GWS TOOL GROUP

SPT SUNCOAST INC. PRECISION TOOLS
ESTABLISHED 1963

POPULAR SPECIALS CATALOG

TAPS | DIES | GAGES

24-48 HOUR SHIPPING

Carbide Taps and Carb-I-Sert™ Carbide Insert Taps

- 60° Thread Forms
- Pipe Threads
- Form Taps
- S.T.I. Taps
- Specials available upon request

Why GWS Tool Group carbide taps?

- Special design criteria (unique characteristics and geometry) can be incorporated to allow unmatched efficiencies in tough materials such as titanium, beryllium, ceramics, plastics, fiberglass, resins, Stellite™, Inconel, and more.
- Solid carbide and Carb-I-Sert™ taps are available in a wide range of sizes, in both inch and metric measurements, and are available in either straight or taper pipe threads.
- Experienced engineers, state-of-the-art equipment and production processes, advanced computer systems and machining equipment provide value-added solutions to your challenging tapping requirements.
- Cutting tools designed, manufactured, and shipped in the U.S.A.

GWS Tool Group carbide taps are available from stock in popular sizes.

See next page for complete listing.

GWS Tool Group

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SOLID CARBIDE TAPS - INCH

To Table 302-A • Includes Pipe Sizes

SIZE	H LIMIT	# OF FLUTES	ITEM# PLUG	ITEM# BOT-TOM
#0-80	H2	2	41579	41580
#2-56	H2	2	41536	41537
#2-56 SPPT	H2	2	41538	
#4-40	H2	2	41007	41008
#4-40 SPPT	H2	2	41009	
#4-48	H2	2	41017	41018
#4-48 SPPT	H2	2	41019	
#5-40	H2	3	41034	41035
#5-40 SPPT	H2	2	41032	
#6-32	H3	3	41074	41075
#6-32 SPPT	H3	2	41072	
#6-40	H2	3	41092	41093
#8-32	H3	4	41125	41126
#8-32 SPPT	H3	2	41120	
#8-36	H2	4	41147	41148
#10-24	H3	4	41180	41181
#10-24 SPPT	H3	2	41175	
#10-32	H3	4	41213	41214
#10-32 SPPT	H3	2	41208	
#12-24	H3	4	41246	41247
#12-24 SPPT	H3	2	41241	
#12-28	H3	4	41279	41280
#12-28 SPPT	H3	2	41274	
1/16-27 NPT/F		4	41800	
1/8-27 NPT/F		4	41801	
1/8-27 NPSF		4	41807	
1/4-18 NPT/F		4	41802	
1/4-20	H3	4	41312	41313
1/4-20 SPPT	H3	2	41307	
1/4-28	H3	4	41345	41346
1/4-28 SPPT	H3	2	41340	
5/16-18	H3	4	41378	41379
5/16-18 SPPT	H3	2	41373	
5/16-24	H3	4	41411	41412
3/8-16	H3	4	41444	41445
3/8-16 SPPT	H3	3	41442	
3/8-24	H3	4	41476	41477
3/8-24 SPPT	H3	3	41001	
7/16-14	H3	4	41520	41521
7/16-14 SPPT	H3	3	41522	
7/16-20	H3	4	41524	41525
7/16-20 SPPT	H3	3	41526	
1/2-13	H3	4	41528	41529
1/2-13 SPPT	H3	3	41530	
1/2-20	H3	4	41532	41533
1/2-20 SPPT	H3	3	41534	
9/16-12 NC	H3	4	47201	47202
9/16-18 NF	H3	4	47204	47205
5/8-11 NC	H3	4	47207	47208
5/8-18 NF	H3	4	47210	47211
3/4-10 NC	H3	4	47213	47214
3/4-10 NC	H5	4	47228	47229
3/4-16 NF	H3	4	47216	47217
3/4-16 NF	H5	4	47231	47232

SOLID CARBIDE TAPS - METRIC

To Table 302-A

SIZE	D #	# OF FLUTES	ITEM# PLUG	ITEM# BOTTOM
M3 x 0.5	D3	3	43001	43002
M3 x 0.5 SPPT	D3	2	43003	
M3.5 x 0.6	D4	3	43005	43006
M3.5 x 0.6 SPPT	D4	2	43007	
M4 x 0.7	D4	4	43009	43010
M4 x 0.7 SPPT	D4	2	43011	
M4.5 x 0.75	D4	4	43013	43014
M4.5 x 0.75 SPPT	D4	2	43015	
M5 x 0.8	D4	4	43017	43018
M5 x 0.8 SPPT	D4	2	43019	
M6 x 1.0	D5	4	43021	43022
M6 x 1.0 SPPT	D5	2	43023	
M7 x 1.0	D5	4	43025	43026
M7 x 1.0 SPPT	D5	2	43027	
M8 x 1.25	D5	4	43029	43030
M8 x 1.25 SPPT	D5	2	43031	
M8 x 1.0	D5	4	43033	43034
M10 x 1.5	D6	4	43037	43038
M10 x 1.5 SPPT	D6	3	43039	
M10 x 1.25	D5	4	43041	43042
M10 x 1.25 SPPT	D5	3	43043	
M12 x 1.75	D6	4	43045	43046
M12 x 1.75 SPPT	D6	3	43047	

CARB-I-SERT™ CARBIDE INSERT TAPS

Includes Pipe Sizes

SIZE	H LIMIT	# OF FLUTES	ITEM# PLUG	ITEM# BOTTOM
3/8-18 NPT/F		4	41808	
1/2-14 NPT/F		4	41809	
3/4-14 NPT/F		4	41810	
7/8-9	H4	4	41558	41559
7/8-14	H4	4	41561	41562
1"-8	H4	4	41564	41565
1"-11-1/2 NPT/F		6	41811	
1"-12	H4	4	41567	41568
1-1/4-7	H4	4	41570	41571
1-3/8-12	H4	4	41573	41574
1-1/2-6	H4	4	41576	41577

Contact GWS Tool Group for all of your carbide and carbide insert tap requirements.

Smart Cut™
Tapping & Metalworking Fluid

SMART CUT
HIGH PERFORMANCE METAL WORKING FLUID FOR TAPPING & DRILLING

SPT SUNCOAST INC. PRECISION TOOLS ESTABLISHED 1963

- Maximum accuracy in machined parts
- Increases productivity
- Extends life of the tap
- Excellent friction-reducing properties
- Can be used for many machining applications including drilling and sawing

Why 'Smart Cut™' tapping and cutting fluid from GWS Tool Group?

- Environmentally SMART...ozone friendly.
- Contains no carbon tetrachloride or 1,1,1-Trichloroethane.
- Designed to extend tool life.
- Penetrates to the tool's cutting edge and stays on the tool.
- Eliminates the hassles of costly hazardous waste disposal.
- Smart Cut is thick, won't evaporate and stays on the tool throughout the cutting operation.
- Does not contain any animal-derived components or components synthesized from animal-derived materials.

SMART CUT TAPPING FLUID PART NUMBER - SIZE	
FL110	16 oz.
FL115	16 oz. (12/case)
FL120	1 gallon
FL125	1 gallon (4/case)
FL130	5 gallon
FL135	55 gallon drum

GWS Tool Group

SPT SUNCOAST INC. PRECISION TOOLS ESTABLISHED 1963

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** *For simplified selection, tool listings are arranged by size.*

** *The information on pages 119-127 is excerpted from the "Standards & Dimensions for Ground Thread Taps," published by the United States Cutting Tool Institute. Reproduced with permission of the United States Cutting Tool Institute.*

** *The suggested tap hole sizes shown in this catalog are reference values, and depending on specific tapping requirements and conditions, may have to be altered. Note: These are recommended hole sizes, not drill sizes.*

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM #		OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
				PLUG	BOTTOM					
#00-90 NS						*Recommended Hole Size Based on 75% Thread = .0362"*				
SPIRAL POINT TAP	**1**	**3B**		**15001**		**1.63**	**0.31**	**0.1410**	**0.110**	**0.19**
#00-96 NS						*Recommended Hole Size Based on 75% Thread = .0370"*				
SPIRAL POINT TAP	**1**	**3B**		**15003**		**1.63**	**0.31**	**0.1410**	**0.110**	**0.19**
#0-80 NF						*Recommended Hole Size Based on 75% Thread = .0479" TRU-FLO at 65% Thread = .0545"*				
L.H. HAND TAP	**1**	**3B**	**2**	**17951**	**17952**	**1.63**	**0.31**	**0.1410**	**0.110**	**0.19**
L.H. SPIRAL POINT TAP	**1**	**3B**		**15012**		**1.63**	**0.31**	**0.1410**	**0.110**	**0.19**
L.H. SPIRAL POINT TAP	**1**	**3B**	**2**	**17953**		**1.63**	**0.31**	**0.1410**	**0.110**	**0.19**
SPIRAL POINT TAP	**3**			**15008**		**1.63**	**0.31**	**0.1410**	**0.110**	**0.19**
TRU-FLO FORM TAP	**2**	**3B**			**19000**	**1.63**	**0.31**	**0.1410**	**0.110**	**0.19**
TRU-FLO FORM TAP	**3**	**2B**			**19001**	**1.63**	**0.31**	**0.1410**	**0.110**	**0.19**
SOLID CARBIDE / HAND TAP	**2**	**2B**	**2**	**41579**	**41580**	**1.63**	**0.31**	**0.1410**	**0.110**	**0.19**
GAGE - Taperlock Style		2B		23003						
GAGE - Taperlock Style		3B		23004						
GAGE - Reversible Style		2B		24194						
GAGE - Reversible Style		3B		24195						
GAGE - Ring-Go		2A		23350						
GAGE - Ring-Go		3A		23351						
GAGE - Ring-NoGo		2A		23352						
GAGE - Ring-NoGo		3A		23353						
#1-56 NS						*Recommended Hole Size Based on 75% Thread = .0559"*				
SPIRAL POINT TAP	**1**	**3B**		**15020**		**1.69**	**0.38**	**0.1410**	**0.110**	**0.19**
#1-64 NC						*Recommended Hole Size Based on TRU-FLO at 65% Thread = .0661"*				
TRU-FLO FORM TAP	**2**	**3B**			**19002**	**1.69**	**0.38**	**0.1410**	**0.110**	**0.19**
TRU-FLO FORM TAP	**3**	**2B**			**19003**	**1.69**	**0.38**	**0.1410**	**0.110**	**0.19**
GAGE - Taperlock Style		2B		23008						
GAGE - Taperlock Style		3B		23009						
GAGE - Reversible Style		2B		24199						
GAGE - Reversible Style		3B		24200						
GAGE - Ring-Go		2A		23356						
GAGE - Ring-Go		3A		23357						
GAGE - Ring-NoGo		2A		23358						
GAGE - Ring-NoGo		3A		23359						
#1-72 NF						*Recommended Hole Size Based on TRU-FLO at 65% Thread = .0669"*				
TRU-FLO FORM TAP	**2**	**3B**			**19004**	**1.69**	**0.38**	**0.1410**	**0.110**	**0.19**
TRU-FLO FORM TAP	**3**	**2B**			**19005**	**1.69**	**0.38**	**0.1410**	**0.110**	**0.19**
GAGE - Taperlock Style		2B		23013						
GAGE - Taperlock Style		3B		23014						
GAGE - Reversible Style		2B		24204						
GAGE - Reversible Style		3B		24205						
GAGE - Ring-Go		2A		23362						
GAGE - Ring-Go		3A		23363						
GAGE - Ring-NoGo		2A		23364						
GAGE - Ring-NoGo		3A		23365						

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
#2-56 NC						*Recommended Hole Size Based on 75% Thread = .0689" TRU-FLO at 65% Thread = .0781"*				
L.H. HAND TAP	**2**	**2B**	**2**	**15038**	**15039**	**1.75**	**0.44**	**0.1410**	**0.110**	**0.19**
L H. SPIRAL POINT TAP	**2**	**2B**	**2**	**15036**		**1.75**	**0.44**	**0.1410**	**0.110**	**0.19**
SPIRAL POINT TAP	**3**		**2**	**17734**		**1.75**	**0.44**	**0.1410**	**0.110**	**0.19**
HAND TAP	**4**		**2**	**17763**	**17764**	**1.75**	**0.44**	**0.1410**	**0.110**	**0.19**
SPIRAL POINT TAP	**4**		**2**	**17735**		**1.75**	**0.44**	**0.1410**	**0.110**	**0.19**
SPIRAL POINT TAP	**5**		**2**	**17668**		**1.75**	**0.44**	**0.1410**	**0.110**	**0.19**
SPIRAL POINT +.003 TAP	**7**		**2**	**17691**		**1.75**	**0.44**	**0.1410**	**0.110**	**0.19**
TRU-FLO FORM TAP	**2**	**3B**			**19006**	**1.75**	**0.44**	**0.1410**	**0.110**	**0.19**
TRU-FLO FORM TAP	**3**	**2B**			**19007**	**1.75**	**0.44**	**0.1410**	**0.110**	**0.19**
SOLID CARBIDE / HAND TAP	**2**	**2B**	**2**	**41536**	**41537**	**1.75**	**0.44**	**0.1410**	**0.110**	**0.19**
SOLID CARBIDE / SP PT TAP	**2**	**2B**	**2**	**41538**		**1.75**	**0.44**	**0.1410**	**0.110**	**0.19**
GAGE - Taperlock Style		2B		23018						
GAGE - Taperlock Style		3B		23019						
GAGE - Reversible Style		2B		24209						
GAGE - Reversible Style		3B		24210						
GAGE - Ring-Go		2A		23368						
GAGE - Ring-Go		3A		23369						
GAGE - Ring-NoGo		2A		23370						
GAGE - Ring-NoGo		3A		23371						
GAGE - STI Plug Taperlock Style		2B		24597						
GAGE - STI Plug Taperlock Style		3B		24598						
#2-64 NF						*Recommended Hole Size Based on TRU-FLO at 65% Thread = .0791"*				
TRU-FLO FORM TAP	**2**	**3B**			**19008**	**1.75**	**0.44**	**0.1410**	**0.110**	**0.19**
TRU-FLO FORM TAP	**3**	**2B**			**19009**	**1.75**	**0.44**	**0.1410**	**0.110**	**0.19**
GAGE - Taperlock Style		2B		23023						
GAGE - Taperlock Style		3B		23024						
GAGE - Reversible Style		2B		24214						
GAGE - Reversible Style		3B		24215						
GAGE - Ring-Go		2A		23374						
GAGE - Ring-Go		3A		23375						
GAGE - Ring-NoGo		2A		23376						
GAGE - Ring-NoGo		3A		23377						
#3-48 NC						*Recommended Hole Size Based on 75% Thread = .079" TRU-FLO at 65% Thread = .0898"*				
L.H. HAND TAP	**2**	**2B**	**2**	**15050**	**15051**	**1.81**	**0.50**	**0.1410**	**0.110**	**0.19**
L H. SPIRAL POINT TAP	**2**	**2B**	**2**	**15048**		**1.81**	**0.50**	**0.1410**	**0.110**	**0.19**
TRU-FLO FORM TAP	**2**	**3B**			**19010**	**1.81**	**0.50**	**0.1410**	**0.110**	**0.19**
TRU-FLO FORM TAP	**3**	**2B**			**19011**	**1.81**	**0.50**	**0.1410**	**0.110**	**0.19**
GAGE - Taperlock Style		2B		23028						
GAGE - Taperlock Style		3B		23029						
GAGE - Reversible Style		2B		24219						
GAGE - Reversible Style		3B		24220						
GAGE - Ring-Go		2A		23380						
GAGE - Ring-Go		3A		23381						
GAGE - Ring-NoGo		2A		23382						
GAGE - Ring-NoGo		3A		23383						

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
#3-48 NC						*See Previous Page for Recommended Hole Size*				
GAGE - STI Taperlock Style		2B		22028						
GAGE - STI Taperlock Style		3B		22029						
#3-56 NF						*Recommended Hole Size Based on TRU-FLO at 65% Thread = .0911"*				
TRU-FLO FORM TAP	**2**	**3B**			**19012**	**1.81**	**0.50**	**0.1410**	**0.110**	**0.19**
TRU-FLO FORM TAP	**3**	**2B**			**19013**	**1.81**	**0.50**	**0.1410**	**0.110**	**0.19**
GAGE - Taperlock Style		2B		23033						
GAGE - Taperlock Style		3B		23034						
GAGE - Reversible Style		2B		24224						
GAGE - Reversible Style		3B		24225						
GAGE - Ring-Go		2A		23386						
GAGE - Ring-Go		3A		23387						
GAGE - Ring-NoGo		2A		23388						
GAGE - Ring-NoGo		3A		23389						
GAGE - STI Taperlock Style		2B		22038						
GAGE - STI Taperlock Style		3B		22039						
#4-32 NS						*Recommended Hole Size Based on 75% Thread = .0817"*				
HAND TAP	**2**	**2B**	**3**	**15062**	**15063**	**1.88**	**0.56**	**0.1410**	**0.110**	**0.19**
#4-36 NS						*Recommended Hole Size Based on 75% Thread = .0850"*				
HAND TAP	**2**	**2B**	**3**	**17946**	**17947**	**1.88**	**0.56**	**0.1410**	**0.110**	**0.19**
#4-40 NC						*Recommended Hole Size Based on 75% Thread = .0878" for STI = .1200" / TRU-FLO at 65% Thread = .1009"*				
FAST SPIRAL FLUTE TAP	**3**		**2**	**17672**	**17673**	**1.88**	**0.56**	**0.1410**	**0.110**	**0.19**
L.H. HAND TAP	**2**	**2B**	**3**	**15074**	**15075**	**1.88**	**0.56**	**0.1410**	**0.110**	**0.19**
L.H. SPIRAL POINT TAP	**2**	**2B**	**2**	**15072**		**1.88**	**0.56**	**0.1410**	**0.110**	**0.19**
HAND TAP	**3**		**3**	**15080**	**15081**	**1.88**	**0.56**	**0.1410**	**0.110**	**0.19**
SPIRAL POINT TAP	**3**		**2**	**15078**		**1.88**	**0.56**	**0.1410**	**0.110**	**0.19**
SPIRAL POINT TAP	**4**		**2**	**17910**		**1.88**	**0.56**	**0.1410**	**0.110**	**0.19**
SPIRAL POINT TAP	**5**		**2**	**17593**		**1.88**	**0.56**	**0.1410**	**0.110**	**0.19**
+.003 SPIRAL POINT TAP	**7**		**2**	**17670**		**1.88**	**0.56**	**0.1410**	**0.110**	**0.19**
+.005 SPIRAL POINT TAP	**11**	PLATING	**2**	**17557**		**1.88**	**0.56**	**0.1410**	**0.110**	**0.19**
TRU-FLO FORM TAP	**3**	**3B**		**19014**	**19015**	**1.88**	**0.31**	**0.1410**	**0.110**	**0.19**
TRU-FLO FORM TAP	**5**	**2B**		**19016**	**19017**	**1.88**	**0.31**	**0.1410**	**0.110**	**0.19**
SOLID CARBIDE / HAND TAP	**2**	**2B**	**2**	**41007**	**41008**	**1.88**	**0.31**	**0.1410**	**0.110**	**0.19**
SOLID CARBIDE / SP PT TAP	**2**	**2B**	**2**	**41009**		**1.88**	**0.31**	**0.1410**	**0.110**	**0.19**
COST CUTTER DRILL/TAP	**2**	**2B**	**2**	**29000**		**1.88**	**0.38**	**0.1410**	**0.110**	**0.19**
TiN COAT/SP PT TAP	**4**		**2**	**50034**		**1.88**	**0.56**	**0.1410**	**0.110**	**0.19**
STI HAND TAP	**1**	**3B**	**3**	**17794**	**17795**	**2.00**	**0.69**	**0.1410**	**0.110**	**0.19**
STI SPIRAL POINT TAP	**1**	**3B**	**2**	**17796**		**2.00**	**0.69**	**0.1410**	**0.110**	**0.19**
STI HAND TAP	**2**	**2B**	**3**	**17798**	**17799**	**2.00**	**0.69**	**0.1410**	**0.110**	**0.19**
STI SPIRAL POINT TAP	**2**	**2B**	**2**	**17800**		**2.00**	**0.69**	**0.1410**	**0.110**	**0.19**
GAGE - Taperlock Style		2B		23038						
GAGE - Taperlock Style		3B		23039						
GAGE - Reversible Style		2B		24229						
GAGE - Reversible Style		3B		24230						
GAGE - Ring-Go		2A		23392						
GAGE - Ring-Go		3A		23393						
GAGE - Ring-NoGo		2A		23394						

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
#4-40 NC						*See Previous Page for Recommended Hole Size*				
GAGE - Ring-NoGo		3A		23395						
GAGE - STI Plug Taperlock Style		2B		24617						
GAGE - STI Plug Taperlock Style		3B		24618						
#4-48 NF						*Recommended Hole Size Based on 75% Thread = .092" TRU-FLO at 65% Thread = .1028"*				
L.H. HAND TAP	**2**	**2B**	**3**	**15086**	**15087**	**1.88**	**0.56**	**0.1410**	**0.110**	**0.19**
L.H. SPIRAL POINT TAP	**2**	**2B**	**2**	**15083**		**1.88**	**0.56**	**0.1410**	**0.110**	**0.19**
TRU-FLO FORM TAP	**3**	**3B**		**19018**	**19019**	**1.88**	**0.31**	**0.1410**	**0.110**	**0.19**
TRU-FLO FORM TAP	**5**	**2B**		**19020**	**19021**	**1.88**	**0.31**	**0.1410**	**0.110**	**0.19**
SOLID CARBIDE / HAND TAP	**2**	**2B**	**2**	**41017**	**41018**	**1.88**	**0.31**	**0.1410**	**0.110**	**0.19**
SOLID CARBIDE / SP PT TAP	**2**	**2B**	**2**	**41019**		**1.88**	**0.31**	**0.1410**	**0.110**	**0.19**
GAGE - Taperlock Style		2B		23043						
GAGE - Taperlock Style		3B		23044						
GAGE - Reversible Style		2B		24234						
GAGE - Reversible Style		3B		24235						
GAGE - Ring-Go		2A		23398						
GAGE - Ring-Go		3A		23399						
GAGE - Ring-NoGo		2A		23400						
GAGE - Ring-NoGo		3A		23401						
GAGE - STI Plug Taperlock Style		2B		24622						
GAGE - STI Plug Taperlock Style		3B		24623						
#5-40 NC						*Recommended Hole Size Based on 75% Thread = .1008" TRU-FLO at 65% Thread = .1139"*				
L.H. HAND TAP	**2**	**3B**	**3**	**15098**	**15099**	**1.94**	**0.63**	**0.1410**	**0.110**	**0.19**
L.H. SPIRAL POINT TAP	**2**	**3B**	**2**	**15096**		**1.94**	**0.63**	**0.1410**	**0.110**	**0.19**
SPIRAL POINT TAP	**5**		**2**	**17697**		**1.94**	**0.63**	**0.1410**	**0.110**	**0.19**
+.003 SPIRAL POINT TAP	**7**		**2**	**17954**		**1.94**	**0.63**	**0.1410**	**0.110**	**0.19**
+.005 SPIRAL POINT TAP	**11**	**PLATING**	**2**	**17675**		**1.94**	**0.63**	**0.1410**	**0.110**	**0.19**
TRU-FLO FORM TAP	**3**	**3B**		**19022**	**19023**	**1.94**	**0.31**	**0.1410**	**0.110**	**0.19**
TRU-FLO FORM TAP	**5**	**2B**		**19024**	**19025**	**1.94**	**0.31**	**0.1410**	**0.110**	**0.19**
SOLID CARBIDE / HAND TAP	**2**	**3B**	**3**	**41034**	**41035**	**1.94**	**0.31**	**0.1410**	**0.110**	**0.19**
SOLID CARBIDE / SP PT TAP	**2**	**3B**	**2**	**41032**		**1.94**	**0.31**	**0.1410**	**0.110**	**0.19**
TiN COAT/SP PT TAP	**5**		**2**	**50029**		**1.94**	**0.63**	**0.1410**	**0.110**	**0.19**
R.H. ROUND DIE 13/16"OD				13020						
GAGE - Taperlock Style		2B		23048						
GAGE - Taperlock Style		3B		23049						
GAGE - Reversible Style		2B		24239						
GAGE - Reversible Style		3B		24240						
GAGE - Ring-Go		2A		23404						
GAGE - Ring-Go		3A		23405						
GAGE - Ring-NoGo		2A		23406						
GAGE - Ring-NoGo		3A		23407						
GAGE - STI Plug Taperlock Style		2B		24627						
GAGE - STI Plug Taperlock Style		3B		24628						
#5-44 NF						*Recommended Hole Size Based on TRU-FLO at 65% Thread = .1150"*				
TRU-FLO FORM TAP	**3**	**3B**		**19026**	**19027**	**1.94**	**0.31**	**0.1410**	**0.110**	**0.19**
TRU-FLO FORM TAP	**5**	**2B**		**19028**	**19029**	**1.94**	**0.31**	**0.1410**	**0.110**	**0.19**

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
#5-44 NF						*See Previous Page for Recommended Hole Size*				
GAGE - Taperlock Style		2B		23053						
GAGE - Taperlock Style		3B		23054						
GAGE - Reversible Style		2B		24244						
GAGE - Reversible Style		3B		24245						
GAGE - Ring-Go		2A		23410						
GAGE - Ring-Go		3A		23411						
GAGE - Ring-NoGo		2A		23412						
GAGE - Ring-NoGo		3A		23413						
#6-32 NC						*Recommended Hole Size based on 75% Thread = .1077" for STI = .1495" / TRU-FLO at 65% Thread = .1242"*				
L.H. HAND TAP	**3**	**2B**	**3**	**15110**	**15111**	**2.00**	**0.69**	**0.1410**	**0.110**	**0.25**
L.H. SPIRAL POINT TAP	**3**	**2B**	**2**	**15108**		**2.00**	**0.69**	**0.1410**	**0.110**	**0.25**
HAND TAP	**5**		**3**	**15122**	**15123**	**2.00**	**0.69**	**0.1410**	**0.110**	**0.25**
SPIRAL POINT TAP	**5**		**2**	**15120**		**2.00**	**0.69**	**0.1410**	**0.110**	**0.25**
+.003 HAND TAP	**7**		**3**	**15128**	**15129**	**2.00**	**0.69**	**0.1410**	**0.110**	**0.25**
+.003 SPIRAL POINT TAP	**7**		**2**	**15126**		**2.00**	**0.69**	**0.1410**	**0.110**	**0.25**
+.005 HAND TAP	**11**	**PLATING**	**3**	**15134**	**15135**	**2.00**	**0.69**	**0.1410**	**0.110**	**0.25**
+.005 SPIRAL POINT TAP	**11**	**PLATING**	**2**	**15132**		**2.00**	**0.69**	**0.1410**	**0.110**	**0.25**
4" EXTENSION SPIRAL POINT TAP	**3**	**2B**	**2**	**17605**		**4.00**	**0.69**	**0.1410**	**0.110**	**0.25**
6" EXTENSION HAND TAP	**3**	**2B**	**3**	**15140**	**15141**	**6.00**	**0.69**	**0.1410**	**0.110**	**0.25**
6" EXTENSION SPIRAL POINT TAP	**3**	**2B**	**2**	**15138**		**6.00**	**0.69**	**0.1410**	**0.110**	**0.25**
TRU-FLO FORM TAP	**3**	**3B**		**19030**	**19031**	**2.00**	**0.38**	**0.1410**	**0.110**	**0.19**
TRU-FLO FORM TAP	**5**	**2B**		**19032**	**19033**	**2.00**	**0.38**	**0.1410**	**0.110**	**0.19**
TRU-FLO FORM TAP	**10**	**PLATING**		**19034**	**19035**	**2.00**	**0.38**	**0.1410**	**0.110**	**0.19**
SOLID CARBIDE / HAND TAP	**3**	**2B**	**3**	**41074**	**41075**	**2.00**	**0.38**	**0.1410**	**0.110**	**0.19**
SOLID CARBIDE / SP PT TAP	**3**	**2B**	**2**	**41072**		**2.00**	**0.38**	**0.1410**	**0.110**	**0.19**
COST CUTTER DRILL/TAP	**3**	**2B**	**2**	**29004**		**2.00**	**0.44**	**0.1410**	**0.110**	**0.19**
STI HAND TAP	**2**	**3B**	**3**	**17802**	**17803**	**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**
STI SPIRAL POINT TAP	**2**	**3B**	**2**	**17804**		**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**
STI HAND TAP	**3**	**2B**	**3**	**17806**	**17807**	**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**
STI SPIRAL POINT TAP	**3**	**2B**	**2**	**17808**		**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**
R.H. ROUND DIE 1"OD				13022						
L.H. ROUND DIE 1"OD				13023						
GAGE - Taperlock Style		2B		23058						
GAGE - Taperlock Style		3B		23059						
GAGE - Reversible Style		2B		24249						
GAGE - Reversible Style		3B		24250						
GAGE - Ring-Go		2A		23416						
GAGE - Ring-Go		3A		23417						
GAGE - Ring-NoGo		2A		23418						
GAGE - Ring-NoGo		3A		23419						
GAGE - STI Plug Taperlock Style		2B		24637						
GAGE - STI Plug Taperlock Style		3B		24638						
#6-40 NF						*Recommended Hole Size based on 75% Thread = .1138" TRU-FLO at 65% Thread = .1269"*				
L.H. HAND TAP	**2**	**3B**	**3**	**15146**	**15147**	**2.00**	**0.69**	**0.1410**	**0.110**	**0.25**
SPIRAL POINT TAP	**3**		**2**	**15150**		**2.00**	**0.69**	**0.1410**	**0.110**	**0.25**
TRU-FLO FORM TAP	**3**	**3B**		**19036**	**19037**	**2.00**	**0.38**	**0.1410**	**0.110**	**0.19**

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
#6-40 NF						*See Previous Page for Recommended Hole Size*				
TRU-FLO FORM TAP	**5**	**2B**		**19038**	**19039**	**2.00**	**0.38**	**0.1410**	**0.110**	**0.19**
SOLID CARBIDE / HAND TAP	**2**	**3B**	**3**	**41092**	**41093**	**2.00**	**0.38**	**0.1410**	**0.110**	**0.19**
R.H. ROUND DIE 1"OD				13024						
L.H. ROUND DIE 1"OD				13025						
GAGE - Taperlock Style		2B		23063						
GAGE - Taperlock Style		3B		23064						
GAGE - Reversible Style		2B		24254						
GAGE - Reversible Style		3B		24255						
GAGE - Ring-Go		2A		23422						
GAGE - Ring-Go		3A		23423						
GAGE - Ring-NoGo		2A		23424						
GAGE - Ring-NoGo		3A		23425						
GAGE - STI Plug Taperlock Style		2B		24642						
GAGE - STI Plug Taperlock Style		3B		24643						
#6-48 NS						*Recommended Hole Size based on 75% Thread = .118"*				
HAND TAP	**2**	**3B**	**3**	**15158**	**15159**	**2.00**	**0.69**	**0.1410**	**0.110**	**0.25**
SPIRAL POINT TAP	**2**	**3B**	**2**	**15156**		**2.00**	**0.69**	**0.1410**	**0.110**	**0.25**
R.H. ROUND DIE 1"OD				13026						
#8-24 NS						*Recommended Hole Size based on 75% Thread = .123"*				
HAND TAP	**3**	**3B**	**4**	**15164**	**15165**	**2.13**	**0.75**	**0.1680**	**0.131**	**0.25**
#8-32 NC						*Recommended Hole Size based on 75% Thread = .1337" for STI = .1770" / TRU-FLO at 65% Thread = .1502"*				
L.H. HAND TAP	**3**	**2B**	**4**	**15170**	**15171**	**2.13**	**0.75**	**0.1680**	**0.131**	**0.25**
L.H. SPIRAL POINT TAP	**3**	**2B**	**2**	**15168**		**2.13**	**0.75**	**0.1680**	**0.131**	**0.25**
HAND TAP	**5**		**4**	**15182**	**15183**	**2.13**	**0.75**	**0.1680**	**0.131**	**0.25**
SPIRAL POINT TAP	**5**		**2**	**15180**		**2.13**	**0.75**	**0.1680**	**0.131**	**0.25**
+.003 HAND TAP	**7**		**4**	**15188**	**15189**	**2.13**	**0.75**	**0.1680**	**0.131**	**0.25**
+.003 SPIRAL POINT TAP	**7**		**2**	**15186**		**2.13**	**0.75**	**0.1680**	**0.131**	**0.25**
+.005 HAND TAP	**11**	**PLATING**	**4**	**15194**	**15195**	**2.13**	**0.75**	**0.1680**	**0.131**	**0.25**
+.005 SPIRAL POINT TAP	**11**	**PLATING**	**2**	**15192**		**2.13**	**0.75**	**0.1680**	**0.131**	**0.25**
4" EXTENSION SPIRAL POINT TAP	**3**	**2B**	**2**	**17582**		**4.00**	**0.75**	**0.1680**	**0.131**	**0.25**
6" EXTENSION HAND TAP	**3**	**2B**	**4**	**15200**	**15201**	**6.00**	**0.75**	**0.1680**	**0.131**	**0.25**
6" EXTENSION SPIRAL POINT TAP	**3**	**2B**	**2**	**15198**		**6.00**	**0.75**	**0.1680**	**0.131**	**0.25**
TRU-FLO FORM TAP	**3**	**3B**		**19040**	**19041**	**2.13**	**0.38**	**0.1680**	**0.131**	**0.25**
TRU-FLO FORM TAP	**5**	**2B**		**19042**	**19043**	**2.13**	**0.38**	**0.1680**	**0.131**	**0.25**
TRU-FLO FORM TAP	**10**	**PLATING**		**19044**	**19045**	**2.13**	**0.38**	**0.1680**	**0.131**	**0.25**
SOLID CARBIDE / HAND TAP	**3**	**2B**	**4**	**41125**	**41126**	**2.13**	**0.38**	**0.1680**	**0.131**	**0.25**
SOLID CARBIDE / SP PT TAP	**3**	**2B**	**2**	**41120**		**2.13**	**0.38**	**0.1680**	**0.131**	**0.25**
COST CUTTER DRILL/TAP	**3**	**2B**	**2**	**29006**		**2.11**	**0.50**	**0.1680**	**0.131**	**0.25**
TiN COAT/SP PT TAP	**5**		**2**	**50000**		**2.13**	**0.75**	**0.1680**	**0.131**	**0.25**
STI HAND TAP	**2**	**3B**	**3**	**17810**	**17811**	**2.38**	**0.94**	**0.2200**	**0.165**	**0.28**
STI SPIRAL POINT TAP	**2**	**3B**	**2**	**17812**		**2.38**	**0.94**	**0.2200**	**0.165**	**0.28**
STI HAND TAP	**3**	**2B**	**3**	**17814**	**17815**	**2.38**	**0.94**	**0.2200**	**0.165**	**0.28**
STI SPIRAL POINT TAP	**3**	**2B**	**2**	**17816**		**2.38**	**0.94**	**0.2200**	**0.165**	**0.28**
R.H. ROUND DIE 1"OD				13028						
L.H. ROUND DIE 1"OD				13029						

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
#8-32 NC						*See Previous Page for Recommended Hole Size*				
GAGE - Taperlock Style		2B		23068						
GAGE - Taperlock Style		3B		23069						
GAGE - Reversible Style		2B		24259						
GAGE - Reversible Style		3B		24260						
GAGE - Ring-Go		2A		23428						
GAGE - Ring-Go		3A		23429						
GAGE - Ring-NoGo		2A		23430						
GAGE - Ring-NoGo		3A		23431						
GAGE - STI Plug Taperlock Style		2B		24647						
GAGE - STI Plug Taperlock Style		3B		24648						
#8-36 NF						*Recommended Hole Size based on 75% Thread = .137" TRU-FLO at 65% Thread = .1517"*				
L.H. HAND TAP	**2**	**3B**	**4**	**15206**	**15207**	**2.13**	**0.75**	**0.1680**	**0.131**	**0.25**
L.H. SPIRAL POINT TAP	**2**	**3B**	**2**	**15204**		**2.13**	**0.75**	**0.1680**	**0.131**	**0.25**
TRU-FLO FORM TAP	**3**	**3B**		**19046**	**19047**	**2.13**	**0.38**	**0.1680**	**0.131**	**0.25**
TRU-FLO FORM TAP	**5**	**2B**		**19048**	**19049**	**2.13**	**0.38**	**0.1680**	**0.131**	**0.25**
SOLID CARBIDE / HAND TAP	**2**	**3B**	**4**	**41147**	**41148**	**2.13**	**0.38**	**0.1680**	**0.131**	**0.25**
GAGE - Taperlock Style		2B		23073						
GAGE - Taperlock Style		3B		23074						
GAGE - Reversible Style		2B		24264						
GAGE - Reversible Style		3B		24265						
GAGE - Ring-Go		2A		23434						
GAGE - Ring-Go		3A		23435						
GAGE - Ring-NoGo		2A		23436						
GAGE - Ring-NoGo		3A		23437						
GAGE - STI Plug Taperlock Style		2B		24652						
GAGE - STI Plug Taperlock Style		3B		24653						
#8-40 NS						*Recommended Hole Size based on 75% Thread = .1398"*				
HAND TAP	**2**	**3B**	**4**	**15218**	**15219**	**2.13**	**0.75**	**0.1680**	**0.131**	**0.25**
SPIRAL POINT TAP	**2**	**3B**	**2**	**15216**		**2.13**	**0.75**	**0.1680**	**0.131**	**0.25**
R.H. ROUND DIE 1"OD				13032						
#10-24 NC						*Recommended Hole Size based on 75% Thread = .149" for STI = .2055" / TRUFLO at 65% Thread = .1716"*				
L.H. HAND TAP	**3**	**3B**	**4**	**15230**	**15231**	**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**
L.H. SPIRAL POINT TAP	**3**	**3B**	**2**	**15228**		**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**
HAND TAP	**5**		**4**	**15236**	**15237**	**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**
SPIRAL POINT TAP	**5**		**2**	**15234**		**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**
+.003 HAND TAP	**7**		**4**	**15242**	**15243**	**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**
+.003 SPIRAL POINT TAP	**7**		**2**	**15240**		**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**
+.005 HAND TAP	**11**	**PLATING**	**4**	**15248**	**15249**	**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**
+.005 SPIRAL POINT TAP	**11**	**PLATING**	**2**	**15246**		**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**
DOUBLE LEAD TAP	**3**	**3B**	**4**	**15254**	**15255**	**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**
4" EXTENSION SPIRAL POINT TAP	**3**	**3B**	**2**	**17606**		**4.00**	**0.88**	**0.1940**	**0.152**	**0.25**
6" EXTENSION HAND TAP	**3**	**3B**	**4**	**15260**	**15261**	**6.00**	**0.88**	**0.1940**	**0.152**	**0.25**
6" EXTENSION SPIRAL POINT TAP	**3**	**3B**	**2**	**15258**		**6.00**	**0.88**	**0.1940**	**0.152**	**0.25**
TRU-FLO FORM TAP	**4**	**3B**		**19050**	**19051**	**2.38**	**0.50**	**0.1940**	**0.152**	**0.25**
TRU-FLO FORM TAP	**6**	**2B**		**19052**	**19053**	**2.38**	**0.50**	**0.1940**	**0.152**	**0.25**

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
#10-24 NC						*See Previous Page for Recommended Hole Size*				
TRU-FLO FORM TAP	10	PLATING		19054	19055	2.38	0.50	0.1940	0.152	0.25
SOLID CARBIDE / HAND TAP	3	3B	4	41180	41181	2.38	0.50	0.1940	0.152	0.25
SOLID CARBIDE / SP PT TAP	3	3B	2	41175		2.38	0.50	0.1940	0.152	0.25
COST CUTTER DRILL/TAP	3	3B	2	29008		2.38	0.63	0.1940	0.152	0.25
STI HAND TAP	2	3B	3	17818	17819	2.50	1.00	0.2550	0.191	0.31
STI SPIRAL POINT TAP	2	3B	2	17820		2.50	1.00	0.2550	0.191	0.31
STI HAND TAP	3	2B	3	17822	17823	2.50	1.00	0.2550	0.191	0.31
STI SPIRAL POINT TAP	3	2B	2	17824		2.50	1.00	0.2550	0.191	0.31
R.H. ROUND DIE 1"OD				13036						
L.H. ROUND DIE 1"OD				13037						
GAGE - Taperlock Style		2B		23078						
GAGE - Taperlock Style		3B		23079						
GAGE - Reversible Style		2B		24269						
GAGE - Reversible Style		3B		24270						
GAGE - Ring-Go		2A		23440						
GAGE - Ring-Go		3A		23441						
GAGE - Ring-NoGo		2A		23442						
GAGE - Ring-NoGo		3A		23443						
GAGE - STI Plug Taperlock		2B		24657						
GAGE - STI Plug Taperlock		3B		24658						
#10-28 NS						*Recommended Hole Size based on 75% Thread = .1553"*				
HAND TAP	3	3B	4	15266	15267	2.38	0.88	0.1940	0.152	0.25
#10-30 NS						*Recommended Hole Size based on 75% Thread = .1574"*				
HAND TAP	3	3B	4	15272	15273	2.38	0.88	0.1940	0.152	0.25
#10-32 NF						*Recommended Hole Size based on 75% Thread = .1597" for STI = .2031" / TRU-FLO at 65% Thread = .1762"*				
L.H. HAND TAP	3	2B	4	15278	15279	2.38	0.88	0.1940	0.152	0.25
L.H. SPIRAL POINT TAP	3	2B	2	15276		2.38	0.88	0.1940	0.152	0.25
HAND TAP	4		4	17898	17899	2.38	0.88	0.1940	0.152	0.25
SPIRAL POINT TAP	4		2	15282		2.38	0.88	0.1940	0.152	0.25
HAND TAP	5		4	15290	15291	2.38	0.88	0.1940	0.152	0.25
SPIRAL POINT TAP	5		2	15288		2.38	0.88	0.1940	0.152	0.25
+.003 HAND TAP	7		4	15296	15297	2.38	0.88	0.1940	0.152	0.25
+.003 SPIRAL POINT TAP	7		2	15294		2.38	0.88	0.1940	0.152	0.25
+.005 HAND TAP	11	PLATING	4	15302	15303	2.38	0.88	0.1940	0.152	0.25
+.005 SPIRAL POINT TAP	11	PLATING	2	15300		2.38	0.88	0.1940	0.152	0.25
4" EXTENSION SPIRAL POINT TAP	3	2B	2	17583		4.00	0.88	0.1940	0.152	0.25
6" EXTENSION HAND TAP	3	2B	4	15314	15315	6.00	0.88	0.1940	0.152	0.25
6" EXTENSION SPIRAL POINT TAP	3	2B	2	15312		6.00	0.88	0.1940	0.152	0.25
TRU-FLO FORM TAP	4	3B		19056	19057	2.38	0.50	0.1940	0.152	0.25
TRU-FLO FORM TAP	6	2B		19058	19059	2.38	0.50	0.1940	0.152	0.25
TRU-FLO FORM TAP	10	PLATING		19060	19061	2.38	0.50	0.1940	0.152	0.25
SOLID CARBIDE / HAND TAP	3	2B	4	41213	41214	2.38	0.50	0.1940	0.152	0.25
SOLID CARBIDE / SP PT TAP	3	2B	2	41208		2.38	0.50	0.1940	0.152	0.25
COST CUTTER DRILL/TAP	3	2B	2	29009		2.38	0.63	0.1940	0.152	0.25
TiN COAT/SP PT x 4" TAP	3	2B	2	50025		4.00	0.88	0.1940	0.152	0.25

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
#10-32 NF						*See Previous Page for Recommended Hole Size*				
TiN COAT/SP PT TAP	4		2	50001		2.38	0.88	0.1940	0.152	0.25
TiN COAT/SP PT TAP	5		2	50002		2.38	0.88	0.1940	0.152	0.25
TiN COAT/SP PT+.005 TAP	11	PLATING	2	50003		2.38	0.88	0.1940	0.152	0.25
STI HAND TAP	2	3B	3	17826	17827	2.50	1.00	0.2550	0.191	0.31
STI SPIRAL POINT TAP	2	3B	2	17828		2.50	1.00	0.2550	0.191	0.31
STI HAND TAP	3	2B	3	17830	17831	2.50	1.00	0.2550	0.191	0.31
STI SPIRAL POINT TAP	3	2B	2	17832		2.50	1.00	0.2550	0.191	0.31
R.H. ROUND DIE 1"OD				13038						
L.H. ROUND DIE 1"OD				13039						
GAGE - Taperlock Style		2B		23083						
GAGE - Taperlock Style		3B		23084						
GAGE - Reversible Style		2B		24274						
GAGE - Reversible Style		3B		24275						
GAGE - Ring-Go		2A		23446						
GAGE - Ring-Go		3A		23447						
GAGE - Ring-NoGo		2A		23448						
GAGE - Ring-NoGo		3A		23449						
GAGE - STI Plug Taperlock Style		2B		24662						
GAGE - STI Plug Taperlock Style		3B		24663						
#10-36 NS						*Recommended Hole Size based on 75% Thread = .163"*				
HAND TAP	2	3B	4	15320	15321	2.38	0.88	0.1940	0.152	0.25
R.H. ROUND DIE 1"OD				13040						
#10-40 NS						*Recommended Hole Size based on 75% Thread = .1658"*				
HAND TAP	2	3B	4	15326	15327	2.38	0.88	0.1940	0.152	0.25
SPIRAL POINT TAP	2	3B	2	15324		2.38	0.88	0.1940	0.152	0.25
R.H. ROUND DIE 1"OD				13042						
#10-48 NS						*Recommended Hole Size based on 75% Thread = .1700"*				
HAND TAP	2	3B	4	15332	15333	2.38	0.88	0.1940	0.152	0.25
#10-56 NS						*Recommended Hole Size based on 75% Thread = .1729"*				
HAND TAP	2	3B	4	15338	15339	2.38	0.88	0.1940	0.152	0.25
R.H. ROUND DIE 1"OD				13046						
#10-64 NS						*Recommended Hole Size based on 75% Thread = .1749"*				
HAND TAP	2	3B	4	15344	15345	2.38	0.88	0.1940	0.152	0.25
.210"-36 NS						*Recommended Hole Size based on 75% Thread = .183"*				
HAND TAP	3	3B	4	17646	17647	2.38	0.94	0.2200	0.165	0.28
HAND TAP	4	2B	4	17901	17902	2.38	0.94	0.2200	0.165	0.28
#12-24 NC						*Recommended Hole Size based on 75% Thread = .175" TRU-FLO at 65% Thread = .1976"*				
L.H. HAND TAP	3	3B	4	15374	15375	2.38	0.94	0.2200	0.165	0.28
TRU-FLO FORM TAP	4	3B		19062	19063	2.38	0.50	0.2200	0.165	0.28
TRU-FLO FORM TAP	6	2B		19064	19065	2.38	0.50	0.2200	0.165	0.28
SOLID CARBIDE / HAND TAP	3	3B	4	41246	41247	2.38	0.50	0.2200	0.165	0.28
SOLID CARBIDE / SP PT TAP	3	3B	2	41241		2.38	0.50	0.2200	0.165	0.28
COST CUTTER DRILL/TAP	3	3B	2	29010		2.38	0.66	0.2200	0.165	0.28
L.H. ROUND DIE 1"OD				13049						
GAGE - Taperlock Style		2B		23088						

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
#12-24 NC						*See Previous Page for Recommended Hole Size*				
GAGE - Taperlock Style		3B		23089						
GAGE - Reversible Style		2B		24279						
GAGE - Reversible Style		3B		24280						
GAGE - Ring-Go		2A		23452						
GAGE - Ring-Go		3A		23453						
GAGE - Ring-NoGo		2A		23454						
GAGE - Ring-NoGo		3A		23455						
GAGE - STI Plug Taperlock Style		2B		24667						
GAGE - STI Plug Taperlock Style		3B		24668						
#12-28 NF						*Recommended Hole Size based on 75% Thread = .1813" TRU-FLO at 65% Thread = .2002"*				
L.H. HAND TAP	**3**	**3B**	**4**	**15380**	**15381**	**2.38**	**0.94**	**0.2200**	**0.165**	**0.28**
TRU-FLO FORM TAP	**4**	**3B**		**19066**	**19067**	**2.38**	**0.50**	**0.2200**	**0.165**	**0.28**
TRU-FLO FORM TAP	**6**	**2B**		**19068**	**19069**	**2.38**	**0.50**	**0.2200**	**0.165**	**0.28**
SOLID CARBIDE / HAND TAP	**3**	**3B**	**4**	**41279**	**41280**	**2.38**	**0.50**	**0.2200**	**0.165**	**0.28**
SOLID CARBIDE / SP PT TAP	**3**	**3B**	**2**	**41274**		**2.38**	**0.50**	**0.2200**	**0.165**	**0.28**
L.H. ROUND DIE 1"OD				13051						
GAGE - Taperlock Style		2B		23093						
GAGE - Taperlock Style		3B		23094						
GAGE - Reversible Style		2B		24284						
GAGE - Reversible Style		3B		24285						
GAGE - Ring-Go		2A		23458						
GAGE - Ring-Go		3A		23459						
GAGE - Ring-NoGo		2A		23460						
GAGE - Ring-NoGo		3A		23461						
#12-32 NEF						*Recommended Hole Size based on 75% Thread = .1857"*				
HAND TAP	**3**	**3B**	**4**	**15386**	**15387**	**2.38**	**0.94**	**0.2200**	**0.165**	**0.28**
SPIRAL POINT TAP	**3**	**3B**	**2**	**15384**		**2.38**	**0.94**	**0.2200**	**0.165**	**0.28**
R.H. ROUND DIE 1"OD				13052						
GAGE - Taperlock Style		2B		23098						
GAGE - Taperlock Style		3B		23099						
GAGE - Reversible Style		2B		22144						
GAGE - Reversible Style		3B		22145						
GAGE - Ring-Go		2A		23464						
GAGE - Ring-Go		3A		23465						
GAGE - Ring-NoGo		2A		23466						
GAGE - Ring-NoGo		3A		23467						
#12-36 NS						*Recommended Hole Size based on 75% Thread = .189"*				
HAND TAP	**2**	**3B**	**4**	**15392**	**15393**	**2.38**	**0.94**	**0.2200**	**0.165**	**0.28**
R.H. ROUND DIE 1"OD				13054						
#14-20 NS						*Recommended Hole Size based on 75% Thread = .1935"*				
HAND TAP	**3**	**3B**	**4**	**15398**	**15399**	**2.50**	**1.00**	**0.2550**	**0.191**	**0.31**
#14-24 NS						*Recommended Hole Size based on 75% Thread = .201"*				
HAND TAP	**3**	**3B**	**4**	**15404**	**15405**	**2.50**	**1.00**	**0.2550**	**0.191**	**0.31**
R.H. ROUND DIE 1"OD				13060						

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
1/16"-27 PIPE TAP NPSI NPSF NPT/F NPS						*Recommended Hole Size: NPT/NPTF = .246"*				
NPT/F LEFT HAND TAPER TAP			**4**	**15407**		**2.13**	**0.69**	**0.3125**	**0.234**	**0.38**
NPT/F INT. THD TAP			**5**	**17677**		**2.13**	**0.69**	**0.3125**	**0.234**	**0.38**
NPT/F 4" EXTENSION TAPER TAP			**4**	**17665**		**4.00**	**0.69**	**0.3125**	**0.234**	**0.38**
NPT/F 6" EXTENSION TAPER TAP			**4**	**15410**		**6.00**	**0.69**	**0.3125**	**0.234**	**0.38**
SOLID CARBIDE - NPT/F TAP			**4**	**41800**		**2.13**	**0.69**	**0.3125**	**0.234**	**0.38**
NPT/F COST CUTTER DRILL/TAP			**4**	**29040**		**2.81**	**0.69**	**0.3125**	**0.234**	**0.38**
NPS R.H. ROUND DIE 1 "OD				13064						
GAGE L1 NPT PLG w/handle				24368						
GAGE L1 NPT RING				24366						
GAGE L1 NPTF PLG w/handle				24418						
GAGE L3 NPTF PLG w/handle				24420						
GAGE NPTF 6 step Plain Plug w/handle				24524						
GAGE L1 NPTF RING				24486						
GAGE L2 NPTF RING				24488						
GAGE NPTF 6 step Plain Ring				24558						
1/8"-27 PIPE TAP NPSI NPSF NPT/F NPS						*Recommended Drill Size: NPT/NPTF = .332" NPSF/NPSI = .3438"*				
NPT/F REG SPR FLT TAPER TAP			**4**	**17554**		**2.13**	**0.75**	**0.4375**	**0.328**	**0.38**
NPT/F LEFT HAND TAPER TAP			**4**	**15413**		**2.13**	**0.75**	**0.4375**	**0.328**	**0.38**
NPT/F 4" EXTENSION TAPER TAP			**4**	**15416**		**4.00**	**0.75**	**0.4375**	**0.328**	**0.38**
NPT/F 6" EXTENSION TAPER TAP			**4**	**15419**		**6.00**	**0.75**	**0.4375**	**0.328**	**0.38**
NPT/F 6" EXTENSION INT TAPER TAP			**5**	**15422**		**6.00**	**0.75**	**0.4375**	**0.328**	**0.38**
NPSF EXT x 6" TAP			**4**	**17710**		**6.00**	**0.75**	**0.4375**	**0.328**	**0.38**
NPT/F 8" EXTENSION TAPER TAP			**4**	**17956**		**8.00**	**0.75**	**0.4375**	**0.328**	**0.38**
NPT/F 10" EXTENSION TAPER TAP			**4**	**17959**		**10.00**	**0.75**	**0.4375**	**0.328**	**0.38**
NPT/F 12 EXT TAPER TAP			**4**	**17962**		**12.00**	**0.75**	**0.4375**	**0.328**	**0.38**
NPSI STRAIGHT TAP			**4**	**15431**		**2.13**	**0.75**	**0.4375**	**0.328**	**0.38**
SOLID CARBIDE - NPT/F TAP			**4**	**41801**		**2.13**	**0.75**	**0.4375**	**0.328**	**0.38**
SOLID CARBIDE - NPSF TAP			**4**	**41807**		**2.13**	**0.75**	**0.4375**	**0.328**	**0.38**
TiN COAT / INT. x 6" NPT/F TAP			**5**	**50004**		**6.00**	**0.75**	**0.4375**	**0.328**	**0.38**
NPT/F COST CUTTER DRILL/ TAP			**4**	**29041**		**2.88**	**0.75**	**0.4375**	**0.328**	**0.38**
NPT R.H. ROUND DIE 1"OD				13070						
NPS R.H. ROUND DIE 1 "OD				13072						
GAGE L1 NPT PLG w/handle				24371						
GAGE L1 NPT RING				24369						
GAGE L1 NPTF PLG w/handle				24426						
GAGE L3 NPTF PLG w/handle				24428						
GAGE NPTF 6 step Plain Plug w/handle				24528						
GAGE L1 NPTF RING				24490						
GAGE L2 NPTF RING				24492						
GAGE NPTF 6 step Plain Ring				24562						

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
1/8"-28 55° WHITWORTH PIPE						*Recommended Hole size BSPT = .3281" / BSPP = .3438"*				
BSPT TAPER - MODIFIED TAP			4	15434	15435	2.13	0.75	0.4375	0.328	0.38
BSPP PARALLEL - MODIFIED TAP			4	15437	15438	2.13	0.75	0.4375	0.328	0.38
BSPT TAPER - FULL FORM TAP			4	17932		2.13	0.75	0.4375	0.328	0.38
BSPP PARALLEL - FULL FORM TAP			4	17923		2.13	0.75	0.4375	0.328	0.38
BSPT R.H. ROUND DIE 1 "OD				13692						
BSPP R.H. ROUND DIE 1 "OD				13693						
GAGE BSPP-Mod. DBL END w/handle				27041						
GAGE BSPT-Mod. w/handle				27002						
5/32"-32 NS						*Recommended Hole Size based on 75% Thread = .1259"*				
HAND TAP	3	2B	4	17560	17561	2.13	0.75	0.1680	0.131	0.25
3/16"-24 NS						*Recommended Hole Size based on 75% Thread = .1465"*				
HAND TAP	3	3B	4	15443	15444	2.38	0.88	0.1940	0.152	0.25
3/16"-32 NS						*Recommended Hole Size based on 75% Thread = .1572"*				
HAND TAP	3	2B	4	15449	15450	2.38	0.88	0.1940	0.152	0.25
7/32"-32 NS						*Recommended Hole Size based on 75% Thread = .1884"*				
HAND TAP	3	2B	4	17565	17566	2.38	0.94	0.2200	0.165	0.28
1/4"-18 PIPE TAP NPSI NPSF NPT/F NPS						*Recommended Hole Size: NPT/NPTF = .4375" NPSF / NPSI = .4375"*				
NPT/F REG. SPR FLT TAPER TAP			4	15452		2.44	1.06	0.5625	0.421	0.44
NPT/F LEFT HAND TAPER TAP			4	15455		2.44	1.06	0.5625	0.421	0.44
PTF-SAE SHORT PROJ .361 TAP			4	17689	17690	2.44	1.06	0.5625	0.421	0.44
NPT/F 4" EXTENSION TAPER TAP			4	15458		4.00	1.06	0.5625	0.421	0.44
NPT/F 6" EXTENSION TAPER TAP			4	15461		6.00	1.06	0.5625	0.421	0.44
NPT/F 6 INT EXT TAPER TAP			5	15464		6.00	1.06	0.5625	0.421	0.44
NPT/F 8" EXTENSION TAPER TAP			4	15467		8.00	1.06	0.5625	0.421	0.44
NPSF EXT x 6" TAP			4	17703		6.00	1.06	0.5625	0.421	0.44
NPSI STRAIGHT TAP			4	15476		2.44	1.06	0.5625	0.421	0.44
SOLID CARBIDE - NPT/F TAP			4	41802		2.44	1.06	0.5625	0.421	0.44
TiN COAT x 6" NPT/F TAP			4	50005		6.00	1.06	0.5625	0.421	0.44
TiN COAT / INT. x 6" NPT/F TAP			5	50006		6.00	1.06	0.5625	0.421	0.44
NPT/F COST CUTTER DRILL/TAP			4	29042		3.31	1.06	0.5625	0.421	0.44
NPT R.H. ROUND DIE 1-1/2"OD				13092						
NPS R.H. ROUND DIE 1-1/2"OD				13094						
GAGE L1 NPT PLG w/handle				24374						
GAGE L1 NPT RING				24372						
GAGE L1 NPTF PLG w/handle				24434						
GAGE L3 NPTF PLG w/handle				24436						
GAGE NPTF 6 step Plain Plug w/handle				24532						
GAGE L1 NPTF RING				24494						
GAGE L2 NPTF RING				24496						
GAGE NPTF 6 step Plain Ring				24566						

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
1/4"-19 55° WHITWORTH PIPE						*Recommended Hole Size: BSPT = .4375" / BSPP= .4531"*				
BSPT TAPER - MODIFIED TAP			4	15479	15480	2.44	1.06	0.5625	0.421	0.44
BSPP PARALLEL - MODIFIED TAP			4	15482	15483	2.44	1.06	0.5625	0.421	0.44
BSPT TAPER - FULL FORM TAP			4	17933		2.44	1.06	0.5625	0.421	0.44
BSPP PARALLEL - FULL FORM TAP			4	17924		2.44	1.06	0.5625	0.421	0.44
BSPT R.H. ROUND DIE 1-1/2"OD				13694						
BSPP R.H. ROUND DIE 1-1/2"OD				13695						
GAGE BSPP-Mod. DBL END w/handle				27044						
GAGE BSPT-Mod. w/handle				27005						
1/4"-20 NC						*Recommended Hole Size based on 75% Thread = .2015" for STI =.2660" / TRU-Flo at 65% Thread = .2279"*				
FAST SPIRAL FLUTE TAP	5	2B	3	17766	17767	2.50	1.00	0.2550	0.191	0.31
L.H. HAND TAP	3	3B	4	15488	15489	2.50	1.00	0.2550	0.191	0.31
L.H. SPIRAL POINT TAP	3	3B	2	15486		2.50	1.00	0.2550	0.191	0.31
+.003 HAND TAP	7		4	15494	15495	2.50	1.00	0.2550	0.191	0.31
+.003 SPIRAL POINT TAP	7		2	15492		2.50	1.00	0.2550	0.191	0.31
+.005 HAND TAP	11	PLATING	4	15500	15501	2.50	1.00	0.2550	0.191	0.31
+.005 SPIRAL POINT TAP	11	PLATING	2	15498		2.50	1.00	0.2550	0.191	0.31
+.010 HAND TAP	21		4	15506	15507	2.50	1.00	0.2550	0.191	0.31
DOUBLE LEAD TAP	3	3B	4	15512	15513	2.50	1.00	0.2550	0.191	0.31
4" EXTENSION SP PT SM SHK TAP	3	3B	2	17964		4.00	1.00	0.1850	0.138	0.25
4" EXTENSION SPIRAL POINT TAP	3	3B	2	17584		4.00	1.00	0.2550	0.191	0.31
6" EXTENSION HAND TAP	3	3B	4	15518	15519	6.00	1.00	0.2550	0.191	0.31
6" EXTENSION SM SHK HAND TAP	3	3B	4	17570	17571	6.00	1.00	0.1850	0.138	0.25
6" EXTENSION SPIRAL POINT TAP	3	3B	2	15516		6.00	1.00	0.2550	0.191	0.31
6" EXTENSION SP PT SM SHK TAP	3	3B	2	17569		6.00	1.00	0.1850	0.138	0.25
8" EXTENSION HAND TAP	3	3B	4	15524	15525	8.00	1.00	0.2550	0.191	0.31
TRU-FLO FORM TAP	4	3B		19070	19071	2.50	0.63	0.2550	0.191	0.31
TRU-FLO FORM TAP	6	2B		19072	19073	2.50	0.63	0.2550	0.191	0.31
TRU-FLO FORM TAP	10	PLATING		19074	19075	2.50	0.63	0.2550	0.191	0.31
SOLID CARBIDE / HAND TAP	3	3B	4	41312	41313	2.50	0.63	0.2550	0.191	0.31
SOLID CARBIDE / SP PT TAP	3	3B	2	41307		2.50	0.63	0.2550	0.191	0.31
COST CUTTER DRILL/TAP	3	3B	2	29012		2.50	0.78	0.2550	0.191	0.31
TiN COAT/SP PT+.003 TAP	7		2	50007		2.50	1.00	0.2550	0.191	0.31
TiN COAT/SP PT+.005 TAP	11	PLATING	2	50008		2.50	1.00	0.2550	0.191	0.31
TiN COAT/SP PT x 6" TAP	3	3B	2	50009		6.00	1.00	0.2550	0.191	0.31
TiN COAT/SP PT x 6"/SM SHK TAP	3	3B	2	50023		6.00	1.00	0.1850	0.138	0.25
TiN COAT/SP PT x 4" TAP	3	3B	2	50026		4.00	1.00	0.2550	0.191	0.31
STI HAND TAP	2	3B	3	17834	17835	2.72	1.13	0.3180	0.238	0.38
STI SPIRAL POINT TAP	2	3B	2	17836		2.72	1.13	0.3180	0.238	0.38
STI HAND TAP	3	2B	3	17838	17839	2.72	1.13	0.3180	0.238	0.38

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
1/4"-20 NC						*See Previous Page for Recommended Hole Size*				
STI SPIRAL POINT TAP	**3**	**2B**	**2**	**17840**		**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
R.H. ROUND DIE 1"OD				13074						
L.H. ROUND DIE 1"OD				13075						
GAGE - Taperlock Style		2B		23103						
GAGE - Taperlock Style		3B		23104						
GAGE - Reversible Style		2B		24289						
GAGE - Reversible Style		3B		24290						
GAGE - Ring-Go		2A		23470						
GAGE - Ring-Go		3A		23471						
GAGE - Ring-NoGo		2A		23472						
GAGE - Ring-NoGo		3A		23473						
GAGE - STI Plug Taperlock Style		2B		24677						
GAGE - STI Plug Taperlock Style		3B		24678						
1/4"-20 BSW 55° MOD WHITWORTH						*Recommended Hole Size = .2020"*				
	3		**4**	**15530**	**15531**	**2.50**	**1.00**	**0.2550**	**0.191**	**0.31**
1/4"-24 NS						*Recommended Hole Size based on 75% Thread = .209"*				
HAND TAP	**3**	**3B**	**4**	**15536**	**15537**	**2.50**	**1.00**	**0.2550**	**0.191**	**0.31**
SPIRAL POINT TAP	**3**	**3B**	**2**	**15534**		**2.50**	**1.00**	**0.2550**	**0.191**	**0.31**
R.H. ROUND DIE 1"OD				13076						
1/4"-26 BSF 55° MOD WHITWORTH						*Recommended Hole Size = .2130"*				
	3		**4**	**17620**	**17621**	**2.50**	**1.00**	**0.2550**	**0.191**	**0.31**
1/4"-27 NS						*Recommended Hole Size based on 75% Thread = .214"*				
HAND TAP	**3**	**3B**	**4**	**15542**	**15543**	**2.50**	**1.00**	**0.2550**	**0.191**	**0.31**
R.H. ROUND DIE 1"OD				13078						
1/4"-28 NF						*Recommended Hole Size based on 75% Thread = .2153" for STI = .2638" / TRU-FLO at 65% Thread = .2342"*				
L.H. HAND TAP	**3**	**3B**	**4**	**15548**	**15549**	**2.50**	**1.00**	**0.2550**	**0.191**	**0.31**
L.H. SPIRAL POINT TAP	**3**	**3B**	**2**	**15546**		**2.50**	**1.00**	**0.2550**	**0.191**	**0.31**
HAND TAP	**5**		**4**	**15554**	**15555**	**2.50**	**1.00**	**0.2550**	**0.191**	**0.31**
SPIRAL POINT TAP	**5**		**2**	**15552**		**2.50**	**1.00**	**0.2550**	**0.191**	**0.31**
+.003 HAND TAP	**7**		**4**	**15560**	**15561**	**2.50**	**1.00**	**0.2550**	**0.191**	**0.31**
+.003 SPIRAL POINT TAP	**7**		**2**	**15558**		**2.50**	**1.00**	**0.2550**	**0.191**	**0.31**
+.005 HAND TAP	**11**	**PLATING**	**4**	**15566**	**15567**	**2.50**	**1.00**	**0.2550**	**0.191**	**0.31**
+.005 SPIRAL POINT TAP	**11**	**PLATING**	**2**	**15564**		**2.50**	**1.00**	**0.2550**	**0.191**	**0.31**
DOUBLE LEAD TAP	**3**	**3B**	**4**	**15572**	**15573**	**2.50**	**1.00**	**0.2550**	**0.191**	**0.31**
4" EXTENSION SP PT SM SHK TAP	**3**	**3B**	**2**	**17965**		**4.00**	**1.00**	**0.1850**	**0.138**	**0.25**
6" EXTENSION HAND TAP	**3**	**3B**	**4**	**15578**	**15579**	**6.00**	**1.00**	**0.2550**	**0.191**	**0.31**
6" EXTENSION SPIRAL POINT TAP	**3**	**3B**	**2**	**15576**		**6.00**	**1.00**	**0.2550**	**0.191**	**0.31**
6" EXTENSION SP PT SM SHK TAP	**3**	**3B**	**2**	**17607**		**6.00**	**1.00**	**0.1850**	**0.138**	**0.25**
TRU-FLO FORM TAP	**4**	**3B**		**19076**	**19077**	**2.50**	**0.63**	**0.2550**	**0.191**	**0.31**
TRU-FLO FORM TAP	**6**	**2B**		**19078**	**19079**	**2.50**	**0.63**	**0.2550**	**0.191**	**0.31**

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM #		OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
				PLUG	BOTTOM					
1/4"-28 NF						*See Previous Page for Recommended Hole Size*				
TRU-FLO FORM TAP	10	PLATING		19080	19081	2.50	0.63	0.2550	0.191	0.31
SOLID CARBIDE / HAND TAP	3	3B	4	41345	41346	2.50	0.63	0.2550	0.191	0.31
SOLID CARBIDE / SP PT TAP	3	3B	2	41340		2.50	0.63	0.2550	0.191	0.31
COST CUTTER DRILL/TAP	3	3B	2	29013		2.50	0.78	0.2550	0.191	0.31
TiN COAT/HAND TAP	5		4		50010	2.50	1.00	0.2550	0.191	0.31
STI HAND TAP	2	3B	3	17842	17843	2.72	1.13	0.3180	0.238	0.38
STI SPIRAL POINT TAP	2	3B	2	17844		2.72	1.13	0.3180	0.238	0.38
STI HAND TAP	3	2B	3	17846	17847	2.72	1.13	0.3180	0.238	0.38
STI SPIRAL POINT TAP	3	2B	2	17848		2.72	1.13	0.3180	0.238	0.38
R.H. ROUND DIE 1"OD				13080						
L.H. ROUND DIE 1"OD				13081						
GAGE - Taperlock Style		2B		23108						
GAGE - Taperlock Style		3B		23109						
GAGE - Reversible Style		2B		24294						
GAGE - Reversible Style		3B		24295						
GAGE - Ring-Go		2A		23476						
GAGE - Ring-Go		3A		23477						
GAGE - Ring-NoGo		2A		23478						
GAGE - Ring-NoGo		3A		23479						
GAGE - STI Plug Taperlock Style		2B		24682						
GAGE - STI Plug Taperlock Style		3B		24683						
1/4"-32 NEF						*Recommended Hole Size based on 75% Thread = .2197"*				
HAND TAP	3	3B	4	15584	15585	2.50	1.00	0.2550	0.191	0.31
L.H. HAND TAP	3	3B	4	17784	17785	2.50	1.00	0.2550	0.191	0.31
SPIRAL POINT TAP	3	3B	2	15588		2.50	1.00	0.2550	0.191	0.31
HAND TAP	5		4	15590	15591	2.50	1.00	0.2550	0.191	0.31
R.H. ROUND DIE 1"OD				13082						
GAGE - Taperlock Style		2B		23113						
GAGE - Taperlock Style		3B		23114						
GAGE - Reversible Style		2B		24937						
GAGE - Reversible Style		3B		24938						
GAGE - Ring-Go		2A		23482						
GAGE - Ring-Go		3A		23483						
GAGE - Ring-NoGo		2A		23484						
GAGE - Ring-NoGo		3A		23485						
1/4"-36 NS						*Recommended Hole Size based on 75% Thread = .2230"*				
HAND TAP	2	3B	4	15596	15597	2.50	1.00	0.2550	0.191	0.31
SPIRAL POINT TAP	2	3B	2	15594		2.50	1.00	0.2550	0.191	0.31
HAND TAP	3	2B	4	17759	17760	2.50	1.00	0.2550	0.191	0.31
SPIRAL POINT TAP	3	2B	2	17572		2.50	1.00	0.2550	0.191	0.31
TiN COAT / SP PT TAP	3	2B	2	50024		2.50	1.00	0.2550	0.191	0.31
R.H. ROUND DIE 1"OD				13451						
1/4"-40 NS						*Recommended Hole Size based on 75% Thread = .2258"*				
HAND TAP	2	3B	4	15602	15603	2.50	1.00	0.2550	0.191	0.31
SPIRAL POINT TAP	2	3B	3	17573		2.50	1.00	0.2550	0.191	0.31
HAND TAP	3	2B	4	15608	15609	2.50	1.00	0.2550	0.191	0.31

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
1/4"-40 NS						*See Previous Page for Recommended Hole Size*				
R.H. ROUND DIE 1"OD				13084						
1/4"-48 NS						*Recommended Hole Size based on 75% Thread = .230"*				
HAND TAP	2	3B	4	15614	15615	2.50	1.00	0.2550	0.191	0.31
R.H. ROUND DIE 1"OD				13086						
1/4"-56 NS						*Recommended Hole Size based on 75% Thread = .2329"*				
HAND TAP	2	3B	4	15620	15621	2.50	1.00	0.2550	0.191	0.31
R.H. ROUND DIE 1"OD				13088						
1/4"-80 NS						*Recommended Hole Size based on 75% Thread = .2379"*				
HAND TAP	2	3B	4	15638	15639	2.50	1.00	0.2550	0.191	0.31
R.H. ROUND DIE 1"OD				13090						
9/32"-32 NS						*Recommended Hole Size based on 75% Thread = .2509"*				
HAND TAP	3	2B	4	17589	17590	2.72	1.13	0.3180	0.238	0.38
5/16"-18 NC						*Recommended Hole Size based on 75% Thread = .2589" for STI = .3320" / TRU-FLO at 65% Thread = .2879"*				
L.H. HAND TAP	3	3B	4	15644	15645	2.72	1.13	0.3180	0.238	0.38
L.H. SPIRAL POINT TAP	3	3B	2	15642		2.72	1.13	0.3180	0.238	0.38
+.003 HAND TAP	7		4	15650	15651	2.72	1.13	0.3180	0.238	0.38
+.003 SPIRAL POINT TAP	7		2	15648		2.72	1.13	0.3180	0.238	0.38
+.005 HAND TAP	11	PLATING	4	15656	15657	2.72	1.13	0.3180	0.238	0.38
+.005 SPIRAL POINT TAP	11	PLATING	2	15654		2.72	1.13	0.3180	0.238	0.38
+.010 HAND TAP	21		4	15662	15663	2.72	1.13	0.3180	0.238	0.38
DOUBLE LEAD TAP	3	3B	4	15668	15669	2.72	1.13	0.3180	0.238	0.38
4" EXTENSION SPIRAL POINT TAP	3	3B	2	17585		4.00	1.13	0.3180	0.238	0.38
4" EXTENSION SP PT SM SHK TAP	3	3B	2	17966		4.00	1.13	0.2400	0.180	0.28
6" EXTENSION HAND TAP	3	3B	4	15673	15674	6.00	1.13	0.3180	0.238	0.38
6" EXTENSION SM SHK HAND TAP	3	3B	4	17608	17609	6.00	1.13	0.2400	0.180	0.28
6" EXTENSION SPIRAL POINT TAP	3	3B	2	15671		6.00	1.13	0.3180	0.238	0.38
6" EXTENSION SP PT SM SHK TAP	3	3B	2	17610		6.00	1.13	0.2400	0.180	0.28
8" EXTENSION HAND TAP	3	3B	4	15678	15679	8.00	1.13	0.3180	0.238	0.38
TRU-FLO FORM TAP	5	3B		19082	19083	2.72	0.69	0.3180	0.238	0.38
TRU-FLO FORM TAP	7	2B		19084	19085	2.72	0.69	0.3180	0.238	0.38
TRU-FLO FORM TAP	10	PLATING		19086	19087	2.72	0.69	0.3180	0.238	0.38
SOLID CARBIDE / HAND TAP	3	3B	4	41378	41379	2.72	0.69	0.3180	0.238	0.38
SOLID CARBIDE / SP PT TAP	3	3B	2	41373		2.72	0.69	0.3180	0.238	0.38
COST CUTTER DRILL/TAP	3	3B	2	29014		2.72	0.94	0.3180	0.238	0.38
TiN COAT / SP PT x 6" TAP	3	3B	2	50011		6.00	1.13	0.3180	0.238	0.38
STI HAND TAP	3	3B	4	17850	17851	2.94	1.25	0.3810	0.286	0.44
STI SPIRAL POINT TAP	3	3B	3	17852		2.94	1.25	0.3810	0.286	0.44
STI HAND TAP	4	2B	4	17854	17855	2.94	1.25	0.3810	0.286	0.44
STI SPIRAL POINT TAP	4	2B	3	17856		2.94	1.25	0.3810	0.286	0.44
R.H. ROUND DIE 1"OD				13100						
L.H. ROUND DIE 1"OD				13101						
GAGE - Taperlock Style		2B		23118						
GAGE - Taperlock Style		3B		23119						

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
5/16"-18 NC						*See Previous Page for Recommended Hole Size*				
GAGE - Reversible Style		2B		24299						
GAGE - Reversible Style		3B		24300						
GAGE - Ring-Go		2A		23488						
GAGE - Ring-Go		3A		23489						
GAGE - Ring-NoGo		2A		23490						
GAGE - Ring-NoGo		3A		23491						
GAGE - STI Plug Taperlock Style		2B		24687						
GAGE - STI Plug Taperlock Style		3B		24688						
5/16"-18 BSW 55° MOD WHITWORTH						*Recommended Hole Size = .2591"*				
	3		4	17625	17626	2.72	1.13	0.3180	0.238	0.38
5/16"-20 NS						*Recommended Hole Size based in 75% Thread = .264"*				
HAND TAP	3	3B	4	15684	15685	2.72	1.13	0.3180	0.238	0.38
R.H. ROUND DIE 1"OD				13102						
GAGE - Taperlock Style		2B		22169						
GAGE - Taperlock Style		3B		22170						
GAGE - Ring-Go		2A		22171						
GAGE - Ring-Go		3A		22172						
GAGE - Ring-NoGo		2A		22173						
GAGE - Ring-NoGo		3A		22174						
5/16"-22 BSF 55° MOD WHITWORTH						*Recommended Hole Size = .2688"*				
	3		4	15690	15691	2.72	1.13	0.3180	0.238	0.38
5/16"-24 NF						*Recommended Hole Size based in 75% Thread = .2715" for STI = .3281" / TRU-FLO at 65% Thread = .2941"*				
L.H. HAND TAP	3	3B	4	15696	15697	2.72	1.13	0.3180	0.238	0.38
L.H. SPIRAL POINT TAP	3	3B	2	15694		2.72	1.13	0.3180	0.238	0.38
4" EXTENSION SP PT SM SHK TAP	3	3B	2	17967		4.00	1.13	0.2400	0.180	0.28
HAND TAP	5		4	17650	17651	2.72	1.13	0.3180	0.238	0.38
SPIRAL POINT TAP	5		2	17737		2.72	1.13	0.3180	0.238	0.38
HAND TAP	6		4	17707	17708	2.72	1.13	0.3180	0.238	0.38
+.005 HAND TAP	11	PLATING	4	15708	15709	2.72	1.13	0.3180	0.238	0.38
+.005 SPIRAL POINT TAP	11	PLATING	2	15706		2.72	1.13	0.3180	0.238	0.38
6" EXTENSION HAND TAP	3	3B	4	15713	15714	6.00	1.13	0.3180	0.238	0.38
6" EXTENSION SPIRAL POINT TAP	3	3B	2	15711		6.00	1.13	0.3180	0.238	0.38
6" EXTENSION SP PT SM SHK TAP	3	3B	2	17611		6.00	1.13	0.2400	0.180	0.28
TRU-FLO FORM TAP	5	3B		19088	19089	2.72	0.69	0.3180	0.238	0.38
TRU-FLO FORM TAP	7	2B		19090	19091	2.72	0.69	0.3180	0.238	0.38
TRU-FLO FORM TAP	10	PLATING		19092	19093	2.72	0.69	0.3180	0.238	0.38
SOLID CARBIDE / HAND TAP	3	3B	4	41411	41412	2.72	0.69	0.3180	0.238	0.38
SOLID CARBIDE SP PT TAP	3	3B	2	41406		2.72	0.69	0.3180	0.238	0.38
COST CUTTER DRILL/TAP	3	3B	2	29015		2.72	0.94	0.3180	0.238	0.38
STI HAND TAP	2	3B	4	17858	17859	2.94	1.25	0.3810	0.286	0.44
STI SPIRAL POINT TAP	2	3B	3	17860		2.94	1.25	0.3810	0.286	0.44
STI HAND TAP	3	2B	4	17862	17863	2.94	1.25	0.3810	0.286	0.44

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
5/16"-24 NF						*See Previous Page for Recommended Hole Size*				
STI SPIRAL POINT TAP	**3**	**2B**	**3**	**17864**		**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
R.H. ROUND DIE 1"OD				13104						
L.H. ROUND DIE 1"OD				13105						
GAGE - Taperlock Style		2B		23123						
GAGE - Taperlock Style		3B		23124						
GAGE - Reversible Style		2B		24304						
GAGE - Reversible Style		3B		24305						
GAGE - Ring-Go		2A		23494						
GAGE - Ring-Go		3A		23495						
GAGE - Ring-NoGo		2A		23496						
GAGE - Ring-NoGo		3A		23497						
GAGE - STI Plug Taperlock Style		2B		24692						
GAGE - STI Plug Taperlock Style		3B		24693						
5/16"-27 NS						*Recommended Hole Size based on 75% Thread = .2765"*				
HAND TAP	**3**	**3B**	**4**	**15719**	**15720**	**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
R.H. ROUND DIE 1"OD				13106						
5/16"-28 NS						*Recommended Hole Size based on 75% Thread = .2778"*				
HAND TAP	**3**	**3B**	**4**	**15725**	**15726**	**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
GAGE - Taperlock Style		2B		22183						
GAGE - Taperlock Style		3B		22184						
GAGE - Ring-Go		2A		22185						
GAGE - Ring-Go		3A		22186						
GAGE - Ring-NoGo		2A		22187						
GAGE - Ring-NoGo		3A		22188						
5/16"-32 NEF						*Recommended Hole Size based on 75% Thread = .2822"*				
HAND TAP	**3**	**3B**	**4**	**15730**	**15731**	**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
SPIRAL POINT TAP	**3**	**3B**	**2**	**15728**		**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
HAND TAP	**5**		**4**	**15735**	**15736**	**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
R.H. ROUND DIE 1"OD				13108						
GAGE - Taperlock Style		2B		23128						
GAGE - Taperlock Style		3B		23129						
GAGE - Reversible Style		2B		24942						
GAGE - Reversible Style		3B		24943						
GAGE - Ring-Go		2A		23500						
GAGE - Ring-Go		3A		23501						
GAGE - Ring-NoGo		2A		23502						
GAGE - Ring-NoGo		3A		23503						
5/16"-40 NS						*Recommended Hole Size based on 75% Thread = .2883"*				
HAND TAP	**2**	**3B**	**4**	**15740**	**15741**	**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
R.H. ROUND DIE 1"OD				13110						
11/32"-32 NS						*Recommended Hole Size based on 75% Thread = .3134"*				
HAND TAP	**3**	**3B**	**4**	**15750**	**15751**	**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
3/8"-12 ACME						*Recommended Hole Size = .2917"*				
TANDEM TAP		**2G**	**4**	**15752**		**4.06**	**2.13**	**0.2550**	**0.191**	**0.31**

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM #		OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
				PLUG	BOTTOM					
3/8"-16 NC						*Recommended Hole Size based on 75% Thread = .3144" for STI = .3970" / TRU-FLO at 65% Thread = .3474"*				
FAST SPIRAL FLUTE TAP	5	2B	3	17912	17913	2.94	1.25	0.3810	0.286	0.44
L.H. HAND TAP	3	3B	4	15756	15757	2.94	1.25	0.3810	0.286	0.44
L.H. SPIRAL POINT TAP	3	3B	3	15754		2.94	1.25	0.3810	0.286	0.44
SPIRAL POINT TAP	3	3B	2	17738		2.94	1.25	0.3810	0.286	0.44
+.003 HAND TAP	7		4	15766	15767	2.94	1.25	0.3810	0.286	0.44
+.003 SPIRAL POINT TAP	7		3	15764		2.94	1.25	0.3810	0.286	0.44
+.005 HAND TAP	11	PLATING	4	15771	15772	2.94	1.25	0.3810	0.286	0.44
+.005 SPIRAL POINT TAP	11	PLATING	3	15769		2.94	1.25	0.3810	0.286	0.44
+.010 HAND TAP	21		4	15776	15777	2.94	1.25	0.3810	0.286	0.44
SMALL SHANK TAP	3	3B	4	15761	15762	2.94	1.25	0.2750	0.286	0.38
DOUBLE LEAD TAP	3	3B	4	15781	15782	2.94	1.25	0.3810	0.286	0.44
4" EXTENSION SP PT SM SHK TAP	3	3B	3	17969		4.00	1.25	0.2750	0.206	0.38
4" EXTENSION SPIRAL POINT TAP	3	3B	3	17586		4.00	1.25	0.3810	0.286	0.44
6" EXTENSION HAND TAP	3	3B	4	15786	15787	6.00	1.25	0.3810	0.286	0.44
6" EXTENSION SM SHANK TAP	3	3B	4	15801	15802	6.00	1.25	0.2750	0.206	0.38
6" EXTENSION SPIRAL POINT TAP	3	3B	3	15784		6.00	1.25	0.3810	0.286	0.44
6" EXTENSION SP PT SM SHK TAP	3	3B	3	15799		6.00	1.25	0.2750	0.206	0.38
6" EXTENSION HAND TAP	5	2B	4	17658	17659	6.00	1.25	0.3810	0.286	0.44
6" EXTENSION SPIRAL POINT TAP	5	2B	3	17666		6.00	1.25	0.3810	0.286	0.44
8" EXTENSION HAND TAP	3	3B	4	15791	15792	8.00	1.25	0.3810	0.286	0.44
10" EXTENSION HAND TAP	3	3B	4	15796	15797	10.00	1.25	0.3810	0.286	0.44
TRU-FLO FORM TAP	5	3B		19094	19095	2.94	0.75	0.3810	0.286	0.44
TRU-FLO FORM TAP	7	2B		19096	19097	2.94	0.75	0.3810	0.286	0.44
TRU-FLO FORM TAP	10	PLATING		19098	19099	2.94	0.75	0.3810	0.286	0.44
SOLID CARBIDE / HAND TAP	3	3B	4	41444	41445	2.94	0.75	0.3810	0.286	0.44
SOLID CARBIDE / SP PT TAP	3	3B	3	41442		2.94	0.75	0.3810	0.286	0.44
COST CUTTER DRILL/TAP	3	3B	2	29016		2.94	1.13	0.3810	0.286	0.44
TiN COAT/SP PT x 6" TAP	3	3B	3	50012		6.00	1.25	0.3810	0.286	0.44
TiN COAT/SP PT x 6"/SM SHK TAP	3	3B	3	50013		6.00	1.25	0.2750	0.206	0.38
STI HAND TAP	3	3B	4	17866	17867	3.38	1.66	0.3670	0.275	0.44
STI SPIRAL POINT TAP	3	3B	3	17868		3.38	1.66	0.3670	0.275	0.44
STI HAND TAP	4	2B	4	17870	17871	3.38	1.66	0.3670	0.275	0.44
STI SPIRAL POINT TAP	4	2B	3	17872		3.38	1.66	0.3670	0.275	0.44
R.H. ROUND DIE 1"OD				13116						
L.H. ROUND DIE 1"OD				13117						
GAGE - Taperlock Style		2B		23133						
GAGE - Taperlock Style		3B		23134						
GAGE - Reversible Style		2B		24309						
GAGE - Reversible Style		3B		24310						
GAGE - Ring-Go		2A		23506						
GAGE - Ring-Go		3A		23507						
GAGE - Ring-NoGo		2A		23508						
GAGE - Ring-NoGo		3A		23509						

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
3/8”-16 NC						*See Previous Page for Recommended Hole Size*				
GAGE - STI Plug Taperlock Style		2B		24697						
GAGE - STI Plug Taperlock Style		3B		24698						
3/8"-18 NS						*Recommended Hole Size based on 75% Thread = .3214”*				
HAND TAP	**3**	**3B**	**4**	**15806**	**15807**	**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
R.H. ROUND DIE 1"OD				13118						
3/8"-18 PIPE TAP NPSI NPSF NPT/F NPS						*Recommended Hole Size: NPT = .5625” / NPTF = .5781” NPSF/NPSI = .5781”*				
NPT/F REGULAR SP FLT TAPER TAP			**4**	**15809**		**2.56**	**1.06**	**0.7000**	**0.531**	**0.50**
NPT/F LEFT HAND TAPER TAP			**4**	**15812**		**2.56**	**1.06**	**0.7000**	**0.531**	**0.50**
NPT/F 6" EXTENSION TAPER TAP			**4**	**15815**		**6.00**	**1.06**	**0.7000**	**0.531**	**0.50**
NPT/F 6 INT EXT TAPER TAP			**5**	**15818**		**6.00**	**1.06**	**0.7000**	**0.531**	**0.50**
NPT/F 8" EXTENSION TAPER TAP			**4**	**15821**		**8.00**	**1.06**	**0.7000**	**0.531**	**0.50**
NPSI STRAIGHT TAP			**4**	**15827**		**2.56**	**1.06**	**0.7000**	**0.531**	**0.50**
NPSF 6" EXTENSION TAP			**4**	**17922**		**6.00**	**1.06**	**0.7000**	**0.531**	**0.50**
NPT/F CARB-I-SERT TAP			**4**	**41808**		**2.56**	**0.94**	**0.7000**	**0.531**	**0.50**
NPT/F COST CUTTER DRILL/ TAP			**4**	**29043**		**3.30**	**1.06**	**0.7000**	**0.531**	**0.50**
NPT/F TiN COAT x 6 TAP			**4**	**50014**		**6.00**	**1.06**	**0.7000**	**0.531**	**0.50**
NPT/F TiN COAT/INT.THD x 6" TAP			**5**	**50015**		**6.00**	**1.06**	**0.7000**	**0.531**	**0.50**
NPT R.H. ROUND DIE 1-1/2"OD				13136						
NPS R.H. ROUND DIE 1-1/2"OD				13138						
GAGE L1 NPT PLG w/handle				24377						
GAGE L1 NPT RING				24375						
GAGE L1 NPTF PLG w/handle				24442						
GAGE L3 NPTF PLG w/handle				24444						
GAGE NPTF 6 step Plain Plug w/handle				24536						
GAGE L1 NPTF RING				24498						
GAGE L2 NPTF RING				24500						
GAGE NPTF 6 step Plain Ring				24570						
3/8"-19 55° WHITWORTH PIPE						*Recommended Hole Size: BSPT = .5781” / BSPP = 5938”*				
BSPT TAPER - MODIFIED TAP			**4**	**15830**	**15831**	**2.56**	**1.06**	**0.7000**	**0.531**	**0.50**
BSPP PARALLEL - MODIFIED TAP			**4**	**15833**	**15834**	**2.56**	**1.06**	**0.7000**	**0.531**	**0.50**
BSPT TAPER - FULL FORM TAP			**4**	**17934**		**2.56**	**1.06**	**0.7000**	**0.531**	**0.50**
BSPP PARALLEL - FULL FORM TAP			**4**	**17925**		**2.56**	**1.06**	**0.7000**	**0.531**	**0.50**
BSPT R.H. ROUND DIE 1-1/2"OD				13696						
BSPP R.H. ROUND DIE 1-1/2"OD				13697						
GAGE BSPP-Mod. DBL END w/handle				27047						
GAGE BSPT-Mod. w/handle				27008						

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
3/8"-20 NS						*Recommended Hole Size based on 75% Thread = .3265"*				
HAND TAP	3	3B		15838	15839	2.94	1.25	0.3810	0.286	0.44
R.H. ROUND DIE 1"OD				13120						
GAGE - Taperlock Style		2B		22197						
GAGE - Taperlock Style		3B		22198						
GAGE - Ring-Go		2A		22199						
GAGE - Ring-Go		3A		22200						
GAGE - Ring-NoGo		2A		22201						
GAGE - Ring-NoGo		3A		22202						
3/8"-20 BSF 55° MOD WHITWORTH						*Recommended Hole Size = .327"*				
	3		4	17630	17631	2.94	1.25	0.3810	0.286	0.44
3/8"-24 NF						*Recommended Hole Size based on 75% Thread = .3340" for STI = .3906" / TRU-FLO at 65% Thread = .3566"*				
REGULAR SPIRAL FLT TAP	5		3	17724	17725	2.94	1.25	0.3810	0.286	0.44
L.H. HAND TAP	3	3B	4	15843	15844	2.94	1.25	0.3810	0.286	0.44
L.H. SPIRAL POINT TAP	3	3B	3	15841		2.94	1.25	0.3810	0.286	0.44
HAND TAP	5		4	15848	15849	2.94	1.25	0.3810	0.286	0.44
HAND TAP	8		4	17915	17916	2.94	1.25	0.3810	0.286	0.44
SPIRAL POINT TAP	5		3	15846		2.94	1.25	0.3810	0.286	0.44
+.003 HAND TAP	7		4	15853	15854	2.94	1.25	0.3810	0.286	0.44
+.003 SPIRAL POINT TAP	7		3	15851		2.94	1.25	0.3810	0.286	0.44
+.005 HAND TAP	11	PLATING	4	15858	15859	2.94	1.25	0.3810	0.286	0.44
+.005 SPIRAL POINT TAP	11	PLATING	3	15856		2.94	1.25	0.3810	0.286	0.44
4" EXTENSION SP PT SM SHK TAP	3	3B	3	17970		4.00	1.25	0.2750	0.206	0.38
6" EXTENSION HAND TAP	3	3B	4	15863	15864	6.00	1.25	0.3810	0.286	0.44
6" EXTENSION SPIRAL POINT TAP	3	3B	3	15861		6.00	1.25	0.3810	0.286	0.44
TRU-FLO FORM TAP	5	3B		19100	19101	2.94	0.75	0.3810	0.286	0.44
TRU-FLO FORM TAP	7	2B		19102	19103	2.94	0.75	0.3810	0.286	0.44
TRU-FLO FORM TAP	10	PLATING		19104	19105	2.94	0.75	0.3810	0.286	0.44
SOLID CARBIDE / HAND TAP	3	3B	4	41476	41477	2.94	0.75	0.3810	0.286	0.44
SOLID CARBIDE / SP PT TAP	3	3B	3	41001		2.94	0.75	0.3810	0.286	0.44
COST CUTTER DRILL/TAP	3	3B	2	29017		2.94	1.13	0.3810	0.286	0.44
TiN COAT / +.003 HAND TAP	7		4		50016	2.94	1.25	0.3810	0.286	0.44
STI HAND TAP	2	3B	4	17874	17875	3.16	1.44	0.3230	0.242	0.41
STI SPIRAL POINT TAP	2	3B	3	17876		3.16	1.44	0.3230	0.242	0.41
STI HAND TAP	3	2B	4	17878	17879	3.16	1.44	0.3230	0.242	0.41
STI SPIRAL POINT TAP	3	2B	3	17880		3.16	1.44	0.3230	0.242	0.41
R.H. ROUND DIE 1"OD				13122						
L.H. ROUND DIE 1"OD				13123						
GAGE - Taperlock Style		2B		23138						
GAGE - Taperlock Style		3B		23139						
GAGE - Reversible Style		2B		24314						
GAGE - Reversible Style		3B		24315						
GAGE - Ring-Go		2A		23512						
GAGE - Ring-Go		3A		23513						
GAGE - Ring-NoGo		2A		23514						
GAGE - Ring-NoGo		3A		23515						

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
3/8"-24 NF						*See Previous Page for Recommended Hole Size*				
GAGE - STI Plug Taperlock Style		2B		24702						
GAGE - STI Plug Taperlock Style		3B		24703						
3/8"-27 NS						*Recommended Hole Size based on 75% Thread = .339"*				
HAND TAP	**3**	**3B**	**4**	**15868**	**15869**	**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
R.H. ROUND DIE 1"OD				13124						
3/8"-28 NS						*Recommended Hole Size based on 75% Thread = .3403"*				
HAND TAP	**3**	**3B**	**4**	**15873**	**15874**	**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
GAGE - Taperlock Style		2B		22211						
GAGE - Taperlock Style		3B		22212						
GAGE - Ring-Go		2A		22213						
GAGE - Ring-Go		3A		22214						
GAGE - Ring-NoGo		2A		22215						
GAGE - Ring-NoGo		3A		22216						
3/8"-32 NEF						*Recommended Hole Size based on 75% Thread = .3447"*				
HAND TAP	**3**	**3B**	**4**	**15878**	**15879**	**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
SPIRAL POINT TAP	**3**	**3B**	**3**	**15876**		**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
HAND TAP	**5**		**4**	**15883**	**15884**	**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
R.H. ROUND DIE 1"OD				13128						
GAGE - Taperlock Style		2B		23143						
GAGE - Taperlock Style		3B		23144						
GAGE - Reversible Style		2B		24947						
GAGE - Reversible Style		3B		24948						
GAGE - Ring-Go		2A		23518						
GAGE - Ring-Go		3A		23519						
GAGE - Ring-NoGo		2A		23520						
GAGE - Ring-NoGo		3A		23521						
3/8"-40 NS						*Recommended Hole Size based on 75% Thread = .3508"*				
HAND TAP	**2**	**3B**	**4**	**15888**	**15889**	**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
HAND TAP	**3**	**2B**	**4**	**17615**	**17616**	**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
R.H. ROUND DIE 1"OD				13132						
3/8"-48 NS						*Recommended Hole Size based on 75% Thread = .355"*				
HAND TAP	**2**	**3B**	**4**	**15893**	**15894**	**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
13/32"-32 NS						*Recommended Hole Size based on 75% Thread = .3759"*				
HAND TAP	**3**	**3B**	**4**	**15898**	**15899**	**3.16**	**1.44**	**0.3230**	**0.242**	**0.41**
7/16"-14 NC						*Recommended Hole Size based on 75% Thread = .3681" for STI = .4531" / TRU-FLO at 65% Thread = .4059"*				
L.H. HAND TAP	**3**	**3B**	**4**	**15903**	**15904**	**3.16**	**1.44**	**0.3230**	**0.242**	**0.41**
L.H. SPIRAL POINT TAP	**3**	**3B**	**3**	**15901**		**3.16**	**1.44**	**0.3230**	**0.242**	**0.41**
+.005 HAND TAP	**11**	**PLATING**	**4**	**15908**	**15909**	**3.16**	**1.44**	**0.3230**	**0.242**	**0.41**
+.005 SPIRAL POINT TAP	**11**	**PLATING**	**3**	**15906**		**3.16**	**1.44**	**0.3230**	**0.242**	**0.41**
6" EXTENSION HAND TAP	**3**	**3B**	**4**	**15933**	**15934**	**6.00**	**1.44**	**0.3230**	**0.242**	**0.41**
6" EXTENSION SPIRAL POINT TAP	**3**	**3B**	**3**	**15931**		**6.00**	**1.44**	**0.3230**	**0.242**	**0.41**
TRU-FLO FORM TAP	**5**	**3B**		**19106**	**19107**	**3.16**	**0.88**	**0.3230**	**0.242**	**0.41**
TRU-FLO FORM TAP	**8**	**2B**		**19108**	**19109**	**3.16**	**0.88**	**0.3230**	**0.242**	**0.41**
SOLID CARBIDE / HAND TAP	**3**	**3B**	**4**	**41520**	**41521**	**3.16**	**0.88**	**0.3230**	**0.242**	**0.41**

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
7/16”-14 NC						*See Previous Page for Recommended Hole Size*				
SOLID CARBIDE / SP PT TAP	**3**	**3B**	**3**	**41522**		**3.16**	**0.88**	**0.3230**	**0.242**	**0.41**
COST CUTTER DRILL/TAP	**3**	**3B**	**2**	**29018**		**3.75**	**1.25**	**0.3230**	**0.242**	**0.41**
STI HAND TAP	**3**	**3B**	**4**	**17882**	**17883**	**3.59**	**1.66**	**0.4290**	**0.322**	**0.50**
STI SPIRAL POINT TAP	**3**	**3B**	**3**	**17884**		**3.59**	**1.66**	**0.4290**	**0.322**	**0.50**
R.H. ROUND DIE 1-1/2"OD				13142						
L.H. ROUND DIE 1-1/2"OD				13143						
GAGE - Taperlock Style		2B		23148						
GAGE - Taperlock Style		3B		23149						
GAGE - Reversible Style		2B		24319						
GAGE - Reversible Style		3B		24320						
GAGE - Ring-Go		2A		23524						
GAGE - Ring-Go		3A		23525						
GAGE - Ring-NoGo		2A		23526						
GAGE - Ring-NoGo		3A		23527						
GAGE - STI Plug Taperlock Style		2B		24707						
GAGE - STI Plug Taperlock Style		3B		24708						
7/16"-16 NS						*Recommended Hole Size based on 75% Thread = .3769”*				
HAND TAP	**3**	**3B**	**4**	**15938**	**15939**	**3.16**	**1.44**	**0.3230**	**0.242**	**0.41**
R.H. ROUND DIE 1-1/2"OD				13144						
GAGE - Taperlock Style		2B		22225						
GAGE - Taperlock Style		3B		22226						
GAGE - Ring-Go		2A		22227						
GAGE - Ring-Go		3A		22228						
GAGE - Ring-NoGo		2A		22229						
GAGE - Ring-NoGo		3A		22230						
7/16"-18 NS						*Recommended Hole Size based on 75% Thread = .3839”*				
HAND TAP	**3**	**3B**	**4**	**15943**	**15944**	**3.16**	**1.44**	**0.3230**	**0.242**	**0.41**
R.H. ROUND DIE 1-1/2"OD				13146						
7/16"-20 NF						*Recommended Hole Size based on 75% Thread = .389” for STI = .4531” / TRU-FLO at 65% Thread = .4154”*				
L.H. HAND TAP	**3**	**3B**	**4**	**15948**	**15949**	**3.16**	**1.44**	**0.3230**	**0.242**	**0.41**
HAND TAP	**6**		**4**	**17741**	**17742**	**3.16**	**1.44**	**0.3230**	**0.242**	**0.41**
+.005 HAND TAP	**11**	**PLATING**	**4**	**15963**	**15964**	**3.16**	**1.44**	**0.3230**	**0.242**	**0.41**
+.005 SPIRAL POINT TAP	**11**	**PLATING**	**3**	**15961**		**3.16**	**1.44**	**0.3230**	**0.242**	**0.41**
6" PULLEY TAP	**3**	**3B**	**4**	**15968**	**15969**	**6.00**	**1.44**	**0.4440**	**0.333**	**0.50**
6" EXTENSION HAND TAP	**3**	**3B**	**4**	**15973**	**15974**	**6.00**	**1.44**	**0.3230**	**0.242**	**0.41**
6" EXTENSION SPIRAL POINT TAP	**3**	**3B**	**3**	**15971**		**6.00**	**1.44**	**0.3230**	**0.242**	**0.41**
TRU-FLO FORM TAP	**5**	**3B**		**19144**	**19145**	**3.16**	**0.88**	**0.3230**	**0.242**	**0.41**
TRU-FLO FORM TAP	**8**	**2B**		**19146**	**19147**	**3.16**	**0.88**	**0.3230**	**0.242**	**0.41**
SOLID CARBIDE / HAND TAP	**3**	**3B**	**4**	**41524**	**41525**	**3.16**	**0.88**	**0.3230**	**0.242**	**0.41**
SOLID CARBIDE / SP PT TAP	**3**	**3B**	**3**	**41526**		**3.16**	**0.88**	**0.3230**	**0.242**	**0.41**
COST CUTTER DRILL/TAP	**3**	**3B**	**2**	**29019**		**3.75**	**1.25**	**0.3230**	**0.242**	**0.41**
STI HAND TAP	**3**	**3B**	**4**	**17886**	**17887**	**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
STI SPIRAL POINT TAP	**3**	**3B**	**3**	**17888**		**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
R.H. ROUND DIE 1-1/2"OD				13148						
L.H. ROUND DIE 1-1/2"OD				13149						

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
7/16"-20 NF						*See Previous Page for Recommended Hole Size*				
GAGE - Taperlock Style		2B		23153						
GAGE - Taperlock Style		3B		23154						
GAGE - Reversible Style		2B		24324						
GAGE - Reversible Style		3B		24325						
GAGE - Ring-Go		2A		23530						
GAGE - Ring-Go		3A		23531						
GAGE - Ring-NoGo		2A		23532						
GAGE - Ring-NoGo		3A		23533						
GAGE - STI Plug Taperlock Style		2B		24712						
GAGE - STI Plug Taperlock Style		3B		24713						
7/16"-24 NS						*Recommended Hole Size based on 75% Thread = .3965"*				
HAND TAP	**3**	**3B**	**4**	**15978**	**15979**	**3.16**	**1.44**	**0.3230**	**0.242**	**0.41**
HAND TAP	**5**	**2B**	**4**	**15983**	**15984**	**3.16**	**1.44**	**0.3230**	**0.242**	**0.41**
R.H. ROUND DIE 1-1/2"OD				13150						
GAGE - Taperlock Style		2B		22239						
GAGE - Taperlock Style		3B		22240						
GAGE - Ring-Go		2A		22241						
GAGE - Ring-Go		3A		22242						
GAGE - Ring-NoGo		2A		22243						
GAGE - Ring-NoGo		3A		22244						
7/16"-27 NS						*Recommended Hole Size based on 75% Thread = .4015"*				
HAND TAP	**3**	**3B**	**4**	**15988**	**15989**	**3.16**	**1.44**	**0.3230**	**0.242**	**0.41**
R.H. ROUND DIE 1-1/2"OD				13152						
7/16"-28 NEF						*Recommended Hole Size based on 75% Thread = .4028"*				
HAND TAP	**3**	**3B**	**4**	**15993**	**15994**	**3.16**	**1.44**	**0.3230**	**0.242**	**0.41**
HAND TAP	**5**	**2B**	**4**	**15998**	**15999**	**3.16**	**1.44**	**0.3230**	**0.242**	**0.41**
R.H. ROUND DIE 1-1/2"OD				13154						
GAGE - Taperlock Style		2B		23158						
GAGE - Taperlock Style		3B		23159						
GAGE - Reversible Style		2B		24952						
GAGE - Reversible Style		3B		24953						
GAGE - Ring-Go		2A		23536						
GAGE - Ring-Go		3A		23537						
GAGE - Ring-NoGo		2A		23538						
GAGE - Ring-NoGo		3A		23539						
7/16"-32 NS						*Recommended Hole Size based on 75% Thread = .4072"*				
HAND TAP	**3**	**3B**	**4**	**16003**	**16004**	**3.16**	**1.44**	**0.3230**	**0.242**	**0.41**
R.H. ROUND DIE 1-1/2"OD				13156						
GAGE - Taperlock Style		2B		22245						
GAGE - Taperlock Style		3B		22246						
GAGE - Ring-Go		2A		22247						
GAGE - Ring-Go		3A		22248						
GAGE - Ring-NoGo		2A		22249						
GAGE - Ring-NoGo		3A		22250						

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
7/16"-40 NS						*Recommended Hole Size based on 75% Thread = .4133"*				
HAND TAP	**2**	**3B**	**4**	**16008**	**16009**	**3.16**	**1.44**	**0.3230**	**0.242**	**0.41**
R.H. ROUND DIE 1-1/2"OD				13158						
15/32"-32 NS						*Recommended Hole Size based on 75% Thread = .4384"*				
HAND TAP	**3**	**3B**	**6**	**16013**	**16014**	**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
SPIRAL POINT TAP	**3**	**3B**	**3**	**16011**		**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
R.H. ROUND DIE 1-1/2"OD				13160						
1/2"-10 ACME						*Recommended Hole Size = .4000"*				
HAND TAP		**2G**	**4**	**16017**		**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
L.H. HAND TAP		**2G**	**4**	**16021**		**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
TANDEM TAP		**2G**	**4**	**16023**		**5.00**	**2.56**	**0.3670**	**0.275**	**0.44**
L.H. TANDEM TAP		**2G**	**4**	**16024**		**5.00**	**2.56**	**0.3670**	**0.275**	**0.44**
1/2"-12 NS						*Recommended Hole Size based on 75% Thread = .4192"*				
HAND TAP	**3**	**3B**	**4**	**16028**	**16029**	**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
R.H. ROUND DIE 1-1/2"OD				13162						
1/2"-12 BSW 55° MOD WHITWORTH						*Recommended Hole Size = .4200"*				
	3		**4**	**16033**	**16034**	**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
1/2"-13 NC						*Recommended Hole Size based on 75% Thread = .4251" for STI = .5312" / TRU-FLO at 65% Thread = .4660"*				
L.H. HAND TAP	**3**	**3B**	**4**	**16038**	**16039**	**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
L.H. SPIRAL POINT TAP	**3**	**3B**	**3**	**16036**		**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
+.003 HAND TAP	**7**		**4**	**16043**	**16044**	**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
+.005 HAND TAP	**11**	**PLATING**	**4**	**16048**	**16049**	**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
+.005 SPIRAL POINT TAP	**11**	**PLATING**	**3**	**16046**		**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
+.010 HAND TAP	**21**		**4**	**16053**	**16054**	**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
DOUBLE LEAD TAP	**3**	**3B**	**4**	**16058**	**16059**	**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
6" EXTENSION HAND TAP	**3**	**3B**	**4**	**16083**	**16084**	**6.00**	**1.66**	**0.3670**	**0.275**	**0.44**
6" EXTENSION SPIRAL POINT TAP	**3**	**3B**	**3**	**16081**		**6.00**	**1.66**	**0.3670**	**0.275**	**0.44**
8" EXTENSION HAND TAP	**3**	**3B**	**4**	**17973**	**17974**	**8.00**	**1.66**	**0.3670**	**0.275**	**0.44**
10" EXTENSION HAND TAP	**3**	**3B**	**4**	**17978**	**17979**	**10.00**	**1.66**	**0.3670**	**0.275**	**0.44**
12" EXTENSION HAND TAP	**3**	**3B**	**4**	**17983**	**17984**	**12.00**	**1.66**	**0.3670**	**0.275**	**0.44**
TRU-FLO FORM TAP	**5**	**3B**		**19110**	**19111**	**3.38**	**0.94**	**0.3670**	**0.275**	**0.44**
TRU-FLO FORM TAP	**8**	**2B**		**19112**	**19113**	**3.38**	**0.94**	**0.3670**	**0.275**	**0.44**
SOLID CARBIDE / HAND TAP	**3**	**3B**	**4**	**41528**	**41529**	**3.38**	**0.94**	**0.3670**	**0.275**	**0.44**
SOLID CARBIDE / SP PT TAP	**3**	**3B**	**3**	**41530**		**3.38**	**0.94**	**0.3670**	**0.275**	**0.44**
COST CUTTER DRILL/TAP	**3**	**3B**	**2**	**29020**		**4.06**	**1.38**	**0.3670**	**0.275**	**0.44**
TiN COAT/SP PT+.005 TAP	**11**	**PLATING**	**3**	**50017**		**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
TiN COAT HAND x 6" TAP	**3**	**3B**	**4**	**50019**		**6.00**	**1.66**	**0.3670**	**0.275**	**0.44**
TiN COAT/SP PT x 6" TAP	**3**	**3B**	**3**	**50018**		**6.00**	**1.66**	**0.3670**	**0.275**	**0.44**
STI HAND TAP	**3**	**3B**	**4**	**17890**	**17891**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
STI SPIRAL POINT TAP	**3**	**3B**	**3**	**17892**		**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
R.H. ROUND DIE 1-1/2"OD				13164						
L.H. ROUND DIE 1-1/2"OD				13165						
GAGE - Taperlock Style		2B		23163						
GAGE - Taperlock Style		3B		23164						
GAGE - Reversible Style		2B		24329						

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
1/2"-13 NC						*See Previous Page for Recommended Hole Size*				
GAGE - Reversible Style		3B		24330						
GAGE - Ring-Go		2A		23542						
GAGE - Ring-Go		3A		23543						
GAGE - Ring-NoGo		2A		23544						
GAGE - Ring-NoGo		3A		23545						
GAGE - STI Plug Taperlock Style		2B		24717						
GAGE - STI Plug Taperlock Style		3B		24718						
1/2"-14 PIPE TAP NPSI NPSF NPT/F NPS						*Recommended Hole Size: NPT/NPTF = .703" NPSF/NPSI = .7188"*				
NPT/F REG. SPR FLT TAPER TAP			4	16086		3.13	1.38	0.6875	0.515	0.63
NPT/F LEFT HAND TAPER TAP			4	16089		3.13	1.38	0.6875	0.515	0.63
NPT/F 6" EXTENSION TAPER TAP			4	16092		6.00	1.38	0.6875	0.515	0.63
NPT/F 6" EXTENSION INT TAPER TAP			5	16095		6.00	1.38	0.6875	0.515	0.63
NPSF EXT x 6" TAP			4	17720		6.00	1.38	0.6875	0.515	0.63
NPT/F 8" EXTENSION TAPER TAP			4	16098		8.00	1.38	0.6875	0.515	0.63
NPT/F 10" EXTENSION TAPER TAP			4	17987		10.00	1.38	0.6875	0.515	0.63
NPT/F CARB-I SERT TAP			4	41809		3.13	1.19	0.6875	0.515	0.63
NPT/F COST CUTTER DRILL/ TAP			4	29044		4.38	1.38	0.6875	0.515	0.63
NPSI STRAIGHT TAP			4	16104		3.13	1.38	0.6875	0.515	0.63
NPT R.H. ROUND DIE 2"OD				13184						
NPS R.H. ROUND DIE 2"OD				13186						
GAGE L1 NPT PLG w/handle				24380						
GAGE L1 NPT RING				24378						
GAGE L1 NPTF PLG w/handle				24450						
GAGE L3 NPTF PLG w/handle				24452						
GAGE NPTF 6 step Plain Plug w/handle				24540						
GAGE L1 NPTF RING				24502						
GAGE L2 NPTF RING				24504						
GAGE NPTF 6 step Plain Ring				24574						
1/2"-14 55° WHITWORTH PIPE						*Recommended Hole Size: BSPT = .7188" / BSPP = .7344"*				
BSPT TAPER - MODIFIED TAP			4	16107	16108	3.13	1.38	0.6875	0.515	0.63
BSPP PARALLEL - MODIFIED TAP			4	16110	16111	3.13	1.38	0.6875	0.515	0.63
BSPT TAPER - FULL FORM TAP			4	17935		3.13	1.38	0.6875	0.515	0.63
BSPP PARALLEL - FULL FORM TAP			4	17926		3.13	1.38	0.6875	0.515	0.63
BSPT FULL FORM DIE 2"OD				13698						
BSPP FULL FORM DIE 2"OD				13699						
GAGE BSPT-Mod. w/handle				27011						
GAGE BSPP-Mod. DBL END w/handle				27050						

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM #		OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
				PLUG	BOTTOM					
1/2"-14 NS						*Recommended Hole Size based on 75% Thread = .4306"*				
HAND TAP	3	3B	4	16115	16116	3.38	1.66	0.3670	0.275	0.44
R.H. ROUND DIE 1-1/2"OD				13166						
1/2"-16 NS						*Recommended Hole Size based on 75% Thread = .4394"*				
HAND TAP	3	3B	4	16120	16121	3.38	1.66	0.3670	0.275	0.44
R.H. ROUND DIE 1-1/2"OD				13168						
GAGE - Taperlock Style		2B		22259						
GAGE - Taperlock Style		3B		22260						
GAGE - Ring-Go		2A		22261						
GAGE - Ring-Go		3A		22262						
GAGE - Ring-NoGo		2A		22263						
GAGE - Ring-NoGo		3A		22264						
1/2"-18 NS						*Recommended Hole Size based on 75% Thread = .4464"*				
HAND TAP	3	3B	4	16125	16126	3.38	1.66	0.3670	0.275	0.44
R.H. ROUND DIE 1-1/2"OD				13170						
1/2"-20 NF						*Recommended Hole Size based on 75% Thread = .4515" for STI = .5156" / TRU-FLO at 65% Thread = .4779"*				
L.H. HAND TAP	3	3B	4	16130	16131	3.38	1.66	0.3670	0.275	0.44
L.H. SPIRAL POINT TAP	3	3B	3	16128		3.38	1.66	0.3670	0.275	0.44
HAND TAP	5	2B	4		17634	3.38	1.66	0.3670	0.275	0.44
+.003 HAND TAP	7		4	16135	16136	3.38	1.66	0.3670	0.275	0.44
+.005 HAND TAP	11	PLATING	4	16140	16141	3.38	1.66	0.3670	0.275	0.44
+.005 SPIRAL POINT TAP	11	PLATING	3	16138		3.38	1.66	0.3670	0.275	0.44
6" PULLEY TAP	3	3B	4	16145	16146	6.00	1.66	0.5070	0.380	0.56
6" EXTENSION HAND TAP	3	3B	4	16150	16151	6.00	1.66	0.3670	0.275	0.44
6" EXTENSION SPIRAL POINT TAP	3	3B	3	16148		6.00	1.66	0.3670	0.275	0.44
TRU-FLO FORM TAP	5	3B		19114	19115	3.38	0.94	0.3670	0.275	0.44
TRU-FLO FORM TAP	8	2B		19116	19117	3.38	0.94	0.3670	0.275	0.44
TRU-FLO FORM TAP	10	PLATING		19118	19119	3.38	0.94	0.3670	0.275	0.44
SOLID CARBIDE / HAND TAP	3	3B	4	41532	41533	3.38	0.94	0.3670	0.275	0.44
SOLID CARBIDE / SP PT TAP	3	3B	3	41534		3.38	0.94	0.3670	0.275	0.44
COST CUTTER DRILL/TAP	3	3B	2	29022		4.06	1.38	0.3670	0.275	0.44
STI HAND TAP	3	3B	4	17894	17895	3.59	1.66	0.4290	0.322	0.50
STI SPIRAL POINT TAP	3	3B	3	17896		3.59	1.66	0.4290	0.322	0.50
R.H. ROUND DIE 1-1/2"OD				13172						
L.H. ROUND DIE 1-1/2"OD				13173						
GAGE - Taperlock Style		2B		23168						
GAGE - Taperlock Style		3B		23169						
GAGE - Reversible Style		2B		24334						
GAGE - Reversible Style		3B		24335						
GAGE - Ring-Go		2A		23548						
GAGE - Ring-Go		3A		23549						
GAGE - Ring-NoGo		2A		23550						
GAGE - Ring-NoGo		3A		23551						
GAGE - STI Plug Taperlock Style		2B		24722						
GAGE - STI Plug Taperlock Style		3B		24723						

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
1/2"-24 NS						*Recommended Hole Size based on 75% Thread = .459"*				
HAND TAP	**3**	**3B**	**4**	**16155**	**16156**	**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
R.H. ROUND DIE 1-1/2"OD				13174						
1/2"-27 NS						*Recommended Hole Size based on 75% Thread = .464"*				
HAND TAP	**3**	**3B**	**4**	**16160**	**16161**	**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
R.H. ROUND DIE 1-1/2"OD				13176						
1/2"-28 NEF						*Recommended Hole Size based on 75% Thread = .4653"*				
HAND TAP	**3**	**3B**	**4**	**16165**	**16166**	**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
SPIRAL POINT TAP	**3**	**3B**	**3**	**16163**		**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
HAND TAP	**5**	**2B**	**4**	**16170**	**16171**	**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
R.H. ROUND DIE 1-1/2"OD				13178						
GAGE - Taperlock Style		2B		23173						
GAGE - Taperlock Style		3B		23174						
GAGE - Reversible Style		2B		24957						
GAGE - Reversible Style		3B		24958						
GAGE - Ring-Go		2A		23554						
GAGE - Ring-Go		3A		23555						
GAGE - Ring-NoGo		2A		23556						
GAGE - Ring-NoGo		3A		23557						
1/2"-32 NS						***Recommended Hole Size based on 75% Thread = .4697"***				
HAND TAP	**3**	**3B**	**6**	**16175**	**16176**	**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
R.H. ROUND DIE 1-1/2"OD				13180						
GAGE - Taperlock Style		2B		22273						
GAGE - Taperlock Style		3B		22274						
GAGE - Ring-Go		2A		22275						
GAGE - Ring-Go		3A		22276						
GAGE - Ring-NoGo		2A		22277						
GAGE - Ring-NoGo		3A		22278						
1/2"-40 NS						***Recommended Hole Size based on 75% Thread = .4758"***				
HAND TAP	**2**	**3B**	**6**	**16180**	**16181**	**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
R.H. ROUND DIE 1-1/2"OD				13182						
33/64"-13 NS						***Recommended Hole Size based on 75% Thread = .4407"***				
HAND TAP	**3**	**3B**	**4**	**16185**	**16186**	**3.59**	**1.66**	**0.4290**	**0.322**	**0.50**
9/16"-12 NC						***Recommended Hole Size based on 75% Thread = .4817" TRU-FLO at 65% Thread = .5257"***				
L.H. HAND TAP	**3**	**3B**	**4**	**16190**	**16191**	**3.59**	**1.66**	**0.4290**	**0.322**	**0.50**
SPIRAL POINT TAP	**3**	**3B**	**3**	**18331**		**3.59**	**1.66**	**0.4290**	**0.322**	**0.50**
6" EXTENSION HAND TAP	**3**	**3B**	**4**	**17653**	**17654**	**6.00**	**1.66**	**0.4290**	**0.322**	**0.50**
TRU-FLO FORM TAP	**7**	**3B**		**19120**	**19121**	**3.59**	**1.00**	**0.4290**	**0.322**	**0.50**
TRU-FLO FORM TAP	**10**	**2B**		**19122**	**19123**	**3.59**	**1.00**	**0.4290**	**0.322**	**0.50**
SOLID CARBIDE TAP	**3**	**3B**	**4**	**47201**	**47202**	**3.59**	**1.00**	**0.4290**	**0.322**	**0.50**
R.H. ROUND DIE 1-1/2"OD				13188						
L.H. ROUND DIE 1-1/2"OD				13189						
GAGE - Taperlock Style		2B		23178						
GAGE - Taperlock Style		3B		23179						
GAGE - Reversible Style		2B		24339						
GAGE - Reversible Style		3B		24340						

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
9/16"-12 NC						*See Previous Page for Recommended Hole Size*				
GAGE - Ring-Go		2A		23560						
GAGE - Ring-Go		3A		23561						
GAGE - Ring-NoGo		2A		23562						
GAGE - Ring-NoGo		3A		23563						
GAGE - STI Plug Taperlock Style		2B		22279						
GAGE - STI Plug Taperlock Style		3B		22280						
9/16"-16 NS						*Recommended Hole Size based on 75% Thread = .5019"*				
HAND TAP	**3**	**3B**	**4**	**16200**	**16201**	**3.59**	**1.66**	**0.4290**	**0.322**	**0.50**
R.H. ROUND DIE 1-1/2"OD				13190						
GAGE - Taperlock Style		2B		22289						
GAGE - Taperlock Style		3B		22290						
GAGE - Ring-Go		2A		22291						
GAGE - Ring-Go		3A		22292						
GAGE - Ring-NoGo		2A		22293						
GAGE - Ring-NoGo		3A		22294						
9/16"-18 NF						*Recommended Hole Size based on 75% Thread = .5089" TRU-FLO at 65% Thread = .5279"*				
L.H. HAND TAP	**3**	**3B**	**4**	**16205**	**16206**	**3.59**	**1.66**	**0.4290**	**0.322**	**0.50**
SPIRAL POINT TAP	**3**	**3B**	**3**	**18337**		**3.59**	**1.66**	**0.4290**	**0.322**	**0.50**
HAND TAP	**5**	**2B**	**4**	**18375**	**17769**	**3.59**	**1.66**	**0.4290**	**0.322**	**0.50**
SPIRAL POINT TAP	**5**	**2B**	**3**	**17655**		**3.59**	**1.66**	**0.4290**	**0.322**	**0.50**
+.005 HAND TAP	**11**	**PLATING**	**4**	**16215**	**16216**	**3.59**	**1.66**	**0.4290**	**0.322**	**0.50**
+.005 SPIRAL POINT TAP	**11**	**PLATING**	**3**	**16213**		**3.59**	**1.66**	**0.4290**	**0.322**	**0.50**
6" EXTENSION HAND TAP	**3**	**3B**	**4**	**16220**	**16221**	**6.00**	**1.66**	**0.4290**	**0.322**	**0.50**
TRU-FLO FORM TAP	**7**	**3B**		**19124**	**19125**	**3.59**	**1.00**	**0.4290**	**0.322**	**0.50**
TRU-FLO FORM TAP	**10**	**2B**		**19126**	**19127**	**3.59**	**1.00**	**0.4290**	**0.322**	**0.50**
SOLID CARBIDE TAP	**3**	**3B**	**4**	**47204**	**47205**	**3.59**	**1.00**	**0.4290**	**0.322**	**0.50**
R.H. ROUND DIE 1-1/2"OD				13192						
L.H. ROUND DIE 1-1/2"OD				13193						
GAGE - Taperlock Style		2B		23183						
GAGE - Taperlock Style		3B		23184						
GAGE - Reversible Style		2B		24344						
GAGE - Reversible Style		3B		24345						
GAGE - Ring-Go		2A		23566						
GAGE - Ring-Go		3A		23567						
GAGE - Ring-NoGo		2A		23568						
GAGE - Ring-NoGo		3A		23569						
GAGE - STI Plug Taperlock Style		2B		22295						
GAGE - STI Plug Taperlock		3B		22296						
9/16"-20 NS						*Recommended Hole Size based on 75% Thread = .514"*				
HAND TAP	**3**	**3B**	**4**	**16225**	**16226**	**3.59**	**1.66**	**0.4290**	**0.322**	**0.50**
SPIRAL POINT TAP	**3**	**3B**	**3**	**16223**		**3.59**	**1.66**	**0.4290**	**0.322**	**0.50**
R.H. ROUND DIE 1-1/2"OD				13194						
GAGE - Taperlock Style		2B		22305						
GAGE - Taperlock Style		3B		22306						
GAGE - Ring-Go		2A		22307						
GAGE - Ring-Go		3A		22308						

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
9/16"-20 NS						*See Previous Page for Recommended Hole Size*				
GAGE - Ring-NoGo		2A		22309						
GAGE - Ring-NoGo		3A		22310						
9/16"-24 NEF						*Recommended Hole Size based on 75% Thread = .5215"*				
HAND TAP	**3**	**3B**	**4**	**16230**	**16231**	**3.59**	**1.66**	**0.4290**	**0.322**	**0.50**
HAND TAP	**5**	**2B**	**4**	**16235**	**16236**	**3.59**	**1.66**	**0.4290**	**0.322**	**0.50**
R.H. ROUND DIE 1-1/2"OD				13196						
GAGE - Taperlock Style		2B		23188						
GAGE - Taperlock Style		3B		23189						
GAGE - Reversible Style		2B		24962						
GAGE - Reversible Style		3B		24963						
GAGE - Ring-Go		2A		23572						
GAGE - Ring-Go		3A		23573						
GAGE - Ring-NoGo		2A		23574						
GAGE - Ring-NoGo		3A		23575						
9/16"-27 NS						*Recommended Hole Size based on 75% Thread = .5265"*				
HAND TAP	**3**	**3B**	**6**	**16240**	**16241**	**3.59**	**1.66**	**0.4290**	**0.322**	**0.50**
R.H. ROUND DIE 1-1/2"OD				13198						
9/16"-32 NS						*Recommended Hole Size based on 75% Thread = .5322"*				
HAND TAP	**3**	**3B**	**6**	**16245**	**16246**	**3.59**	**1.66**	**0.4290**	**0.322**	**0.50**
R.H. ROUND DIE 1-1/2"OD				13200						
GAGE - Taperlock Style		2B		22311						
GAGE - Taperlock Style		3B		22312						
GAGE - Ring-Go		2A		22313						
GAGE - Ring-Go		3A		22314						
GAGE - Ring-NoGo		2A		22315						
GAGE - Ring-NoGo		3A		22316						
5/8"-8 ACME						*Recommended Hole Size = .5000"*				
HAND TAP		**2G**	**4**	**16249**		**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
L.H. HAND TAP		**2G**	**4**	**16253**		**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
TANDEM TAP		**2G**	**4**	**16255**		**6.25**	**3.19**	**0.4800**	**0.360**	**0.56**
L.H. TANDEM TAP		**2G**	**4**	**16256**		**6.25**	**3.19**	**0.4800**	**0.360**	**0.56**
5/8"-11 NC						*Recommended Hole Size based on 75% Thread = .5365" TRU-FLO at 65% Thread = .5848"*				
REGULAR SPIRAL FLUTE TAP	**3**	**3B**	**4**	**16284**	**16285**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
FAST SPIRAL FLUTE TAP	**3**	**3B**	**4**	**17717**	**17718**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
L.H. HAND TAP	**3**	**3B**	**4**	**16270**	**16271**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
L.H. SPIRAL POINT TAP	**3**	**3B**	**3**	**16268**		**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
+.005 HAND TAP	**11**	**PLATING**	**4**	**16275**	**16276**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
+.005 SPIRAL POINT TAP	**11**	**PLATING**	**3**	**16273**		**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
+.010 HAND TAP	**21**		**4**	**16280**	**16281**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
6" EXTENSION HAND TAP	**3**	**3B**	**4**	**16309**	**16310**	**6.00**	**1.81**	**0.4800**	**0.360**	**0.56**
6" EXTENSION SPIRAL POINT TAP	**3**	**3B**	**3**	**16307**		**6.00**	**1.81**	**0.4800**	**0.360**	**0.56**
8" EXTENSION HAND TAP	**3**	**3B**	**4**	**16314**	**16315**	**8.00**	**1.81**	**0.4800**	**0.360**	**0.56**
10" EXTENSION HAND TAP	**3**	**3B**	**4**	**17991**	**17992**	**10.00**	**1.81**	**0.4800**	**0.360**	**0.56**
12" EXTENSION HAND TAP	**3**	**3B**	**4**	**17996**	**17997**	**12.00**	**1.81**	**0.4800**	**0.360**	**0.56**

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
5/8"-11 NC						*See Previous Page for Recommended Hole Size*				
TRU-FLO FORM TAP	**7**	**3B**		**19128**	**19129**	**3.81**	**1.09**	**0.4800**	**0.360**	**0.56**
TRU-FLO FORM TAP	**10**	**2B**		**19130**	**19131**	**3.81**	**1.09**	**0.4800**	**0.360**	**0.56**
COST CUTTER DRILL/TAP	**3**	**3B**	**4**	**29036**		**5.06**	**1.75**	**0.4800**	**0.360**	**0.56**
SOLID CARBIDE TAP	**3**	**3B**	**4**	**47207**	**47208**	**3.81**	**1.09**	**0.4800**	**0.360**	**0.56**
TiN COAT/SP PT x 6" TAP	**3**	**3B**	**3**	**50020**		**6.00**	**1.81**	**0.4800**	**0.360**	**0.56**
R.H. ROUND DIE 1-1/2"OD				13204						
L.H. ROUND DIE 1-1/2"OD				13205						
GAGE - Taperlock Style		2B		23193						
GAGE - Taperlock Style		3B		23194						
GAGE - Reversible Style		2B		24349						
GAGE - Reversible Style		3B		24350						
GAGE - Ring-Go		2A		23578						
GAGE - Ring-Go		3A		23579						
GAGE - Ring-NoGo		2A		23580						
GAGE - Ring-NoGo		3A		23581						
GAGE - STI Plug Taperlock Style		2B		24737						
GAGE - STI Plug Taperlock Style		3B		24738						
5/8"-11 BSW 55° MOD WHITWORTH						*Recommended Hole Size = .5377"*				
	3		**4**	**16265**	**16266**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
5/8"-12 NS						*Recommended Hole Size based on 75% Thread = .5442"*				
HAND TAP	**3**	**3B**	**4**	**16320**	**16321**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
GAGE - Taperlock Style		2B		22323						
GAGE - Taperlock Style		3B		22324						
GAGE - Ring-Go		2A		22325						
GAGE - Ring-Go		3A		22326						
GAGE - Ring-NoGo		2A		22327						
GAGE - Ring-NoGo		3A		22328						
5/8"-16 NS						*Recommended Hole Size based on 75% Thread = .5644"*				
HAND TAP	**3**	**3B**	**4**	**16325**	**16326**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
GAGE - Taperlock Style		2B		22329						
GAGE - Taperlock Style		3B		22330						
GAGE - Ring-Go		2A		22331						
GAGE - Ring-Go		3A		22332						
GAGE - Ring-NoGo		2A		22333						
GAGE - Ring-NoGo		3A		22334						
5/8"-18 NF						*Recommended Hole Size based on 75% Thread = .5714" TRU-FLO at 65% Thread = .6004"*				
REGULAR SPIRAL FLUTE TAP	**3**	**3B**	**4**	**16339**	**16340**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
FAST SPIRAL FLUTE TAP	**3**	**3B**	**4**	**17727**	**17728**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
L.H. HAND TAP	**3**	**3B**	**4**	**16330**	**16331**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
SPIRAL POINT TAP	**3**	**3B**	**3**	**18353**		**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
SPIRAL POINT TAP	**5**	**2B**	**3**	**17683**		**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
+.003 HAND TAP	**7**		**4**	**17681**	**17682**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
HAND TAP	**8**		**4**	**17904**	**17905**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
+.005 HAND TAP	**11**	**PLATING**	**4**	**16335**	**16336**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
6" EXTENSION HAND TAP	**3**	**3B**	**4**	**16344**	**16345**	**6.00**	**1.81**	**0.4800**	**0.360**	**0.56**

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
5/8"-18 NF						*See Previous Page for Recommended Hole Size*				
TRU-FLO FORM TAP	**7**	**3B**		**19132**	**19133**	**3.81**	**1.09**	**0.4800**	**0.360**	**0.56**
TRU-FLO FORM TAP	**10**	**2B**		**19134**	**19135**	**3.81**	**1.09**	**0.4800**	**0.360**	**0.56**
SOLID CARBIDE TAP	**3**	**3B**	**4**	**47210**	**47211**	**3.81**	**1.09**	**0.4800**	**0.360**	**0.56**
TiN COAT/FAST SP FLT TAP	**3**	**3B**	**4**		**50032**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
TiN COAT/SP PT TAP	**5**	**2B**	**3**	**50028**		**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
R.H. ROUND DIE 1-1/2"OD				13212						
L.H. ROUND DIE 1-1/2"OD				13213						
GAGE - Taperlock Style		2B		23198						
GAGE - Taperlock Style		3B		23199						
GAGE - Reversible Style		2B		24354						
GAGE - Reversible Style		3B		24355						
GAGE - Ring-Go		2A		23584						
GAGE - Ring-Go		3A		23585						
GAGE - Ring-NoGo		2A		23586						
GAGE - Ring-NoGo		3A		23587						
GAGE - STI Plug Taperlock Style		2B		24742						
GAGE - STI Plug Taperlock Style		3B		24743						
5/8"-20 NS						*Recommended Hole Size based on 75% Thread = .5765"*				
HAND TAP	**3**	**3B**	**4**	**16349**	**16350**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
R.H. ROUND DIE 1-1/2"OD				13214						
GAGE - Taperlock Style		2B		22343						
GAGE - Taperlock Style		3B		22344						
GAGE - Ring-Go		2A		22345						
GAGE - Ring-Go		3A		22346						
GAGE - Ring-NoGo		2A		22347						
GAGE - Ring-NoGo		3A		22348						
5/8"-24 NEF						*Recommended Hole Size based on 75% Thread = .5840"*				
HAND TAP	**3**	**3B**	**6**	**16354**	**16355**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
HAND TAP	**5**	**2B**	**6**	**16359**	**16360**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
R.H. ROUND DIE 1-1/2"OD				13216						
GAGE - Taperlock Style		2B		23203						
GAGE - Taperlock Style		3B		23204						
GAGE - Reversible Style		2B		24967						
GAGE - Reversible Style		3B		24968						
GAGE - Ring-Go		2A		23590						
GAGE - Ring-Go		3A		23591						
GAGE - Ring-NoGo		2A		23592						
GAGE - Ring-NoGo		3A		23593						
5/8"-27 NS						*Recommended Hole Size based on 75% Thread = .5890"*				
HAND TAP	**3**	**3B**	**6**	**16364**	**16365**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
R.H. ROUND DIE 1-1/2"OD				13218						
5/8"-28 NS						*Recommended Hole Size based on 75% Thread = .5903"*				
HAND TAP	**3**	**3B**	**6**	**16369**	**16370**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
R.H. ROUND DIE 1-1/2"OD				13220						
GAGE - Taperlock Style		2B		22355						

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
5/8"-28 NS						*See Previous Page for Recommended Hole Size*				
GAGE - Taperlock Style		3B		22356						
GAGE - Ring-Go		2A		22357						
GAGE - Ring-Go		3A		22358						
GAGE - Ring-NoGo		2A		22359						
GAGE - Ring-NoGo		3A		22360						
5/8"-32 NS						*Recommended Hole Size based on 75% Thread = .5947"*				
HAND TAP	**3**	**3B**	**6**	**16374**	**16375**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
R.H. ROUND DIE 1-1/2"OD				13222						
GAGE - Taperlock Style		2B		22361						
GAGE - Taperlock Style		3B		22362						
GAGE - Ring-Go		2A		22363						
GAGE - Ring-Go		3A		22364						
GAGE - Ring-NoGo		2A		22365						
GAGE - Ring-NoGo		3A		22366						
41/64"-11 NS						*Recommended Hole Size based on 75% Thread = .5521"*				
HAND TAP	**4**	**3B**	**4**	**16379**	**16380**	**4.03**	**1.81**	**0.5420**	**0.406**	**0.63**
11/16"-11 NS						*Recommended Hole Size based on 75% Thread = .5990"*				
L.H. HAND TAP	**3**	**3B**	**4**	**16384**	**16385**	**4.03**	**1.81**	**0.5420**	**0.406**	**0.63**
11/16"-16 NS						*Recommended Hole Size based on 75% Thread = .6269"*				
L.H. HAND TAP	**3**	**3B**	**4**	**16389**	**16390**	**4.03**	**1.81**	**0.5420**	**0.406**	**0.63**
L.H. ROUND DIE 2"OD				13229						
GAGE - Taperlock Style		2B		22367						
GAGE - Taperlock Style		3B		22368						
GAGE - Ring-Go		2A		22369						
GAGE - Ring-Go		3A		22370						
GAGE - Ring-NoGo		2A		22371						
GAGE - Ring-NoGo		3A		22372						
11/16"-18 NS						*Recommended Hole Size based on 75% Thread = .6339"*				
L.H. HAND TAP	**3**	**3B**	**4**	**17576**	**17577**	**4.03**	**1.81**	**0.5420**	**0.406**	**0.63**
HAND TAP	**3**	**3B**	**4**	**16394**	**16395**	**4.03**	**1.81**	**0.5420**	**0.406**	**0.63**
R.H. ROUND DIE 2"OD				13230						
11/16"-20 NS						*Recommended Hole Size based on 75% Thread = .6390"*				
HAND TAP	**3**	**3B**	**6**	**16399**	**16400**	**4.03**	**1.81**	**0.5420**	**0.406**	**0.63**
R.H. ROUND DIE 2"OD				13232						
GAGE - Taperlock Style		2B		22373						
GAGE - Taperlock Style		3B		22374						
GAGE - Ring-Go		2A		22375						
GAGE - Ring-Go		3A		22376						
GAGE - Ring-NoGo		2A		22377						
GAGE - Ring-NoGo		3A		22378						
11/16"-24 NEF						*Recommended Hole Size based on 75% Thread = .6465"*				
HAND TAP	**3**	**3B**	**6**	**16404**	**16405**	**4.03**	**1.81**	**0.5420**	**0.406**	**0.63**
HAND TAP	**5**	**2B**	**6**	**16409**	**16410**	**4.03**	**1.81**	**0.5420**	**0.406**	**0.63**
R.H. ROUND DIE 2"OD				13234						
GAGE - Taperlock Style		2B		23208						

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
11/16"-24 NEF						*See Previous Page for Recommended Hole Size*				
GAGE - Taperlock Style		3B		23209						
GAGE - Reversible Style		2B		24972						
GAGE - Reversible Style		3B		24973						
GAGE - Ring-Go		2A		23596						
GAGE - Ring-Go		3A		23597						
GAGE - Ring-NoGo		2A		23598						
GAGE - Ring-NoGo		3A		23599						
11/16"-28 NS						*Recommended Hole Size based on 75% Thread = .6528"*				
HAND TAP	**3**	**3B**	**6**	**16419**	**16420**	**4.03**	**1.81**	**0.5420**	**0.406**	**0.63**
GAGE - Taperlock Style		2B		22379						
GAGE - Taperlock Style		3B		22380						
GAGE - Ring-Go		2A		22381						
GAGE - Ring-Go		3A		22382						
GAGE - Ring-NoGo		2A		22383						
GAGE - Ring-NoGo		3A		22384						
11/16"-32 NS						*Recommended Hole Size based on 75% Thread = .6572"*				
HAND TAP	**3**	**3B**	**6**	**16424**	**16425**	**4.03**	**1.81**	**0.5420**	**0.406**	**0.63**
R.H. ROUND DIE 2"OD				13238						
GAGE - Taperlock Style		2B		22385						
GAGE - Taperlock Style		3B		22386						
GAGE - Ring-Go		2A		22387						
GAGE - Ring-Go		3A		22388						
GAGE - Ring-NoGo		2A		22389						
GAGE - Ring-NoGo		3A		22390						
3/4"-5 ACME						*Recommended Hole Size = .550"*				
HAND TAP		**2G**	**4**	**18102**	**18103**	**4.25**	**2.00**	**0.5900**	**0.442**	**0.69**
3/4"-6 ACME						*Recommended Hole Size = .5833"*				
HAND TAP		**2G**	**4**	**16432**		**4.25**	**2.00**	**0.5900**	**0.442**	**0.69**
L.H. HAND TAP		**2G**	**4**	**16436**		**4.25**	**2.00**	**0.5900**	**0.442**	**0.69**
TANDEM TAP		**2G**	**4**	**16438**		**7.94**	**4.31**	**0.5420**	**0.406**	**0.63**
L.H. TANDEM TAP		**2G**	**4**	**16439**		**7.94**	**4.31**	**0.5420**	**0.406**	**0.63**
3/4"-8 ACME						*Recommended Hole Size = .625"*				
HAND TAP		**2G**	**4**	**16442**		**4.25**	**2.00**	**0.5900**	**0.442**	**0.69**
TANDEM TAP		**2G**	**4**	**16444**		**7.94**	**4.31**	**0.5420**	**0.406**	**0.63**
L.H. TANDEM TAP		**2G**	**4**	**16445**		**7.94**	**4.31**	**0.5420**	**0.406**	**0.63**
3/4"-10 NC						*Recommended Hole Size based on 75% Thread = .6526" TRU-FLO at 65% Thread = .7058"*				
REGULAR SPIRAL FLUTE TAP	**3**	**3B**	**4**	**16463**	**16464**	**4.25**	**2.00**	**0.5900**	**0.442**	**0.69**
L.H. HAND TAP	**3**	**3B**	**4**	**16449**	**16450**	**4.25**	**2.00**	**0.5900**	**0.442**	**0.69**
+.005 HAND TAP	**11**	**PLATING**	**4**	**16454**	**16455**	**4.25**	**2.00**	**0.5900**	**0.442**	**0.69**
+.005 SPIRAL POINT TAP	**11**	**PLATING**	**3**	**16452**		**4.25**	**2.00**	**0.5900**	**0.442**	**0.69**
+.010 HAND TAP	**21**		**4**	**16459**	**16460**	**4.25**	**2.00**	**0.5900**	**0.442**	**0.69**
6" EXTENSION HAND TAP	**3**	**3B**	**4**	**16478**	**16479**	**6.00**	**2.00**	**0.5900**	**0.442**	**0.69**
6" EXTENSION SP PT TAP	**3**	**3B**	**3**	**17632**		**6.00**	**2.00**	**0.5900**	**0.442**	**0.69**
8" EXTENSION HAND TAP	**3**	**3B**	**4**	**16483**	**16484**	**8.00**	**2.00**	**0.5900**	**0.442**	**0.69**

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
3/4"-10 NC						*See Previous Page for Recommended Hole Size*				
10" EXTENSION HAND TAP	**3**	**3B**	**4**	**16488**	**16489**	**10.00**	**2.00**	**0.5900**	**0.442**	**0.69**
TRU-FLO FORM TAP	**7**	**3B**		**19136**	**19137**	**4.25**	**1.22**	**0.5900**	**0.442**	**0.69**
TRU-FLO FORM TAP	**10**	**2B**		**19138**	**19139**	**4.25**	**1.22**	**0.5900**	**0.442**	**0.69**
SOLID CARBIDE TAP	**3**	**3B**	**4**	**47213**	**47214**	**4.25**	**1.22**	**0.5900**	**0.442**	**0.69**
SOLID CARBIDE TAP	**5**	**3B**	**4**	**47228**	**47229**	**4.25**	**1.22**	**0.5900**	**0.442**	**0.69**
TiN COAT/SPPTx6" TAP	**3**	**3B**	**3**	**50027**		**6.00**	**2.00**	**0.5900**	**0.442**	**0.69**
R.H. ROUND DIE 2"OD				13240						
L.H. ROUND DIE 2"OD				13241						
GAGE - Taperlock Style		2B		23213						
GAGE - Taperlock Style		3B		23214						
GAGE - Reversible Style		2B		24359						
GAGE - Reversible Style		3B		24360						
GAGE - Ring-Go		2A		23602						
GAGE - Ring-Go		3A		23603						
GAGE - Ring-NoGo		2A		23604						
GAGE - Ring-NoGo		3A		23605						
GAGE - STI Plug Taperlock Style		2B		24747						
GAGE - STI Plug Taperlock Style		3B		24748						
3/4"-10 ACME						*Recommended Hole Size = .6500"*				
HAND TAP		**2G**	**4**	**16493**		**4.25**	**2.00**	**0.5900**	**0.442**	**0.69**
3/4"-11.5 NH						*Recommended Hole Size = .9688"*				
GARDEN HOSE TAP			**6**	**16497**	**16498**	**4.00**	**1.50**	**0.8960**	**0.672**	**0.88**
3/4"-12 NS						*Recommended Hole Size based on 75% Thread = .6692"*				
HAND TAP	**4**	**3B**	**4**	**16502**	**16503**	**4.25**	**2.00**	**0.5900**	**0.442**	**0.69**
R.H. ROUND DIE 2"OD				13242						
GAGE - Taperlock Style		2B		22400						
GAGE - Taperlock Style		3B		22401						
GAGE - Ring-Go		2A		22402						
GAGE - Ring-Go		3A		22403						
GAGE - Ring-NoGo		2A		22404						
GAGE - Ring-NoGo		3A		22405						
3/4"-14 PIPE TAP NPSI NPSF NPT/F NPS						*Recommended Hole Size: NPT = .9063" / NPTF = .9219" NPSI = .9283"*				
NPT/F REG. SPR FLT TAPER TAP			**5**	**16505**		**3.25**	**1.38**	**0.9063**	**0.679**	**0.69**
NPT/F LEFT HAND TAPER TAP			**5**	**16508**		**3.25**	**1.38**	**0.9063**	**0.679**	**0.69**
NPT/F 6" EXTENSION TAPER TAP			**5**	**16511**		**6.00**	**1.38**	**0.9063**	**0.679**	**0.69**
NPT/F 6" EXTENSION INT TAPER TAP			**5**	**16514**		**6.00**	**1.38**	**0.9063**	**0.679**	**0.69**
NPT/F 8" EXTENSION TAPER TAP			**5**	**16517**		**8.00**	**1.38**	**0.9063**	**0.679**	**0.69**
NPT/F 10" EXTENSION TAPER TAP			**5**	**18105**		**10.00**	**1.38**	**0.9063**	**0.679**	**0.69**
NPSI STRAIGHT TAP			**5**	**16523**		**3.25**	**1.38**	**0.9063**	**0.679**	**0.69**
NPT/F CARB-I-SERT TAP			**4**	**41810**		**3.25**	**1.19**	**0.9063**	**0.679**	**0.69**
NPT/F COST CUTTER DRILL/ TAP			**4**	**29045**		**4.56**	**1.38**	**0.9063**	**0.679**	**0.69**
NPT R.H. ROUND DIE 2"OD				13258						

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
3/4"-14 PIPE TAP NPSI NPSF NPT/F NPS						*See Previous Page for Recommended Hole Size*				
NPS R.H. ROUND DIE 2"OD				13260						
GAGE L1 NPT PLG w/handle				24383						
GAGE L1 NPT RING				24381						
GAGE L1 NPTF PLG w/handle				24458						
GAGE L3 NPTF PLG w/handle				24460						
GAGE NPTF 6 step Plain Plug w/handle				24544						
GAGE L1 NPTF RING				24506						
GAGE L2 NPTF RING				24508						
GAGE NPTF 6 step Plain Ring				24578						
3/4"-14 55° WHITWORTH PIPE						*Recommended Hole Size: BSPT = .9219" / BSPP = .9531"*				
BSPT TAPER - MODIFIED TAP			**5**	**16526**	**16527**	**3.25**	**1.38**	**0.9063**	**0.679**	**0.69**
BSPP PARALLEL - MODIFIED TAP			**5**	**16529**	**16530**	**3.25**	**1.38**	**0.9063**	**0.679**	**0.69**
BSPT TAPER - FULL FORM TAP			**5**	**17936**		**3.25**	**1.38**	**0.9063**	**0.679**	**0.69**
BSPP PARALLEL - FULL FORM TAP			**5**	**17927**		**3.25**	**1.38**	**0.9063**	**0.679**	**0.69**
BSPT FULL FORM DIE 2 "OD				13700						
BSPP FULL FORM DIE 2 "OD				13701						
GAGE BSPT-Mod. w/handle				27014						
GAGE BSPP-Mod. DBL END w/handle				27053						
3/4"-16 NF						*Recommended Hole Size based on 75% Thread = .6894" TRU-FLO at 65% Thread = .7224"*				
REGULAR SPIRAL FLUTE TAP	**3**	**3B**	**4**	**16543**	**16544**	**4.25**	**2.00**	**0.5900**	**0.442**	**0.69**
L.H. HAND TAP	**3**	**3B**	**4**	**16534**	**16535**	**4.25**	**2.00**	**0.5900**	**0.442**	**0.69**
SPIRAL POINT TAP	**3**	**3B**	**3**	**18374**		**4.25**	**2.00**	**0.5900**	**0.442**	**0.69**
SPIRAL POINT TAP	**5**	**2B**	**3**	**17692**		**4.25**	**2.00**	**0.5900**	**0.442**	**0.69**
L.H. HAND TAP	**5**	**2B**	**4**	**17788**	**17789**	**4.25**	**2.00**	**0.5900**	**0.442**	**0.69**
+.003 HAND TAP	**7**		**4**	**17637**	**17638**	**4.25**	**2.00**	**0.5900**	**0.442**	**0.69**
HAND TAP	**8**		**4**	**17745**	**17746**	**4.25**	**2.00**	**0.5900**	**0.442**	**0.69**
+.005 HAND TAP	**11**	**PLATING**	**4**	**16539**	**16540**	**4.25**	**2.00**	**0.5900**	**0.442**	**0.69**
TRU-FLO FORM TAP	**7**	**3B**		**19140**	**19141**	**4.25**	**1.22**	**0.5900**	**0.442**	**0.69**
TRU-FLO FORM TAP	**10**	**2B**		**19142**	**19143**	**4.25**	**1.22**	**0.5900**	**0.442**	**0.69**
SOLID CARBIDE TAP	**3**	**3B**	**4**	**47216**	**47217**	**4.25**	**1.22**	**0.5900**	**0.442**	**0.69**
SOLID CARBIDE TAP	**5**	**2B**	**4**	**47231**	**47232**	**4.25**	**1.22**	**0.5900**	**0.442**	**0.69**
TiN COAT/HAND TAP	**8**		**4**	**50033**		**4.25**	**2.00**	**0.5900**	**0.442**	**0.69**
R.H. ROUND DIE 2"OD				13246						
L.H. ROUND DIE 2"OD				13247						
GAGE - Taperlock Style		2B		23218						
GAGE - Taperlock Style		3B		23219						
GAGE - Reversible Style		2B		24364						
GAGE - Reversible Style		3B		24365						
GAGE - Ring-Go		2A		23608						
GAGE - Ring-Go		3A		23609						
GAGE - Ring-NoGo		2A		23610						
GAGE - Ring-NoGo		3A		23611						

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
3/4"-16 NF						*See Previous Page for Recommended Hole Size*				
GAGE - STI Plug Taperlock Style		2B		24752						
GAGE - STI Plug Taperlock Style		3B		24753						
3/4"-18 NS						*Recommended Hole Size based on 75% Thread = .6964"*				
HAND TAP	**3**	**3B**	**4**	**16548**	**16549**	**4.25**	**2.00**	**0.5900**	**0.442**	**0.69**
R.H. ROUND DIE 2"OD				13248						
3/4"-20 NEF						*Recommended Hole Size based on 75% Thread = .7015"*				
L.H. HAND TAP	**3**	**3B**	**6**	**17663**	**17664**	**4.25**	**2.00**	**0.5900**	**0.442**	**0.69**
HAND TAP	**3**	**3B**	**6**	**16553**	**16554**	**4.25**	**2.00**	**0.5900**	**0.442**	**0.69**
HAND TAP	**5**	**2B**	**6**	**16558**	**16559**	**4.25**	**2.00**	**0.5900**	**0.442**	**0.69**
R.H. ROUND DIE 2"OD				13250						
GAGE - Taperlock Style		2B		23223						
GAGE - Taperlock Style		3B		23224						
GAGE - Reversible Style		2B		24977						
GAGE - Reversible Style		3B		24978						
GAGE - Ring-Go		2A		23614						
GAGE - Ring-Go		3A		23615						
GAGE - Ring-NoGo		2A		23616						
GAGE - Ring-NoGo		3A		23617						
3/4"-24 NS						*Recommended Hole Size based on 75% Thread = .709"*				
HAND TAP	**3**	**3B**	**6**	**16563**	**16564**	**4.25**	**2.00**	**0.5900**	**0.442**	**0.69**
R.H. ROUND DIE 2"OD				13252						
3/4"-27 NS						*Recommended Hole Size based on 75% Thread = .714"*				
HAND TAP	**3**	**3B**	**6**	**16568**	**16569**	**4.25**	**2.00**	**0.5900**	**0.442**	**0.69**
R.H. ROUND DIE 2"OD				13254						
3/4"-32 NS						*Recommended Hole Size based on 75% Thread = .7197"*				
HAND TAP	**3**	**3B**	**6**	**16573**	**16574**	**4.25**	**2.00**	**0.5900**	**0.442**	**0.69**
R.H. ROUND DIE 2"OD				13256						
GAGE - Taperlock Style		2B		22414						
GAGE - Taperlock Style		3B		22415						
GAGE - Ring-Go		2A		22416						
GAGE - Ring-Go		3A		22417						
GAGE - Ring-NoGo		2A		22418						
GAGE - Ring-NoGo		3A		22419						
3/4"-40 NS						*Recommended Hole Size based on 75% Thread = .7258"*				
HAND TAP	**3**	**3B**	**6**	**16578**	**16579**	**4.25**	**2.00**	**0.5900**	**0.442**	**0.69**
49/64"-10 NS						*Recommended Hole Size based on 75% Thread = .6682"*				
HAND TAP	**4**	**3B**	**4**	**16583**	**16584**	**4.47**	**2.00**	**0.6520**	**0.489**	**0.69**
.800"-36 AMO MOD. WHITWORTH						*Recommended Hole Size = .7644"*				
HAND TAP	**2**		**6**	**16592**	**16593**	**4.47**	**2.00**	**0.6520**	**0.489**	**0.69**
13/16"-10 NS						*Recommended Hole Size based on 75% Thread = .7151"*				
HAND TAP	**4**	**3B**	**4**	**16597**	**16598**	**4.47**	**2.00**	**0.6520**	**0.489**	**0.69**
13/16"-12 NS						*Recommended Hole Size based on 75% Thread = .7317"*				
HAND TAP	**4**	**3B**	**4**	**16602**	**16603**	**4.47**	**2.00**	**0.6520**	**0.489**	**0.69**
GAGE - Taperlock Style		2B		22420						

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
13/16"-12 NS						*See Previous Page for Recommended Hole Size*				
GAGE - Taperlock Style		3B		22421						
GAGE - Ring-Go		2A		22422						
GAGE - Ring-Go		3A		22423						
GAGE - Ring-NoGo		2A		22424						
GAGE - Ring-NoGo		3A		22425						
13/16"-16 NS						*Recommended Hole Size based on 75% Thread = .7519"*				
HAND TAP	**3**	**3B**	**4**	**16607**	**16608**	**4.47**	**2.00**	**0.6520**	**0.489**	**0.69**
R.H. ROUND DIE 2"OD				13264						
GAGE - Taperlock Style		2B		22426						
GAGE - Taperlock Style		3B		22427						
GAGE - Ring-Go		2A		22428						
GAGE - Ring-Go		3A		22429						
GAGE - Ring-NoGo		2A		22430						
GAGE - Ring-NoGo		3A		22431						
13/16"-18 NS						*Recommended Hole Size based on 75% Thread = .7589"*				
HAND TAP	**3**	**3B**	**4**	**16612**	**16613**	**4.47**	**2.00**	**0.6520**	**0.489**	**0.69**
R.H. ROUND DIE 2"OD				13266						
13/16"-20 NEF						*Recommended Hole Size based on 75% Thread = .7640"*				
HAND TAP	**3**	**3B**	**6**	**16617**	**16618**	**4.47**	**2.00**	**0.6520**	**0.489**	**0.69**
HAND TAP	**5**	**2B**	**6**	**16622**	**16623**	**4.47**	**2.00**	**0.6520**	**0.489**	**0.69**
R.H. ROUND DIE 2"OD				13268						
GAGE - Taperlock Style		2B		23228						
GAGE - Taperlock Style		3B		23229						
GAGE - Ring-Go		2A		23620						
GAGE - Ring-Go		3A		23621						
GAGE - Ring-NoGo		2A		23622						
GAGE - Ring-NoGo		3A		23623						
13/16"-24 NS						*Recommended Hole Size based on 75% Thread = .7715"*				
HAND TAP	**3**	**3B**	**6**	**16627**	**16628**	**4.47**	**2.00**	**0.6520**	**0.489**	**0.69**
R.H. ROUND DIE 2"OD				13270						
7/8"-6 ACME						*Recommended Hole Size based on 75% Thread = .7083"*				
HAND TAP		**2G**	**4**	**16631**		**4.69**	**2.22**	**0.6970**	**0.523**	**0.75**
L.H. HAND TAP		**2G**	**4**	**16635**		**4.69**	**2.22**	**0.6970**	**0.523**	**0.75**
TANDEM TAP		**2G**	**4**	**16637**		**8.63**	**4.38**	**0.6970**	**0.523**	**0.75**
L.H. TANDEM TAP		**2G**	**4**	**16638**		**8.63**	**4.38**	**0.6970**	**0.523**	**0.75**
7/8"-9 NC						*Recommended Hole Size based on 75% Thread = .7667"*				
REGULAR SPIRAL FLUTE TAP	**4**	**3B**	**4**	**16656**	**16657**	**4.69**	**2.22**	**0.6970**	**0.523**	**0.75**
L.H. HAND TAP	**4**	**3B**	**4**	**16642**	**16643**	**4.69**	**2.22**	**0.6970**	**0.523**	**0.75**
SPIRAL POINT TAP	**4**	**3B**	**3**	**16645**		**4.69**	**2.22**	**0.6970**	**0.523**	**0.75**
+.005 HAND TAP	**11**	**PLATING**	**4**	**16652**	**16653**	**4.69**	**2.22**	**0.6970**	**0.523**	**0.75**
8" EXTENSION HAND TAP	**4**	**3B**	**4**	**17700**	**17701**	**8.00**	**2.22**	**0.6970**	**0.523**	**0.75**
CARB-I-SERT TAP	**4**	**3B**	**4**	**41558**	**41559**	**4.69**	**1.34**	**0.6970**	**0.523**	**0.75**
TiN COAT x 8" TAP	**4**	**3B**	**4**	**50030**		**8.00**	**2.22**	**0.6970**	**0.523**	**0.75**
R.H. ROUND DIE 2"OD				13272						
L.H. ROUND DIE 2"OD				13273						

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
7/8"-9 NC						*See Previous Page for Recommended Hole Size*				
GAGE - Taperlock Style		2B		23233						
GAGE - Taperlock Style		3B		23234						
GAGE - Ring-Go		2A		23626						
GAGE - Ring-Go		3A		23627						
GAGE - Ring-NoGo		2A		23628						
GAGE - Ring-NoGo		3A		23629						
7/8"-10 NS						*Recommended Hole Size based on 75% Thread = .7776"*				
HAND TAP	**4**	**3B**	**4**	**16661**	**16662**	**4.69**	**2.22**	**0.6970**	**0.523**	**0.75**
7/8"-12 NS						*Recommended Hole Size based on 75% Thread = .7942"*				
HAND TAP	**4**	**3B**	**4**	**16666**	**16667**	**4.69**	**2.22**	**0.6970**	**0.523**	**0.75**
R.H. ROUND DIE 2"OD				13274						
GAGE - Taperlock Style		2B		22438						
GAGE - Taperlock Style		3B		22439						
GAGE - Ring-Go		2A		22440						
GAGE - Ring-Go		3A		22441						
GAGE - Ring-NoGo		2A		22442						
GAGE - Ring-NoGo		3A		22443						
7/8"-14 NF						*Recommended Hole Size based on 75% Thread = .8056"*				
L.H. HAND TAP	**4**	**3B**	**4**	**16671**	**16672**	**4.69**	**2.22**	**0.6970**	**0.523**	**0.75**
SPIRAL POINT TAP	**4**	**3B**	**3**	**17656**		**4.69**	**2.22**	**0.6970**	**0.523**	**0.75**
HAND TAP	**5**		**4**	**17749**	**17750**	**4.69**	**2.22**	**0.6970**	**0.523**	**0.75**
HAND TAP	**6**	**2B**	**4**	**17686**	**17687**	**4.69**	**2.22**	**0.6970**	**0.523**	**0.75**
+.005 HAND TAP	**11**	**PLATING**	**4**	**16676**	**16677**	**4.69**	**2.22**	**0.6970**	**0.523**	**0.75**
CARB-I-SERT TAP	**4**	**3B**	**4**	**41561**	**41562**	**4.69**	**1.34**	**0.6970**	**0.523**	**0.75**
R.H. ROUND DIE 2"OD				13276						
L.H. ROUND DIE 2"OD				13277						
GAGE - Taperlock Style		2B		23238						
GAGE - Taperlock Style		3B		23239						
GAGE - Ring-Go		2A		23632						
GAGE - Ring-Go		3A		23633						
GAGE - Ring-NoGo		2A		23634						
GAGE - Ring-NoGo		3A		23635						
7/8"-16 NS						*Recommended Hole Size based on 75% Thread = .8144"*				
HAND TAP	**3**	**3B**	**4**	**16681**	**16682**	**4.69**	**2.22**	**0.6970**	**0.523**	**0.75**
R.H. ROUND DIE 2"OD				13278						
GAGE - Taperlock Style		2B		22450						
GAGE - Taperlock Style		3B		22451						
GAGE - Ring-Go		2A		22452						
GAGE - Ring-Go		3A		22453						
GAGE - Ring-NoGo		2A		22454						
GAGE - Ring-NoGo		3A		22455						
7/8"-18 NS						*Recommended Hole Size based on 75% Thread = .8214*				
HAND TAP	**3**	**3B**	**4**	**16686**	**16687**	**4.69**	**2.22**	**0.6970**	**0.523**	**0.75**
R.H. ROUND DIE 2"OD				13280						

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
7/8"-20 NEF						*Recommended Hole Size based on 75% Thread = .8265"*				
HAND TAP	**3**	**3B**	**6**	**16691**	**16692**	**4.69**	**2.22**	**0.6970**	**0.523**	**0.75**
HAND TAP	**5**	**2B**	**6**	**16696**	**16697**	**4.69**	**2.22**	**0.6970**	**0.523**	**0.75**
R.H. ROUND DIE 2"OD				13282						
GAGE - Taperlock Style		2B		23243						
GAGE - Taperlock Style		3B		23244						
GAGE - Ring-Go		2A		23638						
GAGE - Ring-Go		3A		23639						
GAGE - Ring-NoGo		2A		23640						
GAGE - Ring-NoGo		3A		23641						
7/8"-24 NS						*Recommended Hole Size based on 75% Thread = .834"*				
HAND TAP	**3**	**3B**	**6**	**16701**	**16702**	**4.69**	**2.22**	**0.6970**	**0.523**	**0.75**
R.H. ROUND DIE 2"OD				13284						
7/8"-27 NS						*Recommended Hole Size based on 75% Thread = .839"*				
HAND TAP	**3**	**3B**	**6**	**16706**	**16707**	**4.69**	**2.22**	**0.6970**	**0.523**	**0.75**
7/8"-32 NS						*Recommended Hole Size based on 75% Thread = .8447"*				
HAND TAP	**3**	**3B**	**6**	**16711**	**16712**	**4.69**	**2.22**	**0.6970**	**0.523**	**0.75**
R.H. ROUND DIE 2"OD				13286						
GAGE - Taperlock Style		2B		22456						
GAGE - Taperlock Style		3B		22457						
GAGE - Ring-Go		2A		22458						
GAGE - Ring-Go		3A		22459						
GAGE - Ring-NoGo		2A		22460						
GAGE - Ring-NoGo		3A		22461						
15/16"-12 NS						*Recommended Hole Size based on 75% Thread = .8567"*				
HAND TAP	**4**	**3B**	**4**	**16716**	**16717**	**4.91**	**2.22**	**0.7600**	**0.570**	**0.75**
R.H. ROUND DIE 2"OD				13288						
GAGE - Taperlock Style		2B		22462						
GAGE - Taperlock Style		3B		22463						
GAGE - Ring-Go		2A		22464						
GAGE - Ring-Go		3A		22465						
GAGE - Ring-NoGo		2A		22466						
GAGE - Ring-NoGo		3A		22467						
15/16"-14 NS						*Recommended Hole Size based on 75% Thread = .8681"*				
HAND TAP	**4**	**3B**	**4**	**16721**	**16722**	**4.91**	**2.22**	**0.7600**	**0.570**	**0.75**
R.H. ROUND DIE 2"OD				13290						
15/16"-16 NS						*Recommended Hole Size based on 75% Thread = .8769"*				
HAND TAP	**3**	**3B**	**6**	**16726**	**16727**	**4.91**	**2.22**	**0.7600**	**0.570**	**0.75**
R.H. ROUND DIE 2"OD				13292						
15/16"-18 NS						*Recommended Hole Size based on 75% Thread = .8839"*				
HAND TAP	**3**	**3B**	**6**	**16731**	**16732**	**4.91**	**2.22**	**0.7600**	**0.570**	**0.75**
R.H. ROUND DIE 2"OD				13294						
15/16"-20 NEF						*Recommended Hole Size based on 75% Thread = .889"*				
HAND TAP	**3**	**3B**	**6**	**16736**	**16737**	**4.91**	**2.22**	**0.7600**	**0.570**	**0.75**
HAND TAP	**5**	**2B**	**6**	**16741**	**16742**	**4.91**	**2.22**	**0.7600**	**0.570**	**0.75**
R.H. ROUND DIE 2"OD				13296						

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
15/16"-20 NEF						*See Previous Page for Recommended Hole Size*				
GAGE - Taperlock Style		2B		23248						
GAGE - Taperlock Style		3B		23249						
GAGE - Ring-Go		2A		23644						
GAGE - Ring-Go		3A		23645						
GAGE - Ring-NoGo		2A		23646						
GAGE - Ring-NoGo		3A		23647						
15/16"-32 NS						*Recommended Hole Size based on 75% Thread = .9702"*				
HAND TAP	**3**	**3B**	**6**	**16756**	**16757**	**4.91**	**2.22**	**0.7600**	**0.570**	**0.75**
R.H. ROUND DIE 2"OD				13298						
GAGE - Taperlock Style		2B		22468						
GAGE - Taperlock Style		3B		22469						
GAGE - Ring-Go		2A		22470						
GAGE - Ring-Go		3A		22471						
GAGE - Ring-NoGo		2A		22472						
GAGE - Ring-NoGo		3A		22473						
.969"-32										
N-05 LOCKNUT HEX DIE				13702						
1"-5 ACME						*Recommended Hole Size = .800"*				
HAND TAP		**2G**	**4**	**16760**		**5.13**	**2.50**	**0.8000**	**0.600**	**0.81**
L.H. HAND TAP		**2G**	**4**	**16764**		**5.13**	**2.50**	**0.8000**	**0.600**	**0.81**
TANDEM TAP		**2G**	**4**	**16766**		**10.13**	**5.25**	**0.6970**	**0.523**	**0.75**
L.H. TANDEM TAP		**2G**	**4**	**16767**		**10.13**	**5.25**	**0.6970**	**0.523**	**0.75**
1"-8 ACME						*Recommended Hole Size = .875"*				
HAND TAP		**2G**	**4**	**16770**		**5.13**	**2.50**	**0.8000**	**0.600**	**0.81**
1"-8 NC						*Recommended Hole Size based on 75% Thread = .8781"*				
REGULAR SPIRAL FLUTE TAP	**4**	**3B**	**4**	**16789**	**16790**	**5.13**	**2.50**	**0.8000**	**0.600**	**0.81**
FAST SPIRAL FLUTE TAP	**4**	**3B**	**4**	**17791**	**17792**	**5.13**	**2.50**	**0.8000**	**0.600**	**0.81**
L.H. HAND TAP	**4**	**3B**	**4**	**16775**	**16776**	**5.13**	**2.50**	**0.8000**	**0.600**	**0.81**
HAND TAP	**6**	**2B**	**4**	**17918**	**17919**	**5.13**	**2.50**	**0.8000**	**0.600**	**0.81**
SPIRAL POINT TAP	**4**	**3B**	**3**	**16778**		**5.13**	**2.50**	**0.8000**	**0.600**	**0.81**
+.005 HAND TAP	**11**	**PLATING**	**4**	**16785**	**16786**	**5.13**	**2.50**	**0.8000**	**0.600**	**0.81**
+.005 SPIRAL POINT TAP	**11**	**PLATING**	**3**	**16783**		**5.13**	**2.50**	**0.8000**	**0.600**	**0.81**
+.010 HAND TAP	**21**		**4**	**17732**	**17733**	**5.13**	**2.50**	**0.8000**	**0.600**	**0.81**
8" EXTENSION HAND TAP	**4**	**3B**	**4**	**16794**	**16795**	**8.00**	**2.50**	**0.8000**	**0.600**	**0.81**
10" EXTENSION HAND TAP	**4**	**3B**	**4**	**16799**	**16800**	**10.00**	**2.50**	**0.8000**	**0.600**	**0.81**
12" EXTENSION HAND TAP	**4**	**3B**	**4**	**18109**	**18110**	**12.00**	**2.50**	**0.8000**	**0.600**	**0.81**
CARB-I-SERT TAP	**4**	**3B**	**4**	**41564**	**41565**	**5.13**	**1.50**	**0.8000**	**0.600**	**0.81**
TiN COAT x 8" TAP	**4**	**3B**	**4**	**50021**		**8.00**	**2.50**	**0.8000**	**0.600**	**0.81**
R.H. ROUND DIE 2"OD				13300						
L.H. ROUND DIE 2"OD				13301						
GAGE - Taperlock Style		2B		23253						
GAGE - Taperlock Style		3B		23254						
GAGE - Ring-Go		2A		23650						
GAGE - Ring-Go		3A		23651						
GAGE - Ring-NoGo		2A		23652						
GAGE - Ring-NoGo		3A		23653						

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
1"-10 NS						*Recommended Hole Size based on 75% Thread = .9026"*				
HAND TAP	4	3B	4	16809	16810	5.13	2.50	0.8000	0.600	0.81
1"-11 55° WHITWORTH PIPE						*Recommended Hole Size: BSPT = 1.1719" / BSPP = 1.1875"*				
BSPT TAPER - MODIFIED TAP			5	16812	16813	3.75	1.75	1.1250	0.843	0.81
BSPP PARALLEL - MODIFIED TAP			5	16815	16816	3.75	1.75	1.1250	0.843	0.81
BSPT TAPER - FULL FORM TAP			5	17937		3.75	1.75	1.1250	0.843	0.81
BSPP PARALLEL - FULL FORM TAP			5	17928		3.75	1.75	1.1250	0.843	0.81
GAGE BSPP-Mod. DBL END w/handle				27056						
GAGE BSPT-Mod. w/handle				27017						
1"-11.5 PIPE TAP NPT NPT/F NPS						*Recommended Hole Size NPT = 1.1406" / NPTF = 1.1563"*				
NPT/F LEFT HAND TAPER TAP			5	16818		3.75	1.75	1.1250	0.843	0.81
NPT/F 6" EXTENSION TAPER TAP			5	16821		6.00	1.75	1.1250	0.843	0.81
NPT/F 10" EXTENSION TAPER TAP			5	16824		10.00	1.75	1.1250	0.843	0.81
CARB-I-SERT TAP			6	41811		3.75	1.44	1.1250	0.843	0.81
NPT/F COST CUTTER DRILL/ TAP			4	29046		5.38	1.75	1.1250	0.843	0.81
NPT R.H. ROUND DIE 2-1/2"OD				13302						
NPS R.H. ROUND DIE 2-1/2"OD				13304						
GAGE L1 NPT PLG w/handle				24386						
GAGE L1 NPT RING				24384						
GAGE L1 NPTF PLG w/handle				24466						
GAGE L3 NPTF PLG w/handle				24468						
GAGE NPTF 6 step Plain Plug w/handle				24548						
GAGE L1 NPTF RING				24510						
GAGE L2 NPTF RING				24512						
GAGE NPTF 6 step Plain Ring				24582						
1"-12 NF						*Recommended Hole Size based on 75% Thread = .9192"*				
L.H. HAND TAP	4	3B	4	16829	16830	5.13	2.50	0.8000	0.600	0.81
HAND TAP	6	2B	4	16834	16835	5.13	2.50	0.8000	0.600	0.81
+.005 HAND TAP	11	PLATING	4	16839	16840	5.13	2.50	0.8000	0.600	0.81
CARB-I-SERT TAP	4	3B	4	41567	41568	5.13	1.50	0.8000	0.600	0.81
R.H. ROUND DIE 2"OD				13306						
L.H. ROUND DIE 2"OD				13307						
GAGE - Taperlock Style		2B		23258						
GAGE - Taperlock Style		3B		23259						
GAGE - Ring-Go		2A		23656						
GAGE - Ring-Go		3A		23657						
GAGE - Ring-NoGo		2A		23658						
GAGE - Ring-NoGo		3A		23659						

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM #		OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
				PLUG	BOTTOM					
1"-14 NS						*Recommended Hole Size based on 75% Thread = .9306"*				
L.H. HAND TAP	**4**	**3B**	**4**	**16844**	**16845**	**5.13**	**2.50**	**0.8000**	**0.600**	**0.81**
SPIRAL POINT TAP	**4**	**3B**	**3**	**17906**		**5.13**	**2.50**	**0.8000**	**0.600**	**0.81**
HAND TAP	**6**	**2B**	**4**	**16849**	**16850**	**5.13**	**2.50**	**0.8000**	**0.600**	**0.81**
+.005 HAND TAP	**11**	**PLATING**	**4**	**16854**	**16855**	**5.13**	**2.50**	**0.8000**	**0.600**	**0.81**
R.H. ROUND DIE 2"OD				13308						
L.H. ROUND DIE 2"OD				13309						
GAGE - Taperlock Style		2B		23263						
GAGE - Taperlock Style		3B		23264						
GAGE - Ring-Go		2A		23662						
GAGE - Ring-Go		3A		23663						
GAGE - Ring-NoGo		2A		23664						
GAGE - Ring-NoGo		3A		23665						
1"-16 NS						*Recommended Hole Size based on 75% Thread = .9394"*				
L.H. HAND TAP	**3**	**3B**	**6**	**17695**	**17696**	**5.13**	**2.50**	**0.8000**	**0.600**	**0.81**
HAND TAP	**3**	**3B**	**6**	**16859**	**16860**	**5.13**	**2.50**	**0.8000**	**0.600**	**0.81**
R.H. ROUND DIE 2"OD				13310						
GAGE - Taperlock Style		2B		22486						
GAGE - Taperlock Style		3B		22487						
GAGE - Ring-Go		2A		22488						
GAGE - Ring-Go		3A		22489						
GAGE - Ring-NoGo		2A		22490						
GAGE - Ring-NoGo		3A		22491						
1"-18 NS						*Recommended Hole Size based on 75% Thread = .9464"*				
HAND TAP	**3**	**3B**	**6**	**16864**	**16865**	**5.13**	**2.50**	**0.8000**	**0.600**	**0.81**
R.H. ROUND DIE 2"OD				13312						
1"-20 NEF						*Recommended Hole Size based on 75% Thread = .9515"*				
L.H. HAND TAP	**3**	**3B**	**6**	**17580**	**17581**	**5.13**	**2.50**	**0.8000**	**0.600**	**0.81**
HAND TAP	**3**	**3B**	**6**	**16869**	**16870**	**5.13**	**2.50**	**0.8000**	**0.600**	**0.81**
HAND TAP	**5**	**2B**	**6**	**16874**	**16875**	**5.13**	**2.50**	**0.8000**	**0.600**	**0.81**
R.H. ROUND DIE 2"OD				13314						
GAGE - Taperlock Style		2B		23268						
GAGE - Taperlock Style		3B		23269						
GAGE - Ring-Go		2A		23668						
GAGE - Ring-Go		3A		23669						
GAGE - Ring-NoGo		2A		23670						
GAGE - Ring-NoGo		3A		23671						
1"-24 NS						*Recommended Hole Size based on 75% Thread = .959"*				
HAND TAP	**3**	**3B**	**6**	**16879**	**16880**	**5.13**	**2.50**	**0.8000**	**0.600**	**0.81**
R.H. ROUND DIE 2"OD				13316						
1"-27 NS						*Recommended Hole Size based on 75% Thread = .964"*				
HAND TAP	**3**	**3B**	**6**	**16884**	**16885**	**5.13**	**2.50**	**0.8000**	**0.600**	**0.81**
R.H. ROUND DIE 2"OD				13318						
1"-32 NS						*Recommended Hole Size based on 75% Thread = .9697"*				
HAND TAP	**3**	**3B**	**6**	**16889**	**16890**	**5.13**	**2.50**	**0.8000**	**0.600**	**0.81**
R.H. ROUND DIE 2"OD				13320						
GAGE - Taperlock Style		2B		22492						

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM #		OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
				PLUG	BOTTOM					
1"-32 NS						*See Previous Page for Recommended Hole Size*				
GAGE - Taperlock Style		3B		22493						
GAGE - Ring-Go		2A		22494						
GAGE - Ring-Go		3A		22495						
GAGE - Ring-NoGo		2A		22496						
GAGE - Ring-NoGo		3A		22497						
1 1/16"-12 NS						*Recommended Hole Size based on 75% Thread = .9817"*				
HAND TAP	**4**		**4**	**17714**	**17715**	**5.13**	**2.50**	**0.8960**	**0.672**	**0.88**
HAND TAP	**5**	**3B**	**4**	**16893**	**16894**	**5.13**	**2.50**	**0.8960**	**0.672**	**0.88**
HAND TAP	**7**	**2B**	**4**	**16897**	**16898**	**5.13**	**2.50**	**0.8960**	**0.672**	**0.88**
TiN COAT/HAND TAP	**4**		**4**		**50031**	**5.13**	**2.50**	**0.8960**	**0.672**	**0.88**
R.H. ROUND DIE 2"OD				13322						
GAGE - Taperlock Style		2B		24982						
GAGE - Taperlock Style		3B		24983						
GAGE - Ring-Go		2A		22498						
GAGE - Ring-Go		3A		22499						
GAGE - Ring-NoGo		2A		22500						
GAGE - Ring-NoGo		3A		22501						
1 1/16"-14 NS						*Recommended Hole Size based on 75% Thread = .9931"*				
HAND TAP	**5**	**3B**	**6**	**16901**	**16902**	**4.00**	**1.50**	**0.8960**	**0.672**	**0.88**
1 1/16"-16 NS						*Recommended Hole Size based on 75% Thread = 1.002"*				
HAND TAP	**4**	**3B**	**6**	**16905**	**16906**	**4.00**	**1.50**	**0.8960**	**0.672**	**0.88**
HAND TAP	**6**	**2B**	**6**	**16909**	**16910**	**4.00**	**1.50**	**0.8960**	**0.672**	**0.88**
R.H. ROUND DIE 2"OD				13326						
GAGE - Taperlock Style		2B		22502						
GAGE - Taperlock Style		3B		22503						
GAGE - Ring-Go		2A		22504						
GAGE - Ring-Go		3A		22505						
GAGE - Ring-NoGo		2A		22506						
GAGE - Ring-NoGo		3A		22507						
1 1/16"-18 NEF						*Recommended Hole Size based on 75% Thread = 1.008"*				
HAND TAP	**4**	**3B**	**6**	**16913**	**16914**	**4.00**	**1.50**	**0.8960**	**0.672**	**0.88**
HAND TAP	**6**	**2B**	**6**	**16917**	**16918**	**4.00**	**1.50**	**0.8960**	**0.672**	**0.88**
R.H. ROUND DIE 2"OD				13330						
GAGE - Taperlock Style		2B		23273						
GAGE - Taperlock Style		3B		23274						
GAGE - Ring-Go		2A		23674						
GAGE - Ring-Go		3A		23675						
GAGE - Ring-NoGo		2A		23676						
GAGE - Ring-NoGo		3A		23677						
1 1/16"-20 NS						*Recommended Hole Size based on 75% Thread = 1.014"*				
HAND TAP	**4**	**3B**	**6**	**16921**	**16922**	**4.00**	**1.50**	**0.8960**	**0.672**	**0.88**
R.H. ROUND DIE 2"OD				13332						
GAGE - Taperlock Style		2B		22508						
GAGE - Taperlock Style		3B		22509						
GAGE - Ring-Go		2A		22510						

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
1 1/16"-20 NS						*See Previous Page for Recommended Hole Size*				
GAGE - Ring-Go		3A		22511						
GAGE - Ring-NoGo		2A		22512						
GAGE - Ring-NoGo		3A		22513						
1 1/16"-24 NS						*Recommended Hole Size based on 75% Thread = 1.021"*				
HAND TAP	**4**	**3B**	**6**	**16925**	**16926**	**4.00**	**1.50**	**0.8960**	**0.672**	**0.88**
1 1/8"-5 ACME						*Recommended Hole Size = .925"*				
HAND TAP		**2G**	**4**	**16929**		**5.44**	**2.56**	**0.8960**	**0.672**	**0.88**
L.H. HAND TAP		**2G**	**4**	**16933**		**5.44**	**2.56**	**0.8960**	**0.672**	**0.88**
TANDEM TAP		**2G**	**4**	**16935**		**10.75**	**5.25**	**0.8000**	**0.600**	**0.81**
L.H. TANDEM TAP		**2G**	**4**	**16936**		**10.75**	**5.25**	**0.8000**	**0.600**	**0.81**
1 1/8"-7 NC						*Recommended Hole Size based on 75% Thread = .9857"*				
L.H. HAND TAP	**4**	**3B**	**4**	**16939**	**16940**	**5.44**	**2.56**	**0.8960**	**0.672**	**0.88**
R.H. ROUND DIE 2-1/2"OD				13334						
L.H. ROUND DIE 2-1/2"OD				13335						
GAGE - Taperlock Style		2B		23278						
GAGE - Taperlock Style		3B		23279						
GAGE - Ring-Go		2A		23680						
GAGE - Ring-Go		3A		23681						
GAGE - Ring-NoGo		2A		23682						
GAGE - Ring-NoGo		3A		23683						
1 1/8"-8 NS						*Recommended Hole Size based on 75% Thread = 1.003"*				
HAND TAP	**5**	**3B**	**4**	**16943**	**16944**	**5.44**	**2.56**	**0.8960**	**0.672**	**0.88**
TiN COAT/HAND TAP	**5**	**3B**	**4**		**50022**	**5.44**	**2.56**	**0.8960**	**0.672**	**0.88**
R.H. ROUND DIE 2-1/2"OD				13464						
GAGE - Taperlock Style		2B		22520						
GAGE - Taperlock Style		3B		22521						
GAGE - Ring-Go		2A		22522						
GAGE - Ring-Go		3A		22523						
GAGE - Ring-NoGo		2A		22524						
GAGE - Ring-NoGo		3A		22525						
1 1/8"-10 NS						*Recommended Hole Size based on 75% Thread = 1.027"*				
HAND TAP	**5**	**3B**	**4**	**16947**	**16948**	**5.44**	**2.56**	**0.8960**	**0.672**	**0.88**
1 1/8"-12 NF						*Recommended Hole Size based on 75% Thread = 1.044"*				
L.H. HAND TAP	**4**	**3B**	**4**	**16951**	**16952**	**5.44**	**2.56**	**0.8960**	**0.672**	**0.88**
HAND TAP	**6**	**2B**	**4**	**16955**	**16956**	**5.44**	**2.56**	**0.8960**	**0.672**	**0.88**
+.005 HAND TAP	**12**	**PLATING**	**4**	**17776**	**17777**	**5.44**	**2.56**	**0.8960**	**0.672**	**0.88**
R.H. ROUND DIE 2-1/2"OD				13336						
L.H. ROUND DIE 2-1/2"OD				13337						
GAGE - Taperlock Style		2B		23283						
GAGE - Taperlock Style		3B		23284						
GAGE - Ring-Go		2A		23686						
GAGE - Ring-Go		3A		23687						
GAGE - Ring-NoGo		2A		23688						
GAGE - Ring-NoGo		3A		23689						
1 1/8"-14 NS						*Recommended Hole Size based on 75% Thread = 1.055"*				
HAND TAP	**5**	**3B**	**6**	**16959**	**16960**	**4.00**	**1.50**	**0.8960**	**0.672**	**0.88**

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
1 1/8"-16 NS						*Recommended Hole Size based on 75% Thread = 1.064"*				
HAND TAP	**4**	**3B**	**6**	**16963**	**16964**	**4.00**	**1.50**	**0.8960**	**0.672**	**0.88**
R.H. ROUND DIE 2-1/2"OD				13340						
GAGE - Taperlock Style		2B		22532						
GAGE - Taperlock Style		3B		22533						
GAGE - Ring-Go		2A		22534						
GAGE - Ring-Go		3A		22535						
GAGE - Ring-NoGo		2A		22536						
GAGE - Ring-NoGo		3A		22537						
1 1/8"-18 NEF						*Recommended Hole Size based on 75% Thread = 1.071"*				
HAND TAP	**4**	**3B**	**6**	**16967**	**16968**	**4.00**	**1.50**	**0.8960**	**0.672**	**0.88**
HAND TAP	**6**	**2B**	**6**	**16971**	**16972**	**4.00**	**1.50**	**0.8960**	**0.672**	**0.88**
R.H. ROUND DIE 2-1/2"OD				13342						
GAGE - Taperlock Style		2B		23288						
GAGE - Taperlock Style		3B		23289						
GAGE - Ring-Go		2A		23692						
GAGE - Ring-Go		3A		23693						
GAGE - Ring-NoGo		2A		23694						
GAGE - Ring-NoGo		3A		23695						
1 1/8"-20 NS						*Recommended Hole Size based on 75% Thread =1.076"*				
HAND TAP	**4**	**3B**	**6**	**16975**	**16976**	**4.00**	**1.50**	**0.8960**	**0.672**	**0.88**
R.H. ROUND DIE 2-1/2"OD				13344						
GAGE - Taperlock Style		2B		22538						
GAGE - Taperlock Style		3B		22539						
GAGE - Ring-Go		2A		22540						
GAGE - Ring-Go		3A		22541						
GAGE - Ring-NoGo		2A		22542						
GAGE - Ring-NoGo		3A		22543						
1 1/8"-24 NS						*Recommended Hole Size based on 75% Thread = 1.084"*				
HAND TAP	**4**	**3B**	**6**	**16979**	**16980**	**4.00**	**1.50**	**0.8960**	**0.672**	**0.88**
1 1/8"-28 NS						*Recommended Hole Size based on 75% Thread =1.0903"*				
HAND TAP	**4**	**3B**	**6**	**18114**	**18115**	**4.00**	**1.50**	**0.8960**	**0.672**	**0.88**
GAGE - Taperlock Style		2B		22544						
GAGE - Taperlock Style		3B		22545						
GAGE - Ring-Go		2A		22546						
GAGE - Ring-Go		3A		22547						
GAGE - Ring-NoGo		2A		22548						
GAGE - Ring-NoGo		3A		22549						
1 1/8"-32 NS						*Recommended Hole Size based on 75% Thread = 1.095"*				
HAND TAP	**4**	**3B**	**8**	**16987**	**16988**	**4.00**	**1.50**	**0.8960**	**0.672**	**0.88**
1.173"-18										
N-06 LOCKNUT HEX DIE				13703						
1 3/16"-12 NS						*Recommended Hole Size based on 75% Thread = 1.106"*				
HAND TAP	**5**	**3B**	**6**	**16991**	**16992**	**5.44**	**2.56**	**1.0210**	**0.766**	**1.00**
R.H. ROUND DIE 2-1/2"OD				13346						
GAGE - Taperlock Style		2B		24987						

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
1 3/16"-12 NS						*See Previous Page for Recommended Hole Size*				
GAGE - Taperlock Style		3B		24988						
GAGE - Ring-Go		2A		22550						
GAGE - Ring-Go		3A		22551						
GAGE - Ring-NoGo		2A		22552						
GAGE - Ring-NoGo		3A		22553						
1 3/16"-14 NS						*Recommended Hole Size based on 75% Thread = 1.118"*				
HAND TAP	**5**	**3B**	**6**	**16995**	**16996**	**4.00**	**1.50**	**1.0210**	**0.766**	**1.00**
1 3/16"-16 NS						*Recommended Hole Size based on 75% Thread = 1.127"*				
HAND TAP	**4**	**3B**	**6**	**16999**	**17000**	**4.00**	**1.50**	**1.0210**	**0.766**	**1.00**
HAND TAP	**6**	**2B**	**6**	**17003**	**17004**	**4.00**	**1.50**	**1.0210**	**0.766**	**1.00**
GAGE - Taperlock Style		2B		22554						
GAGE - Taperlock Style		3B		22555						
GAGE - Ring-Go		2A		22556						
GAGE - Ring-Go		3A		22557						
GAGE - Ring-NoGo		2A		22558						
GAGE - Ring-NoGo		3A		22559						
1 3/16"-18 NEF						*Recommended Hole Size based on 75% Thread = 1.134"*				
HAND TAP	**4**	**3B**	**6**	**17007**	**17008**	**4.00**	**1.50**	**1.0210**	**0.766**	**1.00**
HAND TAP	**6**	**2B**	**6**	**17011**	**17012**	**4.00**	**1.50**	**1.0210**	**0.766**	**1.00**
R.H. ROUND DIE 2-1/2"OD				13350						
GAGE - Taperlock Style		2B		23293						
GAGE - Taperlock Style		3B		23294						
GAGE - Ring-Go		2A		23698						
GAGE - Ring-Go		3A		23699						
GAGE - Ring-NoGo		2A		23700						
GAGE - Ring-NoGo		3A		23701						
1 3/16"-20 NS						*Recommended Hole Size based on 75% Thread = 1.139"*				
HAND TAP	**4**	**3B**	**6**	**17015**	**17016**	**4.00**	**1.50**	**1.0210**	**0.766**	**1.00**
GAGE - Taperlock Style		2B		22560						
GAGE - Taperlock Style		3B		22561						
GAGE - Ring-Go		2A		22562						
GAGE - Ring-Go		3A		22563						
GAGE - Ring-NoGo		2A		22564						
GAGE - Ring-NoGo		3A		22565						
1 1/4"-5 ACME						*Recommended Hole Size = 1.050"*				
HAND TAP		**2G**	**4**	**17019**		**5.75**	**2.56**	**1.0210**	**0.766**	**1.00**
L.H. HAND TAP		**2G**	**4**	**17023**		**5.75**	**2.56**	**1.0210**	**0.766**	**1.00**
TANDEM TAP		**2G**	**4**	**17025**		**11.13**	**5.25**	**0.8960**	**0.672**	**0.88**
L.H. TANDEM TAP		**2G**	**4**	**17026**		**11.13**	**5.25**	**0.8960**	**0.672**	**0.88**
1 1/4"-7 NC						*Recommended Hole Size based on 75% Thread = 1.110"*				
L.H. HAND TAP	**4**	**3B**	**4**	**17029**	**17030**	**5.75**	**2.56**	**1.0210**	**0.766**	**1.00**
SPIRAL POINT TAP	**4**	**3B**	**3**	**17920**		**5.75**	**2.56**	**1.0210**	**0.766**	**1.00**
HAND TAP	**8**	**2B**	**4**	**17033**	**17034**	**5.75**	**2.56**	**1.0210**	**0.766**	**1.00**
+.005 HAND TAP	**12**	**PLATING**	**4**	**17753**	**17754**	**5.75**	**2.56**	**1.0210**	**0.766**	**1.00**
10" EXTENSION TAP	**4**	**3B**	**4**	**17037**	**17038**	**10.00**	**2.56**	**1.0210**	**0.766**	**1.00**
12" EXTENSION TAP	**4**	**3B**	**4**	**17041**	**17042**	**12.00**	**2.56**	**1.0210**	**0.766**	**1.00**

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
1 1/4"-7 NC						*See Previous Page for Recommended Hole Size*				
CARB-I-SERT TAP	**4**	**3B**	**4**	**41570**	**41571**	**5.75**	**1.72**	**1.0210**	**0.766**	**1.00**
R.H. ROUND DIE 2-1/2"OD				13352						
L.H. ROUND DIE 2-1/2"OD				13353						
GAGE - Taperlock Style		2B		23298						
GAGE - Taperlock Style		3B		23299						
GAGE - Ring-Go		2A		23704						
GAGE - Ring-Go		3A		23705						
GAGE - Ring-NoGo		2A		23706						
GAGE - Ring-NoGo		3A		23707						
1 1/4"-8 NS						*Recommended Hole Size based on 75% Thread = 1.128"*				
HAND TAP	**5**	**3B**	**4**	**17045**	**17046**	**5.75**	**2.56**	**1.0210**	**0.766**	**1.00**
10" EXTENSION TAP	**5**	**3B**	**4**	**17049**	**17050**	**10.00**	**2.56**	**1.0210**	**0.766**	**1.00**
12" EXTENSION TAP	**5**	**3B**	**4**	**17053**	**17054**	**12.00**	**2.56**	**1.0210**	**0.766**	**1.00**
R.H. ROUND DIE 2-1/2"OD				13466						
GAGE - Taperlock Style		2B		22572						
GAGE - Taperlock Style		3B		22573						
GAGE - Ring-Go		2A		22574						
GAGE - Ring-Go		3A		22575						
GAGE - Ring-NoGo		2A		22576						
GAGE - Ring-NoGo		3A		22577						
1 1/4"-10 NS						*Recommended Hole Size based on 75% Thread = 1.152"*				
HAND TAP	**5**	**3B**	**4**	**17057**	**17058**	**5.75**	**2.56**	**1.0210**	**0.766**	**1.00**
1 1/4"-11 55° WHITWORTH PIPE						*Recommended Hole Size: BSPT = 1.500" / BSPP = 1.5469"*				
BSPT TAPER - MODIFIED TAP			**5**	**17060**	**17061**	**4.00**	**1.75**	**1.3125**	**0.984**	**0.94**
BSPP PARALLEL - MODIFIED TAP			**5**	**17063**	**17064**	**4.00**	**1.75**	**1.3125**	**0.984**	**0.94**
BSPT TAPER - FULL FORM TAP			**5**	**17938**		**4.00**	**1.75**	**1.3125**	**0.984**	**0.94**
BSPP PARALLEL - FULL FORM TAP			**5**	**17929**		**4.00**	**1.75**	**1.3125**	**0.984**	**0.94**
GAGE BSPP-Mod. DBL END w/handle				27059						
GAGE BSPT-Mod. w/handle				27020						
1 1/4"-11.5 PIPE TAP NPS NPSF NPT/F						*Recommended Hole Size: NPT = 1.4844" / NPTF = 1.500" NPSC = 1.500" / NPSM = 1.5469"/ NPSF = 1.5050"*				
NPT/F LEFT HAND TAPER TAP			**5**	**17066**		**4.00**	**1.75**	**1.3125**	**0.984**	**0.94**
NPS STRAIGHT TAP			**5**	**17069**		**4.00**	**1.75**	**1.3125**	**0.984**	**0.94**
NPSF STRAIGHT TAP			**5**	**17072**		**4.00**	**1.75**	**1.3125**	**0.984**	**0.94**
GAGE L1 NPT PLG w/handle				24389						
GAGE L1 NPT RING				24387						
GAGE L1 NPTF PLG w/handle				24474						
GAGE L3 NPTF PLG w/handle				24476						
GAGE NPTF 6 step Plain Plug w/handle				24552						
GAGE L1 NPTF RING				24514						
GAGE L2 NPTF RING				24516						
GAGE NPTF 6 step Plain Ring				24586						

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
1 1/4"-12 NF						*Recommended Hole Size based on 75% Thread = 1.169"*				
L.H. HAND TAP	**4**	**3B**	**6**	**17076**	**17077**	**5.75**	**2.56**	**1.0210**	**0.766**	**1.00**
HAND TAP	**6**	**2B**	**6**	**17080**	**17081**	**5.75**	**2.56**	**1.0210**	**0.766**	**1.00**
R.H. ROUND DIE 2-1/2"OD				13354						
L.H. ROUND DIE 2-1/2"OD				13355						
GAGE - Taperlock Style		2B		23303						
GAGE - Taperlock Style		3B		23304						
GAGE - Ring-Go		2A		23710						
GAGE - Ring-Go		3A		23711						
GAGE - Ring-NoGo		2A		23712						
GAGE - Ring-NoGo		3A		23713						
1 1/4"-14 NS						*Recommended Hole Size based on 75% Thread = 1.180"*				
HAND TAP	**5**	**3B**	**6**	**17084**	**17085**	**4.00**	**1.50**	**1.0210**	**0.766**	**1.00**
1 1/4"-16 NS						*Recommended Hole Size based on 75% Thread = 1.189"*				
HAND TAP	**4**	**3B**	**6**	**17088**	**17089**	**4.00**	**1.50**	**1.0210**	**0.766**	**1.00**
R.H. ROUND DIE 2-1/2"OD				13356						
GAGE - Taperlock Style		2B		22584						
GAGE - Taperlock Style		3B		22585						
GAGE - Ring-Go		2A		22586						
GAGE - Ring-Go		3A		22587						
GAGE - Ring-NoGo		2A		22588						
GAGE - Ring-NoGo		3A		22589						
1 1/4"-18 NEF						*Recommended Hole Size based on 75% Thread = 1.196"*				
HAND TAP	**4**	**3B**	**6**	**17092**	**17093**	**4.00**	**1.50**	**1.0210**	**0.766**	**1.00**
HAND TAP	**6**	**2B**	**6**	**17096**	**17097**	**4.00**	**1.50**	**1.0210**	**0.766**	**1.00**
R.H. ROUND DIE 2-1/2"OD				13358						
GAGE - Taperlock Style		2B		23308						
GAGE - Taperlock Style		3B		23309						
GAGE - Ring-Go		2A		23716						
GAGE - Ring-Go		3A		23717						
GAGE - Ring-NoGo		2A		23718						
GAGE - Ring-NoGo		3A		23719						
1 1/4"-20 NS						*Recommended Hole Size based on 75% Thread = 1.201"*				
HAND TAP	**4**	**3B**	**6**	**17100**	**17101**	**4.00**	**1.50**	**1.0210**	**0.766**	**1.00**
R.H. ROUND DIE 2-1/2"OD				13360						
GAGE - Taperlock Style		2B		22590						
GAGE - Taperlock Style		3B		22591						
GAGE - Ring-Go		2A		22592						
GAGE - Ring-Go		3A		22593						
GAGE - Ring-NoGo		2A		22594						
GAGE - Ring-NoGo		3A		22595						
1 1/4"-24 NS						*Recommended Hole Size based on 75% Thread = 1.209"*				
HAND TAP	**4**	**3B**	**8**	**17104**	**17105**	**4.00**	**1.50**	**1.0210**	**0.766**	**1.00**
R.H. ROUND DIE 2-1/2"OD				13362						
1 1/4"-32 NS						*Recommended Hole Size based on 75% Thread = 1.219"*				
HAND TAP	**4**	**3B**	**10**	**17108**	**17109**	**4.00**	**1.50**	**1.0210**	**0.766**	**1.00**

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
1 5/16"-12 NS						*Recommended Hole Size based on 75% Thread = 1.232"*				
HAND TAP	**5**	**3B**	**6**	**17112**	**17113**	**5.75**	**2.56**	**1.1080**	**0.831**	**1.06**
HAND TAP	**8**	**2B**	**6**	**17116**	**17117**	**5.75**	**2.56**	**1.1080**	**0.831**	**1.06**
R.H. ROUND DIE 2-1/2"OD				13364						
GAGE - Taperlock Style		2B		24992						
GAGE - Taperlock Style		3B		24993						
GAGE - Ring-Go		2A		22596						
GAGE - Ring-Go		3A		22597						
GAGE - Ring-NoGo		2A		22598						
GAGE - Ring-NoGo		3A		22599						
1 5/16"-16 NS						*Recommended Hole Size based on 75% Thread = 1.252"*				
HAND TAP	**4**	**3B**	**6**	**17124**	**17125**	**4.00**	**1.50**	**1.1080**	**0.831**	**1.00**
HAND TAP	**6**	**2B**	**6**	**17128**	**17129**	**4.00**	**1.50**	**1.1080**	**0.831**	**1.00**
GAGE - Taperlock Style		2B		22600						
GAGE - Taperlock Style		3B		22601						
GAGE - Ring-Go		2A		22602						
GAGE - Ring-Go		3A		22603						
GAGE - Ring-NoGo		2A		22604						
GAGE - Ring-NoGo		3A		22605						
1 5/16"-18 NEF						*Recommended Hole Size based on 75% Thread = 1.259"*				
HAND TAP	**4**	**3B**	**6**	**17132**	**17133**	**4.00**	**1.50**	**1.1080**	**0.831**	**1.00**
HAND TAP	**6**	**2B**	**6**	**17136**	**17137**	**4.00**	**1.50**	**1.1080**	**0.831**	**1.00**
R.H. ROUND DIE 2-1/2"OD				13370						
GAGE - Taperlock Style		2B		23313						
GAGE - Taperlock Style		3B		23314						
GAGE - Ring-Go		2A		23722						
GAGE - Ring-Go		3A		23723						
GAGE - Ring-NoGo		2A		23724						
GAGE - Ring-NoGo		3A		23725						
1 5/16"-20 NS						*Recommended Hole Size based on 75% Thread = 1.264"*				
HAND TAP	**4**	**3B**	**6**	**17140**	**17141**	**4.00**	**1.50**	**1.1080**	**0.831**	**1.00**
GAGE - Taperlock Style		2B		22606						
GAGE - Taperlock Style		3B		22607						
GAGE - Ring-Go		2A		22608						
GAGE - Ring-Go		3A		22609						
GAGE - Ring-NoGo		2A		22610						
GAGE - Ring-NoGo		3A		22611						
1 3/8"-4 ACME						*Recommended Hole = 1.1250"*				
HAND TAP		**2G**	**4**	**17144**		**6.06**	**3.00**	**1.1080**	**0.831**	**1.06**
L.H. HAND TAP		**2G**	**4**	**17148**		**6.06**	**3.00**	**1.1080**	**0.831**	**1.06**
TANDEM TAP		**2G**	**4**	**17150**		**12.25**	**5.88**	**1.1080**	**0.831**	**1.25**
1 3/8"-6 NC						*Recommended Hole Size based on 75% Thread = 1.212"*				
L.H. HAND TAP	**4**	**3B**	**4**	**17154**	**17155**	**6.06**	**3.00**	**1.1080**	**0.831**	**1.06**
R.H. ROUND DIE 2-1/2"OD				13372						
GAGE - Taperlock Style		2B		23318						
GAGE - Taperlock Style		3B		23319						

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
1 3/8"-6 NC						*See Previous Page for Recommended Hole Size*				
GAGE - Ring-Go		2A		23728						
GAGE - Ring-Go		3A		23729						
GAGE - Ring-NoGo		2A		23730						
GAGE - Ring-NoGo		3A		23731						
1 3/8"-8 NS						*Recommended Hole Size based on 75% Thread = 1.253"*				
HAND TAP	**5**	**3B**	**4**	**17158**	**17159**	**6.06**	**3.00**	**1.1080**	**0.831**	**1.06**
R.H. ROUND DIE 2-1/2"OD				13468						
GAGE - Taperlock Style		2B		22618						
GAGE - Taperlock Style		3B		22619						
GAGE - Ring-Go		2A		22620						
GAGE - Ring-Go		3A		22621						
GAGE - Ring-NoGo		2A		22622						
GAGE - Ring-NoGo		3A		22623						
1 3/8"-12 NF						*Recommended Hole Size based on 75% Thread = 1.294"*				
L.H. HAND TAP	**4**	**3B**	**6**	**17166**	**17167**	**6.06**	**3.00**	**1.1080**	**0.831**	**1.06**
CARB-I-SERT TAP	**4**	**3B**	**4**	**41573**	**41574**	**6.06**	**2.00**	**1.1080**	**0.831**	**1.06**
R.H. ROUND DIE 2-1/2"OD				13374						
L.H. ROUND DIE 2-1/2"OD				13375						
GAGE - Taperlock Style		2B		23323						
GAGE - Taperlock Style		3B		23324						
GAGE - Ring-Go		2A		23734						
GAGE - Ring-Go		3A		23735						
GAGE - Ring-NoGo		2A		23736						
GAGE - Ring-NoGo		3A		23737						
1 3/8"-16 NS						*Recommended Hole Size based on 75% Thread = 1.314"*				
HAND TAP	**4**	**3B**	**6**	**17170**	**17171**	**4.00**	**1.50**	**1.1080**	**0.831**	**1.00**
R.H. ROUND DIE 2-1/2"OD				13378						
GAGE - Taperlock Style		2B		22630						
GAGE - Taperlock Style		3B		22631						
GAGE - Ring-Go		2A		22632						
GAGE - Ring-Go		3A		22633						
GAGE - Ring-NoGo		2A		22634						
GAGE - Ring-NoGo		3A		22635						
1 3/8"-18 NEF						*Recommended Hole Size based on 75% Thread = 1.321"*				
HAND TAP	**4**	**3B**	**6**	**17174**	**17175**	**4.00**	**1.50**	**1.1080**	**0.831**	**1.00**
HAND TAP	**6**	**2B**	**6**	**17178**	**17179**	**4.00**	**1.50**	**1.1080**	**0.831**	**1.00**
R.H. ROUND DIE 2-1/2"OD				13380						
GAGE - Taperlock Style		2B		23328						
GAGE - Taperlock Style		3B		23329						
GAGE - Ring-Go		2A		23740						
GAGE - Ring-Go		3A		23741						
GAGE - Ring-NoGo		2A		23742						
GAGE - Ring-NoGo		3A		23743						
1 3/8"-20 NS						*Recommended Hole Size based on 75% Thread = 1.326"*				
HAND TAP	**4**	**3B**	**6**	**17182**	**17183**	**4.00**	**1.50**	**1.1080**	**0.831**	**1.00**
R.H. ROUND DIE 2-1/2"OD				13382						

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
1 3/8"-20 NS						*See Previous Page for Recommended Hole Size*				
GAGE - Taperlock Style		2B		22636						
GAGE - Taperlock Style		3B		22637						
GAGE - Ring-Go		2A		22638						
GAGE - Ring-Go		3A		22639						
GAGE - Ring-NoGo		2A		22640						
GAGE - Ring-NoGo		3A		22641						
1 7/16"-18 NEF						*Recommended Hole Size based on 75% Thread = 1.384"*				
HAND TAP	**4**	**3B**	**6**	**17186**	**17187**	**4.00**	**1.50**	**1.2330**	**0.925**	**1.00**
HAND TAP	**6**	**2B**	**6**	**17190**	**17191**	**4.00**	**1.50**	**1.2330**	**0.925**	**1.00**
GAGE - Taperlock Style		2B		23333						
GAGE - Taperlock Style		3B		23334						
GAGE - Ring-Go		2A		23746						
GAGE - Ring-Go		3A		23747						
GAGE - Ring-NoGo		2A		23748						
GAGE - Ring-NoGo		3A		23749						
1 1/2"-4 ACME						*Recommended Hole Size = 1.250"*				
HAND TAP		**2G**	**4**	**17194**		**6.38**	**3.00**	**1.2330**	**0.925**	**1.13**
L.H. HAND TAP		**2G**	**4**	**17198**		**6.38**	**3.00**	**1.2330**	**0.925**	**1.13**
TANDEM TAP		**2G**	**4**	**17200**		**12.63**	**5.88**	**1.2330**	**0.925**	**1.25**
L.H. TANDEM TAP		**2G**	**4**	**17201**		**12.63**	**5.88**	**1.2330**	**0.925**	**1.25**
1 1/2"-6 NC						*Recommended Hole Size Based on 75% Thread = 1.337"*				
L.H. HAND TAP	**4**	**3B**	**4**	**17204**	**17205**	**6.38**	**3.00**	**1.2330**	**0.925**	**1.13**
10" EXTENSION TAP	**4**	**3B**	**4**	**17208**	**17209**	**10.00**	**3.00**	**1.2330**	**0.925**	**1.13**
12" EXTENSION TAP	**4**	**3B**	**4**	**17212**	**17213**	**12.00**	**3.00**	**1.2330**	**0.925**	**1.13**
CARB-I-SERT TAP	**4**	**3B**	**4**	**41576**	**41577**	**6.38**	**2.00**	**1.2330**	**0.925**	**1.13**
R.H. ROUND DIE 2-1/2"OD				13392						
L.H. ROUND DIE 2-1/2"OD				13393						
GAGE - Taperlock Style		2B		23338						
GAGE - Taperlock Style		3B		23339						
GAGE - Ring-Go		2A		23752						
GAGE - Ring-Go		3A		23753						
GAGE - Ring-NoGo		2A		23754						
GAGE - Ring-NoGo		3A		23755						
1 1/2"-8 NS						*Recommended Hole Size based on 75% Thread = 1.378"*				
HAND TAP	**5**	**3B**	**6**	**17216**	**17217**	**6.38**	**3.00**	**1.2330**	**0.925**	**1.13**
10" EXTENSION TAP	**5**	**3B**	**4**	**17220**	**17221**	**10.00**	**3.00**	**1.2330**	**0.925**	**1.13**
12" EXTENSION TAP	**5**	**3B**	**4**	**17224**	**17225**	**12.00**	**3.00**	**1.2330**	**0.925**	**1.13**
R.H. ROUND DIE 2-1/2"OD				13470						
GAGE - Taperlock Style		2B		22648						
GAGE - Taperlock Style		3B		22649						
GAGE - Ring-Go		2A		22650						
GAGE - Ring-Go		3A		22651						
GAGE - Ring-NoGo		2A		22652						
GAGE - Ring-NoGo		3A		22653						

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
1 1/2"-10 NS						*Recommended Hole Size based on 75% Thread = 1.402"*				
HAND TAP	**5**	**3B**	**6**	**17228**	**17229**	**6.38**	**3.00**	**1.2330**	**0.925**	**1.13**
1 1/2"-11 55° WHITWORTH PIPE						*Recommended Hole Size: BSPT = 1.750" / BSPP = 1.7656"*				
BSPT TAPER - MODIFIED TAP			**7**	**17231**	**17232**	**4.25**	**1.75**	**1.5000**	**1.125**	**1.00**
BSPP PARALLEL - MODIFIED TAP			**7**	**17234**	**17235**	**4.25**	**1.75**	**1.5000**	**1.125**	**1.00**
BSPT TAPER - FULL FORM TAP			**7**	**17939**		**4.25**	**1.75**	**1.5000**	**1.125**	**1.00**
BSPP PARALLEL - FULL FORM TAP			**7**	**17930**		**4.25**	**1.75**	**1.5000**	**1.125**	**1.00**
GAGE BSPP DBL END w/ handle				27062						
GAGE BSPT w/handle				27023						
1 1/2"-11.5 PIPE NPS NPT/F						*Recommended Hole Size: NPT/NPTF = 1.7344" NPSC = 1.750" / NPSM = 1.7913"*				
NPT/F LEFT HAND TAPER TAP			**7**	**17237**		**4.25**	**1.75**	**1.5000**	**1.125**	**1.00**
NPS STRAIGHT TAP			**7**	**17240**		**4.25**	**1.75**	**1.5000**	**1.125**	**1.00**
GAGE L1 NPT PLG w/handle				24392						
GAGE L1 NPT RING				24390						
GAGE L1 NPTF PLG w/handle				24482						
GAGE L3 NPTF PLG w/handle				24484						
GAGE NPTF 6 step Plain Plug w/handle				24556						
GAGE L1 NPTF RING				24518						
GAGE L2 NPTF RING				24520						
GAGE NPTF 6 step Plain Ring				24590						
1 1/2"-12 NF						*Recommended Hole Size based on 75% Thread = 1.419"*				
L.H. HAND TAP	**4**	**3B**	**6**	**17244**	**17245**	**6.38**	**3.00**	**1.2330**	**0.925**	**1.13**
HAND TAP	**6**	**2B**	**6**	**17248**	**17249**	**6.38**	**3.00**	**1.2330**	**0.925**	**1.13**
R.H. ROUND DIE 2-1/2 "OD				13394						
L.H. ROUND DIE 2-1/2 "OD				13395						
GAGE - Taperlock Style		2B		23343						
GAGE - Taperlock Style		3B		23344						
GAGE - Ring-Go		2A		23758						
GAGE - Ring-Go		3A		23759						
GAGE - Ring-NoGo		2A		23760						
GAGE - Ring-NoGo		3A		23761						
1 1/2"-16 NS						*Recommended Hole Size based on 75% Thread = 1.439"*				
HAND TAP	**4**	**3B**	**6**	**17252**	**17253**	**4.00**	**1.50**	**1.2330**	**0.925**	**1.00**
R.H. ROUND DIE 2-1/2 "OD				13398						
1 1/2"-16 NS						*See Previous Page for Recommended Hole Size*				
GAGE - Taperlock Style		2B		22660						
GAGE - Taperlock Style		3B		22661						
GAGE - Ring-Go		2A		22662						
GAGE - Ring-Go		3A		22663						
GAGE - Ring-NoGo		2A		22664						
GAGE - Ring-NoGo		3A		22665						
1 1/2"-18 NEF						*Recommended Hole Size based on 75% Thread = 1.446"*				
HAND TAP	**4**	**3B**	**6**	**17256**	**17257**	**4.00**	**1.50**	**1.2330**	**0.925**	**1.00**

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
1 1/2"-18 NEF						*See Previous Page for Recommended Hole Size*				
HAND TAP	**6**	**2B**	**6**	**17260**	**17261**	**4.00**	**1.50**	**1.2330**	**0.925**	**1.00**
R.H. ROUND DIE 2-1/2 "OD				13400						
GAGE - Taperlock Style		2B		23348						
GAGE - Taperlock Style		3B		23349						
GAGE - Ring-Go		2A		23764						
GAGE - Ring-Go		3A		23765						
GAGE - Ring-NoGo		2A		23766						
GAGE - Ring-NoGo		3A		23767						
1 1/2"-20 NS						*Recommended Hole Size based on 75% Thread = 1.451"*				
HAND TAP	**4**	**3B**	**6**	**17264**	**17265**	**4.00**	**1.50**	**1.2330**	**0.925**	**1.00**
R.H. ROUND DIE 2-1/2 "OD				13402						
GAGE - Taperlock Style		2B		22666						
GAGE - Taperlock Style		3B		22667						
GAGE - Ring-Go		2A		22668						
GAGE - Ring-Go		3A		22669						
GAGE - Ring-NoGo		2A		22670						
GAGE - Ring-NoGo		3A		22671						
1 1/2"-24 NS						*Recommended Hole Size based on 75% Thread = 1.459"*				
HAND TAP	**4**	**3B**	**8**	**17268**	**17269**	**4.00**	**1.50**	**1.2330**	**0.925**	**1.00**
1 9/16"-16 NS						*Recommended Hole Size based on 75% Thread = 1.502"*				
HAND TAP	**5**	**3B**	**6**	**17272**	**17273**	**5.00**	**2.00**	**1.3050**	**0.979**	**1.13**
1 9/16"-18 NEF						*Recommended Hole Size based on 75% Thread = 1.509"*				
HAND TAP	**5**	**3B**	**6**	**17276**	**17277**	**5.00**	**2.00**	**1.3050**	**0.979**	**1.13**
R.H. ROUND DIE 3" OD				13408						
1 5/8"-5.5 NS						*Recommended Hole Size based on 75% Thread = 1.448"*				
HAND TAP	**7**	**3B**	**6**	**17280**	**17281**	**6.69**	**3.19**	**1.3050**	**0.979**	**1.13**
1 5/8"-8 NS						*Recommended Hole Size based on 75% Thread = 1.503"*				
HAND TAP	**6**	**3B**	**6**	**17284**	**17285**	**6.69**	**3.19**	**1.3050**	**0.979**	**1.13**
1 5/8"-12 NS						*Recommended Hole Size based on 75% Thread = 1.544"*				
HAND TAP	**4**	**3B**	**6**	**17908**	**17909**	**5.00**	**2.00**	**1.3050**	**0.979**	**1.13**
HAND TAP	**6**	**2B**	**6**	**17288**	**17289**	**5.00**	**2.00**	**1.3050**	**0.979**	**1.13**
R.H. ROUND DIE 3" OD				13412						
GAGE - Trilock Style		2B		22672						
GAGE - Trilock Style		3B		22673						
GAGE - Ring-Go		2A		22674						
GAGE - Ring-Go		3A		22675						
GAGE - Ring-NoGo		2A		22676						
GAGE - Ring-NoGo		3A		22677						
1 5/8"-16 NS						*Recommended Hole Size based on 75% Thread = 1.564"*				
HAND TAP	**5**	**3B**	**6**	**17292**	**17293**	**5.00**	**2.00**	**1.3050**	**0.979**	**1.13**
R.H. ROUND DIE 3" OD				13414						
1 5/8"-18 NEF						*Recommended Hole Size based on 75% Thread = 1.571"*				
HAND TAP	**5**	**3B**	**6**	**17296**	**17297**	**5.00**	**2.00**	**1.3050**	**0.979**	**1.13**
R.H. ROUND DIE 3" OD				13416						

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM #		OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
				PLUG	BOTTOM					
1 3/4"-5 NC						*Recommended Hole Size based on 75% Thread = 1.555"*				
HAND TAP	**7**	**3B**	**6**	**17300**	**17301**	**7.00**	**3.19**	**1.4300**	**1.072**	**1.25**
R.H. ROUND DIE 3" OD				13420						
1 3/4"-8 NS						*Recommended Hole Size based on 75% Thread = 1.628"*				
HAND TAP	**6**	**3B**	**6**	**17304**	**17305**	**7.00**	**3.19**	**1.4300**	**1.072**	**1.25**
R.H. ROUND DIE 3" OD				13474						
1 3/4"-10 NS						*Recommended Hole Size based on 75% Thread = 1.652"*				
HAND TAP	**6**	**3B**	**6**	**17308**	**17309**	**7.00**	**3.19**	**1.4300**	**1.072**	**1.25**
1 3/4"-12 NS						*Recommended Hole Size based on 75% Thread = 1.669"*				
HAND TAP	**6**	**3B**	**6**	**17312**	**17313**	**5.00**	**2.00**	**1.4300**	**1.072**	**1.25**
HAND TAP	**8**	**2B**	**6**	**17316**	**17317**	**5.00**	**2.00**	**1.4300**	**1.072**	**1.25**
R.H. ROUND DIE 3" OD				13422						
GAGE - Trilock Style		2B		22678						
GAGE - Trilock Style		3B		22679						
GAGE - Ring-Go		2A		22680						
GAGE - Ring-Go		3A		22681						
GAGE - Ring-NoGo		2A		22682						
GAGE - Ring-NoGo		3A		22683						
1 3/4"-16 NS						*Recommended Hole Size based on 75% Thread = 1.689"*				
HAND TAP	**5**	**3B**	**6**	**17320**	**17321**	**5.00**	**2.00**	**1.4300**	**1.072**	**1.25**
HAND TAP	**7**	**2B**	**6**	**17324**	**17325**	**5.00**	**2.00**	**1.4300**	**1.072**	**1.25**
R.H. ROUND DIE 3" OD				13426						
1 3/4"-18 NS						*Recommended Hole Size based on 75% Thread = 1.696"*				
HAND TAP	**5**	**3B**	**6**	**17328**	**17329**	**5.00**	**2.00**	**1.4300**	**1.072**	**1.25**
R.H. ROUND DIE 3" OD				13428						
1 7/8"-5 NS						*Recommended Hole Size based on 75% Thread = 1.680"*				
HAND TAP	**7**	**3B**	**6**	**17332**	**17333**	**7.31**	**3.56**	**1.5190**	**1.139**	**1.25**
1 7/8"-8 NS						*Recommended Hole Size based on 75% Thread = 1.753"*				
HAND TAP	**6**	**3B**	**6**	**17336**	**17337**	**7.31**	**3.56**	**1.5190**	**1.139**	**1.25**
R.H. ROUND DIE 3" OD				13476						
1 7/8"-12 NS						*Recommended Hole Size based on 75% Thread = 1.794"*				
HAND TAP	**6**	**3B**	**6**	**17340**	**17341**	**5.00**	**2.00**	**1.5190**	**1.139**	**1.25**
HAND TAP	**8**	**2B**	**6**	**17344**	**17345**	**5.00**	**2.00**	**1.5190**	**1.139**	**1.25**
R.H. ROUND DIE 3" OD				13436						
GAGE - Trilock Style		2B		22684						
GAGE - Trilock Style		3B		22685						
GAGE - Ring-Go		2A		22686						
GAGE - Ring-Go		3A		22687						
GAGE - Ring-NoGo		2A		22688						
GAGE - Ring-NoGo		3A		22689						
1 7/8"-16 NS						*Recommended Hole Size based on 75% Thread = 1.814"*				
HAND TAP	**5**	**3B**	**6**	**17348**	**17349**	**5.00**	**2.00**	**1.5190**	**1.139**	**1.25**
R.H. ROUND DIE 3" OD			0	13438						
2"-4.5 NC						*Recommended Hole Size based on 75% Thread = 1.783"*				
HAND TAP	**7**	**3B**	**6**	**17354**	**17355**	**7.63**	**3.56**	**1.6440**	**1.233**	**1.38**
R.H. ROUND DIE 3" OD				13446						

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
2"-8 NS						*Recommended Hole Size based on 75% Thread = 1.878"*				
HAND TAP	**6**	**3B**	**6**	**17358**	**17359**	**7.63**	**3.56**	**1.6440**	**1.233**	**1.38**
R.H. ROUND DIE 3" OD				13478						
2"-11 55° WHITWORTH PIPE						*Recommended Hole Size: BSPT = 2.2188" / BSPP = 2.250"*				
BSPT TAPER - MODIFIED TAP			**7**	**17361**	**17362**	**4.50**	**1.75**	**1.8750**	**1.406**	**1.13**
BSPP PARALLEL - MODIFIED TAP			**7**	**17364**	**17365**	**4.50**	**1.75**	**1.8750**	**1.406**	**1.13**
BSPT TAPER - FULL FORM TAP			**7**	**17940**		**4.50**	**1.75**	**1.8750**	**1.406**	**1.13**
BSPP PARALLEL - FULL FORM TAP			**7**	**17931**		**4.50**	**1.75**	**1.8750**	**1.406**	**1.13**
2"-11.5 NPS NPT						*Recommended Hole Size: NPSC = 2.2188" / NPSM = 2.2638"*				
NPS STRAIGHT TAP			**7**	**17370**		**4.50**	**1.75**	**1.8750**	**1.406**	**1.13**
GAGE L1 NPT PLG w/handle				24395						
GAGE L1 NPT RING				24393						
2"-12 NS						*Recommended Hole Size based on 75% Thread = 1.919"*				
HAND TAP	**6**	**3B**	**6**	**17374**	**17375**	**5.00**	**2.00**	**1.6440**	**1.233**	**1.38**
HAND TAP	**8**	**2B**	**6**	**17378**	**17379**	**5.00**	**2.00**	**1.6440**	**1.233**	**1.38**
R.H. ROUND DIE 3 "OD				13452						
GAGE - Trilock Style		2B		22690						
GAGE - Trilock Style		3B		22691						
GAGE - Ring-Go		2A		22692						
GAGE - Ring-Go		3A		22693						
GAGE - Ring-NoGo		2A		22694						
GAGE - Ring-NoGo		3A		22695						
2"-16 NS						*Recommended Hole Size based on 75% Thread = 1.939"*				
HAND TAP	**5**	**3B**	**6**	**17382**	**17383**	**5.00**	**2.00**	**1.6440**	**1.233**	**1.38**
R.H. ROUND DIE 3 "OD				13456						
2"-20 NS						*Recommended Hole Size based on 75% Thread = 1.951"*				
HAND TAP	**5**	**3B**	**8**	**17386**	**17387**	**5.00**	**2.00**	**1.6440**	**1.233**	**1.38**
R.H. ROUND DIE 3 "OD				13460						
2 1/8"-8 NS						*Recommended Hole Size based on 75% Thread = 2.003"*				
HAND TAP	**6**	**3B**	**6**	**17390**	**17391**	**8.00**	**3.56**	**1.7690**	**1.327**	**1.38**
2 1/8"-12 NS						*Recommended Hole Size based on 75% Thread = 2.044"*				
HAND TAP	**6**	**3B**	**6**	**17394**	**17395**	**5.25**	**2.00**	**1.7690**	**1.327**	**1.38**
2 1/8"-16 NS						*Recommended Hole Size based on 75% Thread = 2.064"*				
HAND TAP	**5**	**3B**	**6**	**17398**	**17399**	**5.25**	**2.00**	**1.7690**	**1.327**	**1.38**
2 1/4"-4.5 NC						*Recommended Hole Size based on 75% Thread = 2.033"*				
HAND TAP	**7**	**3B**	**6**	**17402**	**17403**	**8.25**	**3.56**	**1.8940**	**1.420**	**1.44**
2 1/4"-8 NS						*Recommended Hole Size based on 75% Thread = 2.128"*				
HAND TAP	**6**	**3B**	**6**	**17406**	**17407**	**8.25**	**3.56**	**1.8940**	**1.420**	**1.44**
2 1/4"-12 NS						*Recommended Hole Size based on 75% Thread = .2169"*				
HAND TAP	**6**	**3B**	**6**	**17410**	**17411**	**5.25**	**2.00**	**1.8940**	**1.420**	**1.44**
GAGE - Trilock Style		2B		22696						
GAGE - Trilock Style		3B		22697						
GAGE - Ring-Go		2A		22698						
GAGE - Ring-Go		3A		22699						

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
2 1/4"-12 NS						*See Previous Page for Recommended Hole Size*				
GAGE - Ring-NoGo		2A		22700						
GAGE - Ring-NoGo		3A		22701						
2 1/4"-16 NS						*Recommended Hole Size based on 75% Thread = 2.189"*				
HAND TAP	5	3B	6	17414	17415	5.25	2.00	1.8940	1.420	1.44
2 3/8"-8 NS						*Recommended Hole Size based on 75% Thread = 2.253"*				
HAND TAP	6	3B	6	17418	17419	8.50	4.00	2.0190	1.514	1.44
2 3/8"-12 NS						*Recommended Hole Size based on 75% Thread = 2.294"*				
HAND TAP	6	3B	6	17422	17423	5.25	2.00	2.0190	1.514	1.44
2 3/8"-16 NS						*Recommended Hole Size based on 75% Thread = 2.314"*				
HAND TAP	5	3B	6	17426	17427	5.25	2.00	2.0190	1.514	1.44
2 1/2"-4 NC						*Recommended Hole Size based on 75% Thread = 2.256"*				
HAND TAP	7	3B	6	17430	17431	8.75	4.00	2.1000	1.575	1.50
2 1/2"-8 NS						*Recommended Hole Size based on 75% Thread = 2.378"*				
HAND TAP	6	3B	6	17434	17435	8.75	4.00	2.1000	1.575	1.50
2 1/2"-8 PIPE TAP NPT/F						*Recommended Hole Size: NPT = 2.625" / NPTF = 2.6406"*				
NPT/F TAPER TAP			7	17437		5.50	2.56	2.2500	1.687	1.25
GAGE L1 NPT PLG w/handle				24398						
GAGE L1 NPT RING				24396						
2 1/2"-12 NS						*Recommended Hole Size based on 75% Thread = 2.419"*				
HAND TAP	6	3B	6	17444	17445	5.25	2.00	2.1000	1.575	1.50
GAGE - Trilock Style		2B		22702						
GAGE - Trilock Style		3B		22703						
GAGE - Ring-Go		2A		22704						
GAGE - Ring-Go		3A		22705						
GAGE - Ring-NoGo		2A		22706						
GAGE - Ring-NoGo		3A		22707						
2 1/2"-16 NS						*Recommended Hole Size based on 75% Thread = 2.439"*				
HAND TAP	5	3B	6	17448	17449	5.25	2.00	2.1000	1.575	1.50
2 3/4"-12 NS						*Recommended Hole Size based on 75% Thread = 2.669"*				
HAND TAP	7	3B	6	17460	17461	5.50	2.00	2.1000	1.575	1.50
3"-4 NC						*Recommended Hole Size based on 75% Thread = 2.756"*				
HAND TAP	9	3B	6	17468	17469	9.75	4.56	2.5430	1.907	1.63
3"-8 NS						*Recommended Hole Size based on 75% Thread = 2.878"*				
HAND TAP	8	3B	6	17472	17473	9.75	4.56	2.5430	1.907	1.63
3"-8 PIPE TAP NPT/F						*Recommended Hole Size: NPT/F = 3.265"*				
NPT/F TAPER TAP			9	17475		6.00	2.63	2.6250	1.968	1.38
NPT/F TAPER INT THD TAP			9	17478		6.00	2.63	2.6250	1.968	1.38
GAGE L1 NPT PLG w/handle				24401						
GAGE L1 NPT RING				24399						
3"-12 NS						*Recommended Hole Size based on 75% Thread = 2.919"*				
HAND TAP	7	3B	8	17482	17483	5.50	2.00	2.1000	1.575	1.50
3"-16 NS						*Recommended Hole Size based on 75% Thread = 2.939"*				
HAND TAP	5	3B	8	17486	17487	5.50	2.00	2.1000	1.575	1.50

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	GH #	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
3 1/8"-12 NS						*Recommended Hole Size based on 75% Thread = 3.0442"*				
HAND TAP	7	2B	8	17490	17491	5.75	2.00	2.1000	1.575	1.50
3 1/4"-8 NS						*Recommended Hole Size based on 75% Thread = 3.1281"*				
HAND TAP	8	3B	6	17499	17500	10.00	4.56	2.7930	2.095	1.75
3 1/4"-12 NS						*Recommended Hole Size based on 75% Thread = 3.1692"*				
HAND TAP	7	3B	8	17503	17504	5.75	2.00	2.1000	1.575	1.50
3 1/2"-4 NC						*Recommended Hole Size based on 75% Thread = 3.256"*				
HAND TAP	9	3B	6	17507	17508	10.25	4.94	3.0080	2.256	2.00
3 1/2"-8 NS						*Recommended Hole Size based on 75% Thread = 3.378"*				
HAND TAP	8	3B	6	17511	17512	10.25	4.94	3.0080	2.256	2.00
3 1/2"-8 PIPE TAP NPT/F						*Recommended Hole Size: NPT/F = 3.75"*				
NPT/F TAPER TAP			9	17514		6.50	2.69	2.8125	2.108	1.50
NPT/F TAPER INT THD TAP			9	17517		6.50	2.69	2.8125	2.108	1.50
GAGE L1 NPT PLG w/handle				24404						
GAGE L1 NPT RING				24402						
3 1/2"-12 NS						*Recommended Hole Size based on 75% Thread = 3.4192"*				
HAND TAP	7	2B	8	17521	17522	5.75	2.00	2.1000	1.575	1.50
3 3/4"-4 NC						*Recommended Hole Size based on 75% Thread = 3.506"*				
HAND TAP	9	3B	10	17525	17526	10.50	5.31	3.2170	2.413	2.13
3 3/4"-8 NS						*Recommended Hole Size based on 75% Thread = 3.6281"*				
HAND TAP	8	3B	10	17529	17530	10.50	5.31	3.2170	2.413	2.13
3 3/4"-12 NS						*Recommended Hole Size based on 75% Thread = 3.6692"*				
HAND TAP	7	2B	10	17533	17534	6.00	2.00	2.1000	1.575	1.75
4"-4 NC						*Recommended Hole Size based on 75% Thread = 3.756"*				
HAND TAP	9	3B	10	17537	17538	10.75	5.31	3.4670	2.600	2.25
4"-8 NS						*Recommended Hole Size based on 75% Thread = 3.8781"*				
HAND TAP	8	3B	10	17541	17542	10.75	5.31	3.4670	2.600	2.25
4"-8 PIPE TAP NPT/F						*Recommended Hole Size: NPT/F = 4.25"*				
NPT/F TAPER TAP			9	17544		6.75	2.75	3.0000	2.250	1.56
NPT/F TAPER INT THD TAP			9	17547		6.75	2.75	3.0000	2.250	1.56
GAGE L1 NPT PLG w/handle				24407						
GAGE L1 NPT RING				24405						
4"-12 NS						*Recommended Hole Size based on 75% Thread = 3.9192"*				
HAND TAP	7	2B	10	17551	17552	6.00	2.00	2.1000	1.575	1.75

- **The recommended hole sizes shown are reference values, and depending on specific tapping requirements and conditions, may have to be altered. GWS Tool Group assumes no responsibility or liability of any kind as a result of the selection of tap hole sizes from this catalog.**
- **Note: For Unified, Metric and Pipe EXTENSION taps, S.T.I. tap and gage sizes, or SPECIAL taps NOT LISTED, please contact our Customer Service Dept.**
- **FOR QUESTIONS, PLEASE CONTACT OUR CUSTOMER SERVICE DEPT.**

DECIMAL AND MILLIMETER EQUIVALENT CHART

FRACTION	DECIMAL	MILLIMETERS	FRACTION	DECIMAL	MILLIMETERS
1/64	.0156	.396	**33/64**	.5156	13.096
1/32	.0312	.793	**17/32**	.5312	13.493
3/64	.0468	1.190	**35/64**	.5468	13.890
1/16	.0625	1.587	**9/16**	.5625	14.287
5/64	.0781	1.984	**37/64**	.5781	14.684
3/32	.0937	2.381	**19/32**	.5937	15.081
7/64	.1093	2.778	**39/64**	.6093	15.478
1/8	.125	3.175	**5/8**	.625	15.875
9/64	.1406	3.571	**41/64**	.6406	16.271
5/32	.1562	3.968	**21/32**	.6562	16.668
11/64	.1718	4.365	**43/64**	.6718	17.065
3/16	.1875	4.762	**11/16**	.6875	17.462
13/64	.2031	5.159	**45/64**	.7031	17.859
7/32	.2187	5.556	**23/32**	.7187	18.256
15/64	.2343	5.953	**47/64**	.7343	18.653
1/4	.250	6.350	**3/4**	.750	19.050
17/64	.2656	6.746	**49/64**	.7656	19.446
9/32	.2812	7.143	**25/32**	.7812	19.843
19/64	.2968	7.540	**51/64**	.7968	20.240
5/16	.3125	7.937	**13/16**	.8125	20.637
21/64	.3281	8.334	**53/64**	.8281	21.034
11/32	.3437	8.731	**27/32**	.8437	21.431
23/64	.3593	9.128	**55/64**	.8593	21.828
3/8	.375	9.525	**7/8**	.875	22.225
25/64	.3906	9.921	**57/64**	.8906	22.621
13/32	.4062	10.318	**29/32**	.9062	23.018
27/64	.4218	10.715	**59/64**	.9218	23.415
7/16	.4375	11.112	**15/16**	.9375	23.812
29/64	.4531	11.509	**61/64**	.9531	24.209
15/32	.4687	11.906	**31/32**	.9687	24.606
31/64	.4843	12.303	**63/64**	.9843	25.003
1/2	.500	12.700	**1"**	1.000	25.400

MILLIMETER PITCH TO THREADS PER INCH • METRIC PITCH CONVERSIONS

PITCH IN MILLIMETERS	PITCH IN INCHES	THREADS PER INCH	BASIC HEIGHT	PITCH IN MILLIMETERS	PITCH IN INCHES	THREADS PER INCH	BASIC HEIGHT
0.25	0.00984	101.6000	0.00639	**1.25**	0.04921	20.3211	0.03196
0.30	0.01181	84.6668	0.00767	**1.50**	0.05906	16.9316	0.03836
0.35	0.01378	72.5689	0.00895	**1.75**	0.06890	14.5138	0.04475
0.40	0.01575	63.4921	0.01023	**2.00**	0.07874	12.7000	0.05114
0.45	0.01772	56.4334	0.01151	**2.50**	0.09843	10.1595	0.06393
0.50	0.01969	50.8000	0.01279	**3.00**	0.11811	8.4667	0.07671
0.60	0.02362	42.3370	0.01534	**3.50**	0.13780	7.2569	0.08950
0.70	0.02756	36.2845	0.01790	**4.00**	0.15748	6.3500	0.10229
0.75	0.02953	33.8639	0.01918	**4.50**	0.17717	5.6443	0.11508
0.80	0.03150	31.7460	0.02046	**5.00**	0.19685	5.0800	0.12785
0.90	0.03543	28.2247	0.02301	**6.00**	0.23622	4.2333	0.15344
1.00	0.03937	25.4000	0.02557				

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	D#	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
M1.6 X 0.35						*Recommended Hole Size based on 75% Thread = 1.25mm*				
HAND TAP	**3**	**6H**	**2**	**20010**		**1.63**	**0.31**	**0.1410**	**0.110**	**0.19**
SPIRAL POINT TAP	**3**	**6H**		**20008**		**1.63**	**0.31**	**0.1410**	**0.110**	**0.19**
GAGE - Taperlock Style		6H		25003						
GAGE - Reversible Style		6H		25645						
GAGE - Ring-Go		6g		25205						
GAGE - Ring-NoGo		6g		25206						
M1.8 X 0.35						*Recommended Hole Size based on 75% Thread = 1.45mm*				
HAND TAP	**3**	**6H**	**2**	**20022**	**20023**	**1.69**	**0.38**	**0.1410**	**0.110**	**0.19**
SPIRAL POINT TAP	**3**	**6H**		**20020**		**1.69**	**0.38**	**0.1410**	**0.110**	**0.19**
GAGE - Taperlock Style		6H		25008						
GAGE - Reversible Style		6H		25650						
GAGE - Ring-Go		6g		25210						
GAGE - Ring-NoGo		6g		25211						
M2 X 0.4						*Recommended Hole Size based on 75% Thread = 1.6mm*				
HAND TAP	**3**	**6H**	**3**	**20034**	**20035**	**1.75**	**0.44**	**0.1410**	**0.110**	**0.19**
SPIRAL POINT TAP	**3**	**6H**	**2**	**20032**		**1.75**	**0.44**	**0.1410**	**0.110**	**0.19**
GAGE - Taperlock Style		6H		25013						
GAGE - Reversible Style		6H		25655						
GAGE - Ring-Go		6g		25215						
GAGE - Ring-NoGo		6g		25216						
M2.2 X 0.45						*Recommended Hole Size based on 75% Thread = 1.75mm*				
HAND TAP	**3**	**6H**	**3**	**20046**	**20047**	**1.75**	**0.44**	**0.1410**	**0.110**	**0.19**
SPIRAL POINT TAP	**3**	**6H**	**2**	**20044**		**1.75**	**0.44**	**0.1410**	**0.110**	**0.19**
GAGE - Taperlock Style		6H		25018						
GAGE - Reversible Style		6H		25660						
GAGE - Ring-Go		6g		25220						
GAGE - Ring-NoGo		6g		25221						
M2.5 X 0.45						*Recommended Hole Size based on 75% Thread = 2.05mm*				
HAND TAP	**3**	**6H**	**3**	**20058**	**20059**	**1.81**	**0.50**	**0.1410**	**0.110**	**0.19**
SPIRAL POINT TAP	**3**	**6H**	**2**	**20056**		**1.81**	**0.50**	**0.1410**	**0.110**	**0.19**
HAND TAP	**1**	**4H**	**3**	**20052**	**20053**	**1.81**	**0.50**	**0.1410**	**0.110**	**0.19**
SPIRAL POINT TAP	**1**	**4H**	**2**	**20050**		**1.81**	**0.50**	**0.1410**	**0.110**	**0.19**
GAGE - Taperlock Style		6H		25023						
GAGE - Reversible Style		6H		25665						
GAGE - Ring-Go		6g		25225						
GAGE - Ring-NoGo		6g		25226						
M2.6 X 0.45						*Recommended Hole Size Based on 75% Thread = 2.15mm*				
HAND TAP	**3**	**6H**	**3**	**21179**	**21180**	**1.81**	**0.50**	**0.1410**	**0.110**	**0.19**
M3 X 0.5						*Recommended Hole Size Based on 75% Thread = 2.5mm TRU-FLO at 65% Thread = 2.78mm*				
HAND TAP	**3**	**6H**	**3**	**20070**	**20071**	**1.94**	**0.63**	**0.1410**	**0.110**	**0.19**
SPIRAL POINT TAP	**3**	**6H**	**2**	**20068**		**1.94**	**0.63**	**0.1410**	**0.110**	**0.19**
REGULAR SPIRAL FLUTE TAP	**3**	**6H**	**2**	**20074**	**20075**	**1.94**	**0.63**	**0.1410**	**0.110**	**0.19**
FAST SPIRAL FLUTE TAP	**3**	**6H**	**2**	**20078**	**20079**	**1.94**	**0.63**	**0.1410**	**0.110**	**0.19**
SPIRAL POINT TAP	**5**		**2**	**21021**		**1.94**	**0.63**	**0.1410**	**0.110**	**0.19**
+.076mm SPIRAL POINT TAP	**7**		**2**	**20938**		**1.94**	**0.63**	**0.1410**	**0.110**	**0.19**

SIZE/ DESCRIPTION	D#	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
M3 X 0.5						*See Previous Page for Recommended Hole Size*				
HAND TAP	1	4H	3	20064	20065	1.94	0.63	0.1410	0.110	0.19
SPIRAL POINT TAP	1	4H	2	20062		1.94	0.63	0.1410	0.110	0.19
TRU-FLO FORM TAP	5	6H		19200	19201	1.94	0.31	0.1410	0.110	0.19
SOLID CARBIDE / HAND TAP	3	6H	3	43001	43002	1.94	0.31	0.1410	0.110	0.19
SOLID CARBIDE / SP PT TAP	3	6H	2	43003		1.94	0.31	0.1410	0.110	0.19
COST CUTTER DRILL/TAP	3	6H	2	29024		1.94	0.41	0.1410	0.110	0.19
R.H. ROUND DIE 20.6mm OD				13518						
GAGE - Taperlock Style		6H		25028						
GAGE - Reversible Style		6H		25670						
GAGE - Ring-Go		6g		25230						
GAGE - Ring-NoGo		6g		25231						
M3.5 X 0.6						*Recommended Hole Size Based on 75% Thread = 2.9mm TRU-FLO at 65% Thread = 3.24mm*				
HAND TAP	4	6H	3	20091	20092	2.00	0.69	0.1410	0.110	0.25
SPIRAL POINT TAP	4	6H	2	20089		2.00	0.69	0.1410	0.110	0.25
HAND TAP	1	4H	3	20085	20086	2.00	0.69	0.1410	0.110	0.25
SPIRAL POINT TAP	1	4H	2	20083		2.00	0.69	0.1410	0.110	0.25
REGULAR SPIRAL FLUTE TAP	4	6H	2	20101	20102	2.00	0.69	0.1410	0.110	0.25
FAST SPIRAL FLUTE TAP	4	6H	2	20105	20106	2.00	0.69	0.1410	0.110	0.25
6" EXTENSION HAND TAP	4	6H	3	20118	20119	6.00	0.69	0.1410	0.110	0.25
6" EXTENSION SPIRAL POINT TAP	4	6H	2	20116		6.00	0.69	0.1410	0.110	0.25
+.127mm HAND TAP	11	PLATING	3	20112	20113	2.00	0.69	0.1410	0.110	0.25
+.127mm SPIRAL POINT TAP	11	PLATING	2	20110		2.00	0.69	0.1410	0.110	0.25
TRU-FLO FORM TAP	6	6H		19202	19203	2.00	0.38	0.1410	0.110	0.19
SOLID CARBIDE / HAND TAP	4	6H	3	43005	43006	2.00	0.38	0.1410	0.110	0.19
SOLID CARBIDE / SP PT TAP	4	6H	2	43007		2.00	0.38	0.1410	0.110	0.19
COST CUTTER DRILL/TAP	4	6H	2	29025		2.00	0.44	0.1410	0.110	0.19
R.H. ROUND DIE 20.6mm OD				13522						
GAGE - Taperlock Style		6H		25033						
GAGE - Reversible Style		6H		25675						
GAGE - Ring-Go		6g		25235						
GAGE - Ring-NoGo		6g		25236						
M4 X 0.75						*Recommended Hole Size Based on 75% Thread = 3.25mm*				
HAND TAP	4	6H	4	21035	21036	2.13	0.75	0.1680	0.131	0.25
M4 X 0.7						*Recommended Hole Size Based on 75% Thread = 3.3mm TRU-FLO at 65% Thread = 3.69mm*				
HAND TAP	4	6H	4	20130	20131	2.13	0.75	0.1680	0.131	0.25
SPIRAL POINT TAP	4	6H	2	20128		2.13	0.75	0.1680	0.131	0.25
SPIRAL POINT TAP	5		2	21033		2.13	0.75	0.1680	0.131	0.25
HAND TAP	2	4H	4	20124	20125	2.13	0.75	0.1680	0.131	0.25
SPIRAL POINT TAP	2	4H	2	20122		2.13	0.75	0.1680	0.131	0.25
REGULAR SPIRAL FLUTE TAP	4	6H	2	20140	20141	2.13	0.75	0.1680	0.131	0.25
FAST SPIRAL FLUTE TAP	4	6H	3	20144	20145	2.13	0.75	0.1680	0.131	0.25
+.076mm SPIRAL POINT TAP	7		2	20923		2.13	0.75	0.1680	0.131	0.25
L.H. HAND TAP	4	6H	4	20136	20137	2.13	0.75	0.1680	0.131	0.25
6" EXTENSION HAND TAP	4	6H	4	20157	20158	6.00	0.75	0.1680	0.131	0.25
6" EXTENSION SPIRAL POINT TAP	4	6H	2	20155		6.00	0.75	0.1680	0.131	0.25

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	D#	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
M4 X 0.7						*See Previous Page for Recommended Hole Size*				
+.127mm HAND TAP	**11**	**PLATING**	**4**	**20151**	**20152**	**2.13**	**0.75**	**0.1680**	**0.131**	**0.25**
+.127mm SPIRAL POINT TAP	**11**	**PLATING**	**2**	**20149**		**2.13**	**0.75**	**0.1680**	**0.131**	**0.25**
TRU-FLO FORM TAP	**6**	**6H**		**19204**	**19205**	**2.13**	**0.38**	**0.1680**	**0.131**	**0.25**
SOLID CARBIDE / HAND TAP	**4**	**6H**	**4**	**43009**	**43010**	**2.13**	**0.38**	**0.1680**	**0.131**	**0.25**
SOLID CARBIDE / SP PT TAP	**4**	**6H**	**2**	**43011**		**2.13**	**0.38**	**0.1680**	**0.131**	**0.25**
COST CUTTER DRILL/TAP	**4**	**6H**	**2**	**29026**		**2.13**	**0.50**	**0.1680**	**0.131**	**0.25**
R.H. ROUND DIE 20.6mm OD				13524						
L.H. ROUND DIE 20.6mm OD				13525						
GAGE - Taperlock Style		6H		25038						
GAGE - Reversible Style		6H		25680						
GAGE - Ring-Go		6g		25240						
GAGE - Ring-NoGo		6g		25241						
M4.5 X 0.75						*Recommended Hole Size Based on 75% Thread = 3.75mm TRU-FLO at 65% Thread = 4.17mm*				
HAND TAP	**4**	**6H**	**4**	**20169**	**20170**	**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**
SPIRAL POINT TAP	**4**	**6H**	**2**	**20167**		**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**
HAND TAP	**2**	**4H**	**4**	**20163**	**20164**	**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**
SPIRAL POINT TAP	**2**	**4H**	**2**	**20161**		**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**
REGULAR SPIRAL FLUTE TAP	**4**	**6H**	**2**	**20179**	**20180**	**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**
FAST SPIRAL FLUTE TAP	**4**	**6H**	**3**	**20183**	**20184**	**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**
L.H. HAND TAP	**4**	**6H**	**4**	**20175**	**20176**	**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**
6" EXTENSION HAND TAP	**4**	**6H**	**4**	**20196**	**20197**	**6.00**	**0.88**	**0.1940**	**0.152**	**0.25**
6" EXTENSION SPIRAL POINT TAP	**4**	**6H**	**2**	**20194**		**6.00**	**0.88**	**0.1940**	**0.152**	**0.25**
+.127mm HAND TAP	**11**	**PLATING**	**4**	**20190**	**20191**	**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**
+.127mm SPIRAL POINT TAP	**11**	**PLATING**	**2**	**20188**		**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**
TRU-FLO FORM TAP	**6**	**6H**		**19206**	**19207**	**2.38**	**0.50**	**0.1940**	**0.152**	**0.25**
SOLID CARBIDE / HAND TAP	**4**	**6H**	**4**	**43013**	**43014**	**2.38**	**0.50**	**0.1940**	**0.152**	**0.25**
SOLID CARBIDE / SP PT TAP	**4**	**6H**	**2**	**43015**		**2.38**	**0.50**	**0.1940**	**0.152**	**0.25**
COST CUTTER DRILL/TAP	**4**	**6H**	**2**	**29027**		**2.38**	**0.63**	**0.1940**	**0.152**	**0.25**
R.H. ROUND DIE 20.6mm OD				13528						
GAGE - Taperlock Style		6H		25043						
GAGE - Reversible Style		6H		25685						
GAGE - Ring-Go		6g		25245						
GAGE - Ring-NoGo		6g		25246						
M5 X 0.9						*Recommended Hole Size Based on 75% Thread = 4.1mm*				
HAND TAP	**3**	**4H**	**4**	**21184**	**21185**	**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**
SPIRAL POINT TAP	**3**	**4H**	**2**	**21186**		**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**
M5 X 0.8						*Recommended Hole Size Based on 75% Thread = 4.2mm TRU-FLO at 65% Thread = 4.65mm*				
HAND TAP	**4**	**6H**	**4**	**20208**	**20209**	**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**
SPIRAL POINT TAP	**4**	**6H**	**2**	**20206**		**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**
HAND TAP	**2**	**4H**	**4**	**20202**	**20203**	**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**
SPIRAL POINT TAP	**2**	**4H**	**2**	**20200**		**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**
REGULAR SPIRAL FLUTE TAP	**4**	**6H**	**2**	**20218**	**20219**	**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**
FAST SPIRAL FLUTE TAP	**4**	**6H**	**3**	**20222**	**20223**	**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**
+.076mm SPIRAL POINT TAP	**7**		**2**	**20924**		**2.38**	**0.88**	**0.1940**	**0.152**	**0.25**

SIZE/ DESCRIPTION	D#	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
M5 X 0.8						*See Previous Page for Recommended Hole Size*				
L.H. HAND TAP	4	6H	4	20214	20215	2.38	0.88	0.1940	0.152	0.25
6" EXTENSION HAND TAP	4	6H	4	20235	20236	6.00	0.88	0.1940	0.152	0.25
6" EXTENSION SPIRAL POINT TAP	4	6H	2	20233		6.00	0.88	0.1940	0.152	0.25
+.127mm HAND TAP	11	PLATING	4	20229	20230	2.38	0.88	0.1940	0.152	0.25
+.127mm SPIRAL POINT TAP	11	PLATING	2	20227		2.38	0.88	0.1940	0.152	0.25
TRU-FLO FORM TAP	7	6H		19208	19209	2.38	0.50	0.1940	0.152	0.25
SOLID CARBIDE / HAND TAP	4	6H	4	43017	43018	2.38	0.50	0.1940	0.152	0.25
SOLID CARBIDE / SP PT TAP	4	6H	2	43019		2.38	0.50	0.1940	0.152	0.25
COST CUTTER DRILL/TAP	4	6H	2	29028		2.38	0.63	0.1940	0.152	0.25
TiN COAT / +.076mm SP PT TAP	7		2	55009		2.38	0.88	0.1940	0.152	0.25
R.H. ROUND DIE 20.6mm OD				13530						
L.H. ROUND DIE 20.6mm OD				13531						
GAGE - Taperlock Style		6H		25048						
GAGE - Reversible Style		6H		25690						
GAGE - Ring-Go		6g		25250						
GAGE - Ring-NoGo		6g		25251						
M5 X 0.5						*Recommended Hole Size Based on 75% Thread = 4.5mm*				
HAND TAP	3	6H	4	20910	20911	2.38	0.88	0.1940	0.152	0.25
SPIRAL POINT TAP	3	6H	2	20912		2.38	0.88	0.1940	0.152	0.25
GAGE - Taperlock Style		6H		22780						
GAGE - Reversible Style		6H		22781						
GAGE - Ring-Go		6g		22782						
GAGE - Ring-NoGo		6g		22783						
M5.5 X 0.9						*Recommended Hole Size Based on 75% Thread = 4.6mm*				
HAND TAP	3	4H	4	21189	21190	2.38	0.94	0.2200	0.165	0.28
SPIRAL POINT TAP	3	4H	2	21191		2.38	0.94	0.2200	0.165	0.28
M6 X 1.0						*Recommended Hole Size Based on 75% Thread = 5mm TRU-FLO at 65% Thread = 5.56mm*				
HAND TAP	5	6H	4	20247	20248	2.50	1.00	0.2550	0.191	0.31
SPIRAL POINT TAP	5	6H	2	20245		2.50	1.00	0.2550	0.191	0.31
HAND TAP	3	4H	4	20241	20242	2.50	1.00	0.2550	0.191	0.31
SPIRAL POINT TAP	3	4H	2	20239		2.50	1.00	0.2550	0.191	0.31
REGULAR SPIRAL FLUTE TAP	5	6H	3	20257	20258	2.50	1.00	0.2550	0.191	0.31
FAST SPIRAL FLUTE TAP	5	6H	3	20261	20262	2.50	1.00	0.2550	0.191	0.31
L.H. HAND TAP	5	6H	4	20253	20254	2.50	1.00	0.2550	0.191	0.31
6" EXTENSION HAND TAP	5	6H	4	20274	20275	6.00	1.00	0.2550	0.191	0.31
6" EXTENSION SPIRAL POINT TAP	5	6H	2	20272		6.00	1.00	0.2550	0.191	0.31
+.127mm HAND TAP	11	PLATING	4	20268	20269	2.50	1.00	0.2550	0.191	0.31
+.127mm SPIRAL POINT TAP	11	PLATING	2	20266		2.50	1.00	0.2550	0.191	0.31
TRU-FLO FORM TAP	8	6H		19210	19211	2.50	0.63	0.2550	0.191	0.31
SOLID CARBIDE / HAND TAP	5	6H	4	43021	43022	2.50	0.63	0.2550	0.191	0.31
SOLID CARBIDE / SP PT TAP	5	6H	2	43023		2.50	0.63	0.2550	0.191	0.31
COST CUTTER DRILL/TAP	5	6H	2	29029		2.50	0.78	0.2550	0.191	0.31
R.H. ROUND DIE 25.4mm OD				13538						
L.H. ROUND DIE 25.4mm OD				13539						

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	D#	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
M6 X 1.0						*See Previous Page for Recommended Hole Size*				
GAGE - Taperlock Style		6H		25053						
GAGE - Reversible Style		6H		25695						
GAGE - Ring-Go		6g		25255						
GAGE - Ring-NoGo		6g		25256						
M6 X 0.75						*Recommended Hole Size Based on 75% Thread = 5.25mm*				
HAND TAP	**3**	**4H**	**4**	**20280**	**20281**	**2.50**	**1.00**	**0.2550**	**0.191**	**0.31**
SPIRAL POINT TAP	**3**	**4H**	**2**	**20278**		**2.50**	**1.00**	**0.2550**	**0.191**	**0.31**
R.H. ROUND DIE 25.4mm OD				13536						
GAGE - Taperlock Style		6H		22792						
GAGE - Reversible Style		6H		22793						
GAGE - Ring-Go		6g		22794						
GAGE - Ring-NoGo		6g		22795						
M6 X 0.5						*Recommended Hole Size Based on 75% Thread = 5.5mm*				
HAND TAP	**3**	**6H**	**4**	**20976**	**20977**	**2.50**	**1.00**	**0.2550**	**0.191**	**0.31**
TiN COAT / BTM TAP	**3**	**6H**	**4**		**55011**	**2.50**	**1.00**	**0.2550**	**0.191**	**0.31**
M7 X 1.0						*Recommended Hole Size Based on 75% Thread = 6mm TRU-FLO at 65% Thread = 6.56mm*				
HAND TAP	**5**	**6H**	**4**	**20290**	**20291**	**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
SPIRAL POINT TAP	**5**	**6H**	**2**	**20288**		**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
L.H. HAND TAP	**5**	**6H**	**4**	**20295**	**20296**	**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
+.127mm HAND TAP	**11**	**PLATING**	**4**	**20309**	**20310**	**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
+.127mm SPIRAL POINT TAP	**11**	**PLATING**	**2**	**20307**		**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
TRU-FLO FORM TAP	**8**	**6H**		**19212**	**19213**	**2.72**	**0.69**	**0.3180**	**0.238**	**0.38**
SOLID CARBIDE / HAND TAP	**5**	**6H**	**4**	**43025**	**43026**	**2.72**	**0.69**	**0.3180**	**0.238**	**0.38**
SOLID CARBIDE / SP PT TAP	**5**	**6H**	**2**	**43027**		**2.72**	**0.69**	**0.3180**	**0.238**	**0.38**
COST CUTTER DRILL/TAP	**5**	**6H**	**2**	**29030**		**2.72**	**0.94**	**0.3180**	**0.238**	**0.38**
R.H. ROUND DIE 25.4mm OD				13542						
L.H. ROUND DIE 25.4mm OD				13543						
GAGE - Taperlock Style		6H		25058						
GAGE - Reversible Style		6H		25700						
GAGE - Ring-Go		6g		25260						
GAGE - Ring-NoGo		6g		25261						
M8 X 1.25						*Recommended Hole Size Based on 75% Thread = 6.75mm TRU-FLO at 65% Thread = 7.45mm*				
HAND TAP	**5**	**6H**	**4**	**20324**	**20325**	**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
SPIRAL POINT TAP	**5**	**6H**	**2**	**20322**		**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
HAND TAP	**3**	**4H**	**4**	**20319**	**20320**	**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
SPIRAL POINT TAP	**3**	**4H**	**2**	**20317**		**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
REGULAR SPIRAL FLUTE TAP	**5**	**6H**	**3**	**20333**	**20334**	**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
FAST SPIRAL FLUTE TAP	**5**	**6H**	**3**	**20337**	**20338**	**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
L.H. HAND TAP	**5**	**6H**	**4**	**20329**	**20330**	**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
6" EXTENSION HAND TAP	**5**	**6H**	**4**	**20348**	**20349**	**6.00**	**1.13**	**0.3180**	**0.238**	**0.38**
6" EXTENSION SPIRAL POINT TAP	**5**	**6H**	**2**	**21022**		**6.00**	**1.13**	**0.3180**	**0.238**	**0.38**
+.127mm HAND TAP	**11**	**PLATING**	**4**	**20343**	**20344**	**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
+.127mm SPIRAL POINT TAP	**11**	**PLATING**	**2**	**20341**		**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
TRU-FLO FORM TAP	**9**	**6H**		**19214**	**19215**	**2.72**	**0.69**	**0.3180**	**0.238**	**0.38**

SIZE/ DESCRIPTION	D#	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
M8 X 1.25						*See Previous Page for Recommended Hole Size*				
SOLID CARBIDE / HAND TAP	**5**	**6H**	**4**	**43029**	**43030**	**2.72**	**0.69**	**0.3180**	**0.238**	**0.38**
SOLID CARBIDE / SP PT TAP	**5**	**6H**	**2**	**43031**		**2.72**	**0.69**	**0.3180**	**0.238**	**0.38**
COST CUTTER DRILL/TAP	**5**	**6H**	**2**	**29031**		**2.72**	**0.94**	**0.3180**	**0.238**	**0.38**
TiN COAT / PLUG TAP	**5**	**6H**	**4**	**55002**		**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
TiN COAT / SP PT TAP	**5**	**6H**	**2**	**55001**		**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
R.H. ROUND DIE 25.4mm OD				13546						
L.H. ROUND DIE 25.4mm OD				13547						
GAGE - Taperlock Style		6H		25063						
GAGE - Reversible Style		6H		25705						
GAGE - Ring-Go		6g		25265						
GAGE - Ring-NoGo		6g		25266						
M8 X 1.0						*Recommended Hole Size Based on 75% Thread = 7mm TRU-FLO at 65% Thread = 7.56mm*				
HAND TAP	**5**	**6H**	**4**	**20358**	**20359**	**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
SPIRAL POINT TAP	**5**	**6H**	**2**	**20356**		**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
HAND TAP	**3**	**4H**	**4**	**20353**	**20354**	**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
SPIRAL POINT TAP	**3**	**4H**	**2**	**20351**		**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
L.H. HAND TAP	**5**	**6H**	**4**	**20363**	**20364**	**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
+.127mm HAND TAP	**11**	**PLATING**	**4**	**20376**	**20377**	**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
+.127mm SPIRAL POINT TAP	**11**	**PLATING**	**2**	**20374**		**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
REGULAR SPIRAL FLUTE TAP	**5**	**6H**	**3**	**20367**	**20368**	**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
FAST SPIRAL FLUTE TAP	**5**	**6H**	**3**	**20371**	**20372**	**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
TRU-FLO FORM TAP	**8**	**6H**		**19216**	**19217**	**2.72**	**0.69**	**0.3180**	**0.238**	**0.38**
SOLID CARBIDE / HAND TAP	**5**	**6H**	**4**	**43033**	**43034**	**2.72**	**0.69**	**0.3180**	**0.238**	**0.38**
R.H. ROUND DIE 25.4mm OD				13548						
L.H. ROUND DIE 25.4mm OD				13549						
GAGE - Taperlock Style		6H		25068						
GAGE - Reversible Style		6H		25710						
GAGE - Ring-Go		6g		25270						
GAGE - Ring-NoGo		6g		25271						
M8 X 0.75						*Recommended Hole Size Based on 75% Thread = 7.25mm*				
HAND TAP	**5**	**6H**	**4**	**20941**	**20942**	**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
GAGE - Taperlock Style		6H		22820						
GAGE - Reversible Style		6H		22821						
GAGE - Ring-Go		6g		22822						
GAGE - Ring-NoGo		6g		22823						
M8 X 0.5						*Recommended Hole Size Based on 75% Thread = 7.5mm*				
HAND TAP	**4**	**6H**	**4**	**21024**	**21025**	**2.72**	**1.13**	**0.3180**	**0.238**	**0.38**
M9 X 1.25						*Recommended Hole Size Based on 75% Thread = 7.75mm*				
HAND TAP	**5**	**6H**	**4**	**21038**	**21039**	**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
GAGE - Taperlock Style		6H		22832						
GAGE - Reversible Style		6H		22833						
GAGE - Ring-Go		6g		22834						
GAGE - Ring-NoGo		6g		22835						
M9 X 1.0						*Recommended Hole Size Based on 75% Thread = 8mm*				
HAND TAP	**5**	**6H**		**21041**	**21042**	**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	D#	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
M9 X 1.0						*See Previous Page for Recommended Hole Size*				
GAGE - Taperlock Style		6H		22844						
GAGE - Reversible Style		6H		22845						
GAGE - Ring-Go		6g		22846						
GAGE - Ring-NoGo		6g		22847						
M10 X 1.5						*Recommended Hole Size Based on 75% Thread = 8.5mm TRU-FLO at 65% Thread = 9.34mm*				
HAND TAP	**6**	**6H**	**4**	**20391**	**20392**	**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
SPIRAL POINT TAP	**6**	**6H**	**3**	**20389**		**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
HAND TAP	**3**	**4H**	**4**	**20386**	**20387**	**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
SPIRAL POINT TAP	**3**	**4H**	**3**	**20384**		**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
+.076mm SPIRAL POINT TAP	**7**		**3**	**21043**		**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
REGULAR SPIRAL FLUTE TAP	**6**	**6H**	**3**	**20400**	**20401**	**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
FAST SPIRAL FLUTE TAP	**6**	**6H**	**3**	**20404**	**20405**	**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
L.H. HAND TAP	**6**	**6H**	**4**	**20396**	**20397**	**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
6" EXTENSION HAND .323 SHK TAP	**6**	**6H**	**4**	**21194**	**21195**	**6.00**	**1.25**	**0.3230**	**0.242**	**0.41**
6" EXTENSION SP PT .323 SHK TAP	**6**	**6H**	**3**	**21196**		**6.00**	**1.25**	**0.3230**	**0.242**	**0.41**
6" EXTENSION HAND TAP	**6**	**6H**	**4**	**20415**	**20416**	**6.00**	**1.25**	**0.3810**	**0.286**	**0.44**
6" EXTENSION SPIRAL POINT TAP	**6**	**6H**	**3**	**21026**		**6.00**	**1.25**	**0.3810**	**0.286**	**0.44**
+.127mm HAND TAP	**11**	**PLATING**	**4**	**20410**	**20411**	**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
+.127mm SPIRAL POINT TAP	**11**	**PLATING**	**3**	**20408**		**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
TRU-FLO FORM TAP	**10**	**6H**		**19218**	**19219**	**2.94**	**0.75**	**0.3810**	**0.286**	**0.44**
SOLID CARBIDE / HAND TAP	**6**	**6H**	**4**	**43037**	**43038**	**2.94**	**0.75**	**0.3810**	**0.286**	**0.44**
SOLID CARBIDE / SP PT TAP	**6**	**6H**	**3**	**43039**		**2.94**	**0.75**	**0.3810**	**0.286**	**0.44**
COST CUTTER DRILL/TAP	**6**	**6H**	**2**	**29032**		**2.94**	**1.13**	**0.3810**	**0.286**	**0.44**
TiN COAT / SP PT x 6" TAP	**6**	**6H**	**3**	**55012**		**6.00**	**1.25**	**0.3810**	**0.286**	**0.44**
R.H. ROUND DIE 25.4mm OD				13556						
L.H. ROUND DIE 38.1mm OD				13557						
GAGE - Taperlock Style		6H		25073						
GAGE - Reversible Style		6H		25715						
GAGE - Ring-Go		6g		25275						
GAGE - Ring-NoGo		6g		25276						
M10 X 1.25						*Recommended Hole Size Based on 75% Thread = 8.75mm TRU-FLO at 65% Thread = 9.45mm*				
HAND TAP	**3**	**4H**	**4**	**20420**	**20421**	**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
SPIRAL POINT TAP	**3**	**4H**	**3**	**20418**		**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
HAND TAP	**5**	**6H**	**4**	**20425**	**20426**	**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
SPIRAL POINT TAP	**5**	**6H**	**3**	**20423**		**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
REGULAR SPIRAL FLUTE TAP	**5**	**6H**	**3**	**20434**	**20435**	**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
FAST SPIRAL FLUTE TAP	**5**	**6H**	**3**	**20438**	**20439**	**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
L.H. HAND TAP	**5**	**6H**	**4**	**20430**	**20431**	**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
+.127mm HAND TAP	**11**	**PLATING**	**4**	**20443**	**20444**	**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
+.127mm SPIRAL POINT TAP	**11**	**PLATING**	**3**	**20441**		**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
TRU-FLO FORM TAP	**9**	**6H**		**19220**	**19221**	**2.94**	**0.75**	**0.3810**	**0.286**	**0.44**
SOLID CARBIDE HAND TAP	**5**	**6H**	**4**	**43041**	**43042**	**2.94**	**0.75**	**0.3810**	**0.286**	**0.44**
SOLID CARBIDE SP PT TAP	**5**	**6H**	**3**	**43043**		**2.94**	**0.75**	**0.3810**	**0.286**	**0.44**

SIZE/ DESCRIPTION	D#	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
M10 X 1.25						*See Previous Page for Recommended Hole Size*				
TiN COAT / SP PT TAP	**5**	**6H**	**3**	**55003**		**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
R.H. ROUND DIE 38.1mm OD				13558						
L.H. ROUND DIE 38.1mm OD				13559						
GAGE - Taperlock Style		6H		25078						
GAGE - Reversible Style		6H		25720						
GAGE - Ring-Go		6g		25150						
GAGE - Ring-NoGo		6g		25151						
M10 X 1.0						*Recommended Hole Size Based on 75% Thread = 9mm*				
SPARK PL HAND TAP	**3**		**4**	**20448**	**20449**	**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
HAND TAP	**5**	**6H**	**4**	**20945**	**20946**	**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
L.H. HAND TAP	**5**	**6H**	**4**	**20949**	**20950**	**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
SPIRAL POINT TAP	**5**	**6H**	**3**	**20978**		**2.94**	**1.25**	**0.3810**	**0.286**	**0.44**
R.H. ROUND DIE 38.1mm OD				13554						
GAGE - Taperlock Style		6H		22864						
GAGE - Reversible Style		6H		22865						
GAGE - Ring-Go		6g		22866						
GAGE - Ring-NoGo		6g		22867						
M11 X 1.5						*Recommended Hole Size Based on 75% Thread = 9.5mm*				
HAND TAP	**6**	**6H**	**4**	**20453**	**20454**	**3.16**	**1.44**	**0.3230**	**0.242**	**0.41**
SPIRAL POINT TAP	**6**	**6H**	**3**	**20451**		**3.16**	**1.44**	**0.3230**	**0.242**	**0.41**
R.H. ROUND DIE 38.1mm OD				13560						
GAGE - Taperlock Style		6H		22876						
GAGE - Reversible Style		6H		22877						
GAGE - Ring-Go		6g		22878						
GAGE - Ring-NoGo		6g		22879						
M11 X 1.0						*Recommended Hole Size Based on 75% Thread = 10mm*				
HAND TAP	**5**	**6H**	**4**	**20985**	**20986**	**3.16**	**1.44**	**0.3230**	**0.242**	**0.41**
GAGE - Taperlock Style		6H		22888						
GAGE - Reversible Style		6H		22889						
GAGE - Ring-Go		6g		22890						
GAGE - Ring-NoGo		6g		22891						
M12 X 1.75						*Recommended Hole Size Based on 75% Thread = 10.25mm TRU-FLO at 65% Thread = 11.23mm*				
HAND TAP	**6**	**6H**	**4**	**20463**	**20464**	**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
SPIRAL POINT TAP	**6**	**6H**	**3**	**20461**		**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
HAND TAP	**3**	**4H**	**4**	**20458**	**20459**	**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
SPIRAL POINT TAP	**3**	**4H**	**3**	**20456**		**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
REGULAR SPIRAL FLUTE TAP	**6**	**6H**	**3**	**20472**	**20473**	**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
FAST SPIRAL FLUTE TAP	**6**	**6H**	**3**	**20476**	**20477**	**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
L.H. HAND TAP	**6**	**6H**	**4**	**20468**	**20469**	**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
6" EXTENSION HAND TAP	**6**	**6H**	**4**	**20487**	**20488**	**6.00**	**1.66**	**0.3670**	**0.275**	**0.44**
6" EXTENSION SP PT TAP	**6**	**6H**	**3**	**20913**		**6.00**	**1.66**	**0.3670**	**0.275**	**0.44**
+.127mm HAND TAP	**11**	**PLATING**	**4**	**20482**	**20483**	**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
+.127mm SPIRAL POINT TAP	**11**	**PLATING**	**3**	**20480**		**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
TRU-FLO FORM TAP	**11**	**6H**		**19222**	**19223**	**3.38**	**0.94**	**0.3670**	**0.275**	**0.44**
SOLID CARBIDE / HAND TAP	**6**	**6H**	**4**	**43045**	**43046**	**3.38**	**0.94**	**0.3670**	**0.275**	**0.44**
SOLID CARBIDE / SP PT TAP	**6**	**6H**	**3**	**43047**		**3.38**	**0.94**	**0.3670**	**0.275**	**0.44**

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	D#	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
M12 X 1.75						*See Previous Page for Recommended Hole Size*				
COST CUTTER DRILL/TAP	**6**	**6H**	**2**	**29033**		**4.06**	**1.38**	**0.3670**	**0.275**	**0.44**
TiN COAT / SP PT x 6" TAP	**6**	**6H**	**3**	**55008**		**6.00**	**1.66**	**0.3670**	**0.275**	**0.44**
R.H. ROUND DIE 38.1mm OD				13564						
L.H. ROUND DIE 38.1mm OD				13565						
GAGE - Taperlock Style		6H		25083						
GAGE - Reversible Style		6H		25725						
GAGE - Ring-Go		6g		25280						
GAGE - Ring-NoGo		6g		25281						
M12 X 1.5						*Recommended Hole Size Based on 75% Thread = 10.50mm*				
HAND TAP	**6**	**6H**	**4**	**20906**	**20907**	**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
SPIRAL POINT TAP	**6**	**6H**	**3**	**21027**		**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
TiN COAT / SP PT TAP	**6**	**6H**	**3**	**55013**		**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
GAGE - Taperlock Style		6H		22900						
GAGE - Reversible Style		6H		22901						
GAGE - Ring-Go		6g		22902						
GAGE - Ring-NoGo		6g		22903						
M12 X 1.25						*Recommended Hole Size Based on 75% Thread = 10.75mm TRU-FLO at 65% Thread = 11.45mm*				
HAND TAP	**5**	**6H**	**4**	**20497**	**20498**	**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
SPIRAL POINT TAP	**5**	**6H**	**3**	**20495**		**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
HAND TAP	**3**	**4H**	**4**	**20492**	**20493**	**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
SPIRAL POINT TAP	**3**	**4H**	**3**	**20490**		**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
REGULAR SPIRAL FLUTE TAP	**5**	**6H**	**3**	**20506**	**20507**	**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
FAST SPIRAL FLUTE TAP	**5**	**6H**	**3**	**20510**	**20511**	**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
L.H. HAND TAP	**5**	**6H**	**4**	**20502**	**20503**	**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
+.127mm HAND TAP	**11**	**PLATING**	**4**	**20515**	**20516**	**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
TRU-FLO FORM TAP	**10**	**6H**		**19224**	**19225**	**3.38**	**0.94**	**0.3670**	**0.275**	**0.44**
TiN COAT / REG SPIRAL FLT TAP	**5**	**6H**	**3**	**55004**		**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
R.H. ROUND DIE 38.1mm OD				13566						
L.H. ROUND DIE 38.1mm OD				13567						
GAGE - Taperlock Style		6H		25088						
GAGE - Reversible Style		6H		25730						
GAGE - Ring-Go		6g		25285						
GAGE - Ring-NoGo		6g		25286						
M12 X 1.0						*Recommended Hole Size Based on 75% Thread = 11mm*				
HAND TAP	**5**	**6H**	**4**	**20890**	**20891**	**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
SPIRAL POINT TAP	**5**	**6H**	**3**	**20914**		**3.38**	**1.66**	**0.3670**	**0.275**	**0.44**
GAGE - Taperlock Style		6H		22920						
GAGE - Reversible Style		6H		22921						
GAGE - Ring-Go		6g		22922						
GAGE - Ring-NoGo		6g		22923						
M14 X 2.0						*Recommended Hole Size Based on 75% Thread = 12mm TRU-FLO at 65% Thread = 13.13mm*				
HAND TAP	**7**	**6H**	**4**	**20530**	**20531**	**3.59**	**1.66**	**0.4290**	**0.322**	**0.50**
SPIRAL POINT TAP	**7**	**6H**	**3**	**20528**		**3.59**	**1.66**	**0.4290**	**0.322**	**0.50**
HAND TAP	**3**	**4H**	**4**	**20525**	**20526**	**3.59**	**1.66**	**0.4290**	**0.322**	**0.50**
SPIRAL POINT TAP	**3**	**4H**	**3**	**20523**		**3.59**	**1.66**	**0.4290**	**0.322**	**0.50**

SIZE/ DESCRIPTION	D#	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
M14 X 2.0						*See Previous Page for Recommended Hole Size*				
L.H. HAND TAP	**7**	**6H**	**4**	**20535**	**20536**	**3.59**	**1.66**	**0.4290**	**0.322**	**0.50**
TRU-FLO FORM TAP	**12**	**6H**		**19226**	**19227**	**3.59**	**1.00**	**0.4290**	**0.322**	**0.50**
R.H. ROUND DIE 38.1mm OD				13570						
L.H. ROUND DIE 38.1mm OD				13571						
GAGE - Taperlock Style		6H		25093						
GAGE - Reversible Style		6H		25735						
GAGE - Ring-Go		6g		25290						
GAGE - Ring-NoGo		6g		25291						
M14 X 1.5						*Recommended Hole Size Based on 75% Thread = 12.5mm TRU-FLO at 65% Thread = 13.34mm*				
HAND TAP	**6**	**6H**	**4**	**20546**	**20547**	**3.59**	**1.66**	**0.4290**	**0.322**	**0.50**
SPIRAL POINT TAP	**6**	**6H**	**3**	**20543**		**3.59**	**1.66**	**0.4290**	**0.322**	**0.50**
HAND TAP	**3**	**4H**	**4**	**20540**	**20541**	**3.59**	**1.66**	**0.4290**	**0.322**	**0.50**
SPIRAL POINT TAP	**3**	**4H**	**3**	**20538**		**3.59**	**1.66**	**0.4290**	**0.322**	**0.50**
L.H. HAND TAP	**6**	**6H**	**4**	**20551**	**20552**	**3.59**	**1.66**	**0.4290**	**0.322**	**0.50**
TRU-FLO FORM TAP	**11**	**6H**		**19228**	**19229**	**3.59**	**1.00**	**0.4290**	**0.322**	**0.50**
R.H. ROUND DIE 38.1mm OD				13572						
L.H. ROUND DIE 38.1mm OD				13573						
GAGE - Taperlock Style		6H		25098						
GAGE - Reversible Style		6H		25740						
GAGE - Ring-Go		6g		25295						
GAGE - Ring-NoGo		6g		25296						
M14 X 1.25						*Recommended Hole Size Based on 75% Thread = 12.75mm*				
SPARK PL HAND TAP	**4**		**4**	**20556**	**20557**	**3.59**	**1.66**	**0.4290**	**0.322**	**0.50**
R.H. ROUND DIE 38.1mm OD				13568						
GAGE - Taperlock Style		6H		22940						
GAGE - Reversible Style		6H		22941						
GAGE - Ring-Go		6g		22942						
GAGE - Ring-NoGo		6g		22943						
M14 X 1.0						*Recommended Hole Size Based on 75% Thread = 13mm*				
HAND TAP	**5**	**6H**	**4**	**20902**	**20903**	**3.59**	**1.66**	**0.4290**	**0.322**	**0.50**
GAGE - Taperlock Style		6H		22944						
GAGE - Ring-Go		6g		22946						
GAGE - Ring-NoGo		6g		22947						
M15 X 1.0						*Recommended Hole Size Based on 75% Thread = 14mm*				
HAND TAP	**5**	**6H**	**4**	**20989**	**20990**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
GAGE - Taperlock Style		6H		22948						
GAGE - Reversible Style		6H		22949						
GAGE - Ring-Go		6g		22950						
GAGE - Ring-NoGo		6g		22951						
M16 X 2.0						*Recommended Hole Size Based on 75% Thread = 14mm TRU-FLO at 65% Thread = 15.13mm*				
HAND TAP	**7**	**6H**	**4**	**20566**	**20567**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
SPIRAL POINT TAP	**7**	**6H**	**3**	**20564**		**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
HAND TAP	**4**	**4H**	**4**	**20561**	**20562**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
SPIRAL POINT TAP	**4**	**4H**	**3**	**20559**		**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	D#	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
M16 X 2.0						*See Previous Page for Recommended Hole Size*				
L.H. HAND TAP	**7**	**6H**	**4**	**20571**	**20572**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
6" EXTENSION HAND TAP	**7**	**6H**	**4**	**20953**	**20954**	**6.00**	**1.81**	**0.4800**	**0.360**	**0.56**
6" EXTENSION SPIRAL POINT TAP	**7**	**6H**	**3**	**21028**		**6.00**	**1.81**	**0.4800**	**0.360**	**0.56**
TRU-FLO FORM TAP	**14**	**6H**		**19230**	**19231**	**3.81**	**1.09**	**0.4800**	**0.360**	**0.56**
TiN COAT / HAND TAP x 6" TAP	**7**	**6H**	**4**	**55010**		**6.00**	**1.81**	**0.4800**	**0.360**	**0.56**
+.127mm HAND TAP	**11**	**PLATING**	**4**	**20576**	**20577**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
+.127mm SPIRAL POINT TAP	**11**	**PLATING**	**3**	**20574**		**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
R.H. ROUND DIE 38.1mm OD				13576						
L.H. ROUND DIE 38.1mm OD				13577						
GAGE - Taperlock Style		6H		25103						
GAGE - Reversible Style		6H		25745						
GAGE - Ring-Go		6g		25300						
GAGE - Ring-NoGo		6g		25301						
M16 X 1.5						*Recommended Hole Size Based on 75% Thread = 14.5mm*				
HAND TAP	**6**	**6H**	**4**	**20586**	**20587**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
SPIRAL POINT TAP	**6**	**6H**	**3**	**20584**		**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
HAND TAP	**3**	**4H**	**4**	**20581**	**20582**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
SPIRAL POINT TAP	**3**	**4H**	**3**	**20579**		**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
L.H. HAND TAP	**6**	**6H**	**4**	**20591**	**20592**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
R.H. ROUND DIE 38.1mm OD				13578						
L.H. ROUND DIE 38.1mm OD				13579						
GAGE - Taperlock Style		6H		25108						
GAGE - Reversible Style		6H		25750						
GAGE - Ring-Go		6g		25305						
GAGE - Ring-NoGo		6g		25306						
M16 X 1.0						*Recommended Hole Size Based on 75% Thread = 15mm*				
HAND TAP	**5**	**6H**	**4**	**21045**	**21046**	**3.81**	**1.81**	**0.4800**	**0.360**	**0.56**
GAGE - Taperlock Style		6H		22976						
GAGE - Reversible Style		6H		22977						
GAGE - Ring-Go		6g		22978						
GAGE - Ring-NoGo		6g		22979						
M18 X 2.5						*Recommended Hole Size Based on 75% Thread = 15.5mm*				
HAND TAP	**7**	**6H**	**4**	**20601**	**20602**	**4.03**	**1.81**	**0.5420**	**0.406**	**0.63**
SPIRAL POINT TAP	**7**	**6H**	**3**	**20599**		**4.03**	**1.81**	**0.5420**	**0.406**	**0.63**
L.H. HAND TAP	**7**	**6H**	**4**	**20606**	**20607**	**4.03**	**1.81**	**0.5420**	**0.406**	**0.63**
R.H. ROUND DIE 38.1mm OD				13584						
L.H. ROUND DIE 38.1mm OD				13585						
GAGE - Taperlock Style		6H		25113						
GAGE - Reversible Style		6H		25755						
GAGE - Ring-Go		6g		25310						
GAGE - Ring-NoGo		6g		25311						
M18 X 1.5						*Recommended Hole Size Based on 75% Thread = 16.5mm TRU-FLO at 65% Thread = 17.34mm*				
HAND TAP	**6**	**6H**	**4**	**20621**	**20622**	**4.03**	**1.81**	**0.5420**	**0.406**	**0.63**
SPARK PL HAND TAP	**4**		**4**	**20616**	**20617**	**4.03**	**1.81**	**0.5420**	**0.406**	**0.63**

SIZE/ DESCRIPTION	D#	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
M18 X 1.5						*See Previous Page for Recommended Hole Size*				
HAND TAP	**3**	**4H**	**4**	**20611**	**20612**	**4.03**	**1.81**	**0.5420**	**0.406**	**0.63**
L.H. HAND TAP	**6**	**6H**	**4**	**20626**	**20627**	**4.03**	**1.81**	**0.5420**	**0.406**	**0.63**
TRU-FLO FORM TAP	**12**	**6H**		**19232**	**19233**	**4.03**	**1.09**	**0.5420**	**0.406**	**0.63**
R.H. ROUND DIE 38.1mm OD				13586						
GAGE - Taperlock Style		6H		25118						
GAGE - Reversible Style		6H		25760						
GAGE - Ring-Go		6g		25315						
GAGE - Ring-NoGo		6g		25316						
M18 X 1.0						*Recommended Hole Size Based on 75% Thread = 17mm*				
HAND TAP	**5**	**6H**	**4**	**20894**	**20895**	**4.03**	**1.81**	**0.5420**	**0.406**	**0.63**
GAGE - Taperlock Style		6H		22988						
GAGE - Reversible Style		6H		22989						
GAGE - Ring-Go		6g		22990						
GAGE - Ring-NoGo		6g		22991						
M20 X 2.5						*Recommended Hole Size Based on 75% Thread = 17.5mm*				
HAND TAP	**7**	**6H**	**4**	**20636**	**20637**	**4.47**	**2.00**	**0.6520**	**0.489**	**0.69**
SPIRAL POINT TAP	**7**	**6H**	**3**	**20634**		**4.47**	**2.00**	**0.6520**	**0.489**	**0.69**
HAND TAP	**4**	**4H**	**4**	**20631**	**20632**	**4.47**	**2.00**	**0.6520**	**0.489**	**0.69**
FAST SPIRAL FLUTE TAP	**7**	**6H**	**4**	**21051**	**21052**	**4.47**	**2.00**	**0.6520**	**0.489**	**0.69**
L.H. HAND TAP	**7**	**6H**	**4**	**20641**	**20642**	**4.47**	**2.00**	**0.6520**	**0.489**	**0.69**
6" EXTENSION HAND TAP TAP	**7**	**6H**	**4**	**20933**	**20934**	**6.00**	**2.00**	**0.6520**	**0.489**	**0.69**
+.127mm HAND TAP	**11**	**PLATING**	**4**	**20646**	**20647**	**4.47**	**2.00**	**0.6520**	**0.489**	**0.69**
TiN COAT / SP PT TAP	**7**	**6H**	**3**	**55005**		**4.47**	**2.00**	**0.6520**	**0.489**	**0.69**
TiN COAT / HAND TAP	**7**	**6H**	**4**	**55006**		**4.47**	**2.00**	**0.6520**	**0.489**	**0.69**
R.H. ROUND DIE 50.8mm OD				13592						
L.H. ROUND DIE 50.8mm OD				13593						
GAGE - Taperlock Style		6H		25123						
GAGE - Ring-Go		6g		25320						
GAGE - Ring-NoGo		6g		25321						
M20 X 1.5						*Recommended Hole Size Based on 75% Thread = 18.5mm*				
HAND TAP	**6**	**6H**	**4**	**20656**	**20657**	**4.47**	**2.00**	**0.6520**	**0.489**	**0.69**
HAND TAP	**3**	**4H**	**4**	**20651**	**20652**	**4.47**	**2.00**	**0.6520**	**0.489**	**0.69**
L.H. HAND TAP	**6**	**6H**	**4**	**20661**	**20662**	**4.47**	**2.00**	**0.6520**	**0.489**	**0.69**
+.127mm HAND TAP	**11**	**PLATING**	**4**	**20666**	**20667**	**4.47**	**2.00**	**0.6520**	**0.489**	**0.69**
R.H. ROUND DIE 50.8mm OD				13594						
L.H. ROUND DIE 50.8mm OD				13595						
GAGE - Taperlock Style		6H		25128						
GAGE - Ring-Go		6g		25325						
GAGE - Ring-NoGo		6g		25326						
M20 X 1.0						*Recommended Hole Size Based on 75% Thread = 19mm*				
HAND TAP	**6**	**6H**	**4**	**21048**	**21049**	**4.47**	**2.00**	**0.6520**	**0.489**	**0.69**
GAGE - Taperlock Style		6H		21512						
GAGE - Ring-Go		6g		21513						
GAGE - Ring-NoGo		6g		21514						

TAPS, DIES & GAGES

SIZE/ DESCRIPTION	D#	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
M22 X 2.5						*Recommended Hole Size Based on 75% Thread = 19.5mm*				
HAND TAP	**7**	**6H**	**4**	**20676**	**20677**	**4.69**	**2.22**	**0.6970**	**0.523**	**0.75**
HAND TAP	**4**	**4H**	**4**	**20671**	**20672**	**4.69**	**2.22**	**0.6970**	**0.523**	**0.75**
L.H. HAND TAP	**7**	**6H**	**4**	**20681**	**20682**	**4.69**	**2.22**	**0.6970**	**0.523**	**0.75**
R.H. ROUND DIE 50.8mm OD				13598						
GAGE - Taperlock Style		6H		25133						
GAGE - Ring-Go		6g		25330						
GAGE - Ring-NoGo		6g		25331						
M22 X 1.5						*Recommended Hole Size Based on 75% Thread = 20.5mm*				
HAND TAP	**6**	**6H**	**4**	**20691**	**20692**	**4.69**	**2.22**	**0.6970**	**0.523**	**0.75**
HAND TAP	**3**	**4H**	**4**	**20686**	**20687**	**4.69**	**2.22**	**0.6970**	**0.523**	**0.75**
L.H. HAND TAP	**6**	**6H**	**4**	**20696**	**20697**	**4.69**	**2.22**	**0.6970**	**0.523**	**0.75**
+.127mm HAND TAP	**11**	**PLATING**	**4**	**20701**	**20702**	**4.69**	**2.22**	**0.6970**	**0.523**	**0.75**
R.H. ROUND DIE 50.8mm OD				13600						
GAGE - Taperlock Style		6H		25138						
GAGE - Ring-Go		6g		25335						
GAGE - Ring-NoGo		6g		25336						
M24 X 3.0						*Recommended Hole Size Based on 75% Thread = 21mm*				
HAND TAP	**8**	**6H**	**4**	**20711**	**20712**	**4.91**	**2.22**	**0.7600**	**0.570**	**0.75**
SPIRAL POINT TAP	**8**	**6H**	**3**	**21029**		**4.91**	**2.22**	**0.7600**	**0.570**	**0.75**
HAND TAP	**4**	**4H**	**4**	**20706**	**20707**	**4.91**	**2.22**	**0.7600**	**0.570**	**0.75**
L.H. HAND TAP	**8**	**6H**	**4**	**20716**	**20717**	**4.91**	**2.22**	**0.7600**	**0.570**	**0.75**
+.127mm HAND TAP	**11**	**PLATING**	**4**	**20721**	**20722**	**4.91**	**2.22**	**0.7600**	**0.570**	**0.75**
TiN COAT / HAND TAP	**8**	**6H**	**4**	**55007**		**4.91**	**2.22**	**0.7600**	**0.570**	**0.75**
R.H. ROUND DIE 50.8mm OD				13604						
L.H. ROUND DIE 50.8mm OD				13605						
GAGE - Taperlock Style		6H		25143						
GAGE - Ring-Go		6g		25340						
GAGE - Ring-NoGo		6g		25341						
M24 X 2.0						*Recommended Hole Size Based on 75% Thread = 22mm*				
HAND TAP	**7**	**6H**	**4**	**20731**	**20732**	**4.91**	**2.22**	**0.7600**	**0.570**	**0.75**
HAND TAP	**4**	**4H**	**4**	**20726**	**20727**	**4.91**	**2.22**	**0.7600**	**0.570**	**0.75**
L.H. HAND TAP	**7**	**6H**	**4**	**20736**	**20737**	**4.91**	**2.22**	**0.7600**	**0.570**	**0.75**
R.H. ROUND DIE 50.8mm OD				13606						
L.H. ROUND DIE 50.8mm OD				13607						
GAGE - Taperlock Style		6H		25148						
GAGE - Ring-Go		6g		25345						
GAGE - Ring-NoGo		6g		25346						
M24 X 1.5						*Recommended Hole Size Based on 75% Thread = 22.5mm*				
HAND TAP	**6**	**6H**	**4**	**20917**	**20918**	**4.91**	**2.22**	**0.7600**	**0.570**	**0.75**
GAGE - Taperlock Style		6H		21545						
GAGE - Ring-Go		6g		21546						
GAGE - Ring-NoGo		6g		21547						
M25 X 1.5						*Recommended Hole Size Based on 75% Thread = 23.5mm*				
HAND TAP	**6**	**6H**	**4**	**21031**	**21032**	**5.13**	**2.50**	**0.8000**	**0.600**	**0.81**
GAGE - Taperlock Style		6H		21548						

SIZE/ DESCRIPTION	D#	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
M25 X 1.5						*See Previous Page for Recommended Hole Size*				
GAGE - Ring-Go		6g		21549						
GAGE - Ring-NoGo		6g		21550						
M26 X 1.5						*Recommended Hole Size Based on 75% Thread = 24.5mm*				
HAND TAP	**6**	**6H**	**6**	**20981**	**20982**	**4.00**	**1.50**	**0.8960**	**0.672**	**0.88**
GAGE - Taperlock Style		6H		21557						
GAGE - Ring-Go		6g		21558						
GAGE - Ring-NoGo		6g		21559						
M27 X 3.0						*Recommended Hole Size Based on 75% Thread = 24mm*				
HAND TAP	**8**	**6H**	**4**	**20746**	**20747**	**5.13**	**2.50**	**0.8960**	**0.672**	**0.88**
HAND TAP	**5**	**4H**	**4**	**20741**	**20742**	**5.13**	**2.50**	**0.8960**	**0.672**	**0.88**
L.H. HAND TAP	**8**	**6H**	**4**	**20751**	**20752**	**5.13**	**2.50**	**0.8960**	**0.672**	**0.88**
R.H. ROUND DIE 63.5mm OD				13614						
GAGE - Taperlock Style		6H		25158						
GAGE - Ring-Go		6g		25350						
GAGE - Ring-NoGo		6g		25351						
M27 X 2.0						*Recommended Hole Size Based on 75% Thread = 25mm*				
HAND TAP	**7**	**6H**	**4**	**20761**	**20762**	**5.13**	**2.50**	**0.8960**	**0.672**	**0.88**
HAND TAP	**5**	**4H**	**4**	**20756**	**20757**	**5.13**	**2.50**	**0.8960**	**0.672**	**0.88**
R.H. ROUND DIE 63.5mm OD				13616						
GAGE - Taperlock Style		6H		25163						
GAGE - Ring-Go		6g		25355						
GAGE - Ring-NoGo		6g		25356						
M27 X 1.5						*Recommended Hole Size Based on 75% Thread = 25.5mm*				
HAND TAP	**6**	**6H**	**6**	**21057**	**21058**	**4.00**	**1.50**	**0.8960**	**0.672**	**0.88**
GAGE - Taperlock Style		6H		21578						
GAGE - Ring-Go		6g		21579						
GAGE - Ring-NoGo		6g		21580						
M30 X 3.5						*Recommended Hole Size Based on 75% Thread = 26.5mm*				
HAND TAP	**9**	**6H**	**4**	**20776**	**20777**	**5.44**	**2.56**	**1.0210**	**0.766**	**1.00**
HAND TAP	**5**	**4H**	**4**	**20771**	**20772**	**5.44**	**2.56**	**1.0210**	**0.766**	**1.00**
L.H. HAND TAP	**9**	**6H**	**4**	**20781**	**20782**	**5.44**	**2.56**	**1.0210**	**0.766**	**1.00**
R.H. ROUND DIE 63.5mm OD				13624						
L.H. ROUND DIE 63.5mm OD				13625						
GAGE - Taperlock Style		6H		25168						
GAGE - Ring-Go		6g		25360						
GAGE - Ring-NoGo		6g		25361						
M30 X 2.0						*Recommended Hole Size Based on 75% Thread = 26mm*				
HAND TAP	**7**	**6H**	**4**	**20791**	**20792**	**5.44**	**2.56**	**1.0210**	**0.766**	**1.00**
HAND TAP	**5**	**4H**	**4**	**20786**	**20787**	**5.44**	**2.56**	**1.0210**	**0.766**	**1.00**
R.H. ROUND DIE 63.5mm OD				13626						
GAGE - Taperlock Style		6H		25173						
GAGE - Ring-Go		6g		25365						
GAGE - Ring-NoGo		6g		25366						
M30 X 1.5						*Recommended Hole Size Based on 75% Thread = 28.5mm*				
HAND TAP	**6**	**6H**	**6**	**20898**	**20899**	**4.00**	**1.50**	**1.0210**	**0.766**	**1.00**

SIZE/ DESCRIPTION	D#	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
M30 X 1.5						*See Previous Page for Recommended Hole Size*				
GAGE - Taperlock Style		6H		21593						
GAGE - Ring-Go		6g		21594						
GAGE - Ring-NoGo		6g		21595						
M32 X 2.0						*Recommended Hole Size Based on 75% Thread = 30mm*				
HAND TAP	**7**	**6H**	**6**	**21199**	**21200**	**5.75**	**2.56**	**1.0210**	**0.766**	**1.00**
GAGE - Taperlock Style		6H		21602						
GAGE - Ring-Go		6g		21603						
GAGE - Ring-NoGo		6g		21604						
M32 X 1.5						*Recommended Hole Size Based on 75% Thread = 30.5mm*				
HAND TAP	**6**	**6H**	**6**	**21060**	**21061**	**4.00**	**1.50**	**1.0210**	**0.766**	**1.00**
GAGE - Taperlock Style		6H		21611						
GAGE - Ring-Go		6g		21612						
GAGE - Ring-NoGo		6g		21613						
M33 X 3.5						*Recommended Hole Size Based on 75% Thread = 29.5mm*				
HAND TAP	**9**	**6H**	**4**	**20806**	**20807**	**5.75**	**2.56**	**1.1080**	**0.831**	**1.06**
HAND TAP	**5**	**4H**	**4**	**20801**	**20802**	**5.75**	**2.56**	**1.1080**	**0.831**	**1.06**
GAGE - Taperlock Style		6H		25178						
GAGE - Ring-Go		6g		25370						
GAGE - Ring-NoGo		6g		25371						
M33 X 2.0						*Recommended Hole Size Based on 75% Thread = 31mm*				
HAND TAP	**7**	**6H**	**4**	**20821**	**20822**	**5.75**	**2.56**	**1.1080**	**0.831**	**1.06**
HAND TAP	**5**	**4H**	**4**	**20816**	**20817**	**5.75**	**2.56**	**1.1080**	**0.831**	**1.06**
R.H. ROUND DIE 63.5mm OD				13634						
GAGE - Taperlock Style		6H		25183						
GAGE - Ring-Go		6g		25375						
GAGE - Ring-NoGo		6g		25376						
M35 X 1.5						*Recommended Hole Size Based on 75% Thread = 33.5mm*				
HAND TAP	**6**	**6H**	**6**	**20957**	**20958**	**4.00**	**1.50**	**1.1080**	**0.831**	**1.00**
GAGE - Taperlock Style		6H		21632						
GAGE - Ring-Go		6g		21633						
GAGE - Ring-NoGo		6g		21634						
M36 X 4.0						*Recommended Hole Size Based on 75% Thread = 32mm*				
HAND TAP	**9**	**6H**	**4**	**20836**	**20837**	**6.06**	**3.00**	**1.2330**	**0.925**	**1.13**
HAND TAP	**5**	**4H**	**4**	**20831**	**20832**	**6.06**	**3.00**	**1.2330**	**0.925**	**1.13**
R.H. ROUND DIE 63.5mm OD				13638						
GAGE - Taperlock Style		6H		25188						
GAGE - Ring-Go		6g		25380						
GAGE - Ring-NoGo		6g		25381						
M36 X 3.0						*Recommended Hole Size Based on 75% Thread = 33mm*				
HAND TAP	**8**	**6H**	**4**	**20851**	**20852**	**6.06**	**3.00**	**1.2330**	**0.925**	**1.13**
HAND TAP	**5**	**4H**	**4**	**20846**	**20847**	**6.06**	**3.00**	**1.2330**	**0.925**	**1.13**
R.H. ROUND DIE 63.5mm OD				13640						
GAGE - Taperlock Style		6H		25193						
GAGE - Ring-Go		6g		25385						
GAGE - Ring-NoGo		6g		25386						

SIZE/ DESCRIPTION	D#	CLASS OF FIT	# FLUTES	ITEM # PLUG	ITEM # BOTTOM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
M36 X 2.0						*Recommended Hole Size Based on 75% Thread = 34mm*				
HAND TAP	**7**	**6H**	**6**	**20921**	**20922**	**6.06**	**3.00**	**1.2330**	**0.925**	**1.13**
GAGE - Taperlock Style		6H		21653						
GAGE - Ring-Go		6g		21654						
GAGE - Ring-NoGo		6g		21655						
M36 X 1.5						*Recommended Hole Size Based on 75% Thread = 34.5 mm*				
HAND TAP	**6**	**6H**	**6**	**20961**	**20962**	**4.00**	**1.50**	**1.2330**	**0.925**	**1.00**
GAGE - Taperlock Style		6H		21662						
GAGE - Ring-Go		6g		21663						
GAGE - Ring-NoGo		6g		21664						
M39 X 4.0						*Recommended Hole Size Based on 75% Thread = 35mm*				
HAND TAP	**9**	**6H**	**6**	**20866**	**20867**	**6.69**	**3.19**	**1.3050**	**0.979**	**1.13**
HAND TAP	**6**	**4H**	**6**	**20861**	**20862**	**6.69**	**3.19**	**1.3050**	**0.979**	**1.13**
GAGE - Tri-Lock Style		6H		25198						
GAGE - Ring-Go		6g		25390						
GAGE - Ring-NoGo		6g		25391						
M39 X 3.0						*Recommended Hole Size Based on 75% Thread = 36mm*				
HAND TAP	**8**	**6H**	**6**	**20881**	**20882**	**6.69**	**3.19**	**1.3050**	**0.979**	**1.13**
HAND TAP	**6**	**4H**	**6**	**20876**	**20877**	**6.69**	**3.19**	**1.3050**	**0.979**	**1.13**
R.H. ROUND DIE 76.2mm OD				13648						
GAGE - Tri-Lock Style		6H		25203						
GAGE - Ring-Go		6g		25395						
GAGE - Ring-NoGo		6g		25396						
M40 X 1.5						*Recommended Hole Size Based on 75% Thread = 38.5mm*				
HAND TAP	**6**	**6H**	**6**	**20972**	**20973**	**5.00**	**2.00**	**1.3050**	**0.979**	**1.13**
M42 X 4.5						*Recommended Hole Size Based on 75% Thread = 37.5mm*				
HAND TAP	**10**	**6H**	**6**	**20965**	**20966**	**7.00**	**3.19**	**1.4300**	**1.072**	**1.25**
M42 X 1.5						*Recommended Hole Size Based on 75% Thread = 40.5mm*				
HAND TAP	**6**	**6H**	**6**	**21063**	**21064**	**5.00**	**2.00**	**1.4300**	**1.072**	**1.25**

- **The recommended hole sizes shown are reference values, and depending on specific tapping requirements and conditions, may have to be altered. GWS Tool Group assumes no responsibility or liability of any kind as a result of the selection of tap hole sizes from this catalog.**
- **Dimensions shown for metric taps are decimal inch values, and are not metric (mm) values.**
- **Note: For Unified, Metric and Pipe EXTENSION taps, S.T.I. tap and gage sizes, or SPECIAL taps NOT LISTED, please contact our Customer Service Dept.**
- **FOR QUESTIONS, PLEASE CONTACT OUR CUSTOMER SERVICE DEPT.**

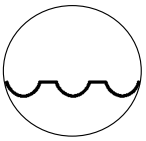
APPLICATION SPECIFIC BLUEPRINT SPECIAL TAPS

High Performance Blueprint Special Taps - Shipped Fast!

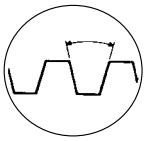
GWS Tool Group continues a commitment to quality and service by offering you a complete line of blueprint special taps - shipped fast! Our experienced team of cutting tool specialists will provide design expertise or work from your blueprint specifications to manufacture reliable special taps that meet your exact specifications, in as few as seven days, depending on the specialty of design and quantity ordered.

Our bar steel is available in a broad range of grades and diameters, and is made of top quality High Speed Steel, or material specified to best fit the threading application at hand. The majority of special taps can be produced from a standard design hardened blank. Our dedication to quality, rapid shipments and customer service has made GWS Tool Group the most respected producer of special taps, dies and gages.

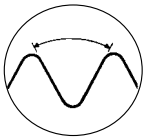
SPECIAL THREAD FORMS



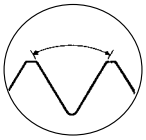
BALL SCREW (GOTHIC ARCH)



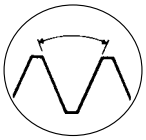
ACME, STUB ACME



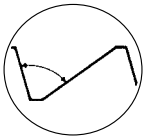
FULL FORM RADIUS



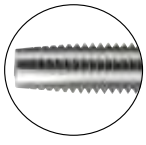
RADIUS ROOT



SPECIAL ANGLES



BUTTRESS



VARYING CHAMFER ANGLES

APPLICATION SPECIFIC BLUEPRINT SPECIAL TAPS

Made-To-Order Blueprint Special Taps

Following are a few of the special features requiring taps be custom manufactured from bar steel, such as...

- Special Overall Lengths either in shank, thread length, or piloted;
- Special Shank and Drive dimensions: Morse taper shanks, threaded, whistle-notch;
- Special Flute Design - straight or spiral;
- Holes - drilled, reamed, ground, cross, coolant-hole, through-hole;
- Flats - notches, keyways, necks;
- Tapered thread, including pipe taps;
- Tandem style;
- Combination tools, to eliminate secondary or finishing operations;
- Reamer point / Drill point / Core Drill;
- Special Forms & Angles - Acme buttress, square thread, full form, modified Whitworth form, custom thread form;
- Special steels available, in combination with numerous surface treatment possibilities, depending on the application at hand.

TURNAROUND IN AS FEW AS 7 DAYS!

CARBIDE TAPS AND CARB-I-SERT TAPS

Why GWS Tool Group Carbide Taps?

- Special design criteria (unique characteristics and geometry) can be incorporated to allow unmatched efficiencies in tough materials such as titanium, beryllium, ceramics, plastics, fiberglass, resins, stellite, inconel, and more
- Solid carbide and Carb-I-Sert™ taps are available in a wide range of sizes, in both inch and metric measurements, and available in either straight and taper pipe threads.
- Experienced engineers, state-of-the-art equipment and production processes, advanced computer systems and machining equipment provide value-added solutions to your challenging tapping requirements.
- Cutting tools designed, manufactured, and shipped in the U.S.A.

- 60° Thread Forms
- Pipe Threads
- Form Taps
- S.T.I. Taps
- Specials Available Upon Request

GWS Tool Group carbide taps are available from stock in popular sizes.

See next page for complete listing.

SOLID CARBIDE TAPS

To Table 302-A Includes Pipe Sizes

SIZE	H LIMIT	# OF FLUTES	ITEM# PLUG	ITEM# BOTTOM
#0-80	H2	2	41579	41580
#2-56	H2	2	41536	41537
#2-56 SPPT	H2	2	41538	
#4-40	H2	2	41007	41008
#4-40 SPPT	H2	2	41009	
#4-48	H2	2	41017	41018
#4-48 SPPT	H2	2	41019	
#5-40	H2	3	41034	41035
#5-40 SPPT	H2	2	41032	
#6-32	H3	3	41074	41075
#6-32 SPPT	H3	2	41072	
#6-40	H2	3	41092	41093
#8-32	H3	4	41125	41126
#8-32 SPPT	H3	2	41120	
#8-36	H2	4	41147	41148
#10-24	H3	4	41180	41181
#10-24 SPPT	H3	2	41175	
#10-32	H3	4	41213	41214
#10-32 SPPT	H3	2	41208	
#12-24	H3	4	41246	41247
#12-24 SPPT	H3	2	41241	
#12-28	H3	4	41279	41280
#12-28 SPPT	H3	2	41274	
1/16-27 NPT/F		4	41800	
1/8-27 NPT/F		4	41801	
1/8-27 NPSF		4	41807	
1/4-18 NPT/F		4	41802	
1/4-20	H3	4	41312	41313
1/4-20 SPPT	H3	2	41307	
1/4-28	H3	4	41345	41346
1/4-28 SPPT	H3	2	41340	
5/16-18	H3	4	41378	41379
5/16-18 SPPT	H3	2	41373	
5/16-24	H3	4	41411	41412
3/8-16	H3	4	41444	41445
3/8-16 SPPT	H3	3	41442	
3/8-24	H3	4	41476	41477
3/8-24 SPPT	H3	3	41001	
7/16-14	H3	4	41520	41521
7/16-14 SPPT	H3	3	41522	
7/16-20	H3	4	41524	41525
7/16-20 SPPT	H3	3	41526	
1/2-13	H3	4	41528	41529
1/2-13 SPPT	H3	3	41530	
1/2-20	H3	4	41532	41533
1/2-20 SPPT	H3	3	41534	
9/16-12 NC	H3	4	47201	47202
9/16-18 NF	H3	4	47204	47205
5/8-11 NC	H3	4	47207	47208
5/8-18 NF	H3	4	47210	47211
3/4-10 NC	H3	4	47213	47214
3/4-10 NC	H5	4	47228	47229
3/4-16 NF	H3	4	47216	47217
3/4-16 NF	H5	4	47231	47232

SOLID CARBIDE TAPS - METRIC

To Table 302-A

SIZE	D #	# OF FLUTES	ITEM# PLUG	ITEM# BOTTOM
M3 x 0.5	D3	3	43001	43002
M3 x 0.5 SPPT	D3	2	43003	
M3.5 x 0.6	D4	3	43005	43006
M3.5 x 0.6 SPPT	D4	2	43007	
M4 x 0.7	D4	4	43009	43010
M4 x 0.7 SPPT	D4	2	43011	
M4.5 x 0.75	D4	4	43013	43014
M4.5 x 0.75 SPPT	D4	2	43015	
M5 x 0.8	D4	4	43017	43018
M5 x 0.8 SPPT	D4	2	43019	
M6 x 1.0	D5	4	43021	43022
M6 x 1.0 SPPT	D5	2	43023	
M7 x 1.0	D5	4	43025	43026
M7 x 1.0 SPPT	D5	2	43027	
M8 x 1.25	D5	4	43029	43030
M8 x 1.25 SPPT	D5	2	43031	
M8 x 1.0	D5	4	43033	43034
M10 x 1.5	D6	4	43037	43038
M10 x 1.5 SPPT	D6	3	43039	
M10 x 1.25	D5	4	43041	43042
M10 x 1.25 SPPT	D5	3	43043	
M12 x 1.75	D6	4	43045	43046
M12 x 1.75 SPPT	D6	3	43047	

CARB-I-SERT™ CARBIDE INSERT TAPS

Includes Pipe Sizes

SIZE	H LIMIT	# OF FLUTES	ITEM# PLUG	ITEM# BOTTOM
3/8-18 NPT/F		4	41808	
1/2-14 NPT/F		4	41809	
3/4-14 NPT/F		4	41810	
7/8-9	H4	4	41558	41559
7/8-14	H4	4	41561	41562
1"-8	H4	4	41564	41565
1"-11-1/2 NPT/F		6	41811	
1"-12	H4	4	41567	41568
1-1/4-7	H4	4	41570	41571
1-3/8-12	H4	4	41573	41574
1-1/2-6	H4	4	41576	41577

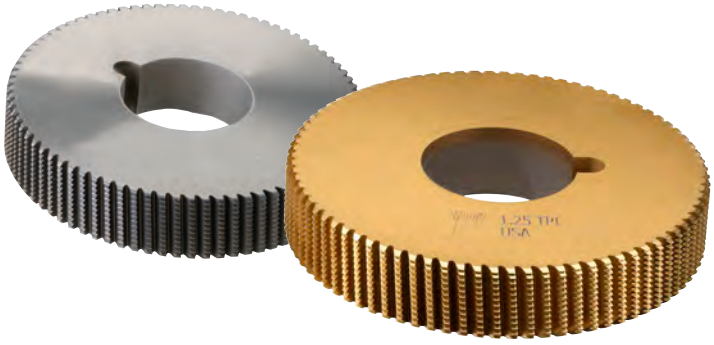
SOLID CARBIDE THREAD MILLS

Why GWS Tool Group Thread Mills?

- Designed for internal threads. Thread mills for external threads are available upon request as non-stock item.
- One tool can thread various holes with same pitch (TPI); and multi 'H' Limits can be achieved with same tool.
- Thread blind holes to the bottom. Eliminate frequent tap breakage in challenging applications.
- Available as general purpose Fractional and Metric sizes; Coolant Through; NPT/NPTF Pipe Sizes; Application-specific for Exotics and Aluminum; Single Profile thread mills; bright finish and coated for demanding threading applications.
- Cutting tools designed, manufactured, and shipped in the U.S.A.
- For detailed information and product offering, request a catalog or view catalog online.

These thread mills are designed to produce internal threads utilizing helical flutes, creating the desired thread type and profile. Thread mills are typically smaller in diameter than their corresponding tap would be, thus enabling them to fit within the ID of the pre-drilled hole. CNC machines with 3-axis capability are required to use thread mills.

- Premium micro-grain carbide construction.
- Spiral flute design eliminates chatter and vibration.
- Optimum quality threads.
- Cut RH and LH threads with same tool.
- Specials and mills for external threads are available upon request.



Ask about polygon thread mills from GWS Tool Group. For spindle synchronization at a 1-to-1 ratio to the part with a controlled feed rate, allowing polygon thread milling on the machine centers. This milling technique is faster than single point threading. Manufacture and resharpening available.

SMART CUT TAPPING & DRILLING FLUID

SMART CUT
HIGH PERFORMANCE METAL WORKING FLUID FOR TAPPING & DRILLING

- Maximum accuracy in machined parts.
- Increases productivity.
- Extends life of the tap.
- Excellent friction-reducing properties.
- Can be used for many machining applications including drilling and sawing.

Why 'Smart Cut™' Tapping And Cutting Fluid From GWS Tool Group?

- Environmentally SMART...ozone friendly.
- Contains no carbon tetrachloride or 1,1,1-Trichloroethane.
- Designed to extend tool life.
- Penetrates to the tool's cutting edge and stays on the tool.
- Eliminates the hassles of costly hazardous waste disposal.
- Smart Cut is thick, won't evaporate and stays on the tool throughout the cutting operation.
- Does not contain any animal-derived components or components synthesized from animal-derived materials.

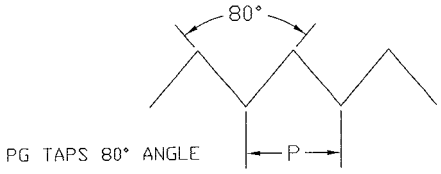
SMART CUT TAPPING FLUID

PART NUMBER	DESCRIPTION	SIZE
FL110	Smart Cut	16 oz.
FL115	Smart Cut	16 oz. (12/case)
FL120	Smart Cut	1 gallon
FL125	Smart Cut	1 gallon (4/case)
FL130	Smart Cut	5 gallon
FL135	Smart Cut	55 gallon drum

SPECIAL TAPS

CONDUIT THREAD TAPS

PER DIN STD. #40430 • 80° INCLUDED ANGLE • 'PG' SERIES TO TABLES 302/303



PG 7	M12.5 X 1.27	4	20992	20993	3.38	1.66	0.3670	0.275	0.44
PG 9	M15.2 X 1.41	4	20995	20996	3.81	1.81	0.4800	0.360	0.56
PG 11	M18.6 X 1.41	4	20998	20999	4.25	2.00	0.5900	0.442	0.69
PG 13.5	M20.4 X 1.41	4	21001	21002	4.47	2.00	0.6520	0.489	0.69
PG 16	M22.5 X 1.41	4	21004	21005	4.69	2.22	0.6970	0.523	0.75
PG 21	M28.3 X 1.588	6	21007	21008	4.00	1.50	0.8960	0.672	0.88
PG 29	M37 X 1.588	6	21010	21011	4.00	1.50	1.2330	0.925	1.00
PG 36	M47 X 1.588	6	21013	21014	5.00	2.00	1.5190	1.139	1.25
PG 42	M54 X 1.588	6	21016	21017	5.25	2.00	1.7690	1.327	1.38
PG 48	M59.3 X 1.588	6	21019	21020	5.25	2.00	2.0190	1.514	1.44

H.S.S. SPECIAL SPIRAL FLUTE TAPS

PLUG & BOTTOM STYLE - INCLUDING METRIC SIZES TO TABLE 302

SIZE	MAX TPI	SIZE MM	MIN. PITCH MM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
#2	100	M2.0, M2.2	0.3	1.81	0.50	0.1410	0.110	0.19
#3	100	M2.3, M2.5, M2.6	0.3	1.81	0.50	0.1410	0.110	0.19
#4	100			1.88	0.56	0.1410	0.110	0.19
#5	100	M3	0.3	1.94	0.63	0.1410	0.110	0.19
#6	100	M3.5	0.3	2.00	0.69	0.1410	0.110	0.25
#8	100	M4	0.3	2.13	0.75	0.1680	0.131	0.25
#10	100	M4.5, M5	0.3	2.38	0.88	0.1940	0.152	0.25
#12	100	M5.5	0.3	2.38	0.94	0.2200	0.165	0.28
#14	80	M6	0.3	2.50	1.00	0.2550	0.191	0.31
1/4"	80	M6	0.3	2.50	1.00	0.2550	0.191	0.31
5/16"	80	M7, M8	0.3	2.72	1.13	0.3180	0.238	0.38
3/8"	80	M9, M10	0.3	2.94	1.25	0.3810	0.286	0.44
7/16"	80	M11	0.3	3.16	1.44	0.3230	0.242	0.41
1/2"	80	M12	0.3	3.38	1.66	0.3670	0.275	0.44
9/16"	64	M14	0.4	3.59	1.66	0.4290	0.322	0.50
5/8"	64	M16	0.4	3.81	1.81	0.4800	0.360	0.56
11/16"	64	M18	0.4	4.03	1.81	0.5420	0.406	0.63
3/4"	64		0.4	4.25	2.00	0.5900	0.442	0.69
13/16"	64	M20		4.47	2.00	0.6520	0.489	0.69
7/8"	64	M22	0.4	4.69	2.22	0.6970	0.523	0.75
15/16"	64	M24		4.91	2.22	0.7600	0.570	0.75
1"	64	M25		5.13	2.50	0.8000	0.600	0.81

These taps are available in left hand style, and in a variety of helix angles including low, medium and high spiral.

SPECIAL TAPS

H.S.S. SPECIAL HAND TAPS

RIGHT AND LEFT HAND INCLUDING METRIC SIZES TO TABLE 302

MAX SIZE	SIZE	MAX TPI	SIZE MM	MIN. PITCH MM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
0.047	#00	120	M1.0	0.2	1.63	0.31	0.1410	0.110	0.19
0.065	#0	100	M1.5, M1.6	0.3	1.63	0.31	0.1410	0.110	0.19
0.078	#1	100	M1.8	0.3	1.69	0.38	0.1410	0.110	0.19
0.091	#2	100	M2, M2.2	0.3	1.75	0.44	0.1410	0.110	0.19
0.104	#3	100	M2.3, M2.5, M2.6	0.3	1.81	0.50	0.1410	0.110	0.19
0.117	#4	100			1.88	0.56	0.1410	0.110	0.19
0.13	#5	100	M3	0.3	1.94	0.63	0.1410	0.110	0.19
0.145	#6	100	M3.5	0.3	2.00	0.69	0.1410	0.110	0.25
0.171	#8	100	M4	0.3	2.13	0.75	0.1680	0.131	0.25
0.197	#10	100	M4.5, M5	0.3	2.38	0.88	0.1940	0.152	0.25
0.223	#12	100	M5.5	0.3	2.38	0.94	0.2200	0.165	0.28
0.26	#14	80	M6	0.3	2.50	1.00	0.2550	0.191	0.31
0.26	1/4"	80	M6	0.3	2.50	1.00	0.2550	0.191	0.31
0.323	5/16"	80	M7, M8	0.3	2.72	1.13	0.3180	0.238	0.38
0.385	3/8"	80	M9, M10	0.3	2.94	1.25	0.3810	0.286	0.44
0.448	7/16"	80	M11	0.3	3.16	1.44	0.3230	0.242	0.41
0.51	1/2"	80	M12	0.3	3.38	1.66	0.3670	0.275	0.44
0.573	9/16"	64	M14	0.4	3.59	1.66	0.4290	0.322	0.50
0.635	5/8"	64	M16	0.4	3.81	1.81	0.4800	0.360	0.56
0.709	11/16"	64	M18	0.4	4.03	1.81	0.5420	0.406	0.63
0.76	3/4"	64			4.25	2.00	0.5900	0.442	0.69
0.823	13/16"	64	M20	0.4	4.47	2.00	0.6520	0.489	0.69
0.885	7/8"	64	M22	0.4	4.69	2.22	0.6970	0.523	0.75
0.948	15/16"	64	M24	0.4	4.91	2.22	0.7600	0.570	0.75
1.01	1"	64	M25	0.4	5.13	2.50	0.8000	0.600	0.81

H.S.S. SPECIAL HAND TAPS

RIGHT AND LEFT HAND INCLUDING METRIC SIZES TO TABLES 302-303

SIZE	MAX TPI	SIZE MM	MIN. PITCH MM	OVERALL LENGTH	LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH	TAP DIMEN. TABLE	# OF FLUTES
1 1/16"	13	M27	2	5.13	2.50	0.8960	0.672	0.88	302	4-6
1 1/16"	55	M27	0.5	4.00	1.50	0.8960	0.672	0.88	303	6-8-10
1 1/8"	13	M28	2	5.44	2.56	0.8960	0.672	0.88	302	4-6
1 1/8"	55	M28	0.5	4.00	1.50	0.8960	0.672	0.88	303	6-8-10
1 3/16"	13	M30	2	5.44	2.56	1.0210	0.766	1.00	302	4-6
1 3/16"	55	M30	0.5	4.00	1.50	1.0210	0.766	1.00	303	6-8-10
1 1/4"	13	M32	2	5.75	2.56	1.0210	0.766	1.00	302	4-6
1 1/4"	55	M32	0.5	4.00	1.50	1.0210	0.766	1.00	303	6-8-10
1 5/16"	13	M33	2	5.75	2.56	1.1080	0.831	1.06	302	4-6
1 5/16"	55	M33	0.5	4.00	1.50	1.1080	0.831	1.00	303	6-8-10
1 3/8"	13	M35	2	6.06	3.00	1.1080	0.831	1.06	302	4-6
1 3/8"	55	M35	0.5	4.00	1.50	1.1080	0.831	1.00	303	6-8-10
1 7/16"	13	M36	2	6.06	3.00	1.2330	0.925	1.13	302	4-6

(cont. on next page)

SPECIAL TAPS

H.S.S. SPECIAL HAND TAPS

RIGHT AND LEFT HAND INCLUDING METRIC SIZES TO TABLES 302-303

SIZE	MAX TPI	SIZE MM	MIN. PITCH MM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH	TAP DIMEN. TABLE	# OF FLUTES
1 7/16"	55	M36	0.5	4.00	1.50	1.2330	0.925	1.00	303	6-8-10
1 1/2"	13	M38	2	6.38	3.00	1.2330	0.925	1.13	302	4-6
1 1/2"	55	M38	0.5	4.00	1.50	1.2330	0.925	1.00	303	6-8-10
1 5/8"	9	M39	3	6.69	3.19	1.3050	0.979	1.13	302	6
1 5/8"	55	M39	0.5	5.00	2.00	1.3050	0.979	1.13	303	6-8-10
1 3/4"	9	M42	3	7.00	3.19	1.4300	1.072	1.25	302	6
1 3/4"	55	M42	0.5	5.00	2.00	1.4300	1.072	1.25	303	6-8-10
1 7/8"	9	M45	3	7.31	3.56	1.5190	1.139	1.25	302	6
1 7/8"	55	M45	0.5	5.00	2.00	1.5190	1.139	1.25	303	6-8-10
2"	9	M48	3	7.63	3.56	1.6440	1.233	1.38	302	6
2"	47	M48	0.5	5.00	2.00	1.6440	1.233	1.38	303	6-8-10
2 1/8"	9	M54	3	8.00	3.56	1.7690	1.327	1.38	302	6
2 1/8"	47	M54	0.5	5.25	2.00	1.7690	1.327	1.38	303	6
2 1/4"	9	M56	3	8.25	3.56	1.8940	1.420	1.44	302	6
2 1/4"	47	M56	0.5	5.25	2.00	1.8940	1.420	1.44	303	6
2 3/8"	9	M60	3	8.50	4.00	2.0190	1.514	1.44	302	6
2 3/8"	47	M60	0.5	5.25	2.00	2.0190	1.514	1.44	303	6
2 1/2"	9	M63	3	8.75	4.00	2.1000	1.575	1.50	302	6
2 1/2"	47	M63	0.5	5.25	2.00	2.1000	1.575	1.50	303	6
2 5/8"	9	M64	3	8.75	4.00	2.2250	1.669	1.50	302	6
2 5/8"	47	M64	0.5	5.50	2.00	2.1000	1.575	1.50	303	6
2 3/4"	9	M70	3	9.25	4.00	2.3500	1.762	1.56	302	6
2 3/4"	47	M70	0.5	5.50	2.00	2.1000	1.575	1.50	303	6
2 7/8"	9	M72	3	9.25	4.00	2.4750	1.856	1.56	302	6
2 7/8"	47	M72	0.5	5.50	2.00	2.1000	1.575	1.50	303	6
3"	9	M76	3	9.75	4.56	2.5430	1.907	1.63	302	6
3"	47	M76	0.5	5.50	2.00	2.1000	1.575	1.50	303	8
3 1/8"	9	M79	3	9.75	4.56	2.6680	2.001	1.63	302	6
3 1/8"	35	M79	0.7	5.75	2.00	2.1000	1.575	1.50	303	8
3 1/4"	9	M82	3	10.00	4.56	2.7930	2.095	1.75	302	6
3 1/4"	35	M82	0.7	5.75	2.00	2.1000	1.575	1.50	303	6-8
3 1/2"	9	M89	3	10.25	4.94	3.0080	2.256	2.00	302	6
3 1/2"	35	M89	0.7	5.75	2.00	2.1000	1.575	1.50	303	6-8
3 5/8"	9	M92	3	10.25	4.94	3.1330	2.350	2.00	302	8
3 5/8"	35	M92	0.7	6.00	2.00	2.1000	1.575	1.75	303	8
3 3/4"	9	M95	3	10.50	5.31	3.2170	2.413	2.13	302	10
3 3/4"	35	M95	0.7	6.00	2.00	2.1000	1.575	1.75	303	10
3 7/8"	9	M98	3	10.50	5.31	3.3420	2.506	2.13	302	10
3 7/8"	35	M98	0.7	6.00	2.00	2.1000	1.575	1.75	303	10
4"	9	M101	3	10.75	5.31	3.4670	2.600	2.25	302	10
4"	35	M101	0.7	6.00	2.00	2.1000	1.575	1.75	303	10

- Table 302 = Long series blank
- Table 303 = Short series blank
- 303 blanks 1-1/16" through 4", number of flutes used will depend on TPI

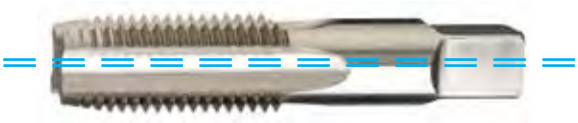
SPECIAL TAPS

TRU-FLO® THREAD FORMING TAPS

TO TABLE 302-A

SIZE	SIZE MM	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH	NECK LENGTH
#0	M1.5, M1.6	1.63	0.31	0.1410	0.110	0.19	
#1	M1.8	1.69	0.38	0.1410	0.110	0.19	
#2	M2, M2.2	1.75	0.44	0.1410	0.110	0.19	
#3	M2.3, M2.5, M2.6	1.81	0.50	0.1410	0.110	0.19	
#4		1.88	0.31	0.1410	0.110	0.19	0.25
#5	M3	1.94	0.31	0.1410	0.110	0.19	0.31
#6	M3.5	2.00	0.38	0.1410	0.110	0.19	0.31
#8	M4	2.13	0.38	0.1680	0.131	0.25	0.38
#10	M4.5, M5	2.38	0.50	0.1940	0.152	0.25	0.38
#12	M5.5	2.38	0.50	0.2200	0.165	0.28	0.44
1/4"	M6	2.50	0.63	0.2550	0.191	0.31	0.38
5/16"	M7, M8	2.72	0.69	0.3180	0.238	0.38	0.44
3/8"	M9, M10	2.94	0.75	0.3810	0.286	0.44	0.50
7/16"	M11	3.16	0.88	0.3230	0.242	0.41	
1/2"	M12	3.38	0.94	0.3670	0.275	0.44	
9/16"	M14	3.59	1.00	0.4290	0.322	0.50	
5/8"	M16	3.81	1.09	0.4800	0.360	0.56	
11/16"	M18	4.03	1.09	0.5420	0.406	0.63	
3/4"		4.25	1.22	0.5900	0.442	0.69	
13/16"	M20	4.47	1.22	0.6520	0.489	0.69	
7/8"	M22	4.69	1.34	0.6970	0.523	0.75	
15/16"	M24	4.91	1.34	0.7600	0.570	0.75	
1"	M25	5.13	1.50	0.8000	0.600	0.81	

Multiple leads, special chamfer, and spiral lobes are available. Thread forming taps are also available in solid carbide.



COOLANT THROUGH TAPS

TO TABLE 302-A

SIZE	SIZE MM	MAX TPI	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH	NECK LENGTH
1/4"	M6	80	2.50	0.63	0.2550	0.191	0.31	0.38
5/16"	M8	80	2.72	0.69	0.3180	0.238	0.38	0.44
3/8"	M10	80	2.94	0.75	0.3810	0.286	0.44	0.50
7/16"	M11	80	3.16	0.88	0.3230	0.242	0.41	
1/2"	M12	80	3.38	0.94	0.3670	0.275	0.44	
9/16"	M14	64	3.59	1.00	0.4290	0.322	0.50	
5/8"	M16	64	3.81	1.09	0.4800	0.360	0.56	
3/4"		64	4.25	1.22	0.5900	0.442	0.69	
7/8"	M22	64	4.69	1.34	0.6970	0.523	0.75	
1"	M25	64	5.13	1.50	0.8000	0.600	0.81	

SPECIAL TAPS

H.S.S. SPECIAL PIPE TAPS - NPS, NPT & BSPP, BSPT

RIGHT AND LEFT HAND • FULL OR INTERRUPTED THREAD TO TABLE 311

NPS NPT PIPE SIZE	BSPP BSPT PIPE SIZE	EQUIV. HAND TAP SIZE	MIN. PROJECTION	# OF FLUTES	FULL OR NPT INT. THD.	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH	NECK LENGTH
1/16"-27	1/16"-28	5/16"	0.06	4	NPS FULL THD	2.13	0.69	0.3125	0.234	0.38	0.38
1/16"-27	1/16"-28	5/16"	0.06	4	NPT FULL THD	2.13	0.69	0.3125	0.234	0.38	0.38
1/16"-27	1/16"-28	5/16"	0.06	5	NPT INT THD	2.13	0.69	0.3125	0.234	0.38	0.38
1/8"-27	1/8"-28	7/16"	0.06	4	NPS FULL THD	2.13	0.75	0.4375	0.328	0.38	0.38
1/8"-27	1/8"-28	7/16"	0.06	4	NPT FULL THD	2.13	0.75	0.4375	0.328	0.38	0.38
1/8"-27	1/8"-28	7/16"	0.06	5	NPT INT THD	2.13	0.75	0.4375	0.328	0.38	0.38
1/4"-18	1/4"-19	9/16"	0.12	4	NPS FULL THD	2.44	1.06	0.5625	0.421	0.44	0.38
1/4"-18	1/4"-19	9/16"	0.12	4	NPT FULL THD	2.44	1.06	0.5625	0.421	0.44	0.38
1/4"-18	1/4"-19	9/16"	0.12	5	NPT INT THD	2.44	1.06	0.5625	0.421	0.44	0.38
3/8"-18	3/8"-19	11/16"	0.14	4	NPS FULL THD	2.56	1.06	0.7000	0.531	0.50	0.38
3/8"-18	3/8"-19	11/16"	0.14	4	NPT FULL THD	2.56	1.06	0.7000	0.531	0.50	0.38
3/8"-18	3/8"-19	11/16"	0.14	5	NPT INT THD	2.56	1.06	0.7000	0.531	0.50	0.38
1/2"-14	1/2"-14	7/8"	0.26	4	NPS FULL THD	3.13	1.38	0.6875	0.515	0.63	
1/2"-14	1/2"-14	7/8"	0.26	4	NPT FULL THD	3.13	1.38	0.6875	0.515	0.63	
1/2"-14	1/2"-14	7/8"	0.26	5	NPT INT THD	3.13	1.38	0.6875	0.515	0.63	
3/4"-14	3/4"-14	1 1/16"	0.245	5	NPS FULL THD	3.25	1.38	0.9063	0.679	0.69	
3/4"-14	3/4"-14	1 1/16"	0.245	5	NPT FULL THD	3.25	1.38	0.9063	0.679	0.69	
3/4"-14	3/4"-14	1 1/16"	0.245	5	NPT INT THD	3.25	1.38	0.9063	0.679	0.69	
1"-11.5	1"-11	1 5/16"	0.36	5	NPS FULL THD	3.75	1.75	1.1250	0.843	0.81	
1"-11.5	1"-11	1 5/16"	0.36	5	NPT FULL THD	3.75	1.75	1.1250	0.843	0.81	
1"-11.5	1"-11	1 5/16"	0.36	5	NPT INT THD	3.75	1.75	1.1250	0.843	0.81	
1 1/4"-11.5	1 1/4"-11	1 11/16"	0.37	5	NPS FULL THD	4.00	1.75	1.3125	0.984	0.94	
1 1/4"-11.5	1 1/4"-11	1 11/16"	0.37	5	NPT FULL THD	4.00	1.75	1.3125	0.984	0.94	
1 1/4"-11.5	1 1/4"-11	1 11/16"	0.37	5	NPT INT THD	4.00	1.75	1.3125	0.984	0.94	
1 1/2"-11.5	1 1/2"-11	2"	0.38	7	NPS FULL THD	4.25	1.75	1.5000	1.125	1.00	
1 1/2"-11.5	1 1/2"-11	2"	0.38	7	NPT FULL THD	4.25	1.75	1.5000	1.125	1.00	
1 1/2"-11.5	1 1/2"-11	2"	0.38	7	NPT INT THD	4.25	1.75	1.5000	1.125	1.00	
2"-11.5	2"-11	2 1/2"	0.38	7	NPS FULL THD	4.25	1.75	1.8750	1.406	1.13	
2"-11.5	2"-11	2 1/2"	0.38	7	NPT FULL THD	4.25	1.75	1.8750	1.406	1.13	
2"-11.5	2"-11	2 1/2"	0.38	7	NPT INT THD	4.25	1.75	1.8750	1.406	1.13	
2 1/2"-8	2 1/2"-11	3"	0.525	7	NPS FULL THD	5.50	2.56	2.2500	1.687	1.25	
2 1/2"-8	2 1/2"-11	3"	0.525	7	NPT FULL THD	5.50	2.56	2.2500	1.687	1.25	
2 1/2"-8	2 1/2"-11	3"	0.525	7	NPT INT THD	5.50	2.56	2.2500	1.687	1.25	

- **BRITISH STRAIGHT PIPE (BSP)**
  Also referred to as British Gas, British Pipe Parallel or Parallel Fastening Thread. Various Symbols: BSP, BSPP, BSPPI, BSPF, BSPG, PS, R,G, RP
- **BRITISH TAPER PIPE (BSPT)**
  Also referred to as British Standard Taper Pipe, or Pipe Taper, or Conical Thread. Various Symbols: BSPT, BSPTr, PT, KR, Rc.

H.S.S. SPECIAL ACME HAND TAPS

TO TABLE 302

SIZE	OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH
1/4"	2.50	1.00	0.2550	0.191	0.31
5/16"	2.72	1.13	0.3180	0.238	0.38
3/8"	2.94	1.25	0.3810	0.286	0.44
7/16"	3.16	1.44	0.3230	0.242	0.41
1/2"	3.38	1.66	0.3670	0.275	0.44
9/16"	3.59	1.66	0.4290	0.322	0.50
5/8"	3.81	1.81	0.4800	0.360	0.56
11/16"	4.03	1.81	0.5420	0.406	0.63
3/4"	4.25	2.00	0.5900	0.442	0.69
13/16"	4.47	2.00	0.6520	0.489	0.69
7/8"	4.69	2.22	0.6970	0.523	0.75
15/16"	4.91	2.22	0.7600	0.570	0.75
1"	5.13	2.50	0.8000	0.600	0.81
1 1/8"	5.44	2.56	0.8960	0.672	0.88
1 1/4"	5.75	2.56	1.0210	0.766	1.00
1 3/8"	6.06	3.00	1.1080	0.831	1.06
1 1/2"	6.38	3.00	1.2330	0.925	1.13

- Please furnish specific material being tapped, type of hole (through, blind or cleared), and depth of hole before threading.
- Taps shown in above table are designed for blind or through holes in free machining steels, cast iron, zinc and aluminum die cast where the length of the hole does not exceed 1-1/2 times the diameter and the threads per inch are not coarser than the standard 60 degree NC threads.

H.S.S. SPECIAL TANDEM STYLE ACME TAPS

RIGHT AND LEFT HAND • CLASS OF FIT OTHER THAN 2G

SIZE	OVERALL LENGTH	THREAD LENGTH	SHANK LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH	MAX. DEPTH OF NUT-BRONZE & STEEL	MAX. DEPTH OF NUT-BRASS & CAST IRON
1/4"-16	3.00	1.75	1.00	0.1850	0.138	0.25	0.500	0.750
5/16"-14	3.41	1.88	1.25	0.2200	0.165	0.28	0.630	0.880
3/8"-12	4.06	2.13	1.63	0.2550	0.191	0.31	0.630	1.000
1/2"-10	5.00	2.56	2.00	0.3670	0.275	0.44	1.000	1.500
5/8"-8	6.25	3.19	2.50	0.4800	0.360	0.56	1.250	1.880
3/4"-6	7.94	4.31	3.00	0.5420	0.406	0.63	1.500	2.250
3/4"-8	7.94	4.31	3.00	0.5420	0.406	0.63	1.500	2.250
7/8"-6	8.63	4.38	3.50	0.6970	0.523	0.75	1.750	2.630
1"-5	10.13	5.25	4.00	0.6970	0.523	0.75	2.000	3.000
1 1/8"-5	10.75	5.25	4.50	0.8000	0.600	0.81	2.250	3.380
1 1/4"-5	11.13	5.25	4.75	0.8960	0.672	0.88	2.500	3.750
1 3/8"-4	12.25	5.88	5.13	1.1080	0.831	1.25	2.750	4.130
1 1/2"-4	12.63	5.88	5.50	1.2330	0.925	1.25	3.000	4.500
1 3/4"-4	13.38	5.88	6.25	1.4300	1.072	1.25	3.500	5.000
2"-4	14.88	6.50	7.00	1.6440	1.233	1.38	4.000	6.000

SPECIAL TAPS

SOLID CARBIDE TAPS - INCH

TO TABLE 302-A

SIZE	H LIMIT	# OF FLUTES	ITEM #		OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH	NECK LENGTH
			PLUG	BOTTOM						
#0-80	H2	2	41579	41580	1.63	0.31	0.1410	0.110	0.19	
#2-56	H2	2	41536	41537	1.75	0.44	0.1410	0.110	0.19	
#2-56 SPPT	H2	2	41538		1.75	0.44	0.1410	0.110	0.19	
#4-40	H2	2	41007	41008	1.88	0.31	0.1410	0.110	0.19	0.25
#4-40 SPPT	H2	2	41009		1.88	0.31	0.1410	0.110	0.19	0.25
#4-48	H2	2	41017	41018	1.88	0.31	0.1410	0.110	0.19	0.25
#4-48 SPPT	H2	2	41019		1.88	0.31	0.1410	0.110	0.19	0.25
#5-40	H2	3	41034	41035	1.94	0.31	0.1410	0.110	0.19	0.31
#5-40 SPPT	H2	2	41032		1.94	0.31	0.1410	0.110	0.19	0.31
#6-32	H3	3	41074	41075	2.00	0.38	0.1410	0.110	0.19	0.31
#6-32 SPPT	H3	2	41072		2.00	0.38	0.1410	0.110	0.19	0.31
#6-40	H2	3	41092	41093	2.00	0.38	0.1410	0.110	0.19	0.31
#8-32	H3	4	41125	41126	2.13	0.38	0.1680	0.131	0.25	0.38
#8-32 SPPT	H3	2	41120		2.13	0.38	0.1680	0.131	0.25	0.38
#8-36	H2	4	41147	41148	2.13	0.38	0.1680	0.131	0.25	0.38
#10-24	H3	4	41180	41181	2.38	0.50	0.1940	0.152	0.25	0.38
#10-24 SPPT	H3	2	41175		2.38	0.50	0.1940	0.152	0.25	0.38
#10-32	H3	4	41213	41214	2.38	0.50	0.1940	0.152	0.25	0.38
#10-32 SPPT	H3	2	41208		2.38	0.50	0.1940	0.152	0.25	0.38
#12-24	H3	4	41246	41247	2.38	0.50	0.2200	0.165	0.28	0.44
#12-24 SPPT	H3	2	41241		2.38	0.50	0.2200	0.165	0.28	0.44
#12-28	H3	4	41279	41280	2.38	0.50	0.2200	0.165	0.28	0.44
#12-28 SPPT	H3	2	41274		2.38	0.50	0.2200	0.165	0.28	0.44
1/16"-27 NPT/F		4	41800		2.13	0.69	0.3125	0.234	0.38	.375
1/8"-27 NPT/F		4	41801		2.13	0.75	0.4375	0.328	0.38	.375
1/8"-27 NPSF		4	41807		2.13	0.75	0.4375	0.328	0.38	.375
1/4"-18 NPT/F		4	41802		2.50	0.63	0.2550	0.191	0.31	0.38
1/4"-20	H3	4	41312	41313	2.50	0.63	0.2550	0.191	0.31	0.38
1/4"-20 SPPT	H3	2	41307		2.50	0.63	0.2550	0.191	0.31	0.38
1/4"-28	H3	4	41345	41346	2.50	0.63	0.2550	0.191	0.31	0.38
1/4"-28 SPPT	H3	2	41340		2.50	0.63	0.2550	0.191	0.31	0.38
5/16"-18	H3	4	41378	41379	2.72	0.69	0.3180	0.238	0.38	0.44
5/16"-18 SPPT	H3	2	41373		2.72	0.69	0.3180	0.238	0.38	0.44
5/16"-24	H3	4	41411	41412	2.72	0.69	0.3180	0.238	0.38	0.44
5/16"-24 SPPT	H3	2	41406		2.72	0.69	0.3180	0.238	0.38	0.44
3/8"-16	H3	4	41444	41445	2.94	0.75	0.3810	0.286	0.44	0.50
3/8"-16 SPPT	H3	3	41442		2.94	0.75	0.3810	0.286	0.44	0.50
3/8"-24	H3	4	41476	41477	2.94	0.75	0.3810	0.286	0.44	0.50
3/8"-24 SPPT	H3	3	41001		2.94	0.75	0.3810	0.286	0.44	
7/16"-14	H3	4	41520	41521	3.16	0.88	0.3230	0.242	0.41	
7/16"-14 SPPT	H3	3	41522		3.16	0.88	0.3230	0.242	0.41	
7/16"-20	H3	4	41524	41525	3.16	0.88	0.3230	0.242	0.41	
7/16"-20 SPPT	H3	3	41526		3.16	0.88	0.3230	0.242	0.41	
1/2"-13	H3	4	41528	41529	3.38	0.94	0.3670	0.275	0.44	
1/2"-13 SPPT	H3	3	41530		3.38	0.94	0.3670	0.275	0.44	
1/2"-20	H3	4	41532	41533	3.38	0.94	0.3670	0.275	0.44	
1/2"-20 SPPT	H3	3	41534		3.38	0.94	0.3670	0.275	0.44	
9/16"-12 NC	H3	4	47201	47202	3.59	1.00	0.4290	0.322	0.50	
9/16"-18 NF	H3	4	47204	47205	3.59	1.00	0.4290	0.322	0.50	
5/8"-11 NC	H3	4	47207	47208	3.81	1.09	0.4800	0.360	0.56	
5/8"-18 NF	H3	4	47210	47211	3.81	1.09	0.4800	0.360	0.56	
3/4"-10 NC	H3	4	47213	47214	4.25	1.22	0.5900	0.442	0.69	
3/4"-10 NC	H5	4	47228	47229	4.25	1.22	0.5900	0.442	0.69	
3/4"-16 NF	H3	4	47216	47217	4.25	1.22	0.5900	0.442	0.69	
3/4"-16 NF	H5	4	47231	47232	4.25	1.22	0.5900	0.442	0.69	

SPECIAL TAPS

SOLID CARBIDE TAPS - METRIC

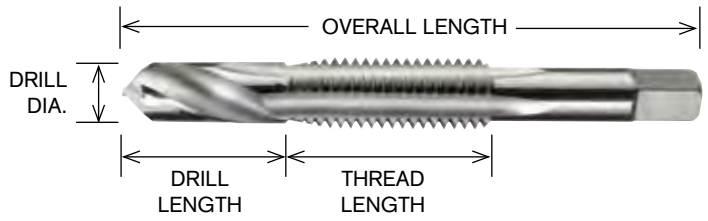
TO TABLE 302-A

SIZE	D #	# OF FLUTES	ITEM #		OVERALL LENGTH	THREAD LENGTH	SHANK DIAMETER	SQUARE DIAMETER	SQUARE LENGTH	NECK LENGTH
			PLUG	BOTTOM						
M3 x 0.50	D3	3	43001	43002	1.94	0.31	0.1410	0.110	0.19	0.31
M3 x 0.50 SPPT	D3	2	43003		1.94	0.31	0.1410	0.110	0.19	0.31
M3.5 x 0.60	D4	3	43005	43006	2.00	0.38	0.1410	0.110	0.19	0.31
M3.5 x 0.60 SPPT	D4	2	43007		2.00	0.38	0.1410	0.110	0.19	0.31
M4 x 0.70	D4	4	43009	43010	2.13	0.38	0.1680	0.131	0.25	0.38
M4 x 0.70 SPPT	D4	2	43011		2.13	0.38	0.1680	0.131	0.25	0.38
M4.5 x 0.75	D4	4	43013	43014	2.38	0.50	0.1940	0.152	0.25	0.38
M4.5 x 0.75 SPPT	D4	2	43015		2.38	0.50	0.1940	0.152	0.25	0.38
M5 x 0.80	D4	4	43017	43018	2.38	0.50	0.1940	0.152	0.25	0.38
M5 x 0.80 SPPT	D4	2	43019		2.38	0.50	0.1940	0.152	0.25	0.38
M6 x 1.00	D5	4	43021	43022	2.50	0.63	0.2550	0.191	0.31	0.38
M6 x 1.00 SPPT	D5	2	43023		2.50	0.63	0.2550	0.191	0.31	0.38
M7 x 1.00	D5	4	43025	43026	2.72	0.69	0.3180	0.238	0.38	0.44
M7 x 1.00 SPPT	D5	2	43027		2.72	0.69	0.3180	0.238	0.38	0.44
M8 x 1.00	D5	4	43033	43034	2.72	0.69	0.3180	0.238	0.38	0.44
M8 x 1.25	D5	4	43029	43030	2.72	0.69	0.3180	0.238	0.38	0.44
M8 x 1.25 SPPT	D5	2	43031		2.72	0.69	0.3180	0.238	0.38	0.44
M10 x 1.50	D6	4	43037	43038	2.94	0.75	0.3810	0.286	0.44	0.50
M10 x 1.50 SPPT	D6	3	43039		2.94	0.75	0.3810	0.286	0.44	0.50
M10 x 1.25	D5	4	43041	43042	2.94	0.75	0.3810	0.286	0.44	0.50
M10 x 1.25 SPPT	D5	3	43043		2.94	0.75	0.3810	0.286	0.44	0.50
M12 x 1.75	D6	4	43045	43046	3.38	0.94	0.3670	0.275	0.44	
M12 x 1.75 SPPT	D6	3	43047		3.38	0.94	0.3670	0.275	0.44	

CARB-I-SERT™ CARBIDE INSERT TAPS

SIZE	# OF FLUTES	ITEM #		OVERALL LENGTH	THREAD LENGTH	NECK LENGTH	SQUARE LENGTH	SHANK DIAMETER	SQUARE DIAMETER
		PLUG	BOTTOM						
3/8"-18 NPT/F	4	41808		2.94	0.75	0.50	0.44	0.7000	0.286
1/2"-14 NPT/F	4	41809		3.38	0.94	0.50	0.44	0.6875	0.275
3/4"-14 NPT/F	4	41810		4.25	1.22	0.50	0.69	0.9063	0.442
7/8"-9	4	41558	41559	4.69	1.34	0.50	0.75	0.6970	0.523
7/8"-14	4	41561	41562	4.69	1.34	0.50	0.75	0.6970	0.523
1"-8	4	41564	41565	5.13	1.50	0.50	0.81	0.8000	0.600
1"-11 1/2 NPTF	6	41811		5.13	1.50	0.50	0.81	0.8000	0.600
1"-12	4	41567	41568	5.13	1.50	0.50	0.81	0.8000	0.600
1 1/4"-7	4	41570	41571	5.75	2.56	0.50	1.00	1.0210	0.766
1 3/8"-12	4	41573	41574	6.06	3.00	0.50	1.06	1.1080	0.831
1 1/2"-6	4	41576	41577	6.38	3.00	0.50	1.13	1.2330	0.925

SPECIAL TAPS



COST CUTTER™

COST CUTTER™ DRILL & TAP - INCH

SIZE	PITCH	LIMIT	ITEM #	OVERALL LENGTH	THREAD LENGTH	DRILL LENGTH	DRILL DIAMETER
4	40 NC	GH-2	29000	1 7/8	3/8	1/4	.091
6	32 NC	GH-3	29004	2	7/16	5/16	.112
8	32 NC	GH-3	29006	2 1/8	1/2	3/8	.138
10	24 NC	GH-3	29008	2 3/8	5/8	13/32	.155
10	32 NF	GH-3	29009	2 3/8	5/8	13/32	.164
12	24 NC	GH-3	29010	2 3/8	21/32	15/32	.180
1/4	20 NC	GH-3	29012	2 1/2	25/32	17/32	.208
1/4	28 NF	GH-3	29013	2 1/2	25/32	17/32	.220
5/16	18 NC	GH-3	29014	2 23/32	15/16	11/16	.266
5/16	24 NF	GH-3	29015	2 23/32	15/16	11/16	.277
3/8	16 NC	GH-3	29016	2 15/16	1 1/8	13/16	.322
3/8	24 NF	GH-3	29017	2 15/16	1 1/8	13/16	.340
7/16	14 NC	GH-3	29018	3 3/4	1 1/4	1	.377
7/16	20 NF	GH-3	29019	3 3/4	1 1/4	1	.395
1/2	13 NC	GH-3	29020	4 1/16	1 3/8	1 1/8	.435
1/2	20 NF	GH-3	29022	4 1/16	1 3/8	1 1/8	.458
5/8	11 NC	GH-3	29036	5 1/16	1 3/4	1 1/2	.548

COST CUTTER™ DRILL & TAP - METRIC

SIZE	PITCH	LIMIT	ITEM #	OVERALL LENGTH	THREAD LENGTH	DRILL LENGTH	DRILL DIAMETER
M3	.5	D3	29024	1 15/16	13/32	9/32	.102
M3.5	.6	D4	29025	2	7/16	5/16	.120
M4	.7	D4	29026	2 1/8	1/2	3/8	.134
M4.5	.75	D4	29027	2 3/8	5/8	13/32	.152
M5	.8	D4	29028	2 3/8	5/8	13/32	.172
M6	1	D5	29029	2 1/2	25/32	17/32	.203
M7	1	D5	29030	2 23/32	15/16	11/16	.242
M8	1.25	D5	29031	2 23/32	15/16	11/16	.274
M10	1.50	D6	29032	2 15/16	1 1/8	13/16	.344
M12	1.75	D6	29033	4 1/16	1 3/8	1 1/8	.414

COST CUTTER™ DRILL & TAP - PIPE SIZES (NPT/F)

SIZE	PITCH	ITEM #	OVERALL LENGTH	THREAD LENGTH	DRILL LENGTH	DRILL DIAMETER
1/16	27	29040	2 13/16	11/16	11/16	.242
1/8	27	29041	2 7/8	3/4	3/4	.332
1/4	18	29042	3 5/16	1 1/16	7/8	.438
3/8	18	29043	3 1/2	1 1/16	15/16	.562
1/2	14	29044	4 3/8	1 3/8	1 1/4	.703
3/4	14	29045	4 9/16	1 3/8	1 5/16	.906
1	11 1/2	29046	5 3/8	1 3/4	1 5/8	1.141

SPECIAL DIES AND ADAPTERS

HEX ADAPTERS

13650	Die OD 1"
13651	Die OD 1-1/2"
13652	Die OD 2"
13653	Die OD 2-1/2"
13654	(Fine) Die OD 3"
13655	(Coarse) Die OD 3"

HEX DIES

ITEM #	METRIC
1/4	M6
5/16	M8
3/8, 7/16	M11
1/2, 9/16	M14
5/8	M16
11/16, 3/4	M18
7/8	M22
1"	M25
1 1/8	M28
1 1/4	M31
1 3/8	M33
1 1/2	M38
1 5/8, 1 3/4, 1 7/8	M45
2", 2 1/8, 2 1/4	M56
2 3/8, 2 1/2, 2 5/8, 2 3/4	M69
2 7/8, 3", 3 1/4, 3 3/8, 3 1/2	M88

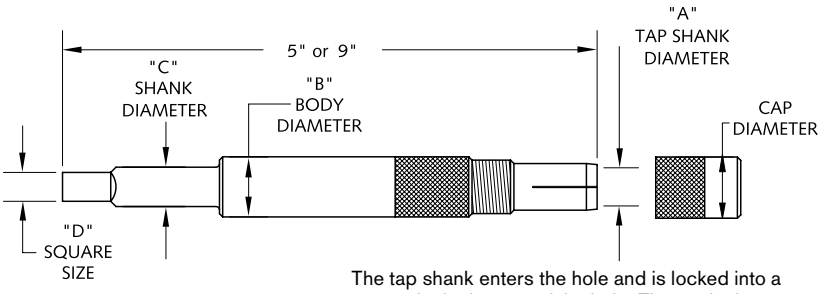
ROUND AND ADJUSTABLE DIES

SIZE	METRIC	OD	MAX. TPI
#4 - 3/8"	M3 - M9	1"	80
7/16" - 5/8"	M10 - M18	1 1/2"	40
11/16" - 1 1/16"	M19 - M27	2"	40
1 1/8" - 1 1/2"	M30 - M38	2 1/2"	28
1 9/16" - 2"	M39 - M48	3"	28

DIE THICKNESS CHART

O.D.(INCH)	O.D.(MM)	THICKNESS
13/16	20.6 mm	1/4
1"	25.4 mm	3/8
1-1/2	38.1 mm	1/2
2"	50.8 mm	5/8
2-1/2	63.5 mm	3/4
3" (10 pitch & coarser)	76.2 mm	1"
3" (11 pitch & finer)	76.2 mm	3/4

FOR ANSI STANDARD TAPS



The tap shank enters the hole and is locked into a square in the bottom of the hole. The tap is then secured by hand tightening the compression cap.

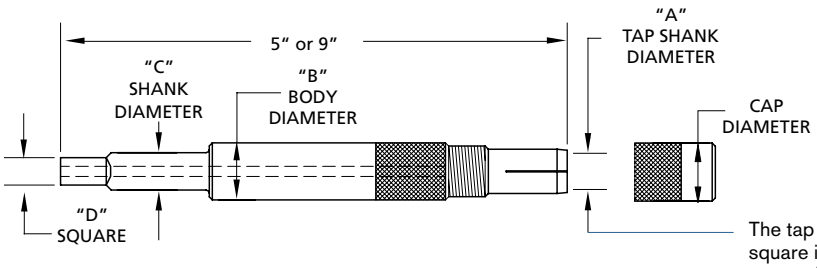
- Hand Tap Extensions 5" & 9" Length
- Made from tool steel.
- Internal square drive for positive tap drive.
- Compression cap for easy tightening. No wrench required.
- A very effective tool at low cost.
- The slim profile lets you fit into places not accessible to conventional tap extensions.
- Eliminates the need for purchasing expensive extended length taps.
- Integral compression collet eliminates the need for bulky collet nuts.

5" Tap Extension Set w/Case (9-piece) shown. Also available in 9" Sets.

EDP NUMBER	NOMINAL TAP SIZE	METRIC TAP SIZE ASME/ANSI B94.9 - 1987	DIA OF TAP SHANK (INCH)	EXT DIA (INCH)	SHANK DIA (INCH)	SQUARE SIZE (INCH)	DEPTH TAP ENTERS
5" TAP EXTENSIONS (CAP Diameter = "B" Body Diameter)							
21700	#0-#6	M1.6-M3.5	0.141	1/4"	0.194	0.152	7/8"
21701	#8	M4	0.168	5/16"	0.194	0.152	7/8"
21702	#10	M4.5-M5	0.194	3/8"	0.194	0.152	1"
21703	#12		0.22	3/8"	0.194	0.152	1"
21704	1/4"	M6-M6.3	0.255	7/16"	0.255	0.191	1"
21705	5/16"	M7 & M8	0.318	1/2"	0.318	0.238	1 1/16"
21706	3/8"	M10	0.381	9/16"	0.381	0.286	1 1/8"
21707	7/16"		0.323	1/2"	0.323	0.242	1 1/16"
21708	1/2"	M12	0.367	9/16"	0.367	0.275	1 1/8"
21709	1/16 & 1/8 RS NPT		0.312	1/2"	0.312	0.234	1"
21796	5" Tap Extension Set w/Case (9-piece set includes EDP No. 21700 thru 21708)						
9" TAP EXTENSIONS (CAP Diameter = "B" Body Diameter)							
21805	#0-#6	M1.6-M3.5	0.141	1/4"	0.194	0.152	7/8"
21710	#8	M4	0.168	5/16"	0.194	0.152	7/8"
21711	#10	M4.5-M5	0.194	3/8"	0.194	0.152	1"
21712	#12		0.22	3/8"	0.194	0.152	1"
21713	1/4"	M6	0.255	7/16"	0.255	0.191	1"
21714	5/16"	M7 & M8	0.318	1/2"	0.318	0.238	1 1/16"
21715	3/8"	M10	0.381	9/16"	0.381	0.286	1 1/8"
21716	7/16"		0.323	1/2"	0.323	0.242	1 1/16"
21717	1/2"	M12	0.367	9/16"	0.367	0.275	1 1/8"
21718	1/16 & 1/8 RS NPT		0.312	1/2"	0.312	0.234	1"
21797	9" Tap Extension Set w/Case (9-piece set includes EDP No. 21805 thru 21717)						
6" TAP EXTENSIONS (For Taps Larger Than 1/2") (CAP Diameter = 1/8" Greater than "B" Body Diameter)							
21719	9/16"		0.429	3/4"	0.429	0.320	1 1/4"
21720	1/8 NPT		0.437	3/4"	0.437	0.328	1"
21721	5/8"	M16	0.480	3/4"	0.480	0.360	1 1/4"
21722	11/16"		0.542	7/8"	0.542	0.406	1 1/4"
21723	1/4 NPT		0.562	7/8"	0.562	0.420	1"
21724	3/4"		0.590	7/8"	0.590	0.440	1 3/8"
21725	7/8"		0.697	1"	0.697	0.520	1 3/8"
21726	3/8 NPT		0.700	1"	0.700	0.530	1 3/16"
21727	1/2 NPT		0.687	1"	0.687	0.515	1 1/4"
21798	1"		0.800	1"	0.800	0.600	1 /2"

Specify quantity, EDP number, tap size and extension length.

FOR COOLANT-THROUGH ANSI STANDARD TAPS



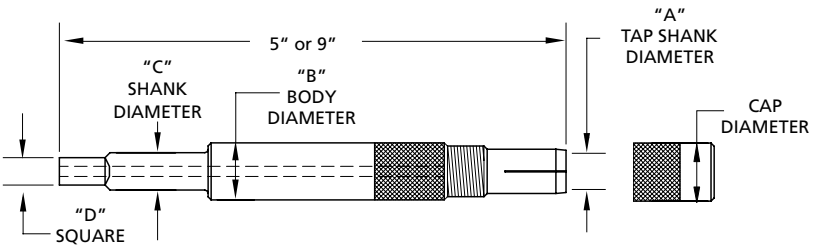
The tap shank enters the hole and is locked into a square in the bottom of the hole. The tap is then secured by hand tightening the compression cap.

- Coolant-Through Hand Tap Extensions 5" & 9" Length
- Made from tool steel.
- Internal square drive for positive tap drive.
- Compression cap for easy tightening. No wrench required.
- A very effective tool at low cost.
- The slim profile lets you fit into places not accessible to conventional tap extensions.
- Eliminates the need for purchasing expensive extended length taps.
- Integral compression collet eliminates the need for bulky collet nuts.

EDP NUMBER	NOMINAL TAP SIZE	METRIC TAP SIZE ASME/ANSI B94.9 - 1987	DIA OF TAP SHANK (INCH)	EXT DIA (INCH)	SHANK DIA (INCH)	SQUARE SIZE (INCH)	DEPTH TAP ENTERS	COOLANT HOLE DIA
5" COOLANT THRU TAP EXTENSIONS (CAP Diameter = "B" Body Diameter)								
21728	#0-#6	M1.6-M3.5	0.141	1/4"	0.194	0.152	7/8"	7/64
21729	#8	M4	0.168	5/16"	0.194	0.152	7/8"	7/64
21730	#10	M4.5-M5	0.194	3/8"	0.194	0.152	1"	7/64
21731	#12		0.22	3/8"	0.194	0.152	1"	7/64
21732	1/4"	M6-M6.3	0.255	7/16"	0.255	0.191	1"	3/32
21733	5/16"	M7 & M8	0.318	1/2"	0.318	0.238	1 1/16"	5/32
21734	3/8"	M10	0.381	9/16"	0.381	0.286	1 1/8"	5/32
21735	7/16"		0.323	1/2"	0.323	0.242	1 1/16"	5/32
21736	1/2"	M12	0.367	9/16"	0.367	0.275	1 1/8"	5/32
21799	1/16 & 1/8 RS NPT		0.312	1/2"	0.312	0.234	1"	5/32
9" COOLANT THRU TAP EXTENSIONS (CAP Diameter = "B" Body Diameter)								
21737	#0-#6	M1.6-M3.5	0.141	1/4"	0.194	0.152	7/8"	7/64
21738	#8	M4	0.168	5/16"	0.194	0.152	7/8"	7/64
21739	#10	M4.5-M5	0.194	3/8"	0.194	0.152	1"	7/64
21740	#12		0.22	3/8"	0.194	0.152	1"	7/64
21741	1/4"	M6-M6.3	0.255	7/16"	0.255	0.191	1"	3/32
21742	5/16"	M7 & M8	0.318	1/2"	0.318	0.238	1 1/16"	5/32
21743	3/8"	M10	0.381	9/16"	0.381	0.286	1 1/8"	5/32
21744	7/16"		0.323	1/2"	0.323	0.242	1 1/16"	5/32
21745	1/2"	M12	0.367	9/16"	0.367	0.275	1 1/8"	5/32
21800	1/16 & 1/8 RS NPT		0.312	1/2"	0.312	0.234	1"	5/32
6" COOLANT THRU TAP EXTENSIONS (For Taps Larger Than 1/2") (CAP Diameter = 1/8" Greater than "B" Body Diameter)								
21746	9/16"		0.429	3/4"	0.429	0.320	1 1/4"	3/16
21747	1/8 NPT		0.437	3/4"	0.437	0.328	1"	3/16
21748	5/8"	M16	0.480	3/4"	0.48	0.360	1 1/4"	3/16
21749	11/16"		0.542	7/8"	0.542	0.406	2 1/4"	3/16
21750	1/4 NPT		0.562	7/8"	0.562	0.420	1"	3/16
21751	3/4"		0.590	7/8"	0.59	0.440	1 3/8"	3/16
21752	7/8"		0.697	1"	0.697	0.520	1 3/8"	3/16
21753	3/8 NPT		0.700	1"	0.7	0.530	1 3/16"	3/16
21754	1/2 NPT		0.687	1"	0.687	0.515	1 1/4"	3/16
21755	1"		0.800	1"	0.8	0.600	1 1/2"	3/16

Specify quantity, EDP number, tap size and extension length.

FOR DIN STANDARD TAPS



The tap shank enters the hole and is locked into a square in the bottom of the hole. The tap is then secured by hand tightening the compression cap.

- Metric DIN Hand Tap Extensions 5" & 9" Length
- All popular DIN metric sizes.
- All the most popular sizes available for coolant-through taps.
- Made from tool steel.
- Internal square drive for positive tap drive.
- Compression cap for easy tightening. No wrench required.
- A very effective tool at low cost.
- The slim profile lets you fit into places not accessible to conventional tap extensions.
- Eliminates the need for purchasing expensive extended length taps.
- Integral compression collet eliminates the need for bulky collet nuts.

EDP NUMBER	TAPS WITH DIN 371 SHANKS	TAPS WITH DIN 374/376 SHANKS	DIA OF TAP SHANK (MM)	DIA OF SHANK (INCH)	DEPTH TAP ENTERS	EXT DIA	SHANK DIA (MM)	SHANK DIA (INCH)	SQUARE SIZE (MM)	SQUARE SIZE (INCH)	WITH COOLANT HOLE	
											EDP NUMBER	COOLANT HOLE SIZE
5" (127mm) LONG TAP EXTENSIONS (CAP Diameter = "B" Body Diameter)												
21756	M2-M2.6	M4	2.8mm	(0.110)	7/8"	1/4"	6mm	(0.236)	4.9mm	(0.193)	21776	2.36mm
21757	M3	M4.5-M5	3.5mm	(0.137)	7/8"	5/16"	6mm	(0.236)	4.9mm	(0.193)	21777	2.36mm
21758	M3.5	M5.5	4.0mm	(0.157)	7/8"	3/8"	6mm	(0.236)	4.9mm	(0.193)	21778	2.36mm
21759	M4	M6	4.5mm	(0.177)	7/8"	3/8"	6mm	(0.236)	4.9mm	(0.193)	21779	2.36mm
21760	M4.5-M6	M8	6.0mm	(0.236)	1"	7/16"	7mm	(0.275)	5.5mm	(0.216)	21780	3.96mm
21761	M7	M9-M10	7.0mm	(0.275)	1"	1/2"	7mm	(0.275)	5.5mm	(0.216)	21781	3.96mm
21762	M8	M11	8.0mm	(0.315)	1 1/8"	1/2"	8mm	(0.315)	6.2mm	(0.244)	21782	3.96mm
21763	M9	M12	9.0mm	(0.354)	1 3/16"	5/8"	9mm	(0.354)	7mm	(0.275)	21783	3.96mm
21764	M10		10.0mm	(0.393)	1 1/4"	5/8"	10mm	(0.393)	8mm	(0.315)	21784	3.96mm
21765		M14	11.0mm	(0.433)	1 3/8"	3/4"	11mm	(0.433)	9mm	(0.354)	21785	3.96mm
21801	M12	M16	12.0mm	(0.472)	1 3/8"	3/4"	12mm	(0.472)	9mm	(0.354)	21803	3.96mm
9" (228.6mm) TAP EXTENSIONS (CAP Diameter = "B" Body Diameter)												
21766	M2-M2.6	M4	2.8mm	(0.110)	7/8"	1/4"	6mm	(0.236)	4.9mm	(0.193)	21786	2.36mm
21767	M3	M4.5-M5	3.5mm	(0.137)	7/8"	5/16"	6mm	(0.236)	4.9mm	(0.193)	21787	2.36mm
21768	M3.5	M5.5	4.0mm	(0.157)	7/8"	3/8"	6mm	(0.236)	4.9mm	(0.193)	21788	2.36mm
21769	M4	M6	4.5mm	(0.177)	7/8"	3/8"	6mm	(0.236)	4.9mm	(0.193)	21789	2.36mm
21770	M4.5-M6	M8	6.0mm	(0.236)	1"	7/16"	7mm	(0.275)	5.5mm	(0.216)	21790	3.96mm
21771	M7	M9-M10	7.0mm	(0.275)	1"	1/2"	7mm	(0.275)	5.5mm	(0.216)	21791	3.96mm
21772	M8	M11	8.0mm	(0.315)	1 1/8"	1/2"	8mm	(0.315)	6.2mm	(0.244)	21792	3.96mm
21773	M9	M12	9.0mm	(0.354)	1 3/16"	5/8"	9mm	(0.354)	7mm	(0.275)	21793	3.96mm
21774	M10		10.0mm	(0.393)	1 1/4"	5/8"	10mm	(0.393)	8mm	(0.315)	21794	3.96mm
21775		M14	11.0mm	(0.433)	1 3/8"	3/4"	11mm	(0.433)	9mm	(0.354)	21795	3.96mm
21802	M12	M16	12.0mm	(0.472)	1 3/8"	3/4"	12mm	(0.472)	9mm	(0.354)	21804	3.96mm

Specify quantity, EDP number, tap size and extension length.

STANDARD SYSTEM OF TAP MARKING

Taps, dies and other types of threading tools are marked according to the Standard System of Marking Ground Thread Taps. Tools are marked with the nominal size, number of threads per inch (pitch), and the appropriate thread form symbol and pitch diameter symbol. Symbols typically used are listed.

Nominal Size – Threads Per Inch
Tap Material
Thread Form Symbol (See listing below)
Pitch Diameter Limit (See listing below)

PITCH DIAMETER LIMIT SYMBOLS

All standard ground thread taps are marked with the letter "G" to designate Ground Thread. The letter G will be followed by the letter "H" to designate above basic; or the letter "L" to designate below basic. The number following H or L signifies the number of .0005" steps above or below the basic pitch diameter. *For instance, the tap pictured above is a 3/8" dia. tap with 20 threads per inch (pitch), and has a NS (American National Special Thread) thread form. The tap is made from High Speed Steel, and the GH-3 pitch diameter limit symbol indicates a Ground Thread tap with pitch diameter limits .0010 to .0015 over basic.*

Pitch Diameter Limits for taps to 1" diameter inclusive:

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

Taps larger than 1" dia. are ground to a .0010" tolerance on the pitch diameter and are, for example,
H4 (Basic plus .0010" to Basic plus .0020").

THREAD FORM SYMBOLS

ACME-C	Acme Thread-Centralizing
ACME-G	Acme Thread-General Purpose
AMO	American Standard Microscope Objective Thread
ANPT	Aeronautical National Form Taper Pipe Thread (Ground thread tap marked NPT)
BA	British Association Standard Thread
BSF	British Standard Fine Thread Series
BSP	British Standard Pipe
BSPP	British Standard Pipe (Parallel) Thread
BSPT	British Standard Taper Pipe Thread
BSW	British Standard Whitworth Coarse Thread Series
M	Metric ScrewThread Series
N	American National 8, 12 and 16 Thread Series (8N, 12N, 16N)
NBUTT	American Buttress Screw Thread
NC	American National Coarse Thread Series
NEF	American National Extra Fine Thread Series
NF	American National Fine Thread Series
NGO	National Gas Outlet Thread
NGT	National Gas Taper Thread (see "SGT")
NH	American National Hose Coupling and Fire Hose Coupling Threads
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 Fuel Internal Straight Pipe Thread
NPSH	American National Standard Straight Pipe Thread for Hose Couplings
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 Threads for Free-Fitting Mechanical Joints for Fixtures (Tap marked NPS)
NPT	American National Standard Taper Pipe Thread (See ANPT, NPTR)
NPTF	Dryseal American National Standard Taper Pipe Thread
NPTR	American National Standard Taper Pipe Thread for Railing Joints (Tap marked NPT)
NS	American National Thread-Special
PG	Panzer Gewinde
PTF	Dryseal SAE Short Taper Pipe Thread
SGT	Special Gas Taper Thread
SPL-PTF	Dryseal Special Taper Pipe Thread
STI	Special Thread for Helical Coil Wire Screw Thread Inserts
Stub Acme	Stub Acme Thread
*UN	Unified Constant Pitch Thread Series
*UNC	Unified Coarse Thread Series
*UNEF	Unified Extra Fine Thread Series
*UNF	Unified Fine Thread Series
UNJ**	Unified Thread Series with a 0.15011P to 0.18042P Controlled Root Radius on External Thread only.
UNJC	Unified Coarse Thread Series with a 0.15011P to 0.18042P Controlled Root Radius on External Thread only.
UNJF	Unified Fine Thread Series with a 0.15011P to 0.18042P Controlled Root Radius on External Thread only.
UNM	Unified Miniature Thread Series
UNR	Unified Constant Pitch Thread Series with a 0.108P to 0.144P Controlled Root Radius; Ext. thread only.
UNRC	Unified Coarse Thread Series with a 0.108P to 0.144P Controlled Root Radius; Ext. thread only.
UNRF	Unified Fine Thread Series with a 0.108P to 0.144P Controlled Root Radius; External thread only.
*UNS	Unified Thread-Special
V	A 60° "V" thread with Truncated Crest and Root. The theoretical "V" Form is usually flatted to the user's specifications.
WHIT	British Standard Whitworth Special Thread

* Taps are not marked with "U" but with the symbol for the corresponding American Standard thread form with which it is compatible.

** See page 100 for additional information on UNJ taps.

SPECIAL TAPS

INCH SCREW THREADS - UNJ PROFILE
Controlled Root Radius with Increased Minor Diameter

The UNJ thread standard (ASME B1.15) defines a system of threads for highly stressed applications requiring high fatigue strength. It was derived from a military specification (MIL-S-8879). MIL-S-8879 was primarily thought of and used for aerospace fastener and threaded component applications. Due to the increase in both its use and types of applications, the American Society of Mechanical Engineers developed and published ASME B1.15 in 1995.

FORM. UNJ screw threads are of the same form as Unified Screw Threads to ASME/ANSI B1.1 except:

External threads: the root has a maximum and minimum prescribed continuous radius, and is not merely rounded due to tool wear.

Internal threads: the minor diameter is increased to accomodate the maximum root radius of the external thread. There is no radius requirement for either the crest or the root of the internal thread.

Designation. UNJ product threads are identified by the letter "J" in the thread symbol, and a thread class symbol including an "A" for external threads or a "B" for internal threads.

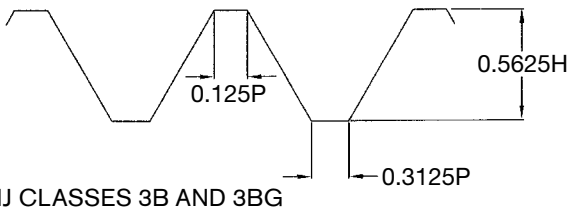
Use of Unified Tooling. Many of the UNJ thread form characteristics are the same as for UN threads. Therefore, some of the tooling used to produce one form can be used to produce the other.

External UNJ threads must be produced with a prescribed root radius; therefore, standard Unified Screw Thread (UN) tooling may not be used.

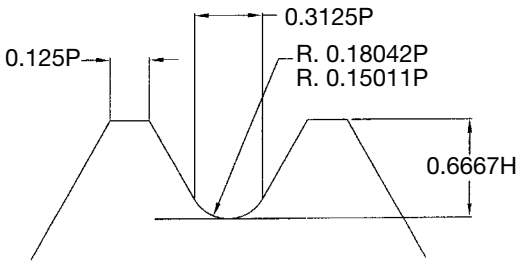
Internal UNJ threads are not required to have a root radius; therefore, ground thread taps designed to produce Unified Screw Threads of the proper class of fit may be used. The letter "J" need not be marked on the tap. The larger product minor diameter of the UNJ internal thread requires the use of a larger tap drill than is used when producing Unified Screw Threads.

- UNJ Thread Form: Unified Thread Series with a 0.15011P to 0.18042P controlled root radius on external thread only. (As defined by MIL-S-8879C)
- UNJ internal threads do not require radius; only external thread requires radius on root.
- UNJ external thread assembles only with UNJ internal thread.
- UNJ tap is standard 2B or 3B class of fit.

UNJ INTERNAL THREAD
Root to Clear 0.125P Width-Flat or Rounded
Assembles With All UN External Threads



UNJ CLASSES 3B AND 3BG
NO RADIUS REQUIRED ON
INTERNAL THREADS



UNJ EXTERNAL THREAD
Assembles Only With UNJ Internal

CLASSES OF THREADS AND TAP SIZE: There is a direct relationship between the size of a tap and the size of the thread that it cuts. Size refers to pitch diameter and its relationship to the class of fit required. If two threaded parts are assembled, the looseness or tightness of the fit is determined by contact on the flanks of the threads only. This contact is controlled by the pitch diameters of each part.

CLASSES OF THREAD: When threaded parts are mated, the two parts must assemble with a degree of tightness dictated by the use of the fastener. In addition, the internal thread must be large enough to allow the external thread to enter it for the required length of engagement. A system of thread classes, each representing a comparative degree of tightness, has been established and universally adopted, to provide manufacturers and users of threaded products with a common language of specification. The thread classes designate minimum and maximum pitch diameters for internal and external threads. It is important to remember that classes of thread actually represents manufacturing tolerances. The closer the tolerance required, the higher the cost involved in producing the parts. Therefore, designers and engineers should always try to select the class of thread with the widest permissible tolerance.

TAP SIZE: Due to material variability and machining conditions, taps rarely cut their own size. The thread size produced is usually larger, but can be smaller due to shrinkage. Tap manufacturers realized that to tap a specified class of thread, several different ground thread tap limits would be required. These limits represent small, defined variations in tap size. A numbering system was developed to designate each series of limits, but these limit numbers are not to be confused with the classes of threads. Ground thread tap limits are designated by the letter H (high) above basic pitch diameter, or L (low) below basic pitch diameter, and these numbers establish the tolerance range in relation to basic pitch diameter. As an example, in sizes 1" and smaller, an H1 tap has a tolerance range of from basic to .0005" over basic; an H2 tap from .0005" over basic to .001" over basic, (see chart 1A on this page). In addition, metric threads are also designated in much the same way. The thread tap limits are designated by the letter D (ground, high) above basic pitch diameter, or U (ground, low) below basic pitch diameter. As an example, in sizes M25 and smaller, a D1 tap has a size of .0005" over basic to tap max. P.D.; a D2 tap has a size of .001" over basic to tap max. P.D., (see Chart 1B). The Tables on pages 115-117 list recommended limit numbers for different classes of thread. Several different limit numbers are available for each diameter and pitch combination. Consequently, it is possible to select the "H" or "L" limit, or the "D" or "U" limit most suitable for the required tapping operation. Please contact our Customer Service Dept. for questions regarding tap limits and their relation to classes of fit.

CHART 1A

Pitch Diameter Limits for taps to 1" diameter inclusive:

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

Taps larger than 1" dia. are ground to a .0010" tolerance on the pitch diameter and are, for example,
H4 (Basic plus .0010" to Basic plus .0020").

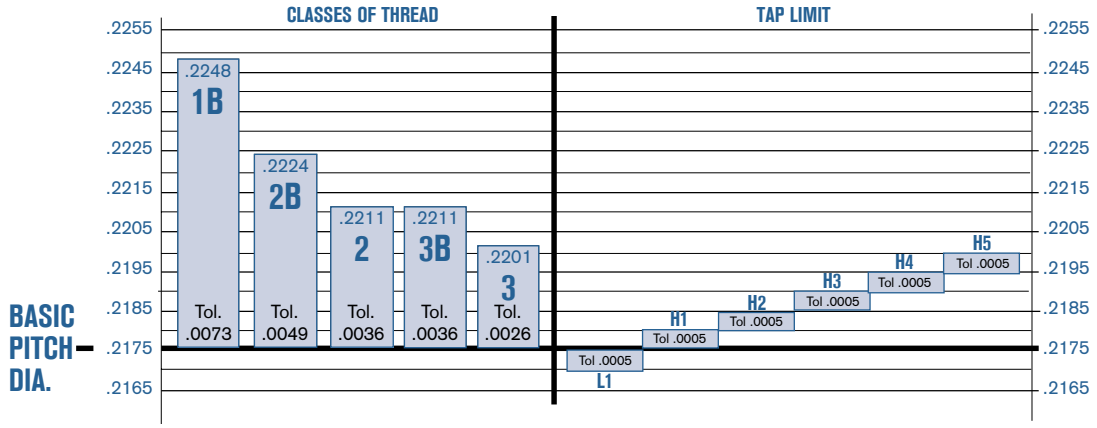
CHART 1B

Pitch Diameter Limits for taps to 1" diameter inclusive: (Metric taps generally have more manufacturing tolerance than .0005 to the minus side.)

U1 = Basic minus .0005 = min. tap P.D.
D1 = Basic plus .0005 = max. tap P.D.
D2 = Basic plus .0010 = max. tap P.D.
D3 = Basic plus .0015 = max. tap P.D.
D4 = Basic plus .0020 = max. tap P.D.
D5 = Basic plus .0025 = max. tap P.D.
D6 = Basic plus .0030 = max. tap P.D.

SPECIAL TAPS & GAGES

CHART 2A COMPARISON OF PITCH DIAMETER LIMITS TO CLASS OF FIT



On Charts 2A and 2B (below), examples of the relationship of Class of Fit to various tap limit sizes is shown for both Imperial and Metric sizes. In chart 2A, using a 1/4"-20NC or UNC thread size, it is obvious that an H5 limit (+.0025" over basic pitch diameter) can be used to cut the tightest class of thread in most machining situations, as can the H1 limit (+.0005" over basic P.D.). However, tool wear would force the discarding of the H1 tap long before the H5 would be worn to an undersize condition. The rule is obvious: always select the largest "H" limit possible to achieve proper class of fit, and maximum tool life.

CHART 2B COMPARISON OF PITCH DIAMETER LIMITS TO CLASS OF FIT

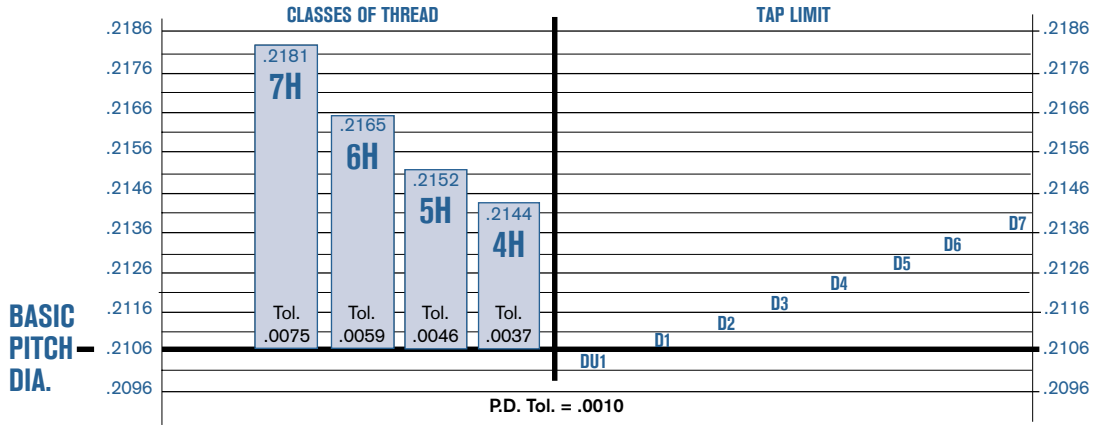


Chart 2B shows the same relationship with a metric thread. Using a M6 X 1.0, it is obvious that a D5 limit (+.0025" over basic pitch diameter) can be used to cut the standard class of thread in most machining situations, as can the D1 limit (+.0005" over basic P.D.). However, tool wear would force the discarding of the D1 tap long before the D5 would be worn to an undersize condition. The rule is obvious: always select the largest "D" limit possible to achieve proper class of fit, and maximum tool life.

SCREW THREAD CLASSES OVERVIEW: Screw thread classes are distinguished from each other by the amount of tolerance and allowance.

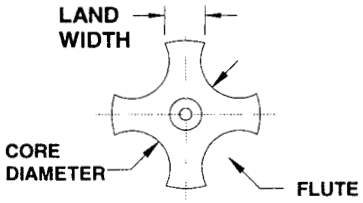
Class 1A and Class 1B: The combination of Class 1A for external threads and Class 1B for internal threads is intended to cover the manufacture of threaded parts where quick and easy assembly is necessary or desired, and an allowance is provided to permit ready assembly.

Class 2A and Class 2B: The combination of Class 2A for external threads and Class 2B for internal threads designed for screws, bolts and nuts, is also suitable for a variety of other applications. A similar allowance is provided which minimizes galling and seizure encountered in assembly and use. It also accomodates, to a limited extent, plating, finishes or coatings.

Class 3A and 3B: The combination of Class 3A for external threads and Class 3B for internal threads is provided for those applications where closeness of fit and accuracy of lead and angle of thread are important. These threads are obtained consistently only by use of high quality production equipment supported by a very efficient system of gauging and inspection.

No allowance is provided.

ILLUSTRATION OF TERMS APPLYING TO TAPS



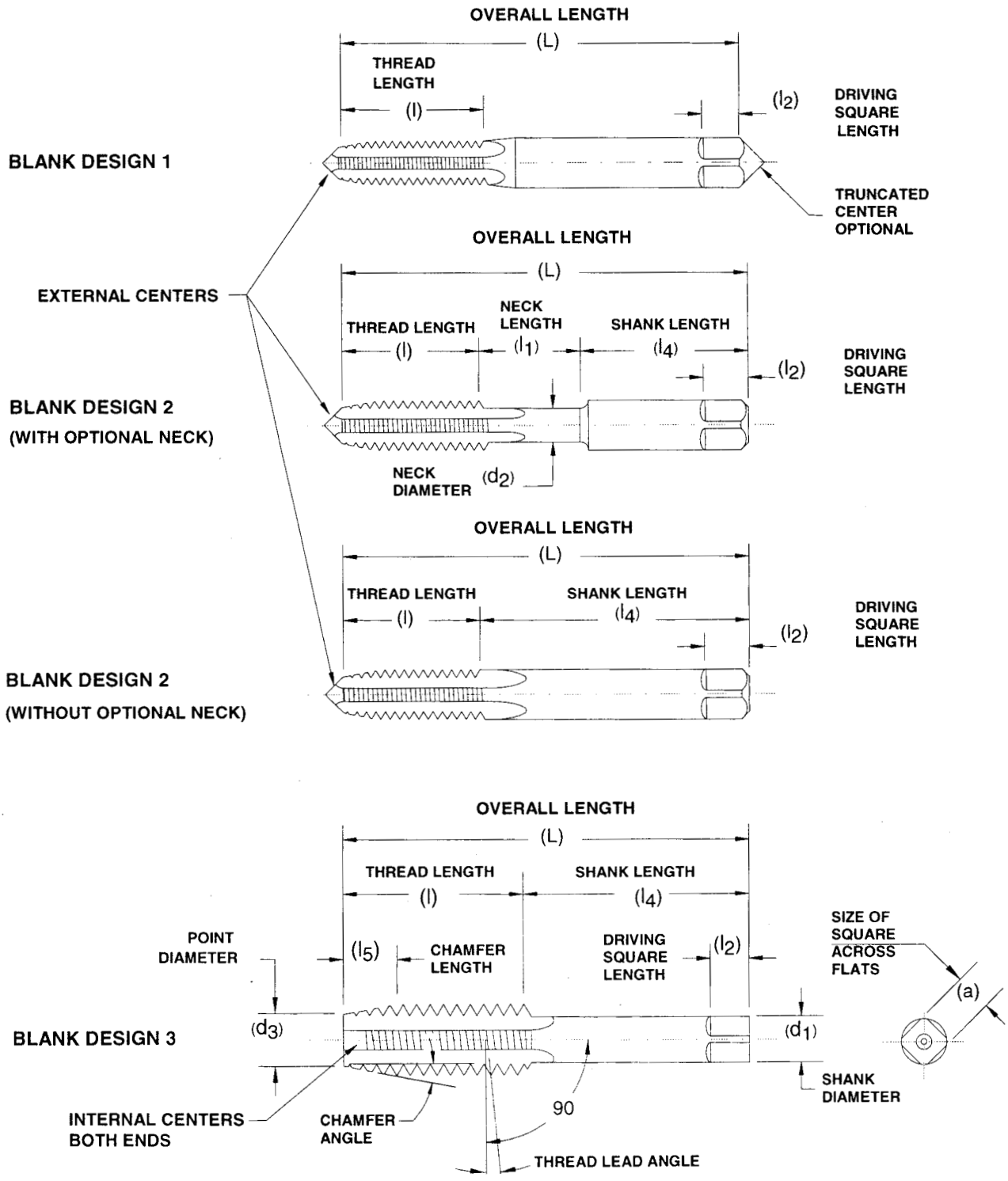
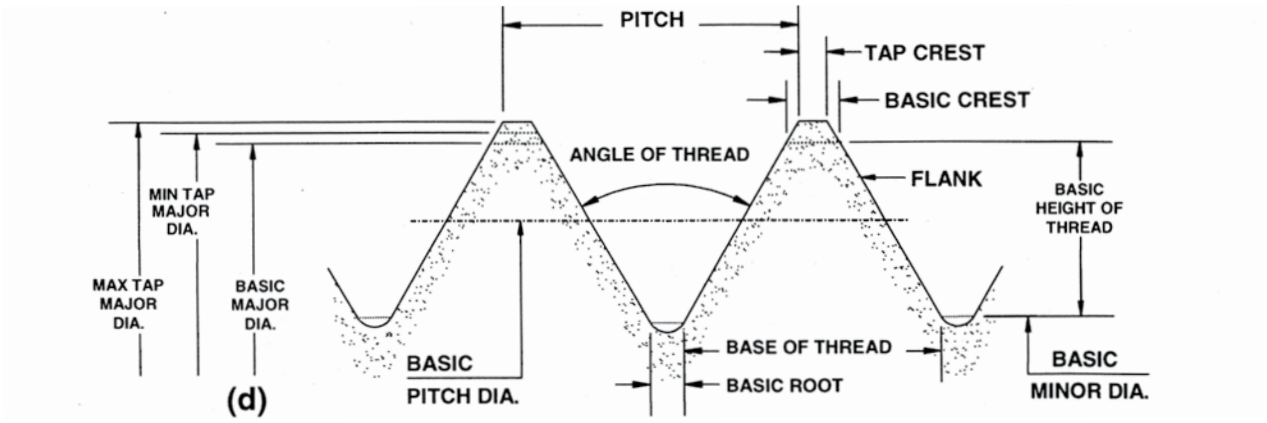
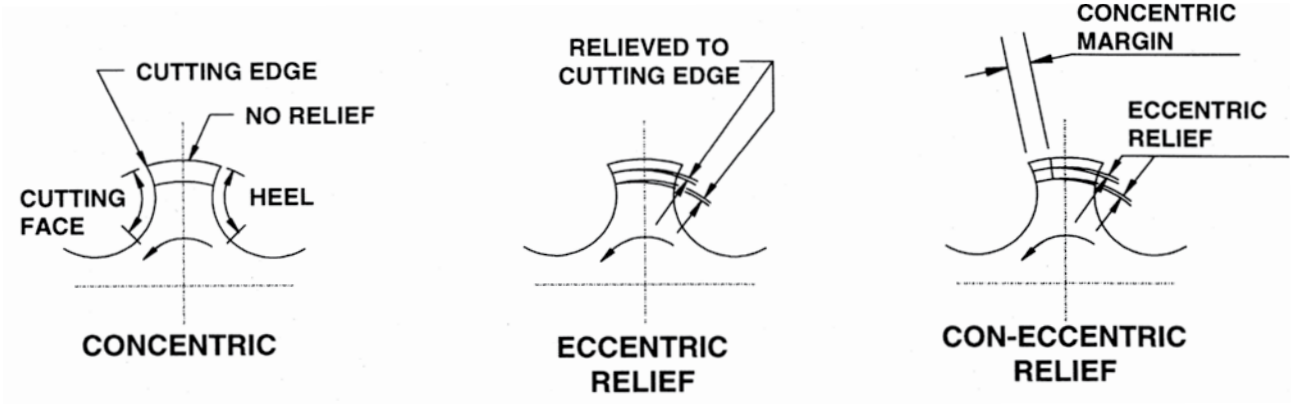
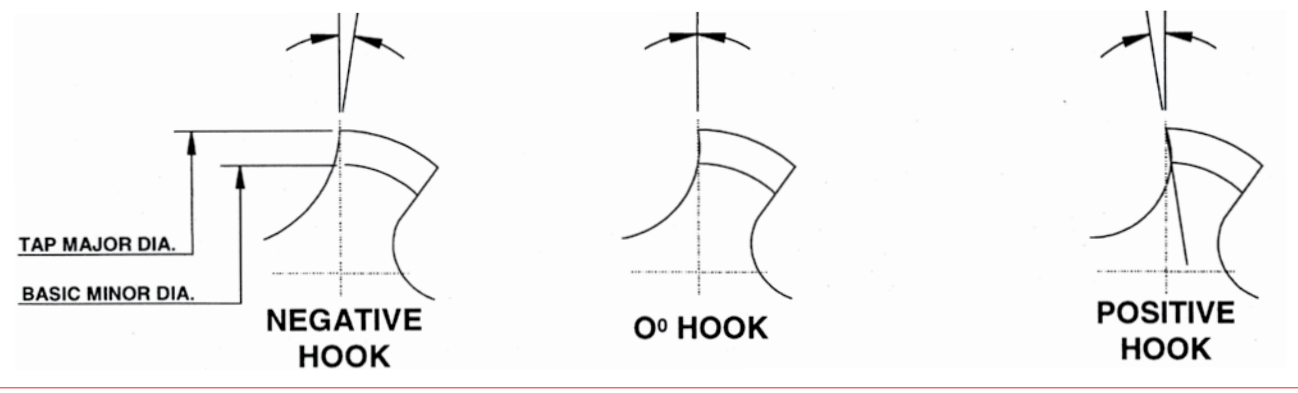
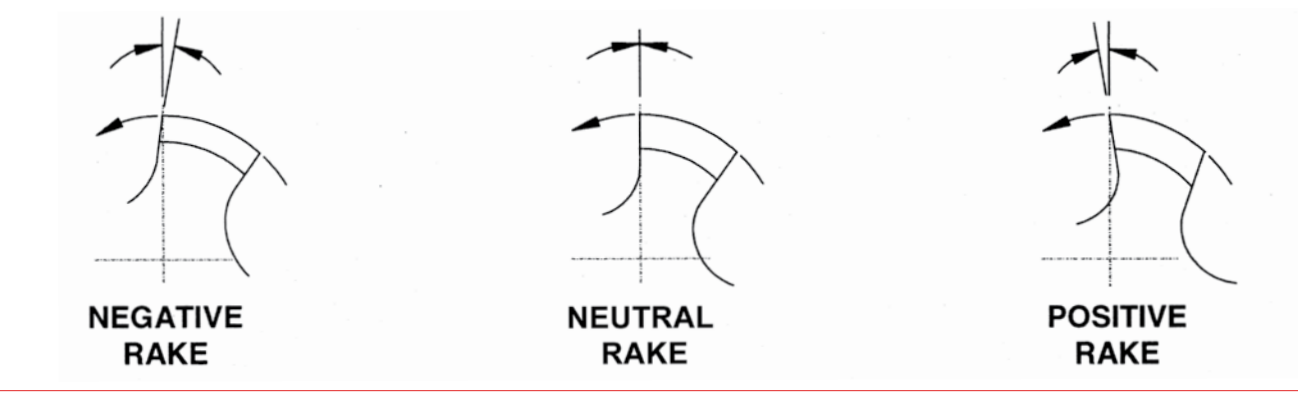


ILLUSTRATION OF TERMS APPLYING TO TAPS









DEFINITION OF TERMS APPLYING TO TAPS

ALLOWANCE
Minimum clearance between two mating parts; the prescribed variations from the basic size.

ANGLE OF THREAD
The angle included between the sides of the thread measured in an axial plane.

AXIS
The imaginary straight line that forms the longitudinal centerline of the tool or threaded part.

BACK TAPER
A gradual decrease in the diameter of the thread form on a tap from the chamfered end of the land towards the back which creates a slight radial relief in the threads.

BASE OF THREAD
The bottom section of the thread; the greatest section between the two adjacent roots.

BASIC SIZE
The theoretical or nominal standard size from which all variations are derived by application of allowances and tolerances.

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; Taper taps are chamfered 7-10 threads; plug taps are chamfered 3-5 threads; semi bottoming taps are chamfered 2-2.5 threads; bottoming taps are chamfered 1-2 threads; taper pipe taps are chamfered 2-3.5 threads.

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 sides or flanks of the 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 cutting rotation on which the chip forms.

FLUTE
The longitudinal channels formed in a tap to create cutting edges on the thread profile, and to provide chip spaces and cutting fluid passages.

HEEL
The edge of the land opposite the cutting edge.

HEIGHT OF THREAD
The distance, measured radially, between the crest and the base of a thread.

HELIX ANGLE
The angle made by the advance of the thread as it wraps around an imaginary cylinder.

HOOK
The undercut on the face of the teeth.

HOOK ANGLE
The inclination of 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 TAP
A tap having an odd number of lands with alternate teeth along the thread helix removed. In some cases alternate teeth are removed only for a portion of the thread length.

LAND
The part of the tap body which remains after the flutes are cut, and on which the threads are finally ground. The threaded section between the flutes of a tap.

LEAD
The axial distance a tap will advance along its axis in one complete turn. On a single start, the lead and the pitch are identical; on a double start, the lead is twice the pitch.

MAJOR DIAMETER
Commonly known as the “outside diameter.” It is the largest diameter of the thread.

MINOR DIAMETER
Commonly known as the “root diameter.” It is the smallest diameter of the thread.

PERCENT OF THREAD
One-half the difference between the basic major diameter and the actual minor diameter of an internal thread, divided by the basic thread height, expressed as a percentage.

PITCH
The distance from any point on a screw thread to a corresponding point on the next thread, measured parallel to the axis and on the same side of the axis. The pitch equals one divided by the number of threads per inch.

DEFINITION OF TERMS APPLYING TO TAPS

PITCH DIAMETER
On a straight thread, the pitch diameter is the diameter of the imaginary co-axial cylinder...the surface of which would pass through the thread profiles at such points as to make the width of the groove equal to one-half of the basic pitch. On a perfect thread this occurs at the point where the widths of the thread and groove are equal. On a taper thread, the pitch diameter at a given position on the thread axis is the diameter of the pitch cone at that position.

RAKE
The angular relationship of the straight cutting face of a tooth with respect to a radial line through the crest of the tooth at the cutting edge. Positive rake means that the crest of the cutting face is angularly ahead of the balance of the cutting face of the tooth. Negative rake means that the crest of the cutting face is angularly behind the balance of the cutting face of the tooth. Zero rake means that the cutting face is directly on a radial line.

RELIEF (or Thread Relief)
The removal of metal from behind the cutting edge to provide clearance and reduce friction between the part being threaded and the threaded land.

ROOT
The bottom surface joining the sides of two adjacent threads, and is identical with or immediately adjacent to the cylinder or cone from which the thread projects.

SPIRAL FLUTE
A flute with uniform axial lead in a spiral path around the axis of a tap.

SPIRAL POINT
The angular fluting in the cutting face of the land at the chamfered end; formed at an angle with respect to the tap axis of opposite hand to that of rotation. Its length is usually greater than the chamfer length and its angle with respect to the tap axis is usually made great enough to direct the chips ahead of the taps cutting action.

STRAIGHT FLUTE
A flute that forms a cutting edge lying in an axial plane.

TOLERANCE
In producing a tap to given specifications, tolerance is: (a.) the total permissible variation of a size; (b.) the difference between the limits of size.

CHAMFERS FOR THREAD CUTTING TAPS

The tap chamfer is the tapering of the threads to distribute cutting action over several teeth. The type of hole to be tapped has much to do with the chamfer style of that tap that's best suited. Some holes go all the way through; some, while not through-holes, are relatively deep; some are quite shallow (a little deeper than diameter). Each of these three kinds of holes - through, deep-bottoming blind, and shallow bottoming - has a tap chamfer best suited to threading requirements.

TAPER TAPS - This style, with a **7-10 thread chamfer**, has the longest chamfer of the three to distribute action over the maximum number of teeth; and the taper also acts as a guide in starting the cutting action in the hole.

Taper style taps start the thread square with the workpiece. Taper taps are commonly used in through holes and in materials where a tapered guide is necessary.

PLUG TAPS - This style, with a **3-5 thread chamfer**, is most widely used in through holes and where there is sufficient room at the bottom in blind holes.

SEMI-BOTTOMING TAPS - This style, with a **2 to 2.5 thread chamfer**, should be used whenever possible in difficult material applications in blind holes, when threads are not required to the bottom of the hole.

BOTTOMING TAPS - This style, designed with a **1 to 2 thread chamfer,** is made with just enough chamfer for starting in the hole; as the name implies, it is designed to thread blind holes to the bottom.

NOTE: Taper, plug and bottoming taps as a set, in a given size (for example: 1/4-20 NC) are identical as to size, length and vital measurements; the difference is in the chamfered threaded portion at the point. As a rule, such taps when used by hand are furnished in sets of three of a given size...namely, taper, plug and bottoming (and should be used in that order).

TAP STYLE GUIDE

HAND TAP

These standard style taps have straight flutes of a number specified as either standard or optional. Hand taps are for general purpose applications such as production tapping or hand tapping operations. Taper, plug and bottoming styles provide versatility in tough materials, blind and through holes.

SPIRAL POINT TAP

As to general physical dimensions, spiral point taps are identical with the standard hand tap. However, the spiral point tap has the cutting face of the first few threads cut at a predetermined angle relative to the tap's axis angle to force the evacuation of chips ahead of the cutting action. This feature, plus the excellent shearing action of the flute, make spiral pointed taps ideal for production tapping of through holes. Typically, this type of tap has a shallower flute passage than conventional taps. This gives the spiral point tap more cross-sectional area, which means greater strength, allows higher tapping speeds, and requires less power to drive.

SPIRAL FLUTED TAP

Regular (or Slow) Spiral

Fast Spiral

These taps, as the name implies, are made with spiral flutes instead of straight flutes. This spiral fluting feature aids in drawing chips out of a hole, or serves to bridge a gap inside the hole such as a keyway or cross-hole. Commonly available in slow spiral (18-30° helix angle) or fast spiral (45-52°). Spiral flute taps are available in left hand style.

INTERRUPTED THREAD TAP

These taps have an odd number of lands with alternate teeth in the thread helix removed. The removal of every other tooth helps to break the chip and allows a greater supply of lubrication to reach the cutting teeth, reducing the incidence of torn threads. Ideal for tapping non-ferrous metals and low carbon steel; as well as use in titanium and high hardness alloys.

THREAD FORMING TAP (TRU-FLO™)

These taps are fluteless except as optionally designed with one or more lubrication grooves. The thread form is lobed so there is a finite number of points contacting the work. This tap does not cut, so it is 'chipless', and consequently will not cause a chip problem. The tool forms the thread by extrusion, thus thread size can be closely maintained. The fluteless design allows high quality threads, faster tapping speeds, higher production, and generates no chips which simplifies tapping of blind bottoming holes (threads can be formed the full depth of the hole).

PIPE TAP

Straight Pipe Tap

Taper Pipe Tap

These taps are for producing standard straight or tapered pipe threads in a wide range of pipe connections. Manufactured with the appropriate design variations to cut specified pipe thread forms.

COMBINED DRILL & TAP (COST CUTTER™)

This high production tool is specially designed to drill and tap in one pass only. By design, this value-added tool reduces machining operations and subsequent parts handling. The drill end features a split point, and the tool shank and square fit standard tap holders.

ACME THREAD TAP

Acme screw threads were devised to allow rotary and transversing motion on machines; and are also used in jacks, valves, presses and other mechanisms where heavy loads are encountered. The acme thread is characterized by a 29° included angle. Acme taps typically require specialized engineering and design due to the nature and severity of cut required in producing Acme threads.

TAP STYLE GUIDE

TANDEM ACME TAP

These taps combine the initial roughing cut with the final finishing cut, in one pass, to achieve an acme screw thread. These taps are economical and enhance production levels by saving on the operation of two tools. Since acme thread pitches are generally coarse relative to diameters, these taps are subjected to heavy chip loads. To achieve a high quality acme thread in a cost-effective manner, roughing and finishing operations are recommended.

EXTENSION TAPS (incl. Nut & Pulley Taps)

Extension Tap - These taps are made to conventional tap dimensions, except that they have an extended shank in order to tap hard to reach holes. Thread length, shank diameter, and shank square are made to standard specifications listed in Table 302. Extension taps are available in both hand and spiral point styles, and in small shank style.

Pulley Tap - The hub portion of pulley parts contain oil cups and set screw holes, most of which cannot be reached with ordinary hand taps. Pulley taps have the same basic thread dimensions as hand taps, but pulley taps differ in that they have a longer shank which is of the same basic major diameter as the threaded portion. When tapping pulley hub holes, the taps are inserted through holes in the rims which are slightly larger than the shanks of the taps. These holes serve as guides or bushings for the taps to assure proper alignment when tapping. Pulley taps can also be used for general tapping in parts where an extra long length is required to reach the holes being tapped.

Nut Tap - Nut taps feature a long chamfer which assists in entering the drilled hole, and distributes the cutting action over several teeth. These taps were initially designed for tapping nuts and have a long thread length. The shank diameter is smaller than the tap's minor diameter to allow the accumulation of several nuts after tapping. Nut taps also feature an extended square length.

THREAD PLUG & RING GAGES

- Thread Plug Gages - UNC, UNF & UNEF
  Class 2B - 3B, Taperlock & Reversible,
  + Metric Sizes - Class 6H
- Thread Ring Gages - UNC, UNF, UNEF
  Class 2A-3A
  + Metric Sizes - Class 6g
- Truncated Thread Setting Plug Gages
  Class 2A-3A
  + Metric Sizes - Class 6g
- Thread Plug Gages - STI
  Screw Thread Insert
- BSP Plug Gages
  (BSPT, BSPP)
- Taper Pipe Gages - Plugs & Rings
  NPT-L1, L1 & L2 Rings,
  NPTF L1 & L3 Plugs,
  NPTF Crest Check Plugs & Rings

Thread Plug Gage

Reversible Thread Plug Gage

Thread Ring Gage

TRU-FLO® THREAD FORMING TAPS

THREAD FORMING TAP ENTRY LENGTHS: Entry taper length is measured on the full diameter of the thread forming lobes and is the axial distance from the entry diameter position to the theoretical intersection of tap major diameter and entry taper angle.

Whenever entry taper length is specified in terms of number of threads, this length is measured in number of pitches (p).

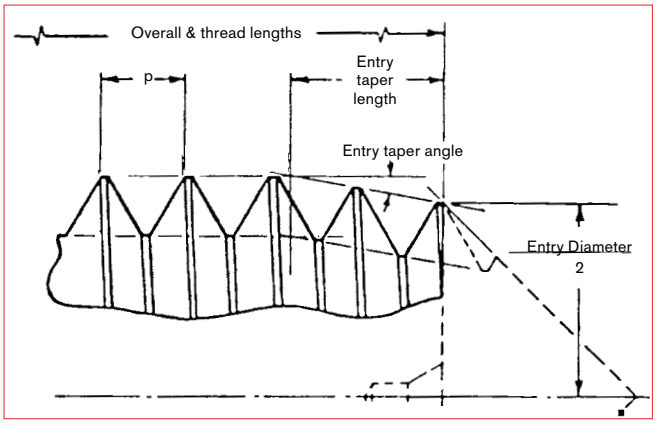
BOTTOMING LENGTH = 1-1/2 to 2-1/2 PITCHES

PLUG LENGTH = 3 to 5 PITCHES

The chamfer on Tru-Flo BOTTOM taps is approximately 2 threads long and requires a drilled hole depth 3-4 pitches beyond the full thread required. When a controlled maximum chamfer shorter than 2 threads is required, an additional charge will apply. We will not guarantee the performance of taps with the shorter chamfer.

Entry diameter, measured at the thread crest nearest the front of the tap, is an appropriate amount smaller than the diameter of the hole drilled for tapping. See below for tap/drill size formulas, and formulas to determine maximum and minimum drill hole sizes for appropriate percent of thread.

TAPPING SPEEDS: TRU-FLO taps operate most efficiently at spindle speeds 1-1/2 to 2 times faster than those recommended for conventional cutting taps, especially



in softer materials and/or with fine pitch TRU-FLO taps. As higher speeds are attained, adequate lubrication is essential for prolonged tap life and thread quality.

LUBRICATION: Since it is more important to 'lubricate' the cold-forming tap than to 'cool' the tap, TRU-FLO taps should be used with conventional lubricating cutting oils or EP (extreme pressure) rated oil...soluble oils and similar coolants are not recommended.

PRE-TAPPED HOLE SIZE: TRU-FLO cold forming taps require a larger pre-tapped hole size than conventional cutting taps. To insure a properly tapped (cold formed) hole, adhere to the following:

FORMULA FOR TAP/DRILL SIZES FOR DECIMAL/INCH TRU-FLO TAPS:

$$\text{HOLE SIZE} = \text{Basic Tap O.D.} - \left(\frac{.0068 \times \%\ \text{of Thread*}}{\text{Threads per Inch}} \right)$$

For example:
To determine drill size for a 1/4-20 thread forming tap at 65% of thread: $.250 - \left(\frac{.0068 \times 65}{20} \right) = .2279$

FORMULA FOR TAP/DRILL SIZES FOR METRIC TRU-FLO TAPS:

$$\text{HOLE SIZE (mm)} = \text{Basic Tap O.D.(mm)} - \left(\frac{\%\ \text{of Thread} \times \text{mm Pitch}}{147.06} \right)$$

* Use whole number for % of thread...for 65%, use 65 (not .65).

There is no true method of predicting percent of thread that will be obtained when tapping with forming taps due to the many variables involved. As a starting point, however, 55% for maximum drill size and 75% for minimum drill size can be used as a guide. Any desired percent of thread can be approximated by using drill sizes in between. To determine theoretical maximum and minimum drill sizes (for average operating conditions), see formulas below.

For UNIFIED INCH Threads:

Max. Drill Size = Basic Major Diameter - $\frac{3}{8N}$

Min. Drill Size = Basic Major Diameter - $\frac{1}{2N}$

N = T.P.I. (Threads per Inch)

For 60° Metric Threads:

Max. Drill Size = Basic Major Diameter - 0.375P
Min. Drill Size = Basic Major Diameter - 0.5P
P = Pitch

Note: For Basic Major Diameter and Pitch, use millimeter value to obtain drill size in mm. To convert mm to inch value, divide by 25.4: $\frac{\text{mm Value}}{25.4}$ = Inch Value

SPECIAL TAPS

TAP RECOMMENDATIONS FOR CLASSES OF THREAD

Unified and American National Screw Threads

NOMINAL SIZE	T.P.I. NC UNC	T.P.I NF UNF	RECOMMENDED TAP FOR CLASS OF THREAD				PITCH DIAMETER LIMITS FOR CLASS OF THREAD				
			CLASS 2	CLASS 3	CLASS 2B	CLASS 3B	MIN. ALL CLASSES (BASIC)	MAX. CLASS 2	MAX. CLASS 3	MAX. CLASS 2B	MAX. CLASS 3B
0	—	80	GH1	GH1	GH2	GH1	.0519	.0536	.0532	.0542	.0536
1	64	—	GH1	GH1	GH2	GH1	.0629	.0648	.0643	.0655	.0648
1	—	72	GH1	GH1	GH2	GH1	.0640	.0658	.0653	.0665	.0659
2	56	—	GH1	GH1	GH2	GH1	.0744	.0764	.0759	.0772	.0765
2	—	64	GH1	GH1	GH2	GH1	.0759	.0778	.0773	.0786	.0779
3	48	—	GH1	GH1	GH2	GH1	.0855	.0877	.0871	.0885	.0877
3	—	56	GH1	GH1	GH2	GH1	.0874	.0894	.0889	.0902	.0895
4	40	—	GH2	GH1	GH2	GH2	.0958	.0982	.0975	.0991	.0982
4	—	48	GH1	GH1	GH2	GH1	.0985	.1007	.1001	.1016	.1008
5	40	—	GH2	GH1	GH2	GH2	.1088	.1112	.1105	.1121	.1113
5	—	44	GH1	GH1	GH2	GH1	.1102	.1125	.1118	.1134	.1126
6	32	—	GH2	GH1	GH3	GH2	.1177	.1204	.1196	.1214	.1204
6	—	40	GH2	GH1	GH2	GH2	.1218	.1242	.1235	.1252	.1243
8	32	—	GH2	GH1	GH3	GH2	.1437	.1464	.1456	.1475	.1465
8	—	36	GH2	GH1	GH2	GH2	.1460	.1485	.1478	.1496	.1487
10	24	—	GH3	GH1	GH3	GH3	.1629	.1662	.1653	.1672	.1661
10	—	32	GH2	GH1	GH3	GH2	.1697	.1724	.1716	.1736	.1726
12	24	—	GH3	GH1	GH3	GH3	.1889	.1922	.1913	.1933	.1922
12	—	28	GH3	GH1	GH3	GH3	.1928	.1959	.1950	.1970	.1959
1/4	20	—	GH3	GH2	GH5	GH3	.2175	.2211	.2201	.2224	.2211
1/4	—	28	GH3	GH1	GH4	GH3	.2268	.2299	.2290	.2311	.2300
5/16	18	—	GH3	GH2	GH5	GH3	.2764	.2805	.2794	.2817	.2803
5/16	—	24	GH3	GH1	GH4	GH3	.2854	.2887	.2878	.3401	.2890
3/8	16	—	GH3	GH2	GH5	GH3	.3344	.3389	.3376	.3401	.3387
3/8	—	24	GH3	GH1	GH4	GH3	.3479	.3512	.3503	.3528	.3516
7/16	14	—	GH5	GH3	GH5	GH3	.3911	.3960	.3947	.3972	.3957
7/16	—	20	GH3	GH1	GH5	GH3	.4050	.4086	.4076	.4104	.4091
1/2	13	—	GH5	GH3	GH5	GH3	.4500	.4552	.4537	.4565	.4548
1/2	—	20	GH3	GH1	GH5	GH3	.4675	.4711	.4701	.4731	.4717
9/16	12	—	GH5	GH3	GH5	GH3	.5084	.5140	.5124	.5152	.5135
9/16	—	18	GH3	GH2	GH5	GH3	.5264	.5305	.5294	.5323	.5308
5/8	11	—	GH5	GH3	GH5	GH3	.5660	.5719	.5702	.5732	.5714
5/8	—	18	GH3	GH2	GH5	GH3	.5889	.5930	.5919	.5949	.5934
3/4	10	—	GH5	GH3	GH5	GH3	.6850	.6914	.6895	.6927	.6907
3/4	—	16	GH3	GH2	GH5	GH3	.7094	.7139	.7126	.7159	.7143
7/8	9	—	GH6	GH4	GH6	GH4	.8028	.8098	.8077	.8110	.8089
7/8	—	14	GH4	GH2	GH6	GH4	.8286	.8335	.8322	.8356	.8339
1	8	—	GH6	GH4	GH6	GH4	.9188	.9264	.9242	.9276	.9254
1	—	12	GH4	GH2	GH6	GH4	.9459	.9515	.9499	.9535	.9516
1	—	14*	GH4	GH2	GH6	GH4	.9536	.9585	.9572	.9609	.9590
1 1/8	7	—	GH8	GH4	GH8	GH4	1.0322	1.0407	1.0381	1.0416	1.0393
1 1/8	—	12	GH4	GH4	GH6	GH4	1.0709	1.0765	1.0749	1.0787	1.0768
1 1/4	7	—	GH8	GH4	GH8	GH4	1.1572	1.1657	1.1631	1.1668	1.1644
1 1/4	—	12	GH4	GH4	GH6	GH4	1.1959	1.2015	1.1999	1.2039	1.2019
1 3/8	6	—	GH8	GH4	GH8	GH4	1.2667	1.2768	1.2738	1.2771	1.2745
1 3/8	—	12	GH4	GH4	GH6	GH4	1.3209	1.3265	1.3249	1.3291	1.3270
1 1/2	6	—	GH8	GH4	GH8	GH4	1.3917	1.4018	1.3988	1.4022	1.3996
1 1/2	—	12	GH4	GH4	GH6	GH4	1.4459	1.4515	1.4499	1.4542	1.4522

*UN

These are general tap recommendations to produce the Class of Thread indicated in average materials when used with reasonable care. However, if the tap specified does not give a satisfactory gage fit in the work, please consult the factory.

METRIC TAP RECOMMENDATIONS FOR CLASSES OF THREAD (ISO)

SIZE mm	PITCH mm	RECOMMENDED TAP FOR CLASS OF THREAD		PITCH DIAMETER LIMITS FOR CLASS OF THREAD		
		4H	6H	MINIMUM (BASIC)	MAX. 4H	MAX. 6H
M1.5	0.35	D1	D2	1.273	1.326	1.358
M1.6	0.35	D1	D3	1.373	1.426	1.458
M1.8	0.35	D1	D3	1.573	1.626	1.658
M2	0.45	D1	D2	1.708	1.768	1.803
M2	0.40	D1	D3	1.740	1.796	1.830
M2.2	0.45	D1	D3	1.908	1.968	2.003
M2.3	0.40	D1	D2	2.040	2.096	2.130
M2.5	0.45	D1	D3	2.208	2.268	2.303
M2.6	0.45	D1	D2	2.308	2.368	2.403
M3	0.60	D1	D2	2.610	2.681	2.722
M3	0.50	D1	D3	2.675	2.738	2.775
M3.5	0.60	D1	D4	3.110	3.181	3.222
M4	0.75	D2	D3	3.513	3.588	3.631
M4	0.70	D2	D4	3.545	3.620	3.663
M4.5	0.75	D2	D4	4.013	4.088	4.131
M5	1.00	D2	D3	4.350	4.440	4.490
M5	0.90	D2	D3	4.415	4.501	4.549
M5	0.80	D2	D4	4.480	4.560	4.605
M5.5	0.90	D2	D3	4.915	5.002	5.050
M6	1.00	D3	D5	5.350	5.445	5.500
M6	0.75	D3	D4	5.513	5.598	5.645
M7	1.00	D3	D5	6.350	6.445	6.500
M7	0.75	D2	D4	6.513	6.598	6.645
M8	1.25	D3	D5	7.188	7.288	7.348
M8	1.00	D3	D5	7.350	7.445	7.500
M9	1.25	D3	D5	8.188	8.288	8.348
M9	1.00	D3	D5	8.350	8.445	8.500
M10	1.50	D3	D6	9.026	9.138	9.206
M10	1.25	D3	D5	9.188	9.288	9.348
M10	1.00	D3	D5	9.350	9.445	9.500
M11	1.50	D3	D5	10.026	10.138	10.206
M12	1.75	D3	D6	10.863	10.988	11.063
M12	1.50	D3	D6	11.026	11.144	11.216
M12	1.25	D3	D5	11.188	11.300	11.368
M14	2.00	D3	D7	12.701	12.833	12.913
M14	1.50	D3	D6	13.026	13.144	13.216
M14	1.25	D3	D5	13.188	13.300	13.368

cont.

These are general tap recommendations to produce the Class of Thread indicated in average materials when used with reasonable care. However, if the tap specified does not give a satisfactory gage fit in the work, please consult the factory.

SPECIAL TAPS

METRIC TAP RECOMMENDATIONS FOR CLASSES OF THREAD (ISO) cont.

SIZE mm	PITCH mm	RECOMMENDED TAP FOR CLASS OF THREAD		PITCH DIAMETER LIMITS FOR CLASS OF THREAD		
		4H	6H	MINIMUM (BASIC)	MAX. 4H	MAX. 6H
M16	2.00	D4	D7	14.701	14.833	14.913
M16	1.50	D3	D6	15.026	15.144	15.216
M17	1.50	D3	D5	16.026	16.144	16.216
M18	2.50	D4	D7	16.376	16.516	16.600
M18	2.00	D4	D6	16.701	16.833	16.913
M18	1.50	D3	D6	17.026	17.144	17.216
M19	2.50	D4	D6	17.376	17.516	17.600
M20	2.50	D4	D7	18.376	18.516	18.600
M20	2.00	D4	D6	18.701	18.833	18.913
M20	1.50	D3	D6	19.026	19.144	19.216
M22	2.50	D4	D7	20.376	20.516	20.600
M22	2.00	D4	D6	20.701	20.833	20.913
M22	1.50	D3	D6	21.026	21.144	21.216
M24	3.00	D4	D8	22.051	22.221	22.316
M24	2.00	D4	D7	22.701	22.841	22.925
M24	1.50	D3	D5	23.026	23.151	23.226
M25	2.00	D4	D7	23.701	23.841	23.925
M25	1.50	D3	D5	24.026	24.151	24.226
M26	3.00	D5	D8	24.051	24.221	24.316
M27	3.00	D5	D8	25.051	25.221	25.316
M27	2.00	D5	D7	25.701	25.841	25.925
M28	3.00	D5	D8	26.051	26.221	26.316
M28	2.00	D5	D7	26.701	26.841	26.925
M30	3.50	D5	D9	27.727	27.907	28.007
M30	3.00	D5	D8	28.051	28.221	28.316
M30	2.00	D5	D7	28.701	28.841	28.925
M32	3.50	D5	D9	27.727	29.907	30.007
M32	2.00	D5	D7	30.701	30.841	30.925
M33	3.50	D5	D9	30.727	30.907	31.007
M33	3.00	D5	D8	31.051	31.221	31.316
M33	2.00	D5	D7	31.701	31.841	31.925
M34	3.50	D5	D9	31.727	31.907	32.007
M36	4.00	D5	D9	33.402	33.592	33.702
M36	3.00	D5	D8	34.051	34.221	34.316
M36	2.00	D5	D7	34.701	34.841	34.925
M38	4.00	D5	D9	35.402	35.592	35.702
M39	4.00	D6	D9	36.402	36.592	36.702
M39	3.00	D6	D8	37.051	37.221	37.316
M39	2.00	D6	D7	37.701	37.841	37.925

These are general tap recommendations to produce the Class of Thread indicated in average materials when used with reasonable care. However, if the tap specified does not give a satisfactory gage fit in the work, please consult the factory.

TAP/DRILL SIZES

TAP SIZE		CUTTING TAPS		TRU-FLO ™ FORMING TAPS	
INCH	METRIC	DRILL SIZE	DECIMAL EQUIVALENT	DRILL SIZE	DECIMAL EQUIVALENT
0-80		3/64	.0469	54	.0550
	M1.6 X 0.35	1.25mm	.0492	1.45mm	.0571
	M1.8 X 0.35	1.45mm	.0571	1.65mm	.0650
1-64		53	.0595	51	.0650
1-72		53	.0595	51	.0650
	M2 X 0.40	1.60mm	.0630	1.80mm	.0709
2-56		50	.0700	5/64	.0781
2-64		50	.0700	47	.0785
	M2.2 X 0.45	1.75mm	.0689	2.00mm	.0787
	M2.5 X 0.45	2.05mm	.0807	2.30mm	.0906
3-48		47	.0785	43	.0890
3-56		46	.0810	2.30mm	.0905
4-40		43	.0890	38	.1015
4-48		42	.0935	2.60mm	.1024
	M3 X 0.50	2.50mm	.0984	7/64	.1094
5-40		38	.1015	33	.1130
5-44		37	.1040	2.90mm	.1142
	M3.5 X 0.60	2.90mm	.1142	3.20mm	.1260
6-32		36	.1065	1/8	.1250
6-40		33	.1130	3.25mm	.1280
	M4 X 0.70	3.30mm	.1299	3.70mm	.1457
8-32		29	.1360	25	.1495
8-36		29	.1360	24	.1520
	M4.5 X 0.75	3.70mm	.1476	4.10mm	.1614
10-24		26	.1470	11/64	.1719
10-32		21	.1590	16	.1770
	M5 X 0.80	4.20mm	.1654	14	.1820
12-24		16	.1770	5mm	.1969
12-28		15	.1800	7	.2010
	M6 X 1.00	5.00mm	.1969	7/32	.2188
1/4-20		7	.2010	1	.2280
1/4-28		3	.2130	15/64	.2340
	M7 X 1.00	6.00mm	.2362	F	.2570
5/16-18		F	.2570	L	.2900
5/16-24		I	.2720	M	.2950
	M8 X 1.25	6.70mm	.2638	7.40mm	.2913
	M8 X 1.0	7.00mm	.2756	19/64	.2969
3/8-16		5/16	.3125	S	.3480
3/8-24		Q	.3320	T	.3580
	M10 X 1.50	8.50mm	.3346	U	.3680
	M10 X 1.25	8.70mm	.3425	9.40mm	.3701
7/16-14		U	.3680	Y	.4040
7/16-20		25/64	.3906	Z	.4130
	M12 X 1.75	10.20mm	.4016	11.20mm	.4409
	M12 X 1.25	10.80mm	.4252	11.50mm	.4528
1/2-13		27/64	.4219	15/32	.4682
1/2-20		29/64	.4531	12.25mm	.4823
	M14 X 2.00	12.00mm	.4224	33/64	.5156
9/16-12		31/64	.4844	17/32	.5312
9/16-18		33/64	.5156	13.50mm	.5315
5/8-11		17/32	.5312	14.75mm	.5807
5/8-18		37/64	.5781	15.25mm	.6004
	M16 X 2.00	14.00mm	.5512	19/32	.5938
	M16 X 1.50	14.50mm	.5906	15.25mm	.6004
	M18 X 2.50	15.50mm	.6102	39/64	.6094
	M18 X 1.50	16.50mm	.6496	17.25mm	.6791

Drill sizes given are the 'closest' drill size.

SPECIAL TAPS

TAP/DRILL SIZES cont.

TAP SIZE		CUTTING TAPS		TRU-FLO ™ FORMING TAPS	
INCH	METRIC	DRILL SIZE	DECIMAL EQUIVALENT	DRILL SIZE	DECIMAL EQUIVALENT
3/4-10		21/32	.6562	45/64	.7031
3/4-16		11/16	.6875	23/32	.7188
	M20 X 2.50	17.50mm	.6890		
	M20 X 1.50	18.50mm	.7283		
	M22 X 2.50	19.50mm	.7677		
	M22 X 1.50	20.50mm	.8071		
7/8-9		49/64	.7656		
7/8-14		13/16	.8125		
	M24 X 3.00	21.00mm	.8268		
	M24 X 2.00	22.00mm	.8661		
1-8		7/8	.8750		
1-12		59/64	.9219		
	M27 X 3.00	24.00mm	.9449		
	M27 X 2.00	25.00mm	.9843		
1-1/8-7		63/64	.9844		
1-1/8-12		1-3/64	1.0469		
	M30 X 3.50	26.50mm	1.0433		
	M30 X 2.00	28.00mm	1.1024		
1-1/4-7		1-7/64	1.1094		
1-1/4-12		1-11/64	1.1719		
	M33 X 3.50	29.50mm	1.1614		
	M33 X 2.00	31.00mm	1.2205		
1-3/8-6		1-7/32	1.2188		
1-3/8-12		1-19/64	1.2969		
	M36 X 4.00	32.00mm	1.2598		
	M36 X 3.00	33.00mm	1.2992		
1-1/2-6		1-11/32	1.3438		
1-1/2-12		1-27/64	1.4219		
	M39 X 4.00	35.00mm	1.3780		
	M39 X 3.00	36.00mm	1.4173		

PIPE THREAD DRILLED HOLE SIZES

NOMINAL SIZE	NPT	NPTF	NPSC	NPSM	NPSF	NPSI	BSPT	BSPP
1/16 - 27	D (0.246)	D (0.246)	.250		.250	.250		
1/8 - 27	Q (0.332)	Q (0.332)	.3437	.3593	.3437	.3437		
1/8 - 28							.3281	.3437
1/4 - 18	.4375	.4375	.4375	.4687	.4375	.4375		
1/4 - 19							.4375	.4531
3/8 - 18	.5625	.5781	.5781	.6093	.5781	.5781		
3/8 - 19							.5781	.5937
1/2 - 14	.7031	.7031	.7187	.750	.7187	.7187	.7187	.7343
5/8 - 14								.8125
3/4 - 14	.9062	.9218	.9218	.9646			.9380	.9650
7/8 - 14								1.1093
1 - 11							1.1718	1.1875
1 - 11-1/2	1.1406	1.1562	1.1562	1.2031				
1-1/4 - 11							1.500	1.5468
1-1/4 - 11-1/2	1.4843	1.500	1.500	1.5468				
1-1/2 - 11							1.750	1.7656
1-1/2 - 11-1/2	1.7343	1.7343	1.750	1.7913				
1-3/4 - 11								2.000
2 - 11							2.2187	2.250
2 - 11-1/2	2.2031	2.2187	2.2187	2.2638				

Drill sizes given are the 'closest' drill size.

FORMULA FOR TAP/DRILL SIZES (INCH)

METHOD 1:

$$\text{Drilled Hole Size (in.)} = \text{Basic Major Dia. Of Thread (in.)} - \frac{.013 \times \%\ \text{of Full Thread*}}{\#\ \text{of Threads per Inch (T.P.I.)}}$$

*Use whole numbers for % of thread…for 65% (not .65).

METHOD 2:

Nominal O.D. - (Dbl. Thread Depth X % of Full Thread) = Drilled Hole Size

EXAMPLE: To find the hole size for obtaining 75% of thread in a 1/4-20 tapped hole, follow first column down to 20 threads, then across to 75% of thread. This figure (.0485), when subtracted from the .250 diameter, is .2015, which is the required diameter of hole. See equation: .250 - .0485 = .2015

To figure whether or not pitch is too coarse for diameter:
(Double thread depth) X 3 = x
x = the smallest diameter possible for that T.P.I.

THREADS PER INCH	DOUBLE THREAD DEPTH	50% THREAD	55% THREAD	60% THREAD	RECOMMENDED RANGE			80% THREAD	85% THREAD
					65% THREAD	70% THREAD	75% THREAD		
6	.21651	.1083	.1192	.1300	.1408	.1517	.1625	.1733	.1842
7	.18558	.0929	.1021	.1114	.1207	.1300	.1393	.1486	.1579
8	.16238	.0813	.0894	.0975	.1056	.1138	.1219	.1300	.1381
9	.14434	.0722	.0794	.0866	.0939	.1011	.1083	.1156	.1228
10	.12990	.0649	.0714	.0779	.0844	.0909	.0974	.1039	.1105
11	.11809	.0590	.0649	.0708	.0767	.0826	.0885	.0944	.1005
12	.10825	.0541	.0595	.0649	.0702	.0755	.0808	.0861	.0921
13	.09992	.0499	.0549	.0599	.0649	.0699	.0749	.0799	.0850
14	.09278	.0464	.0510	.0556	.0602	.0648	.0694	.0740	.0789
16	.08119	.0406	.0446	.0486	.0526	.0566	.0606	.0646	.0691
18	.07217	.0361	.0396	.0431	.0466	.0501	.0536	.0571	.0614
20	.06495	.0325	.0357	.0389	.0421	.0453	.0485	.0517	.0553
24	.05412	.0270	.0298	.0326	.0354	.0382	.0410	.0438	.0460
27	.04811	.0240	.0264	.0288	.0312	.0336	.0360	.0384	.0409
28	.04639	.0232	.0254	.0276	.0298	.0324	.0347	.0370	.0395
30	.04330	.0216	.0238	.0260	.0282	.0304	.0326	.0348	.0368
32	.04059	.0203	.0223	.0243	.0263	.0283	.0303	.0323	.0345
36	.03608	.0180	.0198	.0216	.0234	.0252	.0270	.0288	.0307
40	.03247	.0162	.0178	.0194	.0210	.0226	.0242	.0258	.0276
44	.02952	.0147	.0162	.0177	.0192	.0207	.0222	.0237	.0251
48	.02706	.0135	.0148	.0161	.0174	.0187	.0200	.0213	.0230
56	.02319	.0116	.0127	.0138	.0149	.0160	.0171	.0182	.0197
64	.02029	.0101	.0111	.0121	.0131	.0141	.0151	.0161	.0173
72	.01804	.0090	.0099	.0107	.0115	.0123	.0131	.0139	.0153
80	.01623	.0081	.0089	.0097	.0105	.0113	.0121	.0129	.0138

Figures in table show amount to subtract from O.D. of screw to obtain specific percentages of thread.
Select nearest size commercial stock drill.

SPECIAL TAPS

FORMULA FOR TAP/DRILL SIZES (METRIC)

METHOD 1:

$$\text{Drilled Hole Size (mm)} = \text{Basic Major Dia. Of Thread (mm)} - \frac{\text{\% of Full Thread* X mm Pitch}}{76.98}$$

*Use whole numbers for % of thread…for 65%, use 65 (not .65).

METHOD 2:

Nominal O.D. - (Dbl. Thread Depth X % of Full Thread) = Drilled Hole Size

EXAMPLE: To find the hole size for obtaining 75% of thread in a (M6) 6mm x 1.00 tapped hole, follow first column down to 1.00 threads, then across to 75% of thread. This figure (.9743), when subtracted from 6mm diameter, is 5.0257, which is the required diameter of hole. See equation: M6 - (1.2990 X 75) = (6 - .9743) = 5.0257mm

To figure whether or not pitch is too coarse for diameter:
(Double thread depth) X 3 = x
x = the smallest diameter possible for that T.P.I.

mm PITCH	DOUBLE THREAD DEPTH	50% THREAD	55% THREAD	60% THREAD	RECOMMENDED RANGE 65% THREAD	RECOMMENDED RANGE 70% THREAD	75% THREAD	80% THREAD	85% THREAD
4.0	5.1963	2.5982	2.8580	3.1178	3.3776	3.6374	3.8972	4.1570	4.4169
3.50	4.5466	2.2733	2.5006	2.7280	2.9553	3.1826	3.4100	3.6373	3.8646
3.00	3.8969	1.9485	2.1433	2.3381	2.5330	2.7278	2.9227	3.1175	3.3124
2.50	3.2476	1.6238	1.7862	1.9486	2.1109	2.2733	2.4357	2.5981	2.7605
2.00	2.5979	1.2990	1.4288	1.5587	1.6886	1.8185	1.9484	2.0783	2.2082
1.75	2.2733	1.1367	1.2503	1.3640	1.4776	1.5913	1.7050	1.8186	1.9323
1.50	1.9487	.9744	1.0718	1.1692	1.2667	1.3641	1.4615	1.5590	1.6564
1.25	1.6236	.8118	.8930	.9742	1.0553	1.1365	1.2177	1.2989	1.3801
1.00	1.2990	.6495	.7145	.7794	.8444	.9093	.9743	1.0392	1.1042
.90	1.1687	.5844	.6428	.7012	.7597	.8181	.8765	.9350	.9934
.80	1.0394	.5197	.5717	.6236	.6756	.7276	.7796	.8315	.8835
.75	.9743	.4871	.5359	.5846	.6333	.6820	.7307	.7794	.8282
.70	.9093	.4547	.5001	.5456	.5910	.6365	.6820	.7274	.7729
.60	.7793	.3897	.4286	.4676	.5065	.5455	.5845	.6234	.6624
.50	.6421	.3211	.3532	.3853	.4174	.4495	.4816	.2137	.5458
.45	.5847	.2924	.3216	.3508	.3801	.4093	.4385	.4678	.4970
.40	.5197	.2599	.2858	.3118	.3378	.3638	.3898	.4158	.4417
.35	.4547	.2274	.2501	.2728	.2956	.3183	.3410	.3638	.3865
.30	.3896	.1948	.2143	.2338	.2532	.2727	.2922	.3117	.3312
.25	.3246	.1663	.1785	.1948	.2110	.2272	.2434	.2597	.2759

Figures in table show amount to subtract from O.D. of screw to obtain specific percentages of thread.
Select nearest size commercial stock drill.

MATERIAL HOOK OR RAKE ANGLES • SUGGESTED SURFACE TREATMENTS • CUTTING FLUIDS AND CUTTING SPEEDS
(INITIAL RECOMMENDATIONS ONLY)

MATERIAL TO BE TAPPED	HOOK OR RAKE ANGLE	SUGGESTED SURFACE TREATMENT **	LUBRICANT/ COOLANT	HSS SPEED=SFM	CARBIDE SPEED=SFM
ALUMINUM (WROUGHT)	12° - 15° HOOK	TiN, TiCN	Soluble or Light Based	90 - 150 SFM	100 - 250 SFM
ALUMINUM DIE CASTING	8° - 10° RAKE	TiCN, TiN, CrN, TiALN+WC/ C	Soluble Or Lard Oil	65 - 75 SFM	75 - 100 SFM
ALUMINUM BRONZE	0° - 3° RAKE	N, TiN	Mineral Oil W/ Light Oil	20 - 60 SFM	40 - 80 SFM
BAKELITE (HARD PLASTIC)	0° - 3° RAKE	TiCN	Dry Or Air Jet	25 - 40 SFM	25 - 40 SFM
BERYLLIUM COPPER	12° - 14° HOOK	TiAlN+WC/C, CrN, N	Soluble Light Base Oil	50 - 90 SFM	50 - 90 SFM
BRASS	0° - 3 ° RAKE	None, TiCN	Soluble Light Base Oil	100 - 200 SFM	100 - 200 SFM
BRONZE (FREE-MACHINING)	2° - 6° HOOK	None, TiCN, N	Soluble Light Base Oil	80 - 150 SFM	100 - 200 SFM
CAST BRASS	2° - 5 ° RAKE	N, TiCN	Soluble Light Base Oil	100 - 200 SFM	125 - 250 SFM
CAST IRON (GRAY)	0° - 3 ° RAKE	N, TiCN	Dry Or Soluble Oil	20 - 80 SFM	40 - 100 SFM
COPPER	18° HOOK	TiAlN+WC/C, CrN	Soluble Light Base Oil	80 - 150 SFM	100 - 200 SFM
COPPER - NICKEL	12° HOOK	N, TiCN	Soluble Light Base Oil	10 - 20 SFM	20 - 50 SFM
DELRIN	5° - 8° HOOK	TiAlN+WC/C, TiN, N	Dry, Air Jet, Or Water Soluble	65 - 100 SFM	65 - 100 SFM
DUCTILE IRON	3° - 6° HOOK	N+O, TiN, TiCN	Soluble Or Sulphur Based Oils	30 - 50 SFM	40 - 80 SFM
DURALUMIN	12° - 14° HOOK	TiAlN+WC/C, CrN	Soluble Oil	50 - 90 SFM	50 - 90 SFM
FERRO-TIC	0° - 3° NEG RAKE	None	Anti-Seize Compound	8 - 20 SFM	8 - 20 SFM
FIBERGLASS	0° - 3 ° RAKE	TiCN	Dry Or Air Jet	25 - 40 SFM	30 - 60 SFM
HASTELLOY	12° - 15° HOOK	CrN	Sulphur Based Oils	8 - 20 SFM	8 - 20 SFM
INCONEL	12° - 15° HOOK	N, CrN	Sulphur Based Oils	8 - 20 SFM	8 - 20 SFM
MAGNESIUM	18° - 20° HOOK (MUST)	CrN	Soluble Light Base Oil	100 - 150 SFM	100 - 150 SFM
MALLEABLE IRON	3° RAKE	N+O, TiN, TiCN	Soluble Or Sulphur Based Oils	30 - 50 SFM	30 - 50 SFM
MANGANESE	0° - 3° RAKE	TiCN	Sulphur Based Oils	8 - 20 SFM	8 - 20 SFM
MANGANESE BRONZE	0° - 3° RAKE	N, TiCN	Soluble Light Base Oil	20 - 60 SFM	40 - 80 SFM
MOLYBDENUM	12° - 14° HOOK	N, TiN, TiCN	Sulphur Based Oils	20 - 45 SFM	30 - 60 SFM
MONEL	12° - 15° HOOK	N, TiCN	Sulphur Based Oils	8 - 20 SFM	15 - 40 SFM
NAVAL BRASS	0° - 3° RAKE	N	Soluble Light Base Oil	100 - 200 SFM	100 - 200 SFM
NAVAL BRONZE	2° - 6° HOOK	None, TiCN	Soluble Light Base Oil	80 - 150 SFM	80 - 150 SFM
NICKEL SILVER	0° - 3° RAKE	N, TiCN	Sulphur Based Oils	20 - 60 SFM	20 - 60 SFM
NICKEL (PURE)	12° - 15° HOOK	N, TiCN	Soluble Light Base Oil	5 - 25 SFM	10 - 40 SFM
NITRALLOY	0° RAKE	N, TiCN	Sulphur Based Oils	8 - 20 SFM	8 - 20 SFM
NITRONIC (*NO GUARANTEE)	12° - 14° POS. RAKE	N, TiN, TiCN	Sulphur Based Oils	8 - 20 SFM	8 - 20 SFM
NYLON	5° - 8° HOOK	N, TiN	Dry, Air Jet Or Water Soluble	65 - 100 SFM	65 - 100 SFM
PLASTICS :					
THERMOPLASTIC (SOFT)	5° - 8° HOOK	N, TiN	Dry, Air Jet Or Water Soluble	65 - 100 SFM	65 - 100 SFM
ABS, DELRIN, NYLON, PVC, ETC .					
THERMOSETTING (HARD)	0° - 3° RAKE	TiCN	Dry Or Air Jet	25 - 40 SFM	25 - 40 SFM
BAKELITE, LAMINATES,					
PHENOLIC, POLYESTERS, ETC .					
POWDERED METAL (Sintered)	0° RAKE	TiCN	Soluble Light Based Oil	25 - 80 SFM	25 - 80 SFM
RUBBER, HARD	0° - 3° RAKE	None	Dry	50 - 200 SFM	50 - 200 SFM
SILICON BRONZE	0° - 3° RAKE	N, TiCN	Soluble Light Base Oil	20 - 60 SFM	20 - 60 SFM
STEEL:					
CARBON STEEL	10° - 12° HOOK	O, N, TiN	Sulphur Based Oil	40 - 90 SFM	50 - 120 SFM
COLD-ROLLED STEEL (1018, ETC.)	10° - 12° HOOK	O, N, TiN, TiAlN	Sulphur Based Oil	40 - 90 SFM	50 - 120 SFM
FORGE D	10° - 12° HOOK	O, N, TiN	Sulphur Based Oil	20 - 50 SFM	30 - 75 SFM
LEADED (12L14, ETC.)	12° HOOK	O, N, TiN	Sulphur Based Oil	40 - 90 SFM	50 - 125 SFM
STAINLESS					
FREE MACHINING	12° - 14° HOOK	N, TiN, TiCN	Sulphur Based Oil	20 - 40 SFM	40 - 180 SFM
PRECIP. HARDENING	12° - 14° HOOK	N, TiN, TiCN	Sulphur Based Oil	8 - 20 SFM	10 - 30 SFM
TOOL	12° - 14° HOOK	N, TiN, TiCN	Sulphur Based Oil	20 - 50 SFM	30 - 65 SFM
TITANIUM	15° - 20° HOOK	O, N, CrN	Sulphur Based Oil	20 - 50 SFM	30 - 65 SFM
TUNGSTEN	5° RAKE	TiN	Sulphur Based Oil	8 - 20 SFM	8 - 20 SFM
TURCITE (SOFT PLASTIC)	5° - 8° HOOK	N, TiN	Dry, Air Jet Or Water Soluble	65 - 100 SFM	65 - 100 SFM
ZAMAK (ZINK DIE CAST)	10° - 12° RAKE	TiCN, TiN, CrN, TiAlN+WC/C	Soluble Light B Ased Oil	50 - 200 SFM	50 - 200 SFM
ZINC	10° - 12° RAKE	TiCN, TiN, CrN, TiAlN+WC/C	Soluble Light B Ased Oil	50 - 200 SFM	50 - 200 SFM

* If problems are encountered when tapping nitronic (or anyother material), please consult GWS Tool Group's Tool Designers.
** See page 127 for definitions of tool coating abbreviations.

The SFM cutting speeds listed are starting SFM recommendations only, and depending on specific tapping conditions, may have to be altered. GWS Tool Group assumes no responsibility or liability of any kind as a result of the above listed SFM recommendations.

SPECIAL TAPS

TABLE OF SPEEDS FOR TAPS (USE ONLY AS SUGGESTED STARTING R.P.M.)

MACHINE SCREW AND FRACTIONAL SIZES

TAP SIZE (UNC/ UNF)	TAPER PIPE TAPS (NPT/ NPTF)	SURFACE FEET PER MINUTE (SFM)																	
		5'	10'	15'	20'	25'	30'	40'	50'	60'	70'	80'	90'	100'	110'	120'	130'	140'	150'
		REVOLUTIONS PER MINUTE (RPM)																	
0 (.060)		318	637	955	1273	1592	1910	2546	3183	3820	4456	5093	5729	6366	7003	7639	8276	8913	9549
1 (.073)		273	546	819	1046	1308	1570	2093	2617	3140	3663	4186	4710	5233	5756	6279	6805	7326	7849
2 (.086)		212	424	637	888	1110	1333	1777	2221	2665	3109	3554	3999	4442	4886	5330	5774	6218	6662
3 (.099)		191	382	573	772	964	1157	1543	1929	2315	2701	3086	3472	3858	4244	4629	5015	5401	5787
4 (.112)		174	347	521	682	853	1023	1364	1705	2046	2387	2728	3069	3411	3751	4092	4434	4775	5116
5 (.125)		147	294	441	611	764	917	1222	1528	1833	2139	2445	2750	3056	3361	3667	3973	4278	4584
6 (.138)		136	273	409	553	691	829	1106	1382	1659	1935	2212	2488	2766	3042	3318	3595	3871	4148
8 (.164)		119	239	358	466	583	699	932	1165	1398	1631	1864	2097	2330	2536	2796	3029	3262	3495
10 (.190)		101	201	302	402	502	603	804	1005	1205	1406	1607	1808	2009	2210	2411	2612	2813	3014
12 (.216)		87	174	260	354	442	531	707	884	1061	1238	1415	1592	1769	1945	2122	2300	2476	2653
14 (.242)		79	158	237	316	395	474	631	789	947	1105	1263	1421	1579	1736	1894	2052	2210	2368
1/4		76	153	229	306	382	458	611	764	917	1070	1222	1375	1528	1681	1833	1986	2139	2292
5/16	1/16	62	123	185	245	306	367	489	611	733	856	978	1100	1222	1345	1467	1589	1711	1833
3/8		50	101	151	204	255	305	407	509	611	713	815	917	1019	1120	1222	1324	1426	1528
7/16	1/8	43	87	130	175	219	262	349	437	524	611	698	786	873	960	1048	1135	1222	1310
1/2		38	76	115	153	191	229	305	382	458	535	611	688	764	840	917	993	1070	1146
9/16	1/4	34	68	102	137	172	206	274	342	410	478	547	616	683	752	820	888	952	1020
5/8		32	64	96	122	153	183	244	306	367	428	489	550	611	672	733	794	856	917
11/16	3/8	28	55	83	111	138	167	222	278	333	389	444	500	556	611	667	722	778	833
3/4		35	51	76	102	128	153	203	255	305	357	407	458	509	560	611	662	713	764
7/8	1/2	22	43	65	87	109	131	175	218	262	306	350	392	437	480	524	568	611	655
1"		19	38	57	76	96	115	153	191	230	268	305	344	382	420	458	497	535	573
1 1/8	3/4	17	34	51	68	84	102	136	170	204	238	272	306	340	373	407	441	475	509
1 1/4		15	31	46	61	76	92	122	153	183	214	244	275	305	336	367	397	428	458
1 3/8	1	14	28	42	56	69	83	111	139	167	194	222	250	278	306	333	361	389	417
1 1/2		13	25	38	51	63	76	102	127	153	178	204	229	255	280	305	331	356	382
1 5/8		12	23	35	47	59	71	94	118	141	165	188	212	235	259	282	306	329	353
1 3/4	1 1/4	11	22	33	44	55	65	87	109	131	153	175	196	218	240	262	284	306	327
1 7/8	1 1/2	10	20	30	41	51	61	81	102	122	143	163	183	204	224	244	265	285	306
2"		9	19	29	38	48	57	76	96	115	134	153	172	191	210	229	248	267	287

METRIC SIZES

METRIC TAP SIZE	DEC. EQUIV. SIZE	SURFACE FEET PER MINUTE (SFM)																	
		5'	10'	15'	20'	25'	30'	40'	50'	60'	70'	80'	90'	100'	110'	120'	130'	140'	150'
		REVOLUTIONS PER MINUTE (RPM)																	
M1	.0394	490	979	1469	1959	2449	2938	3918	4897	5877	6856	7836	8815	9795	10774	11754	12733	13713	14692
M2	.0787	242	484	725	967	1209	1451	1934	2418	2901	3385	3868	4352	4835	5319	5803	6286	6770	7253
M3	.1181	162	324	486	647	809	971	1295	1619	1942	2266	2590	2914	3237	3561	3885	4208	4532	4856
M3.5	.1378	138	277	415	554	692	830	1107	1384	1661	1938	2214	2491	2768	3045	3322	3599	3875	4152
M4	.1575	122	243	365	487	608	730	973	1217	1460	1703	1946	2190	2433	2676	2920	3163	3406	3650
M5	.1969	97	194	291	388	485	582	776	970	1163	1357	1551	1745	1939	2133	2327	2521	2715	2909
M6	.2362	81	162	243	324	405	486	647	809	971	1133	1295	1457	1619	1781	1942	2104	2266	2428
M7	.2756	69	138	208	277	346	415	554	692	830	969	1107	1246	1384	1522	1661	1799	1938	2076
M8	.3150	61	121	182	243	303	364	485	606	728	849	970	1091	1213	1334	1455	1577	1698	1819
M10	.3937	48	97	145	194	242	291	388	485	582	679	776	873	970	1067	1163	1260	1357	1454
M12	.4724	40	81	121	162	202	243	324	405	486	567	647	728	809	890	971	1052	1133	1214
M14	.5512	35	69	104	139	173	208	277	347	416	485	555	624	693	763	832	901	971	1040
M16	.6299	30	61	91	121	152	182	243	303	364	424	485	546	606	667	728	788	849	910
M18	.7087	27	54	81	108	135	162	216	269	323	377	431	485	539	593	647	700	754	808
M20	.7874	24	49	73	97	121	146	194	243	291	340	388	437	485	534	582	631	680	728
M22	.8661	22	44	66	88	110	132	176	221	265	309	353	397	441	485	529	573	618	662
M24	.9449	20	40	61	81	101	121	162	202	243	283	323	364	404	445	485	526	566	606
M27	1.0630	18	36	54	72	90	108	144	180	216	252	287	323	359	395	431	467	503	539
M30	1.1811	16	32	49	65	81	97	129	162	194	226	259	291	323	356	388	420	453	485

Factors to be considered when determining tapping speeds:

- Material to be tapped
- Depth of hole
- Length of chamfer on tap
- Pitch of thread
- Percentage of full thread to be cut
- Lubrication
- Machine equipment and rigidity
- Horizontal or vertical tapping

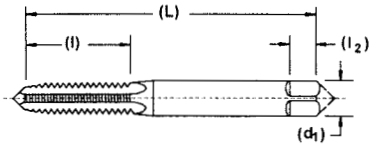
S.F.M./R.P.M. EQUATIONS:

S.F.M. = 0.26 x R.P.M. x Tool Diameter

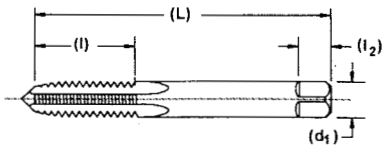
$$\text{R.P.M.} = \frac{3.82 \times \text{S.F.M.}}{\text{TOOL DIAMETER}}$$

STANDARD TAP DIMENSIONS • GROUND THREAD (Ref. USCTI Table 302)

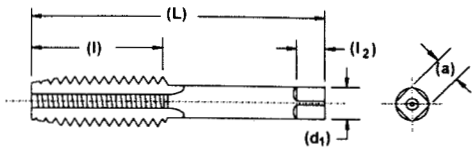
GENERAL DIMENSIONS



BLANK DESIGN 1



BLANK DESIGN 2



BLANK DESIGN 3

NOMINAL DIAMETER RANGE - INCHES		MACHINE SCREW SIZE NO.	NOMINAL FRACTIONAL DIAMETER INCHES	NOMINAL METRIC DIAMETER MILLIMETERS, (INCHES)	BLANK DESIGN NO.	TAP DIMENSIONS – INCHES				
OVER	TO (INC.)					OVERALL LENGTH L	THREAD LENGTH l	SQUARE LENGTH l_2	SHANK DIAMETER d_1	SIZE OF SQUARE a
.052	.065	0 (.0600)		M1.6 (.0630)	1	1.63	.31	.19	.1410	.110
.065	.078	1 (.0730)		M1.8 (.0709)	1	1.69	.38	.19	.1410	.110
.078	.091	2 (.0860)		M2 (.0787), M2.2 (.0866)	1	1.75	.44	.19	.1410	.110
.091	.104	3 (.0990)		M2.5 (.0984)	1	1.81	.50	.19	.1410	.110
.104	.117	4 (.1120)			1	1.88	.56	.19	.1410	.110
.117	.130	5 (.1250)		M3 (.1181)	1	1.94	.63	.19	.1410	.110
.130	.145	6 (.1380)		M3.5 (.1378)	1	2.00	.69	.19	.1410	.110
.145	.171	8 (.1640)		M4 (.1575)	1	2.13	.75	.25	.1680	.131
.171	.197	10 (.1900)		M4.5 (.1772), M5 (.1969)	1	2.38	.88	.25	.1940	.152
.197	.223	12 (.2160)			1	2.38	.94	.28	.2200	.165
.223	.260		1/4 (.2500)	M6 (.2362)	2	2.50	1.00	.31	.2550	.191
.260	.323		5/16 (.3125)	M7 (.2756), M8 (.3150)	2	2.72	1.13	.38	.3180	.238
.323	.395		3/8 (.3750)	M10 (.3937)	2	2.94	1.25	.44	.3810	.286
.395	.448		7/16 (.4375)		3	3.16	1.44	.41	.3230	.242
.448	.510		1/2 (.5000)	M12 (.4724)	3	3.38	1.66	.44	.3670	.275
.510	.573		9/16 (.5625)	M14 (.5512)	3	3.59	1.66	.50	.4290	.322
.573	.635		5/8 (.6250)	M16 (.6299)	3	3.81	1.81	.56	.4800	.360
.635	.709		11/16 (.6875)	M18 (.7087)	3	4.03	1.81	.63	.5420	.406
.709	.760		3/4 (.7500)		3	4.25	2.00	.69	.5900	.442
.760	.823		13/16 (.8125)	M20 (.7874)	3	4.47	2.00	.69	.6520	.489
.823	.885		7/8 (.8750)	M22 (.8661)	3	4.69	2.22	.75	.6970	.523
.885	.948		15/16 (.9375)	M24 (.9449)	3	4.91	2.22	.75	.7600	.570
.948	1.010		1 (1.0000)	M25 (.9843)	3	5.13	2.50	.81	.8000	.600
1.010	1.073		1 - 1/16 (1.0625)	M27 (1.0630)	3	5.13	2.50	.88	8960	.672
1.073	1.135		1 - 1/8 (1.1250)		3	5.44	2.56	.88	.8960	.672
1.135	1.198		1 - 3/16 (1.1875)	M30 (1.1811)	3	5.44	2.56	1.00	1.0210	.766
1.198	1.260		1 - 1/4 (1.2500)		3	5.75	2.56	1.00	1.0210	.766
1.260	1.323		1- 5/16 (1.3125)	M33 (1.2992)	3	5.75	2.56	1.06	1.1080	.831
1.323	1.385		1 - 3/8 (1.3750)		3	6.06	3.00	1.06	1.1080	.831
1.385	1.448		1 -7/16 (1.4375)	M36 (1.4173)	3	6.06	3.00	1.13	1.2330	.925
1.448	1.510		1 -1/2 (1.5000)		3	6.38	3.00	1.13	1.2330	.925
1.510	1.635		1 -5/8 (1.6250)	M39 (1.5354)	3	6.69	3.19	1.13	1.3050	.979
1.635	1.760		1 -3/4 (1.7500)	M42 (1.6535)	3	7.00	3.19	1.25	1.4300	1.072
1.760	1.885		1 -7/8 (1.8750)		3	7.31	3.56	1.25	1.5190	1.139
1.885	2.010		2 (2.0000)	M48 (1.8898)	3	7.63	3.56	1.38	1.6440	1.233

cont.

STANDARD TAP DIMENSIONS • GROUND THREAD (Ref. USCTI Table 302) cont.

GENERAL DIMENSIONS

NOMINAL DIAMETER RANGE - INCHES		MACHINE SCREW SIZE NO.	NOMINAL FRACTIONAL DIAMETER INCHES	NOMINAL METRIC DIAMETER MILLIMETERS, (INCHES)	BLANK DESIGN NO.	TAP DIMENSIONS – INCHES				
OVER	TO (INC.)					OVERALL LENGTH L	THREAD LENGTH l	SQUARE LENGTH l_2	SHANK DIAMETER d_1	SIZE OF SQUARE a
2.010	2.135		2 1/8 (2.1250)		3	8.00	3.56	1.38	1.7690	1.327
2.135	2.260		2 1/4 (2.2500)	M56 (2.2047)	3	8.25	3.56	1.44	1.8940	1.420
2.260	2.385		2 3/8 (2.3750)		3	8.50	4.00	1.44	2.0190	1.514
2.385	2.510		2 1/2 (2.5000)		3	8.75	4.00	1.50	2.1000	1.575
2.510	2.635		2 5/8 (2.6250)	M64 (2.5197)	3	8.75	4.00	1.50	2.2250	1.669
2.635	2.760		2 3/4 (2.7500)		3	9.25	4.00	1.56	2.3500	1.762
2.760	2.885		2 7/8 (2.8750)	M72 (2.8346)	3	9.25	4.00	1.56	2.4750	1.856
2.885	3.010		3 (3.0000)		3	9.75	4.56	1.63	2.5430	1.907
3.010	3.135		3 1/8 (3.1250)		3	9.75	4.56	1.63	2.6680	2.001
3.135	3.260		3 1/4 (3.2500)	M80 (3.1496)	3	10.00	4.56	1.75	2.7930	2.095
3.260	3.385		3 3/8 (3.3750)		3	10.00	4.56	1.75	2.8830	2.162
3.385	3.510		3 1/2 (3.5000)		3	10.25	4.94	2.00	3.0080	2.256
3.510	3.635		3 5/8 (3.6250)	M90 (3.5433)	3	10.25	4.94	2.00	3.1330	2.350
3.635	3.760		3 3/4 (3.7500)		3	10.50	5.31	2.13	3.2170	2.413
3.760	3.885		3 7/8 (3.8750)		3	10.50	5.31	2.13	3.3420	2.506
3.885	4.010		4 (4.0000)	M100 (3.9370)	3	10.75	5.31	2.25	3.4670	2.600

SPECIAL TAPS

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 shown in Table 303.

Special tap thread limits are determined by using the formulas shown in Table 331 for Unified Inch Screw Threads and Table 341 for Metric M-Profile Screw Threads.

NOTES

Tap sizes .395" and smaller have an external center on the threadend (may be removed on bottoming taps). Sizes .223" and smaller have an external center on the shank end. Sizes .224" thru .395" have truncated partial cone centers on the shank end (length of cone approx. 1/4 of diameter of shank). Sizes over .395" have internal centers on both the thread and shank ends.

For standard thread limits and tolerances for Unified Inch Screw Threads see table 327 and for Metric Threads see Table 337.

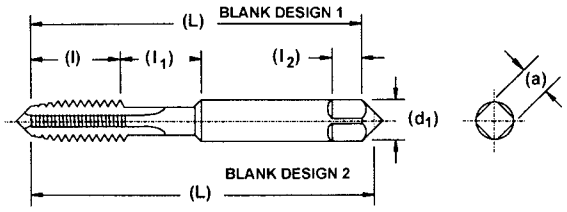
For eccentricity tolerances of tap elements see Table 317.

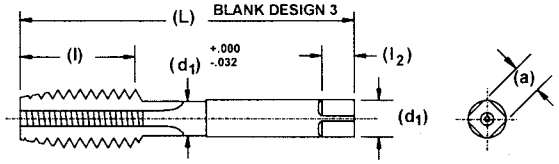
TOLERANCES

ELEMENT	NOMINAL DIAMETER RANGE IN INCHES		DIRECTION	TOLERANCE (INCHES)
	OVER	TO (INC.)		
Length Overall - L	.0520	1.0100	Plus or Minus	.031
	1.0100	4.0100	Plus or Minus	.063
Length of Thread - l	.0520	.2230	Plus or Minus	.047
	.2230	.5100	Plus or Minus	.063
	.5100	1.5100	Plus or Minus	.094
	1.5100	4.0100	Plus or Minus	.125
Length of square - l_2	.0520	1.0100	Plus or Minus	.031
	1.0100	4.0100	Plus or Minus	.063
Diameter of shank - d_1	.0520	.2230	Minus	.0015
	.2230	.6350	Minus	.0015
	.6350	1.0100	Minus	.0020
	1.0100	1.5100	Minus	.0020
	1.5100	2.0100	Minus	.0030
	2.0100	4.0100	Minus	.0030
Size of square - a	.0520	.5100	Minus	.004
	.5100	1.0100	Minus	.006
	1.0100	2.0100	Minus	.008
	2.0100	4.0100	Minus	.010

OPTIONAL NECK AND OPTIONAL SHORTENED THREAD LENGTH TAP DIMENSIONS, GROUND THREAD (Ref. USCTI Table 302-A)

GENERAL DIMENSIONS





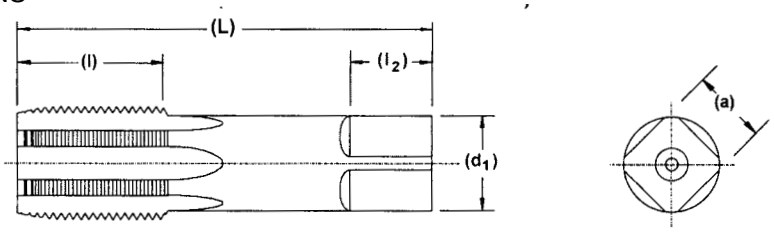
NOMINAL DIAMETER RANGE - INCHES		MACHINE SCREW SIZE NO.	NOMINAL FRACTIONAL DIAMETER INCHES	NOMINAL METRIC DIAMETER MILLIMETERS, (INCHES)	BLANK DESIGN NO.	TAP DIMENSIONS – INCHES					
OVER	TO (INCL.)					OVERALL LENGTH L	THREAD LENGTH l	NECK LENGTH l_1	SQUARE LENGTH l_2	SHANK DIAMETER d_1	SIZE OF SQUARE a
.104	.117	4 (.1120)			1	1.88	.31	.25	.19	.1410	.110
.117	.130	5 (.1250)		M3 (.1181)	1	1.94	.31	.31	.19	.1410	.110
.130	.145	6 (.1380)		M3.5 (.1378)	1	2.00	.38	.31	.19	.1410	.110
.145	.171	8 (.1640)		M4 (.1575)	1	2.13	.38	.38	.25	1680	.131
.171	.197	10 (.1900)		M4.5 (.1772), M5 (.1969)	1	2.38	.50	.38	.25	.1940	.152
.197	.223	12 (.2160)			1	2.38	.50	.44	.28	.2200	.165
.223	.260		1/4 (.2500)	M6 (.2362)	2	2.50	.63	.38	.31	.2550	.191
.260	.323		5/16 (.3125)	M7 (.2756), M8 (.3150)	2	2.72	.69	.44	.38	.3180	.238
.323	.395		3/8 (.3750)	M10 (.3937)	2	2.94	.75	.50	.44	.3810	.286
.395	.448		7/16 (.4375)		3	3.16	.88	–	.41	.3230	.242
.448	.510		1/2 (.5000)	M12 (.4724)	3	3.38	.94	–	.44	.3670	.275
.510	.573		9/16 (.5625)	M14 (.5512)	3	3.59	1.00	–	.50	.4290	.322
.573	.635		5/8 (.6250)	M16 (.6299)	3	3.81	1.09	–	.56	.4800	.360
.635	.709		11/16 (.6875)	M18 (.7087)	3	4.03	1.09	–	.63	.5420	.406
.709	.760		3/4 (.7500)		3	4.25	1.22	–	.69	.5900	.442
.760	.823		13/16 (.8125)	M20 (.7874)	3	4.47	1.22	–	.69	.6520	.489
.823	.885		7/8 (.8750)	M22 (.8661)	3	4.69	1.34	–	.75	.6970	.523
.885	.948		15/16 (.9375)	M24 (.9449)	3	4.91	1.34	–	.75	.7600	.570
.948	1.010		1 (1.0000)	M25 (.9843)	3	5.13	1.50	–	.81	.8000	.600

NOTES

1. Thread Length “l” is based on a length of 12 pitches of the UNC thread series.
2. Thread Length “l” is a minimum value and has no tolerance.
3. When Thread Length “l” is added to Neck Length “l_1” the total shall be no less than the minimum Table 302 Thread Length “l”.
4. Unless otherwise specified, all tolerances are in accordance with Table 302.
5. For eccentricity tolerances, see Table 317.

SPECIAL FINE PITCH TAPS, SHORT SERIES, GROUND THREAD (Ref. USCTI Table 303)

GENERAL DIMENSIONS



Unless otherwise specified, special taps 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, will be made to the general dimensions shown below:

NOMINAL DIAMETER RANGE - INCHES		NOMINAL FRACTIONAL DIAMETER INCHES	NOMINAL METRIC DIAMETER MILLIMETERS	TAP DIMENSIONS – INCHES				
OVER	TO (INCL.)			OVERALL LENGTH L	THREAD LENGTH l	SQUARE LENGTH l_2	SHANK DIAMETER d_1	SIZE OF SQUARE a
1.010	1.073	1 1/16	M27	4.00	1.50	.88	.8960	.672
1.073	1.135	1 1/8		4.00	1.50	.88	.8960	.672
1.135	1.198	1 3/16	M30	4.00	1.50	1.00	1.0210	.766
1.198	1.260	1 1/4		4.00	1.50	1.00	1.0210	.766
1.260	1.323	1 5/16	M33	4.00	1.50	1.00	1.1080	.831
1.323	1.385	1 3/8		4.00	1.50	1.00	1.1080	.831
1.385	1.448	1 7/16	M36	4.00	1.50	1.00	1.2330	.925
1.448	1.510	1 1/2		4.00	1.50	1.00	1.2330	.925
1.510	1.635	1 5/8	M39	5.00	2.00	1.13	1.3050	.979
1.635	1.760	1 3/4	M42	5.00	2.00	1.25	1.4300	1.072
1.760	1.885	1 7/8		5.00	2.00	1.25	1.5190	1.139
1.885	2.010	2	M48	5.00	2.00	1.38	1.6440	1.233
2.010	2.135	2 1/8		5.25	2.00	1.38	1.7690	1.327
2.135	2.260	2 1/4	M56	5.25	2.00	1.44	1.8940	1.420
2.260	2.385	2 3/8		5.25	2.00	1.44	2.0190	1.514
2.385	2.510	2 1/2		5.25	2.00	1.50	2.1000	1.575
2.510	2.635	2 5/8	M64	5.50	2.00	1.50	2.1000	1.575
2.635	2.760	2 3/4		5.50	2.00	1.50	2.1000	1.575
2.760	2.885	2 7/8	M72	5.50	2.00	1.50	2.1000	1.575
2.885	3.010	3		5.50	2.00	1.50	2.1000	1.575
3.010	3.135	3 1/8		5.75	2.00	1.50	2.1000	1.575
3.135	3.260	3 1/4	M80	5.75	2.00	1.50	2.1000	1.575
3.260	3.385	3 3/8		5.75	2.00	1.50	2.1000	1.575
3.385	3.510	3 1/2		5.75	2.00	1.50	2.1000	1.575
3.510	3.635	3 5/8	M90	6.00	2.00	1.75	2.1000	1.575
3.635	3.760	3 3/4		6.00	2.00	1.75	2.1000	1.575
3.760	3.885	3 7/8		6.00	2.00	1.75	2.1000	1.575
3.885	4.010	4	M100	6.00	2.00	1.75	2.1000	1.575

NOTES

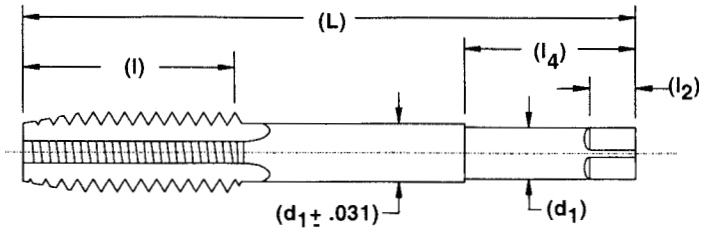
For tolerances see Table 302.

For standard thread limits and tolerances for Unified Inch Screw Threads see Table 327A.

For standard thread limits and tolerances for Metric Threads see Tables 337 and 341.

For eccentricity tolerances of tap elements see Table 317.

SPECIAL EXTENSION TAPS, GROUND THREAD (REF. USCTI TABLE 303-A)



Unless otherwise specified, special extension taps will be furnished with dimensions and tolerances as shown for Machine Screw and Fractional taps in Tables 302 and 303, and for Pipe taps in Table 311.

Exceptions:

1. Types of centers are optional with manufacturer.
2. Tolerances on shank diameter d_1 for l_4 lengh as shown in the following table.
3. Shank eccentricity tolerance in Table 317 applies only to the l_4 length shown in the following table.
4. Length of Close Tolerance Shank, (L_4) is minimum.

NOMINAL TAP SIZE		l THREAD LENGTH	d_1 SHANK DIAMETER	l_2 SQUARE LENGTH	SQUARE SIZE	l_4 GROUND SHANK LENGTH
FRACTIONAL	MACHINE SCREW					
	6	0.69	0.1410	0.19	.110	1.13
	8	0.75	0.1680	0.25	.131	1.25
	10 - 12	0.88	0.1940	0.25	.152	1.38
1/4	14	1.00	0.2550	0.31	.191	1.50
1/4*		1.00	0.1850	0.25	.138	Full Length
5/16		1.13	0.3180	0.38	.238	1.56
5/16*		1.13	0.2400	0.28	.180	Full Length
3/8		1.25	0.3810	0.44	.286	1.63
3/8*		1.25	0.2750	0.38	.206	Full Length
7/16		1.44	0.3230	0.41	.242	1.69
1/2		1.66	0.3670	0.44	.275	1.69
9/16		1.66	0.4290	0.50	.322	1.88
5/8		1.81	0.4800	0.56	.360	2.00
3/4		2.00	0.5900	0.69	.442	2.25
7/8		2.22	0.6970	0.75	.523	2.50
1"		2.50	0.8000	0.81	.600	2.63
1-1/8		2.56	0.8960	0.88	.672	2.75
1-1/4		2.56	1.0210	1.00	.766	2.88
1-3/8		3.00	1.1080	1.06	.831	3.00
1-1/2		3.00	1.2330	1.13	.925	3.00

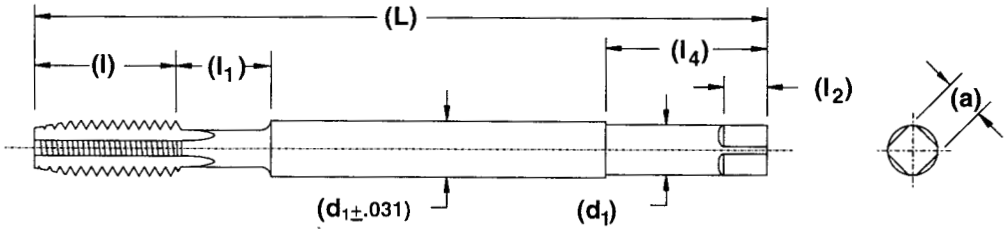
* Small Shank

TOLERANCES FOR SHANK DIAMETER, d_1 AND l_4 LENGTH

SIZE RANGE		DIRECTION	TOLERANCES
FRACTIONAL	MACHINE SCREW		
1/4 to 5/8 incl.	0 -14 incl.	Minus	.003
11/16 to 1-1/2 incl.		Minus	.004

PULLEY TAP DIMENSIONS • GROUND THREAD (REF. USCTI TABLE 310)

GENERAL DIMENSIONS



NOMINAL FRACTION DIAMETER INCHES	TAP DIMENSIONS – INCHES						
	OVERALL LENGTH L	THREAD LENGTH l	NECK LENGTH l_1	SQUARE LENGTH l_2	LENGTH OF SHANK CLOSE TOL. SECTION l_4	SHANK DIAMETER d_1	SIZE OF SQUARE a
1/4 (.2500)	6,8	1.00	.38	.31	1.50	.2550	.191
5/16 (.3125)	6,8	1.13	.38	.38	1.56	.3180	.238
3/8 (.3750)	6,8,10	1.25	.38	.44	1.63	.3810	.286
7/16 (.4375)	6,8	1.44	.44	.50	1.69	.4440	.333
1/2 (.5000)	6,8,10,12	1.66	.50	.56	1.69	.5070	.380
5/8 (.6250)	6,8,10,12	1.81	.63	.69	2.00	.6330	.475
3/4 (.7500)	10,12	2.00	.75	.75	2.25	.7590	.569

TOLERANCES

ELEMENT	SIZE RANGE	DIRECTION	TOLERANCE
Overall Length - L	1/4 to 3/4 included	Plus or Minus	.063
Thread Length - l	1/4 to 3/4 included	Plus or Minus	.063
Neck Length - l_1	1/4 to 3/4 included	See Note - 1	See Note - 1
Square Length - l_2	1/4 to 3/4 included	Plus or Minus	.031
Length of Shank (close tol.) l_4	1/4 to 3/4 included	See Note - 2	See Note - 2
Size of Diameter - d_1	1/4 to 3/4 included	Minus	.0050
Size of Square - a	1/4 to 1/2 included	Minus	.004
	5/8 to 3/4 included	Minus	.006

NOTES

1. l_1, (Neck Length); neck and its length is optional with manufacturer.
2. l_4, (Length of Close Tolerance Shank) is minimum length which is held to eccentricity tolerances per Table 317.

GENERAL NOTES

a. These taps have an internal center in the thread end.

b. These taps are made to the H3 limits shown in Table 327.

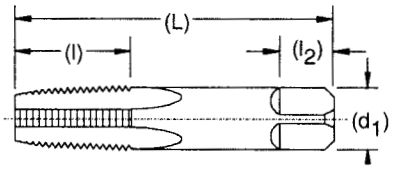
c. For eccentricity tolerances of taps elements see Table 317.

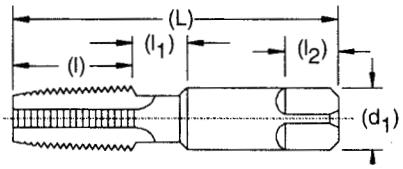
d. d_1, (Shank diameter) is approximately the same as the maximum major diameter for that size.

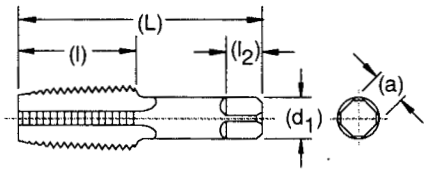
e. a, (Size of Square) is equal to .75 X d_1 to the nearest .001 inch.

STANDARD PIPE TAP DIMENSIONS • STRAIGHT AND TAPER, GROUND THREAD (REF. USCTI TABLE 311)

GENERAL DIMENSIONS







1/16	2.13	.69	.38	.3125	.234	.375
1/8*	2.13	.75	.38	.3125	.234	...
1/8	2.13	.75	.38	.4375	.328	.375
1/4	2.44	1.06	.44	.5625	.421	.375
3/8	2.56	1.06	.50	.7000	.531	.375
1/2	3.13	1.38	.63	.6875	.515	...
3/4	3.25	1.38	.69	.9063	.679	...
1"	3.75	1.75	.81	1.1250	.843	...
1 - 1/4	4.00	1.75	.94	1.3125	.984	...
1 - 1/2	4.25	1.75	1.00	1.5000	1.125	...
2"	4.50	1.75	1.13	1.8750	1.406	...
2 - 1/2	5.50	2.56	1.25	2.2500	1.687	...
3"	6.00	2.63	1.38	2.6250	1.968	...
3 - 1/2	6.50	2.69	1.50	2.8125	2.108	...
4"	6.75	2.75	1.56	3.0000	2.250	...

* Small Shank

TOLERANCES

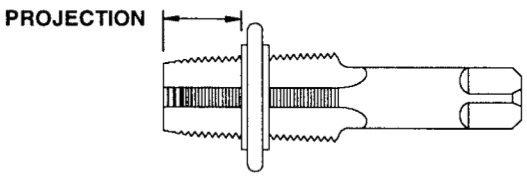
ELEMENT	RANGE	DIRECTION	TOLERANCE
Length Overall - L	1/16 to 3/4 inc.	Plus or Minus	.031
	1" to 4" inc.	Plus or Minus	.063
Length of Thread - l	1/16 to 3/4 inc.	Plus or Minus	.063
	1" to 1 -1/4 inc.	Plus or Minus	.094
	1- 1/2 to 4"	Plus or Minus	.125
Length of Square - l_2	1/16 to 3/4 inc.	Plus or Minus	.031
	1" to 4" inc.	Plus or Minus	.063
Diameter of Shank - d_1	1/16 to 1/8	Minus	.0015
	1/4 to 1" inc.	Minus	.0020
	1 -1/4 to 4" inc.	Minus	.0030
Size of Square - a	1/16 to 1/8	Minus	.004
	1/4 to 3/4 inc.	Minus	.006
	1" to 4" inc.	Minus	.008

NOTE

For thread limits and tolerances see USCTI Tables 335, 335A and 338.
For eccentricity tolerances of taps see Table 317.

TAP DIMENSIONS

TAPER PIPE TAP, THREAD LIMITS, GROUND THREAD (REF. USCTI TABLE 338)



- American National Standard Taper Pipe Thread Form (NPT)
- Aeronautical National Taper Pipe Thread Form (ANPT)
- Dryseal American National Standard Taper Pipe Thread From (NPTF)

THREAD TAP LIMITS						L_1 LENGTH
NOMINAL SIZE INCHES	THREADS PER INCH	PROJECTION* INCHES	PROJECTION TOLERANCE + OR -	TAPER PER FOOT LIMITS		
				MINIMUM	MAXIMUM	
1/16	27	.312	.063	.719	.781	.160
1/8	27	.312	.063	.719	.781	.1615
1/4	18	.459	.063	.719	.781	.2278
3/8	18	.454	.063	.719	.781	.240
1/2	14	.579	.063	.719	.781	.320
3/4	14	.565	.063	.719	.781	.339
1"	11-1/2	.678	.094	.719	.781	.400
1-1/4	11-1/2	.686	.094	.719	.781	.420
1-1/2	11-1/2	.699	.094	.719	.781	.420
2"	11-1/2	.667	.094	.719	.781	.436
2-1/2	8	.925	.094	.734	.781	.682
3"	8	.925	.094	.734	.781	.766
3-1/2	8	.938	.125	.734	.781	.821
4	8	.950	.125	.734	.781	.844

NOTES

* Distance small end of tap projects throught L_1 Taper Thread Ring Gage.

See page 114 for pipe tap drill sizes.

LEAD TOLERANCE

A maximum lead deviation of plus or minus .0005" within any two threads not farther than 1" is permitted.

ECCENTRICITY TOLERANCES OF TAP ELEMENTS WHEN TESTED ON DEAD CENTERS (REF. USCTI TABLE 317)

APPLICABLE TO TABLES 302, 303, 303A, AND 311

ELEMENT	RANGE			GROUND THREAD	
	INCH & MACH. SCREW	PIPE	METRIC	ECCENTRICITY	t.i.v.*
Square (at central point)	#0 - 1/2"	1/16 - 1/8"	M1.6 - M12	.0030	.0060
	Over 1/2" thru 4"	1/4 - 4"	Over M12 thru M100	.0040	.0080
Shank	#0 - 5/16"	1/16"	M1.6 - M8	.0005	.0010
	Over 5/16" thru 4"	1/8 - 4"	Over M8 thru M100	.0008	.0016
Major Diameter	#0 - 5/16"	1/16"	M1.6 - M8	.0005	.0010
	Over 5/16" thru 4"	1/8 - 4"	Over M8 thru M100	.0008	.0016
Pitch Diameter (at first full thread)	#0 - 1/2"	1/16"	M1.6 - M8	.0005	.0010
	Over 1/2" thru 4"	1/8 - 4"	Over M8 thru M100	.0008	.0016
Chamfer**	#0 - 1/2"	1/16 - 1/8"	M1.6 - M12	.0010	.0020
	Over 1/2" thru 4"	1/4 - 4"	Over M12 thru M100	.0015	.0030

* t.i.v. = Total indicator variation. Figures are given for both eccentricity and total indicator variation to avoid misunderstanding.

** Chamfer should preferably be inspected by light projection to avoid errors due to indicator contact points dropping into the thread grooves.

SURFACE TREATMENT ABBREVIATIONS

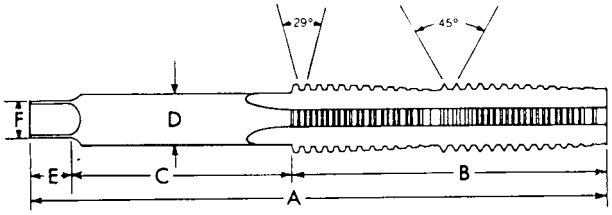
SEE PAGE 117 FOR SURFACE TREATMENT RECOMMENDATIONS

CrN:	Chromium Nitride	TiAlN:	Titanium Aluminum Nitride
N:	Nitride	TiCN:	Titanium Carbonitride
N + O:	Nitride + Oxide	TiN:	Titanium Nitride
O:	Steam Oxide	Amphorex™ DLC:	Diamond-like Carbon
AlCrN:	Aluminum Chromium Nitride	TiAlN + Amphorex™ DLC:	Titanium Aluminum Nitride + Diamond-like Carbon
ZrN:	Zirconium Nitride		

Surface treatments and coatings allow improved tooling performance. For more information on surface treatments, contact Customer Service.

TAP DIMENSIONS

TANDEM ACME TAP DIMENSIONS

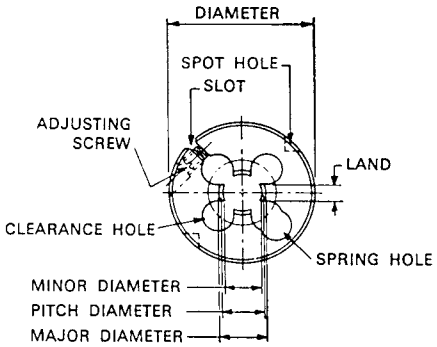


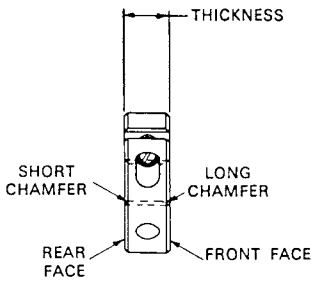
SIZE & PITCH	A OVERALL LENGTH	B LENGTH THREAD END	ROUND SHANK		SQUARE		MAXIMUM DEPTH OF NUT	
			C LENGTH	D DIA.	E LENGTH	F ACROSS FLATS	BRONZE & STEEL	BRASS & CAST IRON
1/4 -16	3"	1 3/4	1"	.185	1/4	.138	1/2	3/4
5/16 -14	3 13/32	1 7/8	1 1/4	.220	9/32	.165	5/8	7/8
3/8 -12	4 1/16	2 1/8	1 5/8	.255	5/16	.191	5/8	1"
1/2-10	5"	2 9/16	2"	.367	7/16	.275	1"	1 1/2
5/8-8	6 1/4	3 3/16	2 1/2	.480	9/16	.360	1 1/4	1 7/8
3/4-6	7 15/16	4 5/16	3"	.542	5/8	.406	1 1/2	2 1/4
3/4-8	7 15/16	4 5/16	3"	.542	5/8	.406	1 1/2	2 1/4
7/8-6	8 5/8	4 3/8	3 1/2	.697	3/4	.523	1 3/4	2 5/8
1" -5	10 1/8	5 1/4	4"	.697	3/4	.523	2"	3"
1 1/8-5	10 3/4	5 1/4	4 1/2	.800	13/16	.600	2 1/4	3 3/8
1 1/4-5	11 1/8	5 1/4	4 3/4	.896	7/8	.672	2 1/2	3 3/4
1 3/8-4	12 1/4	5 7/8	5 1/8	1.108	1 1/4	.831	2 3/4	4 1/8
1 1/2-4	12 5/8	5 7/8	5 1/2	1.233	1 1/4	.925	3"	4 1/2
1 3/4-4	13 3/8	5 7/8	6 1/4	1.430	1 1/4	1.072	3 1/2	5"
2" -4	14 7/8	6 1/2	7	1.644	1 3/8	1.233	4"	6"

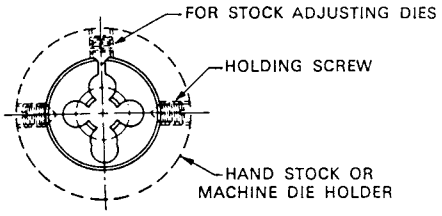
ROUND ADJUSTABLE DIES TECHNICAL DATA

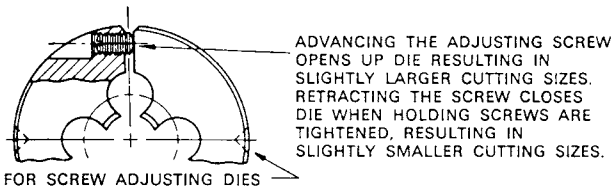
DIE THICKNESS CHART

O.D.(INCH)	O.D.(MM)	THICKNESS
13/16	20.6 mm	1/4
1"	25.4 mm	3/8
1-1/2	38.1 mm	1/2
2"	50.8 mm	5/8
2-1/2	63.5 mm	3/4
3" (10 pitch & coarser)	76.2 mm	1"
3" (11 pitch & finer)	76.2 mm	3/4









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Pouch Includes:

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- Mix and match tools to suit your application.
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- Your choice of various power bits and Weldon™ chatterless 82° single-edge countersinks.

Why North American Tool 'QC' Quick Change Hex Drive Drill and Tap Cost Cutters?

- Hex drive allows quick-change tooling.
- Quick change Cost Cutters are designed to perform two operations in one pass.*
- Drill is designed with a split point, which eliminates center-drilling/punching.
- Available in inch (NC & NF pitches) and metric sizes.
- Specify quick change Cost Cutters for unmatched savings and increased production with tight tolerances.

* Note: For use on through-hole applications only; drill point must break through the workpiece prior to threading.

SEE FOLLOWING PAGES FOR COMPLETE LISTINGS OF 'QC' COST CUTTER KITS.

North American Tool Corporation
215 Elmwood Avenue
PO Box 116
South Beloit, IL 61080-0116
toll free: 800-872-8277
phone: 815-389-2300
fax: 800-872-3299
sales@natool.com
www.natool.com

Basic Inch - NC + NF 'QC' Quick Change Cost Cutter Kit (Item #QC12345)

Item #	Size	H Limit	Description
QCP1001	N/A		Pouch for 'QC' Cost Cutter Kit
QC87502	N/A		1/4" Chuck with 3/8" shank
QC29000	#4-40 NC	H-2	'QC' Cost Cutter Drill & Tap
QC29004	#6-32 NC	H-3	'QC' Cost Cutter Drill & Tap
QC29006	#8-32 NC	H-3	'QC' Cost Cutter Drill & Tap
QC29008	#10-24 NC	H-3	'QC' Cost Cutter Drill & Tap
QC29009	#10-32 NF	H-3	'QC' Cost Cutter Drill & Tap
QC29012	1/4"-20 NC	H-3	'QC' Cost Cutter Drill & Tap
QC29013	1/4"-28 NF	H-3	'QC' Cost Cutter Drill & Tap
QC29014	5/16"-18 NC	H-3	'QC' Cost Cutter Drill & Tap
QC29015	5/16"-24 NF	H-3	'QC' Cost Cutter Drill & Tap
QC29016	3/8"-16 NC	H-3	'QC' Cost Cutter Drill & Tap
QC29017	3/8"-24 NF	H-3	'QC' Cost Cutter Drill & Tap

Basic Inch - NC 'QC' Quick Change Cost Cutter Kit (Item #QC29075)

Item #	Size	H Limit	Description
QCP1001	N/A		Pouch for 'QC' Cost Cutter Kit
QC87502	N/A		1/4" Chuck with 3/8" shank
QC29004	#6-32 NC	H-3	'QC' Cost Cutter Drill & Tap
QC29006	#8-32 NC	H-3	'QC' Cost Cutter Drill & Tap
QC29008	#10-24 NC	H-3	'QC' Cost Cutter Drill & Tap
QC29012	1/4"-20 NC	H-3	'QC' Cost Cutter Drill & Tap
QC29014	5/16"-18 NC	H-3	'QC' Cost Cutter Drill & Tap
QC29016	3/8"-16 NC	H-3	'QC' Cost Cutter Drill & Tap

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fax: 800-872-3299

sales@natool.com
www.natool.com

Basic Inch - NF 'QC' Quick Change Cost Cutter Kit (Item #QC29074)

Item #	Size	H Limit	Description
QCP1001	N/A		Pouch for 'QC' Cost Cutter Kit
QC87502	N/A		1/4" Chuck with 3/8" shank
QC29009	#10-32 NF	H-3	'QC' Cost Cutter Drill & Tap
QC29013	1/4"-28 NF	H-3	'QC' Cost Cutter Drill & Tap
QC29015	5/16"-24 NF	H-3	'QC' Cost Cutter Drill & Tap
QC29017	3/8"-24 NF	H-3	'QC' Cost Cutter Drill & Tap

Basic Metric - MM 'QC' Quick Change Cost Cutter Kit (Item #QC29076)

Item #	Size	D#	Description
QCP1001	N/A		Pouch for 'QC' Cost Cutter Kit
QC87502	N/A		1/4" Chuck with 3/8" shank
QC29026	M4 x 0.7	D-4	'QC' Cost Cutter Drill & Tap
QC29027	M4.5 x 0.75	D-4	'QC' Cost Cutter Drill & Tap
QC29028	M5 x 0.8	D-4	'QC' Cost Cutter Drill & Tap
QC29029	M6 x 1.0	D-5	'QC' Cost Cutter Drill & Tap
QC29030	M7 x 1.0	D-5	'QC' Cost Cutter Drill & Tap
QC29031	M8 x 1.25	D-5	'QC' Cost Cutter Drill & Tap
QC29032	M10 x 1.5	D-6	'QC' Cost Cutter Drill & Tap

ALL 'QC' QUICK CHANGE COST CUTTER TOOLS & COMPONENTS CAN BE PURCHASED SEPARATELY.

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fax: 800-872-3299

sales@natool.com
www.natool.com

COMPLETE Inch - NC 'QC' Quick Change Cost Cutter Kit (Item #QC29080)

Item #	Size	H Limit	Description
QCP1001	N/A		Pouch for 'QC' Cost Cutter Kit
QC87502	N/A		1/4" Chuck with 3/8" shank
QC29004	#6-32 NC	H-3	'QC' Cost Cutter Drill & Tap
QC29006	#8-32 NC	H-3	'QC' Cost Cutter Drill & Tap
QC29008	#10-24 NC	H-3	'QC' Cost Cutter Drill & Tap
QC29012	1/4"-20 NC	H-3	'QC' Cost Cutter Drill & Tap
QC29014	5/16"-18 NC	H-3	'QC' Cost Cutter Drill & Tap
QC29016	3/8"-16 NC	H-3	'QC' Cost Cutter Drill & Tap

** This COMPLETE kit includes the Power Bits and Countersinks shown below.*

COMPLETE Inch - NF 'QC' Quick Change Cost Cutter Kit (Item #QC29081)

Item #	Size	H Limit	Description
QCP1001	N/A		Pouch for 'QC' Cost Cutter Kit
QC87502	N/A		1/4" Chuck with 3/8" shank
QC29009	#10-32 NF	H-3	'QC' Cost Cutter Drill & Tap
QC29013	1/4"-28 NF	H-3	'QC' Cost Cutter Drill & Tap
QC29015	5/16"-24 NF	H-3	'QC' Cost Cutter Drill & Tap
QC29017	3/8"-24 NF	H-3	'QC' Cost Cutter Drill & Tap

** This COMPLETE kit includes the Power Bits and Countersinks shown below.*

COMPLETE Metric - MM 'QC' Quick Change Cost Cutter Kit (Item #QC29082)

Item #	Size	D #	Description
QCP1001	N/A		Pouch for 'QC' Cost Cutter Kit
QC87502	N/A		1/4" Chuck with 3/8" shank
QC29026	M4 x 0.7	D-4	'QC' Cost Cutter Drill & Tap
QC29027	M4.5 x 0.75	D-4	'QC' Cost Cutter Drill & Tap
QC29028	M5 x 0.8	D-4	'QC' Cost Cutter Drill & Tap
QC29029	M6 x 1.0	D-5	'QC' Cost Cutter Drill & Tap
QC29030	M7 x 1.0	D-5	'QC' Cost Cutter Drill & Tap
QC29031	M8 x 1.25	D-5	'QC' Cost Cutter Drill & Tap
QC29032	M10 x 1.5	D-6	'QC' Cost Cutter Drill & Tap

** This COMPLETE kit includes the Power Bits and Countersinks shown below.*

**** These Power Bits and Countersinks are included in Complete Kit Item Numbers QC29080, QC29081, QC29082***

Hex-Drive 2" Power Bits:

Item #	Description
QC15845	#1 Phillips
QC15846	#2 Phillips
QC15864	#6-8 Slotted
QC15865	#8-10 Slotted
QC15872	#1 Square Recess
QC15873	#2 Square Recess

Weldon® Chatterless 82° Single-Edge Hex Shank Countersinks:

Item #	Size Range
QC-18H	.187 - .531
QC-8SH	.125 - .344
QC-3SH	.073 - .234

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- For use on through-hole applications only
- Cost Cutter Drill & Tap offers unmatched savings and increased production by combining two operations in one
- Ask about 'QC' Quick Change Hex Drive Cost Cutters
- Specials available upon request

- Cost Cutters are designed to perform drilling and tapping in one pass.
- Significantly increases part throughput in production runs.
- Drill* designed with a split point, which eliminates a center-drilling/punching operation.

  **Also available as combination reamer-and-tap or core drill-and-tap.*
- Available as popular specials in inch, metric and pipe sizes; blueprint specials to exact specifications also available.
- Stock Cost Cutters are designed to drill and tap through-holes up to 2X the nominal diameter.
- Spindle speeds should be set at normal speed for tapping specific material being machined. As with any tapping operation, a reversing spindle is required. Drill point must break through part prior to threading.

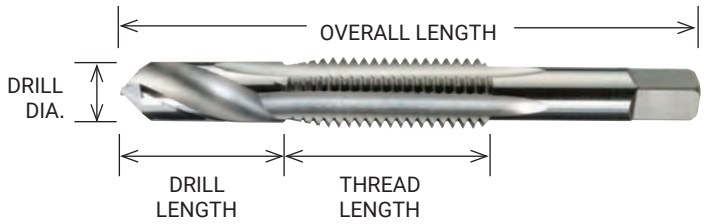
'QC' Quick Change
Hex Drive Cost Cutter

See next page for complete listing.

GWS Tool Group

Florida (HQ)
595 County Road 448
Tavares, FL 32778

1-877-497-8665
sales@gwstoolgroup.com
www.GWSToolGroup.com



COST CUTTER™

COST CUTTER™ DRILL & TAP - INCH SIZES

SIZE	PITCH	LIMIT	ITEM #	OVERALL LENGTH	THREAD LENGTH	DRILL LENGTH	DRILL DIAMETER
4	40 NC	GH-2	29000	1 7/8	3/8	1/4	.091
6	32 NC	GH-3	29004	2	7/16	5/16	.112
8	32 NC	GH-3	29006	2 1/8	1/2	3/8	.138
10	24 NC	GH-3	29008	2 3/8	5/8	13/32	.155
10	32 NF	GH-3	29009	2 3/8	5/8	13/32	.164
12	24 NC	GH-3	29010	2 3/8	21/32	15/32	.180
1/4	20 NC	GH-3	29012	2 1/2	25/32	17/32	.208
1/4	28 NF	GH-3	29013	2 1/2	25/32	17/32	.220
5/16	18 NC	GH-3	29014	2 23/32	15/16	11/16	.266
5/16	24 NF	GH-3	29015	2 23/32	15/16	11/16	.277
3/8	16 NC	GH-3	29016	2 15/16	1 1/8	13/16	.322
3/8	24 NF	GH-3	29017	2 15/16	1 1/8	13/16	.340
7/16	14 NC	GH-3	29018	3 3/4	1 1/4	1	.377
7/16	20 NF	GH-3	29019	3 3/4	1 1/4	1	.395
1/2	13 NC	GH-3	29020	4 1/16	1 3/8	1 1/8	.435
1/2	20 NF	GH-3	29022	4 1/16	1 3/8	1 1/8	.458
5/8	11 NC	GH-3	29036	5 1/16	1 3/4	1 1/2	.548

COST CUTTER™ DRILL & TAP - METRIC SIZES

SIZE	PITCH	LIMIT	ITEM #	OVERALL LENGTH	THREAD LENGTH	DRILL LENGTH	DRILL DIAMETER
M3	.5	D3	29024	1 15/16	13/32	9/32	.102
M3.5	.6	D4	29025	2	7/16	5/16	.120
M4	.7	D4	29026	2 1/8	1/2	3/8	.134
M4.5	.75	D4	29027	2 3/8	5/8	13/32	.152
M5	.8	D4	29028	2 3/8	5/8	13/32	.172
M6	1	D5	29029	2 1/2	25/32	17/32	.203
M7	1	D5	29030	2 23/32	15/16	11/16	.242
M8	1.25	D5	29031	2 23/32	15/16	11/16	.274
M10	1.50	D6	29032	2 15/16	1 1/8	13/16	.344
M12	1.75	D6	29033	4 1/16	1 3/8	1 1/8	.414

COST CUTTER™ DRILL & TAP - PIPE SIZES (NPT/F)

SIZE	PITCH	ITEM #	OVERALL LENGTH	THREAD LENGTH	DRILL LENGTH	DRILL DIAMETER
1/16	27	29040	2 13/16	11/16	11/16	.242
1/8	27	29041	2 7/8	3/4	3/4	.332
1/4	18	29042	3 5/16	1 1/16	7/8	.438
3/8	18	29043	3 1/2	1 1/16	15/16	.562
1/2	14	29044	4 3/8	1 3/8	1 1/4	.703
3/4	14	29045	4 9/16	1 3/8	1 5/16	.906
1	11 1/2	29046	5 3/8	1 3/4	1 5/8	1.141

Contact GWS Tool Group for all of your combination drill and tap requirements.

GWS TOOL GROUP

SOLID CARBIDE THREAD MILLS

48-72 HOUR SHIPPING

Finally…Thread Mills from the People Who Know Threads Best!

Do you have a three axis (or more) CNC machine? Is that machine modern enough to have a circular interpolation program already installed? Can you manually install a program to run thread mills? If you can say yes, you can use thread mills to some significant advantages over traditional tapping applications.

Thread mills help you and your shop in a variety of ways:

- Exceptional quality threads on a variety of materials including specific styles for exotic materials and aluminum.
- Depending on the work in your shop, fewer thread mills may be required to produce threads than the number of taps needed for the same jobs
  (no need for taper, plug and bottom forms).
- Tap breakage (caught in piece part hole) is virtually eliminated.
- Less horsepower is required for similar jobs, smaller chips, less stress on tool.
- Thread mills are particularly well-suited for thin walled work pieces versus taps.
- Multiple H Limits can be achieved with the same tool based on programming expertise.
- Cut RH and LH threads with the same tool.
- Thread blind holes to the bottom.
- Eliminates the need for expensive taps and tapping chucks.
- Helical form disperses the chip load more efficiently to allow for a smoother cut and finish on piece part.
- When the length of the tapped hole exceeds the ideal recommendations from engineering, thread mills can reach deeper without similar consequences.
- Taps may be used up to 45 R^C with few issues. 45 R^C to 50 R^C may require special geometry to accommodate. Carbide thread mills will handle material up to 60 R^C and could be modified to tackle up to 65 R^C.

Contents

Advantages of GWS Tool Group Thread Mills

- **Premium micro-grain carbide construction**
- **Spiral Flutes eliminate chatter** (except Single Profile design)
- **Designed for Internal Threads** Many thread mills can produce internal or external threads. However, 90% of all applications are internal. Therefore, North American Tool's thread mills are designed to work better producing internal threads. Because we use a larger truncation in the root, the tool is less susceptible to breakage. We will make you an external thread tool as a non-stock standard when you need an external thread.
- **A minimum of three axis CNC machines are required to utilize all thread mills.** Thread milling requires utilization of a CNC machine capable of helical interpolation which is the simultaneous movement of three axis (X, Y and Z). The X and Y move in a circular motion while the Z moves in a linear motion. The movement of X and Y will determine the thread diameter, whereas the movement of Z along with the tool (exception is single profile) will determine the pitch, or lead during thread production.
- **May reduce the number of setups required for a job.** If the same number of threads (TPI) are needed for multiple diameters, there is no need to change the tool.
- **Eliminates the need to reverse the spindle** as is the case with conventional tapping applications
- **One thread mill will handle various bore diameters** so long as the pitch is the one required
- **Internal thread can be produced all the way to the bottom of the hole**
- **Exceptional thread quality** on a wide variety of materials including specific designs for aluminum and exotic materials
- **Better rigidity than HSS or HSSE**
- **Standard coolant tools are axial,** but radial coolant holes are available as specials.

Before Requesting a Quote

GWS Tool Group has an unmatched reputation for Special Taps. Special Thread Mills is the next logical step.

In order to quote, here are some of the most important consideration:

1. Thread diameter and Threads Per Inch (TPI) or pitch
   - Major and minor pitch diameters IF different than standard
   - Special root and crest requirements IF different than standard
2. Length of thread required
3. Shank and overall length required
4. Material to be machined and hardness
5. Miscellaneous part considerations
   - Thin walls
   - Cross holes
   - Reach to piece part
6. Is coolant through spindle available? Does this job require coolant?
7. Coating preferences or we can recommend based on information provided
8. Any operations we can combine?
   - Drill
   - Chamfer
   - Spot face
   - Counterbore
9. Quantity

3 Kinds of Special Thread Mills

GWS Tool Group will work with you to create a Special Thread Mill for virtually any application. Aerospace, Medical, Energy or Job Shop—we are here to help.

Modified Standards

(48 hours to ship)

– Extend thread length by grinding neck of tool

– Add coolant grooves along the shank

– Shorten the length of cut to improve rigidity

Non-Stock Standards

(48 hours to ship)

– UN Standard Pitch on Standard Blank

– Metric Standard Pitch on a Standard Blank

Complete Special

(Lead Time Determined at Time of Quotation)

– Add features to combine operations
   - Drill
   - Chamfer
   - Spot face
   - Counterbore
   - Your ideas

– Request Special Carbide Grade

– Polishing, Edge Prep, Coatings

– Build to suit your high volume application

– Radial or Axial coolant through holes on request

– Smaller Minimum Thread Diameters down to #4 UN or M3 in Metric

Fractional • UN • Solid Carbide 15° Helix 2XD Bright Finish & TiAlN Coated

General Purpose Thread Mills
These solid carbide tools are made with multiple spiral flutes for smooth, chatter-free cutting and can be applied to most materials with adjustments in SFM and feed rates. These tools are made with a cutting length that is 2X diameter for strength and stability. Bright finish featured in first column.

Add the available TiAlN coating for enhanced performance with most of your threading needs.

ITEM NUMBER BRIGHT	ITEM NUMBER COATED	DESCRIPTION	MINIMUM THREAD DIAMETER	PITCH	CUTTER DIA	SHANK DIA	LENGTH OF CUT	NO. OF FLUTES	OVERALL LENGTH
14300	14300-TIALN	TMGP #6 X 32 .100	#6	32	0.100	3/16	0.297	3	2.0
14301	14301-TIALN	TMGP #8 X 32 .120	#8	32	0.120	3/16	0.328	3	2.0
14302	14302-TIALN	TMGP #10 X 24 .140	#10	24	0.140	3/16	0.396	3	2.5
14303	14303-TIALN	TMGP #10 X 32 .140	#10	32	0.140	3/16	0.391	3	2.5
14304	14304-TIALN	TMGP 1/4" X 20 .180	1/4"	20	0.180	3/16	0.525	3	2.5
14305	14305-TIALN	TMGP 1/4" X 28 .180	1/4"	28	0.180	3/16	0.518	3	2.5
14306	14306-TIALN	TMGP 5/16" X 18 .235	5/16"	18	0.235	1/4	0.639	3	2.5
14307	14307-TIALN	TMGP 5/16" X 24 .235	5/16"	24	0.235	1/4	0.646	3	2.5
14308	14308-TIALN	TMGP 3/8" X 16 .300	3/8"	16	0.300	5/16	0.781	4	3.0
14309	14309-TIALN	TMGP 3/8" X 24 .300	3/8"	24	0.300	5/16	0.771	4	3.0
14310	14310-TIALN	TMGP 7/16" X 14 .345	7/16"	14	0.345	3/8	0.893	4	3.5
14311	14311-TIALN	TMGP 7/16" X 20 .345	7/16"	20	0.345	3/8	0.875	4	3.5
14312	14312-TIALN	TMGP 1/2" X 13 .370	1/2"	13	0.370	3/8	1.038	4	3.5
14313	14313-TIALN	TMGP 1/2" X 20 .370	1/2"	20	0.370	3/8	1.025	4	3.5
14314	14314-TIALN	TMGP 9/16" X 12 .450	9/16"	12	0.450	1/2	1.125	4	3.5
14315	14315-TIALN	TMGP 9/16" X 18 .450	9/16"	18	0.450	1/2	1.139	4	3.5
14316	14316-TIALN	TMGP 5/8" X 11 .490	5/8"	11	0.490	1/2	1.318	4	3.5
14317	14317-TIALN	TMGP 5/8" X 16 .490	5/8"	16	0.490	1/2	1.281	4	3.5
14318	14318-TIALN	TMGP 5/8" X 18 .490	5/8"	18	0.490	1/2	1.250	4	3.5
14319	14319-TIALN	TMGP 3/4" X 10 .585	3/4"	10	0.585	5/8	1.550	4	4.0
14320	14320-TIALN	TMGP 3/4" X 16 .585	3/4"	16	0.585	5/8	1.531	4	4.0
14321	14321-TIALN	TMGP 7/8" X 9 .620	7/8"	9	0.620	5/8	1.833	4	4.0
14322	14322-TIALN	TMGP 7/8" X 14 .620	7/8"	14	0.620	5/8	1.750	4	4.0
14323	14323-TIALN	TMGP 1" X 8 .740	1"	8	0.740	3/4	2.063	4	5.0
14324	14324-TIALN	TMGP 1" X 12 .740	1"	12	0.740	3/4	2.042	4	5.0

Fractional • UN • Coolant Through • Solid Carbide 15° Helix 2XD Bright Finish & TiAlN Coated

General Purpose Thread Mills with Coolant Through
Designed with the same characteristics as our General Purpose tools, these standard UN Fractional products feature Axial Coolant off the shelf. This feature is important if your machining center only has through the spindle coolant, or if high heat is present in the cut and coolant reduces the temperature and aids with chip evacuation. Bright finish is featured in first column.

Add the available TiAlN coating for enhanced performance with most of your threading needs.

ITEM NUMBER BRIGHT	ITEM NUMBER COATED	DESCRIPTION	MINIMUM THREAD DIAMETER	PITCH	CUTTER DIA	SHANK DIA	LENGTH OF CUT	NO. OF FLUTES	OVERALL LENGTH
14350	**14350-TIALN**	TMGC #10 X 24 .140	#10	24	0.140	3/16	0.396	3	2.5
14351	**14351-TIALN**	TMGC #10 X 32 .140	#10	32	0.140	3/16	0.391	3	2.5
14352	**14352-TIALN**	TMGC 1/4" X 20 .180	1/4"	20	0.180	3/16	0.525	3	2.5
14353	**14353-TIALN**	TMGC 1/4" X 28 .180	1/4"	28	0.180	3/16	0.518	3	2.5
14354	**14354-TIALN**	TMGC 5/16" X 18 .235	5/16"	18	0.235	1/4	0.639	3	2.5
14355	**14355-TIALN**	TMGC 5/16" X 24 .235	5/16"	24	0.235	1/4	0.646	3	2.5
14356	**14356-TIALN**	TMGC 3/8" X 16 .300	3/8"	16	0.300	5/16	0.781	4	3.0
14357	**14357-TIALN**	TMGC 3/8" X 24 .300	3/8"	24	0.300	5/16	0.771	4	3.0
14358	**14358-TIALN**	TMGC 7/16" X 14 .345	7/16"	14	0.345	3/8	0.893	4	3.5
14359	**14359-TIALN**	TMGC 7/16" X 20 .345	7/16"	20	0.345	3/8	0.875	4	3.5
14360	**14360-TIALN**	TMGC 1/2" X 13 .370	1/2"	13	0.370	3/8	1.038	4	3.5
14361	**14361-TIALN**	TMGC 9/16" X 18 .450	9/16"	18	0.450	1/2	1.139	4	3.5
14362	**14362-TIALN**	TMGC 5/8" X 11 .490	5/8"	11	0.490	1/2	1.318	4	3.5
14363	**14363-TIALN**	TMGC 3/4" X 10 .585	3/4"	10	0.585	5/8	1.550	4	4.0
14364	**14364-TIALN**	TMGC 3/4" X 16 .585	3/4"	16	0.585	5/8	1.531	4	4.0

Metric • Solid Carbide 15° Helix 2XD
Bright Finish & TiAlN Coated

General Purpose Thread Mills
These solid carbide tools are made with multiple spiral flutes for smooth, chatter-free cutting and can be applied to most materials with adjustments in SFM and feed rates. These tools are made with a cutting length that is 2X diameter for strength and stability. Bright finish featured in first column.

Add the available TiAlN coating for enhanced performance with most of your threading needs.

ITEM NUMBER		DESCRIPTION	MINIMUM THREAD DIAMETER	PITCH	CUTTER DIA	SHANK DIA	LENGTH OF CUT	NO. OF FLUTES	OVERALL LENGTH
BRIGHT	COATED								
14375	**14375-TIALN**	TMGP M4 X 0.7 .115	M4	0.7	0.115	3/16	0.317	3	2.0
14376	**14376-TIALN**	TMGP M5 X 0.8 .145	M5	0.8	0.145	3/16	0.394	3	2.5
14377	**14377-TIALN**	TMGP M6 X 0.75 .170	M6	0.75	0.170	3/16	0.487	3	2.5
14378	**14378-TIALN**	TMGP M6 X 1 .170	M6	1	0.170	3/16	0.492	3	2.5
14379	**14379-TIALN**	TMGP M8 X 1 .235	M8	1	0.235	1/4	0.650	3	2.5
14380	**14380-TIALN**	TMGP M8 X 1.25 .235	M8	1.25	0.235	1/4	0.664	3	2.5
14381	**14381-TIALN**	TMGP M10 X 1 .300	M10	1	0.300	5/16	0.807	4	3.0
14382	**14382-TIALN**	TMGP M10 X 1.5 .300	M10	1.5	0.300	5/16	0.797	4	3.0
14383	**14383-TIALN**	TMGP M12 X 1 .370	M12	1	0.370	3/8	0.965	4	3.5
14384	**14384-TIALN**	TMGP M12 X 1.5 .370	M12	1.5	0.370	3/8	0.974	4	3.5
14385	**14385-TIALN**	TMGP M12 X 1.75 .370	M12	1.75	0.370	3/8	0.999	4	3.5
14386	**14386-TIALN**	TMGP M14 X 1.5 .420	M14	1.5	0.420	1/2	1.152	4	3.5
14387	**14387-TIALN**	TMGP M14 X 2 .420	M14	2	0.420	1/2	1.142	4	3.5
14388	**14388-TIALN**	TMGP M16 X 1.5 .490	M16	1.5	0.490	1/2	1.270	4	3.5
14389	**14389-TIALN**	TMGP M16 X 2 .490	M16	2	0.490	1/2	1.299	4	3.5

Metric • Coolant Through • Solid Carbide 15° Helix 2XD Bright Finish & TiAlN Coated

General Purpose Thread Mills with Coolant Through
Designed with the same characteristics as our General Purpose tools, these standard products feature Axial Coolant off the shelf. This feature is important if your machining center only has through the spindle coolant, or if high heat is present in the cut and coolant reduces the temperature and aids with chip evacuation. Bright finish is featured in first column.

Add the available TiAlN coating for enhanced performance with most of your threading needs.

ITEM NUMBER		DESCRIPTION	MINIMUM THREAD DIAMETER	PITCH	CUTTER DIA	SHANK DIA	LENGTH OF CUT	NO. OF FLUTES	OVERALL LENGTH
BRIGHT	COATED								
14400	**14400-TIALN**	TMGC M5 X 0.8 .145	M5	0.8	0.145	3/16	.394	3	2.5
14401	**14401-TIALN**	TMGC M6 X 0.75 .170	M6	0.75	0.170	3/16	.487	3	2.5
14402	**14402-TIALN**	TMGC M6 X 1 .170	M6	1	0.170	3/16	.492	3	2.5
14403	**14403-TIALN**	TMGC M8 X 1 .235	M8	1	0.235	1/4	.650	3	2.5
14404	**14404-TIALN**	TMGC M8 X 1.25 .235	M8	1.25	0.235	1/4	.664	3	2.5
14405	**14405-TIALN**	TMGC M10 X 1 .300	M10	1	0.300	5/16	.807	4	3.0
14406	**14406-TIALN**	TMGC M10 X 1.5 .300	M10	1.5	0.300	5/16	.797	4	3.0
14407	**14407-TIALN**	TMGC M12 X 1 .370	M12	1	0.370	3/8	.965	4	3.5
14408	**14408-TIALN**	TMGC M12 X 1.5 .370	M12	1.5	0.370	3/8	.974	4	3.5
14409	**14409-TIALN**	TMGC M12 X 1.75 .370	M12	1.75	0.370	3/8	.999	4	3.5
14410	**14410-TIALN**	TMGC M14 X 1.5 .420	M14	1.5	0.420	1/2	1.152	4	3.5
14411	**14411-TIALN**	TMGC M14 X 2 .420	M14	2	0.420	1/2	1.142	4	3.5
14412	**14412-TIALN**	TMGC M16 X 1.5 .490	M16	1.5	0.490	1/2	1.270	4	3.5
14413	**14413-TIALN**	TMGC M16 X 2 .490	M16	2	0.490	1/2	1.299	4	3.5

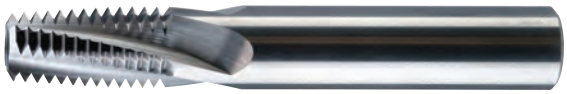
Pipe Sizes • NPT/NPTF • Solid Carbide
Bright Finish & TiAlN Coated

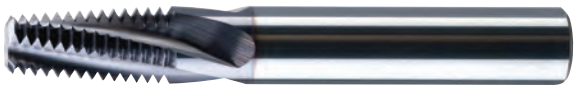
Pipe – NPT – Bright Finish – Solid Carbide
Tapered 1" of diameter for every 16" of length (or 62.5mm/m), American National Standard Taper Pipe Thread thread mills provide a piece part that forms a seal when the flanks of the part are mated. It is usually recommended that a sealant be used in these joints to prevent leakage of liquids, steam, hydraulic fluid or gases.

Pipe – NPT – TiALN Coated – Solid Carbide
Same features as NPT bright finish with TiAlN coating to enhance life in most applications.

Pipe – NPTF – Bright Finish – Solid Carbide
Dryseal American National Standard Taper Pipe Threads are designed to provide additional protection against leakage because the root and crest heights of the threads have been adjusted to provide what is commonly referred to as an “interference” fit. Sealants are still recommended, but may not be required.

Pipe – NPTF – TiALN Coated – Solid Carbide
Same features as NPTF bright finish with TiAlN coating to enhance life in most applications.



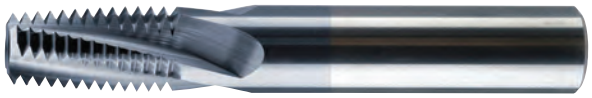


ITEM NUMBER BRIGHT	ITEM NUMBER COATED	DESCRIPTION	MINIMUM THREAD DIAMETER	PITCH	CUTTER DIA	SHANK DIA	LENGTH OF CUT*	NO. OF FLUTES	OVERALL LENGTH
Pipe - NPT - Solid Carbide									
14500	**14500-TIALN**	TMPT 1/16" X 27 NPT .245	1/16"	27	0.245	1/4	(13).481	3	2.5
14501	**14501-TIALN**	TMPT 1/8" X 27 NPT .300	1/8"	27	0.300	5/16	(16).592	4	3.0
14502	**14502-TIALN**	TMPT 1/4" X 18 NPT .360	1/4"	18	0.360	3/8	(11).611	4	3.5
14503	**14503-TIALN**	TMPT 3/8" X 18 NPT .427	3/8"	18	0.427	1/2	(13).722	4	3.5
14504	**14504-TIALN**	TMPT 1/2" X 14 NPT .490	1/2"	14	0.490	1/2	(14)1.000	4	3.5
14505	**14505-TIALN**	TMPT 1" X 11.5 NPT .620	1"	11.5	0.620	5/8	(13)1.130	4	4.0
14506	**14506-TIALN**	TMPT 2 1/2" X 8 NPT .740	2 1/2"	8	0.740	3/4	(12)1.500	4	5.0
Pipe - NPTF - Solid Carbide									
14510	14510-TIALN	TMPT 1/16" X 27 NPTF .245	1/16"	27	0.245	1/4	(13).481	3	2.5
14511	14511-TIALN	TMPT 1/8" X 27 NPTF .300	1/8"	27	0.300	5/16	(16).592	4	3.0
14512	14512-TIALN	TMPT 1/4" X 18 NPTF .360	1/4"	18	0.360	3/8	(11).611	4	3.5
14513	14513-TIALN	TMPT 1/2" X 14 NPTF .490	1/2"	14	0.490	1/2	(14)1.000	4	3.5
14514	14514-TIALN	TMPT 1" X 11.5 NPTF .620	1"	11.5	0.620	5/8	(13)1.130	4	4.0
14515	**14515-TIALN**	TMPT 2 1/2" X 8 NPTF .740	2 1/2"	8	0.740	3/4	(12)1.500	4	5.0

* The parenthetical number represents the number of threads on the tool.

Pipe Sizes • NPT/NPTF • Solid Carbide for Exotics AlCrN Coated

Pipe - NPT - EX - AlCrN Coated - Solid Carbide
Recommended when your pipe fittings are made of Stainless Steel, Titanium or other hard to machine materials. The cutting geometry is modified to increase life and performance.



Pipe - NPTF - EX - AlCrN Coated - Solid Carbide
Dryseal American National Standard Taper Pipe Threads are designed to provide additional protection against leakage because the root and crest heights of the threads have been adjusted to provide what is commonly referred to as an “interference” fit. Sealants are still recommended, but may not be required. The cutting geometry is modified to increase life and performance.

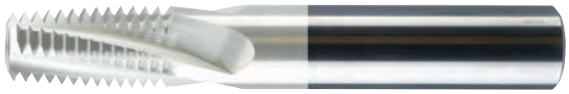
ITEM NUMBER	DESCRIPTION	MINIMUM THREAD DIA	PITCH	CUTTER DIA	SHANK DIA	LENGTH OF CUT*	NO. OF FLUTES	OVERALL LENGTH
Pipe - NPT - Solid Carbide								
14520-ALCRN	TMEX 1/16" X 27 NPT .245	1/16"	27	0.245	1/4	(13).481	3	2.5
14521-ALCRN	TMEX 1/8" X 27 NPT .300	1/8"	27	0.300	5/16	(16).592	4	3.0
14522-ALCRN	TMEX 1/4" X 18 NPT .360	1/4"	18	0.360	3/8	(11).611	4	3.5
14523-ALCRN	TMEX 3/8" X 18 NPT .427	3/8"	18	0.427	1/2	(13).722	4	3.5
14524-ALCRN	TMEX 1/2" X 14 NPT .490	1/2"	14	0.490	1/2	(14)1.000	4	3.5
14525-ALCRN	TMEX 1" X 11.5 NPT .620	1"	11.5	0.620	5/8	(13)1.130	4	4.0
14526-ALCRN	TMEX 2 1/2" X 8 NPT .740	2 1/2"	8	0.740	3/4	(12)1.500	4	5.0
Pipe - NPTF - Solid Carbide								
14530-ALCRN	TMEX 1/16" X 27 NPTF .245	1/16"	27	0.245	1/4	(13).481	3	2.5
14531-ALCRN	TMEX 1/8" X 27 NPTF .300	1/8"	27	0.300	5/16	(16).592	3	3.0
14532-ALCRN	TMEX 1/4" X 18 NPTF .360	1/4"	18	0.360	3/8	(11).611	4	3.5
14533-ALCRN	TMEX 1/2" X 14 NPTF .490	1/2"	14	0.490	1/2	(14)1.000	4	3.5
14534-ALCRN	TMEX 1" X 11.5 NPTF .620	1"	11.5	0.620	5/8	(13)1.130	4	4.0
14535-ALCRN	TMEX 2 1/2" X 8 NPTF .740	2 1/2"	8	0.740	3/4	(12)1.500	4	5.0

* The parenthetical number represents the number of threads on the tool.

Pipe Sizes • NPT/NPTF • Solid Carbide for Aluminum ZrN Coated

Pipe - NPT - AL - ZrN Coated - Solid Carbide
Same features as NPT, but with ZrN coating to enhance life in applications where Aluminum is used. Special thread mill features have been used to make these perform better than standard general purpose tools.

Pipe - NPTF - AL - ZrN Coated - Solid Carbide
Same features as NPTF, but with ZrN coating to enhance life in applications where Aluminum is used. Special thread mill features have been used to make these perform better than standard general purpose tools when machining aluminum.



ITEM NUMBER	DESCRIPTION	MINIMUM THREAD DIA	PITCH	CUTTER DIA	SHANK DIA	LENGTH OF CUT*	NO. OF FLUTES	OVERALL LENGTH
Pipe - NPT - Solid Carbide								
14520-ZRN	TMAL 1/16" X 27 NPT .245 ZrN	1/16"	27	0.245	1/4	(13).481	3	2.5
14521-ZRN	TMAL 1/8" X 27 NPT .300 ZrN	1/8"	27	0.300	5/16	(16).592	4	3.0
14522-ZRN	TMAL 1/4" X 18 NPT .360 ZrN	1/4"	18	0.360	3/8	(11).611	4	3.5
14523-ZRN	TMAL 3/8" X 18 NPT .427 ZrN	3/8"	18	0.427	1/2	(13).722	4	3.5
14524-ZRN	TMAL 1/2" X 14 NPT .490 ZrN	1/2"	14	0.490	1/2	(14)1.000	4	3.5
14525-ZRN	TMAL 1" X 11.5 NPT .620 ZrN	1"	11.5	0.620	5/8	(13)1.130	4	4.0
14526-ZRN	TMAL 2 1/2" X 8 NPT .740 ZrN	2 1/2"	8	0.740	3/4	(12)1.500	4	5.0
Pipe - NPTF - Solid Carbide								
14530-ZRN	TMAL 1/16" X 27 NPTF .245 ZrN	1/16"	27	0.245	1/4	(13).481	3	2.5
14531-ZRN	TMAL 1/8" X 27 NPTF .300 ZrN	1/8"	27	0.300	5/16	(16).592	3	3.0
14532-ZRN	TMAL 1/4" X 18 NPTF .360 ZrN	1/4"	18	0.427	3/8	(11).611	4	3.5
14533-ZRN	TMAL 1/2" X 14 NPTF .490 ZrN	1/2"	14	0.490	1/2	(14)1.000	4	3.5
14534-ZRN	TMAL 1" X 11.5 NPTF .620 ZrN	1"	11.5	0.620	5/8	(13)1.130	4	4.0
14535-ZRN	TMAL 2 1/2" X 8 NPTF .740 ZrN	2 1/2"	8	0.740	3/4	(12)1.500	4	5.0

* The parenthetical number represents the number of threads on the tool.

Fractional • UN • Material Specific • Solid Carbide for Exotics AlCrN Coated

Embrace the high performance, application specific fractional UN thread mills designed with tough to machine materials in mind. Titanium, Inconel, stainless steel, and other tough materials can now be tamed with the use of these thread mills. Thread mills will allow you higher SFM and feed rates that will outperform general purpose tools. The **left hand helix, left hand cut** design feature permits the operator to attack the material from the top to the bottom of the hole and climb mill while creating a right hand thread. The AlCrN coating comes standard off the shelf, because you shouldn't settle for less. Get your thread mills from the people who understand threads best.

ITEM NUMBER	DESCRIPTION	MINIMUM THREAD DIAMETER	PITCH	CUTTER DIA	SHANK DIA	LENGTH OF CUT	NO. OF FLUTES	OVERALL LENGTH
14600-ALCRN	TMEX #2 X 56 .065 AlCrN	#2	56	0.065	1/4	0.17	3	2.5
14601-ALCRN	TMEX #3 X 48 .075 AlCrN	#3	48	0.075	1/4	0.20	3	2.5
14602-ALCRN	TMEX #4 X 40 .085 AlCrN	#4	40	0.085	1/4	0.25	3	2.5
14603-ALCRN	TMEX #6 X 32 .100 AlCrN	#6	32	0.100	1/4	0.28	3	2.5
14604-ALCRN	TMEX #8 X 32 .120 AlCrN	#8	32	0.120	1/4	0.37	3	2.5
14605-ALCRN	TMEX #10 X 24 .140 AlCrN	#10	24	0.140	1/4	0.42	3	2.5
14606-ALCRN	TMEX #10 X 32 .140 AlCrN	#10	32	0.140	1/4	0.42	3	2.5
14607-ALCRN	TMEX 1/4" X 20 .180 AlCrN	1/4"	20	0.180	1/4	0.55	3	2.5
14608-ALCRN	TMEX 1/4" X 28 .180 AlCrN	1/4"	28	0.180	1/4	0.55	3	2.5
14609-ALCRN	TMEX 5/16" X 18 .235 AlCrN	5/16"	18	0.235	1/4	0.68	3	2.5
14610-ALCRN	TMEX 5/16" X 24 .235 AlCrN	5/16"	24	0.235	1/4	0.68	3	2.5
14611-ALCRN	TMEX 3/8" X 16 .300 AlCrN	3/8"	16	0.300	3/8	0.84	4	3.0
14612-ALCRN	TMEX 3/8" X 24 .300 AlCrN	3/8"	24	0.300	3/8	0.84	4	3.0
14613-ALCRN	TMEX 7/16" X 14 .345 AlCrN	7/16"	14	0.345	3/8	0.98	4	3.0
14614-ALCRN	TMEX 7/16" X 20 .345 AlCrN	7/16"	20	0.345	3/8	0.98	4	3.0
14615-ALCRN	TMEX 1/2" X 13 .370 AlCrN	1/2"	13	0.370	3/8	1.08	4	3.0
14616-ALCRN	TMEX 9/16" X 18 .450 AlCrN	9/16"	18	0.450	1/2	1.24	4	3.5
14617-ALCRN	TMEX 5/8" X 11 .490 AlCrN	5/8"	11	0.490	1/2	1.36	4	3.5
14618-ALCRN	TMEX 3/4" X 10 .585 AlCrN	3/4"	10	0.585	5/8	1.63	4	4.0
14619-ALCRN	TMEX 3/4" X 16 .585 AlCrN	3/4"	16	0.585	5/8	1.63	4	4.0

Metric • Material Specific • Solid Carbide for Exotics AlCrN Coated

Embrace the high performance, application specific metric thread mills designed with tough to machine materials in mind. Titanium, Inconel, stainless steel, and other tough materials can now be tamed with the use of these thread mills. Thread mills will allow you higher SFM and feed rates that will outperform general purpose tools. The **left hand helix, left hand cut** design feature permits the operator to attack the material from the top to the bottom of the hole and climb mill while creating a right hand thread. The AlCrN coating comes standard off the shelf, because you shouldn't settle for less.
Get your thread mills from the people who understand threads best.

ITEM NUMBER	DESCRIPTION	MINIMUM THREAD DIAMETER	PITCH	CUTTER DIA	SHANK DIA	LENGTH OF CUT	NO. OF FLUTES	OVERALL LENGTH
14620-ALCRN	TMEX M2 X 0.4 .060 AlCrN	M2	0.4	0.060	1/4	0.180	3	2.5
14621-ALCRN	TMEX M2.5 X 0.45 .076 AlCrN	M2.5	0.45	0.076	1/4	0.220	3	2.5
14622-ALCRN	TMEX M3 X 0.5 .092 AlCrN	M3	0.5	0.092	1/4	0.260	3	2.5
14623-ALCRN	TMEX M3.5 X 0.6 .108 AlCrN	M3.5	0.6	0.108	1/4	0.300	3	2.5
14624-ALCRN	TMEX M4 X 0.7 .122 AlCrN	M4	0.7	0.122	1/4	0.350	3	2.5
14625-ALCRN	TMEX M5 X 0.8 .150 AlCrN	M5	0.8	0.150	1/4	0.44	3	2.5
14626-ALCRN	TMEX M6 X 0.75 .182 AlCrN	M6	0.75	0.182	1/4	0.53	3	2.5
14627-ALCRN	TMEX M6 X 1 .182 AlCrN	M6	1	0.182	1/4	0.53	3	2.5
14628-ALCRN	TMEX M8 X 1 .245 AlCrN	M8	1	0.245	1/4	0.7	3	2.5
14629-ALCRN	TMEX M8 X 1.25 .245 AlCrN	M8	1.25	0.245	1/4	0.7	3	2.5
14630-ALCRN	TMEX M10 X 1 .308 AlCrN	M10	1	0.308	3/8	0.88	4	3.0
14631-ALCRN	TMEX M10 X 1.5 .308 AlCrN	M10	1.5	0.308	3/8	0.88	4	3.0
14632-ALCRN	TMEX M12 X 1 .370 AlCrN	M12	1	0.370	3/8	1	4	3.0
14633-ALCRN	TMEX M12 X 1.5 .370 AlCrN	M12	1.5	0.370	3/8	1	4	3.0
14634-ALCRN	TMEX M12 X 1.75 .370 AlCrN	M12	1.75	0.370	3/8	1	4	3.0
14635-ALCRN	TMEX M14 X 1.5 .440 AlCrN	M14	1.5	0.440	1/2	1.18	4	3.5
14636-ALCRN	TMEX M14 X 2 .440 AlCrN	M14	2	0.440	1/2	1.18	4	3.5
14637-ALCRN	TMEX M16 X 1.5 .490 AlCrN	M16	1.5	0.490	1/2	1.36	4	3.5
14638-ALCRN	TMEX M16 X 2 .490 AlCrN	M16	2	0.490	1/2	1.36	4	3.5

Fractional • UN • Coolant Through • Material Specific • Solid Carbide for Aluminum ZrN Coated

Aluminum is popular in part due to ease of machinability. Why not take advantage of our application specific off the shelf thread mill for aluminum? Designed to machine standard fractional TPI and allow greater feeds and speeds than general purpose thread mills. You will see enhanced production and improved thread quality when you step up to the AL series provided with ZrN coating.

ITEM NUMBER	DESCRIPTION	MINIMUM THREAD DIAMETER	PITCH	CUTTER DIA	SHANK DIA	LENGTH OF CUT	NO. OF FLUTES	OVERALL LENGTH
14425-ZRN	TMAL #10 X 24 .140 ZrN	#10	24	0.140	3/16	0.396	3	2.5
14426-ZRN	TMAL #10 X 32 .140 ZrN	#10	32	0.140	3/16	0.391	3	2.5
14427-ZRN	TMAL 1/4" X 20 .180 ZrN	1/4"	20	0.180	3/16	0.525	3	2.5
14428-ZRN	TMAL 1/4" X 28 .180 ZrN	1/4"	28	0.180	3/16	0.518	3	2.5
14429-ZRN	TMAL 5/16" X 18 .235 ZrN	5/16"	18	0.235	1/4	0.639	3	2.5
14430-ZRN	TMAL 5/16" X 24 .235 ZrN	5/16"	24	0.235	1/4	0.646	3	2.5
14431-ZRN	TMAL 3/8" X 16 .300 ZrN	3/8"	16	0.300	5/16	0.781	3	3.0
14432-ZRN	TMAL 3/8" X 24 .300 ZrN	3/8"	24	0.300	5/16	0.771	3	3.0
14433-ZRN	TMAL 7/16" X 14 .345 ZrN	7/16"	14	0.345	3/8	0.893	3	3.5
14434-ZRN	TMAL 7/16" X 20 .345 ZrN	7/16"	20	0.345	3/8	0.875	3	3.5
14435-ZRN	TMAL 1/2" X 13 .370 ZrN	1/2"	13	0.370	3/8	1.038	3	3.5
14436-ZRN	TMAL 9/16" X 18 .450 ZrN	9/16"	18	0.450	1/2	1.139	3	3.5
14437-ZRN	TMAL 5/8" X 11 .490 ZrN	5/8"	11	0.490	1/2	1.318	3	3.5
14438-ZRN	TMAL 3/4" X 10 .585 ZrN	3/4"	10	0.585	5/8	1.550	3	4.0
14439-ZRN	TMAL 3/4" X 16 .585 ZrN	3/4"	16	0.585	5/8	1.531	3	4.0

Metric • Coolant Through • Material Specific • Solid Carbide for Aluminum ZrN Coated

Aluminum is popular in part due to ease of machinability. Why not take advantage of our application specific off the shelf thread mill for aluminum? Designed to provide metric standard threads and allow greater feeds and speeds than general purpose thread mills. You will see enhanced production and improved thread quality when you step up to the AL series provided with ZrN coating.

ITEM NUMBER	DESCRIPTION	MINIMUM THREAD DIAMETER	PITCH	CUTTER DIA	SHANK DIA	LENGTH OF CUT	NO. OF FLUTES	OVERALL LENGTH
14440-ZRN	TMAL M5 X 0.8 .145 ZrN	M5	0.8	0.145	3/16	0.394	3	2.5
14441-ZRN	TMAL M6 X 0.75 .170 ZrN	M6	0.75	0.170	3/16	0.487	3	2.5
14442-ZRN	TMAL M6 X 1 .170 ZrN	M6	1	0.170	3/16	0.492	3	2.5
14443-ZRN	TMAL M8 X 1 .235 ZrN	M8	1	0.235	1/4	0.650	3	2.5
14444-ZRN	TMAL M8 X 1.25 .235 ZrN	M8	1.25	0.235	1/4	0.664	3	2.5
14445-ZRN	TMAL M10 X 1 .300 ZrN	M10	1	0.300	5/16	0.807	3	3.0
14446-ZRN	TMAL M10 X 1.5 .300 ZrN	M10	1.5	0.300	5/16	0.797	3	3.0
14447-ZRN	TMAL M12 X 1 .370 ZrN	M12	1	0.370	3/8	0.965	3	3.5
14448-ZRN	TMAL M12 X 1.5 .370 ZrN	M12	1.5	0.370	3/8	0.974	3	3.5
14449-ZRN	TMAL M12 X 1.75 .370 ZrN	M12	1.75	0.370	3/8	0.999	3	3.5
14450-ZRN	TMAL M14 X 1.5 .420 ZrN	M14	1.5	0.420	1/2	1.152	3	3.5
14451-ZRN	TMAL M14 X 2 .420 ZrN	M14	2	0.420	1/2	1.142	3	3.5
14452-ZRN	TMAL M16 X 1.5 .490 ZrN	M16	1.5	0.490	1/2	1.270	3	3.5
14453-ZRN	TMAL M16 X 2 .490 ZrN	M16	2	0.490	1/2	1.299	3	3.5

Single Profile • Fractional • UN • Solid Carbide • Bright Finish & TiAlN Coated

Single Profile - Fractional - UN - Bright Finish - Solid Carbide

Your shop isn't called on to mass produce threads each and every day? Why not utilize the most versatile thread mill available? These general purpose single profile tools will allow you to create any TPI within the recommended range for a given size. You utilize circular interpolation settings on your three axis machine to create the TPI you need for prototypes, short runs and in shops where you never know what the next job (or thread) will be. You give up some speed, but you gain versatility. The perfect "save the day" tool for your circumstances.

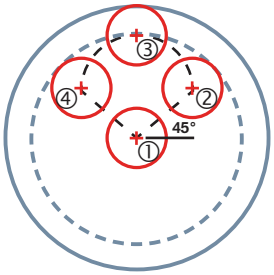
Single Profile - Fractional - UN - TiAlN Coated - Solid Carbide

All the advantages of the bright finish single profile tool with one more thrown in for good measure. TiAlN coating will enhance your speeds, feeds and finishes with most applications. Off the shelf for your convenience.

ITEM NUMBER BRIGHT	ITEM NUMBER COATED	DESCRIPTION	MINIMUM THREAD DIA	RECOMMENDED TPI RANGE	CUTTER DIA	NECK DIAMETER	NECK LENGTH	LENGTH OF CUT	NO. OF FLUTES	OVERALL LENGTH
3 FLUTE, 3/16" SHANK DIA., 2.5" OAL										
14550	**14550-TIALN**	TMSP #2 X 56-80 .060	#2	56-80	0.060	0.034	0.180	0.180	3	2.5
14551	**14551-TIALN**	TMSP #2 X 56-80 .060	#2	56-80	0.060	0.034	0.275	0.275	3	2.5
14552	**14552-TIALN**	TMSP #3 X 48-72 .072	#3	48-72	0.072	0.040	0.200	0.200	3	2.5
14553	**14553-TIALN**	TMSP #3 X 48-72 .072	#3	48-72	0.072	0.040	0.320	0.320	3	2.5
14554	**14554-TIALN**	TMSP #4 X 40-64 .080	#4	40-64	0.080	0.045	0.225	0.225	3	2.5
14555	**14555-TIALN**	TMSP #4 X 40-64 .080	#4	40-64	0.080	0.045	0.360	0.360	3	2.5
14556	**14556-TIALN**	TMSP #6 X 32-64 .098	#6	32-64	0.098	0.049	0.280	0.280	3	2.5
14557	**14557-TIALN**	TMSP #6 X 32-64 .098	#6	32-64	0.098	0.049	0.445	0.445	3	2.5
14558	**14558-TIALN**	TMSP #8 X 32-56 .120	#8	32-56	0.120	0.070	0.330	0.330	3	2.5
14559	**14559-TIALN**	TMSP #8 X 32-56 .120	#8	32-56	0.120	0.070	0.525	0.525	3	2.5
14560	**14560-TIALN**	TMSP #10 X 24-56 .135	#10	24-56	0.135	0.070	0.380	0.380	3	2.5
14561	**14561-TIALN**	TMSP #10 X 24-56 .135	#10	24-56	0.135	0.070	0.610	0.610	3	2.5
4 FLUTE, 1/4" SHANK DIA., 2.5" OAL										
14562	**14562-TIALN**	TMSP 1/4" X 20-56 .180	1/4"	20-56	0.180	0.105	0.500	0.500	4	2.5
14563	**14563-TIALN**	TMSP 1/4" X 20-56 .180	1/4"	20-56	0.180	0.105	0.775	0.775	4	2.5
14564	**14564-TIALN**	TMSP 5/16" X 18-48 .240	5/16"	18-48	0.240	0.160	0.625	0.625	4	2.5
14565	**14565-TIALN**	TMSP 5/16" X 18-48 .240	5/16"	18-48	0.240	0.160	0.965	0.965	4	2.5
4 FLUTE, 3/8" SHANK DIA., 3" OAL										
14566	**14566-TIALN**	TMSP 3/8" X 14-40 .290	3/8"	14-40	0.290	0.190	0.875	0.875	4	3.0
14567	**14567-TIALN**	TMSP 3/8" X 14-40 .290	3/8"	14-40	0.290	0.190	1.160	1.160	4	3.0
14568	**14568-TIALN**	TMSP 1/2" X 12-32 .372	1/2"	12-32	0.372	0.240	1.125	1.125	4	3.0
14569	**14569-TIALN**	TMSP 1/2" X 12-32 .372	1/2"	12-32	0.372	0.240	1.560	1.560	4	3.0
5 FLUTE, 1/2" SHANK DIA., 3.5" OAL										
14570	**14570-TIALN**	TMSP 5/8" X 11-32 .490	5/8"	11-32	0.490	0.350	1.375	1.375	5	3.5
14571	**14571-TIALN**	TMSP 5/8" X 12-32 .490	5/8"	11-32	0.490	0.350	1.940	1.940	5	3.5
6 FLUTE, 5/8" SHANK DIA., 4" OAL										
14572	**14572-TIALN**	TMSP 3/4" X 10-32 .595	3/4"	10-32	0.595	0.420	1.625	1.625	6	4.0
14573	**14573-TIALN**	TMSP 3/4" X 11-32 .595	3/4"	10-32	0.595	0.420	2.310	2.310	6	4.0
6 FLUTE, 3/4" SHANK DIA., 5" OAL										
14574	**14574-TIALN**	TMSP 7/8" X 8-24 .695	7/8"	8-24	0.695	0.490	1.750	1.750	6	5.0
14575	**14575-TIALN**	TMSP 1" X 6-32 .740	1"	6-32	0.740	0.490	2.000	2.000	6	5.0

How To Program Helical Interpolation for Thread Mills

Thread Mill Programming Example

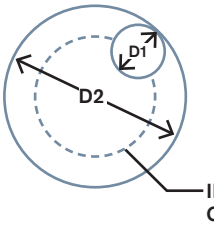


This example will produce an internal right hand thread.

- Position to ① (centerline of thread)
- G01 to desired Z depth
- G01 to ②
- G03 to ③ (while Z moves up 1/8 pitch)
- G03 to ③ (while Z moves up 1 pitch)
- G03 to ④ (while Z moves up 1/8 pitch)
- G01 to ①
- Retract from hole

Feed Rate Compensation

To obtain the correct feed rate for the centerline of the tool, multiply the desired feed rate at the cutting edge by the appropriate factor.



$$\text{INTERNAL} = \frac{D2 - D1}{D2}$$

D1 = TOOL CUTTING DIAMETER
D2 = THREAD DIAMETER

Recommended Speeds and Feeds

	SFM				FEED (INCHES/TOOTH)						
	Uncoated	TiALN	ALCrN	ZrN	3/16"	1/4"	5/16"	3/8"	1/2"	5/8"	3/4"
Aluminum	400-800	- -	- -	600-1400	0.0005	0.0008	0.0012	0.0015	0.0020	0.0025	0.0030
Brass	200-400	- -	- -	400-800	0.0005	0.0008	0.0012	0.0015	0.0020	0.0025	0.0030
Cast Iron	150-250	200-400	220-440	- -	0.0004	0.0005	0.0006	0.0007	0.0010	0.0015	0.0020
Carbon Steel	150-250	250-500	275-550	- -	0.0004	0.0005	0.0006	0.0007	0.0010	0.0015	0.0020
Stainless Steel	100-150	150-400	165-440	- -	0.0004	0.0005	0.0006	0.0007	0.0010	0.0015	0.0020
High Temp Alloy	50-100	80-150	90-165	- -	0.0004	0.0006	0.0007	0.0008	0.0009	0.0010	0.0012
Titanium	50-125	80-250	90-275	- -	0.0003	0.0004	0.0005	0.0006	0.0007	0.0008	0.0010

Troubleshooting

Number one issue: programming the thread mill with no feed rate compensation. If the operator/engineer/machinist programs the feed rate based on the tool at the center of the hole (before it begins to machine threads), then the rate will not be the same at the circumference of the hole when the tool is interpolating the thread. Use the program from the 3 axis (or more) machining center to compensate for the calculated feed.

SFM is too low

- Increase speed
  - For soft materials
  - Fine pitches
  - To reduce chipping
  - To improve the finish on work piece
- Decrease speed for
  - Hard or abrasive material
  - Coarse pitches
  - Where excessive wear is exhibited

Feed rate is too high

- Lower for
  - Frail work piece
  - To improve the finish
  - To reduce chipping
- Increase for
  - Abrasive materials
  - Coarse pitches
  - To reduce excessive wear
  - For free machining applications

Run out from toolholder/spindle

Selection of the wrong style of thread mill

Ensure the rigidity of set up

PROBLEM	CAUSE	SOLUTIONS
Poor thread finish	Deflection	Secure spindle fixture, if clamping is insufficient, reduce SFM, increase feed and try conventional milling
Go Gage won't go	Threads are too small Chips in thread	Improve the coolant flow Reduce the tool radius in the offset compensation

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