

REGAL CUTTING TOOLS

Full Line



Committed to Customer Satisfaction

Thank you for choosing Regal Cutting Tools. You have selected one of the leading manufacturers of industrial quality metal cutting tools, available in both high speed steel and carbide. Regal's expansive product line of tools is designed to keep you and American industry on the cutting edge of performance.

Regal Cutting Tools became a leader because of an intense focus on customer satisfaction. This commitment began in 1955 when the company emerged as the only manufacturer capable of producing special metalworking taps within 24 hours. Today, Regal's expanded manufacturing operations enable the company to provide incredibly fast service on a full line of precision-made cutting tools.



The company's manufacturing facilities, each with its own product focus, are strategically located in Illinois and South Carolina. Manufacturing facilities are streamlined for highly efficient through-put and equipped with CNC machinery and experienced operators, advanced in-house quality controls and company-owned heat treating.

Through a nationwide network of select Industrial Distributors, Regal Cutting Tools serves nearly all major industries where metalworking tools are required. From the aerospace, defense and automotive manufacturers to the smaller family-owned job shops, Regal's cutting tools are testament to American craftsmanship and productivity.

Within this catalog you will find many new products designed to help you cut tooling costs and increase your productivity and profits. Product lines featured in this catalog are drills, Regal Premium taps, dies, gages, reamers and end mills, and the high performance Regal Triple Crown Series Taps and End Mills.

Regal Cutting Tools developed the Regal Premium brand over four decades of continual research to find the best combination of raw materials, heat treatment and tool grinding technology. The **Regal Premium™** brand of taps, dies, gages, end mills and reamers, which premiered in the 1980's, has matured into the finest quality tooling your money can buy.

The ultimate in high performance taps Regal's Triple Crown series is the culmination of Regal's extensive experience with particle metallurgy. **Regal™** taps feature superior thread quality and specific geometrics which produce optimum tool life when machining both common and exotic materials. Particle metallurgy tools have provided Regal cutting tool customers with increased production, reduced downtime and improved product uniformity.

The **National™** brand of drills dates back to the founding of National Twist Drill in 1903. Regal Cutting Tools acquired National Twist Drill in 1985 to expand the cutting tool product line, produce new synergies between manufacturers and position the company to serve a new, more sophisticated generation of users. Regal Cutting Tools is proud to offer the **National™** brand and continue to improve on a fine tradition of excellence.

Again, thank you for choosing Regal Cutting Tools. When you invest in quality tooling, you are positioning yourself for future success.

REGAL CUTTING TOOLS

5330 E. East Rockton Road • Roscoe, IL 61073 • 800-435-2948 • Fax 800-992-1674
www.regalcuttingtools.com

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














Guide to Icons

Taps & Thread Mills

Materials	HSS High Speed Steel	HSS EX 3% Vanadium High Speed Steel	
	Carbide HSS Carbo Clad	HSS V M7 High Speed Steel	
	Carbide Carbide	HSS PM Powder Metal High Speed Steel	
Thread Forms	UNC National Coarse	NPSF Dryseal American National Standard Internal Straight Pipe	UNH National Hose Coupling
	UNF National Fine	M Metric	NPSI Dryseal American National Standard Intermediate Internal Straight Pipe Thread
	UNS National Special	MF Metric Fine	BSPT British Standard Pipe - Taper
	NPT American National Standard Taper Pipe Thread	UNEF National Extra Fine	BSPP British Standard Pipe - Parallel
	NPTF Dryseal American National Standard Taper Pipe Thread	AMO American Microscope Objective	BSW British Standard Whitworth Course
	NPS Dryseal American National Standard Straight Pipe	AMCE Acme Thread	
USCTI Dimension Table	302 Standard Tap Dimensions	302A Short Thread Length Tap Dimensions	311 Pipe Tap Dimensions
	303 Standard Tap Dimensions Short Length (over 1")	303A Extension Tap Dimensions	337 Standard Metric Tap Dimensions
Coatings	TiAlN Titanium Aluminum Nitride	Nitride & Oxide Nitride & Oxide	




















Guide to Icons

Drills & Reamers

Materials	 HSS High Speed Steel	 Carbide HSS Carbide Tipped	
	 Cobalt Cobalt	 Carbide Carbide	
Drill Point	 118° 118° Point	 118° Blend 118° Blend Thinned Point	 120° 120° Point
	 118° Split 118° Split Point	 130° Split 130° Split Point	 140° 140° Point
	 135° Split 135° Split Point	 90° 90° Point	
Coatings	 Black Oxide Black Oxide	 Bronze Oxide Bronze Oxide	 TiN Point Titanium Nitride Point
	 Bright Bright	 Black Bright Bright & Black Oxide Flutes	 TiAlN Titanium Aluminum Nitride
	 TiN Coated Tin Coated		
National Aerospace Specification	 NAS 907 NAS 907	 NAS 965 NAS 965	

Guide to Icons

End Mills

Materials	 HSS High Speed Steel	 Carbide Carbide	
	 Cobalt Cobalt	 MG Carbide Micrograin Carbide	
Flutes	 2 Flute 2 Flute	 4 Flute 4 Flute	 6 Flute 6 Flute
	 3 Flute 3 Flute	 5 Flute 5 Flute	 8 Flute 8 Flute
End Type	 Single End Single End	 CC Center Cutting	 Ball Ball Nose
	 Double End Double End	 NCC Non Center Cutting	
Helix	 20° Helix 20° Helix	 45° Helix 45° Helix	
	 40° Helix 40° Helix	 42° Helix 42° Helix	

REGAL CUTTING TOOLS



WARRANTY

Regal Cutting Tools ("Seller") warrants to original equipment manufacturers, distributors and industrial and commercial users ("Buyer") of its products that each new product manufactured or supplied by Seller shall be commercially free from defects in material and workmanship at the time of shipment of the goods. All claims for allegedly defective goods must be made within 10 days after Buyer learns of such alleged defects limited to a maximum period of one year from the date of sale by Seller. All claims not made in writing and received by Seller within such 10-day period shall be deemed waived. Seller's sole obligation under this warranty is limited to furnishing without additional charge a replacement, or at its option, repairing or issuing credit for any product which shall be returned freight prepaid to the plant designated by a Seller representative and which upon inspection is determined by Seller to be defective in material or workmanship. Complete information as to operating conditions, machine setup, and application of cutting fluid should accompany any product returned for inspection. The provisions of this Warranty shall not apply to any Seller product which has been subjected to misuse, abuse, improper operating conditions (machine setup or application of cutting fluid), or which has been repaired or altered if such repair or alteration in the judgment of Seller would adversely affect performance of the product. THIS WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Seller's sole liability on any claim of any kind, whether in contract, tort or otherwise, for any loss or damage arising out of, connected with, or resulting from the manufacture, sale, delivery or use of the products sold hereunder shall in no case exceed the cost of replacement or repair as provided herein. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES. There are no other warranties, expressed or implied, made by Seller except the warranty against defects in material and workmanship set forth above. Unless authorized in writing by a corporate officer or vice president, no agent, employee or representative of Seller has any authority to bind Seller to any affirmation, representation or warranty concerning the goods sold under the sales contract and such affirmation, representation or warranty has not formed a part of the basis of the bargain and shall be unenforceable.



Cutting tools may shatter if broken. Wear safety glasses and use safeguards. Grinding this product may produce a dust containing chemicals known to the state of California to cause cancer. Please refer to the Material Safety Data Sheet. A copy of the MSDS can be obtained by request from the Regal Cutting Tool Customer Service department.

TAPS & DIES



TAPS

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Carbo Clad Taps	36
Solid Carbide Taps	37

DIES

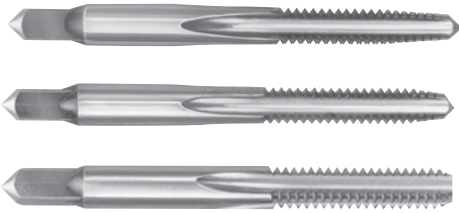
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Metric Round Adjustable Dies	39
NPT Taper & NPS Straight Pipe Dies	40
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MISCELLANEOUS

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Hand Taps Machine Screw Sizes



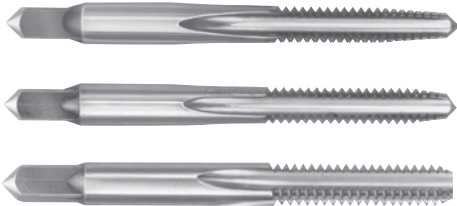
HSS **UNC UNF** **302**

- General-purpose tap used either by hand or on production machines
- Precision ground for a wide variety of applications
- Proper number of flutes to provide sufficient chip room and cutting edges to handle most threading jobs
- Manufactured to Table 302 standards

Size	H Limit	Flutes	List #	Taper	Plug	Bottom	List #	Set
#0-80 UNF	H1	2	100	008000AS	008001AS	008002AS	103	008900AS
#0-80 UNF	H2	2	100	—	008003AS	008004AS	—	—
#1-64 UNC	H1	2	100	008012AS	008013AS	008014AS	103	008901AS
#1-64 UNC	H2	2	100	—	008015AS	—	—	—
#1-72 UNF	H1	2	100	008021AS	008022AS	008023AS	103	008902AS
#1-72 UNF	H2	2	100	—	008024AS	008025AS	—	—
#2-56 UNC	H1	2	101	—	008031AS	008032AS	—	—
#2-56 UNC	H1	3	100	008035AS	008036AS	008037AS	—	—
#2-56 UNC	H2	2	101	—	008033AS	008034AS	—	—
#2-56 UNC	H2	3	100	008038AS	008039AS	008040AS	103	008903AS
#2-64 UNF	H2	3	100	008048AS	008049AS	008050AS	103	008904AS
#3-48 UNC	H1	3	100	—	008057AS	—	—	—
#3-48 UNC	H2	2	101	—	008055AS	008056AS	103	—
#3-48 UNC	H2	3	100	008058AS	008059AS	008060AS	103	008905AS
#3-56 UNF	H2	3	100	008066AS	008067AS	008068AS	103	008906AS
#4-36 UNS	H2	3	100	008074AS	008075AS	008076AS	—	—
#4-40 UNC	H1	2	101	—	008081AS	—	—	—
#4-40 UNC	H1	3	100	—	008080AS	—	—	—
#4-40 UNC	H2	2	101	—	008082AS	008083AS	—	—
#4-40 UNC	H2	3	100	008086AS	008087AS	008088AS	103	008907AS
#4-48 UNF	H1	3	100	—	008097AS	—	—	—
#4-48 UNF	H2	3	100	008100AS	008101AS	008102AS	103	008908AS
#5-40 UNC	H1	3	100	—	008114AS	—	—	—
#5-40 UNC	H2	2	101	—	008112AS	008113AS	—	—
#5-40 UNC	H2	3	100	008115AS	008116AS	008117AS	103	008910AS
#5-44 UNF	H2	3	100	008132AS	008133AS	008134AS	103	008912AS
#6-32 UNC	H1	2	101	—	008139AS	—	—	—
#6-32 UNC	H1	3	100	008144AS	008145AS	008146AS	—	—
#6-32 UNC	H2	2	101	—	008140AS	008141AS	—	—
#6-32 UNC	H2	3	100	008147AS	008148AS	008149AS	—	—
#6-32 UNC	H3	2	101	—	008142AS	008143AS	—	—
#6-32 UNC	H3	3	100	008150AS	008151AS	008152AS	103	008913AS
#6-32 UNC	H7	3	102	—	008153AS	008154AS	—	—
#6-40 UNF	H1	3	100	—	008170AS	—	—	—
#6-40 UNF	H2	2	101	—	008174AS	—	—	—
#6-40 UNF	H2	3	100	008171AS	008172AS	008173AS	103	008914AS

Bold H Limits denote most popular limit. See page 255 for class of fit.

Hand Taps Machine Screw Sizes



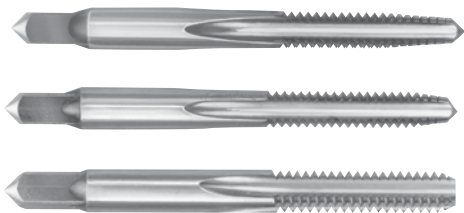
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- General-purpose tap used either by hand or on production machines
- Precision ground for a wide variety of applications
- Proper number of flutes to provide sufficient chip room and cutting edges to handle most threading jobs
- Manufactured to Table 302 standards

Size	H Limit	Flutes	List #	Taper	Plug	Bottom	List #	Set
#8-32 UNC	H1	2	101	—	008183AS	—	—	—
#8-32 UNC	H1	4	100	008180AS	008181AS	008182AS	—	—
#8-32 UNC	H2	2	101	—	008189AS	008190AS	—	—
#8-32 UNC	H2	3	101	—	008187AS	008188AS	—	—
#8-32 UNC	H2	4	100	008184AS	008185AS	008186AS	—	—
#8-32 UNC	H3	2	101	—	008196AS	008197AS	—	—
#8-32 UNC	H3	3	101	—	008194AS	008195AS	—	—
#8-32 UNC	H3	4	100	008191AS	008192AS	008193AS	103	008915AS
#8-32 UNC	H7	3	102	—	008200AS	008201AS	—	—
#8-32 UNC	H7	4	102	—	008198AS	008199AS	—	—
#8-36 UNF	H1	4	100	—	008214AS	—	—	—
#8-36 UNF	H2	4	100	008217AS	008218AS	008219AS	103	008916AS
#10-24 UNC	H1	4	100	008224AS	008225AS	008226AS	—	—
#10-24 UNC	H2	2	101	—	008231AS	008232AS	—	—
#10-24 UNC	H2	3	101	—	008230AS	—	—	—
#10-24 UNC	H2	4	100	008227AS	008228AS	008229AS	—	—
#10-24 UNC	H3	2	101	—	008238AS	008239AS	—	—
#10-24 UNC	H3	3	101	—	008236AS	008237AS	—	—
#10-24 UNC	H3	4	100	008233AS	008234AS	008235AS	103	008917AS
#10-24 UNC	H7	3	102	—	008221AS	008222AS	—	—
#10-24 UNC	H7	4	102	—	008240AS	008241AS	—	—
#10-32 UNF	H1	2	101	—	008259AS	—	—	—
#10-32 UNF	H1	4	100	008256AS	008257AS	008258AS	—	—
#10-32 UNF	H2	2	101	—	008265AS	008266AS	—	—
#10-32 UNF	H2	3	101	—	008263AS	008264AS	—	—
#10-32 UNF	H2	4	100	008260AS	008261AS	008262AS	—	—
#10-32 UNF	H3	2	101	—	008272AS	008273AS	—	—
#10-32 UNF	H3	3	101	—	008270AS	008271AS	—	—
#10-32 UNF	H3	4	100	008267AS	008268AS	008269AS	103	008918AS
#10-32 UNF	H7	3	102	—	008276AS	008277AS	—	—
#10-32 UNF	H7	4	102	—	008274AS	008275AS	—	—
#12-24 UNC	H3	4	100	008293AS	008294AS	008295AS	103	008919AS
#12-28 UNF	H1	4	100	—	008301AS	—	—	—
#12-28 UNF	H3	4	100	008304AS	008305AS	008306AS	103	008920AS

Bold H Limits denote most popular limit. See page 255 for class of fit.

Hand Taps Fractional Sizes



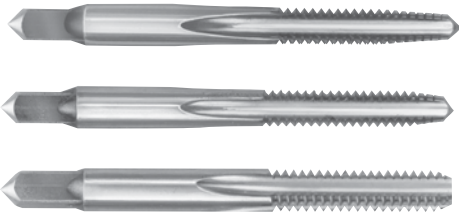
HSS UNC
UNF 302

- General-purpose tap used either by hand or on production machines
- Precision ground for a wide variety of applications
- Proper number of flutes to provide sufficient chip room and cutting edges to handle most threading jobs
- Manufactured to Table 302 standards

Size	H Limit	Flutes	List #	Taper	Plug	Bottom	List #	Set
1/4-20 UNC	H1	3	105	—	008314AS	—	—	—
1/4-20 UNC	H1	4	104	008311AS	008312AS	008313AS	—	—
1/4-20 UNC	H2	3	105	—	008318AS	—	—	—
1/4-20 UNC	H2	4	104	008315AS	008316AS	008317AS	—	—
1/4-20 UNC	H3	2	105	—	008324AS	008325AS	—	—
1/4-20 UNC	H3	3	105	—	008322AS	008323AS	—	—
1/4-20 UNC	H3	4	104	008319AS	008320AS	008321AS	107	008921AS
1/4-20 UNC	H5	3	105	—	008328AS	—	—	—
1/4-20 UNC	H5	4	104	—	008326AS	008327AS	—	—
1/4-20 UNC	H11	4	106	—	008329AS	—	—	—
1/4-28 UNF	H1	4	104	—	008348AS	008349AS	—	—
1/4-28 UNF	H2	4	104	—	008350AS	008351AS	—	—
1/4-28 UNF	H3	2	105	—	008357AS	008358AS	—	—
1/4-28 UNF	H3	3	105	—	008355AS	008356AS	—	—
1/4-28 UNF	H3	4	104	008352AS	008353AS	008354AS	107	008922AS
1/4-28 UNF	H4	4	104	—	008359AS	008360AS	—	—
5/16-18 UNC	H1	4	104	—	008375AS	008376AS	—	—
5/16-18 UNC	H2	4	104	—	008377AS	008378AS	—	—
5/16-18 UNC	H3	2	105	—	008384AS	008385AS	—	—
5/16-18 UNC	H3	3	105	—	008382AS	008383AS	—	—
5/16-18 UNC	H3	4	104	008379AS	008380AS	008381AS	107	008923AS
5/16-18 UNC	H5	4	104	—	008386AS	008387AS	—	—
5/16-18 UNC	H11	4	106	—	008388AS	008374AS	—	—
5/16-24 UNF	H1	4	104	—	008405AS	008406AS	—	—
5/16-24 UNF	H2	4	104	—	008407AS	—	—	—
5/16-24 UNF	H3	3	105	—	008411AS	008412AS	—	—
5/16-24 UNF	H3	4	104	008408AS	008409AS	008410AS	107	008924AS
5/16-24 UNF	H4	4	104	—	008413AS	008414AS	—	—
3/8-16 UNC	H1	4	104	—	008429AS	008430AS	—	—
3/8-16 UNC	H2	4	104	—	008431AS	008432AS	—	—
3/8-16 UNC	H3	3	105	—	008436AS	008437AS	—	—
3/8-16 UNC	H3	4	104	008433AS	008434AS	008435AS	107	008925AS
3/8-16 UNC	H5	4	104	—	008438AS	008439AS	—	—
3/8-16 UNC	H11	4	106	—	008440AS	008451AS	—	—

Bold H Limits denote most popular limit. See page 255 for class of fit.

Hand Taps Fractional Sizes



HSS

UNC
UNF

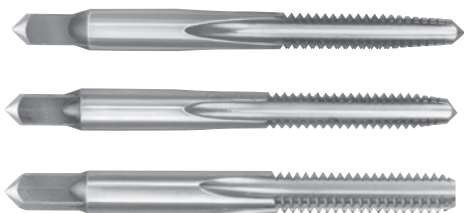
302

- General-purpose tap used either by hand or on production machines
- Precision ground for a wide variety of applications
- Proper number of flutes to provide sufficient chip room and cutting edges to handle most threading jobs
- Manufactured to Table 302 standards

Size	H Limit	Flutes	List #	Taper	Plug	Bottom	List #	Set
3/8-24 UNF	H1	4	104	—	008454AS	008455AS	—	—
3/8-24 UNF	H2	4	104	—	008456AS	008457AS	—	—
3/8-24 UNF	H3	3	105	—	008461AS	008462AS	—	—
3/8-24 UNF	H3	4	104	008458AS	008459AS	008460AS	107	008926AS
3/8-24 UNF	H4	4	104	—	008463AS	008464AS	—	—
7/16-14 UNC	H3	3	105	—	008479AS	—	—	—
7/16-14 UNC	H3	4	104	008476AS	008477AS	008478AS	107	008927AS
7/16-14 UNC	H5	4	104	—	008480AS	008481AS	—	—
7/16-14 UNC	H11	4	106	—	008482AS	008601AS	—	—
7/16-20 UNF	H3	3	105	—	008495AS	—	—	—
7/16-20 UNF	H3	4	104	008492AS	008493AS	008494AS	107	008928AS
7/16-20 UNF	H5	4	104	—	008496AS	008497AS	—	—
1/2-13 UNC	H1	4	104	—	008505AS	008506AS	—	—
1/2-13 UNC	H3	3	105	—	008510AS	008511AS	—	—
1/2-13 UNC	H3	4	104	008507AS	008508AS	008509AS	107	008929AS
1/2-13 UNC	H5	4	104	—	008512AS	008504AS	—	—
1/2-13 UNC	H11	4	106	—	008513AS	008524AS	—	—
1/2-20 UNF	H1	4	104	—	008527AS	008528AS	—	—
1/2-20 UNF	H3	3	105	—	008532AS	—	—	—
1/2-20 UNF	H3	4	104	008529AS	008530AS	008531AS	107	008930AS
1/2-20 UNF	H5	4	104	—	008533AS	—	—	—
9/16-12 UNC	H3	4	104	008544AS	008545AS	008546AS	107	008931AS
9/16-12 UNC	H5	4	104	—	008547AS	—	—	—
9/16-18 UNF	H2	4	104	—	008551AS	—	—	—
9/16-18 UNF	H3	4	104	008552AS	008553AS	008554AS	107	008932AS
9/16-18 UNF	H5	4	104	—	008555AS	—	—	—
5/8-11 UNC	H2	4	104	—	008559AS	—	—	—
5/8-11 UNC	H3	4	104	008560AS	008561AS	008562AS	107	008933AS
5/8-11 UNC	H5	4	104	—	008563AS	008564AS	—	—
5/8-11 UNC	H11	4	106	—	008565AS	008569AS	—	—
5/8-18 UNF	H2	4	104	—	008572AS	—	—	—
5/8-18 UNF	H3	4	104	008573AS	008574AS	008575AS	107	008934AS
5/8-18 UNF	H5	4	104	—	008576AS	008577AS	—	—
11/16-11 UNS	H3	4	104	008581AS	008582AS	008583AS	107	008935AS
11/16-16 UNS	H3	4	104	008587AS	008588AS	008589AS	107	008936AS

Bold H Limits denote most popular limit. See page 255 for class of fit.

Hand Taps Fractional Sizes



HSS **UNC UNF** **302 303**

- General-purpose tap used either by hand or on production machines
- Precision ground for a wide variety of applications
- Proper number of flutes to provide sufficient chip room and cutting edges to handle most threading jobs
- Manufactured to Table 302/303 standards

Size	H Limit	Flutes	List #	Taper	Plug	Bottom	List #	Set
3/4-10 UNC	H2	4	104	—	008593AS	—	—	—
3/4-10 UNC	H3	4	104	008594AS	008595AS	008596AS	107	008937AS
3/4-10 UNC	H5	4	104	—	008597AS	008598AS	—	—
3/4-16 UNF	H1	4	104	—	008605AS	—	—	—
3/4-16 UNF	H2	4	104	—	008606AS	—	—	—
3/4-16 UNF	H3	4	104	008607AS	008608AS	008609AS	107	008938AS
3/4-16 UNF	H5	4	104	—	008610AS	008611AS	—	—
7/8-9 UNC	H4	4	104	008615AS	008616AS	008617AS	107	008939AS
7/8-9 UNC	H6	4	104	—	008618AS	—	—	—
7/8-14 UNF	H2	4	104	—	008622AS	—	—	—
7/8-14 UNF	H4	4	104	008623AS	008624AS	008625AS	107	008940AS
7/8-14 UNF	H6	4	104	—	008621AS	—	—	—
1"-8 UNC	H4	4	104	008629AS	008630AS	008631AS	107	008941AS
1"-8 UNC	H6	4	104	—	008632AS	—	—	—
1"-12 UNF	H4	4	104	008636AS	008637AS	008638AS	107	008942AS
1"-14 UNS	H2	4	104	—	008641AS	—	—	—
1"-14 UNS	H4	4	104	008642AS	008643AS	008644AS	107	008943AS
1-1/8"-7 UNC	H4	4	104	008648AS	008649AS	008650AS	107	008944AS
1-1/8"-12 UNF	H4	4	104	008654AS	008655AS	008656AS	107	008945AS
1-1/4"-7 UNC	H4	4	104	008660AS	008661AS	008662AS	107	008946AS
1-1/4"-12 UNF	H4	6	104	008666AS	008667AS	008668AS	107	008947AS
1-3/8"-6 UNC	H4	4	104	008672AS	008673AS	008674AS	107	008948AS
1-3/8"-12 UNF	H4	6	104	008678AS	008679AS	008680AS	107	008949AS
1-1/2"-6 UNC	H4	4	104	008684AS	008685AS	008686AS	107	008950AS
1-1/2"-12 UNF	H4	6	104	008690AS	008691AS	008692AS	107	008951AS

Bold **H Limits** denote most popular limit. See page 255 for class of fit.

Spiral Point Taps Machine Screw Sizes



HSS

UNC
UNF

302

- A rugged free cutting tap which drives chips ahead of the tap.
- Perfect for through hole applications.
- Manufactured to Table 302 standards

Size	H Limit	Flutes	List #	Plug	Bottom
#0-80 UNF	H1	2	111/116	008005AS	008006AS
#0-80 UNF	H2	2	111/116	008007AS	008008AS
#1-64 UNC	H1	2	111	008016AS	—
#1-64 UNC	H2	2	111	008017AS	—
#1-72 UNF	H1	2	111	008026AS	—
#1-72 UNF	H2	2	111	008027AS	—
#2-56 UNC	H1	2	111,116	008041AS	008042AS
#2-56 UNC	H2	2	111,116	008043AS	008044AS
#2-64 UNF	H2	2	111	008051AS	—
#3-48 UNC	H2	2	111,116	008061AS	008062AS
#3-56 UNF	H1	2	111	008069AS	—
#3-56 UNF	H2	2	111	008070AS	—
#4-36 UNS	H2	2	111	008077AS	—
#4-40 UNC	H1	2	111	008089AS	—
#4-40 UNC	H2	2	111,116	008090AS	008091AS
#4-48 UNF	H1	2	111	008103AS	—
#4-48 UNF	H2	2	111,116	008104AS	008105AS
#5-40 UNC	H1	2	111	008118AS	—
#5-40 UNC	H2	2	111,116	008119AS	008120AS
#5-44 UNF	H2	2	111	008135AS	—
#6-32 UNC	H1	2	111	008155AS	—
#6-32 UNC	H2	2	111,116	008156AS	008159AS
#6-32 UNC	H3	2	111,116	008157AS	008160AS
#6-32 UNC	H7	2	112	008158AS	008161AS
#6-40 UNF	H1	2	111	008169AS	—
#6-40 UNF	H2	2	111,116	008175AS	008176AS
#8-32 UNC	H1	2	111	008202AS	—
#8-32 UNC	H2	2	111,116	008203AS	008204AS
#8-32 UNC	H3	2	111	008205AS	008206AS
#8-32 UNC	H7	2	112,116	008207AS	008208AS
#8-36 UNF	H1	2	111	008029AS	—
#8-36 UNF	H2	2	111	008220AS	—
#10-24 UNC	H1	2	111	008242AS	—
#10-24 UNC	H2	2	111,116	008243AS	008244AS
#10-24 UNC	H3	2	111,116	008245AS	008246AS
#10-24 UNC	H7	2	112	008247AS	—
#10-32 UNF	H1	2	111,116	008278AS	008279AS
#10-32 UNF	H2	2	111,116	008280AS	008281AS
#10-32 UNF	H3	2	111	008282AS	008283AS
#10-32 UNF	H7	2	112	008284AS	—
#12-24 UNC	H1	2	111	008292AS	—
#12-24 UNC	H3	2	111,116	008296AS	008297AS
#12-28 UNF	H3	2	111	008307AS	—

Bold H Limits denote most popular limit. See page 255 for class of fit.

Spiral Point Taps Fractional Sizes



- A rugged free cutting tap which drives chips ahead of the tap.
- Perfect for through hole applications
- Manufactured to Table 302 standards

Size	H Limit	Flutes	List #	Plug	Bottom
1/4-20 UNC	H1	2	115	008330AS	—
1/4-20 UNC	H2	2	115	008331AS	—
1/4-20 UNC	H3	2	115,116	008332AS	008333AS
1/4-20 UNC	H5	2	115	008336AS	—
1/4-20 UNC	H11	2	113	008337AS	—
1/4-20 UNC	H3	3	115	008334AS	—
1/4-20 UNC	H5	3	115	008335AS	—
1/4-28 UNF	H1	2	115	008361AS	—
1/4-28 UNF	H2	2	115	008363AS	—
1/4-28 UNF	H3	2	115,116	008364AS	008365AS
1/4-28 UNF	H4	2	115	008366AS	—
1/4-28 UNF	H2	3	115	008362AS	—
1/4-28 UNF	H4	3	115	008367AS	—
5/16-18 UNC	H1	2	115	008389AS	—
5/16-18 UNC	H2	2	115	008390AS	—
5/16-18 UNC	H3	2	115	008391AS	008392AS
5/16-18 UNC	H5	2	115	008394AS	—
5/16-18 UNC	H3	3	115	008393AS	—
5/16-18 UNC	H5	3	115	008395AS	—
5/16-18 UNC	H11	2	113	008396AS	—
5/16-24 UNF	H1	2	115	008415AS	—
5/16-24 UNF	H2	2	115	008417AS	—
5/16-24 UNF	H3	2	115,116	008419AS	008418AS
5/16-24 UNF	H4	2	115	008421AS	—
5/16-24 UNF	H2	3	115	008416AS	—
5/16-24 UNF	H4	3	115	008420AS	—
3/8-16 UNC	H1	3	115	008441AS	—
3/8-16 UNC	H2	3	115	008442AS	—
3/8-16 UNC	H3	3	115	008443AS	—
3/8-16 UNC	H5	3	115	008444AS	—
3/8-16 UNC	H11	3	113	008445AS	—

Bold **H Limits** denote most popular limit. See page 255 for class of fit.

Spiral Point Taps Fractional Sizes



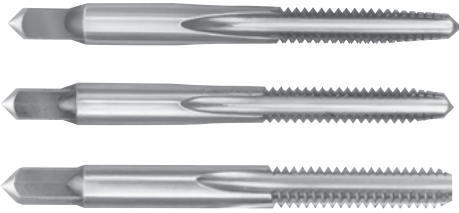
HSS **UNC UNF** **302**

- Rugged free cutting tap which drives chips ahead of the tap
- Perfect for through hole applications
- Manufactured to Table 302 standards

Size	H Limit	Flutes	List #	Plug	Bottom
3/8-24 UNF	H1	3	115	008465AS	—
3/8-24 UNF	H2	3	115	008466AS	—
3/8-24 UNF	H3	3	115	008467AS	—
3/8-24 UNF	H4	3	115	008468AS	—
7/16-14 UNC	H1	3	115	008473AS	—
7/16-14 UNC	H2	3	115	008483AS	—
7/16-14 UNC	H3	3	115	008484AS	—
7/16-14 UNC	H5	3	115	008485AS	—
7/16-14 UNC	H11	3	113	008486AS	—
7/16-20 UNF	H2	3	115	008502AS	—
7/16-20 UNF	H3	3	115	008498AS	—
7/16-20 UNF	H5	3	115	008499AS	—
1/2-13 UNC	H1	3	115	008514AS	—
1/2-13 UNC	H2	3	115	008515AS	—
1/2-13 UNC	H3	3	115	008516AS	—
1/2-13 UNC	H5	3	115	008517AS	—
1/2-13 UNC	H11	3	113	008518AS	—
1/2-20 UNF	H1	3	115	008535AS	—
1/2-20 UNF	H2	3	115	008536AS	—
1/2-20 UNF	H3	3	115	008537AS	—
1/2-20 UNF	H5	3	115	008538AS	—
9/16-12 UNC	H3	3	115	008542AS	—
9/16-12 UNC	H5	3	115	008543AS	—
9/16-18 UNF	H3	3	115	008549AS	—
9/16-18 UNF	H5	3	115	008550AS	—
5/8-11 UNC	H3	3	115	008566AS	—
5/8-11 UNC	H5	3	115	008567AS	—
5/8-11 UNC	H11	3	113	008568AS	—
5/8-18 UNF	H3	3	115	008578AS	—
5/8-18 UNF	H5	3	115	008571AS	—
3/4-10 UNC	H3	3	115	008599AS	—
3/4-10 UNC	H5	3	115	008600AS	—
3/4-16 UNF	H3	3	115	008612AS	—

Bold **H Limits** denote most popular limit. See page 255 for class of fit.

Left Hand Taps



HSS **UNC UNF** **302 303**

- General-purpose tap used either by hand or on production machines
- Precision ground for a wide variety of applications
- Proper number of flutes to provide sufficient chip room and cutting edges to handle most threading jobs
- Manufactured to Table 302/303 standards

Size	H Limit	Flutes	List #	Taper	Plug	Bottom	List #	Set
#6-32 UNC	H3	3	108	017036AS	017037AS	017038AS	—	—
#8-32 UNC	H3	4	108	017052AS	017053AS	017054AS	—	—
#10-24 UNC	H3	4	108	017070AS	017071AS	017072AS	—	—
#10-32 UNF	H3	4	108	017076AS	017077AS	017078AS	—	—
1/4-20 UNC	H3	4	108	017110AS	017111AS	017112AS	109	017800AS
1/4-28 UNF	H3	4	108	017121AS	017122AS	017123AS	—	—
5/16-18 UNC	H3	4	108	017147AS	017148AS	017149AS	109	017801AS
5/16-24 UNF	H3	4	108	017158AS	017159AS	017160AS	109	017802AS
3/8-16 UNC	H3	4	108	017175AS	017176AS	017177AS	109	017803AS
3/8-24 UNF	H3	4	108	017190AS	017191AS	017192AS	109	017804AS
7/16-14 UNC	H3	4	108	017200AS	017201AS	017202AS	109	017805AS
7/16-20 UNF	H3	4	108	017216AS	017217AS	017218AS	109	017806AS
1/2-13 UNC	H3	4	108	017232AS	017233AS	017234AS	109	017807AS
1/2-20 UNF	H3	4	108	017245AS	017246AS	017247AS	109	017808AS
9/16-12 UNC	H3	4	108	017255AS	017256AS	017257AS	109	017809AS
9/16-18 UNF	H3	4	108	017269AS	017270AS	017271AS	109	017810AS
5/8-11 UNC	H3	4	108	017288AS	017289AS	017290AS	109	017811AS
5/8-18 UNF	H3	4	108	017304AS	017305AS	017306AS	109	017812AS
11/16-11 UNS	H3	4	108	017307AS	017308AS	017309AS	—	—
11/16-16 UNS	H3	4	108	017321AS	017322AS	017323AS	—	—
3/4-10 UNC	H3	4	108	017336AS	017337AS	017338AS	109	017813AS
3/4-16 UNF	H3	4	108	017352AS	017353AS	017354AS	109	017814AS
7/8-9 UNC	H4	4	108	017372AS	017373AS	017374AS	109	017815AS
7/8-14 UNF	H4	4	108	017382AS	017383AS	017384AS	109	017816AS
1"-8 UNC	H4	4	108	017406AS	017407AS	017408AS	109	017818AS
1"-12 UNF	H4	4	108	017416AS	017417AS	017418AS	109	017819AS
1"-14 UNS	H4	4	108	017426AS	017427AS	017428AS	109	017820AS
1-1/8"-7 UNC	H4	4	108	017431AS	017435AS	017436AS	—	—
1-1/8"-12 UNF	H4	4	108	017437AS	017438AS	017439AS	—	—
1-1/4"-7 UNC	H4	4	108	017445AS	017446AS	017447AS	—	—
1-1/4"-12 UNF	H4	6	108	017448AS	017452AS	017453AS	—	—
1-3/8"-6 UNC	H4	4	108	017457AS	017458AS	017459AS	—	—
1-3/8"-12 UNF	H4	6	108	017463AS	017464AS	017465AS	—	—
1-1/2"-6 UNC	H4	4	108	017469AS	017470AS	017471AS	—	—
1 1/2"-12 UNF	H4	6	108	017475AS	017476AS	017477AS	—	—

Bold H Limits denote most popular limit. See page 255 for class of fit.

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Spiral Flute Taps



HSS **UNC UNF** **302**

30° Helix

- Helical flutes provide lifting action to remove chips
- Recommended when tapping ductile stringy materials; aluminum, some stainless steels, etc.
- Manufactured to Table 302 standards



52° High Helix

- Provides greater lifting action, especially when tapping deep blind holes in ductile materials
- A built in higher hook provides excellent shearing action
- Manufactured to Table 302 standards

Size	H Limit	Flutes	List #	30° Helix		List #	52° High Helix	
				Plug	Bottom		Plug	Bottom
#3-48 UNC	H2	2	—	—	—	118	—	008063AS
#3-56 UNF	H2	2	—	—	—	118	—	008065AS
#4-40 UNC	H2	2	117	008093AS	008094AS	118	008095AS	008096AS
#4-48 UNF	H2	2	117	008098AS	008099AS	118	008106AS	008107AS
#5-40 UNC	H2	2	117	008125AS	008126AS	118	008127AS	008128AS
#5-44 UNF	H2	2	117	008130AS	008131AS	118	008136AS	008137AS
#6-32 UNC	H3	2	117	008163AS	008164AS	118	008165AS	008166AS
#6-40 UNF	H2	2	117	008167AS	008168AS	118	008177AS	008178AS
#8-32 UNC	H3	2	117	008210AS	008211AS	—	—	—
#8-32 UNC	H3	3	—	—	—	118	008212AS	008213AS
#8-36 UNF	H2	2	117	008215AS	008216AS	—	—	—
#8-36 UNF	H2	3	—	—	—	118	008290AS	008291AS
#10-24 UNC	H3	2	117	008249AS	008250AS	—	—	—
#10-24 UNC	H3	3	—	—	—	118	008251AS	008252AS
#10-32 UNF	H3	2	117	008286AS	008287AS	—	—	—
#10-32 UNF	H3	3	—	—	—	118	008288AS	008289AS
#12-24 UNC	H3	3	—	—	—	118	008299AS	008300AS
#12-28 UNF	H3	3	—	—	—	118	008302AS	008303AS
1/4-20 UNC	H3	2	117	008339AS	008340AS	—	—	—
1/4-20 UNC	H3	3	—	—	—	118	008343AS	008344AS
1/4-20 UNC	H3	3	117	008341AS	008342AS	—	—	—
1/4-28 UNF	H3	3	117	008368AS	008369AS	118	008370AS	008371AS
5/16-18 UNC	H3	3	117	008398AS	008399AS	118	008400AS	008401AS
5/16-24 UNF	H3	3	117	008422AS	008423AS	118	008424AS	008425AS
3/8-16 UNC	H3	3	117	008447AS	008448AS	118	008449AS	008450AS
3/8-24 UNF	H3	3	117	008469AS	008470AS	118	008471AS	008472AS
7/16-14 UNC	H3	3	117	008474AS	008475AS	118	008487AS	008488AS
7/16-20 UNF	H3	3	117	008490AS	008491AS	118	008500AS	008501AS
1/2-13 UNC	H3	3	117	008520AS	008521AS	118	008522AS	008523AS
1/2-20 UNF	H3	3	117	008525AS	008526AS	118	008539AS	008540AS
5/8-11 UNC	H3	4	—	—	—	118	008557AS	008558AS
5/8-18 UNF	H3	4	—	—	—	118	008602AS	008604AS
3/4-10 UNC	H3	4	—	—	—	118	008591AS	008592AS
3/4-16 UNF	H3	4	—	—	—	118	008613AS	008614AS
7/8-9 UNC	H3	4	—	—	—	118	008619AS	008620AS
1"-8 UNC	H3	4	—	—	—	118	008626AS	008627AS

Bold H Limits denote most popular limit. See Engineering Section for class of fit.

Eight Pitch Hand Taps



HSS

UNS

302

- A standard requirement in the power generation industry
- Free cutting for quality threads
- Manufactured to Table 302 standards

Size	H Limit	Flutes	List #	Taper	Plug	Bottom
1-1/8"-8 UNS	H5	4	119	017850AS	017851AS	017852AS
1-1/4"-8 UNS	H5	4	119	017853AS	017854AS	017855AS
1-3/8"-8 UNS	H5	4	119	017856AS	017857AS	017858AS
1-1/2"-8 UNS	H5	4	119	017859AS	017860AS	017861AS
1-5/8"-8 UNS	H6	6	119	017862AS	017863AS	017864AS
1-3/4"-8 UNS	H6	6	119	017865AS	017866AS	017867AS
1-7/8"-8 UNS	H6	6	119	017868AS	017869AS	017870AS
2"-8 UNS	H6	6	119	017871AS	017872AS	017873AS
2-1/8"-8 UNS	H6	6	119	017874AS	017875AS	017876AS
2-1/4"-8 UNS	H6	6	119	017877AS	017878AS	017879AS
2-3/8"-8 UNS	H6	6	119	017880AS	017881AS	017882AS
2-1/2"-8 UNS	H6	6	119	017883AS	017884AS	017885AS
2-5/8"-8 UNS	H8	6	119	017886AS	017887AS	017888AS
2-3/4"-8 UNS	H8	6	119	017889AS	017890AS	017891AS
2-7/8"-8 UNS	H8	6	119	017892AS	017893AS	017894AS
3"-8 UNS	H8	6	119	017895AS	017896AS	017897AS
3-1/4"-8 UNS	H8	6	119	017898AS	017899AS	017900AS
3-1/2"-8 UNS	H8	6	119	017901AS	017902AS	017903AS
3-3/4"-8 UNS	H8	6	119	017904AS	017905AS	017906AS
4"-8 UNS	H8	8	119	017907AS	017908AS	017909AS

Bold H Limits denote most popular limit. See page 255 for class of fit.

Pulley / Extension Taps



HSS **UNC UNF** **303A**

- For tap applications which require use of extra length taps
- Provides extra length for tapping hubs of pulleys for oil caps or set screws

Size	H Limits	Flutes	Chamfer	Thread Length	Shank Diameter	List #	6"	8"	10"	12"
#6-32 UNC	H3	3	Taper Plug Bottom	11/16	.141	129	015300AS 015301AS 015302AS	—	—	—
#8-32 UNC	H3	4	Taper Plug Bottom	3/4	.168	129	015312AS 015313AS 015314AS	—	—	—
#10-24 UNC	H3	4	Taper Plug Bottom	7/8	.194	129	015318AS 015319AS 015320AS	—	—	—
#10-32 UNF	H3	4	Taper Plug Bottom	7/8	.194	129	015324AS 015325AS 015326AS	—	—	—
1/4-20 UNC	H3	4	Plug Plug Bottom	1"	.255 .185* .255	129	008862AS 015125AS* 015150AS	008863AS	—	—
1/4-28 UNF	H3	4	Taper Plug Bottom	1"	.255	129	015342AS 008880AS 015344AS	—	—	—
5/16-18 UNC	H3	4	Plug Plug Bottom	1-1/8"	.318 .240* .318	129	008864AS 015131AS* 015152AS	008865AS	—	—
5/16-24 UNF	H3	4	Taper Plug Bottom	1-1/8"	.318	129	015360AS 008881AS 015362AS	—	—	—
3/8-16 UNC	H3	4	Plug Plug Bottom Bottom	1-1/4"	.381 .275* .381 .275*	129	008866AS 015140AS* 015154AS 015145AS*	008867AS	008868AS	—
3/8-24 UNF	H3	4	Taper Plug Bottom	1-1/4"	.381	129	015372AS 008882AS 015374AS	—	—	—
7/16-14 UNC	H3	4	Taper Plug Bottom	1-7/16"	.323 .323 .323 .444	129	015061AS 015062AS 015063AS 015068AS	—	—	—
7/16-20 UNF	H3	4	Taper Plug Bottom	1-7/16"	.323	129	015064AS 015065AS 015066AS	—	—	—
1/2-13 UNC	H3	4	Plug Bottom	1-21/32"	.367 .507	129	015146AS 015147AS	—	—	—
1/2-20 UNF	H3	4	Plug	1-21/32"	.367	129	015149AS	015153AS	015151AS	015135AS
9/16-12 UNC	H3	4	Taper Plug Bottom	1-21/32"	.429	129	015177AS 015178AS 015179AS	—	—	—
9/16-18 UNF	H3	4	Taper Plug Bottom	1-21/32"	.429	129	015185AS 015186AS 015187AS	—	—	—
5/8-11 UNC	H3	4	Plug	1-13/16"	.480 .633 .633	129	015160AS 015173AS 015183AS	015161AS	—	—
5/8-18 UNF	H3	4	Taper Plug Bottom	1-13/16"	.480	129	015180AS 015181AS 015182AS	—	—	—
3/4-10 UNC	H3	4	Plug Bottom	2"	.590 .590 .759	129	015431AS 015428AS	015429AS	015430AS	—
1"-8 UNC	H4	4	Plug Bottom	2-1/2"	.800	129	—	015162AS 015163AS	015164AS 015165AS	015166AS 015167AS
1-1/4"-7 UNC	H4	4	Plug	2-9/16"	1.021	129	—	—	015174AS	015175AS

* small shank

Spiral Point Extension Taps



HSS

UNC
UNF

- A rugged free cutting tap which drives chips ahead of the tap
- For tap applications which require use of extra length taps
- Provides extra length for tapping hubs of pulleys, oil caps and set screws

Size	H Limits	Flutes	Chamfer	Thread Length	Shank Diameter	4"	6"
#6-32 UNC	H3	2	Plug	11/16	.141	091376AS	015100AS
#8-32 UNC	H3	2	Plug	3/4	.168	091378AS	015102AS
#10-24 UNC	H3	2	Plug	7/8	.194	091380AS	015110AS
#10-32 UNF	H3	2	Plug	7/8	.194	091382AS	015112AS
1/4-20 UNC	H3	2	Plug	1	.185*	091384AS *	015124AS *
1/4-20 UNC	H3	2	Plug	1	.255	—	015122AS
1/4-28 UNF	H3	2	Plug	1	.185*	091386AS *	—
1/4-28 UNF	H3	2	Plug	1	.255	—	015126AS
5/16-18 UNC	H3	2	Plug	1-1/8	.240*	091388AS *	015130AS *
5/16-18 UNC	H3	2	Plug	1-1/8	.318	—	015128AS
5/16-24 UNF	H3	2	Plug	1-1/8	.240*	091390AS *	—
5/16-24 UNF	H3	2	Plug	1-1/8	.318	—	015134AS
3/8-16 UNC	H3	3	Plug	1-1/4	.275*	091392AS *	015139AS *
3/8-16 UNC	H3	3	Plug	1-1/4	.381	—	015141AS
3/8-24 UNF	H3	3	Plug	1-1/4	.275*	091394AS *	—
3/8-24 UNF	H3	3	Plug	1-1/4	.381	—	015142AS
7/16-14 UNC	H3	3	Plug	1-7/16	.323	—	015136AS
7/16-20 UNF	H3	3	Plug	1-7/16	.323	—	015067AS
1/2-13 UNC	H3	3	Plug	1-21/32	.367	—	015144AS
1/2-20 UNF	H3	3	Plug	1-21/32	.367	—	015148AS
5/8-11 UNC	H3	3	Plug	1-13/16	.480	—	015157AS

* small shank

Extension Taper Pipe Taps



HSS

NPT
NPTF

- For tap applications which require use of extra length taps
- Provides extra length for tapping hubs of pulleys, oil caps and set screws

Size	Flutes	Chamfer	Thread Length	Shank Diameter	4"	6"	8"	10"	12"
1/8-27 NPT/NPTF	4	Plug	3/4	.4375	015904AS	015905AS	015906AS	015907AS	015908AS
1/4-18 NPT/NPTF	4	Plug	1-1/16	.5625	015913AS	015915AS	015916AS	015917AS	015918AS
3/8-18 NPT/NPTF	4	Plug	1-1/16	.7000	—	015921AS	015922AS	015923AS	—
1/2-14 NPT/NPTF	4	Plug	1-3/8	.6875	—	015925AS	015927AS	015928AS	—
3/4-14 NPT/NPTF	5	Plug	1-3/8	.9093	—	015929AS	015930AS	015931AS	—
1"-11-1/2 NPT/NPTF	5	Plug	1-3/4	1.1250	—	015933AS	—	015934AS	—

Special Extensions Available To Meet Your Requirements On A Quick Delivery Basis.

Call Your Regal Cutting Tools Representative For More Information.

Nut Taps Fractional Sizes



HSS **UNC**

- Long chamfers assist in entering the hole.
- May also be used to reach holes that would not be accessible with regular length taps.

Tap Size	NC, NF	H Limit	No. of Flutes	Overall Length	EDP No.
1/4-20	UNC	H3	4	5	008849AS
5/16-18	UNC	H3	4	5-1/2	008850AS
3/8-16	UNC	H3	4	6	008851AS
1/2-13	UNC	H3	4	7	008852AS

Hand Taps For Cast Iron



HSS **UNC** **302**

- Low rake angle, 2-1/2 thread chamfer, and an oxide/nitride surface treatment that help overcome the abrasive characteristic of cast iron
- Manufactured to Table 302 standards

Size	H Limit	Flutes	List #	Semi-Bottoming
1/4-20 UNC	H3	4	110	011531AS
5/16-18 UNC	H3	4	110	011689AS
3/8-16 UNC	H3	4	110	011869AS
7/16-14 UNC	H3	4	110	012098AS
1/2-13 UNC	H3	4	110	012265AS

Unipass Drill 'N' Tap™ Machine Screw and Fractional Sizes



HSS UNC UNF

- Drills and taps in a single pass
- Point is self-centering and eliminates the need for center drilling or center punching
- Can be used on multi-spindle heads with reversing mechanisms for tapping in most materials

Size	Flutes	Overall Length	Drill Length	Drill Size	Thread Length	Shank Diameter	Length of Square	Size of Square	List #	EDP No.
#4-40 UNC	2	1-7/8	1/4	.0910	3/8	.141	3/16	.110	121	007500AS
#4-48 UNF	2	1-7/8	1/4	.0945	3/8	.141	3/16	.110	121	007502AS
#5-40 UNC	2	1-15/16	9/32	.1040	13/32	.141	3/16	.110	121	007504AS
#5-44 UNF	2	1-15/16	9/32	.1060	13/32	.141	3/16	.110	121	007506AS
#6-32 UNC	2	2	5/16	.1115	7/16	.141	3/16	.110	121	007508AS
#6-40 UNF	2	2	5/16	.1170	7/16	.141	3/16	.110	121	007510AS
#8-32 UNC	2	2-1/8	3/8	.1375	1/2	.168	1/4	.131	121	007512AS
#8-36 UNF	2	2-1/8	3/8	.1405	1/2	.168	1/4	.131	121	007514AS
#10-24 UNC	2	2-3/8	13/32	.1545	5/8	.194	1/4	.152	121	007516AS
#10-32 UNF	2	2-3/8	13/32	.1635	5/8	.194	1/4	.152	121	007518AS
#12-24 UNC	2	2-3/8	15/32	.1805	21/32	.220	9/32	.165	121	007520AS
#12-28 UNF	2	2-3/8	15/32	.1860	21/32	.220	9/32	.165	121	007522AS
1/4-20 UNC	2	2-1/2	17/32	.2080	25/32	.255	5/16	.191	121	007524AS
1/4-28 UNF	2	2-1/2	17/32	.2200	25/32	.255	5/16	.191	121	007526AS
5/16-18 UNC	2	2-27/32	11/16	.2660	15/16	.318	3/8	.238	121	007528AS
5/16-24 UNF	2	2-27/32	11/16	.2770	15/16	.318	3/8	.238	121	007530AS
3/8-16 UNC	2	3-3/8	13/16	.3225	1-1/16	.381	7/16	.286	121	007532AS
3/8-24 UNF	2	3-3/8	13/16	.3395	1-1/16	.381	7/16	.286	121	007534AS
7/16-14 UNC	2	3-3/4	1	.3770	1-1/4	.323	13/32	.242	121	007536AS
7/16-20 UNF	2	3-3/4	1	.3955	1-1/4	.323	13/32	.242	121	007538AS
1/2-13 UNC	2	4-1/16	1-1/8	.4350	1-3/8	.367	7/16	.275	121	007540AS
1/2-20 UNF	2	4-1/16	1-1/8	.4580	1-3/8	.367	7/16	.275	121	007542AS

Unipass Taper Pipe Drill 'N' Tap

HSS UNC UNF

Size	Flutes	Overall Length	Drill Length	Drill Size	Thread Length	Shank Diameter	Length of Square	Size of Square	List #	EDP No.
1/16-27 NPT/NPTF	4	2-13/16	11/16	.2420	11/16	.312	3/8	.234	122	007550AS
1/8-27 NPT/NPTF	4	2-7/8	3/4	.3320	3/4	.437	3/8	.328	122	007552AS
1/4-18 NPT/NPTF	4	3-5/16	7/8	.4370	1-1/16	.562	7/16	.421	122	007554AS
3/8-18 NPT/NPTF	4	3-1/2	15/16	.5620	1-1/16	.700	1/2	.531	122	007556AS
1/2-14 NPT/NPTF	4	4-3/8	1-1/4	.7030	1-3/8	.687	5/8	.515	122	007558AS
3/4-14 NPT/NPTF	5	4-9/16	1-5/16	.9060	1-3/8	.906	11/16	.679	122	007560AS
1"-11-1/2 NPT/NPTF	5	5-3/8	1-5/8	1.1410	1-3/4	1.125	13/16	.843	122	007562AS

Met-Flo™ Taper Forming Taps



HSS

UNC
UNF

302A

- Specially designed for malleable materials such as aluminum and brass
- Eliminates chip disposal problems
- Ideal for blind holes
- Lasts up to 5 times longer than conventional taps
- Speed may be increased by as much as 200% in most applications
- Manufactured to Table 302A standards
- State of the art design, manufactured on CNC equipment

Formula For Special Met-Flo™ Tap Drill Sizes

$$\text{Drilled Hole Size (inches)} = \text{Basic Major Diameter Of Thread (inches)} - \frac{.0068 \times \% \text{ of Full Thread}}{\text{Number of Threads per Inch}}$$

Size	Class of Fit	List #	Plug	Bottom
#0-80 UNF	2B-3B	123	—	010001AS
#1-64 UNC	2B-3B	123	—	010003AS
#1-72 UNF	2B-3B	123	—	010005AS
#2-56 UNC	2B-3B	123	—	010007AS
#2-64 UNF	2B-3B	123	—	010009AS
#3-48 UNC	2B-3B	123	—	010011AS
#3-56 UNF	2B-3B	123	—	010015AS
#4-40 UNC	2B-3B	123	010018AS	010019AS
#4-48 UNF	2B-3B	123	010022AS	010023AS
#5-40 UNC	2B-3B	123	010026AS	010027AS
#5-44 UNF	2B-3B	123	010030AS	010031AS
#6-32 UNC	2B-3B	123	010034AS	010035AS
#6-32 UNC	Pre-Plate	123	010036AS	010037AS
#6-40 UNF	2B-3B	123	010146AS	010039AS
#8-32 UNC	2B-3B	123	010043AS	010044AS
#8-32 UNC	Pre-Plate	123	010045AS	010046AS
#8-36 UNF	2B-3B	123	010147AS	010048AS
#10-24 UNC	2B-3B	123	010052AS	010053AS
#10-24 UNC	Pre-Plate	123	010054AS	010055AS
#10-32 UNF	2B-3B	123	010058AS	010059AS
#10-32 UNF	Pre-Plate	123	010060AS	010061AS
#12-24 UNC	2B-3B	123	010064AS	010065AS
#12-28 UNF	2B-3B	123	010068AS	010069AS
1/4-20 UNC	2B-3B	123	010072AS	010073AS
1/4-20 UNC	Pre-Plate	123	010074AS	010075AS
1/4-28 UNF	2B-3B	123	010078AS	010079AS
5/16-18 UNC	2B-3B	123	010084AS	010085AS
5/16-18 UNC	Pre-Plate	123	010086AS	010087AS
5/16-24 UNF	2B-3B	123	010090AS	010091AS
3/8-16 UNC	2B-3B	123	010096AS	010097AS
3/8-16 UNC	Pre-Plate	123	010098AS	010099AS
3/8-24 UNF	2B-3B	123	010102AS	010103AS
7/16-14 UNC	2B-3B	123	010108AS	010109AS
7/16-20 UNF	2B-3B	123	010112AS	010113AS
1/2-13 UNC	2B-3B	123	010116AS	010117AS
1/2-20 UNF	2B-3B	123	010120AS	010121AS
9/16-12 UNC	2B-3B	123	010124AS	010125AS
9/16-18 UNF	2B-3B	123	010128AS	010129AS
5/8-11 UNC	2B-3B	123	010132AS	010133AS
5/8-18 UNF	2B-3B	123	010136AS	010137AS
3/4-10 UNC	2B-3B	123	010140AS	010141AS
3/4-16 UNF	2B-3B	123	010144AS	010145AS

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Taper Pipe Taps Regular Thread

HSS NPT NPTF 311



- Produces threads which conform to the American National Standard Taper Pipe Thread Dimensions.
- Manufactured to Table 311 standards
- High hook specially designed for stainless steel

Size	Overall Length	Thread Length	Flutes	List #	NPT	High Hook NPTF	Rake for Cast Iron NPTF	NPTF
1/16-27	2-1/8	11/16	4	124	008700AS	008733AS	008744AS	008701AS
1/8-27	2-1/8	3/4	4	124	008704AS	008734AS	008745AS	008706AS
1/8-27 Sm. Shnk.	2-1/8	3/4	4	124	008703AS	008735AS	008746AS	008705AS
1/4-18	2-7/16	1-1/16	4	124	008709AS	008736AS	008747AS	008710AS
3/8-18	2-9/16	1-1/16	4	124	008712AS	008737AS	008748AS	008713AS
1/2-14	3-1/8	1-3/8	4	124	008715AS	008738AS	008749AS	008716AS
3/4-14	3-1/4	1-3/8	5	124	008718AS	008739AS	008750AS	008719AS
1"-11-1/2	3-3/4	1-3/4	5	124	008721AS	008740AS	008751AS	008722AS
1-1/4"-11-1/2	4	1-3/4	5	124	008724AS	008741AS	008752AS	008725AS
1-1/2"-11-1/2	4-1/4	1-3/4	7	124	008727AS	008742AS	008753AS	008728AS
2"-11-1/2	4-1/2	1-3/4	7	124	008730AS	008743AS	008754AS	008731AS

Interrupted Thread

HSS NPT NPTF 311



- Produces threads which conform to the American National Standard Taper Pipe Thread dimensions
- Interrupted threads reduce friction, and permit better lubrication

Size	Overall Length	Thread Length	Flutes	List #	NPT	NPTF
1/8-27	2-1/8	3/4	5	126	008760AS	008762AS
1/8-27 Sm. Shnk.	2-1/8	3/4	5	126	008761AS	008763AS
1/4-18	2-7/16	1-1/16	5	126	008766AS	008767AS
3/8-18	2-9/16	1-1/16	5	126	008769AS	008770AS
1/2-14	3-1/8	1-3/8	5	126	008772AS	008773AS
3/4-14	3-1/4	1-3/8	5	126	008775AS	008776AS
1"-11-1/2	3-3/4	1-3/4	5	126	008778AS	008779AS
1-1/4"-11-1/2	4	1-3/4	5	126	008781AS	008782AS
1-1/2"-11-1/2	4-1/4	1-3/4	7	126	008784AS	008785AS
2"-11-1/2	4-1/2	1-3/4	7	126	008787AS	008788AS

NPT = American National Standard Taper Pipe Thread

NPTF = Dryseal American National Standard Taper Pipe Thread (Fuel)

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Taper Pipe Taps *Spiral Flute*

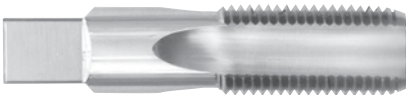


HSS
NPT
NPTF
311

- Produces threads which conform to the American National Standard Taper pipe Thread Dimensions.
- Manufactured to Table 311 standards
- Used in ductile or stringy material to aid chip ejection

Size	Flutes	List #	NPT	NPTF
1/8-27	4	125	008853AS	008854AS
1/4-18	4	125	008855AS	008856AS
3/8-18	4	125	008857AS	008858AS
1/2-14	4	125	008859AS	008860AS
3/4-14	5	125	008861AS	008878AS

Straight Pipe Taps *High Speed Steel*



HSS
NPT
NPTF
311

- Produces threads which conform to the American National Standard Straight Pipe Thread Dimensions.
- Manufactured to Table 311 standards

Size	Overall Length	Thread Length	Flutes	List #	NPS	NPSF
1/8-27	2-1/8	3/4	4	127	008817AS	008819AS
1/8-27 Sm. Shnk.	2-1/8	3/4	4	127	008818AS	008820AS
1/4-18	2-7/16	1-1/16	4	127	008821AS	008822AS
3/8-18	2-9/16	1-1/16	4	127	008823AS	008824AS
1/2-14	3-1/8	1-3/8	4	127	008825AS	008826AS
3/4-14	3-1/4	1-3/8	5	127	008827AS	008828AS
1"-11-1/2	3-3/4	1-3/4	5	127	008829AS	008830AS

NPS = America National Standard Straight Pipe Thread in Pipe Couplings

NPSF = Dryseal American National Standard Internal Straight Thread (Fuel)

STI Screw Thread Insert Taps Machine Screw & Fractional Sizes



HSS **UNC**
UNF

- Oversize taps which will produce threads that will accommodate a helical screw thread insert

Size	H Limit	Flutes	Flute Length	Overall Length	List #	Plug	Bottom
#2-56 UNC	H1	3	9/16	1-7/8	130	007104AS	007105AS
#2-56 UNC	H2	3	9/16	1-7/8	130	007107AS	007108AS
#4-40 UNC	H1	3	11/16	2	130	007000AS	007001AS
#4-40 UNC	H2	3	11/16	2	130	007003AS	007004AS
#5-40 UNC	H1	3	3/4	2-1/8	130	007006AS	007007AS
#5-40 UNC	H2	3	3/4	2-1/8	130	007009AS	007010AS
#6-32 UNC	H2	3	7/8	2-3/8	130	007012AS	007013AS
#6-32 UNC	H3	3	7/8	2-3/8	130	007015AS	007016AS
#6-40 UNF	H1	3	7/8	2-3/8	130	007018AS	007019AS
#6-40 UNF	H2	3	7/8	2-3/8	130	007021AS	007022AS
#8-32 UNC	H2	3	15/16	2-3/8	130	007024AS	007025AS
#8-32 UNC	H3	3	15/16	2-3/8	130	007027AS	007028AS
#10-24 UNC	H2	3	1	2-1/2	130	007030AS	007031AS
#10-24 UNC	H3	3	1	2-1/2	130	007033AS	007034AS
#10-32 UNF	H2	3	1	2-1/2	130	007036AS	007037AS
#10-32 UNF	H3	3	1	2-1/2	130	007039AS	007040AS
#12-24 UNC	H2	3	1-1/8	2-23/32	130	007042AS	007043AS
#12-24 UNC	H3	3	1-1/8	2-23/32	130	007045AS	007046AS
1/4-20 UNC	H2	3	1-1/8	2-23/32	130	007048AS	007049AS
1/4-20 UNC	H3	3	1-1/8	2-23/32	130	007051AS	007052AS
1/4-28 UNF	H2	3	1-1/8	2-23/32	130	007054AS	007055AS
1/4-28 UNF	H3	3	1-1/8	2-23/32	130	007057AS	007058AS
5/16-18 UNC	H3	4	1-1/4	2-15/16	130	007060AS	007061AS
5/16-18 UNC	H4	4	1-1/4	2-15/16	130	007063AS	007064AS
5/16-24 UNF	H2	4	1-1/4	2-15/16	130	007066AS	007067AS
5/16-24 UNF	H3	4	1-1/4	2-15/16	130	007069AS	007070AS

STI Screw Thread Insert Taps Machine Screw & Fractional Sizes



- Oversize taps which will produce threads that will accommodate a helical screw thread insert

Size	H Limit	Flutes	Flute Length	Overall Length	List #	Plug	Bottom
3/8-16 UNC	H3	4	1-21/32	3-3/8	130	007072AS	007073AS
3/8-16 UNC	H4	4	1-21/32	3-3/8	130	007075AS	007076AS
3/8-24 UNF	H2	4	1-7/16	3-5/32	130	007078AS	007079AS
3/8-24 UNF	H3	4	1-7/16	3-5/32	130	007081AS	007082AS
7/16-14 UNC	H3	4	1-21/32	3-19/32	130	007084AS	007085AS
7/16-14 UNC	H4	4	1-21/32	3-19/32	130	007086AS	007087AS
7/16-20 UNF	H3	4	1-21/32	3-3/8	130	007088AS	007089AS
7/16-20 UNF	H4	4	1-21/32	3-3/8	130	007090AS	007091AS
1/2-13 UNC	H3	4	1-13/16	3-13/16	130	007092AS	007093AS
1/2-13 UNC	H4	4	1-13/16	3-13/16	130	007094AS	007095AS
1/2-20 UNF	H3	4	1-21/32	3-19/32	130	007096AS	007097AS
1/2-20 UNF	H4	4	1-21/32	3-19/32	130	007098AS	007099AS
5/8-11 UNC	H3	4	2	4-1/4	130	007138AS	007139AS
5/8-11 UNC	H4	4	2	4-1/4	130	007141AS	007142AS
5/8-18 UNF	H3	4	1-13/16	4-1/32	130	007144AS	007145AS
5/8-18 UNF	H4	4	1-13/16	4-1/32	130	007147AS	007148AS
3/4-10 UNC	H3	4	2-7/32	4-11/16	130	007168AS	007169AS
3/4-10 UNC	H5	4	2-7/32	4-11/16	130	007171AS	007172AS
3/4-16 UNF	H3	4	2	4-15/32	130	007174AS	007175AS
3/4-16 UNF	H4	4	2	4-15/32	130	007177AS	007178AS
7/8-9 UNC	H3	4	2-1/2	5-1/8	130	007180AS	007181AS
7/8-9 UNC	H5	4	2-1/2	5-1/8	130	007183AS	007184AS
7/8-14 UNF	H3	4	2-1/2	5-1/8	130	007186AS	007187AS
7/8-14 UNF	H4	4	2-1/2	5-1/8	130	007189AS	007190AS
1"-8 UNC	H4	4	2-9/16	5-3/4	130	007192AS	007193AS
1"-8 UNC	H6	4	2-9/16	5-3/4	130	007195AS	007196AS
1"-14 UNF	H4	4	2-9/16	5-7/16	130	007198AS	007199AS
1"-14 UNF	H6	4	2-9/16	5-7/16	130	007201AS	007202AS

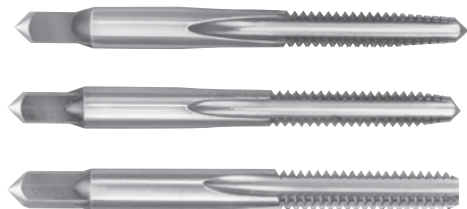
STI Screw Thread Insert - Spiral Point Plug Style Taps Machine Screw & Fractional Sizes



- Oversize taps producing threads that accommodate a screw thread insert

Size	H Limit	Flutes	Flute Length	Overall Length	List #	Plug
#2-56 UNC	H1	2	9/16	1-7/8	131	007100AS
#2-56 UNC	H2	2	9/16	1-7/8	131	007102AS
#3-48 UNC	H1	2	5/8	1-15/16	131	007110AS
#3-48 UNC	H2	2	5/8	1-15/16	131	007112AS
#4-40 UNC	H1	2	11/16	2	131	007002AS
#4-40 UNC	H2	2	11/16	2	131	007005AS
#5-40 UNC	H1	2	3/4	2-1/8	131	007008AS
#5-40 UNC	H2	2	3/4	2-1/8	131	007011AS
#6-32 UNC	H2	2	7/8	2-3/8	131	007014AS
#6-32 UNC	H3	2	7/8	2-3/8	131	007017AS
#6-40 UNF	H1	2	7/8	2-3/8	131	007020AS
#6-40 UNF	H2	2	7/8	2-3/8	131	007023AS
#8-32 UNC	H2	2	15/16	2-3/8	131	007026AS
#8-32 UNC	H3	2	15/16	2-3/8	131	007029AS
#10-24 UNC	H2	2	1	2-1/2	131	007032AS
#10-24 UNC	H3	2	1	2-1/2	131	007035AS
#10-32 UNF	H2	2	1	2-1/2	131	007038AS
#10-32 UNF	H3	2	1	2-1/2	131	007041AS
#12-24 UNC	H2	2	1	2-23/32	131	007044AS
#12-24 UNC	H3	2	1	2-23/32	131	007047AS
1/4-20 UNC	H2	2	1-1/8	2-23/32	131	007050AS
1/4-20 UNC	H3	2	1-1/8	2-23/32	131	007053AS
1/4-28 UNF	H2	2	1-1/8	2-23/32	131	007056AS
1/4-28 UNF	H3	2	1-1/8	2-23/32	131	007059AS
5/16-18 UNC	H3	3	1-1/4	2-15/16	131	007062AS
5/16-18 UNC	H4	3	1-1/4	2-15/16	131	007065AS
5/16-24 UNF	H2	3	1-1/4	2-15/16	131	007068AS
5/16-24 UNF	H3	3	1-1/4	2-15/16	131	007071AS
3/8-16 UNC	H3	3	1-21/32	3-3/8	131	007074AS
3/8-16 UNC	H4	3	1-21/32	3-3/8	131	007077AS
3/8-24 UNF	H2	3	1-7/16	3-5/32	131	007080AS
3/8-24 UNF	H3	3	1-7/16	3-5/32	131	007083AS
7/16-14 UNC	H3	3	1-21/32	3-19/32	131	007122AS
7/16-14 UNC	H4	3	1-21/32	3-19/32	131	007124AS
7/16-20 UNF	H3	3	1-21/32	3-3/8	131	007126AS
7/16-20 UNF	H4	3	1-21/32	3-3/8	131	007128AS
1/2-13 UNC	H3	3	1-13/16	3-13/32	131	007130AS
1/2-13 UNC	H4	3	1-13/16	3-13/32	131	007132AS
1/2-20 UNF	H3	3	1-21/32	3-19/32	131	007134AS
1/2-20 UNF	H4	3	1-21/32	3-19/32	131	007136AS

Metric Hand Taps



- General-purpose tap used either by hand or on production machines
- Precision ground for a wide variety of applications
- Proper number of flutes to provide sufficient chip room and cutting edges to handle most threading jobs
- Manufactured to Table 302 standards
- Thread form manufactured to Table 337 standards

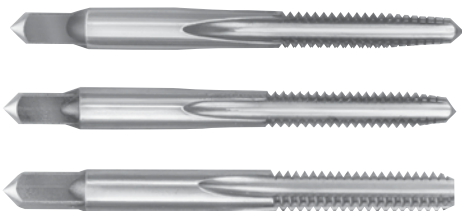
Size	Class of Fit	Pitch Diam. Limit	Flutes	List #	Taper	Plug	Bottom	List #	Set
M1.6 x 0.35	6H	D3	2	200	027700AS	027701AS	027702AS	—	—
M1.8 x 0.35	6H	D3	2	200	027704AS	027705AS	027706AS	—	—
M2 x 0.4	6H	D3	3	200	027708AS	027709AS	027710AS	203	029505AS
M2.2 x 0.45	6H	D3	3	200	027712AS	027713AS	027714AS	—	—
M2.5 x 0.45	6H	D3	3	200	027716AS	027717AS	027718AS	—	—
M3 x 0.5	6H	D3	3	200	027720AS	027721AS	027722AS	203	029506AS
M3.5 x 0.6	6H	D4	3	200	027724AS	027725AS	027726AS	—	—
M3.5 x 0.6	—	+ .127mm	3	211	027400AS	027401AS	027402AS	—	—
M4 x 0.7	6H	D4	4	200	027728AS	027729AS	027730AS	203	029507AS
M4 x 0.7	—	+ .127mm	4	211	027408AS	027409AS	027410AS	—	—
M4.5 x 0.75	6H	D4	4	200	027732AS	027733AS	027734AS	—	—
M4.5 x 0.75	—	+ .127mm	4	211	027416AS	027417AS	027418AS	—	—
M5 x .8	6H	D4	4	200	027736AS	027737AS	027738AS	203	029508AS
M5 x .8	—	+ .127mm	4	211	027424AS	027425AS	027426AS	—	—
M6 x 1	6H	D5	4	200	027740AS	027741AS	027742AS	203	029509AS
M6 x 1	—	+ .127mm	4	211	027432AS	027433AS	027434AS	—	—
M7 x 1	6H	D5	4	200	027744AS	027745AS	027746AS	203	029510AS
M7 x 1	—	+ .127mm	4	211	027448AS	027449AS	027450AS	—	—
M8 x 1.25	6H	D5	4	200	027748AS	027749AS	027750AS	203	029511AS
M8 x 1.25	—	+ .127mm	4	211	027456AS	027457AS	027458AS	—	—
M8 x 1	6H	D5	4	200	027752AS	027753AS	027754AS	—	—
M8 x 1	—	+ .127mm	4	211	027464AS	027465AS	027466AS	—	—
M10 x 1.5	6H	D6	4	200	027756AS	027757AS	027758AS	203	029512AS
M10 x 1.5	—	+ .127mm	4	211	027472AS	027473AS	027474AS	—	—
M10 x 1.25	6H	D5	4	200	027760AS	027761AS	027762AS	—	—
M10 x 1.25	—	+ .127mm	4	211	027480AS	027481AS	027482AS	—	—
M12 x 1.75	6H	D6	4	200	027764AS	027765AS	027766AS	203	029513AS
M12 x 1.75	—	+ .127mm	4	211	027488AS	027489AS	027490AS	—	—
M12 x 1.25	6H	D5	4	200	027768AS	027769AS	027770AS	—	—
M12 x 1.25	—	+ .127mm	4	211	027496AS	027497AS	027498AS	—	—

See page 255 for thread limits.

+ .127mm = +.005"

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Metric Hand Taps



HSS

M
MF

302
303

337

- General-purpose tap used either by hand or on production machines
- Precision ground for a wide variety of applications
- Proper number of flutes to provide sufficient chip room and cutting edges to handle most threading jobs
- Manufactured to Table 302/303 standards
- Thread form manufactured to Table 337 standards

Size	Class of Fit	Pitch Diam. Limit	Flutes	List #	Taper	Plug	Bottom	List #	Set
M14 x 2	6H	D7	4	200	027772AS	027773AS	027774AS	203	029514AS
M14 x 1.5	6H	D6	4	200	027776AS	027777AS	027778AS	—	—
M16 x 2	6H	D7	4	200	027780AS	027781AS	027782AS	203	029515AS
M16 x 2	—	+ .127mm	4	211	027504AS	027505AS	027506AS	—	—
M16 x 1.5	6H	D6	4	200	027784AS	027785AS	027786AS	—	—
M18 x 2.5	6H	D7	4	200	027788AS	027789AS	027790AS	203	029516AS
M18 x 1.5	6H	D6	4	200	027792AS	027793AS	027794AS	—	—
M20 x 2.5	6H	D7	4	200	027795AS	027796AS	027797AS	203	029517AS
M20 x 2.5	—	+ .127mm	4	211	027520AS	027521AS	027522AS	—	—
M20 x 1.5	6H	D6	4	200	027799AS	027800AS	027801AS	—	—
M20 x 1.5	—	+ .127mm	4	211	027529AS	027530AS	027531AS	—	—
M22 x 2.5	6H	D7	4	200	027802AS	027803AS	027804AS	—	—
M22 x 1.5	6H	D6	4	200	027805AS	027806AS	027807AS	—	—
M22 x 1.5	—	+ .127mm	4	211	027547AS	027548AS	027549AS	—	—
M24 x 3	6H	D8	4	200	027808AS	027809AS	027810AS	203	029518AS
M24 x 3	—	+ .127mm	4	211	027556AS	027557AS	027558AS	—	—
M24 x 2	6H	D7	4	200	027811AS	027812AS	027813AS	—	—
M27 x 3	6H	D8	4	200	027814AS	027815AS	027816AS	—	—
M27 x 2	6H	D7	4	200	027817AS	027818AS	027819AS	—	—
M30 x 3.5	6H	D9	4	200	027820AS	027821AS	027822AS	203	029519AS
M30 x 2	6H	D7	4	200	027823AS	027824AS	027825AS	—	—
M33 x 3.5	6H	D9	4	200	027826AS	027827AS	027828AS	—	—
M33 x 2	6H	D7	4	200	027829AS	027830AS	027831AS	—	—
M36 x 4	6H	D9	4	200	027832AS	027833AS	027834AS	203	029520AS
M36 x 3	6H	D8	4	200	027835AS	027836AS	027837AS	—	—
M39 x 4	6H	D9	6	200	027838AS	027839AS	027840AS	—	—
M39 x 3	6H	D8	6	200	027841AS	027842AS	027843AS	—	—

+ .127mm = +.005"

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Metric Spiral Point Taps



HSS
M MF
302
337

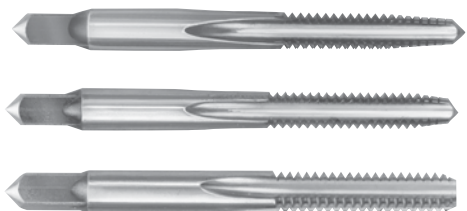
- A rugged free cutting tap that drives chips ahead of the tap
- Perfect for through hole applications
- Manufactured to Table 302 standards
- Thread form manufactured to Table 337 standards

Size	Class of Fit	Pitch Diam. Limit	Flutes	List #	Plug
M1.6 x 0.35	6H	D3	2	210	027703AS
M1.8 x 0.35	6H	D3	2	210	027707AS
M2 x 0.4	6H	D3	2	210	027711AS
M2.2 x 0.45	6H	D3	2	210	027715AS
M2.5 x 0.45	6H	D3	2	210	027719AS
M3 x 0.5	6H	D3	2	210	027723AS
M3.5 x 0.6	6H	D4	2	210	027727AS
M4 x 0.7	6H	D4	2	210	027731AS
M4 x 0.7	—	+ .127mm	2	212	027411AS
M4.5 x 0.75	6H	D4	2	210	027735AS
M4.5 x 0.75	—	+ .127mm	2	212	027419AS
M5 x .8	6H	D4	2	210	027739AS
M5 x .8	—	+ .127mm	2	212	027427AS
M6 x 1	6H	D5	2	210	027743AS
M6 x 1	—	+ .127mm	2	212	027435AS
M7 x 1	6H	D5	2	210	027747AS
M7 x 1	—	+ .127mm	2	212	027451AS
M8 x 1.25	6H	D5	2	210	027751AS
M8 x 1.25	—	+ .127mm	2	212	027459AS
M8 x 1	6H	D5	2	210	027755AS
M8 x 1	—	+ .127mm	2	212	027467AS
M10 x 1.5	6H	D6	3	210	027759AS
M10 x 1.5	—	+ .127mm	3	212	027475AS
M10 x 1.25	6H	D5	3	210	027763AS
M10 x 1.25	—	+ .127mm	3	212	027483AS
M12 x 1.75	6H	D6	3	210	027767AS
M12 x 1.75	—	+ .127mm	3	212	027491AS
M12 x 1.25	6H	D5	3	210	027771AS
M14 x 2	6H	D7	3	210	027775AS
M14 x 1.5	6H	D6	3	210	027779AS
M16 x 2	6H	D7	3	210	027783AS
M16 x 2	—	+ .127mm	3	212	027507AS
M16 x 1.5	6H	D6	3	210	027787AS
M18 x 2.5	6H	D7	3	210	027791AS
M20 x 2.5	6H	D7	3	210	027798AS

+ .127mm = +.005"

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Metric Left Hand Taps



HSS **M MF** **302**

- General-purpose tap used either by hand or on production machines
- Precision ground for a wide variety of applications
- Proper number of flutes to provide sufficient chip room and cutting edges to handle most threading jobs
- Manufactured to Table 302 standards

Size	Class of Fit	Pitch Diam. Limit	Flutes	List #	Taper	Plug	Bottom
M3.5 x 0.6	6H	D4	3	205	029009AS	029010AS	029011AS
M4 x 0.7	6H	D4	4	205	029027AS	029028AS	029029AS
M4.5 x 0.75	6H	D4	4	205	029036AS	029037AS	029038AS
M5 x .8	6H	D4	4	205	029045AS	029046AS	029047AS
M6 x 1	6H	D5	4	205	029054AS	029055AS	029056AS
M7 x 1	6H	D5	4	205	029072AS	029073AS	029074AS
M8 x 1.25	6H	D5	4	205	029081AS	029082AS	029083AS
M8 x 1	6H	D5	4	205	029090AS	029091AS	029092AS
M10 x 1.5	6H	D6	4	205	029099AS	029100AS	029101AS
M10 x 1.25	6H	D5	4	205	029108AS	029109AS	029110AS
M12 x 1.75	6H	D6	4	205	029117AS	029118AS	029119AS
M12 x 1.25	6H	D5	4	205	029126AS	029127AS	029128AS
M14 x 2	6H	D7	4	205	029135AS	029136AS	029137AS
M14 x 1.5	6H	D6	4	205	029144AS	029145AS	029146AS
M16 x 2	6H	D7	4	205	029153AS	029154AS	029155AS
M16 x 1.5	6H	D6	4	205	029162AS	029163AS	029164AS
M18 x 2.5	6H	D7	4	205	029171AS	029172AS	029173AS
M18 x 1.5	6H	D6	4	205	029180AS	029181AS	029182AS
M20 x 2.5	6H	D7	4	205	029189AS	029190AS	029191AS
M20 x 1.5	6H	D6	4	205	029198AS	029199AS	029200AS
M22 x 2.5	6H	D7	4	205	029207AS	029208AS	029209AS
M22 x 1.5	6H	D6	4	205	029216AS	029217AS	029218AS
M24 x 3	6H	D8	4	205	029225AS	029226AS	029227AS
M24 x 2	6H	D7	4	205	029234AS	029235AS	029236AS

Metric Spiral Flute Taps



HSS **M MF** **302**

30° Helix

- Helical flutes provide lifting action to remove chips
- Recommended when tapping ductile stringy materials; aluminum, some stainless steels, etc.
- Manufactured to Table 302 standards



HSS **M MF** **302**

52° High Helix

- Provides greater lifting action, especially when tapping deep blind holes in ductile materials
- Built in higher hook provides excellent shearing action
- Manufactured to Table 302 standards

Size	Class of Fit	Pitch Diam. Limit	Flutes	List #	30° Helix		List #	52° High Helix	
					Plug	Bottom		Plug	Bottom
M3 x 0.5	6H	D3	2	208	027600AS	027601AS	209	027650AS	027651AS
M3.5 x 0.6	6H	D4	2	208	027603AS	027604AS	209	027653AS	027654AS
M4 x 0.7	6H	D4	2	208	027606AS	027607AS	209	027656AS	027657AS
M4.5 x 0.75	6H	D4	2	208	027609AS	027610AS	209	027659AS	027660AS
M5 x .8	6H	D4	2	208	027612AS	027613AS	209	027662AS	027663AS
M6 x 1	6H	D5	3	208	027615AS	027616AS	209	027665AS	027666AS
M7 x 1	6H	D5	3	208	027618AS	027619AS	209	027668AS	027669AS
M8 x 1.25	6H	D5	3	208	027621AS	027622AS	209	027671AS	027672AS
M8 x 1	6H	D5	3	208	027624AS	027625AS	209	027674AS	027675AS
M10 x 1.5	6H	D6	3	208	027627AS	027628AS	209	027677AS	027678AS
M10 x 1.25	6H	D5	3	208	027630AS	027631AS	209	027680AS	027681AS
M12 x 1.75	6H	D6	3	208	027633AS	027634AS	209	027683AS	027684AS
M12 x 1.25	6H	D5	3	208	027636AS	027637AS	209	027686AS	027687AS

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Metric Unipass Drill 'N' Tap



HSS M MF

- Drills and taps in a single pass
- Point is self-centering and eliminates the need for center drilling or center punching
- Can be used on multi-spindle heads with reversing mechanisms in most materials

Size	Pitch Diam. Limit	Flutes	Overall Length	Drill Length	Drill Size	Thread Length	Shank Diameter	Length of Square	Size of Square	List #	EDP
007600AS	M3 x 0.5	D3	2	1-15/16"	9/32"	.1015"	13/32"	.141"	3/16"	.110"	206
007605AS	M3.5 x 0.6	D4	2	2"	5/16"	.1180"	7/16"	.141"	3/16"	.110"	206
007610AS	M4 x 0.7	D4	2	2-1/8"	3/8"	.1340"	1/2"	.168"	1/4"	.131"	206
007615AS	M4.5 x 0.75	D4	2	2-3/8"	13/32"	.1520"	5/8"	.194"	1/4"	.152"	206
007620AS	M5 x .8	D4	2	2-3/8"	13/32"	.1700"	5/8"	.194"	1/4"	.152"	206

Metric Met-Flo Thread Forming Taps



HSS M MF 302A

- Specially designed for malleable materials such as aluminum and brass
- Eliminates chip disposal problems
- Ideal for blind holes
- Lasts up to 5 times longer than conventional taps
- Speed may be increased by as much as 200% in most applications
- Manufactured to Table 302A standards.

Size	Class of Fit	Limit	List #	Plug	Pitch Diam Bottom
M3 x 0.5	6H	D5	207	010200AS	010201AS
M3.5 x 0.6	6H	D6	207	010204AS	010205AS
M4 x 0.7	6H	D7	207	010208AS	010209AS
M4.5 x 0.75	6H	D7	207	010212AS	010213AS
M5 x .8	6H	D7	207	010216AS	010217AS
M6 x 1	6H	D9	207	010220AS	010221AS
M7 x 1	6H	D9	207	010224AS	010225AS
M8 x 1.25	6H	D10	207	010228AS	010229AS
M8 x 1	6H	D9	207	010232AS	010233AS
M10 x 1.5	6H	D11	207	010236AS	010237AS
M10 x 1.25	6H	D10	207	010240AS	010241AS
M12 x 1.75	6H	D12	207	010244AS	010245AS
M12 x 1.25	6H	D11	207	010248AS	010249AS
M14 x 2	6H	D13	207	010252AS	010253AS
M14 x 1.5	6H	D12	207	010256AS	010257AS
M16 x 2	6H	D13	207	010260AS	010261AS
M18 x 1.5	6H	D12	207	010264AS	010265AS

Formula For Special Met-Flo™ Tap Drill Sizes

$$\frac{\text{Drilled Hole Size (mm)} = \text{Basic Major Diameter Of Thread (mm)} - \text{\% Of Full Thread} \times \text{mm Pitch}}{147.06}$$

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Taper Pipe Taps CNC-PIPE

HSS NPT NPTF

- Specifically designed to thread stainless steel and aluminum
- Heat and wear resistant Super Premium Steel
- Bright Finish



List 324 NPTF/NPT

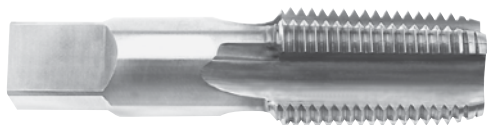
Tap Size	# Flute	EDP	Tap Drill Size
1/8-27	4	019580DS	R
1/4-18	4	019582DS	7/16
3/8-18	5	019584DS	37/64
1/2-14	5	019586DS	45/64
3/4-14	5	019588DS	29/32
1"-11 1/2	5	019590DS	1-5/32

CNC Taper Pipe Tap Dimensions

Size	Overall Length	Thread Length	Square Length	Shank Dia.	Size of Square
1/8-27	4	5/8	3/8	.312	.234
1/4-18	4	15/16	3/8	.437	.328
3/8-18	4-3/8	15/16	7/16	.562	.421
1/2-14	5-1/2	1-3/16	5/8	.687	.515
3/4-14	5-1/2	1-3/16	11/16	.906	.679
1"-11-1/2	6-1/4	1-7/16	1-3/16	1.1245	.843

Extra length for extra reach available upon request.

Carbo-Clad™ Taps



Taper Pipe

List 2016 NPTF/NPT

Carbide
HSS

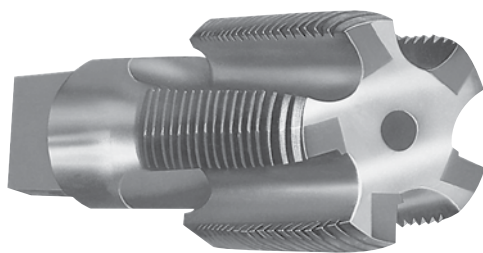
NPT
NPTF

Tap Size	# Flute	EDP No.
1/8-27	4	019381US
1/4-18	4	019382US
3/8-18	4	019383US
1/2-14	4	019384US
3/4-14	5	019385US
1"-11-1/2	5	019386US
1-1/4"-11-1/2	5	019387US
1-1/2"-11-1/2	7	019388US

Carbide
HSS

UNC
UNF

Tap Size	# Flute	Plug	Bottom	2B H Limit
7/16-14	4	019049US	019050US	3
7/16-20	4	019062US	019063US	3
1/2-13	4	019081US	019082US	3
1/2-20	4	019086US	019087US	3
9/16-12	4	019096US	019097US	3
9/16-18	4	019104US	019105US	3
5/8-11	4	019112US	019113US	3
5/8-18	4	019120US	019121US	3
3/4-10	4	019140US	019141US	3
3/4-16	4	019148US	019149US	3
7/8-9	4	019156US	019157US	4
7/8-14	4	019166US	019167US	4
1" - 8	4	019176US	019177US	4
1" - 12	4	019186US	019187US	4
1-1/4" - 7	4	019216US	019217US	4
1-3/8" - 12	4	019240US	019241US	4
1-1/2" - 6	4	019248US	019249US	4



Carbo-Clad™ Taps are comprised of a HSS body and brazed micrograin carbide cutting faces. This unique design allows the HSS shank to absorb shock caused by excessive vibration or lack of rigidity that could chip the cutting edges of conventional solid carbide taps.

Consider coolant feeding style Carbo-Clad™ Taps for high production applications involving blind holes in Cast Iron and Aluminum.

SOLID CARBIDE MET-FLO™ FORM TAPS

Material: 383 Cast Aluminum
 Tap Size: M8 x 1.25
 Hole Depth: 1-1/4" Blind
 Speed: 120 SFM
 Tool Life: 80,000 holes

CARBIDE OIL HOLE TAPS

Part: Engine block
 Material: Cast Iron
 Tap Size: 3/8-16
 Speed: 200 SFM
 Tool Life: Yet to be determined

Carbide Taps Solid Carbide

- Specifically designed for extreme performance in abrasive materials
- Tough micrograin carbide
- Manufactured to Table 302 standards



Straight Flute



Spiral Point



List 2014 Straight Flute



Tap Size	# Flute	Plug	Bottom	2B H Limit
#4-40	2	018190RS	018191RS	2
#4-48	2	018220RS	—	2
#5-40	3	018248RS	018249RS	2
#6-32	3	018309RS	018310RS	3
#6-40	3	018355RS	018356RS	2
#8-32	4	018406RS	018407RS	3
#10-24	4	018497RS	018498RS	3
#10-32	4	018557RS	018558RS	3
#12-24	4	018604RS	018605RS	3
#12-28	4	018617RS	018618RS	3

List 2015 Spiral Point



Tap Size	# Flute	Plug	2B H Limit
#4-40	2	018192RS	2
—	—	—	—
—	—	—	—
#6-32	2	018307RS	3
—	—	—	—
#8-32	2	018401RS	3
#10-24	2	018492RS	3
#10-32	2	018552RS	3
—	—	—	—
—	—	—	—



List 2014 Straight Flute



Tap Size	# Flute	Plug	Bottom	3B H Limit
1/4-20	4	018636RS	018637RS	3
1/4-28	4	018661RS	018662RS	3
5/16-18	4	018695RS	018696RS	3
5/16-24	4	018729RS	018730RS	3
3/8-16	4	018756RS	018757RS	3
3/8-24	4	018792RS	018793RS	3

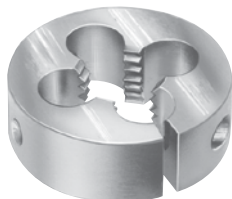
List 2015 Spiral Point



Tap Size	# Flute	Plug	3B H Limit
1/4-20	2	018631RS	3
1/4-28	2	018656RS	3
5/16-18	2	018690RS	3
—	—	—	—
3/8-16	2	018751RS	3
—	—	—	—

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Round Adjustable Dies High Speed Steel



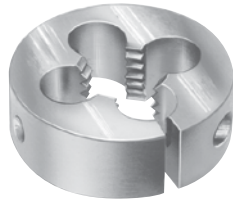
HSS

- Used for cutting external right hand threads
- Adjustable to cut a limited amount of sizes smaller than shown

Size	List #	13/16"OD	1"OD	1-1/2"OD	2"OD
0-80 UNC	150	040139AS	—	—	—
1-64 UNC	150	040140AS	—	—	—
1-72 UNF	150	040141AS	—	—	—
2-56 UNC	150	040142AS	—	—	—
3-48 UNC	150	040144AS	—	—	—
4-40 UNC	150	040147AS	—	—	—
4-48 UNF	150	040148AS	—	—	—
5-40 UNC	150	040150AS	—	—	—
5-44 UNF	150	040151AS	—	—	—
6-32 UNC	150	040152AS	040175AS	—	—
6-40 UNF	150	040153AS	—	—	—
8-32 UNC	150	040154AS	040176AS	—	—
8-36 UNF	150	040155AS	—	—	—
10-24 UNC	150	040156AS	040177AS	—	—
10-32 UNF	150	040157AS	040178AS	—	—
12-24 UNC	150	040158AS	040179AS	—	—
12-28 UNF	150	040159AS	—	—	—
1/4-20 UNC	150	040160AS	040180AS	040200AS	—
1/4-28 UNF	150	040161AS	040181AS	040201AS	—
5/16-18 UNC	150	040162AS	040182AS	040202AS	—
5/16-24 UNF	150	040163AS	040183AS	040203AS	—
3/8-16 UNC	150	—	040184AS	040204AS	—
3/8-24 UNF	150	—	040185AS	040205AS	—
7/16-14 UNC	150	—	040186AS	040206AS	—
7/16-20 UNF	150	—	040187AS	040207AS	—
1/2-13 UNC	150	—	—	040208AS	—
1/2-20 UNF	150	—	—	040209AS	—
9/16-12 UNC	150	—	—	040210AS	—
9/16-18 UNF	150	—	—	040211AS	—
5/8-11 UNC	150	—	—	040212AS	040225AS
5/8-18 UNF	150	—	—	040213AS	040226AS
3/4-10 UNC	150	—	—	—	040227AS
3/4-16 UNF	150	—	—	—	040228AS
7/8-9 UNC	150	—	—	—	040229AS

Please contact your Regal Cutting Tools representative for special dies

Metric Round Adjustable Dies High Speed Steel



HSS

- Used for cutting external right hand threads
- Adjustable to cut a limited amount of sizes smaller than shown

Size	List #	25.4mm OD	38mm OD	50.8mm OD	63.4mm OD	76.2mm OD
M1.6 x 0.35	401	046000AS	—	—	—	—
M1.8 x 0.35	401	046001AS	—	—	—	—
M2 x 0.4	401	046002AS	—	—	—	—
M2.2 x 0.45	401	046003AS	—	—	—	—
M2.5 x 0.45	401	046004AS	—	—	—	—
M3 x 0.5	401	046005AS	—	—	—	—
M3.5 x 0.6	401	046006AS	—	—	—	—
M4 x 0.7	401	046007AS	—	—	—	—
M4.5 x 0.75	401	046008AS	—	—	—	—
M5 x .8	401	046009AS	—	—	—	—
M6 x 1	401	046010AS	—	—	—	—
M6.3 x 1	401	046011AS	—	—	—	—
M7 x 1	401	046012AS	—	—	—	—
M8 x 1.25	401	046013AS	—	—	—	—
M8 x 1	401	046014AS	—	—	—	—
M10 x 1.5	401	—	046015AS	—	—	—
M10 x 1.25	401	—	046016AS	—	—	—
M12 x 1.75	401	—	046017AS	—	—	—
M12 x 1.25	401	—	046018AS	—	—	—
M14 x 2	401	—	046019AS	—	—	—
M14 x 1.5	401	—	046020AS	—	—	—
M16 x 2	401	—	046021AS	—	—	—
M16 x 1.5	401	—	046022AS	—	—	—
M18 x 2.5	401	—	046023AS	—	—	—
M18 x 1.5	401	—	046024AS	—	—	—
M20 x 2.5	401	—	—	046025AS	—	—
M20 x 1.5	401	—	—	046026AS	—	—
M22 x 2.5	401	—	—	046027AS	—	—
M22 x 1.5	401	—	—	046028AS	—	—
M24 x 3	401	—	—	046029AS	—	—
M24 x 2	401	—	—	046030AS	—	—
M27 x 3	401	—	—	—	046031AS	—
M27 x 2	401	—	—	—	046032AS	—
M30 x 3.5	401	—	—	—	046033AS	—
M30 x 2	401	—	—	—	046034AS	—
M33 x 3.5	401	—	—	—	046035AS	—
M33 x 2	401	—	—	—	046036AS	—
M36 x 4	401	—	—	—	046037AS	—
M36 x 3	401	—	—	—	046038AS	—
M39 x 4	401	—	—	—	—	046039AS
M39 x 3	401	—	—	—	—	046040AS

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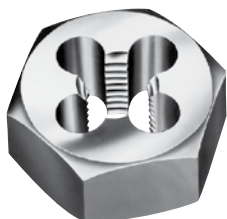
NPT Taper & NPS Straight Pipe Dies High Speed Steel

HSS

- Used in the repair or maintenance of worn parts

Size	Taper	Straight	OD
1/16-27	041500AS	041540AS	1
1/8-27	041501AS	041541AS	
1/4-18	041502AS	041542AS	1-1/2
3/8-18	041503AS	041543AS	
1/2-14	041504AS	041544AS	2
3/4-14	041505AS	041545AS	
1"-11-1/2	041506AS	041546AS	2-1/2

Hex Rethreading Dies High Speed Steel



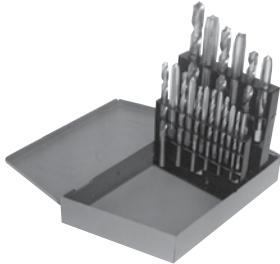
- Used in repair work for rusty and/or damaged threads

HSS

EDP No.	Size	Dimensions	
		Across Flats	Thickness
046200AS	1/2-13	1-1/16	1/2
046202AS	1/2-20	1-1/16	1/2
046204AS	5/8-11	1-1/4	5/8
046206AS	5/8-18	1-1/4	5/8
046208AS	3/4-10	1-7/16	3/4
046210AS	3/4-16	1-7/16	3/4
046212AS	1"-8	1-13/16	1
046214AS	1"-12	1-13/16	1
046216AS	1"-14	1-13/16	1
046218AS	1-1/8"-7	2	1
046220AS	1-1/8"-12	2	1
046222AS	1-1/4"-7	2-3/16	1
046224AS	1-1/4"-12	2-3/16	1
046226AS	1-3/8"-6	2-3/8	1
046228AS	1-3/8"-12	2-3/8	1
046230AS	1-1/2"-6	2-9/16	1
046232AS	1-1/2"-12	2-9/16	1

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Tap and Drill Sets High Speed Steel

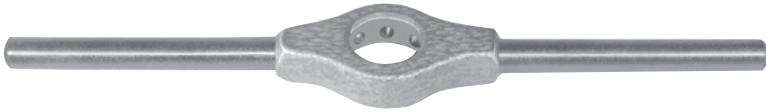


HSS

- High quality taps and drills in a variety of sizes to fit most maintenance, repair or production needs

EDP #078710AS Tap and Drill Set Bright				EDP #045995AS Hand Taps TiN Coated		EDP #045999AS Spiral Point Taps TiN Coated		EDP #046590AS Metric Tap & Drill Set Bright	
Tap Size	Drill	Tap Size	Drill	Size Tap	Drill	Size Tap	Drill	Tap Size	Drill
6-32	36	6-40	33	6-32	36	6-32	36	M2.5 x .45	2.05mm
8-32	29	8-36	29	8-32	29	8-32	29	M3 x .5	2.50mm
10-24	25	10-32	21	10-24	25	10-24	25	M4 x .7	3.30mm
12-24	16	12-28	15	10-32	21	10-32	21	M5 x .8	4.20mm
1/4-20	7	1/4-28	3	1/4-20	7	1/4-20	7	M6 x 1	5.00mm
5/16-18	F	5/16-24	I	5/16-18	F	5/16-18	F	M8 x 1.25	6.70mm
3/8-16	5/16	3/8-24	0	3/8-16	5/16	3/8-16	5/16	M10 x 1.5	8.50mm
7/16-14	U	7/16-20	25/64	7/16-14	U	7/16-14	U	M12 x 1.75	10.20mm
1/2-13	27/64	1/2-20	29/64	1/2-13	27/64	1/2-13	27/64		

Round Die Stock (3 Screw Type)



- Will hold any round adjustable die, but specifically designed for dies with open type adjustment

Fits Die OD of	Length	List #	EDP No.
13/16	9-1/2	151	040270WS
1	10-1/2	151	040271WS
1-1/2	14-1/2	151	040272WS
2	18	151	040273WS
2-1/2	22-1/2	151	040274WS
3	28-1/4	151	040275WS

Tap Wrenches



- T-Handle wrenches are designed for hand tapping and may also be used with drills, screw extractors and other tools
- Straight wrenches are designed to provide greater leverage when tapping larger diameters

Type	Capacity		Overall Length	EDP No.
	Fractional	Machine Screw		
"T" Slip Handle	1/16 to 1/4	0 to 14	2-1/4	040278WS
"T" Slip Handle	7/32 to 1/2	12 to 14	3-5/8	040279WS
"T" Ratchet Handle	1/16 to 1/4	0 to 14	3-3/4	040280WS
"T" Ratchet Handle	7/32 to 1/2	12 to 14	5	040281WS
Fractional		Pipe Taps		
Straight	1/4 to 1-1/8	1/8 to 3/4		040284WS
Straight	3/4 to 1-5/8	3/8 to 1-1/4		040285WS
Straight	1 to 2-1/2	3/4 to 2		040286WS

TRIPLE CROWN SERIES TAPS



MATERIAL SPECIFIC HIGH PERFORMANCE TAPS

TC-SS Blue Ring Taps for Tough materials	44
TC-LT Yellow Ring Taps for General Ductile materials	46
TC-HT Red Ring Taps for High tensile materials	48
Multi 1 Red-Yellow Ring Taps for Multi Purpose	50



PREMIUM

Blue Ring TC-SS Taps for Tough Materials Machine Screw & Fractional



Spiral Flute



Spiral Point



MACHINE SCREW

HSS EX **UNC UNF**

Spiral Flute

TAP SIZE	EDP No.	LIMIT
4-40	030259TC	GH2
6-32	030260TC	GH3
—	—	—
8-32	030261TC	GH3
10-24	030262TC	GH3
10-32	030276TC	GH3

HSS EX **UNC UNF**

Spiral Point

TAP SIZE	EDP No.	LIMIT
4-40	030200TC	GH2
6-32	030201TC	GH3
6-40	030218TC	GH2
8-32	030202TC	GH3
10-24	030203TC	GH3
10-32	030219TC	GH3
12-24	030204TC	GH3



FRACTIONAL

HSS EX **UNC UNF**

Spiral Flute

TAP SIZE	EDP No.	LIMIT
1/4-20	030263TC	GH3
1/4-28	030277TC	GH3
5/16-18	030264TC	GH3
5/16-24	030278TC	GH3
3/8-16	030265TC	GH3
3/8-24	030279TC	GH3
7/16-14	030266TC	GH3
—	—	—
1/2-13	030267TC	GH3
1/2-20	030280TC	GH3
5/8-11	030268TC	GH3
5/8-18	030281TC	GH3
3/4-10	030269TC	GH3
3/4-16	030282TC	GH3
7/8-9	030270TC	GH4
7/8-14	030283TC	GH4
1-8	030271TC	GH4
1-12	030284TC	GH4
1-1/8"-7	030272TC	GH4
1-1/8"-12	030285TC	GH4
1-1/4"-7	030273TC	GH4
1-1/4"-12	030286TC	GH4
1-3/8"-6	030274TC	GH4
1-3/8"-12	030287TC	GH4
1-1/2"-6	030275TC	GH4
1-1/2"-12	030288TC	GH4

HSS EX **UNC UNF**

Spiral Point

TAP SIZE	EDP No.	LIMIT
1/4-20	030205TC	GH3
1/4-28	030220TC	GH3
5/16-18	030206TC	GH3
5/16-24	030221TC	GH3
3/8-16	030207TC	GH3
3/8-24	030222TC	GH3
7/16-14	030208TC	GH3
7/16-20	031208TC	GH3
1/2-13	030209TC	GH3
1/2-20	030223TC	GH3
5/8-11	030210TC	GH3
5/8-18	030224TC	GH3
3/4-10	030211TC	GH3
3/4-16	030225TC	GH3
7/8-9	030212TC	GH4
7/8-14	030226TC	GH4
1-8	030213TC	GH4
1-12	030227TC	GH4
1-1/8"-7	030214TC	GH4
1-1/8"-12	030228TC	GH4
1-1/4"-7	030215TC	GH4
1-1/4"-12	030229TC	GH4
1-3/8"-6	030216TC	GH4
1-3/8"-12	030230TC	GH4
1-1/2"-6	030217TC	GH4
1-1/2"-12	030231TC	GH4

PREMIUM

Blue Ring TC-SS Taps for Tough Materials Metric



Spiral Flute



Spiral Point



METRIC

HSS EX **M MF**

Spiral Flute

TAP SIZE	EDP No.	LIMIT
—	—	—
—	—	—
M3x0.5	030289TC	D3
M3.5x0.6	030290TC	D4
M4x0.7	030291TC	D4
—	—	D4
M5x0.8	030292TC	D4
M6x1.0	030293TC	D5
M7x1.0	030294TC	D5
M8x1.25	030296TC	D5
M8x1.0	030295TC	D5
M10x1.5	030298TC	D6
M10x1.25	030297TC	D5
M12x1.75	030299TC	D6
M12x1.25	030300TC	D5
M14x2.0	030302TC	D7
M14x1.5	030301TC	D6
M16x2.0	030303TC	D7
M16x1.5	030304TC	D6
M18x2.5	030306TC	D7
M18x1.5	030305TC	D6
M20x2.5	030308TC	D6
M20x1.5	030307TC	D5
M22x2.5	030310TC	D6
M22x1.5	030309TC	D6
M24x3.0	030312TC	D7
M24x1.5	030311TC	D5

Spiral Point

HSS EX **M MF**

TAP SIZE	EDP No.	LIMIT
M2x0.4	030232TC	D3
M2.5x0.45	030233TC	D3
M3x0.5	030234TC	D3
M3.5x0.6	030235TC	D4
M4x0.7	030236TC	D4
M4.5x0.75	030237TC	D4
M5x0.8	030238TC	D4
M6x1.0	030239TC	D5
M7x1.0	030240TC	D5
M8x1.25	030242TC	D5
M8x1.0	030241TC	D5
M10x1.5	030244TC	D6
M10x1.25	030243TC	D5
M12x1.75	030245TC	D6
M12x1.25	030246TC	D5
M14x2.0	030248TC	D7
M14x1.5	030247TC	D6
M16x2.0	030249TC	D7
M16x1.5	030250TC	D6
M18x2.5	030252TC	D7
M18x1.5	030251TC	D6
M20x2.5	030254TC	D7
M20x1.5	030253TC	D5
M22x2.5	030256TC	D6
M22x1.5	030255TC	D6
M24x3.0	030258TC	D7
M24x1.5	030257TC	D5

PREMIUM

Yellow Ring TC-LT Taps for General Ductile Materials Machine Screw & Fractional



Spiral Flute



Spiral Point



MACHINE SCREW

HSS V **UNC UNF**

Spiral Flute

TAP SIZE	EDP No.	LIMIT
4-40	030063TC	2B
6-32	030064TC	2B
—	—	—
8-32	030065TC	2B
10-24	030066TC	2B
10-32	030080TC	2B
—	—	—

Spiral Point

HSS V **UNC UNF**

TAP SIZE	EDP No.	LIMIT
4-40	030000TC	2B
6-32	030001TC	2B
6-40	030018TC	2B
8-32	030002TC	2B
10-24	030003TC	2B
10-32	030019TC	2B
12-24	030004TC	2B



FRACTIONAL

HSS V **UNC UNF**

Spiral Flute

TAP SIZE	EDP No.	LIMIT
1/4-20	030067TC	2B
1/4-28	030081TC	2B
5/16-18	030068TC	2B
5/16-24	030082TC	2B
3/8-16	030069TC	2B
3/8-24	030083TC	2B
7/16-14	030070TC	2B
—	—	—
1/2-13	030071TC	2B
1/2-20	030084TC	2B
5/8-11	030072TC	2B
5/8-18	030085TC	2B
3/4-10	030073TC	2B
3/4-16	030086TC	2B
7/8-9	030074TC	2B
7/8-14	030087TC	2B
1-8	030075TC	2B
1-12	030088TC	2B
1-1/8"-7	030076TC	2B
—	—	—
1-1/4"-7	030077TC	2B
—	—	—
1-3/8"-6	030078TC	2B
—	—	—
1-1/2"-6	030079TC	2B
—	—	—

Spiral Point

HSS V **UNC UNF**

TAP SIZE	EDP No.	LIMIT
1/4-20	030005TC	2B
1/4-28	030020TC	2B
5/16-18	030006TC	2B
5/16-24	030021TC	2B
3/8-16	030007TC	2B
3/8-24	030022TC	2B
7/16-14	030008TC	2B
7/16-20	031008TC	2B
1/2-13	030009TC	2B
1/2-20	030023TC	2B
5/8-11	030010TC	2B
5/8-18	030024TC	2B
3/4-10	030011TC	2B
3/4-16	030025TC	2B
7/8-9	030012TC	2B
7/8-14	030026TC	2B
1-8	030013TC	2B
1-12	030027TC	2B
1-1/8"-7	030014TC	2B
1-1/8"-12	030028TC	2B
1-1/4"-7	030015TC	2B
1-1/4"-12	030029TC	2B
1-3/8"-6	030016TC	2B
1-3/8"-12	030030TC	2B
1-1/2"-6	030017TC	2B
1-1/2"-12	030031TC	2B

PREMIUM

Yellow Ring TC-LT Taps for General Ductile Materials Metric



Spiral Flute



Spiral Point



METRIC

HSS
V

M
MF

Spiral Flute

TAP SIZE	EDP No.	LIMIT
—	—	—
—	—	—
M3x0.5	030089TC	6H
M3.5x0.6	030090TC	6H
M4x0.7	030091TC	6H
—	—	—
M5x0.8	030092TC	6H
M6x1	030093TC	6H
M7x1	030094TC	6H
M8x1.25	030096TC	6H
M8x1	030095TC	6H
M10x1.5	030098TC	6H
M10x1.25	030097TC	6H
M12x1.75	030099TC	6H
M12x1.25	030100TC	6H
M14x2	030102TC	6H
M14x1.5	030101TC	6H
M16x2	030103TC	6H
M16x1.5	030104TC	6H
M18x2.5	030106TC	6H
M18x1.5	030105TC	6H
M20x2.5	030108TC	6H
M20x1.5	030107TC	6H
M22x2.5	030110TC	6H
M22x1.5	030109TC	6H
M24x1.5	030111TC	6H
M24x3.0	030112TC	6H
M27x3.0	030114TC	6H
M27x1.5	030113TC	6H
M30x3.5	030116TC	6H
M30x1.5	030115TC	6H

Spiral Point

HSS
V

M
MF

TAP SIZE	EDP No.	LIMIT
M2x0.4	030032TC	6H
M2.5x0.45	030033TC	6H
M3x0.5	030034TC	6H
M3.5x0.6	030035TC	6H
M4x0.7	030036TC	6H
M4.5x0.75	030037TC	6H
M5x0.8	030038TC	6H
M6x1	030039TC	6H
M7x1	030040TC	6H
M8x1.25	030042TC	6H
M8x1	030041TC	6H
M10x1.5	030044TC	6H
M10x1.25	030043TC	6H
M12x1.75	030045TC	6H
M12x1.25	030046TC	6H
M14x2	030048TC	6H
M14x1.5	030047TC	6H
M16x2	030049TC	6H
M16x1.5	030050TC	6H
M18x2.5	030052TC	6H
M18x1.5	030051TC	6H
M20x2.5	030054TC	6H
M20x1.5	030053TC	6H
M22x2.5	030056TC	6H
M22x1.5	030055TC	6H
M24x1.5	030057TC	6H
M24x3	030058TC	6H
M27x3.0	030059TC	6H
M27x1.5	030060TC	6H
M30x3.5	030062TC	6H
M30x1.5	030061TC	6H

PREMIUM

TRIPLE CROWN

Red Ring TC-HT Taps for High Tensile Materials Machine Screw & Fractional



Spiral Flute



Spiral Point



MACHINE SCREW

HSS PM **UNC UNF**

Spiral Flute

TAP SIZE	EDP No.	LIMIT
4-40	030427TC	GH2
—	—	—
6-32	030428TC	GH3
8-32	030429TC	GH3
10-24	030430TC	GH3
10-32	030438TC	GH3

Spiral Point

HSS PM **UNC UNF**

TAP SIZE	EDP No.	LIMIT
4-40	030400TC	GH2
5-40	030401TC	GH2
6-32	030402TC	GH3
8-32	030403TC	GH3
10-24	030404TC	GH3
10-32	030412TC	GH3



FRACTIONAL

HSS PM **UNC UNF**

Spiral Flute

TAP SIZE	EDP No.	LIMIT
1/4-20	030431TC	GH3
1/4-28	030439TC	GH3
5/16-18	030432TC	GH3
5/16-24	030440TC	GH3
3/8-16	030433TC	GH3
3/8-24	030441TC	GH3
7/16-14	030434TC	GH3
7/16-20	031434TC	GH3
1/2-13	030435TC	GH3
1/2-20	030442TC	GH3
5/8-11	030436TC	GH3
5/8-18	030443TC	GH3
3/4-10	030437TC	GH3
3/4-16	031437TC	GH3

Spiral Point

HSS PM **UNC UNF**

TAP SIZE	EDP No.	LIMIT
1/4-20	030405TC	GH3
1/4-28	030413TC	GH3
5/16-18	030406TC	GH3
5/16-24	030414TC	GH3
3/8-16	030407TC	GH3
3/8-24	030415TC	GH3
7/16-14	030408TC	GH3
7/16-20	031408TC	GH3
1/2-13	030409TC	GH3
1/2-20	030416TC	GH3
5/8-11	030410TC	GH3
5/8-18	030417TC	GH3
3/4-10	030411TC	GH3
3/4-16	030418TC	GH3

PREMIUM

Red Ring TC-HT Taps for High Tensile Materials Metric



Spiral Flute



Spiral Point



METRIC

Spiral Flute

HSS
PM

M
MF

TAP SIZE	EDP No.	LIMIT
M3x0.5	030445TC	D3
M4x0.7	030446TC	D4
M5x0.8	030447TC	D4
M6x1.0	030448TC	D5
M8x1.2	030449TC	D5
M10x1.5	030450TC	D6
M10x1.25	030451TC	D5
M12x1.75	030452TC	D6

Spiral Point

HSS
PM

M
MF

TAP SIZE	EDP No.	LIMIT
M3x0.5	030419TC	D3
M4x0.7	030420TC	D4
M5x0.8	030421TC	D4
M6x1.0	030422TC	D5
M8x1.25	030423TC	D5
M10x1.5	030424TC	D6
M10x1.25	030425TC	D5
M12x1.75	030426TC	D6

PREMIUM

Red & Yellow Ring Taps for Multi Purpose Machine Screw & Fractional



Spiral Flute



MACHINE SCREW

HSS UNC UNF

Spiral Flute

TAP SIZE	EDP No.	LIMIT
4-40	032000AS	H3
4-48	032001AS	H3
5-40	032002AS	H3
5-44	032003AS	H3
6-32	032004AS	H3
6-40	032005AS	H3
8-32	032006AS	H3
8-36	032007AS	H3
10-24	032008AS	H4
10-32	032009AS	H3
12-24	032010AS	H4
12-28	032011AS	H4



FRACTIONAL

HSS UNC UNF

Spiral Flute

TAP SIZE	EDP No.	LIMIT
1/4-20	032012AS	H5
1/4-28	032013AS	H5
5/16-18	032014AS	H5
5/16-24	032015AS	H5
3/8-16	032016AS	H5
3/8-24	032017AS	H5
7/16-14	032018AS	H5
7/16-20	032019AS	H5
1/2-13	032020AS	H5
1/2-20	032021AS	H5
9/16-12	032022AS	H5
9/16-18	032023AS	H5
5/8-11	032024AS	H5
5/8-18	032025AS	H5
3/4-10	032026AS	H5
3/4-16	032027AS	H5
7/8-9	032028AS	H6
7/8-14	032029AS	H6
1-8	032030AS	H6
1-12	032031AS	H6

POPULAR SPECIAL TAPS & DIES

Taps

Hand Taps Machine Screw & Fractional	53
Spiral Point Taps	61
30° Spiral Flute Taps	62
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AMO Taps	64
Extension Taps	65
NPT Pipe Taps	64
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Metric Hand Taps	68
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Dies

Right Hand Dies	74
Left Hand Dies	76
Metric Right Hand Dies	77
Metric Left Hand Dies	77

REGAL CUTTING TOOLS

manufactures a wide variety of Special Taps including our 24-Hour Special Taps from Blanks.

Including but not limited to:

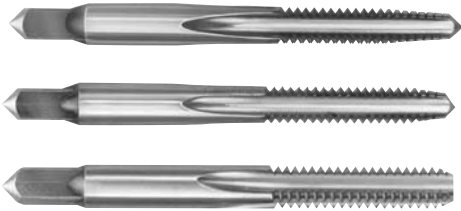
- Hand Taps
- Forming Taps
- Acme Taps
- Spiral Flute Taps
- Extension Taps
- Pipe Taps
- Spiral Point Taps

Call Regal Cutting Tools for all your Special Tap needs.



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Hand Taps Machine Screw & Fractional Sizes



HSS

UNC
UNF

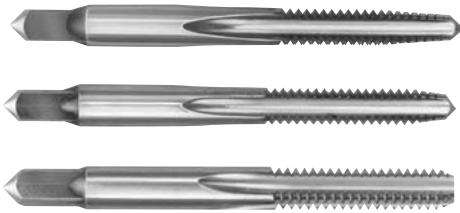
302
303

- General-purpose tap used either by hand or on production machines
- Precision ground for a wide variety of applications
- Proper number of flutes to provide sufficient chip room and cutting edges to handle most threading jobs
- Manufactured to Table 302 standards

EDP No.	Class of Fit	Flutes	Taper	Plug	Bottom
#0-80 NF	H3	2		011162AS	
#1-56 NS	H1	2	011164AS	011165AS	011166AS
#4-32 NS	H2	3	011169AS	011170AS	011171AS
#4-40 NC	H3	3		011173AS	011175AS
#6-32 NC	H5	3	011178AS	011179AS	011180AS
#6-32 NC	H11	3		014503AS	014504AS
#6-48 NS	H2	3	011184AS	011185AS	011186AS
#8-24 NS	H3	4	011189AS	011190AS	011191AS
#8-32 NC	H5	4	011209AS	011210AS	011211AS
#8-32 NC	H11	4		014517AS	014518AS
#8-40 NS	H2	4	011217AS	011220AS	011218AS
#10-24 NC	H5	4	011221AS	011222AS	011223AS
#10-24 NC	H11	4		014531AS	014532AS
#10-28 NS	H3	4	011228AS	011229AS	011230AS
#10-30 NS	H3	4	011236AS	011237AS	011238AS
#10-32 NF	H5	4	011248AS	011249AS	011250AS
#10-32 NF	H11	4		014538AS	014539AS
#10-36 NS	H2	4	011259AS	011260AS	011261AS
#10-40 NS	H2	4	011268AS	011269AS	011270AS
#10-48 NS	H2	4	011274AS	011275AS	011276AS
#10-56 NS	H2	4	011284AS	011285AS	011286AS
#10-64 NS	H2	4	011308AS	011309AS	011310AS
#12-32 NEF	H3	4	011358AS	011359AS	011360AS
#12-36 NS	H2	4	011371AS	011372AS	011373AS
#14-20 NS	H3	4	011413AS	011414AS	011415AS
#14-24 NS	H3	4	011427AS	011428AS	011429AS
5/32-32 NS	H3	4	011432AS	011433AS	011434AS
3/16-24 NS	H3	4	011437AS	011438AS	011439AS
3/16-32 NS	H3	4	011455AS	011456AS	011457AS
7/32-32 NS	H3	4	011501AS	011502AS	011503AS
1/4-20 NC	H7	4	011533AS	011534AS	011535AS
1/4-20 NC	H21	4	014670AS	014671AS	014672AS
1/4-24 NS	H3	4	011551AS	011552AS	011553AS
1/4-27 NS	H3	4	011556AS	011557AS	011558AS
1/4-28 NF	H5	4	011568AS	011569AS	011570AS

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Hand Taps Machine Screw & Fractional Sizes



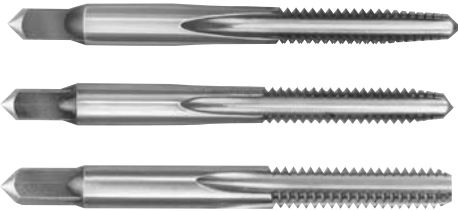
HSS **UNC UNF** **302 303**

- General-purpose tap used either by hand or on production machines
- Precision ground for a wide variety of applications
- Proper number of flutes to provide sufficient chip room and cutting edges to handle most threading jobs
- Manufactured to Table 302 standards

EDP No.	Class of Fit	Flutes	Taper	Plug	Bottom
1/4-28 NF	H7	4	011580AS	011581AS	011582AS
1/4-28 NF	H11	4		014552AS	014553AS
1/4-32 NEF	H3	4	011596AS	011597AS	011598AS
1/4-32 NEF	H5	4	011600AS	011601AS	011602AS
1/4-36 NS	H2	4	011609AS	011610AS	011611AS
1/4-40 NS	H2	4	011621AS	011622AS	011623AS
1/4-40 NS	H3	4	011624AS	011625AS	011626AS
1/4-48 NS	H2	4	011632AS	011633AS	011634AS
1/4-56 NS	H2	4	011643AS	011644AS	011645AS
1/4-80 NS	H2	4	011660AS	011661AS	011662AS
9/32-32 NS	H3	4	011672AS	011673AS	011674AS
5/16-18 NC	H7	4	011720AS	011721AS	011722AS
5/16-18 NC	H21	4	014678AS	014679AS	014680AS
5/16-20 NS	H3	4	011731AS	011732AS	011733AS
5/16-24 NF	H7	4	011758AS	011759AS	011760AS
5/16-24 NF	H11	4		014568AS	014569AS
5/16-27 NS	H3	4	011772AS	011773AS	011774AS
5/16-28 NS	H3	4	011785AS	011786AS	011787AS
5/16-32 NEF	H3	4	011804AS	011805AS	011806AS
5/16-32 NEF	H5	4	011814AS	011815AS	011816AS
5/16-40 NS	H2	4	011821AS	011822AS	011823AS
11/32-32 NS	H3	4	011850AS	011851AS	011852AS
3/8-16 NC	H3	4	011870AS	011871AS	011872AS
3/8-16 NC	H7	4	011899AS	011900AS	011901AS
3/8-16 NC	H21	4	014686AS	014687AS	014688AS
3/8-18 NS	H3	4	011916AS	011917AS	011918AS
3/8-20 NS	H3	4	011924AS	011925AS	011926AS
3/8-24 NF	H5	4	011932AS	011933AS	011934AS
3/8-24 NF	H7	4	011944AS	011945AS	011946AS
3/8-27 NS	H3	4	011958AS	011959AS	011960AS
3/8-28 NS	H3	4	011977AS	011978AS	011979AS
3/8-32 NEF	H3	4	012003AS	012004AS	012005AS
3/8-32 NEF	H5	4	012013AS	012014AS	012015AS
3/8-40 NS	H2	4	012026AS	012027AS	012028AS
3/8-40 NS	H3	4	012031AS	012032AS	012033AS

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Hand Taps Machine Screw & Fractional Sizes



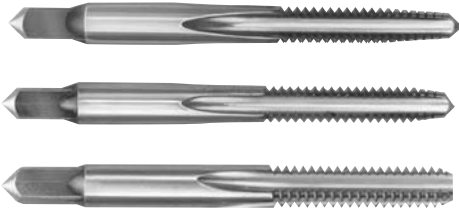
HSS **UNC UNF** **302 303**

- General-purpose tap used either by hand or on production machines
- Precision ground for a wide variety of applications
- Proper number of flutes to provide sufficient chip room and cutting edges to handle most threading jobs
- Manufactured to Table 302 standards

EDP No.	Class of Fit	Flutes	Taper	Plug	Bottom
3/8-48 NS	H2	4	012039AS	012040AS	012041AS
13/32-32 NS	H3	4	012073AS	012074AS	012075AS
7/16-14 NC	H21	4	014694AS	014695AS	014696AS
7/16-16 NS	H3	4	012099AS	012100AS	012101AS
7/16-18 NS	H3	4	012110AS	012111AS	012112AS
7/16-20 NF	H11	4		014596AS	014597AS
7/16-24 NS	H3	4	012141AS	012142AS	012143AS
7/16-24 NS	H5	4	012152AS	012153AS	012154AS
7/16-27 NS	H3	4	012164AS	012165AS	012166AS
7/16-28 NEF	H3	4	012176AS	012177AS	012178AS
7/16-28 NEF	H5	4	012186AS	012187AS	012188AS
7/16-32 NS	H3	4	012199AS	012200AS	012201AS
7/16-40 NS	H2	4	012218AS	012219AS	012220AS
15/32-32 NS	H3	6	012233AS	012234AS	012235AS
1/2-12 NS	H3	4	012241AS	012242AS	012243AS
1/2-13 NC	H21	4	014702AS	014703AS	014704AS
1/2-14 NS	H3	4	012274AS	012275AS	012276AS
1/2-16 NS	H3	4	012288AS	012289AS	012290AS
1/2-18 NS	H3	4	012295AS	012296AS	012297AS
1/2-20 NF	H7	4	012328AS	012329AS	012330AS
1/2-20 NF	H11	4		014614AS	014615AS
1/2-24 NS	H3	4	012336AS	012337AS	012338AS
1/2-27 NS	H3	6	012343AS	012344AS	012345AS
1/2-28 NEF	H3	4	012357AS	012358AS	012359AS
1/2-28 NEF	H5	4	012372AS	012373AS	012374AS
1/2-32 NS	H3	6	012390AS	012391AS	012392AS
1/2-40 NS	H2	6	012397AS	012398AS	012399AS
33/64-13 NS	H3	4	012404AS	012405AS	012406AS
9/16-16 NS	H3	4	012437AS	012438AS	012439AS
9/16-18 NF	H11	4		014618AS	014619AS
9/16-20 NS	H3	4	012455AS	012456AS	012457AS
9/16-24 NEF	H3	4	012467AS	012468AS	012469AS
9/16-24 NEF	H5	4	012482AS	012483AS	012484AS
9/16-27 NS	H3	6	012494AS	012495AS	012496AS
9/16-32 NS	H3	6	012509AS	012510AS	012511AS

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Hand Taps Machine Screw & Fractional Sizes



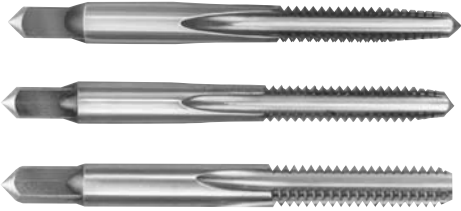
HSS **UNC UNF** **302 303**

- General-purpose tap used either by hand or on production machines
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- Manufactured to Table 302 standards

EDP No.	Class of Fit	Flutes	Taper	Plug	Bottom
5/8-10 NS	H3	4	012524AS	012525AS	012526AS
5/8-11 NC	H21	4	014710AS	014711AS	014712AS
5/8-12 NS	H3	4	012542AS	012543AS	012544AS
5/8-16 NS	H3	4	012557AS	012558AS	012559AS
5/8-18 NF	H11	4		014627AS	014628AS
5/8-20 NS	H3	4	012576AS	012577AS	012578AS
5/8-24 NEF	H3	6	012588AS	012589AS	012590AS
5/8-24 NEF	H5	6	012598AS	012599AS	012600AS
5/8-27 NS	H3	6	012610AS	012611AS	012612AS
5/8-28 NS	H3	6	012617AS	012618AS	012619AS
5/8-32 NS	H3	6	012625AS	012626AS	012627AS
41/64-11 NS	H4	4	012640AS	012641AS	012642AS
11/16-18 NS	H3	6	012680AS	012681AS	012682AS
11/16-20 NS	H3	6	012699AS	012700AS	012701AS
11/16-24 NEF	H3	6	012716AS	012717AS	012718AS
11/16-24 NEF	H5	6	012726AS	012727AS	012728AS
11/16-28 NS	H3	6	012739AS	012740AS	012741AS
11/16-32 NS	H3	6	012749AS	012750AS	012751AS
3/4-10 NC	H11	4		014631AS	014632AS
3/4-10 NC	H21	4	014718AS	014719AS	014720AS
3/4-12 NS	H4	4	012818AS	012819AS	012820AS
3/4-16 NF	H11	4		014635AS	014636AS
3/4-18 NS	H3	4	012858AS	012859AS	012860AS
3/4-20 NEF	H3	6	012870AS	012871AS	012872AS
3/4-20 NEF	H5	6	012880AS	012881AS	012882AS
3/4-24 NS	H3	6	012887AS	012888AS	012889AS
3/4-27 NS	H3	6	012906AS	012907AS	012908AS
3/4-32 NS	H3	6	012921AS	012922AS	012923AS
3/4-40 NS	H3	6	012928AS	012929AS	012930AS
49/64-10 NS	H4	4	012936AS	012937AS	012938AS
25/32-10 NS	H4	4	012944AS	012945AS	012946AS
13/16-10 NS	H4	4	012952AS	012953AS	012954AS
13/16-12 NS	H4	4	012960AS	012961AS	012962AS
13/16-16 NS	H3	4	012974AS	012975AS	012976AS
13/16-18 NS	H3	4	012981AS	012982AS	012983AS

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Hand Taps Machine Screw & Fractional Sizes



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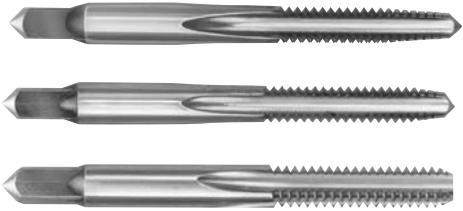
302
303

- General-purpose tap used either by hand or on production machines
- Precision ground for a wide variety of applications
- Proper number of flutes to provide sufficient chip room and cutting edges to handle most threading jobs
- Manufactured to Table 302 standards

EDP No.	Class of Fit	Flutes	Taper	Plug	Bottom
13/16-20 NEF	H3	6	012993AS	012994AS	012995AS
13/16-20 NEF	H5	6	013003AS	013004AS	013005AS
13/16-24 NS	H3	6	013015AS	013016AS	013017AS
7/8-9 NC	H11	4		014639AS	014640AS
7/8-10 NS	H4	4	013040AS	013041AS	013042AS
7/8-12 NS	H4	4	013054AS	013055AS	013056AS
7/8-14 NF	H11	4		014643AS	014644AS
7/8-16 NS	H3	4	013075AS	013076AS	013077AS
7/8-18 NS	H3	6	013094AS	013095AS	013096AS
7/8-20 NEF	H3	6	013101AS	013102AS	013103AS
7/8-20 NEF	H5	6	013106AS	013107AS	013108AS
7/8-24 NS	H3	6	013113AS	013114AS	013115AS
7/8-27 NS	H3	6	013121AS	013122AS	013123AS
7/8-32 NS	H3	6	013129AS	013130AS	013131AS
15/16-12 NS	H4	4	013137AS	013138AS	013139AS
15/16-14 NS	H4	4	013144AS	013145AS	013146AS
15/16-16 NS	H3	6	013152AS	013153AS	013154AS
15/16-18 NS	H3	6	013159AS	013160AS	013161AS
15/16-20 NEF	H3	6	013166AS	013167AS	013168AS
15/16-20 NEF	H5	6	013176AS	013177AS	013178AS
15/16-32 NS	H3	6	013183AS	013184AS	013185AS
1"-8 NC	H11	4		014647AS	014648AS
1"-10 NS	H4	4	013200AS	013201AS	013202AS
1"-12 NF	H6	4	013214AS	013215AS	013216AS
1"-12 NF	H11	4		014651AS	014652AS
1"-14 NS	H6	4	013228AS	013229AS	013230AS
1"-14 NS	H11	4		014655AS	014656AS
1"-16 NS	H3	6	013236AS	013237AS	013238AS
1"-18 NS	H3	6	013243AS	013244AS	013245AS
1"-20 NEF	H3	6	013250AS	013251AS	013252AS
1"-20 NEF	H5	6	013260AS	013261AS	013262AS
1"-24 NS	H3	6	013267AS	013268AS	013269AS
1"-27 NS	H3	6	013274AS	013275AS	013276AS
1"-32 NS	H3	6	013286AS	013287AS	013288AS
1-1/16-12 NS	H5	4	013289AS	013290AS	013291AS

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Hand Taps Machine Screw & Fractional Sizes



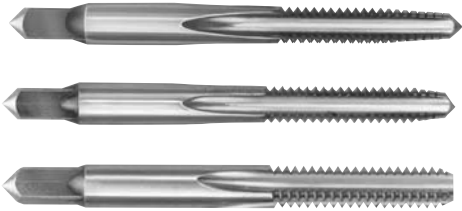
HSS **UNC UNF** **302 303**

- General-purpose tap used either by hand or on production machines
- Precision ground for a wide variety of applications
- Proper number of flutes to provide sufficient chip room and cutting edges to handle most threading jobs
- Manufactured to Table 302 standards

EDP No.	Class of Fit	Flutes	Taper	Plug	Bottom
1-1/16-12 NS	H7	4	013297AS	013298AS	013299AS
1-1/16-14 NS	H5	6	013301AS	013302AS	013303AS
1-1/16-16 NS	H4	6	013308AS	013309AS	013310AS
1-1/16-16 NS	H6	6	013318AS	013319AS	013320AS
1-1/16-18 NEF	H4	6	013330AS	013331AS	013332AS
1-1/16-18 NEF	H6	6	013340AS	013341AS	013342AS
1-1/16-20 NS	H4	6	013347AS	013348AS	013349AS
1-1/16-24 NS	H4	6	013352AS	013353AS	013354AS
1-1/8-10 NS	H5	4	013364AS	013365AS	013366AS
1-1/8-12 NF	H6	4	013374AS	013375AS	013376AS
1-1/8-14 NS	H5	6	013381AS	013382AS	013383AS
1-1/8-16 NS	H4	6	013388AS	013389AS	013390AS
1-1/8-18 NEF	H4	6	013400AS	013401AS	013402AS
1-1/8-18 NEF	H6	6	013410AS	013411AS	013412AS
1-1/8-20 NS	H4	6	013417AS	013418AS	013419AS
1-1/8-24 NS	H4	6	013422AS	013423AS	013424AS
1-1/8-28 NS	H4	6	013427AS	013428AS	013429AS
1-1/8-32 NS	H4	6	013432AS	013433AS	013434AS
1-3/16-12 NS	H5	6	013439AS	013440AS	013441AS
1-3/16-14 NS	H5	6	013446AS	013447AS	013448AS
1-3/16-16 NS	H4	6	013453AS	013454AS	013455AS
1-3/16-16 NS	H6	6	013463AS	013464AS	013465AS
1-3/16-18 NEF	H4	6	013475AS	013476AS	013477AS
1-3/16-20 NS	H4	6	013492AS	013493AS	013494AS
1-1/4-7 NC	H8	4	013504AS	013505AS	013506AS
1-1/4-10 NS	H5	4	013518AS	013519AS	013520AS
1-1/4-12 NF	H6	6	013530AS	013531AS	013532AS
1-1/4-14 NS	H5	6	013537AS	013538AS	013539AS
1-1/4-16 NS	H4	6	013544AS	013545AS	013546AS
1-1/4-18 NEF	H4	6	013556AS	013557AS	013558AS
1-1/4-18 NEF	H6	6	013566AS	013567AS	013568AS
1-1/4-20 NS	H4	6	013573AS	013574AS	013575AS
1-1/4-24 NS	H4	6	013580AS	013581AS	013582AS
1-1/4-32 NS	H4	6	013587AS	013588AS	013589AS
1-5/16-12 NF	H5	6	013594AS	013595AS	013596AS

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Hand Taps Machine Screw & Fractional Sizes



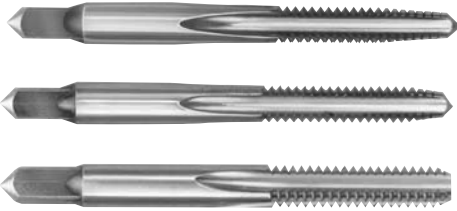
HSS **UNC UNF** **302 303**

- General-purpose tap used either by hand or on production machines
- Precision ground for a wide variety of applications
- Proper number of flutes to provide sufficient chip room and cutting edges to handle most threading jobs
- Manufactured to Table 302 standards

EDP No.	Class of Fit	Flutes	Taper	Plug	Bottom
1-5/16-12 NF	H8	6	013609AS	013610AS	013611AS
1-5/16-14 NS	H5	6	013613AS	013614AS	013615AS
1-5/16-16 NS	H4	6	013618AS	013619AS	013620AS
1-5/16-16 NS	H6	6	013628AS	013629AS	013630AS
1-5/16-18 NEF	H4	6	013640AS	013641AS	013642AS
1-5/16-18 NEF	H6	6	013650AS	013651AS	013652AS
1-5/16-20 NS	H4	6	013655AS	013656AS	013657AS
1-3/8-10 NS	H5	6	013667AS	013668AS	013669AS
1-3/8-16 NS	H4	6	013674AS	013675AS	013676AS
1-3/8-18 NEF	H4	6	013686AS	013689AS	013690AS
1-3/8-18 NEF	H6	6	013692AS	013695AS	013697AS
1-3/8-20 NS	H4	6	013705AS	013706AS	013707AS
1-7/16-18 NEF	H4	6	013729AS	013730AS	013731AS
1-7/16-18 NEF	H6	6	013739AS	013740AS	013741AS
1-1/2-10 NS	H5	6	013751AS	013752AS	013753AS
1-1/2-10 NS	H6	6	013761AS	013762AS	013763AS
1-1/2-16 NS	H4	6	013768AS	013769AS	013770AS
1-1/2-18 NEF	H4	6	013780AS	013781AS	013782AS
1-1/2-18 NEF	H6	6	013790AS	013791AS	013792AS
1-1/2-20 NS	H4	6	013797AS	013798AS	013799AS
1-1/2-24 NS	H4	6	013804AS	013805AS	013806AS
1-9/16-16 NS	H5	6	013811AS	013812AS	013813AS
1-9/16-18 NEF	H5	6	013816AS	013817AS	013818AS
1-5/8-5 1/2 NS	H7	6	013823AS	013824AS	013825AS
1-5/8-12 NS	H6	6	013833AS	013834AS	013835AS
1-5/8-16 NS	H5	6	013838AS	013839AS	013840AS
1-5/8-18 NEF	H5	6	013843AS	013844AS	013845AS
1-3/4-5 NC	H7	6	013857AS	013858AS	013859AS
1-3/4-10 NS	H6	6	013882AS	013883AS	013884AS
1-3/4-12 NS	H6	6	013887AS	013888AS	013889AS
1-3/4-12 NS	H8	6	013897AS	013898AS	013899AS
1-3/4-16 NS	H5	6	013902AS	013903AS	013904AS
1-3/4-16 NS	H7	6	013912AS	013913AS	013914AS
1-3/4-18 NS	H5	6	013917AS	013918AS	013919AS
1-7/8-5 NS	H7	6	013924AS	013925AS	013926AS

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Hand Taps Machine Screw & Fractional Sizes



HSS **UNC UNF** **302 303**

- General-purpose tap used either by hand or on production machines
- Precision ground for a wide variety of applications
- Proper number of flutes to provide sufficient chip room and cutting edges to handle most threading jobs
- Manufactured to Table 302 standards

EDP No.	Class of Fit	Flutes	Taper	Plug	Bottom
1-7/8-12 NS	H6	6	013934AS	013935AS	013936AS
1-7/8-12 NS	H8	6	013944AS	013945AS	013946AS
1-7/8-16 NS	H5	6	013949AS	013950AS	013951AS
2"-4 1/2 NC	H7	6	013956AS	013957AS	013958AS
2"-12 NS	H6	6	013966AS	013967AS	013968AS
2"-12 NS	H8	6	013976AS	013977AS	013978AS
2"-16 NS	H5	6	013983AS	013984AS	013985AS
2"-20 NS	H5	6	013993AS	013994AS	013995AS
2-1/8-12 NS	H6	6	014005AS	014006AS	014007AS
2-1/8-16 NS	H5	6	014010AS	014011AS	014012AS
2-1/4-4 1/2 NC	H7	6	014017AS	014018AS	014019AS
2-1/4-12 NS	H6	6	014027AS	014028AS	014029AS
2-1/4-16 NS	H5	6	014032AS	014033AS	014034AS
2-3/8-12 NS	H6	6	014039AS	014040AS	014041AS
2-3/8-16 NS	H5	6	014044AS	014045AS	014046AS
2-1/2-4 NC	H7	6	014051AS	014052AS	014053AS
2-1/2-12 NS	H6	6	014061AS	014062AS	014063AS
2-1/2-16 NS	H5	6	014066AS	014067AS	014068AS
2-3/4-12 NS	H7	6	014078AS	014079AS	014080AS
3"-4 NC	H9	6	014092AS	014093AS	014094AS
3"-12 NS	H7	8	014102AS	014103AS	014104AS
3"-16 NS	H7	8	014107AS	014108AS	014109AS
3-1/8-12 NS	H7	8		014110AS	014111AS
3-1/4-12 NS	H7	8		014121AS	014122AS
3-1/2-4 NC	H9	6		014123AS	014124AS
3-1/2-12 NS	H7	8		014127AS	014128AS
3-3/4-4 NC	H9	6		014129AS	014130AS
3-3/4-12 NS	H7	8		014133AS	014134AS
4"-4 NC	H9	8		014135AS	014136AS
4"-12 NS	H7	8		014139AS	014140AS

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Spiral Point Taps Machine Screw & Fractional Sizes



HSS UNC UNF 302

- Rugged free cutting tap which drives chips ahead of the tap
- Perfect for through hole applications
- Manufactured to Table 302 standards

EDP No.	Class of Fit	Flutes	Plug
00-90 NS	H1	0	011150AS
00-96 NS	H1	0	011155AS
4-40 NC	H7	2	08079AS
5-40 NC	H7	2	08122AS
6-32 NC	H4	2	011174AS
6-32 NC	H5	2	011177AS
6-32 NC	H11	2	014500AS
6-40 NF	H3	2	011182AS
6-48 NS	H2	2	011187AS
8-32 NC	H4	2	011205AS
8-32 NC	H5	2	011208AS
8-32 NC	H11	2	014514AS
8-40 NS	H2	2	011219AS
10-24 NC	H5	2	011224AS
10-24 NC	H11	2	014528AS
10-32 NF	H4	2	011244AS
10-32 NF	H5	2	011247AS
10-32 NF	H11	2	014535AS
10-40 NS	H2	2	011267AS
12-32 NEF	H3	2	011361AS
1/4-20 NC	H7	2	011532AS
1/4-24 NS	H3	2	011548AS
1/4-28 NF	H7	2	011578AS
1/4-28 NF	H11	2	014549AS
1/4-32 NEF	H3	2	011594AS
1/4-40 NS	H2	2	011620AS
5/16-18 NC	H7	2	011723AS
5/16-24 NF	H11	2	014565AS
5/16-32 NEF	H3	2	011801AS
3/8-16 NC	H3	2	011884AS
3/8-24 NF	H11	3	014579AS
3/8-32 NEF	H3	3	012002AS
7/16-20 NF	H11	3	014593AS
1/2-20 NF	H11	3	014607AS
1/2-28 NEF	H3	3	012356AS
3/4-10 NC	H11	3	008603AS
7/8-9 NC	H4	3	013033AS
1"-8 NC	H4	3	013191AS

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Spiral Flute Taps 30° Helix

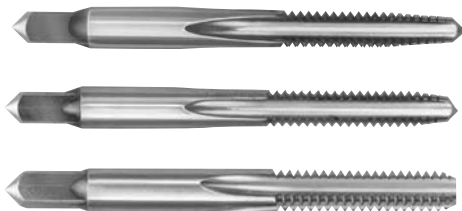


30° Helix

- Helical flutes provide lifting action to remove chips
- Recommended when tapping ductile stringy materials; aluminum, some stainless steels, etc.
- Manufactured to Table 302 standards

EDP No.	Class of Fit	Flutes	Plug	Bottom
5/8-11 NC	H3	4	012536AS	012537AS
5/8-18 NF	H3	4	012564AS	012565AS
3/4-10 NC	H3	4	012780AS	012781AS
3/4-16 NF	H3	4	012833AS	012834AS
7/8-9 NC	H4	4	013034AS	013035AS
1"-8 NC	H4	4	013194AS	013195AS

Left Hand Hand Taps Machine Screw Sizes



HSS UNC
UNF 302
303

- General-purpose tap used either by hand or on production machines
- Precision ground for a wide variety of applications
- Proper number of flutes to provide sufficient chip room and cutting edges to handle most threading jobs
- Manufactured to Table 302/303 standards

EDP No.	Class of Fit	Flutes	Taper	Plug	Bottom
0-80 NF	H1	2		017015AS	
2-56 NC	H2	2	017023AS	017024AS	017025AS
3-48 NC	H2	3	017026AS	017027AS	017028AS
4-40 NC	H2	3	017029AS	017030AS	017031AS
4-48 NF	H2	3		017057AS	
5-40 NC	H2	3	017033AS	017034AS	017035AS
6-40 NF	H2	3	017042AS	017043AS	017044AS
8-36 NF	H2	4		011215AS	
12-24 NC	H3	4	017082AS	017083AS	017084AS
12-28 NF	H3	4	017097AS	017098AS	017099AS

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Left Hand Spiral Point Taps Machine Screw Sizes

HSS UNC UNF 302

EDP No.	Class of Fit	Flutes	Plug
0-80 NF	H1	2	011160AS
2-56 NC	H2	2	017022AS
3-48 NC	H2	2	017055AS
4-40 NC	H2	2	017032AS
4-48 NF	H2	2	017058AS
5-40 NC	H2	2	017059AS
6-32 NC	H3	2	017039AS
8-32 NC	H3	2	017051AS
8-36 NF	H2	2	017061AS
10-24 NC	H3	2	017069AS
10-32 NF	H3	2	017079AS
1/4-20 NC	H3	2	017108AS
1/4-28 NF	H3	2	017120AS
5/16-18 NC	H3	2	017146AS
5/16-24 NF	H3	2	017157AS
3/8-16 NC	H3	3	017174AS
3/8-24 NF	H3	3	017189AS
7/16-14 NC	H3	3	017203AS
1/2-13 NC	H3	3	017231AS
1/2-20 NF	H3	3	017244AS
5/8-11 NC	H3	3	017287AS

AMO Taps

HSS AMO

EDP No.	Class of Fit	Flutes	Taper	Plug	Bottom
.800-36 AMO	—	6	015656AS	015657AS	015658AS

Extension Taps Fractional Sizes

HSS UNC UNS

EDP No.	Class of Fit	Flutes	Chamfer	10-inch	12-inch
1-1/4-8 NS	H5	4	Plug	015176AS	015168AS
1-1/2-6 NC	H4	4	Plug	015169AS	015170AS
1-1/2-8 NS	H5	4	Plug	015171AS	015172AS

NPT Pipe Taps



- Produces threads which conform to the American National Standard Taper Pipe Thread Dimensions.
- Manufactured to Table 311 standards

EDP No.	Flutes	Chamfer	Plug
2-1/2-8 NPT NPTF	7	Plug	015935AS
3"-8 NPT NPTF	7	Plug	015936AS
3-1/2-8 NPT NPTF	7	Plug	015937AS
4"-8 NPT NPTF	9	Plug	015938AS

Interrupted Pipe Taps



- Produces threads which conform to the American National Standard Taper Pipe Thread dimensions
- Interrupted threads reduce friction, and permit better lubrication

EDP No.	Flutes	Chamfer	Plug
2-1/2-8 NPT NPTF	7	Plug	015993AS
3"-8 NPT NPTF	7	Plug	015994AS
3-1/2-8 NPT NPTF	9	Plug	015996AS
4"-8 NPT NPTF	9	Plug	015995AS

NPT = American National Standard Taper Pipe Thread

NPTF = Dryseal American National Standard Taper Pipe Thread (Fuel)

NPS NPSF Pipe Taps



• Manufactured to Table 311 standards

EDP No.	Flute	Chamfer	NPS	NPSF
1-1/4-11-1/2	5	Plug	015951AS	015950AS
1-1/2-11-1/2	7	Plug	015952AS	
2"-11-1/2	7	Plug	015953AS	

NPSI Pipe Taps



• Manufactured to Table 311 standards

EDP No.	Flutes	Chamfer	Plug
1/8-27	4	Plug	015850AS
1/4-18	4	Plug	015852AS
3/8-18	4	Plug	015854AS
1/2-14	4	Plug	015856AS
3/4-14	5	Plug	015858AS

Left Hand Pipe Taps Regular Thread



- Produces threads which conform to the American National Standard Taper Pipe Thread Dimensions.
- Manufactured to Table 311 standards

Size	Flutes	Chamfer	NPT NPTF
1/16-27	4	Plug	017521AS
1/8-27	4	Plug	017522AS
1/4-18	4	Plug	017524AS
3/8-18	4	Plug	017526AS
1/2-14	4	Plug	017528AS
3/4-14	5	Plug	017530AS
1"-11 1/2	5	Plug	017532AS
1-1/4-11-1/2	5	Plug	017534AS
1-1/2-11-1/2	7	Plug	017536AS
2"-11-1/2	7	Plug	017538AS

BSP Pipe Taps

HSS BSPT BSPP

Size	Flutes	Chamfer	55° Mod. Whit BSPT Taper	55° Mod. Whit BSPP Parallel	55° Full Form BSPT Taper #	55° Full Form BSPP Parallel
1/8-28	4	Plug	015730AS	015700AS	015729AS	015690AS
1/4-19	4	Plug	015732AS	015702AS	015731AS	015701AS
3/8-19	4	Plug	015734AS	015704AS	015733AS	015703AS
1/2-14	4	Plug	015736AS	015706AS	015735AS	015705AS
3/4-14	4	Plug	015738AS	015708AS	015737AS	015707AS
1"-11	5	Plug	015740AS	015710AS	015739AS	015709AS
1-1/4-11	5	Plug	015742AS	015712AS	015741AS	015711AS
1-1/2-11	7	Plug	015744AS	015714AS	015743AS	015713AS
2"-11	7	Plug	015746AS	015716AS	015745AS	015715AS

BSW Taps

HSS BSW

Size	Class of Fit	Flutes	Taper	Plug	Bottom
1/2-12 BSW	H3	4	015640AS	015641AS	015642AS
5/8-11 BSW	H3	4	015648AS	015649AS	015650AS

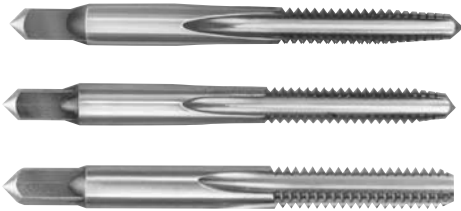
Extension Pipe Taps

HSS NPT NPTF

Size	Flutes	4"	6"
1/16-27	4	091396AS	015900AS
1/8-27	5		015971AS
1/4-18	5		015974AS
3/8-18	5		015977AS
1/2-14	5		015980AS

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Metric Hand Taps



HSS

M
MF

302
303

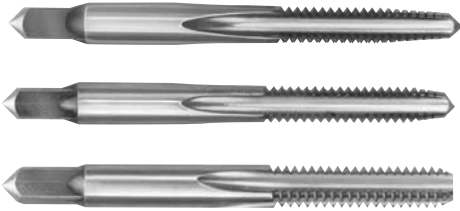
337

- General-purpose tap used either by hand or on production machines
- Precision ground for a wide variety of applications
- Proper number of flutes to provide sufficient chip room and cutting edges to handle most threading jobs
- Manufactured to Table 302 standards
- Thread form manufactured to Table 337 standards

EDP No.	Class of Fit	Flutes	Taper	Plug	Bottom
M1.5 x 0.35	D1	2	025000AS	025001AS	025002AS
M1.6 x 0.35	D1	2	020008AS	020009AS	020010AS
M1.8 x 0.35	D1	2	020024AS	020025AS	020026AS
M2 x 0.4	D1	3	020040AS	020041AS	020042AS
M2 x 0.45	D2	3	025048AS	025049AS	025050AS
M2.2 x 0.45	D1	3	020056AS	020057AS	020058AS
M2.5 x 0.45	D1	3	020072AS	020073AS	020074AS
M2.6 x 0.45	D2	3	025096AS	025097AS	025098AS
M3 x 0.5	D1	3	020088AS	020089AS	020090AS
M3 x 0.6	D2	3	025120AS	025121AS	025122AS
M3.5 x 0.6	D1	3	020104AS	020105AS	020106AS
M4 x 0.7	D2	4	020120AS	020121AS	020122AS
M4.5 x 0.75	D2	4	020136AS	020137AS	020138AS
M5 x 0.8	D2	4	020152AS	020153AS	020154AS
M5 x 0.9	D3	4	025181AS	025182AS	025183AS
M5.5 x 0.9	D3	4	025213AS	025214AS	025215AS
M6 x 1	D3	4	020168AS	020169AS	020170AS
M6 x 0.75	D3	4	025229AS	025230AS	025231AS
M7 x 1	D3	4	020200AS	020201AS	020202AS
M8 x 1.25	D3	4	020216AS	020217AS	020218AS
M8 x 1	D3	4	020232AS	020233AS	020234AS
M10 x 1.5	D3	4	020248AS	020249AS	020250AS
M10 x 1.25	D3	4	020264AS	020265AS	020266AS
M11 x 1.5	D5	4	025317AS	025318AS	025319AS
M12 x 1.75	D3	4	020280AS	020281AS	020282AS
M12 x 1.25	D3	4	020296AS	020297AS	020298AS

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Metric Hand Taps



- General-purpose tap used either by hand or on production machines
- Precision ground for a wide variety of applications
- Proper number of flutes to provide sufficient chip room and cutting edges to handle most threading jobs
- Manufactured to Table 302 standards
- Thread form manufactured to Table 337 standards

EDP No.	Class of Fit	Flutes	Taper	Plug	Bottom
M14 x 2	D3	4	020312AS	020313AS	020314AS
M14 x 1.5	D3	4	020328AS	020329AS	020330AS
M16 x 2	D4	4	020344AS	020345AS	020346AS
M16 x 1.5	D3	4	020360AS	020361AS	020362AS
M18 x 2.5	D4	4	020375AS	020376AS	020377AS
M18 x 1.5	D3	4	020393AS	020394AS	020395AS
M20 x 2.5	D4	4	020411AS	020412AS	020413AS
M20 x 2	D6	4	025491AS	025492AS	025493AS
M20 x 1.5	D3	4	020429AS	020430AS	020431AS
M22 x 2.5	D4	4	020447AS	020448AS	020449AS
M22 x 1.5	D3	4	020465AS	020466AS	020467AS
M24 x 3	D4	4	020483AS	020484AS	020485AS
M24 x 2	D4	4	020501AS	020502AS	020503AS
M27 x 3	D5	4	020519AS	020520AS	020521AS
M27 x 2	D5	4	020537AS	020538AS	020539AS
M30 x 3.5	D5	4	020555AS	020556AS	020557AS
M30 x 2	D5	4	020573AS	020574AS	020575AS
M32 x 2	D7	6	025706AS	025707AS	025708AS
M33 x 3.5	D5	4	020591AS	020592AS	020593AS
M33 x 2	D5	4	020609AS	020610AS	020611AS
M36 x 4	D5	4	020627AS	020628AS	020629AS
M36 x 3	D5	4	020645AS	020646AS	020647AS
M39 x 4	D6	6	020663AS	020664AS	020665AS
M39 x 3	D6	6	020681AS	020682AS	020683AS

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Metric Spiral Point Taps



- A rugged free cutting tap that drives chips ahead of the tap
- Perfect for through hole applications
- Manufactured to Table 302 standards
- Thread form manufactured to Table 337 standards

Size	Class of Fit	Flutes	Plug
M2.5 x 0.45	D1	2	020075AS
M3 x 0.5	D1	2	020091AS
M3.5 x 0.6	D1	2	020107AS
M3.5 x 0.6	D11	2	024275AS
M4 x 0.7	D2	2	020123AS
M4 x 0.7	D11	2	024276AS
M4.5 x 0.75	D2	2	020139AS
M4.5 x 0.75	D11	2	024277AS
M5 x 0.8	D2	2	020155AS
M5 x 0.8	D11	2	024278AS
M5 x 0.9	D3	2	025184AS
M5.5 x 0.9	D3	2	025216AS
M6 x 1	D3	2	020171AS
M6 x 1	D11	2	024279AS
M6 x 0.75	D3	2	025232AS
M7 x 1	D3	2	020203AS
M7 x 1	D11	2	024280AS
M8 x 1.25	D3	2	020219AS
M8 x 1.25	D11	2	024281AS
M8 x 1	D3	2	020235AS
M8 x 1	D11	2	024282AS
M10 x 1.5	D3	3	020251AS
M10 x 1.5	D11	3	024283AS
M10 x 1.25	D3	3	020267AS
M10 x 1.25	D11	3	024284AS
M11 x 1.5	D5	3	025320AS
M12 x 1.75	D3	3	020283AS
M12 x 1.75	D11	3	024285AS
M12 x 1.25	D3	3	020299AS
M14 x 2	D3	3	020315AS
M14 x 1.5	D3	3	020331AS
M16 x 2	D4	3	020347AS
M16 x 2	D11	3	024286AS
M16 x 1.5	D3	3	020363AS

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Metric Left Hand Hand Taps

HSS M MF 302 303 337

EDP No.	Class of Fit	Flutes	Taper	Plug	Bottom
M27 x 3	H5	4	029242AS	029243AS	029244AS
M30 x 3.5	H5	4	029261AS	029262AS	029263AS

Metric 6" Extension Taps

HSS M MF

EDP No.	Class of Fit	Flutes	Taper	Plug	Bottom
M3.5 x 0.6	D4	3	027200AS	027201AS	027202AS
M4 x 0.7	D4	4		027209AS	
M4.5 x 0.75	D4	4	027216AS	027217AS	027218AS
M5 x 0.8	D4	4	027224AS	027225AS	027226AS
M6 x 1	D5	4	027232AS	027233AS	027234AS
M7 x 1	D5	4	027248AS	027249AS	027250AS
M8 x 1.25	D5	4	027257AS	027258AS	027259AS
M10 x 1.5	D6	4	027266AS	027267AS	027268AS
M12 x 1.75	D6	4	027275AS	027276AS	027277AS

Metric 6" Spiral Point Extension Taps

HSS M MF

Size	Class of Fit	Chamfer	NPT NPTF
M3.5 x 0.6	D4	2	027203AS
M4 x 0.7	D4	2	027211AS
M4.5 x 0.75	D4	2	027219AS
M5 x 0.8	D4	2	027227AS
M6 x 1	D5	2	027235AS

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Acme Taps Fractional Sizes

HSS ACME

Size	Class of Fit	Flutes	Chamfer	Hand Tap	Left Hand Hand Tap	Tandem Unipass	Left Hand Tandem Unipass
3/8-12	2G	4	Plug			015000AS	
1/2-10	2G	4	Plug	015240AS	017630AS	015002AS	017602AS
5/8-8	2G	4	Plug	015241AS	017632AS	015007AS	017604AS
3/4-5	2G	4	Plug	015242AS			
3/4-6	2G	4	Plug	015243AS	017634AS	015004AS	017606AS
3/4-8	2G	4	Plug	015244AS		015006AS	017608AS
3/4-10	2G	4	Plug	015245AS			
7/8-6	2G	4	Plug	015246AS	015009AS	015008AS	017610AS
1"-5	2G	4	Plug	015248AS	017638AS	015010AS	017612AS
1"-8	2G	4	Plug	015249AS			
1-1/8-5	2G	4	Plug	015250AS	017640AS	015012AS	017614AS
1-1/4-5	2G	4	Plug	015251AS	017642AS	015014AS	017616AS
1-3/8-4	2G	4	Plug	015252AS	017644AS	015016AS	017618AS
1-1/2-4	2G	4	Plug	015253AS	017646AS	015020AS	017620AS
2"-4	2G	6	Plug			015022AS	017652AS

Double Lead Taps Machine Screw & Fractional Sizes

HSS UNC UNF

Size	Class of Fit	Flutes	Taper	Plug	Bottom
#10-24 NC	H3	4		017080AS	
#10-32 NF	H3	4	014918AS	014919AS	014920AS
1/4-20 NC	H3	4	014930AS	014931AS	014932AS
3/8-16 NC	H3	4	014954AS	014955AS	014956AS

Garden Hose Taps Fractional Sizes

HSS UNH

Size	Flutes	Chamfer	NPT NPTF
3/4-11 1/2 NH	H3	4	015965AS

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Carbide Taps



Straight Flute



Spiral Point



- Specifically designed for extreme performance in abrasive materials
- Tough micrograin carbide
- Manufactured to Table 302 standards

EDP No.	Class of Fit	Flutes	Taper	Plug	Bottom
#0-80 NF	H2	2	018009RS	018010RS	018011RS
#2-56 NC	H2	2	018072RS	018073RS	018074RS
#8-36 NF	H2	4		018450RS	

Metric Carbide Taps



EDP No.	Class of Fit	Flutes	Plug	Bottom
M4 x 0.7	D4	4	018800RS	018802RS
M4 x 0.7	D4	2	018830RS	
M5 x 0.8	D4	4	018803RS	018804RS
M5 x 0.8	D4	2	018833RS	
M6 x 1	D4	4	018805RS	018807RS
M6 x 1	D4	2	018835RS	
M8 x 1.25	D5	4	018810RS	018812RS
M8 x 1.25	D5	3	018840RS	
M10 x 1.25	D5	4	018825RS	018827RS
M10 x 1.25	D5	3	018855RS	

Right Hand Dies

HSS UNC UNF

Size	OD	Part Number
#0-80 NF	1"	041200AS
#1-64 NC	1"	041201AS
#1-72 NF	1"	041202AS
#3-48 NC	1"	041205AS
#4-36 NS	1"	041208AS
#4-40 NC	1"	041209AS
#4-48 NF	1"	041210AS
#6-48 NS	1"	041211AS
#8-40 NS	1"	041212AS
#10-36 NS	1"	041214AS
#10-40 NS	1"	041215AS
#10-48 NS	1"	041216AS
#10-56 NS	1"	041217AS
#12-32 NEF	1"	041218AS
#12-36 NS	1"	041219AS
#14-20 NS	1"	041221AS
#14-24 NS	1"	041222AS
3/16-24 NS	1"	041225AS
1/4-24 NS	1"	041226AS
1/4-27 NS	1"	041227AS
1/4-32 NEF	1"	041228AS
1/4-36 NS	1"	041229AS
1/4-40 NS	1"	041230AS
1/4-48 NS	1"	041231AS
1/4-56 NS	1"	041232AS
1/4-80 NS	1"	041233AS
9/32-32 NS	1"	041234AS
5/16-20 NS	1"	041236AS
5/16-27 NS	1"	041237AS
5/16-32 NEF	1"	041238AS
5/16-40 NS	1"	041239AS
11/32-32 NS	1"	041241AS
3/8-18 NS	1"	041242AS
3/8-20 NS	1"	041243AS
3/8-27 NS	1"	041244AS
3/8-32 NEF	1"	041246AS
3/8-40 NS	1"	041248AS
13/32-32 NS	1"	041250AS
7/16-16 NS	1-1/2"	041275AS
7/16-18 NS	1-1/2"	041276AS
7/16-24 NS	1-1/2"	041277AS
7/16-27 NS	1-1/2"	041278AS
7/16-28 NEF	1-1/2"	041279AS
7/16-32 NS	1-1/2"	041280AS
7/16-40 NS	1-1/2"	041282AS

Size	OD	Part Number
15/32-32 NS	1-1/2"	041283AS
1/2-12 NS	1-1/2"	041284AS
1/2-14 NS	1-1/2"	041285AS
1/2-16 NS	1-1/2"	041286AS
1/2-18 NS	1-1/2"	041287AS
1/2-24 NS	1-1/2"	041288AS
1/2-27 NS	1-1/2"	041289AS
1/2-28 NEF	1-1/2"	041290AS
1/2-32 NS	1-1/2"	041291AS
1/2-40 NS	1-1/2"	041292AS
9/16-16 NS	1-1/2"	041293AS
9/16-20 NS	1-1/2"	041294AS
9/16-24 NEF	1-1/2"	041295AS
9/16-27 NS	1-1/2"	041296AS
9/16-32 NS	1-1/2"	041297AS
5/8-12 NS	1-1/2"	041299AS
5/8-16 NS	1-1/2"	041301AS
5/8-20 NS	1-1/2"	041302AS
5/8-24 NEF	1-1/2"	041303AS
5/8-27 NS	1-1/2"	041304AS
5/8-28 NS	1-1/2"	041305AS
5/8-32 NS	1-1/2"	041306AS
11/16-18 NS	2"	041326AS
11/16-20 NS	2"	041327AS
11/16-24 NEF	2"	041328AS
11/16-32 NS	2"	041330AS
3/4-12 NS	2"	041331AS
3/4-18 NS	2"	041333AS
3/4-20 NEF	2"	041334AS
3/4-24 NS	2"	041335AS
3/4-27 NS	2"	041336AS
3/4-32 NS	2"	041337AS
13/16-16 NS	2"	041340AS
13/16-18 NS	2"	041341AS
13/16-20 NEF	2"	041342AS
13/16-24 NS	2"	041343AS
7/8-12 NS	2"	041345AS
7/8-16 NS	2"	041346AS
7/8-18 NS	2"	041347AS
7/8-20 NEF	2"	041348AS
7/8-24 NS	2"	041349AS
7/8-32 NS	2"	041350AS
15/16-12 NS	2"	041351AS
15/16-14 NS	2"	041352AS
15/16-16 NS	2"	041353AS

Right Hand Dies

HSS UNC UNF

Size	OD	Part Number
15/16-18 NS	2"	041354AS
15/16-20 NEF	2"	041355AS
15/16-32 NS	2"	041356AS
1"-8 NC	2"	041357AS
1"-16 NS	2"	041360AS
1"-18 NS	2"	041361AS
1"-20 NEF	2"	041362AS
1"-24 NS	2"	041363AS
1"-27 NS	2"	041364AS
1"-32 NS	2"	041365AS
1-1/16-12 NS	2"	041366AS
1-1/16-14 NS	2"	041367AS
1-1/16-16 NS	2"	041368AS
1-1/16-18 NEF	2"	041369AS
1-1/16-20 NS	2"	041370AS
1-1/8-7 NC	2-1/2"	041390AS
1-1/8-12 NF	2-1/2"	041392AS
1-1/8-14 NS	2-1/2"	041393AS
1-1/8-16 NS	2-1/2"	041394AS
1-1/8-18 NEF	2-1/2"	041395AS
1-1/8-20 NS	2-1/2"	041396AS
1-3/16-12 NS	2-1/2"	041397AS
1-3/16-14 NS	2-1/2"	041398AS
1-3/16-18 NEF	2-1/2"	041399AS
1-1/4-7 NC	2-1/2"	041401AS
1-1/4-12 NF	2-1/2"	041403AS
1-1/4-16 NS	2-1/2"	041404AS
1-1/4-18 NEF	2-1/2"	041405AS
1-1/4-20 NS	2-1/2"	041406AS
1-1/4-24 NS	2-1/2"	041407AS
1-5/16-12 NF	2-1/2"	041408AS

Size	OD	Part Number
1-5/16-14 NS	2-1/2"	041409AS
1-5/16-16 NS	2-1/2"	041410AS
1-5/16-18 NEF	2-1/2"	041411AS
1-3/8-6 NC	2-1/2"	041412AS
1-3/8-12 NF	2-1/2"	041414AS
1-3/8-16 NS	2-1/2"	041416AS
1-3/8-18 NEF	2-1/2"	041417AS
1-3/8-20 NS	2-1/2"	041418AS
1-7/16-18 NEF	2-1/2"	041422AS
1-1/2-6 NC	2-1/2"	041424AS
1-1/2-10 NS	2-1/2"	041426AS
1-1/2-16 NS	2-1/2"	041428AS
1-1/2-18 NEF	2-1/2"	041429AS
1-1/2-20 NS	2-1/2"	041430AS
1-9/16-16 NS	3"	041451AS
1-9/16-18 NEF	3"	041452AS
1-5/8-5 1/2 NS	3"	041453AS
1-5/8-12 NS	3"	041455AS
1-5/8-16 NS	3"	041456AS
1-5/8-18 NEF	3"	041457AS
1-3/4-5 NC	3"	041460AS
1-3/4-12 NS	3"	041462AS
1-3/4-16 NS	3"	041464AS
1-3/4-18 NS	3"	041465AS
1-7/8-5 NS	3"	041470AS
1-7/8-12 NS	3"	041473AS
1-7/8-16 NS	3"	041474AS
2"-4 1/2 NC	3"	041478AS
2"-12 NS	3"	041482AS
2"-16 NS	3"	041484AS
2"-20 NS	3"	041486AS

POPULAR SPECIALS

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Left Hand Dies

HSS UNC
UNF

Size	OD	Part Number
#0-80 NF	1"	041000AS
#2-56 NC	1"	041003AS
#3-48 NC	1"	041005AS
#4-40 NC	1"	041008AS
#5-40 NC	1"	041010AS
#6-32 NC	1"	041012AS
#6-40 NF	1"	041013AS
#8-32 NC	1"	041014AS
#8-36 NF	1"	041015AS
#10-24 NC	1"	041016AS
#10-32 NF	1"	041017AS
#12-24 NC	1"	041018AS
#12-28 NF	1"	041019AS
1/4-20 NC	1"	041022AS
1/4-28 NF	1"	041025AS
5/16-18 NC	1"	041027AS
5/16-24 NF	1"	041029AS
3/8-16 NC	1"	041032AS
3/8-24 NF	1"	041034AS
7/16-14 NC	1-1/2"	041050AS
7/16-20 NF	1-1/2"	041051AS
1/2-13 NC	1-1/2"	041055AS

Size	OD	Part Number
1/2-20 NF	1-1/2"	041056AS
9/16-12 NC	1-1/2"	041058AS
9/16-18 NF	1-1/2"	041059AS
5/8-11 NC	1-1/2"	041060AS
5/8-18 NF	1-1/2"	041061AS
11/16-11 NS	2"	041075AS
11/16-16 NS	2"	041076AS
3/4-10 NC	2"	041078AS
3/4-16 NF	2"	041079AS
7/8-9 NC	2"	041081AS
7/8-14 NF	2"	041082AS
1"-8 NC	2"	041084AS
1"-12 NF	2"	041085AS
1"-14 NS	2"	041086AS
1-1/8-7 NC	2-1/2"	041100AS
1-1/8-12 NF	2-1/2"	041101AS
1-1/4-7 NC	2-1/2"	041102AS
1-1/4-12 NF	2-1/2"	041103AS
1-3/8-6 NC	2-1/2"	041104AS
1-3/8-12 NF	2-1/2"	041105AS
1-1/2-6 NC	2-1/2"	041106AS
1-1/2-10 NS	2-1/2"	041107AS

POPULAR SPECIALS

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Metric Right Hand Dies

HSS M MF

Size	OD	Part Number
M1.5 x 0.35	25.4MM	045400AS
M2 x 0.45	25.4MM	045402AS
M2.6 x 0.45	25.4MM	045406AS
M3 x 0.6	25.4MM	045408AS
M5 x 0.9	25.4MM	045414AS
M5.5 x 0.9	25.4MM	045416AS
M6 x 0.75	25.4MM	045418AS
M11 x 1.5	38MM	045452AS
M20 x 2	50.8MM	045482AS

Metric Left Hand Dies

HSS M MF

Size	OD	Part Number
M2 x 0.4	25.4MM	045750AS
M2.6 x 0.45	25.4MM	045754AS
M3 x 0.5	25.4MM	045756AS
M3.5 x 0.6	25.4MM	045758AS
M4 x 0.7	25.4MM	045760AS
M4.5 x 0.75	25.4MM	045762AS
M5 x 0.8	25.4MM	045764AS
M5.5 x 0.9	25.4MM	045766AS
M6 x 1	25.4MM	045768AS
M7 x 1	25.4MM	045770AS
M8 x 1.25	25.4MM	045772AS
M10 x 1.5	38MM	045800AS
M11 x 1.5	38MM	045802AS
M12 x 1.75	38MM	045804AS
M14 x 2	38MM	045806AS
M16 x 2	38MM	045810AS
M18 x 2.5	38MM	045812AS
M18 x 1.5	38MM	045814AS
M20 x 2.5	50.8MM	045840AS
M22 x 2.5	50.8MM	045842AS
M24 x 3	50.8MM	045844AS
M27 x 3	50.8MM	045846AS
M30 x 3.5	50.8MM	045848AS

POPULAR SPECIALS

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

THREAD MILLS



THREAD MILLS

UN Thread Mills	80
Metric Thread Mills	81
NPT & NPTF Thread Mills	82

Thread Mills **Spiral Fluted Solid Carbide**



Regal Cutting Tools Premium Vortex Thread Mills are a viable alternative to the traditional methods of thread cutting or thread forming. They offer a wide variety of features and benefits.

- Made from sub-micrograin carbide with high transverse rupture strength and excellent wear resistant properties
- Tools are manufactured on state-of-the-art CNC equipment for consistent quality
- Full product offering of UN, Metric, NPT and NPTF
- Stocked with TiAlN coating, other coatings upon request
- One thread mill can produce a variety of thread diameters of the same pitch
- One tool can be used for both right hand and left hand threads
- Control the pitch diameter to within .0001
- Produce threads to within one pitch of a shoulder or counterbore
- Produce 100% thread height to UN specifications
- 20° helical flute design reduces chatter and guarantees two flutes always in the cut
- Produces threads with excellent form, finish and accuracy
- Helical flute reduces side-cutting pressure allowing for higher feed rates
- Makes threading difficult materials easy
- Produces small controllable chips
- No need to reverse the spindle
- Eliminates the need of removing broken taps
- Will reduce cycle times compared to indexable thread mills
- Smaller machines can produce larger threads due to less spindle torque
- Eliminates the need for many special dimensional taps

UN Thread Forms

Carbide

TiAlN

RCT EDP	Min. Thread Size & Pitch	Pitch	Flutes	Cutter Diameter	Shank Diameter	Length of Cut	Overall Length
085900TM	#8-32	32	3	0.115	0.125	0.250	2.000
085901TM	#10-32	32	3	0.120	0.125	0.312	2.000
085902TM	#10-28	28	3	0.120	0.125	0.312	2.000
085903TM	1/4-28	28	3	0.180	0.187	0.500	2.500
085904TM	#10-24	24	3	0.120	0.125	0.312	2.000
085905TM	5/16-24	24	3	0.235	0.250	0.625	2.500
085906TM	3/8-24	24	4	0.285	0.312	0.750	3.000
085907TM	1/4-20	20	3	0.180	0.187	0.500	2.500
085908TM	7/16-20	20	4	0.335	0.375	0.875	3.500
085909TM	5/16-18	18	3	0.235	0.250	0.625	2.500
085910TM	9/16-18	18	4	0.370	0.375	0.875	3.500
085911TM	3/8-16	16	4	0.285	0.312	0.750	3.000
085912TM	3/4-16	16	4	0.490	0.500	1.250	3.500
085913TM	7/16-14	14	4	0.305	0.312	0.750	3.000
085914TM	7/8-14	14	4	0.490	0.500	1.250	3.500
085915TM	1/2-13	13	4	0.350	0.375	0.875	3.500
085916TM	9/16-12	12	4	0.370	0.375	0.875	3.500
085917TM	3/4-12	12	4	0.495	0.500	1.250	3.500
085918TM	5/8-11	11	4	0.470	0.500	1.250	3.500
085919TM	3/4-10	10	4	0.495	0.500	1.250	3.500
085920TM	7/8-9	9	4	0.620	0.625	1.375	4.000
085921TM	1"-8	8	4	0.620	0.625	1.375	4.000

Thread Mills *Spiral Fluted Solid Carbide*

Metric Thread Mills

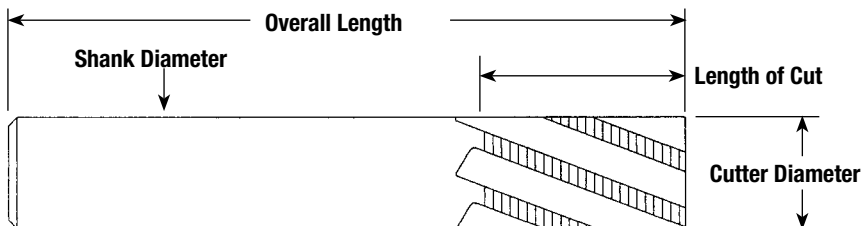


RCT EDP No.	Min. Thread Size & Pitch	Pitch	Flutes	Cutter Diameter	Shank Diameter	Length of Cut	Overall Length
085950TM	M4.5	0.75	3	0.120	0.125	0.250	2.000
085951TM	M8	0.75	3	0.235	0.250	0.625	2.500
085952TM	M5	0.80	3	0.120	0.125	0.312	2.000
085953TM	M6	1	3	0.170	0.187	0.500	2.500
085954TM	M12	1	4	0.360	0.375	0.875	3.500
085955TM	M8	1.25	3	0.235	0.250	0.625	2.500
085956TM	M10	1.5	4	0.300	0.312	0.750	3.000
085957TM	M14	1.5	4	0.370	0.375	0.875	3.500
085958TM	M18	1.5	4	0.490	0.500	1.250	3.500
085959TM	M16	2	4	0.470	0.500	1.250	3.500
085960TM	M20	2.5	4	0.495	0.500	1.250	3.500
085961TM	M24	3	4	0.620	0.625	1.375	4.000

NPT & NPTF Thread Mills



RCT EDP No.	Thread Size & Pitch	Pitch	Flutes	Large End Cutter Diameter	Shank Diameter	Length of Cut	Overall Length
085970TM	1/16 & 1/8 NPT	27	3	0.245	0.250	0.437	2.500
085971TM	1/4 & 3/8 NPT	18	4	0.305	0.312	0.625	3.000
085972TM	1/2 & 3/4 NPT	14	4	0.495	0.500	0.875	3.500
085973TM	1" to 2" NPT	11-1/2	4	0.620	0.625	1.125	4.000
085980TM	1/16 & 1/8 NPTF	27	3	0.245	0.250	0.437	2.500
085981TM	1/4 & 3/8 NPTF	18	4	0.305	0.312	0.625	3.000
085982TM	1/2 & 3/4 NPTF	14	4	0.495	0.500	0.875	3.500
085983TM	1" to 2" NPTF	11-1/2	4	0.620	0.625	1.125	4.000



Special Thread Mills are available upon request.
Two weeks delivery on most specials; add additional week for coatings.

Programming Request & Support

**REQUEST THE NO CHARGE
SPREADSHEET PROGRAM!**

A programming spread sheet is available upon request at no charge to our customers.

(The program may not be suitable for all machines or circumstances)

Regal Cutting Tools' technical support staff is available to aid or provide programming for our thread mills. Complete and accurate job details need to be supplied by fax. Phoned information will not be acceptable.

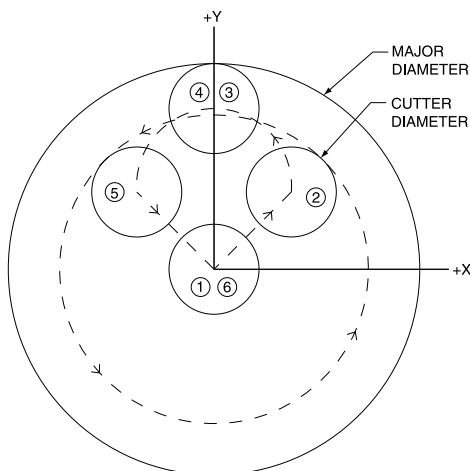
Most CNC machines produced in the last 10 years are suitable for helical interpolation. Some machines prior to that time supplied it as an option which can be enacted with a parameter. The best way to determine if your machine is capable is to MDI the part program to see if it will make the moves. It is generally recommended to cut fine threads in one pass and coarse threads in two passes. If you need to use two passes, just repeat the program below and use a different D word to reduce the depth of the first pass. If cutting a 3/8-16 thread, increase the offset for the first D worked by about 35% of the pitch or $(.35 \times .0625) = .0218$.

Sample Program for a 3/8-16 x 3/4 Deep Thread with a .235 Diameter Thread Mill

N05	M3 S3521			Z-7578			
N10	G01G91			D (Offset #)			F30.00
N15	G41	X .0350	Y .0350	Z .0078	I -0.350	J 0	
N20	G03	X -.0350	Y -.0350	Z .0625	I 0	J -.070	F4.85
N25	G03	X 0	Y 0	Z .0078	I 0	J -.035	F4.85
N30	G03	X -.0350	Y -.0350				F9.70
N35	G01G40	X .0350	Y .0350	Z .6797			F30.00
N40	G00						
N45	G90						

Thread Mills cut by feeding into a predrilled hole, feed out to the major diameter and then in one revolution generate the entire length of thread. In producing a right hand thread, the "Z" axis will feed the tool **out** one pitch as the tool rotates clockwise while the spindle travels 360° counterclockwise. To produce a left hand thread, the tool is fed one pitch **in** of the part; all else remains equal.

Thread Mill Programming Help Sheet for UN Internal Threads



When programming thread mills, the start position in X and Y should be at the center of the drilled hole. The Z start position will be at the top of the part. All the programming is done in incremental mode since the absolute hole positions are not known. All the cutting will be climb milling.

The machine will go thru the following sequences when programming:

- (0-1) Feed Z in at 30 IPM to the full thread depth plus 1/8 of a pitch
- (1-2) Feed X and Y to position 2 (clear diameter) and activate the cutter compensation
- (2-3) Feed CCW thru 45 degrees at the programmed feed rate in X, Y, and Z to ramp out to the major diameter. The Z move will be out of the part and equal to 1/8 of the pitch ($45/360 \text{ degrees} = 1/8$)
- (3-4) Feed CCW around the entire circle to cut the threads in on revolution. The Z move will be out of part and be equal to the pitch (ex: 16 pitch = .0625)
- (4-5) Feed CCW thru 45 degrees to ramp out of the part to the clear diameter. The Z move will be out of the part and equal 1/8 of the pitch.
- (5-6) Move the cutter back to centerline at 30 IPM and delete the cutter compensation.

The last move is to rapid Z out to the top of the part and return to "absolute" mode.

Programming Request & Support

Work Piece Material	Speed SFM	Feed Rate (Inches/Tooth) Tool Cutting Diameter													
		1/8		3/16		1/4		5/16		3/8		1/2		5/8	
Aluminum	800 1400	.0005	.001	.001	.0015	.0015	.0025	.002	.003	.003	.0045	.0035	.0055	.005	.007
Magnesium	800 1400	.0005	.001	.001	.0015	.0015	.0025	.002	.003	.003	.0045	.0035	.0055	.005	.007
Brass	600 800	.0005	.001	.001	.0015	.0015	.0025	.002	.003	.003	.0045	.0035	.0045	.005	.006
Bronze	500 600	.0005	.001	.001	.0015	.0015	.0025	.002	.003	.003	.0045	.0035	.0045	.005	.006
Hard Bronze	200 300	.0004	.0008	.0007	.0012	.001	.002	.001	.002	.0015	.0025	.002	.003	.003	.004
Low Alloy Steels <25Rc	350 500	.0005	.001	.001	.0015	.0015	.0025	.002	.003	.0025	.0035	.003	.004	.004	.005
High Alloy Steels >25Rc	250 400	.0003	.0006	.0005	.001	.0008	.0015	.001	.002	.0015	.0025	.002	.003	.003	.004
Stainless Steel	150 250	.0004	.0008	.0006	.001	.001	.0015	.0015	.002	.0015	.0030	.002	.0035	.003	.004
Cast Iron Soft	250 350	.0004	.0008	.0007	.0013	.0007	.0013	.0015	.002	.002	.003	.002	.004	.003	.005
Cast Iron Hard	200 300	.0003	.0006	.0005	.001	.0008	.0015	.001	.002	.0015	.0025	.002	.003	.003	.004
Titanium	80 150	.0003	.0006	.0005	.001	.0008	.0015	.001	.002	.0015	.0025	.0015	.0025	.0025	.0035
Inconel	60 100	.0003	.0006	.0005	.001	.0008	.0015	.001	.002	.0015	.0025	.0015	.0025	.002	.003

When cutting an internal thread, the linear feed rate has to be reduced to compensate for the ratio of the tool's cutting diameter to the major diameter being cut. If not compensated, the feed rate that the cutting edge sees will be much greater and tool failure will occur.

Example #1:

Thread Diameter to be Cut
Thread Mill Diameter

(D2): 3/8
(D1): .285

If the linear feed rate calculated from the feeds and speeds above are 10 IPM, the programmed feed rate for the internal thread milling cut would be $((D2-D1)/D2) \times \text{linear feed rate}$ or $((.375 - .285)/.375) \times 10$ or 2.4 inches per minute.

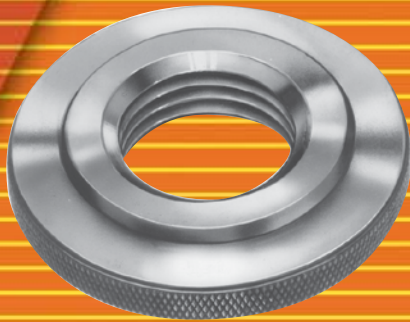
Example #2:

Application: To cut a 1/2-13 thread in low alloy steel, less than 25 Rc hardness.
 Thread Mill: EDP 85915 .350 diameter, 4 flutes
 SFM: 350 to 500 (use 400 in this example)
 Feed/Tooth: .0025 .0035 (use .003"/tooth in the example)
 RPM: Take 3.8 divided by the thread mill diameter and multiply by the SFM
 Example: $((3.8/.350) \times 40\text{SFM}) = 4343 \text{ RPM}$
 Linear Inches: Take the (inch/tooth) \times (# flutes) \times RPM
 Example: $((.003" \times 4 \text{ flutes}) \times 4343 \text{ RPM}) = 52 \text{ linear inches per minute}$
 Answer: $((D2-D1)/D2) \times \text{linear feed rate}$ or $((.500 - .350)/.500) \times 52 \text{ IPM} = 15.5 \text{ IPM}$

Tool Holder Requirements

Regal Cutting Tools Solid Carbide Thread Mills are capable of running at very high RPM's and therefore must be held securely and concentrically. For the best tool performance and thread quality, an end mill type holder with screw tightening is recommended. Only use precision ground holders or one that has been ground eccentric to minimize runout due to the side clamping screw. Collet chucks are not recommended as they tend to runout, which may lead to premature tool chipping or catastrophic failure.

It is equally important to keep the tool length projecting out of the holder to a minimum. Minimizing the overhand will reduce deflection, aid in extending tool life and enhance the quality of threads being produced. A tool that extends out of the holder twice as far will have eight times more deflection given the same side forces. The tools should be inserted into the holder as close to the flute section as possible.



GAGES

Standard Thread Gages

Working Thread Plug Gages	88
Thread Ring & Setting Plug Gages	89

Metric Gages

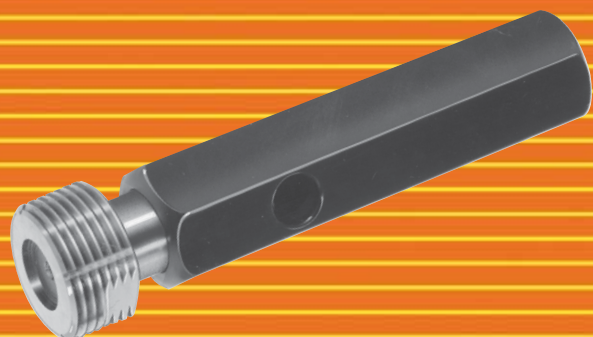
Working Thread Plug Gages	90
Thread Ring & Setting Plug Gages	91

Taper Pipe Thread Gages

NPT Plugs & Rings	92
NPSE, NPSM Plugs	92
BSPT Plugs & Rings	92
NPTF, ANPT Plugs, 6 Step Plain	93
NPTF, ANPT Rings, 6 Step Plain	93

STI Gages

Working Thread Plug Gages	94
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Standard Gages Working Thread Plug

HSS UNC UNF



- Working thread plug gages are furnished with Standard class “X” industry tolerance.
- Taperlock style has a Go and/or No Go member(s) with the Go member being longer and having a chip groove (in larger sizes).
- Reversible thread plug gage consists of a Go and No Go member(s) both members being straight.
- Trilock design consists of a Go and/or No Go member(s), with a bolt fastening system to support the size and weight. Design is best suited for large size (1-1/2 inches and up) with a chip groove on the Go member.

	Taperlock					Handle	Reversible					Handle
	Go Member 2B-3B	Not Go(HI) Member 2B	Not Go(HI) Member 3B	Double End w/Handle 2B	Double End w/Handle 3B		Go Member 2B-3B	Not Go(HI) Member 2B	Not Go(HI) Member 3B	Double End w/Handle 2B	Double End w/Handle 3B	
0-80 UNF	090000PS	090002PS	090004PS	090023PS	090025PS	0935272S	090017PS	090019PS	090021PS	090027PS	090029PS	0936042S
1-64 UNC	090038PS	090040PS	090042PS	090061PS	090063PS		090055PS	090057PS	090059PS	090065PS	090067PS	
1-72 UNF	090076PS	090078PS	090080PS	090099PS	090101PS		090093PS	090095PS	090097PS	090103PS	090105PS	
2-56 UNC	090114PS	090116PS	090118PS	090137PS	090139PS		090131PS	090133PS	090135PS	090141PS	090143PS	
2-64 UNF	090152PS	090154PS	090156PS	090175PS	090177PS	0935282S	090169PS	090171PS	090173PS	090179PS	090181PS	0936062S
3-48 UNC	090190PS	090192PS	090194PS	090213PS	090215PS		090207PS	090209PS	090211PS	090217PS	090219PS	
3-56 UNF	090228PS	090230PS	090232PS	090251PS	090253PS		090245PS	090247PS	090249PS	090255PS	090257PS	
4-40 UNC	090266PS	090268PS	090270PS	090289PS	090291PS		090283PS	090285PS	090287PS	090293PS	090295PS	
4-48 UNF	090304PS	090306PS	090308PS	090327PS	090329PS	0935292S	090321PS	090323PS	090325PS	090331PS	090333PS	0936082S
5-40 UNC	090342PS	090344PS	090346PS	090365PS	090367PS		090359PS	090361PS	090363PS	090369PS	090371PS	
5-44 UNF	090380PS	090382PS	090384PS	090403PS	090405PS		090397PS	090399PS	090401PS	090407PS	090409PS	
6-32 UNC	090418PS	090420PS	090422PS	090441PS	090443PS		090435PS	090437PS	090439PS	090445PS	090447PS	
6-40 UNF	090456PS	090458PS	090460PS	090479PS	090481PS	0935302S	090473PS	090475PS	090477PS	090483PS	090485PS	0936102S
8-32 UNC	090494PS	090496PS	090498PS	090517PS	090519PS		090511PS	090513PS	090515PS	090521PS	090523PS	
8-36 UNF	090532PS	090534PS	090536PS	090555PS	090557PS		090549PS	090551PS	090553PS	090559PS	090561PS	
10-24 UNC	090570PS	090572PS	090574PS	090593PS	090595PS		090587PS	090589PS	090591PS	090597PS	090599PS	
10-32 UNF	090608PS	090610PS	090612PS	090631PS	090633PS	0935312S	090625PS	090627PS	090629PS	090635PS	090637PS	0936122S
12-24 UNC	090646PS	090648PS	090650PS	090669PS	090671PS		090663PS	090665PS	090667PS	090673PS	090675PS	
12-28 UNF	090684PS	090686PS	090688PS	090707PS	090709PS		090701PS	090703PS	090705PS	090711PS	090713PS	
12-32 UNEF	090722PS	090724PS	090726PS	090740PS	090743PS		Reversible Available As Special					
1/4-20 UNC	090751PS	090753PS	090755PS	090774PS	090776PS	0935302S	090768PS	090770PS	090772PS	090778PS	090780PS	0936082S
1/4-28 UNF	090789PS	090791PS	090793PS	090812PS	090814PS		090806PS	090808PS	090810PS	090816PS	090818PS	
1/4-32 UNEF	090826PS	090828PS	090830PS	090845PS	090847PS		Reversible Available As Special					
5/16-18 UNC	090856PS	090858PS	090860PS	090879PS	090881PS		090873PS	090875PS	090877PS	090883PS	090885PS	
5/16-24 UNF	090895PS	090897PS	090899PS	090918PS	090920PS	0935312S	090912PS	090914PS	090916PS	090922PS	090923PS	0936102S
5/16-32 UNEF	090933PS	090935PS	090937PS	090951PS	090953PS		Reversible Available As Special					
3/8-16 UNC	090962PS	090964PS	090966PS	090985PS	090987PS		090979PS	090981PS	090983PS	090989PS	090991PS	
3/8-24 UNF	091000PS	091002PS	091004PS	091023PS	091025PS		091017PS	091019PS	091021PS	091027PS	091029PS	
3/8-32 UNEF	091038PS	091040PS	091042PS	091056PS	091058PS	0935312S	Reversible Available As Special					
7/16-14 UNC	091067PS	091069PS	091071PS	091090PS	091092PS		091084PS	091086PS	091088PS	091094PS	091096PS	
7/16-20 UNF	091105PS	091107PS	091109PS	091128PS	091130PS		091122PS	091124PS	091126PS	091132PS	091134PS	
7/16-28 UNEF	091143PS	091145PS	091147PS	091161PS	091163PS		Reversible Available As Special					
1/2-13 UNC	091172PS	091174PS	091176PS	091195PS	091197PS	0935312S	091189PS	091191PS	091193PS	091199PS	091201PS	0936122S
1/2-20 UNF	091210PS	091212PS	091214PS	091233PS	091235PS		091227PS	091229PS	091231PS	091237PS	091239PS	
1/2-28 UNEF	091248PS	091250PS	091252PS	091266PS	091268PS		Reversible Available As Special					

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Standard Gages Working Thread Plug



- Working thread plug gages are furnished with Standard class "X" industry tolerance.
- Taperlock style has a Go and/or No Go member(s) with the Go member being longer and having a chip groove (in larger sizes).
- Reversible thread plug gage consists of a Go and No Go member(s) both members being straight.
- Trilock design consists of a Go and/or No Go member(s), with a bolt fastening system to support the size & weight. Design is best suited for large sizes (1-1/2 inches & up) with a chip groove on the Go member.



	Taperlock					Handle	Reversible					Handle			
	Go Member 2B-3B	Not Go(HI) Member 2B	Not Go(HI) Member 3B	Double End w/Handle 2B	Double End w/Handle 3B		Go Member 2B-3B	Not Go(HI) Member 2B	Not Go(HI) Member 3B	Double End w/Handle 2B	Double End w/Handle 3B				
9/16-12 UNC	091277PS	091279PS	091281PS	091300PS	091302PS	0935322S	091294PS	091296PS	091298PS	091304PS	091306PS	0936142S			
9/16-18 UNF	091315PS	091317PS	091319PS	091338PS	091340PS		091332PS	091334PS	091336PS	091342PS	091344PS				
9/16-24 UNEF	091353PS	091355PS	091357PS	091371PS	091373PS		Reversible Available As Special								
5/8-11 UNC	091382PS	091384PS	091386PS	091405PS	091407PS		091399PS	091401PS	091403PS	091409PS	091411PS	0936142S			
5/8-18 UNF	091420PS	091422PS	091424PS	091443PS	091445PS		091437PS	091439PS	091441PS	091447PS	091449PS				
5/8-24 UNEF	091458PS	091460PS	091462PS	091476PS	091478PS		Reversible Available As Special								
11/16-24 UNEF	091487PS	091489PS	091491PS	091505PS	091507PS		091533PS	091535PS	091537PS	091543PS	091545PS	0936162S			
3/4-10 UNC	091516PS	091518PS	091520PS	091539PS	091541PS		091571PS	091573PS	091575PS	091581PS	091583PS				
3/4-16 UNF	091554PS	091556PS	091558PS	091577PS	091579PS		Reversible Available As Special Contact your local Regal Cutting Tools representative								
3/4-20 UNEF	091592PS	091594PS	091596PS	091610PS	091612PS										
13/16-20 UNEF	091621PS	091623PS	091625PS	091639PS	091641PS	0935332S									
7/8-9 UNC	091650PS	091652PS	091654PS	091673PS	091675PS										
7/8-14 UNF	091688PS	091690PS	091692PS	091711PS	091713PS										
7/8-20 UNEF	091725PS	091727PS	091729PS	091743PS	091745PS										
15/16-20 UNEF	091754PS	091756PS	091758PS	091772PS	091774PS										
1" - 8 UNC	091883PS	091885PS	091887PS	091906PS	091908PS										
1" - 12 UNF	091921PS	091923PS	091925PS	091944PS	091946PS										
1" - 14 UNS	091959PS	091961PS	091963PS	091982PS	091984PS										
1" - 20 UNEF	091997PS	091999PS	092001PS	092015PS	092017PS										
1-1/16"-18 UNEF	092026PS	092028PS	092030PS	092044PS	092046PS										
1-1/8"-7 UNC	092055PS	092057PS	092059PS	092078PS	092080PS										
1-1/8"-12 UNF	092093PS	092095PS	092097PS	092116PS	092118PS										
1-1/8"-18 UNEF	092131PS	092133PS	092135PS	092149PS	092151PS										
1-3/16"-18 UNEF	092160PS	092162PS	092164PS	092178PS	092180PS										
1-1/4"-7 UNC	092189PS	092191PS	092193PS	092212PS	092214PS										
1-1/4"-12 UNF	092227PS	092229PS	092231PS	092250PS	092252PS										
1-1/4"-18 UNEF	092265PS	092267PS	092269PS	092283PS	092285PS										
1-5/16"-18 UNEF	092294PS	092296PS	092298PS	092312PS	092314PS										
1-3/8"-6 UNC	092323PS	092325PS	092327PS	092346PS	092348PS	0935342S									
1-3/8"-12 UNF	092361PS	092363PS	092365PS	092385PS	092384PS										
1-3/8"-18 UNEF	092399PS	092401PS	092403PS	092417PS	092419PS										
1-7/16"-18 UNEF	092428PS	092430PS	092432PS	092446PS	092448PS										
1-1/2"-6 UNC	092457PS	092459PS	092461PS	092480PS	092482PS										
1-1/2"-12 UNF	092495PS	092497PS	092499PS	092518PS	092520PS										
1-1/2"-18 UNEF	092533PS	092535PS	092537PS	092551PS	092553PS										

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Metric Gages Working Thread Plug



Double End

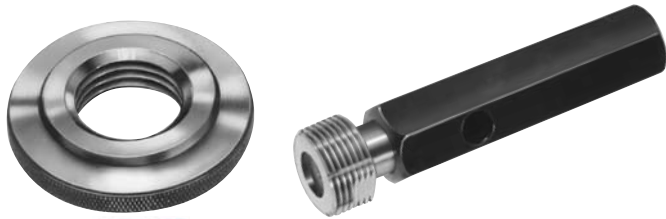
- Working thread plug and ring gages are furnished with Standard class “X” industry tolerance.
- For rings with Class “W” tolerance pitch diameters, set plugs must be ordered or provided.
- Setting plugs are truncated and have Class “W” tolerances on lead and Class “X” tolerance on pitch diameter.

	Taperlock					Handle	Reversible					Handle
	Go Member 6H-4H	Not Go(HI) Member 6H	Not Go(HI) Member 4H	Double End w/Handle 6H	Double End w/Handle 4H		Go Member 6H-4H	Not Go(HI) Member 6H	Not Go(HI) Member 4H	Double End w/Handle 6H	Double End w/Handle 4H	
M1.6 x .35	095000PS	095001PS	095002PS	095024PS	095025PS	0980002S						
M1.8 x .35	095044PS	095045PS	095046PS	095068PS	095069PS							
M2 x .4	095088PS	095089PS	095090PS	095112PS	095113PS							
M2.2 x .45	095132PS	095133PS	095134PS	095156PS	095157PS							
M2.5 x .45	095176PS	095177PS	095178PS	095200PS	095201PS							
M3 x .5	095220PS	095221PS	095222PS	095244PS	095245PS	0980012S						
M3.5 x .6	095264PS	095265PS	095266PS	095288PS	095289PS							
M4 x .7	095308PS	095309PS	095310PS	095332PS	095333PS	0980022S						
M4.5 x .75	095352PS	095353PS	095354PS	095376PS	095377PS							
M5 x .8	095396PS	095397PS	095398PS	095420PS	095421PS							
M6 x 1	095440PS	095441PS	095442PS	095464PS	095465PS	0980032S						
M7 x 1	095528PS	095529PS	095530PS	095552PS	095553PS							
M8 x 1.25	095572PS	095573PS	095574PS	095596PS	095597PS							
M8 x 1	095616PS	095617PS	095618PS	095640PS	095641PS	0980042S						
M10 x 1.5	095660PS	095661PS	095662PS	095684PS	095685PS							
M10 x 1.25	095704PS	095705PS	095706PS	095728PS	095729PS							
M12 x 1.75	095748PS	095749PS	095750PS	095772PS	095773PS							
M12 x 1.25	095792PS	095793PS	095794PS	095816PS	095817PS							
M14 x 2	095836PS	095837PS	095838PS	095860PS	095861PS	0980052S						
M14 x 1.5	095880PS	095881PS	095882PS	095904PS	095905PS							
M16 x 2	095924PS	095925PS	095926PS	095948PS	095949PS							
M16 x 1.5	095968PS	095969PS	095970PS	095992PS	095993PS							
M18 x 2.5	096012PS	096013PS	096014PS	096036PS	096037PS							
M18 x 1.5	096056PS	096057PS	096058PS	096080PS	096081PS							
M20 x 2.5	096100PS	096101PS	096102PS	096124PS	096125PS							
M20 x 1.5	096144PS	096145PS	096146PS	096168PS	096169PS							
M22 x 2.5	096188PS	096189PS	096190PS	096212PS	096213PS	0980062S						
M22 x 1.5	096232PS	096233PS	096234PS	096256PS	096257PS							
M24 x 3	096276PS	096277PS	096278PS	096300PS	096301PS							
M24 x 2	096311PS	096312PS	096313PS	096335PS	096336PS							
M27 x 3	096355PS	096356PS	096357PS	096379PS	096380PS							
M27 x 2	096390PS	096391PS	096392PS	096414PS	096415PS	0980072S						
M30 x 3.5	096434PS	096435PS	096436PS	096458PS	096459PS							
M30 x 2	096478PS	096479PS	096480PS	096503PS	096504PS							
M33 x 3.5	096523PS	096524PS	096525PS	096547PS	096548PS							
M33 x 2	096567PS	096568PS	096569PS	096591PS	096592PS	0980152S						
M36 x 4	096611PS	096612PS	096613PS	096635PS	096636PS							
M36 x 3	096655PS	096656PS	096657PS	096679PS	096680PS							
M39 x 4	096699PS	096700PS	096701PS	096723PS	096724PS							
M39 x 3	096743PS	096744PS	096745PS	096767PS	096768PS							

Reversible Available As Special
Contact your local
Regal Cutting Tools representative

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Taper Pipe Thread Gages



HSS

NPT

- NPT thread gages are manufactured to specification of the Bureau of Standard Handbook H-28 and ANSI B2.1
- NPSF (Straight Pipe Thread Dryseal)
- NPSM (Straight Pipe for Mechanical Joints)
- BPST (British Standard Pipe)



NPT (American National Pipe Threads)

	L-1 Rings	1 Step L-1 Plug (Members Only)	1 Step L-1 Plug With Handles	Handles Only
1/16-27	093001PS	093000PS	093025PS	0935302S
1/8-27	093030PS	093029PS	093055PS	0935312S
1/4-18	093059PS	093058PS	093074PS	0935322S
3/8-18	093088PS	093087PS	093112PS	
1/2-14	093117PS	093116PS	093132PS	0935332S
3/4-14	093146PS	093145PS	093170PS	
1"-11-1/2	093175PS	093174PS	093199PS	0935342S
1-1/4"-11-1/2	093204PS	093203PS	093228PS	
1-1/2"-11-1/2	093233PS	093232PS	093248PS	
2"-11-1/2	093261PS	093260PS	093286PS	
2-1/2"-8	093291PS	093290PS	093306PS	0935432S
3"-8	093320PS	093319PS	093335PS	
3-1/2"-8	093349PS	093348PS	093364PS	0935452S
4"-8	093378PS	093377PS	093393PS	
5"-8	093407PS	093406PS	093422PS	
6"-8	093436PS	093435PS	093451PS	

NPT-L1 thread plugs are supplied with 1-Step as standard. 2-Step or 3-Step limit plug members also available



NPSF (Dryseal American Standard Fuel Internal Straight Pipe Threads)

NPSM (American Standard Straight Pipe Threads for free fitting Mechanical Joints)

HSS

NPSF
NPSM

	NPSF Plug (members only)		NPSM Plug (Class 2B) (members only)		Handles Only
	Go	Not Go	Go	Not Go	
1/8-27	092750PS	092752PS	—	—	0935312S
1/4-18	092754PS	092756PS	092758PS	092760PS	0935322S
3/8-18	092768PS	092770PS	092764PS	092766PS	
1/2-14	092771PS	092772PS	092774PS	092776PS	0935332S
3/4-14	092777PS	092778PS	092780PS	092781PS	



BSPT (British Taper Pipe) - 55° MODIFIED WHITWORTH

HSS

BSPT

	Rings	1 Step Plug (Members Only)	Plug Gage With Handles	Handles Only
1/8-28	093456PS	093455PS	093440PS	0935312S
1/4-19	093458PS	093457PS	093441PS	0935322S
3/8-19	093460PS	093462PS	093442PS	
1/2-14	093471PS	093459PS	093443PS	0935332S
3/4-14	093464PS	093463PS	093444PS	
1"-11	093466PS	093465PS	093445PS	0935342S
1-1/4"-11	093468PS	093467PS	093446PS	
1-1/2"-11	093470PS	093469PS	093447PS	

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Taper Pipe Thread Gages



HSS **NPFT**
ANPT

- NPFT (dryseal) and ANPT (Aeronautical) gages are manufactured to specification of the bureau of Standard Handbook H-28 and ANSI B22 and comply to MIL-P-7105 Military Standards

NPFT (Dryseal American Standard Tapered Pipe Threads)
ANPT (Aeronautical Tapered Pipe Threads)

	NPFT or ANPT Plugs (members only)				NPFT or ANPT Plugs (with handle)				Handles Only
	L-1 1 Step		L-3 1 Step		L-1 1 Step		L-3 1 Step		
	NPFT	ANPT	NPFT	ANPT	NPFT	ANPT	NPFT	ANPT	
1/16-27		093002PS	092850PS	093004PS	092880PS	093026PS	092865PS	093019PS	092895PS
0935302S									
1/8-27		093031PS	092851PS	093033PS	092881PS	093046PS	092866PS	093048PS	092896PS
0935312S									
1/4-18		093060PS	092852PS	093062PS	092882PS	093075PS	092867PS	093077PS	092897PS
0935322S									
3/8-18		093089PS	092853PS	093091PS	092883PS	093113PS	092868PS	093106PS	092898PS
0935332S									
1/2-14		093118PS	092854PS	093120PS	092884PS	093133PS	092869PS	093135PS	092899PS

1/2 and 3/4 thread plugs are supplied with 1-Step as standard. 2-Step or 3-Step limit plug members also available

3/4-14		093147PS	092855PS	093149PS	092885PS	093162PS	093164PS	092900PS
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6 STEP PLAIN - NPFT and ANPT

HSS **NPFT**
ANPT

	6 Step Plain Plug (with handle)		6 Step Plain Plug Handles		Only
	NPFT	ANPT	NPFT	ANPT	
1/16-27	093006PS	093012PS	093021PS	093024PS	0935302S
1/8-27	093035PS	093041PS	093050PS	093053PS	0935312S
1/4-18	093064PS	093070PS	093079PS	093082PS	0935322S
3/8-18	093093PS	093099PS	093108PS	093111PS	
1/2-14	093122PS	093128PS	093137PS	093140PS	0935332S
3/4-14	093151PS	093157PS	093166PS	093169PS	
1"-11-1/2	093180PS	093186PS	093195PS	093198PS	0935342S
1-1/4"-11-1/2	093209PS	093215PS	093224PS	093227PS	
1-1/2"-11-1/2	093238PS	093244PS	093253PS	093256PS	

HSS **NPFT**
ANPT

NPFT (Dryseal American Standard Tapered Pipe Threads)

HSS **NPFT**

6 STEP PLAIN RING - NPFT and ANPT

	NPFT Thread Rings		ANPT Thread Rings	
	L-1	L-2	L-1	L-2
1/16-27	093007PS	093008PS	093013PS	093014PS
1/8-27	093036PS	093037PS	093042PS	093043PS
1/4-18	093065PS	093066PS	093071PS	093072PS
3/8-18	093094PS	093095PS	093100PS	093101PS
1/2-14	093123PS	093124PS	093129PS	093130PS
3/4-14	093152PS	093153PS	093158PS	093159PS
1"-11-1/2	093181PS	093182PS	093187PS	093188PS
1-1/4"-11-1/2	093210PS	093211PS	093216PS	093217PS
1-1/2"-11-1/2	093239PS	093240PS	093245PS	093246PS

	NPFT	ANPT
1/16-27	093009PS	093015PS
1/8-27	093038PS	093044PS
1/4-18	093067PS	093073PS
3/8-18	093096PS	093102PS
1/2-14	093125PS	093131PS
3/4-14	093154PS	093160PS
1"-11-1/2	093183PS	093189PS
1-1/4"-11-1/2	093212PS	093218PS
1-1/2"-11-1/2	093241PS	093247PS

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

STI Screw Thread Insert Gages Working Thread Plug

HSS



- Working thread plug and ring gages are furnished with Standard class “X” industry tolerance.
- For rings with Class “W” tolerance pitch diameters, set plugs must be ordered or provided.
- Setting plugs are truncated and have Class “W” tolerances on lead and Class “X” tolerance on pitch diameter.

	Taperlock					Handle
	Go Member 2B-3B	Not Go(HI) Member 2B	Not Go(HI) Member 3B	Double End w/Handle 2B	Double End w/ Handle 3B	
4-40 UNC-STI	094000PS	094001PS	094002PS	094003PS	094004PS	0935282S
4-48 UNF-STI	094005PS	094006PS	—	094008PS	—	
6-32 UNC-STI	094020PS	094021PS	094022PS	094023PS	094024PS	0935292S
6-40 UNF-STI	094025PS	094026PS	—	094028PS	—	
8-32 UNC-STI	094030PS	094031PS	094032PS	094033PS	094034PS	0935302S
10-24 UNC-STI	094040PS	094041PS	094042PS	094043PS	094044PS	
10-32 UNF-STI	094045PS	094046PS	094047PS	094048PS	094049PS	0935302S
1/4-20 UNC-STI	094060PS	094061PS	094062PS	094063PS	094064PS	
1/4-28 UNF-STI	094065PS	094066PS	094067PS	094068PS	094069PS	0935312S
5/16-18 UNC-STI	094070PS	094071PS	094072PS	094073PS	—	
5/16-24 UNF-STI	094075PS	094076PS	094077PS	094078PS	—	0935312S
3/8-16 UNC-STI	094080PS	094081PS	094082PS	094083PS	—	
3/8-24 UNF-STI	094085PS	094086PS	094087PS	094088PS	—	0935312S
7/16-14 UNC-STI	094090PS	094091PS	094092PS	094093PS	—	
7/16-20 UNF-STI	094095PS	094096PS	094097PS	094098PS	—	0935322S
1/2-13 UNC-STI	094100PS	094101PS	094102PS	094103PS	—	
1/2-20 UNF-STI	094105PS	094106PS	094107PS	094108PS	—	0935322S

For All Your Special Gage Requirements

Call Your Regal Cutting Tools Representative.

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

DRILLS

Jobber Drills

Jobber Length Drills - Fractional, Wire Gage and Letter Sizes

HSS Treated	98
HSS Bright	98
HSS TiN Coated	98
HSS Heavy Duty	98
HSS High Helix	98
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Jobber Length Drills Features



List 206 - HSS - Regular - 118° Point - Treated

List 208 - HSS - Regular - 118° Point - Treated

List 207 - HSS - Regular - 118° Point - Treated

HSS Treated

- General Purpose straight shank drill
- Designed to perform satisfactorily under most normal conditions



List 2806 - HSS - Regular - 118° Point - Bright

List 2808 - HSS - Regular - 118° Point - Bright

List 2807 - HSS - Regular - 118° Point - Bright

HSS Bright

- General Purpose straight shank drill
- Bright smooth surfaces promote easy chip ejection, especially important when drilling light or soft materials



List 2806T - HSS - Regular - 118° Point - TiN Coated

List 2808T - HSS - Regular - 118° Point - TiN Coated

List 2807T - HSS - Regular - 118° Point - TiN Coated

HSS TiN Coated

- General Purpose straight shank drill
- Titanium Nitride coated surface allows for increased productivity, greater lubricity, improved drill life and chip ejection



List 2206 - HSS - Heavy Duty - 135° Split Point - Treated

List 2208 - HSS - Heavy Duty - 135° Split Point - Treated

List 2207 - HSS - Heavy Duty - 135° Split Point - Treated

HSS Heavy Duty

- Heavy duty drill for high production drilling
- Rugged design for heavy duty drilling of tough steel parts in moderately deep holes



List 2406 - HSS - High Helix - 118° Blend Thinned Point - Bright

List 2408 - HSS - High Helix - 118° Blend Thinned Point - Bright

List 2407 - HSS - High Helix - 118° Blend Thinned Point - Bright

HSS High Helix

- Designed with higher cutting rake and improved chip conveying properties
- Ideal for aluminum, die casting alloys and some plastics



List 290 - HSS - Para-Flute - 135° Split Point - Bright

List 292 - HSS - Para-Flute - 135° Split Point - Bright

HSS Para-Flute

- Designed for rapid drilling in production machining operations
- Capable of drilling to greater depths without retraction
- Flute design allows for better hole size control



List 206C - Cobalt - Heavy Duty - 135° Split Point - Bronze

List 208C - Cobalt - Heavy Duty - 135° Split Point - Bronze

List 207C - Cobalt - Heavy Duty - 135° Split Point - Bronze

Cobalt Heavy Duty

- High red hardness and abrasion resistant
- Heavy-duty construction provides greater strength and rigidity
- Designed for drilling tough and abrasive materials, high temperature alloys, stainless and heat treated high strength steels

Straight Shank - Jobbers Length Twist Drills

Fractional Sizes



HSS 118° **Black Oxide**

List 206 - HSS - Regular - 118° Point - Treated

HSS 118° **Bright**

List 2806 - HSS - Regular - 118° Point - Bright

HSS 118° **TiN Coated**

List 2806T - HSS - Regular - 118° Point - TiN Coated

HSS 135° Split **Black Oxide**

List 2206 - HSS - Heavy Duty - 135° Split Point - Treated

HSS 118° **Bright**

List 2406 - HSS - High Helix - 118° Blend Thinned Point - Bright

HSS 135° Split **Bright**

List 290 - HSS - Para - Flute - 135° Split Point - Bright

Cobalt 135° Split **Bronze Oxide**

List 206C - Cobalt - Heavy Duty - 135° Split Point - Bronze

Packaging: 1/64" to 9/32" (12), 19/64" to 1/2" (6), Over 1/2" (1)

Diameter	Decimal Equiv.	Flute Length	Overall Length	List 206 Treated	List 2806 Bright	List 2806T TiN Coated	List 2206 Heavy Duty	List 2406 High Helix	List 290 Para-Flute	List 206C Cobalt Bronze
1/64	.0156	3/16	3/4	012301AW	012433AW	—	012333AW+	—	—	020901AW+
1/32	.0313	1/2	1-3/8	012302AW	012434AW	—	012334AW+	012366AW	—	020902AW+
3/64	.0469	3/4	1-3/4	012303AW	012435AW	—	012335AW	012367AW	—	020903AW
1/16	.0625	7/8	1-7/8	012304AW	012436AW	—	012336AW	012368AW	049104AW	020904AW
5/64	.0781	1	2	012305AW	012437AW	—	012337AW	012369AW	049105AW	020905AW
3/32	.0938	1-1/4	2-1/4	012306AW	012438AW	—	012338AW	012370AW	049106AW	020906AW
7/64	.1094	1-1/2	2-5/8	012307AW	012439AW	014236AW	012339AW	012371AW	049107AW	020907AW
1/8	.1250	1-5/8	2-3/4	012308AW	012440AW	014237AW	012340AW	012372AW	049108AW	020908AW
9/64	.1406	1-3/4	2-7/8	012309AW	012441AW	014238AW	012341AW	012373AW	049109AW	020909AW
5/32	.1563	2	3-1/8	012310AW	012442AW	014239AW	012342AW	012374AW	049110AW	020910AW
11/64	.1719	2-1/8	3-1/4	012311AW	012443AW	014240AW	012343AW	012375AW	049111AW	020911AW
3/16	.1875	2-5/8	3-1/2	012312AW	012444AW	014241AW	012344AW	012376AW	049112AW	020912AW
13/64	.2031	2-7/16	3-5/8	012313AW	012445AW	014242AW	012345AW	012377AW	049113AW	020913AW
7/32	.2188	2-1/2	3-3/4	012314AW	012446AW	014243AW	012346AW	012378AW	049114AW	020914AW
15/64	.2344	2-5/8	3-7/8	012315AW	012447AW	014244AW	012347AW	012379AW	049115AW	020915AW
1/4	.2500	2-3/4	4	012316AW	012448AW	014245AW	012348AW	012380AW	049116AW	020916AW
17/64	.2656	2-7/8	4-1/8	012317AW	012449AW	014246AW	012349AW	012381AW	049117AW	020917AW
9/32	.2813	2-15/16	4-1/4	012318AW	012450AW	014247AW	012350AW	012382AW	049118AW	020918AW
19/64	.2021	3-1/16	4-3/8	012319AW	012451AW	014248AW	012351AW	012383AW	049119AW	020919AW
5/16	.3125	3-3/16	4-1/2	012320AW	012452AW	014249AW	012352AW	012384AW	049120AW	020920AW
21/64	.3281	3-5/16	4-5/8	012321AW	012453AW	014250AW	012353AW	012385AW	049121AW	020921AW
11/32	.3438	3-7/16	4-3/4	012322AW	012454AW	014251AW	012354AW	012386AW	049122AW	020922AW

* Note: Titanium Nitride surface treatment available upon request on all bright finished drills

+ not split point

Straight Shank Jobbers Length Twist Drills Fractional Sizes



HSS 118° **Black Oxide**

List 206 - HSS - Regular - 118° Point - Treated

HSS 118° **Bright**

List 2806 - HSS -Regular - 118° Point - Bright

HSS 118° **TiN Coated**

List 2806T - HSS - Regular - 118° Point - TiN Coated

HSS 135° Split **Black Oxide**

List 2206 - HSS - Heavy Duty - 135° Split Point - Treated

HSS 118° **Bright**

List 2406 - HSS - High Helix - 118° Blend Thinned Point - Bright

HSS 135° Split **Bright**

List 290 - HSS - Para - Flute - 135° Split Point - Bright

Cobalt 135° Split **Bronze Oxide**

List 206C - Cobalt - Heavy Duty - 135° Split Point - Bronze

Packaging: 1/64" to 9/32" (12), 19/64" to 1/2" (6), Over 1/2" (1)

Diameter	Decimal Equiv.	Flute Length	Overall Length	List 206 Treated	List 2806 Bright	List 2806T TiN Coated	List 2206 Heavy Duty	List 2406 High Helix	List 290 Para-Flute	List 206C Cobalt Bronze
23/64	.3594	3-1/2	4-7/8	012323AW	012455AW	014252AW	012355AW	012387AW	049123AW	020923AW
3/8	.3750	3-5/8	5	012324AW	012456AW	014253AW	012356AW	012388AW	049124AW	020924AW
25/64	.3906	3-3/4	5-1/8	012325AW	012457AW	014254AW	012357AW	012389AW	049125AW	020925AW
13/32	.4063	3-7/8	5-1/4	012326AW	012458AW	014255AW	012358AW	012390AW	049126AW	020926AW
27/64	.4219	3-15/16	5-3/8	012327AW	012459AW	014256AW	012359AW	012391AW	049127AW	020927AW
7/16	.4375	4-1/16	5-1/2	012328AW	012460AW	014257AW	012360AW	012392AW	049128AW	020928AW
29/64	.4531	4-3/16	5-5/8	012329AW	012461AW	014258AW	012361AW	012393AW	049129AW	020929AW
15/32	.4688	4-5/16	5-3/4	012330AW	012462AW	014259AW	012362AW	012394AW	049130AW	020930AW
31/64	.4844	4-3/8	5-7/8	012331AW	012463AW	014260AW	012363AW	012395AW	049131AW	020931AW
1/2	.5000	4-1/2	6	012332AW	012464AW	014261AW	012364AW	012396AW	049132AW	020932AW
33/64	.5156	4-13/16	6-5/8	012833AW	012465AW	—	—	—	—	—
17/32	.5313	4-13/16	6-5/8	012834AW	012466AW	—	—	—	—	—
35/64	.5469	4-13/16	6-5/8	012835AW	012467AW	—	—	—	—	—
9/16	.5625	4-13/16	6-5/8	012836AW	012468AW	—	—	—	—	—
37/64	.5781	4-13/16	6-5/8	012837AW	012469AW	—	—	—	—	—
19/32	.5938	5-3/16	7-1/8	012838AW	012470AW	—	—	—	—	—
39/64	.6094	5-3/16	7-1/8	012839AW	012471AW	—	—	—	—	—
5/8	.6250	5-3/16	7-1/8	012840AW	012472AW	—	—	—	—	—
41/64	.6406	5-3/16	7-1/8	012841AW	012473AW	—	—	—	—	—
21/32	.6563	5-3/16	7-1/8	012842AW	012474AW	—	—	—	—	—
43/64	.6719	5-5/8	7-5/8	012843AW	012475AW	—	—	—	—	—
11/16	.6875	5-5/8	7-5/8	012844AW	012476AW	—	—	—	—	—

* Note: Titanium Nitride surface treatment available upon request on all bright finished drills

Straight Shank - Jobbers Length Twist Drills

Wire Gauge Sizes



HSS 118° **Black Oxide**

List 208 - HSS - Regular - 118° Point - Treated

HSS 118° **Bright**

List 2808 - HSS - Regular - 118° Point - Bright

HSS 135° Split **Black Oxide**

List 2208 - HSS - Heavy Duty - 135° Split Point - Treated

HSS 118° **Bright**

List 2408 - HSS - High Helix - 118° Blend Thinned Point - Bright

HSS 135° Split **Bright**

List 292 - HSS - Para - Flute - 135° Split Point - Bright

Cobalt 135° Split **Bronze Oxide**

List 208C - Cobalt - Heavy Duty - 135° Split Point - Bronze

Packaging (12)

Diameter	Decimal Equiv.	Flute Length	Overall Length	List 208 Treated	List 2808 Bright	List 2208 Heavy Duty	List 2408 High Helix	List 292 Para-Flute	List 208C Cobalt Bronze
80	.0135	1/8	3/4	013380AW	013780AW	013480AW+	013580AW	—	020880AW+
79	.0145	1/8	3/4	013379AW	013779AW	013479AW+	013579AW	—	020879AW+
78	.0160	3/16	7/8	013378AW	013778AW	013478AW+	013578AW	—	020878AW+
77	.0180	3/16	7/8	013377AW	013777AW	013477AW+	013577AW	—	020877AW+
76	.0200	3/16	7/8	013376AW	013776AW	013476AW+	013576AW	—	020876AW+
75	.0210	1/4	1	013375AW	013775AW	013475AW+	013575AW	—	020875AW+
74	.0225	1/4	1	013374AW	013774AW	013474AW+	013574AW	—	020874AW+
73	.0240	5/16	1-1/8	013373AW	013773AW	013473AW+	013573AW	—	020873AW+
72	.0250	5/16	1-1/8	013372AW	013772AW	013472AW+	013572AW	—	020872AW+
71	.0260	3/8	1-1/4	013371AW	013771AW	013471AW+	013571AW	—	020871AW+
70	.0280	3/8	1-1/4	013370AW	013770AW	013470AW+	013570AW	—	020870AW+
69	.0292	1/2	1-3/8	013369AW	013769AW	013469AW+	013569AW	—	020869AW+
68	.0310	1/2	1-3/8	013368AW	013768AW	013468AW+	013568AW	—	020868AW+
67	.0320	1/2	1-3/8	013367AW	013767AW	013467AW+	013567AW	—	020867AW+
66	.0330	1/2	1-3/8	013366AW	013766AW	013466AW+	013566AW	—	020866AW+
65	.0350	5/8	1-1/2	013365AW	013765AW	013465AW+	013565AW	—	020865AW+
64	.0360	5/8	1-1/2	013364AW	013764AW	013464AW+	013564AW	—	020864AW+
63	.0370	5/8	1-1/2	013363AW	013763AW	013463AW+	013563AW	—	020863AW+
62	.0380	5/8	1-1/2	013362AW	013762AW	013462AW+	013562AW	—	020862AW+

* Note: Titanium Nitride surface treatment available upon request on all bright finished drills

+ not split point

Straight Shank - Jobbers Length Twist Drills

Wire Gauge Sizes



HSS	118°	Black Oxide	List 208 - HSS - Regular - 118° Point - Treated
HSS	118°	Bright	List 2808 - HSS - Regular - 118° Point - Bright
HSS	135° Split	Black Oxide	List 2208 - HSS - Heavy Duty - 135° Split Point - Treated
HSS	118°	Bright	List 2408 - HSS - High Helix - 118° Blend Thinned Point - Bright
HSS	135° Split	Bright	List 292 - HSS - Para - Flute - 135° Split Point - Bright
Cobalt	135° Split	Bronze Oxide	List 208C - Cobalt - Heavy Duty - 135° Split Point - Bronze

Packaging (12)

Diameter	Decimal Equiv.	Flute Length	Overall Length	List 208 Treated	List 2808 Bright	List 2208 Heavy Duty	List 2408 High Helix	List 292 Para-Flute	List 208C Cobalt Bronze
61	.0390	11/16	1-5/8	013361AW	013761AW	013461AW+	013561AW	—	020861AW+
60	.0400	11/16	1-5/8	013360AW	013760AW	013460AW+	013560AW	—	020860AW+
59	.0410	11/16	1-5/8	013359AW	013759AW	013459AW+	013559AW	—	020859AW+
58	.0420	11/16	1-5/8	013358AW	013758AW	013458AW+	013558AW	—	020858AW+
57	.0430	3/4	1-3/4	013357AW	013757AW	013457AW+	013557AW	—	020857AW+
56	.0465	3/4	1-3/4	013356AW	013756AW	013456AW+	013556AW	—	020856AW+
55	.0520	7/8	1-7/8	013355AW	013755AW	013455AW+	013555AW	—	020855AW+
54	.0550	7/8	1-7/8	013354AW	013754AW	013454AW+	013554AW	—	020854AW+
53	.0595	7/8	1-7/8	013353AW	013753AW	013453AW+	013553AW	—	020853AW+
52	.0635	7/8	1-7/8	013352AW	013752AW	013452AW	013552AW	049252AW	020852AW
51	.0670	1	2	013351AW	013751AW	013451AW	013551AW	049251AW	020851AW
50	.0700	1	2	013350AW	013750AW	013450AW	013550AW	049250AW	020850AW
49	.0730	1	2	013349AW	013749AW	013449AW	013549AW	049249AW	020849AW
48	.0760	1	2	013348AW	013748AW	013448AW	013548AW	049248AW	020848AW
47	.0785	1	2	013347AW	013747AW	013447AW	013547AW	049247AW	020847AW
46	.0810	1-1/8	2-1/8	013346AW	013746AW	013446AW	013546AW	049246AW	020846AW
45	.0820	1-1/8	2-1/8	013345AW	013745AW	013445AW	013545AW	049245AW	020845AW
44	.0860	1-1/8	2-1/8	013344AW	013744AW	013444AW	013544AW	049244AW	020844AW
43	.0890	1-1/4	2-1/4	013343AW	013743AW	013443AW	013543AW	049243AW	020843AW
42	.0935	1-1/4	2-1/4	013342AW	013742AW	013442AW	013542AW	049242AW	020842AW
41	.0960	1-3/8	2-3/8	013341AW	013741AW	013441AW	013541AW	049241AW	020841AW

* Note: Titanium Nitride surface treatment available upon request on all bright finished drills

+ not split point

Straight Shank - Jobbers Length Twist Drills

Wire Gauge Sizes



HSS	118°	Black Oxide	List 208 - HSS - Regular - 118° Point - Treated
HSS	118°	Bright	List 2808 - HSS -Regular - 118° Point - Bright
HSS	118°	TiN Coated	List 2808T - HSS - Regular - 118° Point - TiN Coated
HSS	135° Split	Black Oxide	List 2208 - HSS - Heavy Duty - 135° Split Point - Treated
HSS	118°	Bright	List 2408 - HSS - High Helix - 118° Blend Thinned Point - Bright
HSS	135° Split	Bright	List 292 - HSS - Para - Flute - 135° Split Point - Bright
Cobalt	135° Split	Bronze Oxide	List 208C - Cobalt - Heavy Duty - 135° Split Point - Bronze

Packaging: 1/64" to 9/32"(12), 19/64" to 1/2"(6), Over 1/2"(1)

Diameter	Decimal Equiv.	Flute Length	Overall Length	List 208 Treated	List 2808 Bright	List 2808T TiN Coated	List 2208 Heavy Duty	List 2408 High Helix	List 292 Para-Flute	List 208C Cobalt Bronze
40	.0980	1-3/8	2-3/8	013340AW	013740AW	014340AW	013440AW	013540AW	049240AW	020840AW
39	.0995	1-3/8	2-3/8	013339AW	013739AW	014339AW	013439AW	013539AW	049239AW	020839AW
38	.1015	1-7/16	2-1/2	013338AW	013738AW	014338AW	013438AW	013538AW	049238AW	020838AW
37	.1040	1-7/16	2-1/2	013337AW	013737AW	014337AW	013437AW	013537AW	049237AW	020837AW
36	.1065	1-7/16	2-1/2	013336AW	013736AW	014336AW	013436AW	013536AW	049236AW	020836AW
35	.1100	1-1/2	2-5/8	013335AW	013735AW	014335AW	013435AW	013535AW	049235AW	020835AW
34	.1110	1-1/2	2-5/8	013334AW	013734AW	014334AW	013434AW	013534AW	049234AW	020834AW
33	.1130	1-1/2	2-5/8	013333AW	013733AW	014333AW	013433AW	013533AW	049233AW	020833AW
32	.1160	1-5/8	2-3/4	013332AW	013732AW	014332AW	013432AW	013532AW	049232AW	020832AW
31	.1200	1-5/8	2-3/4	013331AW	013731AW	014331AW	013431AW	013531AW	049231AW	020831AW
30	.1285	1-5/8	2-3/4	013330AW	013730AW	014330AW	013430AW	013530AW	049230AW	020830AW
29	.1360	1-3/4	2-7/8	013329AW	013729AW	014329AW	013429AW	013529AW	049229AW	020829AW
28	.1405	1-3/4	2-7/8	013328AW	013728AW	014328AW	013428AW	013528AW	049228AW	020828AW
27	.1440	1-7/8	3	013327AW	013727AW	014327AW	013427AW	013527AW	049227AW	020827AW
26	.1470	1-7/8	3	013326AW	013726AW	014326AW	013426AW	013526AW	049226AW	020826AW
25	.1495	1-7/8	3	013325AW	013725AW	014325AW	013425AW	013525AW	049225AW	020825AW
24	.1520	2	3-1/8	013324AW	013724AW	014324AW	013424AW	013524AW	049224AW	020824AW
23	.1540	2	3-1/8	013323AW	013723AW	014323AW	013423AW	013523AW	049223AW	020823AW
22	.1570	2	3-1/8	013322AW	013722AW	014322AW	013422AW	013522AW	049222AW	020822AW
21	.1590	2-1/8	3-1/4	013321AW	013721AW	014321AW	013421AW	013521AW	049221AW	020821AW

* Note: Titanium Nitride surface treatment available upon request on all bright finished drills

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Straight Shank - Jobbers Length Twist Drills

Wire Gauge Sizes



HSS	118°	Black Oxide	List 208 - HSS - Regular - 118° Point - Treated
HSS	118°	Bright	List 2808 - HSS -Regular - 118° Point - Bright
HSS	118°	TiN Coated	List 2808T - HSS - Regular - 118° Point - TiN Coated
HSS	135° Split	Black Oxide	List 2208 - HSS - Heavy Duty - 135° Split Point - Treated
HSS	118°	Bright	List 2408 - HSS - High Helix - 118° Blend Thinned Point - Bright
HSS	135° Split	Bright	List 292 - HSS - Para - Flute - 135° Split Point - Bright
Cobalt	135° Split	Bronze Oxide	List 208C - Cobalt - Heavy Duty - 135° Split Point - Bronze

Packaging: 1/64" to 9/32"(12), 19/64" to 1/2"(6), Over 1/2"(1)

Diameter	Decimal Equiv.	Flute Length	Overall Length	List 208 Treated	List 2808 Bright	List 2808T TiN Coated	List 2208 Heavy Duty	List 2408 High Helix	List 292 Para-Flute	List 208C Cobalt Bronze
20	.1610	2-1/8	3-1/4	013320AW	013720AW	014320AW	013420AW	013520AW	049220AW	020820AW
19	.1660	2-1/8	3-1/4	013319AW	013719AW	014319AW	013419AW	013519AW	049219AW	020819AW
18	.1695	2-1/8	3-1/4	013318AW	013718AW	014318AW	013418AW	013518AW	049218AW	020818AW
17	.1730	2-3/16	3-3/8	013317AW	013717AW	014317AW	013417AW	013517AW	049217AW	020817AW
16	.1770	2-3/16	3-3/8	013316AW	013716AW	014316AW	013416AW	013516AW	049216AW	020816AW
15	.1800	2-3/16	3-3/8	013315AW	013715AW	014315AW	013415AW	013515AW	049215AW	020815AW
14	.1820	2-3/16	3-3/8	013314AW	013714AW	014314AW	013414AW	013514AW	049214AW	020814AW
13	.1850	2-5/16	3-1/2	013313AW	013713AW	014313AW	013413AW	013513AW	049213AW	020813AW
12	.1890	2-5/16	3-1/2	013312AW	013712AW	014312AW	013412AW	013512AW	049212AW	020812AW
11	.1910	2-5/16	3-1/2	013311AW	013711AW	014311AW	013411AW	013511AW	049211AW	020811AW
10	.1935	2-7/16	3-5/8	013310AW	013710AW	014310AW	013410AW	013510AW	049210AW	020810AW
9	.1960	2-7/16	3-5/8	013309AW	013709AW	014309AW	013409AW	013509AW	049209AW	020809AW
8	.1990	2-7/16	3-5/8	013308AW	013708AW	014308AW	013408AW	013508AW	049208AW	020808AW
7	.2010	2-7/16	3-5/8	013307AW	013707AW	014307AW	013407AW	013507AW	049207AW	020807AW
6	.2040	2-1/2	3-3/4	013306AW	013706AW	014306AW	013406AW	013506AW	049206AW	020806AW
5	.2055	2-1/2	3-3/4	013305AW	013705AW	014305AW	013405AW	013505AW	049205AW	020805AW
4	.2090	2-1/2	3-3/4	013304AW	013704AW	014304AW	013404AW	013504AW	049204AW	020804AW
3	.2130	2-1/2	3-3/4	013303AW	013703AW	014303AW	013403AW	013503AW	049203AW	020803AW
2	.2210	2-5/8	3-7/8	013302AW	013702AW	014302AW	013402AW	013502AW	049202AW	020802AW
1	.2280	2-5/8	3-7/8	013301AW	013701AW	014301AW	013401AW	013501AW	049201AW	020801AW

* Note: Titanium Nitride surface treatment available upon request on all bright finished drills

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Straight Shank Jobbers Length Twist Drills

Letter Sizes



- HSS
118°
Black Oxide
List 207 - HSS - Regular - 118° Point - Treated

- HSS
118°
Bright
List 2807 - HSS -Regular - 118° Point - Bright

- HSS
118°
TiN Coated
List 2807T - HSS - Regular - 118° Point - TiN Coated

- HSS
135° Split
Black Oxide
List 2207 - HSS - Heavy Duty - 135° Split Point - Treated

- HSS
118°
Bright
List 2407 - HSS - High Helix - 118° Blend Thinned Point - Bright

- Cobalt
135° Split
Bronze Oxide
List 207C - Cobalt - Heavy Duty - 135° Split Point - Bronze

Packaging: A to K(12), L to Z (6)

Diameter	Decimal Equiv.			List 207 Treated	List 2807 Bright	List 2807T TiN Coated	List 2207 Heavy Duty	List 2407 High Helix	List 207C Cobalt Bronze
A	.2340	2-5/8	3-7/8	013001AW	013105AW	014271AW	014201AW	014001AW	012525AW
B	.2380	2-3/4	4	013002AW	013106AW	014272AW	014202AW	014002AW	012526AW
C	.2420	2-3/4	4	013003AW	013107AW	014273AW	014203AW	014003AW	012527AW
D	.2460	2-3/4	4	013004AW	013108AW	014274AW	014204AW	014004AW	012528AW
E	.2500	2-3/4	4	013005AW	013109AW	014275AW	014205AW	014005AW	012529AW
F	.2570	2-7/8	4-1/8	013006AW	013110AW	014276AW	014206AW	014006AW	012530AW
G	.2610	2-7/8	4-1/8	013007AW	013111AW	014277AW	014207AW	014007AW	012531AW
H	.2660	2-7/8	4-1/8	013008AW	013112AW	014278AW	014208AW	014008AW	012532AW
I	.2720	2-7/8	4-1/8	013009AW	013113AW	014279AW	014209AW	014009AW	012533AW
J	.2770	2-7/8	4-1/8	013010AW	013114AW	014280AW	014210AW	014010AW	012534AW
K	.2810	2-15/16	4-1/4	013011AW	013115AW	014281AW	014211AW	014011AW	012535AW
L	.2900	2-15/16	4-1/4	013012AW	013116AW	014282AW	014212AW	014012AW	012536AW
M	.2950	3-1/16	4-3/8	013013AW	013117AW	014283AW	014213AW	014013AW	012537AW
N	.3020	3-1/16	4-3/8	013014AW	013118AW	014284AW	014214AW	014014AW	012538AW
O	.3160	3-3/16	4-1/2	013015AW	013119AW	014285AW	014215AW	014015AW	012539AW
P	.3230	3-8/16	4-5/8	013016AW	013120AW	014286AW	014216AW	014016AW	012540AW
Q	.3320	3-7/16	4-3/4	013017AW	013121AW	014287AW	014217AW	014017AW	012541AW
R	.3390	3-7/16	4-3/4	013018AW	013122AW	014288AW	014218AW	014018AW	012542AW
S	.3480	3-1/2	4-7/8	013019AW	013123AW	014289AW	014219AW	014019AW	012543AW
T	.3580	3-1/2	4-7/8	013020AW	013124AW	014290AW	014220AW	014020AW	012544AW
U	.3680	3-5/8	5	013021AW	013125AW	014291AW	014221AW	014021AW	012545AW
V	.3770	3-5/8	5	013022AW	013126AW	014292AW	014222AW	014022AW	012546AW
W	.3860	3-3/4	5-1/8	013023AW	013127AW	014293AW	014223AW	014023AW	012547AW
X	.3970	3-3/4	5-1/8	013024AW	013128AW	014294AW	014224AW	014024AW	012548AW
Y	.4040	3-7/8	5-1/4	013025AW	013129AW	014295AW	014225AW	014025AW	012549AW
Z	.4130	3-7/8	5-1/4	013026AW	013130AW	014296AW	014226AW	014026AW	012550AW

* Note: Titanium Nitride surface treatment available upon request on all bright finished drills

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Straight Shank Jobbers Length Twist Drills Metric Sizes



HSS

118°

Bright

- General Purpose straight shank drill
- Designed to perform satisfactorily under normal conditions in most materials

List 206M - HSS - Regular - 118° Point - Bright(.35mm to .95mm)* Treated(1mm to 14mm)

Packaging: 0.15mm to 7.3mm(12), 7.40mm to 12.5mm(6), Over 12.50mm(1)

EDP No.	Diameter	Decimal Equiv.	Flute Length		Overall Length		EDP No.	Diameter	Decimal Equiv.	Flute Length		Overall Length	
			mm	Fractional	mm	Fractional				mm	Fractional	mm	Fractional
012608AW	.35mm	.0138	4mm	5/32	19mm	3/4	012642AW	2.05mm	.0807	24mm	15/16	49mm	1-15/16
012609AW	.40mm	.0157	5mm	3/16	20mm	25/32	012643AW	2.10mm	.0827	24mm	15/16	49mm	1-15/16
012610AW	.45mm	.0177	5mm	3/16	20mm	25/32	012644AW	2.15mm	.0546	27mm	1-1/16	53mm	2-3/32
012611AW	.50mm	.0197	6mm	1/4	22mm	7/8	012645AW	2.20mm	.0866	27mm	1-1/16	53mm	2-3/32
012612AW	.55mm	.0217	7mm	9/32	24mm	15/16	012646AW	2.25mm	.0886	27mm	1-1/16	53mm	2-3/32
012613AW	.60mm	.0236	7mm	9/32	24mm	15/16	012647AW	2.30mm	.0906	27mm	1-1/16	53mm	2-3/32
012614AW	.65mm	.0256	8mm	5/16	26mm	1-1/32	012648AW	2.35mm	.0925	27mm	1-1/16	53mm	2-3/32
012615AW	.70mm	.0276	9mm	11/32	28mm	1-3/32	012649AW	2.40mm	.0945	30mm	1-3/16	57mm	2-1/4
012616AW	.75mm	.0295	9mm	11/32	28mm	1-3/32	012650AW	2.45mm	.0965	30mm	1-3/16	57mm	2-1/4
012617AW	.80mm	.0315	10mm	13/32	30mm	1-3/16	012651AW	2.50mm	.0984	30mm	1-3/16	57mm	2-1/4
012618AW	.85mm	.0335	10mm	13/32	30mm	1-3/16	012652AW	2.60mm	.1024	30mm	1-3/16	57mm	2-1/4
012619AW	.90mm	.0354	11mm	27/64	32mm	1-1/4	012654AW	2.70mm	.1063	33mm	1-5/16	61mm	2-13/32
012620AW	.95mm	.0374	11mm	27/64	32mm	1-1/4	012656AW	2.80mm	.1102	33mm	1-5/16	61mm	2-13/32
012621AW	1.00mm	.0394	12mm	15/32	34mm	1-11/32	012657AW	2.90mm	.1142	33mm	1-5/16	61mm	2-13/32
012622AW	1.05mm	.0413	12mm	15/32	34mm	1-11/32	012658AW	3.00mm	.1181	33mm	1-5/16	61mm	2-13/32
012623AW	1.10mm	.0433	14mm	9/16	36mm	1-7/16	012659AW	3.10mm	.1220	36mm	1-7/16	65mm	2-9/16
012624AW	1.15mm	.0453	14mm	9/16	36mm	1-7/16	012661AW	3.20mm	.1260	36mm	1-7/16	65mm	2-9/16
012625AW	1.20mm	.0472	16mm	5/8	38mm	1-1/2	012663AW	3.30mm	.1299	36mm	1-7/16	65mm	2-9/16
012626AW	1.25mm	.0492	16mm	5/8	38mm	1-1/2	012664AW	3.40mm	.1339	39mm	1-17/32	70mm	2-3/4
012627AW	1.30mm	.0512	16mm	5/8	38mm	1-1/2	012665AW	3.50mm	.1378	39mm	1-17/32	70mm	2-3/4
012628AW	1.35mm	.0531	18mm	23/32	40mm	1-9/16	012666AW	3.60mm	.1417	39mm	1-17/32	70mm	2-3/4
012629AW	1.40mm	.0551	18mm	23/32	40mm	1-9/16	012667AW	3.70mm	.1457	39mm	1-17/32	70mm	2-3/4
012630AW	1.45mm	.0571	18mm	23/32	40mm	1-9/16	012668AW	3.75mm	.1476	39mm	1-17/32	70mm	2-3/4
012631AW	1.50mm	.0591	18mm	23/32	40mm	1-9/16	012669AW	3.80mm	.1496	43mm	1-11/16	75mm	2-3/4
012632AW	1.55mm	.0610	20mm	25/32	43mm	1-11/16	012670AW	3.90mm	.1535	43mm	1-11/16	75mm	2-15/16
012633AW	1.60mm	.0630	20mm	25/32	43mm	1-11/16	012671AW	4.00mm	.1575	43mm	1-11/16	75mm	2-15/16
012634AW	1.65mm	.0650	20mm	25/32	43mm	1-11/16	012672AW	4.10mm	.1614	43mm	1-11/16	75mm	2-15/16
012635AW	1.70mm	.0669	20mm	25/32	43mm	1-11/16	012673AW	4.20mm	.1654	43mm	1-11/16	75mm	2-15/16
012636AW	1.75mm	.0689	22mm	7/8	46mm	1-13/16	012675AW	4.30mm	.1693	47mm	1-27/32	80mm	3-5/32
012637AW	1.80mm	.0709	22mm	7/8	46mm	1-13/16	012676AW	4.40mm	.1732	47mm	1-27/32	80mm	3-5/32
012638AW	1.85mm	.0728	22mm	7/8	46mm	1-13/16	012677AW	4.50mm	.1772	47mm	1-27/32	80mm	3-5/32
012639AW	1.90mm	.0748	22mm	7/8	46mm	1-13/16	012678AW	4.60mm	.1811	47mm	1-27/32	80mm	3-5/32
012640AW	1.95mm	.0768	24mm	15/16	49mm	1-15/16	012679AW	4.70mm	.1850	47mm	1-27/32	80mm	3-5/32
012641AW	2.00mm	.0787	24mm	15/16	49mm	1-15/16	-	-	-	-	-	-	-

* Note: Titanium Nitride surface treatment available upon request on all bright finished drills

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Straight Shank Jobbers Length Twist Drills Metric Sizes



HSS

118°

Bright

- General Purpose straight shank drill
- Designed to perform satisfactorily under normal conditions in most materials

List 206M - HSS - Regular - 118° Point - Bright(.35mm to .95mm)* Treated(1mm to 14mm)

Packaging: 0.15mm to 7.3mm(12), 7.40mm to 12.5mm(6), Over 12.50mm(1)

EDP No.	Diameter	Decimal Equiv.	Flute Length		Overall Length		EDP No.	Diameter	Decimal Equiv.	Flute Length		Overall Length	
			mm	Fractional	mm	Fractional				mm	Fractional	mm	Fractional
012681AW	4.80mm	.1890	52mm	2-1/16	86mm	3-3/8	012720AW	8.10mm	.3189	75mm	2-15/16	117mm	4-19/32
012682AW	4.90mm	.1929	52mm	2-1/16	86mm	3-3/8	012721AW	8.20mm	.3228	75mm	2-15/16	117mm	4-19/32
012683AW	5.00mm	.1969	52mm	2-1/16	86mm	3-3/8	012723AW	8.30mm	.3268	75mm	2-15/16	117mm	4-19/32
012684AW	5.10mm	.2008	52mm	2-1/16	86mm	3-3/8	012724AW	8.40mm	.3307	75mm	2-15/16	117mm	4-19/32
012685AW	5.20mm	.2047	52mm	2-1/16	86mm	3-3/8	012725AW	8.50mm	.3346	75mm	2-15/16	117mm	4-19/32
012687AW	5.30mm	.2087	52mm	2-1/16	86mm	3-3/8	012726AW	8.60mm	.3386	81mm	3-3/16	125mm	4-29/32
012688AW	5.40mm	.2126	57mm	2-1/4	93mm	3-21/32	012727AW	8.70mm	.3425	81mm	3-3/16	125mm	4-29/32
012689AW	5.50mm	.2165	57mm	2-1/4	93mm	3-21/32	012729AW	8.80mm	.3465	81mm	3-3/16	125mm	4-29/32
012690AW	5.60mm	.2205	57mm	2-1/4	93mm	3-21/32	012730AW	8.90mm	.3504	81mm	3-3/16	125mm	4-29/32
012691AW	5.70mm	.2244	57mm	2-1/4	93mm	3-21/32	012731AW	9.00mm	.3543	81mm	3-3/16	125mm	4-29/32
012693AW	5.80mm	.2283	57mm	2-1/4	93mm	3-21/32	012732AW	9.10mm	.3583	81mm	3-3/16	125mm	4-29/32
012694AW	5.90mm	.2323	57mm	2-1/4	93mm	3-21/32	012733AW	9.20mm	.3622	81mm	3-3/16	125mm	4-29/32
012695AW	6.00mm	.2362	57mm	2-1/4	93mm	3-21/32	012735AW	9.30mm	.3661	81mm	3-3/16	125mm	4-29/32
012696AW	6.10mm	.2402	63mm	2-15/32	101mm	3-31/32	012736AW	9.40mm	.3701	81mm	3-3/16	125mm	4-29/32
012697AW	6.20mm	.2441	63mm	2-15/32	101mm	3-31/32	012737AW	9.50mm	.3740	81mm	3-3/16	125mm	4-29/32
012699AW	6.30mm	.2480	63mm	2-15/32	101mm	3-31/32	012738AW	9.60mm	.3780	87mm	3-7/16	133mm	5-1/4
012700AW	6.40mm	.2520	63mm	2-15/32	101mm	3-31/32	012739AW	9.70mm	.3819	87mm	3-7/16	133mm	5-1/4
012701AW	6.50mm	.2559	63mm	2-15/32	101mm	3-31/32	012741AW	9.80mm	.3858	87mm	3-7/16	133mm	5-1/4
012702AW	6.60mm	.2598	63mm	2-15/32	101mm	3-31/32	012742AW	9.90mm	.3898	87mm	3-7/16	133mm	5-1/4
012703AW	6.70mm	.2638	63mm	2-15/32	101mm	3-31/32	012743AW	10.00mm	.3937	87mm	3-7/16	133mm	5-1/4
012705AW	6.80mm	.2677	69mm	2-23/32	109mm	4-9/32	012964AW	10.20mm	.4016	87mm	3-7/16	133mm	5-1/4
012706AW	6.90mm	.2717	69mm	2-23/32	109mm	4-9/32	012744AW	10.50mm	.4134	87mm	3-7/16	133mm	5-1/4
012707AW	7.00mm	.2756	69mm	2-23/32	109mm	4-9/32	012965AW	10.80mm	.4252	94mm	3-11/16	142mm	5-19/32
012708AW	7.10mm	.2795	69mm	2-23/32	109mm	4-9/32	012745AW	11.00mm	.4331	94mm	3-11/16	142mm	5-19/32
012709AW	7.20mm	.2835	69mm	2-23/32	109mm	4-9/32	012966AW	11.20mm	.4410	94mm	3-11/16	142mm	5-19/32
012711AW	7.30mm	.2874	69mm	2-23/32	109mm	4-9/32	012746AW	11.50mm	.4528	94mm	3-11/16	142mm	5-19/32
012712AW	7.40mm	.2913	69mm	2-23/32	109mm	4-9/32	012967AW	11.80mm	.4646	94mm	3-11/16	142mm	5-19/32
012713AW	7.50mm	.2953	69mm	2-23/32	109mm	4-9/32	012747AW	12.00mm	.4724	101mm	3-31/32	151mm	42505
012714AW	7.60mm	.2992	75mm	2-15/16	117mm	4-19/32	012968AW	12.20mm	.4803	101mm	3-31/32	151mm	42506
012715AW	7.70mm	.3031	75mm	2-15/16	117mm	4-19/32	012748AW	12.50mm	.4921	101mm	3-31/32	151mm	42507
012717AW	7.80mm	.3071	75mm	2-15/16	117mm	4-19/32	012970AW	13.00mm	.5118	101mm	3-31/32	151mm	42508
012718AW	7.90mm	.3110	75mm	2-15/16	117mm	4-19/32	012972AW	13.50mm	.5315	108mm	4-1/4	160mm	6-5/16
012719AW	8.00mm	.3150	75mm	2-15/16	117mm	4-19/32	012974AW	14.00mm	.5512	108mm	4-1/4	160mm	6-5/16

* Note: Titanium Nitride surface treatment available upon request on all bright finished drills

Straight Shank Screw Machine Length Twist Drills Fractional Sizes



HSS

118°

Bright

- Designed for use in screw machines, the overall length and short flutes offer increased rigidity
- Other applications include portable drilling of tough hard materials

List 240 - HSS - Right Hand - 118° Point - Bright*

Packaging: 3/94" to 9/32"(12), 19/64" to 1/2"(6)

EDP No.	Diameter	Decimal Equiv.	Flute Length	Overall Length	EDP No.	Diameter	Decimal Equiv.	Flute Length	Overall Length
016203AW	3/64	.0469	1/2	1-3/8	016218AW	9/32	.2812	1-1/2	2-11/16
016204AW	1/16	.0625	5/8	1-5/8	016219AW	19/64	.2969	1-9/16	2-3/4
016205AW	5/64	.0781	11/16	1-11/16	016220AW	5/16	.3125	1-5/8	2-13/16
016206AW	3/32	.0938	3/4	1-3/4	016221AW	21/64	.3281	1-11/16	2-15/16
016207AW	7/64	.1094	13/16	1-13/16	016222AW	11/32	.3438	1-11/16	3
016208AW	1/8	.1250	7/8	1-7/8	016223AW	23/64	.3594	1-3/4	3-1/16
016209AW	9/64	.1406	15/16	1-15/16	016224AW	3/8	.3750	1-13/16	3-1/8
016210AW	5/32	.1562	1	2-1/16	016225AW	25/64	.3906	1-7/8	3-1/4
016211AW	11/64	.1719	1-1/16	2-1/8	016226AW	13/32	.4062	1-15/16	3-5/16
016212AW	3/16	.1875	1-1/8	2-3/16	016227AW	27/64	.4219	2	3-3/8
016213AW	13/64	.2031	1-3/16	2-1/4	016228AW	7/16	.4375	2-1/16	3-7/16
016214AW	7/32	.2188	1-1/4	2-3/8	016229AW	29/64	.4531	2-1/8	3-9/16
016215AW	15/64	.2344	1-5/16	2-7/16	016230AW	15/32	.4688	2-1/8	3-5/8
016216AW	1/4	.2500	1-3/8	2-1/2	016231AW	31/64	.4844	2-3/16	3-11/16
016217AW	17/64	.2656	1-7/16	2-5/8	016232AW	1/2	.5000	2-1/4	3-3/4

* Note: Titanium Nitride surface treatment available upon request on all bright finished drills

Straight Shank - Screw Machine Length Twist Drills Fractional Sizes Over 1/2"



List 241 - HSS - Right Hand - 118° Point - Bright*
45/64" And Above Treated

- Designed for use in screw machines, the overall length and short flutes offer increased rigidity
- Other applications include portable drilling of tough hard materials

Packaging: All (1)

EDP No.	Diameter	Decimal Equiv.	Shank Diameter	Shank Length	Flute Length	Overall Length	EDP No.	Diameter	Decimal Equiv.	Shank Diameter	Shank Length	Flute Length	Overall Length
016333AW	33/64	.5156	33/64	1-1/2	2-3/8	3-7/8	016357AW	57/64	.8906	57/64	2	3-5/8	5-5/8
016334AW	17/32	.5312	17/32	1-1/2	2-3/8	3-7/8	016358AW	29/32	.9062	29/32	2	3-5/8	5-5/8
016335AW	35/64	.5469	35/64	1-1/2	2-1/2	4	016359AW	59/64	.9219	59/64	2	3-3/4	5-3/4
016336AW	9/16	.5625	9/16	1-1/2	2-1/2	4	016360AW	15/16	.9375	15/16	2	3-3/4	5-3/4
016337AW	37/64	.5781	37/64	1-1/2	2-5/8	4-1/8	016361AW	61/64	.9531	61/64	2	3-7/8	5-7/8
016338AW	19/32	.5938	19/32	1-1/2	2-5/8	4-1/8	016362AW	32/32	.9688	32/32	2	3-7/8	5-7/8
016339AW	39/64	.6094	39/64	1-1/2	2-3/4	4-1/4	016363AW	63/64	.9844	63/64	2	4	6
016340AW	5/8	.6250	5/8	1-1/2	2-3/4	4-1/4	016364AW	1	1.0000	1	2	4	6
016341AW	41/64	.6406	41/64	1-5/8	2-7/8	4-1/2	016368AW	1-1/16	.6875	1	2-1/4	4	6-1/4
016342AW	21/32	.6562	21/32	1-5/8	2-7/8	4-1/2	016372AW	1-1/8	1.1250	1	2-1/4	4	6-3/8
016343AW	43/64	.6719	43/64	1-3/4	2-7/8	4-5/8	016376AW	1-3/16	1.1875	1	2-1/4	4-1/4	6-5/8
016344AW	11/16	.6875	11/16	1-3/4	2-7/8	4-5/8	016380AW	1-1/4	1.2500	1	2-1/4	4-3/8	6-3/4
016345AW	45/64	.7031	45/64	1-3/4	3	4-3/4	016384AW	1-5/16	1.3125	1-1/4	2-1/2	4-3/8	7
016346AW	23/32	.7188	23/32	1-3/4	3	4-3/4	016388AW	1-3/8	1.3750	1-1/4	2-1/2	4-1/2	7-1/8
016347AW	47/64	.7344	47/64	1-7/8	3-1/8	5	016392AW	1-7/16	1.4375	1-1/4	2-1/2	4-3/4	7-3/8
016348AW	3/4	.7500	3/4	1-7/8	3-1/8	5	016396AW	1-1/2	1.5000	1-1/4	2-1/2	4-7/8	7-1/2
016349AW	49/64	.7656	49/64	1-7/8	3-1/4	5-1/8	016400AW	1-9/16	1.5625	1-1/2	2-3/4	4-7/8	7-3/4
016350AW	25/32	.7812	25/32	1-7/8	3-1/4	5-1/8	016404AW	1-5/8	1.6250	1-1/2	2-3/4	4-7/8	7-3/4
016351AW	51/64	.7969	51/64	1-7/8	3-3/8	5-1/4	016408AW	1-11/16	1.6875	1-1/2	2-3/4	5-1/8	8
016352AW	13/16	.8125	13/16	1-7/8	3-3/8	5-1/4	016412AW	1-3/4	1.7500	1-1/2	2-3/4	5-1/8	8
016353AW	53/64	.8281	53/64	1-7/8	3-1/2	5-3/8	016416AW	1-13/16	1.8125	1-1/2	2-3/4	5-3/8	8-1/4
016354AW	27/32	.8438	27/32	1-7/8	3-1/2	5-3/8	016420AW	1-7/8	1.8750	1-1/2	2-3/4	5-3/8	8-1/4
016355AW	55/64	.8594	55/64	2	3-1/2	5-1/2	016424AW	1-15/16	1.9375	1-1/2	2-3/4	5-5/8	8-1/2
016356AW	7/8	.8750	7/8	2	3-1/2	5-1/2	016428AW	2	2.0000	1-1/2	2-3/4	5-5/8	8-1/2

* Note: Titanium Nitride surface treatment available upon request on all bright finished drills

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Straight Shank Automotive Jobbers Length Twist Drills



HSS **118°** **Black Oxide**

List 206B - HSS - Regular - 118° Point - Tanged - Treated

- General Purpose straight shank drill
- Designed to perform satisfactorily under most normal conditions
- Furnished with tangs for use with split sleeve drill drivers

Packaging: 1/8" to 9/32"(12), 7.25mm to 1/2"(6), Over 1/2"(1)

EDP No.	Diameter	Decimal Equiv.	Flute Length	Overall Length	EDP No.	Diameter	Decimal Equiv.	Flute Length	Overall Length
012570AW	.1250	1/8	1-5/8	2-3/4	012580AW	.2812	9/32	2-15/16	4-1/4
016030AW	.1285	30	1-5/8	2-3/4	015972AW	.2854	7.25mm	75mm	108mm
015933AW	.1299	3.30mm	45mm	73mm	015974AW	.2913	7.40mm	78mm	111mm
015934AW	.1339	3.40mm	45mm	73mm	012581AW	.2969	19/64	3-1/16	4-3/8
016029AW	.1360	29	1-3/4	2-7/8	015914AW	.3020	N	3-1/16	4-3/8
015935AW	.1378	3.50mm	45mm	73mm	015978AW	.3071	7.80mm	81mm	114mm
012571AW	.1406	9/64	1-3/4	2-7/8	012582AW	.3125	5/16	3-3/16	4-1/2
016027AW	.1440	27	1-7/8	3	015915AW	.3160	O	3-3/16	4-1/2
016026AW	.1470	26	1-7/8	3	015916AW	.3230	P	3-5/16	4-5/8
016024AW	.1520	24	2	3-1/8	012583AW	.3281	21/64	3-5/16	4-5/8
012572AW	.1562	5/32	2	3-1/8	015917AW	.3320	Q	3-7/16	4-3/4
016020AW	.1610	20	2-1/8	3-1/4	015918AW	.3390	R	3-7/16	4-3/4
016019AW	.1660	19	2-1/8	3-1/4	012584AW	.3438	11/32	3-7/16	4-3/4
016018AW	.1695	18	2-1/8	3-1/4	015919AW	.3480	S	3-1/2	4-7/8
012573AW	.1719	11/64	2-1/8	3-1/4	015990AW	.3543	9.00mm	89mm	124mm
016017AW	.1730	17	2-3/16	3-3/8	012585AW	.3594	23/64	3-1/2	4-7/8
016016AW	.1770	16	2-3/16	3-3/8	015921AW	.3680	U	3-5/8	5
016015AW	.1800	15	2-3/16	3-3/8	012586AW	.3750	3/8	3-5/8	5
016013AW	.1850	13	2-5/16	3-1/2	015923AW	.3860	W	3-3/4	5-1/8
012574AW	.1875	3/16	2-5/16	3-1/2	012587AW	.3906	25/64	3-3/4	5-1/8
016011AW	.1910	11	2-5/16	3-1/2	015924AW	.3970	X	3-3/4	5-1/8
016010AW	.1935	10	2-7/16	3-5/8	012588AW	.4062	13/32	3-7/8	5-1/4
016009AW	.1960	9	2-7/16	3-5/8	012589AW	.4219	27/64	3-15/16	5-3/8
016008AW	.1990	8	2-7/16	3-5/8	012590AW	.4375	7/16	4-1/16	5-1/2
012575AW	.2031	13/64	2-7/16	3-5/8	012591AW	.4531	29/64	4-3/16	5-5/8
016004AW	.2090	4	2-1/2	3-3/4	012592AW	.4688	15/32	4-5/16	5-3/4
016003AW	.2130	3	2-1/2	3-3/4	012593AW	.4844	31/64	4-3/8	5-7/8
012576AW	.2188	7/32	2-1/2	3-3/4	012594AW	.5000	1/2	4-1/2	6
015957AW	.2244	5.70mm	67mm	98mm	012595AW	.5156	33/64	4-13/16	6-5/8
016001AW	.2280	1	2-5/8	3-7/8	012596AW	.5312	17/32	4-13/16	6-5/8
012577AW	.2344	15/64	2-5/8	3-7/8	012597AW	.5469	35/64	4-13/16	6-5/8
015961AW	.2402	6.10mm	70mm	102mm	012598AW	.5625	9/16	4-13/16	6-5/8
015904AW	.2460	D	2-3/4	4	012599AW	.5781	37/64	4-13/16	6-5/8
015905AW	.2500	E	2-3/4	4	012600AW	.5938	19/32	5-3/16	7-1/8
012578AW	.2500	1/4	2-3/4	4	012601AW	.6094	39/64	5-3/16	7-1/8
015964AW	.2520	6.40mm	73mm	105mm	012602AW	.6250	5/8	5-3/16	7-1/8
015906AW	.2570	F	2-7/8	4-1/8	012603AW	.6406	41/64	5-3/16	7-1/8
015907AW	.2610	G	2-7/8	4-1/8	012604AW	.6562	21/32	5-3/16	7-1/8
012579AW	.2656	17/64	2-7/8	4-1/8	012605AW	.6719	43/64	5-5/8	7-5/8
015909AW	.2720	I	2-7/8	4-1/8	012606AW	.6875	11/16	5-5/8	7-5/8
015910AW	.2770	J	2-7/8	4-1/8	—	—	—	—	—

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Railroad Drills - Track Bits



HSS **Black Oxide**

List 2871 - HSS - Flat Beaded Single End - Treated



HSS **Black Oxide**

List 2881 - HSS - Flat Beaded Double End - Treated

- Design allows for drilling of both hard and soft rails



Cobalt **Bronze Oxide**

List 3871 - Cobalt - Spiral Flute Single End - Treated

- Cobalt track bits can easily be resharpened

Packaging: Flat Track Bits (12), Spiral Flute Track Bits (1)

Diameter	Decimal Equiv.	Overall Length	List 2871	List 2881	List 3871
7/8	.8750	6-1/4	032005AA	032103AA	—
15/16	.9375	6-1/4	032006AA	—	—
1	1.0000	6-1/4	032007AA	—	—
1-1/16	1.0625	6-1/4	032008AA	032106AA	037232AA
1-1/8	1.1250	6-1/4	032009AA	032107AA	037233AA
1-3/16	1.1875	6-1/4	032010AA	032108AA	037234AA
1-1/4	1.2500	6-1/4	032011AA	032109AA	037235AA
1-5/16	1.3125	6-1/4	032012AA	032110AA	037236AA
1-3/8	1.3750	6-1/4	032013AA	032111AA	037237AA

Tie Bore Drills



HSS **Bright**

List 2861 - HSS

- Designed for drilling spike holes in wooden railroad ties
- Available in one or two flute design

Packaging: All (3)

EDP No.	Diameter	Decimal Equiv.	Flute Length	Overall Length	Shank Diameter	Shank Length	# Flute	Flats
031954AA	9/16	.5625	6	9-3/8	1/2	3	2	
031955AA	5/8	.6250	6-1/4	9-3/8	1/2	3	2	
031961AA	9/16	.5625	6	9-3/8	1/2	3	1	
031967AA	5/8	.6250	6-1/4	9-3/8	1/2	3	1	
031971AA	9/16	.5625	6-1/4	9-3/8	1/2	3	2	×
031973AA	3/4	.7500	6	9-3/8	1/2	2-1/2	1	
031974AA	9/16	.5625	8-3/8	12	1/2	3	2	×
031980AA	3/4	.7500	8-5/8	11-1/4	1/2	2-1/2	1	×
031981AA	3/4	.7500	8-5/8	11-1/4	3/4	—	2	Tang
031982AA	11/16	.6875	7	9-5/8	1/2	3	1	

Bonding Drills

Cobalt **Bronze Oxide**

List 3841 - Cobalt

- Designed for drilling holes for bonding wires for track signals
- Available in flattened or round shanks

Packaging: All (1)

Diameter	Decimal Equiv.	Flute Length	Overall Length	Shank Diameter	Flat Shank EDP No.	Round Shank EDP No.
3/8	.9750	1-3/4	3	3/8	037204AA	037203AA

Taper Shank Twist Drills Fractional Sizes



HSS 118° Black Oxide

List 200 - HSS - Regular Shank - 118° Point - Treated

- Designed to fit American Standard (Morse) Taper Shank Holders
- Used in various drilling applications and materials

Packaging: All (3)

EDP No.	Diameter	Decimal Equiv.	Flute Length	Overall Length	Taper Shank	EDP No.	Diameter	Decimal Equiv.	Flute Length	Overall Length	Taper Shank
010012AW	3/16	.1875	2-1/2	5-3/4	1	010043AW	43/64	.6719	5-3/8	9-1/4	2
010013AW	13/64	.2031	2-3/4	6	1	010044AW	11/16	.6875	5-3/8	9-1/4	2
010014AW	7/32	.2188	2-3/4	6	1	010045AW	45/64	.7031	5-5/8	9-1/2	2
010015AW	15/64	.2344	2-7/8	6-1/8	1	010046AW	23/32	.7188	5-5/8	9-1/2	2
010016AW	1/4	.2500	2-7/8	6-1/8	1	010047AW	47/64	.7344	5-7/8	9-3/4	2
010017AW	17/64	.2656	3	6-1/4	1	010048AW	3/4	.7500	5-7/8	9-3/4	2
010018AW	9/32	.2812	3	6-1/4	1	010049AW	49/64	.7656	6	9-7/8	2
010019AW	19/64	.2969	3-1/8	6-3/8	1	010050AW	25/32	.7812	6	9-7/8	2
010020AW	5/16	.3125	3-1/8	6-3/8	1	010051AW	51/64	.7969	6-1/8	10-3/4	3
010021AW	21/64	.3281	3-1/4	6-1/2	1	010052AW	13/16	.8125	6-1/8	10-3/4	3
010022AW	11/32	.3438	3-1/4	6-1/2	1	010053AW	53-64	.8281	6-1/8	10-3/4	3
010023AW	23/64	.3594	3-1/2	6-3/4	1	010054AW	27/32	.8438	6-1/8	10-3/4	3
010024AW	3/8	.3750	3-1/2	6-3/4	1	010055AW	55-64	.8594	6-1/8	10-3/4	3
010025AW	25/64	.3906	3-5/8	7	1	010056AW	7/8	.8750	6-1/8	10-3/4	3
010026AW	13/32	.4062	3-5/8	7	1	010057AW	57/64	.8906	6-1/8	10-3/4	3
010027AW	27/64	.4219	3-7/8	7-1/4	1	010058AW	29/32	.9062	6-1/8	10-3/4	3
010028AW	7/16	.4375	3-7/8	7-1/4	1	010059AW	59/64	.9219	6-1/8	10-3/4	3
010029AW	29/64	.4531	4-1/8	7-1/2	1	010060AW	15/16	.9375	6-1/8	10-3/4	3
010030AW	15/32	.4688	4-1/8	7-1/2	1	010061AW	61/64	.9531	6-3/8	11	3
010031AW	31/64	.4844	4-3/8	8-1/4	2	010062AW	31/32	.9688	6-3/8	11	3
010032AW	1/2	.5000	4-3/8	8-1/4	2	010063AW	63/64	.9844	6-3/8	11	3
010033AW	33/64	.5156	4-5/8	8-1/2	2	010064AW	1	1.0000	6-3/8	11	3
010034AW	33/64	.5312	4-5/8	8-1/2	2	010065AW	1-1/64	1.0156	6-1/2	11-1/8	3
010035AW	35/64	.5469	4-7/8	8-3/4	2	010066AW	1-1/32	1.0313	6-1/2	11-1/8	3
010036AW	9/16	.5625	4-7/8	8-3/4	2	010067AW	1-3/64	1.0469	6-5/8	11-1/4	3
010037AW	37/64	.5781	4-7/8	8-3/4	2	010068AW	1-1/16	1.0625	6-5/8	11-1/4	3
010038AW	19/32	.5938	4-7/8	8-3/4	2	010069AW	1-5/64	1.0781	6-7/8	12-1/2	4
010039AW	39/64	.6094	4-7/8	8-3/4	2	010070AW	1-3/32	1.0938	6-7/8	12-1/2	4
010040AW	5/8	.6250	4-7/8	8-3/4	2	010071AW	1-7/64	1.1094	7-1/8	12-3/4	4
010041AW	41/64	.6406	5-1/8	9	2	010072AW	1-1/8	1.1250	7-1/8	12-3/4	4
010042AW	21/32	.6562	5-1/8	9	2	010073AW	1-9/64	1.1406	7-1/4	12-7/8	4

Taper Shank Twist Drills Fractional Sizes



HSS

118°

Black
Oxide

List 200 - HSS - Regular Shank - 118° Point - Treated

- Designed to fit American Standard (Morse) Taper Shank Holders
- Used in various drilling applications and materials

Packaging: All (1)

EDP No.	Diameter	Decimal Equiv.	Flute Length	Overall Length	Taper Shank	EDP No.	Diameter	Decimal Equiv.	Flute Length	Overall Length	Taper Shank
010074AW	1-5/32	1.1562	7-1/4	12-7/8	4	010114AW	1-25-32	1.7813	10-1/8	17-1/8	5
010075AW	1-11/64	1.1719	7-3/8	13	4	010116AW	1-13/16	1.8125	10-1/8	17-1/8	5
010076AW	1-3/16	1.1875	7-3/8	13	4	010118AW	1-27/32	1.8438	10-1/8	17-1/8	5
010077AW	1-13/64	1.2031	7-1/2	13-1/8	4	010120AW	1-7/8	1.8750	10-3/8	17-3/8	5
010078AW	1-7/32	1.2188	7-1/2	13-11-8/	4	010122AW	1-29/32	1.9063	10-3/8	17-3/8	5
010079AW	1-15/64	1.2344	7-7/8	13-1/2	4	010124AW	1-15/16	1.9375	10-3/8	17-3/8	5
010080AW	1-1/4	1.2500	7-7/8	13-1/2	4	010126AW	1-31/32	1.9688	10-3/8	17-3/8	5
010081AW	1-17/64	1.2656	8-1/2	14-1/8	4	010128AW	2	2.0000	10-3/8	17-3/8	5
010082AW	1-9/32	1.2812	8-1/2	14-1/8	4	010130AW	2-1/32	2.0313	10-3/8	17-3/8	5
010083AW	1-19/64	1.2969	8-5/8	14-1/4	4	010132AW	2-1/6	2.0625	10-1/4	17-3/8	5
010084AW	1-5/16	1.3125	8-5/8	14-1/4	4	010134AW	2-3/32	2.0938	10-1/4	17-3/8	5
010085AW	1-21/64	1.3281	8-3/4	14-3/8	4	010136AW	2-1/8	2.1250	10-1/4	17-3/8	5
010086AW	1-11/32	1.3438	8-3/4	14-3/8	4	010138AW	2-5/32	2.1562	10-1/4	17-3/8	5
010087AW	1-23/64	1.3594	8-7/8	14-1/2	4	010140AW	2-3/16	2.1875	10-1/4	17-3/8	5
010088AW	1-3/8	1.3750	8-7/8	14-1/2	4	010142AW	2-7/32	2.2188	10-1/8	17-3/8	5
010089AW	1-25/64	1.3906	9	14-5/8	4	010144AW	2-1/4	2.2500	10-1/8	17-3/8	5
010090AW	1-13/32	1.4062	9	14-5/8	4	010148AW	2-5/16	2.3125	10-1/8	17-3/8	5
010091AW	1-27/64	1.4219	9-1/8	14-3/4	4	010152AW	2-3/8	2.3750	10-1/8	17-3/8	5
010092AW	1-7/16	1.4375	9-1/8	14-3/4	4	010156AW	2-7/16	2.4375	11-1/4	18-3/4	5
010093AW	1-29/64	1.4531	9-1/4	14-7/8	4	010160AW	2-1/2	2.5000	11-1/4	18-3/4	5
010094AW	1-15/32	1.4688	9-1/4	14-7/8	4	010164AW	2-9/16	2.5625	11-7/8	19-1/2	5
010095AW	1-31/64	1.4844	9-3/8	15	4	010168AW	2-5/8	2.6250	11-7/8	19-1/2	5
010096AW	1-1/2	1.5000	9-3/8	15	4	010172AW	2-11/16	2.6875	12-3/4	20-3/8	5
010098AW	1-17/32	1.5313	9-3/8	16-3/8	5	010176AW	2-3/4	2.7500	12-3/4	20-3/8	5
010100AW	1-9/16	1.5625	6-5/8	16-3/8	5	010180AW	2-3/4	2.8125	13-3/8	21-1/8	5
010102AW	1-19/32	1.5938	9-7/8	16-7/8	5	010184AW	2-7/8	2.8750	13-3/8	21-1/8	5
010104AW	1-5/8	1.6250	10	17	5	010188AW	2-15/16	2.9375	14	21-3/4	5
010106AW	1-21/32	1.6562	10-1/8	17-1/8	5	010192AW	3	3.0000	14	21-3/4	5
010108AW	1-11/16	1.6875	10-1/8	17-1/8	5	010200AW	3-1/8	3.1250	14-5/8	24-1/2	6
010110AW	1-23/32	1.7188	10-1/8	17-1/8	5	010208AW	3-1/4	3.2500	15-1/2	25-1/2	6
010112AW	1-3/4	1.7500	10-1/8	17-1/8	5	—	—	—	—	—	—

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Taper Shank Twist Drills Fractional Sizes



HSS **118°** **Black Oxide**

- List 200C - HSS - Shank** **Smaller Than Regular - 118° Point - Treated**
- Designed to fit American Standard (Morse) Taper Shank Holders
 - Used in various drilling applications and materials

Packaging: All (1)

EDP No.	Diameter	Decimal Equiv.	Flute Length	Overall Length	Taper Shank	EDP No.	Diameter	Decimal Equiv.	Flute Length	Overall Length	Taper Shank
010580AW	31/64	0.4844	4-3/8	7-3/4	1	010605AW	1-1/4	1.2500	7-7/8	12-1/2	3
010581AW	1/2	0.5000	4-3/8	7-3/4	1	010606AW	1-33/64	1.5156	9-3/8	15	4
010582AW	33/64	0.5156	4-5/8	8	1	010607AW	1-17/32	1.5312	9-3/8	15	4
010583AW	17/32	0.5312	4-5/8	8	1	010608AW	1-35/64	1.5469	9-5/8	15-1/4	4
010584AW	35/64	0.5469	4-7/8	8-1/4	1	010609AW	1-9/16	1.5625	9-5/8	15-1/4	4
010585AW	9/16	0.5625	4-7/8	8-1/4	1	010610AW	1-37/64	1.5781	9-7/8	15-1/2	4
010586AW	51/64	0.7969	6-1/8	10	2	010611AW	1-19/32	1.5938	9-7/8	15-1/2	4
010587AW	13/16	0.8125	6-1/8	10	2	010612AW	1-39/64	1.6094	10	15-5/8	4
010588AW	53/64	0.8281	6-1/8	10	2	010613AW	1-5/8	1.6250	10	15-5/8	4
010589AW	27/32	0.8438	6-1/8	10	2	010614AW	1-41/64	1.6406	10-1/8	15-3/4	4
010590AW	55/64	0.8594	6-1/8	10	2	010615AW	1-21/32	1.6563	10-1/8	15-3/4	4
010591AW	7/8	0.8750	6-1/8	10	2	010616AW	1-43/64	1.6719	10-1/8	15-3/4	4
010592AW	57/64	0.8906	6-1/8	10	2	010617AW	1-11/16	1.6875	10-1/8	15-3/4	4
010593AW	29/32	0.9062	6-1/8	10	2	010618AW	1-45/64	1.7031	10-1/8	15-3/4	4
010594AW	1-5/64	1.0781	6-7/8	11-1/2	3	010619AW	1-23/32	1.7188	10-1/8	15-3/4	4
010595AW	1-3/32	1.0938	6-7/8	11-1/2	3	010620AW	1-47/64	1.7344	10-3/8	16-1/4	4
010596AW	1-7/64	1.1094	7-1/8	11-3/4	3	010621AW	1-3/4	1.7500	10-3/8	16-1/4	4
010597AW	1-1/8	1.1250	7-1/8	11-3/4	3	010623AW	1-25/32	1.7813	10-3/8	16-1/4	4
010598AW	1-9/64	1.1406	7-1/4	11-7/8	3	010625AW	1-13/16	1.8125	10-3/8	16-1/4	4
010599AW	1-5/32	1.1562	7-1/4	11-7/8	3	010627AW	1-27/32	1.8438	10-3/8	16-1/4	4
010600AW	1-11/64	1.1719	7-3/8	12	3	010629AW	1-7/8	1.8750	10-1/2	16-1/2	4
010601AW	1-3/16	1.1875	7-3/8	12	3	010631AW	1-29/32	1.9063	10-1/2	16-1/2	4
010602AW	1-13/64	1.2031	7-1/2	12-1/8	3	010633AW	1-15/16	1.9375	10-5/8	16-5/8	4
010603AW	1-7/32	1.2188	7-1/2	12-1/8	3	010635AW	1-31/32	1.9688	10-5/8	16-5/8	4
010604AW	1-15/64	1.2344	7-7/8	12-1/2	3	010637AW	2	2.0000	10-5/8	16-5/8	4

HSS **118°** **Black Oxide**

List 200BC - HSS - Shank Larger Than Regular - 118° Point - Treated

Packaging: All (1)

EDP No.	Diameter	Decimal Equiv.	Flute Length	Overall Length	Taper Shank	EDP No.	Diameter	Decimal Equiv.	Flute Length	Overall Length	Taper Shank
010550AW	3/8	.3750	3-1/2	7-3/8	2	010560AW	11/16	.6875	5-3/8	10	3
010551AW	25/64	.3906	3-5/8	7-1/2	2	010561AW	45/64	.7031	5-5/8	10-1/4	3
010552AW	13/32	.4062	3-5/8	7-1/2	2	010562AW	23/32	.7188	5-5/8	10-1/4	3
010553AW	27/64	.4219	3-7/8	7-3/4	2	010563AW	47/64	.7344	5-7/8	10-1/2	3
010554AW	7/16	.4375	3-7/8	7-3/4	2	010564AW	3/4	.7500	5-7/8	10-1/2	3
010555AW	29/64	.4531	4-1/8	8	2	010565AW	49/64	.7656	6	10-5/8	3
010556AW	15/32	.4688	4-1/8	8	2	010566AW	25/32	.7812	6	10-5/8	3
010557AW	41/64	.6406	5-1/8	9-3/4	3	010567AW	1	1.0000	6-3/8	12	4
010558AW	21/32	.6562	5-1/8	9-3/4	3	010569AW	1-1/32	1.0312	6-1/2	12-1/8	4
010559AW	43/64	.6719	5-3/8	10	3	010571AW	1-1/16	1.0625	6-5/8	12-1/4	4

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

1/2" Reduced Shank - Silver & Deming Drills Fractional Sizes



HSS 118° Bright Black

List 209 - HSS - Round Shank - Shank Length 2-1/4" - 118° Point - Treated Flutes

HSS 118° Bright Black

List 209F - HSS - 3 Flats - Shank Length 2-1/4" - 118° Point - Treated Flutes

- Designed to fit 1/2" drill chucks
- Used in both drill presses and portable drills, where diameter is larger than drill chuck
- Not recommended for enlarging holes

Packaging: All (1)

Diameter	Decimal Equiv.	Flute Length	Overall Length	List #209 Round Shank	List #209F Flat Shank	Diameter	Decimal Equiv.	Flute Length	Overall Length	List #209 Round Shank	List #209F Flat Shank
1/2	0.5000	3	6	017232AW	017632AW	61/64	0.9531	3	6	017261AW	017661AW
33/64	0.5156	3	6	017233AW	017633AW	31/32	0.9688	3	6	017262AW	017662AW
17/32	0.5312	3	6	017234AW	017634AW	63/64	0.9844	3	6	017263AW	017663AW
35/64	0.5469	3	6	017235AW	017635AW	1	1.0000	3	6	017264AW	017664AW
9/16	0.5625	3	6	017236AW	017636AW	1-1/64	1.0156	3	6	014420AW	017665AW
37/64	0.5781	3	6	017237AW	017637AW	1-1/32	1.0313	3	6	014421AW	017666AW
19/32	0.5938	3	6	017238AW	017638AW	1-3/64	1.0469	3	6	014422AW	017667AW
39/64	0.6094	3	6	017239AW	017639AW	1-1/16	1.0625	3	6	017268AW	017668AW
5/8	0.6250	3	6	017240AW	017640AW	1-5/64	1.0781	3	6	014423AW	017669AW
41/64	0.6406	3	6	017241AW	017641AW	1-3/32	1.0938	3	6	014424AW	017670AW
21/32	0.6562	3	6	017242AW	017642AW	1-7/64	1.1094	3	6	014425AW	017671AW
43/64	0.6719	3	6	017243AW	017643AW	1-1/8	1.1250	3	6	017272AW	017672AW
11/16	0.6875	3	6	017244AW	017644AW	1-9/64	1.1406	3	6	014426AW	017673AW
45/64	0.7031	3	6	017245AW	017645AW	1-5/32	1.1562	3	6	014427AW	017674AW
23/32	0.7188	3	6	017246AW	017646AW	1-11/64	1.1719	3	6	014428AW	017675AW
47/64	0.7344	3	6	017247AW	017647AW	1-3/16	1.1875	3	6	017276AW	017676AW
3/4	0.7500	3	6	017248AW	017648AW	1-13/64	1.2031	3	6	014429AW	017677AW
49/64	0.7656	3	6	017249AW	017649AW	1-7/32	1.2188	3	6	014430AW	017678AW
25/32	0.7812	3	6	017250AW	017650AW	1-15/64	1.2344	3	6	014431AW	017679AW
51/64	0.7969	3	6	017251AW	017651AW	1-1/4	1.2500	3	6	017280AW	017680AW
13/16	0.8125	3	6	017252AW	017652AW	1-9/32	1.2812	3	6	014432AW	017681AW
53/64	0.8281	3	6	017253AW	017653AW	1-5/16	1.3125	3	6	014433AW	017682AW
27/32	0.8438	3	6	017254AW	017654AW	1-11/32	1.3438	3	6	014434AW	017683AW
55/64	0.8594	3	6	017255AW	017655AW	1-3/8	1.3750	3	6	014435AW	017684AW
7/8	0.8750	3	6	017256AW	017656AW	1-13/32	1.4062	3	6	014436AW	017685AW
57/64	0.8906	3	6	017257AW	017657AW	1-7/16	1.4375	3	6	014437AW	017686AW
29/32	0.9062	3	6	017258AW	017658AW	1-15/32	1.4688	3	6	014438AW	017687AW
59/64	0.9219	3	6	017259AW	017659AW	1-1/2	1.5000	3	6	014439AW	017688AW
15/16	0.9375	3	6	017260AW	017660AW	—	—	—	—	—	—

1/2" Reduced Shank Silver & Deming Drill Set Fractional Sizes

Set Includes 8 Drills 9/16 to 1 by 16ths

EDP 14440AW - Round Shank - Shank Length 2-1/4" - 118° Point - Treated Flutes

EDP 14441AW - Flatted Shank - Shank Length 2-1/4" - 118° Point - Treated Flutes



Combined Drills & Countersinks



HSS Bright

List 268 - HSS - Plain Type - 60° Included Angle - Bright

Packaging: 00 to 5 (12), 6 to 8 (6)

• Used for centering work ends where the work piece is to be revolved on machine centers

EDP No.	Size	Body Diameter	Drill Diameter	Drill Length	Overall Length
017100AW	00	1/8	.025	.030	1-1/8
017110AW	0	1/8	1/32	.038	1-1/8
017101AW	1	1/8	3/64	3/64	1-1/4
017102AW	2	3/16	5/64	5/64	1-7/8
017103AW	3	1/4	7/64	7/64	2
017104AW	4	5/16	1/8	1/8	2-1/8
017105AW	5	7/16	3/16	3/16	2-3/4
017106AW	6	1/2	7/32	7/32	3
017107AW	7	5/8	1/4	1/4	3-1/4
017108AW	8	3/4	5/16	5/16	3-1/2



HSS Bright

List 268C - HSS - Bell Type - 60° Included Angle -

Packaging: 11 to 15 (12), 16 to 18 (6)

EDP No.	Size	Body Diameter	Drill Diameter	Drill Length	Overall Length	Bell Diameter
017111AW	11	1/8	3/64	3/64	1-1/4	.100
017112AW	12	3/16	1/16	1/16	1-7/8	.150
017113AW	13	1/4	3/32	3/32	2	.200
017114AW	14	5/16	7/64	7/64	2-1/8	.250
017115AW	15	7/16	5/32	5/32	2-3/4	.350
017116AW	16	1/2	3/16	3/16	3	.400
017117AW	17	5/8	7/32	7/32	3-1/4	.500
017118AW	18	3/4	1/4	1/4	3-1/2	.600



HSS Bright

List 268XL - HSS - Long Series - 60° Included Angle - Bright

Packaging: All (1)

EDP No.	Size	Body Diameter	Drill Length	Overall Length
017122AW	1	1/8	3/64	6
017125AW	2	3/16	5/64	6
017128AW	3	1/4	7/64	6
017131AW	4	5/16	1/8	6
017134AW	5	7/16	3/16	6
017136AW	6	1/2	7/32	6
017137AW	7	5/8	1/4	6
017138AW	8	3/4	5/16	6

Combined Drills & Countersinks Set

HSS Bright

EDP No. **029020AW** Set No. 25B

HSS Plain Type 60° Included Angle Bright (Sizes 1, 2, 3, 4, 5)

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

ROYAL Gold Tip - Jobber Length



HSS - Regular - 135° Point - Gold Tip

Fractional Sizes



EDP No.	Decimal Equiv.	Flute Length	Overall Length	List 308 Type A
027507AW	3/64	.0469	3/4	1-3/4
027508AW	1/16	.0625	7/8	1-7/8
027509AW	5/64	.0781	1	2
027510AW	3/32	.0938	1 1/4	2-1/4
027511AW	7/64	.1094	1-1/2	2-5/8
027512AW	1/8	.1250	1-5/8	2-3/4
027513AW	9/64	.1406	1-3/4	2-7/8
027514AW	5/32	.1563	2	3-1/8
027515AW	11/64	.1719	2-1/8	3-1/4
027516AW	3/16	.1875	2-5/16	3-1/2
027517AW	13/64	.2031	2-7/16	3-5/8
027518AW	7/32	.2188	2-1/2	3-3/4
027519AW	15/64	.2344	2-5/8	3-7/8
027520AW	1/4	.2500	2-3/4	4
027521AW	17/64	.2656	2-7/8	4-1/8
027522AW	9/32	.2813	2-15/16	4-1/4
027523AW	19/64	.2969	3-1/16	4-3/8
027524AW	5/16	.3125	3-3/16	4-1/2
027525AW	21/64	.3164	3-5/16	4-5/8
027526AW	11/32	.3438	3-7/16	4-3/4
027527AW	23/64	.3594	3-1/2	4-7/8
027528AW	3/8	.3750	3-5/8	5
027529AW	25/64	.3906	3-3/4	5-1/8
027530AW	13/32	.4063	3-7/8	5-1/4
027531AW	27/64	.4219	3-5/16	5-3/8
027532AW	7/16	.4375	4-1/16	5-1/2
027533AW	29/64	.4531	4-3/16	5-5/8

Tolerance of D

upto 1/8(.1250)	0~ -.0005
over 1/8(.1250) ~ upto 1/4(.2500)	0~ -.0007
over 1/4(.2500) ~ upto 1/2(.5000)	0~ -.0010

ROYAL Gold Tip - Jobber Length Letter Sizes



HSS - Regular - 135° Point - Gold Tip

HSS 130° Split TiN Point

EDP No.	Decimal Equiv.	Flute Length	Overall Length	List 308 Type A
027534AW	A	.2340	2-5/8	3-7/8
027535AW	B	.2380	2-3/4	4
027536AW	C	.2420	2-3/4	4
027537AW	D	.2460	2-3/4	4
027538AW	E	.2500	2-3/4	4
027539AW	F	.2570	2-7/8	4-1/8
027540AW	G	.2610	2-7/8	4-1/8
027541AW	H	.2660	2-7/8	4-1/8
027542AW	I	.2720	2-7/8	4-1/8
027543AW	J	.2770	2-7/8	4-1/8
027544AW	K	.2810	2-15/16	4-1/4
027545AW	L	.2900	2-15/16	4-1/4
027546AW	M	.2950	3-1/16	4-3/8
027547AW	N	.3020	3-1/16	4-3/8
027548AW	O	.3160	3-3/16	4-1/2
027549AW	P	.3230	3-5/16	4-5/8
027550AW	Q	.3320	3-7/16	4-3/4
027551AW	R	.3390	3-7/16	4-3/4
027552AW	S	.3480	3-1/2	4-7/8
027553AW	T	.3580	3-1/2	4-7/8
027554AW	U	.3680	3-5/8	5
027555AW	V	.3770	3-5/8	5
027556AW	W	.3860	3-3/4	5-1/8
027557AW	X	.3970	3-3/4	5-1/8
027558AW	Y	.4040	3-7/8	5-1/4
027559AW	Z	.4130	3-7/8	5-1/4

Tolerance of D

upto 1/8(.1250)
0~ -.0005

over 1/8(.1250) ~ upto 1/4(.2500)
0~ -.0007

over 1/4(.2500) ~ upto 1/2(.5000)
0~ -.0010

ROYAL Gold Tip - Jobber Length Wire Gauge Sizes



HSS - Regular - 135° Point - Gold Tip

HSS 130° Split TiN Point

EDP No.	Diameter	Decimal Equiv.	Flute Length	Overall Length	EDP No.	Diameter	Decimal Equiv.	Flute Length	Overall Length
027564AW	52	.0635	7/8	1-7/8	027592AW	24	.1540	2	3-1/8
027565AW	51	.0670	1	2	027593AW	23	.1570	2	3-1/8
027566AW	50	.0700	1	2	027594AW	22	.1590	2-1/8	3-1/4
027567AW	49	.0730	1	2	027595AW	21	.1160	1-5/8	2-3/4
027568AW	48	.0760	1	2	027596AW	20	.1610	2-1/8	3-1/4
027569AW	47	.0785	1	2	027597AW	19	.1660	2-1/8	3-1/4
027570AW	46	.0810	1-1/8	2-1/8	027598AW	18	.1695	2-1/8	3-1/4
027571AW	45	.0820	1-1/8	2-1/8	027599AW	17	.1730	2-3/16	3-3/8
027572AW	44	.0860	1-1/8	2-1/8	027600AW	16	.1770	2-3/16	3-3/8
027573AW	43	.0890	1-1/4	2-1/4	027601AW	15	.1800	2-3/16	3-3/8
027574AW	42	.0935	1-1/4	2-1/4	027602AW	14	.1820	2-3/16	3-3/8
027575AW	41	.0960	1-3/8	2-3/8	027603AW	13	.1850	2-5/16	3-1/2
027576AW	40	.0980	1-3/8	2-3/8	027604AW	12	.1890	2-5/16	3-1/2
027577AW	39	.0995	1-3/8	2-3/8	027605AW	11	.1910	2-5/16	3-1/2
027578AW	38	.1015	1-7/16	2-1/2	027606AW	10	.1935	2-7/16	3-5/8
027579AW	37	.1040	1-7/16	2-1/2	027607AW	9	.1960	2-7/16	3-5/8
027580AW	36	.1065	1-7/16	2-1/2	027608AW	8	.1990	2-7/16	3-5/8
027581AW	35	.1100	1-1/2	2-5/8	027609AW	7	.2010	2-7/16	3-5/8
027582AW	34	.1110	1-1/2	2-5/8	027610AW	6	.2040	2-1/2	3-3/4
027583AW	33	.1130	1-1/2	2-5/8	027611AW	5	.2055	2-1/2	3-3/4
027584AW	32	.1200	1-5/8	2-3/4	027612AW	4	.2090	2-1/2	3-3/4
027585AW	31	.1285	1-5/8	2-3/4	027613AW	3	.2130	2-1/2	3-3/4
027586AW	30	.1360	1-3/4	2-7/8	027614AW	2	.2210	2-5/8	3-7/8
027587AW	29	.1405	1-3/4	2-7/8	027615AW	1	.2280	2-5/8	3-7/8
027588AW	28	.1440	1-7/8	3					
027589AW	27	.1470	1-7/8	3					
027590AW	26	.1495	1-7/8	3					
027591AW	25	.1520	2	3-1/8					

Tolerance of D

upto 1/8(.1250)
0~ -.0005

over 1/8(.1250) ~ upto 1/4(.2500)
0~ -.0007

over 1/4(.2500) ~ upto 1/2(.5000)
0~ -.0010

ROYAL Gold Tip Parabolic Flute - Jobber Length



Cobalt - Regular - 130° Split Point - Gold Tip

Fractional sizes

Cobalt

130°
Split

TiN
Point

Letter sizes

Cobalt

130°
Split

TiN
Point

EDP No.	Diameter	Decimal Equiv.	Flute Length	Overall Length	EDP No.	Diameter	Decimal Equiv.	Flute Length	Overall Length
027616AW	5/64	.0781	1	2	027644AW	A	.2340	2-5/8	3-7/8
027617AW	3/32	.0938	1-1/4	2-1/4	027645AW	B	.2380	2-3/4	4
027618AW	7/64	.1094	1-1/2	2-5/8	027646AW	C	.2420	2-3/4	4
027619AW	1/8	.1250	1-5/8	2-3/4	027647AW	D	.2460	2-3/4	4
027620AW	9/64	.1406	1-3/4	2-7/8	027648AW	E	.2500	2-3/4	4
027621AW	5/32	.1563	2	3-1/8	027649AW	F	.2570	2-7/8	4-1/8
027622AW	11/64	.1719	2-1/8	3-1/4	027650AW	G	.2610	2-7/8	4-1/8
027623AW	3/16	.1875	2-5/16	3-1/2	027651AW	H	.2660	2-7/8	4-1/8
027624AW	13/64	.2031	2-7/16	3-5/8	027652AW	I	.2720	2-7/8	4-1/8
027625AW	7/32	.2188	2-1/2	3-3/4	027653AW	J	.2770	2-7/8	4-1/8
027626AW	15/64	.2344	2-5/8	3-7/8	027654AW	K	.2810	2-15/16	4-1/4
027627AW	1/4	.2500	2-3/4	4	027655AW	L	.2900	2-15/16	4-1/4
027628AW	17/64	.2656	2-7/8	4-1/8	027656AW	M	.2950	3-1/16	4-3/8
027629AW	9/32	.2813	2-15/16	4-1/4	027657AW	N	.3020	3-1/16	4-3/8
027630AW	19/64	.2969	3-1/16	4-3/8	027658AW	O	.3160	3-3/16	4-1/2
027631AW	5/16	.3125	3-3/16	4-1/2	027659AW	P	.3230	3-5/16	4-5/8
027632AW	21/64	.3281	3-5/16	4-5/8	027660AW	Q	.3320	3-7/16	4-3/4
027633AW	11/32	.3438	3-7/16	4-3/4	027661AW	R	.3390	3-7/16	4-3/4
027634AW	23/64	.3594	3-1/2	4-7/8	027662AW	S	.3480	3-1/2	4-7/8
027635AW	3/8	.3750	3-5/8	5	027663AW	T	.3580	3-1/2	4-7/8
027636AW	25/64	.3906	3-3/4	5-1/8	027664AW	U	.3680	3-5/8	5
027637AW	13/32	.4063	3-7/8	5-1/4	027665AW	V	.3770	3-5/8	5
027638AW	27/64	.4219	3-15/16	5-3/8	027666AW	W	.3860	3-3/4	5-1/8
027639AW	7/16	.4375	4-1/16	5-1/2	027667AW	X	.3970	3-3/4	5-1/8
027640AW	29/64	.4531	4-3/16	5-5/8	027668AW	Y	.4040	3-7/8	5-1/4
027641AW	15/32	.4688	4-5/16	5-3/4	027669AW	Z	.4130	3-7/8	5-1/4
027642AW	31/64	.4844	4-3/8	5-7/8					
027643AW	1/2	.5000	4-1/2	6					

Tolerance of D

upto 1/8(.1250)
0~ -.0005

over 1/8(.1250) ~ upto 1/4(.2500)
0~ -.0007

over 1/4(.2500) ~ upto 1/2(.5000)
0~ -.0010

ROYAL Gold Tip Parabolic Flute - Jobber Length Cobalt Gauge Sizes



HSSC05 - Regular - 130° Split Point - Gold Tip

Cobalt 130° Split TiN Point

EDP No.	Diameter	Decimal Equiv.	Flute Length	Overall Length	EDP No.	Diameter	Decimal Equiv.	Flute Length	Overall Length
027670AW	47	.0785	1	2	027694AW	23	.1540	2	3-1/8
027671AW	46	.0810	1-1/8	2-1/8	027695AW	22	.1570	2	3-1/8
027672AW	45	.0820	1-1/8	2-1/8	027696AW	21	.1590	2-1/8	3-1/4
027673AW	44	.0860	1-1/8	2-1/8	027697AW	20	.1610	2-1/8	3-1/4
027674AW	43	.0890	1-1/4	2-1/4	027698AW	19	.1660	2-1/8	3-1/4
027675AW	42	.0935	1-1/4	2-1/4	027699AW	18	.1695	2-1/8	3-1/4
027676AW	41	.0960	1-3/8	2-3/8	027700AW	17	.1730	2-3/16	3-3/8
027677AW	40	.0980	1-3/8	2-3/8	027701AW	16	.1770	2-3/16	3-3/8
027678AW	39	.0995	1-3/8	2-3/8	027702AW	15	.1800	2-3/16	3-3/8
027679AW	38	.1015	1-7/16	2-1/2	027703AW	14	.1820	2-3/16	3-3/8
027680AW	37	.1040	1-7/16	2-1/2	027704AW	13	.1850	2-5/16	3-1/2
027681AW	36	.1065	1-7/16	2-1/2	027705AW	12	.1890	2-5/16	3-1/2
027682AW	35	.1100	1-1/2	2-5/8	027706AW	11	.1910	2-5/16	3-1/2
027683AW	34	.1110	1-1/2	2-5/8	027707AW	10	.1935	2-7/16	3-5/8
027684AW	33	.1130	1-1/2	2-5/8	027708AW	9	.1960	2-7/16	3-5/8
027685AW	32	.1160	1-5/8	2-3/4	027709AW	8	.1990	2-7/16	3-5/8
027686AW	31	.1200	1-5/8	2-3/4	027710AW	7	.2010	2-7/16	3-5/8
027687AW	30	.1285	1-5/8	2-3/4	027711AW	6	.2040	2-1/2	3-3/4
027688AW	29	.1360	1-3/4	2-7/8	027712AW	5	.2055	2-1/2	3-3/4
027689AW	28	.1405	1-3/4	2-7/8	027713AW	4	.2090	2-1/2	3-3/4
027690AW	27	.1440	1-7/8	3	027714AW	3	.2130	2-1/2	3-3/4
027691AW	26	.1470	1-7/8	3	027715AW	2	.2210	2-5/8	3-7/8
027692AW	25	.1495	1-7/8	3	027716AW	1	.2280	2-5/8	3-7/8
027693AW	24	.1520	2	3-1/8					

Tolerance of D

upto 1/8(.1250)
0~ -.0005

over 1/8(.1250) ~ upto 1/4(.2500)
0~ -.0007

over 1/4(.2500) ~ upto 1/2(.5000)
0~ -.0010

ROYAL Gold-Tip Drills Drills Set

EDP No.	Description	Size	Q'TY
027717AW	HSS Straight shank, split point (3/64 : Normal Point)	1/16 - 1/2 (Fractional)	29PCS

Cobalt 8% HSS, NC Spotting Drill



Cobalt 90° Bronze Oxide

NC-Spotting drills 90°



Cobalt 120° Bronze Oxide

NC-Spotting drills 120°

- Application: For more precise centering work on NC/CNC machine. A larger diameter in respect to the subsequent drilling tool permit to obtain the centering and chamfering simultaneously.

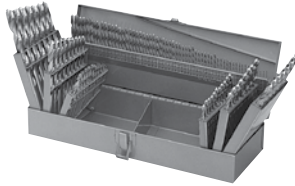
NC-Spotting drills 90°

NC-Spotting drills 120°

EDP No.	Diameter	Flute Length	Overall Length	EDP No.	Diameter	Flute Length	Overall Length
027489AW	1/8	0.472	1.93	027498AW	1/8	0.472	1.93
027490AW	3/16	0.590	2.44	027499AW	3/16	0.590	2.44
027491AW	1/4	0.669	2.76	027500AW	1/4	0.669	2.76
027492AW	5/16	0.984	3.11	027501AW	5/16	0.984	3.11
027493AW	3/8	0.827	3.50	027502AW	3/8	0.827	3.50
027494AW	1/2	0.984	4.02	027503AW	1/2	0.984	4.02
027495AW	5/8	1.575	4.53	027504AW	5/8	1.575	4.53
027496AW	3/4	1.968	5.16	027505AW	3/4	1.968	5.16
027497AW	1	1.968	6.14	027506AW	1	1.968	6.14

Drill Sets (with Index Case)

HSS - General Purpose Jobber Length Twist Drills



- Designed with the craftsman in mind
- Consists of the most popular size drills
- Manufactured from the finest high speed and cobalt steels
- Compact, rugged index makes drill selection easy and accurate

HSS 118° Black Oxide

Packaging: All (1)

EDP No.	Drill Set Number	Description of Drills in Index Case	Number of Drills
029004AW	29-HS	1/16 to 1/2×64th Drills Set-Treated	29
029012AW	13-HS	1/16 to 1/4×64th Drills Set-Treated	13
029022AW	21-HS	1/16 to 3/8×64th Drills Set-Treated	21
029505AW	15-HS	1/16 to 1/2×32nd Drills Set-Treated	15
029009AW	60-HS	1 to 60 Wire Sizes Drill Set-Treated	60
029015AW	20-HS	61 to 80 Wire Sizes Drill Set-Bright	20
029018AW	26-HS	A to Z Letter Sizes Drill Set-Treated	26
029031AW	115-HS	1/16 to 1/2×64, 1 to 60, A to Z Drill Set-Treated	115

Cobalt - General Purpose Jobber Length Twist Drills

Cobalt 135° Split Black Oxide

Packaging: All (1)

EDP No.	Drill Set Number	Description of Drills in Index Case	Number of Drills
029024AW	29-CO	1/16 to 1/2×64th Drill Set	29
029049AW	21-CO	1/16 to 3/8×64th Drill Set	21
029025AW	26-CO	A to Z Letter Sizes Drill Set	26
029026AW	60-CO	1 to 60 Wire Sizes Drill Set	60

Cobalt - General Purpose Screw Machine Length Twist Drills

Packaging: All (1)

EDP No.	Drill Set Number	Description of Drills in Index Case	Number of Drills
029027AW	29-CO-S	1/16 to 1/2×64th Drill Set	29

Special Drills



Wide Range of Drills for Variety of Applications & Industries

Regal Cutting Tools offers a wide range of drills for many varied applications and industries. While the majority of hole drilling uses standard drills, there remains a need for specifically designed tools. These special drills are manufactured from premium tool steels for drilling difficult materials and for use in unusual applications.

Pictured above is a small example of these special tools. They are capable in many applications of producing holes to very close tolerances and finishes.

Productivity can be enhanced through special combination tools replacing several operations. Various shank configurations can be incorporated to accommodate spindles of specialty drilling machines.

Regal Cutting Tools manufactures most special drills, with delivery times second to none. Call your Regal Cutting Tools representative today for all your special drill needs.

Carbide Tipped - Jobber Length Twist Drills Fractional



Carbide Tipped 118° Bright

List 406 (Fractional) Regular Helix - 118° Point

- Primarily used for drilling cast iron, bronze, hard copper, aluminum and other hard non-ferrous materials
- Not recommended for steel

EDP No.	Diameter	Decimal Equiv.	Flute Length	Overall Length	EDP No.	Diameter	Decimal Equiv.	Flute Length	Overall Length
014908AW	1/8	.1250	1-5/8	2-3/4	014921AW	21/64	.3281	3-5/16	4-5/8
014909AW	9/64	.1406	1-3/4	2-7/8	014922AW	11/32	.3438	3-7/16	4-3/4
014910AW	5/32	.1563	2	3-1/8	014923AW	23/64	.3594	3-1/2	4-7/8
014911AW	11/64	.1719	2-1/8	3-1/4	014924AW	3/8	.3750	3-5/8	5
014912AW	3/16	.1875	2-5/16	3-1/2	014925AW	25/64	.3906	3-3/4	5-1/8
014913AW	13/64	.2031	2-7/16	3-5/8	014926AW	13/32	.4063	3-7/8	5-1/4
014914AW	7/32	.2188	2-1/2	3-3/4	014927AW	27/64	.4219	3-15/16	5-3/8
014915AW	15/64	.2344	2-5/8	3-7/8	014928AW	7/16	.4375	4-1/16	5-1/2
014916AW	1/4	.2500	2-3/4	4	014929AW	29/64	.4531	4-3/16	5-5/8
014917AW	17/64	.2656	2-7/8	4-1/8	014930AW	15/32	.4688	4-5/16	5-3/4
014918AW	9/32	.2813	2-15/16	4-1/4	014931AW	31/64	.4844	4-3/8	5-7/8
014919AW	19/64	.2969	3-1/16	4-3/8	014932AW	1/2	.5000	4-1/2	6
014920AW	5/16	.3125	3-3/16	4-1/2	—	—	—	—	—

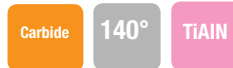
ROYAL HP Carbide Drills, TiAlN Coated, Short



- Ideal for mass production drilling
- Ground from solid micro-grain carbide
- Suitable general, cast steel, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metal, non-ferrous light metal, abrasive plastic.

EDP No.	Diameter	Decimal Equiv.	Overall Length	Flute Length	EDP No.	Diameter	Decimal Equiv.	Overall Length	Flute Length
027000AW	1/8	.1250	1-59/64	45/64	027017AW	11/32	.3438	3-7/8	2-3/16
027001AW	9/64	.1406	2-3/64	25/32	027018AW	23/64	.3594	4	2-9/32
027002AW	5/32	.1562	2-3/16	7/8	027019AW	U	.3680	4	2-9/32
027003AW	11/64	.1719	2-9/32	15/16	027020AW	3/8	.3750	4-1/8	2-3/8
027004AW	3/16	.1875	2-7/16	1	027021AW	25/64	.3906	4-1/8	2-3/8
027005AW	13/64	.2031	2-7/16	1	027022AW	13/32	.4062	4-13/32	2-5/8
027006AW	7/32	.2188	2-5/8	1-1/8	027023AW	27/64	.4219	4-1/2	2-11/16
027007AW	15/64	.2344	2-5/8	1-1/8	027024AW	7/16	.4375	4-5/8	2-13/16
027008AW	1/4	.2500	3-3/16	1-5/8	027025AW	29/64	.4531	4-3/4	2-7/8
027009AW	F	.2570	3-17/64	1-11/16	027026AW	15/32	.4688	4-3/4	2-7/8
027010AW	17/64	.2656	3-17/64	1-11/16	027027AW	31/64	.4844	5-5/16	3
027011AW	I	.2720	3-17/64	1-11/16	027028AW	1/2	.5000	5-3/8	3-1/16
027012AW	9/32	.2812	3-7/16	1-3/4	027029AW	33/64	.5156	5-11/16	3-11/32
027013AW	19/64	.2969	3-9/16	1-7/8	027030AW	17/32	.5312	5-11/16	3-11/32
027014AW	5/16	.3125	3-9/16	1-7/8	027031AW	9/16	.5625	5-15/16	3-1/2
027015AW	21/64	.3281	3-3/4	2-1/16	027032AW	37/64	.5781	6	3-37/64
027016AW	Q	.3320	3-3/4	2-1/16	027033AW	5/8	.6250	6-19/64	3-25/3

ROYAL HP - Carbide Drills - Coolant Holes TiAlN Coated, Short/Long



- Ideal for mass production drilling
- Ground from solid micro-grain carbide
- Suitable general, cast steel, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metal, non-ferrous light metal, abrasive plastic.

Carbide - Short

EDP No.	Diameter		Shank Diameter	Overall Length	Flute Length	EDP No.	Diameter		Shank Diameter	Overall Length	Flute Length
		Decimal						Decimal			
027034AW	1/8	.1250	15/64	2.992	1.102	027052AW	3/8	.3705	25/64	4.174	1.969
027035AW	11/64	.1719	15/64	3.386	1.417	027053AW	25/64	.3906	25/64	4.174	1.969
027036AW	3/16	.1875	15/64	3.543	1.575	027054AW	13/32	.4062	27/64	4.567	2.067
027037AW	13/64	.2031	15/64	3.228	1.082	027055AW	27/64	.4219	27/64	4.567	2.165
027038AW	7/32	.2188	15/64	3.228	1.181	027056AW	7/16	.4375	15/32	4.803	2.264
027039AW	15/64	.2344	15/64	3.228	1.181	027057AW	29/64	.4531	15/32	4.803	2.264
027040AW	1/4	.2500	17/64	3.465	1.279	027058AW	15/32	.4688	15/32	4.803	2.362
027041AW	F	.2570	17/64	3.465	1.279	027059AW	31/64	.4844	1/2	5.039	2.461
027042AW	17/64	.2656	17/64	3.465	1.378	027060AW	1/2	.5000	1/2	5.039	2.559
027043AW	I	.2720	.2720	3.465	1.378	027061AW	33/64	.5156	35/64	5.276	2.657
027044AW	9/32	.2812	5/16	3.701	1.476	027062AW	17/32	.5312	35/64	5.276	2.756
027045AW	19/64	.2969	5/16	3.701	1.476	027063AW	35/64	.5469	35/64	5.276	2.756
027046AW	5/16	.3125	5/16	3.701	1.575	027064AW	9/16	.5625	37/64	5.512	2.854
027047AW	21/64	.3281	11/32	3.937	1.673	027065AW	37/64	.5781	37/64	5.512	2.953
027048AW	Q	.3320	11/32	3.937	1.673	027066AW	19/32	.5937	5/8	5.709	3.051
027049AW	11/32	.3438	11/32	3.937	1.772	027067AW	39/64	.6094	5/8	5.709	3.051
027050AW	23/64	.3594	25/64	4.174	1.870	027068AW	5/8	.6250	5/8	5.709	3.150
027051AW	U	.3680	25/64	4.174	1.870						

Carbide - Long

EDP No.	Diameter		Shank Diameter	Overall Length	Flute Length	EDP No.	Diameter		Shank Diameter	Overall Length	Flute Length
		Decimal						Decimal			
027069AW	13/64	.2031	15/64	3-15/16	1-3/4	027081AW	11/32	.3438	11/32	5	2-27/32
027070AW	7/32	.2188	15/64	3-15/16	1-57/64	027082AW	23/64	.3594	25/64	5-23/64	3
027071AW	15/64	.2344	15/64	3-15/16	1-57/64	027083AW	U	.3680	25/64	5-23/64	3
027072AW	1/4	.2500	17/64	4-19/64	2-3/64	027084AW	3/8	.3750	25/64	5-23/64	3-5/32
027073AW	F	.2570	17/64	4-19/64	2-13/64	027085AW	25/64	.3906	25/64	5-23/64	3-5/32
027074AW	17/64	.2656	17/64	4-19/64	2-13/64	027086AW	13/32	.4062	27/64	5-7/8	3-5/16
027075AW	I	.2720	.2720	4-19/64	2-13/64	027087AW	27/64	.4219	27/64	5-7/8	3-15/32
027076AW	9/32	.2812	5/16	4-41/64	2-23/64	027088AW	7/16	.4375	15/32	6-7/32	3-5/8
027077AW	19/64	.2969	5/16	4-41/64	2-33/64	027089AW	29/64	.4531	15/32	6-7/32	3-25/32
027078AW	5/16	.3125	5/16	4-41/64	2-33/64	027090AW	15/32	.4688	15/32	6-7/32	3-25/32
027079AW	21/64	.3281	11/32	5	2-43/64	027091AW	31/64	.4844	1/2	6-37/64	3-15/16
027080AW	Q	.3320	11/32	5	2-43/64	027092AW	1/2	.5000	1/2	6-37/64	4-3/32

ROYAL HP - Carbide Drills, TiAlN Coated, Short



Carbide

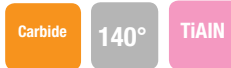
140°

TiAlN

- Ideal for mass production drilling
- Ground from solid micro-grain carbide
- Suitable for general, cast steel, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metal, non-ferrous light metal, abrasive plastic.

EDP No.	Diameter	Decimal Equiv.	Overall Length	Flute Length	EDP No.	Diameter	Decimal Equiv.	Overall Length	Flute Length
027093AW	3.0	.1181	46	16	027139AW	7.6	.2992	79	37
027094AW	3.1	.1220	49	18	027140AW	7.7	.3031	79	37
027095AW	3.2	.1260	49	18	027141AW	7.8	.3071	79	37
027096AW	3.3	.1299	49	18	027142AW	7.9	.3110	79	37
027097AW	3.4	.1339	52	20	027143AW	8.0	.3150	79	37
027098AW	3.5	.1378	52	20	027144AW	8.1	.3189	79	37
027099AW	3.6	.1417	52	20	027145AW	8.2	.3228	79	37
027100AW	3.7	.1457	52	20	027146AW	8.3	.3268	79	37
027101AW	3.8	.1496	55	22	027147AW	8.4	.3307	79	37
027102AW	3.9	.1535	55	22	027148AW	8.5	.3346	79	37
027103AW	4.0	.1575	55	22	027149AW	8.6	.3386	84	40
027104AW	4.1	.1614	55	22	027150AW	8.7	.3425	84	40
027105AW	4.2	.1654	55	22	027151AW	8.8	.3465	84	40
027106AW	4.3	.1693	58	24	027152AW	8.9	.3504	84	40
027107AW	4.4	.1732	58	24	027153AW	9.0	.3543	84	40
027108AW	4.5	.1772	58	24	027154AW	9.1	.3583	84	40
027109AW	4.6	.1811	58	24	027155AW	9.2	.3622	84	40
027110AW	4.7	.1850	58	24	027156AW	9.3	.3661	84	40
027111AW	4.8	.1890	62	26	027157AW	9.4	.3701	84	40
027112AW	4.9	.1929	62	26	027158AW	9.5	.3740	84	40
027113AW	5.0	.1969	62	26	027159AW	9.6	.3780	89	43
027114AW	5.1	.2008	62	26	027160AW	9.7	.3819	89	43
027115AW	5.2	.2047	62	26	027161AW	9.8	.3858	89	43
027116AW	5.3	.2087	62	26	027162AW	9.9	.3898	89	43
027117AW	5.4	.2126	66	28	027163AW	10.0	.3937	89	43
027118AW	5.5	.2165	66	28	027164AW	10.2	.4016	89	43
027119AW	5.6	.2205	66	28	027165AW	10.5	.4134	89	43
027120AW	5.7	.2244	66	28	027166AW	11.0	.4331	95	47
027121AW	5.8	.2283	66	28	027167AW	11.5	.4528	95	47
027122AW	5.9	.2323	66	28	027168AW	12.0	.4724	102	51
027123AW	6.0	.2362	66	28	027169AW	13.0	.5118	102	51
027124AW	6.1	.2402	70	31	027170AW	13.5	.5314	107	54
027125AW	6.2	.2441	70	31	027171AW	14.0	.5511	107	54
027126AW	6.3	.2480	70	31	027172AW	14.5	.5708	111	56
027127AW	6.4	.2520	70	31	027173AW	15.0	.5905	111	56
027128AW	6.5	.2559	70	31	027174AW	15.5	.6102	115	58
027129AW	6.6	.2598	70	31	027175AW	16.0	.6299	115	58
027130AW	6.7	.2638	70	31	027176AW	16.5	.6495	119	60
027131AW	6.8	.2677	74	34	027177AW	17.0	.6692	119	60
027132AW	6.9	.2717	74	34	027178AW	17.5	.6889	123	62
027133AW	7.0	.2756	74	34	027179AW	18.0	.7086	123	62
027134AW	7.1	.2795	74	34	027180AW	18.5	.7283	127	64
027135AW	7.2	.2835	74	34	027181AW	19.0	.7480	127	64
027136AW	7.3	.2874	74	34	027182AW	19.5	.7676	131	66
027137AW	7.4	.2913	74	34	027183AW	20.0	.7873	131	66
027138AW	7.5	.2953	74	34					

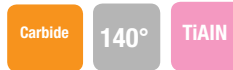
ROYAL HP Carbide Drills - Coolant Holes TiAlN Coated, Short



- Ideal for mass production drilling
- Ground from solid micro-grain carbide
- Suitable for general, cast steel, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metal, non-ferrous light metal, abrasive plastic.

EDP No.	Diameter		Shank Diameter	Overall Length	Flute Length	EDP No.	Diameter		Shank Diameter	Overall Length	Flute Length
	MM	Decimal					MM	Decimal			
027184AW	3.0	.1181	6.0	62	20	027214AW	6.0	.2362	6.0	66	28
027185AW	3.1	.1220	6.0	62	20	027215AW	6.1	.2402	8.0	79	34
027186AW	3.2	.1260	6.0	62	20	027216AW	6.2	.2441	8.0	79	34
027187AW	3.3	.1299	6.0	62	20	027217AW	6.3	.2480	8.0	79	34
027188AW	3.4	.1339	6.0	62	20	027218AW	6.4	.2520	8.0	79	34
027189AW	3.5	.1378	6.0	62	20	027219AW	6.5	.2559	8.0	79	34
027190AW	3.6	.1417	6.0	62	20	027220AW	6.6	.2598	8.0	79	34
027191AW	3.7	.1457	6.0	62	20	027221AW	6.7	.2638	8.0	79	34
027192AW	3.8	.1496	6.0	66	24	027222AW	6.8	.2677	8.0	79	34
027193AW	3.9	.1535	6.0	66	24	027223AW	6.9	.2717	8.0	79	34
027194AW	4.0	.1575	6.0	66	24	027224AW	7.0	.2756	8.0	79	34
027195AW	4.1	.1614	6.0	66	24	027225AW	7.1	.2795	8.0	79	41
027196AW	4.2	.1654	6.0	66	24	027226AW	7.2	.2835	8.0	79	41
027197AW	4.3	.1693	6.0	66	24	027227AW	7.3	.2874	8.0	79	41
027198AW	4.4	.1732	6.0	66	24	027228AW	7.4	.2913	8.0	79	41
027199AW	4.5	.1772	6.0	66	24	027229AW	7.5	.2953	8.0	79	41
027200AW	4.6	.1811	6.0	66	24	027230AW	7.6	.2992	8.0	79	41
027201AW	4.7	.1850	6.0	66	24	027231AW	7.7	.3031	8.0	79	41
027202AW	4.8	.1890	6.0	66	28	027232AW	7.8	.3071	8.0	79	41
027203AW	4.9	.1929	6.0	66	28	027233AW	7.9	.3110	8.0	79	41
027204AW	5.0	.1969	6.0	66	28	027234AW	8.0	.3150	8.0	79	41
027205AW	5.1	.2008	6.0	66	28	027235AW	8.1	.3189	10.0	89	47
027206AW	5.2	.2047	6.0	66	28	027236AW	8.2	.3228	10.0	89	47
027207AW	5.3	.2087	6.0	66	28	027237AW	8.3	.3268	10.0	89	47
027208AW	5.4	.2126	6.0	66	28	027238AW	8.4	.3307	10.0	89	47
027209AW	5.5	.2165	6.0	66	28	027239AW	8.5	.3346	10.0	89	47
027210AW	5.6	.2205	6.0	66	28	027240AW	8.6	.3386	10.0	89	47
027211AW	5.7	.2244	6.0	66	28	027241AW	8.7	.3425	10.0	89	47
027212AW	5.8	.2283	6.0	66	28	027242AW	8.8	.3465	10.0	89	47
027213AW	5.9	.2323	6.0	66	28	027243AW	8.9	.3504	10.0	89	47

ROYAL HP Carbide Drills - Coolant Holes TiAIN Coated, Short



- Ideal for mass production drilling
- Ground from solid micro-grain carbide
- Suitable for general, cast steel, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metal, non-ferrous light metal, abrasive plastic.

EDP No.	Diameter		Shank Diameter	Overall Length	Flute Length	EDP No.	Diameter		Shank Diameter	Overall Length	Flute Length
	MM	Decimal					MM	Decimal			
027244AW	9.0	.3543	10.0	89	47	027268AW	11.4	.4488	12.0	102	55
027245AW	9.1	.3583	10.0	89	47	027269AW	11.5	.4527	12.0	102	55
027246AW	9.2	.3622	10.0	89	47	027270AW	11.6	.4566	12.0	102	55
027247AW	9.3	.3661	10.0	89	47	027271AW	11.7	.4606	12.0	102	55
027248AW	9.4	.3701	10.0	89	47	027272AW	11.8	.4645	12.0	102	55
027249AW	9.5	.3740	10.0	89	47	027273AW	11.9	.4685	12.0	102	55
027250AW	9.6	.3780	10.0	89	47	027274AW	12.0	.4724	12.0	102	55
027251AW	9.7	.3819	10.0	89	47	027275AW	12.5	.4921	14.0	107	60
027252AW	9.8	.3858	10.0	89	47	027276AW	13.0	.5118	14.0	107	60
027253AW	9.9	.3898	10.0	89	47	027277AW	13.5	.5314	14.0	107	60
027254AW	10.0	.3937	10.0	89	47	027278AW	14.0	.5511	14.0	107	60
027255AW	10.1	.3976	12.0	102	55	027279AW	14.5	.5708	16.0	115	65
027256AW	10.2	.4016	12.0	102	55	027280AW	15.0	.5905	16.0	115	65
027257AW	10.3	.4055	12.0	102	55	027281AW	15.5	.6102	16.0	115	65
027258AW	10.4	.4094	12.0	102	55	027282AW	16.0	.6299	16.0	115	65
027259AW	10.5	.4134	12.0	102	55	027283AW	16.5	.6495	18.0	123	73
027260AW	10.6	.4173	12.0	102	55	027284AW	17.0	.6692	18.0	123	73
027261AW	10.7	.4212	12.0	102	55	027285AW	17.5	.6889	18.0	123	73
027262AW	10.8	.4252	12.0	102	55	027286AW	18.0	.7086	18.0	123	73
027263AW	10.9	.4291	12.0	102	55	027287AW	18.5	.7283	20.0	131	79
027264AW	11.0	.4330	12.0	102	55	027288AW	19.0	.7480	20.0	131	79
027265AW	11.1	.4370	12.0	102	55	027289AW	19.5	.7676	20.0	131	79
027266AW	11.2	.4409	12.0	102	55	027290AW	20.0	.7873	20.0	131	79
027267AW	11.3	.4448	12.0	102	55						

ROYAL HP Carbide Drills - Coolant Holes, TiAlN Coated, Long



Carbide

140°

TiAlN

- Ideal for mass production drilling
- Ground from solid micro-grain carbide
- Suitable for general, cast steel, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metal, non-ferrous light metal, abrasive plastic.

EDP No.	Diameter		Shank Diameter	Overall Length	Flute Length	EDP No.	Diameter		Shank Diameter	Overall Length	Flute Length
	MM	Decimal					MM	Decimal			
027291AW	3.0	.1181	6.0	66	28	027321AW	6.0	.2362	6.0	82	44
027292AW	3.1	.1220	6.0	66	28	027322AW	6.1	.2402	8.0	91	53
027293AW	3.2	.1260	6.0	66	28	027323AW	6.2	.2441	8.0	91	53
027294AW	3.3	.1299	6.0	66	28	027324AW	6.3	.2480	8.0	91	53
027295AW	3.4	.1339	6.0	66	28	027325AW	6.4	.2520	8.0	91	53
027296AW	3.5	.1378	6.0	66	28	027326AW	6.5	.2559	8.0	91	53
027297AW	3.6	.1417	6.0	66	28	027327AW	6.6	.2598	8.0	91	53
027298AW	3.7	.1457	6.0	66	28	027328AW	6.7	.2638	8.0	91	53
027299AW	3.8	.1496	6.0	74	36	027329AW	6.8	.2677	8.0	91	53
027300AW	3.9	.1535	6.0	74	36	027330AW	6.9	.2717	8.0	91	53
027301AW	4.0	.1575	6.0	74	36	027331AW	7.0	.2756	8.0	91	53
027302AW	4.1	.1614	6.0	74	36	027332AW	7.1	.2795	8.0	91	53
027303AW	4.2	.1654	6.0	74	36	027333AW	7.2	.2835	8.0	91	53
027304AW	4.3	.1693	6.0	74	36	027334AW	7.3	.2874	8.0	91	53
027305AW	4.4	.1732	6.0	74	36	027335AW	7.4	.2913	8.0	91	53
027306AW	4.5	.1772	6.0	74	36	027336AW	7.5	.2953	8.0	91	53
027307AW	4.6	.1811	6.0	74	36	027337AW	7.6	.2992	8.0	91	53
027308AW	4.7	.1850	6.0	74	36	027338AW	7.7	.3031	8.0	91	53
027309AW	4.8	.1890	6.0	82	44	027339AW	7.8	.3071	8.0	91	53
027310AW	4.9	.1929	6.0	82	44	027340AW	7.9	.3110	8.0	91	53
027311AW	5.0	.1969	6.0	82	44	027341AW	8.0	.3150	8.0	91	53
027312AW	5.1	.2008	6.0	82	44	027342AW	8.1	.3189	10.0	103	61
027313AW	5.2	.2047	6.0	82	44	027343AW	8.2	.3228	10.0	103	61
027314AW	5.3	.2087	6.0	82	44	027344AW	8.3	.3268	10.0	103	61
027315AW	5.4	.2126	6.0	82	44	027345AW	8.4	.3307	10.0	103	61
027316AW	5.5	.2165	6.0	82	44	027346AW	8.5	.3346	10.0	103	61
027317AW	5.6	.2205	6.0	82	44	027347AW	8.6	.3386	10.0	103	61
027318AW	5.7	.2244	6.0	82	44	027348AW	8.7	.3425	10.0	103	61
027319AW	5.8	.2283	6.0	82	44	027349AW	8.8	.3465	10.0	103	61
027320AW	5.9	.2323	6.0	82	44	027350AW	8.9	.3504	10.0	103	61

ROYAL HP Carbide Drills - Coolant Holes, TiAlN Coated, Long



- Ideal for mass production drilling
- Drill to 3 times diameter
- Ground from solid micro-grain carbide
- Suitable for general, cast steel, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metal, non-ferrous light metal, abrasive plastic.

EDP No.	Diameter		Shank Diameter	Overall Length	Flute Length	EDP No.	Diameter		Shank Diameter	Overall Length	Flute Length
	MM	Decimal					MM	Decimal			
027351AW	9.0	.3543	10.0	103	61	027375AW	11.4	.4488	12.0	118	71
027352AW	9.1	.3583	10.0	103	61	027376AW	11.5	.4527	12.0	118	71
027353AW	9.2	.3622	10.0	103	61	027377AW	11.6	.4566	12.0	118	71
027354AW	9.3	.3661	10.0	103	61	027378AW	11.7	.4606	12.0	118	71
027355AW	9.4	.3701	10.0	103	61	027379AW	11.8	.4645	12.0	118	71
027356AW	9.5	.3740	10.0	103	61	027380AW	11.9	.4685	12.0	118	71
027357AW	9.6	.3780	10.0	103	61	027381AW	12.0	.4724	12.0	118	71
027358AW	9.7	.3819	10.0	103	61	027382AW	12.5	.4921	14.0	124	77
027359AW	9.8	.3858	10.0	103	61	027383AW	13.0	.5118	14.0	124	77
027360AW	9.9	.3898	10.0	103	61	027384AW	13.5	.5314	14.0	124	77
027361AW	10.0	.3937	10.0	103	61	027385AW	14.0	.5511	14.0	124	77
027362AW	10.1	.3976	12.0	118	71	027386AW	14.5	.5708	16.0	133	83
027363AW	10.2	.4016	12.0	118	71	027387AW	15.0	.5905	16.0	133	83
027364AW	10.3	.4055	12.0	118	71	027388AW	15.5	.6102	16.0	133	83
027365AW	10.4	.4094	12.0	118	71	027389AW	16.0	.6299	16.0	133	83
027366AW	10.5	.4134	12.0	118	71	027390AW	16.5	.6495	18.0	143	93
027367AW	10.6	.4173	12.0	118	71	027391AW	17.0	.6692	18.0	143	93
027368AW	10.7	.4212	12.0	118	71	027392AW	17.5	.6889	18.0	143	93
027369AW	10.8	.4252	12.0	118	71	027393AW	18.0	.7086	18.0	143	93
027370AW	10.9	.4291	12.0	118	71	027394AW	18.5	.7283	20.0	153	101
027371AW	11.0	.4330	12.0	118	71	027395AW	19.0	.7480	20.0	153	101
027372AW	11.1	.4370	12.0	118	71	027396AW	19.5	.7676	20.0	153	101
027373AW	11.2	.4409	12.0	118	71	027397AW	20.0	.7873	20.0	153	101
027374AW	11.3	.4448	12.0	118	71						

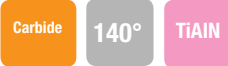
ROYAL HP Carbide Drills - Coolant Holes, TiAlN Coated, Extra Long



- Ideal for mass production drilling
- Ground from solid micro-grain carbide
- Suitable for general, cast steel, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metal, non-ferrous light metal, abrasive plastic.

EDP No.	Diameter		Shank Diameter	Overall Length	Flute Length	EDP No.	Diameter		Shank Diameter	Overall Length	Flute Length
	MM	Decimal					MM	Decimal			
027398AW	3.0	.1181	6.0	72	34	027428AW	6.0	.2362	6.0	95	57
027399AW	3.1	.1220	6.0	72	34	027429AW	6.1	.2402	8.0	114	76
027400AW	3.2	.1260	6.0	72	34	027430AW	6.2	.2441	8.0	114	76
027401AW	3.3	.1299	6.0	72	34	027431AW	6.3	.2480	8.0	114	76
027402AW	3.4	.1339	6.0	72	34	027432AW	6.4	.2520	8.0	114	76
027403AW	3.5	.1378	6.0	72	34	027433AW	6.5	.2559	8.0	114	76
027404AW	3.6	.1417	6.0	72	34	027434AW	6.6	.2598	8.0	114	76
027405AW	3.7	.1457	6.0	72	34	027435AW	6.7	.2638	8.0	114	76
027406AW	3.8	.1496	6.0	81	43	027436AW	6.8	.2677	8.0	114	76
027407AW	3.9	.1535	6.0	81	43	027437AW	6.9	.2717	8.0	114	76
027408AW	4.0	.1575	6.0	81	43	027438AW	7.0	.2756	8.0	114	76
027409AW	4.1	.1614	6.0	81	43	027439AW	7.1	.2795	8.0	114	76
027410AW	4.2	.1654	6.0	81	43	027440AW	7.2	.2835	8.0	114	76
027411AW	4.3	.1693	6.0	81	43	027441AW	7.3	.2874	8.0	114	76
027412AW	4.4	.1732	6.0	81	43	027442AW	7.4	.2913	8.0	114	76
027413AW	4.5	.1772	6.0	81	43	027443AW	7.5	.2953	8.0	114	76
027414AW	4.6	.1811	6.0	81	43	027444AW	7.6	.2992	8.0	114	76
027415AW	4.7	.1850	6.0	81	43	027445AW	7.7	.3031	8.0	114	76
027416AW	4.8	.1890	6.0	95	57	027446AW	7.8	.3071	8.0	114	76
027417AW	4.9	.1929	6.0	95	57	027447AW	7.9	.3110	8.0	114	76
027418AW	5.0	.1969	6.0	95	57	027448AW	8.0	.3150	8.0	114	76
027419AW	5.1	.2008	6.0	95	57	027449AW	8.1	.3189	10.0	142	95
027420AW	5.2	.2047	6.0	95	57	027450AW	8.2	.3228	10.0	142	95
027421AW	5.3	.2087	6.0	95	57	027451AW	8.3	.3268	10.0	142	95
027422AW	5.4	.2126	6.0	95	57	027452AW	8.4	.3307	10.0	142	95
027423AW	5.5	.2165	6.0	95	57	027453AW	8.5	.3346	10.0	142	95
027424AW	5.6	.2205	6.0	95	57	027454AW	8.6	.3386	10.0	142	95
027425AW	5.7	.2244	6.0	95	57	027455AW	8.7	.3425	10.0	142	95
027426AW	5.8	.2283	6.0	95	57	027456AW	8.8	.3465	10.0	142	95
027427AW	5.9	.2323	6.0	95	57	027457AW	8.9	.3504	10.0	142	95

ROYAL HP Carbide Drills - Coolant Holes, TiAlN Coated, Extra Long

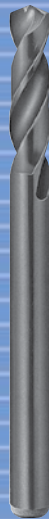


- Ideal for mass production drilling
- Ground from solid micro-grain carbide
- Suitable for general, cast steel, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metal, non-ferrous light metal, abrasive plastic.

EDP No.	Diameter		Shank Diameter	Overall Length	Flute Length	EDP No.	Diameter		Shank Diameter	Overall Length	Flute Length
	MM	Decimal					MM	Decimal			
027458AW	9.0	.3543	10.0	142	95	027474AW	10.6	.4173	12.0	162	114
027459AW	9.1	.3583	10.0	142	95	027475AW	10.7	.4212	12.0	162	114
027460AW	9.2	.3622	10.0	142	95	027476AW	10.8	.4252	12.0	162	114
027461AW	9.3	.3661	10.0	142	95	027477AW	10.9	.4291	12.0	162	114
027462AW	9.4	.3701	10.0	142	95	027478AW	11.0	.4330	12.0	162	114
027463AW	9.5	.3740	10.0	142	95	027479AW	11.1	.4370	12.0	162	114
027464AW	9.6	.3780	10.0	142	95	027480AW	11.2	.4409	12.0	162	114
027465AW	9.7	.3819	10.0	142	95	027481AW	11.3	.4448	12.0	162	114
027466AW	9.8	.3858	10.0	142	95	027482AW	11.4	.4488	12.0	162	114
027467AW	9.9	.3898	10.0	142	95	027483AW	11.5	.4527	12.0	162	114
027468AW	10.0	.3937	10.0	142	95	027484AW	11.6	.4566	12.0	162	114
027469AW	10.1	.3976	12.0	162	114	027485AW	11.7	.4606	12.0	162	114
027470AW	10.2	.4016	12.0	162	114	027486AW	11.8	.4645	12.0	162	114
027471AW	10.3	.4055	12.0	162	114	027487AW	11.9	.4685	12.0	162	114
027472AW	10.4	.4094	12.0	162	114	027488AW	12.0	.4724	12.0	162	114
027473AW	10.5	.4134	12.0	162	114						

AIRCRAFT DRILLS

Jobber Length Drills



Fractional, Wire Gage and Letter Sizes

Type A - HSS 118° Split Point - Bright	136
Type B - HSS 135° Split Point - Treated	136
Type J - Cobalt Heavy Duty 135° Split Point - Bronze	136
Type D - Cobalt 135° Split Point - Short Flute - Bronze	136

Screw Machine Length Drills

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Aircraft Drills - Jobber Length Fractional Sizes



HSS
NAS 907
118° Split
Bright

Type A - List 306 - HSS - Regular - 118° Split Point - Bright

- Manufactured to A.I.A. NAS-907 Standards
- Designed for lighter duty applications in non-ferrous materials, low carbon steel and Austenitic stainless



HSS
NAS 907
135° Split
Black Oxide

Type B - List 3206 - HSS - Regular - 135° Split Point - Treated

- Manufactured to A.I.A. NAS-907 Standards
- Recommended for use in power and portable drilling of hard steels, stainless steels, titanium and other hard materials

Packaging: 1/64" to 9/32" (12), 19/64" to 1/2" (6), Over 1/2" (1)

Diameter	Decimal Equiv.	Flute Length	Type D Flute	Overall Length	List 306 Type A	List 3206 Type B	List 206C Type J	List 3306 Type D
1/64	.0156	3/16	—	3/4	—	—	020901AW+	—
1/32	.0313	1/2	—	1-3/8	—	—	020902AW+	—
3/64	.0469	3/4	7/16	1-3/4	—	—	020903AW	—
1/16	.0625	7/8	7/16	1-7/8	017904AW	018104AW	020904AW	035403AW
5/64	.0781	1	1/2	2	017905AW	018105AW	020905AW	035404AW
3/32	.0938	1-1/4	5/8	2-1/4	017906AW	018106AW	020906AW	035405AW
7/64	.1094	1-1/2	13/16	2-5/8	017907AW	018107AW	020907AW	035406AW
1/8	.1250	1-5/8	7/8	2-3/4	017908AW	018108AW	020908AW	035407AW
9/64	.1406	1-3/4	15/16	2-7/8	017909AW	018109AW	020909AW	035408AW
5/32	.1563	2	1	3-1/8	017910AW	018110AW	020910AW	035409AW
11/64	.1719	2-1/8	1-1/16	3-1/4	017911AW	018111AW	020911AW	035410AW
3/16	.1875	2-5/16	1-1/8	3-1/2	017912AW	018112AW	020912AW	035411AW
13/64	.2031	2-7/16	1-3/16	3-5/8	017913AW	018113AW	020913AW	035412AW
7/32	.2188	2-1/2	1-1/4	3-3/4	017914AW	018114AW	020914AW	035413AW
15/64	.2344	2-5/8	1-5/16	3-7/8	017915AW	018115AW	020915AW	035414AW
1/4	.2500	2-3/4	1-3/8	4	017916AW	018116AW	020916AW	035415AW

+ not split point

Aircraft Drills - Jobber Length Fractional Sizes



Cobalt
NAS 907
135° Split
Bronze Oxide

Type J - List 206C - Cobalt - Heavy Duty - 135° Split Point - Bronze

- Manufactured to A.I.A. NAS-907 Standards
- High red hardness and abrasion resistant
- Heavy-duty construction provides greater strength and rigidity
- Designed for drilling tough and abrasive materials, high temperature alloys, stainless and heat treated high strength steels



Cobalt
NAS 907
135° Split
Bronze Oxide

Type D - List 3306 - Cobalt - 135° Split Point - Short Flute - Bronze

- Manufactured to A.I.A. NAS-907 Standards
- Heavy-duty construction provides greater strength and rigidity
- Designed for drilling tough and abrasive materials, high temperature alloys, stainless and heat treated high strength steels
- Similar to Type J, except Screw Machine length flutes are better suited for portable drilling

Packaging: 1/64" to 9/32" (12), 19/64" to 1/2" (6), Over 1/2" (1)

Diameter	Decimal Equiv.	Flute Length	Type D Flute	Overall Length	List 306 Type A	List 3206 Type B	List 206C Type J	List 3306 Type D
17/64	.2656	2-7/8	1-7/16	4-1/8	017917AW	018117AW	020917AW	035416AW
9/32	.2813	2-15/16	1-1/2	4-1/4	017918AW	018118AW	020918AW	035417AW
19/64	.2969	3-1/16	1-9/16	4-3/8	017919AW	018119AW	020919AW	035418AW
5/16	.3125	3-3/16	1-5/8	4-1/2	017920AW	018120AW	020920AW	035419AW
21/64	.3281	3-5/16	1-11/16	4-5/8	017921AW	018121AW	020921AW	035420AW
11/32	.3438	3-7/16	1-11/16	4-3/4	017922AW	018122AW	020922AW	035421AW
23/64	.3594	3-1/2	1-3/4	4-7/8	017923AW	018123AW	020923AW	035422AW
3/8	.3750	3-5/8	1-13/16	5	017924AW	018124AW	020924AW	035423AW
25/64	.3906	3-3/4	1-7/8	5-1/8	017925AW	018125AW	020925AW	035424AW
13/32	.4063	3-7/8	1-15/16	5-1/4	017926AW	018126AW	020926AW	035425AW
27/64	.4219	3-15/16	2	5-3/8	017927AW	018127AW	020927AW	035426AW
7/16	.4375	4-1/16	2-1/16	5-1/2	017928AW	018128AW	020928AW	035427AW
29/64	.4531	4-3/16	2-1/8	5-5/8	017929AW	018129AW	020929AW	035428AW
15/32	.4688	4-5/16	2-1/8	5-3/4	017930AW	018130AW	020930AW	035429AW
31/64	.4844	4-3/8	2-3/16	5-7/8	017931AW	018131AW	020931AW	035430AW
1/2	.5000	4-1/2	2-1/4	6	017932AW	018132AW	020932AW	035431AW

+ not split point

Aircraft Drills - Jobber Length Wire Gauge Sizes



HSS **NAS 907** **118° Split** **Bright**

Type A - List 308 - HSS - Regular - 118° Split Point - Bright

HSS **NAS 907** **135° Split** **Black Oxide**

Type B - List 3208 - HSS - Regular - 135° Split Point - Treated

Cobalt **NAS 907** **135° Split** **Bronze Oxide**

Type J - List 208C - Cobalt - Heavy Duty - 135° Split Point - Bronze

Cobalt **NAS 907** **135° Split** **Bronze Oxide**

Type D - List 3308 - Cobalt - 135° Split Point - Short Flute - Bronze

Packaging: All (12)

Diameter	Decimal Equiv.	Flute Length	Type D Flute	Overall Length	List 308 Type A	List 3208 Type B	List 208C Type J	List 3308 Type D
80	.0135	1/8	—	3/4	—	—	020880AW+	—
79	.0145	1/8	—	3/4	—	—	020879AW+	—
78	.0160	3/16	—	7/8	—	—	020878AW+	—
77	.0180	3/16	—	7/8	—	—	020877AW+	—
76	.0200	3/16	—	7/8	—	—	020876AW+	—
75	.0210	1/4	—	1	—	—	020875AW+	—
74	.0225	1/4	—	1	—	—	020874AW+	—
73	.0240	5/16	—	1-1/8	—	—	020873AW+	—
72	.0250	5/16	—	1-1/8	—	—	020872AW+	—
71	.0260	3/8	—	1-1/4	—	—	020871AW+	—
70	.0280	3/8	—	1-1/4	—	—	020870AW+	—
69	.0292	1/2	—	1-3/8	—	—	020869AW+	—
68	.0310	1/2	—	1-3/8	—	—	020868AW+	—
67	.0320	1/2	—	1-3/8	—	—	020867AW+	—
66	.0330	1/2	—	1-3/8	—	—	020866AW+	—
65	.0350	5/8	—	1-1/2	—	—	020865AW+	—
64	.0360	5/8	—	1-1/2	—	—	020864AW+	—
63	.0370	5/8	—	1-1/2	—	—	020863AW+	—
62	.0380	5/8	—	1-1/2	—	—	020862AW+	—
61	.0390	11/16	—	1-5/8	—	—	020861AW+	—

+ not split point

Aircraft Drills - Jobber Length Wire Gauge Sizes



HSS **NAS 907** **118° Split** **Bright**

Type A - List 308 - HSS - Regular - 118° Split Point - Bright

HSS **NAS 907** **135° Split** **Black Oxide**

Type B - List 3208 - HSS - Regular - 135° Split Point - Treated

Cobalt **NAS 907** **135° Split** **Bronze Oxide**

Type J - List 208C - Cobalt - Heavy Duty - 135° Split Point - Bronze

Cobalt **NAS 907** **135° Split** **Bronze Oxide**

Type D - List 3308 - Cobalt - 135° Split Point - Short Flute - Bronze

Packaging: All (12)

Diameter	Decimal Equiv.	Flute Length	Type D Flute	Overall Length	List 308 Type A	List 3208 Type B	List 208C Type J	List 3308 Type D
60	.0400	11/16	—	1-5/8	—	—	020860AW+	—
59	.0410	11/16	—	1-5/8	—	—	020859AW+	—
58	.0420	11/16	—	1-5/8	—	—	020858AW+	—
57	.0430	3/4	—	1-3/4	—	—	020857AW+	—
56	.0465	3/4	—	1-3/4	—	—	020856AW+	—
55	.0520	7/8	—	1-7/8	—	—	020855AW+	—
54	.0550	7/8	—	1-7/8	—	—	020854AW+	—
53	.0595	7/8	—	1-7/8	—	—	020853AW+	—
52	.0635	7/8	7/16	1-7/8	018052AW	018352AW	020852AW	035532AW
51	.0670	1	1/2	2	018051AW	018351AW	020851AW	035533AW
50	.0700	1	1/2	2	018050AW	018350AW	020850AW	035534AW
49	.0730	1	1/2	2	018049AW	018349AW	020849AW	035535AW
48	.0760	1	1/2	2	018048AW	018348AW	020848AW	035536AW
47	.0785	1	1/2	2	018047AW	018347AW	020847AW	035537AW
46	.0810	1-1/8	9/16	2-1/8	018046AW	018346AW	020846AW	035538AW
45	.0820	1-1/8	9/16	2-1/8	018045AW	018345AW	020845AW	035539AW
44	.0860	1-1/8	9/16	2-1/8	018044AW	018344AW	020844AW	035540AW
43	.0890	1-1/4	5/8	2-1/4	018043AW	018343AW	020843AW	035541AW
42	.0935	1-1/4	5/8	2-1/4	018042AW	018342AW	020842AW	035542AW
41	.0960	1-3/8	5/8	2-3/8	018041AW	018341AW	020841AW	035543AW

+ not split point

Aircraft Drills - Jobber Length **Wire Gauge Sizes**



HSS **NAS 907** **118° Split** **Bright**

Type A - List 308 - HSS - Regular - 118° Split Point - Bright

HSS **NAS 907** **135° Split** **Black Oxide**

Type B - List 3208 - HSS - Regular - 135° Split Point - Treated

Cobalt **NAS 907** **135° Split** **Bronze Oxide**

Type J - List 208C - Cobalt - Heavy Duty - 135° Split Point - Bronze

Cobalt **NAS 907** **135° Split** **Bronze Oxide**

Type D - List 3308 - Cobalt - 135° Split Point - Short Flute - Bronze

Packaging: All (12)

Diameter	Decimal Equiv.	Flute Length	Type D Flute	Overall Length	List 308 Type A	List 3208 Type B	List 208C Type J	List 3308 Type D
40	.0980	1-3/8	13/16	2-3/8	018040AW	018340AW	020840AW	035544AW
39	.0995	1-3/8	13/16	2-3/8	018039AW	018339AW	020839AW	035545AW
38	.1015	1-7/16	13/16	2-1/2	018038AW	018338AW	020838AW	035546AW
37	.1040	1-7/16	13/16	2-1/2	018037AW	018337AW	020837AW	035547AW
36	.1065	1-7/16	13/16	2-1/2	018036AW	018336AW	020836AW	035548AW
35	.1100	1-1/2	7/8	2-5/8	018035AW	018335AW	020835AW	035549AW
34	.1110	1-1/2	7/8	2-5/8	018034AW	018334AW	020834AW	035550AW
33	.1130	1-1/2	7/8	2-5/8	018033AW	018333AW	020833AW	035551AW
32	.1160	1-5/8	7/8	2-3/4	018032AW	018332AW	020832AW	035552AW
31	.1200	1-5/8	7/8	2-3/4	018031AW	018331AW	020831AW	035553AW
30	.1285	1-5/8	15/16	2-3/4	018030AW	018330AW	020830AW	035554AW
29	.1360	1-3/4	15/16	2-7/8	018029AW	018329AW	020829AW	035555AW
28	.1405	1-3/4	15/16	2-7/8	018028AW	018328AW	020828AW	035556AW
27	.1440	1-7/8	1	3	018027AW	018327AW	020827AW	035557AW
26	.1470	1-7/8	1	3	018026AW	018326AW	020826AW	035558AW
25	.1495	1-7/8	1	3	018025AW	018325AW	020825AW	035559AW
24	.1520	2	1	3-1/8	018024AW	018324AW	020824AW	035560AW
23	.1540	2	1	3-1/8	018023AW	018323AW	020823AW	035561AW
22	.1570	2	1-1/16	3-1/8	018022AW	018322AW	020822AW	035562AW
21	.1590	2-1/8	1-1/16	3-1/4	018021AW	018321AW	020821AW	035563AW

Aircraft Drills - Jobber Length **Wire Gauge Sizes**



HSS **NAS 907** **118° Split** **Bright**

Type A - List 308 - HSS - Regular - 118° Split Point - Bright

HSS **NAS 907** **135° Split** **Black Oxide**

Type B - List 3208 - HSS - Regular - 135° Split Point - Treated

Cobalt **NAS 907** **135° Split** **Bronze Oxide**

Type J - List 208C - Cobalt - Heavy Duty - 135° Split Point - Bronze

Cobalt **NAS 907** **135° Split** **Bronze Oxide**

Type D - List 3308 - Cobalt - 135° Split Point - Short Flute - Bronze

Packaging: All (12)

Diameter	Decimal Equiv.	Flute Length	Type D Flute	Overall Length	List 308 Type A	List 3208 Type B	List 208C Type J	List 3308 Type D
20	.1610	2-1/8	1-1/16	3-1/4	018020AW	018320AW	020820AW	035564AW
19	.1660	2-1/8	1-1/16	3-1/4	018019AW	018319AW	020819AW	035565AW
18	.1695	2-1/8	1-1/16	3-1/4	018018AW	018318AW	020818AW	035566AW
17	.1730	2-3/16	1-1/8	3-3/8	018017AW	018317AW	020817AW	035567AW
16	.1770	2-3/16	1-1/8	3-3/8	018016AW	018316AW	020816AW	035568AW
15	.01800	2-3/16	1-1/8	3-3/8	018015AW	018315AW	020815AW	035569AW
14	.1820	2-3/16	1-1/8	3-3/8	018014AW	018314AW	020814AW	035570AW
13	.1850	2-5/16	1-1/8	3-1/2	018013AW	018313AW	020813AW	035571AW
12	.1890	2-5/16	1-1/8	3-1/2	018012AW	018312AW	020812AW	035572AW
11	.1910	2-5/16	1-3/16	3-1/2	018011AW	018311AW	020811AW	035573AW
10	.1935	2-7/16	1-3/16	3-5/8	018010AW	018310AW	020810AW	035574AW
9	.1960	2-7/16	1-3/16	3-5/8	018009AW	018309AW	020809AW	035575AW
8	.1990	2-7/16	1-3/16	3-5/8	018008AW	018308AW	020808AW	035576AW
7	.2010	2-7/16	1-3/16	3-5/8	018007AW	018307AW	020807AW	035577AW
6	.2040	2-1/2	1-1/4	3-3/4	018006AW	018306AW	020806AW	035578AW
5	.2055	2-1/2	1-1/4	3-3/4	018005AW	018305AW	020805AW	035579AW
4	.2090	2-1/2	1-1/4	3-3/4	018004AW	018304AW	020804AW	035580AW
3	.2130	2-1/2	1-1/4	3-3/4	018003AW	018303AW	020803AW	035581AW
2	.2210	2-5/8	1-5/16	3-7/8	018002AW	018302AW	020802AW	035582AW
1	.2280	2-5/8	1-5/16	3-7/8	018001AW	018301AW	020801AW	035583AW

Aircraft Drills - Jobber Length Letter Sizes



HSS **NAS 907** **118° Split** **Bright**

Type A - List 307 - HSS - Regular - 118° Split Point - Bright

HSS **NAS 907** **135° Split** **Black Oxide**

Type B - List 3207 - HSS - Regular - 135° Split Point - Treated

Cobalt **NAS 907** **135° Split** **Bronze Oxide**

Type J - List 207C - Cobalt - Heavy Duty - 135° Split Point - Bronze

Packaging: A to K (12), L to Z (6)

Diameter	Decimal Equiv.	Flute Length	Overall Length	List 308 Type A	List 3208 Type B	List 208C Type J
A	.2340	2-5/8	3-7/8	020101AW	020401AW	012525AW
B	.2380	2-3/4	4	020102AW	020402AW	012526AW
C	.2420	2-3/4	4	020103AW	020403AW	012527AW
D	.2460	2-3/4	4	020104AW	020404AW	012528AW
E	.2500	2-3/4	4	020105AW	020405AW	012529AW
F	.2570	2-7/8	4-1/8	020106AW	020406AW	012530AW
G	.2610	2-7/8	4-1/8	020107AW	020407AW	012531AW
H	.2660	2-7/8	4-1/8	020108AW	020408AW	012532AW
I	.2720	2-7/8	4-1/8	020109AW	020409AW	012533AW
J	.2770	2-7/8	4-1/8	020110AW	020410AW	012534AW
K	.2810	2-15/16	4-1/4	020111AW	020411AW	012535AW
L	.2900	2-15/16	4-1/4	020112AW	020412AW	012536AW
M	.2950	3-1/16	4-3/8	020113AW	020413AW	012537AW
N	.3020	3-1/16	4-3/8	020114AW	020414AW	012538AW
O	.3160	3-3/16	4-1/2	020115AW	020415AW	012539AW
P	.3230	3-5/16	4-5/8	020116AW	020416AW	012540AW
Q	.3320	3-7/16	4-3/4	020117AW	020417AW	012541AW
R	.3390	3-7/16	4-3/4	020118AW	020418AW	012542AW
S	.3480	3-1/2	4-7/8	020119AW	020419AW	012543AW
T	.3580	3-1/2	4-7/8	020120AW	020420AW	012544AW
U	.3680	3-5/8	5	020121AW	020421AW	012545AW
V	.3770	3-5/8	5	020122AW	020422AW	012546AW
W	.3860	3-3/4	5-1/8	020123AW	020423AW	012547AW
X	.3970	3-3/4	5-1/8	020124AW	020424AW	012548AW
Y	.4040	3-7/8	5-1/4	020125AW	020425AW	012549AW
Z	.4130	3-7/8	5-1/4	020126AW	020426AW	012550AW

Aircraft Drills - Screw Machine Length Fractional Sizes



Type C - List 340 - HSS - Regular - 135° Split Point - Treated

- Manufactured to A.I.A. NAS-907 Standards
- Recommended for use in power and portable drilling of hard steels, stainless steels, titanium and other hard materials



Type F - List 314C - Cobalt - Heavy Duty - 135° Split Point - Bronze

- Designed for use in portable power tools and portable hand tools for drilling holes in hard and tough sheet metal alloys of heat resistant stainless steel and titanium

Packaging: 1/16" to 9/32"(12), 19/64" to 1/2"(6)

Diameter	Decimal Equiv.	Flute Length	Overall Length	List 340 Type C	List 314C Type F	Diameter	Decimal Equiv.	Flute Length	Overall Length	List 340 Type C	List 314C Type F
1/16	.0625	5/8	1-5/8	018404AW	017804AW	19/64	.2969	1-9/16	2-3/4	018419AW	017819AW
5/64	.0781	11/16	1-11/16	018405AW	017805AW	5/16	.3125	1-5/8	2-13/16	018420AW	017820AW
3/32	.0938	3/4	1-3/4	018406AW	017806AW	21/64	.3281	1-11/16	2-15/16	018421AW	017821AW
7/64	.1094	13/16	1-13/16	018407AW	017807AW	11/32	.3438	1-11/16	3	018422AW	017822AW
1/8	.1250	7/8	1-7/8	018408AW	017808AW	23-64	.3594	1-3/4	3-1/16	018423AW	017823AW
9/64	.1406	15/16	1-15/16	018409AW	017809AW	3/8	.3750	1-13/16	3-1/8	018424AW	017824AW
5/32	.1562	1	2-1/16	018410AW	017810AW	25/64	.3906	1-7/8	3-1/4	018425AW	017825AW
11/64	.1719	1-1/16	2-1/8	018411AW	017811AW	13/32	.4062	1-15/16	3-5/16	018426AW	017826AW
3/16	.1875	1-1/8	2-3/16	018412AW	017812AW	27/64	.4219	2	3-3/8	018427AW	017827AW
13/64	.2031	1-3/16	2-1/4	018413AW	017813AW	7/16	.4375	2-1/16	3-7/16	018428AW	017828AW
7/32	.2188	1-1/4	2-3/8	018414AW	017814AW	29/64	.4531	2-1/8	3-9/16	018429AW	017829AW
15/64	.2344	1-5/16	2-7/16	018415AW	017815AW	15/32	.4688	2-1/8	3-5/8	018430AW	017830AW
1/4	.2500	1-3/8	2-1/2	018416AW	017816AW	31/64	.4844	2-3/16	3-11/16	018431AW	017831AW
17/64	.2656	1-7/16	2-5/8	018417AW	017817AW	1/2	.5000	2-1/4	3-3/4	018432AW	017832AW
9/32	.2812	1-1/2	2-11/16	018418AW	017818AW	—	—	—	—	—	—

Aircraft Drills - Screw Machine Length Wire Gauge & Letter Sizes



HSS **NAS 907** **135° Split** **Black Oxide**

Type C - List 341 - HSS - Regular - 135° Split Point - Treated

Cobalt **135° Split** **Bronze Oxide**

Type F - List 316C- Cobalt - Heavy Duty - 135° Split Point - Bronze

Packaging: All (12)

Diameter	Decimal Equiv.	Flute Length	Overall Length	List 342 Type C	List 315C Type F	Diameter	Decimal Equiv.	Flute Length	Overall Length	List 342 Type C	List 315C Type F
52	.0635	11/16	1-11/16	018552AW	022352AW	26	.1470	1	2-1/16	018526AW	022326AW
51	.0670	11/16	1-11/16	018551AW	022351AW	25	.1495	1	2-1/16	018525AW	022325AW
50	.0700	11/16	1-11/16	018550AW	022350AW	24	.1520	1	2-1/16	018524AW	022324AW
49	.0730	11/16	1-11/16	018549AW	022349AW	23	.1540	1	2-1/16	018523AW	022323AW
48	.0760	11/16	1-11/16	018548AW	022348AW	22	.1570	1-1/16	2-1/8	018522AW	022322AW
47	.0785	11/16	1-11/16	018547AW	022347AW	21	.1590	1-1/16	2-1/8	018521AW	022321AW
46	.0810	3/4	1-3/4	018546AW	022346AW	20	.1610	1-1/16	2-1/8	018520AW	022320AW
45	.0820	3/4	1-3/4	018545AW	022345AW	19	.1660	1-1/16	2-1/8	018519AW	022319AW
44	.0860	3/4	1-3/4	018544AW	022344AW	18	.1695	1-1/16	2-1/8	018518AW	022318AW
43	.0890	3/4	1-3/4	018543AW	022343AW	17	.1730	1-1/8	2-3/16	018517AW	022317AW
42	.0935	3/4	1-3/4	018542AW	022342AW	16	.1770	1-1/8	2-3/16	018516AW	022316AW
41	.0960	13/16	1-13/16	018541AW	022341AW	15	.1800	1-1/8	2-3/16	018515AW	022315AW
40	.0980	13/16	1-13/16	018540AW	022340AW	14	.1820	1-1/8	2-3/16	018514AW	022314AW
39	.0995	13/16	1-13/16	018539AW	022339AW	13	.1850	1-1/8	2-3/16	018513AW	022313AW
38	.1015	13/16	1-13/16	018538AW	022338AW	12	.1890	1-3/16	2-1/4	018512AW	022312AW
37	.1040	13/16	1-13/16	018537AW	022337AW	11	.1910	1-3/16	2-1/4	018511AW	022311AW
36	.1065	13/16	1-13/16	018536AW	022336AW	10	.1935	1-3/16	2-1/4	018510AW	022310AW
35	.1100	7/8	1-7/8	018535AW	022335AW	9	.1960	1-3/16	2-1/4	018509AW	022309AW
34	.1110	7/8	1-7/8	018534AW	022334AW	8	.1990	1-3/16	2-1/4	018508AW	022308AW
33	.1130	7/8	1-7/8	018533AW	022333AW	7	.2010	1-3/16	2-1/4	018507AW	022307AW
32	.1160	7/8	1-7/8	018532AW	022332AW	6	.2040	1-1/4	2-3/8	018506AW	022306AW
31	.1200	7/8	1-7/8	018531AW	022331AW	5	.2055	1-1/4	2-3/8	018505AW	022305AW
30	.1285	15/16	1-15/16	018530AW	022330AW	4	.2090	1-1/4	2-3/8	018504AW	022304AW
29	.1360	15/16	1-15/16	018529AW	022329AW	3	.2130	1-1/4	2-3/8	018503AW	022303AW
28	.1405	15/16	1-15/16	018528AW	022328AW	2	.2210	1-5/16	2-7/16	018502AW	022302AW
27	.1440	1	2-1/16	018527AW	022327AW	1	.2280	1-5/16	2-7/16	018501AW	022301AW

Aircraft Drills - Screw Machine Length Wire Gauge & Letter Sizes



Type C - List 341 - HSS - Regular - 135° Split Point - Treated



Type F - List 316C- Cobalt - Heavy Duty - 135° Split Point - Bronze

Packaging: A to K (12), L to Z (6)

Diameter	Decimal Equiv.	Flute Length	Overall Length	List 341 Type C	List 316C Type F	Diameter	Decimal Equiv.	Flute Length	Overall Length	List 341 Type C	List 316C Type F
A	.2340	1-5/16	2-7/16	020301AW	017875AW	N	.3020	1-5/8	2-13/16	020314AW	017887AW
B	.2380	1-3/8	2-1/2	020302AW	017876AW	O	.3160	1-11/16	2-13/16	020315AW	017888AW
C	.2420	1-3/8	2-1/2	020303AW	017877AW	P	.3230	1-11/16	2-13/16	020316AW	017889AW
D	.2460	1-3/8	2-1/2	020304AW	017878AW	Q	.3320	1-11/16	3	020317AW	017890AW
E	.2500	1-3/8	2-1/2	020305AW	017879AW	R	.3390	1-11/16	3	020318AW	017891AW
F	.2570	1-7/16	2-5/8	020306AW	017880AW	S	.3480	1-11/16	3	020319AW	017892AW
G	.2610	1-7/16	2-5/8	020307AW	017881AW	T	.3580	1-3/4	3-1/16	020320AW	017893AW
H	.2660	1-1/2	2-11/16	020308AW	017882AW	U	.3680	1-13/16	3-1/8	020321AW	017894AW
I	.2720	1-1/2	2-11/16	020309AW	017883AW	V	.3770	1-7/8	3-1/4	020322AW	017895AW
J	.2770	1-1/2	2-11/16	020310AW	017884AW	W	.3860	1-7/8	3-1/4	020323AW	017896AW
K	.2810	1-1/2	2-11/16	020311AW	014400AW	X	.3970	1-15/16	3-5/16	020324AW	014401AW
L	.2900	1-9/16	2-3/4	020312AW	017885AW	Y	.4040	1-15/16	3-5/16	020325AW	014402AW
M	.2950	1-9/16	2-3/4	020313AW	017886AW	Z	.4130	2	3-3/8	020326AW	014403AW

Special Drills Wide Range of Drills for Variety of Applications & Industries



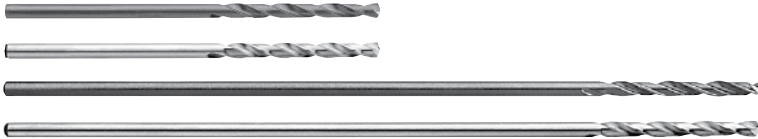
Regal Cutting Tools offers a wide range of drills for many varied applications and industries. While the majority of hole drilling uses standard drills, there remains a need for specifically designed tools. These special drills are manufactured from premium tool steels for drilling difficult materials and for use in unusual applications.

Pictured above is a small example of these special tools. They are capable in many applications of producing holes to very close tolerances and finishes.

Productivity can be enhanced through special combination tools replacing several operations. Various shank configurations can be incorporated to accommodate spindles of specialty drilling machines.

Regal Cutting Tools manufactures most special drills, with delivery times second to none. Call your Regal Cutting Tools representative today for all your special drill needs.

Aircraft Drills - Extension Length Fractional Sizes



HSS **NAS 907** **135° Split** **Black Oxide**

List 3406 - HSS 6" Overall - 135° Split Point - Type B - Treated

Cobalt **NAS 907** **135° Split** **Bronze Oxide**

List 3606 - Cobalt 6" Overall - 135° Split Point - Type J - Bronze

HSS **NAS 907** **135° Split** **Black Oxide**

List 3506 - HSS 12" Overall - 135° Split Point - Type B - Treated

Cobalt **NAS 907** **135° Split** **Bronze Oxide**

List 3706 - Cobalt 12" Overall - 135° Split Point - Type J - Bronze

- Manufactured to A.I.A. NAS-907 Standards
- Used in applications where standard drill lengths cannot reach

Packaging: 1/16" to 9/32"(12), 19/64" to 1/2"(6)

Diameter	Decimal Equiv.	Flute Length	6" Overall Length		12" Overall Length		Diameter	Decimal Equiv.	Flute Length	12" Overall List 3506 HSS
			List 3406 HSS	List 3606 Cobalt	List 3506 HSS	List 3706 Cobalt				
1/16	.0625	7/8	017504AW	017304AW	017404AW	017004AW	19/64	.2969	3-1/16	017419AW
5/64	.0781	1	017505AW	017305AW	017405AW	017005AW	5/16	.3125	3-3/16	017420AW
3/32	.0938	1-1/4	017506AW	017306AW	017406AW	017006AW	21/64	.3281	3-5/16	017421AW
7/64	.1094	1-1/2	017507AW	017307AW	017407AW	017007AW	11/32	.3438	3-7/16	017422AW
1/8	.1250	1-5/8	017508AW	017308AW	017408AW	017008AW	23/64	.3594	3-1/2	017423AW
9/64	.1406	1-3/4	017509AW	017309AW	017409AW	017009AW	3/8	.3750	3-5/8	017424AW
5/32	.1562	2	017510AW	017310AW	017410AW	017010AW	25/64	.3906	3-3/4	017425AW
11/64	.1719	2-1/8	017511AW	017311AW	017411AW	017011AW	13/32	.4062	3-7/8	017426AW
3/16	.1875	2-5/16	017512AW	017312AW	017412AW	017012AW	27/64	.4219	3-15/16	017427AW
13/64	.2031	2-7/16	017513AW	017313AW	017413AW	017013AW	7/16	.4375	4-1/16	017428AW
7/32	.2188	2-1/2	017514AW	017314AW	017414AW	017014AW	29/64	.4531	4-3/16	017429AW
15/64	.2344	2-5/8	017515AW	017315AW	017415AW	017015AW	15/32	.4688	4-5/16	017430AW
1/4	.2500	2-3/4	017516AW	017316AW	017416AW	017016AW	31/64	.4844	4-3/8	017431AW
17/64	.2676	2-7/8	—	—	—	017417AW	1/2	.5000	4-1/2	017432AW
9/32	.2813	2-15/16	—	—	—	017418AW	—	—	—	—

Aircraft Drills - Extension Length Letter Sizes



HSS **NAS 907** **135° Split** **Black Oxide**

List 3407 - HSS 6" Overall -135° Split Point - Type B - Treated

Cobalt **NAS 907** **135° Split** **Bronze Oxide**

List 3607 - Cobalt 6" Overall - 135° Split Point - Type J - Bronze

HSS **NAS 907** **135° Split** **Black Oxide**

List 3507 - HSS 12" Overall - 135° Split Point - Type B - Treated

Letter Sizes

Packaging: A to K (12), L to Z (6)

- Manufactured to A.I.A. NAS-907 Standards
- Used in applications where standard drill lengths cannot reach

Diameter	Decimal Equiv.	Flute Length	6" Overall Length		12" Overall	Diameter	Decimal Equiv.	Flute Length	12" Overall
			List 3407 HSS	List 3607 Cobalt	List 3507 HSS				List 3507 HSS
A	.2340	2-5/8	023401AW	—	023601AW	N	.3020	3-1/16	023614AW
B	.2380	2-3/4	023402AW	—	023602AW	O	.3160	3-3/16	023615AW
C	.2420	2-3/4	023403AW	023503AW	023603AW	P	.3230	3-5/16	023616AW
D	.2460	2-3/4	023404AW	023504AW	023604AW	Q	.3320	3-7/16	023617AW
E	.2500	2-3/4	023405AW	023505AW	023605AW	R	.3390	3-7/16	023618AW
F	.2570	2-7/8	023406AW	023506AW	023606AW	S	.3480	3-1/2	023619AW
G	.2610	2-7/8	—	—	023607AW	T	.3580	3-1/2	023620AW
H	.2660	2-7/8	—	—	023608AW	U	.3680	3-5/8	023621AW
I	.2720	2-7/8	—	—	023609AW	V	.3770	3-5/8	023622AW
J	.2770	2-7/8	—	—	023610AW	W	.3860	3-3/4	023623AW
K	.2810	2-15/16	—	—	023611AW	X	.3970	3-3/4	023624AW
L	.2900	2-15/16	—	—	023612AW	Y	.4040	3-7/8	023625AW
M	.2950	3-1/16	—	—	023613AW	Z	.4730	3-7/8	023626AW

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Aircraft Drills - Extension Length Wire Gauge Sizes



HSS **NAS 907** **135° Split** **Black Oxide**

List 3408 - HSS 6" Overall - 135° Split Point - Type B - Treated

Cobalt **NAS 907** **135° Split** **Bronze Oxide**

List 3608 - Cobalt 6" Overall - 135° Split Point - Type J - Bronze

HSS **NAS 907** **135° Split** **Black Oxide**

List 3508 - HSS 12" Overall - 135° Split Point - Type B - Treated

Packaging: All (12)

- Manufactured to A.I.A. NAS-907 Standards
- Used in applications where standard drill lengths cannot reach

Diameter	Decimal Equiv.	Flute Length	6" Overall Length			Diameter	Decimal Equiv.	Flute Length	6" Overall Length		
			List 3408 HSS	List 3608 Cobalt	List 3508 HSS				List 3408 HSS	List 3608 Cobalt	List 3508 HSS
52	.0635	7/8	017752AW	022552AW	—	26	.1470	1-7/8	017726AW	022526AW	022626AW
51	.0670	1	017751AW	022551AW	—	25	.1495	1-7/8	017725AW	022525AW	022625AW
50	.0700	1	017750AW	022550AW	022650AW	24	.1520	2	017724AW	022524AW	—
49	.0730	1	017749AW	022549AW	022649AW	23	.1540	2	017723AW	022523AW	022623AW
48	.0760	1	017748AW	022548AW	022648AW	22	.1570	2	017722AW	022522AW	022622AW
47	.0785	1	017747AW	022547AW	022647AW	21	.1590	2-1/8	017721AW	022521AW	02262AW
46	.0810	1-1/8	017746AW	022546AW	022646AW	20	.1610	2-1/8	017720AW	022520AW	022620AW
45	.0820	1-1/8	017745AW	022545AW	022645AW	19	.1660	2-1/8	017719AW	022519AW	022619AW
44	.0860	1-1/8	017744AW	022544AW	022644AW	18	.1695	2-1/8	017718AW	022518AW	022618AW
43	.0890	1-1/4	017743AW	022543AW	022643AW	17	.1730	2-3/16	017717AW	022517AW	022617AW
42	.0935	1-1/4	017742AW	022542AW	022642AW	16	.1770	2-3/16	017716AW	022516AW	022616AW
41	.0960	1-3/8	017741AW	022541AW	022641AW	15	.1800	2-3/16	017715AW	022515AW	—
40	.0980	1-3/8	017740AW	022540AW	022640AW	14	.1820	2-3/16	017714AW	022514AW	022614AW
39	.0995	1-3/8	017739AW	022539AW	022639AW	13	.1850	2-5/16	017713AW	022513AW	022613AW
38	.1015	1-7/16	017738AW	022538AW	022638AW	12	.1890	2-5/16	017712AW	022512AW	022612AW
37	.1040	1-7/16	017737AW	022537AW	022637AW	11	.1910	2-5/16	017711AW	022511AW	022611AW
36	.1065	1-7/16	017736AW	022536AW	022636AW	10	.1935	2-7/16	017710AW	022510AW	022610AW
35	.1100	1-1/2	017735AW	022535AW	—	9	.1960	2-7/16	017709AW	022509AW	022609AW
34	.1110	1-1/2	017734AW	022534AW	—	8	.1990	2-7/16	017708AW	022508AW	—
33	.1130	1-1/2	017733AW	022533AW	—	7	.2010	2-7/16	017707AW	022507AW	022607AW
32	.1160	1-5/8	017732AW	022532AW	—	6	.2040	2-1/2	017706AW	022506AW	—
31	.1200	1-5/8	017731AW	022531AW	022631AW	5	.2055	2-1/2	017705AW	022505AW	022605AW
30	.1285	1-5/8	017730AW	022530AW	022630AW	4	.2090	2-1/2	017704AW	022504AW	022604AW
29	.1360	1-3/4	017729AW	022529AW	022629AW	3	.2130	2-1/2	017703AW	022503AW	022603AW
28	.1405	1-3/4	017728AW	022528AW	—	2	.2210	2-5/8	017702AW	022502AW	—
27	.1440	1-7/8	017727AW	022527AW	022627AW	1	.2280	2-5/8	017701AW	022501AW	022601AW

REAMERS

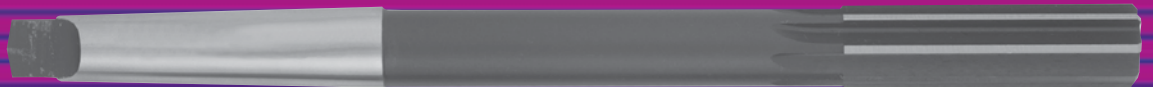


Chucking Reamers

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Chucking Reamers

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Chuckling Reamers Straight Shank - Fractional



List 330 - Straight Flute

HSS

- Chuckling reamers have short deep flutes specially designed for accurate machine reaming in most materials



List 331 - Left Hand Spiral Flute; Right Hand

HSS

- Cuts with a smoother chatter free action than straight flute reamers
- Recommended when better finishes are required
- Spiral flutes aid in chip removal and the spanning of interrupted cuts
- Pushes chips forward through the hole when reaming



List 332 - Right Hand Spiral Flute

HSS

- Cuts with a smoother chatter free action than straight flute reamers
- Recommended when better finishes are required
- Spiral flutes aid in chip removal and the spanning of interrupted cuts

Packaging: All (1)

Size	EDP No. Type 330 Straight	EDP No. Type 331 L.H.S./R.H.C.	EDP No. Type 332 R.H.	Size	EDP No. Type 330 Straight	EDP No. Type 331 L.H.S./R.H.C.	EDP No. Type 332 R.H.
1/32	000100ZM	—	—	15/32	000360ZM	000860ZM	001364ZM
3/64	000126ZM	—	—	31/64	000362ZM	000862ZM	—
1/16	000133ZM	000633ZM	—	1/2	000366ZM	000866ZM	001370ZM
5/64	000142ZM	000644ZM	—	17/32	000370ZM	000870ZM	—
3/32	000156ZM	000658ZM	—	9/16	000372ZM	000872ZM	—
7/64	000170ZM	000672ZM	—	19/32	000374ZM	000874ZM	—
1/8	000184ZM	000686ZM	001188ZM	5/8	000376ZM	000876ZM	—
9/64	000194ZM	000696ZM	—	21/32	000378ZM	000878ZM	—
5/32	000206ZM	000706ZM	001210ZM	11/16	000380ZM	000880ZM	—
11/64	000218ZM	000718ZM	—	23/32	000382ZM	000882ZM	—
3/16	000232ZM	000732ZM	001236ZM	3/4	000384ZM	000884ZM	—
13/64	000248ZM	000748ZM	—	25/32	000386ZM	000886ZM	—
7/32	000258ZM	000758ZM	001262ZM	13/16	000388ZM	000888ZM	—
15/64	000266ZM	000766ZM	—	27/32	000390ZM	000890ZM	—
1/4	000276ZM	000776ZM	001280ZM	7/8	000392ZM	000892ZM	—
17/64	000284ZM	000784ZM	—	29/32	000394ZM	000894ZM	—
9/32	000294ZM	000794ZM	001298ZM	15/16	000396ZM	000896ZM	—
19/64	000300ZM	000800ZM	—	31/32	000398ZM	000898ZM	—
5/16	000306ZM	000806ZM	001310ZM	1"	000400ZM	000900ZM	—
21/64	000314ZM	000814ZM	—	1-1/16"	000402ZM	000902ZM	—
11/32	000320ZM	000820ZM	001324ZM	1-1/8"	000404ZM	000904ZM	—
23/64	000326ZM	000826ZM	—	1-3/16"	000406ZM	000906ZM	—
3/8	000332ZM	000832ZM	001336ZM	1-1/4"	000408ZM	000908ZM	—
25/64	000340ZM	000840ZM	—	1-5/16"	000410ZM	000910ZM	—
13/32	000346ZM	000846ZM	001350ZM	1-3/8"	000412ZM	000912ZM	—
27/64	000350ZM	000850ZM	—	1-7/16"	000414ZM	000914ZM	—
7/16	000354ZM	000854ZM	001358ZM	1-1/2"	000416ZM	000916ZM	—
29/64	000358ZM	000858ZM	—	—	—	—	—

See page 158 for Chuckling Reamer dimensions.

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Chucking Reamers Wire Gage, Letter Sizes

List 330 - Wire Gauge Sizes - Straight Flute

HSS

Packaging: All (1)

EDP No. Type 330 Straight	Wire Size	EDP No. Type 330 Straight	Wire Size
000116ZM	60	000188ZM	30
000118ZM	59	000190ZM	29
000120ZM	58	000192ZM	28
000122ZM	57	000196ZM	27
000124ZM	56	000198ZM	26
000128ZM	55	000200ZM	25
000130ZM	54	000202ZM	24
000132ZM	53	000204ZM	23
000134ZM	52	000208ZM	22
000135ZM	51	000210ZM	21
000136ZM	50	000212ZM	20
000138ZM	49	000214ZM	19
000140ZM	48	000216ZM	18
000144ZM	47	000220ZM	17
000146ZM	46	000222ZM	16
000148ZM	45	000224ZM	15
000150ZM	44	000226ZM	14
000152ZM	43	000228ZM	13
000154ZM	42	000236ZM	12
000158ZM	41	000238ZM	11
000160ZM	40	000240ZM	10
000162ZM	39	000242ZM	9
000164ZM	38	000244ZM	8
000166ZM	37	000246ZM	7
000168ZM	36	000250ZM	6
000172ZM	35	000252ZM	5
000174ZM	34	000254ZM	4
000176ZM	33	000256ZM	3
000178ZM	32	000260ZM	2
000180ZM	31	000262ZM	1

List 330 - Letter Sizes - Straight Flute

HSS

Packaging: All (1)

EDP No. Type 330 Straight	Wire Size	EDP No. Type 330 Straight	Wire Size
000264ZM	A	000310ZM	O
000268ZM	B	000312ZM	P
000270ZM	C	000316ZM	Q
000272ZM	D	000318ZM	R
000280ZM	F	000322ZM	S
000282ZM	G	000324ZM	T
000286ZM	H	000328ZM	U
000288ZM	I	000336ZM	V
000290ZM	J	000338ZM	W
000292ZM	K	000342ZM	X
000296ZM	L	000344ZM	Y
000298ZM	M	000348ZM	Z
000302ZM	N		

See page 158 for
Chucking Reamer
dimensions.

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Chuckling Reamers Metric, Dowel Pin, Over/Under

Metric List 330M - Straight Flute

HSS

Packaging: All (1)

EDP No. Type 330M Straight	Size	Decimal Equiv.	EDP No. Type 330M Straight	Size	Decimal Equiv.	EDP No. Type 330M Straight	Size	Decimal Equiv.
000500ZM	M1.0	.0394	000534ZM	M9.5	.3740	000566ZM	M17.5	.6890
000502ZM	M1.5	.0591	000536ZM	M10.0	.3937	000568ZM	M18.0	.7087
000504ZM	M2.0	.0787	000538ZM	M10.5	.4134	000570ZM	M18.5	.7283
000506ZM	M2.5	.0984	000540ZM	M11.0	.4331	000572ZM	M19.0	.7480
000508ZM	M3.0	.1181	000542ZM	M11.5	.4528	000574ZM	M19.5	.7677
000510ZM	M3.5	.1378	000544ZM	M12.0	.4724	000576ZM	M20.0	.7874
000512ZM	M4.0	.1575	000546ZM	M12.5	.4921	000578ZM	M20.5	.8071
000514ZM	M4.5	.1772	000548ZM	M13.0	.5118	000580ZM	M21.0	.8268
000516ZM	M5.0	.1969	000550ZM	M13.5	.5315	000582ZM	M21.5	.8465
000518ZM	M5.5	.2165	000552ZM	M14.0	.5512	000584ZM	M22.0	.8661
000520ZM	M6.0	.2362	000554ZM	M14.5	.5709	000586ZM	M22.5	.8858
000522ZM	M6.5	.2559	000556ZM	M15.0	.5906	000588ZM	M23.0	.9055
000524ZM	M7.0	.2756	000558ZM	M15.5	.6102	000590ZM	M23.5	.9252
000526ZM	M7.5	.2953	000560ZM	M16.0	.6299	000592ZM	M24.0	.9449
000528ZM	M8.0	.3150	000562ZM	M16.5	.6496	000593ZM	M24.5	.9646
000530ZM	M8.5	.3346	000564ZM	M17.0	.6693	000594ZM	M25.0	.9843
000532ZM	M9.0	.3543	—	—	—	—	—	—

Dowel Pin, List D/P 330 - Straight Flute

Precision Ground to -.0002 Tolerance

HSS

Packaging: All (1)

EDP No. Type 330 Straight	Size
000444ZM	.1230
000446ZM	.1247
000448ZM	.1855
000450ZM	.1870
000452ZM	.2480
000454ZM	.2495
000456ZM	.3105
000458ZM	.3120
000460ZM	.3730
000462ZM	.3745
000464ZM	.4355
000466ZM	.4370
000468ZM	.4980
000470ZM	.4995

Over/Under Decimal Sizes List O/U 330 - Straight Flute

Precision Ground to +.0002 Tolerance

HSS

Packaging: All (1)

EDP No. Type 330 Straight	Size
000182ZM	.1240
000186ZM	.1260
000230ZM	.1865
000234ZM	.1885
000274ZM	.2490
000278ZM	.2510
000304ZM	.3115
000308ZM	.3135
000330ZM	.3740
000334ZM	.3760
000352ZM	.4365
000356ZM	.4385
000364ZM	.4990
000368ZM	.5010

See page 158 for
Chuckling Reamer
dimensions.

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Chucking Reamers Taper Shank



HSS List 380 - Straight Flute



HSS List 382 - Right Hand Spiral

Packaging: All (1)

- Chucking reamers have short deep flutes specially designed for accurate machine reaming in most materials

Size	EDP No. Type 380 Straight	EDP No. Type 382 RH Spiral	# Flutes	TS# Shank Dia.	Flute Length	Overall Length	Size	EDP No. Type 380 Straight	EDP No. Type 382 RH Spiral	# Flutes	TS# Shank Dia.	Flute Length	Overall Length
1/4	003715ZM	003781ZM	6	1	1-1/2	6	27/32	003734ZM	003800ZM	10	2	2-1/2	9-1/2
5/16	003717ZM	003783ZM	6	1	1-1/2	6	7/8	003735ZM	003801ZM	10	2	2-5/8	10
3/8	003719ZM	003785ZM	6	1	1-3/4	7	29/32	003736ZM	003802ZM	10	2	2-5/8	10
7/16	003721ZM	003787ZM	6	1	1-3/4	7	15/16	003737ZM	003803ZM	10	3	2-5/8	10
1/2	003723ZM	003789ZM	6	1	1-3/4	8	31/32	003738ZM	003804ZM	10	3	2-5/8	10
17/32	003724ZM	003790ZM	6	1	2	8	1	003739ZM	003805ZM	10	3	2-3/4	10-1/2
9/16	003725ZM	003791ZM	6	1	2	8	1-1/16	003740ZM	003806ZM	10	3	2-3/4	10-1/2
19/32	003726ZM	003792ZM	6	1	2	8	1-1/8	003741ZM	003807ZM	10	3	2-7/8	11
5/8	003727ZM	003793ZM	6	2	2-1/4	9	1-3/16	003742ZM	003808ZM	10	3	2-7/8	11
21/32	003728ZM	003794ZM	8	2	2-1/4	9	1-1/4	003743ZM	003809ZM	10	4	3	11-1/2
11/16	003729ZM	003795ZM	8	2	2-1/4	9	1-5/16	003744ZM	003810ZM	10	4	3	11-1/2
23/32	003730ZM	003796ZM	8	2	2-1/4	9	1-3/8	003745ZM	003811ZM	10	4	3-1/4	12
3/4	003731ZM	003797ZM	8	2	2-1/2	9-1/2	1-7/16	003746ZM	003812ZM	10	4	3-1/4	12
25/32	003732ZM	003798ZM	8	2	2-1/2	9 1/2	1-1/2	003747ZM	003813ZM	10	4	3-1/2	12-1/2
13/16	003733ZM	003799ZM	8	2	2-1/2	9 1/2	—	—	—	—	—	—	—

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Taper Pin Reamers Taper 1/4" per foot



HSS

List 500 - Straight Flute,



HSS

List 501 - LH Spiral; RH Cut



HSS

List 502 - LH Spiral; RH Cut-High Helix Type

- Designed with taper of 1/4" per foot to ream holes into which taper pins will fit
- Best results if the hole to be reamed is drilled a few thousandths smaller than the small diameter of the reamer

Packaging: All (1)

Size Number	Type 500 Straight	Type 501 L.H.	Type 502 L.H./H.H.	# Flutes	Shank Diameter	Small End	Large End	Flute Length	Overall Length
7/0	037621ZM	037601ZM	037641ZM	4	5/64	0497	0666	13/16	1-13/16
6/0	037622ZM	037602ZM	037642ZM	4	3/32	0611	0806	15/16	1-15/16
5/0	037623ZM	037603ZM	037643ZM	4	7/64	0719	0966	1-3/16	2-3/16
4/0	037624ZM	037604ZM	037644ZM	4	1/8	0869	1142	1-5/16	2-5/16
3/0	037625ZM	037605ZM	037645ZM	6	9/64	1029	1302	1-5/16	2-5/16
2/0	037626ZM	037606ZM	037646ZM	6	5/32	1137	1462	1-9/16	2-9/16
0	037627ZM	037607ZM	037647ZM	6	11/64	1287	1638	1-11/16	2-15/16
1	037628ZM	037608ZM	037648ZM	6	3/16	1447	1798	1-11/16	2-15/16
2	037629ZM	037609ZM	037649ZM	6	13/64	1605	2008	1-15/16	3-3/16
3	037630ZM	037610ZM	037650ZM	6	15/64	1813	2294	2-5/16	3-11/16
4	037631ZM	037611ZM	037651ZM	6	17/64	2071	2604	2-9/16	4-1/16
5	037632ZM	037612ZM	037652ZM	6	5/16	2409	2994	2-13/16	4-5/16
6	037633ZM	037613ZM	037653ZM	6	23/64	2773	3540	3-11/16	5-7/16
7	037634ZM	037614ZM	037654ZM	6	13/32	3297	4220	4-7/16	6-5/16
8	037635ZM	037615ZM	037655ZM	6	7/16	3971	5050	5-3/16	7-3/16
9	037636ZM	037616ZM	037656ZM	6	7/16	4805	6066	6-1/16	8-5/16
10	037637ZM	037617ZM	037657ZM	8	5/8	4799	7216	6-13/16	9-5/16a

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Hand Reamers



HSS

List 350 - Straight Flute



HSS

List 351 - Left Hand Spiral; Right Hand Cut

Packaging: All (1)

Size	EDP No. Type 350 Straight	EDP No. Type 351 LH Spiral	# Flutes	Shank Diameter	Flute Length	Overall Length	Size of Square
1/8	003860ZM	003915ZM	4	1/8	1-1/2	3	095
5/32	003862ZM	003917ZM	6	5/32	1-5/8	3-1/4	115
3/16	003864ZM	003919ZM	6	3/16	1-3/4	3-1/2	140
7/32	003866ZM	003921ZM	6	7/32	1-7/8	3-3/4	165
1/4	003868ZM	003923ZM	6	1/4	2	4	185
9/32	003870ZM	003925ZM	6	9/32	2-1/8	4-1/4	210
5/16	003872ZM	003927ZM	6	5/16	2-1/4	4-1/2	235
11/32	003874ZM	003929ZM	6	11/32	2-3/8	4-3/4	255
3/8	003876ZM	003931ZM	6	3/8	2-1/2	5	280
13/32	003878ZM	003933ZM	6	13/32	2-5/8	5-1/4	305
7/16	003880ZM	003935ZM	6	7/16	2-3/4	5-1/2	330
15/32	003882ZM	—	6	15/32	2-7/8	5-3/4	350
1/2	003884ZM	003939ZM	6	1/2	3	6	375
17/32	003885ZM	003940ZM	6	17/32	3-1/8	6-1/4	400
9/16	003886ZM	003941ZM	6	9/16	3-1/4	6-1/2	420
19/32	003887ZM	003942ZM	6	19/32	3-3/8	6-3/4	445
5/8	003888ZM	003943ZM	6	5/8	3-1/2	7	470
21/32	003889ZM	003944ZM	8	21/32	3-11/16	7-3/8	490
11/16	003890ZM	003945ZM	8	11/16	3-7/8	7-3/4	515
23/32	003891ZM	003946ZM	8	23/32	4-1/16	8-1/8	540
3/4	003892ZM	003947ZM	8	3/4	4-3/16	8-3/8	560
13/16	003894ZM	003949ZM	8	13/16	4-9/16	9-1/8	610
7/8	003896ZM	003951ZM	8	7/8	4-7/8	9-3/4	655
15/16	003898ZM	003953ZM	8	15/16	5-1/8	10-1/4	705
1	003900ZM	003955ZM	8	1	5-7/16	10-7/8	750
1-1/8	003902ZM	—	8	1-1/8	5-13/16	11-5/8	845
1-1/4	003904ZM	—	10	1-1/4	6-1/8	12-1/4	935
1-3/8	003906ZM	—	10	1-3/8	6-5/16	12-5/8	1030
1-1/2	003908ZM	—	10	1-1/2	6-1/2	13	1125

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Reamers Bridge & Car



HSS

Bridge Reamers - Taper Shank
List 510 - Straight Flutes



HSS

List 511 - Left Hand Spiral Flutes

- Designed for severe service and particularly adapted for use in structural steel, in the building industry, bridge erection and ship construction
- Bridge reamers are used for enlarging, aligning and deburring holes

Packaging: All (1)

Size	EDP No. Type 510 Straight	# Flutes	Tpaer Shank	Flute Length	Overall Length	Point Diameter	EDP No. Type 551 LH Spiral	# Flutes	Tpaer Shank	Flute Length	Overall Length	Point Diameter
7/16	005830ZM	5	2	4-3/8	8-1/4	1/4	005920ZM	4	2	4-3/8	8-1/4	1/4
1/2	—	—	—	—	—	—	005922ZM	4	2	5-1/8	9	9/32
9/16	005834ZM	5	2	5-1/8	9	11/32	005924ZM	5	2	5-1/8	9	11/32
5/8	—	—	—	—	—	—	005926ZM	5	2	6-1/8	10	3/8
11/16	005838ZM	5	3	7-1/8	11-3/4	25/64	005928ZM	5	3	7-1/8	11-3/4	25/64
3/4	—	—	—	—	—	—	005930ZM	5	3	7-3/8	12	7/16
13/16	005842ZM	5	3	7-3/8	12	1/2	005932ZM	5	3	7-3/8	12	1/2
7/8	—	—	—	—	—	—	005934ZM	5	3	7-3/8	12	9/16
15/16	005846ZM	5	3	7-3/8	12	5/8	005936ZM	5	3	7-3/8	12	5/8
1"	—	—	—	—	—	—	005938ZM	5	3	7-3/8	12	11/16
1-1/16"	005850ZM	5	3	7-3/8	12	3/4	005940ZM	5	3	7-3/8	12	3/4
1-1/8"	—	—	—	—	—	—	005942ZM	5	3	7-3/8	12	13/16
1-3/16"	005854ZM	5	3	7-3/8	12	7/8	005944ZM	5	3	7-3/8	12	7/8
1-1/4"	—	—	—	—	—	—	005946ZM	5	4	7-3/8	12	15/16
1-5/16"	005858ZM	5	4	7-3/8	13	1	005948ZM	5	4	7-3/8	13	1



HSS

Car Reamers - Taper Shank
List 520 - Straight Flutes

HSS

List 521 - Left Hand Spiral

- Car reamers are used for enlarging, aligning and deburring holes

Packaging: All (1)

Size	EDP No. Type 510 Straight	# Flutes	Tpaer Shank	Flute Length	Overall Length	EDP No. Type 551 LH Spiral	# Flutes	Tpaer Shank	Flute Length	Overall Length
5/16	—	—	—	—	—	005880ZM	4	1	2-3/4	5-11/16
3/8	—	—	—	—	—	005882ZM	4	1	2-3/4	5-11/16
7/16	005864ZM	5	2	3-1/2	6-15/16	005884ZM	4	2	3-1/2	6-15/16
1/2	—	—	—	—	—	005886ZM	4	2	4	7-9/16
9/16	005868ZM	5	2	4	7-9/16	005888ZM	5	2	4	7-9/16
5/8	—	—	—	—	—	005890ZM	5	2	4-1/2	8-1/16
11/16	005872ZM	5	3	4-1/2	8-13/16	005892ZM	5	3	4-1/2	8-13/16
3/4	—	—	—	—	—	005894ZM	5	3	5	9-1/2
13/16	005876ZM	5	3	5	9-1/2	005896ZM	5	3	5	9-1/2
15/16	005878ZM	5	3	5	9-1/2	005898ZM	5	3	5	9-1/2

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Reamer Sets Straight Shank

Packaging: All (1)

HSS

EDP No.	Size	Diameter Range	Flute	Set Number
003675ZM	Dowel Pin	.1230 - .4995	Straight	100
003681ZM	Over & Under	.1240 - .501	Straight	110
003687ZM	Wire Gage	1 - 60	Straight	120
003693ZM	Letter	A - Z	Straight	130
003699ZM	Fractional	1/16 - 1/2	Straight	150
003708ZM	Jig Borer	1/8 - 1	RH Spiral	160

Taper Pipe Reamers

Taper Pipe Reamers

List 531 - Left Hand Spiral; Right Hand Cut

- Designed with taper of 3/4" per foot to ream holes which will be tapped with American National Standard taper pipe taps

Packaging: All (1)

HSS

EDP No.	Size Inches
005900ZM	1/8
005902ZM	1/4
005904ZM	3/8
005906ZM	1/2
005908ZM	3/4
005910ZM	1
005912ZM	1-1/4
005914ZM	1-1/2
005916ZM	2

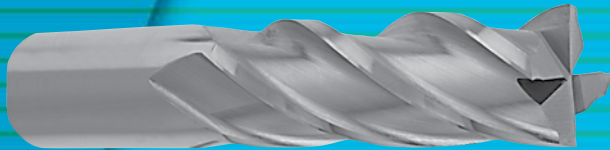
Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Chucking Reamer Dimensions

Packaging: All (1)

Diameter Range	Shank Diameter	Length of Cut	Length Overall	No. of Flutes	Diameter Range	Shank Diameter	Length of Cut	Length Overall	No. of Flutes	Taper Shank Size
.0300-.0399	.0290-.0280	1/2	2-1/4	4	.2380-.2470	.2319-.2329	1-1/2	6	6	1
.0400-.0464	.0380-.0390	1/2	2-1/4	4	.2471-.2510	.2395-.2405	1-1/2	6	6	1
.0465-.0519	.0445-.0455	1/2	2-1/2	4	.2511-.2670	.2475-.2485	1-1/2	6	6	1
.0520-.0594	.0500-.0510	1/2	2-1/2	4	.2671-.2820	.2475-.2485	1-1/2	6	6	1
.0595-.0669	.0575-.0585	1/2	2-1/2	4	.2821-.3230	.2782-.2792	1-1/2	6	6	1
.0670-.0793	.0650-.0660	3/4	3	4	.3231-.3450	.2782-.2792	1-1/2	6	6	1
.0740-.0809	.0710-.0720	3/4	3	4	.3451-.3760	.3095-.3105	1-3/4	7	6	1
.0810-.0859	.0761-.0771	3/4	3	4	.3761-.4080	.3095-.3105	1-3/4	7	6	1
.0860-.0909	.0800-.0810	3/4	3	4	.4081-.4370	.3720-.3730	1-3/4	7	6	1
.0910-.0959	.0870-.0880	3/4	3	4	.4371-.4700	.3720-.3730	1-3/4	7	6	1
.0960-.1014	.0918-.0928	7/8	3-1/2	4	.4701-.5160	.4345-.4355	2	8	6	1
.1015-.1064	.0940-.0950	7/8	3-1/2	4	.5161-.5450	.4345-.4355	2	8	6	1
.1065-.1109	.1020-.1030	7/8	3-1/2	4	.5451-.5800	.4345-.4355	2	8	6	1
.1110-.1159	.1045-.1055	7/8	3-1/2	4	.5801-.5950	.4345-.4355	2	8	6	1
.1160-.1214	.1110-.1120	7/8	3-1/2	4	.5951-.6300	.5605-.5620	2-1/4	9	6	2
.1215-.1249	.1180-.1190	7/8	3-1/2	4	.6301-.6600	.5605-.5620	2-1/4	9	6	2
.1250-.1264	.1180-.1190	7/8	3-1/2	6	.6601-.6950	.5605-.5620	2-1/4	9	6	2
.1265-.1319	.1180-.1190	7/8	3-1/2	6	.6951-.7200	.5605-.5620	2-1/4	9	6	2
.1320-.1379	.1265-.1275	1	4	6	.7201-.7550	.6230-.6245	2-1/2	9-1/2	8	2
.1380-.1440	.1340-.1350	1	4	6	.7551-.7850	.6230-.6245	2-1/2	9-1/2	8	2
.1441-.1495	.1420-.1430	1	4	6	.7851-.8150	.6230-.6245	2-1/2	9-1/2	8	2
.1496-.1544	.1450-.1460	1	4	6	.8151-.8450	.6230-.6245	2-1/2	9-1/2	8	2
.1545-.1589	.1500-.1510	1	4	6	.8451-.8800	.7480-.7495	2-5/8	10	8	2
.1590-.1644	.1520-.1530	1-1/8	4-1/2	6	.8801-.9100	.7480-.7495	2-5/8	10	8	2
.1645-.1695	.1585-.1595	1-1/8	4-1/2	6	.9101-.9400	.7480-.7495	2-5/8	10	8	3
.1696-.1746	.1635-.1645	1-1/8	4-1/2	6	.9401-.9700	.7480-.7495	2-5/8	10	8	3
.1800-.1849	.1745-.1755	1-1/8	4-1/2	6	.9701-1.0050	.8730-.8745	2-3/4	10-1/2	8	3
.1850-.1900	.1795-.1805	1-1/8	4-1/2	6	1.0051-1.0650	.8730-.8745	2-3/4	10-1/2	8	3
.1901-.1954	.1850-.1860	1-1/4	5	6	1.0651-1.0950	.8730-.8745	2-7/8	11	8	3
.1955-.2004	.1885-.1895	1-1/4	5	6	1.0951-1.1300	.8730-.8745	2-7/8	11	8	3
.2005-.2054	.1935-.1945	1-1/4	5	6	1.1301-1.1600	.9980-.9995	2-7/8	11	8	3
.2055-.2109	.2006-.2016	1-1/4	5	6	1.1601-1.1900	.9980-.9995	2-7/8	11	10	3
.2110-.2201	.2065-.2075	1-1/4	5	6	1.1901-1.2200	.9980-.9995	3	11-1/2	10	3
.2202-.2293	.2163-.2173	1-1/2	6	6	1.2201-1.2500	.9980-.9995	3	11-1/2	10	4
.2294-.2379	.2255-.2265	1-1/2	6	6	1.2501-1.2813	.9980-.9995	3	11-1/2	10	4
					1.2814-1.3300	.9980-.9995	3	11-1/2	10	4
					1.3301-1.4054	1.2480-1.2495	3-1/4	12	12	4
					1.4055-1.4420	1.2480-1.2495	3-1/4	12	12	4
					1.4421-1.4680	1.2480-1.2495	3-1/2	12-1/2	12	4
					1.4681-1.5050	1.2480-1.2495	3-1/2	12-1/2	12	4

END MILLS



General Purpose HSS

2 Flute Center Cutting End Mills	160
2 Flute Ball End Mills	161
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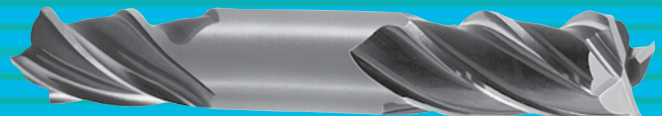
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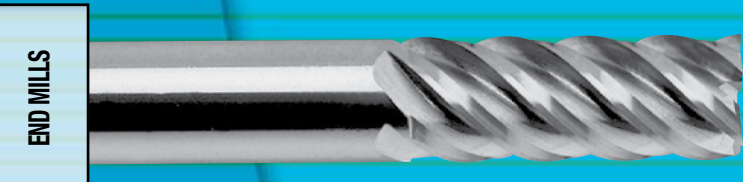
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END MILLS

Premium HSS

2-Flute End Mills - High Speed Steel Center Cutting



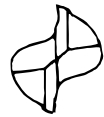
List 5003B Double End - 2-Flute- Stub



Packaging: All (1)



- Plunge, slot, spot drill and profile
- Greater chip carrying capacity
- Proper slot size and location easily held
- Cost effective: Offers two-tools-in-one



EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length
050172AM	1/8	3/8	3/16	2-3/4	050181AM	7/32	3/8	21/64	2-7/8
050175AM	5/32	3/8	15/64	2-3/4	050184AM	1/4	3/8	3/8	2-7/8
050178AM	3/16	3/8	9/32	2-3/4	—	—	—	—	—



List 5003B Double End - 2-Flute - Regular



Packaging: All (1)



EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length
050080AM	1/8	3/8	3/8	3-1/6	050770AM	19/32	5/8	1-1/8	5
050083AM	5/32	3/8	7/16	3-1/8	050122AM	5/8	5/8	1-1/8	5
050086AM	3/16	3/8	7/16	3-1/4	050771AM	21/32	3/4	1-5/16	5-5/8
050089AM	7/32	3/8	1/2	3-1/4	050125AM	11/16	3/4	1-5/16	5-5/8
050092AM	1/4	3/8	1/2	3-3/8	050749AM	23/32	3/4	1-5/16	5-5/8
050095AM	9/32	3/8	9/16	3-3/8	050128AM	3/4	3/4	1-5/16	5-5/8
050098AM	5/16	3/8	9/16	3-1/2	050774AM	25/32	7/8	1-9/16	6-1/8
050101AM	11/32	3/8	9/16	3-1/2	050131AM	13/16	7/8	1-9/16	6-1/8
050104AM	3/8	3/8	9/16	3-1/2	050776AM	27/32	7/8	1-9/16	6-1/8
050107AM	13/32	1/2	13/16	4-1/8	050134AM	7/8	7/8	1-9/16	6-1/8
050110AM	7/16	1/2	13/16	4-1/8	050777AM	29/32	1	1-5/8	6-3/8
050113AM	15/32	1/2	13/16	4-1/8	050137AM	15/16	1	1-5/8	6-3/8
050116AM	1/2	1/2	13/16	4-1/8	050779AM	31/32	1	1-5/8	6-3/8
050768AM	17/32	5/8	1-1/8	5	050140AM	1	1	1-5/8	6-3/8
050119AM	9/16	5/8	1-1/8	5	—	—	—	—	—

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Premium HSS 2-Flute Keyway End Mills High Speed Steel Center Cutting



List 5062 Single End - Spiral Flute



List 5062S Single End - Straight Flute

- Plunge, slot, spot, drill and profile
- Greater chip carrying capacity
- Proper slot size and location easily held
- Keyway end mills for close tolerance keyway milling: Minus tolerance $+.000$ to $-.0015$



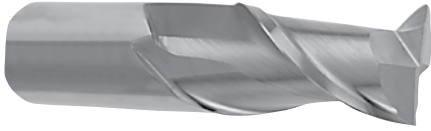
Packaging: All (1)

EDP No. Sp.Fl	EDP No. Str.Fl	Dia. of Mill*	Dia. of Shank	Length of Cut	Overall Length	EDP No. Sp.Fl	EDP No. Str.Fl	Dia. of Mill*	Dia. of Shank	Length of Cut	Overall Length
052129AM	052100AM	1/4	3/8	1/2	2-7/16	052136AM	052116AM	11/16	5/8	1-5/16	3-3/4
052130AM	052104AM	5/16	3/8	9/16	2-1/2	052137AM	052118AM	3/4	3/4	1-5/16	3-7/8
052131AM	052106AM	3/8	3/8	9/16	2-1/2	052138AM	052120AM	7/8	7/8	1-1/2	4-1/8
052132AM	052108AM	7/16	3/8	3/4	2-1/2	052139AM	052122AM	1	1	1-5/8	4-1/2
052133AM	052110AM	1/2	1/2	1	3-1/4	052140AM	052124AM	1-1/8	1	1-5/8	4-1/2
052134AM	052112AM	9/16	1/2	1-1/8	3-3/8	052141AM	052126AM	1-1/4	1-1/4	1-5/8	4-1/2
052135AM	052114AM	5/8	5/8	1-5/16	3-3/4	052142AM	052128AM	1-1/2	1-1/4	1-5/8	4-1/2

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Premium HSS

2-Flute End Mills - High Speed Steel Center Cutting



List 5006 Single End - High Speed Steel



Packaging: All (1)

- Plunge, slot, spot drill and profile
- Greater chip carrying capacity
- Proper slot size and location easily held



EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length
050500AM	1/8	3/8	3/8	2-5/16	050546AM	13/16	3/4	1-7/8	4-1/8
050501AM	11/64	3/8	7/16	2-3/8	050759AM	27/32	7/8	1-7/8	4-1/8
050503AM	3/16	3/8	7/16	2-3/8	050548AM	7/8	5/8	1-1/2	4
050502AM	13/64	3/8	1/2	2-7/16	050549AM	7/8	3/4	1-1/2	4-1/8
050504AM	7/32	3/8	1/2	2-7/16	050575AM	7/8	7/8	1-1/2	4-1/8
050505AM	15/64	3/8	1/2	2-7/16	050762AM	29/32	7/8	1-7/8	4-1/8
050506AM	1/4	3/8	1/2	2-7/16	050551AM	15/16	5/8	1-1/2	4
050507AM	17/64	3/8	9/16	2-1/2	050552AM	15/16	3/4	1-1/2	4-1/8
050508AM	9/32	3/8	9/16	2-1/2	050578AM	15/16	7/8	1-1/2	4-1/8
050510AM	19/64	3/8	9/16	2-1/2	050764AM	31/32	1	1-5/8	4-1/2
050509AM	5/16	3/8	9/16	2-1/2	050554AM	1	5/8	1-1/2	4
050750AM	21/64	3/8	9/16	2-1/2	050560AM	1	3/4	1-1/2	4-1/8
050511AM	11/32	3/8	9/16	2-1/2	050581AM	1	7/8	1-1/2	4-1/8
050751AM	23/64	3/8	9/16	2-1/2	050590AM	1	1	1-5/8	4-1/2
050512AM	3/8	3/8	9/16	2-1/2	050591AM	1-1/16	3/4	1-5/8	4-1/4
050752AM	25/64	3/8	13/16	2-11/16	050765AM	1-1/16	3/4	2	4-1/4
050513AM	13/32	3/8	13/16	2-11/16	050563AM	1-1/8	3/4	1-5/8	4-1/4
050753AM	27/64	3/8	13/16	2-11/16	050584AM	1-1/8	7/8	1-5/8	4-1/4
050515AM	7/16	3/8	13/16	2-11/16	050593AM	1-1/8	1	1-5/8	4-1/2
050754AM	29/64	3/8	13/16	2-11/16	050594AM	1-3/16	3/4	1-5/8	4-1/4
050516AM	15/32	3/8	13/16	2-11/16	050767AM	1-3/16	1	1-5/8	4-1/2
050518AM	1/2	3/8	13/16	2-11/16	050566AM	1-1/4	3/4	1-5/8	4-1/2
050512AM	1/2	1/2	1	3-1/4	050587AM	1-1/4	7/8	1-5/8	4-1/2
050522AM	17/32	1/2	1-1/8	3-3/8	050596AM	1-1/4	1	1-5/8	4-1/2
050524AM	9/16	1/2	1-1/8	3-3/8	050605AM	1-1/4	1-1/4	1-5/8	4-1/2
050525AM	19/32	1/2	1-1/8	3-3/8	050569AM	1-3/8	3/4	1-5/8	4-1/4
050527AM	5/8	1/2	1-1/8	3-3/8	050599AM	1-3/8	1	1-5/8	4-1/2
050536AM	5/8	5/8	1-5/16	3-3/4	050572AM	1-1/2	3/4	1-5/8	4-1/4
050756AM	21/32	5/8	1-5/16	3-3/4	050602AM	1-1/2	1	1-5/8	4-1/2
050530AM	11/16	1/2	1-5/16	3-5/8	050608AM	1-1/2	1-1/4	1-5/8	4-1/2
050539AM	11/16	5/8	1-5/16	3-3/4	050611AM	1-5/8	1-1/4	1-5/8	4-1/2
050757AM	23/32	3/4	1-5/8	3-7/8	050612AM	1-3/4	3/4	1-5/8	4-1/4
050533AM	3/4	1/2	1-5/16	3-5/8	050614AM	1-3/4	1-1/4	1-5/8	4-1/2
050542AM	3/4	5/8	1-5/16	3-3/4	050617AM	1-7/8	1-1/4	1-5/8	4-1/2
050557AM	3/4	3/4	1-5/16	3-7/8	050618AM	2	3/4	1-5/8	4-1/4
050758AM	25/32	3/4	1-1/2	4	050620AM	2	1-1/4	1-5/8	4-1/2
050545AM	13/16	5/8	1-1/2	4	—	—	—	—	—

Enhance tool performance and wear life with **TiN, TiCN, TiAlN**

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Premium HSS

2-Flute Ball End Mills - High Speed Steel Center Cutting



List 5014B Double End - 2-Flute - Ball End



Packaging: All (1)

HSS
2 Flute
Double End
CC
Ball

- Full radius cutting action
- Free machining
- Excellent chip removal in slotting operations
- Avoids sharp machined corners
- Takes “delicate” cuts on contoured surfaces of molds and dies
- Cost effective: Offers two-tools-in-one



EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length
050884AM	1/8	3/8	3/16	2-3/4	050894AM	5/16	3/8	9/16	3-1/2
050885AM	1/8	3/8	3/8	3-1/16	050895AM	11/32	3/8	9/16	3-1/2
050886AM	5/32	3/8	7/16	3-1/8	050897AM	3/8	3/8	9/16	3-1/2
050887AM	3/16	3/8	9/32	2-3/4	050898AM	7/16	1/2	13/16	4-1/8
050888AM	3/16	3/8	7/16	3-1/4	050900AM	1/2	1/2	13/16	4-1/8
050889AM	7/32	3/8	1/2	3-1/4	050902AM	5/8	5/8	1-1/8	5
050890AM	1/4	3/8	3/8	2-7/8	050904AM	3/4	3/4	1-5/16	5-5/8
050891AM	1/4	3/8	1/2	3-3/8	050906AM	7/8	7/8	1-9/16	6-1/8
050892AM	9/32	3/8	9/16	3-3/8	050908AM	1	1	1-5/8	6-3/8



List 5011B Single End - 2-Flute - Ball End



Packaging: All (1)

HSS
2 Flute
Single End
CC
Ball

- Full radius cutting action
- Free machining
- Excellent chip removal in slotting operations
- Avoids sharp machined corners
- Takes “delicate” cuts on contoured surfaces of molds and dies



EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length
050760AM	1/8	3/8	3/8	2-5/16	050787AM	3/4	3/4	1-5/8	3-7/8
050763AM	3/16	3/8	1/2	2-3/8	050789AM	13/16	3/4	2	4-1/4
050766AM	1/4	3/8	5/8	2-7/16	050791AM	7/8	3/4	2	4-1/4
050769AM	5/16	3/8	3/4	2-1/2	050790AM	7/8	7/8	2	4-1/4
050772AM	3/8	3/8	3/4	2-1/2	050792AM	15/16	3/4	2-1/4	4-1/2
050775AM	7/16	1/2	1	3-1/4	050794AM	1	3/4	2-1/4	4-1/2
050778AM	1/2	1/2	1	3-1/4	050793AM	1	1	2-1/4	4-3/4
050781AM	9/16	1/2	1-1/8	3-3/8	050796AM	1-1/8	1	2-1/4	4-3/4
050782AM	5/8	1/2	1-1/8	3-3/8	050799AM	1-1/4	1-1/4	2-1/2	5
050784AM	5/8	5/8	1-3/8	3-3/4	050805AM	1-1/2	1-1/4	2-1/2	5
050788AM	3/4	1/2	1-5/16	3-5/8	—	—	—	—	—

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Premium HSS

2-Flute Hi Helix End Mills - High Speed Steel Center Cutting



List 5024 Single End - 2-Flute - Hi Helix End



Packaging: All (1)

- Recommended for milling aluminum and other non-ferrous materials
- Minimizes chip packing
- Reduced vibration and chatter

EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length
051638AM	1/8	3/8	3/8	2-5/16	051644AM	13/16	3/4	1-7/8	4-1/8
051639AM	3/16	3/8	1/2	2-3/8	051664AM	7/8	7/8	1-7/8	4-1/8
051640AM	1/4	3/8	5/8	2-7/16	051645AM	15/16	7/8	1-7/8	4-1/8
051643AM	5/16	3/8	3/4	2-1/2	051667AM	1	1	2	4-1/2
051646AM	3/8	3/8	3/4	2-1/2	051668AM	1	1	3	5-1/2
051649AM	7/16	3/8	1	2-11/16	051670AM	1-1/4	1-1/4	2	4-1/2
051652AM	1/2	1/2	1-1/4	3-1/4	051671AM	1-1/4	1-1/4	3	5-1/2
051641AM	9/16	1/2	1-3/8	3-3/8	051673AM	1-1/2	1-1/4	2	4-1/2
051655AM	5/8	1/2	1-3/8	3-3/8	051674AM	1-1/2	1-1/4	3	5-1/2
051658AM	5/8	5/8	1-5/8	3-3/4	051676AM	1-3/4	1-1/4	2	4-1/2
051642AM	11/16	5/8	1-5/8	3-3/4	051679AM	2	1-1/4	2	4-1/2
051661AM	3/4	3/4	1-5/8	3-7/8	051680AM	2	1-1/4	3	5-1/2
051662AM	3/4	3/4	2	4-1/4	—	—	—	—	—

List 5026 Single End - 2-Flute - Hi Helix End - Long



Packaging: All (1)



EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length
051690AM	1/4	3/8	1 1/4	3-1/16	059981AM	7/8	7/8	3 1/2	5-3/4
051693AM	5/16	3/8	1 3/8	3-1/8	051711AM	1	1	4	6-1/2
051696AM	3/8	3/8	1 1/2	3-1/4	051714AM	1-1/4	1-1/4	4	6-1/2
051699AM	7/16	1/2	1 3/4	3-3/4	051717AM	1-1/2	1-1/4	4	6-1/2
051702AM	1/2	1/2	2	4	051720AM	1-3/4	1-1/4	4	6-1/2
051705AM	5/8	5/8	2 1/2	4-5/8	051723AM	2	1-1/4	4	6-1/2
051708AM	3/4	3/4	3	5-1/4	050722AM	2	2	4	7-3/4

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

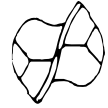
Premium HSS

2-Flute Hi Helix End Mills - High Speed Steel Center Cutting



List 5027 Single End - Spiral Flute - Ball Nose

- Recommended for milling aluminum and other non-ferrous materials
- Minimizes chip packing
- Reduced vibration and chatter
- Full radius cutting action
- For radius milling of slots, fillets, and special contours



Packaging: All (1)

EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length
051740AM	1/4	3/8	1-3/4	3-9/16	051758AM	3/4	3/4	4	6-1/4
051743AM	5/16	3/8	2	3-3/4	051761AM	7/8	7/8	5	7-1/4
051746AM	3/8	3/8	2-1/2	4-1/4	051764AM	1	1	6	8-1/2
051749AM	7/16	1/2	2-3/4	4-3/4	051767AM	1-1/4	1-1/4	6	8-1/2
051752AM	1/2	1/2	3	5	051770AM	1-1/2	1-1/4	6	8-1/2
051753AM	1/2	1/2	4	6	051724AM	2	1-1/4	6	8-1/2
051706AM	5/8	5/8	3	5-1/8	050723AM	2	2	6	9-3/4
051755AM	5/8	5/8	4	6-1/8	—	—	—	—	—

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Premium HSS

3-Flute End Mills - High Speed Steel Center Cutting



List 5018 Double End - 3-Flute



Packaging: All (1)



- Smoother cutting action than two flute end mills
- Offers more space between flutes than multiple flute end mills
- Often produces acceptable finish in roughing cut
- Plunge, slot, pocket and keyway mill
- Cost effective: Offers two-tools-in-one



EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length
051540AM	1/8	3/8	3/8	3-1/16	051561AM	3/8	3/8	3/4	3-1/2
051543AM	5/32	3/8	7/16	3-1/4	051564AM	7/16	1/2	1	4-1/8
051546AM	3/16	3/8	1/2	3-1/4	051567AM	1/2	1/2	1	4-1/8
051549AM	7/32	3/8	9/16	3-1/4	051570AM	9/16	5/8	1-3/8	5
051552AM	1/4	3/8	5/8	3-3/8	051573AM	5/8	5/8	1-3/8	5
051555AM	9/32	3/8	11/16	3-3/8	051576AM	3/4	3/4	1-5/8	5-5/8
051558AM	5/16	3/8	3/4	3-1/2	—	—	—	—	—



List 5017 Single End - 3-Flute



Packaging: All (1)



- Smoother cutting action than two flute end mills
- Offers more space between flutes than multiple flute end mills
- Often produces acceptable finish in roughing cut
- Plunge, slot, pocket and keyway mill



EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length
051480AM	1/8	3/8	3/8	2-5/16	051519AM	3/4	5/8	1-5/8	3-3/4
051483AM	3/16	3/8	1/2	2-3/8	051511AM	3/4	3/4	1-5/8	3-7/8
051486AM	1/4	3/8	5/8	2-7/16	051522AM	7/8	5/8	1-7/8	4
051489AM	5/16	3/8	3/4	2-1/2	051523AM	7/8	3/4	1-7/8	4-1/8
051492AM	3/8	3/8	3/4	2-1/2	051524AM	7/8	7/8	1-7/8	4-1/8
051495AM	7/16	3/8	1	2-11/16	051525AM	1	5/8	1-7/8	4
051498AM	1/2	3/8	1	2-11/16	051526AM	1	3/4	1-7/8	4-1/8
051501AM	1/2	1/2	1-1/4	3-1/4	051528AM	1	7/8	1-7/8	4-1/8
051504AM	9/16	1/2	1-3/8	3-3/8	051527AM	1	1	2	4-1/2
051507AM	5/8	1/2	1-3/8	3-3/8	051529AM	1-1/4	1	2	4-1/2
051513AM	5/8	5/8	1-5/8	3-3/4	051530AM	1-1/2	1	2	4-1/2
051510AM	3/4	1/2	1-5/8	3-5/8	—	—	—	—	—

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Premium HSS

4 or More-Flute End Mills - High Speed Steel Non-Center Cutting



List 5000 Double End - 4-or moreFlute

- Machines a wide variety of materials including steel, brass, and iron
- Large core diameter provides extra rigidity
- Minimized deflection
- Excellent surface finish
- Cost effective: Offers two-tools-in-one



Packaging: All (1)



EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes
050000AM	1/8	3/8	3/8	3-1/16	4	050033AM	15/32	1/2	1	4-1/8	4
050003AM	5/32	3/8	7/16	3-1/8	4	050036AM	1/2	1/2	1	4-1/8	4
050006AM	3/16	3/8	1/2	3-1/4	4	050039AM	9/16	5/8	1-3/8	5	4
050009AM	7/32	3/8	9/16	3-1/4	4	050042AM	5/8	5/8	1-3/8	5	4
050012AM	1/4	3/8	5/8	3-3/8	4	050045AM	11/16	3/4	1-5/8	5-5/8	4
050015AM	9/32	3/8	11/16	3-3/8	4	050048AM	3/4	3/4	1-5/8	5-5/8	4
050018AM	5/16	3/8	3/4	3-1/2	4	050051AM	13/16	7/8	1-7/8	6-1/8	4
050021AM	11/32	3/8	3/4	3-1/2	4	050054AM	7/8	7/8	1-7/8	6-1/8	4
050024AM	3/8	3/8	3/4	3-1/2	4	050057AM	15/16	1	1-7/8	6-3/8	4
050027AM	13/32	1/2	1	4-1/8	4	050060AM	1	1	1-7/8	6-3/8	4
050030AM	7/16	1/2	1	4-1/8	4	—	—	—	—	—	—

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Premium HSS

4 or More-Flute End Mills - High Speed Steel Non-Center Cutting

List 5004 Single End - 4-or moreFlute



Packaging: All (1)



EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes
050350AM	1/4	3/8	1-1/4	3-1/16	4	050380AM	1	1	4	6-1/2	4
050447AM	9/32	3/8	1-3/8	3-1/8	4	050383AM	1-1/8	1	4	6-1/2	6
050353AM	5/16	3/8	1-3/8	3-1/8	4	050386AM	1-1/4	1	4	6-1/2	6
050448AM	11/32	3/8	1-1/2	3-1/4	4	050389AM	1-1/4	1-1/4	4	6-1/2	4
050356AM	3/8	3/8	1-1/2	3-1/4	4	050392AM	1-1/4	1-1/4	4	6-1/2	6
050449AM	13/32	3/8	2	3-11/16	4	050395AM	1-3/8	1	4	6-1/2	6
050359AM	7/16	3/8	1-3/4	3-3/4	4	050398AM	1-1/2	1	4	6-1/2	6
050451AM	15/32	3/8	2	3-11/16	4	050404AM	1-1/2	1-1/4	4	6-1/2	4
050362AM	1/2	1/2	2	4	4	050401AM	1-1/2	1-1/4	4	6-1/2	6
050452AM	17/32	1/2	2-1/2	4-1/2	4	050407AM	1-3/4	1-1/4	4	6-1/2	6
050454AM	9/16	1/2	2-1/2	4-1/2	4	050413AM	2	1-1/4	4	6-1/2	4
050365AM	5/8	5/8	2-1/2	4-5/8	4	050416AM	2	1-1/4	4	6-1/2	6
050374AM	3/4	1/2	3	5	4	050410AM	2	1-1/4	4	6-1/2	8
050371AM	3/4	3/4	3	5-1/4	4	050736AM	2	2	6	9-3/4	6
050377AM	7/8	7/8	3-1/2	5-3/4	4	—	—	—	—	—	—

List 5005 Single End - 4-or moreFlute



Packaging: All (1)

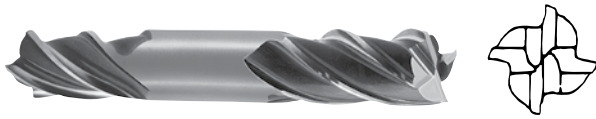


EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes
050450AM	1/4	3/8	1-3/4	3-9/16	4	050464AM	11/16	5/8	4	6-1/8	4
050455AM	9/32	3/8	2	3-3/4	4	050468AM	3/4	3/4	4	6-1/4	4
050453AM	5/16	3/8	2	3-3/4	4	050465AM	13/16	3/4	5	7-1/4	4
050457AM	11/32	3/8	2-1/2	4-1/4	4	050474AM	7/8	7/8	5	7-1/4	4
050456AM	3/8	3/8	2-1/2	4-1/4	4	050466AM	15/16	7/8	6	8-1/4	4
050458AM	13/32	3/8	2-5/8	4-5/16	4	050477AM	1	1	6	8-1/2	4
050460AM	7/16	3/8	2-5/8	4-5/16	4	050480AM	1-1/4	1-1/4	6	8-1/2	6
050461AM	15/32	3/8	3	4-11/16	4	050483AM	1-1/2	1-1/4	6	8-1/2	6
050459AM	1/2	1/2	3	5	4	050411AM	2	1-1/4	6	8-1/2	6
050463AM	9/16	1/2	4	6	4	050739AM	2	2	8	11-3/4	6
050462AM	5/8	5/8	4	6-1/8	4	—	—	—	—	—	—

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Premium HSS

4 or More-Flute End Mills - High Speed Steel Center Cutting



List 5036 Double End - 4-or more Flute



Packaging: All (1)



- Machines a wide variety of materials including steel, brass, and iron
- Large core diameter provides rigidity
- Minimized deflection
- Excellent surface finish
- Plunge, slot, pocket, trace mill, cam mill, die sink and keyway cut
- Cost effective: offers two-tools-in-one

EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes
051080AM	1/8	3/8	3/8	3-1/16	4	051095AM	1/2	1/2	1	4-1/8	4
051083AM	3/16	3/8	1/2	3-1/4	4	051098AM	5/8	5/8	1-3/8	5	4
051086AM	1/4	3/8	5/8	3-3/8	4	051101AM	3/4	3/4	1-5/8	5-5/8	4
051089AM	5/16	3/8	3/4	3-1/2	4	051104AM	7/8	7/8	1-7/8	6-1/8	4
051092AM	3/8	3/8	3/4	3-1/2	4	051107AM	1	1	1-7/8	6-3/8	4



List 5032 Single End - 4-or more Flute



List 5032
Packaging: All (1)



- Machines a wide variety of materials including steel, brass, and iron
- Large core diameter provides rigidity
- Minimized deflection
- Excellent surface finish
- Plunge, slot, pocket, trace mill, cam mill, die sink and keyway cut

EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes
050950AM	1/8	3/8	3/8	2-5/16	4	050974AM	3/4	3/4	1-5/8	3-7/8	4
050953AM	3/16	3/8	1/2	2-3/8	4	050975AM	3/4	3/4	1-5/8	3-7/8	6
050467AM	7/32	3/8	5/8	2-7/16	4	050478AM	13/16	3/4	1-7/8	4-1/8	4
050956AM	1/4	3/8	5/8	2-7/16	4	050977AM	7/8	7/8	1-7/8	4-1/8	4
050469AM	9/32	3/8	5/8	2-7/16	4	050979AM	7/8	7/8	1-7/8	4-1/8	6
050959AM	5/16	3/8	3/4	2-1/2	4	050479AM	15/16	7/8	1-7/8	4-1/8	4
050470AM	11/32	3/8	3/4	2-1/2	4	050980AM	1	1	2	4-1/2	4
050962AM	3/8	3/8	3/4	2-1/2	4	050981AM	1	1	2	4-1/2	6
050471AM	13/32	3/8	1	2-11/16	4	050983AM	1-1/8	1	2	4-1/2	4
050472AM	7/16	3/8	1	2-11/16	4	050985AM	1-1/8	1	2	4-1/2	6
050473AM	15/32	3/8	1	2-11/16	4	050986AM	1-1/4	1-1/4	2	4-1/2	4
050965AM	1/2	1/2	1-1/4	3-1/4	4	050987AM	1-1/4	1-1/4	2	4-1/2	6
050475AM	17/32	1/2	1-3/8	3-3/8	4	050989AM	1-1/2	1-1/4	2	4-1/2	4
050476AM	9/16	1/2	1-3/8	3-3/8	4	050991AM	1-1/2	1-1/4	2	4-1/2	6
050968AM	5/8	5/8	1-5/8	3-3/4	4	050998AM	2	1-1/4	2	4-1/2	6
050971AM	11/16	5/8	1-5/8	3-3/4	4	—	—	—	—	—	—

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Premium HSS

4 or More-Flute End Mills - High Speed Steel Center Cutting

List 5034 Single End - 4-or more Flute - Long



LONG

Packaging: All (1)

HSS

4+
Flute

Single
End

CC

EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes
051000AM	1/4	3/8	1-1/4	3-1/16	4	051019AM	7/8	7/8	3-1/2	5-3/4	6
051003AM	5/16	3/8	1-3/8	3-1/8	4	050408AM	15/16	7/8	4	6-1/4	4
051006AM	3/8	3/8	1-1/2	3-1/4	4	051021AM	1	1	4	6-1/2	4
051009AM	1/2	1/2	2	4	4	051022AM	1	1	4	6-1/2	6
051012AM	5/8	5/8	2-1/2	4-5/8	4	051024AM	1-1/4	1-1/4	4	6-1/2	4
051013AM	5/8	5/8	3	5-1/8	4	051025AM	1-1/4	1-1/4	4	6-1/2	6
051015AM	3/4	3/4	3	5-1/4	4	050994AM	1-1/2	1-1/4	4	6-1/2	4
051016AM	3/4	3/4	3	5-1/4	6	050995AM	1-1/2	1-1/4	4	6-1/2	6
050406AM	13/16	3/4	3-1/2	5-3/4	4	051070AM	2	1-1/4	4	6-1/2	6
051018AM	7/8	7/8	3-1/2	5-3/4	4	050928AM	2	2	6	9-3/4	6

List 5035 Single End - 4-or more Flute - Extra Long



EXTRA LONG

Packaging: All (1)

HSS

4+
Flute

Single
End

CC

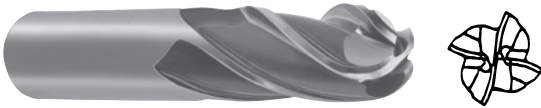
EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes
050294AM	3/16	3/8	1-1/8	3	4	051054AM	5/8	5/8	4	6-1/8	4
050493AM	7/32	3/8	1-3/4	3-9/16	4	051057AM	3/4	3/4	4	6-1/4	4
051042AM	1/4	3/8	1-3/4	3-9/16	4	051058AM	3/4	3/4	4	6-1/4	6
050494AM	9/32	3/8	2	3-3/4	4	051060AM	7/8	7/8	5	7-1/4	4
051045AM	5/16	3/8	2	3-3/4	4	051061AM	7/8	7/8	5	7-1/4	6
050495AM	11/32	3/8	2-1/2	4-1/4	4	051063AM	1	1	6	8-1/2	4
051048AM	3/8	3/8	2-1/2	4-1/4	4	051064AM	1	1	6	8-1/2	6
050496AM	13/32	3/8	2-5/8	4-5/16	4	051066AM	1-1/4	1-1/4	6	8-1/2	4
050497AM	7/16	3/8	2-5/8	4-5/16	4	051067AM	1-1/4	1-1/4	6	8-1/2	6
050498AM	15/32	3/8	3	4-11/16	4	051068AM	1-1/2	1-1/4	6	8-1/2	4
051051AM	1/2	1/2	3	5	4	051069AM	1-1/2	1-1/4	6	8-1/2	6
051052AM	1/2	1/2	4	6	4	051071AM	2	1-1/4	6	8-1/2	6

Enhance tool performance and wear life with TiN, TiCN, TiAlN

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Premium HSS

4 or More-Flute Ball End Mills - High Speed Steel Center Cutting



List 5013B Single End - 4-or more Flute



Packaging: All (1)

- For radius milling of slots, fillets, special contours, as well as plunging cuts
- Produces excellent finish following rough cut
- Allows drilling into piece part prior to slotting operation

EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes
050845AM	1/4	3/8	5/8	2-7/16	4	050856AM	5/8	5/8	1-3/8	5	4
050847AM	5/16	3/8	3/4	2-1/2	4	050859AM	3/4	3/4	1-5/8	5-5/8	4
050850AM	3/8	3/8	3/4	2-1/2	4	050862AM	1	1	1-7/8	6-3/8	4
050853AM	1/2	1/2	1-1/4	3-1/4	4	050912AM	2	2	4	7-3/4	6

List 5067 Single End - 4-or more Flute - Long



Packaging: All (1)



EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes
050851AM	1/4	3/8	1-1/4	3-1/8	4	050858AM	3/4	3/4	2-1/4	4-1/2	4
050852AM	5/16	3/8	1-3/8	3-1/8	4	050869AM	3/4	3/4	3	5-1/4	4
050854AM	3/8	3/8	1-1/2	3-1/4	4	050860AM	1	1	3	5-1/2	4
050855AM	1/2	1/2	2	4	4	050865AM	1	1	4	6-1/2	4
050857AM	5/8	5/8	2-1/2	4-5/8	4	050915AM	2	2	6	9-3/4	6
050867AM	5/8	5/8	3	5-1/8	4	—	—	—	—	—	—

List 5068 Single End - 4-or more Flute - Extra Long



Packaging: All (1)



EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes
050861AM	1/4	3/8	1-3/4	3-9/16	4	050872AM	5/8	5/8	4	6-1/8	4
050863AM	5/16	3/8	2	3-3/4	4	050874AM	3/4	3/4	4	6-1/4	4
050864AM	3/8	3/8	2-1/2	4-1/4	4	050876AM	1	1	6	8-1/2	4
050866AM	1/2	1/2	3	5	4	050918AM	2	2	8	11-3/4	60
050870AM	1/2	1/2	4	6	4	—	—	—	—	—	—

Ball-nose end mills have rounded end cutting edges. This style of end mill is available as a center-cutting tool only. It is used where rounded details must be machined in a part; for example, a slot with a rounded bottom. It is also used where sharp machined corners must be avoided; this is a typical requirement in the machining of aircraft structural parts where sharp corners can lead to stress cracking. Ball-nose end mills are also widely used for “delicate” cuts on contoured surfaces of molds and dies.

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Premium HSS

2-Flute Metric End Mills - High Speed Steel Center Cutting



List 5038 Double End - 2-Flute - Regular



REGULAR

Packaging: All (1)

HSS
2 Flute
Double End
CC

- Plunge, slot, spot drill and profile
- Greater chip carrying capacity
- Proper slot size and location easily held
- Cost effective: offers two-tools-in-one

EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length
055474AM	M3	3/8	3/8	3-1/16	055528AM	M12	1/2	13/16	4-1/8
055477AM	M3.5	3/8	7/16	3-1/4	055531AM	M12.5	1/2	13/16	4-1/8
055480AM	M4	3/8	7/16	3-1/4	055534AM	M13	5/8	1-1/8	5
055483AM	M4.5	3/8	7/16	3-1/4	055537AM	M13.5	5/8	1-1/8	5
055486AM	M5	3/8	7/16	3-1/4	055540AM	M14	5/8	1-1/8	5
055489AM	M5.5	3/8	1/2	3-1/4	055543AM	M14.5	5/8	1-1/8	5
055492AM	M6	3/8	1/2	3-3/8	055546AM	M15	5/8	1-1/8	5
055495AM	M6.5	3/8	1/2	3-3/8	055549AM	M16	3/4	1-5/16	5-5/8
055498AM	M7	3/8	9/16	3-3/8	055552AM	M17	3/4	1-5/16	5-5/8
055501AM	M7.5	3/8	9/16	3-3/8	055555AM	M18	3/4	1-5/16	5-5/8
055504AM	M8	3/8	9/16	3-1/2	055558AM	M19	3/4	1-5/16	5-5/8
055507AM	M8.5	3/8	9/16	3-1/2	055561AM	M20	7/8	1-9/16	6-1/8
055510AM	M9	3/8	9/16	3-1/2	055564AM	M21	7/8	1-9/16	6-1/8
055513AM	M9.5	3/8	9/16	3-1/2	055567AM	M22	7/8	1-9/16	6-1/8
055516AM	M10	1/2	13/16	4-1/8	055570AM	M23	1	1-5/8	6-3/8
055519AM	M10.5	1/2	13/16	4-1/8	055573AM	M24	1	1-5/8	6-3/8
055522AM	M11	1/2	13/16	4-1/8	055576AM	M25	1	1-5/8	6-3/8
055525AM	M11.5	1/2	13/16	4-1/8	—	—	—	—	—



List 5039 Single End - 2-Flute - Regular



REGULAR

Packaging: All (1)

HSS
2 Flute
Double End
CC

- Plunge, slot, spot drill and profile
- Greater chip carrying capacity
- Proper slot size and location easily held

EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length
055024AM	M3	3/8	3/8	2-5/16	055081AM	M12.5	1/2	1-1/4	3-1/4
055027AM	M3.5	3/8	7/16	2-3/8	055084AM	M13	1/2	1-1/8	3-1/8
055030AM	M4	3/8	7/16	2-3/8	055087AM	M13.5	1/2	1-1/8	3-1/8
055033AM	M4.5	3/8	7/16	2-3/8	055090AM	M14	1/2	1-1/8	3-1/8
055036AM	M5	3/8	7/16	2-7/16	055093AM	M14.5	1/2	1-1/8	3-1/8
055039AM	M5.5	3/8	1/2	2-7/16	055096AM	M15	1/2	1-1/8	3-1/8
055042AM	M6	3/8	1/2	2-7/16	055099AM	M16	5/8	1-3/8	3-3/4
055045AM	M6.5	3/8	1/2	2-7/16	055102AM	M17	5/8	1-5/8	3-3/4
055048AM	M7	3/8	9/16	2-1/2	055105AM	M18	5/8	1-5/8	3-3/4
055051AM	M7.5	3/8	9/16	2-1/2	055108AM	M19	3/4	1-5/8	3-7/8
055054AM	M8	3/8	9/16	2-1/2	055111AM	M20	5/8	1-1/2	3-5/8
055057AM	M8.5	3/8	9/16	2-1/2	055114AM	M21	5/8	1-1/2	3-5/8
055060AM	M9	3/8	9/16	2-1/2	055117AM	M22	7/8	1-7/8	4-1/8
055063AM	M9.5	3/8	3/4	2-1/2	055120AM	M23	7/8	1-7/8	4-1/8
055066AM	M10	3/8	3/4	2-1/2	055123AM	M24	1	2	4-1/2
055069AM	M10.5	3/8	1	2-11/16	055126AM	M25	1	2	4-1/2
055072AM	M11	3/8	1	2-11/16	055135AM	M28	1	2	4-1/2
055075AM	M11.5	3/8	1	2-11/16	055147AM	M32	1	2	4-1/2
055078AM	M12	1/2	1	3-1/4	055159AM	M36	1	2	4-1/2

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Premium HSS

4-Flute Metric End Mills - High Speed Steel Center Cutting



List 5037 Single End - 4-Flute - Regular



Packaging: All (1)



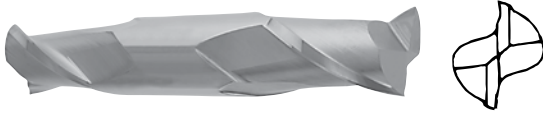
- Machines a wide variety of materials including steel, brass, and iron
- Large core diameter provides rigidity
- Minimized deflection
- Excellent surface finish
- Plunge, slot, pocket, trace mill, cam mill, die sink and keyway cut

EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length
055246AM	M3	3/8	3/8	2-5/16	055305AM	M13	1/2	1-1/4	3-1/4
055249AM	M3.5	3/8	1/2	2-3/8	055308AM	M13.5	1/2	1-3/8	3-3/8
055252AM	M4	3/8	1/2	2-3/8	055311AM	M14	1/2	1-3/8	3-3/8
055255AM	M4.5	3/8	1/2	2-3/8	055314AM	M14.5	1/2	1-3/8	3-3/8
055258AM	M5	3/8	5/8	2-7/16	055317AM	M15	1/2	1-3/8	3-3/8
055261AM	M5.5	3/8	5/8	2-7/16	055320AM	M16	5/8	1-5/8	3-3/4
055264AM	M6	3/8	5/8	2-7/16	055323AM	M17	5/8	1-5/8	3-3/4
055267AM	M6.5	3/8	5/8	2-7/16	055326AM	M18	5/8	1-5/8	3-3/4
055270AM	M7	3/8	3/4	2-1/2	055329AM	M19	3/4	1-5/8	3-3/4
055273AM	M7.5	3/8	3/4	2-1/2	055332AM	M20	5/8	1-7/8	4
055276AM	M8	3/8	3/4	2-1/2	055335AM	M21	5/8	1-7/8	4
055279AM	M8.5	3/8	3/4	2-1/2	055338AM	M22	7/8	1-7/8	4-1/8
055281AM	M9	3/8	3/4	2-1/2	055341AM	M23	7/8	1-7/8	4-1/8
055284AM	M9.5	3/8	3/4	2-1/2	055344AM	M24	1	2	4-1/2
055287AM	M10	3/8	3/4	2-1/2	055347AM	M25	1	2	4-1/2
055290AM	M10.5	3/8	1	2-11/16	055356AM	M28	1	2	4-1/2
055293AM	M11	3/8	1	2-11/16	055368AM	M32	1	2	4-1/2
055296AM	M11.5	3/8	1	2-11/16	055380AM	M36	1	2	4-1/2
055299AM	M12	1/2	1-1/4	3-1/4	055392AM	M40	1-1/4	2	4-1/2
055302AM	M12.5	1/2	1-1/4	3-1/4	055407AM	M45	1-1/4	2	4-1/2

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Premium HSS

2-Flute End Mills - HSS Cobalt Center Cutting



List 5060 Double End - 2-Flute - Cobalt

- Retains hardness at elevated temperatures
- Resists abrasion and premature wear
- Suitable for milling abrasive, high strength and heat resistant metals
- Plunge, slot, spot drill and profile
- Cost effective: offers two-tools-in-one



Packaging: All (1)

EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length
052150JM	1/8	3/8	3/8	3-1/16	052156JM	5/16	3/8	9/16	3-1/2
052151JM	5/32	3/8	7/16	3-1/8	052158JM	3/8	3/8	9/16	3-1/2
052152JM	3/16	3/8	7/16	3-1/4	052160JM	1/2	1/2	13/16	4-1/8
052153JM	7/32	3/8	1/2	3-1/4	052162JM	5/8	5/8	1-1/8	5
052154JM	1/4	3/8	1/2	3-3/8	052164JM	3/4	3/4	1-5/16	5-5/8
052155JM	9/32	3/8	9/16	3-3/8	—	—	—	—	—



List 5020A Single End - 2-Flute - Cobalt

- Retains hardness at elevated temperatures
- Resists abrasion and premature wear
- Suitable for milling abrasive, high strength and heat resistant metals
- Plunge, slot, spot drill and profile



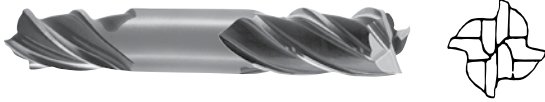
Packaging: All (1)

EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length
051825JM	1/8	3/8	3/8	2-5/16	051837JM	3/8	3/8	9/16	2-1/2
051828JM	3/16	3/8	7/16	2-3/8	051838JM	13/32	3/8	13/16	2-11/16
051829JM	7/32	3/8	1/2	2-7/16	051839JM	7/16	3/8	13/16	2-11/16
051831JM	1/4	3/8	1/2	2-7/16	051840JM	1/2	1/2	1	3-1/4
051832JM	1/4	3/8	5/8	2-7/16	051843JM	5/8	5/8	1-5/16	3-3/4
051833JM	9/32	3/8	9/16	2-1/2	051846JM	3/4	3/4	1-5/16	3-7/8
051834JM	5/16	3/8	9/16	2-1/2	051847JM	3/4	3/4	2	4-1/4
051835JM	11/32	3/8	9/16	2-1/2	051849JM	1	1	1-5/8	4-1/2

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Premium HSS

4 or More-Flute End Mills - HSS Cobalt Center Cutting



List 5061 Double End - 4 or more Flute -

- Retains hardness at elevated temperatures
- Resists abrasion and premature wear
- Suitable for milling abrasive, high strength and heat resistant exotic metals
- Plunge, slot, pocket, trace mill, cam mill, die sink and keyway cut
- Cost effective double end offers two-tools-in-one



Packaging: All (1)

EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes
052250JM	1/8	3/8	3/8	3-1/16	4	052258JM	3/8	3/8	3/4	3-1/2	4
052252JM	3/16	3/8	1/2	3-1/4	4	052260JM	1/2	1/2	1	4-1/8	4
052254JM	1/4	3/8	5/8	3-3/8	4	052262JM	5/8	5/8	1-3/8	5	4
052256JM	5/16	3/8	3/4	3-1/2	4	052264JM	3/4	3/4	1-5/8	5-5/8	4



List 5040 Single End - 4 or more Flute - Cobalt

- Retains hardness at elevated temperatures
- Resists abrasion and premature wear
- Suitable for milling abrasive, high strength and heat resistant exotic metals
- Plunge, slot, pocket, trace mill, cam mill, die sink and keyway cut

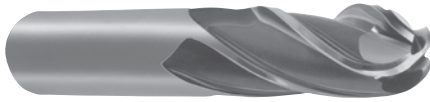


Packaging: All (1)

EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes
051915JM	1/8	3/8	3/8	2-5/16	4	051937JM	3/4	3/4	1-5/8	3-7/8	6
051918JM	3/16	3/8	1/2	2-3/8	4	051939JM	1	1	2	4-1/2	4
051921JM	1/4	3/8	5/8	2-7/16	4	051985JM	1	1	2	4-1/2	6
051924JM	5/16	3/8	3/4	2-1/2	4	051988JM	1-1/4	1-1/4	2	4-1/2	4
051927JM	3/8	3/8	3/4	2-1/2	4	051942JM	1-1/4	1-1/4	2	4-1/2	6
051930JM	1/2	1/2	1-1/4	3-1/4	4	052060JM	1-1/2	1-1/4	2	4-1/2	4
051933JM	5/8	5/8	1-5/8	3-3/4	4	051945JM	1-1/2	1-1/4	2	4-1/2	6
051936JM	3/4	3/4	1-5/8	3-7/8	4	052080JM	2	1-1/4	2	4-1/2	6

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Premium HSS 4 or More-Flute End Mills HSS Cobalt Center Cutting



List 5021B Single End - 4 or more Flute - Ball

- Retains hardness at elevated temperatures
- Resists abrasion and premature wear
- Suitable for milling abrasive, high strength and heat resistant exotic metals
- Full radius cutting action
- Avoids sharp machined corners



Packaging: All (1)

EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes
051960JM	1/8	3/8	3/8	2-5/16	4	051975JM	1/2	1/2	1-1/4	3-1/4	4
051963JM	3/16	3/8	1/2	2-3/8	4	051978JM	5/8	5/8	1-5/8	3-3/4	4
051966JM	1/4	3/8	5/8	2-7/16	4	051981JM	3/4	3/4	1-5/8	3-7/8	4
051969JM	5/16	3/8	3/4	2-1/2	4	051984JM	1	1	2	4-1/2	4
051972JM	3/8	3/8	3/4	2-1/2	4	051987JM	1-1/4	1-1/4	2	4-1/2	6

All Regal Cutting Tools products are available with high performance coatings, **TiN, TiCN, TiAlN**

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Premium HSS

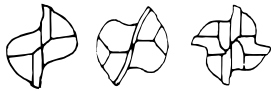
2, 4 or More-Flute End Mills - HSS Cobalt Center Cutting



Single End - 2, 4 or more Flute



Double End - 2, 4 or more Flute



- 2-flute designed to plunge, profile, slot, pocket and keyway
- 4-flute designed for profile milling, keyways, and open-ended slots
- Double end offers two-tools-in-one
- Ball nose provides full radius cutting action

Packaging: All (1)

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	2-Flute CC	2-Flute Ball	4-Flute CC	Overall Length	2-Flute CC	2-Flute Ball	4-Flute CC
1/32	3/16	3/64	1-1/2	051233AM	057560AM	—	1-7/8	051128AM	051330AM	—
1/32	3/16	3/32	1-1/2	051268AM	051294AM	—	2	051168AM	051375AM	—
3/64	3/16	1/16	1-1/2	051234AM	—	—	1-7/8	051129AM	—	—
3/64	3/16	9/64	1-1/2	051269AM	—	—	2	051169AM	—	—
1/16	3/16	3/32	1-1/2	051235AM	057562AM	—	2	051130AM	051331AM	057537AM
1/16	3/16	3/16	1-1/2	051270AM	051295AM	—	2-1/4	051170AM	051376AM	—
1/16	3/16	7/32	1-1/2	—	—	—	2-1/2	051200AM	057518AM	—
5/64	3/16	1/8	1-1/2	051236AM	—	—	2	051131AM	—	—
5/64	3/16	15/64	1-1/2	051271AM	—	—	2-1/4	051171AM	—	—
3/32	3/16	9/64	1-1/2	051237AM	057564AM	—	2	051132AM	051332AM	057538AM
3/32	3/16	9/32	1-1/2	051272AM	051296AM	051413AM	2-1/4	051172AM	051377AM	051459AM
3/32	3/16	9/32	1-1/2	—	—	—	2-5/8	051203AM	057520AM	051435AM
7/64	3/16	11/64	1-1/2	051238AM	—	—	2	051135AM	051335AM	—
7/64	3/16	21/64	1-1/2	051275AM	—	—	2-1/4	051175AM	051380AM	—
1/8	3/16	3/16	1-1/2	051240AM	057566AM	—	2	051138AM	051338AM	057540AM
1/8	3/16	3/8	1-1/2	051278AM	051299AM	051416AM	2-1/4	051178AM	051383AM	051462AM
1/8	3/16	3/4	1-1/2	—	—	—	3-1/8	051206AM	057522AM	051438AM
9/64	3/16	7/32	1-1/2	051241AM	—	—	2	051141AM	051341AM	—
9/64	3/16	27/64	1-1/2	051279AM	—	—	2-1/4	051181AM	051386AM	—
5/32	3/16	15/64	1-1/2	051243AM	057568AM	—	2	051144AM	051344AM	057542AM
5/32	3/16	7/16	1-1/2	051280AM	051302AM	051419AM	2-1/4	051184AM	051389AM	051465AM
5/32	3/16	7/8	1-1/2	—	—	—	3-1/4	051209AM	057524AM	051441AM
11/64	3/16	17/64	1-1/2	051242AM	—	—	2	051147AM	051347AM	—
11/64	3/16	1/2	1-1/2	051281AM	—	—	2-1/4	051187AM	051392AM	—
3/16	3/16	9/32	1-1/2	051246AM	057570AM	—	2	051150AM	051350AM	057546AM
3/16	3/16	1/2	—	051282AM	051305AM	051422AM	2-1/4	051190AM	051395AM	051468AM
3/16	3/16	1	—	—	—	—	3-3/8	051212AM	057526AM	051444AM

Add **TiN**, **TiCN**, **TiAlN** after the part number to order tools with the required coating.

Premium HSS

4 or More-Flute Velvet Kut™ Roughing & Finishing End Mills High Speed Steel Non-Center Cutting



List 5620 Single End - 4 or more Flute, Non-Center Cut



- Roughs and finishes in one operation
- Removes larger amounts of material in less time
- Greatly reduces chatter and vibration
- Easily resharpened

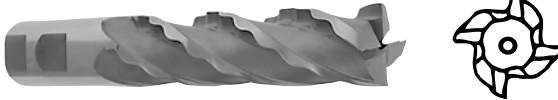
Packaging: All (1)

EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes
056694AM	1/2	1/2	1-1/4	3-1/4	4	056736AM	1-1/4	1-1/4	3	5-1/2	6
056696AM	1/2	1/2	2	4	4	056740AM	1-1/4	1-1/4	4	6-1/2	6
056698AM	1/2	1/2	3	5	4	056744AM	1-1/4	1-1/4	6	8-1/2	6
056700AM	5/8	5/8	1-5/8	3-3/4	4	056748AM	1-1/2	1-1/4	2	4-1/2	4
056702AM	5/8	5/8	2-1/2	4-5/8	4	056750AM	1-1/2	1-1/4	2	4-1/2	6
056706AM	3/4	3/4	1-5/8	3-7/8	4	056752AM	1-1/2	1-1/4	3	5-1/2	6
056708AM	3/4	3/4	3	5-1/4	4	056756AM	1-1/2	1-1/4	4	6-1/2	6
056710AM	3/4	3/4	4	6-1/4	4	056760AM	1-1/2	1-1/4	6	8-1/2	6
056712AM	7/8	3/4	1-7/8	4-1/8	4	056762AM	2	1-1/4	2	4-1/2	6
056714AM	1	3/4	1-7/8	4-1/8	4	056766AM	2	1-1/4	4	6-1/2	6
056716AM	1	1	2	4-1/2	4	056774AM	2	2	4	7-3/4	6
056718AM	1	1	2	4-1/2	6	056772AM	2	2	4	7-3/4	8
056720AM	1	1	3	5-1/2	6	056782AM	2	2	6	9-3/4	6
056722AM	1	1	4	6-1/2	4	056784AM	2	2	6	9-3/4	8
056724AM	1	1	4	6-1/2	6	056788AM	2	2	8	11-3/4	6
056728AM	1	1	6	8-1/2	6	056790AM	2	2	8	11-3/4	8
056730AM	1-1/4	3/4	2	4-1/4	6	056792AM	2-1/2	2	4	7-5/8	8
056732AM	1-1/4	1-1/4	2	4-1/2	4	056796AM	2-1/2	2	8	11-5/8	8
056734AM	1-1/4	1-1/4	2	4-1/2	6	—	—	—	—	—	—

Premium HSS

4 or More-Flute Velvet Kut™ Roughing & Finishing End Mills

HSS Cobalt Non-Center Cutting



List 5640 Single End - 4+ Flute

Packaging: All (1)

Cobalt

4+
Flute

Single
End

NCC

EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes
056866JM	1/2	1/2	1-1/4	3-1/4	4	056888JM	1	1	4	6-1/2	6
056868JM	1/2	1/2	2	4	4	056892JM	1-1/4	1-1/4	2	4-1/2	6
056870JM	1/2	1/2	3	5	4	056894JM	1-1/4	1-1/4	3	5-1/2	6
056872JM	5/8	5/8	1-5/8	3-3/4	4	056896JM	1-1/4	1-1/4	4	6-1/2	6
056874JM	5/8	5/8	2-1/2	4-5/8	4	056898JM	1-1/4	1-1/4	6	8-1/2	6
056876JM	5/8	5/8	4	6-1/8	4	056902JM	1-1/2	1-1/4	3	5-1/2	6
056878JM	3/4	3/4	1-5/8	3-7/8	4	056904JM	1-1/2	1-1/4	4	6-1/2	6
056880JM	3/4	3/4	3	5-1/4	4	056906JM	1-1/2	1-1/4	6	8-1/2	6
056882JM	3/4	3/4	4	6-1/4	4	056912JM	2	2	4	7-3/4	8
056884JM	1	1	2	4-1/2	6	056916JM	2	2	6	9-3/4	8
056886JM	1	1	3	5-1/2	6	056918JM	2	2	8	11-3/4	8

Premium HSS

4 or More - Flute Velvet Kut™ Roughing & Finishing End Mills High Speed Steel Center Cutting



HSS

4+
Flute

Single
End

CC

List 5630 Single End - 4+ Flute

- Roughs and finishes in one operation
- Removes larger amounts of material in less time
- Greatly reduces chatter and vibration
- Large core diameter provides rigidity
- Easily resharpened

Packaging: All (1)

EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes
056801AM	3/8	3/8	3/4	2-1/2	4	056828AM	1	1	2	4-1/2	4
056803AM	3/8	3/8	1-3/8	3-1/8	4	056830AM	1	1	3	5-1/2	4
056804AM	1/2	1/2	1-1/4	3-1/4	4	056832AM	1	1	4	6-1/2	4
056806AM	1/2	1/2	2	4	4	056836AM	1-1/4	1-1/4	2	4-1/2	4
056808AM	1/2	1/2	3	5	4	056838AM	1-1/4	1-1/4	3	5-1/2	4
056810AM	5/8	5/8	1-5/8	3-3/4	4	056840AM	1-1/4	1-1/4	4	6-1/2	4
056812AM	5/8	5/8	2-1/2	4-5/8	4	056842AM	1-1/4	1-1/4	6	8-1/2	4
056814AM	5/8	5/8	4	6-1/8	4	056844AM	1-1/2	1-1/4	2	4-1/2	4
056816AM	3/4	3/4	1-5/8	3-7/8	4	056846AM	1-1/2	1-1/4	4	6-1/2	4
056818AM	3/4	3/4	3	5-1/4	4	056848AM	1-1/2	1-1/4	6	8-1/2	4
056820AM	3/4	3/4	4	6-1/4	4	056856AM	2	2	4	7-3/4	6
056822AM	7/8	7/8	1-7/8	4-1/8	4	056860AM	2	2	6	9-3/4	6
056824AM	7/8	7/8	3-1/2	5-3/4	4	—	—	—	—	—	—

Premium HSS

4 or More-Flute Roughing End Mills - High Speed Steel Non-Center Cutting



List 5687 Single End - 4+ Flute

Packaging: All (1)



- Increased metal removal at faster rates
- Free cutting action
- Decreased horsepower requirements
- Resharpen face only – double number of regrinds
- High performance materials available from stock

EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes
052540AM	3/8	3/8	3/4	2-1/2	4	052579AM	1-1/8	1	2	4-1/2	6
052543AM	7/16	1/2	7/8	3	4	052582AM	1-1/4	1-1/4	2	4-1/2	6
052546AM	1/2	1/2	1-1/4	3-1/4	4	052583AM	1-1/4	1-1/4	3	5-1/2	6
052549AM	1/2	1/2	2	4	4	052585AM	1-1/4	1-1/4	4	6-1/2	6
052552AM	5/8	5/8	1-5/8	3-3/4	4	052588AM	1-1/4	1-1/4	6	8-1/2	6
052555AM	5/8	5/8	2-1/2	4-5/8	4	052591AM	1-1/2	1-1/4	2	4-1/2	6
052558AM	3/4	3/4	1-5/8	3-7/8	4	052594AM	1-1/2	1-1/4	4	6-1/2	6
052561AM	3/4	3/4	3	5-1/4	4	052597AM	1-1/2	1-1/4	6	8-1/2	6
052564AM	7/8	3/4	1-3/4	3-7/8	5	052600AM	1-3/4	1-1/4	4	6-1/2	6
052567AM	7/8	3/4	3-1/2	5-5/8	5	052603AM	2	1-1/4	2	4-1/2	8
052570AM	1	1	2	4-1/2	5	052606AM	2	1-1/4	4	6-1/2	8
052572AM	1	1	3	5-1/2	5	052609AM	2	2	4	7-3/4	8
052573AM	1	1	4	6-1/2	5	052612AM	2	2	6	9-3/4	8
052576AM	1	1	6	8-1/2	5	—	—	—	—	—	—

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Premium HSS

4 or More-Flute Roughing End Mills - HSS Cobalt Non-Center Cutting



List 5088 Single End - 4 or more Flute

- Increased metal removal at faster rates
- Free cutting action
- Decreased horsepower requirements
- Resharpen face only – double number of regrinds
- High performance materials available from stock

Packaging: All (1)

EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes
052477JM	3/8	3/8	3/4	2-1/2	4	052505JM	1-1/8	1	2	4-1/2	6
052475JM	1/2	1/2	1-1/4	3-1/4	4	052508JM	1-1/4	1-1/4	2	4-1/2	6
052478JM	1/2	1/2	2	4	4	052510JM	1-1/4	1-1/4	3	5-1/2	6
052479JM	9/16	1/2	1-3/8	3-3/8	4	052511JM	1-1/4	1-1/4	4	6-1/2	6
052481JM	5/8	5/8	1-5/8	3-3/4	4	052512JM	1-1/4	1-1/4	6	8-1/2	6
052484JM	5/8	5/8	2-1/2	4-5/8	4	052514JM	1-1/2	1-1/4	2	4-1/2	6
052487JM	3/4	3/4	1-5/8	3-7/8	4	052517JM	1-1/2	1-1/4	4	6-1/2	6
052490JM	3/4	3/4	3	5-1/4	4	052520JM	1-1/2	1-1/4	6	8-1/2	6
052493JM	7/8	3/4	1-3/4	3-7/8	5	052525JM	1-3/4	1-1/4	4	6-1/2	6
052496JM	7/8	3/4	3-1/2	5-5/8	5	052530JM	2	1-1/4	2	4-1/2	8
052499JM	1	1	2	4-1/2	5	052531JM	2	1-1/4	4	6-1/2	8
052500JM	1	1	3	5-1/2	5	052533JM	2	2	4	7-3/4	8
052502JM	1	1	4	6-1/2	5	052536JM	2	2	6	9-3/4	8
052503JM	1	1	6	8-1/2	5	—	—	—	—	—	—

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Premium HSS

4 or More-Flute Roughing End Mills - HSS Cobalt Center Cutting



- Increased metal removal at faster rates
- Free cutting action
- Decreased horsepower requirements
- Resharpener face only – double number of regrinds
- High performance materials available from stock

List 5642 Single End - 4+ Flute

Packaging: All (1)

EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes	EDP No.	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flutes
059540JM	1/2	1/2	1-1/4	3-1/4	4	059572JM	1	1	3	5-1/2	5
059541JM	1/2	1/2	1-5/8	3-5/8	4	059573JM	1	1	4	6-1/2	5
059542JM	1/2	1/2	2	4	4	059574JM	1	1	6	8-1/2	5
059543JM	1/2	1/2	2-1/2	4-1/2	4	059575JM	1-1/8	3/4	2	4-1/4	6
059544JM	1/2	1/2	3	5	4	059576JM	1-1/8	1	2	4-1/2	6
059545JM	5/8	5/8	3/4	2-7/8	4	059577JM	1-1/8	1	3-1/2	6	6
059546JM	5/8	5/8	1-1/4	3-3/8	4	059578JM	1-1/4	3/4	1-1/8	3-3/8	6
059547JM	5/8	5/8	1-5/8	3-3/4	4	059579JM	1-1/4	3/4	2	4-1/4	6
059548JM	5/8	5/8	2-1/8	4-1/4	4	059580JM	1-1/4	1-1/4	3	5-1/2	6
059549JM	5/8	5/8	2-1/2	4-5/8	4	059581JM	1-1/4	1-1/4	4	6-1/2	6
059550JM	5/8	5/8	3-1/8	5-1/4	4	059582JM	1-1/4	1-1/4	6	8-1/2	6
059551JM	11/16	5/8	1-5/8	3-3/4	4	059583JM	1-3/8	3/4	2	4-1/4	6
059552JM	3/4	5/8	1-5/8	3-3/4	4	059584JM	1-1/2	3/4	1-1/8	3-3/8	6
059554JM	3/4	3/4	1-1/4	3-1/2	4	059585JM	1-1/2	3/4	2	4-1/4	6
059555JM	3/4	3/4	1-5/8	3-7/8	4	059586JM	1-1/2	1-1/4	2	4-1/2	6
059556JM	3/4	3/4	2-1/2	4-5/8	4	059587JM	1-1/2	1-1/4	3	5-1/2	6
059557JM	3/4	3/4	3	5-1/4	4	059588JM	1-1/2	1-1/4	4	6-1/2	6
059558JM	3/4	3/4	4-1/8	6-3/8	4	059589JM	1-1/2	1-1/4	6	8-1/2	6
059559JM	13/16	3/4	1-7/8	4-1/8	5	059590JM	1-3/4	3/4	1-1/8	3-3/8	6
059560JM	7/8	3/4	1-1/8	3-3/8	5	059591JM	-3/4	3/4	2	4-1/4	6
059561JM	7/8	3/4	1-7/8	4-1/8	5	059592JM	1-3/4	1-1/4	4	6-1/2	6
059562JM	7/8	3/4	3-1/2	5-5/8	5	059593JM	2	3/4	1-1/8	3-3/8	8
059563JM	7/8	7/8	1-1/8	3-3/8	5	059594JM	2	3/4	2	4-1/2	8
059564JM	1	3/4	1-1/8	3-3/8	5	059595JM	2	1-1/4	2	4-1/2	8
059565JM	1	3/4	1-1/2	3-3/8	5	059596JM	2	1-1/4	4	6-1/2	8
059566JM	1	3/4	2	4-1/4	5	059597JM	2	1-1/4	6-1/8	8-5/8	8
059567JM	1	3/4	3	5-1/4	5	059598JM	2	2	2	5-3/4	8
059568JM	1	3/4	4	6-1/4	5	059599JM	2	2	3	6-3/4	8
059569JM	1	1	1-1/8	3-5/8	5	059600JM	2	2	4	7-3/4	8
059570JM	1	1	1-5/8	4-1/8	5	059601JM	2	2	6	9-3/4	8
059571JM	1	1	2	4-1/2	5	059602JM	2	2	8	11-3/4	8

Depending on the application, you may require different tool material, a non-standard size, or even custom tool geometries. Whatever your needs—consult Regal Cutting Tools for the right end mill for the job. Our experienced staff of cutting tool specialists will work with you to find the optimum solution for your cutting tool requirements.

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Premium HSS Special Purpose - Corner Rounding End Mills High Speed Steel



List 5088 Corner Rounding



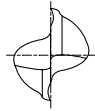
- Weldon Shank
- 4 Flutes
- Radius Form Relieved
- R. H. Cut

Packaging: All (1)

EDP No.	Radius	Cutter End, Minor Dia.	OD Cutter Body Dia.	Dia. of Shank	Overall Length	EDP No.	Radius	Cutter End, Minor Dia.	OD Cutter Body Dia.	Dia. of Shank	Overall Length
052400AM	1/16	1/4	7/16	3/8	2-1/2	052427AM	5/16	3/8	1-1/8	1/2	3-1/4
052403AM	3/32	1/4	1/2	3/8	2-1/2	052424AM	5/16	3/8	1-1/8	7/8	3-1/2
052406AM	1/8	1/4	5/8	1/2	13	052433AM	3/8	3/8	1-1/4	1/2	3-1/2
052409AM	5/32	5/16	3/4	1/2	3	052430AM	3/8	3/8	1-1/4	7/8	3-3/4
052415AM	3/16	5/16	7/8	1/2	3	052445AM	1/2	3/8	1-1/2	3/4	3-7/8
052412AM	3/16	5/16	7/8	3/4	3-1/8	052442AM	1/2	3/8	1-1/2	1	4-1/8
052421AM	1/4	3/8	1	1/2	3	052451AM	5/8	9/16	1-5/16	3/4	4
052418AM	1/4	3/8	1	3/4	3-1/4	052457AM	3/4	5/8	2-1/4	3/4	4-1/8

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Premium CARBIDE 2 & 4 Flute, Stub Length, Double



Carbide 2 Flute Double End CC

Double End - 2-Flute- Stub



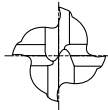
2 FLUTE STUB LENGTH

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/32	1/8	1/16	1-1/2	090354RM
3/64	1/8	3/32	1-1/2	090355RM
1/16	1/8	1/8	1-1/2	090356RM
5/64	1/8	1/8	1-1/2	090357RM
3/32	1/8	3/16	1-1/2	090358RM
7/64	1/8	3/16	1-1/2	090359RM
1/8	1/8	1/4	1-1/2	090360RM
9/64	3/16	5/16	2	090361RM
5/32	3/16	5/16	2	090362RM
11/64	3/16	5/16	2	090363RM
3/16	3/16	3/8	2	090364RM
13/64	1/4	1/2	2-1/2	090365RM
7/32	1/4	1/2	2-1/2	090366RM
15/64	1/4	1/2	2-1/2	090367RM
1/4	1/4	1/2	2-1/2	090368RM
5/16	5/16	1/2	2-1/2	090369RM
3/8	3/8	9/16	2-1/2	090370RM
7/16	7/16	9/16	2-3/4	090371RM
1/2	1/2	5/8	3	090372RM

- Same construction features as 2 & 4 flute single end mill in a more economical version.
- Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and

TOLERANCE OF MILL DIA.	
+ 0-.0012	N NO-.0020

The shank of end mills is the same diameter as the cutting portion.



Carbide 4 Flute Double End CC

Double End - 2-Flute- Stub



4 FLUTE STUB LENGTH

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/16	1/8	1/8	1-1/2	090373RM
5/64	1/8	1/8	1-1/2	090374RM
3/32	1/8	3/16	1-1/2	090375RM
7/64	1/8	3/16	1-1/2	090376RM
1/8	1/8	1/4	1-1/2	090377RM
9/64	3/16	5/16	2	090378RM
5/32	3/16	5/16	2	090379RM
11/64	3/16	5/16	2	090380RM
3/16	3/16	3/8	2	090381RM
13/64	1/4	1/2	2-1/2	090382RM
7/32	1/4	1/2	2-1/2	090383RM
15/64	1/4	1/2	2-1/2	090384RM
1/4	1/4	1/2	2-1/2	090385RM
5/16	5/16	1/2	2-1/2	090386RM
3/8	3/8	9/16	2-1/2	090387RM
7/16	7/16	9/16	2-3/4	090388RM
1/2	1/2	5/8	3	090389RM

Premium CARBIDE 2-Flute, Regular Length



Single End - 2-Flute- Regular

- These are designed for slotting, drilling, pocketing and general operation.
- Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.

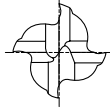


Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/32	1/8	5/64	1-1/2	090238RM
3/64	1/8	7/64	1-1/2	090239RM
1/16	1/8	3/16	1-1/2	090240RM
5/64	1/8	3/16	1-1/2	090241RM
3/32	1/8	3/8	1-1/2	090242RM
7/64	1/8	3/8	1-1/2	090243RM
1/8	1/8	1/2	1-1/2	090244RM
9/64	3/16	1/2	2	090245RM
5/32	3/16	9/16	2	090246RM
11/64	3/16	5/8	2	090247RM
3/16	3/16	5/8	2	090248RM
13/64	1/4	5/8	2-1/2	090249RM
7/32	1/4	5/8	2-1/2	090250RM
15/64	1/4	3/4	2-1/2	090251RM
1/4	1/4	3/4	2-1/2	090252RM
9/32	5/16	3/4	2-1/2	090253RM
5/16	5/16	13/16	2-1/2	090254RM
3/8	3/8	1	2-1/2	090255RM
7/16	7/16	1	2-3/4	090256RM
1/2	1/2	1	3	090257RM
5/8	5/8	1-1/4	3-1/2	090258RM
3/4	3/4	1-1/2	4	090259RM
1	1	1-1/2	4	090260RM

TOLERANCE OF MILL DIA.

0-.0012

Premium CARBIDE 4-Flute, Regular Length



Single End - 4-Flute- Stub



MEDIUM LENGTH

- Possible for high-speed cutting, suitable for high efficiency machining for hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/16	1/8	3/16	1-1/2	090261RM
5/64	1/8	3/16	1-1/2	090262RM
3/32	1/8	3/8	1-1/2	090263RM
7/64	1/8	3/8	1-1/2	090264RM
1/8	1/8	1/2	1-1/2	090265RM
9/64	3/16	1/2	2	090266RM
5/32	3/16	9/16	2	090267RM
11/64	3/16	5/8	2	090268RM
3/16	3/16	5/8	2	090269RM
13/64	1/4	5/8	2-1/2	090270RM
7/32	1/4	5/8	2-1/2	090271RM
15/64	1/4	3/4	2-1/2	090272RM
1/4	1/4	3/4	2-1/2	090273RM
9/32	5/16	3/4	2-1/2	090274RM
5/16	5/16	13/16	2-1/2	090275RM
3/8	3/8	1	2-1/2	090276RM
7/16	7/16	1	2-3/4	090277RM
1/2	1/2	1	3	090278RM
5/8	5/8	1-1/4	3-1/2	090279RM
3/4	3/4	1-1/2	4	090280RM
1	1	1-1/2	4	090281RM

TOLERANCE OF MILL DIA.

0-.0012

Premium CARBIDE 2 & 4 Flute, Regular Length, Double



Double End - 2-Flute- Regular

- Same construction features as single end mill in a more economical version.
- Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.

2 FLUTE REGULAR LENGTH

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/8	3/8	3/8	3-1/16	090390RM
5/32	3/8	7/16	3-1/8	090391RM
3/16	3/8	1/2	3-1/4	090392RM
7/32	3/8	9/16	3-3/8	090393RM
1/4	3/8	5/8	3-3/8	090394RM
9/32	3/8	11/16	3-3/8	090395RM
5/16	3/8	3/4	3-1/2	090396RM
11/32	3/8	3/4	3-1/2	090397RM
3/8	3/8	3/4	3-1/2	090398RM
7/16	1/2	7/8	4	090399RM
1/2	1/2	1	4	090400RM

TOLERANCE OF MILL DIA.

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The shank of end mills is the same diameter as the cutting portion.



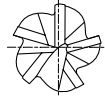
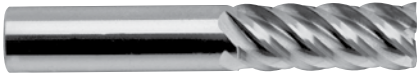
Double End - 4-Flute- Stub



4 FLUTE REGULAR LENGTH

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/8	3/8	3/8	3-1/16	090401RM
5/32	3/8	7/16	3-1/8	090402RM
3/16	3/8	1/2	3-1/4	090403RM
7/32	3/8	9/16	3-3/8	090404RM
1/4	3/8	5/8	3-3/8	090405RM
9/32	3/8	11/16	3-3/8	090406RM
5/16	3/8	3/4	3-1/2	090407RM
11/32	3/8	3/4	3-1/2	090408RM
3/8	3/8	3/4	3-1/2	090409RM
7/16	1/2	7/8	4	090410RM
1/2	1/2	1	4	090411RM

Premium CARBIDE 5-Flute, 45° Helix, Standard Length



Single End - 5-Flute- 45°

- Designed to machine stainless steels, inconels and other alloys.
- The new design of stub length allows cutting at maximum speeds and feeds with minimum deflection
- 5 Flute and 45° medium helix allow harmonic balance and smooth cutting.

 **STANDARD LENGTH**

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/8	1/8	1/2	1-1/2	090462RM
5/32	3/16	9/16	2	090463RM
3/16	3/16	9/16	2	090464RM
7/32	1/4	3/4	2-1/2	090465RM
1/4	1/4	3/4	2-1/2	090466RM
5/16	5/16	13/16	2-1/2	090467RM
3/8	3/8	1	2-1/2	090468RM
7/16	7/16	1	2-3/4	090469RM
1/2	1/2	1-1/4	3	090470RM
5/8	5/8	1-5/8	3-1/2	090471RM
3/4	3/4	1-5/8	4	090472RM
7/8	7/8	2	4	090473RM
1	1	2	4	090474RM

TOLERANCE OF MILL DIA.

0- .0012

Premium CARBIDE 2 & 4 Flute, Regular Length, Ball Nose



Single End - 2-Flute - Ball Nose - Regular



- Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.

2 FLUTE, REGULAR LENGTH

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/8	1/8	1/2	1-1/2	090282RM
5/32	3/16	9/16	2	090283RM
3/16	3/16	5/8	2	090284RM
7/32	1/4	5/8	2-1/2	090285RM
1/4	1/4	3/4	2-1/2	090286RM
5/16	5/16	13/16	2-1/2	090287RM
3/8	3/8	1	2-1/2	090288RM
7/16	7/16	1	2-3/4	090289RM
1/2	1/2	1	3	090290RM
5/8	5/8	1-1/4	3-1/2	090291RM
3/4	3/4	1-1/2	4	090292RM
1	1	1-1/2	4	090293RM

TOLERANCE OF MILL DIA.

0-.0012

Single End - 4-Flute - Ball Nose - Regular



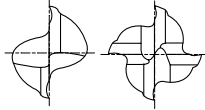
4 FLUTE, REGULAR LENGTH

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/8	1/8	1/2	1-1/2	090294RM
5/32	3/16	9/16	2	090295RM
3/16	3/16	5/8	2	090296RM
7/32	1/4	5/8	2-1/2	090297RM
1/4	1/4	3/4	2-1/2	090298RM
5/16	5/16	13/16	2-1/2	090299RM
3/8	3/8	1	2-1/2	090300RM
7/16	7/16	1	2-3/4	090301RM
1/2	1/2	1	3	090302RM
5/8	5/8	1-1/4	3-1/2	090303RM
3/4	3/4	1-1/2	4	090304RM
1	1	1-1/2	4	090305RM

TOLERANCE OF MILL DIA.

0-.0012

Premium CARBIDE 2 & 4 Flute, Long Length



List 5013B Single End - 4-or more Flute

- Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.

2 FLUTE, LONG LENGTH

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/8	1/8	3/4	2-1/4	090306RM
3/16	3/16	3/4	2-1/2	090307RM
1/4	1/4	1-1/8	3	090308RM
5/16	5/16	1-1/8	3	090309RM
3/8	3/8	1-1/8	3	090310RM
7/16	7/16	2	4	090311RM
1/2	1/2	2	4	090312RM
5/8	5/8	2-1/4	5	090313RM
3/4	3/4	2-1/4	5	090314RM
1	1	2-1/4	5	090315RM

TOLERANCE OF MILL DIA.

0-.0012

4 FLUTE, LONG LENGTH

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/8	1/8	3/4	2-1/4	090316RM
3/16	3/16	3/4	2-1/2	090317RM
1/4	1/4	1-1/8	3	090318RM
5/16	5/16	1-1/8	3	090319RM
3/8	3/8	1-1/8	3	090320RM
7/16	7/16	2	4	090321RM
1/2	1/2	2	4	090322RM
5/8	5/8	2-1/4	5	090323RM
3/4	3/4	2-1/4	5	090324RM
1	1	2-1/4	5	090325RM

TOLERANCE OF MILL DIA.

0-.0012

Premium CARBIDE 2 & 4 Flute, Extra Long Length



Single End - 2-Flute - Extra Long



- Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.

2 FLUTE, EXTRA LONG LENGTH

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/8	1/8	1	3	090326RM
3/16	3/16	1-1/8	3	090327RM
3/16	3/16	1	4	090339RM
1/4	1/4	1-1/2	4	090328RM
1/4	1/4	1-1/2	6	090336RM
5/16	5/16	1-5/8	4	090329RM
3/8	3/8	1-3/4	4	090330RM
3/8	3/8	1-1/2	6	090337RM
7/16	7/16	3	6	090331RM
1/2	1/2	1-1/2	6	090338RM
1/2	1/2	3	6	090332RM
5/8	5/8	3	6	090333RM
3/4	3/4	3	6	090334RM
1	1	3	6	090335RM

TOLERANCE OF MILL DIA.

0-.0012



Single End - 4-Flute - Extra Long



4 FLUTE, EXTRA LONG LENGTH

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/8	1/8	1	3	090340RM
3/16	3/16	1-1/8	3	090341RM
3/16	3/16	1	4	090353RM
1/4	1/4	1-1/2	4	090342RM
1/4	1/4	1-1/2	6	090350RM
5/16	5/16	1-5/8	4	090343RM
3/8	3/8	1-3/4	4	090344RM
3/8	3/8	1-1/2	6	090351RM
7/16	7/16	3	6	090345RM
1/2	1/2	1-1/2	6	090352RM
1/2	1/2	3	6	090346RM
5/8	5/8	3	6	090347RM
3/4	3/4	3	6	090348RM
1	1	3	6	090349RM

TOLERANCE OF MILL DIA.

0-.0012

Premium CARBIDE 2 & 4 Flute, Long Length, Ball Nose



Single End - 2-Flute - Ball Nose - Long



- Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.

2 FLUTE, LONG LENGTH

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/8	1/8	3/4	2-1/4	090412RM
3/16	3/16	3/4	2-1/2	090413RM
1/4	1/4	1-1/8	3	090414RM
5/16	5/16	1-1/8	3	090415RM
3/8	3/8	1-1/8	3	090416RM
7/16	7/16	2	4	090417RM
1/2	1/2	2	4	090418RM
5/8	5/8	2-1/4	5	090419RM
3/4	3/4	2-1/4	5	090420RM
1	1	2-1/4	5	090421RM

TOLERANCE OF MILL DIA.

0- .0012



Single End - 4-Flute - Ball Nose - Long



4 FLUTE, LONG LENGTH

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/8	1/8	3/4	2-1/4	090422RM
3/16	3/16	3/4	2-1/2	090423RM
1/4	1/4	1-1/8	3	090424RM
5/16	5/16	1-1/8	3	090425RM
3/8	3/8	1-1/8	3	090426RM
7/16	7/16	2	4	090427RM
1/2	1/2	2	4	090428RM
5/8	5/8	2-1/4	5	090429RM
3/4	3/4	2-1/4	5	090430RM
1	1	2-1/4	5	090431RM

TOLERANCE OF MILL DIA.

0- .0012

Premium CARBIDE 2 & 4 Flute, Extra Long Length, Ball Nose



Single End - 2-Flute - Ball Nose - Extra Long

Carbide 2 Flute Single End Ball CC

- Suitable for cutting hardened & high alloy steels, steel casting, chill casting, malleable cast iron, CrNi-steels, brass, copper, aluminum with a high percentage of silicon and abrasive plastics.

2 FLUTE, EXTRA LONG LENGTH

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/8	1/8	1	3	090432RM
3/16	3/16	1-1/8	3	090433RM
3/16	3/16	1	4	090445RM
1/4	1/4	1-1/2	4	090434RM
1/4	1/4	1-1/2	6	090442RM
5/16	5/16	1-5/8	4	090435RM
3/8	3/8	1-3/4	4	090436RM
3/8	3/8	1-1/2	6	090443RM
7/16	7/16	3	6	090437RM
1/2	1/2	1-1/2	6	090444RM
1/2	1/2	3	6	090438RM
5/8	5/8	3	6	090439RM
3/4	3/4	3	6	090440RM
1	1	3	6	090441RM

TOLERANCE OF MILL DIA.

0-.0012



Single End - 4-Flute - Ball Nose - Extra Long

Carbide 4 Flute Single End Ball CC

4 FLUTE, EXTRA LONG LENGTH

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/8	1/8	1	3	090446RM
3/16	3/16	1-1/8	3	090447RM
1/4	1/4	1-1/2	4	090448RM
1/4	1/4	1-1/2	6	090456RM
5/16	5/16	1-5/8	4	090449RM
3/8	3/8	1-3/4	4	090450RM
3/8	3/8	1-1/2	6	090457RM
7/16	7/16	3	6	090451RM
1/2	1/2	1-1/2	6	090458RM
1/2	1/2	3	6	090452RM
5/8	5/8	3	6	090453RM
5/8	5/8	1-1/2	6	090459RM
3/4	3/4	3	6	090454RM
3/4	3/4	1-1/2	6	090460RM
1	1	3	6	090455RM
1	1	1-1/2	6	090461RM

TOLERANCE OF MILL DIA.

0-.0012

Solid Carbide Long & Extra Long Center Cutting



Carbide 2 Flute Single End CC

List 8120 2-Flute - Single End



Carbide 4 Flute Single End CC

List 8146 4-Flute - Single End

- Carbide micro grain structure
- Harder and more wear resistant
- Resists fracturing and chipping
- Unaffected by high cutting temperatures
- Can run 3X to 10X faster than HSS
- Effective in milling plastics, magnesium, cast irons and high alloy steels

Packaging: All (1)

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	2-Flute	4-Flute
1/8	1/8	3/4	2-1/4	098035RM	098145RM
1/8	1/8	1	3	098036RM	098146RM
3/16	3/16	3/4	2-1/4	098037RM	098147RM
3/16	3/16	1-1/8	3	098038RM	098148RM
1/4	1/4	1-1/8	3	098039RM	098149RM
1/4	1/4	1-1/2	4	098040RM	098150RM
5/16	5/16	1-1/8	3	098042RM	098152RM
5/16	5/16	1-5/8	4	098044RM	098154RM
3/8	3/8	1-1/8	3	098045RM	098155RM
3/8	3/8	1-3/4	4	098046RM	098156RM
1/2	1/2	1-1/2	4	098052RM	098162RM
1/2	1/2	2	4	098054RM	098164RM
1/2	1/2	3	6	098055RM	098165RM
5/8	5/8	2-1/4	5	098056RM	098166RM
5/8	5/8	3	6	098057RM	098167RM
3/4	3/4	2-1/4	5	098058RM	098168RM
3/4	3/4	3	6	098059RM	098169RM
1	1	2-1/4	5	098061RM	098170RM
1	1	3	6	098062RM	098171RM

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Solid Carbide End Mills

Regular Center Cutting

3-Flute - Single End

		Carbide	2 Flute	Single End	CC	List 8018 - Regular 2-Flute - Single End
		Carbide	4 Flute	Single End	CC	List 8007 - Regular 3-Flute - Single End List 8040 - 60° Hi-Helix 3-Flute - Single End
		Carbide	2 Flute	Single End	Ball CC	List 8018B - Regular 2-Flute - Single End-Ball
		Carbide	4 Flute	Single End	Ball CC	List 8016B - Regular 4-Flute - Single End-Ball
		Carbide	4 Flute	Single End	CC	List 8016 - Regular 4-Flute - Single End



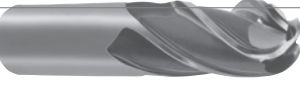

Packaging: All (1)

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	2-Flute	2-Flute Ball	3-Flute	3-Flute Hi-Helix	4-Flute	4-Flute Ball
1/32	1/8	5/64	1-1/2	098729RM	098737RM	—	—	098725RM	098733RM
3/64	1/8	7/64	1-1/2	098530RM	098318RM	—	—	098496RM	098284RM
1/16	1/8	3/16	1-1/2	098531RM	098319RM	098748RM	—	098497RM	098285RM
5/64	1/8	3/16	1-1/2	098532RM	098320RM	—	—	098498RM	098286RM
3/32	1/8	9/32	1-1/2	098533RM	098321RM	098749RM	—	098499RM	098287RM
7/64	1/8	3/8	1-1/2	098534RM	098322RM	—	—	098500RM	098288RM
1/8	1/8	1/2	1-1/2	098535RM	098323RM	098750RM	098785RM	098501RM	098289RM
9/64	3/16	1/2	2	098536RM	098324RM	—	—	098502RM	098290RM
5/32	3/16	1/2	2	098537RM	098738RM	098751RM	—	098503RM	098291RM
11/64	3/16	5/8	2	098538RM	098326RM	—	—	098504RM	098292RM
3/16	3/16	5/8	2	098539RM	098327RM	098752RM	098786RM	098505RM	098293RM
13/64	1/4	5/8	2-1/2	098540RM	098328RM	—	—	098506RM	098294RM
7/32	1/4	5/8	2-1/2	098541RM	098739RM	098753RM	—	098507RM	098295RM
15/64	1/4	3/4	2-1/2	098542RM	098330RM	—	—	098508RM	098296RM
1/4	1/4	3/4	2-1/2	098543RM	098331RM	098754RM	098787RM	098509RM	098297RM
17/64	5/16	3/4	2-1/2	098544RM	—	—	—	098510RM	—
9/32	5/16	3/4	2-1/2	098730RM	098740RM	098755RM	—	098726RM	098734RM
19/64	5/16	13/16	2-1/2	098546RM	—	—	—	098512RM	—
5/16	5/16	13/16	2-1/2	098547RM	098335RM	098756RM	098788RM	098513RM	098301RM
21/64	3/8	7/8	2-1/2	098548RM	—	—	—	098514RM	—
11/32	3/8	7/8	2-1/2	098731RM	098741RM	—	—	098727RM	098735RM
3/8	3/8	7/8	2-1/2	098549RM	098337RM	098758RM	098789RM	098515RM	098303RM
13/32	7/16	1	2-3/4	098550RM	098338RM	—	—	098516RM	098304RM
7/16	7/16	1	2-3/4	098551RM	098339RM	098759RM	098790RM	098517RM	098305RM
15/32	1/2	1	3	098552RM	098340RM	—	—	098518RM	098306RM
1/2	1/2	1	3	098553RM	098341RM	098760RM	098791RM	098519RM	098307RM
17/32	9/16	1-1/8	3-1/2	098554RM	—	—	—	098520RM	—
9/16	9/16	1-1/8	3-1/2	098555RM	098742RM	098761RM	—	098521RM	098309RM
5/8	5/8	1-1/4	3-1/2	098557RM	098743RM	098762RM	098793RM	098523RM	098311RM
11/16	3/4	1-1/2	4	098558RM	—	—	—	098524RM	—
3/4	3/4	1-1/2	4	098559RM	098744RM	098763RM	098794RM	098525RM	098313RM
13/16	7/8	1-1/2	4	098560RM	—	—	—	098526RM	—
7/8	7/8	1-1/2	4	098562RM	—	—	—	098528RM	—
1	1	1-1/2	4	098561RM	098745RM	098764RM	098795RM	098527RM	098315RM

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Solid Carbide End Mills - NC Tolerance

Regular Center Cutting

		Carbide	2 Flute	Single End	CC	List 8115 2-Flute - Single End
		Carbide	4 Flute	Single End	CC	List 8140 4-Flute - Single End
		Carbide	2 Flute	Single End	Ball CC	List 8130 2-Flute - Single End - Ball
		Carbide	4 Flute	Single End	Ball CC	List 8155 4-Flute - Single End - Ball

- Tight tolerances for precision machining
- +.001-.000 cutting diameter tolerance
- Carbide micrograin structure
- Harder and more wear resistant
- Resists fracturing and chipping
- Unaffected by high cutting temperatures
- Can run 3X to 10X faster than HSS
- Ball nose provides full radius cutting action

Packaging: All (1)

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	2-Flute	2-Flute Ball	4-Flute	4-Flute Ball
1/16	1/8	3/16	1-1/2	098012RM	098080RM	098125RM	098186RM
3/32	1/8	5/16	1-1/2	098013RM	098081RM	098126RM	098187RM
1/8	1/8	7/16	1-1/2	098014RM	098092RM	098127RM	098188RM
5/32	3/16	1/2	2	098015RM	098083RM	098128RM	098189RM
3/16	3/16	9/16	2	098016RM	098084RM	098129RM	098190RM
7/32	1/4	5/8	2-1/2	098017RM	098085RM	098130RM	098191RM
1/4	1/4	3/4	2-1/2	098018RM	098086RM	098131RM	098192RM
9/32	5/16	3/4	2-1/2	098019RM	098087RM	098132RM	098193RM
5/16	5/16	13/16	2-1/2	098020RM	098088RM	098133RM	098194RM
3/8	3/8	7/8	2-1/2	098021RM	098089RM	098134RM	098195RM
7/16	7/16	1	2-3/4	098022RM	098090RM	098135RM	098196RM
1/2	1/2	1	3	098023RM	098091RM	098136RM	098197RM
9/16	9/16	1-1/8	3-1/2	098024RM	098092RM	098137RM	098198RM
5/8	5/8	1-1/4	3-1/2	098025RM	098093RM	098138RM	098199RM
11/16	3/4	1-3/8	4	098026RM	098094RM	098139RM	098200RM
3/4	3/4	1-1/2	4	098027RM	098095RM	098140RM	098201RM
1	1	1-1/2	4	098028RM	098096RM	098141RM	098202RM

Enhance tool performance and wear life with **TiN, TiCN, TiAlN**

Solid Carbide End Mills Stub & Regular Center Cutting



- Effective in milling plastics, magnesium, cast irons and high alloy steels
- Ball nose provides full radius cutting action
- Double end offers two-tools-in-one
- Carbide micrograin structure
- Harder and more wear resistant; resists fracturing and chipping
- Unaffected by high cutting temperatures
- Can run 3X to 10X faster than HSS

Packaging: All (1)

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	2-Flute	2-Flute Ball	4-Flute	4-Flute Ball
1/32	1/8	1/16	1-1/2	098706RM	098717RM	098702RM	098710RM
3/64	1/8	3/32	1-1/2	098707RM	098718RM	098703RM	098711RM
1/16	1/8	1/8	1-1/2	098395RM	098719RM	098361RM	098712RM
3/32	1/8	3/16	1-1/2	098397RM	098721RM	098363RM	098714RM
1/8	1/8	1/4	1-1/2	098399RM	098723RM	098365RM	098716RM
5/32	3/16	5/16	2	098401RM	098775RM	098367RM	098765RM
3/16	3/16	3/8	2	098403RM	098776RM	098369RM	098766RM
7/32	1/4	1/2	2-1/2	098405RM	098777RM	098371RM	098767RM
1/4	1/4	1/2	2-1/2	098407RM	098778RM	098373RM	098768RM
5/16	5/16	1/2	2-1/2	098411RM	098780RM	098377RM	098770RM
3/8	3/8	9/16	2-1/2	098413RM	098781RM	098379RM	098771RM
7/16	7/16	9/16	2-3/4	098415RM	098782RM	098381RM	098772RM
1/2	1/2	5/8	3	098417RM	098783RM	098383RM	098773RM

Packaging: All (1)

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	2-Flute	2-Flute Ball	4-Flute	4-Flute Ball
1/8	3/8	3/8	3-1/16	098000RM	098065RM	098112RM	098174RM
5/32	3/8	7/16	3-1/8	098002RM	098066RM	098113RM	098175RM
3/16	3/8	1/2	3-1/4	098003RM	098067RM	098114RM	098176RM
7/32	3/8	9/16	3-1/2	098004RM	098068RM	098115RM	098177RM
1/4	3/8	5/8	3-1/2	098005RM	098069RM	098116RM	098178RM
9/32	3/8	11/16	3-1/2	098006RM	098070RM	098117RM	098179RM
5/16	3/8	3/4	3-1/2	098007RM	098071RM	098118RM	098180RM
11/32	3/8	3/4	3-1/2	098008RM	098072RM	098119RM	098181RM
3/8	3/8	3/4	3-1/2	098009RM	098073RM	098120RM	098182RM
7/16	1/2	7/8	4	098010RM	098074RM	098121RM	098183RM
1/2	1/2	1	4	098011RM	098075RM	098122RM	098184RM

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Solid Carbide End Mills - Metric End Mills

Regular Center Cutting



Carbide
2 Flute
Double End
CC

List 8160 - Regular 2-Flute - Single End



Carbide
4 Flute
Double End
CC

List 8165 - Regular 4-Flute - Single End

Packaging: All (1)

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	2-Flute	4-Flute
1.0	3	2	39	098650RM	098671RM
1.5	3	3	39	098651RM	098672RM
2.0	3	6.3	38	098652RM	098673RM
2.5	3	9.5	38	098653RM	098674RM
3.0	3	12	38	098654RM	098675RM
3.5	4	12	50	098655RM	098676RM
4.0	4	14	50	098656RM	098677RM
4.5	6	16	50	098657RM	098678RM
5.0	6	16	50	098658RM	098679RM
6.0	6	19	50	098659RM	098680RM
7.0	8	19	63	098660RM	098681RM
8.0	8	20	63	098661RM	098682RM
9.0	10	22	75	098662RM	098683RM
10.0	10	25	75	098663RM	098684RM
11.0	10	25	75	098664RM	098685RM
12.0	12	25	75	098665RM	098686RM
14.0	14	32	89	098666RM	098687RM
16.0	16	32	89	098667RM	098688RM
18.0	18	38	100	098668RM	098689RM
20.0	20	38	100	098669RM	098690RM

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Solid Carbide End Mills - Roughing End Mills

Regular Center Cutting



List 8170 - Regular 4-Flute - Single End

Packaging: All (1)

EDP	Dia. of Shank	Length of Cut	Overall Length	Dia. of Mill
098691RM	1/4	1/4	3/8	2
098692RM	1/4	1/4	3/4	2-1/2
098693RM	5/16	5/16	7/8	2-1/2
098694RM	3/8	3/8	1/2	2
098695RM	3/8	3/8	7/8	2-1/2
098696RM	1/2	1/2	1	3
098697RM	5/8	5/8	1-1/4	3-1/2
098698RM	3/4	3/4	1-1/2	4
098699RM	1	1	1	3
098700RM	1	1	1-1/2	4

Solid Carbide End Mills

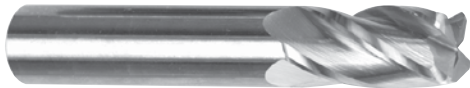
Titanium Aluminum Nitride (TiAlN) Coated Hi Helix Four or More Flute Single End CC



- Increased metal removal at faster rates
- Free cutting action
- Decreased horsepower requirements

Packaging: All (1)

EDP	Diameter of Mill	Diameter of Shank	Flute Length	Overall Length	Flutes
097850RM	1/8	1/8	1/2	1-1/2	4
097851RM	3/16	3/16	5/8	2	4
097852RM	1/4	1/4	3/4	2-1/2	6
097853RM	5/16	5/16	13/16	2-1/2	6
097854RM	3/8	3/8	1	2-1/2	6
097855RM	7/16	7/16	1	2-3/4	6
097856RM	1/2	1/2	1	3	6
097857RM	9/16	9/16	1-1/8	3-1/2	6
097858RM	5/8	5/8	1-1/4	3-1/2	6
097859RM	3/4	3/4	1-1/2	4	6
097860RM	7/8	7/8	1-1/2	4	6
097861RM	1	1	1-1/2	4	8



2 Flute Single - End Corner Radius

- Designed for cutting radii
- Eliminates sharp corners

Packaging: All (1)

Diameter of Mill	Diameter of Shank	Flute Length	Overall Length	Radius							
				.015	.020	.030	.045	.060	.090	.0125	
1/8	1/8	1/2	1-1/2	097862RM	—	—	—	—	—	—	—
3/16	3/16	5/8	2	—	097863RM	097871RM	—	—	—	—	—
1/4	1/4	3/4	2-1/2	—	097864RM	097872RM	097879RM	—	—	—	—
5/16	5/16	13/16	2-1/2	—	097865RM	097873RM	097880RM	—	—	—	—
3/8	3/8	7/8	2-1/2	—	097866RM	097874RM	097881RM	—	—	—	—
1/2	1/2	1	3	—	097867RM	097875RM	097882RM	097886RM	—	—	—
5/8	5/8	1-1/4	3-1/2	—	097868RM	097876RM	097883RM	097887RM	097890RM	—	—
3/4	3/4	1-1/2	4	—	097869RM	097877RM	097884RM	097888RM	097891RM	097893RM	—
1	1	1-1/2	4	—	097870RM	097878RM	097885RM	097889RM	097892RM	097894RM	—

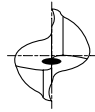
Packaging: All (1)

4 Flute Single - End Corner Radius

Diameter of Mill	Diameter of Shank	Flute Length	Overall Length	Radius							
				.015	.020	.030	.045	.060	.090	.0125	
1/8	1/8	1/2	1-1/2	097895RM	—	—	—	—	—	—	—
3/16	3/16	5/8	2	—	097896RM	097904RM	—	—	—	—	—
1/4	1/4	3/4	2-1/2	—	097897RM	097905RM	097912RM	—	—	—	—
5/16	5/16	13/16	2-1/2	—	097898RM	097906RM	097913RM	—	—	—	—
3/8	3/8	7/8	2-1/2	—	097899RM	097907RM	097914RM	—	—	—	—
1/2	1/2	1	3	—	097900RM	097908RM	097915RM	097919RM	—	—	—
5/8	5/8	1-1/4	3-1/2	—	097901RM	097909RM	097916RM	097920RM	097923RM	—	—
3/4	3/4	1-1/2	4	—	097902RM	097910RM	097917RM	097921RM	097924RM	097926RM	—
1	1	1-1/2	4	—	097903RM	097911RM	097918RM	097922RM	097925RM	097927RM	—

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

Premium HSC Mills 2 & 4 Flute, Regular Length



Single End - 2-Flute - Regular

- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- Superior workpiece finishes.
- Increased feed rate.

2 FLUTE, REGULAR

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No. EM154
1/16	1/8	5/16	2	090000RM
1/8	1/8	5/8	2	090001RM
3/16	3/16	3/4	2-1/8	090002RM
1/4	1/4	1	2-3/4	090003RM
5/16	5/16	1	2-3/4	090004RM
3/8	3/8	1	2-3/4	090005RM
1/2	1/2	1-1/2	3-1/2	090006RM
5/8	5/8	1-3/4	4	090007RM
3/4	3/4	2	4-1/2	090008RM
1	1	2	4/1-2	090009RM

Single End - 2-Flute - Regular

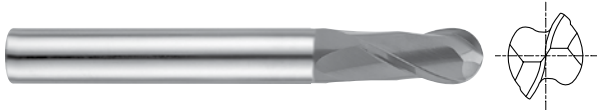
4 FLUTE, REGULAR



Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No. EM153
1/16	1/8	5/16	2	090010RM
1/8	1/8	5/8	2	090011RM
3/16	3/16	3/4	2-1/8	090012RM
1/4	1/4	1	2-3/4	090013RM
5/16	5/16	1	2-3/4	090014RM
3/8	3/8	1	2-3/4	090015RM
1/2	1/2	1-1/2	3-1/2	090016RM
5/8	5/8	1-3/4	4	090017RM
3/4	3/4	2	4-1/2	090018RM
1	1	2	4/1-2	090019RM

TOLERANCE OF MILL DIA.	0-.0012
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Premium HSC Mills 2 & 4 Flute, Long Length, Ball Nose



Single End - 2-Flute - Regular



- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- For copy - milling machines.

2 FLUTE LONG LENGTH

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	Dia. of Neck	Length Below Shank	EDP No.
1/8	1/8	1/8	2-3/4	—	—	090056RM
3/16	3/16	3/16	3-1/8	—	—	090057RM
1/4	1/4	1/4	3-1/8	.242	7/8	090058RM
5/16	5/16	5/16	3-1/2	.305	1-1/16	090059RM
3/8	3/8	3/8	4	.367	1-1/4	090060RM
1/2	1/2	1/2	4-1/4	.492	1-1/2	090061RM
5/8	5/8	5/8	5-1/2	.617	2	090062RM
3/4	3/4	3/4	6-1/4	.742	2-1/4	090063RM
1	1	1	7	.992	3	090064RM



Single End - 4-Flute - Long - Ball Nose



4 FLUTE LONG LENGTH

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	Dia. of Neck	Length Below Shank	EDP No.
1/8	1/8	1/8	2-3/4	—	—	090065RM
3/16	3/16	3/16	3-1/8	—	—	090066RM
1/4	1/4	1/4	3-1/8	.242	7/8	090067RM
5/16	5/16	5/16	3-1/2	.305	1-1/16	090068RM
3/8	3/8	3/8	4	.367	1-1/4	090069RM
1/2	1/2	1/2	4-1/4	.492	1-1/2	090070RM
5/8	5/8	5/8	5-1/2	.617	2	090071RM
3/4	3/4	3/4	6-1/4	.742	2-1/4	090072RM
1	1	1	7	.992	3	090073RM

TOLERANCE OF MILL DIA.	0-.0012
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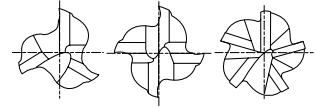
Premium HSC Mills 3 or More-Flute, 20° Helix, Long Length, Roughing



Single End - 3+ Flute - 20° Helix -Long



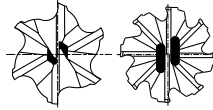
- Designed to machine tool steel, alloy steel, mold steel and other high hardened materials.
- High velocity milling of hardened steels.
- For dry and wet milling.
- Fast chip ejection.



Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	Dia. of Neck	Length Below Shank	No. of Flutes	EDP No.
1/4	1/4	5/16	2-1/2	.225	3/4	3	090074RM
5/16	5/16	3/8	2-1/2	.285	1	3	090075RM
3/8	3/8	9/16	2-1/2	.350	1-1/8	3	090076RM
1/2	1/2	5/8	3	.460	1-1/2	4	090077RM
5/8	5/8	7/8	4	.585	2	4	090078RM
3/4	3/4	1	4-3/8	.710	2-1/4	4	090079RM
1	1	1	5	.960	3	5	090080RM

Size Range O.D.	1/4 3/80 .0022	1/2 5/80 .0027	3/4 10 .0033
Tolerance			

Premium HSC Mills 6 & 8 Flute, 45° Helix, Long Length



Single End - 6 & 8 Flute - 45° Helix -Long



- Designed to machine high hardened materials.
- High speed cutting and finish milling with high feed rate.
- Superior workpiece finishes.
- Superior wear resistant.
- Suitable for dry milling.
- Corner Protection against chipping.



Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flute	EDP No.
1/4	1/4	3/4	2-1/2	6	090046RM
5/16	5/16	1	2-3/4	6	090047RM
3/8	3/8	1-1/4	3-1/4	6	090048RM
1/2	1/2	1-1/2	3-3/4	6	090049RM
5/8	5/8	1-3/4	4-1/4	6	090050RM
3/4	3/4	2	4-5/8	8	090051RM
1	1	2	5	8	090052RM

TOLERANCE OF MILL DIA. 0-.0012

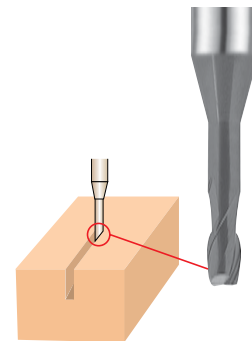
Premium HSC Mills 2 Flute for RIB Processing



Single End - 2 Flute

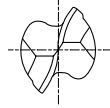


Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	Effective Length	Dia. of Neck	EDP No.
1/32	1/8	3/64	1-7/8	3/16	.029	090081RM
1/32	1/8	3/64	1-7/8	9/32	.029	090082RM
3/64	1/8	1/16	1-7/8	3/16	.045	090083RM
3/64	1/8	1/16	1-7/8	1/4	.045	090084RM
3/64	1/8	1/16	1-7/8	15/32	.045	090085RM
1/16	1/8	3/32	1-7/8	9/32	.060	090086RM
1/16	1/8	3/32	1-7/8	11/32	.060	090087RM
1/16	1/8	3/32	1-7/8	15/32	.060	090088RM
1/16	1/8	3/32	1-7/8	19/32	.060	090089RM
5/64	1/8	1/8	1-7/8	15/32	.076	090090RM
5/64	1/8	1/8	1-7/8	19/32	.076	090091RM
3/32	1/8	9/64	1-7/8	15/32	.090	090092RM
3/32	1/8	9/64	1-7/8	19/32	.090	090093RM
1/8	1/4	3/16	2-1/8	17/32	.120	090094RM
1/8	1/4	3/16	2-1/8	23/32	.120	090095RM



TOLERANCE OF MILL DIA.	0 -0.0006
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Premium HSC Mills 2 Flute, Ball Nose for RIB Processing



Single End - 2 Flute - Ball Nose



RIB PROCESSING

MG
Carbide

2
Flute

Single
End

AlTiN

Ball

CC

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	Effective Length	Dia. of Neck	EDP No.
1/32	1/8	3/64	1-7/8	3/16	.029	090096RM
1/32	1/8	3/64	1-7/8	9/32	.029	090097RM
3/64	1/8	1/16	1-7/8	3/16	.045	090098RM
3/64	1/8	1/16	1-7/8	1/4	.045	090099RM
3/64	1/8	1/16	1-7/8	15/32	.045	090100RM
1/16	1/8	3/32	1-7/8	9/32	.060	090101RM
1/16	1/8	3/32	1-7/8	15/32	.060	090102RM
1/16	1/8	3/32	1-7/8	19/32	.060	090103RM
5/64	1/8	1/8	1-7/8	15/32	.076	090104RM
5/64	1/8	1/8	1-7/8	19/32	.076	090105RM
3/32	1/8	9/64	1-7/8	15/32	.090	090107RM
3/32	1/8	9/64	1-7/8	19/32	.090	090108RM
1/8	1/4	3/16	2-1/8	17/32	.120	090109RM
1/8	1/4	3/16	2-1/8	23/32	.120	090110RM

TOLERANCE OF MILL DIA.	0 - .0006
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Premium ALU-Mills 2 Flute, Corner Radius with Neck



Single End - 2 Flute - Ball Nose



STUB CUT LENGTH WITH NECK

- Excellent cutting qualities on stainless steel, aluminum, copper.
- Increased tool life and higher cutting accuracy.

Dia. of Mill	Radius	Dia. of Shank	Length of Cut	Overall Length	Length Below Shank	Neck Dia.	EDP No.
5/32	R.012	1/4	5/32	1-7/8	5/16	.140	090213RM
1/4	R.020	1/4	9/32	2-1/4	11/16	.226	090214RM
5/16	R.024	5/16	5/16	2-5/8	1-1/16	.282	090215RM
3/8	R.031	3/8	7/16	3	1-1/4	.336	090216RM
1/2	R.040	1/2	1/2	3-3/8	1-1/4	.460	090217RM
5/8	R.051	5/8	5/8	3-7/8	1-1/2	.566	090218RM
3/4	R.063	3/4	7/8	3-7/8	1-1/2	.670	090219RM

TOLERANCE OF MILL DIA.	0-.0012
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Premium ALU Mills

Solid Carbide 3 Flute, 40° Helix, Ball Nose with Neck



Single End - 3 Flute - 40° - Ball Nose



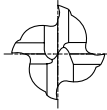
- Excellent cutting qualities on stainless steel, aluminum, copper.
- Increased tool life and higher cutting accuracy.



Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/8	1/8	1/2	1-1/2	090220RM
3/16	3/16	5/8	2	090221RM
1/4	1/4	3/4	2-1/2	090222RM
5/16	5/16	13/16	2-1/2	090223RM
3/8	3/8	1	2-1/2	090224RM
1/2	1/2	1	3	090225RM
5/8	5/8	1-1/4	3-1/2	090226RM
3/4	3/4	1-1/2	4	090227RM
1	1	1-1/2	4	090228RM

TOLERANCE OF MILL DIA.	0-.0012
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Premium-V Mills 4 Flute, Regular

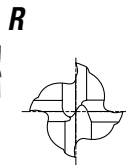


Single End - 4 Flute



Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.	
				PLAIN	FLAT
1/8	1/8	3/8	1-1/2	090163RM	—
5/32	3/16	7/16	2	090164RM	—
3/16	3/16	7/16	2	090165RM	—
7/32	1/4	7/16	2-1/2	090166RM	—
1/4	1/4	1/2	2-1/2	090167RM	090180RM
9/32	5/16	5/8	2-1/2	090168RM	090181RM
5/16	5/16	13/16	2-1/2	090169RM	090182RM
11/32	3/8	13/16	2-1/2	090170RM	090183RM
3/8	3/8	7/8	2-1/2	090171RM	090184RM
13/32	7/16	15/16	2-3/4	090172RM	090185RM
7/16	7/16	1	2-3/4	090173RM	090186RM
15/32	1/2	1	3	090174RM	090187RM
1/2	1/2	1	3	090175RM	090188RM
9/16	9/16	1-1/8	3-1/2	090176RM	090189RM
5/8	5/8	1-1/4	3-1/2	090177RM	090190RM
3/4	3/4	1-1/2	4	090178RM	090191RM
1	1	1-1/2	4	090179RM	090192RM

4 Flute, Regular, Corner Radius



Single End - 4 Flute



RADIUS	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.	
					PLAIN	FLAT
R.010~R.015	1/8	1/8	3/8	1-1/2	090193RM	—
R.010~R.015	3/16	3/16	7/16	2	090194RM	—
R.015~R.020	1/4	1/4	1/2	2-1/2	090195RM	090204RM
R.015~R.020	5/16	5/16	13/16	2-1/2	090196RM	090205RM
R.015~R.020	3/8	3/8	7/8	2-1/2	090197RM	090206RM
R.015~R.020	7/16	7/16	1	2-3/4	090198RM	090207RM
R.025~.030	1/2	1/2	1	3	090199RM	090208RM
R.025~.030	9/16	9/16	1-1/8	3-1/2	090200RM	090209RM
R.035~.040	5/8	5/8	1-1/4	3-1/2	090201RM	090210RM
R.035~.040	3/4	3/4	1-1/2	4	090202RM	090211RM
R.035~.040	1	1	1-1/2	4	090203RM	090212RM

Royal HSC Mill

2 Flute, Stub Cut Length, Ball Nose with Extended Neck

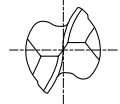


R



Single End - 2 Flute - Stub - Ball Nose

- Designed to machine high hardened materials.
- Suitable for dry cutting, high speed cutting thanks to newly developed raw-material and new coating.
- Excellent workpiece finishes.
- Designed for high precision milling operation.
- Higher wear-resistance.

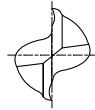


STUB CUT LENGTH

R	Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	Length Below Shank	Neck Dia.	EDP No.
R1/64	1/32	1/4	1/32	2	1/16	.029	090154RM
R1/32	1/16	1/4	1/16	2	1/8	.059	090155RM
R3/64	3/32	1/4	1/32	2	3/16	.090	090156RM
R1/16	1/8	1/4	1/8	2-1/2	1/4	.121	090157RM
R3/32	3/16	1/4	3/16	3	3/8	.184	090158RM
R1/8	1/4	1/4	1/4	3-1/2	1/2	.246	090159RM
R5/32	5/16	5/16	5/16	4	5/8	.309	090160RM
R3/16	3/8	3/8	3/8	4	3/4	.371	090161RM
R1/4	1/2	1/2	1/2	4-1/2	1	.496	090162RM

MILL DIA. TOLERANCE(inch)			SHANK DIA. TOLERANCE
DIAMETER	TOLERANCE	R TOLERANCE	
up to 3/16	0 ~ -0.0005	±0.002	h6
from 1/4	0 ~ -0.0006	±0.004	

Premium HSS 2 Flute, Regular Length - High Speed Steel



Single End - 2 Flute - Reg



- These end mills are furnished as regular with right-hand cutting and right-hand helical flutes. All shanks are flatted for holder set screw. These are designed for slotting, drilling, pocketing and general-purpose operation.



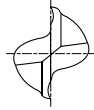
Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/8	3/8	3/8	2-5/16	090475RM
5/32	3/8	7/16	2-5/16	090476RM
3/16	3/8	7/16	2-5/16	090477RM
7/32	3/8	1/2	2-5/16	090478RM
1/4	3/8	1/2	2-5/16	090479RM
9/32	3/8	9/16	2-5/16	090480RM
5/16	3/8	9/16	2-5/16	090481RM
11/32	3/8	9/16	2-5/16	090482RM
3/8	3/8	9/16	2-5/16	090483RM
13/32	3/8	13/16	2-1/2	090484RM
7/16	3/8	13/16	2-1/2	090485RM
15/32	3/8	13/16	2-1/2	090486RM
1/2	3/8	13/16	2-1/2	090501RM
1/2	1/2	1	3	090487RM
9/16	1/2	1-1/8	3-1/8	090488RM
5/8	1/2	1-1/8	3-1/8	090502RM
5/8	5/8	1-5/16	3-7/16	090489RM
11/16	5/8	1-5/16	3-7/16	090490RM
3/4	1/2	1-5/16	3-5/16	090503RM
3/4	5/8	1-5/16	3-7/16	090504RM
3/4	3/4	1-5/16	3-7/16	090491RM
13/16	5/8	1-1/2	3-5/8	090492RM
7/8	3/4	1-1/2	3-3/4	090505RM
7/8	7/8	1-1/2	3-3/4	090493RM
15/16	7/8	1-1/2	3-3/4	090511RM
1	5/8	1-1/2	3-5/8	090506RM
1	3/4	1-1/2	3-3/4	090507RM
1	1	1-5/8	4-1/8	090494RM

TOLERANCE OF MILL DIA.

.0010— .0000	NN .0015— .0000
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**The shank of End Mills is the same diameter as the cutting portion.

Premium HSS 2 Flute, Regular Length - High Speed Steel



Single End - 2 Flute - Reg



- These end mills are furnished as regular with right-hand cutting and right-hand helical flutes. All shanks are flatted for holder set screw. These are designed for slotting, drilling, pocketing and general-purpose operation.



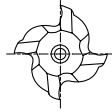
Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1-1/8	1	1-5/8	4-1/8	090495RM
1-1/4	1-1/4	1-5/8	4-1/8	090496RM
1-3/8	1	1-5/8	4-1/8	090508RM
1-3/8	1-1/4	1-5/8	4-1/8	090497RM
1-1/2	1	1-5/8	4-1/8	090509RM
1-1/2	1-1/4	1-5/8	4-1/8	090498RM
1-3/4	1-1/4	1-5/8	4-1/8	090499RM
2	1-1/4	1-5/8	4-1/8	090500RM
2	2	2	5-3/4	090510RM

TOLERANCE OF MILL DIA.	
.0010— .0000	NN .0015— .0000

**The shank of End Mills is the same diameter as the cutting portion.

Premium HSS

4 Flute, Regular Length - High Speed Steel



Single End - 4 Flute



- Possible for high-speed cutting, suitable for high efficiency machining. Easy to regrind.

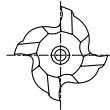
Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/8	3/8	3/8	2-5/16	090512RM
5/32	3/8	7/16	2-3/8	090513RM
11/64	3/8	1/2	2-3/8	090514RM
3/16	3/8	1/2	2-3/8	090515RM
13/64	3/8	9/16	2-7/16	090516RM
7/32	3/8	9/16	2-7/16	090517RM
15/64	3/8	5/8	2-7/16	090518RM
1/4	3/8	5/8	2-7/16	090519RM
17/64	3/8	11/16	2-1/2	090520RM
9/32	3/8	11/16	2-1/2	090521RM
19/64	3/8	3/4	2-1/2	090522RM
5/16	3/8	3/4	2-1/2	090523RM
21/64	3/8	3/4	2-1/2	090524RM
11/32	3/8	3/4	2-1/2	090525RM
23/64	3/8	3/4	2-1/2	090526RM
3/8	3/8	3/4	2-1/2	090527RM
25/64	3/8	1	2-11/16	090528RM
13/32	3/8	1	2-11/16	090529RM
27/64	3/8	1	2-11/16	090530RM
7/16	1/2	1	3	090531RM
7/16	3/8	1	2-11/16	090550RM
29/64	1/2	1-1/4	3-1/4	090532RM
15/32	1/2	1-1/4	3-1/4	090533RM
31/64	1/2	1-1/4	3-1/4	090534RM
1/2	3/8	1	2-11/16	090551RM
1/2	1/2	1-1/4	3-1/4	090535RM

TOLERANCE OF MILL DIA.

.0010— .0000	N N .0015— .0000
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** The shank of End Mills is the same diameter as the cutting portion.

Premium HSS 4 Flute, Regular Length - High Speed Steel



Single End - 4 Flute



- Possible for high-speed cutting, suitable for high efficiency machining. Easy to regrind.



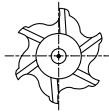
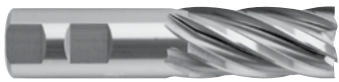
Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
17/32	1/2	1-3/8	3-3/8	090536RM
9/16	1/2	1-3/8	3-3/8	090537RM
19/32	1/2	1-3/8	3-3/8	090538RM
5/8	1/2	1-3/8	3-3/8	090552RM
5/8	5/8	1-5/8	3-3/4	090539RM
21/32	1/2	1-5/8	3-5/8	090540RM
11/16	5/8	1-5/8	3-3/4	090541RM
23/32	1/2	1-5/8	3-5/8	090553RM
3/4	1/2	1-5/8	3-5/8	090554RM
3/4	5/8	1-5/8	3-3/4	090555RM
3/4	3/4	1-5/8	3-7/8	090542RM
25/32	5/8	1-7/8	4	090543RM
13/16	3/4	1-7/8	4-1/8	090544RM
27/32	5/8	1-7/8	4	090545RM
7/8	3/4	1-7/8	4-1/8	090556RM
7/8	7/8	1-7/8	4-1/8	090546RM
29/32	3/4	1-7/8	4-1/8	090547RM
15/16	3/4	1-7/8	4-1/8	090559RM
31/32	3/4	1-7/8	4-1/8	090548RM
1	5/8	1-7/8	4	090557RM
1	3/4	1-7/8	4-1/8	090558RM
1	1	2	4-1/2	090549RM

TOLERANCE OF MILL DIA.

.0010— .0000	NN .0015— .0000
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**The shank of End Mills is the same diameter as the cutting portion.

Premium HSS 6 Flute, Regular Length - High Speed Steel



Single End - 4 Flute

HSS 6 Flute Single End NCC

- Possible for high-speed cutting, suitable for high efficiency machining. Easy to regrind.

REGULAR LENGTH

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
5/8	5/8	1-5/8	3-3/4	090560RM
3/4	3/4	1-5/8	3-7/8	090561RM
13/16	3/4	1-7/8	4-1/8	090577RM
7/8	5/8	1-7/8	4	090576RM
7/8	7/8	1-7/8	4-1/8	090562RM
15/16	5/8	1-7/8	4	090563RM
1	5/8	1-7/8	4	090575RM
1	1	2	4-1/2	090564RM
1-1/8	3/4	2	4-1/4	090565RM
1-1/8	1	2	4-1/2	090573RM
1-1/4	3/4	2	4-1/4	090566RM
1-1/4	1	2	4-1/2	090571RM
1-1/4	1-1/4	2	4-1/2	090574RM
1-3/8	1	2	4-1/2	090567RM
1-1/2	1	2	4-1/2	090572RM
1-1/2	1-1/4	2	4-1/2	090568RM
1-3/4	1-1/4	2	4-1/2	090569RM
2	1-1/4	2	4-1/2	090570RM
2	2	2	5-3/4	090578RM

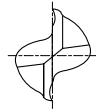
TOLERANCE OF MILL DIA.

.0010— .0000	NN .0015— .0000
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**The shank of End Mills is the same diameter as the cutting portion.

Premium HSS

2 Flute, 42° Helix, Regular / Medium Length for Aluminum High Speed Steel



Single End - 2 Flute - 42° Helix -Reg

- The two flute end mills for aluminum have High Helix flute design making them well suited for milling aluminum and other non-ferrous materials. Special rake angles and low micro inch finishes on the primary clearance angles and flute faces insure free cutting action, fine finishes and longer tool life for both non-ferrous materials as well as harder alloys. These tools are made from regular H.S.S.(M2), which is good for aluminum

REGULAR LENGTH

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/4	3/8	5/8	2-7/16	090640RM
5/16	3/8	3/4	2-1/2	090641RM
3/8	3/8	3/4	2-1/2	090642RM
7/16	3/8	1	2-11/16	090643RM
1/2	1/2	1-1/4	3-1/4	090644RM
5/8	5/8	1-5/8	3-3/4	090645RM
3/4	3/4	1-5/8	3-7/8	090646RM
7/8	3/4	1-7/8	4-1/8	090653RM
7/8	7/8	1-7/8	4-1/8	090647RM
1	3/4	1-7/8	4-1/8	090654RM
1	1	2	4-1/2	090648RM
1-1/4	1-1/4	2	4-1/2	090649RM
1-1/2	1-1/4	2	4-1/2	090650RM
1-3/4	1-1/4	2	4-1/2	090651RM
2	1-1/4	2	4-1/2	090652RM

TOLERANCE OF MILL DIA.	
.0010— .0000	NN .0015— .0000

T The shank of End Mills is the same diameter as the cutting portion.

Premium HSS 4 & 6 Flute, Long Length - High Speed Steel



Single End - 4 Flute - Long



Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/8	3/8	3/4	2-11/16	090581RM
1/4	3/8	1-1/4	3-1/16	090582RM
5/16	3/8	1-3/8	3-1/8	090583RM
3/8	3/8	1-1/2	3-1/4	090584RM
7/16	1/2	1-3/4	3-3/4	090585RM
1/2	1/2	2	4	090586RM
5/8	5/8	2-1/2	4-5/8	090587RM
3/4	3/4	3	5-1/4	090588RM
7/8	7/8	3-1/2	5-3/4	090589RM
1	1	4	6-1/2	090590RM

Single End - 6 Flute - Long



Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1-1/8	1	4	6-1/2	090591RM
1-1/4	1	4	6-1/2	090597RM
1-1/4	1-1/4	4	6-1/2	090592RM
1-1/2	1	4	6-1/2	090598RM
1-1/2	1-1/4	4	6-1/2	090593RM
1-3/4	1-1/4	4	6-1/2	090594RM
2	1-1/4	4	6-1/2	090596RM
2	2	4	7-3/4	090595RM

TOLERANCE OF MILL DIA.

.0010— .0000	NN .0015— .0000
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**The shank of End Mills is the same diameter as the cutting portion.

Premium HSS 2 Flute, Regular Length, Double - High Speed Steel



Double End - 2 Flute - Regular



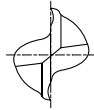
Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/8	3/8	3/8	3-1/16	090599RM
9/64	3/8	7/16	3-1/8	090600RM
5/32	3/8	7/16	3-1/8	090601RM
11/64	3/8	7/16	3-1/8	090602RM
3/16	3/8	7/16	3-1/8	090603RM
13/64	3/8	1/2	3-1/8	090604RM
7/32	3/8	1/2	3-1/8	090605RM
15/64	3/8	1/2	3-1/8	090606RM
1/4	3/8	1/2	3-1/8	090607RM
17/64	3/8	9/16	3-1/8	090608RM
9/32	3/8	9/16	3-1/8	090609RM
19/64	3/8	9/16	3-1/8	090610RM
5/16	3/8	9/16	3-1/8	090611RM
21/64	3/8	9/16	3-1/8	090612RM
11/32	3/8	9/16	3-1/8	090613RM
23/64	3/8	9/16	3-1/8	090614RM
3/8	3/8	9/16	3-1/8	090615RM
25/64	1/2	13/16	3-3/4	090616RM
13/32	1/2	13/16	3-3/4	090617RM
27/64	1/2	13/16	3-3/4	090618RM
7/16	1/2	13/16	3-3/4	090619RM
29/64	1/2	13/16	3-3/4	090620RM
15/32	1/2	13/16	3-3/4	090621RM
31/64	1/2	13/16	3-3/4	090622RM
1/2	1/2	13/16	3-3/4	090623RM
17/32	5/8	1-1/8	4-1/2	090624RM
9/16	5/8	1-1/8	4-1/2	090625RM

TOLERANCE OF MILL DIA.	
.0000— .0010	NN—.0000— .0020

**The shank of End Mills is the same diameter as the cutting portion.

Premium HSS

2 Flute, Regular Length, Double - High Speed Steel



Double End - 2 Flute - Regular



REGULAR LENGTH

HSS
2 Flute
Double End
CC

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
19/32	5/8	1-1/8	4-1/2	090626RM
5/8	5/8	1-1/8	4-1/2	090627RM
21/32	3/4	1-5/16	5	090628RM
11/16	3/4	1-5/16	5	090629RM
23/32	3/4	1-5/16	5	090630RM
3/4	3/4	1-5/16	5	090631RM
25/32	7/8	1-9/16	5-1/2	090632RM
13/16	7/8	1-9/16	5-1/2	090633RM
27/32	7/8	1-9/16	5-1/2	090634RM
7/8	7/8	1-9/16	5-1/2	090635RM
29/32	1	1-5/8	5-7/8	090636RM
15/16	1	1-5/8	5-7/8	090637RM
31/32	1	1-5/8	5-7/8	090638RM
1	1	1-5/8	5-7/8	090639RM

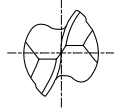
TOLERANCE OF MILL DIA.

.0000— .0010	NN—.0000— .0020
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**The shank of End Mills is the same diameter as the cutting portion.

Premium HSS

2 Flute, Regular Length, Ball Nose - High Speed Steel



Single End - 2 Flute -Ball Nose



- The two flute ball end mills are designed for milling of radius bottom slots, fillets and special contours. The end teeth are cut to center allowing these end mills to drill into material at the beginning of a slotting cut. The two flute design provides good chip removal ability in slotting.

REGULAR LENGTH

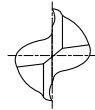
Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/8	3/8	3/8	2-5/16	090655RM
3/16	3/8	1/2	2-3/8	090656RM
1/4	3/8	5/8	2-7/16	090657RM
5/16	3/8	3/4	2-1/2	090658RM
3/8	3/8	3/4	2-1/2	090659RM
7/16	1/2	1	3	090676RM
1/2	1/2	1	3	090660RM
9/16	1/2	1-1/8	3-1/8	090661RM
5/8	1/2	1-1/8	3-1/8	090671RM
5/8	5/8	1-3/8	3-1/2	090662RM
3/4	1/2	1-5/16	3-5/16	090672RM
3/4	3/4	1-5/8	3-7/8	090663RM
7/8	3/4	2	4-1/4	090678RM
7/8	7/8	2	4-1/4	090664RM
1	3/4	2-1/4	4-1/2	090679RM
1	1	2-1/4	4-3/4	090665RM
1-1/8	3/4	1-5/8	3-7/8	090673RM
1-1/8	1	2-1/4	4-3/4	090666RM
1-1/4	3/4	1-5/8	3-7/8	090674RM
1-1/4	1-1/4	2-1/2	5	090667RM
1-3/8	3/4	1-5/8	4-1/8	090675RM
1-3/8	1-1/4	2-1/2	5	090668RM
1-1/2	3/4	1-5/8	4-1/8	090677RM
1-1/2	1-1/4	2-1/2	5	090669RM
2	1-1/4	2-1/2	5	090670RM

TOLERANCE OF MILL DIA.

.0010— .0000	NN .0015— .0000
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**The shank of End Mills is the same diameter as the cutting portion.

Premium HSS 2 Flute, Regular Length - HSS Cobalt



Single End - 2 Flute -Cobalt

Cobalt
2 Flute
Single End
CC

- These end mills are furnished as regular with right-hand cutting and right-hand helical flutes. All shanks are flatted for holder set screw. These are designed for slotting, drilling, pocketing and general-purpose operation.

REGULAR LENGTH

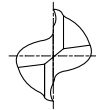
Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/8	3/8	3/8	2-5/16	090696RM
5/32	3/8	7/16	2-5/16	090697RM
3/16	3/8	7/16	2-5/16	090698RM
7/32	3/8	1/2	2-5/16	090699RM
1/4	3/8	1/2	2-5/16	090700RM
9/32	3/8	9/16	2-5/16	090701RM
5/16	3/8	9/16	2-5/16	090702RM
11/32	3/8	9/16	2-5/16	090703RM
3/8	3/8	9/16	2-5/16	090704RM
13/32	3/8	13/16	2-1/2	090705RM
7/16	3/8	13/16	2-1/2	090706RM
15/32	3/8	13/16	2-1/2	090707RM
1/2	3/8	13/16	2-1/2	090722RM
1/2	1/2	1	3	090708RM
9/16	1/2	1-1/8	3-1/8	090709RM
5/8	1/2	1-1/8	3-1/8	090723RM
5/8	5/8	1-5/16	3-7/16	090710RM
11/16	5/8	1-5/16	3-7/16	090711RM
3/4	1/2	1-5/16	3-5/16	090724RM
3/4	5/8	1-5/16	3-7/16	090725RM
3/4	3/4	1-5/16	3-7/16	090712RM
13/16	5/8	1-1/2	3-5/8	090713RM
7/8	3/4	1-1/2	3-3/4	090726RM
7/8	7/8	1-1/2	3-3/4	090714RM
15/16	7/8	1-1/2	3-3/4	090731RM
1	5/8	1-1/2	3-5/8	090727RM
1	3/4	1-1/2	3-3/4	090728RM
1	1	1-5/8	4-1/8	090715RM

TOLERANCE OF MILL DIA.

.0010— .0000	N N .0015— .0000
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**The shank of End Mills is the same diameter as the cutting portion.

Premium HSS 2 Flute, Regular Length - HSS Cobalt



Single End - 2 Flute -Cobalt



- These end mills are furnished as regular with right-hand cutting and right-hand helical flutes. All shanks are flatted for holder set screw. These are designed for slotting, drilling, pocketing and general-purpose operation.



Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1-1/8	1	1-5/8	4-1/8	090716RM
1-1/4	1-1/4	1-5/8	4-1/8	090717RM
1-3/8	1	1-5/8	4-1/8	090729RM
1-3/8	1-1/4	1-5/8	4-1/8	090718RM
1-1/2	1	1-5/8	4-1/8	090730RM
1-1/2	1-1/4	1-5/8	4-1/8	090719RM
1-3/4	1-1/4	1-5/8	4-1/8	090720RM
2	1-1/4	1-5/8	4-1/8	090721RM

TOLERANCE OF MILL DIA.	
.0010— .0000	NN .0015— .0000

**The shank of End Mills is the same diameter as the cutting portion.

Premium HSS 4 Flute, Regular Length - HSS Cobalt



Single End - 4 Flute - Cobalt



- Possible for high-speed cutting, suitable for high efficiency machining. Easy to regrind.

REGULAR LENGTH

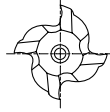
Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/8	3/8	3/8	2-5/16	090732RM
5/32	3/8	7/16	2-3/8	090734RM
11/64	3/8	1/2	2-3/8	090735RM
3/16	3/8	1/2	2-3/8	090736RM
13/64	3/8	9/16	2-7/16	090737RM
7/32	3/8	9/16	2-7/16	090738RM
15/64	3/8	5/8	2-7/16	090739RM
1/4	3/8	5/8	2-7/16	090740RM
17/64	3/8	11/16	2-1/2	090741RM
9/32	3/8	11/16	2-1/2	090742RM
19/64	3/8	3/4	2-1/2	090743RM
5/16	3/8	3/4	2-1/2	090744RM
21/64	3/8	3/4	2-1/2	090745RM
11/32	3/8	3/4	2-1/2	090746RM
23/64	3/8	3/4	2-1/2	090747RM
3/8	3/8	3/4	2-1/2	090748RM
25/64	3/8	1	2-11/16	090749RM
13/32	3/8	1	2-11/16	090750RM
27/64	3/8	1	2-11/16	090751RM
7/16	3/8	1	2-11/16	090770RM
29/64	1/2	1-1/4	3-1/4	090752RM
15/32	1/2	1-1/4	3-1/4	090753RM
31/64	1/2	1-1/4	3-1/4	090754RM
1/2	3/8	1	2-11/16	090771RM
1/2	1/2	1-1/4	3-1/4	090755RM

TOLERANCE OF MILL DIA.

.0010— .0000	N N .0015— .0000
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**The shank of End Mills is the same diameter as the cutting portion.

Premium HSS 4 Flute, Regular Length - HSS Cobalt



Single End - 4 Flute - Cobalt



- Possible for high-speed cutting, suitable for high efficiency machining. Easy to regrind.



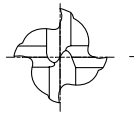
Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
17/32	1/2	1-3/8	3-3/8	090756RM
9/16	1/2	1-3/8	3-3/8	090757RM
19/32	1/2	1-3/8	3-3/8	090758RM
5/8	1/2	1-3/8	3-3/8	090772RM
5/8	5/8	1-5/8	3-3/4	090759RM
21/32	1/2	1-5/8	3-5/8	090760RM
11/16	5/8	1-5/8	3-3/4	090761RM
23/32	1/2	1-5/8	3-5/8	090773RM
3/4	1/2	1-5/8	3-5/8	090774RM
3/4	5/8	1-5/8	3-3/4	090775RM
3/4	3/4	1-5/8	3-7/8	090762RM
25/32	5/8	1-7/8	4	090763RM
13/16	3/4	1-7/8	4-1/8	090764RM
27/32	5/8	1-7/8	4	090765RM
7/8	3/4	1-7/8	4-1/8	090777RM
7/8	7/8	1-7/8	4-1/8	090766RM
29/32	3/4	1-7/8	4-1/8	090767RM
15/16	3/4	1-7/8	4-1/8	090778RM
31/32	3/4	1-7/8	4-1/8	090768RM
1	5/8	1-7/8	4	090776RM
1	3/4	1-7/8	4-1/8	090779RM
1	1	2	4-1/2	090769RM

TOLERANCE OF MILL DIA.	
.0010— .0000	N N .0015— .0000

**The shank of End Mills is the same diameter as the cutting portion.

Premium HSS

4 Flute, Regular Length, Center Cutting - HSS Cobalt



Single End - 4 Flute -Cobalt

Cobalt
4 Flute
Single End
CC

- Center cutting allows these end mills to drill into the part for the beginning of a slot. These center cutting end mills are recommended for pocketing, tracer milling, cam milling, die sinking and slotting.



REGULAR LENGTH

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/8	3/8	3/8	2-5/16	090820RM
5/32	3/8	7/16	2-3/8	090821RM
3/16	3/8	1/2	2-3/8	090822RM
7/32	3/8	9/16	2-7/16	090823RM
1/4	3/8	5/8	2-7/16	090824RM
9/32	3/8	11/16	2-1/2	090825RM
5/16	3/8	3/4	2-1/2	090826RM
11/32	3/8	3/4	2-1/2	090827RM
3/8	3/8	3/4	2-1/2	090828RM
13/32	3/8	1	2-11/16	090829RM
7/16	3/8	1	2-11/16	090840RM
15/32	3/8	1	2-11/16	090839RM
1/2	3/8	1	2-11/16	090843RM
1/2	1/2	1-1/4	3-1/4	090830RM

TOLERANCE OF MILL DIA.	
.0010— .0000	N N .0015— .0000

**The shank of End Mills is the same diameter as the cutting portion.

Premium HSS 4 Flute, Regular Length, Center Cutting - HSS Cobalt



Single End - 4 Flute - Cobalt



- Center cutting allows these end mills to drill into the part for the beginning of a slot. These center cutting end mills are recommended for pocketing, tracer milling, cam milling, die sinking and slotting.

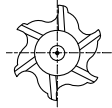


Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
5/8	1/2	1-3/8	3-3/8	090845RM
5/8	5/8	1-5/8	3-3/4	090831RM
11/16	5/8	1-5/8	3-3/4	090832RM
3/4	1/2	1-5/8	3-5/8	090844RM
3/4	5/8	1-5/8	3-3/4	090846RM
3/4	3/4	1-5/8	3-7/8	090833RM
7/8	3/4	1-7/8	4-1/8	090842RM
7/8	7/8	1-7/8	4-1/8	090834RM
1	3/4	1-7/8	4-1/8	090841RM
1	1	2	4-1/2	090835RM
1-1/8	1	2	4-1/2	090836RM
1-1/4	1-1/4	2	4-1/2	090837RM
1-1/2	1-1/4	2	4-1/2	090838RM

TOLERANCE OF MILL DIA.	
.0010— .0000	NN .0015— .0000

**The shank of End Mills is the same diameter as the cutting portion.

Premium HSS 6 & 8 Flute, Regular Length - HSS Cobalt



Single End - 6/8 Flute - Cobalt



- Possible for high-speed cutting, suitable for high efficiency machining. Easy to regrind.

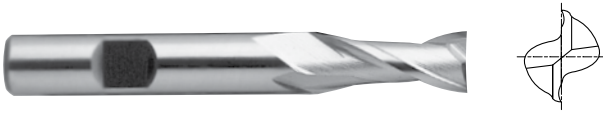


Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flute	EDP No.
5/8	5/8	1-5/8	3-3/4	6	090780RM
3/4	3/4	1-5/8	3-7/8	6	090781RM
13/16	3/4	1-7/8	4-1/8	6	090797RM
7/8	5/8	1-7/8	4	6	090796RM
7/8	7/8	1-7/8	4-1/8	6	090782RM
15/16	5/8	1-7/8	4	6	090783RM
1	5/8	1-7/8	4	6	090794RM
1	1	2	4-1/2	6	090784RM
1-1/8	3/4	2	4-1/4	6	090790RM
1-1/8	1	2	4-1/2	6	090795RM
1-1/4	3/4	2	4-1/4	6	090791RM
1-1/4	1	2	4-1/2	6	090792RM
1-1/4	1-1/4	2	4-1/2	6	090785RM
1-3/8	1	2	4-1/2	6	090786RM
1-1/2	1	2	4-1/2	6	090793RM
1-1/2	1-1/4	2	4-1/2	6	090787RM
1-3/4	1-1/4	2	4-1/2	6	090788RM
2	1-1/4	2	4-1/2	6	090789RM
2	2	2	5-3/4	6	090798RM
2	3/4	2	4-1/2	8	090801RM

TOLERANCE OF MILL DIA.	
.0010— .0000	NN .0015— .0000

**The shank of End Mills is the same diameter as the cutting portion.

Premium HSS 2 Flute, Long Length - HSS Cobalt



Single End - 2 Flute - Long - Cobalt

 **LONG LENGTH**

Cobalt

2
Flute

Single
End

CC

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/4	3/8	1-1/4	3-1/8	090932RM
5/16	3/8	1-3/8	3-1/8	090933RM
3/8	3/8	1-1/2	3-1/4	090934RM
1/2	1/2	2	4	090935RM
5/8	5/8	2	4-1/8	090936RM
3/4	3/4	2-1/4	4-1/2	090937RM
1	1	3	5-1/2	090938RM
1-1/8	1	3	5-1/2	090939RM
1-1/4	1	3	5-1/2	090945RM
1-1/4	1-1/4	3	5-1/2	090940RM
1-1/2	1-1/4	3	5-1/2	090941RM
1-3/4	1-1/4	3	5-1/2	090942RM
2	1-1/4	3	5-1/2	090944RM
2	2	3	6-3/4	090943RM

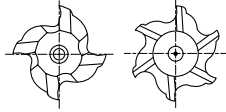
TOLERANCE OF MILL DIA.

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NN .0015—
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**The shank of End Mills is the same diameter as the cutting portion.

Premium HSS 4 & 6 Flute, Long Length - HSS Cobalt



Single End - 4 Flute - Cobalt

4 FLUTE, LONG LENGTH

Cobalt

4
Flute

Single
End

CC

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/8	3/8	3/4	2-11/16	090802RM
1/4	3/8	1-1/4	3-1/16	090803RM
5/16	3/8	1-3/8	3-1/8	090804RM
3/8	3/8	1-1/2	3-1/4	090805RM
7/16	1/2	1-3/4	3-3/4	090806RM
1/2	1/2	2	4	090807RM
5/8	5/8	2-1/2	4-5/8	090808RM
3/4	3/4	3	5-1/4	090809RM
7/8	7/8	3-1/2	5-3/4	090810RM
1	1	4	6-1/2	090811RM

Single End - 6 Flute - Cobalt

6 FLUTE, LONG LENGTH

Cobalt

4
Flute

Single
End

CC

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1-1/8	1	4	6-1/2	090812RM
1-1/4	1	4	6-1/2	090818RM
1-1/4	1-1/4	4	6-1/2	090813RM
1-1/2	1	4	6-1/2	090819RM
1-1/2	1-1/4	4	6-1/2	090814RM
1-3/4	1-1/4	4	6-1/2	090815RM
2	1-1/4	4	6-1/2	090817RM
2	2	4	7-3/4	090816RM

TOLERANCE OF MILL DIA.

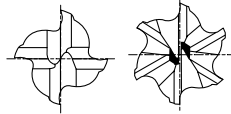
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**The shank of End Mills is the same diameter as the cutting portion.

Premium HSS

4 & 6 Flute, Long Length, Center Cutting - HSS Cobalt



Single End - 4 Flute - Cobalt

 **4 FLUTE, LONG LENGTH**

Cobalt
4 Flute
Single End
CC

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/4	3/8	1-1/4	3-1/16	090848RM
5/16	3/8	1-3/8	3-1/8	090849RM
3/8	3/8	1-1/2	3-1/4	090850RM
1/2	1/2	2	4	090851RM
5/8	5/8	2-1/2	4-5/8	090852RM
3/4	3/4	3	5-1/4	090853RM
7/8	7/8	3-1/2	5-3/4	090854RM
1	1	4	6-1/2	090855RM
1-1/4	1-1/4	4	6-1/2	090856RM
1-1/2	1-1/4	4	6-1/2	090857RM

Single End - 4 Flute - Cobalt

 **6 FLUTE, LONG LENGTH**

Cobalt
6 Flute
Single End
CC

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/2	1/2	2	4	090971RM
5/8	5/8	2-1/2	4-5/8	090972RM
3/4	3/4	3	5-1/4	090973RM
7/8	7/8	3-1/2	5-3/4	090974RM
1	1	4	6-1/2	090975RM
1-1/4	1-1/4	4	6-1/2	090976RM
1-1/2	1-1/4	4	6-1/2	090977RM
2	1-1/4	4	6-1/2	090979RM
2	2	4	7-3/4	090978RM
2	2	6	9-3/4	090980RM

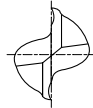
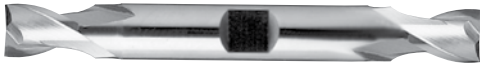
TOLERANCE OF MILL DIA.

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TTThe shank of End Mills is the same diameter as the cutting portion.

Premium HSS

2 Flute, Regular Length, Double - HSS Cobalt



Double End - 2 Flute -Cobalt



REGULAR LENGTH

Cobalt
2 Flute
Double End
CC

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/8	3/8	3/8	3-1/16	090858RM
9/64	3/8	7/16	3-1/8	090859RM
5/32	3/8	7/16	3-1/8	090860RM
11/64	3/8	7/16	3-1/8	090861RM
3/16	3/8	7/16	3-1/8	090862RM
13/64	3/8	1/2	3-1/8	090863RM
7/32	3/8	1/2	3-1/8	090864RM
15/64	3/8	1/2	3-1/8	090865RM
1/4	3/8	1/2	3-1/8	090866RM
17/64	3/8	9/16	3-1/8	090867RM
9/32	3/8	9/16	3-1/8	090868RM
19/64	3/8	9/16	3-1/8	090869RM
5/16	3/8	9/16	3-1/8	090870RM
21/64	3/8	9/16	3-1/8	090871RM
11/32	3/8	9/16	3-1/8	090872RM
23/64	3/8	9/16	3-1/8	090873RM
3/8	3/8	9/16	3-1/8	090874RM
25/64	1/2	13/16	3-3/4	090875RM
13/32	1/2	13/16	3-3/4	090876RM
27/64	1/2	13/16	3-3/4	090877RM
7/16	1/2	13/16	3-3/4	090878RM
29/64	1/2	13/16	3-3/4	090879RM
15/32	1/2	13/16	3-3/4	090880RM
31/64	1/2	13/16	3-3/4	090881RM
1/2	1/2	13/16	3-3/4	090882RM
17/32	5/8	1-1/8	4-1/2	090883RM
9/16	5/8	1-1/8	4-1/2	090884RM

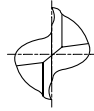
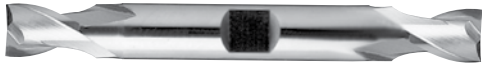
TOLERANCE OF MILL DIA.

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**The shank of End Mills is the same diameter as the cutting portion.

Premium HSS

2 Flute, Regular Length, Double - HSS Cobalt



Double End - 2 Flute - Cobalt



REGULAR LENGTH

Cobalt

2 Flute

Double End

CC

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
19/32	5/8	1-1/8	4-1/2	090885RM
5/8	5/8	1-1/8	4-1/2	090886RM
21/32	3/4	1-5/16	5	090887RM
11/16	3/4	1-5/16	5	090888RM
23/32	3/4	1-5/16	5	090889RM
3/4	3/4	1-5/16	5	090890RM
25/32	7/8	1-9/16	5-1/2	090891RM
13/16	7/8	1-9/16	5-1/2	090892RM
27/32	7/8	1-9/16	5-1/2	090893RM
7/8	7/8	1-9/16	5-1/2	090894RM
29/32	1	1-5/8	5-7/8	090895RM
15/16	1	1-5/8	5-7/8	090896RM
31/32	1	1-5/8	5-7/8	090897RM
1	1	1-5/8	5-7/8	090898RM

TOLERANCE OF MILL DIA.

.0000—
.0010

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.0020

**The shank of End Mills is the same diameter as the cutting portion.

Premium HSS

4 Flute, Regular Length, Double - HSS Cobalt



Double End - 4 Flute - Cobalt

 **REGULAR LENGTH**

Cobalt **4 Flute** **Double End** **CC**

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/8	3/8	3/8	3-1/16	090899RM
9/64	3/8	7/16	3-1/8	090900RM
5/32	3/8	7/16	3-1/8	090901RM
11/64	3/8	1/2	3-1/4	090902RM
3/16	3/8	1/2	3-1/4	090903RM
13/64	3/8	9/16	3-1/4	090904RM
7/32	3/8	9/16	3-1/4	090905RM
15/64	3/8	5/8	3-3/8	090906RM
1/4	3/8	5/8	3-3/8	090907RM
17/64	3/8	11/16	3-3/8	090908RM
9/32	3/8	11/16	3-3/8	090909RM
19/64	3/8	3/4	3-1/2	090910RM
5/16	3/8	3/4	3-1/2	090911RM
21/64	3/8	3/4	3-1/2	090912RM
11/32	3/8	3/4	3-1/2	090913RM
23/64	3/8	3/4	3-1/2	090914RM
3/8	3/8	3/4	3-1/2	090915RM
25/64	1/2	1	4-1/8	090916RM
13/32	1/2	1	4-1/8	090917RM
27/64	1/2	1	4-1/8	090918RM
7/16	1/2	1	4-1/8	090919RM

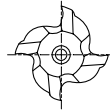
TOLERANCE OF MILL DIA.

.0000— .0010	NN—.0000— .0020
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**The shank of End Mills is the same diameter as the cutting portion.

Premium HSS

4 Flute, Regular Length, Double - HSS Cobalt



Double End - 4 Flute - Cobalt



REGULAR LENGTH

Cobalt

4
Flute

Double
End

CC

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
29/64	1/2	1	4-1/8	090920RM
15/32	1/2	1	4-1/8	090921RM
31/64	1/2	1	4-1/8	090922RM
1/2	1/2	1	4-1/8	090923RM
9/16	5/8	1-3/8	5	090924RM
5/8	5/8	1-3/8	5	090925RM
11/16	3/4	1-5/8	5-5/8	090926RM
3/4	3/4	1-5/8	5-5/8	090927RM
13/16	7/8	1-7/8	6-1/8	090928RM
7/8	7/8	1-7/8	6-1/8	090929RM
15/16	1	1-7/8	6-3/8	090930RM
1	1	1-7/8	6-3/8	090931RM

TOLERANCE OF MILL DIA.

.0000—
.0010

NN—.0000—
.0020

**The shank of End Mills is the same diameter as the cutting portion.

Premium HSS

2 Flute, Regular Length, Ball Nose - HSS Cobalt



Single End - 2 Flute - Cobalt



Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/8	3/8	3/8	2-5/16	090946RM
3/16	3/8	1/2	2-3/8	090947RM
1/4	3/8	5/8	2-7/16	090948RM
5/16	3/8	3/4	2-1/2	090949RM
3/8	3/8	3/4	2-1/2	090950RM
7/16	1/2	1	3	090951RM
1/2	1/2	1	3	090952RM
9/16	1/2	1-1/8	3-1/8	090953RM
5/8	1/2	1-1/8	3-1/8	090963RM
5/8	5/8	1-3/8	3-1/2	090954RM
3/4	1/2	1-5/16	3-5/16	090964RM
3/4	3/4	1-5/8	3-7/8	090955RM
7/8	3/4	2	4-1/4	090969RM
7/8	7/8	2	4-1/4	090956RM
1	3/4	2-1/4	4-1/2	090970RM
1	1	2-1/4	4-3/4	090957RM
1-1/8	3/4	1-5/8	3-7/8	090965RM
1-1/8	1	2-1/4	4-3/4	090958RM
1-1/4	3/4	1-5/8	3-7/8	090966RM
1-1/4	1-1/4	2-1/2	5	090959RM
1-3/8	3/4	1-5/8	4-1/8	090967RM
1-3/8	1-1/4	2-1/2	5	090960RM
1-1/2	3/4	1-5/8	4-1/8	090968RM
1-1/2	1-1/4	2-1/2	5	090961RM
2	1-1/4	2-1/2	5	090962RM

TOLERANCE OF MILL DIA.

.0010— .0000	NN .0015— .0000
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**The shank of End Mills is the same diameter as the cutting portion.

Premium HSS 4 Flute, Regular Length, Ball Nose - HSS Cobalt



Single End - 2 Flute - Cobalt



- The four flute ball end mills are designed for milling of radius bottom slots fillets and special contours. The end teeth are cut to center allowing these end mills to drill into material at the beginning of a slotting cut.

REGULAR LENGTH

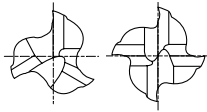
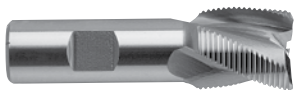
Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	EDP No.
1/8	3/8	3/8	2-5/16	090680RM
3/16	3/8	1/2	2-3/8	090681RM
1/4	3/8	5/8	2-7/16	090682RM
5/16	3/8	3/4	2-1/2	090683RM
3/8	3/8	3/4	2-1/2	090684RM
7/16	3/8	1	2-11/16	090685RM
1/2	1/2	1-1/4	3-1/4	090686RM
5/8	5/8	1-5/8	3-3/4	090687RM
11/16	5/8	1-5/8	3-3/4	090695RM
3/4	3/4	1-5/8	3-7/8	090688RM
7/8	7/8	1-7/8	4-1/8	090689RM
1	1	2	4-1/2	090690RM
1-1/8	1	2	4-1/2	090691RM
1-1/4	1-1/4	2	4-1/2	090692RM
1-1/2	1-1/4	2	4-1/2	090693RM
2	1-1/4	2	4-1/2	090694RM

TOLERANCE OF MILL DIA.	
.0010— .0000	N N .0015— .0000

** The shank of End Mills is the same diameter as the cutting portion.

Premium HSS

3 or More-Flute, Stub / Regular Length, Roughing Fine, Center Cutting HSS Cobalt

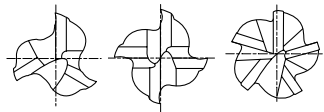
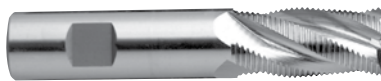


Single End - 3+ Flute - Cobalt

- This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths. In many cases, the milled surfaces are of acceptable quality.

STUB LENGTH

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flute	EDP No.
1/4	3/8	1/4	2-1/16	4	090111RM
3/8	3/8	3/8	2-5/32	4	090112RM
7/16	1/2	1/2	2-1/2	4	090113RM
1/2	1/2	1/2	2-1/2	4	090114RM
5/8	5/8	5/8	2-3/4	4	090115RM
3/4	3/4	3/4	2-7/8	4	090116RM
7/8	3/4	7/8	3-1/8	5	090117RM
1	1	1	3-1/2	5	090118RM



Single End - 3+ Flute - Cobalt

REGULAR LENGTH



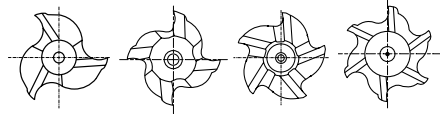
Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flute	EDP No.
1/4	3/8	5/8	2-7/16	3	090119RM
5/16	3/8	3/4	2-1/2	3	090120RM
3/8	3/8	3/4	2-1/2	4	090121RM
7/16	3/8	1	2-11/16	4	090122RM
1/2	1/2	1-1/4	3-1/4	4	090123RM
9/16	1/2	1-3/8	3-3/8	4	090124RM
5/8	5/8	1-5/8	3-3/4	4	090125RM
3/4	3/4	1-5/8	3-7/8	4	090126RM
7/8	3/4	1-7/8	4-1/8	5	090127RM
7/8	7/8	1-7/8	4-1/8	5	090128RM
1	3/4	2	4-1/4	5	090129RM
1	1	2	4-1/2	5	090130RM

TOLERANCE OF MILL DIA.

Up to 1	Over 1
.0030— .0000	.0060— .0000

Premium HSS

3 or More-Flute, Regular Length, Roughing Fine - HSS Cobalt



Single End - 2 Flute - Cobalt

- This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths. In many cases, the milled surfaces are of acceptable quality.

REGULAR LENGTH

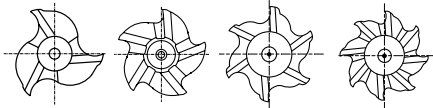
Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flute	EDP No.
1/4	3/8	5/8	2-7/16	3	090131RM
5/16	3/8	3/4	2-1/2	3	090132RM
3/8	3/8	3/4	2-1/2	4	090133RM
7/16	3/8	1	2-11/16	4	090134RM
1/2	1/2	1-1/4	3-1/4	4	090135RM
9/16	1/2	1-3/8	3-3/8	4	090136RM
5/8	5/8	1-5/8	3-3/4	4	090137RM
3/4	5/8	1-5/8	3-3/4	4	090138RM
3/4	3/4	1-5/8	3-7/8	4	090139RM
7/8	3/4	1-7/8	4-1/8	5	090140RM
7/8	7/8	1-7/8	4-1/8	5	090141RM
1	3/4	2	4-1/4	5	090142RM
1	1	2	4-1/2	5	090143RM
1-1/8	3/4	2	4-1/4	6	090144RM
1-1/8	1	2	4-1/2	6	090145RM
1-1/4	3/4	2	4-1/4	6	090146RM
1-1/4	1-1/4	2	4-1/2	6	090147RM
1-3/8	3/4	2	4-1/4	6	090148RM
1-1/2	3/4	2	4-1/4	6	090149RM
1-1/2	1-1/4	2	4-1/2	6	090150RM
1-3/4	1-1/4	2	4-1/2	6	090151RM
2	3/4	2	4-1/4	6	090152RM
2	1-1/4	2	4-1/2	6	090153RM

TOLERANCE OF MILL DIA.

Up to 1	Over 1
.0030— .0000	.0060— .0000

Premium HSS

3 or More-Flute, Regular Length, Roughing Coarse - HSS Cobalt



Single End - 3+ Flute - Cobalt



- This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is recommended for cutting steel grades and many non-ferrous materials.
- The end tooth of this tool has a center hole design for many accurate resharpenings between centers.



Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flute	EDP No.
1/4	3/8	5/8	2-7/16	3	090981RM
5/16	3/8	3/4	2-1/2	3	090982RM
3/8	3/8	3/4	2-1/2	4	090983RM
7/16	3/8	1	2-11/16	4	091010RM
1/2	1/2	1-1/4	3-1/4	4	090984RM
9/16	1/2	1-3/8	3-3/8	4	090985RM
5/8	5/8	1-5/8	3-3/4	4	090986RM
11/16	5/8	1-5/8	3-3/4	4	090987RM
3/4	5/8	1-5/8	3-3/4	4	090988RM
3/4	3/4	1-5/8	3-3/4	4	090999RM
13/16	3/4	1-7/8	4-1/8	4	090989RM
7/8	3/4	1-7/8	4-1/8	5	090990RM
7/8	7/8	1-7/8	4-1/8	5	091000RM
15/16	7/8	1-7/8	4-1/8	5	090991RM
1	3/4	2	4-1/4	5	090992RM
1	1	2	4-1/2	5	091001RM
1-1/8	3/4	2	4-1/4	6	090993RM
1-1/8	1	2	4-1/2	6	091002RM
1-1/4	3/4	2	4-1/4	6	090994RM
1-1/4	1-1/4	2	4-1/2	6	091003RM
1-3/8	3/4	2	4-1/4	6	090995RM
1-1/2	3/4	2	4-1/4	6	090996RM
1-1/2	1-1/4	2	4-1/2	6	091004RM
1-3/4	3/4	2	4-1/4	6	090997RM
1-3/4	1-1/4	2	4-1/2	6	091005RM
2	3/4	2	4-1/4	6	090998RM
2	1-1/4	2	4-1/2	6	091006RM
2	2	2	5-3/4	8	091007RM
2	2	3	6-3/4	8	091008RM
2	2	4	7-3/4	8	091009RM

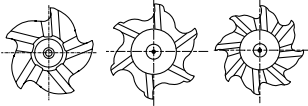
TOLERANCE OF MILL DIA.

Up to 1	Over 1
.0030— .0000	.0060— .0000

** The shank of End Mills is the same diameter as the cutting portion.

Premium HSS

4 or More-Flute, Medium & Long Length, Roughing Coarse - HSS Cobalt



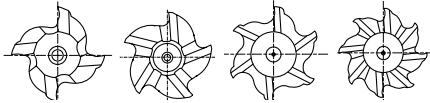
Single End - 4+ Flute - Cobalt



Cobalt
4+ Flute
Single End
NCC

- This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is recommended for cutting steel grades and many non-ferrous materials. The end tooth of this tool has a center hole design for many accurate resharpenings between centers.

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flute	EDP No.
1	1	3	5-1/2	5	091011RM
1-1/4	1-1/4	3	5-1/2	6	091012RM
1-1/2	1-1/4	3	5-1/2	6	091013RM
2	2	6	9-3/4	8	091014RM



Single End - 2 Flute - Cobalt



Cobalt
4+ Flute
Single End
NCC

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flute	EDP No.
1/2	1/2	2	4	4	091015RM
5/8	5/8	2-1/2	4-5/8	4	091016RM
3/4	5/8	3	5-1/8	4	091017RM
3/4	3/4	3	5-1/4	4	091024RM
7/8	3/4	3-1/2	5-3/4	5	091018RM
1	3/4	4	6-1/4	5	091028RM
1	1	4	6-1/2	5	091019RM
1-1/4	3/4	4	6-1/4	6	091020RM
1-1/4	1-1/4	4	6-1/2	6	091025RM
1-1/2	3/4	4	6-1/4	6	091021RM
1-1/2	1-1/4	4	6-1/2	6	091026RM
1-3/4	1-1/4	4	6-1/2	6	091022RM
2	1-1/4	4	6-1/2	6	091023RM
2	2	8	11-3/4	8	091027RM

TOLERANCE OF MILL DIA.	
Up to 1	Over 1
.0030— .0000	.0060— .0000

Premium HSS

4 or More-Flute, Regular Length, Roughing Coarse, Center Cutting HSS Cobalt



Single End - 4+ Flute - Cobalt



- This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is recommended for cutting steel grades and many non-ferrous materials.

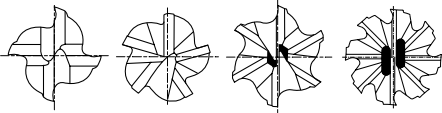
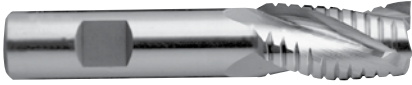
MEDIUM LENGTH

Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flute	EDP No.
1/2	1/2	1-1/4	3-1/4	4	091029RM
5/8	5/8	1-5/8	3-3/4	4	091030RM
3/4	3/4	1-5/8	3-7/8	4	091031RM
1	1	2	4-1/2	5	091032RM
1-1/4	1-1/4	2	4-1/2	6	091033RM
1-1/2	1-1/4	2	4-1/2	6	091034RM

TOLERANCE OF MILL DIA.	
Up to 1	Over 1
.0030— .0000	.0060— .0000

Premium HSS

4 or More-Flute, Regular Length, Roughing & Finishing - HSS Cobalt



Single End - 4+ Flute - Cobalt



- This general purpose rougher is designed for high production metal removal in a wide range of work piece material. It is suitable for a very broad spectrum of materials having up to high tensile strengths. In many cases, the milled surfaces are of acceptable quality.



Dia. of Mill	Dia. of Shank	Length of Cut	Overall Length	No. of Flute	EDP No.
1/4	3/8	5/8	2-7/16	4	091035RM
5/16	3/8	3/4	2-1/2	4	091036RM
3/8	3/8	3/4	2-1/2	4	091037RM
7/16	3/8	1	2-11/16	4	091038RM
1/2	1/2	1-1/4	3-1/4	4	091039RM
9/16	1/2	1-3/8	3-3/8	4	091040RM
5/8	5/8	1-5/8	3-3/4	4	091041RM
11/16	5/8	1-5/8	3-3/4	4	091042RM
3/4	5/8	1-5/8	3-3/4	4	091054RM
3/4	3/4	1-5/8	3-3/4	4	091043RM
7/8	3/4	1-7/8	4-1/8	5	091055RM
7/8	7/8	1-7/8	4-1/8	5	091044RM
1	3/4	2	4-1/4	5	091056RM
1	1	2	4-1/2	5	091045RM
1-1/8	3/4	2	4-1/4	6	091046RM
1-1/4	3/4	2	4-1/4	6	091057RM
1-1/4	1-1/4	2	4-1/2	6	091047RM
1-1/2	3/4	2	4-1/4	6	091058RM
1-1/2	1-1/4	2	4-1/2	6	091048RM
1-3/4	3/4	2	4-1/4	6	091059RM
1-3/4	1-1/4	2	4-1/2	6	091049RM
2	3/4	2	4-1/4	6	091050RM
2	1-1/4	2	4-1/2	6	091060RM
2	2	2	5-3/4	8	091051RM
2	2	3	6-3/4	8	091052RM
2	2	4	7-3/4	8	091053RM

TOLERANCE OF MILL DIA.

.0025 .0005

Aircraft Counterbores Short Series, Interchangeable Pilots, 4 Flutes



SQUARE CORNER

HSS

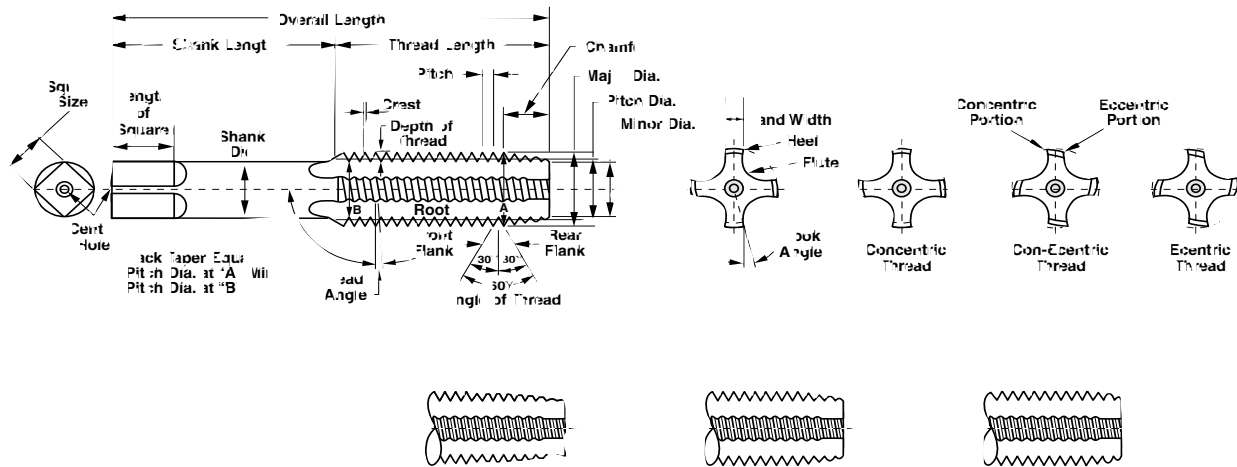
Size	Shank Length	Hole Size	Overall Length	EDP No.
1/4	1-1/8	3/32	2-3/8	009000CB
9/32	7/8	3/32	2-3/8	009001CB
5/16	7/8	3/32	2-3/8	009002CB
11/32	7/8	3/32	2-3/8	009003CB
3/8	7/8	3/32	2-3/8	009004CB
13/32	7/8	1/8	2-13/16	009005CB
7/16	7/8	1/8	2-13/16	009006CB
15/32	7/8	1/8	2-13/16	009007CB
1/2	7/8	1/8	2-13/16	009008CB
17/32	7/8	1/8	2-13/16	009009CB
9/16	7/8	1/8	2-13/16	009010CB
19/32	7/8	1/8	2-13/16	009011CB
5/8	7/8	1/8	2-13/16	009012CB
21/32	7/8	3/16	3-1/8	009013CB
11/16	7/8	3/16	3-1/8	009014CB
23/32	7/8	3/16	3-1/8	009015CB
3/4	7/8	3/16	3-1/8	009016CB
25/32	3/4	1/4	3-1/8	009017CB
13/16	7/8	1/4	3-1/8	009018CB
27/32	7/8	1/4	3-1/8	009019CB
7/8	7/8	1/4	3-1/8	009020CB
29/32	7/8	1/4	3-1/8	009021CB
15/16	7/8	1/4	3-1/8	009022CB
31/32	7/8	1/4	3-1/8	009023CB
1	7/8	1/4	3-1/8	009024CB
5/16	5/8	1/4	2-3/8	009025CB
3/8	5/8	1/4	2-3/8	009026CB
9/16	5/8	1/4	2-3/16	009027CB
19/32	5/8	1/4	2-13/16	009028CB
13/16	7/8	1/4	3-1/8	009029CB
7/8	7/8	1/4	3-1/8	009030CB
1	7/8	1/4	3-1/8	009031CB

Items in RED will no longer be available as a stock item when supplies are depleted—Additional discounts are available.

ENGINEERING DATA

Tap Terminology	248
Rake Angle Versus Material Chart	249
Tap Dimensions Table 302A.	250
Extension Tap Dimensions Table 303A.	250
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Tap Terminology



Angle of Thread—The Angle included between the flanks of the thread measured in an axial plane.

Back Taper—A slight axial relief of the tap which makes the pitch diameter of the thread near the shank somewhat smaller than that of the chamfered end.

Basic—The theoretical or nominal standard size from which all variations are made.

Chamfer—The tapering of the threads at the front end of each land of a tap by cutting away and relieving the crest of the first few teeth to distribute the cutting action over several teeth. When the tapering amounts to 7 to 10 threads, the tap is called a "Taper" Tap; 3 to 5 threads, a "Plug" Tap; and 1 to 2 threads, a "Bottoming" Tap.

Chamfer Relief—The gradual decrease in land height from cutting edge to heel on the chamfered portion, to provide clearance for the cutting action as the tap advances.

Crest—The top surface joining the two flanks of a thread. The crest of an external thread is at its major diameter, while the crest of an internal thread is at its minor diameter.

Cutting Face—The leading side of the land in the direction of rotation for cutting on which the chip impinges.

Dryseal—A pipe threaded fuel connection for both external and internal application designed for use where the assembled product must withstand high fluid or gas pressures without the use of a sealing compound, or where a sealer is functionally objectionable.

Flutes—The longitudinal channels formed in a tap to create cutting edges on the thread profile and to provide chip spaces and cutting fluid passages.

Height of Thread—The distance between the crest and the base of a thread measured normal to the axis.

Helical Flute—A flute with uniform axial lead and constant helix in a helical path around the axis of a cylindrical tap.

Hook Face—A concave cutting face, usually specified either as Chordal Hook or Tangential Hook.

Chordal Hook Angle—The angle between the chord passing through the root and crest of a thread form at the cutting face, and a radial line through the crest at the cutting edge.

Tangential Hook Angle—The angle between a line tangent to a hook cutting face at the cutting edge and a radial line to the same point.

Interrupted Thread—A tap having an odd number of lands, with every other tooth

along the thread helix removed.

Lead—The distance a screw thread advances axially in one complete turn. On a single lead screw or tap, the lead and pitch are identical. On a double lead screw or tap, the lead is twice the pitch, etc.

Threads Per Inch—The number of threads in one inch of length.

Pitch—The distance from any point on a screw or tap thread to a corresponding point on the next thread, measured parallel to the axis. The pitch equals one divided by the number of threads per inch.

Pitch Diameter—On a straight thread, the diameter of an imaginary co-axial cylinder, the surface of which would pass through the thread profile at such points as to make equal the width of the threads and the width of the spaces cut by the surface of the cylinder.

On a Taper thread, the diameter at a given distance from a reference plane perpendicular to the axis of an imaginary co-axial cone, the surface of which would pass through the thread profile at such points as to make equal the width of the threads and the width of the spaces cut by the surface of the cone.

Rake—Any deviation of a straight cutting face of the tooth from a radial line. Positive Rake means that the crest of the cutting face is angularly advanced ahead of the balance of the face of the tooth. Negative Rake means that the same point is angularly behind the balance of the cutting face of the tooth. Zero Rake means that the cutting face is directly on the center line.

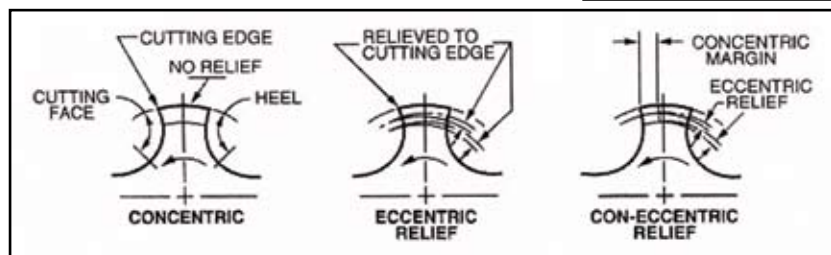
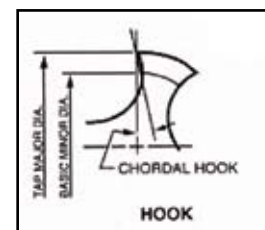
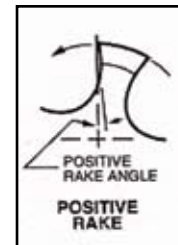
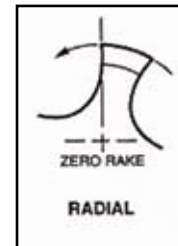
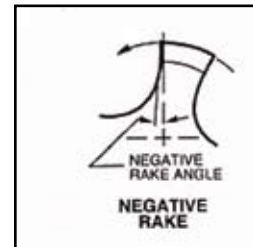
Root—The bottom surface joining the flanks of two adjacent threads. The root of an external thread is at its minor diameter, while the root of an internal thread is at its major diameter.

Spiral Point (Chip Driver)—A supplementary angular fluting cut in the cutting face of the land at the chamfer end. It is slightly longer than the chamfer on the tap and of the opposite hand to that of rotation.

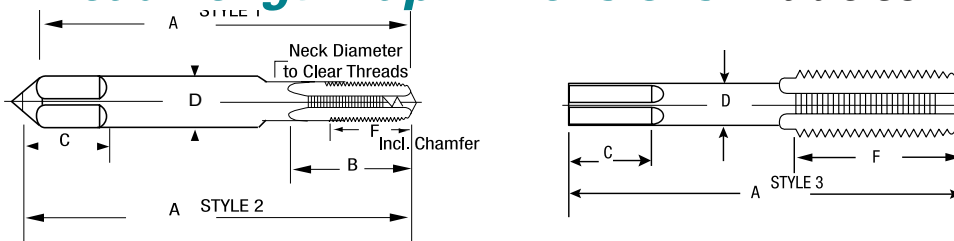
Thread Relief—The clearance produced by removal of metal from behind the cutting edge. When the thread angle is relieved from the heel to cutting edge, the tap is said to have "Eccentric" relief. If relieved from heel for only a portion of land width, the tap is said to have "Con-eccentric" relief.

Rake Angle Versus Material Chart

Material	Rake Angle
STEEL	
Steel <70g/mm ²	12-14°
Steel <70-10Kg/mm ²	8-10°
Deep Drawn Sheetmetal	15-20°
Stainless Resistant Steel	8-10°
CAST IRON	
Cast Steel	12-14°
SG Cast Iron (Long Shavings)	12-14°
SG Cast Iron (Short Shavings)	6-8°
Malleable Iron	8-10°
Gray Cast Iron	3-6°
LIGHT METAL	
Aluminum (Short Chips)	12-14°
Aluminum (Long Chips)	20-25°
Zinc	12-14°
COPPER & COPPER ALLOYS	
Copper	18-25°
Bronze - Soft	12-14°
Bronze - Hard	5-8°
Brass 58	3-6°
Brass 63	12-14°
Titanium	0-4°
PLASTIC	
Bakelite - Hard	3-6°
PVC, Polystyrene - Soft	20-25°



Short Thread Length Tap Dimensions Table 302A



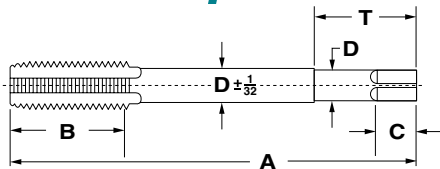
Nominal Diameter Range - Inches		Machine Screw Size Number	Nom. Fract. Dia. (Inches)	Nom. Metric Dia. (MM)	Style	Tap Dimensions					
Over	To (Incl.)					A Overall Length	B Length *	C Square Length	D Shank Dia.	E Square Size	F Thread Length**
.104	.117	4	-	-	1	1-7/8	9/16	3/16	.141	.110	5/16
.117	.130	5	1/8	M3, M3.15	1	1-15/16	5/8	3/16	.141	.110	5/16
.130	.145	6	-	M3.5	1	2	11/16	3/16	.141	.110	3/8
.145	.171	8	5/32	M4	1	2-1/8	3/4	1/4	.168	.131	3/8
.171	.197	10	3/16	M4.5, M5	1	2-3/8	7/8	1/4	.194	.152	1/2
.197	.223	12	7/32	-	1	2-3/8	15/16	9/32	.220	.165	1/2
.223	.260	14	1/4	M6, M6.3	2	2-1/2	1	5/16	.255	.191	5/8
.260	.323		5/16	M7, M8	2	2-23/32	1-1/8	3/8	.318	.238	11/16
.323	.395		3/8	M10	2	2-15/16	1-1/4	7/16	.381	.286	3/4
.395	.448		7/16	-	3	3-5/32	*	13/32	.323	.242	7/8
.448	.510		1/2	M12, M12.5	3	3-3/8	*	7/16	.367	.275	15/16
.510	.573		9/16	M14	3	3-19/32	*	1/2	.429	.322	1
.573	.635		5/8	M16	3	3-13/16	*	9/16	.480	.360	1-3/32
.635	.709		11/16	M18	3	4-1/32	*	5/8	.542	.406	1-3/32
.709	.760		3/4	-	3	4-1/4	*	11/16	.590	.442	1-7/32
.760	.823		13/16	M20	3	4-15/32	*	11/16	.652	.489	1-7/32
.823	.885		7/8	M22	3	4-11/16	*	3/4	.697	.523	1-11/32
.885	.948		15/16	M24	3	4-29/32	*	3/4	.760	.570	1-11/32
.948	1.010		1	M25	3	5-1/8	*	13/16	.800	.600	1-1/2

* "B" based on Table 302, column B and shall be no less than minimum Table 302 thread length.

** "F" based on the length of 12 pitches of the UNC series.

Notes: 1) "F" is minimum value and has no tolerance. 2) Unless otherwise specified, all tolerances are in accordance with Table 302.

Extension Tap Dimensions Table 303A

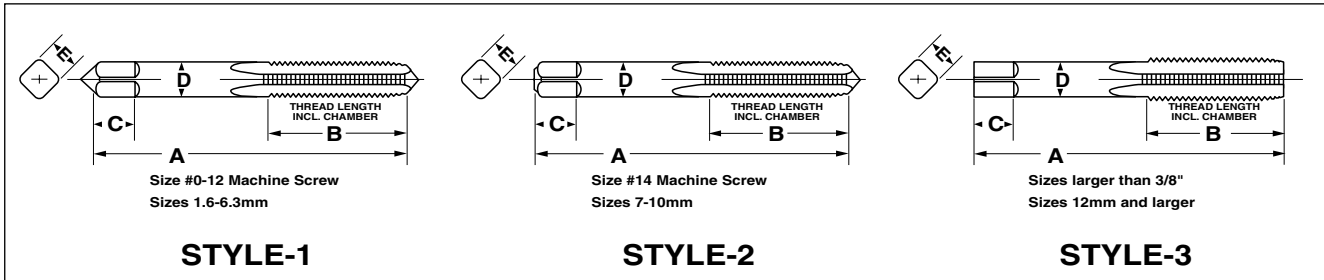


The "T" length of the shank diameter of extension taps is ground to close tolerances whereas the remaining portion of the shank has ordinary bar tolerances. In special applications where the shank is used with a bushing, the entire shank length may be ground to close tolerance upon request.

Size	B Thread Length	D Shank Dia.	C Square Length	Square Size	T Ground Shank Length	Size	B Thread Length	D Shank Dia.	C Square Length	Square Size	T Ground Shank Length
6	11/16	.141	3/16	.110	1-1/8	1/2	1-21/32	.367	7/16	.275	1-11/16
8	3/4	.168	1/4	.131	1-1/4	9/16	1-21/32	.429	1/2	.322	1-7/8
10	7/8	.194	1/4	.152	1-3/8	5/8	1-13/16	.480	9/16	.360	2
1/4	1"	.255	5/16	.191	1-1/2	3/4	2	.590	11/16	.442	2-1/4
1/4*	1"	.185	1/4	.138	1-1/2	7/8	2-7/32	.697	3/4	.523	2-1/2
5/16	1-1/8	.318	3/8	.238	1-9/16	1	2-1/2	.800	13/16	.600	2-5/8
5/16*	1-1/8	.240	9/32	.180	1-9/16	1-1/8	2-9/16	.896	7/8	.672	2-3/4
3/8	1-1/4	.381	7/16	.286	1-5/8	1-1/4	2-9/16	1.021	1	.766	2-7/8
3/8*	1-1/4	.275	3/8	.206	1-5/8	1-3/8	3	1.108	1-1/16	.831	3
7/16	1-7/16	.323	13/32	.242	1-11/16	1-1/2	3	1.233	1-1/8	.925	3

*Small Shank

Standard Tap Dimensions Table 302 - Up to 1" Diameter



Nominal DiameterMach. Range — InchesScrew		Nominal Fractional Size No.	Nominal Metric Diameter Inches	Style* Diameter Millimeters	Overall	Tap Dimensions — Inches				
Over	To (Incl.)					Thread Length A	Square Length B	Shank Length C	Diameter D	Size of Square E
.052	.065	0	1/16	M1.6	1	1-5/8	5/16	3/16	.141	.110
.065	.078	1	—	M1.8	1	1-11/16	3/8	3/16	.141	.110
.078	.091	2	—	M2, M2.2	1	1-3/4	7/16	3/16	.141	.110
.091	.104	3	3/32	M2.5	1	1-13/16	1/2	3/16	.141	.110
.104	.117	4	—	—	1	1-7/8	9/16	3/16	.141	.110
.117	.130	5	1/8	M3, M3.15	1	1-15/16	5/8	3/16	.141	.110
.130	.145	6	—	M3.5	1	2	11/16	3/16	.141	.110
.145	.171	8	5/32	M4	1	2-1/8	3/4	1/4	.168	.131
.171	.197	10	3/16	M4.5, M5	1	2-3/8	7/8	1/4	.194	.152
.197	.223	12	7/32	—	1	2-3/8	15/16	9/32	.220	.165
.223	.260	14	1/4	M6, M6.3	2	2-1/2	1	5/16	.255	.191
.260	.323	—	5/16	M7, M8	2	2-23/32	1-1/8	3/8	.318	.238
.323	.395	—	3/8	M10	2	2-15/16	1-1/4	7/16	.381	.286
.395	.448	—	7/16	—	3	3-5/32	1-7/16	13/32	.323	.242
.448	.510	—	1/2	M12, M12.5	3	3-3/8	1-21/32	7/16	.367	.275
.510	.573	—	9/16	M14	3	3-19/32	1-21/32	1/2	.429	.322
.573	.635	—	5/8	M16	3	3-13/16	1-13/16	9/16	.480	.360
.635	.709	—	11/16	M18	3	4-1/32	1-13/16	5/8	.542	.406
.709	.760	—	3/4	—	3	4-1/4	2	11/16	.590	.442
.760	.823	—	13/16	M20	3	4-15/32	2	11/16	.652	.489
.823	.885	—	7/8	M22	3	4-11/16	2-7/32	3/4	.697	.523
.885	.948	—	15/16	M24	3	4-29/32	2-7/32	3/4	.760	.570
.948	1.010	—	1	M25	3	5-1/8	2-1/2	13/16	.800	.600
1.010	1.073	—	1-1/16	M27	3	5-1/8	2-1/2	7/8	.896	.672

* Styles shown are for ground thread taps.

Notes

Special ground thread taps are made to limits shown in USCTI Table 331 for Unified Inch Screw Threads and USCTI Table 341 for Metric M-Profile Screw Threads.

Ground thread taps, sizes .395" and smaller, have external center on thread end

(may be removed on bottoming taps).

For eccentricity tolerances of tap elements refer to Table 317, published by the United States Cutting Tool Institute.

Standard Tap Dimensions Table 302/303 - Over 1" Diameter

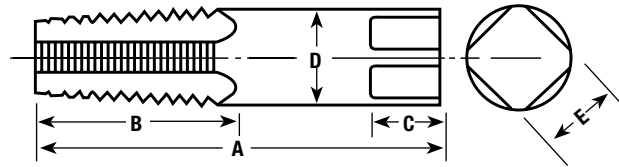
Nominal Diameter Range - Inches		Nominal Fractional Diameter Inches	Nominal Metric Diameter Millimeter	STYLE	Shank Diameter D	TABLE 302 Long Length				TABLE 303 Short Length			
Over	To (Incl.)					Overall Length A	Thread Length B	Square Length C	Size of Square E	Overall Length A	Thread Length B	Square Length C	Size of Square E
1.010	1.073	1-1/16	M27	3	.896	5-1/8	2-1/2	7/8	.672	4	1-1/2	7/8	.672
1.073	1.135	1-1/8		3	.896	5-7/16	2-9/16	7/8	.672	4	1-1/2	7/8	.672
1.135	1.198	1-3/16	M30	3	1.021	5-7/16	2-9/16	1	.766	4	1-1/2	1	.766
1.198	1.260	1-1/4		3	1.021	5-3/4	2-9/16	1	.766	4	1-1/2	1	.766
1.260	1.323	1-5/16	M33	3	1.108	5-3/4	2-9/16	1-1/16	.831	4	1-1/2	1	.831
1.323	1.385	1-3/8		3	1.108	6-1/16	3	1-1/16	.831	4	1-1/2	1	.831
1.385	1.448	1-7/16	M36	3	1.233	6-1/16	3	1-1/8	.925	4	1-1/2	1	.925
1.448	1.510	1-1/2		3	1.233	6-3/8	3	1-1/8	.925	4	1-1/2	1	.925
1.510	1.635	1-5/8	M39	3	1.305	6-11/16	3-3/16	1-1/8	.979	5	2	1-1/8	.979
1.635	1.760	1 3/4	M42	3	1.430	7	3-3/16	1-1/4	1.072	5	2	1-1/4	1.072
1.760	1.885	1-7/8		3	1.519	7-5/16	3-9/16	1-1/4	1.139	5	2	1-1/4	1.139
1.885	2.010	2	M48	3	1.644	7-5/8	3-9/16	1-3/8	1.233	5	2	1-3/8	1.233
2.010	2.135	2-1/8		3	1.769	8	3-9/16	1-3/8	1.327	5-1/4	2	1-3/8	1.327
2.135	2.260	2-1/4	M56	3	1.894	8-1/4	3-9/16	1-7/16	1.420	5-1/4	2	1-7/16	1.420
2.260	2.385	2-3/8		3	2.019	8-1/2	4	1-7/16	1.514	5-1/4	2	1-7/16	1.514
2.385	2.510	2-1/2		3	2.100	8-3/4	4	1-1/2	1.575	5-1/4	2	1-1/2	1.575
2.510	2.635	2-5/8	M64	3	2.225	8-3/4	4	1-1/2	1.669	5-1/2	2	1-1/2	1.575
2.635	2.760	2-3/4		3	2.350	9-1/4	4	1-9/16	1.762	5-1/2	2	1-1/2	1.575
2.760	2.885	2-7/8	M72	3	2.475	9-1/4	4	1	1.856	5-1/2	2	1-1/2	1.575
2.885	3.010	3		3	2.543	9-3/4	4-9/16	1-5/8	1.907	5-1/2	2	1-1/2	1.575
3.010	3.135	3-1/8		3	2.668	9-3/4	4-9/16	1-5/8	2.001	5-3/4	2	1-1/2	1.575
3.135	3.260	3-1/4	M80	3	2.793	10	4-9/16	1-3/4	2.095	5-3/4	2	1-1/2	1.575
3.260	3.385	3-3/8		3	2.883	10	4-9/16	1-3/4	2.162	5-3/4	2	1-1/2	1.575
3.385	3.510	3-1/2		3	3.008	10-1/4	4-15/16	2	2.256	5-3/4	2	1-1/2	1.575
3.510	3.635	3-5/8	M90	3	3.133	10-1/4	4-15/16	2	2.350	6	2	1-3/4	1.575
3.635	3.760	3-3/4		3	3.217	10-1/2	5-5/16	2-1/8	2.413	6	2	1-3/4	1.575
3.760	3.885	3-7/8		3	3.342	10-1/2	5-5/16	2-1/8	2.506	6	2	1-3/4	1.575
3.885	4.010	4	M100	3	3.467	10-3/4	5-5/16	2-1/4	2.600	6	2	1-3/4	1.575

• Short length Blanks, 2.385" diameter through 4.010 have a 2.100" shank diameter.

Notes: Unless otherwise specified, special taps over 1.010" to 1.510" diameter inclusive, having 14 or more threads per inch or 1.75 millimeter pitch and finer; and sizes over 1.510" diameter with 10 or more threads per inch or 2.5 millimeter pitch and finer, are made to general dimensions, Table 303, United States Cutting Tool Institute (USCTI) standards.

Element	Nominal Diameter Range - Inches		Direction	Tolerance - Inches
	Over	To (Incl.)		
Length Overall - A	.052	1.010	Plus or Minus	1/32
	1.010	4.010	Plus or Minus	1/16
Length of Thread - B	.052	.223	Plus or Minus	3/64
	.223	.510	Plus or Minus	1/16
	.510	1.510	Plus or Minus	3/32
	1.510	4.010	Plus or Minus	1/8
Length of Square - C	.052	1.010	Plus or Minus	1/32
	1.010	4.010	Plus or Minus	1/16
Diameter of Shank - D	.052	.223	Minus	.0015
	.223	.635	Minus	.0015
	.635	1.010	Minus	.002
	1.010	1.510	Minus	.002
	1.510	2.010	Minus	.003
	2.010	4.010	Minus	.003
Size of Square - E	.052	.510	Minus	.004
	.510	1.010	Minus	.006
	1.010	2.010	Minus	.008
	2.010	4.010	Minus	.010

Pipe Tap Dimensions -Straight and Taper Table 311



Nominal Size Inches	Standard Projection	Minimum Projection	Length Overall A	Length of Thread B	Length of Square C	Diameter of Shank D	Size of Square E
1/16	.312	Flush ("0" Proj.)	2-1/8	11/16	3/8	.3125	.234
1/8*	.312	Flush ("0" Proj.)	2-1/8	3/4	3/8	.3125	.234
1/8	.312	Flush ("0" Proj.)	2-1/8	3/4	3/8	.4375	.328
1/4	.459	.218	2-7/16	1-1/16	7/16	.5625	.421
3/8	.454	.150	2-9/16	1-1/16	1/2	.7000	.531
1/2	.579	.260	3-1/8	1-3/8	5/8	.6875	.515
3/4	.565	.245	3-1/4	1-3/8	11/16	.9063	.679
1	.678	.275	3-3/4	1-3/4	13/16	1.1250	.843
1-1/4	.686	.285	4	1-3/4	15/16	1.3125	.984
1-1/2	.699	.300	4-1/4	1-3/4	1	1.5000	1.125
2	.667	.267	4-1/2	1-3/4	1-1/8	1.8750	1.406
2-1/2	.925	.525	5-1/2	2-9/16	1-1/4	2.2500	1.687
3	.925	.525	6	2-5/8	1-3/8	2.6250	1.968
3-1/2	.938	.525	6-1/2	2-11/16	1-1/2	2.8125	2.108
4	.950	.525	6-3/4	2-3/4	1-5/8	3.0000	2.250

Taper Pipe Reamers High Speed Steel

Nominal Size - Inches High Speed Steel	Diam. Large End	Diam. Small End	Dimensions - Inches Length of Flutes	Diam. of Shank	Size of Square	Length Overall
1/8	.362	.316	3/4	.4375	.328	2-1/8
1/4	.472	.406	1-1/16	.5625	.421	2-7/16
3/8	.606	.540	1-1/16	.7000	.531	2-9/16
1/2	.751	.665	1-3/8	.6875	.515	3-1/8
3/4	.962	.876	1-3/8	.9063	.679	3-1/4
1	1.212	1.103	1-3/4	1.1250	.843	3-3/4
1-1/4	1.553	1.444	1-3/4	1.3125	.984	4
1-1/2	1.793	1.684	1-3/4	1.5000	1.125	4-1/4
2	2.268	2.159	1-3/4	1.8750	1.406	4-1/2

Pitch Diameter Limit Symbols

HSG: High Speed Ground
G: Ground Thread
H: (High) Pitch diameter is above basic
L: (Low) Pitch diameter is below basic
 (replaces the letter "H").

The number following "H" or "L" signifies the number of .0005" steps above or below the basic pitch diameter.

Standard taps 1" diameter and smaller are ground to a .0005" tolerance on the pitch diameter and are marked with one of these corresponding pitch diameter limits.

L1 = Basic to basic minus .0005".
H1 = Basic to basic plus .0005".
H2 = Basic plus .0005" to basic plus .0010".
H3 = Basic plus .0010" to basic plus .0015".
H4 = Basic plus .0015" to basic plus .0020".
H5 = Basic plus .0020" to basic plus .0025".
H6 = Basic plus .0025" to basic plus .0030".

Standard taps larger than 1" diameter are ground to a .0010" tolerance on the pitch diameter and are marked with this pitch diameter limit.

H4 = Basic plus .0010" to basic .0020".

Thread Form Symbols

M Metric Screw Thread Series
NC American National Coarse Thread Series
UNC Unified Coarse Thread Series
NF American National Fine Thread Series
UNF Unified Fine Thread Series
NEF American National Extra Fine Thread Series
UNEF Unified Extra Fine Thread Series
N American National 8, 12 and 16 Thread Series
UN Unified Constant-Pitch Thread Series
UNR Unified Constant-Pitch Thread Series with a 0.108P to 0.144P Controlled Root Radius
UNJ Unified Thread Series with a 0.15011P to 0.18042P Controlled Root Radius External Thread Only
UNM Unified Miniature Thread Series
NS American National Thread—Special
UNS Unified Thread—Special
NPT American National Standard Taper Pipe Thread
NPTF Dryseal American National Standard Taper Pipe Thread (Fuel)
PTF Dryseal SAE Short Taper Pipe Thread
ANPT Aeronautical National Form Taper Pipe Thread (MIL-P-7105)
NPS For Tap Marking Only (See NPSC, NPSM)
NPSC American National Standard Straight Pipe Thread in Pipe Couplings (Tap marked NPS)
NPSF Dryseal American National Standard Internal Straight Pipe Thread (Fuel)
NPSH American National Standard Straight Pipe Thread for Hose Couplings and Nipples

NPSI Dryseal American National Standard Intermediate Internal Straight Pipe Thread
NPSL American National Standard Straight Pipe Thread for Loose Fitting Mechanical Joints with Locknuts
NPSM American National Standard Straight Pipe Thread for Free Fitting Mechanical Joints for Fixtures (Tap marked NPS)
NPTR American National Standard Taper Pipe Thread for Railing Joints (Tap marked NPT)
NGO National Gas Outlet Thread
NH American National Hose Coupling and Fire Hose Coupling Threads
AMO American Standard Microscope Objective Thread
ACME C Acme Thread—Centralizing
ACME G Acme Thread—General Purpose
N BUTT American Buttress Screw Thread
STI Special Threads for Helical Coil Wire Screw Thread Inserts

Symbols used for British Threads are:

BSW British Standard Whitworth Coarse Thread Series
BSF British Standard Fine Thread Series
BSP (BSP.TR) British Standard Taper Pipe Thread
BSP (BSP.PL) British Standard Pipe (Parallel) Thread
WHIT Whitworth Standard Special Thread
BA British Association Standard Thread

Tap Recommendations & Thread Limits For Classes 2B & 3B Machine Screw and Fractional Sizes

Size	Recommended Tap for Class of Thread						Tap Recommendations and Thread Limits		
	Class 2B			Class 3B			Min. All Classes (basic)	Max Class 2B	Max Class 3B
	H-Limit	Min	Max	H Limit	Min	Max			
#0-80 UNF	H2	.0524	.0529	H1	.0519	.0524	.0519	.0542	.0536
#1-64 UNC	H2	.0634	.0639	H1	.0629	.0634	.0629	.0655	.0648
#1-72 UNF	H2	.0645	.0650	H1	.0640	.0645	.0640	.0665	.0659
#2-56 UNC	H2	.0749	.0754	H1	.0744	.0749	.0744	.0772	.0765
#2-64 UNF	H2	.0764	.0769	H1	.0759	.0764	.0759	.0786	.0779
#3-48 UNC	H2	.0860	.0865	H1	.0855	.0860	.0855	.0885	.0877
#3-56 UNF	H2	.0879	.0884	H1	.0874	.0879	.0874	.0902	.0895
#4-40 UNC	H2	.0963	.0968	H2	.0963	.0968	.0958	.0991	.0982
#4-48 UNF	H2	.0990	.0995	H1	.0985	.0990	.0985	.1016	.1008
#5-40 UNC	H2	.1093	.1098	H2	.1093	.1098	.1088	.1121	.1113
#5-44 UNF	H2	.1107	.1112	H1	.1102	.1107	.1102	.1134	.1126
#6-32 UNC	H3	.1187	.1192	H2	.1182	.1187	.1177	.1214	.1204
#6-40 UNF	H2	.1223	.1228	H2	.1223	.1228	.1218	.1252	.1243
#8-32 UNC	H3	.1447	.1452	H2	.1442	.1447	.1437	.1475	.1465
#8-36 UNF	H2	.1465	.1470	H2	.1465	.1470	.1460	.1496	.1487
#10-24 UNC	H3	.1639	.1644	H3	.1639	.1644	.1629	.1672	.1661
#10-32 UNF	H3	.1707	.1712	H2	.1702	.1707	.1697	.1736	.1726
#12-24 UNC	H3	.1899	.1904	H3	.1899	.1904	.1889	.1933	.1922
#12-28 UNF	H3	.1938	.1942	H3	.1938	.1942	.1928	.1970	.1959
1/4-20 UNC	H5	.2195	.2200	H3	.2185	.2190	.2175	.2224	.2211
1/4-28 UNF	H4	.2283	.2288	H3	.2278	.2283	.2268	.2311	.2300
5/16-18 UNC	H5	.2784	.2789	H3	.2774	.2779	.2764	.2817	.2803
5/16-24 UNF	H4	.2869	.2874	H3	.2864	.2869	.2854	.2902	.2890
3/8-16 UNC	H5	.3364	.3369	H3	.3354	.3359	.3344	.3401	.3387
3/8-24 UNF	H4	.3494	.3499	H3	.3489	.3494	.3479	.3528	.3516
7/16-14 UNC	H5	.3931	.3936	H3	.3921	.3926	.3911	.3972	.3957
7/16-20 UNF	H5	.4070	.4075	H3	.4060	.4065	.4050	.4104	.4091
1/2-13 UNC	H5	.4520	.4525	H3	.4510	.4515	.4500	.4565	.4548
1/2-20 UNF	H5	.4695	.4700	H3	.4685	.4690	.4675	.4731	.4717
9/16-12 UNC	H5	.5104	.5109	H3	.5094	.5099	.5084	.5152	.5135
9/16-18 UNF	H5	.5284	.5289	H3	.5274	.5279	.5264	.5323	.5308
5/8-11 UNC	H5	.5680	.5685	H3	.5670	.5675	.5660	.5732	.5714
5/8-18 UNF	H5	.5909	.5914	H3	.5899	.5904	.5889	.5949	.5934
3/4-10 UNC	H5	.6870	.6875	H5	.6870	.6875	.6850	.6927	.6907
3/4-16 UNF	H5	.7114	.7119	H3	.7104	.7109	.7094	.7159	.7143
7/8-9 UNC	H6	.8053	.8058	H4	.8043	.8048	.8028	.8110	.8089
7/8-14 UNF	H6	.8311	.8316	H4	.8301	.8306	.8286	.8356	.8339
1-8 UNC	H6	.9213	.9218	H4	.9203	.9208	.9188	.9276	.9254
1-12 UNF	H6	.9484	.9489	H4	.9474	.9479	.9459	.9535	.9516
1-14 UNS	H6	.9561	.9566	H4	.9551	.9556	.9536	.9609	.9590
1 1/8-7 UNC	H8	1.0352	1.0357	H4	1.0332	1.0337	1.0322	1.0416	1.0393
1 1/8-12 UNF	H6	1.0739	1.0749	H4	1.0719	1.0729	1.0709	1.0787	1.0768
1 1/4-7 UNC	H8	1.1622	1.1632	H4	1.1582	1.1592	1.1572	1.1668	1.1644
1 1/4-12 UNF	H6	1.1989	1.1999	H4	1.1969	1.1979	1.1959	1.2039	1.2019
1 3/8-6 UNC	H8	1.2717	1.2727	H4	1.2677	1.2687	1.2667	1.2771	1.2745
1 3/8-12 UNF	H6	1.3239	1.3249	H4	1.3219	1.3229	1.3209	1.3291	1.3270
1 1/2-6 UNC	H8	1.3967	1.3977	H4	1.3927	1.3937	1.3917	1.4022	1.3996
1 1/2-12 UNF	H6	1.4489	1.4499	H4	1.4469	1.4479	1.4459	1.4542	1.4522

Metric Tap Thread Limits Table 337

Nominal Dia. mm	Pitch mm	Major Diameter (Inches)			Pitch Diameter Limits (Inches)								
		Basic	Min.	Max.	Basic	D3		D4		D5		D6	
						Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1.6	0.35	.0630	.0641	.0651	.0541	.0550	.0556						
2	0.4	.0787	.0800	.0810	.0685	.0695	.0700						
2.5	0.45	.0984	.0998	.1008	.0869	.0879	.0885						
3	0.5	.1181	.1197	.1207	.1053	.1063	.1069						
3.5	0.6	.1378	.1397	.1407	.1224	—	—	.1237	.1245				
4	0.7	.1575	.1597	.1613	.1396	—	—	.1408	.1416				
4.5	0.75	.1772	.1795	.1811	.1580	—	—	.1593	.1600				
5	0.8	.1969	.1994	.2010	.1764	—	—	.1776	.1784				
6	1	.2362	.2394	.2410	.2106	—	—	—	—	.2122	.2132		
7	1	.2756	.2787	.2804	.2500	—	—	—	—	.2516	.2526		
8	1.25	.3150	.3189	.3214	.2830	—	—	—	—	.2843	.2856		
10	1.5	.3937	.3987	.4009	.3554	—	—	—	—	—	—	.3572	.3584
12	1.75	.4724	.4780	.4805	.4277	—	—	—	—	—	—	.4295	.4308

Nominal Dia. mm	Pitch mm	Major Diameter (Inches)			Pitch Diameter Limits (Inches)								
		Basic	Min.	Max.	Basic	D7		D8		D9			
						Min.	Max.	Min.	Max.	Min.	Max.		
14	2	.5512	.5575	.5600	.5000	.5020	.5036						
16	2	.6299	.6362	.6387	.5788	.5808	.5824						
20	2.5	.7874	.7953	.7978	.7235	.7254	.7271						
24	3	.9449	.9547	.9583	.8682	—	—	.8706	.8722				
30	3.5	1.1811	1.1921	1.1961	1.0916	—	—	—	—	1.0942	1.0962		
36	4	1.4173	1.4299	1.4339	1.3150	—	—	—	—	1.3176	1.3197		

Basic Pitch Diameter is the same as Min. Pitch diameter of Internal Thread Class 6H - Table 21, ANSI B1.13M-1979

Metric Tap Limits Table 341

Pitch (mm)	Tolerance			
	M1.6 - M6 incl.	Over M6 - M25 incl.	Over M25 - M90 incl.	Over M90
0.3	.0006	.0006	.0008	.0008
0.35	.0006	.0006	.0008	.0008
0.4	.0006	.0006	.0008	.0010
0.45	.0006	.0008	.0008	.0010
0.5	.0006	.0008	.0010	.0010
0.6	.0008	.0008	.0010	.0010
0.7	.0008	.0008	.0010	.0010
0.75	.0008	.0010	.0010	.0012
0.8	.0008	.0010	.0010	.0012
0.9	.0008	.0010	.0010	.0012
1	.0010	.0010	.0012	.0012
1.25	.0010	.0012	.0012	.0016
1.5	.0010	.0012	.0012	.0016
1.75	.0010	.0012	.0016	.0016
2	—	.0016	.0016	.0016
2.5	—	.0016	.0016	.0020
3	—	.0016	.0020	.0020
3.5	—	.0016	.0020	.0020
4	—	.0020	.0020	.0025
4.5	—	.0020	.0020	.0025
5	—	—	.0025	.0025
5.5	—	—	.0025	.0025
6	—	—	.0025	.0025

HSG: High Speed Ground

D: pitch Diameter is above basic (Go Gage)

DU: Pitch diameter is below basic

Each .0005" represents One D number.

The number following "D" or "DU" signifies the number of .0005" steps above or below basic pitch diameter.

(Go Gage)

DU1	= Basic minus .0005"	= MIN PD	MIN PD Plus Tol	= MAX PD
D1	= Basic plus .0005"	= MAX PD	MAX PD Minus Tol	= MIN PD
D2	= Basic plus .0010"	= MAX PD	MAX PD Minus Tol	= MIN PD
D3	= Basic plus .0015"	= MAX PD	MAXPD Minus Tol	= MIN PD
D4	= Basic plus .0020"	= MAX PD	MAX PD Minus Tol	= MIN PD

Triple Crown Specifications High Performance Taps

TC-LT Yellow Ring							TC-SS Blue Ring		TC-HT Red Ring		Multi 1 Red Yellow Ring					
Size	Overall Length	Thread Length		Square Length	Shank Diameter	Size of Square	Size	Overall Length	Thread Length		Square Length	Shank Diameter	Size of Square			
		Spiral Point	Spiral Flute						Spiral Point	Spiral Flute						
#4	1-7/8"	5/16"	5/16"	3/16"	.141	.110	#4	1-7/8"	.335	.236	3/16"	.141	.110			
#5	1-15/16"	5/16"	5/16"				#5	1-15/16"	.374							
#6	2"	3/8"	3/8"				#6	2"	.413							
#8	2-1/8"						#8	2-1/8"	.453							
#10-24	2-3/8"	1/2"	1/2"	1/4"	.194	.152	#10-24	2-3/8"	.531	.354	1/4"	.194	.152			
#10-32				#10-32			.276									
#12-24				#12-24			.354	9/32"	.220	.165				#12-24	.571	.276
#12-28				#12-28			.276									
1/4"-20	2-1/2"	5/8"	5/8"	5/16"	.255	.191	1/4"-20	2-1/2"	.591	.433	5/16"	.255	.191			
1/4"-28				1/4"-28			.354									
5/16"-18	2-23/32"	11/16"	11/16"	3/8"	.318	.238	5/16"-18	2-23/32"	.669	.472	3/8"	.318	.238			
5/16"-24				5/16"-24			.394									
3/8"-16	2-15/16"	3/4"	3/4"	7/16"	.381	.286	3/8"-16	2-15/16"	.748	.551	7/16"	.381	.286			
3/8"-24				3/8"-24			.394									
7/16"-14	3-5/32"	7/8"	7/8"	13/32"	.323	.242	7/16"-14	3-5/32"	.866	.591	13/32"	.323	.242			
7/16"-20				7/16"-20			.472									
1/2"-13	3-3/8"	15/16"	15/16"	7/16"	.367	.275	1/2"-13	3-3/8"	.984	.630	7/16"	.367	.275			
1/2"-20				1/2"-20			.472									
5/8"-11	3-13/16"	1-3/32"	1-3/32"	9/16"	.480	.360	5/8"-11	3-13/16"	1.083	.748	9/16"	.480	.360			
5/8"-18				5/8"-18			.512									
3/4"-10	4-1/4"	1-7/32"	1-7/32"	11/16"	.590	.442	3/4"-10	4-1/4"	1.201	.827	11/16"	.590	.442			
3/4"-16				3/4"-16			.591									
7/8"-9	4-11/16"	1-11/32"	1-11/32"	3/4"	.697	.523	7/8"-9	4-11/16"	1.339	.827	3/4"	.697	.523			
7/8"-14				7/8"-14			.709									
1"-8	5-1/8"	1-1/2"	1-1/2"	13.16"	.800	.600	1"-8	5-1/8"	1.496	.984	13.16"	.800	.600			
1"-12				1"-12			.709									
Size	Overall Length	Thread Length		Square Length	Shank Diameter	Size of Square	Size	Overall Length	Thread Length		Square Length	Shank Diameter	Size of Square			
M3	1-15/16"	5/16"	5/16"	3/16"	.141	.100	M3	1-15/16"	.374	.197	3/16"	.141	.100			
M3.5	2"	3/8"	3/8"	1/4"	.168	.131	M3.5	2"	.413	.276	1/4"	.168	.131			
M4	2-1/8"	3/8"	3/8"				M4	2-1/8"	.453	.276						
M5	2-3/8"	1/2"	1/2"				M5	2-3/8"	.531	.354						
M6	2-1/2"	5/8"	5/8"				M6	2-1/2"	.591	.433						
M8	2-23/32"	11/16"	11/16"	3/8"	.318	.238	M8	2-23/32"	.669	.472	3/8"	.318	.238			
M10 x 1.5	2-15/16"	3/4"	3/4"	7/16"	.381	.286	M10 x 1.5	2-15/16"	.748	.512	7/16"	.381	.286			
M10 x 1.25							M10 x 1.25		.472							
M12 x 1.75	3-3/8"	15/16"	15/16"				M12 x 1.75	3-3/8"	.591	.367				.275		
M12 x 1.25							M12 x 1.25		.551							
M14 x 2.0	3-19/32"	1"	1"	1/2"	.429	.322	M14 x 2.0	3-19/32"	.984	.709	1/2"	.429	.322			
M14 x 1.5				M14 x 1.5			.551									
M16 x 2.0	3-13/16"	1-3/32"	1-3/32"	9/16"	.480	.360	M16 x 2.0	3-13/16"	1.083	.709	9/16"	.480	.360			
M16 x 1.5				M16 x 1.5			.551									
M18 x 2.5	4-1/32"	1-3/32"	1-3/32"	5/8"	.512	.406	M18 x 2.5	4-1/32"	.787	.512	5/8"	.512	.406			
M18 x 1.5				M18 x 1.5			.551									

High Performance Taps Recommended Speed Table

Material types	Stainless Steel						Carbon Steel					
	Free Machining	Ferritic	Austenitic	Martensitic	Precipitation Hardened		Free Machining	Low Carbon	Alloy-Low Carbon	Medium Carbon	High Carbon	Alloy-High Carbon
Material Examples	303, 303SE, 416, 420F, 430F	405, 430	302, 304, 316, 329, 436 <275	403, 410, 420, 431	15-5PH 17-4PH 17-7PH		1118, 1114, 1212, 12L14, 12L15, 1215	1008, 1010, 1011, 1015, 1018, 1029	3310, 4620, 4820, 8620	1030, 1035, 1040, 4045, 1050	1050, 1065, 1070, 1080, 1090	4140, 4150, 4340
Hardness	BHN	<250	<260	<28	<275	350-440	<180	<180	<240	<275	<300	<390
	RC	<23	<26	<28	<28	<48	<20	<20	<24	<28	<32	<42
Thread Forming Taps	50-100 SFM	70-100 SFM					120-180 SFM	60-129 SFM	50-90 SFM			
Carbide Taps			20-35									
Blue Ring Color Taps	25-50 SFM	35-50 SFM	SFM 15-25	25-50 SFM	25-50 SFM		20-50 SFM	20-50 SFM	15-25 SFM	20-40 SFM		
Yellow Ring Color Taps	15-35 SFM	25-35 SFM	SFM	15-35 SFM	15-35 SFM		60-90 SFM	30-60 SFM	26-45 SFM	20-50 SFM	25-40 SFM	15-20 SFM
Red Ring Color Taps		15-25 SFM	15-25 SFM	15-25 SFM	15-25 SFM	12-20 SFM				25-50 SFM	25-50 SFM	15-25 SFM
HSS	15-35 SFM	25-35 SFM	SFM	15-35 SFM	15-35 SFM		45-65 SFM	20-45 SFM	20-30 SFM	15-35 SFM	20-30 SFM	12-19 SFM

Material types	Cast Iron & Sintered Metals								Titanium				
	Pearlitic-Martensitic	Martensitic (Malleable)	Martensitic (Ductile)	Martensitic (Malleable)	Precipitation (Malleable)	Austenitic (Gray)	Austenitic (Ductile)	Austenitic (Ductile)	Commercial Pure	& - alloy		& - alloy	
Material Examples	100-70-03	120-90-02	53004, 60003, 60000	70002, 70003	80002, 90001	ASTM A436 Type 1-6	ASTM A439 Type D-2 D-2C, D-5, D3A, D5B	ASTM A439 Type D-2B D-3, D-4	99.5, 99.2, 98.9	6Al-4V		6Al4V ELT 6Al-6V-2Sn	
Hardness	BHN	240-300	270-300	200-255	220-260	240-320	100-250	120-200	140-275	<275	300-350	300-400	330-420
	RC									<28	<36	<42	<45
Carbide Taps	15-26 SFM	12-20 SFM	35-45 SFM	30-40 SFM	29-30 SFM	35-60 SFM	20-30 SFM	15-25 SFM					
Blue Ring Color Taps									15-30 SFM				
Yellow Ring Color Taps	12-20 SFM	9-15 SFM	25-35 SFM	23-30 SFM	20-23 SFM	25-45 SFM	15-23 SFM	13-20 SFM	12-23 SFM	9-15 SFM		4-7 SFM	
Red Ring Color Taps									25-40 SFM	15-20 SFM		5-7 SFM	
HSS	12-20 SFM	9-15 SFM	25-35 SFM	23-30 SFM	20-23 SFM	25-45 SFM	15-23 SFM	13-20 SFM	12-23 SFM	9-15 SFM	8-15 SFM	4-7 SFM	

High Performance Taps Recommended Speed Table

Material types	Carbon Steel		Aluminum				Cast Iron & Sintered Metals				
	Tool Steel		Unalloyed	Wrought	Cast (Sand)	DieCastings	Pearlitic-Ferritic	Pearlitic (Gray)	Pearlitic (Malleable)	Pearlitic w Free Carbide	
Material Examples	01, A-2, D-2, H-13, P-20		1000 Series	2000, 3000, 5000, 6000, 7000 Series	308, 319, 328, 365	360, 380, 383, 390, 392 50-125	ASTM A48 : Class 25	ASTM A48 : Classes 30, 35, 40	40010,43010, 45006,45008, 48005,50005	ASTM A48 : Classes 45, 50	ASTM A48 : Classes 55, 60
Hardness BHN RC	<340 <35	350-440 <48	<30	30-80	40-100	180-300	160-200	190-220	160-200	220-260	250-320
Thread Forming Taps			240 SFM	200-250 SFM	180-200 SFM	SFM 300-450					
Carbide Taps			240-360 SFM	250-375 SFM	200-300 SFM	SFM 30-90	140-210 SFM	120-180 SFM	100-150 SFM	80-120 SFM	50-75 SFM
Blue Ring Color Taps			30-90 SFM	30-90 SFM	30-90 SFM	SFM 65-110					
Yellow Ring Color Taps	15-20 SFM		90 SFM	75-95 SFM	65-75 SFM	SFM	35-50 SFM	30-45 SFM	30-35 SFM	20-30 SFM	12-19 SFM
Red Ring Color Taps	15-25 SFM	10-20 SFM				65-110					
HSS			90 SFM	75-95 SFM	65-75 SFM	SFM	35-50 SFM	30-45 SFM	30-35 SFM	20-30 SFM	12-19 SFM

Material types	Brass/ Bronze	Copper	Nickel Alloys								
	—	—	Nickel-Alloys	Nickel-Alloys	Nickel Alloys	High Temp Alloys (Nickel Base)	High Temp Alloys (Nickel Base)	High Temp Alloys (Nickel Base)	High Temp Alloys (Nickel Base)	High Temp Alloys (Nickel Base)	High Temp Alloys (Nickel Base)
Material Examples			Nickel 200, 201, 205	Monel 400, 401, 404	Duranickel Monel K800	Inconel 700718	Waspaloy Rene41	Hastaloy BC, G, X	Inconel 600 Inconel 500700	Haynes 25188 180-270	A286, Inconel 800
Hardness BHN RC			80-170 <20	115-240 <24	150-360 <38	200-300 <30	300-400 <42	140-220 <23	240-310 <32	<28	180-230 <23
Carbide Taps											
Blue Ring Color Taps	30-65 SFM	50-60 SFM								10-15	10-12
Yellow Ring Color Taps	30-80 SFM	25-60 SFM	10-15 SFM	10-15 SFM	10-15 SFM	10-12 SFM	10-15 SFM	10-15 SFM	10-12 SFM	SFM 5-20	SFM 5-25
Red Ring Color Taps	25-60 SFM		5-20 SFM	5-20 SFM	5-25 SFM	5-25 SFM	5-20 SFM	5-25 SFM	5-20 SFM	SFM 4-7	SFM 11-15
HSS			15-20 SFM	8-20 SFM	4-9 SFM	6-9 SFM	4-8 SFM	8-11 SFM	5-7 SFM	SFM	SFM

Thread Plug Gage Pitch Diameter Machine Screw & Fractional Sizes

Nominal Size	Go Basic All Classes All Serie	Unified Pitch Diameters				
		No Go Class 2B	No Go Class 3B	X Tol. Go = + No Go = -	X Lead Tol.	X + Half Angle Tol.
#0-80 UNF	.0519	.0542	.0536	.0002	.0002	0° 30'
#1-64 UNC	.0629	.0655	.0648	.0002	.0002	0° 30'
#1-72 UNF	.0640	.0665	.0659	.0002	.0002	0° 30'
#2-56 UNC	.0744	.0772	.0756	.0002	.0002	0° 30'
#2-64 UNF	.0759	.0786	.0779	.0002	.0002	0° 30'
#3-48 UNC	.0855	.0885	.0877	.0002	.0002	0° 30'
#3-56 UNF	.0874	.0902	.0895	.0002	.0002	0° 30'
#4-40 UNC	.0958	.0991	.0982	.0002	.0002	0° 20'
#4-48 UNF	.0985	.1016	.1008	.0002	.0002	0° 30'
#5-40 UNC	.1088	.1121	.1113	.0002	.0002	0° 20'
#5-44 UNF	.1102	.1134	.1126	.0002	.0002	0° 20'
#6-32 UNC	.1177	.1214	.1204	.0003	.0003	0° 15'
#6-40 UNF	.1218	.1252	.1243	.0002	.0002	0° 20'
#8-32 UNC	.1437	.1475	.1465	.0003	.0003	0° 15'
#8-36 UNF	.1460	.1496	.1487	.0002	.0002	0° 20'
#10-24 UNC	.1629	.1672	.1661	.0003	.0003	0° 15'
#10-32 UNF	.1697	.1736	.1726	.0003	.0003	0° 15'
#12-24 UNC	.1889	.1933	.1922	.0003	.0003	0° 15'
#12-28 UNF	.1928	.1970	.1959	.0003	.0003	0° 15'
1/4-20 UNC	.2175	.2224	.2211	.0003	.0003	0° 15'
1/4-28 UNF	.2268	.2311	.2300	.0003	.0003	0° 15'
5/16-18 UNC	.2764	.2817	.2803	.0003	.0003	0° 10'
5/16-24 UNF	.2854	.2902	.2890	.0003	.0003	0° 15'
3/8-16 UNC	.3344	.3401	.3387	.0003	.0003	0° 10'
3/8-24 UNF	.3479	.3528	.3516	.0003	.0003	0° 15'
7/16-14 UNC	.3911	.3972	.3957	.0003	.0003	0° 10'
7/16-20 UNF	.4050	.4104	.4091	.0003	.0003	0° 15'
1/2-13 UNC	.4500	.4565	.4548	.0003	.0003	0° 10'
1/2-20 UNF	.4675	.4731	.4717	.0003	.0003	0° 15'
9/16-12 UNC	.5084	.5152	.5135	.0003	.0003	0° 10'
9/16-18 UNF	.5264	.5323	.5308	.0003	.0003	0° 10'
5/8-11 UNC	.5660	.5732	.5714	.0003	.0003	0° 10'
5/8-18 UNF	.5889	.5949	.5934	.0003	.0003	0° 10'
3/4-10 UNC	.6850	.6927	.6907	.0003	.0003	0° 10'
3/4-16 UNF	.7094	.7159	.7143	.0003	.0003	0° 10'
7/8-9 UNC	.8028	.8110	.8089	.0003	.0003	0° 10'
7/8-14 UNF	.8286	.8356	.8339	.0003	.0003	0° 10'
1-8 UNC	.9188	.9276	.9254	.0004	.0004	0° 5'
1-12 UNF	.9459	.9535	.9516	.0003	.0003	0° 10'
1-14 UNS	.9536	.9609	.9590	.0003	.0003	0° 10'
1 1/8-7 UNC	1.0322	1.0416	1.0393	.0004	.0004	0° 5'
1 1/8-12 UNF	1.0709	1.0787	1.0768	.0003	.0003	0° 10'
1 1/4-7 UNC	1.1572	1.1668	1.1644	.0004	.0004	0° 5'
1 1/4-12 UNF	1.1959	1.2039	1.2019	.0003	.0003	0° 10'
1 3/8-6 UNC	1.2667	1.2771	1.2745	.0004	.0004	0° 5'
1 3/8-12 UNF	1.3209	1.3291	1.3270	.0003	.0003	0° 10'
1 1/2-6 UNC	1.3917	1.4022	1.3996	.0004	.0004	0° 5'
1 1/2-12 UNF	1.4459	1.4542	1.4522	.0003	.0003	0° 10'

Thread Plug Gage Pitch Diameter Metric Sizes

Nominal Size	Go Basic Pitch Diameter MM	4H Tolerance No Go Pitch Diameter MM	6H Tolerance No Go Pitch Diameter MM
M1.6 x .35	1.373	1.426	1.458
M1.8 x 0.35	1.573	1.626	1.658
M2.0 x .40	1.740	1.796	1.830
M2.2 x 0.45	1.908	1.968	2.003
M2.5 x .45	2.208	2.268	2.303
M3.0 x .50	2.675	2.738	2.775
M3.5 x .60	3.110	3.181	3.222
M4.0 x .70	3.545	3.620	3.663
M4.5 x .75	4.013	4.088	4.131
M5.0 x .80	4.480	4.560	4.605
M6.0 x 1.0	5.350	5.445	5.500
M7 x 1.0	6.350	6.445	6.500
M8.0 x 1.25	7.188	7.288	7.348
M8.0 x 1.00	7.350	7.445	7.500
M10 x 1.5	9.026	9.138	9.206
M12 x 1.75	10.863	10.988	11.063
M12 x 1.25	11.188	11.300	11.368
M14 x 2.00	12.701	12.833	12.913
M14 x 1.50	13.026	13.144	13.216
M16 x 2.00	14.701	14.833	14.913
M16 x 1.50	15.026	15.144	15.216
M18 x 2.50	16.376	16.516	16.600
M18 x 1.50	17.026	17.144	17.216
M20 x 2.50	18.376	18.516	18.600
M20 x 1.50	19.026	19.144	19.216
M22 x 2.50	20.376	20.516	20.600
M22 x 1.50	21.026	21.144	21.216
M24 x 3.00	22.051	22.221	22.316
M24 x 2.00	22.701	22.841	22.925
M27 x 3.00	25.051	25.221	25.316
M27 x 2.00	25.701	25.841	25.925
M30 x 3.50	27.727	27.907	28.007
M30 x 2.00	28.701	28.841	28.925
M33 x 3.50	30.727	30.907	31.007
M33 x 2.00	31.701	31.841	31.925
M36 x 4.00	33.402	33.592	33.702
M36 x 3.00	34.051	34.221	34.316
M39 x 4.00	36.402	36.592	36.702
M39 x 3.00	37.051	37.221	37.316

Thread Ring & Setting Thread Plug Gage Pitch Diameter Machine Screw & Fractional Sizes

Nominal Size	Unified Pitch Diameters				X Tol. Go = + No Go = -
	Go Class 3A	Class 2A	No Go Class 2A	Class 3A	
0-80 UNF	.0519	.0514	.0496	.0506	.0002
1-64 UNC	.0629	.0623	.0603	.0614	.0002
1-72 UNF	.0640	.0634	.0615	.0626	.0002
2-56 UNC	.0744	.0738	.0717	.0728	.0002
2-64 UNF	.0759	.0753	.0733	.0744	.0002
3-48 UNC	.0855	.0848	.0825	.0838	.0002
3-56 UNF	.0874	.0867	.0845	.0858	.0002
4-40 UNC	.0958	.0950	.0925	.0939	.0002
4-48 UNF	.0985	.0978	.0954	.0967	.0002
5-40 UNC	.1088	.1080	.1054	.1069	.0002
5-44 UNF	.1102	.1095	.1070	.1082	.0002
6-32 UNC	.1177	.1169	.1141	.1156	.0003
6-40 UNF	.1218	.1210	.1184	.1198	.0002
8-32 UNC	.1437	.1428	.1399	.1415	.0003
8-36 UNF	.1460	.1452	.1424	.1439	.0002
10-24 UNC	.1629	.1619	.1586	.1604	.0003
10-32 UNF	.1697	.1688	.1658	.1674	.0003
12-24 UNC	.1889	.1879	.1845	.1863	.0003
12-28 UNF	.1928	.1918	.1886	.1904	.0003
12-32 UNEF	.1957	.1948	.1917	.1933	.0003
1/4-20 UNC	.2175	.2164	.2127	.2147	.0003
1/4-28 UNF	.2268	.2258	.2225	.2243	.0003
1/4-32 UNEF	.2297	.2287	.2255	.2273	.0003
5/16-18 UNC	.2764	.2752	.2712	.2734	.0003
5/16-24 UNF	.2854	.2843	.2806	.2827	.0003
5/16-32 UNEF	.2922	.2912	.2880	.2898	.0003
3/8-16 UNC	.3344	.3331	.3287	.3311	.0003
3/8-24 UNF	.3479	.3468	.3430	.3450	.0003
3/8-32 UNEF	.3547	.3537	.3503	.3522	.0003
7/16-14 UNC	.3911	.3897	.3850	.3876	.0003
7/16-20 UNF	.4050	.4037	.3995	.4019	.0003
7/16-28 UNEF	.4143	.4132	.4096	.4116	.0003
1/2-13 UNC	.4500	.4485	.4435	.4463	.0003
1/2-20 UNF	.4675	.4662	.4619	.4643	.0003
1/2-28 UNEF	.4768	.4757	.4720	.4740	.0003

Thread Ring & Setting Thread Plug Gage Pitch Diameter Fractional Sizes

Nominal Size	Unified Pitch Diameters				X Tol. Go = + No Go = -
	Go Class 3A	Class 2A	No Go Class 2A	Class 3A	
9/16-12 UNC	.5084	.5068	.5016	.5045	.0003
9/16-18 UNF	.5264	.5250	.5205	.5230	.0003
9/16-24 UNEF	.5354	.5342	.5303	.5325	.0003
5/8-11 UNC	.5660	.5644	.5589	.5619	.0003
5/8-18 UNF	.5889	.5875	.5828	.5854	.0003
5/8-24 UNEF	.5979	.5967	.5927	.5949	.0003
11/16-24 UNEF	.6604	.6592	.6552	.6574	.0003
3/4-10 UNC	.6850	.6832	.6773	.6806	.0003
3/4-16 UNF	.7094	.7079	.7029	.7056	.0003
3/4-20 UNEF	.7175	.7162	.7118	.7142	.0003
13/16-20 UNEF	.7800	.7787	.7743	.7767	.0003
7/8-9 UNC	.8028	.8009	.7946	.7981	.0003
7/8-14 UNF	.8286	.8270	.8216	.8245	.0003
7/8-20 UNEF	.8425	.8412	.8368	.8392	.0003
15/16-20 UNEF	.9050	.9036	.8991	.9016	.0003
1-8 UNC.9188	.9168	.9100	.9137	.9004	
1-12 UNF	.9459	.9441	.9382	.9415	.0003
1-14 UNS	.9536	.9519	.9463	.9494	.0003
1-20 UNEF	.9675	.9661	.9616	.9641	.0003
1 1/16-18 UNEF	1.0264	1.0250	1.0203	1.0228	.0003
1 1/8-7 UNC	1.0322	1.0300	1.0228	1.0268	.0004
1 1/8-12 UNF	1.0709	1.0691	1.0631	1.0664	.0003
1 1/8-18 UNEF	1.0889	1.0875	1.0828	1.0853	.0003
1 3/16-18 UNEF	1.1514	1.1499	1.1450	1.1478	.0003
1 1/4-7 UNC	1.1572	1.1550	1.1476	1.1517	.0004
1 1/4-12 UNF	1.1959	1.1941	1.1879	1.1913	.0003
1 1/4-18 UNEF	1.2139	1.2124	1.2075	1.2103	.0003
1 5/16-18 UNEF	1.2764	1.2749	1.2700	1.2728	.0003
1 3/8-6 UNC	1.2667	1.2643	1.2563	1.2607	.0004
1 3/8-12 UNF	1.3209	1.3190	1.3127	1.3162	.0003
1 3/8-18 UNEF	1.3389	1.3374	1.3325	1.3353	.0003
1 7/16-18 UNEF	1.4014	1.3999	1.3949	1.3977	.0003
1 1/2-6 UNC	1.3917	1.3893	1.3812	1.3856	.0004
1 1/2-12 UNF	1.4459	1.4440	1.4376	1.4411	.0003
1 1/2-18 UNEF	1.4639	1.4624	1.4574	1.4602	.0003

Twist Drill Speed Conversion Charts Letter Sizes

Feet per Minute No. Size	20'	40'	60'	80'	100'	120'	140'
	REVOLUTIONS PER MINUTE						
A	326	654	982	1309	1636	1959	2285
B	321	642	963	1284	1605	1926	2247
C	316	631	947	1262	1578	1894	2210
D	311	622	934	1245	1556	1863	2174
E	306	611	917	1222	1528	1834	2139
F	297	594	892	1189	1486	1784	2081
G	293	585	878	1170	1463	1756	2049
H	287	574	862	1149	1436	1723	2010
I	281	562	842	1123	1404	1685	1966
J	276	552	827	1103	1279	1655	1930
K	272	554	815	1087	1359	1631	1903
L	263	527	790	1054	1317	1581	1844
M	259	518	777	1036	1295	1554	1813

Feet per Minute No. ISize	20'	40'	60'	80'	100'	120'	140'
	REVOLUTIONS PER MINUTE						
N	253	506	759	1012	1265	1518	1771
O	242	484	725	967	1209	1450	1692
P	237	473	710	946	1183	1419	1657
Q	230	460	690	920	1150	1384	1611
R	225	451	676	902	1127	1355	1577
S	220	439	659	878	1098	1317	1537
T	213	426	640	853	1066	1280	1494
U	208	415	623	830	1038	1246	1453
V	203	405	608	810	1013	1219	1418
W	198	396	594	792	989	1188	1385
X	192	385	576	769	962	1155	1347
Y	189	378	567	756	945	1135	1324
Z	185	370	555	740	925	1110	1295

Twist Drill Feeds Chart

Recommended Feeds For Various Diameter Drills	
Diameter of Drills	Feed Inches Per Revolution
Under 1/8	.001 to .003
1/8 to 1/4	.002 to .006
1/4 to 1/2	.004 to .010
1/2 to 1	.007 to .015
1 inch and over	.015 to .025

Note: It is best to start with a moderate speed and feed, increasing either one, or both, after observing the action and condition of the drill.

Formulas For Drilling Applications

$$\text{R.P.M.} = (3.8197 / \text{Drill Diameter}) \times \text{S.F.M.}$$

$$\text{S.F.M.} = 0.2618 \times \text{Drill Diameter} \times \text{R.P.M.}$$

$$\text{I.P.M.} = \text{I.P.R. (feed)} \times \text{R.P.M. (speed)}$$

$$\text{Machine Time (seconds)} = (60 \times \text{Feed minus Stroke}) / \text{I.P.M.}$$

R.P.M. = Revolutions Per Minute

S.F.M. = Surface Feet Per Minute

I.P.M. = Inches Per Minute

I.P.R. = Inches Per Revolution

Feed Stroke = Drill Depth + 1/3

Drill Diameter + Approach & Over Travel Distance

HSSCo8 NC-Spotting Drills Speed Charts

WORK MATERIAL DIAMETER(mm)	CARBON STEELS		ALLOY STEELS		ALLOY STEELS, TOOL STEELS, HARDENED STEELS		CARBON STEELS		CARBON STEELS	
	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR
1/8 5/32	2460	0.002	2110	0.002	1080	0.002	940	0.002	7040	0.005
11/64 3/16	1850	0.002	1580	0.002	800	0.002	700	0.002	5280	0.006
13/64 15/64	1510	0.003	1300	0.003	670	0.003	580	0.003	4400	0.006
1/4 5/16	1170	0.003	1030	0.003	540	0.003	460	0.003	3520	0.007
21/64 25/64	880	0.004	790	0.004	400	0.004	350	0.004	2640	0.008
13/32 15/32	700	0.004	630	0.004	320	0.004	290	0.004	2110	0.009
31/64 5/8	590	0.005	530	0.005	260	0.005	240	0.005	1760	0.011
41/64 47/64	460	0.007	400	0.007	200	0.007	180	0.007	1320	0.012
3/4 1	350	0.009	320	0.009	150	0.009	140	0.009	1060	0.017

ROYAL Gold-Tip Drill Speed charts Jobber Length - ANSI

WORK MATERIAL HARDNESS STRENGTH DIAMETER(inch)	CARBON STEELS		CARBON STEELS 240 Bhn.		ALLOY STEELS 240 - 320 Bhn.		STAINLESS STEELS 240 Bhn.	
	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR
	3/64 (.0469)	14000	0.0008	12500	0.0008	7700	0.0008	7000
#47 (.0785)	7000	0.0023	6100	0.0024	3850	0.0024	3500	0.0024
#32 (.1160)	4650	0.0038	4100	0.0031	2550	0.0031	2350	0.0031
#22 (.1570)	3500	0.0044	3050	0.0043	1950	0.0039	1750	0.0039
#9 (.1960)	2800	0.0049	2450	0.0043	1550	0.0039	1400	0.0039
B (.2380)	2350	0.0056	2050	0.0051	1300	0.0047	1150	0.0047
J (.2770)	2000	0.0064	1750	0.0059	1100	0.0055	1000	0.0055
O (.3160)	1750	0.0072	1550	0.0071	960	0.0059	875	0.0059
T (.3580)	1550	0.0077	1350	0.0087	855	0.0071	780	0.0071
X (.3970)	1400	0.0084	1250	0.0087	770	0.0071	700	0.0071
7/16 (.4375)	1250	0.0087	1100	0.0087	700	0.0071	650	0.0071
15/32 (.4688)	1150	0.0090	1000	0.0087	650	0.0079	585	0.0079
1/2 (.5000)	1050	0.0090	950	0.0087	595	0.0079	540	0.0079

WORK MATERIAL HARDNESS DIAMETER(inch)	TITANIUM ALLOYS		ALUMINUM ALLOYS, ZINC ALLOYS		MAGNESIUM ALLOYS	
	RPM	IPR	RPM	IPR	RPM	IPR
3/64 (.0469)	8050	0.0008	30000	0.0008	11500	0.0012
#47 (.0785)	4050	0.0024	15000	0.0023	5800	0.0035
#32 (.1160)	2700	0.0031	9900	0.0038	3850	0.0051
#22 (.1570)	2000	0.0035	7450	0.0044	2900	0.0059
#9 (.1960)	1600	0.0039	5950	0.0049	2300	0.0067
B (.2380)	1350	0.0047	4950	0.0056	1950	0.0075
J (.2770)	1150	0.0055	4250	0.0064	1650	0.0087
O (.3160)	1000	0.0059	3700	0.0072	1450	0.0094
T (.3580)	895	0.0067	3300	0.0079	1280	0.0106
X (.3970)	805	0.0071	3000	0.0090	1150	0.0114
7/16 (.4375)	730	0.0071	2700	0.0090	1050	0.0118
15/32 (.4688)	670	0.0079	2480	0.0090	960	0.0122
1/2 (.5000)	620	0.0079	2300	0.0090	890	0.0122

ROYAL Gold-Tip Drill Speed Charts

Jobber Length, DH100-ANSI

WORK MATERIAL HARDNESS	CARBON STEELS ALLOY STEELS 200 - 285 Bhn.		TOOL STEELS HARDENED STEELS 225 - 375 Bhn.		SOFT GREY CAST IRON		HARD GREY CAST IRON	
	DIAMETER(inch)	RPM	IPR	RPM	IPR	RPM	IPR	RPM
3/64 (.0469)	8750	0.0008	6300	0.0008	16000	0.0008	9800	0.0008
#47 (.0785)	4400	0.0022	3150	0.0022	7900	0.0027	4900	0.0027
#32 (.1160)	2900	0.0032	2100	0.0032	5250	0.0043	3250	0.0043
#22 (.1570)	2200	0.0036	1600	0.0036	3950	0.0054	2450	0.0054
#9 (.1960)	1750	0.0041	1250	0.0041	3150	0.0054	1950	0.0054
B (.2380)	1450	0.0047	1050	0.0047	2650	0.0069	1650	0.0069
J (.2770)	1250	0.0054	900	0.0054	2250	0.0078	1400	0.0078
O (.3160)	1100	0.0060	790	0.0060	1950	0.0087	1250	0.0087
T (.3580)	975	0.0066	700	0.0066	1750	0.0095	1100	0.0095
X (.3970)	875	0.0071	630	0.0071	1600	0.0108	980	0.0108
7/16 (.4375)	800	0.0077	575	0.0077	1450	0.0108	890	0.0108
15/32 (.4688)	730	0.0077	525	0.0077	1300	0.0108	815	0.0108
1/2 (.5000)	675	0.0077	485	0.0077	1200	0.0108	755	0.0108

ROYAL HP Drill Speed Charts

Application:

Drilling into steel in general, cast steel, cast iron, chilled cast iron, malleable cast iron, non-ferrous heavy metal, non-ferrous light metal, abrasive plastic.

Advantage:

Self centering - center drilling is not required
 Excellent positioning - bush is not necessary
 Special design - reaming is not required
 - good chip removal
 - powerful drilling

3XD TiAlN Coated Without coolant holes

**30° Helix
140° Point**

Material	Non Coolant Fed Drills / Inch Diameter											
	1/8~3/16		3/16~5/16		5/16~3/8		3/8~1/2		1/2~9/16		9/16~13/16	
	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR
Cast Iron <240 BHN	13120	0.006	8200	0.008	5970	0.011	4690	0.014	3860	0.016	2980	0.018
Cast Iron >240 BHN	8750	0.005	5470	0.006	3980	0.009	3120	0.011	2570	0.012	1990	0.014
Carbon Steels <300 BHN	7880	0.005	4920	0.006	3560	0.009	2810	0.011	2310	0.012	1790	0.014
Alloy Steels 300 - 400 BHN	7000	0.005	4370	0.006	3190	0.009	2500	0.011	2060	0.012	1590	0.014
Aluminum, Si <10%	13530	0.008	8450	0.010	6140	0.014	4830	0.017	3960	0.020	3080	0.022
Aluminum, Si >10%	11140	0.006	6960	0.008	5060	0.011	3980	0.014	3270	0.016	2530	0.018
Stainless Steels	3070	0.002	1910	0.003	1400	0.004	1090	0.005	910	0.006	700	0.007

Kf $\frac{3xD}{1.0}$ $\frac{5xD}{0.85}$

3XD & 5XD TiAlN Coated With coolant holes

**30° Helix
140° Point**

Material	Coolant Fed Drills / Inch Diameter											
	1/8~3/16		3/16~5/16		5/16~3/8		3/8~1/2		1/2~9/16		9/16~13/16	
	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR
Cast Iron <240 BHN	13120	0.006	8200	0.008	5970	0.011	4690	0.014	3860	0.016	2980	0.018
Cast Iron <240 BHN	14870	0.006	8200	0.008	6760	0.011	5310	0.014	4370	0.016	3380	0.018
Cast Iron >240 BHN	9620	0.006	6010	0.008	4370	0.011	3440	0.014	2830	0.016	2190	0.018
Carbon Steels <300 BHN	8750	0.006	5470	0.008	3980	0.011	3120	0.014	2570	0.016	1990	0.018
Alloy Steels 300 - 400 BHN	7880	0.005	4920	0.006	3580	0.009	2810	0.011	2310	0.012	1790	0.014
Aluminum, Si <10%	15910	0.008	9940	0.010	7230	0.014	5680	0.017	4680	0.020	3610	0.022
Aluminum, Si >10%	13530	0.008	8450	0.010	6140	0.014	4830	0.017	3980	0.020	3080	0.022
Stainless Steels	3500	0.002	2190	0.003	1590	0.004	1250	0.005	1030	0.006	800	0.007

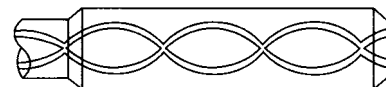
Kf $\frac{3xD}{1.0}$ $\frac{5xD}{0.85}$

up to .118	over .118 up to .236	over .236 up to .394	over .394 up to .709
+0	+0	+0	+0
-.00055	-.00071	-.00087	-.00106

Diameter Tolerance	DRILL DIAMETER TOLERANCE METRIC (σ_{d1})				
	1-3 from to	3-6 over to	6-10 over to	10-18 over to	18-30 over to
h6	0 -6	0 -8	0 -9	0 -11	0 -13
h7	0 -10	0 -12	0 -15	0 -18	0 -21
h8	0 -14	0 -18	0 -22	0 -27	0 -33
m7	+12 +2	+16 +4	+21 +6	+25 +7	+29 +8

mm = 1/1000 mm

SHANK TYPE – Form HA

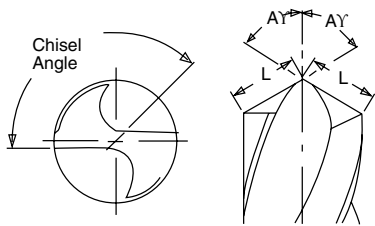


We recommend you to reduce the feed rate to Kf when you use 5xD drills.

Drill Points Suggested for Various Materials

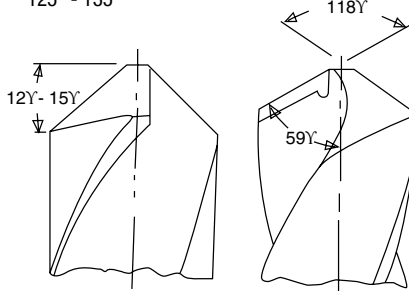
NOTE: Point designs illustrated are not necessarily available from factory stock. Grinds suggested may be made and evaluated by user.

IMPORTANT: Lip lengths and angles must be equal.



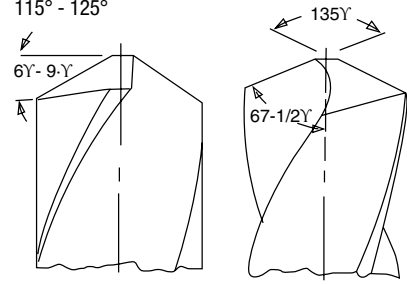
• BRASS and SOFT BRONZE

CHISEL ANGLE
125° - 135°



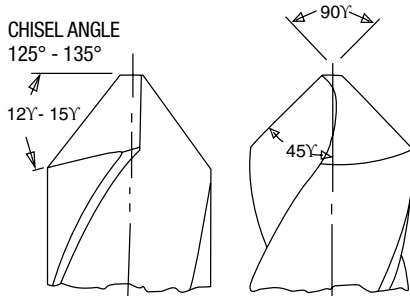
• HARD and TOUGH MATERIALS,
MANGANESE STEEL RAILS, etc.

CHISEL ANGLE
115° - 125°



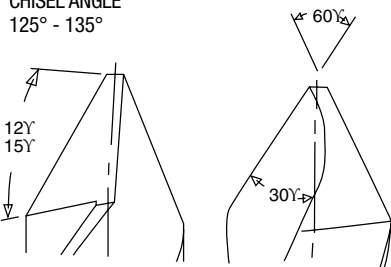
• HARD WOOD, BAKELITE, HARD RUBBER and FIBERS,
SOFT and MEDIUM CAST IRON

CHISEL ANGLE
125° - 135°



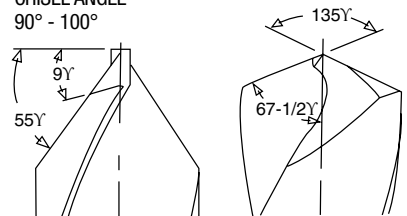
• WOOD, RUBER, BAKELITE,
FIBER, MOLDED PLASTICS

CHISEL ANGLE
125° - 135°



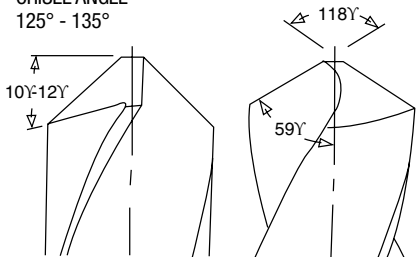
• CRANKSHAFT or SPLIT POINT for
DEEP HOLES
Overcomes excessive thrust (due to heavy web) HARD
and TOUGH MATERIALS

CHISEL ANGLE
90° - 100°



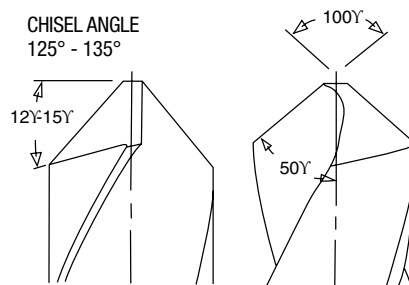
• REGULAR POINT...GENERAL PURPOSE, MILD STEELS,
LAMINATED PLASTICS, etc.

CHISEL ANGLE
125° - 135°



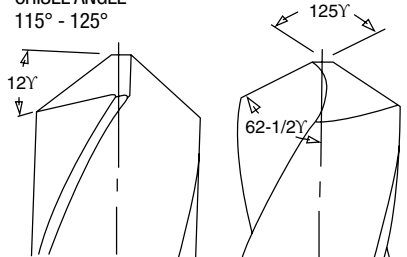
• SOFT ALUMINUM, MAGNESIUM, COPPER and MEDIUM
HARD BRASS

CHISEL ANGLE
125° - 135°

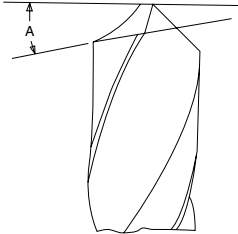


• HEAT TREATED STEELS, DROP FORGINGS and
CONNECTING RODS

CHISEL ANGLE
115° - 125°

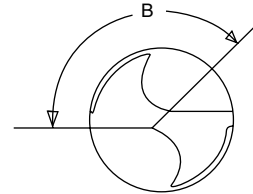


Lip Relief Angles for Drills



The lip relief angle "A" should vary according to the material to be drilled, and also according to the drill diameter. Hard and tough material call for lesser relief angles than do the soft, free machining materials.

Also the smaller diameter drills require a greater amount of relief than do the larger diameters.



The chisel point angle "B" will increase or decrease with the relief angle "A", but should be held in the range of 115° to 135°.

The accompanying table of suggested relief angles for various drill diameters, and materials to be drilled, will be found useful as a guide:—

Causes of Failures of Twist Drills

Indications	Causes
Outer corners breakdown	Cutting speed too high. Hard spots in material. No cutting compound at drill point.
Cutting edges chip	Too much feed. Lip clearance too great.
Checks or cracks in cutting edges	Overheated or too quickly cooled while sharpening or drilling.
Margin chips	Oversize jig bushing.
Drill breaks	Point improperly ground. Feed too heavy. Spring or back lash in drill press, fixture or work. Drill is dull. Flutes clogged with chips.
Tang breaks	Imperfect fit between taper shank and socket caused by dirt or chips, or burred or badly worn sockets.

Indications	Causes
Drill breaks when drilling brass or wood	Flutes clogged with chips. Improper type drill
Drill splits up center	Lip clearance too small. Too much feed.
Drill will not enter work	Drill is dull. Lip clearance too small. Too heavy a web.
Hole rough	Point improperly ground or dull. No cutting compound at drill point. Feed too great. Fixture not rigid.
Hole oversize	Drill point improperly ground.
Chip shape changes while drilling	Drill becomes dull or cutting edges chipped.
Large chip coming out of one flute, small chip out of other flute	Point improperly ground, one lip doing all the cutting.

Suggested Lip Relief Angles at Periphery

Drill Diameters	For General Purpose	Hard and Tough Materials	Soft and Free Machining Materials
No. 80 to No. 61	24°	20°	26°
No. 60 to No. 41	21°	18°	24°
No. 40 to No. 31	18°	16°	22°
No. 30 to 1/4"	16°	14°	20°
F to 11/32"	14°	12°	18°
S to 1/2" 12°	10°	16°	
33/64" to 3/4"	10°	8°	14°
49/64" and Larger	8°	7°	12°

Lip Height Variation

Drill Diameter Range	TIV (Total Indicator Variation)
1/16 to 1/8" inclusive (.0625 to .0125)	.0020
Over 1/8 to 1/4" inclusive (.1250 to .2500)	.0030
Over 1/4 to 1/2" inclusive (.2500 to .5000)	.0040
Over 1/2 to 1" inclusive (.5000 to 1.0000)	.0050
Over 1 to 3-1/2" inclusive (1.0000 to 3.5000)	.0060

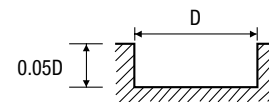
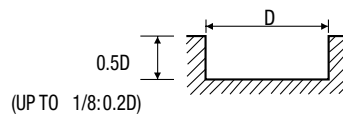
Diameter Tolerance at Point

Drill Diameter Range	Tolerance
#97 to #81 inclusive (.0059 to .0130)	+ .0002 to - .0002
Over #81 to 1/8" inclusive (.0130 to .1250)	+ .0000 to - .0005
Over 1/8 to 1/4" inclusive (.1250 to .2500)	+ .0000 to - .0007
Over 1/4 to 1/2" inclusive (.2500 to .5000)	+ .0000 to - .0010
Over 1/2 to 1" inclusive (.5000 to 1.0000)	+ .0000 to - .0012
Over 1 to 2" inclusive (1.0000 to 2.0000)	+ .0000 to - .0015
Over 2 to 3-1/2" inclusive (2.0000 to 3.5000)	+ .0000 to - .0020

95% of drills in any one lot to fall within above tolerances. Suggested Method of Measurement:—Rotate the drill in a V-Block against a back end stop. Measure the cutting lip height variation on a comparator, or with an indicator set at a location approximately 75% of the distance from the center to the periphery of the drill

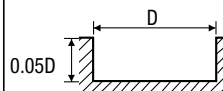
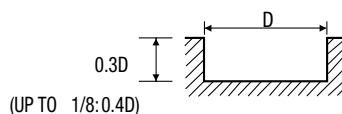
PREMIUM HSC MILL Speed & Feed Charts 2 Flute, FINISH, SLOTTING

MATERIAL HARDNESS	CARBON STEELS ALLOY STEELS CAST IRON < 300 BHN.		ALLOY STEELS TOOL STEELS 300 - 430 BHN.		STAINLESS STEELS		HARDENED STEELS 430 - 550 BHN.		HARDENED STEELS 550 - 710 BHN.		
	DIAMETER	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM
1/16	11560	7.50	7560	4.70	6300	3.55	5040	1.40			
1/8	8920	8.25	5560	5.50	4620	4.70	3360	1.55	1900	1.55	
3/16	6300	12.60	3780	7.50	3160	6.30	2320	1.95	1260	1.55	
1/4	5560	13.80	3360	8.65	2840	7.10	2000	2.15	1100	1.55	
5/16	4200	14.95	2520	7.85	2100	7.10	1680	2.95	840	1.55	
3/8	3260	13.00	2000	6.30	1680	6.30	1360	2.35	680	1.40	
1/2	2740	11.00	1680	5.10	1360	5.10	1160	2.15	560	1.40	
5/8	2200	8.65	1360	4.30	1060	4.30	900	1.55	440	0.80	
3/4	1680	6.70	1060	3.15	840	3.15	680	1.20	320	0.80	
1	1360	5.10	840	2.75	680	2.35	540	0.80	260	0.60	



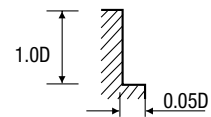
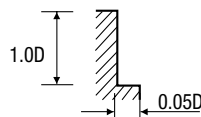
2 Flute, FINISH LONG, SLOTTING

MATERIAL HARDNESS	CARBON STEELS ALLOY STEELS CAST IRON 300 BHN.		ALLOY STEELS TOOL STEELS 300 - 430 BHN.		STAINLESS STEELS 430 - 550 BHN.		
	DIAMETER	RPM	IPM	RPM	IPM	RPM	IPM
1/8	4410	7.8	3570	2.4	2200	1.2	
3/16	3050	4.1	2420	3.3	1580	1.6	
1/4	2630	4.9	2100	4.1	1370	2.0	
5/16	2000	5.3	1580	4.1	1050	2.0	
3/8	1680	5.3	1370	4.1	840	2.0	
1/2	1370	4.1	1160	3.7	700	1.6	
5/8	1160	3.7	890	3.0	560	1.4	
3/4	840	2.8	680	2.0	420	1.0	
1	610	2.0	540	1.6	330	0.7	



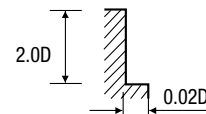
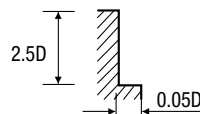
PREMIUM HSC MILL Speed & Feed Charts 4 Flute, FINISH, SIDE CUTTING

MATERIAL HARDNESS	CARBON STEELS ALLOY STEELS CAST IRON < 300 BHN.		ALLOY STEELS TOOL STEELS 300 - 430 BHN.		STAINLESS STEELS		HARDENED STEELS 430 - 550 BHN. 1500 ~		HARDENED STEELS 550 - 710 BHN.		
	DIAMETER	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM
1/16	11560	11.00	7560	6.70	6300	5.50	5040	1.95			
1/8	8920	12.60	5560	7.85	4620	6.70	3360	2.35	1900	2.35	
3/16	6300	23.60	3780	14.15	3160	11.80	2320	2.75	1260	2.35	
1/4	5560	26.00	3360	16.15	2840	13.00	2000	3.15	1100	2.35	
5/16	4200	27.95	2520	14.95	2100	13.80	1680	4.30	840	2.35	
3/8	3260	24.00	2000	11.80	1680	11.80	1360	3.55	680	1.95	
1/2	2740	20.50	1680	9.85	1360	9.45	1160	3.15	560	1.95	
5/8	2200	16.15	1360	7.85	1060	7.85	900	2.35	440	1.20	
3/4	1680	12.60	1060	6.30	840	5.90	680	1.55	320	1.20	
1	1360	9.85	840	5.10	680	4.70	540	1.20	260	0.80	

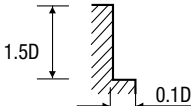
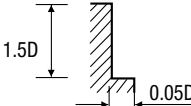
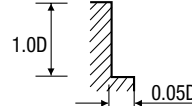
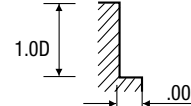


4 Flute, LONG, SIDE CUTTING

MATERIAL HARDNESS	CARBON STEELS ALLOY STEELS CAST IRON 300 BHN.		ALLOY STEELS TOOL STEELS 300 - 430 BHN.		HARDENED STEELS 430 - 550 BHN.		HARDENED STEELS 550 - 710 BHN.	
	DIAMETER	RPM	IPM	RPM	IPM	RPM	IPM	RPM
1/8	4410	4.5	3570	3.9	2200	2.2	1890	1.2
3/16	3050	7.1	2420	5.5	1580	2.8	1260	1.6
1/4	2630	8.5	2100	7.1	1370	3.5	1160	2.0
5/16	2000	9.1	1580	7.1	1050	3.5	840	2.0
3/8	1680	9.1	1370	7.1	840	3.5	670	2.0
1/2	1370	7.1	1160	6.3	700	2.8	560	1.6
5/8	1160	6.3	890	4.9	560	2.4	440	1.4
3/4	840	4.5	680	3.5	420	1.8	340	1.0
1	670	4.5	540	3.5	340	1.8	270	1.0



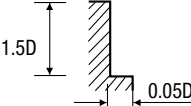
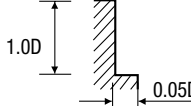
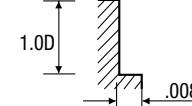
PREMIUM HSC MILL Speed & Feed Charts 6 & 8 Flute, 45° Helix, Long, Side Cutting

MATERIAL	CARBON STEELS ALLOY STEELS CAST IRON		ALLOY STEELS TOOL STEELS		HARDENED STEELS		HARDENED STEELS	
	< 285 BHN.		285 - 495 BHN.		495 - 550 BHN.		550 - 710 BHN.	
HARDNESS								
DIAMETER	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM
1/4	5560	79.00	3880	54.00	1580	8.25	1100	5.10
5/16	4200	79.00	2940	54.00	1160	8.25	840	5.10
3/8	3360	79.00	2320	54.00	1000	8.25	680	5.10
1/2	2840	66.00	2000	46.00	840	7.10	560	4.35
5/8	2100	50.00	1480	35.00	640	5.10	420	2.75
3/4	1680	40.00	1160	27.00	500	4.35	320	2.35
1	1260	25.00	870	17.50	375	3.00	240	1.54
								

RPM=REVOLUTION PER MIN.
FEED=inch/min.

6 & 8 Flute, 45° Helix, Long, Side Cutting

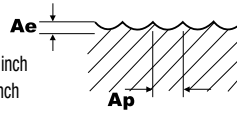
(HIGH SPEED CUTTING)

MATERIAL	CARBON STEELS TOOL STEELS		HARDENED STEELS		HARDENED STEELS	
	< 495 BHN.		495 - 550 BHN.		> 550 BHN.	
HARDNESS						
DIAMETER	RPM	IPM	RPM	IPM	RPM	IPM
1/4	16800	240.00	8400	120.00	4200	58.00
5/16	12600	240.00	6300	120.00	3160	58.00
3/8	9980	235.00	5040	120.00	2520	58.00
1/2	8400	199.00	4200	100.00	2100	50.00
5/8	6300	149.00	3160	75.00	1580	37.00
3/4	5040	120.00	2520	58.00	1260	30.00
1	3790	75.00	1890	38.00	950	19.00
						

PREMIUM HSC MILL Speed & Feed Charts 2 Flute, BALL NOSE, LONG

MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS	
	< 285 BHN.		285 - 430 BHN.		430 - 710 BHN.	
DIAMETER	RPM	IPM	RPM	IPM	RPM	IPM
R1/64×1/32	15760	9.80	12720	7.80	5800	3.50
R1/32×1/16	15760	13.80	12140	10.60	5320	4.70
R3/64×3/32	14400	29.50	10700	19.30	4680	5.90
R1/16×1/8	13100	26.70	10000	18.10	4520	5.90
R3/32×3/16	9140	32.30	7300	22.80	3680	7.10
R1/8×1/4	7780	33.00	6300	24.80	3160	7.50
R5/32×5/16	5260	37.50	4420	26.00	2100	7.50
R3/16×3/8	4620	40.10	3780	28.00	1780	7.50
R1/4×1/2	3780	35.40	2940	26.00	1360	7.50
R5/16×5/8	2740	36.20	2320	26.00	1160	7.50
R3/8×3/4	2100	33.00	1900	25.00	840	7.50

Ae: D1/32~D1/4 =.008 inch
D5/16~D3/4=.012 inch
Ap: 0.2×D

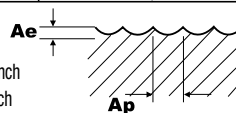


Ae: D1/32~D1/4
=.008 inch
D5/16~D3/4
=.012 inch
Ap: 0.1×D

(HIGH SPEED CUTTING)

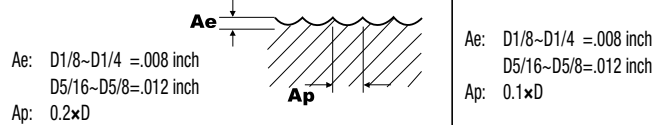
MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		HARDENED STEELS	
	< 430 BHN.		430 - 710 BHN.	
DIAMETER	RPM	IPM	RPM	IPM
R1/64×1/32	25000	25.60	25000	15.70
R1/32×1/16	23000	27.50	23000	16.90
R3/64×3/32	21000	34.60	19000	19.30
R1/16×1/8	21000	39.40	17000	20.50
R3/32×3/16	21000	70.90	12000	23.60
R1/8×1/4	21000	90.90	10500	24.80
R5/32×5/16	15760	111.80	7880	29.10
R3/16×3/8	13660	120.00	6300	33.00
R1/4×1/2	10500	103.50	5260	33.00
R5/16×5/8	8200	103.50	3780	28.00
R3/8×3/4	6300	99.00	2940	20.80

Ae: D1/32~D1/4 =.008 inch
D5/16~D3/4=.012 inch
Ap: 0.05×D



PREMIUM HSC MILL Speed & Feed Charts 4 Flute, BALL NOSE, LONG

MATERIAL HARDNESS	CARBON STEELS ALLOY STEELS CAST IRON < 285 BHN.		ALLOY STEELS TOOL STEELS 285 - 430 BHN.		HARDENED STEELS 430 - 710 BHN.	
	DIAMETER	RPM	IPM	RPM	IPM	IPM
R1/16×1/8	13100	40.10	10000	27.00	4520	8.85
R3/32×3/16	9140	48.50	7300	34.00	3680	10.50
R1/8×1/4	7780	49.50	6300	37.00	3160	11.25
R5/32×5/16	5260	56.00	4420	39.00	2100	11.25
R3/16×3/8	4620	60.00	3780	42.00	1780	11.25
R1/4×1/2	3780	53.00	2940	39.00	1360	11.25
R5/16×5/8	2740	54.50	2320	38.50	1160	11.25



(HIGH SPEED CUTTING)

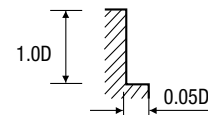
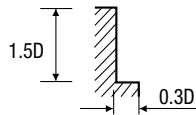
MATERIAL HARDNESS	CARBON STEELS ALLOY STEELS CAST IRON < 430 BHN.		ALLOY STEELS TOOL STEELS 430 - 710 BHN.	
	DIAMETER	RPM	IPM	IPM
R1/16×1/8	21000	59.00	17000	30.50
R3/32×3/16	21000	106.25	12000	35.50
R1/8×1/4	21000	136.50	10500	37.00
R5/32×5/16	15760	167.50	7880	43.50
R3/16×3/8	13660	180.00	6300	49.50
R1/4×1/2	10500	155.50	5260	49.50
R5/16×5/8	8200	155.50	3780	42.00



RPM = REVOLUTION PER MIN.
FEED = inch/min.

PREMIUM HSC MILL Speed & Feed Charts MULTI FLUTE ROUGHING, SIDE CUTTING

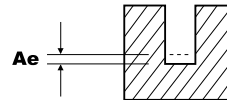
MATERIAL	NON-ALLOYED STEELS ALLOY STEELS CAST IRON		ALLOY STEELS HEAT RESISTANT STEELS		ALLOY STEELS HEAT RESISTANT STEELS		HARDENED STEELS		HARDENED STEELS	
	HARDNESS < 285 BHN.		285 - 365 BHN.		365- 430 BHN.		430 - 550 BHN.		550 - 710 BHN.	
DIAMETER	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM
1/4	15600	91.35	12400	33.10	8400	22.45	3400	10.25	2400	7.50
5/16	11600	91.35	9200	33.10	6300	22.45	2400	9.50	1800	7.10
3/8	9200	91.35	7600	33.10	5100	22.45	2000	11.40	1300	7.50
1/2	8000	94.50	6000	31.50	4200	22.45	1680	10.25	1200	7.50
5/8	6000	94.50	4800	29.90	3300	20.05	1200	6.30	800	4.35
3/4	5200	91.35	4400	28.35	2700	16.55	1100	5.90	700	3.95
1	4800	85.05	3600	22.05	2400	14.15	1000	5.90	660	3.95



PREMIUM HSC MILL Speed & Feed Charts 2 FLUTE FINISH for RIB PROCESSING

MATERIAL HARDNESS	NON-ALLOYED STEELS ALLOY STEELS CAST IRON < 285 BHN.			ALLOY STEELS HEAT RESISTANT STEELS 285 - 430 BHN.			HARDENED STEELS 430 - 550 BHN.		
	DIAMETER	RPM	IPM	Ae (inch)	RPM	IPM	Ae (inch)	RPM	IPM
1/32	27000~35000	7.5~16.5	.0006~.0014	19500~24500	2.4~9.5	.0006~.0014	12500~14800	1.4~3.7	.0003~.0006
3/64	18500~23500	7.5~23.6	.0022~.0039	13000~16500	3.7~11.8	.0022~.0039	8300~10500	2.0~3.9	.0004~.0009
1/16	14000~18000	7.5~23.6	.0030~.0057	10200~12800	3.7~11.8	.0030~.0057	6400~ 8000	2.0~3.9	.0006~.0012
5/64	12000~14500	7.5~23.6	.0035~.0071	8300~10500	3.7~11.8	.0035~.0071	5300~ 6600	2.0~3.9	.0007~.0014
3/32	9500~12000	7.5~23.6	.0044~.0093	6700~ 8500	3.7~11.8	.0044~.0093	4300~ 5300	2.0~3.9	.0009~.0018
1/8	8000~10000	7.5~23.6	.0053~.0106	5500~ 7000	3.7~11.8	.0053~.0106	3500~ 4400	2.0~3.9	.0011~.0022

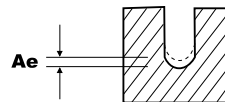
(Depth of Cut per one pass)



2 FLUTE BALL NOSE for RIB PROCESSING

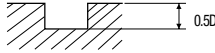
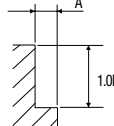
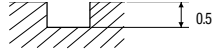
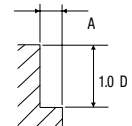
MATERIAL HARDNESS	NON-ALLOYED STEELS ALLOY STEELS CAST IRON < 285 BHN.			ALLOY STEELS HEAT RESISTANT STEELS 285 - 430 BHN.			HARDENED STEELS 430 - 550 BHN.		
	DIAMETER	RPM	IPM	Ae (inch)	RPM	IPM	Ae (inch)	RPM	IPM
R1/64x1/32	27000~35000	7.5~16.5	.0006~.0014	19500~24500	2.4~9.5	.0006~.0014	12500~14800	1.4~3.7	.0003~.0006
R.0234x3/64	18500~23500	7.5~23.6	.0022~.0039	13000~16500	3.7~11.8	.0022~.0039	8300~10500	2.0~3.9	.0004~.0009
R1/32x1/16	14000~18000	7.5~23.6	.0030~.0057	10200~12800	3.7~11.8	.0030~.0057	6400~ 8000	2.0~3.9	.0006~.0012
R.0391x5/64	12000~14500	7.5~23.6	.0035~.0071	8300~10500	3.7~11.8	.0035~.0071	5300~ 6600	2.0~3.9	.0007~.0014
R3/64x3/32	9500~12000	7.5~23.6	.0044~.0093	6700~ 8500	3.7~11.8	.0044~.0093	4300~ 5300	2.0~3.9	.0009~.0018
R1/16x1/8	8000~10000	7.5~23.6	.0053~.0106	5500~ 7000	3.7~11.8	.0053~.0106	3500~ 4400	2.0~3.9	.0011~.0022

(Depth of Cut per one pass)



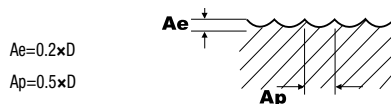
PREMIUM ALU MILL Speed & Feed Charts 2 Flute, CORNER RADIUS END MILLS WITH NECK

MATERIAL DIAMETER	ALUMINUM ALUMINUM ALLOY				COPPER ALLOY			
	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM
R.012×5/32	10000	36.35	10000	42.40	3000	9.10	3000	10.60
R.020×1/4	10000	45.40	10000	60.60	3000	11.50	3000	15.15
R.024×5/16	8000	54.50	8000	69.60	2300	13.60	2300	17.55
R.031×3/8	8000	66.60	8000	81.75	2300	16.65	2300	20.60
R.040×1/2	8000	81.75	8000	103.00	2300	20.55	2300	25.75
R.051×5/8	6000	75.70	6000	93.90	1800	19.05	1800	23.60
R.063×3/4	4000	60.60	4000	75.70	1150	15.15	1150	19.10

	<p>A: 5/32" 3/8=0.25 D 1/2" 3/4=0.5 D</p> 		<p>A: 5/32" 3/8=0.25 D 1/2" 3/4=0.5 D</p> 
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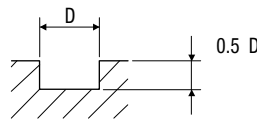
3 Flute, BALL NOSE END MILLS WITH NECK

MATERIAL DIAMETER	ALUMINUM ALUMINUM ALLOY		COPPER ALLOY	
	RPM	IPM	RPM	FEED
R3/64×3/32	20700	28.80	6200	7.25
R1/16×1/8	13800	28.80	4200	7.25
R3/32×3/16	13800	40.90	4200	10.30
R1/8×1/4	13800	53.00	4200	13.30
R5/32×5/16	10800	60.55	3200	15.15
R3/16×3/8	10800	71.15	3200	17.55
R1/4×1/2	10800	90.85	3200	22.70
R5/16×5/8	8500	81.75	2500	20.30



PREMIUM HSS MILL Speed & Feed Charts 2Flute, FINISH Slotting, HSS-Co8 END MILLS

MATERIAL HARDNESS DIAMETER	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS < 225 BHN.		CARBON STEELS ALLOY STEELS TOOL STEELS 225 - 285 BHN.		CARBON STEELS ALLOY STEELS TOOL STEELS 285 - 375 BHN.		ALUMINUM ALUMINUM ALLOYS	
	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM
1/8	3500	2.20	3200	1.80	2500	1.60	1600	0.80	11000	9.80
1/4	1800	3.50	1600	3.10	1200	2.40	800	1.60	5600	12.20
3/8	1100	4.00	900	3.50	800	3.10	450	1.80	3100	15.80
1/2	900	4.30	800	4.00	630	3.10	400	2.00	2500	15.00
5/8	700	4.30	560	3.50	450	2.80	280	1.80	2000	13.80
3/4	630	4.00	500	3.50	400	2.80	250	1.80	1800	13.80
7/8	500	4.00	450	3.50	350	2.80	220	1.80	1400	11.80
1	450	3.50	400	3.10	310	2.40	180	1.40	1200	11.00
1-1/8	400	3.10	350	2.80	280	2.20	160	1.20	1100	10.50
1-3/8	310	2.40	250	2.00	200	1.60	120	1.00	900	8.70
1-1/2	310	2.40	250	2.00	200	1.60	120	1.00	900	8.70
1-3/4	280	2.40	220	2.00	180	1.60	110	1.00	800	7.80
2	250	2.00	190	1.80	110	1.00	80	0.80	630	6.30

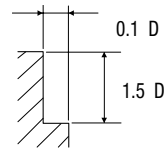


The FEED, in long & extra long types, should be reduced by around 50%

PREMIUM HSS MILL Speed & Feed Charts

MULTI Flute, FINISH Side Cutting, HSS-Co8 END MILLS

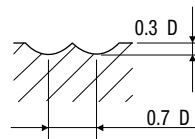
MATERIAL HARDNESS	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS < 225 BHN.		CARBON STEELS ALLOY STEELS TOOL STEELS 225 - 285 BHN.		CARBON STEELS ALLOY STEELS TOOL STEELS 285 - 375 BHN.		ALUMINUM ALUMINUM ALLOYS	
	DIAMETER	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM
1/8	3500	4.30	3200	3.10	2500	2.40	1600	1.20	11000	15.00
1/4	1800	7.10	1600	5.70	1200	3.50	800	2.40	5600	18.50
3/8	1100	7.90	900	6.30	800	4.70	450	2.60	3100	23.60
1/2	900	8.70	800	7.10	630	4.70	400	3.00	2500	22.40
5/8	700	8.70	560	6.30	450	4.10	280	2.60	2000	20.90
3/4	630	7.90	500	6.30	400	4.10	250	2.60	1800	20.90
13/16	500	7.90	450	6.30	350	4.10	220	2.60	1400	17.70
15/16	500	7.90	450	6.30	350	4.10	220	2.60	1400	17.70
1	450	7.10	400	5.70	310	3.50	180	2.00	1200	16.50
1-1/2	310	4.70	250	3.50	200	2.40	120	1.40	900	13.00
1-3/4	280	4.70	220	3.50	150	2.40	110	1.40	800	11.80
2	280	4.70	190	3.50	110	1.80	80	1.00	630	11.80



The FEED, in long & extra long types, should be reduced by around 50%

PREMIUM HSS MILL Speed & Feed Charts 2Flute. BALL NOSE, HSS-Co8 END MILLS

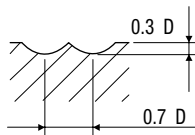
MATERIAL HARDNESS	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS < 225 BHN.		CARBON STEELS ALLOY STEELS TOOL STEELS 225 - 285 BHN.		CARBON STEELS ALLOY STEELS TOOL STEELS 285 - 375 BHN.		ALUMINUM ALUMINUM ALLOYS	
	DIAMETER	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM
R1/16 × 1/8	4500	3.70	3400	2.80	2000	1.20	1400	0.80	11000	9.10
R5/64 × 5/32	3200	4.50	2400	3.10	1400	1.40	1000	1.00	8000	10.20
R1/8 × 1/4	2200	5.30	1700	3.50	1000	1.80	700	1.00	5600	11.00
R5/32 × 5/16	1600	6.30	1200	4.10	700	2.00	500	1.20	4000	13.80
R3/16 × 3/8	1300	7.10	1000	4.70	560	2.40	400	1.40	3200	14.20
R1/4 × 1/2	1000	6.70	800	4.10	450	2.20	320	1.40	2500	13.40
R5/16 × 5/8	800	6.00	600	4.00	350	2.20	250	1.40	2000	11.80
R3/32 × 3/16	600	5.50	500	3.40	300	2.00	200	1.40	1600	11.00
R1/2 × 1	500	5.10	400	2.80	220	1.60	160	1.20	1300	9.80



The FEED, in long & extra long types, should be reduced by around 50%

Multi Flute, BALL NOSE, HSS-Co8 END MILLS

MATERIAL HARDNESS	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS < 225 BHN.		CARBON STEELS ALLOY STEELS TOOL STEELS 225 - 285 BHN.		CARBON STEELS ALLOY STEELS TOOL STEELS 285 - 375 BHN.		ALUMINUM ALUMINUM ALLOYS	
	DIAMETER	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM
R1/8 × 1/4	2200	7.90	1700	5.30	1000	2.80	700	1.60	5600	16.50
R5/32 × 5/16	1600	9.40	1200	6.30	700	3.00	500	1.80	4000	20.90
R3/16 × 3/8	1300	10.60	1000	7.10	560	3.50	400	2.00	3200	21.30
R1/4 × 1/2	1000	10.20	800	6.30	450	3.10	320	2.00	2500	20.10
R5/16 × 5/8	800	9.10	600	6.00	350	3.10	250	2.00	2000	17.70
R3/32 × 3/16	600	8.30	500	5.10	300	3.00	200	2.00	1600	16.50
R1/2 × 1	500	7.90	400	4.10	220	2.40	160	1.80	1300	15.00

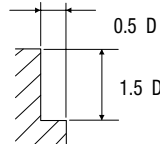


The FEED, in long & extra long types, should be reduced by around 50%

PREMIUM HSS MILL Speed & Feed Charts

MULTI Flute, Side Cutting, ROUGHING, HSS-Co8 END MILLS

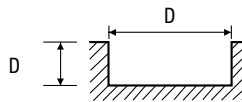
MATERIAL HARDNESS DIAMETER	CARBON STEELS ALLOY STEELS TOOL STEELS		CARBON STEELS ALLOY STEELS TOOL STEELS < 225 BHN.		CARBON STEELS ALLOY STEELS TOOL STEELS 225 - 285 BHN.		CARBON STEELS ALLOY STEELS TOOL STEELS 285 - 375 BHN.		ALUMINUM ALUMINUM ALLOYS	
	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM
1/4	1800	3.10	1600	2.40	1200	2.20	800	1.20	4500	7.90
5/16	1400	4.10	1100	3.00	900	2.60	560	1.40	3100	9.10
3/8	1100	6.00	900	4.70	800	4.30	450	2.40	2500	13.80
1/2	900	7.10	800	5.50	630	4.30	400	2.80	2000	15.80
5/8	700	7.10	560	5.50	450	4.30	280	2.80	1600	17.70
11/16	630	7.10	500	5.50	400	4.30	250	2.80	1400	18.50
7/8	500	8.70	450	6.70	350	5.50	220	3.40	1100	18.50
1	450	8.70	400	6.70	310	5.50	180	3.40	1000	17.70
1-1/8	400	8.10	350	6.30	280	5.10	160	3.40	900	20.10
1-1/4	350	8.10	280	6.30	220	5.10	140	3.40	800	19.70
1-3/8	310	8.10	250	6.30	200	5.10	120	3.40	700	18.50
1-3/4	280	7.90	220	6.00	180	4.70	110	3.10	630	17.70
2	220	7.90	180	6.70	160	5.50	90	3.10	500	14.60



The FEED, in long & extra long types, should be reduced by around 50%

PREMIUM CARBIDE MILL Speed & Feed Charts 2 FLUTE END MILLS, SLOTTING

MATERIAL HARDNESS	CARBON STEELS ALLOY STEELS TOOL STEELS < 225 BHN.		CARBON STEELS ALLOY STEELS TOOL STEELS 225 - 285 BHN.		CARBON STEELS ALLOY STEELS TOOL STEELS 285 - 375 BHN.		STAINLESS STEELS TITANIUM ALLOYS		CAST IRON		ALUMINUM ALLOYS		COPPER, BRASS NON-FERROUS METALS	
	DIAMETER	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM
3/32	5500	3.15	4800	2.76	4000	2.17	8000	2.56	6500	5.91	16000	12.60	12000	9.45
1/8	3700	3.54	3200	3.15	2600	2.36	5300	2.56	4200	5.91	11000	12.60	8000	9.45
5/32	2800	3.54	2400	3.15	2000	2.36	4000	2.56	3200	5.91	8000	12.60	6000	9.45
3/16	2200	3.54	1900	3.15	1600	2.36	3200	2.56	2500	5.91	6400	12.60	4800	9.45
1/4	1800	3.54	1600	3.15	1300	2.36	2600	2.56	2100	7.09	5300	13.39	4000	10.24
5/16	1400	3.54	1200	3.15	1000	2.36	2000	2.56	1600	7.48	4000	13.39	3000	10.24
3/8	1100	3.54	950	3.15	800	2.36	1600	2.56	1300	7.87	3200	13.39	2400	10.24
1/2	900	3.54	800	3.15	660	2.36	1300	2.56	1000	8.27	2600	13.39	2000	10.24
9/16	800	3.54	700	3.15	570	2.36	1100	2.56	900	8.66	2300	13.39	1700	10.24
5/8	700	3.94	600	3.35	500	2.95	1000	2.95	800	8.86	2000	13.39	1500	10.24
13/16	550	3.94	480	3.35	400	2.95	800	3.15	640	9.45	1600	13.39	1200	10.24

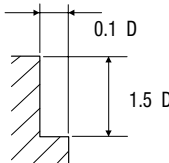


The FEED, in long & extra long types, should be reduced by around 50%

PREMIUM CARBIDE MILL Speed & Feed Charts 4 FLUTE END MILLS, SIDE CUTTING

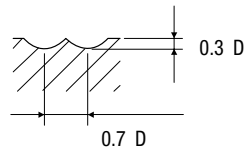
MATERIAL HARDNESS	CARBON STEELS ALLOY STEELS TOOL STEELS < 225 BHN.		CARBON STEELS ALLOY STEELS TOOL STEELS 225 - 285 BHN.		CARBON STEELS ALLOY STEELS TOOL STEELS 285 - 375 BHN.		STAINLESS STEELS TITANIUM ALLOYS		CAST IRON		ALUMINUM ALLOYS		COPPER, BRASS NON-FERROUS METALS	
	DIAMETER	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM
3/32	5500	9.45	4800	8.27	4000	6.30	8000	7.87	6500	17.72	16000	37.80	12000	25.35
1/8	3700	10.63	3200	9.45	2600	7.09	5300	7.87	4200	17.72	11000	37.80	8000	25.35
5/32	2800	10.63	2400	9.45	2000	7.09	4000	7.87	3200	17.72	8000	37.80	6000	25.35
3/16	2200	10.63	1900	9.45	1600	7.09	3200	7.87	2500	17.72	6400	37.80	4800	25.35
1/4	1800	10.63	1600	9.45	1300	7.09	2600	7.87	2100	21.26	5300	40.16	4000	30.71
5/16	1400	10.63	1200	9.45	1000	7.09	2000	7.87	1600	22.44	4000	40.16	3000	30.71
3/8	1100	10.63	950	9.45	800	7.09	1600	7.87	1300	23.62	3200	40.16	2400	30.71
1/2	900	10.63	800	9.45	660	7.09	1300	7.87	1000	24.80	2600	40.16	2000	30.71
9/16	800	10.63	700	9.45	570	7.09	1100	7.87	900	25.98	2300	40.16	1700	30.71
5/8	700	11.81	600	10.24	500	8.66	1000	8.86	800	26.77	2000	40.16	1500	30.71
13/16	550	11.81	480	10.24	400	8.66	800	9.45	640	28.35	1600	40.16	1200	30.71

The FEED, in long & extra long types, should be reduced by around 50%



PREMIUM CARBIDE MILL Speed & Feed Charts 2 FLUTE. BALL NOSE END MILLS

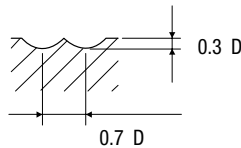
MATERIAL HARDNESS DIAMETER	CARBON STEELS ALLOY STEELS TOOL STEELS < 285 BHN.		CARBON STEELS ALLOY STEELS TOOL STEELS 285 - 375 BHN.		CAST IRON		ALUMINUM ALLOYS	
	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM
3/32	5200	3.54	4400	1.77	7300	5.91	21500	11.02
1/8	3500	3.94	2900	1.77	4900	6.30	14300	11.02
5/32	2600	3.94	2100	1.77	3600	7.87	10900	11.02
3/16	2100	4.13	1700	1.77	2900	9.06	8800	12.99
1/4	1700	3.94	1430	1.77	2400	9.84	7260	12.99
5/16	1270	3.74	1100	1.77	1800	12.60	5500	14.96
3/8	1000	3.74	870	1.77	1430	12.60	4300	14.96
1/2	870	3.35	730	1.77	1200	12.60	3600	17.32
9/16	750	3.35	620	1.77	1000	12.80	3000	17.32
5/8	650	3.35	540	1.77	920	12.80	2700	14.96
11/16	580	3.35	480	1.77	810	12.80	2400	14.96
13/16	500	3.35	430	1.77	730	11.42	2100	14.96



The FEED, in long & extra long types, should be reduced by around 50%

PREMIUM CARBIDE MILL Speed & Feed Charts 4 FLUTE. BALL NOSE END MILLS

MATERIAL HARDNESS STRENGTH DIAMETER	CARBON STEELS ALLOY STEELS TOOL STEELS < 285 BHN.		CARBON STEELS ALLOY STEELS TOOL STEELS 285 - 375 BHN.		CAST IRON		ALUMINUM ALLOYS	
	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM
3/32	5200	5.51	4400	2.76	7300	9.06	21500	16.54
1/8	3500	5.91	2900	2.76	4900	9.45	14300	16.54
5/32	2600	5.91	2100	2.76	3600	11.81	10900	16.54
3/16	2100	6.30	1700	2.76	2900	13.78	8800	19.69
1/4	1700	5.91	1430	2.76	2400	14.96	7260	19.69
5/16	1270	5.52	1100	2.76	1800	18.90	5500	22.44
3/8	1000	5.52	870	2.76	1430	18.90	4300	22.44
1/2	870	5.12	730	2.76	1200	18.90	3600	25.98
9/16	750	5.12	620	2.76	1000	19.29	3000	25.98
5/8	650	5.12	540	2.76	920	19.29	2700	22.44
11/16	580	5.12	480	2.76	810	19.29	2400	22.44
13/16	500	5.12	430	2.76	730	17.29	2100	22.44



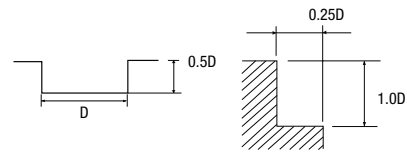
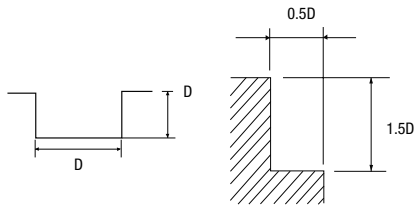
The FEED, in long & extra long types, should be reduced by around 50%

PREMIUM-V MILL Speed & Feed Charts

MATERIAL HARDNESS DIAMETER	ALLOY STEELS CAST IRON < 230 BHN.		STAINLESS STEELS 300SERIES		STAINLESS STEELS 400SERIES		TITANIUM		INCONEL	
	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM
3	13475	275	8700	190	10400	240	8700	190	3080	43
4	10105	330	6525	250	7800	310	6525	250	2305	56
5	8085	370	5220	305	6240	380	5220	305	1850	68
6	6735	435	4355	355	5170	440	4355	355	1540	80
8	5050	555	3265	460	3900	570	3260	455	1155	103
10	4455	690	2665	515	2880	555	2665	515	890	69
12	3710	695	2230	520	2335	544	2230	520	745	69
14	3180	620	1910	480	2000	505	1910	480	640	64
16	2785	590	1670	440	1750	460	1670	440	555	59
18	2475	585	1485	437	1555	460	1485	440	495	58
20	2225	580	1340	435	1400	455	1340	435	445	58
25	1780	450	1070	350	1120	370	1070	350	355	47

• ALLOY STEELS CAST IRON / STAINLESS STEELS 300, 400SERIES / TITANIUM

• INCONEL



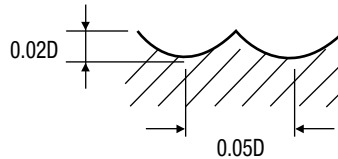
Tolerance

METRIC		INCH	
MILL DIA.	SHANK DIA.	MILL DIA.	MILL DIA.
0 ~ - 0.03	h6	0 ~ - .0012	h6

ROYAL HSC MILL Speed & Feed Charts

2 FLUTE, Stub length, Ball

MATERIAL HARDNESS DIAMETER	CARBON STEELS ALLOY STEELS TOOL STEELS 285 - 380 BHN.		HARDENED STEELS 380 - 495 BHN.		HARDENED STEELS 495 - 555 BHN.		HARDENED STEELS 555 - 625 BHN.		HARDENED STEELS 625 - 710 BHN.		HARDENED STEELS 285 - 380 BHN.	
	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM
	R1/64×1/32	50000	188.98	50000	165.35	45000	149.61	40000	118.11	35000	102.36	35000
R1/32×1/16	49700	224.41	47800	188.98	40000	157.48	35000	124.02	32000	110.24	28500	90.55
R3/64×3/32	49700	224.41	47800	188.98	40000	157.48	35000	124.02	32000	110.24	28500	90.55
R1/16×1/8	33100	236.22	31800	208.66	26500	157.48	23500	124.02	21000	110.24	19000	90.55
R3/32×3/16	18600	228.35	17800	192.91	15000	147.64	13500	120.08	11500	100.39	10500	82.68
R1/8×1/14	13900	190.94	13400	161.42	11000	122.05	10000	98.43	8800	84.65	8000	68.90
R5/32×5/16	11100	165.35	10700	137.80	9000	106.30	8000	84.65	7000	72.83	6500	61.02
R3/16×3/8	9300	145.67	8900	122.05	7500	94.49	6600	74.80	5800	64.96	5300	54.33
R1/4×1/2	6950	116.14	6680	98.43	5600	74.80	5000	61.02	4400	49.21	4000	41.34



The FEE, in long & extra long types, should be reduced by around 50%

Hardness Conversion Table

VICKERS HARDNESS NO.	BRINELL HARDNESS NO. 3000 KG LOAD 10 MM BALL		ROCKWELL HARDNESS NO.				ROCKWELL SUPERFICIAL HARDNESS NO. SUPERFICIAL BRALE INDENTER			TENSILE STRENGTH (APPROX.) MPs	TENSILE STRENGTH (APPROX.) ksi
	STANDARD BALL	TUNGSTEN CARBIDE BALL	A SCALE 60 KG LOAD BRALE INDENTER	B SCALE 150 KG LOAD BRALE INDENTER	C SCALE 150 KG LOAD BRALE INDENTER	D SCALE 100 KG LOAD BRALE INDENTER	15M SCALE 15 KG LOAD	30M SCALE 30 KG LOAD	45M SCALE 45 KG LOAD		
520	(480)	488	76.1		50.5	63.5	85.7	69.0	55.6	1793	260
510	(473)	479	75.7		49.8	62.9	85.4	68.3	54.7	1751	254
500	(465)	471	75.3		49.1	62.2	85.0	67.7	53.9	1703	247
490	(456)	460	74.9		48.4	61.6	84.7	67.1	53.1	1662	241
480	(448)	452	74.5		47.7	61.3	84.3	66.4	52.2	1620	235
470	441	442	74.1		46.9	60.7	83.9	65.7	51.3	1572	228
460	433	433	73.6		46.1	60.1	83.6	64.9	50.4	1538	223
450	425	425	73.3		45.3	59.4	83.2	64.3	49.4	1496	217
440	415	415	72.8		44.5	58.8	82.8	63.5	48.4	1462	212
430	405	405	72.3		43.6	58.2	82.3	62.7	47.4	1413	205
420	397	397	71.8		42.7	57.5	81.8	61.9	46.4	1372	199
410	388	388	71.4		41.8	56.6	81.4	61.1	45.3	1331	193
400	379	379	70.8		40.8	56.0	80.8	60.2	44.1	1289	187
390	369	369	70.3		39.8	55.2	80.3	59.3	42.9	1248	181
380	360	360	69.8	(110.0)	38.8	54.4	79.8	58.4	41.7	1207	175
370	350	350	69.2		37.7	53.6	79.2	57.4	40.4	1172	170
360	341	341	68.7	(109.0)	36.6	52.8	78.6	56.4	39.1	1131	164
350	331	331	68.1		35.5	51.9	78.0	55.4	37.8	1096	159
340	322	322	67.6	(108.0)	34.4	51.1	77.4	54.4	36.5	1069	155
330	313	313	67.0		33.3	50.2	76.8	53.6	35.2	1034	150
320	303	303	66.4	(107.0)	32.2	49.4	76.2	52.3	33.9	1007	146
310	294	294	65.8		31.0	48.4	75.6	51.3	32.5	979	142
300	284	284	65.2	(105.5)	29.8	47.5	74.9	50.2	31.1	951	138
295	280	280	64.8		29.2	47.1	74.6	49.7	30.4	938	136
290	275	275	64.5	(104.5)	28.5	46.5	74.2	49.0	29.5	917	133
285	270	270	64.2		27.8	46.0	73.8	48.4	28.7	903	131
280	265	265	63.8	(103.5)	27.1	45.3	73.4	47.8	27.9	899	130
275	261	261	63.5		26.4	44.9	73.0	47.2	27.1	876	127
270	256	256	63.1	(102.0)	25.6	44.3	72.6	46.4	26.2	855	124
265	252	252	62.7		24.8	43.7	72.1	45.7	25.2	841	122
260	247	247	62.4	(101.0)	24.0	43.1	71.6	45.0	24.3	827	120
255	243	243	62.0		23.1	42.2	71.1	44.2	23.2	807	117
250	238	238	61.6	99.5	22.2	41.7	70.6	43.4	22.2	793	115
245	233	233	61.2		21.3	41.1	70.1	42.5	21.1	779	113
240	228	228	60.7	98.1	20.3	40.3	69.6	41.7	19.9	765	111
230	219	219		96.7	(18.0)					731	106
220	209	209		95.0	(15.7)					696	101
210	200	200		93.4	(13.4)					669	97
200	190	190		91.5	(11.0)					634	92
190	181	181		89.5	(8.5)					607	88
180	171	171		87.1	(6.0)					579	84
170	162	162		85.0	(3.0)					545	79
160	152	152		81.7	(0.0)					517	75
150	143	143		78.7						490	71
140	133	133		75.0						455	66
130	124	124		71.2						427	62
120	114	114		66.7						393	57
110	105	105		62.3							
100	95	95		56.2							
95	90	90		52.0							
90	86	86		48.0							
85	81	81		41.0							

Terms and Conditions

TERMS AND CONDITIONS OF SALES

1. AGREEMENT AND LIMITATIONS. The agreement between Seller and Buyer ("Sales Contract") with respect to the sale of goods described on the other side hereof (the "goods") shall consist exclusively of the terms appearing herein and on the other side hereof. Seller objects to and shall not be bound by additional or different terms, whether printed or otherwise, in Buyer's purchase order or in any other communication from Buyer to Seller. Such additions and differences in terms shall be considered material and Seller's terms and conditions shall govern. The Sales Contract shall be for the benefit of Seller and Buyer and not for the benefit of any other person. Prior courses of dealing, trade usage and verbal agreements not reduced to a writing signed by Seller, to the extent they modify, add to or detract from the Sales Contract, shall not be binding on Seller.

2. TERMINATION OR MODIFICATION. The Sales Contract may be modified or terminated only upon Seller's express written consent. If all or part of the Sales Contract is terminated, Buyer, in the absence of a contrary written agreement signed by Seller, shall pay termination charges based upon expenses and costs incurred in the production of the goods to the date such termination is accepted by Seller including, without limitation, expenses of disposing of materials on hand or on order from suppliers and losses resulting from such disposition, plus a reasonable profit, except that any goods completed on or before Seller's acceptance of such termination shall be accepted and paid for in full by Buyer.

3. PRICE AND PAYMENT. Fulfillment of Buyer's order is contingent upon the availability of materials. The price of the goods sold pursuant to the Sales Contract shall be based upon Seller's price in effect at the time of shipment and any acceptance of the order will be on the basis of the freight rates now in effect. In the event of an increase or decrease in the applicable freight charges before the material is shipped, such changes in freight charges will be for the account of Buyer. Price advances, discounts, extras and terms and conditions are subject to changes without notice. Any sales or other tax or duty that Seller may be required to collect or pay upon the sale of the goods will be added to the quoted price. If such amount is not included in an invoice for the goods, it may be invoiced separately later. If the Sales Contract is for more than one unit of goods, the goods may be shipped in several lots at the discretion of Seller, and each such shipment shall be paid for separately. Seller may require full or partial payment or payment guarantee in advance of shipment whenever, in its opinion, the financial condition of Buyer so warrants. In addition, Seller may at any time or times, suspend performance of any order or require payment in cash, security or other adequate assurance satisfactory to Seller when, in Seller's opinion, the financial condition of Buyer warrants such action.

BLANKET ORDER WITH SCHEDULED RELEASES

(a) Stock Item. Blanket orders of stock items with scheduled releases are predicated on total units released for shipment within the specified period. All blanket orders will be adjusted for price levels based on actual releases within the specified period.

(b) Special Items. In the event Buyer has not taken delivery by the end of the specified period of all special items covered by a blanket order with scheduled releases, Seller shall, on that date, ship the remaining number of special items and invoice the Buyer accordingly. Any deviation from the policy set forth in (a) or (b) above must have prior written approval signed by Seller's authorized representative.

TERMS

Terms of payment, minimum order charges, broken package charges, and transportation charges are as set forth on the front of this form. C.O.D. shipments are not entitled to a cash discount or prepaid transportation. Shipment of specials may be 10% over/under quantity ordered unless otherwise stated on the order. All prices are F.O.B. shipping point. Methods and route of shipment are at Seller's discretion unless the Buyer supplies explicit instruction. Seller may assess a delinquency charge of 1-1 1/2% per month on invoices not paid within stated terms.

4. TAXES. Prices do not include federal, state or local taxes. Buyer shall pay to Seller, in addition to the price of the goods, all applicable taxes and other governmental charges upon the production, sale, delivery or use of the goods, to the extent required or not forbidden by law to be collected by Seller from Buyer, unless Buyer furnished Seller with valid exemption certificates acceptable to the appropriate taxing authorities before the date of acknowledgment.

5. RISK OF LOSS. Delivery shall occur, and risk of loss shall pass to Buyer, upon delivery of the material to a carrier at the point of shipment. Transportation shall be at Buyer's sole risk and expense, and any claim for loss or damage in transit shall be against the carrier only.

6. DELIVERY AND QUANTITIES.

(a) Promises of delivery from stock are subject to prior sales. Delivery dates are not guaranteed but are estimated on the basis of immediate receipt by Seller of all information to be furnished by Buyer and the absence of delay, direct or indirect, resulting from or contributed to by circumstances beyond Seller's reasonable control. Seller shall in good faith endeavor to meet estimated delivery dates. Seller shall not be liable to Buyer for damages as a result of any delay caused or contributed to by circumstances beyond Seller's reasonable control. If the goods are non-catalog goods, Seller may ship overages or underages to the extent of ten percent (10%) of quantity ordered, and Buyer shall pay for such quantity supplied based upon the unit price of the goods. Seller shall not be required to maintain closer control of quantity, unless specifically agreed to by Seller in writing. Quantities of all items may be determined by weight. Any claims for shortage must be made within ten (10) days from the date of receipt of the goods by Buyer, and in every case the weights found in any particular shipment, including tare, must be given and Seller advised as to the method used by Buyer in computing the count of parts.

(b) In the event that Buyer is unable to accept delivery of the goods at time of shipment, Seller shall invoice Buyer for the full purchase price as if shipment had been made and (i) if Seller is able to store such goods in its own facilities, Buyer will pay Seller the reasonable handling and storage charges for the period of such storage, and (ii) if Seller is unable to store such goods in its own facilities, Seller reserves the right to arrange handling and storage in a suitable bonded warehouse for the Buyer at Buyer's expense. In cases where handling and storage become necessary, it shall be Buyer's responsibility to notify Seller when shipment is to be made. Seller will make necessary arrangements for shipment at Buyer's expense.

7. RETURNED GOODS. Goods may not be returned. If Seller consents in writing to the return of goods for any reason, however, Buyer assumes all risk of loss of such returned goods until actual receipt by Seller.

8. INSPECTION. Buyer shall inspect the goods immediately upon the receipt thereof.

9. WARRANTY. Seller warrants to original equipment manufacturers, distributors and industrial and commercial users ("Buyer") of its products that each new product manufactured or supplied by Seller shall be commercially free from defects in material and workmanship at the time of shipment of the goods. All claims for allegedly defective goods must be made within 10 days after Buyer learns of such alleged defects limited to a maximum period of one

year from the date of sale by Seller. All claims not made in writing and received by Seller within such 10-day period shall be deemed waived. Seller's sole obligation under this warranty is limited to furnishing without additional charge a replacement, or at its option, repairing or issuing credit for any product which shall be returned freight prepaid to the plant designated by a Seller representative and which upon inspection is determined by Seller to be defective in material or workmanship. Complete information as to operating conditions, machine setup, and application of cutting fluid should accompany any product returned for inspection. The provisions of this Warranty shall not apply to any Seller product which has been subjected to misuse, abuse, improper operating conditions (machine setup or application of cutting fluid), or which has been repaired or altered if such repair or alteration in the judgment of Seller would adversely affect performance of the product. THIS WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Seller's sole liability on any claim of any kind, whether in contract, tort or otherwise, for any loss or damage arising out of, connected with, or resulting from the manufacture, sale, delivery or use of the products sold hereunder shall in no case exceed the cost of replacement or repair as provided herein. EVEN IF THE REPAIR OR REPLACEMENT REMEDY SHALL BE DEEMED TO HAVE FAILED OF ITS ESSENTIAL PURPOSE UNDER SECTION 2-719 OF THE UNIFORM COMMERCIAL CODE, SELLER SHALL HAVE NO LIABILITY TO BUYER FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, SUCH AS LOST PROFITS, LOST REVENUE, DAMAGE TO OTHER EQUIPMENT OR LIABILITY OR INJURY TO A THIRD PARTY. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES. There are no other warranties, expressed or implied, made by Seller except the warranty against defects in material and workmanship set forth above. Unless authorized in writing by a corporate officer or vice president, no agent, employee or representative of Seller has any authority to bind Seller to any affirmation, representation or warranty concerning the goods sold under the sales contract and such affirmation, representation or warranty has not formed a part of the basis of the bargain and shall be unenforceable.

10. REMEDIES AND LIMITATION OF LIABILITY. In the event Buyer claims Seller has breached any of its obligations under the Sales Contract, whether of warranty or otherwise, Seller may request the return of goods and tender to Buyer, at Seller's option, a replacement shipment of goods or the purchase price theretofore paid by Buyer. If Seller so requests the return of the goods, the goods will be redelivered to Seller in accordance with Seller's instructions and at Buyer's expense. If Seller so determines, a refund of the purchase price paid by Buyer shall be made only upon actual receipt of the goods by Seller. Except as herein provided, Seller shall have no further obligation under the Sales Contract. The remedies contained in this paragraph and paragraph 9 hereof shall constitute the sole recourse of Buyer against Seller for breach of any of Seller's obligations under the Sales Contract, whether of warranty or otherwise. In no event shall Seller be liable for incidental, consequential or special damages, nor shall Seller's liability on any claim for damages arising out of or connected with the Sales Contract or the manufacture, sale, delivery or use of the goods exceed the purchase price of the goods.

11. TECHNICAL ADVICE. Any technical advice furnished, or recommendation made by Seller or any representative of Seller concerning any use or application of any of the goods is believed to be reliable, but Seller makes no warranty, express or implied, on results to be obtained. Buyer assumes all responsibility for loss or damage resulting from the handling or use of any of the goods.

12. FORCE MAJEURE. Seller shall not be liable for failure to perform its obligations under the Sales Contract in whole or in part caused by the occurrence of any contingencies beyond the control either of Seller or of suppliers to Seller, including but not limited to acts of God; acts of Buyer; acts of any government or agency thereof or civil or military authority, fires, accidents, explosions, strikes or other labor disputes, earthquakes, storms, judicial action, floods, war (whether an actual declaration thereof is made or not), sabotage, riot, delays in transportation, lack of or inability to obtain raw materials, components, labor, fuel or supplies, technical failure, or other circumstances beyond Seller's reasonable control, whether similar or dissimilar to the foregoing. If any such contingency occurs, Seller may allocate goods and deliveries among Seller's customers.

13. ASSIGNMENT AND DELEGATION. No right or interest in the Sales Contract shall be assigned by Buyer without Seller's prior written consent, and no delegation of any obligation owed, or of the performance of any obligation by Buyer shall be made without Seller's prior written consent. Any attempted assignment or delegation shall be wholly void and totally ineffective for all purposes unless made in conformity with this paragraph.

14. CHANGES. Seller may, at any time without notice, make changes (whether in design, materials, improvements or otherwise) in any catalog goods, and may discontinue the manufacture of any catalog goods, all in its sole discretion, without incurring any obligations of any kind as a result thereof, whether for failure to fill an order of Buyer or otherwise.

15. SEVERABILITY. If any term, clause or provision contained in the Sales Contract is declared or held invalid by a court of competent jurisdiction, such declaration or holding shall not affect the validity of any other term, clause or provision contained herein.

16. GOVERNING LAW AND LIMITATION.

(a) The formation and performance of the Sales Contract shall be governed by the Uniform Commercial Code as adopted in the State of Illinois. Whenever a term defined by said Uniform Commercial Code is used in the Sales Contract, the definition contained in said Uniform Commercial Code controls. Any action for breach of the Sales Contract must be commenced within one (1) year after the cause of action accrued, and all such claims shall be barred thereafter notwithstanding any statutory period of limitations to the contrary.

(b) The Sales Contract shall be deemed to have been made at South Beloit, Illinois and shall be interpreted and the rights and liabilities of the parties hereto determined in accordance with the laws of Illinois. Seller represents that the goods will be produced in compliance with the Fair Labor Standards Act of 1938, as amended. Buyer hereby agrees to the jurisdiction of any state or federal court located within Winnebago County, Illinois. Buyer waives any objection based on forum non conveniens and any objection to venue of any action instituted hereunder, and consents to the granting of such legal or equitable relief as is deemed appropriate by a court of competent jurisdiction. The rights and obligations of Seller and Buyer shall not be governed by the provisions of the United Nations Convention on Contracts for the International Sales of Goods; and

(c) BUYER AGREES TO PAY ALL OF SELLER'S COSTS AND EXPENSES OF COLLECTION AND LITIGATION, INCLUDING BUT NOT LIMITED TO ATTORNEYS' FEES AND COSTS.

Decimal Equivalents Fractional, Wire, Letter & Metric Sizes

Decimal	Fract. Wire Letter	mm.	Decimal	Fract. Wire Letter	mm.	Decimal	Fract. Wire Letter	mm.	Decimal	Fract. Wire Letter	mm.
.0059	97		.0413		1.05	.1065	36		.1960	9	
.0063	96		.0420	58		.1083		2.75	.1969		5.0
.0067	95		.0430	57		.1094	7/64"		.1990	8	
.0071	94		.0433		1.1	.1100	35		.2008		5.1
.0075	93		.0453		1.15	.1102		2.8	.2010	7	
.0079	92	.2	.0465	56		.1110	34		.2031	13/64"	
.0083	91		.0469	3/64"		.1130	33		.2040	6	
.0087	90	.22	.0472		1.2	.1142		2.9	.2047		5.2
.0091	89		.0492		1.25	.1160	32		.2055	5	
.0095	88		.0512		1.3	.1181		3.0	.2067		5.25
.0098		.25	.0520	55		.1200	31		.2087		5.3
.0100	87		.0531		.135	.1220		3.1	.2090	4	
.0150	86		.0550	54		.1250	1/8"		.2126		5.4
.0110	85	.28	.0551		1.4	.1260		3.2	.2130	3	
.0115	84		.0571		1.45	.1280		3.25	.2165		5.5
.0188		.3	.0591		1.5	.1285	30		.2188	7/32"	
.0120	83		.0595	53		.1299		3.3	.2205		5.6
.0125	82		.0610		1.55	.1339		3.4	.220	2	
.0126		.32	.0625	1/16"		.1260	29		.2244		5.7
.0130	81		.0630		1.6	.1378		3.5	.2264		5.75
.0135	80		.0635	52		.1405	28		.2280	1	
.0138		.35	.0650		1.65	.1406	9/64"		.2283		5.8
.0145	79		.0669		1.7	.1417		3.6	.2323		5.9
.0156	1/64"		.0670	51		.1440	27		.2340	A	
.0157		.4	.0689		1.75	.1457		3.7	.2344	15/64"	
.0160	78		.0700	50		.1470	26		.2362		6.0
.0177		.45	.0709		1.8	.1476		3.75	.2380	B	
.0180	77		.0728		1.85	.1495	25		.2402		6.1
.0197		.5	.0730	49		.1496		3.8	.2420	C	
.0200	76		.0748		1.9	.1520	24		.2441		6.2
.0210	75		.0760	48		.1535		3.9	.2460	D	
.0217		.55	.0768		1.95	.1540	23		.2461		6.25
.0225	74		.0781	5/64"		.1562	5/32"		.2480		6.3
.0236		.6	.0785	47		.1570	22		.2500	1/4" E	
.0240	73		.0787		2.0	.1575		4.0	.2520		6.4
.0250	72		.0807		2.05	.1590	21		.2559		6.5
.0256		.65	.0810	46		.1610	20		.2570	F	
.0260	71		.0820	45		.1614		4.1	.2598		6.6
.0276		.7	.0827		2.1	.1654		4.2	.2610	G	
.0280	70		.0846		2.15	.1660	19		.2638		6.7
.0292	69		.0860	44		.1673		4.25	.2656	17/64"	
.0295		.75	.0866		2.2	.1693		4.3	.2657		6.75
.0310	68		.0886		2.25	.1695	18		.2660	H	
.0312	1/32"		.0890	43		.1719	11/64"		.2677		6.8
.0315		.8	.0906		2.3	.1730	17		.2717		6.9
.0320	67		.0925		2.35	.1732		4.4	.2720	I	
.0330	66		.0935	42		.1770	16		.2756		7.0
.0335		.85	.0938	3/32"		.1772		4.5	.2770	J	
.0350	65		.0945		2.4	.1800	15		.2795		7.1
.0354		.9	.0960	41		.1811		4.6	.2810	K	
.0360	64		.0965		2.45	.1820	14		.2812	9/32"	
.0370	63		.0980	40		.1850	13	4.7	.2835		7.2
.0374		.95	.0984		2.5	.1870		4.75	.2854		7.25
.0380	62		.0995	39		.1875	3/16"		.2874		7.3
.0390	61		.1015	38		.1890	12	4.8	.2900	L	
.0394		1.0	.1024		2.6	.1910	11		.2913		7.4
.0400	60		.1040	37		.1929	4.9				
.0410	59		.1063		2.7	.1935	10				

Decimal Equivalents Fractional, Wire, Letter & Metric Sizes

Decimal	Fract. Wire Letter	mm.	Decimal	Fract. Wire Letter	mm.	Decimal	Fract. Wire Letter	mm.	Decimal	Fract. Wire Letter	mm.
.2950	M		.4688	15/32"		.9843		25.0	1.4961		38.0
.2953		7.5	.4724		12.0	.9844	63/64"		1.5000	1-1/2"	
.2969	19/64"		.4844	31/64"		1.0000	1"		1.5156	1-33/64"	
.2992		7.6	.4921		12.5	1.0039		25.5	1.5157		38.5
.3020	N		.5000	1/2"		1.0156	1-1/64"		1.5312	1-17/32"	
.3031		7.7	.5118		13.0	1.0236		26.0	1.5354		39.0
.3051		7.75	.5156	33/64"		1.0312	1-1/32"		1.5469	1-35/64"	
.3071		7.8	.5312	17/32"		1.0433		26.5	1.5551		39.5
.3110		7.9	.5315		13.5	1.0469	1-3/64"		1.5625	1-9/16"	
.3125	5/16"		.5469	35/64"		1.0625	1-1/16"		1.5748		40.0
.3150		8.0	.5512		14.0	1.0630		27.0	1.5781	1-37/64"	
.3160	O		.5625	9/16"		1.0781	1-5/64"		1.5938	1-19/32"	
.3189		8.1	.5709		14.5	1.0827		27.5	1.5945		40.5
.3228		8.2	.5781	37/64"		1.0938	1-3/32"		1.6094	1-39/64"	
.3230	P		.5906		15.0	1.1024		28.0	1.6142		41.0
.3248		8.25	.5938	19/32"		1.1094	1-7/64"		1.6250	1-5/8"	
.3268		8.3	.6094	39/64"		1.1220		28.5	1.6339		41.5
.3281	21/64"		.6102		15.5	1.1250	1-1/8"		1.6406	1-41/64"	
.3307		8.4	.6250	5/8"		1.1406	1-9/64"		1.6535		42.0
.3320	Q		.6299		16.0	1.1417		29.0	1.6562	1-21/32"	
.3346		8.5	.6406	41/64"		1.1562	1-5/32"		1.6719	1-43/64"	
.3386		8.6	.6496		16.5	1.1614		29.5	1.6732		42.5
.3390	R		.6562	21/32"		1.1719	1-11/64"		1.6875	1-11/16"	
.3425		8.7	.6693		17.0	1.1811		30.0	1.6929		43.0
.3438	11/32"		.6719	43/64"		1.1875	1-3/16"		1.7031	1-45/64"	
.3445		8.75	.6875	11/16"		1.2008		30.5	1.7126		43.5
.3465		8.8	.6890		17.5	1.2031	1-13/64"		1.7188	1-23/32"	
.3480	S		.7031	45/64"		1.2188	1-7/32"		1.7323		44.0
.3504		8.9	.7087		18.0	1.2205		31.0	1.7344	1-47/64"	
.3543		9.0	.7188	23/32"		1.2344	1-15/64"		1.7500	1-3/4"	
.3580	T		.7283		18.5	1.2402		31.5	1.7520		44.5
.3583		9.1	.7344	47/64"		1.2500	1-1/4"		1.7656	1-49/64"	
.3594	23/64"		.7480		19.0	1.2598		32.0	1.7717		45.0
.3622		9.2	.7500	3/4"		1.2656	1-17/64"		1.7812	1-23/32"	
.3642		9.25	.7656	49/64"		1.2795		32.5	1.7913		45.5
.3661		9.3	.7677		19.5	1.2812	1-9/32"		1.7969	1-51/64"	
.3680	U		.7812	25/32"		1.2969	1-19/64"		1.8110		46.0
.3701		9.4	.7874		20.0	1.2992		33.0	1.8125	1-13/16"	
.3740		9.5	.7969	51/64"		1.3125	1-5/16"		1.8281	1-53/64"	
.3750	3/8"		.8071		20.5	1.3189		33.5	1.8307		46.5
.3770	V		.8125	13/16"		1.3281	1-21/64"		1.8438	1-27/32"	
.3780		9.6	.8268		21.0	1.3386		34.0	1.8504		47.0
.3819		9.7	.8281	53/64"		1.3438	1-11/32"		1.8594	1-55/64"	
.3839		9.75	.8438	27/32"		1.3583		34.5	1.8701		47.5
.3858		9.8	.8465		21.5	1.3594	1-23/64"		1.8750	1-7/8"	
.3860	W		.8594	55/64"		1.3750	1-3/8"		1.8898		48.0
.3898		9.9	.8661		22.0	1.3780		35.0	1.8906	1-57/64"	
.3906	25/64"		.8750	7/8"		1.3906	1-25/64"		1.9062	1-29/32"	
.3937		10.0	.8858		22.5	1.3976		35.5	1.9094		48.5
.3970	X		.8906	57/64"		1.4062	1-13/32"		1.9219	1-59/64"	
.4040	Y		.9055		23.0	1.4173		36.	1.9291		49.0
.4062	13/32"		.9062	29/32"		1.4219	1-27/64"		1.9375	1-15/16"	
.4130	Z		.9219	59/64"		1.4370		36.5	1.9488		49.5
.4134		10.5	.9252		23.5	1.4375	1-7/16"		1.9531	1-61/64"	
.4219	27/64"		.9375	15/16"		1.4531	1-29/64"		1.9685		50.0
.4331		11.0	.9449		24.0	1.4567		37.0	1.9688	1-31/32"	
.4375	7/16"		.9531	61/64"		1.4688	1-15/32"		1.9844	1-63/64"	
.4528		11.5	.9646		24.5	1.4784		37.5	1.9882		50.5
.4531	29/64"		.9688	31/32"		1.4844	1-31/64"		2.0000	2"	

Surface Treatments

Regal Cutting Tools offers many surface treatments which provide higher surface hardness to resist wear and make your taps resistant to galling or chip loading

SURFACE TREATMENTS		BENEFITS & APPLICATIONS
Nitride Treatment:	#33	Provides increased surface hardness. Is recommended general purpose surface treatment for increasing tool life in a wide variety of applications.
Steam Oxide Treatment:	#43	Acts as a solid lubricant and also retains liquid lubricant at cutting edges. Prevents chip welding, reduces friction, and acts as thermal insulator between the tap and the workplace.
Nitride & Steam Oxide Combination:	#53	This combination of both surface treatments affords the characteristics of both treatments.
Titanium Nitride	#25	Provides increased surface hardness, adhesive (lower C.O.F.) resistance and tool life.
Titanium Carbo Nitride:	#85	Developed for machining difficult steel alloys. Adds life to tools in high speed machining.
Chrome Plate:	#74	Adds lubricating and heat dissipation qualities at the cutting edge. Excellent for non ferrous materials and soft steel.
Chrome Plate Over Nitride:	#64	An effective treatment when tapping non-ferrous metals and some soft steels
Aluminum Titanium Nitride:	#88	A multi layer coating, excellent for machining cast iron, stainless steel and nickel based alloys.

* Note: Other coatings available upon request.

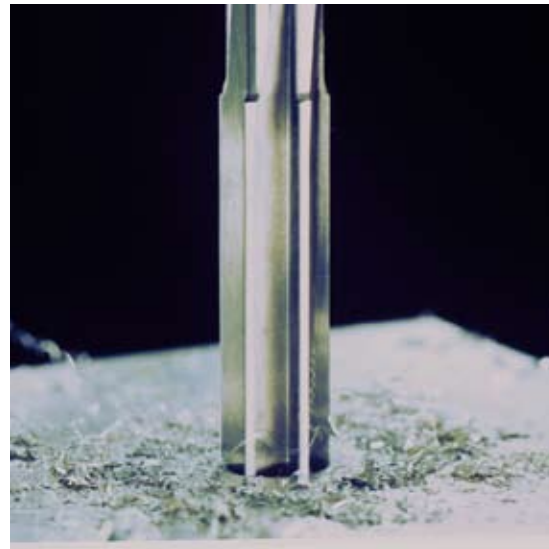
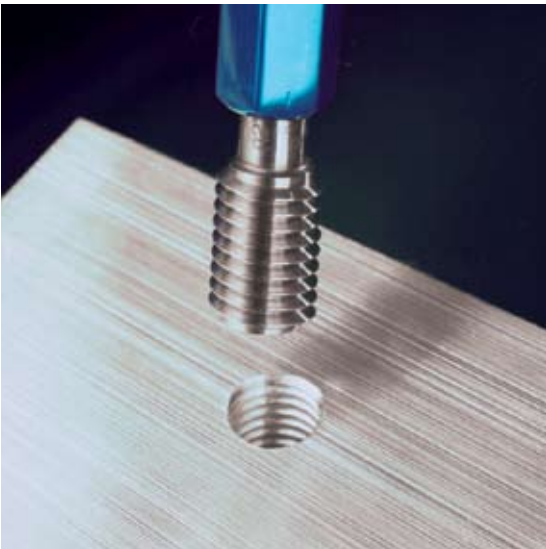
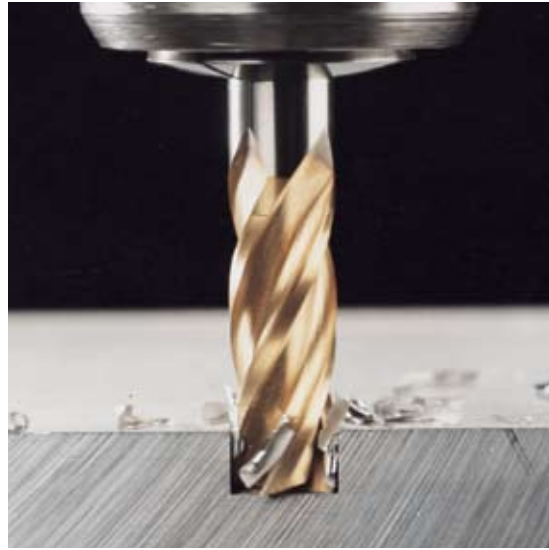
Recommendations

Material	Surface Treatment								Material	Surface Treatment							
	33	43	53	64	74	25	85	88		33	43	53	64	74	25	85	88
Aluminum				•					Nickel	•						•	
Die Cast			•	•					Steel								
Sand Cast			•	•					Cast			•			•	•	•
All Others—Bright									Chromium					•	•		
Magnesium•				•	•				Tool			•			•	•	
Bakelite				•					Moly			•			•	•	
Plastic	•			•					Nickel			•			•	•	•
Nylon				•	•				Tungsten		•			•	•		
Fiber	•								Vanadium			•			•	•	
Brass (Soft & Hard)	•						•		Stainless		•			•	•	•	
Bronze	•			•					Free machining, leading			•			•	•	
Copper						•	•		Titanium		•						
Iron (Cast & Malleable)			•			•	•		Zinc	•					•		
Monel Metal•			•														

REGAL CUTTING TOOLS

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ISO 9001:2000
Certificate Numbers
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