 24	H1	3	1	TT91073	14.14
3/8 - 24	H2	3	1	TT91074	14.14
3/8 - 24	H3	3	1	TT91075	12.00
3/8 - 24	H4	3	1	TT91076	14.14
7/16 - 14	H2	3	1	TT91077	20.69
7/16 - 14	H3	3	1	TT91078	18.95
7/16 - 14	H5	3	1	TT91079	20.69
7/16 - 20	H2	3	1	TT91080	20.69
7/16 - 20	H3	3	1	TT91081	18.95
7/16 - 20	H5	3	1	TT91082	20.69
1/2 - 13	H1	3	1	TT91083	25.32
1/2 - 13	H2	3	1	TT91084	25.32
1/2 - 13	H3	3	1	TT91085	19.33
1/2 - 13	H5	3	1	TT91086	22.80
1/2 - 20	H1	3	1	TT91087	25.32
1/2 - 20	H2	3	1	TT91088	25.32
1/2 - 20	H3	3	1	TT91089	22.70
1/2 - 20	H5	3	1	TT91090	25.32
9/16 - 12	H3	3	1	TT91091	31.56
9/16 - 18	H3	3	1	TT91092	31.56
5/8 - 11	H3	3	1	TT91093	43.08
5/8 - 11	H5	3	1	TT91094	43.08
5/8 - 18	H3	3	1	TT91095	43.08
3/4 - 10	H3	3	1	TT91096	60.77
3/4 - 10	H5	3	1	TT91097	60.77
3/4 - 16	H3	3	1	TT91098	60.77
-	-	-	-	-	-

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 203, OR GO TO: TITANMAN.COM

STEAM OXIDE



SERIES 751 HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	ITEM#	LIST PRICE
0 - 80	H2	2	1	TT91001S	24.17
1 - 64	H2	2	1	TT91003S	21.85
1 - 72	H2	2	1	TT91005S	21.85
2 - 56	H2	2	1	TT91007S	18.54
2 - 64	H2	2	1	TT91009S	20.76
3 - 48	H2	2	1	TT91011S	14.86
3 - 56	H2	2	1	TT91013S	16.56
4 - 40	H2	2	1	TT91015S	11.93
4 - 48	H2	2	1	TT91017S	13.60
4 - 36	H2	2	1	TT91018S	13.60
5 - 40	H2	2	1	TT91020S	11.93
5 - 44	H2	2	1	TT91021S	13.60
6 - 32	H3	2	1	TT91024S	10.02
6 - 40	H2	2	1	TT91027S	11.38
8 - 32	H3	2	1	TT91030S	10.02
8 - 36	H2	2	1	TT91033S	11.38
10 - 24	H3	2	1	TT91036S	10.02
10 - 32	H3	2	1	TT91040S	10.02
12 - 24	H3	2	1	TT91043S	11.38
1/4 - 20	H3	2	1	TT91047S	10.02
1/4 - 28	H3	2	1	TT91054S	10.02
5/16 - 18	H3	2	1	TT91059S	10.84
5/16 - 24	H3	2	1	TT91066S	10.84
3/8 - 16	H3	3	1	TT91071S	12.85
3/8 - 24	H3	3	1	TT91075S	13.80
7/16 - 14	H3	3	1	TT91078S	21.85
7/16 - 20	H3	3	1	TT91081S	21.85
1/2 - 13	H3	3	1	TT91085S	22.26
1/2 - 20	H3	3	1	TT91089S	26.11
9/16 - 12	H3	3	1	TT91091S	36.30
9/16 - 18	H3	3	1	TT91092S	36.30
5/8 - 11	H3	3	1	TT91093S	49.56
5/8 - 18	H3	3	1	TT91095S	49.56
3/4 - 10	H3	3	1	TT91096S	69.91
3/4 - 16	H3	3	1	TT91098S	69.91

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



SERIES 752 HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	ITEM#	LIST PRICE
4 - 40	H2	2	1	TT91015NS	11.93
4 - 48	H2	2	1	TT91017NS	13.60
4 - 36	H2	2	1	TT91018NS	13.60
5 - 40	H2	2	1	TT91020NS	11.93
5 - 44	H2	2	1	TT91021NS	13.60
6 - 32	H3	2	1	TT91024NS	10.02
6 - 40	H2	2	1	TT91027NS	11.38
8 - 32	H3	2	1	TT91030NS	10.02
8 - 36	H2	2	1	TT91033NS	11.38
10 - 24	H3	2	1	TT91036NS	10.02
10 - 32	H3	2	1	TT91040NS	10.02
12 - 24	H3	2	1	TT91043NS	11.38
1/4 - 20	H3	2	1	TT91047NS	10.02
1/4 - 28	H3	2	1	TT91054NS	10.02
5/16 - 18	H3	2	1	TT91059NS	10.84
5/16 - 24	H3	2	1	TT91066NS	10.84
3/8 - 16	H3	3	1	TT91071NS	12.85
3/8 - 24	H3	3	1	TT91075NS	13.80
7/16 - 14	H3	3	1	TT91078NS	21.85
7/16 - 20	H3	3	1	TT91081NS	21.85
1/2 - 13	H3	3	1	TT91085NS	22.26
1/2 - 20	H3	3	1	TT91089NS	26.11
9/16 - 12	H3	3	1	TT91091NS	36.30
9/16 - 18	H3	3	1	TT91092NS	36.30
5/8 - 11	H3	3	1	TT91093NS	49.56
5/8 - 18	H3	3	1	TT91095NS	49.56
3/4 - 10	H3	3	1	TT91096NS	69.91
3/4 - 16	H3	3	1	TT91098NS	69.91

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).

**TAKE 55%
OFF LIST
PRICES**

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 203, OR GO TO: TITANMAN.COM

**TAKE 55%
OFF LIST
PRICES**



SERIES 760
HIGH SPEED STEEL
TIN COATED



SERIES 762
HIGH SPEED STEEL
ALTIN COATED

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	ITEM#	LIST PRICE
0-80	H2	2	1	TT99401	31.07
2-56	H2	2	1	TT99407	24.93
4-40	H2	2	1	TT99415	17.63
5-40	H2	2	1	TT99420	17.63
6-32	H3	2	1	TT99424	16.47
8-32	H3	2	1	TT99430	16.47
10-24	H3	2	1	TT99436	16.47
10-32	H3	2	1	TT99440	16.47
12-24	H3	2	1	TT99443	17.99
12-28	H3	2	1	TT99444	17.99
1/4-20	H3	2	1	TT99447	16.47
1/4-28	H3	2	1	TT99454	16.47
5/16-18	H3	2	1	TT99459	18.03
5/16-24	H3	2	1	TT99466	18.03
3/8-16	H3	3	1	TT99471	21.17
3/8-24	H3	3	1	TT99475	22.26
7/16-14	H3	3	1	TT99478	35.01
7/16-20	H3	3	1	TT99481	35.01
1/2-13	H3	3	1	TT99485	35.48
1/2-20	H3	3	1	TT99489	39.63
5/8-11	H3	3	1	TT99493	82.01
5/8-18	H3	3	1	TT99495	82.01
3/4-10	H3	3	1	TT99496	107.09
3/4-16	H3	3	1	TT99498	107.09

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

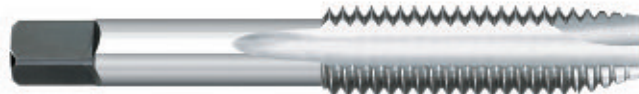
SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	ITEM#	LIST PRICE
0-80	H2	2	1	TT98001	31.07
2-56	H2	2	1	TT98002	24.93
4-40	H2	2	1	TT98003	17.63
5-40	H2	2	1	TT98004	17.63
6-32	H3	2	1	TT98005	16.47
8-32	H3	2	1	TT98006	16.47
10-24	H3	2	1	TT98007	16.47
10-32	H3	2	1	TT98008	16.47
12-24	H3	2	1	TT98009	17.99
12-28	H3	2	1	TT98010	17.99
1/4-20	H3	2	1	TT98011	16.47
1/4-28	H3	2	1	TT98012	16.47
5/16-18	H3	2	1	TT98013	18.03
5/16-24	H3	2	1	TT98014	18.03
3/8-16	H3	3	1	TT98015	21.17
3/8-24	H3	3	1	TT98016	22.26
7/16-14	H3	3	1	TT98017	35.01
7/16-20	H3	3	1	TT98018	35.01
1/2-13	H3	3	1	TT98019	35.48
1/2-20	H3	3	1	TT98020	39.63
5/8-11	H3	3	1	TT98021	82.01
5/8-18	H3	3	1	TT98022	82.01
3/4-10	H3	3	1	TT98023	107.09
3/4-16	H3	3	1	TT98024	107.09

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 5.

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 203, OR GO TO: TITANMAN.COM

SPIRAL POINT PLUG TAPS



SERIES 780
HIGH SPEED STEEL
METRIC
UNCOATED

SIZE	D-LIMIT	# OF FLUTES	PKG. QTY.	ITEM#	LIST PRICE
M2 x 0.4	D3	2	1	TT93208	23.25
M2.5 x 0.45	D3	2	1	TT93214	16.67
M3 x 0.5	D3	2	1	TT93217	13.39
M3.5 x 0.6	D4	2	1	TT93220	11.55
M4 x 0.7	D4	2	1	TT93223	11.55
M4.5 x 0.75	D4	2	1	TT93226	11.55
M5 x 0.8	D4	2	1	TT93229	11.55
M6 x 1.0	D5	2	1	TT93232	11.55
M7 x 1.0	D5	2	1	TT93238	13.36
M8 x 1.25	D5	2	1	TT93244	13.36
M10 x 1.50	D6	3	1	TT93250	22.19
M12 x 1.75	D6	3	1	TT93256	27.78
M14 x 2.0	D7	3	1	TT93262	43.12
M16 x 2.0	D7	3	1	TT93268	48.84
M18 x 2.5	D7	3	1	TT93274	71.85
M20 x 2.5	D7	3	1	TT93277	94.82



SERIES 882
HIGH SPEED STEEL
METRIC
TIN COATED

SIZE	D-LIMIT	# OF FLUTES	PKG. QTY.	ITEM#	LIST PRICE
M2 x 0.4	D3	2	1	TT93208TIN	32.05
M2.5 x 0.45	D3	2	1	TT93214TIN	22.98
M3 x 0.5	D3	2	1	TT93217TIN	18.50
M3.5 x 0.6	D4	2	1	TT93220TIN	15.93
M4 x 0.7	D4	2	1	TT93223TIN	15.93
M4.5 x 0.75	D4	2	1	TT93226TIN	15.93
M5 x 0.8	D4	2	1	TT93229TIN	15.93
M6 x 1.0	D5	2	1	TT93232TIN	15.93
M7 x 1.0	D5	2	1	TT93238TIN	18.39
M8 x 1.25	D5	2	1	TT93244TIN	18.39
M10 x 1.50	D6	3	1	TT93250TIN	30.56
M12 x 1.75	D6	3	1	TT93256TIN	38.30
M14 x 2.0	D7	3	1	TT93262TIN	59.40
M16 x 2.0	D7	3	1	TT93268TIN	67.31
M18 x 2.5	D7	3	1	TT93274TIN	98.99
M20 x 2.5	D7	3	1	TT93277TIN	130.68

**TAKE 55%
OFF LIST
PRICES**

SPIRAL POINT BOTTOMING TAPS



SERIES 754
HIGH SPEED STEEL
UNCOATED

SIZE	H-LIMIT	# OF FLUTES	PKG. QTY.	ITEM#	LIST PRICE
0 - 80	H2	2	1	TT91201	38.66
2 - 56	H2	2	1	TT91207	29.63
3 - 48	H2	2	1	TT91211	23.77
4 - 40	H2	2	1	TT91215	19.08
5 - 40	H2	2	1	TT91220	19.08
6 - 32	H2	2	1	TT91223	16.04
6 - 32	H3	2	1	TT91224	16.04
6 - 40	H2	2	1	TT91227	18.25
8 - 32	H2	2	1	TT91229	16.04
8 - 32	H3	2	1	TT91230	16.04
10 - 24	H2	2	1	TT91235	18.25
10 - 24	H3	2	1	TT91236	16.04
10 - 32	H2	2	1	TT91239	16.04
10 - 32	H3	2	1	TT91240	16.04
12 - 24	H3	2	1	TT91243	18.25
1/4 - 20	H3	2	1	TT91247	16.04
1/4 - 28	H3	2	1	TT91254	16.04
5/16 - 18	H3	2	1	TT91259	17.31
5/16 - 24	H3	2	1	TT91266	17.31



SERIES 756
HIGH SPEED STEEL
TIN COATED

SIZE	H-LIMIT	# OF FLUTES	PKG. QTY.	ITEM#	LIST PRICE
0 - 80	H2	2	1	TT92202	52.19
2 - 56	H2	2	1	TT92209	39.99
3 - 48	H2	2	1	TT92212	32.09
4 - 40	H2	2	1	TT92216	25.75
5 - 40	H2	2	1	TT92221	25.75
6 - 32	H2	2	1	TT92224	21.66
6 - 32	H3	2	1	TT92225	21.66
6 - 40	H2	2	1	TT92228	24.63
8 - 32	H2	2	1	TT92230	21.66
8 - 32	H3	2	1	TT92231	21.66
10 - 24	H2	2	1	TT92236	24.63
10 - 24	H3	2	1	TT92237	21.66
10 - 32	H2	2	1	TT92240	21.66
10 - 32	H3	2	1	TT92241	21.66
12 - 24	H3	2	1	TT92244	24.63
1/4 - 20	H3	2	1	TT92248	21.66
1/4 - 28	H3	2	1	TT92255	21.66
5/16 - 18	H3	2	1	TT92260	23.36
5/16 - 24	H3	2	1	TT92267	23.36

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

FOR COATING INFORMATION SEE PAGE 5.

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 203, OR GO TO: TITANMAN.COM

**TAKE 55%
OFF LIST
PRICES**

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#	LIST PRICE
3 - 48	H2	2	1	TT76101	35.48
3 - 56	H2	2	1	TT76103	35.48
4 - 40	H2	2	1	TT76105	29.19
4 - 48	H2	2	1	TT76107	29.19
5 - 40	H3	2	1	TT76109	29.19
5 - 44	H3	2	1	TT76111	29.19
6 - 32	H3	2	1	TT76113	23.70
6 - 40	H3	2	1	TT76115	23.70
8 - 32	H3	3	1	TT76117	23.70
8 - 36	H3	3	1	TT76119	23.70
10 - 24	H3	3	1	TT76121	23.70
10 - 32	H3	3	1	TT76123	23.70
12 - 24	H3	3	1	TT76125	25.72
12 - 28	H3	3	1	TT76127	25.72
1/4 - 20	H3	3	1	TT76129	25.72
1/4 - 28	H3	3	1	TT76131	25.72
5/16 - 18	H3	3	1	TT76133	31.68
5/16 - 24	H3	3	1	TT76135	31.68
3/8 - 16	H3	3	1	TT76137	36.56
3/8 - 24	H3	3	1	TT76139	36.56
7/16 - 14	H3	3	1	TT76141	54.81
7/16 - 20	H3	3	1	TT76143	54.81
1/2 - 13	H3	3	1	TT76145	65.97
1/2 - 20	H3	3	1	TT76147	65.97
9/16 - 12	H3	4	1	TT76149	110.05
9/16 - 18	H3	4	1	TT76151	110.05
5/8 - 11	H3	4	1	TT76153	143.61
5/8 - 18	H3	4	1	TT76155	143.61
3/4 - 10	H3	4	1	TT76157	183.82
3/4 - 16	H3	4	1	TT76159	183.82

SIZE	D-LIMIT	# OF FLUTES	PKG. QTY.	ITEM#	LIST PRICE
M3 x 0.5	D3	2	1	TT76349	30.02
M3.5 x 0.6	D4	3	1	TT76351	24.31
M4 x 0.7	D4	3	1	TT76353	24.31
M4.5 x 0.75	D4	3	1	TT76355	24.31
M5 x 0.8	D4	3	1	TT76357	24.31
M6 x 1.0	D5	3	1	TT76359	26.55
M8 x 1.25	D5	3	1	TT76361	32.73
M10 x 1.5	D6	3	1	TT76363	56.58
M12 x 1.75	D6	3	1	TT76365	68.10

- 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



SERIES 876
HIGH SPEED STEEL
UNCOATED



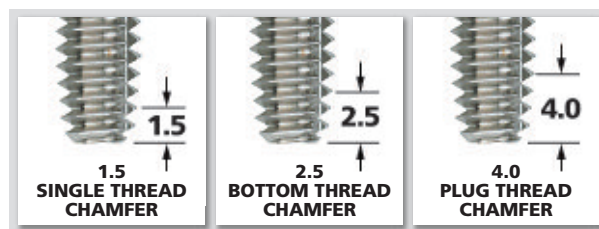
SERIES 898
HIGH SPEED STEEL
METRIC
UNCOATED

SIZE	H LIMIT	#OF LUBE GROOVES	PKG. QTY.	1.5 ITEM#	2.5 ITEM#	4.0 ITEM#	LIST PRICE
0-80	H2	0	1	TT88301	TT82800	-	27.95
0-80	H3	0	1	TT88303	TT82802	-	27.95
1-64	H3	0	1	-	TT82804	-	27.95
1-72	H3	0	1	TT88307	TT82806	-	27.95
2-56	H3	0	1	TT88309	TT82808	-	27.77
2-56	H4	0	1	TT88311	TT82810	-	27.77
2-64	H3	0	1	-	TT82814	-	27.77
3-48	H3	0	1	-	TT82818	-	27.77
3-56	H3	0	1	-	TT82820	-	27.77
3-56	H5	0	1	-	TT82822	-	27.77
4-40	H3	0	1	TT88321	TT82824	TT82823	25.03
4-40	H5	0	1	TT88323	TT82826	TT82825	25.03
4-48	H4	0	1	-	TT82828	-	25.03
5-40	H4	0	1	-	TT82832	TT82831	25.03
5-44	H4	0	1	-	TT82836	-	25.03
6-32	H3	1	1	TT88331	TT82840	TT82839	20.63
6-32	H5	1	1	TT88333	TT82842	TT82841	20.63
6-40	H4	1	1	-	TT82846	TT82845	20.63
8-32	H3	1	1	TT88337	TT82850	TT82849	20.63
8-32	H5	1	1	TT88339	TT82852	TT82851	20.63
8-32	H7	1	1	-	TT82854	TT82853	20.63
8-36	H4	1	1	-	TT82856	TT82855	20.63
10-24	H5	1	1	-	TT82858	TT82857	19.84
10-24	H7	1	1	-	TT82860	TT82859	19.84
10-32	H3	1	1	TT88347	TT82862	TT82861	19.84
10-32	H5	1	1	TT88349	TT82864	TT82863	19.84
12-24	H5	2	1	-	TT82866	TT82865	19.84
12-28	H4	2	1	-	TT82870	TT82869	19.84
1/4-20	H5	2	1	TT88355	TT82872	TT82871	21.06
1/4-20	H8	2	1	TT88357	TT82874	TT82873	21.06
1/4-28	H4	2	1	TT88359	TT82878	TT82877	21.06
1/4-28	H6	2	1	TT88361	TT82880	TT82879	21.06
5/16-18	H5	2	1	-	TT82882	TT82881	23.39
5/16-18	H8	2	1	TT88365	TT82884	TT82883	23.39
5/16-24	H5	2	1	TT88367	TT82886	TT82885	23.39
5/16-24	H7	2	1	TT88369	TT82888	TT82887	23.39
3/8-16	H6	2	1	TT88371	TT82890	TT82889	26.70
3/8-16	H8	2	1	TT88373	TT82892	TT82891	26.70
3/8-24	H5	2	1	TT88375	TT82894	TT82893	26.70
3/8-24	H7	2	1	TT88377	TT82896	TT82895	26.70
7/16-14	H7	4	1	-	TT82898	TT82897	40.62
7/16-14	H9	4	1	-	TT82902	TT82901	40.62
7/16-20	H5	4	1	-	TT82904	TT82903	40.62
7/16-20	H8	4	1	-	TT82906	TT82905	40.62
1/2-13	H7	6	1	-	TT82908	TT82907	45.43
1/2-13	H10	6	1	-	TT82910	TT82909	45.43
1/2-20	H5	6	1	-	TT82912	TT82911	45.43
1/2-20	H8	6	1	-	TT82914	TT82913	45.43

Plug Tap sizes 3/8" and smaller have male centers

SIZE	D LIMIT	#OF LUBE GROOVES	PKG. QTY.	1.5 ITEM#	2.5 ITEM#	4.0 ITEM#	LIST PRICE
M1.6 x .35	D5	0	1	-	TT89690	-	23.00
M1.7 x .35	D5	0	1	-	TT89692	-	23.00
M2 x .04	D5	0	1	TT88380	TT89694	-	23.00
M2.5 x .45	D6	0	1	TT88382	TT89696	-	23.00
M3 x .05	D6	0	1	TT88384	TT89802	-	23.00
M3.5 x .06	D7	1	1	TT88386	TT89698	TT89697	20.75
M4 x .07	D7	1	1	TT88388	TT89804	TT89803	20.75
M5 x .08	D8	1	1	TT88390	TT89806	TT89805	20.75
M6 x 1.0	D9	2	1	TT88392	TT89808	TT89807	22.01
M8 x 1.25	D10	2	1	TT88394	TT89810	TT89809	25.18
M10 x 1.5	D11	2	1	TT88396	TT89812	TT89811	28.34
M12 x 1.75	D12	4	1	TT88398	TT89814	TT89813	48.89

Plug Tap sizes M10 and smaller have male centers



- **SINGLE THREAD - 1.5 Thread Chamfer**
For maximum thread length in blind holes due to its short chamfer
- **BOTTOM - 2.5 Thread Chamfer**
For blind hole tapping
- **PLUG - 4.0 Thread Chamfer**
For through hole tapping
- **THREAD FORMING**
Taps have no flutes or cutting edges & provide chipless tapping
- **LUBE GROOVES**
For lubrication & venting in blind holes
- **MATERIALS:**
brass, copper, lead, stainless steels, carbon steels, zinc, most ductile materials producing stringy chips are great for forming

FOR TECHNICAL INFORMATION PLEASE SEE
PAGES 205 & 206 OR GO TO: TITANMAN.COM

FOR COATING OPTIONS AVAILABLE ON OUR
THREAD FORMING TOOLS, PLEASE SEE PAGE 5

**TAKE 55%
OFF LIST
PRICES**



SERIES 776
HIGH SPEED STEEL
TIN COATED



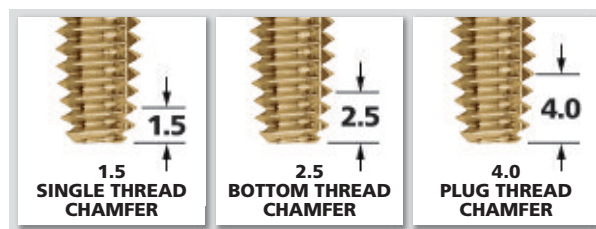
SERIES 798
HIGH SPEED STEEL
METRIC
TIN COATED

SIZE	H LIMIT	#OF LUBE GROOVES	PKG. QTY.	1.5 ITEM#	2.5 ITEM#	4.0 ITEM#	LIST PRICE
0-80	H2	0	1	TT88401	TT92800	-	34.94
0-80	H3	0	1	TT88403	TT92802	-	34.94
1-64	H3	0	1	-	TT92804	-	34.94
1-72	H3	0	1	TT88407	TT92806	-	34.94
2-56	H3	0	1	TT88409	TT92808	-	34.71
2-56	H4	0	1	TT88411	TT92810	-	34.71
2-64	H3	0	1	-	TT92814	-	34.71
3-48	H3	0	1	-	TT92818	-	34.71
3-56	H3	0	1	-	TT92820	-	34.71
3-56	H5	0	1	-	TT92822	-	34.71
4-40	H3	0	1	TT88421	TT92824	TT92823	31.29
4-40	H5	0	1	TT88423	TT92826	TT92825	31.29
4-48	H4	0	1	-	TT92828	-	31.29
5-40	H4	0	1	-	TT92832	TT92831	31.29
5-44	H4	0	1	-	TT92836	-	31.29
6-32	H3	1	1	TT88431	TT92840	TT92839	25.78
6-32	H5	1	1	TT88433	TT92842	TT92841	25.78
6-40	H4	1	1	-	TT92846	TT92845	25.78
8-32	H3	1	1	TT88437	TT92850	TT92849	25.78
8-32	H5	1	1	TT88439	TT92852	TT92851	25.78
8-32	H7	1	1	-	TT92854	TT92853	25.78
8-36	H4	1	1	-	TT92856	TT92855	25.78
10-24	H5	1	1	-	TT92858	TT92857	24.80
10-24	H7	1	1	-	TT92860	TT92859	24.80
10-32	H3	1	1	TT88447	TT92862	TT92861	24.80
10-32	H5	1	1	TT88449	TT92864	TT92863	24.80
12-24	H5	2	1	-	TT92866	TT92865	24.80
12-28	H4	2	1	-	TT92870	TT92869	24.80
1/4-20	H5	2	1	TT88455	TT92872	TT92871	26.34
1/4-20	H8	2	1	TT88457	TT92874	TT92873	26.34
1/4-28	H4	2	1	TT88459	TT92878	TT92877	26.34
1/4-28	H6	2	1	TT88461	TT92880	TT92879	26.34
5/16-18	H5	2	1	-	TT92882	TT92881	29.24
5/16-18	H8	2	1	TT88465	TT92884	TT92883	29.24
5/16-24	H5	2	1	TT88467	TT92886	TT92885	29.24
5/16-24	H7	2	1	TT88469	TT92888	TT92887	29.24
3/8-16	H6	2	1	TT88471	TT92890	TT92889	33.37
3/8-16	H8	2	1	TT88473	TT92892	TT92891	33.37
3/8-24	H5	2	1	TT88475	TT92894	TT92893	33.37
3/8-24	H7	2	1	TT88477	TT92896	TT92895	33.37
7/16-14	H7	4	1	-	TT92898	TT92897	50.78
7/16-14	H9	4	1	-	TT92902	TT92901	50.78
7/16-20	H5	4	1	-	TT92904	TT92903	50.78
7/16-20	H8	4	1	-	TT92906	TT92905	50.78
1/2-13	H7	6	1	-	TT92908	TT92907	56.79
1/2-13	H10	6	1	-	TT92910	TT92909	56.79
1/2-20	H5	6	1	-	TT92912	TT92911	56.79
1/2-20	H8	6	1	-	TT92914	TT92913	56.79

Plug Tap sizes 3/8" and smaller have male center

SIZE	D LIMIT	#OF LUBE GROOVES	PKG. QTY.	1.5 ITEM#	2.5 ITEM#	4.0 ITEM#	LIST PRICE
M1.6 x .35	D5	0	1	-	TT89790	-	28.00
M1.7 x .35	D5	0	1	-	TT89792	-	28.00
M2 x .4	D5	0	1	TT88580	TT89794	-	28.00
M2.5 x .45	D6	0	1	TT88582	TT89796	-	28.00
M3 x .5	D6	0	1	TT88584	TT79802	-	28.00
M3.5 x .6	D7	1	1	TT88586	TT89798	TT89797	25.95
M4 x .7	D7	1	1	TT88588	TT79804	TT79803	25.95
M5 x .8	D8	1	1	TT88590	TT79806	TT79805	25.95
M6 x 1.0	D9	2	1	TT88592	TT79808	TT79807	27.51
M8 x 1.25	D10	2	1	TT88594	TT79810	TT79809	31.49
M10 x 1.5	D11	2	1	TT88596	TT79812	TT79811	35.41
M12 x 1.75	D12	4	1	TT88598	TT79814	TT79813	61.12

Plug Tap sizes M10 and smaller have male center



- **SINGLE THREAD - 1.5 Thread Chamfer**
For maximum thread length in blind holes due to its short chamfer
- **BOTTOM - 2.5 Thread Chamfer**
For blind hole tapping
- **PLUG - 4.0 Thread Chamfer**
For through hole tapping

■ THREAD FORMING

Taps have no flutes or cutting edges & provide chipless tapping

■ LUBE GROOVES

For lubrication & venting in blind holes

■ MATERIALS:

brass, copper, lead, stainless steels, carbon steels, zinc, most ductile materials producing stringy chips are great for forming

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 205 & 206 OR GO TO: TITANMAN.COM

FOR COATING OPTIONS AVAILABLE ON OUR THREAD FORMING TOOLS, PLEASE SEE PAGE 5

**TAKE 55%
OFF LIST
PRICES**



SERIES 707
HIGH SPEED STEEL

**TAKE 55%
OFF LIST
PRICES**

SIZE	SHANK DIA.	OVERALL LENGTH	DRILL LENGTH	DRILL SIZE	THREAD LENGTH	# OF FLUTES	PACKAGE QUANTITY	ITEM#	LIST PRICE
4-40	0.141	1-7/8	1/4	0.0910	3/8	2	1	TT70701	38.87
5-40	0.141	1-15/16	9/32	0.1040	13/32	2	1	TT70703	38.87
6-32	0.141	2	5/16	0.1115	7/16	2	1	TT70705	38.87
8-32	0.168	2-1/8	3/8	0.1375	1/2	2	1	TT70707	38.87
10-24	0.194	2-3/8	13/32	0.1545	5/8	2	1	TT70709	38.87
10-32	0.194	2-3/8	13/32	0.1635	5/8	2	1	TT70711	38.87
12-24	0.220	2-3/8	15/32	0.1805	21/32	2	1	TT70713	42.02
1/4-20	0.255	2-1/2	17/32	0.2080	25/32	2	1	TT70715	38.87
1/4-28	0.255	2-1/2	17/32	0.2200	25/32	2	1	TT70717	38.87
5/16-18	0.318	2-27/32	11/16	0.2660	15/16	2	1	TT70719	57.41
5/16-24	0.318	2-27/32	11/16	0.2770	15/16	2	1	TT70721	57.41
3/8-16	0.381	3-3/8	13/16	0.3225	1-1/16	2	1	TT70723	69.76
3/8-24	0.381	3-3/8	13/16	0.3395	1-1/16	2	1	TT70725	69.76
7/16-14	0.323	3-3/4	1	0.3770	1-1/4	2	1	TT70727	83.49
7/16-20	0.323	3-3/4	1	0.3955	1-1/4	2	1	TT70729	83.49
1/2-13	0.367	4-1/16	1-1/8	0.4350	1-3/8	2	1	TT70731	94.22
1/2-20	0.367	4-1/16	1-1/8	0.4580	1-3/8	2	1	TT70733	94.22

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#	LIST PRICE
M4 x 0.7	0.168	2-1/8	3/8	0.1340	1/2	2	1	TT70830	42.78
M5 x 0.8	0.194	2-3/8	13/32	0.1700	5/8	2	1	TT70832	42.78
M6 x 1.0	0.255	2-1/2	17/32	0.2030	25/32	2	1	TT70834	42.78
M8 x 1.25	0.318	2-27/32	11/16	0.2730	15/16	2	1	TT70836	77.50
M10 x 1.50	0.381	3.38	13/16	0.3440	0.69	2	1	TT70838	88.55
M12 x 1.75	0.367	4-1/16	1-1/8	0.4140	1-3/8	2	1	TT70840	88.55

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

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 203, OR GO TO: TITANMAN.COM

**TAKE 55%
OFF LIST
PRICES**



SERIES 775
UNCOATED



SERIES 777
STEAM OXIDE



SERIES 878
TIN COATED

SIZE	# OF FLUTES	PKG. QTY.	UNCOATED	LIST PRICE	STEAM OXIDE	LIST PRICE	TIN	LIST PRICE
1/16 - 27	4	1	TT93400	33.35	TT93400S	38.37	TT93400TIN	43.39
1/8 - 27*	4	1	TT93401	33.35	TT93401S	38.37	TT93401TIN	43.39
1/8 - 27	4	1	TT93402	33.35	TT93402S	38.37	TT93402TIN	43.39
1/4 - 18	4	1	TT93406	36.92	TT93406S	42.45	TT93406TIN	48.01
3/8 - 18	4	1	TT93408	48.59	TT93408S	55.89	TT93408TIN	63.15
1/2 - 14	4	1	TT93410	77.28	TT93410S	88.88	TT93410TIN	100.44
3/4 - 14	5	1	TT93412	108.10	TT93412S	124.32	TT93412TIN	140.54
1 - 11-1/2	5	1	TT93414	164.28	TT93414S	188.88	TT93414TIN	196.94
1-1/4 - 11-1/2	5	1	TT93416	234.15	TT93416S	269.27	TT93416TIN	304.38
1-1/2 - 11-1/2	7	1	TT93418	314.07	TT93418S	361.21	TT93418TIN	408.29
2 - 11-1/2	7	1	TT93420	427.22	TT93420S	491.31	TT93420TIN	555.41

* SMALL SHANK

NPT - INTERRUPTED HIGH SPEED STEEL



SERIES 785
UNCOATED



SERIES 786
STEAM OXIDE



SERIES 880
TIN COATED

SIZE	# OF FLUTES	PKG. QTY.	UNCOATED	LIST PRICE	STEAM OXIDE	LIST PRICE	TIN	LIST PRICE
1/8 - 27*	5	1	TT93601	51.74	TT93601S	59.50	TT93601TIN	67.27
1/8 - 27	5	1	TT93602	51.74	TT93602S	59.50	TT93602TIN	67.27
1/4 - 18	5	1	TT93606	57.23	TT93606S	65.79	TT93606TIN	74.39
3/8 - 18	5	1	TT93608	72.40	TT93608S	83.24	TT93608TIN	94.12
1/2 - 14	5	1	TT93610	115.14	TT93610S	132.41	TT93610TIN	149.68
3/4 - 14	5	1	TT93612	167.56	TT93612S	192.67	TT93612TIN	217.82
1 - 11-1/2	5	1	TT93614	254.63	TT93614S	292.82	TT93614TIN	331.01
1-1/4 - 11-1/2	5	1	TT93616	360.60	TT93616S	414.68	TT93616TIN	468.77
1-1/2 - 11-1/2	7	1	TT93618	483.69	TT93618S	556.24	TT93618TIN	628.78
2 - 11-1/2	7	1	TT93620	653.68	TT93620S	751.73	TT93620TIN	849.75

* SMALL SHANK

FOR COATING INFORMATION SEE PAGE 5.

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 203, OR GO TO: TITANMAN.COM

**NPTF DRYSEAL
HIGH SPEED STEEL**



**SERIES 787
UNCOATED**

SIZE	# OF FLUTES	PKG. QTY.	ITEM#	LIST PRICE
1/16 - 27	4	1	TT93800	36.71
1/8 - 27*	4	1	TT93801	36.71
1/8 - 27	4	1	TT93802	36.71
1/4 - 18	4	1	TT93806	40.61
3/8 - 18	4	1	TT93808	53.43
1/2 - 14	4	1	TT93810	85.01
3/4 - 14	5	1	TT93812	118.90
1 - 11-1/2	5	1	TT93814	180.68
1-1/4 - 11-1/2	5	1	TT93816	257.56
1-1/2 - 11-1/2	7	1	TT93818	345.46
2 - 11-1/2	7	1	TT93820	469.96

* SMALL SHANK



**SERIES 883
TIN COATED**

SIZE	# OF FLUTES	PKG. QTY.	ITEM#	LIST PRICE
1/16 - 27	4	1	TT93800TIN	54.99
1/8 - 27*	4	1	TT93801TIN	54.99
1/8 - 27	4	1	TT93802TIN	54.99
1/4 - 18	4	1	TT93806TIN	60.84
3/8 - 18	4	1	TT93808TIN	80.06
1/2 - 14	4	1	TT93810TIN	127.32
3/4 - 14	5	1	TT93812TIN	178.11
1 - 11-1/2	5	1	TT93814TIN	270.68
1-1/4 - 11-1/2	5	1	TT93816TIN	385.82
1-1/2 - 11-1/2	7	1	TT93818TIN	517.54
2 - 11-1/2	7	1	TT93820TIN	704.00

* SMALL SHANK

**TAKE 55%
OFF LIST
PRICES**

**NPTF DRYSEAL - INTERRUPTED
HIGH SPEED STEEL**



**SERIES 788
UNCOATED**

SIZE	# OF FLUTES	PKG. QTY.	ITEM#	LIST PRICE
1/8 - 27*	5	1	TT94001	56.90
1/8 - 27	5	1	TT94002	56.90
1/4 - 18	5	1	TT94006	62.94
3/8 - 18	5	1	TT94008	79.63
1/2 - 14	5	1	TT94010	126.67
3/4 - 14	5	1	TT94012	184.29
1 - 11-1/2	5	1	TT94014	280.07
1-1/4 - 11-1/2	5	1	TT94016	396.62
1-1/2 - 11-1/2	7	1	TT94018	532.07
2 - 11-1/2	7	1	TT94020	719.03

* SMALL SHANK



**SERIES 884
TIN COATED**

SIZE	# OF FLUTES	PKG. QTY.	ITEM#	LIST PRICE
1/8 - 27*	5	1	TT94001TIN	85.26
1/8 - 27	5	1	TT94002TIN	85.26
1/4 - 18	5	1	TT94006TIN	94.30
3/8 - 18	5	1	TT94008TIN	119.30
1/2 - 14	5	1	TT94010TIN	189.71
3/4 - 14	5	1	TT94012TIN	276.10
1 - 11-1/2	5	1	TT94014TIN	419.56
1-1/4 - 11-1/2	5	1	TT94016TIN	594.17
1-1/2 - 11-1/2	7	1	TT94018TIN	797.00
2 - 11-1/2	7	1	TT94020TIN	1,077.10

* SMALL SHANK

FOR COATING INFORMATION SEE PAGE 5.

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 203, OR GO TO: TITANMAN.COM

**TAKE 55%
OFF LIST
PRICES**

STRAIGHT PIPE - NPS
HIGH SPEED STEEL

SERIES 792
UNCOATED

SERIES 888
TIN COATED

SIZE	# OF FLUTES	PKG. QTY.	ITEM#	LIST PRICE
1/8 - 27	4	1	TT94201	53.29
1/4 - 18	4	1	TT94202	58.96
3/8 - 18	4	1	TT94203	77.60
1/2 - 14	4	1	TT94204	123.45
3/4 - 14	5	1	TT94205	172.66
1 - 11-1/2	5	1	TT94206	262.37

SIZE	# OF FLUTES	PKG. QTY.	ITEM#	LIST PRICE
1/8 - 27	4	1	TT94201TIN	79.84
1/4 - 18	4	1	TT94202TIN	88.33
3/8 - 18	4	1	TT94203TIN	116.26
1/2 - 14	4	1	TT94204TIN	184.91
3/4 - 14	5	1	TT94205TIN	258.65
1 - 11-1/2	5	1	TT94206TIN	393.04

EXTENSION TAPER PIPE - NPT
HIGH SPEED STEEL

SERIES 793
UNCOATED

SIZE	# OF FLUTES	OVERALL LENGTH	PKG. QTY.	ITEM#	LIST PRICE
1/8 - 27	4	6	1	TT94221	99.90
1/4 - 18	4	6	1	TT94223	115.14
3/8 - 18	4	6	1	TT94225	155.79
1/2 - 14	4	6	1	TT94227	250.01


SERIES 890
TIN COATED

SIZE	# OF FLUTES	OVERALL LENGTH	PKG. QTY.	ITEM#	LIST PRICE
1/8 - 27	4	6	1	TT94221TIN	149.64
1/4 - 18	4	6	1	TT94223TIN	172.51
3/8 - 18	4	6	1	TT94225TIN	233.39
1/2 - 14	4	6	1	TT94227TIN	374.51

FOR COATING INFORMATION SEE PAGE 5.

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 203, OR GO TO: TITANMAN.COM

**TAKE 55%
OFF LIST
PRICES**

STI - SPIRAL POINT PLUG



SERIES 770
HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	ITEM#	LIST PRICE
4 - 40	H1	2	1	TT92315	25.29
5 - 40	H1	2	1	TT92320	25.29
6 - 32	H2	2	1	TT92324	25.47
6 - 40	H2	2	1	TT92327	25.47
8 - 32	H2	2	1	TT92330	25.72
10 - 24	H2	2	1	TT92336	26.19
10 - 32	H2	2	1	TT92340	26.66
12 - 24	H2	2	1	TT92343	26.66
1/4 - 20	H2	2	1	TT92347	26.66
1/4 - 28	H2	2	1	TT92354	27.10
5/16 - 18	H3	3	1	TT92360	34.25
5/16 - 24	H2	3	1	TT92368	34.68
3/8 - 16	H3	3	1	TT92371	42.16
3/8 - 24	H2	3	1	TT92375	42.67
7/16 - 14	H3	3	1	TT92378	46.24
7/16 - 20	H3	3	1	TT92381	46.24
1/2 - 13	H3	3	1	TT92385	51.48
1/2 - 20	H3	3	1	TT92389	51.48

STI - HAND PLUG & BOTTOMING



SERIES 783
HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	PLUG ITEM#	BOTTOM ITEM#	LIST PRICE
4 - 40	H1	3	1	TT78302	TT78303	22.54
5 - 40	H1	3	1	TT78304	TT78305	22.54
6 - 32	H2	3	1	TT78306	TT78307	22.94
6 - 40	H1	3	1	TT78308	TT78309	22.94
8 - 32	H2	3	1	TT78310	TT78311	23.48
10 - 24	H2	3	1	TT78312	TT78313	23.48
10 - 32	H2	3	1	TT78314	TT78315	24.42
12 - 24	H2	3	1	TT78316	TT78317	24.42
1/4 - 20	H2	3	1	TT78318	TT78319	24.53
1/4 - 28	H2	3	1	TT78320	TT78321	24.53
5/16 - 18	H3	4	1	TT78322	TT78323	26.48
5/16 - 24	H2	4	1	TT78324	TT78325	26.48
3/8 - 16	H3	4	1	TT78326	TT78327	28.76
3/8 - 24	H2	4	1	TT78328	TT78329	28.76
7/16 - 14	H3	4	1	TT78330	TT78331	39.56
7/16 - 20	H3	4	1	TT78332	TT78333	39.56
1/2 - 13	H3	4	1	TT78334	TT78335	44.40
1/2 - 20	H3	4	1	TT78336	TT78337	44.40

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#	LIST PRICE
6 - 32	H11	2	1	TT91732	13.08
8 - 32	H11	2	1	TT91734	13.08
10 - 24	H11	2	1	TT91736	14.23
10 - 32	H11	2	1	TT91738	14.23
1/4 - 20	H11	2	1	TT91749	16.22
5/16 - 18	H11	2	1	TT91761	18.64
3/8 - 16	H11	3	1	TT91772	21.17
7/16 - 14	H11	3	1	TT91779	31.79
1/2 - 13	H11	3	1	TT91786	38.69
5/8 - 11	H11	3	1	TT91794	65.93

+ .005 OVERSIZE HAND PLUG



SERIES 766
HIGH SPEED STEEL

SIZE	H LIMIT	# OF FLUTES	PKG. QTY.	ITEM#	LIST PRICE
6 - 32	H11	3	1	TT90931	10.87
8 - 32	H11	4	1	TT90933	10.87
10 - 24	H11	4	1	TT90935	12.03
10 - 32	H11	4	1	TT90937	12.03
1/4 - 20	H11	4	1	TT90940	14.34
5/16 - 18	H11	4	1	TT90946	18.06
3/8 - 16	H11	4	1	TT90950	20.74
7/16 - 14	H11	4	1	TT90954	30.02
1/2 - 13	H11	4	1	TT90958	35.23
5/8 - 11	H11	4	1	TT90966	66.33

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 203, OR GO TO: TITANMAN.COM

**TAKE 55%
OFF LIST
PRICES**

PULLEY - PLUG**SERIES 747
HIGH SPEED STEEL**

SIZE	H LIMIT	# OF FLUTES	OVERALL LENGTH	PKG. QTY.	ITEM#	LIST PRICE
1/4 - 20	H3	4	6	1	TT92722	76.74
1/4 - 20	H3	4	8	1	TT92723	94.87
5/16 - 18	H3	4	6	1	TT92730	80.93
5/16 - 18	H3	4	8	1	TT92731	97.69
3/8 - 16	H3	4	6	1	TT92738	90.68
3/8 - 16	H3	4	8	1	TT92739	108.82
3/8 - 16	H3	4	10	1	TT92740	136.75
7/16 - 14	H3	4	6	1	TT92746	96.28
7/16 - 14	H3	4	8	1	TT92747	125.58
1/2 - 13	H3	4	6	1	TT92754	97.69

SIZE	H LIMIT	# OF FLUTES	OVERALL LENGTH	PKG. QTY.	ITEM#	LIST PRICE
1/2 - 13	H3	4	8	1	TT92755	128.37
1/2 - 13	H3	4	10	1	TT92756	157.67
1/2 - 13	H3	4	12	1	TT92757	193.94
5/8 - 11	H3	4	6	1	TT92762	129.77
5/8 - 11	H3	4	8	1	TT92763	168.83
5/8 - 11	H3	4	10	1	TT92764	212.11
5/8 - 11	H3	4	12	1	TT92765	248.38
3/4 - 10	H3	4	10	1	TT92772	248.38
3/4 - 10	H3	4	12	1	TT92773	295.82
-	-	-	-	-	-	-

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#	LIST PRICE
6 - 32	H3	6	NC	11/16	3/16	0.097	0.073	2	1	TT94101	77.86
8 - 32	H3	6	NC	3/4	1/4	0.123	0.092	2	1	TT94102	76.27
10 - 24	H3	6	NC	7/8	1/4	0.136	0.102	2	1	TT94103	71.50
10 - 32	H3	6	NF	7/8	1/4	0.136	0.102	2	1	TT94104	71.50
1/4 - 20	H3	6	NC	1	5/16	0.185	0.139	2	1	TT94105	97.55
1/4 - 28	H3	6	NF	1	5/16	0.185	0.139	2	1	TT94106	97.55
5/16 - 18	H3	6	NC	1-1/8	3/8	0.240	0.180	2	1	TT94107	102.39
5/16 - 24	H3	6	NF	1-1/8	3/8	0.240	0.180	2	1	TT94108	102.39
3/8 - 16	H3	6	NC	1-1/4	7/16	0.275	0.206	3	1	TT94109	110.30
3/8 - 24	H3	6	NF	1-1/4	7/16	0.275	0.206	3	1	TT94110	110.30
7/16 - 14	H3	6	NC	1-7/16	13/32	0.323	0.242	3	1	TT94111	126.45
7/16 - 20	H3	6	NF	1-7/16	13/32	0.323	0.242	3	1	TT94112	126.45
1/2 - 13	H3	6	NC	1-21/32	7/16	0.367	0.275	3	1	TT94113	132.74
1/2 - 20	H3	6	NF	1-21/32	7/16	0.367	0.275	3	1	TT94114	132.74
5/8 - 11	H3	6	NC	1-13/16	9/16	0.480	0.360	3	1	TT94115	171.50
5/8 - 18	H3	6	NF	1-13/16	9/16	0.480	0.360	3	1	TT94116	171.50
3/4 - 10	H3	6	NC	2	11/16	0.590	0.442	3	1	TT94117	222.73
3/4 - 16	H3	6	NF	2	11/16	0.590	0.442	3	1	TT94118	222.73

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

FOR TECHNICAL INFORMATION PLEASE SEE PAGE 203, OR GO TO: TITANMAN.COM

ADJUSTABLE ROUND SPLIT



SERIES 794
HIGH SPEED STEEL

**TAKE 55%
OFF LIST
PRICES**

SIZE	OUTSIDE DIA.	ITEM#	LIST PRICE
4-40	1	TE80810	61.96
5-40	13/16	TE80811	51.16
5-44	13/16	TE80812	51.16
6-32	13/16	TE80813	51.16
6-32	1	TE80814	61.96
6-40	13/16	TE80815	51.16
8-32	13/16	TE80816	51.16
8-32	1	TE80817	61.96
10-24	13/16	TE80818	51.16
10-24	1	TE80819	61.96
10-32	13/16	TE80820	51.16
10-32	1	TE80821	61.96
12-24	13/16	TE80822	51.16
12-24	1	TE80823	61.96
12-28	13/16	TE80824	51.16
1/4-20	13/16	TE80825	51.16
1/4-20	1	TE80826	61.96

SIZE	OUTSIDE DIA.	ITEM#	LIST PRICE
1/4-20	1-1/2	TE80827	101.32
1/4-28	13/16	TE80828	51.16
1/4-28	1	TE80829	61.96
1/4-28	1-1/2	TE80830	101.32
5/16-18	13/16	TE80831	51.16
5/16-18	1	TE80832	61.96
5/16-18	1-1/2	TE80833	101.32
5/16-24	13/16	TE80834	51.16
5/16-24	1	TE80835	61.96
5/16-24	1-1/2	TE80836	101.32
3/8-16	1	TE80837	61.96
3/8-16	1-1/2	TE80838	101.32
3/8-24	1	TE80839	61.96
3/8-24	1-1/2	TE80840	101.32
7/16-14	1	TE80841	61.96
7/16-14	1-1/2	TE80842	101.32
7/16-20	1	TE80843	61.96

SIZE	OUTSIDE DIA.	ITEM#	LIST PRICE
7/16-20	1-1/2	TE80844	101.32
1/2-13	1	TE80845	61.96
1/2-13	1-1/2	TE80846	101.32
1/2-20	1	TE80847	61.96
1/2-20	1-1/2	TE80848	101.32
9/16-12	1-1/2	TE80849	101.32
9/16-18	1-1/2	TE80850	101.32
5/8-11	1-1/2	TE80851	101.32
5/8-11	2	TE80852	137.72
5/8-18	1-1/2	TE80853	101.32
5/8-18	2	TE80854	137.72
3/4-10	1-1/2	TE80855	101.32
3/4-10	2	TE80856	137.72
3/4-16	1-1/2	TE80857	101.32
3/4-16	2	TE80858	137.72
7/8-9	2	TE80859	137.72
7/8-14	2	TE80860	137.72

DIE STOCKS



SERIES 789

SIZE	ITEM#	LIST PRICE
1 OD	TE78909	46.13
1-1/2 OD	TE78910	75.54
2 OD	TE78911	132.99

**TAKE 55%
OFF LIST
PRICES**

ADJUSTABLE ROUND SPLIT



SERIES 790
CARBON STEEL

SIZE	OUTSIDE DIA.	ITEM#	LIST PRICE
6-32	1	TE80113	40.29
8-32	1	TE80116	40.29
10-24	1	TE80119	40.29
10-32	1	TE80121	40.29
1/4-20	1	TE80127	40.29
1/4-20	1-1/2	TE80128	65.92
1/4-28	1	TE80130	40.29
1/4-32	1	TE80134	40.29
5/16-18	1	TE80135	40.29
5/16-18	1-1/2	TE80136	65.92
5/16-24	1	TE80138	40.29
5/16-24	1-1/2	TE80139	65.92
5/16-32	1	TE80141	40.29

SIZE	OUTSIDE DIA.	ITEM#	LIST PRICE
3/8-16	1	TE80142	40.29
3/8-16	1-1/2	TE80143	65.92
3/8-24	1	TE80145	40.29
3/8-24	1-1/2	TE80146	65.92
7/16-14	1	TE80148	40.29
7/16-14	1-1/2	TE80149	65.92
7/16-20	1	TE80151	40.29
1/2-13	1-1/2	TE80154	65.92
1/2-20	1-1/2	TE80156	65.92
9/16-12	1-1/2	TE80158	65.92
9/16-18	1-1/2	TE80160	65.92
5/8-11	1-1/2	TE80162	65.92
5/8-18	1-1/2	TE80165	65.92

HEXAGON RETHREADING



SERIES 795
CARBON STEEL

SIZE	ACROSS FLATS	THICKNESS	ITEM#	LIST PRICE
1/4-20	19/32	1/4	TE80529	23.62
1/4-28	19/32	1/4	TE80532	23.62
5/16-18	11/16	5/16	TE80537	27.54
5/16-24	11/16	5/16	TE80540	27.54
3/8-16	25/32	3/8	TE80544	30.50
3/8-24	25/32	3/8	TE80547	30.50
7/16-14	7/8	7/16	TE80550	37.37
7/16-20	7/8	7/16	TE80553	37.37
1/2-13	1-1/16	1/2	TE80555	41.33
1/2-20	1-1/16	1/2	TE80557	41.33
9/16-12	1-1/16	1/2	TE80559	44.25
9/16-18	1-1/16	1/2	TE80561	44.25
5/8-11	1-1/4	5/8	TE80563	46.23
5/8-18	1-1/4	5/8	TE80566	46.23
11/16-11	1-7/16	3/4	TE80568	51.16
11/16-16	1-7/16	3/4	TE80569	51.16

SIZE	ACROSS FLATS	THICKNESS	ITEM#	LIST PRICE
3/4-10	1-7/16	3/4	TE80571	57.07
3/4-16	1-7/16	3/4	TE80573	57.07
7/8-9	1-5/8	7/8	TE80575	61.96
7/8-14	1-5/8	7/8	TE80577	61.96
1-8	1-13/16	1	TE80579	69.85
1-12	1-13/16	1	TE80581	69.85
1-14	1-13/16	1	TE80583	69.85
1-1/8-7	2	1	TE80584	80.65
1-1/8-12	2	1	TE80585	80.65
1-1/4-7	2-3/16	1	TE80586	88.53
1-1/4-12	2-3/16	1	TE80587	88.53
1-3/8-6	2-3/8	1	TE80588	167.24
1-3/8-12	2-3/8	1	TE80589	167.24
1-1/2-6	2-9/16	1	TE80590	186.90
1-1/2-12	2-9/16	1	TE80591	186.90
-	-	-	-	-



NPT HEXAGON RETHREADING

SERIES 797
CARBON STEEL

**TAKE 55%
OFF LIST
PRICES**

SIZE	ACROSS THE FLATS	THICKNESS	ITEM#	LIST PRICE
1/8 - 27 NPT	1-1/16	3/8	TE80701	32.65
1/4 - 18 NPT	1-1/4	5/8	TE80702	36.19
3/8 - 18 NPT	1-7/16	5/8	TE80703	50.05
1/2 - 14 NPT	1-5/8	3/4	TE80704	72.31
3/4 - 14 NPT	2	13/16	TE80705	89.40
1 - 11-1/2 NPT	2-3/8	1	TE80706	173.07



METRIC HEXAGON RETHREADING

SERIES 796
CARBON STEEL

SIZE	ACROSS THE FLATS	ITEM#	LIST PRICE
M3 x 0.5	1	TE80601	17.99
M4 x 0.7	1	TE80602	17.51
M5 x 0.8	1	TE80603	17.51
M6 x 1.0	1	TE80604	17.51
M7 x 1.0	1	TE80605	17.99
M8 x 1.25	1	TE80606	17.51
M10 x 1.25	1	TE80607	17.51
M10 x 1.50	1	TE80608	17.51
M12 x 1.25	1	TE80609	17.51

SIZE	ACROSS THE FLATS	ITEM#	LIST PRICE
M12 x 1.75	1	TE80610	17.51
M14 x 1.50	1-7/16	TE80611	27.16
M14 x 2.0	1-7/16	TE80612	27.16
M16 x 1.50	1-7/16	TE80613	27.16
M16 x 2.0	1-7/16	TE80614	27.16
M18 x 1.50	1-7/16	TE80615	27.16
M18 x 2.50	1-7/16	TE80616	27.16
M20 x 2.5	1-13/16	TE80617	56.72
M24 x 3.0	1-13/16	TE80618	56.72

T-HANDLE TAP WRENCHES



SERIES 801

SIZE	ITEM#	LIST PRICE
0 - 1/4	TE78701	14.94
1/4 - 1/2	TE78702	22.37

**TAKE 55%
OFF LIST
PRICES**

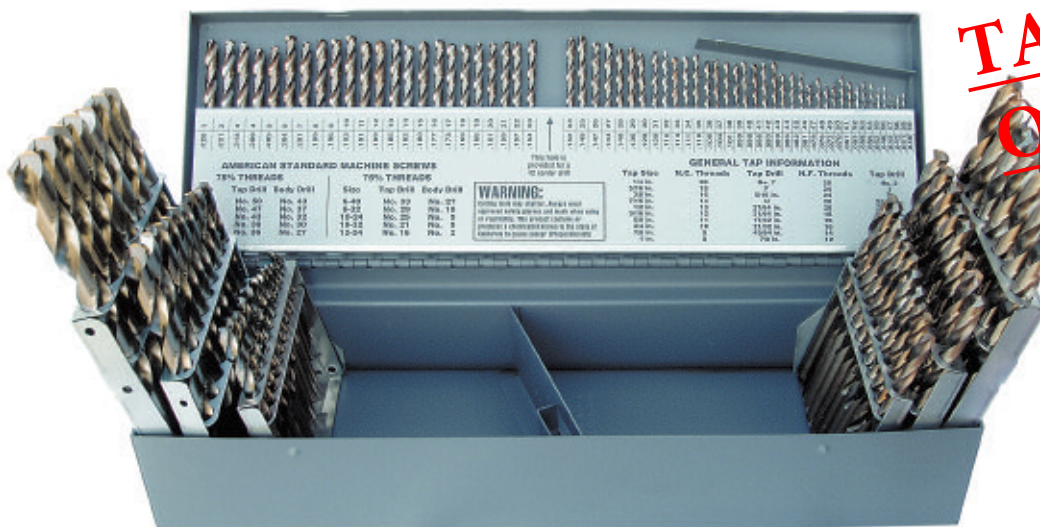
**ITEM# MS99028****29 PC. JOBBER DRILL SET - BRIGHT FINISH
HIGH SPEED STEEL****ITEM# MS99030****29 PC. HEAVY DUTY DRILL SET - BLACK/GOLD
HIGH SPEED STEEL****HIGH SPEED STEEL - JOBBER DRILL SETS**

DESCRIPTION	ITEM#	LIST PRICE
13Pc. • 1/16" - 1/4" by 64ths • 118° Point • Oxidized	MS99010	39.45
13Pc. • 1/16" - 1/4" by 64ths • 118° Point • Bright	MS99011	39.45
15Pc. • 1/16" - 1/2" by 32nds • 118° Point • Oxidized	MS99014	110.16
15Pc. • 1/16" - 1/2" by 32nds • 118° Point • Bright	MS99016	110.16
15Pc. • 1/16" - 1/2" by 32nds • Heavy Duty • 135° SP/PT • Oxidized	MS99017	121.50
21Pc. • 1/16" - 3/8" by 64ths • 118° Point • Oxidized	MS99018	93.10
21Pc. • 1/16" - 3/8" by 64ths • 118° Point • Bright	MS99020	93.10
25Pc. • 1.0mm - 13.0mm by 0.5mm • 118° Point • Oxidized	MS99050	212.62
26Pc. • A-Z • 118° Point • Oxidized	MS99022	155.82
26Pc. • A-Z • 118° Point • Bright	MS99024	155.82
29Pc. • 1/16" - 1/2" by 64ths • 118° Point • Oxidized	MS99026	151.38
29Pc. • 1/16" - 1/2" by 64ths • 118° Point • Bright	MS99028	151.38
29Pc. • 1/16" - 1/2" by 64ths • Heavy Duty • 135° SP/PT • Oxidized	MS99032	188.41
29Pc. • 1/16" - 1/2" by 64ths • 3/8" Reduced Shank • 118° Point • Oxidized	MS99034	161.31
29Pc. • 1/16" - 1/2" by 64ths • 118° Point • TIN Coated	MS99036	374.37
60Pc. • #1 - #60 • 118° Point • Oxidized	MS99038	136.93
60Pc. • #1 - #60 • 118° Point • Bright	MS99040	136.93
115Pc. • 1/16" - 1/2" by 64ths • #1 - #60 • A - Z • 118° Point • Oxidized	MS99042	435.10
115Pc. • 1/16" - 1/2" by 64ths • #1 - #60 • A - Z • 118° Point • Bright	MS99044	435.10

HIGH SPEED STEEL - BLACK & GOLD SETS

DESCRIPTION	ITEM#	LIST PRICE
13Pc. • 1/16" - 1/4" by 64ths • Heavy Duty • 135° SP/PT • Black/Gold	MS99012	49.21
15Pc. • 1/16" - 1/2" by 32nds • Heavy Duty • 135° SP/PT • Black/Gold	MS99015	142.53
21Pc. • 1/16" - 3/8" by 64ths • Heavy Duty • 135° SP/PT • Black/Gold	MS99021	139.60
29Pc. • 1/16" - 1/2" by 64ths • Heavy Duty • 135° SP/PT • Black/Gold	MS99030	228.04
29Pc. • 1/16" - 1/2" by 64ths • H.D. • 135° SP/PT • Black/Gold • Plastic Case	MS99431	228.04
115Pc. • 1/16" - 1/2" by 64ths • Heavy Duty • 135° SP/PT • Black/Gold	MS99046	629.00

NOTE: SIZES BELOW 1/16" ARE NOT SPLIT POINT.
FOR COATING INFORMATION SEE PAGE 5. FOR TECHNICAL INFORMATION PLEASE SEE PAGES 207-208.



**TAKE 55%
OFF LIST
PRICES**

ITEM# MS99163

115 PC. JOBBER DRILL SET - M42 COBALT - STRAW FINISH

M42 COBALT - JOBBER DRILL SETS

DESCRIPTION	ITEM#	LIST PRICE
13Pc. • 1/16" - 1/4" by 64ths • Heavy Duty • 135° SP/PT • Straw Finish	MS99151	53.18
15Pc. • 1/16" - 1/2" by 32nds • Heavy Duty • 135° SP/PT • Straw Finish	MS99153	179.45
21Pc. • 1/16" - 3/8" by 64ths • Heavy Duty • 135° SP/PT • Straw Finish	MS99155	195.46
26Pc. • A - Z • Heavy Duty • 135° SP/PT • Straw Finish	MS99157	297.63
29Pc. • 1/16" - 1/2" by 64ths • Heavy Duty • 135° SP/PT • Straw Finish	MS99159	291.31
60Pc. • #1 - #60 • Heavy Duty • 135° SP/PT • Straw Finish	MS99161	254.27
115Pc. • 1/16" - 1/2" by 64ths • #1 - #60 • A - Z • H.D. • 135° SP/PT • Straw Finish	MS99163	1,072.37

DRILL INDEXES ONLY

DESCRIPTION	ITEM#	LIST PRICE
21Pc. • 1/16" - 3/8" by 64ths • Metal Case	MS99320	14.45
26Pc. • A - Z • Metal Case	MS99323	15.57
29Pc. • 1/16" - 1/2" by 64ths • Metal Case	MS99326	15.57
60Pc. • #1 - #60 • Metal Case	MS99329	15.46
115Pc. • 1/16" - 1/2" by 64ths, A - Z, #1 - #60 • Metal Case	MS99332	95.52

HIGH SPEED STEEL - TAP & DRILL SETS

DESCRIPTION	ITEM#	LIST 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	202.97

NOTE: SIZES BELOW 1/16" ARE NOT SPLIT POINT.
FOR TECHNICAL INFORMATION PLEASE SEE PAGES 207-208.

**TAKE 55%
OFF LIST
PRICES**

**ITEM# MS99302**

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

SILVER & DEMING SETS - 1/2" SHANK

DESCRIPTION	ITEM#	LIST PRICE
8Pc. • HSS • 9/16", 5/8", 11/16", 3/4", 13/16", 7/8", 15/16", 1" • 118° Point • In Plastic Case	MS99302	367.90
8Pc. • HSS • Black & Gold • 118° Split Point • In Plastic Case	MS99313	467.22
8Pc. • M42 Cobalt • 118° Split Point • In Plastic Case	MS99310	759.00
33Pc. • HSS • 1/2" - 1" by 64ths • 118° Point • Metal Stand	MS99304	1,655.13

**ITEM# MS99442**

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

HIGH SPEED STEEL - MECHANICS LENGTH SETS

DESCRIPTION	ITEM#	LIST PRICE
15Pc. • 1/16" - 1/2" by 32ths • Black/Gold • Heavy Duty • 135° SP/PT • Metal Case	MS99425	134.15
29Pc. • 1/16" - 1/2" by 64ths • Black/Gold • Heavy Duty • 135° SP/PT • Metal Case	MS99405	247.55
29Pc. • 1/16" - 1/2" by 64ths • Black/Gold • Heavy Duty • 135° SP/PT • Plastic Case	MS99442	247.55

**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 207-208.

JOBBER LENGTH - 118° POINT



SERIES 406
BRIGHT FINISH

**TAKE 55%
OFF LIST
PRICES**

FRACTIONAL SIZES						FRACTIONAL SIZES						FRACTIONAL SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
1/16	7/8	1-7/8	12	CD40604	1.60	7/32	2-1/2	3-3/4	12	CD40614	2.59	3/8	3-5/8	5	6	CD40624	7.16
5/64	1	2	12	CD40605	1.60	15/64	2-5/8	3-7/8	12	CD40615	2.90	25/64	3-3/4	5-1/8	6	CD40625	7.74
3/32	1-1/4	2-1/4	12	CD40606	1.60	1/4	2-3/4	4	12	CD40616	2.97	13/32	3-7/8	5-1/4	6	CD40626	8.45
7/64	1-1/2	2-5/8	12	CD40607	1.60	17/64	2-7/8	4-1/8	6	CD40617	4.26	27/64	3-15/16	5-3/8	6	CD40627	9.00
1/8	1-5/8	2-3/4	12	CD40608	1.60	9/32	2-15/16	4-1/4	6	CD40618	4.53	7/16	4-1/16	5-1/2	6	CD40628	9.82
9/64	1-3/4	2-7/8	12	CD40609	1.70	19/64	3-1/16	4-3/8	6	CD40619	4.98	29/64	4-3/16	5-5/8	6	CD40629	10.46
5/32	2	3-1/8	12	CD40610	1.77	5/16	3-3/16	4-1/2	6	CD40620	5.18	15/32	4-5/16	5-3/4	6	CD40630	11.38
11/64	2-1/8	3-1/4	12	CD40611	1.91	21/64	3-5/16	4-5/8	6	CD40621	5.79	31/64	4-3/8	5-7/8	6	CD40631	12.03
3/16	2-5/16	3-1/2	12	CD40612	2.08	11/32	3-7/16	4-3/4	6	CD40622	6.20	1/2	4-1/2	6	6	CD40632	12.54
13/64	2-7/16	3-5/8	12	CD40613	2.35	23/64	3-1/2	4-7/8	6	CD40623	6.82	-	-	-	-	-	-

LETTER SIZES						LETTER SIZES						LETTER SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
A	2-5/8	3-7/8	12	CD40901	2.90	J	2-7/8	4-1/8	6	CD40910	4.43	S	3-1/2	4-7/8	6	CD40919	6.82
B	2-3/4	4	12	CD40902	2.97	K	2-15/16	4-1/4	6	CD40911	4.53	T	3-1/2	4-7/8	6	CD40920	7.16
C	2-3/4	4	12	CD40903	2.97	L	2-15/16	4-1/4	6	CD40912	4.74	U	3-5/8	5	6	CD40921	7.74
D	2-3/4	4	12	CD40904	3.07	M	3-1/16	4-3/8	6	CD40913	5.01	V	3-5/8	5	6	CD40922	8.01
E	2-3/4	4	12	CD40905	3.10	N	3-1/16	4-3/8	6	CD40914	5.18	W	3-3/4	5-1/8	6	CD40923	8.52
F	2-7/8	4-1/8	6	CD40906	4.29	O	3-3/16	4-1/2	6	CD40915	5.62	X	3-3/4	5-1/8	6	CD40924	9.03
G	2-7/8	4-1/8	6	CD40907	4.12	P	3-5/16	4-5/8	6	CD40916	6.03	Y	3-7/8	5-1/4	6	CD40925	9.48
H	2-7/8	4-1/8	6	CD40908	4.19	Q	3-7/16	4-3/4	6	CD40917	6.27	Z	3-7/8	5-1/4	6	CD40926	9.68
I	2-7/8	4-1/8	6	CD40909	4.29	R	3-7/16	4-3/4	6	CD40918	6.51	-	-	-	-	-	-

WIRE SIZES						WIRE SIZES						WIRE SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
1	2-5/8	3-7/8	12	CD40801	3.17	21	2-1/8	3-1/4	12	CD40821	2.01	41	1-3/8	2-3/8	12	CD40841	1.47
2	2-5/8	3-7/8	12	CD40802	3.17	22	2	3-1/8	12	CD40822	1.91	42	1-1/4	2-1/4	12	CD40842	1.47
3	2-1/2	3-3/4	12	CD40803	2.90	23	2	3-1/8	12	CD40823	1.91	43	1-1/4	2-1/4	12	CD40843	1.47
4	2-1/2	3-3/4	12	CD40804	2.90	24	2	3-1/8	12	CD40824	1.91	44	1-1/8	2-1/8	12	CD40844	1.47
5	2-1/2	3-3/4	12	CD40805	2.86	25	1-7/8	3	12	CD40825	1.67	45	1-1/8	2-1/8	12	CD40845	1.53
6	2-1/2	3-3/4	12	CD40806	2.86	26	1-7/8	3	12	CD40826	1.67	46	1-1/8	2-1/8	12	CD40846	1.53
7	2-7/16	3-5/8	12	CD40807	2.76	27	1-7/8	3	12	CD40827	1.67	47	1	2	12	CD40847	1.53
8	2-7/16	3-5/8	12	CD40808	2.76	28	1-3/4	2-7/8	12	CD40828	1.53	48	1	2	12	CD40848	1.53
9	2-7/16	3-5/8	12	CD40809	2.73	29	1-3/4	2-7/8	12	CD40829	1.53	49	1	2	12	CD40849	1.53
10	2-7/16	3-5/8	12	CD40810	2.49	30	1-5/8	2-3/4	12	CD40830	1.50	50	1	2	12	CD40850	1.53
11	2-5/16	3-1/2	12	CD40811	2.49	31	1-5/8	2-3/4	12	CD40831	1.47	51	1	2	12	CD40851	1.53
12	2-5/16	3-1/2	12	CD40812	2.49	32	1-5/8	2-3/4	12	CD40832	1.47	52	7/8	1-7/8	12	CD40852	1.53
13	2-5/16	3-1/2	12	CD40813	2.49	33	1-1/2	2-5/8	12	CD40833	1.47	53	7/8	1-7/8	12	CD40853	1.53
14	2-3/16	3-3/8	12	CD40814	2.35	34	1-1/2	2-5/8	12	CD40834	1.47	54	7/8	1-7/8	12	CD40854	1.64
15	2-3/16	3-3/8	12	CD40815	2.35	35	1-1/2	2-5/8	12	CD40835	1.47	55	7/8	1-7/8	12	CD40855	1.64
16	2-3/16	3-3/8	12	CD40816	2.35	36	1-7/16	2-1/2	12	CD40836	1.47	56	3/4	1-3/4	12	CD40856	1.64
17	2-3/16	3-3/8	12	CD40817	2.25	37	1-7/16	2-1/2	12	CD40837	1.47	57	3/4	1-3/4	12	CD40857	1.81
18	2-1/8	3-1/4	12	CD40818	2.25	38	1-7/16	2-1/2	12	CD40838	1.47	58	11/16	1-5/8	12	CD40858	1.81
19	2-1/8	3-1/4	12	CD40819	2.25	39	1-3/8	2-3/8	12	CD40839	1.47	59	11/16	1-5/8	12	CD40859	1.81
20	2-1/8	3-1/4	12	CD40820	2.01	40	1-3/8	2-3/8	12	CD40840	1.47	60	11/16	1-5/8	12	CD40860	1.81

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 207-208.

**TAKE 55%
OFF LIST
PRICES**

JOBBER LENGTH - 118° POINT**SERIES 475**
TIN COATED

FRACTIONAL SIZES						FRACTIONAL SIZES						FRACTIONAL SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
1/16	7/8	1-7/8	12	CD47504	4.53	7/32	2-1/2	3-3/4	12	CD47514	8.40	3/8	3-5/8	5	6	CD47524	20.92
5/64	1	2	12	CD47505	4.53	15/64	2-5/8	3-7/8	12	CD47515	8.76	25/64	3-3/4	5-1/8	6	CD47525	25.89
3/32	1-1/4	2-1/4	12	CD47506	4.53	1/4	2-3/4	4	12	CD47516	8.98	13/32	3-7/8	5-1/4	6	CD47526	26.48
7/64	1-1/2	2-5/8	12	CD47507	4.60	17/64	2-7/8	4-1/8	6	CD47517	12.78	27/64	3-15/16	5-3/8	6	CD47527	27.40
1/8	1-5/8	2-3/4	12	CD47508	4.60	9/32	2-15/16	4-1/4	6	CD47518	14.18	7/16	4-1/16	5-1/2	6	CD47528	27.99
9/64	1-3/4	2-7/8	12	CD47509	4.82	19/64	3-1/16	4-3/8	6	CD47519	14.47	29/64	4-3/16	5-5/8	6	CD47529	30.75
5/32	2	3-1/8	12	CD47510	5.38	5/16	3-3/16	4-1/2	6	CD47520	15.28	15/32	4-5/16	5-3/4	6	CD47530	31.63
11/64	2-1/8	3-1/4	12	CD47511	5.45	21/64	3-5/16	4-5/8	6	CD47521	17.42	31/64	4-3/8	5-7/8	6	CD47531	31.89
3/16	2-5/16	3-1/2	12	CD47512	5.74	11/32	3-7/16	4-3/4	6	CD47522	18.34	1/2	4-1/2	6	6	CD47532	32.55
13/64	2-7/16	3-5/8	12	CD47513	8.17	23/64	3-1/2	4-7/8	6	CD47523	20.69	-	-	-	-	-	-

LETTER SIZES						LETTER SIZES						LETTER SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
A	2-5/8	3-7/8	12	CD47601	9.13	J	2-7/8	4-1/8	6	CD47610	15.54	S	3-1/2	4-7/8	6	CD47619	23.35
B	2-3/4	4	12	CD47602	9.35	K	2-15/16	4-1/4	6	CD47611	16.72	T	3-1/2	4-7/8	6	CD47620	24.45
C	2-3/4	4	12	CD47603	9.35	L	2-15/16	4-1/4	6	CD47612	16.72	U	3-5/8	5	6	CD47621	24.45
D	2-3/4	4	12	CD47604	9.35	M	3-1/16	4-3/8	6	CD47613	17.01	V	3-5/8	5	6	CD47622	24.78
E	2-3/4	4	12	CD47605	8.98	N	3-1/16	4-3/8	6	CD47614	17.31	W	3-3/4	5-1/8	6	CD47623	28.69
F	2-7/8	4-1/8	6	CD47606	15.43	O	3-3/16	4-1/2	6	CD47615	17.31	X	3-3/4	5-1/8	6	CD47624	30.89
G	2-7/8	4-1/8	6	CD47607	15.43	P	3-5/16	4-5/8	6	CD47616	18.04	Y	3-7/8	5-1/4	6	CD47625	32.92
H	2-7/8	4-1/8	6	CD47608	15.43	Q	3-7/16	4-3/4	6	CD47617	18.04	Z	3-7/8	5-1/4	6	CD47626	33.29
I	2-7/8	4-1/8	6	CD47609	15.43	R	3-7/16	4-3/4	6	CD47618	18.52	-	-	-	-	-	-

WIRE SIZES						WIRE SIZES						WIRE SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
1	2-5/8	3-7/8	12	CD47701	9.13	21	2-1/8	3-1/4	12	CD47721	5.89	41	1-3/8	2-3/8	12	CD47741	4.53
2	2-5/8	3-7/8	12	CD47702	9.13	22	2	3-1/8	12	CD47722	5.89	42	1-1/4	2-1/4	12	CD47742	4.53
3	2-1/2	3-3/4	12	CD47703	8.76	23	2	3-1/8	12	CD47723	5.82	43	1-1/4	2-1/4	12	CD47743	4.53
4	2-1/2	3-3/4	12	CD47704	8.76	24	2	3-1/8	12	CD47724	5.82	44	1-1/8	2-1/8	12	CD47744	4.53
5	2-1/2	3-3/4	12	CD47705	8.76	25	1-7/8	3	12	CD47725	5.71	45	1-1/8	2-1/8	12	CD47745	4.53
6	2-1/2	3-3/4	12	CD47706	8.76	26	1-7/8	3	12	CD47726	5.71	46	1-1/8	2-1/8	12	CD47746	4.53
7	2-7/16	3-5/8	12	CD47707	8.32	27	1-7/8	3	12	CD47727	5.71	47	1	2	12	CD47747	4.53
8	2-7/16	3-5/8	12	CD47708	8.32	28	1-3/4	2-7/8	12	CD47728	5.52	48	1	2	12	CD47748	4.53
9	2-7/16	3-5/8	12	CD47709	8.32	29	1-3/4	2-7/8	12	CD47729	5.52	49	1	2	12	CD47749	4.53
10	2-7/16	3-5/8	12	CD47710	8.32	30	1-5/8	2-3/4	12	CD47730	4.60	50	1	2	12	CD47750	4.53
11	2-5/16	3-1/2	12	CD47711	8.32	31	1-5/8	2-3/4	12	CD47731	4.60	51	1	2	12	CD47751	4.53
12	2-5/16	3-1/2	12	CD47712	6.81	32	1-5/8	2-3/4	12	CD47732	4.60	52	7/8	1-7/8	12	CD47752	4.53
13	2-5/16	3-1/2	12	CD47713	6.70	33	1-1/2	2-5/8	12	CD47733	4.60	53	7/8	1-7/8	12	CD47753	4.53
14	2-3/16	3-3/8	12	CD47714	6.70	34	1-1/2	2-5/8	12	CD47734	4.60	54	7/8	1-7/8	12	CD47754	4.53
15	2-3/16	3-3/8	12	CD47715	6.70	35	1-1/2	2-5/8	12	CD47735	4.60	55	7/8	1-7/8	12	CD47755	4.53
16	2-3/16	3-3/8	12	CD47716	6.70	36	1-7/16	2-1/2	12	CD47736	4.53	56	3/4	1-3/4	12	CD47756	4.53
17	2-3/16	3-3/8	12	CD47717	6.70	37	1-7/16	2-1/2	12	CD47737	4.53	57	3/4	1-3/4	12	CD47757	4.53
18	2-1/8	3-1/4	12	CD47718	5.97	38	1-7/16	2-1/2	12	CD47738	4.53	58	11/16	1-5/8	12	CD47758	4.53
19	2-1/8	3-1/4	12	CD47719	5.97	39	1-3/8	2-3/8	12	CD47739	4.53	59	11/16	1-5/8	12	CD47759	4.53
20	2-1/8	3-1/4	12	CD47720	5.97	40	1-3/8	2-3/8	12	CD47740	4.53	60	11/16	1-5/8	12	CD47760	4.53

FOR COATING INFORMATION SEE PAGE 5.

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 207-208.

JOBBER LENGTH - 118° POINT



SERIES 400
OXIDE FINISH

**TAKE 55%
OFF LIST
PRICES**

FRACTIONAL SIZES						FRACTIONAL SIZES						FRACTIONAL SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
1/16	7/8	1-7/8	12	CD40004	1.60	9/32	2-15/16	4-1/4	6	CD40018	4.53	1/2	4-1/2	6	6	CD40032	12.54
5/64	1	2	12	CD40005	1.60	19/64	3-1/16	4-3/8	6	CD40019	4.98	33/64	4-13/16	6-5/8	1	CD40033	29.96
3/32	1-1/4	2-1/4	12	CD40006	1.60	5/16	3-3/16	4-1/2	6	CD40020	5.18	17/32	4-13/16	6-5/8	1	CD40034	31.39
7/64	1-1/2	2-5/8	12	CD40007	1.60	21/64	3-5/16	4-5/8	6	CD40021	5.79	35/64	4-13/16	6-5/8	1	CD40035	33.98
1/8	1-5/8	2-3/4	12	CD40008	1.60	11/32	3-7/16	4-3/4	6	CD40022	6.20	9/16	4-13/16	6-5/8	1	CD40036	35.58
9/64	1-3/4	2-7/8	12	CD40009	1.70	23/64	3-1/2	4-7/8	6	CD40023	6.82	37/64	4-13/16	6-5/8	1	CD40037	35.69
5/32	2	3-1/8	12	CD40010	1.77	3/8	3-5/8	5	6	CD40024	7.16	19/32	5-3/16	7-1/8	1	CD40038	36.67
11/64	2-1/8	3-1/4	12	CD40011	1.91	25/64	3-3/4	5-1/8	6	CD40025	7.74	39/64	5-3/16	7-1/8	1	CD40039	40.29
3/16	2-5/16	3-1/2	12	CD40012	2.08	13/32	3-7/8	5-1/4	6	CD40026	8.45	5/8	5-3/16	7-1/8	1	CD40040	39.33
13/64	2-7/16	3-5/8	12	CD40013	2.35	27/64	3-15/16	5-3/8	6	CD40027	9.00	41/64	5-3/16	7-1/8	1	CD40041	43.01
7/32	2-1/2	3-3/4	12	CD40014	2.59	7/16	4-1/16	5-1/2	6	CD40028	9.82	21/32	5-3/16	7-1/8	1	CD40042	41.55
15/64	2-5/8	3-7/8	12	CD40015	2.90	29/64	4-3/16	5-5/8	6	CD40029	10.46	43/64	5-5/8	7-5/8	1	CD40043	48.84
1/4	2-3/4	4	12	CD40016	2.97	15/32	4-5/16	5-3/4	6	CD40030	11.38	11/16	5-5/8	7-5/8	1	CD40044	47.79
17/64	2-7/8	4-1/8	6	CD40017	4.26	31/64	4-3/8	5-7/8	6	CD40031	12.03	-	-	-	-	-	-

LETTER SIZES						LETTER SIZES						LETTER SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
A	2-5/8	3-7/8	12	CD40301	2.90	J	2-7/8	4-1/8	6	CD40310	4.43	S	3-1/2	4-7/8	6	CD40319	6.82
B	2-3/4	4	12	CD40302	2.97	K	2-15/16	4-1/4	6	CD40311	4.53	T	3-1/2	4-7/8	6	CD40320	7.16
C	2-3/4	4	12	CD40303	2.97	L	2-15/16	4-1/4	6	CD40312	4.74	U	3-5/8	5	6	CD40321	7.74
D	2-3/4	4	12	CD40304	3.07	M	3-1/16	4-3/8	6	CD40313	5.01	V	3-5/8	5	6	CD40322	8.01
E	2-3/4	4	12	CD40305	3.10	N	3-1/16	4-3/8	6	CD40314	5.18	W	3-3/4	5-1/8	6	CD40323	8.52
F	2-7/8	4-1/8	6	CD40306	4.29	O	3-3/16	4-1/2	6	CD40315	5.62	X	3-3/4	5-1/8	6	CD40324	9.03
G	2-7/8	4-1/8	6	CD40307	4.12	P	3-5/16	4-5/8	6	CD40316	6.03	Y	3-7/8	5-1/4	6	CD40325	9.48
H	2-7/8	4-1/8	6	CD40308	4.19	Q	3-7/16	4-3/4	6	CD40317	6.27	Z	3-7/8	5-1/4	6	CD40326	9.68
I	2-7/8	4-1/8	6	CD40309	4.29	R	3-7/16	4-3/4	6	CD40318	6.51	-	-	-	-	-	-

WIRE SIZES						WIRE SIZES						WIRE SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
1	2-5/8	3-7/8	12	CD40201	3.17	21	2-1/8	3-1/4	12	CD40221	2.01	41	1-3/8	2-3/8	12	CD40241	1.47
2	2-5/8	3-7/8	12	CD40202	3.17	22	2	3-1/8	12	CD40222	1.94	42	1-1/4	2-1/4	12	CD40242	1.47
3	2-1/2	3-3/4	12	CD40203	2.90	23	2	3-1/8	12	CD40223	1.94	43	1-1/4	2-1/4	12	CD40243	1.47
4	2-1/2	3-3/4	12	CD40204	2.90	24	2	3-1/8	12	CD40224	1.94	44	1-1/8	2-1/8	12	CD40244	1.47
5	2-1/2	3-3/4	12	CD40205	2.86	25	1-7/8	3	12	CD40225	1.67	45	1-1/8	2-1/8	12	CD40245	1.53
6	2-1/2	3-3/4	12	CD40206	2.86	26	1-7/8	3	12	CD40226	1.67	46	1-1/8	2-1/8	12	CD40246	1.53
7	2-7/16	3-5/8	12	CD40207	2.76	27	1-7/8	3	12	CD40227	1.67	47	1	2	12	CD40247	1.53
8	2-7/16	3-5/8	12	CD40208	2.76	28	1-3/4	2-7/8	12	CD40228	1.53	48	1	2	12	CD40248	1.53
9	2-7/16	3-5/8	12	CD40209	2.73	29	1-3/4	2-7/8	12	CD40229	1.53	49	1	2	12	CD40249	1.53
10	2-7/16	3-5/8	12	CD40210	2.49	30	1-5/8	2-3/4	12	CD40230	1.50	50	1	2	12	CD40250	1.53
11	2-5/16	3-1/2	12	CD40211	2.49	31	1-5/8	2-3/4	12	CD40231	1.47	51	1	2	12	CD40251	1.53
12	2-5/16	3-1/2	12	CD40212	2.49	32	1-5/8	2-3/4	12	CD40232	1.47	52	7/8	1-7/8	12	CD40252	1.53
13	2-5/16	3-1/2	12	CD40213	2.49	33	1-1/2	2-5/8	12	CD40233	1.47	53	7/8	1-7/8	12	CD40253	1.53
14	2-3/16	3-3/8	12	CD40214	2.35	34	1-1/2	2-5/8	12	CD40234	1.47	54	7/8	1-7/8	12	CD40254	1.64
15	2-3/16	3-3/8	12	CD40215	2.35	35	1-1/2	2-5/8	12	CD40235	1.47	55	7/8	1-7/8	12	CD40255	1.64
16	2-3/16	3-3/8	12	CD40216	2.35	36	1-7/16	2-1/2	12	CD40236	1.47	56	3/4	1-3/4	12	CD40256	1.64
17	2-3/16	3-3/8	12	CD40217	2.25	37	1-7/16	2-1/2	12	CD40237	1.47	57	3/4	1-3/4	12	CD40257	1.81
18	2-1/8	3-1/4	12	CD40218	2.25	38	1-7/16	2-1/2	12	CD40238	1.47	58	11/16	1-5/8	12	CD40258	1.81
19	2-1/8	3-1/4	12	CD40219	2.25	39	1-3/8	2-3/8	12	CD40239	1.47	59	11/16	1-5/8	12	CD40259	1.81
20	2-1/8	3-1/4	12	CD40220	2.01	40	1-3/8	2-3/8	12	CD40240	1.47	60	11/16	1-5/8	12	CD40260	1.81

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 207-208.

**TAKE 55%
OFF LIST
PRICES**

JOBBER LENGTH - 118° POINT


SERIES 420
OXIDE FINISH

METRIC SIZES

SIZE (mm)	FLUTE LENGTH	OVERALL LENGTH	PKG. QTY.	ITEM#	LIST PRICE
1.00	17	41	12	CD42100	2.10
1.05	17	41	12	CD42105	2.31
1.10	19	44	12	CD42110	2.20
1.15	19	44	12	CD42115	2.24
1.20	22	48	12	CD42120	2.20
1.25	22	48	12	CD42125	2.24
1.30	22	48	12	CD42130	2.20
1.35	22	48	12	CD42135	2.31
1.40	22	48	12	CD42140	2.20
1.50	22	48	12	CD42150	2.20
1.60	22	48	12	CD42160	2.20
1.70	25	51	12	CD42170	2.24
1.80	25	51	12	CD42180	2.24
1.90	25	51	12	CD42190	2.24
2.00	25	51	12	CD42200	2.24
2.50	35	60	12	CD42250	2.35
3.00	41	70	12	CD42300	2.46
3.50	45	73	12	CD42350	2.57
4.00	54	83	12	CD42400	2.67
4.50	56	86	12	CD42450	3.00
5.00	62	92	12	CD42500	3.40
5.50	64	95	12	CD42550	3.83
6.00	70	102	12	CD42600	4.15
6.50	73	105	6	CD42650	5.31
7.00	73	105	6	CD42700	5.53
7.50	78	111	6	CD42750	6.58
8.00	81	114	6	CD42800	7.23
8.50	87	121	6	CD42850	8.27
9.00	89	124	6	CD42900	9.32
9.50	92	127	6	CD42950	9.75
10.00	95	130	6	CD43100	10.48
10.50	98	133	6	CD43105	11.92
11.00	103	140	6	CD43110	12.25
11.50	106	143	6	CD43115	13.77
12.00	111	149	6	CD43120	15.17
12.50	114	152	6	CD43125	15.50
13.00	114	152	6	CD43130	25.69

NOTE: ALL DIMENSIONS IN TABLE ARE METRIC (mm)

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 207-208.

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



SERIES 440
OXIDE FINISH

**TAKE 55%
OFF LIST
PRICES**

FRACTIONAL SIZES						FRACTIONAL SIZES						FRACTIONAL SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
1/16	7/8	1-7/8	12	CD44004	1.60	7/32	2-1/2	3-3/4	12	CD44014	3.03	3/8	3-5/8	5	6	CD44024	8.21
5/64	1	2	12	CD44005	1.60	15/64	2-5/8	3-7/8	12	CD44015	3.31	25/64	3-3/4	5-1/8	6	CD44025	8.93
3/32	1-1/4	2-1/4	12	CD44006	1.60	1/4	2-3/4	4	12	CD44016	3.51	13/32	3-7/8	5-1/4	6	CD44026	9.68
7/64	1-1/2	2-5/8	12	CD44007	1.60	17/64	2-7/8	4-1/8	6	CD44017	4.84	27/64	3-15/16	5-3/8	6	CD44027	10.43
1/8	1-5/8	2-3/4	12	CD44008	1.60	9/32	2-15/16	4-1/4	6	CD44018	5.25	7/16	4-1/16	5-1/2	6	CD44028	11.32
9/64	1-3/4	2-7/8	12	CD44009	1.74	19/64	3-1/16	4-3/8	6	CD44019	5.79	29/64	4-3/16	5-5/8	6	CD44029	12.07
5/32	2	3-1/8	12	CD44010	2.11	5/16	3-3/16	4-1/2	6	CD44020	5.96	15/32	4-5/16	5-3/4	6	CD44030	13.12
11/64	2-1/8	3-1/4	12	CD44011	2.25	21/64	3-5/16	4-5/8	6	CD44021	6.75	31/64	4-3/8	5-7/8	6	CD44031	13.87
3/16	2-5/16	3-1/2	12	CD44012	2.56	11/32	3-7/16	4-3/4	6	CD44022	7.16	1/2	4-1/2	6	6	CD44032	14.59
13/64	2-7/16	3-5/8	12	CD44013	2.76	23/64	3-1/2	4-7/8	6	CD44023	7.53	-	-	-	-	-	-

LETTER SIZES						LETTER SIZES						LETTER SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
A	2-5/8	3-7/8	12	CD44301	3.78	J	2-7/8	4-1/8	6	CD44310	5.83	S	3-1/2	4-7/8	6	CD44319	9.20
B	2-3/4	4	12	CD44302	3.78	K	2-15/16	4-1/4	6	CD44311	5.83	T	3-1/2	4-7/8	6	CD44320	9.20
C	2-3/4	4	12	CD44303	3.78	L	2-15/16	4-1/4	6	CD44312	5.83	U	3-5/8	5	6	CD44321	9.78
D	2-3/4	4	12	CD44304	3.78	M	3-1/16	4-3/8	6	CD44313	7.16	V	3-5/8	5	6	CD44322	9.78
E	2-3/4	4	12	CD44305	3.78	N	3-1/16	4-3/8	6	CD44314	7.16	W	3-3/4	5-1/8	6	CD44323	11.11
F	2-7/8	4-1/8	6	CD44306	4.81	O	3-3/16	4-1/2	6	CD44315	7.16	X	3-3/4	5-1/8	6	CD44324	11.11
G	2-7/8	4-1/8	6	CD44307	4.81	P	3-5/16	4-5/8	6	CD44316	8.08	Y	3-7/8	5-1/4	6	CD44325	12.10
H	2-7/8	4-1/8	6	CD44308	4.81	Q	3-7/16	4-3/4	6	CD44317	8.08	Z	3-7/8	5-1/4	6	CD44326	12.10
I	2-7/8	4-1/8	6	CD44309	4.81	R	3-7/16	4-3/4	6	CD44318	8.08	-	-	-	-	-	-

WIRE SIZES						WIRE SIZES						WIRE SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
1	2-5/8	3-7/8	12	CD44201	3.27	21	2-1/8	3-1/4	12	CD44221	2.59	41	1-3/8	2-3/8	12	CD44241	2.18
2	2-5/8	3-7/8	12	CD44202	3.27	22	2	3-1/8	12	CD44222	2.59	42	1-1/4	2-1/4	12	CD44242	2.18
3	2-1/2	3-3/4	12	CD44203	3.03	23	2	3-1/8	12	CD44223	2.59	43	1-1/4	2-1/4	12	CD44243	2.18
4	2-1/2	3-3/4	12	CD44204	3.03	24	2	3-1/8	12	CD44224	2.59	44	1-1/8	2-1/8	12	CD44244	2.18
5	2-1/2	3-3/4	12	CD44205	3.03	25	1-7/8	3	12	CD44225	2.59	45	1-1/8	2-1/8	12	CD44245	2.18
6	2-1/2	3-3/4	12	CD44206	3.03	26	1-7/8	3	12	CD44226	2.59	46	1-1/8	2-1/8	12	CD44246	2.18
7	2-7/16	3-5/8	12	CD44207	2.86	27	1-7/8	3	12	CD44227	2.59	47	1	2	12	CD44247	2.18
8	2-7/16	3-5/8	12	CD44208	2.90	28	1-3/4	2-7/8	12	CD44228	2.59	48	1	2	12	CD44248	2.18
9	2-7/16	3-5/8	12	CD44209	2.90	29	1-3/4	2-7/8	12	CD44229	2.08	49	1	2	12	CD44249	2.18
10	2-7/16	3-5/8	12	CD44210	2.62	30	1-5/8	2-3/4	12	CD44230	2.08	50	1	2	12	CD44250	2.18
11	2-5/16	3-1/2	12	CD44211	2.62	31	1-5/8	2-3/4	12	CD44231	2.28	51	1	2	12	CD44251	2.18
12	2-5/16	3-1/2	12	CD44212	2.62	32	1-5/8	2-3/4	12	CD44232	2.28	52	7/8	1-7/8	12	CD44252	2.18
13	2-5/16	3-1/2	12	CD44213	2.90	33	1-1/2	2-5/8	12	CD44233	2.28	53	7/8	1-7/8	12	CD44253	2.18
14	2-3/16	3-3/8	12	CD44214	2.90	34	1-1/2	2-5/8	12	CD44234	2.28	54	7/8	1-7/8	12	CD44254	2.18
15	2-3/16	3-3/8	12	CD44215	2.90	35	1-1/2	2-5/8	12	CD44235	2.28	55	7/8	1-7/8	12	CD44255	2.18
16	2-3/16	3-3/8	12	CD44216	2.90	36	1-7/16	2-1/2	12	CD44236	2.28	56	3/4	1-3/4	12	CD44256	2.18
17	2-3/16	3-3/8	12	CD44217	2.90	37	1-7/16	2-1/2	12	CD44237	2.28	57	3/4	1-3/4	12	CD44257	2.18
18	2-1/8	3-1/4	12	CD44218	2.90	38	1-7/16	2-1/2	12	CD44238	2.28	58	11/16	1-5/8	12	CD44258	2.18
19	2-1/8	3-1/4	12	CD44219	2.76	39	1-3/8	2-3/8	12	CD44239	2.28	59	11/16	1-5/8	12	CD44259	2.18
20	2-1/8	3-1/4	12	CD44220	2.76	40	1-3/8	2-3/8	12	CD44240	2.28	60	11/16	1-5/8	12	CD44260	2.18

NOTE: SIZES BELOW 1/16" ARE NOT SPLIT POINT.
FOR TECHNICAL INFORMATION PLEASE SEE PAGES 207-208.

**TAKE 55%
OFF LIST
PRICES**

STANDARD LENGTH - HEAVY DUTY - 135° SPLIT POINT - TYPE "B"



SERIES 445
BLACK & GOLD

FRACTIONAL SIZES						FRACTIONAL SIZES						FRACTIONAL SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
1/16	7/8	1-7/8	12	CD44504	1.84	7/32	2-1/2	3-3/4	12	CD44514	3.68	3/8	3-5/8	5	6	CD44524	9.37
5/64	1	2	12	CD44505	2.01	15/64	2-5/8	3-7/8	12	CD44515	4.06	25/64	3-3/4	5-1/8	6	CD44525	10.19
3/32	1-1/4	2-1/4	12	CD44506	1.84	1/4	2-3/4	4	12	CD44516	4.26	13/32	3-7/8	5-1/4	6	CD44526	11.21
7/64	1-1/2	2-5/8	12	CD44507	1.91	17/64	2-7/8	4-1/8	6	CD44517	5.73	27/64	3-15/16	5-3/8	6	CD44527	11.96
1/8	1-5/8	2-3/4	12	CD44508	2.11	9/32	2-15/16	4-1/4	6	CD44518	6.17	7/16	4-1/16	5-1/2	6	CD44528	12.88
9/64	1-3/4	2-7/8	12	CD44509	2.22	19/64	3-1/16	4-3/8	6	CD44519	6.78	29/64	4-3/16	5-5/8	6	CD44529	13.70
5/32	2	3-1/8	12	CD44510	2.66	5/16	3-3/16	4-1/2	6	CD44520	7.02	15/32	4-5/16	5-3/4	6	CD44530	14.89
11/64	2-1/8	3-1/4	12	CD44511	2.79	21/64	3-5/16	4-5/8	6	CD44521	7.74	31/64	4-3/8	5-7/8	6	CD44531	15.71
3/16	2-5/16	3-1/2	12	CD44512	3.10	11/32	3-7/16	4-3/4	6	CD44522	8.28	1/2	4-1/2	6	6	CD44532	16.43
13/64	2-7/16	3-5/8	12	CD44513	3.37	23/64	3-1/2	4-7/8	6	CD44523	8.96	-	-	-	-	-	-

LETTER SIZES						LETTER SIZES						LETTER SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
A	2-5/8	3-7/8	12	CD44801	5.97	J	2-7/8	4-1/8	6	CD44810	7.56	S	3-1/2	4-7/8	6	CD44819	11.61
B	2-3/4	4	12	CD44802	5.97	K	2-15/16	4-1/4	6	CD44811	8.43	T	3-1/2	4-7/8	6	CD44820	13.06
C	2-3/4	4	12	CD44803	5.97	L	2-15/16	4-1/4	6	CD44812	8.14	U	3-5/8	5	6	CD44821	13.06
D	2-3/4	4	12	CD44804	5.78	M	3-1/16	4-3/8	6	CD44813	8.96	V	3-5/8	5	6	CD44822	13.30
E	2-3/4	4	12	CD44805	4.82	N	3-1/16	4-3/8	6	CD44814	8.96	W	3-3/4	5-1/8	6	CD44823	16.28
F	2-7/8	4-1/8	6	CD44806	6.46	O	3-3/16	4-1/2	6	CD44815	8.96	X	3-3/4	5-1/8	6	CD44824	19.22
G	2-7/8	4-1/8	6	CD44807	6.99	P	3-5/16	4-5/8	6	CD44816	10.02	Y	3-7/8	5-1/4	6	CD44825	19.46
H	2-7/8	4-1/8	6	CD44808	7.13	Q	3-7/16	4-3/4	6	CD44817	10.31	Z	3-7/8	5-1/4	6	CD44826	19.90
I	2-7/8	4-1/8	6	CD44809	7.13	R	3-7/16	4-3/4	6	CD44818	10.74	-	-	-	-	-	-

WIRE SIZES						WIRE SIZES						WIRE SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
1	2-5/8	3-7/8	12	CD44701	5.54	21	2-1/8	3-1/4	12	CD44721	3.44	41	1-3/8	2-3/8	12	CD44741	2.66
2	2-5/8	3-7/8	12	CD44702	5.54	22	2	3-1/8	12	CD44722	3.44	42	1-1/4	2-1/4	12	CD44742	2.66
3	2-1/2	3-3/4	12	CD44703	5.15	23	2	3-1/8	12	CD44723	3.34	43	1-1/4	2-1/4	12	CD44743	2.66
4	2-1/2	3-3/4	12	CD44704	5.15	24	2	3-1/8	12	CD44724	3.34	44	1-1/8	2-1/8	12	CD44744	2.66
5	2-1/2	3-3/4	12	CD44705	5.15	25	1-7/8	3	12	CD44725	3.34	45	1-1/8	2-1/8	12	CD44745	2.66
6	2-1/2	3-3/4	12	CD44706	5.15	26	1-7/8	3	12	CD44726	3.34	46	1-1/8	2-1/8	12	CD44746	2.66
7	2-7/16	3-5/8	12	CD44707	4.53	27	1-7/8	3	12	CD44727	3.24	47	1	2	12	CD44747	2.66
8	2-7/16	3-5/8	12	CD44708	4.53	28	1-3/4	2-7/8	12	CD44728	3.24	48	1	2	12	CD44748	2.66
9	2-7/16	3-5/8	12	CD44709	4.53	29	1-3/4	2-7/8	12	CD44729	3.17	49	1	2	12	CD44749	2.66
10	2-7/16	3-5/8	12	CD44710	4.43	30	1-5/8	2-3/4	12	CD44730	2.76	50	1	2	12	CD44750	2.66
11	2-5/16	3-1/2	12	CD44711	4.09	31	1-5/8	2-3/4	12	CD44731	2.76	51	1	2	12	CD44751	2.66
12	2-5/16	3-1/2	12	CD44712	4.09	32	1-5/8	2-3/4	12	CD44732	2.76	52	7/8	1-7/8	12	CD44752	2.49
13	2-5/16	3-1/2	12	CD44713	3.95	33	1-1/2	2-5/8	12	CD44733	2.76	53	7/8	1-7/8	12	CD44753	2.49
14	2-3/16	3-3/8	12	CD44714	3.95	34	1-1/2	2-5/8	12	CD44734	2.76	54	7/8	1-7/8	12	CD44754	2.49
15	2-3/16	3-3/8	12	CD44715	3.95	35	1-1/2	2-5/8	12	CD44735	2.76	55	7/8	1-7/8	12	CD44755	2.49
16	2-3/16	3-3/8	12	CD44716	3.95	36	1-7/16	2-1/2	12	CD44736	2.66	56	3/4	1-3/4	12	CD44756	2.49
17	2-3/16	3-3/8	12	CD44717	3.95	37	1-7/16	2-1/2	12	CD44737	2.66	57	3/4	1-3/4	12	CD44757	2.49
18	2-1/8	3-1/4	12	CD44718	3.47	38	1-7/16	2-1/2	12	CD44738	2.66	58	11/16	1-5/8	12	CD44758	2.49
19	2-1/8	3-1/4	12	CD44719	3.47	39	1-3/8	2-3/8	12	CD44739	2.66	59	11/16	1-5/8	12	CD44759	2.49
20	2-1/8	3-1/4	12	CD44720	3.47	40	1-3/8	2-3/8	12	CD44740	2.66	60	11/16	1-5/8	12	CD44760	2.49

NOTE: SIZES BELOW 1/16" ARE NOT SPLIT POINT.
FOR TECHNICAL INFORMATION PLEASE SEE PAGES 207-208.

MECHANICS LENGTH - HEAVY DUTY - 135° SPLIT POINT - TYPE "B"



SERIES 455
BLACK & GOLD

**TAKE 55%
OFF LIST
PRICES**

FRACTIONAL SIZES					
SIZE	FLUTE LENGTH	OVERALL LENGTH	PACKAGE QUANTITY	ITEM#	LIST PRICE
1/16	7/8	1-7/8	12	CD45504	2.18
5/64	1	2	12	CD45505	2.35
3/32	1-1/4	2-1/4	12	CD45506	2.35
7/64	1-5/16	2-3/8	12	CD45507	2.42
1/8	1-7/16	2-1/2	12	CD45508	2.52
9/64	1-9/16	2-5/8	12	CD45509	2.59
5/32	1-11/16	2-3/4	12	CD45510	3.10
11/64	1-13/16	2-7/8	12	CD45511	3.17
3/16	1-7/8	3	12	CD45512	3.61
13/64	1-15/16	3-1/8	12	CD45513	3.92
7/32	2	3-1/4	12	CD45514	4.36
15/64	2-1/16	3-3/8	12	CD45515	4.67
1/4	2	3-1/2	12	CD45516	4.94
17/64	2-1/8	3-5/8	6	CD45517	6.20
9/32	2-1/4	3-3/4	6	CD45518	6.20
19/64	2-3/8	3-7/8	6	CD45519	7.36
5/16	2-1/2	4	6	CD45520	7.87
21/64	2-9/16	4-1/16	6	CD45521	8.38
11/32	2-5/8	4-1/8	6	CD45522	9.13
23/64	2-11/16	4-3/16	6	CD45523	9.71
3/8	2-11/16	4-1/4	6	CD45524	10.29
25/64	2-3/4	4-5/16	6	CD45525	10.94
13/32	2-13/16	4-3/8	6	CD45526	11.79
27/64	2-7/8	4-7/16	6	CD45527	13.29
7/16	2-15/16	4-1/2	6	CD45528	14.04
29/64	3	4-5/8	6	CD45529	15.30
15/32	3-1/8	4-3/4	6	CD45530	16.39
31/64	3-1/4	4-7/8	6	CD45531	16.74
1/2	3-3/8	5	6	CD45532	17.18

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 207-208.

**TAKE 55%
OFF LIST
PRICES**

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#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
1/16	5/8	1-5/8	12	CD30004	1.87	7/32	1-1/4	2-3/8	12	CD30014	2.83	3/8	1-13/16	3-1/8	6	CD30024	6.27
5/64	11/16	1-11/16	12	CD30005	1.91	15/64	1-5/16	2-7/16	12	CD30015	3.27	25/64	1-7/8	3-1/4	6	CD30025	6.65
3/32	3/4	1-3/4	12	CD30006	1.91	1/4	1-3/8	2-1/2	12	CD30016	3.61	13/32	1-15/16	3-5/16	6	CD30026	7.29
7/64	13/16	1-13/16	12	CD30007	1.91	17/64	1-7/16	2-5/8	6	CD30017	3.72	27/64	2	3-3/8	6	CD30027	7.70
1/8	7/8	1-7/8	12	CD30008	1.91	9/32	1-1/2	2-11/16	6	CD30018	3.92	7/16	1-1/16	3-7/16	6	CD30028	8.42
9/64	15/16	1-15/16	12	CD30009	1.91	19/64	1-9/16	2-3/4	6	CD30019	4.26	29/64	2-1/8	3-9/16	6	CD30029	8.93
5/32	1	2-1/16	12	CD30010	2.08	5/16	1-5/8	2-13/16	6	CD30020	4.53	15/32	2-1/8	3-5/8	6	CD30030	9.82
11/64	1-1/16	2-1/8	12	CD30011	2.08	21/64	1-11/16	2-15/16	6	CD30021	5.08	31/64	2-3/16	3-11/16	6	CD30031	10.19
3/16	1-1/8	2-3/16	12	CD30012	2.42	11/32	1-11/16	3	6	CD30022	5.42	1/2	2-1/4	3-3/4	6	CD30032	10.74
13/64	1-3/16	2-1/4	12	CD30013	2.49	23/64	1-3/4	3-1/16	6	CD30023	5.76	-	-	-	-	-	-

LETTER SIZES						LETTER SIZES						LETTER SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
A	1-5/16	2-7/16	12	CD30301	3.92	J	1-1/2	2-11/16	6	CD30310	6.07	S	1-3/4	3-1/16	6	CD30319	8.86
B	1-3/8	2-1/2	12	CD30302	4.12	K	1-1/2	2-11/16	6	CD30311	6.17	T	1-3/4	3-1/16	6	CD30320	9.07
C	1-3/8	2-1/2	12	CD30303	4.12	L	1-9/16	2-3/4	6	CD30312	6.31	U	1-13/16	3-1/8	6	CD30321	9.78
D	1-3/8	2-1/2	12	CD30304	4.16	M	1-9/16	2-3/4	6	CD30313	6.61	V	1-7/8	3-1/4	6	CD30322	10.40
E	1-3/8	2-1/2	12	CD30305	4.16	N	1-5/8	2-13/16	6	CD30314	6.88	W	1-7/8	3-1/4	6	CD30323	10.77
F	1-7/16	2-5/8	6	CD30306	5.35	O	1-11/16	2-15/16	6	CD30315	7.74	X	1-15/16	3-5/16	6	CD30324	11.42
G	1-7/16	2-5/8	6	CD30307	5.73	P	1-11/16	2-15/16	6	CD30316	7.94	Y	1-15/16	3-5/16	6	CD30325	11.66
H	1-1/2	2-11/16	6	CD30308	5.90	Q	1-11/16	3	6	CD30317	8.28	Z	2	3-3/8	6	CD30326	12.07
I	1-1/2	2-11/16	6	CD30309	5.93	R	1-11/16	3	6	CD30318	8.52	-	-	-	-	-	-

WIRE SIZES						WIRE SIZES						WIRE SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
1	1-5/16	2-7/16	12	CD30201	3.27	21	1-1/16	2-1/8	12	CD30221	2.76	41	13/16	1-13/16	12	CD30241	2.11
2	1-5/16	2-7/16	12	CD30202	3.27	22	1-1/16	2-1/8	12	CD30222	2.69	42	3/4	1-3/4	12	CD30242	2.11
3	1-1/4	2-3/8	12	CD30203	3.37	23	1	2-1/16	12	CD30223	2.69	43	3/4	1-3/4	12	CD30243	2.11
4	1-1/4	2-3/8	12	CD30204	3.37	24	1	2-1/16	12	CD30224	2.69	44	3/4	1-3/4	12	CD30244	2.11
5	1-1/4	2-3/8	12	CD30205	3.37	25	1	2-1/16	12	CD30225	2.69	45	3/4	1-3/4	12	CD30245	2.11
6	1-1/4	2-3/8	12	CD30206	3.37	26	1	2-1/16	12	CD30226	2.69	46	3/4	1-3/4	12	CD30246	2.11
7	1-3/16	2-1/4	12	CD30207	2.90	27	1	2-1/16	12	CD30227	2.69	47	11/16	1-11/16	12	CD30247	2.11
8	1-3/16	2-1/4	12	CD30208	2.90	28	15/16	1-15/16	12	CD30228	2.69	48	11/16	1-11/16	12	CD30248	2.11
9	1-3/16	2-1/4	12	CD30209	2.90	29	15/16	1-15/16	12	CD30229	2.69	49	11/16	1-11/16	12	CD30249	2.11
10	1-3/16	2-1/4	12	CD30210	2.90	30	15/16	1-15/16	12	CD30230	2.11	50	11/16	1-11/16	12	CD30250	2.11
11	1-3/16	2-1/4	12	CD30211	2.90	31	7/8	1-7/8	12	CD30231	2.11	51	11/16	1-11/16	12	CD30251	2.11
12	1-3/16	2-1/4	12	CD30212	2.90	32	7/8	1-7/8	12	CD30232	2.11	52	11/16	1-11/16	12	CD30252	2.11
13	1-1/8	2-3/16	12	CD30213	2.90	33	7/8	1-7/8	12	CD30233	2.11	53	5/8	1-5/8	12	CD30253	2.11
14	1-1/8	2-3/16	12	CD30214	2.90	34	7/8	1-7/8	12	CD30234	2.11	54	5/8	1-5/8	12	CD30254	2.11
15	1-1/8	2-3/16	12	CD30215	2.90	35	7/8	1-7/8	12	CD30235	2.11	55	5/8	1-5/8	12	CD30255	2.11
16	1-1/8	2-3/16	12	CD30216	2.90	36	13/16	1-13/16	12	CD30236	2.11	56	1/2	1-3/8	12	CD30256	2.11
17	1-1/8	2-3/16	12	CD30217	2.90	37	13/16	1-13/16	12	CD30237	2.11	57	1/2	1-3/8	12	CD30257	2.11
18	1-1/16	2-1/8	12	CD30218	2.76	38	13/16	1-13/16	12	CD30238	2.11	58	1/2	1-3/8	12	CD30258	2.11
19	1-1/16	2-1/8	12	CD30219	2.76	39	13/16	1-13/16	12	CD30239	2.11	59	1/2	1-3/8	12	CD30259	2.11
20	1-1/16	2-1/8	12	CD30220	2.76	40	13/16	1-13/16	12	CD30240	2.11	60	1/2	1-3/8	12	CD30260	2.11

NOTE: SIZES BELOW 1/16" ARE NOT SPLIT POINT.
FOR TECHNICAL INFORMATION PLEASE SEE PAGES 207-208.

TAPER LENGTH - 118° POINT



SERIES 525
OXIDE FINISH

**TAKE 55%
OFF LIST
PRICES**

FRACTIONAL SIZES						FRACTIONAL SIZES						FRACTIONAL SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
3/64	1-1/8	2-1/4	12	CD52503	7.68	13/32	4-3/8	7	6	CD52526	27.91	49/64	6	9-7/8	1	CD52549	98.98
1/16	1-3/4	3	12	CD52504	8.00	27/64	4-5/8	7-1/4	6	CD52527	29.61	25/32	6	9-7/8	1	CD52550	98.98
5/64	2	3-3/4	12	CD52505	8.27	7/16	4-5/8	7-1/4	6	CD52528	29.61	51/64	6-1/8	10	1	CD52551	106.86
3/32	2-1/4	4-1/4	12	CD52506	8.76	29/64	4-3/4	7-1/2	6	CD52529	33.69	13/16	6-1/8	10	1	CD52552	106.86
7/64	2-1/2	4-5/8	12	CD52507	10.24	15/32	4-3/4	7-1/2	6	CD52530	33.69	53/64	6-1/8	10	1	CD52553	112.53
1/8	2-3/4	5-1/8	12	CD52508	10.53	31/64	4-3/4	7-3/4	6	CD52531	35.65	27/32	6-1/8	10	1	CD52554	112.53
9/64	3	5-3/8	12	CD52509	14.07	1/2	4-3/4	7-3/4	6	CD52532	35.65	55/64	6-1/8	10	1	CD52555	118.09
5/32	3	5-3/8	12	CD52510	14.21	33/64	4-3/4	8	1	CD52533	47.35	7/8	6-1/8	10	1	CD52556	118.09
11/64	3-3/8	5-3/4	12	CD52511	14.91	17/32	4-3/4	8	1	CD52534	47.35	57/64	6-1/8	10	1	CD52557	123.10
3/16	3-3/8	5-3/4	12	CD52512	13.88	35/64	4-7/8	8-1/4	1	CD52535	49.75	29/32	6-1/8	10	1	CD52558	123.10
13/64	3-5/8	6	12	CD52513	16.94	9/16	4-7/8	8-1/4	1	CD52536	49.75	59/64	6-1/8	10-3/4	1	CD52559	133.82
7/32	3-5/8	6	12	CD52514	18.26	37/64	4-7/8	8-3/4	1	CD52537	58.22	15/16	6-1/8	10-3/4	1	CD52560	133.82
15/64	3-3/4	6-1/8	12	CD52515	18.26	19/32	4-7/8	8-3/4	1	CD52538	58.22	61/64	6-3/8	11	1	CD52561	147.70
1/4	3-3/4	6-1/8	12	CD52516	15.76	39/64	4-7/8	8-3/4	1	CD52539	60.32	31/32	6-3/8	11	1	CD52562	147.70
17/64	3-7/8	6-1/4	6	CD52517	19.11	5/8	4-7/8	8-3/4	1	CD52540	60.32	63/64	6-3/8	11	1	CD52563	153.96
9/32	3-7/8	6-1/4	6	CD52518	19.11	41/64	5-1/8	9	1	CD52541	68.68	1	6-3/8	11	1	CD52564	153.96
19/64	4	6-3/8	6	CD52519	20.81	21/32	5-1/8	9	1	CD52542	68.68	1-1/16	6-5/8	11-1/4	1	CD52568	190.78
5/16	4	6-3/8	6	CD52520	20.81	43/64	5-3/8	9-1/4	1	CD52543	81.23	1-1/8	7-1/8	11-3/4	1	CD52572	212.36
21/64	4-1/8	6-1/2	6	CD52521	20.81	11/16	5-3/8	9-1/4	1	CD52544	81.23	1-3/16	7-3/8	12	1	CD52576	248.89
11/32	4-1/8	6-1/2	6	CD52522	20.81	45/64	5-5/8	9-1/2	1	CD52545	84.95	1-1/4	7-7/8	12-1/2	1	CD52580	266.56
23/64	4-1/4	6-3/4	6	CD52523	24.52	23/32	5-5/8	9-1/2	1	CD52546	84.95	1-5/16	8-5/8	14-1/4	1	CD52584	318.08
3/8	4-1/4	6-3/4	6	CD52524	24.52	47/64	5-7/8	9-3/4	1	CD52547	91.36	1-3/8	8-7/8	14-1/2	1	CD52588	341.13
25/64	4-3/8	6-3/4	6	CD52525	27.91	3/4	5-7/8	9-3/4	1	CD52548	91.36	-	-	-	-	-	-

WIRE SIZES						WIRE SIZES						WIRE SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
1	3-3/4	6-1/8	12	CD52701	19.15	15	3-3/8	5-3/4	12	CD52715	16.83	29	3	5-3/8	12	CD52729	16.83
2	3-3/4	6-1/8	12	CD52702	19.15	16	3-3/8	5-3/4	12	CD52716	16.83	30	3	5-3/8	12	CD52730	16.83
3	3-5/8	6	12	CD52703	18.52	17	3-3/8	5-3/4	12	CD52717	16.83	31	2-3/4	5-1/8	12	CD52731	16.50
4	3-5/8	6	12	CD52704	18.52	18	3-3/8	5-3/4	12	CD52718	16.83	32	2-3/4	5-1/8	12	CD52732	16.50
5	3-5/8	6	12	CD52705	18.52	19	3-3/8	5-3/4	12	CD52719	16.83	33	2-3/4	5-1/8	12	CD52733	16.50
6	3-5/8	6	12	CD52706	18.52	20	3-3/8	5-3/4	12	CD52720	16.83	34	2-3/4	5-1/8	12	CD52734	16.50
7	3-5/8	6	12	CD52707	18.52	21	3-3/8	5-3/4	12	CD52721	16.83	35	2-3/4	5-1/8	12	CD52735	16.50
8	3-5/8	6	12	CD52708	18.52	22	3-3/8	5-3/4	12	CD52722	16.83	36	2-1/2	4-5/8	12	CD52736	12.34
9	3-5/8	6	12	CD52709	18.52	23	3	5-3/8	12	CD52723	16.83	37	2-1/2	4-5/8	12	CD52737	12.34
10	3-5/8	6	12	CD52710	18.52	24	3	5-3/8	12	CD52724	16.83	38	2-1/2	4-5/8	12	CD52738	12.34
11	3-5/8	6	12	CD52711	18.52	25	3	5-3/8	12	CD52725	16.83	39	2-1/2	4-5/8	12	CD52739	10.83
12	3-5/8	6	12	CD52712	18.52	26	3	5-3/8	12	CD52726	16.83	40	2-1/2	4-5/8	12	CD52740	10.83
13	3-3/8	5-3/4	12	CD52713	16.83	27	3	5-3/8	12	CD52727	16.83	-	-	-	-	-	-
14	3-3/8	5-3/4	12	CD52714	16.83	28	3	5-3/8	12	CD52728	16.83	-	-	-	-	-	-

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 207-208.

**TAKE 55%
OFF LIST
PRICES**

TAPER SHANK - 118° POINT



SERIES 550
OXIDE FINISH

FRACTIONAL SIZES						FRACTIONAL SIZES					
SIZE	MORSE TAPER #	FLUTE LENGTH	OVERALL LENGTH	ITEM#	LIST PRICE	SIZE	MORSE TAPER #	FLUTE LENGTH	OVERALL LENGTH	ITEM#	LIST PRICE
3/16	#1	2-1/2	5-3/4	CD55012	37.23	13/16	#3	6-1/8	10-3/4	CD55052	124.79
13/64	#1	2-3/4	6	CD55013	37.23	53/64	#3	6-1/8	10-3/4	CD55053	138.24
7/32	#1	2-3/4	6	CD55014	37.23	27/32	#3	6-1/8	10-3/4	CD55054	134.52
15/64	#1	2-7/8	6-1/8	CD55015	37.23	55/64	#3	6-1/8	10-3/4	CD55055	151.79
1/4	#1	2-7/8	6-1/8	CD55016	37.23	7/8	#3	6-1/8	10-3/4	CD55056	138.60
17/64	#1	3	6-1/4	CD55017	37.23	57/64	#3	6-1/8	10-3/4	CD55057	146.37
9/32	#1	3	6-1/4	CD55018	37.23	29/32	#3	6-1/8	10-3/4	CD55058	146.37
19/64	#1	3-1/8	6-3/8	CD55019	39.44	59/64	#3	6-1/8	10-3/4	CD55059	148.40
5/16	#1	3-1/8	6-3/8	CD55020	41.46	15/16	#3	6-1/8	10-3/4	CD55060	139.08
21/64	#1	3-1/4	6-1/2	CD55021	41.46	61/64	#3	6-3/8	11	CD55061	152.45
11/32	#1	3-1/4	6-1/2	CD55022	41.46	31/32	#3	6-3/8	11	CD55062	151.42
23/64	#1	3-1/2	6-3/4	CD55023	42.31	63/64	#3	6-3/8	11	CD55063	161.77
3/8	#1	3-1/2	6-3/4	CD55024	42.31	1	#3	6-3/8	11	CD55064	153.96
25/64	#1	3-5/8	7	CD55025	50.26	1-1/64	#3	6-1/2	11-1/8	CD55065	179.00
13/32	#1	3-5/8	7	CD55026	50.26	1-1/32	#3	6-1/2	11-1/8	CD55066	177.67
27/64	#1	3-7/8	7-1/4	CD55027	54.13	1-3/64	#3	6-5/8	11-1/4	CD55067	186.14
7/16	#1	3-7/8	7-1/4	CD55028	54.13	1-1/16	#3	6-5/8	11-1/4	CD55068	177.67
29/64	#1	4-1/8	7-1/2	CD55029	54.13	1-5/64	#4	6-7/8	12-1/2	CD55069	211.48
15/32	#1	4-1/8	7-1/2	CD55030	54.13	1-3/32	#4	6-7/8	12-1/2	CD55070	211.48
31/64	#2	4-3/8	8-1/4	CD55031	59.21	1-7/64	#4	7-1/8	12-3/4	CD55071	219.95
1/2	#2	4-3/8	8-1/4	CD55032	55.42	1-1/8	#4	7-1/8	12-3/4	CD55072	219.95
33/64	#2	4-5/8	8-1/2	CD55033	63.89	1-9/64	#4	7-1/4	12-7/8	CD55073	236.89
17/32	#2	4-5/8	8-1/2	CD55034	65.99	1-5/32	#4	7-1/4	12-7/8	CD55074	228.42
35/64	#2	4-7/8	8-3/4	CD55035	69.52	1-11/64	#4	7-3/8	13	CD55075	236.89
9/16	#2	4-7/8	8-3/4	CD55036	67.68	1-3/16	#4	7-3/8	13	CD55076	236.89
37/64	#2	4-7/8	8-3/4	CD55037	74.02	1-13/64	#4	7-1/2	13-1/8	CD55077	253.79
19/32	#2	4-7/8	8-3/4	CD55038	72.76	1-7/32	#4	7-1/2	13-1/8	CD55078	253.79
39/64	#2	4-7/8	8-3/4	CD55039	77.00	1-1/4	#4	7-7/8	13-1/2	CD55080	265.64
5/8	#2	4-7/8	8-3/4	CD55040	73.61	1-5/16	#4	8-5/8	14-1/4	CD55084	326.55
41/64	#2	5-1/8	9	CD55041	84.62	1-3/8	#4	8-7/8	14-1/2	CD55088	348.53
21/32	#2	5-1/8	9	CD55042	82.93	1-7/16	#4	9-1/8	14-3/4	CD55092	382.37
43/64	#2	5-3/8	9-1/4	CD55043	91.36	1-1/2	#4	9-3/8	15	CD55096	401.01
11/16	#2	5-3/8	9-1/4	CD55044	86.28	1-9/16	#5	9-5/8	16-5/8	CD55102	488.98
45/64	#2	5-5/8	9-1/2	CD55045	94.75	1-5/8	#5	10	17	CD55106	527.90
23/32	#2	5-5/8	9-1/2	CD55046	91.54	1-11/16	#5	10-1/8	17-1/8	CD55110	582.07
47/64	#2	5-7/8	9-3/4	CD55047	101.52	1-3/4	#5	10-1/8	17-1/8	CD55114	619.30
3/4	#2	5-7/8	9-3/4	CD55048	100.68	1-13/16	#5	10-1/8	17-1/8	CD55118	664.96
49/64	#2	6	9-7/8	CD55049	121.33	1-7/8	#5	10-3/8	17-3/8	CD55122	693.72
25/32	#2	6	9-7/8	CD55050	120.63	1-15/16	#5	10-3/8	17-3/8	CD55126	747.88
51/64	#3	6-1/8	10-3/4	CD55051	132.82	2	#5	10-3/8	17-3/8	CD55130	774.95

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 207-208.

SCREW MACHINE LENGTH - HEAVY DUTY - 135° SPLIT POINT - TYPE "J"



SERIES 325
NAS 907 - M42 COBALT
STRAW FINISH

**TAKE 55%
OFF LIST
PRICES**

FRACTIONAL SIZES						FRACTIONAL SIZES						FRACTIONAL SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
1/16	5/8	1-5/8	12	CD32504	2.32	7/32	1-1/4	2-3/8	12	CD32514	5.59	3/8	1-13/16	3-1/8	6	CD32524	13.26
5/64	11/16	1-11/16	12	CD32505	2.32	15/64	1-5/16	2-7/16	12	CD32515	6.00	25/64	1-7/8	3-1/4	6	CD32525	15.17
3/32	3/4	1-3/4	12	CD32506	2.32	1/4	1-3/8	2-1/2	12	CD32516	6.24	13/32	1-15/16	3-5/16	6	CD32526	15.68
7/64	13/16	1-13/16	12	CD32507	2.62	17/64	1-7/16	2-5/8	6	CD32517	7.12	27/64	2	3-3/8	6	CD32527	17.38
1/8	7/8	1-7/8	12	CD32508	3.03	9/32	1-1/2	2-11/16	6	CD32518	7.74	7/16	1-1/16	3-7/16	6	CD32528	17.86
9/64	15/16	1-15/16	12	CD32509	3.03	19/64	1-9/16	2-3/4	6	CD32519	8.96	29/64	2-1/8	3-9/16	6	CD32529	21.44
5/32	1	2-1/16	12	CD32510	3.34	5/16	1-5/8	2-13/16	6	CD32520	9.61	15/32	2-1/8	3-5/8	6	CD32530	21.44
11/64	1-1/16	2-1/8	12	CD32511	3.78	21/64	1-11/16	2-15/16	6	CD32521	10.67	31/64	2-3/16	3-11/16	6	CD32531	21.44
3/16	1-1/8	2-3/16	12	CD32512	4.43	11/32	1-11/16	3	6	CD32522	11.52	1/2	2-1/4	3-3/4	6	CD32532	21.44
13/64	1-3/16	2-1/4	12	CD32513	5.08	23/64	1-3/4	3-1/16	6	CD32523	13.26	-	-	-	-	-	-

LETTER SIZES						LETTER SIZES						LETTER SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
A	1-5/16	2-7/16	12	CD32701	7.16	J	1-1/2	2-11/16	6	CD32710	8.52	S	1-3/4	3-1/16	6	CD32719	16.19
B	1-3/8	2-1/2	12	CD32702	7.60	K	1-1/2	2-11/16	6	CD32711	8.52	T	1-3/4	3-1/16	6	CD32720	16.19
C	1-3/8	2-1/2	12	CD32703	7.60	L	1-9/16	2-3/4	6	CD32712	10.12	U	1-13/16	3-1/8	6	CD32721	16.19
D	1-3/8	2-1/2	12	CD32704	7.60	M	1-9/16	2-3/4	6	CD32713	10.12	V	1-7/8	3-1/4	6	CD32722	18.00
E	1-3/8	2-1/2	12	CD32705	6.92	N	1-5/8	2-13/16	6	CD32714	10.87	W	1-7/8	3-1/4	6	CD32723	18.00
F	1-7/16	2-5/8	6	CD32706	8.04	O	1-11/16	2-15/16	6	CD32715	12.03	X	1-15/16	3-5/16	6	CD32724	18.00
G	1-7/16	2-5/8	6	CD32707	8.04	P	1-11/16	2-15/16	6	CD32716	12.03	Y	1-15/16	3-5/16	6	CD32725	18.00
H	1-1/2	2-11/16	6	CD32708	8.52	Q	1-11/16	3	6	CD32717	13.02	Z	2	3-3/8	6	CD32726	20.62
I	1-1/2	2-11/16	6	CD32709	8.52	R	1-11/16	3	6	CD32718	13.02	-	-	-	-	-	-

WIRE SIZES						WIRE SIZES						WIRE SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
1	1-5/16	2-7/16	12	CD32601	6.88	21	1-1/16	2-1/8	12	CD32621	3.58	41	13/16	1-13/16	12	CD32641	2.42
2	1-5/16	2-7/16	12	CD32602	6.88	22	1-1/16	2-1/8	12	CD32622	3.58	42	3/4	1-3/4	12	CD32642	2.39
3	1-1/4	2-3/8	12	CD32603	6.88	23	1	2-1/16	12	CD32623	3.58	43	3/4	1-3/4	12	CD32643	2.39
4	1-1/4	2-3/8	12	CD32604	6.13	24	1	2-1/16	12	CD32624	3.58	44	3/4	1-3/4	12	CD32644	2.39
5	1-1/4	2-3/8	12	CD32605	6.13	25	1	2-1/16	12	CD32625	3.34	45	3/4	1-3/4	12	CD32645	2.39
6	1-1/4	2-3/8	12	CD32606	6.13	26	1	2-1/16	12	CD32626	3.34	46	3/4	1-3/4	12	CD32646	2.39
7	1-3/16	2-1/4	12	CD32607	4.84	27	1	2-1/16	12	CD32627	3.34	47	11/16	1-11/16	12	CD32647	2.39
8	1-3/16	2-1/4	12	CD32608	4.84	28	15/16	1-15/16	12	CD32628	3.03	48	11/16	1-11/16	12	CD32648	2.39
9	1-3/16	2-1/4	12	CD32609	4.84	29	15/16	1-15/16	12	CD32629	3.03	49	11/16	1-11/16	12	CD32649	2.39
10	1-3/16	2-1/4	12	CD32610	4.84	30	15/16	1-15/16	12	CD32630	2.86	50	11/16	1-11/16	12	CD32650	2.39
11	1-3/16	2-1/4	12	CD32611	4.70	31	7/8	1-7/8	12	CD32631	2.86	51	11/16	1-11/16	12	CD32651	2.39
12	1-3/16	2-1/4	12	CD32612	4.70	32	7/8	1-7/8	12	CD32632	2.86	52	11/16	1-11/16	12	CD32652	2.39
13	1-1/8	2-3/16	12	CD32613	4.60	33	7/8	1-7/8	12	CD32633	2.76	53	5/8	1-5/8	12	CD32653	2.69
14	1-1/8	2-3/16	12	CD32614	4.60	34	7/8	1-7/8	12	CD32634	2.76	54	5/8	1-5/8	12	CD32654	2.69
15	1-1/8	2-3/16	12	CD32615	4.60	35	7/8	1-7/8	12	CD32635	2.76	55	5/8	1-5/8	12	CD32655	2.69
16	1-1/8	2-3/16	12	CD32616	4.60	36	13/16	1-13/16	12	CD32636	2.76	56	1/2	1-3/8	12	CD32656	2.69
17	1-1/8	2-3/16	12	CD32617	4.43	37	13/16	1-13/16	12	CD32637	2.76	57	1/2	1-3/8	12	CD32657	2.69
18	1-1/16	2-1/8	12	CD32618	3.78	38	13/16	1-13/16	12	CD32638	2.52	58	1/2	1-3/8	12	CD32658	2.86
19	1-1/16	2-1/8	12	CD32619	3.58	39	13/16	1-13/16	12	CD32639	2.52	59	1/2	1-3/8	12	CD32659	2.86
20	1-1/16	2-1/8	12	CD32620	3.58	40	13/16	1-13/16	12	CD32640	2.52	60	1/2	1-3/8	12	CD32660	2.86

NOTE: ALL COBALT DRILLS HAVE IDENTIFICATION RING ON SHANK

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

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 207-208.

**TAKE 55%
OFF LIST
PRICES**

SCREW MACHINE LENGTH - HEAVY DUTY - 135° SPLIT POINT - TYPE "J"

**SERIES 602**

**NAS 907 - M42 COBALT
ALTIN COATED**

FRACTIONAL SIZES						FRACTIONAL SIZES						FRACTIONAL SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
1/16	5/8	1-5/8	12	CD60204	4.20	7/32	1-1/4	2-3/8	12	CD60214	10.11	3/8	1-13/16	3-1/8	6	CD60224	23.97
5/64	11/16	1-11/16	12	CD60205	4.20	15/64	1-5/16	2-7/16	12	CD60215	10.87	25/64	1-7/8	3-1/4	6	CD60225	27.44
3/32	3/4	1-3/4	12	CD60206	4.20	1/4	1-3/8	2-1/2	12	CD60216	11.29	13/32	1-15/16	3-5/16	6	CD60226	28.31
7/64	13/16	1-13/16	12	CD60207	4.76	17/64	1-7/16	2-5/8	6	CD60217	12.85	27/64	2	3-3/8	6	CD60227	31.37
1/8	7/8	1-7/8	12	CD60208	5.52	9/32	1-1/2	2-11/16	6	CD60218	14.00	7/16	1-1/16	3-7/16	6	CD60228	32.27
9/64	15/16	1-15/16	12	CD60209	5.52	19/64	1-9/16	2-3/4	6	CD60219	16.19	29/64	2-1/8	3-9/16	6	CD60229	38.70
5/32	1	2-1/16	12	CD60210	6.04	5/16	1-5/8	2-13/16	6	CD60220	17.37	15/32	2-1/8	3-5/8	6	CD60230	38.70
11/64	1-1/16	2-1/8	12	CD60211	6.81	21/64	1-11/16	2-15/16	6	CD60221	19.28	31/64	2-3/16	3-11/16	6	CD60231	38.70
3/16	1-1/8	2-3/16	12	CD60212	8.02	11/32	1-11/16	3	6	CD60222	20.84	1/2	2-1/4	3-3/4	6	CD60232	38.70
13/64	1-3/16	2-1/4	12	CD60213	9.14	23/64	1-3/4	3-1/16	6	CD60223	23.97	-	-	-	-	-	-

LETTER SIZES						LETTER SIZES						LETTER SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
A	1-5/16	2-7/16	12	CD60401	12.92	J	1-1/2	2-11/16	6	CD60410	15.42	S	1-3/4	3-1/16	6	CD60419	29.29
B	1-3/8	2-1/2	12	CD60402	13.72	K	1-1/2	2-11/16	6	CD60411	15.42	T	1-3/4	3-1/16	6	CD60420	29.29
C	1-3/8	2-1/2	12	CD60403	13.72	L	1-9/16	2-3/4	6	CD60412	18.27	U	1-13/16	3-1/8	6	CD60421	29.29
D	1-3/8	2-1/2	12	CD60404	13.72	M	1-9/16	2-3/4	6	CD60413	18.27	V	1-7/8	3-1/4	6	CD60422	32.48
E	1-3/8	2-1/2	12	CD60405	12.54	N	1-5/8	2-13/16	6	CD60414	19.63	W	1-7/8	3-1/4	6	CD60423	32.48
F	1-7/16	2-5/8	6	CD60406	14.52	O	1-11/16	2-15/16	6	CD60415	21.75	X	1-15/16	3-5/16	6	CD60424	32.48
G	1-7/16	2-5/8	6	CD60407	14.52	P	1-11/16	2-15/16	6	CD60416	21.75	Y	1-15/16	3-5/16	6	CD60425	32.48
H	1-1/2	2-11/16	6	CD60408	15.42	Q	1-11/16	3	6	CD60417	23.52	Z	2	3-3/8	6	CD60426	37.28
I	1-1/2	2-11/16	6	CD60409	15.42	R	1-11/16	3	6	CD60418	23.52	-	-	-	-	-	-

WIRE SIZES						WIRE SIZES						WIRE SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
1	1-5/16	2-7/16	12	CD60301	12.44	21	1-1/16	2-1/8	12	CD60321	6.46	41	13/16	1-13/16	12	CD60341	4.41
2	1-5/16	2-7/16	12	CD60302	12.44	22	1-1/16	2-1/8	12	CD60322	6.46	42	3/4	1-3/4	12	CD60342	4.34
3	1-1/4	2-3/8	12	CD60303	12.44	23	1	2-1/16	12	CD60323	6.46	43	3/4	1-3/4	12	CD60343	4.34
4	1-1/4	2-3/8	12	CD60304	11.12	24	1	2-1/16	12	CD60324	6.46	44	3/4	1-3/4	12	CD60344	4.34
5	1-1/4	2-3/8	12	CD60305	11.12	25	1	2-1/16	12	CD60325	6.04	45	3/4	1-3/4	12	CD60345	4.34
6	1-1/4	2-3/8	12	CD60306	11.12	26	1	2-1/16	12	CD60326	6.04	46	3/4	1-3/4	12	CD60346	4.34
7	1-3/16	2-1/4	12	CD60307	8.72	27	1	2-1/16	12	CD60327	6.04	47	11/16	1-11/16	12	CD60347	4.34
8	1-3/16	2-1/4	12	CD60308	8.72	28	15/16	1-15/16	12	CD60328	5.52	48	11/16	1-11/16	12	CD60348	4.34
9	1-3/16	2-1/4	12	CD60309	8.72	29	15/16	1-15/16	12	CD60329	5.52	49	11/16	1-11/16	12	CD60349	4.34
10	1-3/16	2-1/4	12	CD60310	8.72	30	15/16	1-15/16	12	CD60330	5.18	50	11/16	1-11/16	12	CD60350	4.34
11	1-3/16	2-1/4	12	CD60311	8.48	31	7/8	1-7/8	12	CD60331	5.18	51	11/16	1-11/16	12	CD60351	4.34
12	1-3/16	2-1/4	12	CD60312	8.48	32	7/8	1-7/8	12	CD60332	5.18	52	11/16	1-11/16	12	CD60352	4.34
13	1-1/8	2-3/16	12	CD60313	8.34	33	7/8	1-7/8	12	CD60333	5.00	53	5/8	1-5/8	12	CD60353	4.86
14	1-1/8	2-3/16	12	CD60314	8.34	34	7/8	1-7/8	12	CD60334	5.00	54	5/8	1-5/8	12	CD60354	4.86
15	1-1/8	2-3/16	12	CD60315	8.34	35	7/8	1-7/8	12	CD60335	5.00	55	5/8	1-5/8	12	CD60355	4.86
16	1-1/8	2-3/16	12	CD60316	8.30	36	13/16	1-13/16	12	CD60336	5.00	56	1/2	1-3/8	12	CD60356	4.86
17	1-1/8	2-3/16	12	CD60317	8.02	37	13/16	1-13/16	12	CD60337	5.00	57	1/2	1-3/8	12	CD60357	4.86
18	1-1/16	2-1/8	12	CD60318	6.81	38	13/16	1-13/16	12	CD60338	4.55	58	1/2	1-3/8	12	CD60358	5.18
19	1-1/16	2-1/8	12	CD60319	6.46	39	13/16	1-13/16	12	CD60339	4.55	59	1/2	1-3/8	12	CD60359	5.18
20	1-1/16	2-1/8	12	CD60320	6.46	40	13/16	1-13/16	12	CD60340	4.55	60	1/2	1-3/8	12	CD60360	5.18

- 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 5. FOR TECHNICAL INFORMATION PLEASE SEE PAGES 207-208.**

JOBBER LENGTH - HEAVY DUTY - 135° SPLIT POINT - TYPE "J"



SERIES 500
NAS 907 - M42 COBALT
STRAW FINISH

**TAKE 55%
OFF LIST
PRICES**

FRACTIONAL SIZES						FRACTIONAL SIZES						FRACTIONAL SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
1/16	7/8	1-7/8	12	CD50004	2.69	7/32	2-1/2	3-3/4	12	CD50014	6.03	3/8	3-5/8	5	6	CD50024	14.72
5/64	1	2	12	CD50005	2.69	15/64	2-5/8	3-7/8	12	CD50015	6.41	25/64	3-3/4	5-1/8	6	CD50025	16.74
3/32	1-1/4	2-1/4	12	CD50006	2.69	1/4	2-3/4	4	12	CD50016	6.85	13/32	3-7/8	5-1/4	6	CD50026	17.45
7/64	1-1/2	2-5/8	12	CD50007	2.83	17/64	2-7/8	4-1/8	6	CD50017	7.77	27/64	3-15/16	5-3/8	6	CD50027	19.29
1/8	1-5/8	2-3/4	12	CD50008	3.48	9/32	2-15/16	4-1/4	6	CD50018	8.15	7/16	4-1/16	5-1/2	6	CD50028	19.73
9/64	1-3/4	2-7/8	12	CD50009	3.48	19/64	3-1/16	4-3/8	6	CD50019	9.92	29/64	4-3/16	5-5/8	6	CD50029	23.69
5/32	2	3-1/8	12	CD50010	3.89	5/16	3-3/16	4-1/2	6	CD50020	10.57	15/32	4-5/16	5-3/4	6	CD50030	24.13
11/64	2-1/8	3-1/4	12	CD50011	4.09	21/64	3-5/16	4-5/8	6	CD50021	11.69	31/64	4-3/8	5-7/8	6	CD50031	24.27
3/16	2-5/16	3-1/2	12	CD50012	4.60	11/32	3-7/16	4-3/4	6	CD50022	12.85	1/2	4-1/2	6	6	CD50032	24.27
13/64	2-7/16	3-5/8	12	CD50013	5.52	23/64	3-1/2	4-7/8	6	CD50023	14.72	-	-	-	-	-	-

LETTER SIZES						LETTER SIZES						LETTER SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
A	2-5/8	3-7/8	12	CD50301	7.26	J	2-7/8	4-1/8	6	CD50310	9.44	S	3-1/2	4-7/8	6	CD50319	16.94
B	2-3/4	4	12	CD50302	8.38	K	2-15/16	4-1/4	6	CD50311	9.44	T	3-1/2	4-7/8	6	CD50320	16.94
C	2-3/4	4	12	CD50303	8.38	L	2-15/16	4-1/4	6	CD50312	10.70	U	3-5/8	5	6	CD50321	16.94
D	2-3/4	4	12	CD50304	9.44	M	3-1/16	4-3/8	6	CD50313	11.35	V	3-5/8	5	6	CD50322	18.68
E	2-3/4	4	12	CD50305	6.85	N	3-1/16	4-3/8	6	CD50314	11.35	W	3-3/4	5-1/8	6	CD50323	18.68
F	2-7/8	4-1/8	6	CD50306	8.38	O	3-3/16	4-1/2	6	CD50315	12.54	X	3-3/4	5-1/8	6	CD50324	18.68
G	2-7/8	4-1/8	6	CD50307	8.38	P	3-5/16	4-5/8	6	CD50316	13.33	Y	3-7/8	5-1/4	6	CD50325	19.80
H	2-7/8	4-1/8	6	CD50308	9.44	Q	3-7/16	4-3/4	6	CD50317	13.84	Z	3-7/8	5-1/4	6	CD50326	21.54
I	2-7/8	4-1/8	6	CD50309	9.44	R	3-7/16	4-3/4	6	CD50318	13.84	-	-	-	-	-	-

WIRE SIZES						WIRE SIZES						WIRE SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
1	2-5/8	3-7/8	12	CD50201	7.33	21	2-1/8	3-1/4	12	CD50221	4.12	41	1-3/8	2-3/8	12	CD50241	2.69
2	2-5/8	3-7/8	12	CD50202	7.33	22	2	3-1/8	12	CD50222	4.12	42	1-1/4	2-1/4	12	CD50242	2.66
3	2-1/2	3-3/4	12	CD50203	6.85	23	2	3-1/8	12	CD50223	4.12	43	1-1/4	2-1/4	12	CD50243	2.66
4	2-1/2	3-3/4	12	CD50204	6.85	24	2	3-1/8	12	CD50224	4.12	44	1-1/8	2-1/8	12	CD50244	2.66
5	2-1/2	3-3/4	12	CD50205	6.85	25	1-7/8	3	12	CD50225	3.78	45	1-1/8	2-1/8	12	CD50245	2.66
6	2-1/2	3-3/4	12	CD50206	6.85	26	1-7/8	3	12	CD50226	3.72	46	1-1/8	2-1/8	12	CD50246	2.66
7	2-7/16	3-5/8	12	CD50207	5.35	27	1-7/8	3	12	CD50227	3.72	47	1	2	12	CD50247	2.66
8	2-7/16	3-5/8	12	CD50208	5.35	28	1-3/4	2-7/8	12	CD50228	3.48	48	1	2	12	CD50248	2.66
9	2-7/16	3-5/8	12	CD50209	5.35	29	1-3/4	2-7/8	12	CD50229	3.37	49	1	2	12	CD50249	2.66
10	2-7/16	3-5/8	12	CD50210	5.35	30	1-5/8	2-3/4	12	CD50230	3.20	50	1	2	12	CD50250	2.66
11	2-5/16	3-1/2	12	CD50211	5.35	31	1-5/8	2-3/4	12	CD50231	3.10	51	1	2	12	CD50251	2.66
12	2-5/16	3-1/2	12	CD50212	5.35	32	1-5/8	2-3/4	12	CD50232	3.07	52	7/8	1-7/8	12	CD50252	2.66
13	2-5/16	3-1/2	12	CD50213	5.25	33	1-1/2	2-5/8	12	CD50233	2.97	53	7/8	1-7/8	12	CD50253	2.97
14	2-3/16	3-3/8	12	CD50214	5.25	34	1-1/2	2-5/8	12	CD50234	2.97	54	7/8	1-7/8	12	CD50254	2.97
15	2-3/16	3-3/8	12	CD50215	5.25	35	1-1/2	2-5/8	12	CD50235	2.97	55	7/8	1-7/8	12	CD50255	2.97
16	2-3/16	3-3/8	12	CD50216	4.77	36	1-7/16	2-1/2	12	CD50236	2.93	56	3/4	1-3/4	12	CD50256	3.34
17	2-3/16	3-3/8	12	CD50217	4.67	37	1-7/16	2-1/2	12	CD50237	2.93	57	3/4	1-3/4	12	CD50257	3.34
18	2-1/8	3-1/4	12	CD50218	4.26	38	1-7/16	2-1/2	12	CD50238	2.73	58	11/16	1-5/8	12	CD50258	3.34
19	2-1/8	3-1/4	12	CD50219	4.16	39	1-3/8	2-3/8	12	CD50239	2.73	59	11/16	1-5/8	12	CD50259	3.34
20	2-1/8	3-1/4	12	CD50220	4.16	40	1-3/8	2-3/8	12	CD50240	2.73	60	11/16	1-5/8	12	CD50260	3.34

NOTE: SIZES BELOW 1/16" ARE NOT SPLIT POINT. ALL COBALT DRILLS HAVE IDENTIFICATION RING ON SHANK.
FOR TECHNICAL INFORMATION PLEASE SEE PAGES 207-208.

**TAKE 55%
OFF LIST
PRICES**

WORKER 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#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
1/16	7/8	1-7/8	12	CD60704	4.83	7/32	2-1/2	3-3/4	12	CD60714	10.91	3/8	3-5/8	5	6	CD60724	26.58
5/64	1	2	12	CD60705	4.83	15/64	2-5/8	3-7/8	12	CD60715	11.57	25/64	3-3/4	5-1/8	6	CD60725	30.22
3/32	1-1/4	2-1/4	12	CD60706	4.83	1/4	2-3/4	4	12	CD60716	12.40	13/32	3-7/8	5-1/4	6	CD60726	31.54
7/64	1-1/2	2-5/8	12	CD60707	5.11	17/64	2-7/8	4-1/8	6	CD60717	14.03	27/64	3-15/16	5-3/8	6	CD60727	34.88
1/8	1-5/8	2-3/4	12	CD60708	6.25	9/32	2-15/16	4-1/4	6	CD60718	14.73	7/16	4-1/16	5-1/2	6	CD60728	35.68
9/64	1-3/4	2-7/8	12	CD60709	6.25	19/64	3-1/16	4-3/8	6	CD60719	17.93	29/64	4-3/16	5-5/8	6	CD60729	42.80
5/32	2	3-1/8	12	CD60710	7.02	5/16	3-3/16	4-1/2	6	CD60720	19.07	15/32	4-5/16	5-3/4	6	CD60730	43.60
11/64	2-1/8	3-1/4	12	CD60711	7.40	21/64	3-5/16	4-5/8	6	CD60721	21.12	31/64	4-3/8	5-7/8	6	CD60731	43.84
3/16	2-5/16	3-1/2	12	CD60712	8.30	11/32	3-7/16	4-3/4	6	CD60722	23.21	1/2	4-1/2	6	6	CD60732	43.84
13/64	2-7/16	3-5/8	12	CD60713	9.97	23/64	3-1/2	4-7/8	6	CD60723	26.58	-	-	-	-	-	-

LETTER SIZES						LETTER SIZES						LETTER SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
A	2-5/8	3-7/8	12	CD60901	13.10	J	2-7/8	4-1/8	6	CD60910	17.02	S	3-1/2	4-7/8	6	CD60919	30.64
B	2-3/4	4	12	CD60902	15.11	K	2-15/16	4-1/4	6	CD60911	17.02	T	3-1/2	4-7/8	6	CD60920	30.64
C	2-3/4	4	12	CD60903	15.11	L	2-15/16	4-1/4	6	CD60912	19.35	U	3-5/8	5	6	CD60921	30.64
D	2-3/4	4	12	CD60904	17.02	M	3-1/16	4-3/8	6	CD60913	20.53	V	3-5/8	5	6	CD60922	33.77
E	2-3/4	4	12	CD60905	12.40	N	3-1/16	4-3/8	6	CD60914	20.53	W	3-3/4	5-1/8	6	CD60923	33.77
F	2-7/8	4-1/8	6	CD60906	15.11	O	3-3/16	4-1/2	6	CD60915	22.68	X	3-3/4	5-1/8	6	CD60924	33.77
G	2-7/8	4-1/8	6	CD60907	15.11	P	3-5/16	4-5/8	6	CD60916	24.11	Y	3-7/8	5-1/4	6	CD60925	35.78
H	2-7/8	4-1/8	6	CD60908	17.02	Q	3-7/16	4-3/4	6	CD60917	24.98	Z	3-7/8	5-1/4	6	CD60926	38.91
I	2-7/8	4-1/8	6	CD60909	17.02	R	3-7/16	4-3/4	6	CD60918	24.98	-	-	-	-	-	-

WIRE SIZES						WIRE SIZES						WIRE SIZES					
SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE	SIZE	FLUTE LENGTH	O.A.L.	PKG. QTY.	ITEM#	LIST PRICE
1	2-5/8	3-7/8	12	CD60801	13.27	21	2-1/8	3-1/4	12	CD60821	7.43	41	1-3/8	2-3/8	12	CD60841	4.83
2	2-5/8	3-7/8	12	CD60802	13.27	22	2	3-1/8	12	CD60822	7.43	42	1-1/4	2-1/4	12	CD60842	4.79
3	2-1/2	3-3/4	12	CD60803	12.40	23	2	3-1/8	12	CD60823	7.43	43	1-1/4	2-1/4	12	CD60843	4.79
4	2-1/2	3-3/4	12	CD60804	12.40	24	2	3-1/8	12	CD60824	7.43	44	1-1/8	2-1/8	12	CD60844	4.79
5	2-1/2	3-3/4	12	CD60805	12.40	25	1-7/8	3	12	CD60825	6.81	45	1-1/8	2-1/8	12	CD60845	4.79
6	2-1/2	3-3/4	12	CD60806	12.40	26	1-7/8	3	12	CD60826	6.74	46	1-1/8	2-1/8	12	CD60846	4.79
7	2-7/16	3-5/8	12	CD60807	9.66	27	1-7/8	3	12	CD60827	6.74	47	1	2	12	CD60847	4.79
8	2-7/16	3-5/8	12	CD60808	9.66	28	1-3/4	2-7/8	12	CD60828	6.32	48	1	2	12	CD60848	4.79
9	2-7/16	3-5/8	12	CD60809	9.66	29	1-3/4	2-7/8	12	CD60829	6.11	49	1	2	12	CD60849	4.79
10	2-7/16	3-5/8	12	CD60810	9.66	30	1-5/8	2-3/4	12	CD60830	5.73	50	1	2	12	CD60850	4.79
11	2-5/16	3-1/2	12	CD60811	9.66	31	1-5/8	2-3/4	12	CD60831	5.63	51	1	2	12	CD60851	4.79
12	2-5/16	3-1/2	12	CD60812	9.66	32	1-5/8	2-3/4	12	CD60832	5.56	52	7/8	1-7/8	12	CD60852	4.79
13	2-5/16	3-1/2	12	CD60813	9.48	33	1-1/2	2-5/8	12	CD60833	5.35	53	7/8	1-7/8	12	CD60853	5.38
14	2-3/16	3-3/8	12	CD60814	9.48	34	1-1/2	2-5/8	12	CD60834	5.35	54	7/8	1-7/8	12	CD60854	5.38
15	2-3/16	3-3/8	12	CD60815	9.48	35	1-1/2	2-5/8	12	CD60835	5.35	55	7/8	1-7/8	12	CD60855	5.38
16	2-3/16	3-3/8	12	CD60816	8.65	36	1-7/16	2-1/2	12	CD60836	5.28	56	3/4	1-3/4	12	CD60856	6.08
17	2-3/16	3-3/8	12	CD60817	8.44	37	1-7/16	2-1/2	12	CD60837	5.28	57	3/4	1-3/4	12	CD60857	6.08
18	2-1/8	3-1/4	12	CD60818	7.71	38	1-7/16	2-1/2	12	CD60838	4.90	58	11/16	1-5/8	12	CD60858	6.08
19	2-1/8	3-1/4	12	CD60819	7.50	39	1-3/8	2-3/8	12	CD60839	4.90	59	11/16	1-5/8	12	CD60859	6.08
20	2-1/8	3-1/4	12	CD60820	7.50	40	1-3/8	2-3/8	12	CD60840	4.90	60	11/16	1-5/8	12	CD60860	6.08

- 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 5. FOR TECHNICAL INFORMATION PLEASE SEE PAGES 207-208.



SERIES 625

HIGH SPEED STEEL

1/2" ROUND SHANK - 118° POINT

SIZE	OVERALL LENGTH	ITEM#	LIST PRICE
33/64	6	SD91433	30.68
17/32	6	SD91434	30.68
35/64	6	SD91435	32.38
9/16	6	SD91436	32.38
37/64	6	SD91437	34.77
19/32	6	SD91438	34.77
39/64	6	SD91439	36.54
5/8	6	SD91440	36.54
41/64	6	SD91441	38.28
21/32	6	SD91442	38.28
43/64	6	SD91443	40.70
11/16	6	SD91444	40.70
45/64	6	SD91445	40.87
23/32	6	SD91446	40.87
47/64	6	SD91447	44.58
3/4	6	SD91448	44.72
49/64	6	SD91449	47.41
25/32	6	SD91450	47.41
51/64	6	SD91451	49.83
13/16	6	SD91452	49.83
53/64	6	SD91453	51.77
27/32	6	SD91454	51.77
55/64	6	SD91455	53.48
7/8	6	SD91456	53.48
57/64	6	SD91457	55.66
29/32	6	SD91458	55.66
59/64	6	SD91459	60.60
15/16	6	SD91460	60.60
61/64	6	SD91461	63.53
31/32	6	SD91462	63.53
63/64	6	SD91463	70.83
1	6	SD91464	70.83
1-1/32	6	SD91466	95.03
1-1/16	6	SD91468	95.03
1-3/32	6	SD91470	101.33
1-1/8	6	SD91472	108.25
1-5/32	6	SD91474	108.25
1-3/16	6	SD91476	119.84
1-7/32	6	SD91478	132.62
1-1/4	6	SD91480	132.62
1-5/16	6	SD91484	140.29
1-3/8	6	SD91488	161.59
1-7/16	6	SD91492	177.68
1-1/2	6	SD91496	195.23



SERIES 620

HIGH SPEED STEEL

1/2" SHANK - 3 FLATS - 118° POINT

SIZE	OVERALL LENGTH	ITEM#	LIST PRICE
33/64	6	SD92533	33.44
17/32	6	SD92534	33.44
35/64	6	SD92535	35.55
9/16	6	SD92536	35.55
37/64	6	SD92537	38.21
19/32	6	SD92538	38.21
39/64	6	SD92539	39.98
5/8	6	SD92540	39.98
41/64	6	SD92541	42.64
21/32	6	SD92542	42.64
43/64	6	SD92543	44.34
11/16	6	SD92544	44.34
45/64	6	SD92545	44.92
23/32	6	SD92546	44.92
47/64	6	SD92547	48.94
3/4	6	SD92548	48.94
49/64	6	SD92549	52.22
25/32	6	SD92550	52.22
51/64	6	SD92551	57.23
13/16	6	SD92552	57.23
53/64	6	SD92553	59.61
27/32	6	SD92554	59.61
55/64	6	SD92555	63.60
7/8	6	SD92556	63.60
57/64	6	SD92557	65.99
29/32	6	SD92558	65.99
59/64	6	SD92559	67.55
15/16	6	SD92560	67.55
61/64	6	SD92561	70.72
31/32	6	SD92562	70.72
63/64	6	SD92563	77.51
1	6	SD92564	77.51

**TAKE 55%
OFF LIST
PRICES**

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 207-208.

**TAKE 55%
OFF LIST
PRICES**

**SERIES 623**

HIGH SPEED STEEL - BLACK & GOLD
1/2" SHANK - 3 FLATS - 118° SPLIT POINT

**SERIES 622**

COBALT - STRAW FINISH
1/2" ROUND SHANK - 118° SPLIT POINT

SIZE	OVERALL LENGTH	ITEM#	LIST PRICE
33/64	6	SD94733	39.16
17/32	6	SD94734	39.16
35/64	6	SD94735	41.48
9/16	6	SD94736	41.48
37/64	6	SD94737	44.04
19/32	6	SD94738	44.04
39/64	6	SD94739	45.77
5/8	6	SD94740	45.77
41/64	6	SD94741	48.57
21/32	6	SD94742	48.57
43/64	6	SD94743	50.65
11/16	6	SD94744	50.65
45/64	6	SD94745	52.76
23/32	6	SD94746	52.76
47/64	6	SD94747	55.05
3/4	6	SD94748	55.05
49/64	6	SD94749	58.11
25/32	6	SD94750	58.11
51/64	6	SD94751	61.83
13/16	6	SD94752	61.83
53/64	6	SD94753	64.52
27/32	6	SD94754	64.52
55/64	6	SD94755	66.26
7/8	6	SD94756	66.26
57/64	6	SD94757	69.16
29/32	6	SD94758	69.16
59/64	6	SD94759	74.34
15/16	6	SD94760	74.34
61/64	6	SD94761	80.06
31/32	6	SD94762	80.06
63/64	6	SD94763	84.08
1	6	SD94764	84.08

SIZE	OVERALL LENGTH	ITEM#	LIST PRICE
33/64	6	SD93633	61.01
17/32	6	SD93634	61.01
35/64	6	SD93635	73.42
9/16	6	SD93636	73.42
37/64	6	SD93637	75.90
19/32	6	SD93638	75.90
39/64	6	SD93639	77.85
5/8	6	SD93640	77.85
41/64	6	SD93641	81.66
21/32	6	SD93642	81.66
43/64	6	SD93643	83.33
11/16	6	SD93644	83.33
45/64	6	SD93645	87.90
23/32	6	SD93646	87.90
47/64	6	SD93647	91.72
3/4	6	SD93648	91.72
49/64	6	SD93649	95.91
25/32	6	SD93650	95.91
51/64	6	SD93651	98.47
13/16	6	SD93652	98.47
53/64	6	SD93653	106.41
27/32	6	SD93654	106.41
55/64	6	SD93655	106.41
7/8	6	SD93656	106.41
57/64	6	SD93657	110.47
29/32	6	SD93658	110.47
59/64	6	SD93659	115.24
15/16	6	SD93660	115.24
61/64	6	SD93661	121.61
31/32	6	SD93662	121.61
63/64	6	SD93663	138.00
1	6	SD93664	138.00

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 207-208.

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

**TAKE 55%
OFF LIST
PRICES**

FRACTIONAL SIZES

SIZE	OVERALL LENGTH	FLUTE LENGTH	PACKAGE QUANTITY	HSS	LIST PRICE	COBALT	LIST PRICE
3/32	6	1-1/4	12	CD67506	6.26	CD67706	9.72
7/64	6	1-1/2	12	CD67507	6.78	CD67707	10.94
1/8	6	1-5/8	12	CD67508	6.67	CD67708	10.46
9/64	6	1-3/4	12	CD67509	7.95	CD67709	12.41
5/32	6	2	12	CD67510	7.95	CD67710	12.30
11/64	6	2-1/8	12	CD67511	8.69	CD67711	13.62
3/16	6	2-5/16	12	CD67512	8.69	CD67712	13.33
13/64	6	2-7/16	12	CD67513	10.57	CD67713	16.87
7/32	6	2-1/2	12	CD67514	10.57	CD67714	16.72
15/64	6	2-5/8	12	CD67515	11.78	CD67715	18.34
1/4	6	2-3/4	12	CD67516	11.56	CD67716	18.01
17/64	6	2-7/8	6	CD67517	26.44	-	-
9/32	6	2-15/16	6	CD67518	27.47	-	-
19/64	6	3-1/16	6	CD67519	32.26	-	-
5/16	6	3-3/16	6	CD67520	35.02	-	-
21/64	6	3-5/16	6	CD67521	38.04	-	-
11/32	6	3-7/16	6	CD67522	37.63	-	-
23/64	6	3-1/2	6	CD67523	42.24	-	-
3/8	6	3-5/8	6	CD67524	43.05	-	-

WIRE SIZES

SIZE	OVERALL LENGTH	FLUTE LENGTH	PACKAGE QUANTITY	HSS	LIST PRICE	COBALT	LIST PRICE
1	6	2-5/8	12	CD67601	12.45	CD67801	19.26
2	6	2-5/8	12	CD67602	12.45	CD67802	19.26
10	6	2-7/16	12	CD67610	10.09	CD67810	15.17
11	6	2-5/16	12	CD67611	9.28	CD67811	14.58
20	6	2-1/8	12	CD67620	8.36	CD67820	12.70
21	6	2-1/8	12	CD67621	8.36	CD67821	12.70
29	6	1-3/4	12	CD67629	8.47	CD67829	13.07
30	6	1-5/8	12	CD67630	6.78	CD67830	10.31
40	6	1-5/8	12	CD67640	6.15	CD67840	9.54

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 207-208.

**TAKE 55%
OFF LIST
PRICES**

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	LIST PRICE	COBALT	LIST PRICE
1/8	12	1-5/8	12	CD68008	19.30	CD68808	30.12
9/64	12	1-3/4	12	CD68009	19.48	CD68809	33.80
5/32	12	2	12	CD68010	19.48	CD68810	30.82
11/64	12	2-1/8	12	CD68011	21.95	CD68811	33.51
3/16	12	2-5/16	12	CD68012	21.73	CD68812	32.59
13/64	12	2-7/16	12	CD68013	24.93	CD68813	42.64
7/32	12	2-1/2	12	CD68014	24.67	CD68814	38.44
15/64	12	2-5/8	12	CD68015	27.80	CD68815	41.17
1/4	12	2-3/4	12	CD68016	26.51	CD68816	39.33
17/64	12	2-7/8	6	CD68017	33.03	-	-
9/32	12	2-15/16	6	CD68018	33.73	-	-
19/64	12	3-1/16	6	CD68019	38.89	-	-
5/16	12	3-3/16	6	CD68020	42.57	-	-
21/64	12	3-5/16	6	CD68021	46.25	-	-
11/32	12	3-7/16	6	CD68022	45.73	-	-
23/64	12	3-1/2	6	CD68023	51.81	-	-
3/8	12	3-5/8	6	CD68024	52.29	-	-
25/64	12	3-3/4	6	CD68025	58.33	-	-
13/32	12	3-7/8	6	CD68026	56.23	-	-
27/64	12	3-15/16	6	CD68027	62.01	-	-
7/16	12	4-1/16	6	CD68028	62.12	-	-
29/64	12	4-3/16	6	CD68029	70.08	-	-
15/32	12	4-5/16	6	CD68030	72.62	-	-
31/64	12	4-3/8	6	CD68031	75.30	-	-
1/2	12	4-1/2	6	CD68032	74.49	-	-

WIRE SIZES

SIZE	OVERALL LENGTH	FLUTE LENGTH	PACKAGE QUANTITY	HSS	LIST PRICE	COBALT	LIST PRICE
1	12	2-5/8	12	CD68101	30.27	CD68901	42.64
10	12	2-7/16	12	CD68110	24.34	CD68910	34.10
11	12	2-5/16	12	CD68111	24.56	CD68911	34.10
20	12	2-1/8	12	CD68120	22.09	CD68920	31.26
21	12	2-1/8	12	CD68121	21.69	CD68921	31.26
29	12	1-3/4	12	CD68129	22.98	CD68929	32.81
30	12	1-5/8	12	CD68130	21.69	CD68930	31.26
40	12	1-3/8	12	CD68140	21.69	CD68940	31.26

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 207-208.

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#	LIST PRICE
1/8	9	12	CD68608	41.58
9/64	9	12	CD68609	60.26
5/32	9	12	CD68610	54.80
11/64	9	12	CD68611	46.73
3/16	9	12	CD68612	46.73
13/64	9	12	CD68613	56.63
7/32	9	12	CD68614	50.71
15/64	9	12	CD68615	50.71
1/4	9	12	CD68616	52.43
17/64	9	12	CD68617	54.26
9/32	9	12	CD68618	54.26
19/64	9	12	CD68619	56.25
5/16	9	12	CD68620	56.25
21/64	9	12	CD68621	60.26
11/32	9	12	CD68622	60.26
23/64	9	12	CD68623	60.26

FRACTIONAL SIZES				
SIZE	FLUTE LENGTH	O.A.L.	ITEM#	LIST PRICE
3/8	9	12	CD68624	55.52
25/64	9	12	CD68625	84.03
13/32	9	12	CD68626	84.03
27/64	9	12	CD68627	84.03
7/16	9	12	CD68628	71.76
29/64	9	12	CD68629	87.70
15/32	9	12	CD68630	78.91
31/64	9	12	CD68631	80.74
1/2	9	12	CD68632	80.74
17/32	9	12	CD68634	102.30
9/16	9	12	CD68636	102.30
19/32	9	12	CD68638	127.86
5/8	9	12	CD68640	124.23
11/16	9	12	CD68644	131.53
3/4	9	12	CD68648	148.15
-	-	-	-	-

3/8" REDUCED SHANK - 118° POINT HIGH SPEED STEEL



SERIES 650 - OXIDE FINISH

SIZE	SHANK DIAMETER	PKG. QTY.	ITEM#	LIST PRICE
25/64	3/8	6	CD65025	12.08
13/32	3/8	6	CD65026	13.64
27/64	3/8	6	CD65027	14.14
7/16	3/8	6	CD65028	15.09
29/64	3/8	6	CD65029	16.24
15/32	3/8	6	CD65030	17.39
31/64	3/8	6	CD65031	18.11
1/2	3/8	6	CD65032	18.69

**TAKE 55%
OFF LIST
PRICES**

FOR TECHNICAL INFORMATION PLEASE SEE PAGES 207-208.

SCREW EXTRACTORS
HIGH SPEED STEEL
**SERIES 531**

SIZE	FOR SCREW & BOLT SIZES	PIPE SIZE	PKG. QTY.	ITEM#	LIST PRICE
1	3/16 - 1/4	–	1	CD53101	6.92
2	1/4 - 5/16	–	1	CD53102	7.38
3	5/16 - 7/16	–	1	CD53103	8.94
4	7/16 - 9/16	1/8	1	CD53104	9.48
5	9/16 - 3/4	1/4	1	CD53105	11.85
6	3/4 - 1	3/8	1	CD53106	26.02
7	1 - 1-3/8	1/2	1	CD53107	41.88
8	1-3/8 - 1-3/4	3/4	1	CD53108	56.98
9	1-3/4 - 2-1/8	1	1	CD53109	99.09
10	2-1/8 - 2-1/2	1-1/4	1	CD53110	257.14
11	2-1/2 - 3	1-1/2	1	CD53111	273.72
12	3 - 3-1/2	2	1	CD53112	363.10
SET	SIZES 1-5	–	1	CD53113	44.52

DRILL DRIFTS**SERIES 534 - OXIDE FINISH**

SIZE	FOR USE WITH TAPER#	ITEM#	LIST PRICE
1	1	CD53401	24.65
2	2	CD53402	29.23
3	3	CD53403	33.47
4	4,5,6	CD53404	36.91



Over 13,000 "American-Made" products in stock and ready to ship

STRAIGHT SHANK - STRAIGHT FLUTE



**TAKE 55%
OFF LIST
PRICES**

SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	SERIES 933		SERIES 1933	
						HSS	LIST PRICE	M42 COBALT	LIST PRICE
#80	.0135	3/8	2	3/4	.0135	TR96001	35.00	TR96310	38.74
#79	.0145	3/8	2	3/4	.0145	TR96002	35.00	TR96311	38.74
1/64	.0156	3/8	2	3/4	.0156	TR96003	35.00	TR96312	38.74
#78	.0160	3/8	2	7/8	.0160	TR96004	35.00	TR96313	38.74
#77	.0180	3/8	2	7/8	.0180	TR96005	35.00	TR96314	38.74
#76	.0200	3/8	2	7/8	.0200	TR96006	35.00	TR96315	38.74
#75	.0210	1/2	3	1	.0210	TR96007	35.00	TR96316	38.74
#74	.0225	1/2	3	1	.0225	TR96008	35.00	TR96317	38.74
#73	.0240	1/2	3	1-1/8	.0240	TR96009	35.00	TR96318	38.74
#72	.0250	1/2	3	1-1/8	.0250	TR96010	35.00	TR96319	38.74
#71	.0260	1/2	3	1-1/4	.0260	TR96011	35.00	TR96320	38.74
#70	.0280	1/2	3	1-1/4	.0280	TR96012	35.00	TR96321	38.74
#69	.0292	1/2	3	1-3/8	.0292	TR96013	35.00	TR96322	38.74
#68	.0310	1/2	3	1-3/8	.0310	TR96014	35.00	TR96323	38.74
1/32	.0312	1/2	3	1-3/8	.0312	TR96015	27.59	TR96324	31.88
#67	.0320	1/2	3	1-3/8	.0320	TR96016	29.31	TR96325	31.88
#66	.0330	1/2	3	1-3/8	.0330	TR96017	29.31	TR96326	31.88
#65	.0350	1/2	3	1-1/2	.0350	TR96018	29.31	TR96327	31.88
#64	.0360	1/2	3	1-1/2	.0360	TR96019	29.31	TR96328	31.88
#63	.0370	1/2	3	1-1/2	.0370	TR96020	29.31	TR96329	31.88
#62	.0380	1/2	3	1-1/2	.0380	TR96021	29.31	TR96330	31.88
#61	.0390	1/2	3	1-1/2	.0390	TR96022	29.31	TR96331	31.88
1.0mm	.0394	1/2	4	2-1/2	.0394	TR96023	29.31	TR96332	31.38
#60	.0400	1/2	4	2-1/2	.0390	TR96024	29.31	TR96333	31.38
#59	.0410	1/2	4	2-1/2	.0390	TR96025	29.31	TR96334	31.38
#58	.0420	1/2	4	2-1/2	.0390	TR96026	29.31	TR96335	31.38
#57	.0430	1/2	4	2-1/2	.0390	TR96027	29.31	TR96336	31.38
#56	.0465	1/2	4	2-1/2	.0455	TR96028	29.31	TR96337	31.38
3/64	.0469	1/2	4	2-1/2	.0455	TR96029	29.31	TR96338	31.38
#55	.0520	1/2	4	2-1/2	.0510	TR96030	29.31	TR96339	31.38
#54	.0550	1/2	4	2-1/2	.0510	TR96031	29.31	TR96340	31.38
1.5mm	.0591	1/2	4	2-1/2	.0510	TR96032	29.31	TR96341	31.38
#53	.0595	1/2	4	2-1/2	.0585	TR96033	29.31	TR96342	31.38
1/16	.0625	1/2	4	2-1/2	.0585	TR96034	26.35	TR96343	31.38
#52	.0635	1/2	4	2-1/2	.0585	TR96035	26.35	TR96344	31.38
#51	.0670	3/4	4	3	.0660	TR96036	23.58	TR96345	25.26
#50	.0700	3/4	4	3	.0660	TR96037	23.58	TR96346	25.26
#49	.0730	3/4	4	3	.0660	TR96038	23.58	TR96347	25.26
#48	.0760	3/4	4	3	.0720	TR96039	23.58	TR96348	25.26
5/64	.0781	3/4	4	3	.0720	TR96040	23.58	TR96349	25.26
#47	.0785	3/4	4	3	.0720	TR96041	23.58	TR96350	25.26
2.0mm	.0787	3/4	4	3	.0720	TR96042	23.58	TR96351	25.26
#46	.0810	3/4	4	3	.0771	TR96043	23.58	TR96352	25.26
#45	.0820	3/4	4	3	.0771	TR96044	23.58	TR96353	25.26
#44	.0860	3/4	4	3	.0810	TR96045	23.58	TR96354	25.26
#43	.0890	3/4	4	3	.0810	TR96046	23.58	TR96355	25.26

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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

**TAKE 55%
OFF LIST
PRICES**

STRAIGHT SHANK - STRAIGHT FLUTE



SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	SERIES 933		SERIES 1933	
						HSS	LIST PRICE	M42 COBALT	LIST PRICE
#42	.0935	3/4	4	3	.0880	TR96047	23.58	TR96356	25.26
3/32	.0938	3/4	4	3	.0880	TR96048	21.20	TR96357	25.26
#41	.0960	7/8	4	3-1/2	.0928	TR96049	23.81	TR96358	25.45
#40	.0980	7/8	4	3-1/2	.0928	TR96050	23.81	TR96359	25.45
2.5mm	.0984	7/8	4	3-1/2	.0928	TR96051	23.81	TR96360	25.45
#39	.0995	7/8	4	3-1/2	.0928	TR96052	23.81	TR96361	25.45
#38	.1015	7/8	4	3-1/2	.0950	TR96053	23.81	TR96362	25.45
#37	.1040	7/8	4	3-1/2	.0950	TR96054	23.81	TR96363	25.45
#36	.1065	7/8	4	3-1/2	.1030	TR96055	23.81	TR96364	25.45
7/64	.1094	7/8	4	3-1/2	.1030	TR96056	24.55	TR96365	26.23
#35	.1100	7/8	4	3-1/2	.1030	TR96057	24.55	TR96366	26.23
#34	.1110	7/8	4	3-1/2	.1055	TR96058	24.55	TR96367	26.23
#33	.1130	7/8	4	3-1/2	.1055	TR96059	24.55	TR96368	26.23
#32	.1160	7/8	4	3-1/2	.1120	TR96060	24.55	TR96369	26.23
3.0mm	.1181	7/8	4	3-1/2	.1120	TR96061	24.55	TR96370	26.23
#31	.1200	7/8	4	3-1/2	.1120	TR96062	24.55	TR96371	26.23
o/u	.1240	7/8	4	3-1/2	.1190	TR96063	24.55	TR96372	26.23
1/8	.1250	7/8	4	3-1/2	.1190	TR96064	19.57	TR96373	20.97
o/u	.1260	7/8	4	3-1/2	.1190	TR96065	24.55	TR96374	26.23
#30	.1285	7/8	4	3-1/2	.1190	TR96066	24.55	TR96375	26.23
#29	.1360	1	4	4	.1275	TR96067	29.31	TR96376	31.38
3.5mm	.1378	1	4	4	.1350	TR96068	29.31	TR96377	31.38
#28	.1405	1	4	4	.1350	TR96069	29.31	TR96378	31.38
9/64	.1406	1	4	4	.1350	TR96070	29.31	TR96379	31.38
#27	.1440	1	4	4	.1350	TR96071	29.31	TR96380	31.38
#26	.1470	1	4	4	.1430	TR96072	29.31	TR96381	31.38
#25	.1495	1	4	4	.1430	TR96073	29.31	TR96382	31.38
#24	.1520	1	4	4	.1460	TR96074	29.31	TR96383	31.38
#23	.1540	1	4	4	.1460	TR96075	29.31	TR96384	31.38
5/32	.1562	1	4	4	.1510	TR96076	29.31	TR96385	31.38
#22	.1570	1	6	4	.1510	TR96077	29.31	TR96386	31.38
4.0mm	.1575	1	6	4	.1510	TR96078	29.31	TR96387	31.38
#21	.1590	1-1/8	6	4-1/2	.1530	TR96079	31.30	TR96388	33.48
#20	.1610	1-1/8	6	4-1/2	.1530	TR96080	31.30	TR96389	33.48
#19	.1660	1-1/8	6	4-1/2	.1595	TR96081	31.30	TR96390	33.48
#18	.1695	1-1/8	6	4-1/2	.1595	TR96082	31.30	TR96391	33.48
11/64	.1719	1-1/8	6	4-1/2	.1645	TR96083	31.30	TR96392	33.48
#17	.1730	1-1/8	6	4-1/2	.1645	TR96084	31.30	TR96393	33.48
#16	.1770	1-1/8	6	4-1/2	.1704	TR96085	31.30	TR96394	33.48
4.5mm	.1772	1-1/8	6	4-1/2	.1704	TR96086	31.30	TR96395	33.48
#15	.1800	1-1/8	6	4-1/2	.1755	TR96087	31.30	TR96396	33.48
#14	.1820	1-1/8	6	4-1/2	.1755	TR96088	31.30	TR96397	33.48
#13	.1850	1-1/8	6	4-1/2	.1805	TR96089	31.30	TR96398	33.48
o/u	.1865	1-1/8	6	4-1/2	.1805	TR96090	31.30	TR96399	33.48
3/16	.1875	1-1/8	6	4-1/2	.1805	TR96091	28.14	TR96400	32.35
o/u	.1885	1-1/8	6	4-1/2	.1805	TR96092	31.30	TR96401	33.48

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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

STRAIGHT SHANK - STRAIGHT FLUTE



**TAKE 55%
OFF LIST
PRICES**

SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	SERIES 933		SERIES 1933	
						HSS	LIST PRICE	M42 COBALT	LIST PRICE
#12	.1890	1-1/8	6	4-1/2	.1805	TR96093	31.30	TR96402	33.48
#11	.1910	1-1/4	6	5	.1860	TR96094	35.04	TR96403	40.46
#10	.1935	1-1/4	6	5	.1860	TR96095	35.04	TR96404	40.46
#9	.1960	1-1/4	6	5	.1895	TR96096	35.04	TR96405	40.46
5.0mm	.1969	1-1/4	6	5	.1895	TR96097	35.04	TR96406	40.46
#8	.1990	1-1/4	6	5	.1895	TR96098	35.04	TR96407	40.46
#7	.2010	1-1/4	6	5	.1895	TR96099	35.04	TR96408	40.46
13/64	.2031	1-1/4	6	5	.1945	TR96100	35.04	TR96409	40.46
#6	.2040	1-1/4	6	5	.1945	TR96101	35.04	TR96410	40.46
#5	.2055	1-1/4	6	5	.2016	TR96102	35.04	TR96411	40.46
#4	.2090	1-1/4	6	5	.2016	TR96103	35.04	TR96412	40.46
#3	.2130	1-1/4	6	5	.2075	TR96104	35.04	TR96413	40.46
5.5mm	.2165	1-1/4	6	5	.2075	TR96105	35.04	TR96414	40.46
7/32	.2188	1-1/4	6	5	.2075	TR96106	35.04	TR96415	40.46
#2	.2210	1-1/2	6	6	.2173	TR96107	36.01	TR96416	41.63
#1	.2280	1-1/2	6	6	.2173	TR96108	36.01	TR96417	41.63
A	.2340	1-1/2	6	6	.2265	TR96109	36.01	TR96418	41.63
15/64	.2344	1-1/2	6	6	.2265	TR96110	36.01	TR96419	41.63
6.0mm	.2362	1-1/2	6	6	.2265	TR96111	37.96	TR96420	41.82
B	.2380	1-1/2	6	6	.2329	TR96112	37.96	TR96421	41.82
C	.2420	1-1/2	6	6	.2329	TR96113	37.96	TR96422	41.82
D	.2460	1-1/2	6	6	.2329	TR96114	37.96	TR96423	38.00
o/u	.2490	1-1/2	6	6	.2405	TR96115	34.18	TR96424	37.61
1/4	.2500	1-1/2	6	6	.2405	TR96116	32.23	TR96425	35.55
o/u	.2510	1-1/2	6	6	.2405	TR96117	34.18	TR96426	37.65
6.5mm	.2559	1-1/2	6	6	.2405	TR96118	37.96	TR96427	41.82
F	.2570	1-1/2	6	6	.2485	TR96119	37.96	TR96428	41.82
G	.2610	1-1/2	6	6	.2485	TR96120	37.96	TR96429	41.82
17/64	.2656	1-1/2	6	6	.2485	TR96121	42.29	TR96430	56.71
H	.2660	1-1/2	6	6	.2485	TR96122	42.29	TR96431	56.71
I	.2720	1-1/2	6	6	.2485	TR96123	42.29	TR96432	56.71
7.0mm	.2756	1-1/2	6	6	.2485	TR96124	42.29	TR96433	56.71
J	.2770	1-1/2	6	6	.2485	TR96125	42.29	TR96434	56.71
K	.2810	1-1/2	6	6	.2485	TR96126	42.29	TR96435	56.71
9/32	.2812	1-1/2	6	6	.2485	TR96127	40.14	TR96436	53.86
L	.2900	1-1/2	6	6	.2792	TR96128	42.29	TR96437	56.71
M	.2950	1-1/2	6	6	.2792	TR96129	42.29	TR96438	56.71
7.5mm	.2953	1-1/2	6	6	.2792	TR96130	42.29	TR96439	56.71
19/64	.2969	1-1/2	6	6	.2792	TR96131	42.29	TR96440	56.71
N	.3020	1-1/2	6	6	.2792	TR96132	42.29	TR96441	56.71
o/u	.3115	1-1/2	6	6	.2792	TR96133	40.14	TR96442	53.86
5/16	.3125	1-1/2	6	6	.2792	TR96134	38.12	TR96443	51.02
o/u	.3135	1-1/2	6	6	.2792	TR96135	40.14	TR96444	53.86
8.0mm	.3150	1-1/2	6	6	.2792	TR96136	42.29	TR96445	56.71
O	.3160	1-1/2	6	6	.2792	TR96137	42.29	TR96446	56.71
P	.3230	1-1/2	6	6	.2792	TR96138	45.21	TR96447	61.11

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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

**TAKE 55%
OFF LIST
PRICES**

STRAIGHT SHANK - STRAIGHT FLUTE



SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	SERIES 933		SERIES 1933	
						HSS	LIST PRICE	M42 COBALT	LIST PRICE
21/64	.3281	1-1/2	6	6	.2792	TR96139	45.21	TR96448	61.11
Q	.3320	1-1/2	6	6	.2792	TR96140	45.21	TR96449	61.11
8.5mm	.3346	1-1/2	6	6	.2792	TR96141	45.21	TR96450	61.11
R	.3390	1-1/2	6	6	.2792	TR96142	45.21	TR96451	61.11
11/32	.3438	1-1/2	6	6	.2792	TR96143	45.21	TR96452	61.11
S	.3480	1-3/4	6	6	.3105	TR96144	45.68	TR96453	62.13
9.0mm	.3543	1-3/4	6	7	.3105	TR96145	45.68	TR96454	62.13
T	.3580	1-3/4	6	7	.3105	TR96146	45.68	TR96455	62.13
23/64	.3594	1-3/4	6	7	.3105	TR96147	45.68	TR96456	62.13
U	.3680	1-3/4	6	7	.3105	TR96148	45.68	TR96457	62.13
9.5mm-o/u	.3740	1-3/4	6	7	.3105	TR96149	43.38	TR96458	58.97
3/8	.3750	1-3/4	6	7	.3105	TR96150	41.04	TR96459	55.89
o/u	.3760	1-3/4	6	7	.3105	TR96151	43.38	TR96460	58.97
V	.3770	1-3/4	6	7	.3105	TR96152	49.65	TR96461	75.73
W	.3860	1-3/4	6	7	.3105	TR96153	49.65	TR96462	75.73
25/64	.3906	1-3/4	6	7	.3105	TR96154	49.65	TR96463	75.73
10.0mm	.3937	1-3/4	6	7	.3105	TR96155	49.65	TR96464	75.73
X	.3970	1-3/4	6	7	.3105	TR96156	49.65	TR96465	75.73
Y	.4040	1-3/4	6	7	.3105	TR96157	51.53	TR96466	75.73
13/32	.4062	1-3/4	6	7	.3105	TR96158	51.53	TR96467	75.73
Z	.4130	1-3/4	6	7	.3730	TR96159	51.53	TR96468	75.73
10.5mm	.4134	1-3/4	6	7	.3730	TR96160	52.03	TR96469	75.73
27/64	.4219	1-3/4	6	7	.3730	TR96161	51.53	TR96470	75.73
11.0mm	.4331	1-3/4	6	7	.3730	TR96162	51.53	TR96471	75.73
o/u	.4365	1-3/4	6	7	.3730	TR96163	48.95	TR96472	75.73
7/16	.4375	1-3/4	6	7	.3730	TR96164	48.95	TR96473	75.73
o/u	.4385	1-3/4	6	7	.3730	TR96165	48.95	TR96474	75.73
11.5mm	.4528	1-3/4	6	7	.3730	TR96166	56.12	TR96475	86.80
29/64	.4531	1-3/4	6	7	.3730	TR96167	56.12	TR96476	86.80
15/32	.4688	1-3/4	6	7	.3730	TR96168	56.12	TR96477	86.80
12.0mm	.4724	2	6	8	.4355	TR96169	56.12	TR96478	86.80
31/64	.4844	2	6	8	.4355	TR96170	56.12	TR96479	86.80
12.5mm	.4921	2	6	8	.4355	TR96171	56.12	TR96480	86.80
o/u	.4990	2	6	8	.4355	TR96172	53.28	TR96481	86.80
1/2	.5000	2	6	8	.4355	TR96173	53.28	TR96482	86.80
o/u	.5010	2	6	8	.4355	TR96174	53.28	TR96483	86.80
13.0mm	.5118	2	6	8	.4355	TR96175	69.53	-	-
33/64	.5156	2	6	8	.4355	TR96176	69.53	-	-
17/32	.5312	2	6	8	.4355	TR96177	66.22	TR96484	97.36
13.5mm	.5315	2	6	8	.4355	TR96178	69.53	-	-
35/64	.5469	2	8	8	.4355	TR96179	69.53	-	-
14.0mm	.5512	2	8	8	.4355	TR96180	69.53	-	-
o/u	.5615	2	8	8	.4355	TR96181	69.53	-	-
9/16	.5625	2	8	8	.4355	TR96182	66.22	TR96485	97.36
o/u	.5635	2	8	8	.4355	TR96183	69.53	-	-
14.5mm	.5709	2	8	8	.4355	TR96184	69.53	-	-

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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

STRAIGHT SHANK - STRAIGHT FLUTE



**TAKE 55%
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PRICES**

SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	SERIES 933		SERIES 1933	
						HSS	LIST PRICE	M42 COBALT	LIST PRICE
37/64	.5781	2	8	8	.4355	TR96185	69.53	-	-
15.0mm	.5906	2	8	8	.4355	TR96186	69.53	-	-
19/32	.5938	2	8	8	.4355	TR96187	66.22	TR96486	97.36
39/64	.6094	2-1/4	8	9	.5615	TR96188	81.15	-	-
15.5mm	.6102	2-1/4	8	9	.5615	TR96189	81.15	-	-
o/u	.6240	2-1/4	8	9	.5615	TR96190	81.15	-	-
5/8	.6250	2-1/4	8	9	.5615	TR96191	77.56	TR96487	113.61
o/u	.6260	2-1/4	8	9	.5615	TR96192	81.15	-	-
16.0mm	.6299	2-1/4	8	9	.5615	TR96193	81.15	-	-
41/64	.6406	2-1/4	8	9	.5615	TR96194	81.15	-	-
16.5mm	.6496	2-1/4	8	9	.5615	TR96195	81.15	-	-
21/32	.6562	2-1/4	8	9	.5615	TR96196	87.38	TR96488	128.42
17.0mm	.6693	2-1/4	8	9	.5615	TR96197	91.71	-	-
43/64	.6719	2-1/4	8	9	.5615	TR96198	91.71	-	-
o/u	.6865	2-1/4	8	9	.5615	TR96199	91.71	-	-
11/16	.6875	2-1/4	8	9	.5615	TR96200	87.38	TR96489	128.42
o/u	.6885	2-1/4	8	9	.5615	TR96201	98.45	-	-
17.5mm	.6890	2-1/4	8	9	.5615	TR96202	98.45	-	-
45/64	.7031	2-1/4	8	9	.5615	TR96203	98.45	-	-
18.0mm	.7087	2-1/4	8	9	.5615	TR96204	98.45	-	-
23/32	.7188	2-1/4	8	9	.5615	TR96205	97.52	TR96490	143.35
18.5mm	.7283	2-1/2	8	9	.6240	TR96206	102.35	-	-
47/64	.7344	2-1/2	8	9	.6240	TR96207	113.38	-	-
19.0mm	.7480	2-1/2	8	9	.6240	TR96208	113.38	-	-
o/u	.7490	2-1/2	8	9	.6240	TR96209	113.38	-	-
3/4	.7500	2-1/2	8	9	.6240	TR96210	98.10	TR96491	144.17
o/u	.7510	2-1/2	8	9	.6240	TR96211	109.13	-	-
49/64	.7656	2-1/2	8	9	.6240	TR96212	109.13	-	-
19.5mm	.7677	2-1/2	8	9	.6240	TR96213	109.13	-	-
25/32	.7812	2-1/2	8	9	.6240	TR96214	105.78	TR96492	155.47
20.0mm	.7874	2-1/2	8	9	.6240	TR96215	116.85	-	-
51/64	.7969	2-1/2	8	9	.6240	TR96216	116.85	-	-
20.5mm	.8071	2-1/2	8	9	.6240	TR96217	116.85	-	-
o/u	.8115	2-1/2	8	9	.6240	TR96218	116.85	-	-
13/16	.8125	2-1/2	8	9	.6240	TR96219	105.78	TR96493	155.47
o/u	.8135	2-1/2			.6240	TR96220	116.85	-	-
21.0mm	.8268	2-1/2	8	9-1/2	.6240	TR96221	116.85	-	-
53/64	.8281	2-1/2	8	9-1/2	.6240	TR96222	116.85	-	-
27/32	.8438	2-1/2	8	9-1/2	.6240	TR96223	125.15	TR96494	183.96
21.5mm	.8465	2-5/8	8	10	.7490	TR96224	136.22	-	-
55/64	.8594	2-5/8	8	10	.7490	TR96225	136.22	-	-
22.0mm	.8661	2-5/8	8	10	.7490	TR96226	136.22	-	-
o/u	.8740	2-5/8	8	10	.7490	TR96227	136.22	-	-
7/8	.8750	2-5/8	8	10	.7490	TR96228	128.03	TR96495	188.25
o/u	.8760	2-5/8	8	10	.7490	TR96229	139.14	-	-
22.5mm	.8858	2-5/8	8	10	.7490	TR96230	139.14	-	-

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THRU 1/2" DIAMETER	1/2" TO 5/8"	5/8" TO 1-1/2"	1-1/2" TO 2"
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STRAIGHT SHANK - STRAIGHT FLUTE



SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	SERIES 933		SERIES 1933	
						HSS	LIST PRICE	M42 COBALT	LIST PRICE
57/64	.8906	2-5/8	8	10	.7490	TR96231	139.14	-	-
23.0mm	.9055	2-5/8	8	10	.7490	TR96232	139.14	-	-
29/32	.9062	2-5/8	8	10	.7490	TR96233	138.01	TR96496	202.83
59/64	.9219	2-5/8	8	10	.7490	TR96234	149.00	-	-
23.5mm	.9252	2-5/8	8	10	.7490	TR96235	149.00	-	-
o/u	.9365	2-5/8	8	10	.7490	TR96236	149.00	-	-
15/16	.9375	2-5/8	8	10	.7490	TR96237	138.01	TR96497	202.83
o/u	.9385	2-5/8	8	10	.7490	TR96238	149.00	-	-
24.0mm	.9449	2-5/8	8	10	.7490	TR96239	149.00	-	-
61/64	.9531	2-5/8	8	10	.7490	TR96240	149.00	-	-
24.5mm	.9646	2-5/8	8	10	.7490	TR96241	149.00	-	-
31/32	.9688	2-5/8	8	10	.7490	TR96242	154.58	TR96498	227.15
25.0mm	.9843	2-3/4	8	10-1/2	.8740	TR96243	158.20	-	-
63/64	.9844	2-3/4	8	10-1/2	.8740	TR96244	158.20	-	-
o/u	.9990	2-3/4	8	10-1/2	.8740	TR96245	158.20	-	-
1	1.0000	2-3/4	8	10-1/2	.8740	TR96246	156.02	TR96499	229.29
o/u	1.0010	2-3/4	8	10-1/2	.8740	TR96247	167.05	-	-
1-1/32	1.0312	2-3/4	8	10-1/2	.8740	TR96248	217.05	-	-
1-1/16	1.0625	2-3/4	8	10-1/2	.8740	TR96249	172.93	TR96500	254.20
1-3/32	1.0938	2-7/8	8	11	.8740	TR96250	227.97	-	-
1-1/8	1.1250	2-7/8	8	11	.8740	TR96251	183.81	TR96501	270.14
1-5/32	1.1562	2-7/8	10	11	.9990	TR96252	259.38	-	-
1-3/16	1.1875	2-7/8	10	11	.9990	TR96253	215.26	TR96502	316.44
1-7/32	1.2188	3	10	11-1/2	.9990	TR96254	272.28	-	-
1-1/4	1.2500	3	10	11-1/2	.9990	TR96255	228.12	TR96503	335.30
1-9/32	1.2812	3	10	11-1/2	.9990	TR96256	310.28	-	-
1-5/16	1.3125	3	10	11-1/2	.9990	TR96257	266.08	TR96504	391.08
1-11/32	1.3438	3-1/4	10	12	.9990	TR96258	323.77	-	-
1-3/8	1.3750	3-1/4	10	12	.9990	TR96259	279.61	TR96505	411.03
1-13/32	1.4062	3-1/4	10	12	1.2490	TR96260	344.00	-	-
1-7/16	1.4375	3-1/4	10	12	1.2490	TR96261	299.84	TR96506	440.85
1-15/32	1.4688	3-1/2	10	12-1/2	1.2490	TR96262	367.07	-	-
1-1/2	1.5000	3-1/2	10	12-1/2	1.2490	TR96263	322.87	TR96507	474.64
1-9/16	1.5625	3-1/2	12	13	1.2490	TR96910	457.10	-	-
1-5/8	1.6250	3-1/2	12	13	1.2490	TR96911	457.10	-	-
1-11/16	1.6875	4	12	13-1/2	1.2490	TR96912	524.96	-	-
1-3/4	1.7500	4	12	13-1/2	1.2490	TR96913	524.96	-	-
1-13/16	1.8125	4	12	14	1.4990	TR96914	604.62	-	-
1-7/8	1.8750	4	12	14	1.4990	TR96915	604.62	-	-
1-15/16	1.9375	4	12	14	1.4990	TR96916	709.04	-	-
2	2.0000	4	12	14	1.4990	TR96917	709.04	-	-

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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STOCKED INTERMEDIATE SIZES - HIGH SPEED STEEL

DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE
0.0140	TR94007	43.57	0.0490	TR94054	34.30	0.0770	TR94101	30.75	0.1060	TR94148	30.75	0.1340	TR94195	36.05
0.0150	TR94008	43.57	0.0495	TR94055	34.30	0.0775	TR94102	30.75	0.1070	TR94149	30.75	0.1345	TR94196	36.05
0.0155	TR94009	43.57	0.0500	TR94056	34.30	0.0780	TR94103	30.75	0.1075	TR94150	30.75	0.1350	TR94197	36.05
0.0165	TR94010	43.57	0.0505	TR94057	34.30	0.0790	TR94104	30.75	0.1080	TR94151	30.75	0.1355	TR94198	36.05
0.0170	TR94011	43.57	0.0510	TR94058	34.30	0.0795	TR94105	30.75	0.1085	TR94152	30.75	0.1365	TR94199	36.05
0.0175	TR94012	43.57	0.0515	TR94059	34.30	0.0800	TR94106	30.75	0.1090	TR94153	30.75	0.1370	TR94200	36.05
0.0185	TR94013	43.57	0.0525	TR94060	34.30	0.0805	TR94107	30.75	0.1095	TR94154	26.58	0.1375	TR94201	36.05
0.0190	TR94014	43.57	0.0530	TR94061	34.30	0.0815	TR94108	30.75	0.1105	TR94155	26.58	0.1380	TR94202	36.05
0.0195	TR94015	43.57	0.0535	TR94062	34.30	0.0825	TR94109	30.75	0.1115	TR94156	26.58	0.1385	TR94203	36.05
0.0205	TR94016	39.68	0.0540	TR94063	34.30	0.0830	TR94110	30.75	0.1120	TR94157	26.58	0.1390	TR94204	36.05
0.0215	TR94017	39.68	0.0545	TR94064	34.30	0.0835	TR94111	30.75	0.1125	TR94158	26.58	0.1395	TR94205	36.05
0.0220	TR94018	39.68	0.0555	TR94065	34.30	0.0840	TR94112	30.75	0.1135	TR94159	26.58	0.1400	TR94206	36.05
0.0230	TR94019	39.68	0.0560	TR94066	34.30	0.0845	TR94113	30.75	0.1140	TR94160	26.58	0.1410	TR94207	34.30
0.0235	TR94020	39.68	0.0565	TR94067	34.30	0.0850	TR94114	30.75	0.1145	TR94161	26.58	0.1415	TR94208	34.30
0.0245	TR94021	39.68	0.0570	TR94068	34.30	0.0855	TR94115	30.75	0.1150	TR94162	26.58	0.1420	TR94209	34.30
0.0255	TR94022	39.68	0.0575	TR94069	34.30	0.0865	TR94116	30.75	0.1155	TR94163	26.58	0.1425	TR94210	34.30
0.0265	TR94023	39.68	0.0580	TR94070	34.30	0.0870	TR94117	30.75	0.1165	TR94164	26.58	0.1430	TR94211	34.30
0.0270	TR94024	39.68	0.0585	TR94071	34.30	0.0875	TR94118	30.75	0.1170	TR94165	26.58	0.1435	TR94212	34.30
0.0275	TR94025	39.68	0.0590	TR94072	34.30	0.0880	TR94119	30.75	0.1175	TR94166	26.58	0.1445	TR94213	34.30
0.0285	TR94026	39.68	0.0600	TR94073	34.30	0.0885	TR94120	30.75	0.1180	TR94167	26.58	0.1450	TR94214	34.30
0.0290	TR94027	39.68	0.0605	TR94074	34.30	0.0895	TR94121	30.75	0.1185	TR94168	26.58	0.1455	TR94215	34.30
0.0295	TR94028	36.05	0.0610	TR94075	34.30	0.0900	TR94122	30.75	0.1190	TR94169	26.58	0.1460	TR94216	34.30
0.0300	TR94029	36.05	0.0615	TR94076	34.30	0.0905	TR94123	30.75	0.1195	TR94170	26.58	0.1465	TR94217	34.30
0.0305	TR94030	36.05	0.0620	TR94077	34.30	0.0910	TR94124	30.75	0.1205	TR94171	26.58	0.1475	TR94218	34.30
0.0315	TR94031	36.05	0.0630	TR94078	30.75	0.0915	TR94125	30.75	0.1210	TR94172	26.58	0.1480	TR94219	34.30
0.0325	TR94032	36.05	0.0640	TR94079	30.75	0.0920	TR94126	30.75	0.1215	TR94173	26.58	0.1485	TR94220	34.30
0.0335	TR94033	36.05	0.0645	TR94080	30.75	0.0925	TR94127	30.75	0.1220	TR94174	26.58	0.1490	TR94221	34.30
0.0340	TR94034	36.05	0.0650	TR94081	30.75	0.0930	TR94128	30.75	0.1225	TR94175	26.58	0.1500	TR94222	34.30
0.0345	TR94035	36.05	0.0655	TR94082	30.75	0.0940	TR94129	30.75	0.1230	TR94176	26.58	0.1505	TR94223	34.30
0.0355	TR94036	36.05	0.0660	TR94083	30.75	0.0945	TR94130	30.75	0.1235	TR94177	26.58	0.1510	TR94224	34.30
0.0365	TR94037	36.05	0.0665	TR94084	30.75	0.0950	TR94131	30.75	0.1245	TR94178	26.58	0.1515	TR94225	34.30
0.0375	TR94038	36.05	0.0675	TR94085	30.75	0.0955	TR94132	30.75	0.1247	TR94179	26.58	0.1525	TR94226	34.30
0.0385	TR94039	36.05	0.0680	TR94086	30.75	0.0965	TR94133	30.75	0.1255	TR94180	36.05	0.1530	TR94227	34.30
0.0395	TR94040	34.30	0.0685	TR94087	30.75	0.0970	TR94134	30.75	0.1265	TR94181	36.05	0.1535	TR94228	34.30
0.0405	TR94041	34.30	0.0690	TR94088	30.75	0.0975	TR94135	30.75	0.1270	TR94182	36.05	0.1545	TR94229	34.30
0.0415	TR94042	34.30	0.0695	TR94089	30.75	0.0985	TR94136	30.75	0.1275	TR94183	36.05	0.1550	TR94230	34.30
0.0425	TR94043	34.30	0.0705	TR94090	30.75	0.0990	TR94137	30.75	0.1280	TR94184	36.05	0.1555	TR94231	34.30
0.0435	TR94044	34.30	0.0710	TR94091	30.75	0.1000	TR94138	30.75	0.1290	TR94185	36.05	0.1560	TR94232	34.30
0.0440	TR94045	34.30	0.0715	TR94092	30.75	0.1005	TR94139	30.75	0.1295	TR94186	36.05	0.1565	TR94233	36.05
0.0445	TR94046	34.30	0.0720	TR94093	30.75	0.1010	TR94140	30.75	0.1300	TR94187	36.05	0.1580	TR94234	36.05
0.0450	TR94047	34.30	0.0725	TR94094	30.75	0.1020	TR94141	30.75	0.1305	TR94188	36.05	0.1585	TR94235	36.05
0.0455	TR94048	34.30	0.0735	TR94095	30.75	0.1025	TR94142	30.75	0.1310	TR94189	36.05	0.1595	TR94236	36.05
0.0460	TR94049	34.30	0.0740	TR94096	30.75	0.1030	TR94143	30.75	0.1315	TR94190	36.05	0.1600	TR94237	36.05
0.0470	TR94050	34.30	0.0745	TR94097	30.75	0.1035	TR94144	30.75	0.1320	TR94191	36.05	0.1605	TR94238	36.05
0.0475	TR94051	34.30	0.0750	TR94098	30.75	0.1045	TR94145	30.75	0.1325	TR94192	36.05	0.1615	TR94239	36.05
0.0480	TR94052	34.30	0.0755	TR94099	30.75	0.1050	TR94146	30.75	0.1330	TR94193	36.05	0.1620	TR94240	36.05
0.0485	TR94053	34.30	0.0765	TR94100	30.75	0.1055	TR94147	30.75	0.1335	TR94194	36.05	0.1625	TR94241	36.05

CONTINUED ON NEXT PAGE

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STOCKED INTERMEDIATE SIZES - HIGH SPEED STEEL

DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE
0.1630	TR94242	36.05	0.1925	TR94289	42.76	0.2205	TR94336	42.37	0.2470	TR94383	38.20	0.2740	TR94430	48.72
0.1635	TR94243	36.05	0.1930	TR94290	42.76	0.2215	TR94337	42.37	0.2475	TR94384	38.20	0.2745	TR94431	48.72
0.1640	TR94244	36.05	0.1940	TR94291	42.76	0.2220	TR94338	42.37	0.2480	TR94385	38.20	0.2750	TR94432	48.72
0.1645	TR94245	36.05	0.1945	TR94292	42.76	0.2225	TR94339	42.37	0.2485	TR94386	38.20	0.2755	TR94433	48.72
0.1650	TR94246	36.05	0.1950	TR94293	42.76	0.2230	TR94340	42.37	0.2495	TR94387	38.20	0.2760	TR94434	48.72
0.1655	TR94247	36.05	0.1955	TR94294	42.76	0.2235	TR94341	42.37	0.2505	TR94388	48.72	0.2765	TR94435	48.72
0.1665	TR94248	36.05	0.1965	TR94295	42.76	0.2240	TR94342	42.37	0.2515	TR94389	48.72	0.2775	TR94436	48.72
0.1670	TR94249	36.05	0.1970	TR94296	42.76	0.2245	TR94343	42.37	0.2520	TR94390	48.72	0.2780	TR94437	48.72
0.1675	TR94250	36.05	0.1975	TR94297	42.76	0.2250	TR94344	42.37	0.2525	TR94391	48.72	0.2785	TR94438	48.72
0.1680	TR94251	36.05	0.1980	TR94298	42.76	0.2255	TR94345	42.37	0.2530	TR94392	48.72	0.2790	TR94439	48.72
0.1685	TR94252	36.05	0.1985	TR94299	42.76	0.2260	TR94346	42.37	0.2535	TR94393	48.72	0.2795	TR94440	48.72
0.1690	TR94253	36.05	0.1995	TR94300	42.76	0.2265	TR94347	42.37	0.2540	TR94394	48.72	0.2800	TR94441	48.72
0.1700	TR94254	36.05	0.2000	TR94301	42.76	0.2270	TR94348	42.37	0.2545	TR94395	48.72	0.2805	TR94442	48.72
0.1705	TR94255	36.05	0.2005	TR94302	42.76	0.2275	TR94349	42.37	0.2550	TR94396	48.72	0.2815	TR94443	48.72
0.1710	TR94256	36.05	0.2015	TR94303	42.76	0.2285	TR94350	42.37	0.2555	TR94397	48.72	0.2820	TR94444	48.72
0.1715	TR94257	36.05	0.2020	TR94304	42.76	0.2290	TR94351	42.37	0.2560	TR94398	48.72	0.2825	TR94445	48.72
0.1720	TR94258	33.87	0.2025	TR94305	42.76	0.2295	TR94352	42.37	0.2565	TR94399	48.72	0.2830	TR94446	48.72
0.1725	TR94259	33.87	0.2030	TR94306	42.76	0.2300	TR94353	42.37	0.2575	TR94400	48.72	0.2835	TR94447	48.72
0.1735	TR94260	33.87	0.2035	TR94307	41.66	0.2305	TR94354	42.37	0.2580	TR94401	48.72	0.2840	TR94448	48.72
0.1740	TR94261	33.87	0.2045	TR94308	41.66	0.2310	TR94355	42.37	0.2585	TR94402	48.72	0.2845	TR94449	48.72
0.1745	TR94262	33.87	0.2050	TR94309	41.66	0.2315	TR94356	42.37	0.2590	TR94403	48.72	0.2850	TR94450	48.72
0.1750	TR94263	33.87	0.2060	TR94310	41.66	0.2320	TR94357	42.37	0.2595	TR94404	48.72	0.2855	TR94451	48.72
0.1755	TR94264	33.87	0.2065	TR94311	41.66	0.2325	TR94358	42.37	0.2600	TR94405	48.72	0.2860	TR94452	48.72
0.1760	TR94265	33.87	0.2070	TR94312	41.66	0.2330	TR94359	42.37	0.2605	TR94406	48.72	0.2865	TR94453	48.72
0.1765	TR94266	33.87	0.2075	TR94313	41.66	0.2335	TR94360	42.37	0.2615	TR94407	48.72	0.2870	TR94454	48.72
0.1775	TR94267	33.87	0.2080	TR94314	41.66	0.2345	TR94361	38.20	0.2620	TR94408	48.72	0.2875	TR94455	48.72
0.1780	TR94268	33.87	0.2085	TR94315	41.66	0.2350	TR94362	38.20	0.2625	TR94409	48.72	0.2880	TR94456	48.72
0.1785	TR94269	33.87	0.2095	TR94316	41.66	0.2355	TR94363	38.20	0.2630	TR94410	48.72	0.2885	TR94457	48.72
0.1790	TR94270	33.87	0.2100	TR94317	41.66	0.2360	TR94364	38.20	0.2635	TR94411	48.72	0.2890	TR94458	48.72
0.1795	TR94271	33.87	0.2105	TR94318	41.66	0.2365	TR94365	38.20	0.2640	TR94412	48.72	0.2895	TR94459	48.72
0.1805	TR94272	33.87	0.2110	TR94319	41.66	0.2370	TR94366	38.20	0.2645	TR94413	48.72	0.2905	TR94460	48.72
0.1810	TR94273	33.87	0.2115	TR94320	41.66	0.2375	TR94367	38.20	0.2650	TR94414	48.72	0.2910	TR94461	48.72
0.1815	TR94274	33.87	0.2120	TR94321	41.66	0.2385	TR94368	38.20	0.2655	TR94415	48.72	0.2915	TR94462	48.72
0.1825	TR94275	33.87	0.2125	TR94322	41.66	0.2390	TR94369	38.20	0.2665	TR94416	48.72	0.2920	TR94463	48.72
0.1830	TR94276	33.87	0.2135	TR94323	41.66	0.2395	TR94370	38.20	0.2670	TR94417	48.72	0.2925	TR94464	48.72
0.1835	TR94277	33.87	0.2140	TR94324	41.66	0.2400	TR94371	38.20	0.2675	TR94418	48.72	0.2930	TR94465	48.72
0.1840	TR94278	33.87	0.2145	TR94325	41.66	0.2405	TR94372	38.20	0.2680	TR94419	48.72	0.2935	TR94466	48.72
0.1845	TR94279	33.87	0.2150	TR94326	41.66	0.2410	TR94373	38.20	0.2685	TR94420	48.72	0.2940	TR94467	48.72
0.1855	TR94280	33.87	0.2155	TR94327	41.66	0.2415	TR94374	38.20	0.2690	TR94421	48.72	0.2945	TR94468	48.72
0.1860	TR94281	33.87	0.2160	TR94328	41.66	0.2425	TR94375	38.20	0.2695	TR94422	48.72	0.2955	TR94469	48.72
0.1870	TR94282	33.87	0.2170	TR94329	41.66	0.2430	TR94376	38.20	0.2700	TR94423	48.72	0.2960	TR94470	48.72
0.1880	TR94283	42.76	0.2175	TR94330	41.66	0.2435	TR94377	38.20	0.2705	TR94424	48.72	0.2965	TR94471	48.72
0.1895	TR94284	42.76	0.2180	TR94331	41.66	0.2440	TR94378	38.20	0.2710	TR94425	48.72	0.2970	TR94472	43.61
0.1900	TR94285	42.76	0.2185	TR94332	41.66	0.2445	TR94379	38.20	0.2715	TR94426	48.72	0.2975	TR94473	43.61
0.1905	TR94286	42.76	0.2190	TR94333	42.37	0.2450	TR94380	38.20	0.2725	TR94427	48.72	0.2980	TR94474	43.61
0.1915	TR94287	42.76	0.2195	TR94334	42.37	0.2455	TR94381	38.20	0.2730	TR94428	48.72	0.2985	TR94475	43.61
0.1920	TR94288	42.76	0.2200	TR94335	42.37	0.2465	TR94382	38.20	0.2735	TR94429	48.72	0.2990	TR94476	43.61

CONTINUED ON NEXT PAGE



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STOCKED INTERMEDIATE SIZES - HIGH SPEED STEEL

DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE
0.2995	TR94477	43.61	0.3265	TR94524	51.37	0.3515	TR94571	52.11	0.3780	TR94618	56.20	0.4025	TR94665	57.64
0.3000	TR94478	43.61	0.3270	TR94525	51.37	0.3520	TR94572	52.11	0.3785	TR94619	56.20	0.4030	TR94666	57.64
0.3005	TR94479	43.61	0.3275	TR94526	51.37	0.3525	TR94573	52.11	0.3790	TR94620	56.20	0.4035	TR94667	57.64
0.3010	TR94480	43.61	0.3280	TR94527	51.37	0.3530	TR94574	52.11	0.3795	TR94621	56.20	0.4040	TR94668	57.64
0.3015	TR94481	43.61	0.3285	TR94528	51.37	0.3535	TR94575	52.11	0.3800	TR94622	56.20	0.4050	TR94669	57.64
0.3025	TR94482	43.61	0.3290	TR94529	51.37	0.3540	TR94576	52.11	0.3805	TR94623	56.20	0.4055	TR94670	57.64
0.3030	TR94483	43.61	0.3295	TR94530	51.37	0.3545	TR94577	52.11	0.3810	TR94624	56.20	0.4060	TR94671	57.64
0.3035	TR94484	43.61	0.3300	TR94531	51.37	0.3550	TR94578	52.11	0.3815	TR94625	56.20	0.4065	TR94672	57.64
0.3040	TR94485	43.61	0.3305	TR94532	51.37	0.3555	TR94579	52.11	0.3820	TR94626	56.20	0.4070	TR94673	57.64
0.3045	TR94486	43.61	0.3310	TR94533	51.37	0.3560	TR94580	52.11	0.3825	TR94627	56.20	0.4075	TR94674	57.64
0.3050	TR94487	43.61	0.3315	TR94534	51.37	0.3565	TR94581	52.11	0.3830	TR94628	56.20	0.4080	TR94675	57.64
0.3055	TR94488	43.61	0.3325	TR94535	51.37	0.3570	TR94582	52.11	0.3835	TR94629	56.20	0.4085	TR94676	57.64
0.3060	TR94489	43.61	0.3330	TR94536	51.37	0.3575	TR94583	52.11	0.3840	TR94630	56.20	0.4090	TR94677	57.64
0.3065	TR94490	43.61	0.3335	TR94537	51.37	0.3585	TR94584	52.11	0.3845	TR94631	56.20	0.4095	TR94678	57.64
0.3070	TR94491	43.61	0.3340	TR94538	51.37	0.3590	TR94585	52.11	0.3850	TR94632	56.20	0.4100	TR94679	57.64
0.3075	TR94492	43.61	0.3345	TR94539	51.37	0.3595	TR94586	46.69	0.3855	TR94633	56.20	0.4105	TR94680	57.64
0.3080	TR94493	43.61	0.3350	TR94540	51.37	0.3600	TR94587	46.69	0.3865	TR94634	56.20	0.4110	TR94681	57.64
0.3085	TR94494	43.61	0.3355	TR94541	51.37	0.3605	TR94588	46.69	0.3870	TR94635	56.20	0.4115	TR94682	57.64
0.3090	TR94495	43.61	0.3360	TR94542	51.37	0.3610	TR94589	46.69	0.3875	TR94636	56.20	0.4120	TR94683	57.64
0.3095	TR94496	43.61	0.3365	TR94543	51.37	0.3615	TR94590	46.69	0.3880	TR94637	56.20	0.4125	TR94684	57.64
0.3100	TR94497	43.61	0.3370	TR94544	51.37	0.3620	TR94591	46.69	0.3885	TR94638	56.20	0.4135	TR94685	57.64
0.3105	TR94498	43.61	0.3375	TR94545	51.37	0.3625	TR94592	46.69	0.3890	TR94639	56.20	0.4140	TR94686	57.64
0.3110	TR94499	43.61	0.3380	TR94546	51.37	0.3630	TR94593	46.69	0.3895	TR94640	56.20	0.4145	TR94687	57.64
0.3120	TR94500	43.61	0.3385	TR94547	51.37	0.3635	TR94594	46.69	0.3900	TR94641	56.20	0.4150	TR94688	57.64
0.3130	TR94501	51.37	0.3395	TR94548	51.37	0.3640	TR94595	46.69	0.3905	TR94642	56.20	0.4155	TR94689	57.64
0.3140	TR94502	51.37	0.3400	TR94549	51.37	0.3645	TR94596	46.69	0.3910	TR94643	57.64	0.4160	TR94690	57.64
0.3145	TR94503	51.37	0.3405	TR94550	51.37	0.3650	TR94597	46.69	0.3915	TR94644	57.64	0.4165	TR94691	57.64
0.3155	TR94504	51.37	0.3410	TR94551	51.37	0.3655	TR94598	46.69	0.3920	TR94645	57.64	0.4170	TR94692	57.64
0.3165	TR94505	51.37	0.3415	TR94552	51.37	0.3660	TR94599	46.69	0.3925	TR94646	57.64	0.4175	TR94693	57.64
0.3170	TR94506	51.37	0.3420	TR94553	51.37	0.3665	TR94600	46.69	0.3930	TR94647	57.64	0.4180	TR94694	57.64
0.3175	TR94507	51.37	0.3425	TR94554	51.37	0.3670	TR94601	46.69	0.3935	TR94648	57.64	0.4185	TR94695	57.64
0.3180	TR94508	51.37	0.3430	TR94555	51.37	0.3675	TR94602	46.69	0.3940	TR94649	57.64	0.4190	TR94696	57.64
0.3185	TR94509	51.37	0.3435	TR94556	51.37	0.3685	TR94603	46.69	0.3945	TR94650	57.64	0.4195	TR94697	57.64
0.3190	TR94510	51.37	0.3440	TR94557	52.11	0.3690	TR94604	46.69	0.3950	TR94651	57.64	0.4200	TR94698	57.64
0.3195	TR94511	51.37	0.3445	TR94558	52.11	0.3695	TR94605	46.69	0.3955	TR94652	57.64	0.4205	TR94699	57.64
0.3200	TR94512	51.37	0.3450	TR94559	52.11	0.3700	TR94606	46.69	0.3960	TR94653	57.64	0.4210	TR94700	57.64
0.3205	TR94513	51.37	0.3455	TR94560	52.11	0.3705	TR94607	46.69	0.3965	TR94654	57.64	0.4215	TR94701	57.64
0.3210	TR94514	51.37	0.3460	TR94561	52.11	0.3710	TR94608	46.69	0.3975	TR94655	57.64	0.4220	TR94702	54.06
0.3215	TR94515	51.37	0.3465	TR94562	52.11	0.3715	TR94609	46.69	0.3980	TR94656	57.64	0.4225	TR94703	54.06
0.3220	TR94516	51.37	0.3470	TR94563	52.11	0.3720	TR94610	46.69	0.3985	TR94657	57.64	0.4230	TR94704	54.06
0.3225	TR94517	51.37	0.3475	TR94564	52.11	0.3725	TR94611	46.69	0.3990	TR94658	57.64	0.4235	TR94705	54.06
0.3235	TR94518	51.37	0.3485	TR94565	52.11	0.3730	TR94612	46.69	0.3995	TR94659	57.64	0.4240	TR94706	54.06
0.3240	TR94519	51.37	0.3490	TR94566	52.11	0.3735	TR94613	46.69	0.4000	TR94660	57.64	0.4245	TR94707	54.06
0.3245	TR94520	51.37	0.3495	TR94567	52.11	0.3745	TR94614	46.69	0.4005	TR94661	57.64	0.4250	TR94708	54.06
0.3250	TR94521	51.37	0.3500	TR94568	52.11	0.3755	TR94615	56.20	0.4010	TR94662	57.64	0.4255	TR94709	54.06
0.3255	TR94522	51.37	0.3505	TR94569	52.11	0.3765	TR94616	56.20	0.4015	TR94663	57.64	0.4260	TR94710	54.06
0.3260	TR94523	51.37	0.3510	TR94570	52.11	0.3775	TR94617	56.20	0.4020	TR94664	57.64	0.4265	TR94711	54.06

CONTINUED ON NEXT PAGE

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STOCKED INTERMEDIATE SIZES - HIGH SPEED STEEL

DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE	DEC. SIZE	ITEM#	LIST PRICE
0.4270	TR94712	54.06	0.4525	TR94760	61.31	0.4765	TR94808	61.31	0.5020	TR94856	77.56	0.7525	TR94903	124.41
0.4275	TR94713	54.06	0.4530	TR94761	61.31	0.4770	TR94809	61.31	0.5025	TR94857	77.56	0.7530	TR94904	124.41
0.4280	TR94714	54.06	0.4535	TR94762	61.31	0.4775	TR94810	61.31	0.5030	TR94858	77.56	0.7540	TR94905	124.41
0.4285	TR94715	54.06	0.4540	TR94763	61.31	0.4780	TR94811	61.31	0.5035	TR94859	77.56	0.7550	TR94906	124.41
0.4290	TR94716	54.06	0.4545	TR94764	61.31	0.4785	TR94812	61.31	0.5040	TR94860	77.56	0.8095	TR94907	124.41
0.4295	TR94717	54.06	0.4550	TR94765	61.31	0.4790	TR94813	61.31	0.5045	TR94861	77.56	0.8100	TR94908	124.41
0.4300	TR94718	54.06	0.4555	TR94766	61.31	0.4795	TR94814	61.31	0.5050	TR94862	77.56	0.8105	TR94909	124.41
0.4305	TR94719	54.06	0.4560	TR94767	61.31	0.4800	TR94815	61.31	0.5060	TR94863	77.56	0.8110	TR94910	124.41
0.4310	TR94720	54.06	0.4565	TR94768	61.31	0.4805	TR94816	61.31	0.5070	TR94864	77.56	0.8120	TR94911	124.41
0.4315	TR94721	54.06	0.4570	TR94769	61.31	0.4810	TR94817	61.31	0.5080	TR94865	77.56	0.8130	TR94912	137.00
0.4320	TR94722	54.06	0.4575	TR94770	61.31	0.4815	TR94818	61.31	0.5090	TR94866	77.56	0.8140	TR94913	137.00
0.4325	TR94723	54.06	0.4580	TR94771	61.31	0.4820	TR94819	61.31	0.5100	TR94867	77.56	0.8145	TR94914	137.00
0.4330	TR94724	54.06	0.4585	TR94772	61.31	0.4825	TR94820	61.31	0.5600	TR94868	75.96	0.8150	TR94915	137.00
0.4335	TR94725	54.06	0.4590	TR94773	61.31	0.4830	TR94821	61.31	0.5605	TR94869	75.96	0.8155	TR94916	137.00
0.4340	TR94726	54.06	0.4595	TR94774	61.31	0.4835	TR94822	61.31	0.5610	TR94870	75.96	0.8720	TR94917	140.54
0.4345	TR94727	54.06	0.4600	TR94775	61.31	0.4840	TR94823	61.31	0.5620	TR94871	75.96	0.8725	TR94918	140.54
0.4350	TR94728	54.06	0.4605	TR94776	61.31	0.4845	TR94824	57.64	0.5630	TR94872	87.23	0.8730	TR94919	140.54
0.4355	TR94729	54.06	0.4610	TR94777	61.31	0.4850	TR94825	57.64	0.5640	TR94873	87.23	0.8735	TR94920	140.54
0.4360	TR94730	54.06	0.4615	TR94778	61.31	0.4855	TR94826	57.64	0.5645	TR94874	87.23	0.8745	TR94921	140.54
0.4370	TR94731	54.06	0.4620	TR94779	61.31	0.4860	TR94827	57.64	0.5650	TR94875	87.23	0.8755	TR94922	153.13
0.4380	TR94732	61.31	0.4625	TR94780	61.31	0.4865	TR94828	57.64	0.5655	TR94876	87.23	0.8765	TR94923	153.13
0.4390	TR94733	61.31	0.4630	TR94781	61.31	0.4870	TR94829	57.64	0.6220	TR94877	87.62	0.8770	TR94924	153.13
0.4395	TR94734	61.31	0.4635	TR94782	61.31	0.4875	TR94830	57.64	0.6225	TR94878	87.62	0.8775	TR94925	153.13
0.4400	TR94735	61.31	0.4640	TR94783	61.31	0.4880	TR94831	57.64	0.6230	TR94879	87.62	0.8780	TR94926	153.13
0.4405	TR94736	61.31	0.4645	TR94784	61.31	0.4885	TR94832	57.64	0.6235	TR94880	87.62	0.9340	TR94927	153.13
0.4410	TR94737	61.31	0.4650	TR94785	61.31	0.4890	TR94833	57.64	0.6245	TR94881	87.62	0.9345	TR94928	153.13
0.4415	TR94738	61.31	0.4655	TR94786	61.31	0.4895	TR94834	57.64	0.6255	TR94882	97.87	0.9350	TR94929	153.13
0.4420	TR94739	61.31	0.4660	TR94787	61.31	0.4900	TR94835	57.64	0.6265	TR94883	97.87	0.9355	TR94930	153.13
0.4425	TR94740	61.31	0.4665	TR94788	61.31	0.4905	TR94836	57.64	0.6270	TR94884	97.87	0.9360	TR94931	153.13
0.4430	TR94741	61.31	0.4670	TR94789	61.31	0.4910	TR94837	57.64	0.6275	TR94885	97.87	0.9370	TR94932	153.13
0.4435	TR94742	61.31	0.4675	TR94790	61.31	0.4915	TR94838	57.64	0.6280	TR94886	97.87	0.9380	TR94933	168.10
0.4440	TR94743	61.31	0.4680	TR94791	61.31	0.4920	TR94839	57.64	0.6300	TR94949	97.87	0.9390	TR94934	168.10
0.4445	TR94744	61.31	0.4685	TR94792	61.31	0.4925	TR94840	57.64	0.6845	TR94887	97.87	0.9395	TR94935	168.10
0.4450	TR94745	61.31	0.4690	TR94793	61.31	0.4930	TR94841	57.64	0.6850	TR94888	97.87	0.9400	TR94936	168.10
0.4455	TR94746	61.31	0.4695	TR94794	61.31	0.4935	TR94842	57.64	0.6855	TR94889	97.87	0.9405	TR94937	168.10
0.4460	TR94747	61.31	0.4700	TR94795	61.31	0.4940	TR94843	57.64	0.6860	TR94890	97.87	0.9970	TR94938	171.34
0.4465	TR94748	61.31	0.4705	TR94796	61.31	0.4945	TR94844	57.64	0.6870	TR94891	97.87	0.9975	TR94939	171.34
0.4470	TR94749	61.31	0.4710	TR94797	61.31	0.4950	TR94845	57.64	0.6880	TR94892	107.88	0.9980	TR94940	171.34
0.4475	TR94750	61.31	0.4715	TR94798	61.31	0.4955	TR94846	57.64	0.6895	TR94893	107.88	0.9985	TR94941	171.34
0.4480	TR94751	61.31	0.4720	TR94799	61.31	0.4960	TR94847	57.64	0.6900	TR94894	107.88	0.9995	TR94942	171.34
0.4485	TR94752	61.31	0.4725	TR94800	61.31	0.4965	TR94848	57.64	0.6905	TR94895	107.88	1.0005	TR94943	237.98
0.4490	TR94753	61.31	0.4730	TR94801	61.31	0.4970	TR94849	57.64	0.7470	TR94896	114.63	1.0015	TR94944	237.98
0.4495	TR94754	61.31	0.4735	TR94802	61.31	0.4975	TR94850	57.64	0.7475	TR94897	114.63	1.0020	TR94945	237.98
0.4500	TR94755	61.31	0.4740	TR94803	61.31	0.4980	TR94851	57.64	0.7485	TR94898	114.63	1.0025	TR94946	237.98
0.4505	TR94756	61.31	0.4745	TR94804	61.31	0.4985	TR94852	57.64	0.7495	TR94899	114.63	1.0030	TR94947	237.98
0.4510	TR94757	61.31	0.4750	TR94805	61.31	0.4995	TR94853	57.64	0.7505	TR94900	124.41	-	-	-
0.4515	TR94758	61.31	0.4755	TR94806	61.31	0.5005	TR94854	77.56	0.7515	TR94901	124.41	-	-	-
0.4520	TR94759	61.31	0.4760	TR94807	61.31	0.5015	TR94855	77.56	0.7520	TR94902	124.41	-	-	-

**TAKE 55%
OFF LIST
PRICES**

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+
.0135 - .0195	209.86	137.14	102.19	67.44	60.92	51.78	46.85	43.58	42.44	38.89	37.71	37.22	36.34
.0196 - .0290	190.80	124.68	92.97	61.30	55.36	48.53	42.58	39.68	36.79	35.31	35.16	35.10	34.98
.0291 - .0390	173.44	113.15	84.48	55.68	50.31	44.16	38.75	36.05	33.41	32.12	31.21	30.77	30.04
.0391 - .0624	156.77	104.37	84.48	53.71	48.42	41.96	36.92	34.30	31.64	29.69	29.23	29.12	28.93
.0626 - .1093	165.06	105.66	81.48	50.77	44.50	36.90	33.41	30.75	28.17	26.58	25.94	25.47	24.60
.1095 - .1249	162.88	103.38	76.59	44.37	38.96	35.65	29.23	26.58	26.20	25.77	25.34	24.87	24.68
.1251 - .1405	173.44	113.15	76.39	55.68	52.44	44.16	38.75	36.05	33.41	32.12	31.30	30.77	29.74
.1407 - .1561	170.81	111.36	84.57	53.99	48.42	42.29	36.92	34.30	32.38	31.64	30.92	30.19	29.43
.1563 - .1718	173.44	108.24	84.08	55.68	50.43	44.16	38.75	36.05	33.41	32.89	32.38	32.12	31.49
.1720 - .1874	166.34	103.83	84.03	51.87	46.61	41.66	36.65	33.87	33.51	33.00	32.53	31.70	31.30
.1876 - .2030	178.11	118.66	93.12	62.33	57.02	50.68	45.33	42.75	39.84	37.71	36.90	36.65	36.35
.2032 - .2187	178.11	118.66	92.12	61.37	56.08	49.64	44.23	41.67	38.96	36.65	36.19	35.76	35.58
.2189 - .2343	178.83	119.60	92.87	62.15	56.81	50.43	45.03	42.36	39.74	38.14	37.57	37.22	36.92
.2345 - .2499	178.83	119.60	88.40	57.67	52.29	46.13	40.86	38.19	35.36	35.16	34.69	34.32	34.18
.2501 - .2968	185.73	126.27	99.47	68.75	63.47	56.70	51.37	48.72	45.90	43.51	43.09	42.71	42.29
.2970 - .3124	180.57	121.16	94.35	63.51	58.18	51.78	46.33	43.61	43.43	43.05	42.84	42.55	42.29
.3126 - .3437	189.69	129.31	102.36	66.30	64.28	59.31	54.14	51.37	48.48	46.37	45.90	45.59	45.22
.3439 - .3593	189.42	130.01	103.13	72.36	66.99	62.88	54.14	52.11	49.46	47.09	46.61	46.24	45.90
.3595 - .3749	183.98	124.39	97.59	66.64	61.37	54.88	49.58	46.69	46.44	46.37	46.05	45.82	45.66
.3751 - .3905	192.58	133.22	106.58	75.52	70.20	64.35	58.87	56.20	53.60	50.77	50.49	50.07	49.64
.3907 - .4218	195.00	135.52	108.64	77.89	72.57	65.56	60.26	57.65	54.92	52.52	52.02	51.78	51.64
.4220 - .4374	191.32	131.97	104.96	74.32	69.03	62.15	56.70	54.05	53.60	53.42	53.19	52.09	51.52
.4376 - .4843	200.18	140.67	113.86	83.12	77.79	70.50	62.57	61.30	59.96	58.09	57.67	57.02	56.51
.4845 - .4999	195.47	136.01	109.15	78.28	73.09	65.85	57.82	57.65	57.18	56.96	56.51	56.31	56.13
.5001 - .5311	283.65	176.18	140.45	104.48	95.64	86.58	80.68	77.56	74.57	73.20	72.26	71.67	70.97
.5313 - .5624	282.06	174.53	138.73	102.82	93.98	84.90	79.08	75.98	72.91	71.43	70.54	69.88	69.56
.5626 - .5937	293.16	185.62	149.75	113.86	107.04	96.03	92.90	87.22	84.03	82.67	81.70	81.10	80.27
.5939 - .6249	293.57	185.92	150.09	114.21	105.37	96.41	90.45	87.61	84.38	83.03	82.02	81.48	81.13
.6251 - .6874	304.04	196.51	160.65	124.77	115.82	111.16	100.85	97.87	94.93	93.39	92.49	91.99	91.70
.6876 - .7187	313.88	206.44	170.54	134.23	125.48	116.71	110.80	107.89	104.93	103.38	102.40	101.68	101.10
.7189 - .7499	317.84	210.32	174.66	138.65	129.87	120.84	114.78	114.63	114.50	114.40	113.98	113.75	113.37
.7501 - .8124	330.37	222.92	187.22	151.25	142.34	133.41	127.42	124.41	121.43	119.95	119.08	118.39	117.59
.8126 - .8437	343.04	235.45	199.79	163.86	154.90	146.07	139.99	137.00	134.07	132.51	131.54	131.02	130.27
.8439 - .8749	346.22	238.71	202.80	166.91	158.00	149.09	143.02	140.54	139.23	135.52	134.56	133.99	131.45
.8751 - .9374	359.23	251.69	215.86	179.97	171.09	162.25	156.12	153.14	150.24	149.78	149.52	149.30	149.02
.9376 - .9687	374.15	265.03	230.81	195.00	186.06	177.12	171.09	168.09	165.15	163.77	162.66	162.31	161.41
.9689 - .9999	377.25	269.76	233.95	198.00	189.17	180.19	174.27	171.34	168.20	166.79	165.82	165.15	164.48
1.0001 - 1.0624	404.86	302.42	291.71	281.01	270.19	259.48	248.73	237.98	227.30	225.89	220.72	218.91	217.06
1.0626 - 1.1249	427.54	325.64	313.88	302.07	290.27	278.49	266.76	254.99	243.22	231.47	230.38	229.23	227.93
1.1251 - 1.1874	456.57	356.15	343.93	332.25	320.53	308.84	297.49	285.47	275.91	262.03	250.32	238.67	226.94
1.1876 - 1.2499	481.96	380.10	367.33	354.69	342.03	329.39	316.70	304.04	291.39	278.75	266.08	253.40	240.77
1.2501 - 1.3749	548.22	441.54	427.76	414.28	400.83	385.33	373.89	360.50	346.95	333.48	330.02	326.58	323.76
1.3751 - 1.4999	606.44	503.20	488.16	473.19	458.14	443.10	428.17	413.09	398.13	383.06	378.98	373.42	367.05

THRU 1/2" DIAMETER	ABOVE 1/2" TO 5/8"	ABOVE 5/8" TO 1-1/2"
+ .0002, -.0000	+ .0003, -.0000	+ .0001, +.0004

**TAKE 55%
OFF LIST
PRICES**

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+
.0135 - .0195	303.15	160.26	118.79	77.53	67.19	56.79	49.94	46.47	43.02	41.32	40.31	38.89	38.75
.0196 - .0290	275.63	145.61	107.99	70.48	61.08	51.64	45.33	42.23	39.14	38.96	38.91	38.89	38.75
.0291 - .0390	250.59	132.47	98.21	64.01	55.48	49.63	41.23	38.43	35.58	34.18	33.34	32.72	31.96
.0391 - .0624	228.14	130.46	96.25	62.00	53.45	44.91	39.26	36.40	33.54	32.13	31.94	31.68	31.40
.0626 - .1093	229.71	127.54	93.33	59.10	50.62	41.97	36.34	33.47	30.61	29.23	29.06	28.93	28.69
.1095 - .1249	224.46	122.22	88.10	53.87	45.32	36.81	31.11	29.42	27.75	27.27	26.88	26.53	26.22
.1251 - .1405	234.61	132.41	97.81	64.01	55.48	46.96	41.23	38.43	35.58	34.18	33.34	32.72	31.96
.1407 - .1561	232.67	130.46	96.25	62.00	53.45	44.91	39.26	36.40	33.54	32.13	31.70	31.59	31.36
.1563 - .1718	234.82	132.51	98.31	64.18	55.65	47.09	41.43	38.56	35.68	34.24	33.99	33.75	33.47
.1720 - .1874	233.10	130.96	96.69	62.57	55.47	45.48	39.75	36.92	34.06	33.99	33.79	33.54	33.53
.1876 - .2030	242.66	140.45	106.16	72.02	63.50	54.88	49.27	46.39	43.52	42.09	41.23	40.70	40.48
.2032 - .2343	241.63	139.47	105.28	71.05	62.57	54.05	48.29	46.80	45.29	44.81	44.53	44.16	43.47
.2345 - .2499	237.48	135.52	101.34	67.19	58.59	50.05	44.37	44.11	43.82	43.47	43.06	42.29	41.75
.2501 - .2968	258.65	156.48	122.16	88.10	79.50	70.99	65.15	62.38	59.57	58.14	57.71	56.87	56.70
.2970 - .3124	252.14	149.86	115.67	81.48	72.87	64.37	58.74	58.37	58.01	57.74	57.25	57.17	56.77
.3126 - .3437	261.86	159.57	125.35	91.20	82.67	74.07	68.42	65.55	62.65	62.41	62.06	61.47	61.14
.3439 - .3593	262.32	160.14	125.92	91.74	83.22	74.72	68.94	66.17	63.37	62.92	62.55	62.41	62.00
.3595 - .3749	256.33	154.09	119.90	85.65	77.12	68.57	62.88	62.72	62.55	62.33	61.30	62.19	61.94
.3751 - .3905	279.98	177.81	143.63	109.43	100.85	92.34	86.39	83.67	80.94	79.50	78.62	78.10	77.37
.3907 - .4218	283.56	181.45	147.17	112.99	104.49	95.91	90.21	87.38	84.55	83.22	82.17	81.66	80.94
.4220 - .4374	278.00	175.79	141.61	107.40	98.91	90.33	84.59	81.78	78.91	77.56	76.66	76.11	75.41
.4376 - .4843	291.50	189.35	155.13	120.96	112.43	103.85	98.27	95.41	92.54	91.08	90.21	89.67	88.92
.4845 - .4999	284.15	181.90	147.74	113.53	104.93	96.44	90.78	89.24	87.68	87.44	87.13	86.95	86.80
.5001 - .5311	299.83	196.15	162.31	125.34	121.86	118.60	115.38	112.15	108.90	105.67	102.40	99.17	95.98
.5313 - .5624	302.07	199.45	166.78	129.35	125.54	121.86	118.22	114.58	110.93	107.30	103.65	100.01	96.35
.5626 - .5937	307.80	204.59	170.95	133.32	129.16	125.09	121.04	127.27	112.96	108.90	104.85	100.79	96.71
.5939 - .6249	317.53	214.85	182.20	144.46	140.58	137.00	133.41	129.82	126.24	122.56	118.99	115.38	111.79
.6251 - .6874	327.63	224.55	193.58	155.64	152.13	148.83	145.53	142.22	138.89	135.63	133.60	128.94	125.71
.6876 - .7187	337.58	234.37	201.34	163.21	160.38	157.72	154.90	152.32	149.75	147.13	144.46	143.63	143.37
.7189 - .7499	349.50	247.41	216.64	178.20	174.04	169.92	165.86	161.81	157.72	153.63	149.52	145.46	141.33
.7501 - .8124	367.95	265.02	232.90	195.76	183.51	179.59	175.63	171.71	167.81	163.86	159.89	155.98	152.06
.8126 - .8437	386.47	284.66	250.96	216.31	206.05	202.52	199.15	195.76	192.32	188.86	185.44	182.06	178.65
.8439 - .8749	406.56	303.54	270.46	233.99	220.36	215.71	211.17	206.63	202.06	197.52	192.92	188.43	183.86
.8751 - .9374	422.78	319.36	286.65	248.46	234.61	229.95	225.38	220.76	216.16	211.58	206.93	204.92	202.79
.9376 - .9687	444.45	338.87	306.56	269.35	263.73	258.73	253.40	248.17	242.84	237.52	232.26	229.61	227.13
.9689 - .9999	459.91	357.01	325.34	288.95	281.73	274.62	267.56	260.55	253.54	246.55	239.52	232.45	225.42
1.0001 - 1.0624	494.88	391.84	358.40	321.21	313.32	305.06	297.45	289.58	281.69	273.76	265.85	257.88	250.06
1.0626 - 1.1249	530.16	427.53	394.75	358.42	348.01	337.97	327.85	317.79	307.66	297.65	287.56	277.48	267.42
1.1251 - 1.1874	564.35	459.91	430.10	390.18	381.13	372.25	363.44	354.55	345.71	336.80	327.90	319.10	310.17
1.1876 - 1.2499	600.12	499.04	466.82	427.91	416.41	405.62	394.76	384.02	373.28	362.48	351.71	340.89	330.18
1.2501 - 1.3749	636.16	531.33	496.71	461.41	454.41	440.51	440.40	433.43	426.43	419.43	412.44	411.99	411.04
1.3751 - 1.4999	671.46	568.21	536.01	498.65	493.72	489.11	484.46	481.51	478.56	477.55	476.72	475.57	474.62

THRU 1/2" DIAMETER	ABOVE 1/2" TO 5/8"	ABOVE 5/8" TO 1-1/2"
+ .0002, -.0000	+ .0003, -.0000	+ .0001, +.0004



Chucking Reamers

MADE IN THE
USA

YOUR #1 SOURCE FOR AMERICAN-MADE PREMIUM CUTTING TOOLS

**TAKE 55%
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PRICES**

STRAIGHT SHANK - RIGHT HAND SPIRAL - RIGHT HAND CUT



SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	SERIES 935R		SERIES 1935R	
						HSS	LIST PRICE	M42 COBALT	LIST PRICE
1.0mm	.0394	1/2	4	2-1/2	.0394	TR96550	33.71	TR96726	36.87
#60	.0400	1/2	4	2-1/2	.0390	TR96551	33.71	TR96727	36.87
#59	.0410	1/2	4	2-1/2	.0390	TR96552	33.71	TR96728	36.87
#58	.0420	1/2	4	2-1/2	.0390	TR96553	33.71	TR96729	36.87
#57	.0430	1/2	4	2-1/2	.0390	TR96554	33.71	TR96730	36.87
#56	.0465	1/2	4	2-1/2	.0455	TR96555	33.71	TR96731	36.87
3/64	.0469	1/2	4	2-1/2	.0455	TR96556	33.71	TR96732	36.87
#55	.0520	1/2	4	2-1/2	.0510	TR96557	33.71	TR96733	36.87
#54	.0550	1/2	4	2-1/2	.0510	TR96558	33.71	TR96734	36.87
1.5mm	.0591	1/2	4	2-1/2	.0510	TR96559	33.71	TR96735	36.87
#53	.0595	1/2	4	2-1/2	.0585	TR96560	33.71	TR96736	36.87
1/16	.0625	1/2	4	2-1/2	.0585	TR96561	33.71	TR96737	36.87
#52	.0635	1/2	4	2-1/2	.0585	TR96562	33.71	TR96738	36.87
#51	.0670	3/4	4	3	.0660	TR96563	27.13	TR96739	29.70
#50	.0700	3/4	4	3	.0660	TR96564	27.13	TR96740	29.70
#49	.0730	3/4	4	3	.0660	TR96565	27.13	TR96741	29.70
#48	.0760	3/4	4	3	.0720	TR96566	27.13	TR96742	29.70
5/64	.0781	3/4	4	3	.0720	TR96567	27.13	TR96743	29.70
#47	.0785	3/4	4	3	.0720	TR96568	27.13	TR96744	29.70
2.0mm	.0787	3/4	4	3	.0720	TR96569	27.13	TR96745	29.70
#46	.0810	3/4	4	3	.0771	TR96570	27.13	TR96746	29.70
#45	.0820	3/4	4	3	.0771	TR96571	27.13	TR96747	29.70
#44	.0860	3/4	4	3	.0810	TR96572	27.13	TR96748	29.70
#43	.0890	3/4	4	3	.0810	TR96573	27.13	TR96749	29.70
#42	.0935	3/4	4	3	.0880	TR96574	27.13	TR96750	29.70
3/32	.0938	3/4	4	3	.0880	TR96575	26.89	TR96751	29.70
#41	.0960	7/8	4	3-1/2	.0928	TR96576	27.32	TR96752	29.97
#40	.0980	7/8	4	3-1/2	.0928	TR96577	27.32	TR96753	29.97
2.5mm	.0984	7/8	4	3-1/2	.0928	TR96578	27.32	TR96754	29.97
#39	.0995	7/8	4	3-1/2	.0928	TR96579	27.32	TR96755	29.97
#38	.1015	7/8	4	3-1/2	.0950	TR96580	27.32	TR96756	29.97
#37	.1040	7/8	4	3-1/2	.0950	TR96581	27.32	TR96757	29.97
#36	.1065	7/8	4	3-1/2	.1030	TR96582	27.32	TR96758	29.97
7/64	.1094	7/8	4	3-1/2	.1030	TR96583	28.14	TR96759	30.91
#35	.1100	7/8	4	3-1/2	.1030	TR96584	28.14	TR96760	30.91
#34	.1110	7/8	4	3-1/2	.1055	TR96585	28.14	TR96761	30.91
#33	.1130	7/8	4	3-1/2	.1055	TR96586	28.14	TR96762	30.91
#32	.1160	7/8	4	3-1/2	.1120	TR96587	28.14	TR96763	30.91
3.0mm	.1181	7/8	4	3-1/2	.1120	TR96588	28.14	TR96764	30.91
#31	.1200	7/8	4	3-1/2	.1120	TR96589	28.14	TR96765	30.91
o/u	.1240	7/8	4	3-1/2	.1190	TR96590	28.14	TR96766	30.91
1/8	.1250	7/8	4	3-1/2	.1190	TR96591	25.37	TR96767	27.79
o/u	.1260	7/8	4	3-1/2	.1190	TR96592	28.14	TR96768	30.91
#30	.1285	7/8	4	3-1/2	.1190	TR96593	28.14	TR96769	30.91
#29	.1360	1	4	4	.1275	TR96594	33.71	TR96770	36.91
3.5mm	.1378	1	4	4	.1350	TR96595	33.71	TR96771	36.91

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THRU 1/2" DIAMETER	1/2" TO 5/8"	5/8" TO 1-1/2"	1-1/2" TO 2"
+0.0002, -.0000	+0.0003, -.0000	+0.0001, +.0004	+0.0002, +.0006

**TAKE 55%
OFF LIST
PRICES**

STRAIGHT SHANK - RIGHT HAND SPIRAL - RIGHT HAND CUT



SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	SERIES 935R		SERIES 1935R	
						HSS	LIST PRICE	M42 COBALT	LIST PRICE
#28	.1405	1	4	4	.1350	TR96596	33.71	TR96772	36.91
9/64	.1406	1	4	4	.1350	TR96597	33.71	TR96773	36.91
#27	.1440	1	4	4	.1350	TR96598	33.71	TR96774	36.91
#26	.1470	1	4	4	.1430	TR96599	33.71	TR96775	36.91
#25	.1495	1	4	4	.1430	TR96600	33.71	TR96776	36.91
#24	.1520	1	4	4	.1460	TR96601	35.08	TR96777	36.91
#23	.1540	1	4	4	.1460	TR96602	35.08	TR96778	36.91
5/32	.1562	1	4	4	.1510	TR96603	35.08	TR96779	36.91
#22	.1570	1	6	4	.1510	TR96604	35.08	TR96780	36.91
4.0mm	.1575	1	6	4	.1510	TR96605	35.08	TR96781	36.91
#21	.1590	1-1/8	6	4-1/2	.1530	TR96606	35.97	TR96782	39.40
#20	.1610	1-1/8	6	4-1/2	.1530	TR96607	35.97	TR96783	39.40
#19	.1660	1-1/8	6	4-1/2	.1595	TR96608	35.97	TR96784	39.40
#18	.1695	1-1/8	6	4-1/2	.1595	TR96609	35.97	TR96785	39.40
11/64	.1719	1-1/8	6	4-1/2	.1645	TR96610	35.97	TR96786	39.40
#17	.1730	1-1/8	6	4-1/2	.1645	TR96611	35.97	TR96787	39.40
#16	.1770	1-1/8	6	4-1/2	.1704	TR96612	35.97	TR96788	39.40
4.5mm	.1772	1-1/8	6	4-1/2	.1704	TR96613	35.97	TR96789	39.40
#15	.1800	1-1/8	6	4-1/2	.1755	TR96614	35.97	TR96790	39.40
#14	.1820	1-1/8	6	4-1/2	.1755	TR96615	35.97	TR96791	39.40
#13	.1850	1-1/8	6	4-1/2	.1805	TR96616	35.97	TR96792	39.40
o/u	.1865	1-1/8	6	4-1/2	.1805	TR96617	35.97	TR96793	39.40
3/16	.1875	1-1/8	6	4-1/2	.1805	TR96618	34.18	TR96794	37.42
o/u	.1885	1-1/8	6	4-1/2	.1805	TR96619	35.97	TR96795	39.40
#12	.1890	1-1/8	6	4-1/2	.1805	TR96620	35.97	TR96796	39.40
#11	.1910	1-1/4	6	5	.1860	TR96621	40.30	TR96797	44.16
#10	.1935	1-1/4	6	5	.1860	TR96622	40.30	TR96798	44.16
#9	.1960	1-1/4	6	5	.1895	TR96623	40.30	TR96799	44.16
5.0mm	.1969	1-1/4	6	5	.1895	TR96624	40.30	TR96800	44.16
#8	.1990	1-1/4	6	5	.1895	TR96625	40.30	TR96801	44.16
#7	.2010	1-1/4	6	5	.1895	TR96626	40.30	TR96802	44.16
13/64	.2031	1-1/4	6	5	.1945	TR96627	40.30	TR96803	44.16
#6	.2040	1-1/4	6	5	.1945	TR96628	40.30	TR96804	44.16
#5	.2055	1-1/4	6	5	.2016	TR96629	40.30	TR96805	44.16
#4	.2090	1-1/4	6	5	.2016	TR96630	40.30	TR96806	44.16
#3	.2130	1-1/4	6	5	.2075	TR96631	40.30	TR96807	44.16
5.5mm	.2165	1-1/4	6	5	.2075	TR96632	40.30	TR96808	44.16
7/32	.2188	1-1/4	6	5	.2075	TR96633	40.30	TR96809	44.16
#2	.2210	1-1/2	6	6	.2173	TR96634	41.43	TR96810	45.41
#1	.2280	1-1/2	6	6	.2173	TR96635	41.43	TR96811	45.41
A	.2340	1-1/2	6	6	.2265	TR96636	41.43	TR96812	45.41
15/64	.2344	1-1/2	6	6	.2265	TR96637	41.43	TR96813	45.41
6.0mm	.2362	1-1/2	6	6	.2265	TR96638	41.70	TR96814	47.78
B	.2380	1-1/2	6	6	.2329	TR96639	41.70	TR96815	47.78
C	.2420	1-1/2	6	6	.2329	TR96640	41.70	TR96816	47.78
D	.2460	1-1/2	6	6	.2329	TR96641	41.70	TR96817	43.46

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THRU 1/2" DIAMETER	1/2" TO 5/8"	5/8" TO 1-1/2"	1-1/2" TO 2"
+0.0002, -.0000	+0.0003, -.0000	+0.0001, +.0004	+0.0002, +.0006

**TAKE 55%
OFF LIST
PRICES**

STRAIGHT SHANK - RIGHT HAND SPIRAL - RIGHT HAND CUT



SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	SERIES 935R		SERIES 1935R	
						HSS	LIST PRICE	M42 COBALT	LIST PRICE
o/u	.2490	1-1/2	6	6	.2405	TR96642	44.51	TR96818	51.17
1/4	.2500	1-1/2	6	6	.2405	TR96643	35.51	TR96819	40.61
o/u	.2510	1-1/2	6	6	.2405	TR96644	44.51	TR96820	51.17
6.5mm	.2559	1-1/2	6	6	.2405	TR96645	41.70	TR96821	47.78
F	.2570	1-1/2	6	6	.2485	TR96646	41.70	TR96822	47.78
G	.2610	1-1/2	6	6	.2485	TR96647	41.70	TR96823	47.78
17/64	.2656	1-1/2	6	6	.2485	TR96648	46.54	TR96824	59.01
H	.2660	1-1/2	6	6	.2485	TR96649	46.54	TR96825	59.01
I	.2720	1-1/2	6	6	.2485	TR96650	46.54	TR96826	59.01
7.0mm	.2756	1-1/2	6	6	.2485	TR96651	46.54	TR96827	59.01
J	.2770	1-1/2	6	6	.2485	TR96652	46.54	TR96828	59.01
K	.2810	1-1/2	6	6	.2485	TR96653	46.54	TR96829	59.01
9/32	.2812	1-1/2	6	6	.2485	TR96654	44.16	TR96830	56.09
L	.2900	1-1/2	6	6	.2792	TR96655	46.54	TR96831	59.01
M	.2950	1-1/2	6	6	.2792	TR96656	46.54	TR96832	59.01
7.5mm	.2953	1-1/2	6	6	.2792	TR96657	46.54	TR96833	59.01
19/64	.2969	1-1/2	6	6	.2792	TR96658	46.54	TR96834	59.01
N	.3020	1-1/2	6	6	.2792	TR96659	46.54	TR96835	59.01
o/u	.3115	1-1/2	6	6	.2792	TR96660	44.16	TR96836	56.09
5/16	.3125	1-1/2	6	6	.2792	TR96661	41.86	TR96837	53.12
o/u	.3135	1-1/2	6	6	.2792	TR96662	44.16	TR96838	56.09
8.0mm	.3150	1-1/2	6	6	.2792	TR96663	46.54	TR96839	59.01
O	.3160	1-1/2	6	6	.2792	TR96664	46.54	TR96840	59.01
P	.3230	1-1/2	6	6	.2792	TR96665	49.77	TR96841	63.57
21/64	.3281	1-1/2	6	6	.2792	TR96666	49.77	TR96842	63.57
Q	.3320	1-1/2	6	6	.2792	TR96667	49.77	TR96843	63.57
8.5mm	.3346	1-1/2	6	6	.2792	TR96668	49.77	TR96844	63.57
R	.3390	1-1/2	6	6	.2792	TR96669	49.77	TR96845	63.57
11/32	.3438	1-1/2	6	6	.2792	TR96670	49.77	TR96846	63.57
S	.3480	1-3/4	6	6	.3105	TR96671	50.20	TR96847	64.43
9.0mm	.3543	1-3/4	6	7	.3105	TR96672	50.20	TR96848	64.43
T	.3580	1-3/4	6	7	.3105	TR96673	50.20	TR96849	64.43
23/64	.3594	1-3/4	6	7	.3105	TR96674	50.20	TR96850	64.43
U	.3680	1-3/4	6	7	.3105	TR96675	50.20	TR96851	64.43
9.5mm-o/u	.3740	1-3/4	6	7	.3105	TR96676	47.71	TR96852	61.15
3/8	.3750	1-3/4	6	7	.3105	TR96677	45.21	TR96853	58.00
o/u	.3760	1-3/4	6	7	.3105	TR96678	47.71	TR96854	61.15
V	.3770	1-3/4	6	7	.3105	TR96679	54.64	TR96855	81.15
W	.3860	1-3/4	6	7	.3105	TR96680	54.64	TR96856	81.15
25/64	.3906	1-3/4	6	7	.3105	TR96681	54.64	TR96857	81.15
10.0mm	.3937	1-3/4	6	7	.3105	TR96682	54.64	TR96858	81.15
X	.3970	1-3/4	6	7	.3105	TR96683	54.64	TR96859	81.15
Y	.4040	1-3/4	6	7	.3105	TR96684	56.67	TR96860	81.15
13/32	.4062	1-3/4	6	7	.3105	TR96685	56.67	TR96861	81.15
Z	.4130	1-3/4	6	7	.3730	TR96686	56.67	TR96862	81.15
10.5mm	.4134	1-3/4	6	7	.3730	TR96687	56.67	TR96863	81.15

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THRU 1/2" DIAMETER	1/2" TO 5/8"	5/8" TO 1-1/2"	1-1/2" TO 2"
+0.0002, -.0000	+0.0003, -.0000	+0.0001, +.0004	+0.0002, +.0006

**TAKE 55%
OFF LIST
PRICES**

STRAIGHT SHANK - RIGHT HAND SPIRAL - RIGHT HAND CUT



SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	SERIES 935R		SERIES 1935R	
						HSS	LIST PRICE	M42 COBALT	LIST PRICE
27/64	.4219	1-3/4	6	7	.3730	TR96688	56.67	TR96864	81.15
11.0mm	.4331	1-3/4	6	7	.3730	TR96689	56.67	TR96865	81.15
o/u	.4365	1-3/4	6	7	.3730	TR96690	56.67	TR96866	81.15
7/16	.4375	1-3/4	6	7	.3730	TR96691	53.82	TR96867	77.05
o/u	.4385	1-3/4	6	7	.3730	TR96692	56.67	TR96868	81.15
11.5mm	.4528	1-3/4	6	7	.3730	TR96693	61.78	TR96869	92.99
29/64	.4531	1-3/4	6	7	.3730	TR96694	61.78	TR96870	92.99
15/32	.4688	1-3/4	6	7	.3730	TR96695	61.78	TR96871	92.99
12.0mm	.4724	2	6	8	.4355	TR96696	61.78	TR96872	92.99
31/64	.4844	2	6	8	.4355	TR96697	61.78	TR96873	92.99
12.5mm	.4921	2	6	8	.4355	TR96698	61.78	TR96874	92.99
o/u	.4990	2	6	8	.4355	TR96699	61.78	TR96875	92.99
1/2	.5000	2	6	8	.4355	TR96700	58.58	TR96876	88.32
o/u	.5010	2	6	8	.4355	TR96701	61.78	TR96877	92.99
17/32	.5312	2	6	8	.4355	TR96702	72.84	TR96878	104.34
9/16	.5625	2	8	8	.4355	TR96703	72.84	TR96880	104.34
19/32	.5938	2	8	8	.4355	TR96704	72.84	TR96881	104.34
5/8	.6250	2-1/4	8	9	.5615	TR96705	85.01	TR96882	121.72
21/32	.6562	2-1/4	8	9	.5615	TR96706	89.41	TR96883	137.62
11/16	.6875	2-1/4	8	9	.5615	TR96707	96.11	TR96884	137.62
23/32	.7188	2-1/4	8	9	.5615	TR96708	107.30	TR96885	153.56
3/4	.7500	2-1/2	8	9-1/2	.6240	TR96709	107.30	TR96886	154.42
25/32	.7812	2-1/2	8	9-1/2	.6240	TR96710	116.30	TR96887	166.62
13/16	.8125	2-1/2	8	9-1/2	.6240	TR96711	116.30	TR96888	166.62
27/32	.8438	2-1/2	8	9-1/2	.6240	TR96712	137.66	TR96889	197.14
7/8	.8750	2-5/8	8	10	.7490	TR96713	140.82	TR96890	201.70
29/32	.9062	2-5/8	8	10	.7490	TR96714	151.81	TR96891	217.33
15/16	.9375	2-5/8	8	10	.7490	TR96715	151.81	TR96892	217.33
31/32	.9688	2-5/8	8	10	.7490	TR96716	169.97	TR96893	243.40
1	1.0000	2-3/4	8	10-1/2	.8740	TR96717	171.61	TR96894	245.35
1-1/16	1.0625	2-3/4	8	10-1/2	.8740	TR96718	190.24	-	-
1-1/8	1.1250	2-7/8	8	11	.8740	TR96719	202.16	-	-
1-3/16	1.1875	2-7/8	8	11	.9990	TR96720	236.74	-	-
1-1/4	1.2500	3	8	11-1/2	.9990	TR96721	250.92	-	-
1-5/16	1.3125	3	10	11-1/2	.9990	TR96722	292.70	-	-
1-3/8	1.3750	3-1/4	10	12	.9990	TR96723	307.63	-	-
1-7/16	1.4375	3-1/4	10	12	1.2490	TR96724	329.85	-	-
1-1/2	1.5000	3-1/2	10	12-1/2	1.2490	TR96725	355.10	-	-
1-9/16	1.5625	3-1/2	12	13	1.2490	TR96900	502.94	-	-
1-5/8	1.6250	3-1/2	12	13	1.2490	TR96901	502.94	-	-
1-11/16	1.6875	4	12	13-1/2	1.2490	TR96902	577.50	-	-
1-3/4	1.7500	4	12	13-1/2	1.2490	TR96903	577.50	-	-
1-13/16	1.8125	4	12	14	1.4990	TR96904	665.11	-	-
1-7/8	1.8750	4	12	14	1.4990	TR96905	665.11	-	-
1-15/16	1.9375	4	12	14	1.4990	TR96906	778.65	-	-
2	2.0000	4	12	14	1.4990	TR96907	778.65	-	-

THRU 1/2" DIAMETER	1/2" TO 5/8"	5/8" TO 1-1/2"	1-1/2" TO 2"
+0.0002, -.0000	+0.0003, -.0000	+0.0001, +.0004	+0.0002, +.0006

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

**TAKE 55%
OFF LIST
PRICES**

SIZE	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	9700-ITEM#	LIST PRICE	1970-ITEM#	LIST PRICE	9750-ITEM#	LIST PRICE	1975-ITEM#	LIST PRICE
.1230	7/8	4	3-1/2	.1190	TR96264	24.55	TR96508	25.41	TR96950	28.14	TR96970	29.35
.1247	7/8	4	3-1/2	.1190	TR96265	24.55	TR96509	25.41	TR96951	28.14	TR96971	29.35
.1855	1-1/8	6	4-1/2	.1805	TR96266	31.34	TR96510	31.92	TR96952	35.97	TR96972	37.73
.1870	1-1/8	6	4-1/2	.1805	TR96267	31.34	TR96511	31.92	TR96953	35.97	TR96973	37.73
.2480	1-1/2	6	6	.2405	TR96268	34.18	TR96512	35.82	TR96954	37.57	TR96974	40.96
.2495	1-1/2	6	6	.2405	TR96269	34.18	TR96513	35.82	TR96955	37.57	TR96975	40.96
.3105	1-1/2	6	6	.2792	TR96270	40.14	TR96514	51.29	TR96956	44.20	TR96976	53.20
.3120	1-1/2	6	6	.2792	TR96271	40.14	TR96515	51.29	TR96957	44.20	TR96977	53.20
.3730	1-3/4	6	7	.3105	TR96272	43.34	TR96516	56.20	TR96958	47.71	TR96978	58.27
.3745	1-3/4	6	7	.3105	TR96273	43.34	TR96517	56.20	TR96959	47.71	TR96979	58.27
.4355	1-3/4	6	7	.3730	TR96274	48.91	TR96518	72.10	TR96960	56.67	TR96980	77.29
.4370	1-3/4	6	7	.3730	TR96275	48.91	TR96519	72.10	TR96961	56.67	TR96981	77.29
.4980	2	6	8	.4355	TR96276	53.28	TR96520	82.71	TR96962	61.74	TR96982	88.59
.4995	2	6	8	.4355	TR96277	53.28	TR96521	82.71	TR96963	61.74	TR96983	88.59

DIAMETER TOLERANCES FOR DOWEL PIN SIZES

+ .0000, - .0002

TAPER SHANK - STRAIGHT FLUTE



SERIES 936
HIGH SPEED STEEL

SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	MORSE TAPER #	ITEM#	LIST PRICE
1/4	.2500	1-1/2	6	6	1	TR97801	57.53
9/32	.2812	1-1/2	6	6	1	TR97802	60.22
5/16	.3125	1-1/2	6	6	1	TR97803	59.20
11/32	.3438	1-1/2	6	6	1	TR97804	64.15
3/8	.3750	1-3/4	6	7	1	TR97805	66.18
13/32	.4062	1-3/4	6	7	1	TR97806	67.35
7/16	.4375	1-3/4	6	7	1	TR97807	67.66
15/32	.4688	1-3/4	6	7	1	TR97808	73.08
1/2	.5000	2	6	8	1	TR97809	74.09
17/32	.5312	2	6	8	1	TR97810	82.47
9/16	.5625	2	8	8	1	TR97811	87.97
19/32	.5938	2	8	8	1	TR97812	89.53
5/8	.6250	2-1/4	8	9	2	TR97813	95.37
21/32	.6562	2-1/4	8	9	2	TR97814	96.27
11/16	.6875	2-1/4	8	9	2	TR97815	96.27
23/32	.7188	2-1/4	8	9	2	TR97816	108.55
3/4	.7500	2-1/2	8	9-1/2	2	TR97817	108.55
25/32	.7182	2-1/2	8	9-1/2	2	TR97818	124.06
13/16	.8125	2-1/2	8	9-1/2	2	TR97819	124.06
27/32	.8438	2-1/2	8	9-1/2	2	TR97820	138.52
7/8	.8750	2-5/8	8	10	2	TR97821	140.00

SIZE	DEC. EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	MORSE TAPER #	ITEM#	LIST PRICE
29/32	.9062	2-5/8	8	10	2	TR97822	154.11
15/16	.9375	2-5/8	8	10	3	TR97823	154.11
31/32	.9688	2-5/8	8	10	3	TR97824	169.11
1	1.0000	2-3/4	8	10-1/2	3	TR97825	170.59
1-1/16	1.0625	2-3/4	8	10-1/2	3	TR97826	186.50
1-1/8	1.1250	2-7/8	8	11	3	TR97827	206.96
1-3/16	1.1875	2-7/8	10	11	3	TR97828	231.94
1-1/4	1.2500	3	10	11-1/2	4	TR97829	251.12
1-5/16	1.3125	3	10	11-1/2	4	TR97830	274.62
1-3/8	1.3750	3-1/4	10	12	4	TR97831	296.80
1-7/16	1.4375	3-1/4	10	12	4	TR97832	321.70
1-1/2	1.5000	3-1/2	10	12-1/2	4	TR97833	341.93
1-9/16	1.5625	3-1/2	12	13	4	TR97834	480.10
1-5/8	1.6250	3-1/2	12	13	4	TR97835	480.10
1-11/16	1.6875	4	12	13-1/2	5	TR97836	551.27
1-3/4	1.7500	4	12	13-1/2	5	TR97837	551.27
1-13/16	1.8125	4	12	14	5	TR97838	634.91
1-7/8	1.8750	4	12	14	5	TR97839	634.91
1-15/16	1.9375	4	12	14	5	TR97840	743.30
2	2.0000	4	12	14	5	TR97841	743.30
-	-	-	-	-	-	-	-

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

**TAKE 55%
OFF LIST
PRICES**

STRAIGHT SHANK


SERIES 931
HIGH SPEED STEEL

SIZE	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	ITEM#	LIST PRICE
3/8	3/4	6	7	5/16	TR97201	148.92
13/32	3/4	6	7	5/16	TR97202	158.63
7/16	7/8	6	7	3/8	TR97203	158.63
15/32	7/8	6	8	27/64	TR97204	164.75
1/2	1	6	8	7/16	TR97205	167.67
17/32	1	6	8	7/16	TR97206	174.76
9/16	1-1/8	6	8	7/16	TR97207	179.21
19/32	1-1/8	6	8	7/16	TR97208	181.94
5/8	1-1/4	6	9	9/16	TR97209	187.47
21/32	1-1/4	6	9	9/16	TR97210	194.95
11/16	1-1/4	6	9	9/16	TR97211	196.32
23/32	1-1/4	6	9	9/16	TR97212	209.06
3/4	1-3/8	6	9-1/2	5/8	TR97213	216.27
25/32	1-3/8	8	9-1/2	5/8	TR97214	228.98
13/16	1-3/8	8	9-1/2	5/8	TR97215	237.75
27/32	1-3/8	8	9-1/2	5/8	TR97216	250.49
7/8	1-1/2	8	10	3/4	TR97217	255.05

SIZE	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	ITEM#	LIST PRICE
29/32	1-1/2	8	10	3/4	TR97218	268.58
15/16	1-1/2	8	10	3/4	TR97219	281.17
31/32	1-1/2	8	10	3/4	TR97220	293.87
1	1-5/8	8	10-1/2	7/8	TR97221	309.97
1-1/32	1-5/8	8	10-1/2	7/8	TR97222	431.26
1-1/16	1-5/8	8	10-1/2	7/8	TR97223	342.59
1-3/32	1-5/8	8	10-1/2	7/8	TR97224	358.88
1-1/8	1-3/4	8	11	7/8	TR97225	374.90
1-5/32	1-3/4	8	11	7/8	TR97226	380.01
1-3/16	1-3/4	8	11	1	TR97227	394.86
1-7/32	1-3/4	8	11	1	TR97228	409.24
1-1/4	1-7/8	8	11-1/2	1	TR97229	425.57
1-5/16	1-7/8	8	11-1/2	1	TR97230	439.80
1-3/8	2	8	12	1	TR97231	455.97
1-7/16	2	8	12	1-1/4	TR97232	474.02
1-1/2	2-1/8	8	12-1/2	1-1/4	TR97233	494.01
-	-	-	-	-	-	-

TAPER SHANK


SERIES 932
HIGH SPEED STEEL

SIZE	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	MORSE TAPER#	ITEM#	LIST PRICE
3/8	3/4	6	7	5/16	1	TR97250	168.96
13/32	3/4	6	7	5/16	1	TR97251	195.93
7/16	7/8	6	7	3/8	1	TR97252	178.90
15/32	7/8	6	8	27/64	1	TR97253	183.14
1/2	1	6	8	7/16	1	TR97254	186.81
17/32	1	6	8	7/16	1	TR97255	194.21
9/16	1-1/8	6	8	7/16	1	TR97256	194.21
19/32	1-1/8	6	8	7/16	1	TR97257	201.31
5/8	1-1/4	6	9	9/16	2	TR97258	208.52
21/32	1-1/4	6	9	9/16	2	TR97259	214.25
11/16	1-1/4	6	9	9/16	2	TR97260	215.53
23/32	1-1/4	6	9	9/16	2	TR97261	229.91
3/4	1-3/8	6	9-1/2	5/8	2	TR97262	237.01
25/32	1-3/8	8	9-1/2	5/8	2	TR97263	247.92
13/16	1-3/8	8	9-1/2	5/8	2	TR97264	251.62
27/32	1-3/8	8	9-1/2	5/8	2	TR97265	266.28
7/8	1-1/2	8	10	3/4	2	TR97266	276.76

SIZE	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	MORSE TAPER#	ITEM#	LIST PRICE
29/32	1-1/2	8	10	3/4	2	TR97267	291.14
15/16	1-1/2	8	10	3/4	3	TR97268	298.39
31/32	1-1/2	8	10	3/4	3	TR97269	310.98
1	1-5/8	8	10-1/2	7/8	3	TR97270	328.91
1-1/32	1-5/8	8	10-1/2	7/8	3	TR97271	341.50
1-1/16	1-5/8	8	10-1/2	7/8	3	TR97272	357.83
1-3/32	1-5/8	8	10-1/2	7/8	3	TR97273	373.81
1-1/8	1-3/4	8	11	7/8	3	TR97274	386.71
1-5/32	1-3/4	8	11	7/8	3	TR97275	402.65
1-3/16	1-3/4	8	11	1	3	TR97276	418.75
1-7/32	1-3/4	8	11	1	3	TR97277	434.89
1-1/4	1-7/8	8	11-1/2	1	4	TR97278	455.00
1-5/16	1-7/8	8	11-1/2	1	4	TR97279	472.81
1-3/8	2	8	12	1	4	TR97280	492.41
1-7/16	2	8	12	1-1/4	4	TR97281	521.29
1-1/2	2-1/8	8	12-1/2	1-1/4	4	TR97282	539.11
-	-	-	-	-	-	-	-

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, +.0004

STRAIGHT SHANK - STRAIGHT FLUTE



SERIES 9000
HIGH SPEED STEEL

**TAKE 55%
OFF LIST
PRICES**

SIZE	DECIMAL EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	ITEM#	LIST PRICE
1/16	.0625	1	4	2	.0625	TR97606	69.49
5/64	.0781	1	4	2	.0781	TR97607	69.49
3/32	.0938	1-1/4	4	2-1/2	.0938	TR97608	69.49
7/64	.1094	1-1/4	4	2-1/2	.1094	TR97609	69.49
1/8	.1250	1-1/2	4	3	.1250	TR97610	65.52
9/64	.1406	1-5/8	4	3-1/4	.1406	TR97611	65.52
5/32	.1562	1-5/8	4	3-1/4	.1562	TR97612	70.82
11/64	.1719	1-3/4	6	3-1/2	.1719	TR97613	70.82
3/16	.1875	1-3/4	6	3-1/2	.1875	TR97614	69.49
13/64	.2031	1-7/8	6	3-3/4	.2031	TR97615	69.49
7/32	.2188	1-7/8	6	3-3/4	.2188	TR97616	76.59
15/64	.2344	2	6	4	.2344	TR97617	76.59
1/4	.2500	2	6	4	.2500	TR97618	76.12
17/64	.2656	2-1/8	6	4-1/4	.2656	TR97619	76.59
9/32	.2812	2-1/8	6	4-1/4	.2812	TR97620	82.39
19/64	.2969	2-1/4	6	4-1/2	.2969	TR97621	82.39
5/16	.3125	2-1/4	6	4-1/2	.3125	TR97622	80.56
11/32	.3438	2-3/8	6	4-3/4	.3438	TR97623	93.50
3/8	.3750	2-1/2	6	5	.3750	TR97624	91.28
13/32	.4062	2-5/8	6	5-1/4	.4062	TR97625	105.93
7/16	.4375	2-3/4	6	5-1/2	.4375	TR97626	103.79
15/32	.4688	2-7/8	6	5-3/4	.4688	TR97627	114.82

SIZE	DECIMAL EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	ITEM#	LIST PRICE
1/2	.5000	3	6	6	.5000	TR97628	110.38
17/32	.5312	3-1/8	8	6-1/4	.5312	TR97629	119.26
9/16	.5625	3-1/4	8	6-1/2	.5625	TR97630	127.57
19/32	.5938	3-3/8	8	6-3/4	.5938	TR97631	141.79
5/8	.6250	3-1/2	8	7	.6250	TR97632	137.47
21/32	.6562	3-11/16	8	7-3/8	.6562	TR97633	154.07
11/16	.6875	3-7/8	8	7-3/4	.6875	TR97634	151.03
23/32	.7188	4-1/16	8	8-1/8	.7188	TR97635	165.45
3/4	.7500	4-3/16	8	8-3/8	.7500	TR97636	161.05
25/32	.7812	4-3/8	8	8-3/4	.7812	TR97637	176.71
13/16	.8125	4-9/16	8	9-1/8	.8125	TR97638	161.05
27/32	.8438	4-11/16	8	9-3/8	.8438	TR97639	193.47
7/8	.8750	4-7/8	8	9-3/4	.8750	TR97640	195.15
29/32	.9062	5	8	10	.9062	TR97641	215.65
15/16	.9375	5-1/8	8	10-1/4	.9375	TR97642	195.30
31/32	.9688	5-5/16	8	10-5/8	.9688	TR97643	237.44
1	1.0000	5-7/16	8	10-7/8	1.0000	TR97644	236.38
1-1/8	1.1250	5-13/16	8	11-5/8	1.1250	TR97645	308.92
1-1/4	1.2500	6-1/8	8	12-1/4	1.2500	TR97646	379.35
1-3/8	1.3750	6-5/16	10	12-5/8	1.3750	TR97647	448.37
1-1/2	1.5000	6-1/2	10	13	1.5000	TR97648	529.21
-	-	-	-	-	-	-	-

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#	LIST PRICE
1/16	.0625	1	4	2	.0625	TR97350	81.54
5/64	.0781	1	4	2	.0781	TR97351	81.54
3/32	.0938	1-1/4	4	2-1/2	.0938	TR97352	81.54
7/64	.1094	1-1/4	4	2-1/2	.1094	TR97353	81.54
1/8	.1250	1-1/2	4	3	.1250	TR97354	80.56
9/64	.1406	1-5/8	4	3-1/4	.1406	TR97355	80.56
5/32	.1562	1-5/8	4	3-1/4	.1562	TR97356	86.88
11/64	.1719	1-3/4	6	3-1/2	.1719	TR97357	86.88
3/16	.1875	1-3/4	6	3-1/2	.1875	TR97358	86.88
13/64	.2031	1-7/8	6	3-3/4	.2031	TR97359	86.88
7/32	.2188	1-7/8	6	3-3/4	.2188	TR97360	84.58
15/64	.2344	2	6	4	.2344	TR97361	84.58
1/4	.2500	2	6	4	.2500	TR97362	84.19
17/64	.2656	2-1/8	6	4-1/4	.2656	TR97363	84.58
9/32	.2812	2-1/8	6	4-1/4	.2812	TR97364	93.50
19/64	.2969	2-1/4	6	4-1/2	.2969	TR97365	93.50
5/16	.3125	2-1/4	6	4-1/2	.3125	TR97366	92.61
11/32	.3438	2-3/8	6	4-3/4	.3438	TR97367	104.14
3/8	.3750	2-1/2	6	5	.3750	TR97368	103.83
13/32	.4062	2-5/8	6	5-1/4	.4062	TR97369	115.37
7/16	.4375	2-3/4	6	5-1/2	.4375	TR97370	115.76
15/32	.4688	2-7/8	6	5-3/4	.4688	TR97371	127.80

SIZE	DECIMAL EQUIV.	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	ITEM#	LIST PRICE
1/2	.5000	3	6	6	.5000	TR97372	124.68
17/32	.5312	3-1/8	8	6-1/4	.5312	TR97373	145.57
9/16	.5625	3-1/4	8	6-1/2	.5625	TR97374	146.39
19/32	.5938	3-3/8	8	6-3/4	.5938	TR97375	159.21
5/8	.6250	3-1/2	8	7	.6250	TR97376	156.29
21/32	.6562	3-11/16	8	7-3/8	.6562	TR97377	171.37
11/16	.6875	3-7/8	8	7-3/4	.6875	TR97378	170.87
23/32	.7188	4-1/16	8	8-1/8	.7188	TR97379	184.24
3/4	.7500	4-3/16	8	8-3/8	.7500	TR97380	180.69
25/32	.7812	4-3/8	8	8-3/4	.7812	TR97381	196.36
13/16	.8125	4-9/16	8	9-1/8	.8125	TR97382	196.36
27/32	.8438	4-11/16	8	9-3/8	.8438	TR97383	214.91
7/8	.8750	4-7/8	8	9-3/4	.8750	TR97384	214.91
29/32	.9062	5	8	10	.9062	TR97385	239.58
15/16	.9375	5-1/8	8-10	10-1/4	.9375	TR97386	239.58
31/32	.9688	5-5/16	8-10	10-5/8	.9688	TR97387	263.82
1	1.0000	5-7/16	8-10	10-7/8	1.0000	TR97388	263.82
1-1/8	1.1250	5-13/16	8-10	11-5/8	1.1250	TR97389	339.59
1-1/4	1.2500	6-1/8	8-10	12-1/4	1.2500	TR97390	417.85
1-3/8	1.3750	6-5/16	8-10	12-5/8	1.3750	TR97391	493.00
1-1/2	1.5000	6-1/2	8-10	13	1.5000	TR97392	583.93
-	-	-	-	-	-	-	-

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

**TAKE 55%
OFF LIST
PRICES**

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#	LIST PRICE
1/16	.2320	.2750	6	3/4	2-1/8	.3125	.235	TR97649	90.89
1/8	.3160	.3620	6	3/4	2-1/8	.4375	.328	TR97650	84.73
1/4	.4060	.4720	6	1-1/16	2-7/16	.5625	.421	TR97651	97.01
3/8	.5400	.6060	6	1-1/16	2-9/16	.7000	.531	TR97652	109.83
1/2	.6650	.7510	6	1-3/8	3-1/8	.6875	.515	TR97653	138.75
3/4	.8760	.9620	8	1-3/8	3-1/4	.9063	.679	TR97654	192.38
1	1.1030	1.2120	8	1-3/4	3-3/4	1.1250	.843	TR97655	283.08
1-1/4	1.4440	1.5530	10	1-3/4	4	1.3125	.984	TR97656	476.78
1-1/2	1.6840	1.7930	12	1-3/4	4-1/4	1.5000	1.125	TR97657	602.87
2	2.1590	2.2680	12	1-3/4	4-1/2	1.8750	1.406	TR97658	805.27

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	LIST PRICE	LH-SPIRAL	LIST PRICE	LH-HELICAL	LIST PRICE
7/0	.0497	.0666	4	TR97525	72.69	TR97567	75.42	TR97546	67.43
6/0	.0611	.0806	4	TR97526	72.69	TR97568	75.42	TR97547	63.49
5/0	.0719	.0966	4	TR97527	66.26	TR97569	72.69	TR97548	65.87
4/0	.0869	.1142	4	TR97528	66.26	TR97570	72.69	TR97549	65.87
3/0	.1029	.1302	4	TR97529	66.26	TR97571	72.69	TR97550	59.48
2/0	.1137	.1462	4	TR97530	59.24	TR97572	63.49	TR97551	60.18
0	.1287	.1638	4	TR97531	56.98	TR97573	60.68	TR97552	61.62
1	.1447	.1798	6	TR97532	55.19	TR97574	61.62	TR97553	62.56
2	.1605	.2008	6	TR97533	55.19	TR97575	61.62	TR97554	70.82
3	.1813	.2294	6	TR97534	55.19	TR97576	61.62	TR97555	73.20
4	.2071	.2604	6	TR97535	61.62	TR97577	67.19	TR97556	82.39
5	.2409	.2994	6	TR97536	66.26	TR97578	71.68	TR97557	90.15
6	.2773	.3540	6	TR97537	79.98	TR97579	88.32	TR97558	105.82
7	.3297	.4220	6	TR97538	103.01	TR97580	111.66	TR97559	130.61
8	.3971	.5050	6	TR97539	107.77	TR97581	144.40	TR97560	153.25
9	.4805	.6066	6	TR97540	160.07	TR97582	174.26	TR97561	168.37
10	.5799	.7216	6	TR97541	175.74	TR97583	193.16	TR97562	213.78
11	.7060	.8780	8	TR97542	187.28	TR97584	206.06	TR97563	226.60
12	.8420	1.0500	8	TR97543	289.78	TR97585	318.74	TR97564	350.78
13	1.0090	1.2590	10	TR97544	562.06	TR97586	618.26	TR97565	679.49
14	1.2500	1.5420	10	TR97545	900.60	TR97587	999.48	TR97566	1,097.46

CAPSCREW COUNTERBORES HIGH SPEED STEEL



**TAKE 55%
OFF LIST
PRICES**

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#	LIST PRICE
4	std.	901	.1120	1/8	.1830	9/16	3-7/8	TR97470	41.70
4	1/64 o/s	902	.1270	1/8	.1990	9/16	3-7/8	TR97484	41.70
4	1/32 o/s	903	.1430	1/8	.2150	9/16	3-7/8	TR97501	41.70
5	std.	901	.1250	5/32	.2050	5/8	4-1/8	TR97471	41.70
5	1/64 o/s	902	.1400	5/32	.2210	5/8	4-1/8	TR97485	41.70
5	1/32 o/s	903	.1560	5/32	.2370	5/8	4-1/8	TR97502	41.70
6	std.	901	.1380	3/16	.2270	3/4	4-5/8	TR97472	44.16
6	1/64 o/s	902	.1530	3/16	.2430	3/4	4-5/8	TR97486	44.16
6	1/32 o/s	903	.1690	3/16	.2590	3/4	4-5/8	TR97503	44.16
8	std.	901	.1640	7/32	.2700	3/4	5	TR97473	47.32
8	1/64 o/s	902	.1790	7/32	.2860	3/4	5	TR97487	47.32
8	1/32 o/s	903	.1950	7/32	.3020	3/4	5	TR97504	47.32
10	std.	901	.1900	1/4	.3120	7/8	5-1/4	TR97474	48.33
10	1/64 o/s	902	.2050	1/4	.3280	7/8	5-1/4	TR97488	48.33
10	1/32 o/s	903	.2210	1/4	.3440	7/8	5-1/4	TR97505	48.33
1/4	std.	901	.2500	9/32	.3800	1	5-5/8	TR97475	50.82
1/4	1/64 o/s	902	.2650	9/32	.3960	1	5-5/8	TR97489	50.82
1/4	1/32 o/s	903	.2810	9/32	.4120	1	5-5/8	TR97506	50.82
5/16	std.	901	.3125	5/16	.4740	1	6-1/8	TR97476	63.49
5/16	1/64 o/s	902	.3280	5/16	.4890	1	6-1/8	TR97490	63.49
5/16	1/32 o/s	903	.3430	5/16	.5040	1	6-1/8	TR97507	63.49
3/8	std.	901	.3750	3/8	.5690	1-1/4	6-1/2	TR97477	69.34
3/8	1/64 o/s	902	.3900	3/8	.5850	1-1/4	6-1/2	TR97491	69.34
3/8	1/32 o/s	903	.4060	3/8	.6010	1-1/4	6-1/2	TR97508	69.34
7/16	std.	901	.4370	7/16	.6610	1-1/4	7	TR97478	83.41
7/16	1/64 o/s	902	.4520	7/16	.6760	1-1/4	7	TR97492	83.41
7/16	1/32 o/s	903	.4680	7/16	.6910	1-1/4	7	TR97509	83.41
1/2	std.	901	.5000	1/2	.7550	1-1/2	7-1/2	TR97479	95.45
1/2	1/64 o/s	902	.5150	1/2	.7710	1-1/2	7-1/2	TR97493	95.45
1/2	1/32 o/s	903	.5310	1/2	.7870	1-1/2	7-1/2	TR97510	95.45
5/8	std.	901	.6250	5/8	.9430	1-1/2	7-5/8	TR97480	155.75
5/8	1/64 o/s	902	.6400	5/8	.9590	1-1/2	7-5/8	TR97494	155.75
5/8	1/32 o/s	903	.6560	5/8	1.0000	1-1/2	7-5/8	TR97511	155.75
3/4	std.	901	.7500	3/4	1.1310	1-5/8	7-3/4	TR97481	181.20
3/4	1/64 o/s	902	.7650	3/4	1.1720	1-5/8	7-3/4	TR97495	181.20
3/4	1/32 o/s	903	.7810	3/4	1.1630	1-5/8	7-3/4	TR97512	181.20
7/8	std.	901	.8750	7/8	1.3200	1-7/8	8	TR97482	220.72
7/8	1/64 o/s	902	.8910	7/8	1.3360	1-7/8	8	TR97496	220.72
7/8	1/32 o/s	903	.9060	7/8	1.3520	1-7/8	8	TR97513	220.72
1	std.	901	1.0000	1	1.5080	2	8-1/2	TR97483	280.00
1	1/64 o/s	902	1.0150	1	1.5240	2	8-1/2	TR97497	280.00
1	1/32 o/s	903	1.0310	1	1.5400	2	8-1/2	TR97514	280.00



SIZE	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	SHANK DIA.	ITEM#	LIST PRICE
3/8	2-1/2	5	4-5/8	3/8	TR97595	80.01
7/16	3-1/4	5	5-3/8	7/16	TR97596	86.34
1/2	3-3/4	5	5-7/8	1/2	TR97597	95.56
9/16	3-3/4	5	5-7/8	1/2	TR97598	99.46
5/8	4-1/4	5	6-3/8	1/2	TR97599	110.62
11/16	4-1/4	5	6-3/8	1/2	TR97600	120.59
3/4	4-1/2	5	6-7/8	1/2	TR97601	139.65
13/16	4-1/2	5	6-7/8	1/2	TR97602	139.65
7/8	4-1/2	5	6-7/8	1/2	TR97603	158.40
15/16	4-1/2	5	6-7/8	1/2	TR97604	158.40
1	4-1/2	5	6-7/8	1/2	TR97605	180.87
1-1/16	4-1/2	5	6-7/8	1/2	TR97660	212.78

**CONSTRUCTION
REAMERS****SERIES 9950**

HIGH SPEED STEEL

LEFT HAND SPIRAL

RIGHT HAND CUT

BLACK & GOLD

3 FLATS

**TAKE 55%
OFF LIST
PRICES**



SIZE	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	HEX SHANK DIAMETER	ITEM#	LIST PRICE
9/16	4	5	5-1/2	1-1/16	TR99050	168.65
11/16	4-1/2	5	6-3/8	1-1/16	TR99052	203.94
13/16	5	5	7	1-1/4	TR99054	243.88
15/16	5	5	7	1-7/16	TR99056	275.56
1-1/16	5	5	7	1-5/8	TR99058	364.98
1-3/16	5	5	7	1-13/16	TR99060	470.16
1-5/16	5	5	7-7/8	2	TR99062	561.63

**SAFETY REAMERS WITH
MAGNETIC HEX SHANK****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)



SIZE	FLUTE LENGTH	# OF FLUTES	OVERALL LENGTH	MORSE TAPER #	SMALL DIAMETER	ITEM#	LIST PRICE
7/16	5-1/8	5	9	2	.3050	TR98974	87.81
1/2	5-1/8	5	9	2	.3125	TR98976	97.75
9/16	5-1/8	5	9	2	.3430	TR97589	97.75
5/8	6-1/8	5	10	2	.3750	TR98978	105.54
11/16	7-1/8	5	11-3/4	3	.3906	TR97590	112.91
3/4	7-3/8	5	12	3	.5000	TR97591	147.01
13/16	7-3/8	5	12	3	.5000	TR97592	147.01
7/8	7-3/8	5	12	3	.5625	TR98980	161.16
15/16	7-3/8	5	12	3	.6250	TR97593	172.04
1	7-3/8	5	12	3	.6875	TR98982	186.96
1-1/16	7-3/8	5	12	3	.7500	TR97594	194.10
1-1/8	7-3/8	5	12	3	.8125	TR98984	236.85
1-3/16	7-3/8	5	12	3	.8750	TR98986	302.76
1-1/4	7-3/8	5	13	4	.9375	TR98988	344.50
1-5/16	7-3/8	5	13	4	1.0000	TR98990	407.06
1-3/8	7-3/8	5	13	4	1.0625	TR99000	422.65
1-7/16	7-3/8	6	13	4	1.1250	TR99001	439.41
1-1/2	7-3/8	6	13	4	1.1875	TR99002	498.88
1-9/16	7-3/8	6	13	4	1.2500	TR99003	599.56
1-5/8	7-3/8	6	13	4	1.3125	TR99008	691.26

BRIDGE REAMERS**SERIES 9850**

HIGH SPEED STEEL

LEFT HAND SPIRAL

RIGHT HAND CUT

**TAKE 55%
OFF LIST
PRICES**



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#	LIST PRICE
29Pc • 1/16" - 1/2" by 64ths • HSS	Straight	TR96283	1,212.40
29Pc • 1/16" - 1/2" by 64ths • M42 Cobalt	Straight	TR96284	1,588.24
60Pc • #1 - #60 • HSS	Straight	TR96286	1,798.67
60Pc • #1 - #60 • M42 Cobalt	Straight	TR96287	1,952.85
26Pc • A-Z • HSS	Straight	TR96290	1,121.90
26Pc • A-Z • M42 Cobalt	Straight	TR96291	1,561.70
14Pc • Dowel Pin • .1230 - .4995 • HSS	Straight	TR96279	628.83
14Pc • Dowel Pin • .1230 - .4995 • M42 Cobalt	Straight	TR96280	824.83
14Pc • O/U • .1240 - .5010 • HSS	Straight	TR96293	628.83
14Pc • O/U • .1240 - .5010 • M42 Cobalt	Straight	TR96294	788.20
20Pc • #61 - #80 • HSS	Straight	TR96305	737.10
10Pc • #4 - 1/2" • Std • Ctr Bore Set • HSS	RH Spiral	TR96307	618.11
10Pc • #4 - 1/2" • 1/64" OS • Ctr Bore Set • HSS	RH Spiral	TR96308	618.11
10Pc • #4 - 1/2" • 1/32" OS • Ctr Bore Set • HSS	RH Spiral	TR96309	618.11

VI-PRO ENDMILLS - CARBIDE

VI-PRO

- Running @ higher SFM; heavier chip loads than conventional endmills
- Speed and feed chart parameters are for 4 flute full diameter slotting
- Recommended slotting depth = 1 x diameter
- Tool holding important for maximizing tool life. Minimize TIR
- Max ramp angle recommended 3° or less

Speed and Feed Calculation:

$$\text{RPM} = (3.82 \times \text{SFM}) \div \text{Dia.}$$

$$\text{IPR} = \text{IPM} \div \text{RPM}$$

$$\text{SFM} = (\text{RPM} \times \text{Dia.}) \div 3.82$$

$$\text{IPM} = \text{IPT}(\text{chip load}) \times \text{No. of Teeth} \times \text{RPM}$$

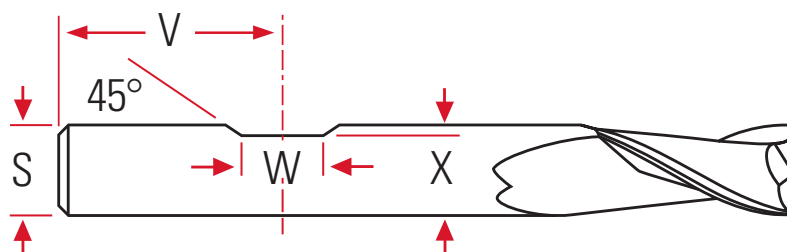
$$\text{IPT}(\text{chip load}) = \text{IPM} \div (\text{No. of teeth} \times \text{RPM})$$

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, 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 higher speeds and feeds due to excellent thermal properties under high mechanical loads, and can be used for roughing and finishing operations. Because of its chromium 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. This coating is highly recommended for titanium, high temperature alloys, and hardened and tempered tool steels with 35 HRC or greater.

Weldon Flat specifications for the VI-PRO



STUB LENGTH

S SHANK DIAMETER	V	W		X
		MIN	MAX	
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		X
		MIN	MAX	
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		X
		MIN	MAX	
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		X
		MIN	MAX	
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"
-	-	-	-	-

VI-PRO ENDMILLS - CARBIDE

VI-PRO 4 FLUTE

SFM FOR ALTiN, FOR ALCRO-MAX INCREASE UP TO 20%

MATERIAL / TYPE	Rc HARDNESS	4 FLUTE STUB LENGTH	4 FLUTE REG LENGTH	4 FLUTE LONG LENGTH	4 FLUTE EXTRA LONG
COBALT BASE ALLOYS					
STELLITE, HS-21,	UNDER 32	125 - 175	125 - 175	80 - 125	80 - 125
HAYNES 25/188, X-40, L-605	OVER 32	80 - 100	80 - 100	55 - 70	55 - 70
NICKEL BASE ALLOYS					
INCONEL-625/718, WASPALLOY,	UNDER 32	125 - 175	125 - 175	80 - 125	80 - 125
RENE, HASTELLOY	OVER 32	80 - 100	80 - 100	55 - 70	55 - 70
IRON BASE ALLOYS					
INCOLOY 800-802, MULTIMET N-155,	UNDER 32	125 - 175	125 - 175	80 - 125	80 - 125
TIMKIN 16-25-6, CARPENTER 22-b3	OVER 32	80 - 100	80 - 100	55 - 70	55 - 70
MONEL					
MONEL-65% NICKEL	-	150 - 200	150 - 200	105 - 140	105 - 140
TITANIUM ALLOYS					
COMMERCIALLY PURE, 6Al-4V,	-	-	-	-	-
ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si	-	200 - 325	200 - 325	140 - 230	140 - 230
STAINLESS STEEL (PRECIPITATION)					
12/8, 15/5, 17/4, AM-350/355	UNDER 32	250 - 300	250 - 300	175 - 210	175 - 210
	OVER 32	200 - 250	200 - 250	140 - 175	140 - 175
STAINLESS STEEL (AUSTENITIC)					
200 SERIES, 302, 303, 304, 316	-	290 - 375	290 - 375	200 - 260	200 - 260
STAINLESS STEEL (AUSTENITIC)					
304L, 316L	UNDER 32	250 - 300	250 - 300	175 - 210	175 - 210
	OVER 32	200 - 250	200 - 250	140 - 175	140 - 175
STAINLESS STEEL (MARTENSITIC)					
403, 410, 416, 440	-	250 - 300	250 - 300	175 - 210	175 - 210
HIGH STRENGTH TOOL STEELS					
4140, 4340, 6150, 5210, A2,	UNDER 32	250 - 350	250 - 350	175 - 210	175 - 210
D2, P20, H11, H13, S2, 01	OVER 32	150 - 200	150 - 200	100 - 140	100 - 140
CARBON STEELS					
1000's, 1100's, 1300'S	-	560 - 595	560 - 595	300 - 500	300 - 500
DUCTILE					
DUCTILE CAST IRONS	-	560 - 595	560 - 595	400 - 500	400 - 500
CAST IRONS					
GRAY CAST IRONS	-	560 - 595	560 - 595	400 - 500	400 - 500

Speed and feed chart parameters are for 4 flute full diameter slotting

Recommended slotting depth = 1 x diameter

Tool holding important for maximizing tool life. Minimize TIR

Max ramp angle recommended 3° or less

VI-PRO ENDMILLS - CARBIDE

VI-PRO

4 FLUTE

I.P.T. (Inch Per Tooth)

MATERIAL / TYPE	1/8"	3/16"	1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	1"
COBALT BASE ALLOYS										
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
NICKEL BASE ALLOYS										
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
IRON BASE ALLOYS										
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
MONEL										
MONEL-65% NICKEL	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0018 - .0020	.0017 - .0019	.0019 - .0021	.0026 - .0028	.0029 - .0031	.0035 - .0037	.0039 - .0041
TITANIUM ALLOYS										
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
STAINLESS STEEL (PRECIPITATION)										
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
STAINLESS STEEL (AUSTENITIC)										
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
STAINLESS STEEL (AUSTENITIC)										
304L, 316L	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0016 - .0020	.0017 - .0025	.0019 - .0031	.0026 - .0032	.0029 - .0037	.0035 - .0039	.0039 - .0041
STAINLESS STEEL (MARTENSITIC)										
403, 410, 416, 440	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0016 - .0020	.0017 - .0025	.0019 - .0031	.0026 - .0032	.0029 - .0037	.0035 - .0039	.0039 - .0041
HIGH STRENGTH TOOL STEELS										
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
CARBON STEELS										
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
DUCTILE										
DUCTILE CAST IRONS	.0004 - .0008	.0011 - .0013	.0018 - .0020	.0024 - .0026	.0030 - .0032	.0033 - .0035	.0035 - .0037	.0039 - .0041	.0041 - .0043	.0054 - .0056
CAST IRONS										
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 for 4 Flute 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

VI-PRO ENDMILLS - CARBIDE

VI-PRO 5 FLUTE

**SFM FOR ALTIM, FOR ALCRO-MAX INCREASE UP TO +20%
FINISHING PASSES ONLY, 10% OF DIAMETER MAX**

MATERIAL / TYPE	Rc HARDNESS	5 FLUTE STUB LENGTH	5 FLUTE REG LENGTH	5 FLUTE LONG LENGTH	5 FLUTE EXTRA LONG
COBALT BASE ALLOYS					
STELLITE, HS-21,	UNDER 32	550 - 570	550 - 570	385 - 400	385 - 400
HAYNES 25/188, X-40, L-605	OVER 32	200 - 225	200 - 225	140 - 160	140 - 160
NICKEL BASE ALLOYS					
INCONEL-625/718, WASPALLOY,	UNDER 32	550 - 570	550 - 570	385 - 400	385 - 400
RENE, HASTELLOY	OVER 32	200 - 225	200 - 225	140 - 160	140 - 160
IRON BASE ALLOYS					
INCOLOY 800-802, MULTIMET N-155,	UNDER 32	550 - 570	550 - 570	385 - 400	385 - 400
TIMKIN 16-25-6, CARPENTER 22-b3	OVER 32	200 - 225	200 - 225	140 - 160	140 - 160
MONEL					
MONEL-65% NICKEL	-	550 - 570	550 - 570	385 - 400	385 - 400
TITANIUM ALLOYS					
COMMERCIALLY PURE, 6Al-4V,	-	-	-	-	-
ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si	-	550 - 570	550 - 570	385 - 400	385 - 400
STAINLESS STEEL (PRECIPITATION)					
12/8, 15/5, 17/4, AM-350/355	UNDER 32	600 - 625	600 - 625	420 - 440	420 - 440
	OVER 32	550 - 570	550 - 570	385 - 400	385 - 400
STAINLESS STEEL (AUSTENITIC)					
200 SERIES, 302, 303, 304, 316	-	600 - 625	600 - 625	420 - 440	420 - 440
STAINLESS STEEL (AUSTENITIC)					
304L, 316L	UNDER 32	600 - 625	600 - 625	420 - 440	420 - 440
	OVER 32	550 - 570	550 - 570	385 - 400	385 - 400
STAINLESS STEEL (MARTENSITIC)					
403, 410, 416, 440	-	600 - 625	600 - 625	420 - 440	420 - 440
HIGH STRENGTH TOOL STEELS					
4140, 4340, 6150, 5210, A2,	UNDER 32	600 - 625	600 - 625	420 - 440	420 - 440
D2, P20, H11, H13, S2, 01	OVER 32	550 - 570	550 - 570	385 - 400	385 - 400
CARBON STEELS					
1000's, 1100's, 1300's	-	800 - 850	800 - 850	560 - 595	560 - 595
DUCTILE					
DUCTILE CAST IRONS	-	800 - 850	800 - 850	560 - 595	560 - 595
CAST IRONS					
GRAY CAST IRONS	-	800 - 850	800 - 850	560 - 595	560 - 595

VI-PRO ENDMILLS - CARBIDE

VI-PRO

5 FLUTE

I.P.T. (Inch Per Tooth)										
MATERIAL / TYPE	1/8"	3/16"	1/4"	5/16"	3/8"	7/16"	1/2"	5/8"	3/4"	1"
COBALT BASE ALLOYS										
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
NICKEL BASE ALLOYS										
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
IRON BASE ALLOYS										
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
MONEL										
MONEL-65% NICKEL	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0018 - .0020	.0017 - .0019	.0019 - .0021	.0026 - .0028	.0029 - .0031	.0035 - .0037	.0039 - .0041
TITANIUM ALLOYS										
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
STAINLESS STEEL (PRECIPITATION)										
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
STAINLESS STEEL (AUSTENITIC)										
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
STAINLESS STEEL (AUSTENITIC)										
304L, 316L	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0016 - .0020	.0017 - .0025	.0019 - .0031	.0026 - .0032	.0029 - .0037	.0035 - .0039	.0039 - .0041
STAINLESS STEEL (MARTENSITIC)										
403, 410, 416, 440	.0004 - .0008	.0009 - .0011	.0014 - .0016	.0016 - .0020	.0017 - .0025	.0019 - .0031	.0026 - .0032	.0029 - .0037	.0035 - .0039	.0039 - .0041
HIGH STRENGTH TOOL STEELS										
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
CARBON STEELS										
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
DUCTILE										
DUCTILE CAST IRONS	.0004 - .0008	.0011 - .0013	.0018 - .0020	.0024 - .0026	.0030 - .0032	.0033 - .0035	.0035 - .0037	.0039 - .0041	.0041 - .0043	.0054 - .0056
CAST IRONS										
GRAY CAST IRONS	.0004 - .0008	.0011 - .0013	.0018 - .0020	.0024 - .0026	.0030 - .0032	.0033 - .0035	.0035 - .0037	.0039 - .0041	.0041 - .0043	.0054 - .0056

HIGH PERFORMANCE ENDMILLS - 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 TERMINATOR FINISHING PASSES ONLY, 10% OF DIAMETER MAX

MATERIAL / TYPE	Rc HARDNESS	2 Fl, 3 Fl 45° Helix Aluminum	3 Flute 45° & 60° Helix	5 Flute 45° Helix	TERMINATOR ALTIN COATING	TERMINATOR ALCRO-MAX COATING
COBALT BASE ALLOYS						
STELLITE, HS-21,	UNDER 32	—	200 - 275	250 - 300	220 - 270	265 - 325
HAYNES 25/188, X-40, L-605	OVER 32	—	125 - 175	150 - 200	150 - 200	180 - 240
NICKEL BASE ALLOYS						
INCONEL-625/718, WASPALLOY,	UNDER 32	—	150 - 200	250 - 300	220 - 270	265 - 325
RENE, HASTELLOY	OVER 32	—	90 - 125	150 - 200	150 - 200	180 - 240
IRON BASE ALLOYS						
INCOLOY 800-802, MULTIMET N-155,	UNDER 32	—	250 - 300	250 - 300	220 - 270	265 - 325
TIMKIN 16-25-6, CARPENTER 22-b3	OVER 32	—	150 - 200	150 - 200	150 - 200	180 - 240
MONEL						
MONEL-65% NICKEL	—	—	200 - 300	225 - 350	200 - 245	240 - 295
TITANIUM ALLOYS						
COMMERCIALLY PURE, 6Al-4V,	—	500 min.	250 - 400	250 - 400	245 - 400	295 - 480
ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si	—	—	—	—	—	—
STAINLESS STEEL (PRECIPITATION)						
12/8, 15/5, 17/4, AM-350/355	UNDER 32	—	200 - 350	200 - 350	200 - 350	240 - 420
	OVER 32	—	150 - 250	150 - 250	150 - 245	180 - 295
STAINLESS STEEL (AUSTENITIC)						
200 SERIES, 302, 303, 304, 316	UNDER 32	—	250 - 350	250 - 350	245 - 345	295 - 415
	OVER 32	—	175 - 275	175 - 275	170 - 270	200 - 325
STAINLESS STEEL (AUSTENITIC)						
304L, 316L	UNDER 32	—	125 - 200	125 - 200	120 - 200	145 - 240
	OVER 32	—	90 - 125	90 - 125	90 - 120	110 - 145
STAINLESS STEEL (MARTENSITIC)						
403, 410, 416, 440	UNDER 32	—	200 - 350	200 - 350	200 - 350	240 - 420
	OVER 32	—	150 - 250	150 - 250	150 - 250	180 - 300
HIGH STRENGTH TOOL STEELS						
4140, 4340, 6150, 5210, A2,	UNDER 32	—	225 - 300	225 - 300	220 - 300	265 - 360
D2, P20, H11, H13, S2, 01	OVER 32	—	125 - 200	125 - 200	120 - 200	145 - 240
MEDIUM ALLOY STEELS						
200, 250, 300	UNDER 32	—	250 - 350	250 - 350	245 - 345	295 - 415
	OVER 32	—	150 - 200	150 - 200	150 - 200	180 - 240
CARBON STEELS						
1000's, 1100's, 1300's	UNDER 32	—	250 - 350	250 - 350	245 - 345	295 - 415
	OVER 32	—	150 - 200	150 - 200	150 - 200	180 - 240
DUCTILE						
DUCTILE CAST IRONS	—	—	350 - 450	300 - 400	200 - 300	240 - 360
CAST IRONS						
GRAY CAST IRONS	—	—	300 - 400	250 - 350	170 - 245	200 - 295
ALUMINUM						
2014, 2024, 6061-(T1-T6)	—	500 min.	500 min.	500 min.	—	—
7075, DIE CAST, EXTRUDED	—	—	—	—	—	—
MAGNESIUM						
	—	500 min.	500 min.	500 min.	—	—
COPPER, COPPER ALLOYS						
	—	400 - 500	400 - 500	250 - 350	—	—
BRASS BRONZE						
BRASS, ALUM/BRONZE,	—	300 - 400	300 - 400	—	—	—
LOW SILICON BRONZE	—	—	—	—	—	—
COMPOSITES						
G-10 FIBERGLASS, GRAPHITE,	—	250 - 1000	—	—	—	—
GRAPHITE/EPOXY, PLASTICS	—	—	—	—	—	—

HIGH PERFORMANCE ENDMILLS - CARBIDE

I.P.T. (Inch Per Tooth)					
MATERIAL / TYPE	Rc HARDNESS	1/8"	1/8" - 1/4"	1/4" - 1/2"	1/2" - 1"
COBALT BASE ALLOYS					
STELLITE, HS-21, HAYNES 25/188, X-40, L-605	UNDER 32 OVER 32	.0005"-.0010" .0003"-.0005"	.0005"-.0010" .0003"-.0005"	.0008"-.0020" .0005"-.0015"	.0020"-.0040" .0010"-.0030"
NICKEL BASE ALLOYS					
INCONEL-625/718, WASSPALLOY, RENE, HASTELLOY	UNDER 32 OVER 32	.0005"-.0010" .0003"-.0005"	.0005"-.0010" .0003"-.0005"	.0008"-.0020" .0005"-.0015"	.0020"-.0040" .0010"-.0030"
IRON BASE ALLOYS					
INCOLOY 800-802, MULTIMET N-155, TIMKIN 16-25-6, CARPENTER 22-b3	UNDER 32 OVER 32	.0005"-.0010" .0003"-.0005"	.0005"-.0010" .0003"-.0005"	.0008"-.0020" .0005"-.0015"	.0020"-.0040" .0010"-.0030"
MONEL					
MONEL-65% NICKEL	-	.0007"-.0015"	.0007"-.0015"	.0010"-.0025"	.0030"-.0050"
TITANIUM ALLOYS					
COMMERCIALLY PURE, 6Al-4V, ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si	- -	.0007"-.0015" -	.0007"-.0015" -	.0010"-.0025" -	.0030"-.0050" -
STAINLESS STEEL (PRECIPITATION)					
12/8, 15/5, 17/4, AM-350/355	UNDER 32 OVER 32	.0005"-.0010" .0003"-.0005"	.0005"-.0010" .0003"-.0005"	.0008"-.0020" .0005"-.0015"	.0020"-.0040" .0010"-.0030"
STAINLESS STEEL (AUSTENITIC)					
200 SERIES, 302, 303, 304, 316	UNDER 32 OVER 32	.0005"-.0010" .0003"-.0005"	.0005"-.0010" .0003"-.0005"	.0008"-.0020" .0005"-.0015"	.0020"-.0040" .0010"-.0030"
STAINLESS STEEL (AUSTENITIC)					
304L, 316L	UNDER 32 OVER 32	.0005"-.0008" .0003"-.0005"	.0005"-.0008" .0003"-.0005"	.0008"-.0015" .0005"-.0010"	.0015"-.0030" .0010"-.0020"
STAINLESS STEEL (MARTENSITIC)					
403, 410, 416, 440	UNDER 32 OVER 32	.0005"-.0010" .0003"-.0005"	.0005"-.0010" .0003"-.0005"	.0008"-.0020" .0005"-.0015"	.0020"-.0040" .0010"-.0030"
HIGH STRENGTH TOOL STEELS					
4140, 4340, 6150, 5210, A2, D2, P20, H11, H13, S2, O1	UNDER 32 OVER 32	.0005"-.0010" .0003"-.0005"	.0005"-.0010" .0003"-.0005"	.0008"-.0020" .0005"-.0015"	.0020"-.0040" .0010"-.0030"
MEDIUM ALLOY STEELS					
200, 250, 300	UNDER 32 OVER 32	.0007"-.0015" .0005"-.0010"	.0007"-.0015" .0005"-.0010"	.0010"-.0025" .0008"-.0020"	.0030"-.0050" .0020"-.0040"
CARBON STEELS					
1000's, 1100's, 1300's	UNDER 32 OVER 32	.0007"-.0015" .0005"-.0010"	.0007"-.0015" .0005"-.0010"	.0010"-.0025" .0008"-.0020"	.0030"-.0050" .0020"-.0040"
DUCTILE					
DUCTILE CAST IRONS	-	.0010"-.0020"	.0010"-.0020"	.0015"-.0040"	.0030"-.0100"
CAST IRONS					
GRAY CAST IRONS	-	.0010"-.0020"	.0010"-.0020"	.0015"-.0040"	.0030"-.0100"
ALUMINUM					
2014, 2024, 6061-(T1-T6) 7075, DIE CAST, EXTRUDED	- -	.0010"-.0020" -	.0010"-.0020" -	.0015"-.0040" -	.0030"-.0150" -
MAGNESIUM					
	-	.0010"-.0020"	.0010"-.0020"	.0015"-.0040"	.0030"-.0100"
COPPER, COPPER ALLOYS					
	-	.0007"-.0015"	.0007"-.0015"	.0010"-.0025"	.0020"-.0080"
BRASS BRONZE					
BRASS, ALUM/BRONZE, LOW SILICON BRONZE	- -	.0007"-.0015" -	.0007"-.0015" -	.0010"-.0025" -	.0020"-.0080" -
COMPOSITES					
G-10 FIBERGLASS, GRAPHITE, GRAPHITE/EPOXY, PLASTICS	- -	.0010"-.0020" -	.0010"-.0020" -	.0015"-.0040" -	.0030"-.0100" -

HIGH PERFORMANCE ROUGHING ENDMILLS - CARBIDE

CARBIDE ROUGHERS - SFM & CHIP LOAD						
MATERIAL	HARDNESS HRC	SFM UNCOATED	SFM ALTIN	SFM ALCRO-MAX	CHIP LOAD PER TOOTH 1/4" - 1/2" 1/2" - 1"	
LOW AND PLAIN CARBON, ALLOY & TOOL STEELS	<19	258 - 345	430 - 575	430 - 690	.0015 - .0030	.0030 - .0045
LOW AND PLAIN CARBON, ALLOY & TOOL STEELS	20 - 30	210 - 258	350 - 430	350 - 516	.0015 - .0030	.0030 - .0045
LOW AND PLAIN CARBON, ALLOY & TOOL STEELS	31 - 40	126 - 192	210 - 320	210 - 384	.0011 - .0021	.0021 - .0032
AUSTENITIC STAINLESS STEELS, 200 AND 300 SERIES 135-275	<28	150 - 300	250 - 500	250 - 600	.0010 - .0025	.0025 - .0040
FERRITIC, MARTENSITIC 400, 500, & PH STAINLESS STEELS	<35	135 - 258	225 - 430	225 - 516	.0015 - .0030	.0030 - .0045
TITANIUM ALLOYS	32 - 43	75 - 129	125 - 215	125 - 258	.0009 - .0018	.0018 - .0027
NICKEL-BASED HIGH TEMPERATURE ALLOYS	<32	39 - 87	65 - 145	65 - 174	.0009 - .0018	.0018 - .0027
NICKEL-BASED HIGH TEMPERATURE ALLOYS	32 - 50	33 - 66	55 - 110	55 - 132	.0009 - .0018	.0018 - .0027
COBALT-BASED HIGH TEMPERATURE ALLOYS	<45	27 - 45	45 - 75	45 - 90	.0009 - .0018	.0018 - .0027

For the long length carbide rougher the SFM should be reduced by 30%.

ENDMILLS - 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 = +40 UP TO +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:

$$\text{RPM} = (3.82 \times \text{SFM}) \div \text{Dia.}$$

$$\text{IPR} = \text{IPM} \div \text{RPM}$$

$$\text{SFM} = (\text{RPM} \times \text{Dia.}) \div 3.82$$

$$\text{IPM} = \text{IPT}(\text{chip load}) \times \text{No. of Teeth} \times \text{RPM}$$

$$\text{IPT}(\text{chip load}) = \text{IPM} \div (\text{No. of teeth} \times \text{RPM})$$

THREADMILLS - 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 - 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.

GENERAL PURPOSE ENDMILLS - 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
COBALT BASE ALLOYS					
STELLITE, HS-21,	UNDER 32	-	-	175 - 225	150 - 200
HAYNES 25/188, X-40, L-605	OVER 32	-	-	125 - 175	100 - 150
NICKEL BASE ALLOYS					
INCONEL-625/718, Waspalloy,	UNDER 32	-	-	125 - 175	150 - 200
RENE, HASTELLOY	OVER 32	-	-	70 - 115	100 - 150
IRON BASE ALLOYS					
INCOLOY 800-802, MULTIMET N-155,	UNDER 32	-	-	175 - 225	150 - 200
TIMKIN 16-25-6, CARPENTER 22-b3	OVER 32	-	-	125 - 175	100 - 150
MONEL					
MONEL-65% NICKEL	-	175 - 300	125 - 175	175 - 300	125 - 175
TITANIUM ALLOYS					
COMMERCIALLY PURE, 6Al-4V,	-	200 - 300	125 - 250	200 - 300	125 - 250
ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si	-	-	-	-	-
STAINLESS STEEL (PRECIPITATION)					
12/8, 15/5, 17/4, AM-350/355	UNDER 32	-	-	150 - 250	100 - 150
	OVER 32	-	-	125 - 175	80 - 150
STAINLESS STEEL (AUSTENITIC)					
200 SERIES, 302, 303, 304, 316	UNDER 32	-	-	200 - 250	125 - 175
	OVER 32	-	-	150 - 200	100 - 150
STAINLESS STEEL (AUSTENITIC)					
304L, 316L	UNDER 32	-	-	90 - 125	80 - 120
	OVER 32	-	-	75 - 110	60 - 90
STAINLESS STEEL (MARTENSITIC)					
403, 410, 416, 440	UNDER 32	-	-	150 - 250	100 - 150
	OVER 32	-	-	125 - 175	80 - 150
HIGH STRENGTH TOOL STEELS					
4140, 4340, 6150, 5210, A2,	UNDER 32	-	-	150 - 225	125 - 175
D2, P20, H11, H13, S2, 01	OVER 32	-	-	60 - 125	80 - 120
MEDIUM ALLOY STEELS					
200, 250, 300	UNDER 32	-	-	200 - 250	150 - 200
	OVER 32	-	-	125 - 175	100 - 150
CARBON STEELS					
1000's, 1100's, 1300's	UNDER 32	-	-	200 - 250	150 - 200
	OVER 32	-	-	125 - 175	100 - 150
DUCTILE					
DUCTILE CAST IRONS	-	250 - 350	200 - 300	300 - 400	200 - 300
CAST IRONS					
GRAY CAST IRONS	-	225 - 325	175 - 250	250 - 350	175 - 250
ALUMINUM					
2014, 2024, 6061-(T1-T6)	-	500 min.	500 min.	500 min.	500 min.
7075, DIE CAST, EXTRUDED	-	-	-	-	-
MAGNESIUM					
	-	500 min.	500 min.	500 min.	500 min.
COPPER, COPPER ALLOYS					
	-	400 - 500	400 - 500	300 - 400	250 - 350
BRASS BRONZE					
BRASS, ALUM/BRONZE,	-	300 - 400	300 - 400	250 - 350	200 - 300
LOW SILICON BRONZE	-	-	-	-	-
COMPOSITES					
G-10 FIBERGLASS, GRAPHITE,	-	250 - 1000	250 - 1000	250 - 1000	250 - 1000
GRAPHITE/EPOXY, PLASTICS	-	-	-	-	-

GENERAL PURPOSE ENDMILLS - 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"
COBALT BASE ALLOYS						
STELLITE, HS-21, HAYNES 25/188, X-40, L-605	UNDER 32 OVER 32	.0005"-.0010" .0003"-.0005"	.0005"-.0010" .0003"-.0005"	.0008"-.0020" .0005"-.0015"	.0020"-.0040" .0010"-.0030"	.0030"-.0050" .0020"-.0040"
NICKEL BASE ALLOYS						
INCONEL-625/718, WASPALLOY, RENE, HASTELLOY	UNDER 32 OVER 32	.0005"-.0010" .0003"-.0005"	.0005"-.0010" .0003"-.0005"	.0008"-.0020" .0005"-.0015"	.0020"-.0040" .0010"-.0030"	.0030"-.0050" .0020"-.0040"
IRON BASE ALLOYS						
INCOLOY 800-802, MULTIMET N-155, TIMKIN 16-25-6, CARPENTER 22-b3	UNDER 32 OVER 32	.0005"-.0010" .0003"-.0005"	.0005"-.0010" .0003"-.0005"	.0008"-.0020" .0005"-.0015"	.0020"-.0040" .0010"-.0030"	.0030"-.0050" .0020"-.0040"
MONEL						
MONEL-65% NICKEL	-	.0007"-.0015"	.0007"-.0015"	.0010"-.0025"	.0030"-.0050"	.0040"-.0060"
TITANIUM ALLOYS						
COMMERCIALLY PURE, 6Al-4V, ASTM 1/2/3, 6Al-25N-4Zr-2Mo-Si	- -	.0007"-.0015" -	.0007"-.0015" -	.0010"-.0025" -	.0030"-.0050" -	.0040"-.0060" -
STAINLESS STEEL (PRECIPITATION)						
12/8, 15/5, 17/4, AM-350/355	UNDER 32 OVER 32	.0005"-.0010" .0003"-.0005"	.0005"-.0010" .0003"-.0005"	.0008"-.0020" .0005"-.0015"	.0020"-.0040" .0010"-.0030"	.0030"-.0050" .0020"-.0040"
STAINLESS STEEL (AUSTENITIC)						
200 SERIES, 302, 303, 304, 316	UNDER 32 OVER 32	.0005"-.0010" .0003"-.0005"	.0005"-.0010" .0003"-.0005"	.0008"-.0020" .0005"-.0015"	.0020"-.0040" .0010"-.0030"	.0030"-.0050" .0020"-.0040"
STAINLESS STEEL (AUSTENITIC)						
304L, 316L	UNDER 32 OVER 32	.0005"-.0008" .0003"-.0005"	.0005"-.0008" .0003"-.0005"	.0008"-.0015" .0005"-.0010"	.0015"-.0030" .0010"-.0020"	.0020"-.0040" .0015"-.0030"
STAINLESS STEEL (MARTENSITIC)						
403, 410, 416, 440	UNDER 32 OVER 32	.0005"-.0010" .0003"-.0005"	.0005"-.0010" .0003"-.0005"	.0008"-.0020" .0005"-.0015"	.0020"-.0040" .0010"-.0030"	.0030"-.0050" .0020"-.0040"
HIGH STRENGTH TOOL STEELS						
4140, 4340, 6150, 5210, A2, D2, P20, H11, H13, S2, O1	UNDER 32 OVER 32	.0005"-.0010" .0003"-.0005"	.0005"-.0010" .0003"-.0005"	.0008"-.0020" .0005"-.0015"	.0020"-.0040" .0010"-.0030"	.0030"-.0050" .0020"-.0040"
MEDIUM ALLOY STEELS						
200, 250, 300	UNDER 32 OVER 32	.0007"-.0015" .0005"-.0010"	.0007"-.0015" .0005"-.0010"	.0010"-.0025" .0008"-.0020"	.0030"-.0050" .0020"-.0040"	.0040"-.0060" .0030"-.0050"
CARBON STEELS						
1000's, 1100's, 1300's	UNDER 32 OVER 32	.0007"-.0015" .0005"-.0010"	.0007"-.0015" .0005"-.0010"	.0010"-.0025" .0008"-.0020"	.0030"-.0050" .0020"-.0040"	.0040"-.0060" .0030"-.0050"
DUCTILE						
DUCTILE CAST IRONS	-	.0010"-.0020"	.0010"-.0020"	.0015"-.0040"	.0030"-.0100"	.0050"-.0100"
CAST IRONS						
GRAY CAST IRONS	-	.0010"-.0020"	.0010"-.0020"	.0015"-.0040"	.0030"-.0100"	.0050"-.0100"
ALUMINUM						
2014, 2024, 6061-(T1-T6) 7075, DIE CAST, EXTRUDED	- -	.0010"-.0020" -	.0010"-.0020" -	.0015"-.0040" -	.0030"-.0150" -	.0050"-.0150" -
MAGNESIUM						
	-	.0010"-.0020"	.0010"-.0020"	.0015"-.0040"	.0030"-.0100"	.0050"-.0100"
COPPER, COPPER ALLOYS						
	-	.0007"-.0015"	.0007"-.0015"	.0010"-.0025"	.0020"-.0080"	.0040"-.0100"
BRASS BRONZE						
BRASS, ALUM/BRONZE, LOW SILICON BRONZE	- -	.0007"-.0015" -	.0007"-.0015" -	.0010"-.0025" -	.0020"-.0080" -	.0040"-.0100" -
COMPOSITES						
G-10 FIBERGLASS, GRAPHITE, GRAPHITE/EPOXY, PLASTICS	- -	.0010"-.0020" -	.0010"-.0020" -	.0015"-.0040" -	.0030"-.0100" -	.0050"-.0100" -

DRILLS - CARBIDE

THESE VALUES ARE FOR UNCOATED TOOLS. FOR ALTiN COATED TOOLS INCREASE SFM +40%

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"
COBALT BASE ALLOYS								
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"
NICKEL BASE ALLOYS								
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"
IRON BASE ALLOYS								
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"
MONEL								
MONEL-65% NICKEL	-	100 - 150	100 - 150	.0004"-.0010"	.0008"-.0015"	.0010"-.0015"	.0015"-.0030"	.0020"-.0040"
TITANIUM ALLOYS								
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"
	-	-	-	-	-	-	-	-
STAINLESS STEEL (PRECIPITATION)								
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"
STAINLESS STEEL (AUSTENITIC)								
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"
STAINLESS STEEL (AUSTENITIC)								
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"
STAINLESS STEEL (MARTENSITIC)								
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"
HIGH STRENGTH TOOL STEELS								
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"
MEDIUM ALLOY STEELS								
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"
CARBON STEELS								
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"
DUCTILE								
DUCTILE CAST IRONS	-	125 - 200	150 - 250	.0010"-.0020"	.0010"-.0030"	.0015"-.0035"	.0025"-.0040"	.0030"-.0050"
CAST IRONS								
GRAY CAST IRONS	-	100 - 200	150 - 250	.0010"-.0020"	.0010"-.0030"	.0015"-.0035"	.0025"-.0040"	.0030"-.0050"
ALUMINUM								
2014, 2024, 6061-(T1-T6) 7075, DIE CAST, EXTRUDED	- -	150 - 300 -	- -	.0010"-.0020" -	.0015"-.0040" -	.0020"-.0020" -	.0030"-.0060" -	.0035"-.0070" -
MAGNESIUM								
	-	200 - 500	-	.0010"-.0020"	.0010"-.0030"	.0015"-.0035"	.0025"-.0040"	.0030"-.0050"
COPPER, COPPER ALLOYS								
	-	150 - 300	-	.0010"-.0020"	.0010"-.0030"	.0015"-.0035"	.0025"-.0040"	.0030"-.0050"
BRASS BRONZE								
BRASS, ALUM/BRONZE	-	150 - 300	-	.0010"-.0020"	.0010"-.0030"	.0015"-.0035"	.0025"-.0040"	.0030"-.0050"
BRASS BRONZE								
LOW SILICON BRONZE	-	125 - 200	-	.0008"-.0015"	.0010"-.0020"	.0015"-.0030"	.0020"-.0040"	.0025"-.0050"
COMPOSITES								
G-10 FIBERGLASS, GRAPHITE, GRAPHITE/EPOXY, PLASTICS	- -	150 - 300 -	150 - 300 -	.0010"-.0020" -	.0010"-.0030" -	.0015"-.0035" -	.0025"-.0040" -	.0030"-.0050" -

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

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 141 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

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

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

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

FOR ADDITIONAL PRODUCT INFORMATION GO TO TITANMAN.COM

PREDATOR TAPS - HIGH PERFORMANCE

SPEED CHART FOR PREDATOR TAPS

MATERIAL / TYPE	HARDNESS		CUTTING SPEED (fpm)		CUTTING FLUID*
	Bhn	Rc	SPIRAL POINT	SPIRAL FLUTE	
ALUMINUM ALLOYS					
UNALLOYED - 1000 SERIES	-	-	80	60	WS, CO
CAST - 360, A380	-	-	60	45	WS, CO
WROUGHT - 2000-7000 SERIES	-	-	80	60	WS, CO
BRASS					
HIGH-LEADED, FREE CUTTING - C34000, C36000	-	-	60	45	WS
NAVAL, RED - C46400-C46700, C23000	-	-	60	45	WS
CAST IRON					
PEARLITIC, GRAY CAST IRON, FERRITIC - A48 CLASS 20, CLASS 25, CLASS 40	< 253	< 25	20	15	WS
MALLEABLE - ASTM A47 GRADE 32510, SAE J158 GRADE M3210	< 253	< 25	15	12	CO
NICKEL ALLOYS					
NICKEL BASE ALLOY, WROUGHT & CAST - NICKEL 200, MONEL ALLOY 400	< 253	< 25	15	12	CO
HIGH TEMPERATURE ALLOY, WROUGHT & CAST - INCONEL 600, 718, HASTALLOY B & C	253 - 390	25 - 42	10	10	CO
STEEL					
LOW CARBON - 1010, 1018, 1029, 1513, 1522	< 190	< 10	55	40	WS, CO
MEDIUM CARBON - 1030, 1040, 1045, 1050	< 208	< 15	35	25	WS, CO
HIGH CARBON - 1050, 1070, 1080, 1090, 1561, 1572	< 253	< 25	15	12	CO
HIGH STRENGTH STEEL - 4140, 4340	327 - 390	35 - 42	10	10	CO
STAINLESS STEEL					
AUSTENITIC - SAE (300 SERIES)	< 253	< 25	20	15	CO
MARTENSITIC & FERRITIC - 400 SERIES, 416, 420F, 446	253 - 301	25 - 32	15	12	CO
HARDENED - 15-5PH, 17-4PH, A286	< 327 - 390	< 35 - 42	10	10	CO
TITANIUM ALLOYS					
ALPHA & ALPHA-BETA ALLOYS ANNEALED - Ti-6Al-4V	253 - 301	25 - 32	10	10	CO
ALPHA & ALPHA-BETA ALLOYS SOLUTION TREATED & AGED - Ti-6Al-6V	327 - 390	35 - 42	8	8	CO
TOOL STEEL					
HOT WORK, COLD WORK & MOLD - A2, D2, H10, H14, P2, P13	190 - 253	10 - 25	20	15	CO
HOT WORK, COLD WORK & MOLD - A2, D2, H10, H14, P2, P13	327 - 390	35 - 42	15	12	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.

THREAD FORMING TAPS

SPEED CHART FOR THREAD FORMING TAPS			
MATERIAL / TYPE	HARDNESS		FORMING SPEED (fpm)
	Bhn	Rc	
ALUMINUM ALLOYS			
UNALLOYED - 1000 SERIES	-	-	80
CAST - 360, A380	-	-	60
WROUGHT - 2000-7000 SERIES	-	-	80
BRASS			
HIGH-LEADED, FREE CUTTING - C34000, C36000	-	-	60
NAVAL, RED - C46400-C46700, C23000	-	-	60
NICKEL ALLOYS			
NICKEL BASE ALLOY, WROUGHT & CAST - NICKEL 200, MONEL ALLOY 400	< 253	< 25	15
STEEL			
LOW CARBON - 1010, 1018, 1029, 1513, 1522	< 190	< 10	55
MEDIUM CARBON - 1030, 1040, 1045, 1050	< 208	< 15	35
HIGH CARBON - 1050, 1070, 1080, 1090, 1561, 1572	< 253	< 25	15
STAINLESS STEEL			
AUSTENITIC - SAE (300 SERIES)	< 253	< 25	20
MARTENSITIC & FERRITIC - 400 SERIES, 416, 420F, 446	253 - 301	25 - 32	15
TITANIUM ALLOYS			
ALPHA & ALPHA-BETA ALLOYS ANNEALED - Ti-6Al-4V	253 - 301	25 - 32	10
TOOL STEEL			
HOT WORK, COLD WORK & MOLD - A2, D2, H10, H14, P2, P13	190 - 253	10 - 25	20

CALCULATING TAP DRILL SIZES - THREAD FORMING TAPS

DRILL SIZE = MAJOR DIAMETER - [(0.0068 X desired % of thread) ÷ Threads Per Inch]

DRILL SIZE (mm) = MAJOR DIAMETER - [(0.0068 X desired % of thread x Pitch (mm))]

GUIDELINES FOR USING THREAD FORMING TAPS

PRE-TAP HOLE SIZE - Thread Forming taps require a larger pre-tap hole size than a cutting tap. Tapping with too small of a pre-tap hole size results in excessive tap wear, torque and possible tap breakage.

LUBRICATION - Forming Taps require good lubrication. Cutting oils are generally preferred because of their lubricity compared to water soluble coolants.

THREAD FORMING TAPS

PRE TAP HOLE SIZE				
TAP SIZE	TPI	75% THREAD	65% THREAD	NEAREST DRILL SIZE
0	80	0.054	0.055	#54 or 1.4 mm
1	64	0.066	0.067	#51 or 1.7 mm
1	72	0.067	0.068	#51 or 1.75 mm
2	56	0.078	0.079	#47 or 2.0 mm
2	64	0.079	0.080	2.0 mm
3	48	0.090	0.091	2.3 mm
3	56	0.091	0.092	2.3 mm
4	40	0.100	0.101	#39
4	48	0.103	0.104	#37
5	40	0.113	0.114	#33 or 2.9 mm
5	44	0.114	0.115	#33 or 2.9 mm
6	32	0.124	0.125	3.1 mm
6	40	0.126	0.127	1/8" or 3.2 mm
8	32	0.149	0.150	#25 or 3.8 mm
8	36	0.151	0.152	#24
10	24	0.170	0.172	11/64"
10	32	0.175	0.176	#16 or .176"
12	24	0.196	0.198	#9 or 5.0 mm
12	28	0.199	0.201	#7 or 5.1 mm
1/4	20	0.225	0.227	5.75 mm
1/4	28	0.233	0.235	"A"
5/16	18	0.285	0.287	7.25 mm
5/16	24	0.292	0.294	.293"
3/8	16	0.344	0.347	"S" or 11/32"
3/8	24	0.355	0.357	9.0 mm
7/16	14	0.402	0.405	"Y"
7/16	20	0.414	0.416	"Z" or 10.5 mm
1/2	13	0.462	0.466	.463"

PRE TAP HOLE SIZE - METRIC				
TAP SIZE	PITCH	75% THREAD	65% THREAD	NEAREST DRILL SIZE
M1.6	0.35	0.057	0.058	1.45 mm
M1.7	0.35	0.061	0.062	1.55 mm
M2	0.4	0.072	0.073	1.85 mm
M2.5	0.45	0.091	0.092	2.30 mm
M3	0.5	0.110	0.111	#35
M3.5	0.6	0.128	0.129	#30
M4	0.7	0.145	0.146	3.70 mm
M5	0.8	0.183	0.184	#14
M6	1	0.218	0.220	5.50 mm
M8	1.25	0.291	0.294	7.40 mm
M10	1.5	0.365	0.368	9.30 mm
M12	1.75	0.439	0.442	7/16"

WHERE TO USE THREAD FORMING TAPS

Materials particularly well suited for thread forming include aluminum, brass, copper, lead, stainless steel, carbon steel, cast steel, leaded steel and zinc. In general, any material which produces a stringy chip is a good candidate for cold forming threads. If the chips are powdery, the material may be too brittle. Forming taps generate threads without producing chips. The threads produced are much stronger than those created by cut taps because of the displacements of the grain of the metal in the workpiece. Cutting taps produce chips which may interfere with the tapping process.

MAJOR ADVANTAGES TO THREAD FORMING

- Chipless Tapping – no chip removal problems in blind holes.
- Stronger Threads – the grain flow of formed threads follows the contour of the thread in steel and stainless steel, resulting in greater thread strength.
- Better Thread Gaging – forming taps create their own lead therefore the possibility of producing oversized threads is greatly reduced.
- Stronger Taps – the absence for the need for flutes results in a stronger more solid tap.
- Longer Tap Life – forming taps last 3 to 20 times longer because they have no cutting edge to dull.
- More Efficient Production – longer tap life, less tap breakage and faster tapping speeds (up to 2X faster than cutting taps).
- Ideal for Non-Lead Screw Tappers – the ability to form their own lead makes forming taps well suited for NC machines or other machines without lead screws.

DRILLS - HIGH SPEED STEEL

ELEMENT & DIMENSIONAL TOLERANCES FOR 2, 3 & 4 FLUTE DRILLS

DIAMETER AT POINT

SIZE (INCLUSIVE)	TOLERANCE
OVER #81 TO 1/8	+.0000 TO -.0005
OVER 1/8 TO 1/4	+.0000 TO -.0007
OVER 1/4 TO 1/2	+.0000 TO -.0010
OVER 1/2 TO 1	+.0000 TO -.0012
OVER 1 TO 2	+.0000 TO -.0015
OVER 2 TO 3-1/2	+.0000 TO -.0020

SHANK DIAMETER

SIZE (INCLUSIVE)	TOLERANCE
OVER #81 TO 1/8	-.0000 TO -.0025
OVER 1/8 TO 1/4	-.0005 TO -.0030
OVER 1/4 TO 1/2	-.0005 TO -.0045
OVER 1/2 TO 2	-.0005 TO -.0030

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.

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"
STEEL													
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
STAINLESS STEEL													
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
CAST IRON													
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
TITANIUM													
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
NICKEL													
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
COPPER													
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
ALUMINUM, MAGNESIUM													
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
SYNTHETIC MATERIALS													
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



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