



AUTOMOTIVE



AEROSPACE



HEAVY EQUIPMENT



GENERAL MACHINING

CUTTING TOOLS



A PRODUCT OF KENNAMETAL INC.

**TAPS • DIES
THREAD MILLS • GAGES**



GREENFIELD TAP AND DIE

THE BRAND NAME YOU'VE TRUSTED SINCE 1872...NOW IN ITS THIRD CENTURY.

Greenfield Tap and Die (GTD) has been supplying the highest quality taps, dies, and gages to industry for more than 130 years. From premium raw materials, through a stringent ISO-certified production process, to carefully inspected, packaged, and shipped tools, GTD has consistently delivered quality products and services to you, our customer.

Always committed to innovation, GTD continues to focus on developing products that enable you to achieve better production at lower costs.

- We invented the GUN® tap, which dramatically improved chip removal for through hole tapping.
- Now, we have introduced new solid carbide taps for steel (pages 4-6) that offer increased production rates and longer tap life, marking the start of a new era in threading.
- We have also developed a line of helical carbide flute thread mills (pages 53-54) that feature PVD TiN coating standard.
- And, with the installation of GTD's new Balzers coating system, we can quickly provide proprietary, high-performance coatings within the quality control specifications of the tool's manufacturer.

Whether you need off-the-shelf production taps, a custom solution designed for your toughest tapping job, or premium-quality TiN-coated thread plug gages, rely on Greenfield Tap and Die to provide the quality you need, with the consistency and innovation you deserve.

For answers to product questions, to order tools, or to learn more about GTD's Lightning® Service, contact your local Greenfield Tap and Die distributor.



**New Balzers coater for
in-house custom solutions**

**A revolution in tapping – GTD's new
EX-HPC carbide taps!**



**Kennametal Global Headquarters,
Latrobe, PA**

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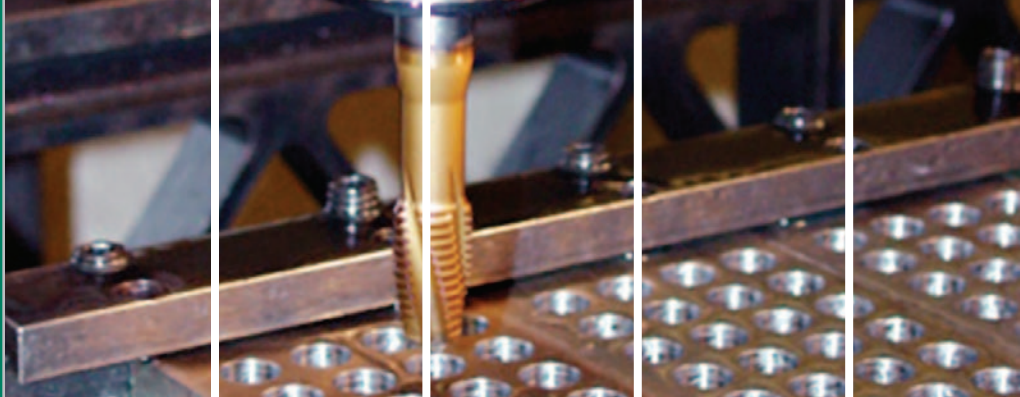
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Introducing Greenfield Tap & Die's **NEW SOLID EX-HPC CARBIDE Tap** for Alloy Steels



***Ideal for Shrink-Fit,
hydraulic, or TGHP
collet holders!***

- ***Run up to 4x faster - with 4x the service life - versus HSS styles!***
- Ideal for high-speed CNC machines with synchronous or rigid tapping capability!
- Patented PVD TiAlN/TiN gold coating delivers superior edge strength and wear resistance!
- Get less than 10 microns run-out, resulting in exceptional thread quality!
- Specially designed and modified cutting edges guard against chipping!
- Excellent in steels, irons, and select stainless steels, too!
- Available in metric and inch sizes!

US Patents 6,660,133 and 6,884,499; other Patents pending.

Greenfield Tap & Die will significantly boost your
holemaking productivity and profitability!

Let us prove it.

Call 888/434-4311 for the name of your local GTD distributor.



A PRODUCT OF KENAMETAL INC.



HIGH-PERFORMANCE TAPS

Greenfield LIGHTNING® SERVICE

Rely on Greenfield's Lightning® Service program to deliver the special taps you need, when and where you need them, via your local authorized distributor. Within minutes of a call, Greenfield can quote, process, and release your order to the factory. This rapid response allows us to make and ship your order quickly, often with only a 24-hour lead time.

Greenfield special taps can be used for tapping popular materials such as Steels, Cast Iron, Aluminum, or Brass. We can also custom design tools to thread even the most difficult materials such as Inconel, Titanium, and other High-Temperature Alloys. When success is measured by accurate thread pitch diameters and proper gage fits, you can depend on Greenfield Tap and Die for special taps made to your order.

Let Greenfield's Lightning Service program spark your production. Contact your authorized Greenfield distributor for details.

**Greenfield LIGHTNING®
SERVICE Available**

▶ QUICK REFERENCE

High-Performance Taps

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TAP INTO THE FUTURE OF HIGH PERFORMANCE

- Unmatched high-performance tapping with our family of Exotic Material (EM) taps, specially designed to thread stainless steels, pre-hardened mold steels, nickel alloys, titanium, titanium alloys, and aluminums
- Enhanced tool geometry creates less tapping torque, provides better chip removal, and increases coolant flow to the cutting teeth for more efficient threading and longer tap life
- New patented Solid Carbide Tap, designed for through hole tapping in mild steels, steel alloys, ferritic and martensitic stainless steels, and irons, can increase production rates up to 4X with 4X longer tap life
- Broad selection of state-of-the-art thin film coated taps standard from stock to match your toughest tapping application



Alternate Coatings Available

Greenfield's in-house tool coating capabilities lead the industry! Choose from Titanium Nitride (TiN), Titanium Carbonitride (TiCN), Titanium Nitride and Chromium Carbide Carbon (TiN + CrC/C), Titanium Aluminum Nitride (TiAlN), and Chromium Nitride (CrN). Available in full package quantities only. Contact your authorized Greenfield distributor for details.

Alternate Coatings Available.

(Full package quantities only)





High-Performance Tap Selector



For Through Holes



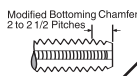
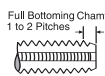
Material	Hardness BHN Rc	EM-SS® GUN® 8301, 8351, 8701 pp 7-11	EM-AL GUN® 8201, 8251 pp 19-20	EM-Ni® GUN® 8601, 8651 pp 25-27	EM-Ti® LHS/RHC GUN® 8901, 8951 pp 32-33	EM-TL/TLD FORM 8500, 8502, 8510, 8580, 8590 pp 45, 49-50	EX-HPC SOLID CARBIDE** 9401, 9451, 9503, 9553, pp 4-6	EM-MS HAND 8330, 8320 pp 37-38	SOLID CARBIDE CI HAND 8603, 8653 pp 39-41	SOLID CARBIDE AL HAND 8703, 8753 pp 42-44	Speed (SFM)
Steels											
Carbon	<275 <30	•			•	•					45-75
Tool, Mold	>275 >30		•				•				15-35
Cast Iron											
Gray	<250 <30			•		•	•	•	•		45-70
Ductile	<275 <30	•				•					25-50
Stainless Steels											
	<275 <30	•			•	•*					30-50
	>275 >30			•							15-30
Nickel-Based Alloys											
Inconel, Waspalloy Hastelloy, etc.	<275 <30 >275 >30			• •							20-30 10-20
Titanium											
Pure, Alloys	<275 <30 >275 >30				• •						20-30 10-20
Aluminum, Copper, and Magnesium	- -	•	•	•					•		75-115
Cast Aluminum	- -		•						•		40-100
Plastic (soft, stringy chips) - -		•	•	•					•		40-50
Plastic, Fiberglass, and Bakelite (broken chips) - -		•						•			40-50

*not recommended for 303, 304, or 316 stainless.

**EX-HPC runs 4X faster than HSS taps.



For Blind Holes



Material	Hardness BHN Rc	EM-SS SPIRAL 8304, 8354, 8314, 8321 pp 12-18	EM-AL SPIRAL 8204, 8254 pp 21-22	EM-Ni® SPIRAL 8614, 8624 pp 23-24	EM-Ti® SPIRAL 8904, 8954 pp 28-31	EM-TL/TLD FORM 8502, 8512 pp 46-48	EM-MS HAND 8330, 8320 pp 37-38	SOLID CARBIDE CI HAND 8603, 8653 pp 39-41	SOLID CARBIDE AL HAND 8703, 8753 pp 42-44	Speed (SFM)
Steels										
Carbon	<275 <30	•				•				25-40
Tool, Mold	>275 >30			•			•			10-25
Cast Iron										
Gray	<250 <30						•	•		10-14
Ductile	<275 <30	•						•		10-25
Stainless Steels										
	<275 <30	•				•				15-50
	>275 >30			•						10-20
Nickel-Based Alloys										
Inconel, Waspalloy, Hastelloy, etc.	<275 <30 >275 >30			• •						5-10 5-10
Titanium										
Pure, Alloys	<275 <30 >275 >30				• •					5-10 5-10
Aluminum, Copper, and Magnesium	- -	•	•	•	•			•		45-75
Cast Aluminum	- -		•					•		30-60
Plastic (soft, stringy chips) - -		•	•	•	•			•		20-35
Plastic, Fiberglass, and Bakelite (broken chips) - -		•					•			20-35

Modified bottoming chamfers are preferred whenever sufficient drill depth exists. The additional chamfer threads significantly reduce cutting forces, minimizing breakage and increasing tool life.

Bottoming chamfers are the least efficient chamfer for blind hole tapping.



EX-HPC Solid Carbide Taps

NEW PATENTED DESIGN - For Exceptional Performance in Ferrous Materials

HIGH-PERFORMANCE TAPS

THREAD MILLS

PRODUCTION TAPS

MAINTENANCE TOOLS

GAGES

TECHNICAL
INFORMATION & INDEX

■ EX-HPC Extreme High-Performance Solid Carbide Taps for Through Hole Tapping

Features/Benefits:

- runs 5 times faster, lasts 4 times longer than conventional taps
- enhanced tap precision and design for superior accuracy of product thread
- fully cylindrical shanks for use with hydraulic or shrink-fit holders for optimal performance
- may also be used with Tremendous Grip High Precision (TGHP) collet holders
- common fractional or metric tap shank sizes that match solid carbide tap drill shanks (DIN 6535)
- tap runout less than 10 microns (0.0004") for superior thread quality and excellent tap performance
- newly designed cutting edges modified by a patented process to resist chipping
- patented PVD nanolayer TiAlN/TiN coated carbide grade for highest edge strength and wear resistance (other patents pending)
- available with straight flutes or left hand spiral flutes (right hand thread)
- left hand spiral flute taps designed for maximum chip control and free cutting in through holes
- engineered custom solutions available upon request
- through coolant hole, semi-bottoming chamfer, straight flute design for blind holes available on request
- after use, can be factory reconditioned to original patented specifications and tolerances



For Through Hole Tapping



Straight Flute Solid Carbide Taps
Left Hand Spiral Flute Solid Carbide Taps

Application Information:

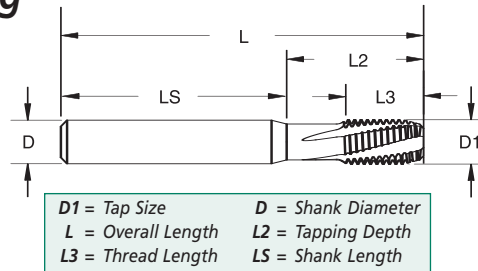
- may be used at 4-5 times the tapping speed of HSS taps and still obtain 4 times life
- designed for use on CNC machines with synchronous or rigid tapping control and precision tool holders
- low-carbon steel
- free-machining steel
- medium and high plain carbon, alloy, and tool steels
- ferritic, martensitic, and PH stainless steels (not recommended for austenitic 303, 304, 316 SS)
- ductile (nodular) and malleable cast irons
- gray cast iron
- use straight fluted taps for sizes M16 and larger and for ductile and cast iron and for materials producing broken chips
- use on high-speed drilling/tapping machines and machining and turning centers that are equipped with rigid hydraulic, shrink-fit, or TGHP precision collet tool holders

U.S. Patents 6,660,133; 6,884,499; other patents pending

Operating Speed Recommendations

Workpiece Material Group	Examples	Hardness	Straight Flute Plug Chamfer Taps Recommended		For Right Hand Threads Left Hand Spiral Fluted Plug Chamfer Taps Recommended	
			SFM	m/min	SFM	m/min
low carbon steel (<0.25% C)	1018	<220 HB	—	—	300-400	100-130
free machining steel	12L14	<275 HB	—	—	250-350	80-120
medium and high plain-carbon, alloy, and tool steels	1040, 4340, H13, D2	<320 HB <32 HRC	—	—	200-300	70-100
ferritic, martensitic, and PH stainless steels	430, 410, 17-4PH	<320 HB <32 HRC	—	—	150-210	50-70
ductile (nodular) and malleable cast irons	A47, A536	<300 HB	250-400	80-130	250-400	80-130
gray cast iron	Class 20-50	<300 HB	250-400	80-130	—	—

EX-HPC Extreme High-Performance Solid Carbide Left Hand Spiral Fluted GUN® Taps for Through Hole Tapping



P	Steel
M	Stainless Steel
K	Cast Iron

EX-HPC Solid Carbide Left Hand Spiral Fluted GUN® Taps for Through Holes

Series No. 9401 Plug Chamfer TiAlN/TiN Coated

FRACTIONAL

D1	NC/UNC	NF/UNF	Class of Fit	L	L3	L2	LS	D	Flutes	EDP Number Coated
1/4	20	-	3B	2.76	.59	.91	1.67	.2500	3	12200
1/4	-	28	3B	2.76	.59	.91	1.67	.2500	3	12201
5/16	18	-	3B	3.15	.67	1.10	1.85	.3125	3	12202
5/16	-	24	3B	3.15	.67	1.10	1.85	.3125	3	12203
3/8	16	-	3B	3.54	.75	1.30	2.01	.3750	4	12204
3/8	-	24	3B	3.54	.75	1.30	2.01	.3750	4	12205
7/16	14	-	3B	3.94	.87	1.42	2.26	.4375	4	12206
1/2	13	-	3B	3.94	.94	1.58	2.08	.5000	4	12207
1/2	-	20	3B	3.94	.94	1.58	2.08	.5000	4	12208
9/16	12	-	3B	4.33	1.02	1.58	2.76	.5000	4	12209
5/8	11	-	3B	4.33	1.10	1.58	2.76	.5625	5	12210

Tap pitch diameter optimized for 3B class of fit; will also satisfy 2B class of fit.

Shank diameter and length conform to DIN 6535 shank diameter tolerance h6 (see shank diameter tolerance table).

Plug chamfer length = 5 pitches.

Straight flute taps are recommended for sizes larger than 5/8".

Tapmatic Synchroflex holders with TGHP collets recommended for solid carbide taps: Model SFT50 for sizes through 5/16"; Model SFT75 for sizes 3/8" and larger.

EX-HPC Metric Solid Carbide Left Hand Spiral Fluted GUN® Taps for Through Holes

Series No. 9451 Plug Chamfer TiAlN/TiN Coated

METRIC

Tap Size	Class of Fit	Dimensions in mm					Flutes	EDP Number
		L	L3	L2	LS	D		Coated
M6 x 1	6H	70	12	23	43	6	3	12225
M8 x 1,25	6H	80	15	28	47	8	3	12226
M10 x 1,5	6H	90	18	33	51	10	4	12227
M12 x 1,75	6H	100	21	40	54	12	4	12228
M14 x 2	6H	110	24	40	70	12	4	12229
M16 x 2	6H	110	24	40	70	14	4	12230

Tap pitch diameter optimized for 6H class of fit.

Shank diameter and length conform to DIN 6535 shank diameter tolerance h6 (see shank diameter tolerance table).

Plug chamfer length = 5 pitches.

Straight flute taps are recommended for sizes larger than M16.

Tapmatic Synchroflex holders with TGHP collets recommended for solid carbide taps: Model SFT50 for sizes through M8; Model SFT75 for sizes M10 and larger.

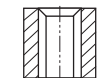
EX-HPC Solid Carbide Taps

NEW PATENTED DESIGN - For Exceptional Performance in Ferrous Materials

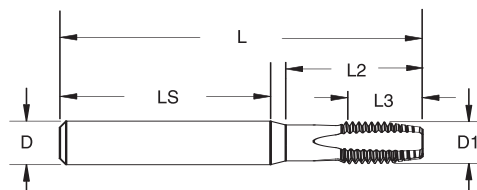


EX-HPC Extreme High-Performance Solid Carbide Straight Flute Taps

P	Steel
M	Stainless Steel
K	Cast Iron



For Through Hole Tapping



D1 = Tap Size D = Shank Diameter
L = Overall Length L2 = Tapping Depth
L3 = Thread Length LS = Shank Length

EX-HPC Solid Carbide Straight Flute Taps

Series No. 9303 Plug Chamfer TiAlN/TiN Coated

FRACTIONAL

D1	NC/UNC	NF/UNF	Class of Fit	L	L3	L2	LS	D	Flutes	EDP Number Coated
3/8	16	-	3B	3.54	.75	1.30	2.01	.3750	4	12404
3/8	-	24	3B	3.54	.75	1.30	2.01	.3750	4	12405
7/16	14	-	3B	3.94	.87	1.42	2.26	.4375	4	12406
1/2	13	-	3B	3.94	.94	1.58	2.08	.5000	4	12407
1/2	-	20	3B	3.94	.94	1.58	2.08	.5000	4	12408
9/16	12	-	3B	4.33	1.02	1.58	2.76	.5000	4	12409
5/8	11	-	3B	4.33	1.10	1.58	2.76	.5625	5	12410
3/4	10	-	3B	4.92	1.22	1.97	2.95	.6250	5	12411

Tap pitch diameter optimized for 3B class of fit; will also satisfy 2B class of fit.

Shank diameter and length conform to DIN 6535 shank diameter tolerance h6 (see shank diameter tolerance table).

Plug chamfer length = 5 pitches.

Straight flute taps are recommended for sizes larger than 5/8".

Tapmatic Synchroflex holders with TGHP collets recommended for solid carbide taps: Model SFT50 for sizes through 5/16"; Model SFT75 for sizes 3/8" and larger.

EX-HPC Metric Solid Carbide Straight Flute Taps

Series No. 9353 Plug Chamfer TiAlN/TiN Coated

METRIC

Tap Size	Class of Fit	Dimensions in mm					D	Flutes	EDP Number Coated
M10 x 1,5	6H	90	18	33	51	10	10	4	12427
M12 x 1,75	6H	100	21	40	54	12	12	4	12428
M14 x 2	6H	110	24	40	70	12	14	4	12429
M16 x 2	6H	110	24	40	70	14	14	4	12430
M18 x 2,5	6H	125	30	45	80	16	16	5	12431
M20 x 2,5	6H	140	30	50	90	18	18	5	12432

Tap pitch diameter optimized for 6H class of fit.

Shank diameter and length conform to DIN 6535 shank diameter tolerance h6 (see shank diameter tolerance table).

Plug chamfer length = 5 pitches.

Straight flute taps are recommended for sizes larger than M16.

Tapmatic Synchroflex holders with TGHP collets recommended for solid carbide taps: Model SFT50 for sizes through M8; Model SFT75 for sizes M10 and larger.

Shank Diameter Tolerances for Series 9300 Taps

Metric Shank	Tolerance (mm)	Fractional Shank	Tolerance (inch)
6mm	+ 0, - 0,008	.2500 to .3750	+ 0, - 0.0004
8mm to 10mm	+ 0, - 0,009	.4375 to .6250	+ 0, - 0.0004
12mm to 16mm	+ 0, - 0,011		

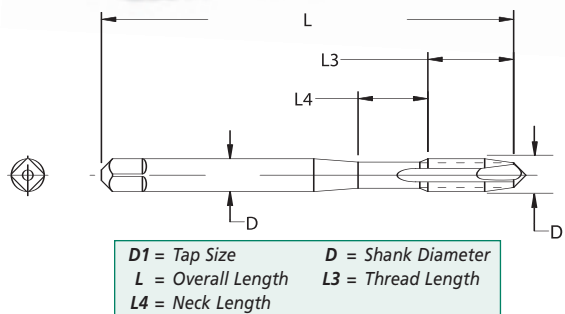
EM-SS® GUN® Taps for Through Holes

Features/Benefits:

- manufactured from special high-vanadium HSS-E
- unique GUN® flute geometry provides lower tapping torque and pushes chips ahead of the tap during threading
- available in a wide variety of pitch diameter (H or D) limits to enable finer adjustments of product pitch diameter
- surface treatment options: TiCN, TiN, SH50 oxide, uncoated; alternate tap coatings are available as stock modifications
- made to USCTI and ANSI dimensions
- neck design for CNC equipment

Application Information:

- stainless steels < 275 Bhn (TiCN, TiN, SH50)
- stainless steels 304, 316 < 275 Bhn (TiN+CrC/C)
- steel and steel alloys < 275 Bhn (TiCN, TiN, SH50)
- copper and copper alloys (uncoated)
- plastic (TiCN, TiN, uncoated)
- ductile irons (TiCN, TiN, SH50)



EM-SS GUN® Taps for Through Holes

Series No. 8301 Plug Chamfer 3 to 5 Pitches

D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	L4	D	Flutes	Pitch Dia. Limit	EDP Number			
									TiCN	TiN	SH50 Oxide	Uncoated
2	56	-	1.75	.256	.181	.141	2	H2	—	—	82623	—
2	56	-	1.75	.256	.181	.141	2	H3	—	—	82624	—
2	56	-	1.75	.256	.181	.141	2	H4	—	—	82636	—
3	48	-	1.81	.295	.205	.141	2	H2	—	—	82600	—
4	40	-	1.88	.335	.227	.141	2	H2	82301	82901	82601	82601B
4	40	-	1.88	.335	.227	.141	2	H3	—	—	82602	—
4	40	-	1.88	.335	.227	.141	2	H4	—	—	82612	—
4	40	-	1.88	.335	.227	.141	2	H5	—	—	82634	82634B
4	40	-	1.88	.335	.227	.141	2	H6	—	—	82638	—
4	-	48	1.88	.335	.227	.141	2	H2	—	—	82683	—
4	-	48	1.88	.335	.227	.141	2	H4	—	—	82641	—
5	40	-	1.94	.374	.251	.141	3	H2	—	—	82603	—
6	32	-	2.00	.413	.274	.141	3	H2	—	—	82604	—
6	32	-	2.00	.413	.274	.141	3	H3	82305	82905	82605	82605B
6	32	-	2.00	.413	.274	.141	3	H4	—	—	82608	—
6	32	-	2.00	.413	.274	.141	3	H5	—	—	82635	82635B
6	32	-	2.00	.413	.274	.141	3	H6	—	—	82659	—
6	32	-	2.00	.413	.274	.141	3	H7	—	—	82665	82665B
6	-	40	2.00	.413	.274	.141	3	H2	—	—	82684	—
6	-	40	2.00	.413	.274	.141	3	H3	—	—	82642	—
8	32	-	2.13	.453	.297	.168	3	H2	—	—	82606	—
8	32	-	2.13	.453	.297	.168	3	H3	82307	82907	82607	82607B
8	32	-	2.13	.453	.297	.168	3	H4	—	—	82629	—
8	32	-	2.13	.453	.297	.168	3	H5	—	—	82637	82637B
8	32	-	2.13	.453	.297	.168	3	H6	—	—	82660	—
8	32	-	2.13	.453	.297	.168	3	H7	—	—	82667	—
8	-	36	2.13	.453	.297	.168	3	H2	—	—	82686	—

EM taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.
Series No. 8301 continued on next page.

EM-SS Taps

For Through Holes in Stainless Steel < 30 Rc



HIGH-PERFORMANCE TAPS

THREAD MILLS

PRODUCTION TAPS

MAINTENANCE TOOLS

GAGES

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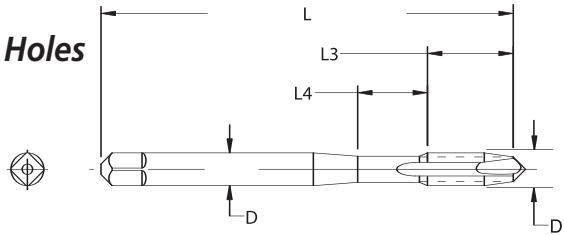
(continued)

EM-SS GUN® Taps for Through Holes

■ Series No. 8301 Plug Chamfer 3 to 5 Pitches



For Through Hole Tapping



D1 = Tap Size D = Shank Diameter
L = Overall Length L3 = Thread Length L4 = Neck Length

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous

D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	L4	D	Flutes	Pitch Dia. Limit	EDP Number			
									TiCN	TiN	SH50 Oxide	Uncoated
10	24	-	2.38	.531	.344	.194	3	H3	82309	82909	82609	82609B
10	24	-	2.38	.531	.344	.194	3	H4	—	—	82657	—
10	24	-	2.38	.531	.344	.194	3	H5	—	—	82639	82639B
10	24	-	2.38	.531	.344	.194	3	H6	—	—	82690	—
10	24	-	2.38	.531	.344	.194	3	H7	—	—	82669	—
10	-	32	2.38	.531	.344	.194	3	H2	—	—	82611	—
10	-	32	2.38	.531	.344	.194	3	H3	82310	82910	82610	82610B
10	-	32	2.38	.531	.344	.194	3	H4	—	—	82630	—
10	-	32	2.38	.531	.344	.194	3	H5	—	—	82640	82640B
10	-	32	2.38	.531	.344	.194	3	H6	—	—	82661	—
10	-	32	2.38	.531	.344	.194	3	H7	—	—	82670	—
12	24	-	2.38	.571	.366	.220	3	H3	—	—	82688	—
12	-	28	2.38	.571	.366	.220	3	H3	—	—	82689	—
1/4	20	-	2.50	.591	.409	.255	3	H2	—	—	82658	—
1/4	20	-	2.50	.591	.409	.255	3	H3	82313	82913	82613	82613B
1/4	20	-	2.50	.591	.409	.255	3	H5	—	—	82643	82643B
1/4	20	-	2.50	.591	.409	.255	3	H7	—	—	82673	—
1/4	-	28	2.50	.591	.409	.255	3	H2	—	—	82666	—
1/4	-	28	2.50	.591	.409	.255	3	H3	82314	82914	82614	82614B
1/4	-	28	2.50	.591	.409	.255	3	H4	—	—	82631	—
1/4	-	28	2.50	.591	.409	.255	3	H5	—	—	82644	82644B
1/4	-	28	2.50	.591	.409	.255	3	H6	—	—	82662	—
1/4	-	28	2.50	.591	.409	.255	3	H7	—	—	82674	—
5/16	18	-	2.72	.669	.456	.318	3	H3	82315	82915	82615	82615B
5/16	18	-	2.72	.669	.456	.318	3	H5	—	—	82645	82645B
5/16	18	-	2.72	.669	.456	.318	3	H7	—	—	82675	—
5/16	-	24	2.72	.669	.456	.318	3	H3	82316	82916	82616	82616B
5/16	-	24	2.72	.669	.456	.318	3	H4	—	—	82632	—
5/16	-	24	2.72	.669	.456	.318	3	H5	—	—	82646	82646B
5/16	-	24	2.72	.669	.456	.318	3	H6	—	—	82663	—
5/16	-	24	2.72	.669	.456	.318	3	H7	—	—	82676	—
3/8	16	-	2.94	.748	.502	.381	3	H3	82317	82917	82617	82617B
3/8	16	-	2.94	.748	.502	.381	3	H5	—	—	82647	82647B
3/8	16	-	2.94	.748	.502	.381	3	H7	—	—	82668	—
3/8	-	24	2.94	.748	.502	.381	3	H3	82318	82918	82618	82618B
3/8	-	24	2.94	.748	.502	.381	3	H4	—	—	82633	—
3/8	-	24	2.94	.748	.502	.381	3	H5	—	—	82648	82648B
3/8	-	24	2.94	.748	.502	.381	3	H6	—	—	82664	—
3/8	-	24	2.94	.748	.502	.381	3	H7	—	—	82678	—
7/16	14	-	3.16	.886	-	.323	3	H3	82319	82919	82619	82619B
7/16	14	-	3.16	.886	-	.323	3	H5	—	—	82649	82649B
7/16	14	-	3.16	.886	-	.323	3	H7	—	—	82671	—
7/16	-	20	3.16	.886	-	.323	3	H3	82320	82920	82620	82620B
7/16	-	20	3.16	.886	-	.323	3	H5	—	—	82650	82650B
7/16	-	20	3.16	.886	-	.323	3	H6	—	—	82691	82691B
7/16	-	20	3.16	.886	-	.323	3	H7	—	—	82680	—

EM taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.
Series No. 8301 continued on next page.

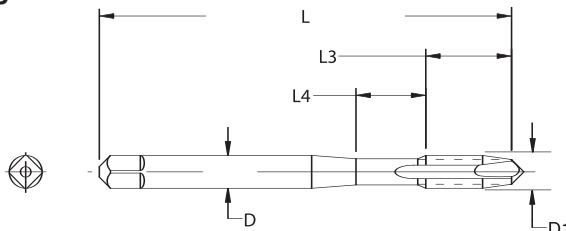
(continued)

EM-SS GUN® Taps for Through Holes

Series No. 8301 Plug Chamfer 3 to 5 Pitches



For Through
Hole Tapping



D1 = Tap Size D = Shank Diameter
L = Overall Length L3 = Thread Length L4 = Neck Length

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous

Alternate Coatings Available.

(Full package quantities only)



									EDP Number			
D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	L4	D	Flutes	Pitch Dia. Limit	TiCN	TiN	SH50 Oxide	Uncoated
1/2	13	-	3.38	.984	-	.367	3	H3	82321	82921	82621	82621B
1/2	13	-	3.38	.984	-	.367	3	H5	—	—	82651	82651B
1/2	13	-	3.38	.984	-	.367	3	H7	—	—	82681	—
1/2	-	20	3.38	.984	-	.367	3	H3	82322	82922	82622	82622B
1/2	-	20	3.38	.984	-	.367	3	H5	—	—	82652	82652B
1/2	-	20	3.38	.984	-	.367	3	H6	—	—	82692	—
1/2	-	20	3.38	.984	-	.367	3	H7	—	—	82682	—
9/16	12	-	3.59	.984	-	.429	3	H3	82353	82953	82653	82653B
9/16	-	18	3.59	.984	-	.429	3	H3	82354	82954	82654	82654B
5/8	11	-	3.81	1.083	-	.480	3	H3	82325	82925	82625	82625B
5/8	11	-	3.81	1.083	-	.480	3	H5	—	—	82655	82655B
5/8	11	-	3.81	1.083	-	.480	3	H7	—	—	82672	—
5/8	-	18	3.81	1.083	-	.480	3	H3	82326	82926	82626	82626B
5/8	-	18	3.81	1.083	-	.480	3	H5	—	—	82656	82656B
5/8	-	18	3.81	1.083	-	.480	3	H6	—	—	82694	—
5/8	-	18	3.81	1.083	-	.480	3	H7	—	—	82677	—
3/4	10	-	4.25	1.201	-	.590	3	H3	82327	82927	82627	82627B
3/4	10	-	4.25	1.201	-	.590	3	H5	—	—	81657	—
3/4	-	16	4.25	1.201	-	.590	3	H3	82328	82928	82628	82628B
7/8	9	-	4.69	1.339	-	.697	3	H4	82395	82995	82695	82695B
7/8	-	14	4.69	1.339	-	.697	3	H4	82396	82996	82696	82696B
1	8	-	5.13	1.496	-	.800	3	H4	82397	82997	82697	82697B
1	-	12	5.13	1.496	-	.800	3	H4	—	—	82679	—
1 1/8	7	-	5.44	2.563	-	.896	4	H6	—	—	—	82700
1 1/8	-	12	5.44	2.563	-	.896	4	H5	—	—	—	82701
1 1/4	7	-	5.75	2.563	-	1.021	4	H6	—	—	—	82702
1 1/4	-	12	5.75	2.563	-	1.021	4	H5	—	—	—	82703
1 3/8	6	-	6.06	3.000	-	1.108	4	H6	—	—	—	82705
1 3/8	-	12	6.06	3.000	-	1.108	4	H5	—	—	—	82706
1 1/2	6	-	6.38	3.000	-	1.233	4	H6	—	—	—	82707
1 1/2	-	12	6.38	3.000	-	1.233	4	H5	—	—	—	82708
1 3/4	5	-	7.00	3.188	-	1.430	4	H7	—	—	—	82709
2	4 1/2	-	7.63	3.563	-	1.644	4	H7	—	—	—	82710

EM taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.



THREADING: Longer Lengths of Thread Engagement

ASME B 1.1 permits the use of larger drill sizes depending upon the depth of the hole to be threaded. This can be a great advantage for both minimizing tapping problems and extending tool life. Allowances are for 1/3 to 2/3, 2/3 to 1 1/2, and 1 1/2 to 3 times the diameter. You can find these specific sizes at the top of each page of the Greenfield Screw Thread Manual (EDP GI039) for each tap size, or by contacting Technical Support at 888/434-8665.

EM-SS Taps

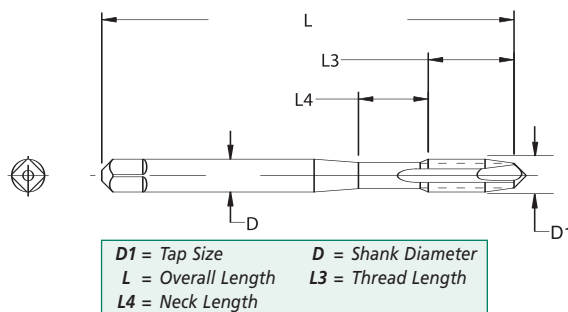
For Through Holes in Stainless Steel < 30 Rc



EM-SS Metric GUN® Taps for Through Holes

■ Series No. 8351 Plug Chamfer 3 to 5 Pitches

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous



Alternate Coatings Available.

(Full package quantities only)



Size	L	L3	L4	D	Flutes	Pitch Dia. Limit	EDP Number			
							TiCN	TiN	SH50 Oxide	Uncoated
M3 x 0,5	1.94	.313	.313	.141	3	D3	72815	72915	72615	72615B
M3,5 x 0,6	2.00	.375	.313	.141	3	D4	—	—	72616	72616B
M4 x 0,7	2.13	.375	.375	.168	3	D4	72817	72917	72617	72617B
M5 x 0,8	2.38	.500	.375	.194	3	D4	72819	72919	72619	72619B
M6 x 1	2.50	.625	.375	.255	3	D5	72820	72920	72620	72620B
M7 x 1	2.72	.688	.438	.318	3	D5	—	—	72621	72621B
M8 x 1	2.72	.688	.438	.318	3	D5	—	—	72622	72622B
M8 x 1,25	2.72	.688	.438	.318	3	D5	72823	72923	72623	72623B
M10 x 1,25	2.94	.750	.500	.381	3	D5	—	—	72624	72624B
M10 x 1,5	2.94	.750	.500	.381	3	D6	72825	72925	72625	72625B
M12 X 1,25	3.38	.938	-	.367	3	D5	—	—	72626	72626B
M12 x 1,75	3.38	.938	-	.367	3	D6	72827	72927	72627	72627B
M14 x 1,5	3.59	1.000	-	.429	3	D6	—	—	72628	72628B
M14 x 2	3.59	1.000	-	.429	3	D7	—	—	72629	72629B
M16 x 1,5	3.81	1.094	-	.480	3	D6	—	—	72630	72630B
M16 x 2	3.81	1.094	-	.480	3	D7	—	—	72631	72631B
M18 x 1,5	4.03	1.094	-	.542	3	D6	—	—	72632	72632B
M18 x 2,5	4.03	1.094	-	.542	3	D7	—	—	72633	72633B

Metric taps for 6H class of fit are suitable for MJ Aerospace internal threading applications.

Metric taps are manufactured to USCTI specifications and dimensions.

Metric tap blank dimensions are equivalent to inch taps.

Greenfield LIGHTNING®
SERVICE Available



THREADING: Simplified General Purpose Drill Formula for Metric Taps

The drill formula for metric taps is:

Basic Major Diameter – the Pitch = Hole Size

For example, a M5 X 0,8 thread would be calculated as follows:

5,00mm - 0,80mm = 4,20mm hole size

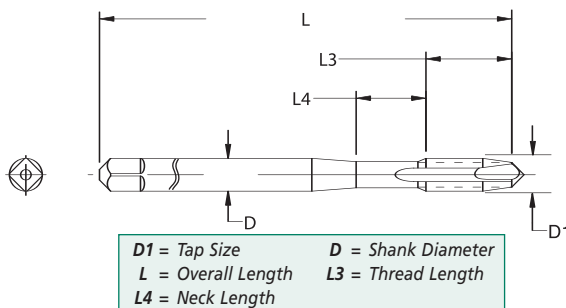
Simply select the closest available drill size. The hole produced will yield approximately 70%-75% of thread.

EM-SS Extended Shank GUN® Taps for Through Holes - 6" Length

■ Series No. 8701 Plug Chamfer 3 to 5 Pitches



For Through Hole Tapping



									EDP Number
D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	L4	D	Flutes	Pitch Dia. Limit	SH50 Oxide
2	56	-	6.00	.438	-	.141	2	H2	82523
3	48	-	6.00	.500	-	.141	2	H2	82500
4	40	-	6.00	.313	.250	.141	2	H2	82501
6	32	-	6.00	.375	.313	.141	3	H3	82505
8	32	-	6.00	.375	.375	.168	3	H3	82507
10	24	-	6.00	.500	.375	.194	3	H3	82509
10	-	32	6.00	.500	.375	.194	3	H3	82510
1/4	20	-	6.00	.625	.375	.255	3	H3	82513
1/4	-	28	6.00	.625	.375	.255	3	H3	82514
5/16	18	-	6.00	.688	.438	.318	3	H3	82515
5/16	-	24	6.00	.688	.438	.318	3	H3	82516
3/8	16	-	6.00	.750	.500	.381	3	H3	82517
3/8	-	24	6.00	.750	.500	.381	3	H3	82518
7/16	14	-	6.00	.875	-	.323	3	H3	82519
7/16	-	20	6.00	.875	-	.323	3	H3	82520
1/2	13	-	6.00	.938	-	.367	3	H3	82521
1/2	-	20	6.00	.938	-	.367	3	H3	82522

EM taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.



TAPPING: Tap Hook and Relief

Four basic design features are incorporated into the design of all cutting tools, including taps. They are cutting face (hook), relief, base material, and surface treatment or coating. This tip discusses hook and relief.

The **cutting face**, or hook, is that portion of the tap flute between the major and minor diameter of the thread that cuts or shears the workpiece material. The entry angle of the cutting face into the workpiece material is measured in degrees, from positive to negative, from a perpendicular reference line through the axis of the tool. Positive hooks are used for soft materials such as aluminum, mild steel, and stainless that produce continuous (stringy) chips. Due to the positive angle, the cutting faces are fragile and may chip easily. Negative hooks are used for materials that produce broken or powder chips, or those that have been hardened. This type of cutting face is much stronger and is less prone to chipping.

The **relief** of a tap may be found on the chamfer's major diameter (required for tapping), or in the threads, in the form of radial clearance or back taper. Radial or thread relief is the thinning of the tooth from the cutting face to the heel to relieve cutting pressures and friction across the land of the tap. Thread relief is applied for materials that are tough, hard, or have high elastic memory (shrinks or squeezes the tap creating friction). Back taper is the reduction of the major, pitch, and minor diameters from the first thread at the front of the tap to the last thread near the shank. While thread relief is applied for specific applications, back taper is applied to all taps.



EM-SS Taps

Spiral Flute for Blind Holes in Stainless Steel < 30 Rc

EM-SS Spiral Flute Taps for Blind Holes

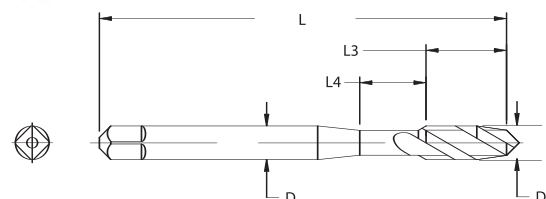
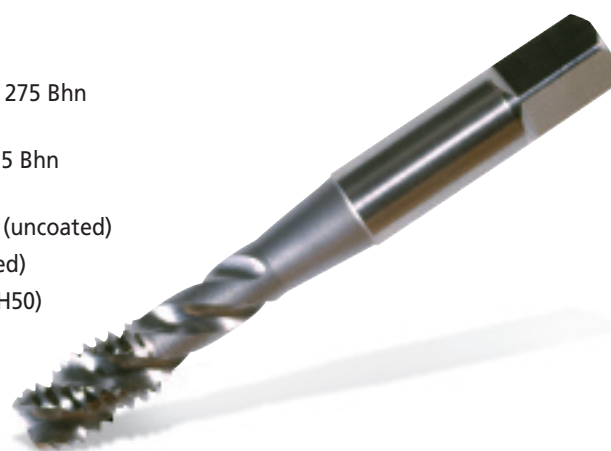
Features/Benefits:

- manufactured from special high-vanadium HSS-E
- unique spiral flute geometry for improved blind-hole tapping pulls stringy chips up and out of the hole during tapping
- available in a wide variety of pitch diameter (H or D) limits to enable finer adjustment in product pitch diameter in the finished product
- surface treatment options: TiCN, TiN, SH50 oxide, uncoated; alternate coatings, including TiN+CrC/C, are available as stock modifications
- made to USCTI and ANSI dimensions
- neck design for CNC equipment

Application Information:

- stainless steels < 275 Bhn (TiCN, TiN, SH50)
- stainless steels 304, 316 < 275 Bhn (TiN+CrC/C)
- steel and steel alloys < 275 Bhn (TiCN, TiN, SH50)
- copper and copper alloys (uncoated)
- plastic (TiCN, TiN, uncoated)
- ductile irons (TiCN, TiN, SH50)

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous



D = Shank Diameter D1 = Tap Size
L = Overall Length L3 = Thread Length
L4 = Neck Length

EM-SS Spiral Flute Taps for Blind Holes

Series No. 8304 Modified Bottoming Chamfer 2 1/2 to 3 1/2 Pitches

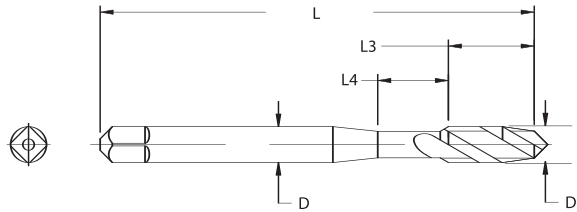
D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	L4	D	Flutes	Pitch Dia. Limit	EDP Number			
									TiCN	TiN	SH50 Oxide	Uncoated
2	56	-	1.75	.438	-	.141	2	H2	—	—	84671	84671B
3	48	-	1.81	.500	-	.141	2	H2	—	—	84672	84672B
4	40	-	1.88	.236	.326	.141	2	H2	84301	84901	84601	84601B
4	40	-	1.88	.236	.326	.141	2	H3	—	—	84602	—
4	40	-	1.88	.236	.326	.141	2	H4	—	—	84629	—
4	40	-	1.88	.236	.326	.141	2	H5	—	—	84634	84634B
4	40	-	1.88	.236	.326	.141	2	H6	—	—	84612	—
4	-	48	1.88	.236	.326	.141	2	H2	—	—	84683	—
5	40	-	1.94	.236	.389	.141	3	H2	84303	84903	84603	84603B
6	32	-	2.00	.276	.411	.141	3	H2	—	—	84604	—
6	32	-	2.00	.276	.411	.141	3	H3	84305	84905	84605	84605B
6	32	-	2.00	.276	.411	.141	3	H4	—	—	84636	—
6	32	-	2.00	.276	.411	.141	3	H5	—	—	84635	84635B
6	32	-	2.00	.276	.411	.141	3	H7	—	—	84665	—
6	-	40	2.00	.276	.411	.141	3	H2	—	—	84684	—
6	-	40	2.00	.276	.411	.141	3	H3	—	—	84685	—
8	32	-	2.13	.276	.474	.168	3	H2	—	—	84606	—
8	32	-	2.13	.276	.474	.168	3	H3	84307	84907	84607	84607B
8	32	-	2.13	.276	.474	.168	3	H4	—	—	84638	—
8	32	-	2.13	.276	.474	.168	3	H5	—	—	84637	84637B
8	32	-	2.13	.276	.474	.168	3	H6	—	—	84660	—
8	32	-	2.13	.276	.474	.168	3	H7	—	—	84667	—
8	-	36	2.13	.276	.474	.168	3	H3	—	—	84687	—

EM taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.
Series No. 8304 continued on next page.

(continued)

EM-SS Spiral Flute Taps for Blind Holes

■ Series No. 8304 Modified Bottoming Chamfer 2 1/2 to 3 1/2 Pitches



D = Shank Diameter D1 = Tap Size
L = Overall Length L3 = Thread Length
L4 = Neck Length

Alternate Coatings Available.
(Full package quantities only)



HIGH-PERFORMANCE TAPS

THREAD MILLS

PRODUCTION TAPS

MAINTENANCE TOOLS

GAGES

TECHNICAL
INFORMATION & INDEX

										EDP Number			
D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	L4	D	Flutes	Pitch Dia. Limit	TiCN	TiN	SH50 Oxide	Uncoated	
10	24	-	2.38	.354	.521	.194	3	H2	—	—	84624	—	
10	24	-	2.38	.354	.521	.194	3	H3	84309	84909	84609	84609B	
10	24	-	2.38	.354	.521	.194	3	H4	—	—	84623	—	
10	24	-	2.38	.354	.521	.194	3	H5	—	—	84639	84639B	
10	24	-	2.38	.354	.521	.194	3	H7	—	—	84669	—	
10	-	32	2.38	.276	.599	.194	3	H2	—	—	84611	—	
10	-	32	2.38	.276	.599	.194	3	H3	84310	84910	84610	84610B	
10	-	32	2.38	.276	.599	.194	3	H4	—	—	84630	—	
10	-	32	2.38	.276	.599	.194	3	H5	—	—	84640	84640B	
10	-	32	2.38	.276	.599	.194	3	H6	—	—	84662	—	
10	-	32	2.38	.276	.599	.194	3	H7	—	—	84670	—	
12	24	-	2.38	.354	.583	.220	3	H3	—	—	84688	—	
12	-	28	2.38	.276	.661	.220	3	H3	—	—	84689	—	
1/4	20	-	2.50	.433	.567	.255	3	H2	—	—	84641	—	
1/4	20	-	2.50	.433	.567	.255	3	H3	84313	84913	84613	84613B	
1/4	20	-	2.50	.433	.567	.255	3	H5	—	—	84643	84643B	
1/4	20	-	2.50	.433	.567	.255	3	H7	—	—	84673	—	
1/4	-	28	2.50	.354	.646	.255	3	H2	—	—	84642	—	
1/4	-	28	2.50	.354	.646	.255	3	H3	84314	84914	84614	84614B	
1/4	-	28	2.50	.354	.646	.255	3	H4	—	—	84631	—	
1/4	-	28	2.50	.354	.646	.255	3	H5	—	—	84644	84644B	
1/4	-	28	2.50	.354	.646	.255	3	H6	—	—	84664	—	
1/4	-	28	2.50	.354	.646	.255	3	H7	—	—	84674	—	
5/16	18	-	2.72	.472	.653	.318	3	H3	84315	84915	84615	84615B	
5/16	18	-	2.72	.472	.653	.318	3	H5	—	—	84645	84645B	
5/16	18	-	2.72	.472	.653	.318	3	H7	—	—	84675	—	
5/16	-	24	2.72	.394	.731	.318	3	H3	84316	84916	84616	84616B	
5/16	-	24	2.72	.394	.731	.318	3	H5	—	—	84646	84646B	
5/16	-	24	2.72	.394	.731	.318	3	H6	—	—	84657	—	
5/16	-	24	2.72	.394	.731	.318	3	H7	—	—	84676	—	
3/8	16	-	2.94	.551	.699	.381	3	H3	84317	84917	84617	84617B	
3/8	16	-	2.94	.551	.699	.381	3	H5	—	—	84647	84647B	
3/8	16	-	2.94	.551	.699	.381	3	H7	—	—	84677	—	
3/8	-	24	2.94	.394	.856	.381	3	H3	84318	84918	84618	84618B	
3/8	-	24	2.94	.394	.856	.381	3	H4	—	—	84633	—	
3/8	-	24	2.94	.394	.856	.381	3	H5	—	—	84648	—	
3/8	-	24	2.94	.394	.856	.381	3	H6	—	—	84658	—	
3/8	-	24	2.94	.394	.856	.381	3	H7	—	—	84678	—	

EM taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.
Series No. 8304 continued on next page.

EM-SS Taps

Spiral Flute for Blind Holes in Stainless Steel < 30 Rc

(continued)

EM-SS Spiral Flute Taps for Blind Holes

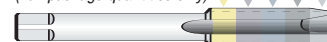
■ Series No. 8304 Modified Bottoming Chamfer 2 1/2 to 3 1/2 Pitches



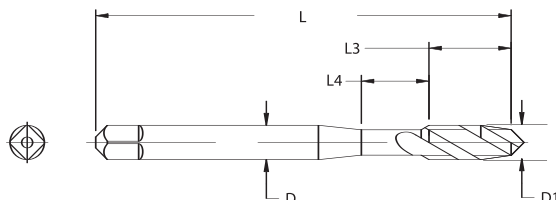
P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous

Alternate Coatings Available.

(Full package quantities only)



For Blind Hole Tapping



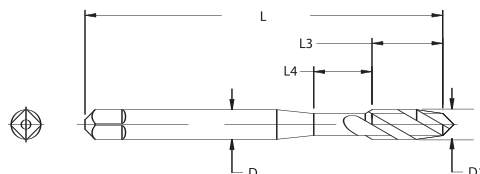
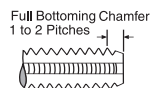
D = Shank Diameter D1 = Tap Size
L = Overall Length L3 = Thread Length
L4 = Neck Length

	D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	L4	D	Flutes	Pitch Dia. Limit	EDP Number			
										TiCN	TiN	SH50 Oxide	Uncoated
PRODUCTION TAPS	7/16	14	-	3.16	.591	-	.323	3	H3	84319	84919	84619	84619B
	7/16	14	-	3.16	.591	-	.323	3	H5	—	—	84649	84649B
	7/16	14	-	3.16	.591	-	.323	3	H7	—	—	84679	—
	7/16	-	20	3.16	.472	-	.323	3	H3	84320	84920	84620	84620B
	7/16	-	20	3.16	.472	-	.323	3	H5	—	—	84650	84650B
	7/16	-	20	3.16	.472	-	.323	3	H6	—	—	84691	—
	7/16	-	20	3.16	.472	-	.323	3	H7	—	—	84680	—
MAINTENANCE TOOLS	1/2	13	-	3.38	.630	-	.367	3	H3	84321	84921	84621	84621B
	1/2	13	-	3.38	.630	-	.367	3	H5	—	—	84651	84651B
	1/2	13	-	3.38	.630	-	.367	3	H7	—	—	84681	—
	1/2	-	20	3.38	.472	-	.367	3	H3	84322	84922	84622	84622B
	1/2	-	20	3.38	.472	-	.367	3	H5	—	—	84652	84652B
	1/2	-	20	3.38	.472	-	.367	3	H6	—	—	84692	—
	1/2	-	20	3.38	.472	-	.367	3	H7	—	—	84682	—
	9/16	12	-	3.59	.709	-	.429	3	H3	84353	84953	84653	84653B
	9/16	12	-	3.59	.709	-	.429	3	H5	—	—	84699	84699B
	9/16	-	18	3.59	.512	-	.429	3	H3	84354	84954	84654	84654B
GAGES	9/16	-	18	3.59	.512	-	.429	3	H5	—	—	84698	84698B
	5/8	11	-	3.81	.748	-	.480	3	H3	84325	84925	84625	84625B
	5/8	11	-	3.81	.748	-	.480	3	H5	—	—	84655	84655B
	5/8	11	-	3.81	.748	-	.480	3	H7	—	—	84661	—
	5/8	-	18	3.81	.512	-	.480	3	H3	84326	84926	84626	84626B
	5/8	-	18	3.81	.512	-	.480	3	H5	—	—	84656	84656B
	5/8	-	18	3.81	.512	-	.480	3	H6	—	—	84663	—
	5/8	-	18	3.81	.512	-	.480	3	H7	—	—	84666	—
	3/4	10	-	4.25	.827	-	.590	4	H3	84327	84927	84627	84627B
	3/4	10	-	4.25	.827	-	.590	4	H5	—	—	84693	—
	3/4	-	16	4.25	.591	-	.590	4	H3	84328	84928	84628	84628B
	3/4	-	16	4.25	.591	-	.590	4	H5	—	—	84694	—
	3/4	-	16	4.25	.591	-	.590	4	H7	—	—	84686	—
	7/8	9	-	4.69	.827	-	.697	4	H4	84395	84995	84695	84695B
	7/8	-	14	4.69	.709	-	.697	4	H4	84396	84996	84696	84696B
TECHNICAL INFORMATION & INDEX	1	8	-	5.13	.984	-	.800	4	H4	84397	84997	84697	84697B
	1	-	12	5.13	.709	-	.800	4	H4	—	—	84668	—
	1 1/8	7	-	5.44	2.563	-	.896	4	H6	—	—	—	84701
	1 1/8	-	12	5.44	2.563	-	.896	4	H5	—	—	—	84702
	1 1/4	7	-	5.75	2.563	-	1.021	4	H6	—	—	—	84703
	1 1/4	-	12	5.75	2.563	-	1.021	4	H5	—	—	—	84705
	1 3/8	6	-	6.06	3.000	-	1.108	4	H6	—	—	—	84706
	1 3/8	-	12	6.06	3.000	-	1.108	4	H5	—	—	—	84707
	1 1/2	6	-	6.38	3.000	-	1.233	4	H6	—	—	—	84709
	1 1/2	-	12	6.38	3.000	-	1.233	4	H5	—	—	—	84711
	1 3/4	5	-	7.00	3.188	-	1.430	4	H7	—	—	—	84714
	2	4 1/2	-	7.63	3.563	-	1.644	4	H7	—	—	—	84715

EM taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.
Series No. 8304 full bottoming chamfer begins on next page.

EM-SS Spiral Flute Taps for Threading Close to the Bottom in a Blind Hole

Series No. 8304 Full Bottoming Chamfer 1 to 2 Pitches



D = Shank Diameter D1 = Tap Size
L = Overall Length L3 = Thread Length
L4 = Neck Length

									EDP Number
D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	L4	D	Flutes	Pitch Dia. Limit	SH50 Oxide
4	40	-	1.88	.236	.326	.141	2	H2	84001
4	40	-	1.88	.236	.326	.141	2	H3	84002
4	40	-	1.88	.236	.326	.141	2	H5	84034
4	-	48	1.88	.236	.326	.141	2	H2	84083
5	40	-	1.94	.236	.389	.141	3	H2	84003
6	32	-	2.00	.276	.411	.141	3	H2	84004
6	32	-	2.00	.276	.411	.141	3	H3	84005
6	32	-	2.00	.276	.411	.141	3	H5	84035
6	-	40	2.00	.276	.411	.141	3	H2	84084
6	-	40	2.00	.276	.411	.141	3	H3	84085
8	32	-	2.13	.276	.474	.168	3	H2	84006
8	32	-	2.13	.276	.474	.168	3	H3	84007
8	32	-	2.13	.276	.474	.168	3	H5	84037
10	24	-	2.38	.354	.521	.194	3	H3	84009
10	24	-	2.38	.354	.521	.194	3	H5	84039
10	-	32	2.38	.276	.599	.194	3	H3	84010
10	-	32	2.38	.276	.599	.194	3	H5	84040
1/4	20	-	2.50	.433	.567	.255	3	H3	84013
1/4	20	-	2.50	.433	.567	.255	3	H5	84043
1/4	-	28	2.50	.354	.646	.255	3	H3	84014
1/4	-	28	2.50	.354	.646	.255	3	H5	84044
5/16	18	-	2.72	.472	.653	.318	3	H3	84015
5/16	18	-	2.72	.472	.653	.318	3	H5	84045
5/16	-	24	2.72	.394	.731	.318	3	H3	84016
5/16	-	24	2.72	.394	.731	.318	3	H5	84046
3/8	16	-	2.94	.551	.699	.381	3	H3	84017
3/8	16	-	2.94	.551	.699	.381	3	H5	84047
3/8	16	-	2.94	.551	.699	.381	3	H7	84077
3/8	-	24	2.94	.394	.856	.381	3	H3	84018
3/8	-	24	2.94	.394	.856	.381	3	H4	84033
3/8	-	24	2.94	.394	.856	.381	3	H5	84048
7/16	14	-	3.16	.591	-	.323	3	H3	84019
7/16	14	-	3.16	.591	-	.323	3	H5	84049
7/16	-	20	3.16	.472	-	.323	3	H3	84020
7/16	-	20	3.16	.472	-	.323	3	H5	84050
1/2	13	-	3.38	.630	-	.367	3	H3	84021
1/2	13	-	3.38	.630	-	.367	3	H5	84051
1/2	-	20	3.38	.472	-	.367	3	H3	84022
1/2	-	20	3.38	.472	-	.367	3	H5	84052
9/16	12	-	3.59	.709	-	.429	3	H3	84053
9/16	-	18	3.59	.512	-	.429	3	H3	84054
5/8	11	-	3.81	.748	-	.480	3	H3	84025
5/8	11	-	3.81	.748	-	.480	3	H5	84055
5/8	-	18	3.81	.512	-	.480	3	H3	84026
5/8	-	18	3.81	.512	-	.480	3	H5	84056
3/4	10	-	4.25	.827	-	.590	4	H3	84027
3/4	-	16	4.25	.591	-	.590	4	H3	84028

EM taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.
Series 8354 metric EM-SS spiral fluted taps begin on the next page.

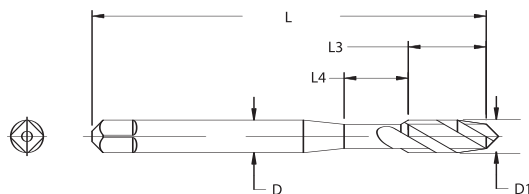
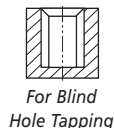
EM-SS Taps

Spiral Flute for Blind Holes in Stainless Steel < 30 Rc



EM-SS Metric Spiral Flute Taps for Blind Holes

Series No. 8354 Modified Bottoming Chamfer 2 1/2 to 3 1/2 Pitches



D = Shank Diameter D1 = Tap Size
L = Overall Length L3 = Thread Length
L4 = Neck Length

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous

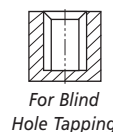
Alternate Coatings Available.
(Full package quantities only)



							EDP Number			
Size	L	L3	L4	D	Flutes	Pitch Dia. Limit	TiCN	TiN	SH50 Oxide	Uncoated
M3 x 0,5	1.94	.313	.250	.141	3	D3	74815	74915	74615	74615B
M3,5 x 0,6	2.00	.375	.250	.141	3	D4	—	—	74616	74616B
M4 x 0,7	2.13	.375	.375	.168	3	D4	74817	74917	74617	74617B
M5 x 0,8	2.38	.500	.375	.194	3	D4	74819	74919	74619	74619B
M6 x 1	2.50	.625	.375	.255	3	D5	74820	74920	74620	74620B
M7 x 1	2.72	.688	.438	.318	3	D5	—	—	74621	74621B
M8 x 1	2.72	.688	.438	.318	3	D5	—	—	74622	74622B
M8 x 1,25	2.72	.688	.438	.318	3	D5	74823	74923	74823	74623B
M10 x 1,25	2.94	.750	.500	.381	3	D5	—	—	74624	74624B
M10 x 1,5	2.94	.750	.500	.381	3	D6	74825	74925	74625	74625B
M12 x 1,25	3.38	.938	-	.367	3	D5	—	—	74626	74626B
M12 x 1,75	3.38	.938	-	.367	3	D6	74827	74927	74627	74627B
M14 x 1,5	3.59	1.000	-	.429	3	D6	—	—	74628	74628B
M14 x 2	3.59	1.000	-	.429	3	D7	—	—	74629	74629B
M16 x 1,5	3.81	1.094	-	.480	3	D6	—	—	74630	74630B
M16 x 2	3.81	1.094	-	.480	3	D7	—	—	74631	74631B
M18 x 1,5	4.03	1.094	-	.542	4	D6	—	—	74632	74632B
M18 x 2,5	4.03	1.094	-	.542	3	D7	—	—	74633	74633B

EM-SS Metric Spiral Flute Taps for Threading Close to the Bottom in a Blind Hole

Series No. 8354 Full Bottoming Chamfer 1 to 2 Pitches

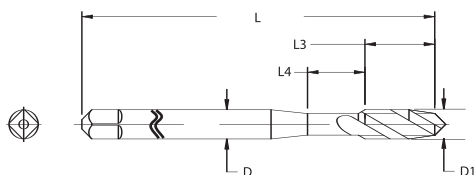


							EDP Number	
Size	L	L3	L4	D	Flutes	Pitch Dia. Limit	SH50 Oxide	
M3 x 0,5	1.94	.313	.250	.141	3	D3	74015	
M3,5 x 0,6	2.00	.375	.250	.141	3	D4	74016	
M4 x 0,7	2.13	.375	.375	.168	3	D4	74017	
M5 x 0,8	2.38	.500	.375	.194	3	D4	74019	
M6 x 1	2.50	.625	.375	.255	3	D5	74020	
M7 x 1	2.72	.688	.438	.318	3	D5	74021	
M8 x 1	2.72	.688	.438	.318	3	D5	74022	
M8 x 1,25	2.72	.688	.438	.318	3	D5	74023	
M10 x 1,25	2.94	.750	.500	.381	3	D5	74024	
M10 x 1,5	2.94	.750	.500	.381	3	D6	74025	
M12 x 1,25	3.38	.938	-	.367	3	D5	74026	
M12 x 1,75	3.38	.938	-	.367	3	D6	74027	
M14 x 1,5	3.59	1.000	-	.429	3	D6	74028	
M14 x 2	3.59	1.000	-	.429	3	D7	74029	
M16 x 1,5	3.81	1.094	-	.480	3	D6	74030	
M16 x 2	3.81	1.094	-	.480	3	D7	74031	
M18 x 1,5	4.03	1.094	-	.542	4	D6	74032	

Metric taps for 6H class of fit are suitable for MJ Aerospace internal threading applications.
Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.

Extended EM-SS Spiral Flute Taps for Blind Holes - 6" Overall Length for Applications Requiring a Long Reach

■ Series No. 8314 Modified Bottoming Chamfer 2 1/2 to 3 1/2 Pitches



D = Shank Diameter *D1* = Tap Size
L = Overall Length *L3* = Thread Length
L4 = Neck Length

									EDP Number
D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	L4	D	Flutes	Pitch Dia. Limit	SH50 Oxide
2	56	-	6.00	.438	-	.141	2	H2	84523
3	48	-	6.00	.500	-	.141	2	H2	84500
4	40	-	6.00	.236	.326	.141	2	H2	84501
6	32	-	6.00	.276	.411	.141	3	H3	84505
8	32	-	6.00	.276	.474	.168	3	H3	84507
10	24	-	6.00	.354	.521	.194	3	H3	84509
10	-	32	6.00	.276	.599	.194	3	H3	84510
1/4	20	-	6.00	.433	.567	.255	3	H3	84513
1/4	-	28	6.00	.354	.646	.255	3	H3	84514
5/16	18	-	6.00	.472	.653	.318	3	H3	84515
5/16	-	24	6.00	.394	.731	.318	3	H3	84516
3/8	16	-	6.00	.551	.699	.381	3	H3	84517
3/8	-	24	6.00	.394	.856	.381	3	H3	84518
7/16	14	-	6.00	.591	-	.323	3	H3	84519
7/16	-	20	6.00	.472	-	.323	3	H3	84520
1/2	13	-	6.00	.630	-	.367	3	H3	84521
1/2	-	20	6.00	.472	-	.367	3	H3	84522

EM taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.

**Greenfield LIGHTNING®
SERVICE Available**

EM-SS Taps

Pipe Taps for Tapping in Stainless Steel < 30 Rc



EM-SS Spiral Flute Pipe Taps

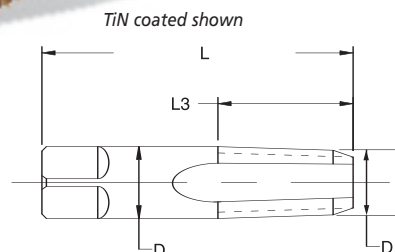
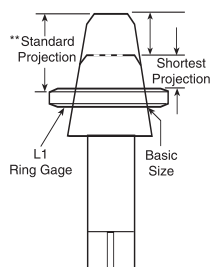
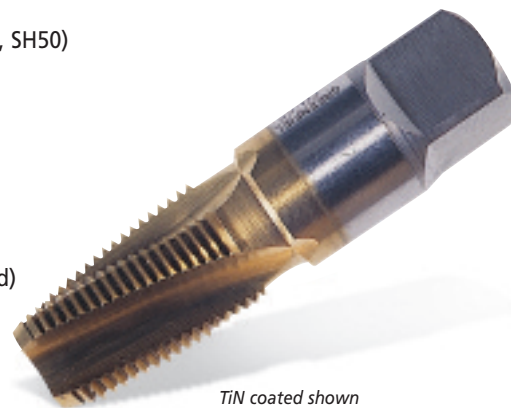
Features/Benefits:

- manufactured from special high-vanadium HSS-E
- ground thread pipe taps are standard in American Standard Pipe Thread (NPT) and American Standard Dryseal Pipe Thread (NPTF)
- NPT threads require the use of a sealer such as Teflon® tape or pipe compound
- NPTF dryseal threads give a pressure-tight joint without the use of sealer
- standard projection
- unique slow spiral tap geometry for improved thread finish when tapping stainless steels

Application Information:

- stainless steels <275 Bhn (TiCN, TiN, SH50)
- stainless steels 304, 316 <275 Bhn (TiN+Cr/C)
- steel and steel alloys <275 Bhn (TiN, TiCN, SH50)
- wrought and cast aluminum (TiN+Cr/C, uncoated)
- copper and copper alloys (uncoated)
- plastic (TiN, TiCN, uncoated)
- ductile irons (TiCN, TiN, SH50)

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous



D = Shank Diameter D1 = Tap Size
L = Overall Length L3 = Thread Length

EM-SS Spiral Flute Pipe Taps

Series No. 8321 Standard Chamfer 2 1/2 to 3 1/2 Pitches

D1	TPI	L	L3	D	Flutes	Gage Measurement		EDP Number					
						Standard	Tolerance	TiN		SH50 Oxide		Uncoated	
								NPT	NPTF	NPT	NPTF	NPT	NPTF
1/16	27	2.125	.688	.3125	4	.312	±1/16	83940	83960	83640	83660	83640B	83660B
1/8*	27	2.125	.750	.4375	4	.312	±1/16	83941	83961	83641	83661	83641B	83661B
1/8	27	2.125	.750	.3125	4	.312	±1/16	83942	83962	83642	83662	83642B	83662B
1/4	18	2.438	1.063	.5625	4	.459	±1/16	83943	83963	83643	83663	83643B	83663B
3/8	18	2.563	1.063	.7031	4	.454	±1/16	83944	83964	83644	83664	83644B	83664B
1/2	14	3.125	1.375	.6875	4	.579	±1/16	83945	83965	83645	83665	83645B	83665B
3/4	14	3.250	1.375	.9063	4	.565	±1/16	83946	83966	83646	83666	83646B	83666B
1	11 1/2	3.750	1.750	1.1250	4	.678	±3/32	83947	83967	83647	83667	83647B	83667B

*Large shank.

** Pipe tap projection is the distance the small end of the tap projects through an American National Standard L1 Pipe Thread Ring Gage.

PIPE TAPS: Tap Drill Sizes for Taper and Straight Pipe Taps



Size & Pitch of Tap	NPT / NPTF Taper Pipe Threads		Straight Pipe Threads		
	without Reamer	with Reamer	NPSF	NPSC	NPSF
1/16-27	C	A	—	1/4	D
1/8-27	Q	21/64	T	Q	R
1/4-18	7/16	27/64	15/32	7/16	7/16
3/8-18	9/16	9/16	.603**	37/64	37/64
1/2-14	45/64	11/16	19,0 mm	18,0 mm	18,0 mm
3/4-14	29/32	57/64	61/64	59/64	59/64
1-11 1/2	1 9/64	1 1/8	1 13/64	1 5/32	1 5/32
1 1/4-11 1/2	1 31/64	1 15/32	1 35/64	1 1/2	—
1 1/2-11 1/2	1 23/32	1 45/64	1 25/32	1 47/64	—
2-11 1/2	2 3/16	2 11/64	2 1/4	2 13/64	—

** special

EM-AL GUN® Taps for Through Hole Tapping in Aluminum (DIN Length)

N Non-Ferrous

Features/Benefits:

- manufactured from special high-vanadium HSS-E
- new GUN® flute and geometry designed for tapping aluminum
- MAXI nitride surface treated for added toughness and wear life
- made to DIN overall tap lengths, ANSI shank dimensions
- neck design for CNC equipment

Application Information:

- designed to tap wrought and die cast aluminum (MAXI)
- non-ferrous materials including copper, zinc, and magnesium alloys (MAXI)
- soft plastics (MAXI)



D = Shank Diameter D1 = Tap Size L = Overall Length
L3 = Thread Length L4 = Neck Length

EM-AL GUN® Taps for Through Holes (DIN Length)

Series No. 8201 Plug Chamfer 4 to 5 Pitches

D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L*	L3	L4	D	Flutes	Pitch Dia. Limit	EDP Number
									MAXI Nitride
2	56	-	1.77	.276	.196	.141	2	H2	86200
4	40	-	2.21	.433	.276	.141	2	H2	86201
5	40	-	2.21	.433	.276	.141	3	H2	86202
6	32	-	2.21	.512	.275	.141	3	H3	86203
8	32	-	2.48	.512	.315	.168	3	H3	86204
10	24	-	2.76	.630	.354	.194	3	H3	86205
10	-	32	2.76	.630	.354	.194	3	H3	86206
1/4	20	-	3.15	.748	.433	.255	3	H3	86207
1/4	20	-	3.15	.748	.433	.255	3	H5	86208
1/4	-	28	3.15	.748	.433	.255	3	H3	86209
1/4	-	28	3.15	.748	.433	.255	3	H4	86211
5/16	18	-	3.54	.866	.512	.318	3	H3	86212
5/16	18	-	3.54	.866	.512	.318	3	H5	86213
5/16	-	24	3.54	.866	.512	.318	3	H3	86214
5/16	-	24	3.54	.866	.512	.318	3	H4	86215
3/8	16	-	3.94	.945	.590	.381	3	H3	86216
3/8	16	-	3.94	.945	.590	.381	3	H5	86217
3/8	-	24	3.54	.787	.748	.381	3	H3	86218
3/8	-	24	3.54	.787	.748	.381	3	H4	86219
7/16	14	-	3.94	.945	.709	.323	3	H3	86220
7/16	14	-	3.94	.945	.709	.323	3	H5	86221
7/16	-	20	3.94	.945	.709	.323	3	H3	86222
7/16	-	20	3.94	.945	.709	.323	3	H5	86223
1/2	13	-	4.33	1.142	.630	.367	3	H3	86224
1/2	13	-	4.33	1.142	.630	.367	3	H5	86225
1/2	-	20	3.94	.866	.906	.367	3	H3	86226
1/2	-	20	3.94	.866	.906	.367	3	H5	86227

*Manufactured to DIN overall tap lengths.

EM taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.

EM-AL Taps

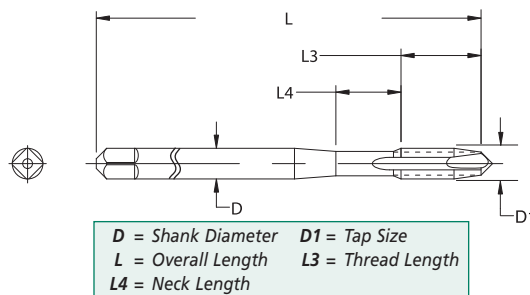
GUN® Taps for Through Hole Tapping in Aluminum



EM-AL Metric GUN® Taps for Through Holes (DIN Length)

N Non-Ferrous

■ Series No. 8251 Plug Chamfer 4 to 5 Pitches



Size	L*	L3	L4	D	Flutes	Pitch Dia. Limit	EDP Number
							MAXI Nitride
M3 x 0,5	2.21	.433	.276	.141	3	D3	86228
M3,5 x 0,6	2.21	.512	.275	.141	3	D4	86229
M4 x 0,7	2.48	.512	.315	.168	3	D4	86230
M5 x 0,8	2.76	.630	.354	.194	3	D4	86231
M6 x 1	3.15	.748	.433	.255	3	D5	86232
M7 x 1	3.15	.748	.433	.318	3	D5	86233
M8 x 1	3.54	.866	.512	.318	3	D5	86234
M8 x 1,25	3.54	.866	.512	.318	3	D5	86235
M10 x 1,25	3.94	.945	.590	.381	3	D5	86236
M10 x 1,5	3.94	.945	.590	.381	3	D6	86237
M12 x 1,25	3.94	.866	.906	.367	3	D5	86238
M12 x 1,5	3.94	.866	.906	.367	3	D5	86239
M12 x 1,75	4.33	1.142	.630	.367	3	D6	86240

*Manufactured to DIN overall tap lengths. DIN length taps have ANSI shank dimensions.
Metric taps for 6H class of fit are suitable for MJ Aerospace internal threading applications.



TAPPING: Tap Design/Applications

Today, it seems as though there are as many tool designs as there are part materials to be tapped. However, a closer look at the geometry of the various specialty taps developed for these materials reveals a few basic design philosophies:

A. The most common and easiest to machine materials are soft, ductile materials that produce long, continuous (stringy) chips. They range from non-ferrous such as aluminum and copper, to mild to medium alloy steels, and also include some free machining stainless steels. These materials are easy to cut, produce minimal heat, and are not very abrasive. Taps for these materials are designed with medium to high hook cutting geometry and minimal or no thread relief. They are made from general purpose high speed steel such as M1 or M7, with either an oxide, nitride surface treatment or Titanium Nitride (TiN). Most GP taps, or those for stainless, fall into this category.

B. The second group of materials includes heat-treated ferrous materials, generally above 275 Bhn. These materials are generally abrasive and do not produce chips easily, and heat generated during cutting becomes a consideration. Taps for these materials are designed with low or negative hook cutting geometry, relief to generate a chip, and require heat-resistant cobalt or tungsten based HSS such as M42, Rex 45, or T15. Thin film coatings TiN, TiCN, TiN+CrC/C and TiAlN are often preferred for lubricity, heat resistance, and abrasion resistance. Heavy duty and HP taps for hard alloys are designed with these features.

C. Tough alloys such as nickel and titanium make up the third group. While generally not hard, these materials exhibit a toughness that makes it very difficult to produce a chip. They also have more elastic memory (closing in) which causes friction and heat, are quite abrasive, and easily work harden. The chips produced are generally long. The taps designed for this group are similar to those for hard materials, but the hook and relief are often higher to reduce friction and heat. When tapping materials such as titanium, higher H limits are recommended to overcome shrinkage.

D. The last category includes materials that produce very broken chips or powder, such as cast iron or brass. Because these materials are cast, they are abrasive but soft. The taps for this group normally feature a low or neutral hook, and no relief, other than the back taper, is required. General purpose HSS is often sufficient, and either a nitride surface treatment or one of the thin film coatings such as TiN or TiCN helps with abrasion resistance.

EM-ALS 25° Spiral Flute Taps for Blind Hole Tapping in Die Cast Aluminums (DIN Length)

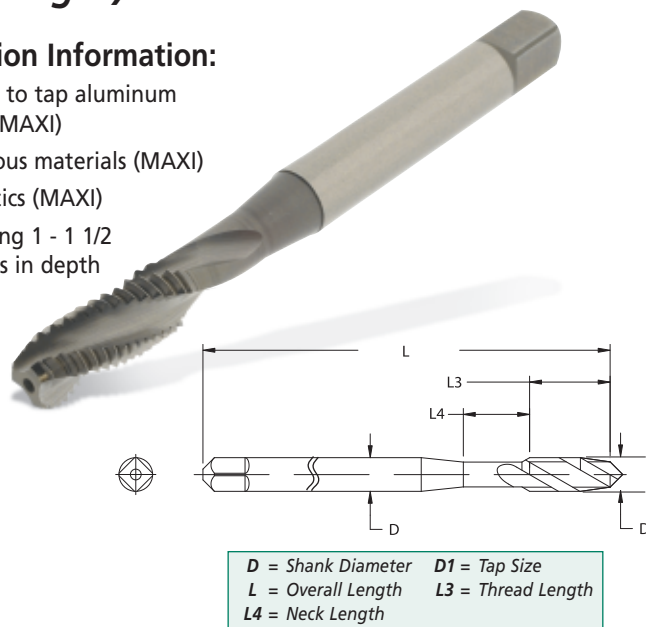
N Non-Ferrous

Features/Benefits:

- manufactured from special high-vanadium HSS-E
- new 25° spiral flute geometry for tapping die cast aluminums
- MAXI nitride surface treated for added toughness and wear life
- made to DIN overall tap lengths, ANSI shank dimensions
- neck design for CNC equipment

Application Information:

- designed to tap aluminum die cast (MAXI)
- non-ferrous materials (MAXI)
- soft plastics (MAXI)
- for tapping 1 - 1 1/2 diameters in depth



EM-ALS 25° Spiral Flute Taps for Blind Holes (DIN Length)

Series No. 8204 Modified Bottoming Chamfer 2 1/2 to 3 Pitches

D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L*	L3	L4	D	Flutes	Pitch Dia. Limit	EDP Number
									MAXI Nitride
2	56	-	1.77	.276	.196	.141	3	H2	86400
4	40	-	2.21	.433	.276	.141	3	H2	86401
5	40	-	2.21	.433	.276	.141	3	H2	86402
6	32	-	2.25	.512	.275	.141	3	H3	86403
8	32	-	2.48	.512	.315	.168	3	H3	86404
10	24	-	2.76	.630	.354	.194	3	H3	86405
10	-	32	2.76	.630	.354	.194	3	H3	86406
1/4	20	-	3.15	.748	.433	.255	3	H3	86407
1/4	20	-	3.15	.748	.433	.255	3	H5	86408
1/4	-	28	3.15	.748	.433	.255	3	H3	86409
1/4	-	28	3.15	.748	.433	.255	3	H5	86411
5/16	18	-	3.54	.866	.512	.318	3	H3	86412
5/16	18	-	3.54	.866	.512	.318	3	H5	86413
5/16	-	24	3.54	.866	.512	.318	3	H3	86414
5/16	-	24	3.54	.866	.512	.318	3	H4	86415
3/8	16	-	3.54	.945	.590	.381	3	H3	86416
3/8	16	-	3.54	.945	.590	.381	3	H5	86417
3/8	-	24	3.54	.787	.748	.381	3	H3	86418
3/8	-	24	3.54	.787	.748	.381	3	H4	86419
7/16	14	-	3.94	.945	.709	.323	3	H3	86420
7/16	14	-	3.94	.945	.709	.323	3	H5	86421
7/16	-	20	3.94	.945	.709	.323	3	H3	86422
7/16	-	20	3.94	.945	.709	.323	3	H5	86423
1/2	13	-	4.33	1.142	.630	.367	3	H3	86424
1/2	13	-	4.33	1.142	.630	.367	3	H5	86425
1/2	-	20	3.94	.866	.906	.367	3	H3	86426
1/2	-	20	3.94	.866	.906	.367	3	H5	86427

*Manufactured to DIN overall tap lengths. DIN length taps have ANSI shank dimensions.
EM taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.



EM-ALS Taps

Spiral Fluted Taps for Blind Hole Tapping in Cast Aluminums

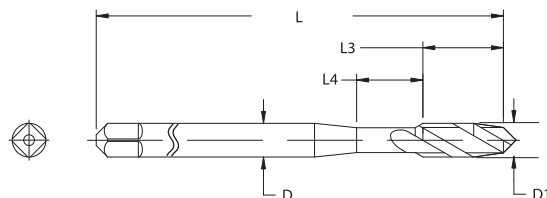
EM-ALS 25° Metric Spiral Flute Taps for Blind Holes (DIN Length)

■ Series No. 8254 Modified Bottoming Chamfer 2 1/2 to 3 Pitches

N Non-Ferrous



For Blind
Hole Tapping



D = Shank Diameter *D1* = Tap Size
L = Overall Length *L3* = Thread Length
L4 = Neck Length

							EDP Number
Size	L*	L3	L4	D	Flutes	Pitch Dia. Limit	MAXI Nitride
M3 x 0,5	2.21	.433	.276	.141	3	D3	86428
M3,5 x 0,6	2.21	.512	.275	.141	3	D4	86429
M4 x 0,7	2.48	.512	.315	.168	3	D4	86430
M5 x 0,8	2.76	.630	.354	.194	3	D4	86431
M6 x 1	3.15	.748	.433	.255	3	D5	86432
M7 x 1	3.15	.748	.433	.318	3	D5	86433
M8 x 1	3.54	.866	.512	.318	3	D5	86434
M8 x 1,25	3.54	.866	.512	.318	3	D5	86435
M10 x 1,25	3.94	.945	.590	.381	3	D5	86436
M10 x 1,5	3.94	.945	.590	.381	3	D6	86437
M12 x 1,25	3.94	.866	.630	.367	3	D5	86438
M12 x 1,5	3.94	.866	.630	.367	3	D5	86439
M12 x 1,75	4.33	1.142	.906	.367	3	D6	86440

*Manufactured to DIN overall tap lengths. DIN length taps have ANSI shank dimensions.
Metric taps for 6H class of fit are suitable for MJ Aerospace internal threading applications.
Metric taps are manufactured to USCTI specifications and dimensions.

EM-AL 45° Spiral Flute Taps for Blind Hole Tapping in Aluminum (DIN Length)

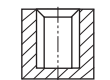
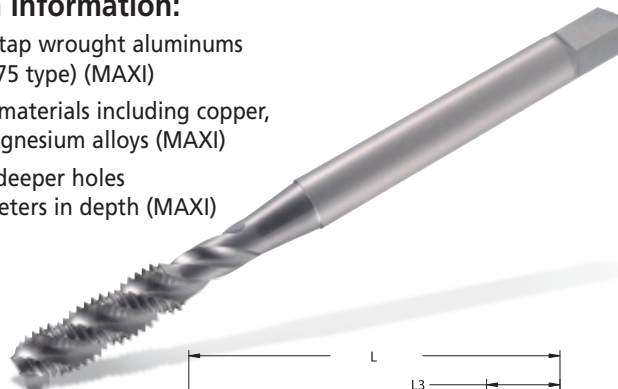
N Non-Ferrous

Features/Benefits:

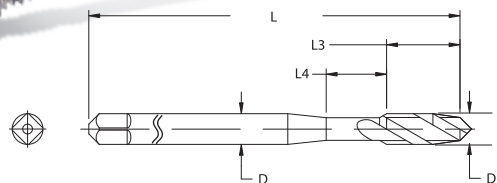
- manufactured from special high-vanadium HSS-E
- new 45° spiral flute geometry for tapping aluminums
- MAXI nitride surface treated for added toughness and wear life
- made to DIN overall tap lengths, ANSI shank dimensions
- neck design for CNC equipment

Application Information:

- designed to tap wrought aluminums (6061-T6, 7075 type) (MAXI)
- non-ferrous materials including copper, zinc, and magnesium alloys (MAXI)
- for tapping deeper holes > 1-1/2 diameters in depth (MAXI)



For Blind Hole Tapping



D = Shank Diameter D1 = Tap Size L = Overall Length
L3 = Thread Length L4 = Neck Length

EM-AL 45° Spiral Flute Taps for Blind Holes (DIN Length)

Series No. 8214 Modified Bottoming Chamfer 2 1/2 to 3 Pitches

D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L*	L3	L4	D	Flutes	Pitch Dia. Limit	EDP Number
									MAXI Nitride
2	56	-	1.77	.276	.196	.141	2	H2	86500
4	40	-	2.21	.433	.276	.141	2	H2	86501
5	40	-	2.21	.433	.276	.141	3	H2	86502
6	32	-	2.21	.512	.275	.141	3	H3	86503
8	32	-	2.48	.512	.315	.168	3	H3	86504
10	24	-	2.76	.630	.354	.194	3	H3	86505
10	-	32	2.76	.630	.354	.194	3	H3	86506
1/4	20	-	3.15	.748	.433	.255	3	H3	86507
1/4	20	-	3.15	.748	.433	.255	3	H5	86508
1/4	-	28	3.15	.748	.433	.255	3	H3	86509
1/4	-	28	3.15	.748	.433	.255	3	H4	86511
5/16	18	-	3.54	.866	.512	.318	3	H3	86512
5/16	18	-	3.54	.866	.512	.318	3	H5	86513
5/16	-	24	3.54	.866	.512	.318	3	H3	86514
5/16	-	24	3.54	.866	.512	.318	3	H4	86515
3/8	16	-	3.94	.945	.590	.381	3	H3	86516
3/8	16	-	3.94	.945	.590	.381	3	H5	86517
3/8	-	24	3.54	.787	.748	.381	3	H3	86518
3/8	-	24	3.54	.787	.748	.381	3	H4	86519
7/16	14	-	3.94	.945	.709	.323	3	H3	86520
7/16	14	-	3.94	.945	.709	.323	3	H5	86521
7/16	-	20	3.94	.945	.709	.323	3	H3	86522
7/16	-	20	3.94	.945	.709	.323	3	H5	86523
1/2	13	-	4.33	1.142	.630	.367	3	H3	86524
1/2	13	-	4.33	1.142	.630	.367	3	H5	86525
1/2	-	20	3.94	.866	.906	.367	3	H3	86526
1/2	-	20	3.94	.866	.906	.367	3	H5	86527

*Manufactured to DIN overall tap lengths. DIN length taps have ANSI shank dimensions.
EM taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.



EM-AL Taps

45° Spiral Fluted for Blind Hole Tapping in Aluminum

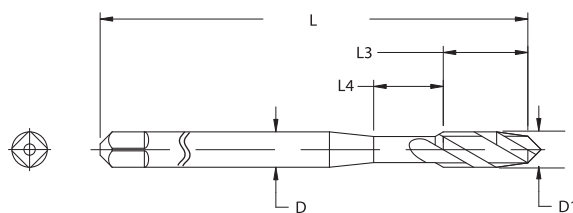
EM-AL 45° Metric Spiral Flute Taps for Blind Holes (DIN Length)

■ Series No. 8264 Modified Bottoming Chamfer 2 1/2 to 3 Pitches

N Non-Ferrous



For Blind
Hole Tapping



D = Shank Diameter *D1* = Tap Size
L = Overall Length *L3* = Thread Length
L4 = Neck Length

							EDP Number
Size	L*	L3	L4	D	Flutes	Pitch Dia. Limit	MAXI Nitride
M3 x 0,5	2.21	.433	.276	.141	3	D3	86528
M3,5 x 0,6	2.21	.512	.275	.141	3	D4	86529
M4 x 0,7	2.48	.512	.315	.168	3	D4	86530
M5 x 0,8	2.76	.630	.354	.194	3	D4	86531
M6 x 1	3.15	.748	.433	.255	3	D5	86532
M7 x 1	3.15	.748	.433	.318	3	D5	86533
M8 x 1	3.54	.866	.512	.318	3	D5	86534
M8 x 1,25	3.54	.866	.512	.318	3	D5	86535
M10 x 1,25	3.94	.945	.590	.381	3	D5	86536
M10 x 1,5	3.94	.945	.590	.381	3	D6	86537
M12 x 1,25	3.94	.866	.906	.367	3	D5	86538
M12 x 1,5	3.94	.866	.906	.367	3	D5	86539
M12 x 1,75	4.33	1.142	.630	.367	3	D6	86540

*Manufactured to DIN overall tap lengths. DIN length taps have ANSI shank dimensions.
Metric taps for 6H class of fit are suitable for MJ Aerospace internal threading applications.

**Greenfield LIGHTNING®
SERVICE Available**

EM-NI® GUN® Taps for Through Holes

Features/Benefits:

- manufactured from premium cobalt high-vanadium PMT15
- unique GUN® flute geometry for tapping through holes in nickel alloys
- surface treatment TiCN, SH47 (oxide/nitride)
- neck design for CNC equipment
- geometry designed to tap materials >30 RC (270 Bhn)

Application Information:

- nickel alloys: inconel, waspalloy, hastelloy (TiAlN, SH47, TiCN)
- hardened steels and stainless steels > 275 BHN (TiN+CrC/C, SH47, TiCN)
- stainless steels 304, 316 (TiN+CrC/C)
- mold steels (TiCN, SH47)
- tool steels (TiCN, SH47)

P	Steel
M	Stainless Steel
S	High-Temp Alloys
H	Hardened Materials



EM-NI® GUN® Taps for Through Holes

Series No. 8601 Plug Chamfer 3 to 5 Pitches

D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	L4	D	Flutes	Pitch Dia. Limit	EDP Number		
									TiCN	SH47 Oxide Nitride	Uncoated
2	56	-	1.75	.256	.181	.141	2	H2	—	85523	—
4	40	-	1.88	.335	.227	.141	2	H2	85401	85501	85501B
4	40	-	1.88	.335	.227	.141	2	H3	—	85502	—
4	40	-	1.88	.335	.227	.141	2	H4	—	85504	85504B
4	-	48	1.88	.335	.227	.141	2	H2	—	85506	—
5	40	-	1.94	.374	.251	.141	3	H2	—	85503	—
6	32	-	2.00	.413	.274	.141	3	H2	—	85508	—
6	32	-	2.00	.413	.274	.141	3	H3	85405	85505	85505B
6	32	-	2.00	.413	.274	.141	3	H4	—	85524	—
6	32	-	2.00	.413	.274	.141	3	H5	—	85535	—
6	32	-	2.00	.413	.274	.141	3	H7	—	85511	—
6	-	40	2.00	.413	.274	.141	3	H2	—	85512	85512B
8	32	-	2.13	.453	.297	.168	3	H2	—	85534	—
8	32	-	2.13	.453	.297	.168	3	H3	85407	85507	85507B
8	32	-	2.13	.453	.297	.168	3	H4	—	85529	—
8	32	-	2.13	.453	.297	.168	3	H5	—	85537	—
8	32	-	2.13	.453	.297	.168	3	H6	—	85560	—
8	32	-	2.13	.453	.297	.168	3	H7	—	85567	—
10	24	-	2.38	.531	.344	.194	3	H3	85409	85509	85509B
10	24	-	2.38	.531	.344	.194	3	H4	—	85536	—
10	24	-	2.38	.531	.344	.194	3	H5	—	85539	—
10	24	-	2.38	.531	.344	.194	3	H7	—	85538	—
10	-	32	2.38	.531	.344	.194	3	H2	—	85541	—
10	-	32	2.38	.531	.344	.194	3	H3	85410	85510	85510B
10	-	32	2.38	.531	.344	.194	3	H4	—	85530	—
10	-	32	2.38	.531	.344	.194	3	H5	—	85540	85540B
10	-	32	2.38	.531	.344	.194	3	H6	—	85561	—
10	-	32	2.38	.531	.344	.194	3	H7	—	85570	—

EM taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.
Series No. 8601 continued on next page.

EM-NI® Taps

GUN® Taps for Through Holes in Nickel-Based Materials

(continued)

EM-NI® GUN® Taps for Through Holes

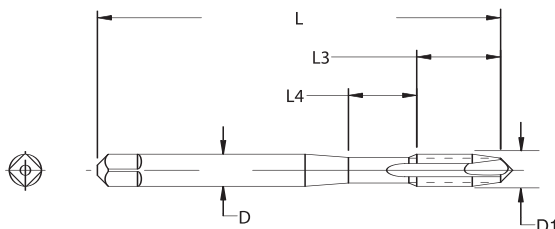
■ Series No. 8601 Plug Chamfer 3 to 5 Pitches



P	Steel
M	Stainless Steel
S	High-Temp Alloys
H	Hardened Materials

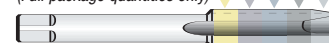


For Through Hole Tapping



D = Shank Diameter D1 = Tap Size
L = Overall Length L3 = Thread Length
L4 = Neck Length

Alternate Coatings Available.
(Full package quantities only)



	D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	L4	D	Flutes	Pitch Dia. Limit	EDP Number		
										TiCN	SH47 Oxide Nitride	Uncoated
PRODUCTION TAPS	1/4	20	-	2.50	.591	.409	.255	3	H3	85413	85513	85513B
	1/4	20	-	2.50	.591	.409	.255	3	H5	—	85543	—
	1/4	20	-	2.50	.591	.409	.255	3	H7	—	85542	—
	1/4	-	28	2.50	.591	.409	.255	3	H3	85414	85514	85514B
	1/4	-	28	2.50	.591	.409	.255	3	H4	—	85531	—
	1/4	-	28	2.50	.591	.409	.255	3	H5	—	85544	—
	1/4	-	28	2.50	.591	.409	.255	3	H6	—	85562	—
MAINTENANCE TOOLS	1/4	-	28	2.50	.591	.409	.255	3	H7	—	85574	—
	5/16	18	-	2.72	.669	.456	.318	3	H3	85415	85515	85515B
	5/16	18	-	2.72	.669	.456	.318	3	H5	—	85545	—
	5/16	18	-	2.72	.669	.456	.318	3	H7	—	85553	—
	5/16	-	24	2.72	.669	.456	.318	3	H3	85416	85516	85516B
	5/16	-	24	2.72	.669	.456	.318	3	H4	—	85532	—
	5/16	-	24	2.72	.669	.456	.318	3	H5	—	85546	—
GAGES	5/16	-	24	2.72	.669	.456	.318	3	H6	—	85563	—
	5/16	-	24	2.72	.669	.456	.318	3	H7	—	85576	—
	3/8	16	-	2.94	.748	.502	.381	3	H3	85417	85517	85517B
	3/8	16	-	2.94	.748	.502	.381	3	H5	—	85547	—
	3/8	16	-	2.94	.748	.502	.381	3	H7	—	85554	—
	3/8	-	24	2.94	.748	.502	.381	3	H3	85418	85518	85518B
	3/8	-	24	2.94	.748	.502	.381	3	H4	—	85533	—
TECHNICAL INFORMATION & INDEX	3/8	-	24	2.94	.748	.502	.381	3	H5	—	85548	—
	3/8	-	24	2.94	.748	.502	.381	3	H6	—	85564	—
	3/8	-	24	2.94	.748	.502	.381	3	H7	—	85578	—
	7/16	14	-	3.16	.866	-	.323	3	H3	85419	85519	85519B
	7/16	14	-	3.16	.866	-	.323	3	H5	—	85549	—
	7/16	-	20	3.16	.866	-	.323	3	H3	85420	85520	85520B
	7/16	-	20	3.16	.866	-	.323	3	H5	—	85550	—
	1/2	13	-	3.38	.964	-	.367	3	H3	85421	85521	85521B
	1/2	13	-	3.38	.964	-	.367	3	H5	—	85551	—
	1/2	13	-	3.38	.964	-	.367	3	H7	—	85555	—
	1/2	-	20	3.38	.964	-	.367	3	H3	85422	85522	85522B
	1/2	-	20	3.38	.964	-	.367	3	H5	—	85552	—
	1/2	-	20	3.38	.964	-	.367	3	H7	—	85556	—
	5/8	11	-	3.81	1.083	-	.480	3	H3	—	85525	—
	5/8	11	-	3.81	1.083	-	.480	3	H5	—	85565	—
	5/8	-	18	3.81	1.083	-	.480	3	H3	—	85526	—
	5/8	-	18	3.81	1.083	-	.480	3	H5	—	85566	—
	3/4	10	-	4.25	1.201	-	.590	3	H3	—	85527	—
	3/4	10	-	4.25	1.201	-	.590	3	H5	—	85557	—
	3/4	-	16	4.25	1.201	-	.590	3	H3	—	85528	—
	3/4	-	16	4.25	1.201	-	.590	3	H5	—	85558	—

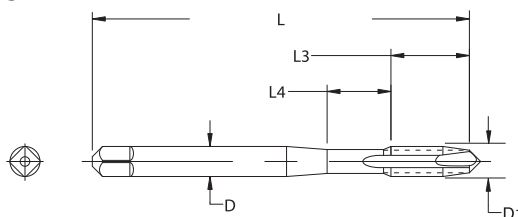
EM taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.
Metric EM-NI GUN Taps are listed on the next page.

EM-NI® Metric GUN® Taps for Through Holes

Series No. 8651 Plug Chamfer 3 to 5 Pitches



For Through
Hole Tapping



D = Shank Diameter *D1* = Tap Size
L = Overall Length *L3* = Thread Length
L4 = Neck Length

P	Steel
M	Stainless Steel
S	High-Temp Alloys
H	Hardened Materials

Size	L	L3	L4	D	Flutes	Pitch Dia. Limit	EDP Number	
							TiCN	SH47 Oxide Nitride
M2,5 x 0,45	1.81	.295	.205	.141	3	D3	—	87320
M3 x 0,50	1.94	.374	.251	.141	3	D3	87421	87321
M3,5 x 0,6	2.00	.413	.274	.141	3	D4	—	87322
M4 x 0,7	2.13	.453	.297	.168	3	D4	87423	87323
M5 x 0,8	2.38	.531	.344	.194	3	D4	87234	87324
M6 x 1	2.50	.591	.409	.255	3	D5	87235	87325
M7 x 1	2.72	.669	.456	.318	3	D5	—	87326
M8 x 1	2.72	.669	.456	.318	3	D5	—	87327
M8 x 1,25	2.72	.669	.456	.318	3	D5	87238	87328
M10 x 1,25	2.94	.748	.502	.381	3	D5	—	87329
M10 x 1,5	2.94	.748	.502	.381	3	D6	87430	87330
M12 x 1,25	3.38	.984	-	.367	3	D5	—	87331
M12 x 1,75	3.38	.984	-	.367	3	D6	87432	87332

Metric taps for 6H class of fit are suitable for MJ Aerospace internal threading applications.

Metric taps are manufactured to USCTI specifications and dimensions.

Metric tap blank dimensions are equivalent to inch taps.

**Greenfield LIGHTNING®
SERVICE Available**



NEW TAP COATING: Titanium Nitride + Chromium Carbide Carbon (TiN+CrC/C)



Titanium Nitride + Chromium Carbide Carbon (TiN+CrC/C) is a new proprietary coating that combines the wear resistance of smooth TiN coating with a lubricious top layer of chromium carbide carbon. Effective in stainless steel and non-ferrous materials, including aluminum and titanium, this new coating has a hardness of 2300 Vickers and is black/gray in color.

Use TiN+CrC/C coating to extend tap life when tapping 304, 316 stainless steels, wrought and silicon die cast aluminums, titanium, and titanium alloys.

Spiral Flute Taps for Blind Holes in Nickel-Based Materials

HIGH-PERFORMANCE TAPS

THREAD MILLS

PRODUCTION TAPS

MAINTENANCE TOOLS

GAGES

TECHNICAL INFORMATION & INDEX

EM-NI® Taps

EM-NI® Spiral Flute Taps for Blind Holes

Features/Benefits:

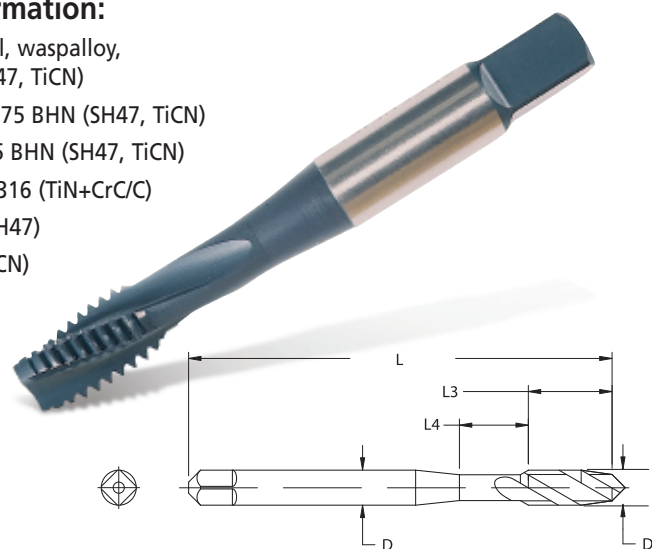
- manufactured from premium cobalt high-vanadium PMT15
- unique geometry and spiral flute for lifting stringy chips up and out of blind holes while tapping nickel alloys
- surface treatments: TiCN or SH47 (oxide/nitride)
- neck design for CNC equipment
- geometry designed to tap materials >30 RC (270 Bhn)

Application Information:

- nickel alloys: inconel, waspalloy, hastelloy (TiAlN, SH47, TiCN)
- hardened steels > 275 BHN (SH47, TiCN)
- stainless steels > 275 BHN (SH47, TiCN)
- stainless steels 304, 316 (TiN+CrC/C)
- mold steels (TiCN, SH47)
- tool steels (SH47, TiCN)



For Blind Hole Tapping



D = Shank Diameter D1 = Tap Size L = Overall Length
L3 = Thread Length L4 = Neck Length

EM-NI® Spiral Flute Taps for Blind Holes

Series No. 8604 Modified Bottoming Chamfer 3 to 4 Pitches

D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	L4	D	Flutes	Pitch Dia. Limit	EDP Number	
									TiCN	SH47 Oxide Nitride
2	56	-	1.75	.438	-	.141	3	H2	—	87523
3	48	-	1.81	.500	-	.141	3	H2	—	87571
4	40	-	1.88	.313	.250	.141	3	H2	87301	87501
4	40	-	1.88	.313	.250	.141	3	H3	—	87502
4	40	-	1.88	.313	.250	.141	3	H4	—	87512
4	40	-	1.88	.313	.250	.141	3	H5	—	87572
4	-	48	1.88	.313	.250	.141	3	H2	—	87503
5	40	-	1.94	.313	.313	.141	3	H2	87304	87504
6	32	-	2.00	.375	.313	.141	3	H2	—	87506
6	32	-	2.00	.375	.313	.141	3	H3	87305	87505
6	32	-	2.00	.375	.313	.141	3	H4	—	87588
6	32	-	2.00	.375	.313	.141	3	H5	—	87535
6	32	-	2.00	.375	.313	.141	3	H7	—	87566
6	-	40	2.00	.375	.313	.141	3	H2	—	87511
8	32	-	2.13	.375	.375	.168	3	H2	—	87524
8	32	-	2.13	.375	.375	.168	3	H3	87307	87507
8	32	-	2.13	.375	.375	.168	3	H4	—	87529
8	32	-	2.13	.375	.375	.168	3	H5	—	87537
8	32	-	2.13	.375	.375	.168	3	H6	—	87560
8	32	-	2.13	.375	.375	.168	3	H7	—	87567
10	24	-	2.38	.500	.375	.194	3	H3	87309	87509
10	24	-	2.38	.500	.375	.194	3	H4	—	87534
10	24	-	2.38	.500	.375	.194	3	H5	—	87539
10	24	-	2.38	.500	.375	.194	3	H7	—	87536
10	-	32	2.38	.500	.375	.194	3	H2	—	87538
10	-	32	2.38	.500	.375	.194	3	H3	87310	87510
10	-	32	2.38	.500	.375	.194	3	H4	—	87530
10	-	32	2.38	.500	.375	.194	3	H5	—	87540
10	-	32	2.38	.500	.375	.194	3	H6	—	87561
10	-	32	2.38	.500	.375	.194	3	H7	—	87570

EM taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.
Series No. 8604 continued on next page.

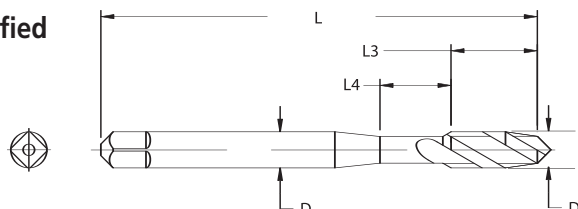
(continued)

EM-NI® Spiral Flute Taps for Blind Holes

■ Series No. 8604 Modified Bottoming Chamfer 3 to 4 Pitches



For Blind Hole Tapping



D = Shank Diameter D1 = Tap Size L = Overall Length
L3 = Thread Length L4 = Neck Length

P Steel
M Stainless Steel
S High-Temp Alloys
H Hardened Materials

Alternate Coatings Available.
(Full package quantities only)



EDP Number

D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	L4	D	Flutes	Pitch Dia. Limit	TiCN	SH47 Oxide Nitride
1/4	20	-	2.50	.625	.375	.255	3	H3	87313	87513
1/4	20	-	2.50	.625	.375	.255	3	H5	—	87543
1/4	20	-	2.50	.625	.375	.255	3	H7	—	87541
1/4	-	28	2.50	.625	.375	.255	3	H3	87314	87514
1/4	-	28	2.50	.625	.375	.255	3	H4	—	87531
1/4	-	28	2.50	.625	.375	.255	3	H5	—	87544
1/4	-	28	2.50	.625	.375	.255	3	H6	—	87562
1/4	-	28	2.50	.625	.375	.255	3	H7	—	87574
5/16	18	-	2.72	.688	.438	.318	3	H3	87315	87515
5/16	18	-	2.72	.688	.438	.318	3	H5	—	87545
5/16	18	-	2.72	.688	.438	.318	3	H7	—	87542
5/16	-	24	2.72	.688	.438	.318	3	H3	87316	87516
5/16	-	24	2.72	.688	.438	.318	3	H4	—	87532
5/16	-	24	2.72	.688	.438	.318	3	H5	—	87546
5/16	-	24	2.72	.688	.438	.318	3	H6	—	87563
5/16	-	24	2.72	.688	.438	.318	3	H7	—	87576
3/8	16	-	2.94	.750	.500	.381	3	H3	87317	87517
3/8	16	-	2.94	.750	.500	.381	3	H5	—	87547
3/8	16	-	2.94	.750	.500	.381	3	H7	—	87553
3/8	-	24	2.94	.750	.500	.381	3	H3	87318	87518
3/8	-	24	2.94	.750	.500	.381	3	H4	—	87533
3/8	-	24	2.94	.750	.500	.381	3	H5	—	87548
3/8	-	24	2.94	.750	.500	.381	3	H6	—	87564
3/8	-	24	2.94	.750	.500	.381	3	H7	—	87578
7/16	14	-	3.16	.875	-	.323	3	H3	87319	87519
7/16	14	-	3.16	.875	-	.323	3	H5	—	87549
7/16	-	20	3.16	.875	-	.323	3	H3	87220	87520
7/16	-	20	3.16	.875	-	.323	3	H5	—	87550
1/2	13	-	3.38	.938	-	.367	3	H3	87221	87521
1/2	13	-	3.38	.938	-	.367	3	H5	—	87551
1/2	13	-	3.38	.938	-	.367	3	H7	—	87554
1/2	-	20	3.38	.938	-	.367	3	H3	87222	87522
1/2	-	20	3.38	.938	-	.367	3	H5	—	87552
1/2	-	20	3.38	.938	-	.367	3	H7	—	87555
5/8	11	-	3.81	1.094	-	.480	4	H3	—	87525
5/8	11	-	3.81	1.094	-	.480	4	H5	—	87565
5/8	11	-	3.81	1.094	-	.480	4	H7	—	87585
5/8	-	18	3.81	1.094	-	.480	4	H3	—	87526
5/8	-	18	3.81	1.094	-	.480	4	H5	—	87559
5/8	-	18	3.81	1.094	-	.480	4	H7	—	87586
3/4	10	-	4.25	1.219	-	.590	4	H3	—	87527
3/4	10	-	4.25	1.219	-	.590	4	H5	—	87557
3/4	-	16	4.25	1.219	-	.590	4	H3	—	87528
3/4	-	16	4.25	1.219	-	.590	4	H5	—	87558

EM taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.
Series No. 8604 full bottoming taps begin on next page.

EM-NI® Taps

Spiral Flute Taps for Through Holes in Nickel-Based Materials

EM-NI® Spiral Flute Taps for Threading Close to the Bottom in a Blind Hole

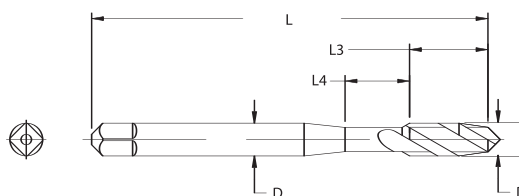
■ Series No. 8604 Full Bottoming Chamfer 1 to 2 Pitches



P	Steel
M	Stainless Steel
S	High-Temp Alloys
H	Hardened Materials



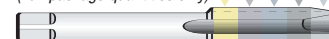
For Blind Hole Tapping



D = Shank Diameter D1 = Tap Size L = Overall Length
L3 = Thread Length L4 = Neck Length

Alternate Coatings Available.

(Full package quantities only)



	D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	L4	D	Flutes	Pitch Dia. Limit	EDP Number
										SH47 Oxide Nitride
PRODUCTION TAPS	4	40	-	1.88	.313	.250	.141	3	H2	87582
	4	40	-	1.88	.313	.250	.141	3	H3	87002
	4	40	-	1.88	.313	.250	.141	3	H5	87072
	4	-	48	1.88	.313	.250	.141	3	H2	87003
	5	40	-	1.94	.313	.313	.141	3	H2	87581
	6	32	-	2.00	.375	.313	.141	3	H2	87006
	6	32	-	2.00	.375	.313	.141	3	H3	87005
	6	32	-	2.00	.375	.313	.141	3	H5	87035
MAINTENANCE TOOLS	6	-	40	2.00	.375	.313	.141	3	H2	87011
	8	32	-	2.13	.375	.375	.168	3	H2	87024
	8	32	-	2.13	.375	.375	.168	3	H3	87580
	8	32	-	2.13	.375	.375	.168	3	H5	87037
	10	24	-	2.38	.500	.375	.194	3	H3	87009
	10	24	-	2.38	.500	.375	.194	3	H5	87039
	10	-	32	2.38	.500	.375	.194	3	H3	87556
	10	-	32	2.38	.500	.375	.194	3	H5	87040
	1/4	20	-	2.50	.625	.375	.255	3	H3	87013
	1/4	20	-	2.50	.625	.375	.255	3	H5	87043
	1/4	-	28	2.50	.625	.375	.255	3	H3	87579
	1/4	-	28	2.50	.625	.375	.255	3	H4	87031
GAGES	1/4	-	28	2.50	.625	.375	.255	3	H5	87443
	5/16	18	-	2.72	.688	.438	.318	3	H3	87015
	5/16	18	-	2.72	.688	.438	.318	3	H5	87045
	5/16	-	24	2.72	.688	.438	.318	3	H3	87577
	5/16	-	24	2.72	.688	.438	.318	3	H4	87032
	5/16	-	24	2.72	.688	.438	.318	3	H5	87046
	3/8	16	-	2.94	.750	.500	.381	3	H3	87017
	3/8	16	-	2.94	.750	.500	.381	3	H5	87047
	3/8	-	24	2.94	.750	.500	.381	3	H3	87575
	3/8	-	24	2.94	.750	.500	.381	3	H4	87033
	3/8	-	24	2.94	.750	.500	.381	3	H5	87048
	7/16	14	-	3.16	.875	-	.323	3	H3	87019
TECHNICAL INFORMATION & INDEX	7/16	14	-	3.16	.875	-	.323	3	H5	87049
	7/16	-	20	3.16	.875	-	.323	3	H3	87573
	7/16	-	20	3.16	.875	-	.323	3	H5	87050
	1/2	13	-	3.38	.938	-	.367	3	H3	87500
	1/2	13	-	3.38	.938	-	.367	3	H5	87051
	1/2	-	20	3.38	.938	-	.367	3	H3	87022
	1/2	-	20	3.38	.938	-	.367	3	H5	87052
	5/8	11	-	3.81	1.094	-	.480	4	H3	87025
	5/8	-	18	3.81	1.094	-	.480	4	H3	87508
	3/4	10	-	4.25	1.219	-	.590	4	H3	87027

EM-NI® Metric Spiral Flute Taps for Blind Holes

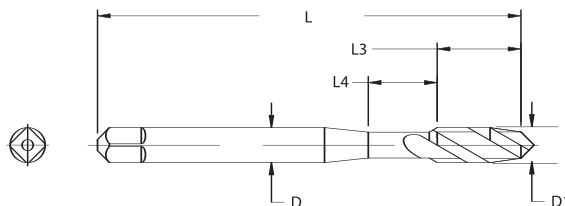
Series No. 8654 Modified Bottoming Chamfer 3 to 4 Pitches

P Steel

M Stainless Steel

S High-Temp Alloys

H Hardened Materials



D = Shank Diameter **D1** = Tap Size **L** = Overall Length
L3 = Thread Length **L4** = Neck Length

Alternate Coatings Available.
(Full package quantities only)



Size	L	L3	L4	D	Flutes	Pitch Dia. Limit	EDP Number		
							TiCN	SH47 Oxide Nitride	Uncoated
M2,5 x 0,45	1.813	.500	-	.141	3	D3	—	88320	—
M3 x 0,5	1.938	.313	.313	.141	3	D3	88421	88321	88321B
M3,5 x 0,6	2.000	.375	.313	.141	3	D4	—	88322	—
M4 x 0,7	2.125	.375	.375	.168	3	D4	88423	88323	88323B
M5 x 0,8	2.375	.500	.375	.194	3	D4	88424	88324	88324B
M6 x 1	2.500	.625	.375	.255	3	D5	88425	88325	88325B
M7 x 1	2.719	.688	.438	.318	3	D5	—	88326	—
M8 x 1	2.719	.688	.438	.318	3	D5	—	88327	—
M8 x 1,25	2.719	.688	.438	.318	3	D5	88428	88328	88328B
M10 x 1,25	2.938	.750	.500	.381	3	D5	—	88329	—
M10 x 1,5	2.938	.750	.500	.381	3	D6	88430	88330	88330B
M12 x 1,25	3.375	.938	-	.367	3	D5	—	88331	—
M12 x 1,75	3.375	.938	-	.367	3	D6	88432	88332	88332B

Metric taps for 6H class of fit are suitable for MJ Aerospace internal threading applications.

Metric taps are manufactured to USCTI specifications and dimensions.

Metric tap blank dimensions are equivalent to inch taps.

EM-TI® Taps

For Through Holes in Titanium and Titanium Alloys



EM-TI® Spiral Flute Left Hand Spiral/ Right Hand Cut, GUN® Tap for Through Holes

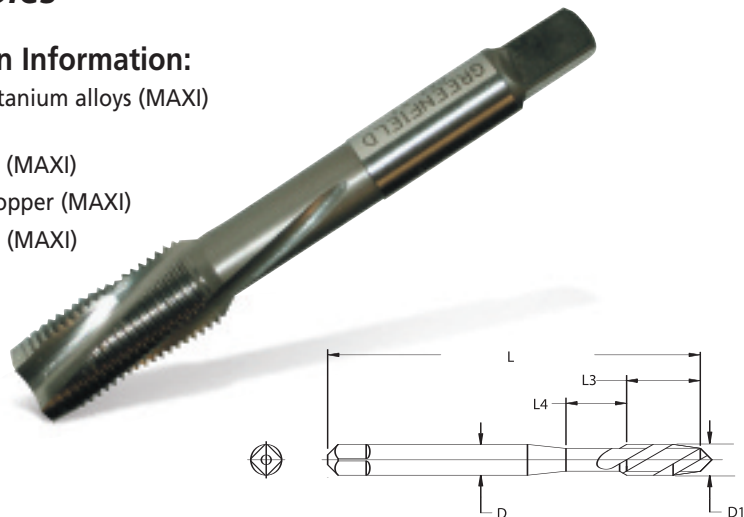
N Non-Ferrous
S High-Temp Alloys

Features/Benefits:

- manufactured from premium cobalt high-vanadium PMT15
- GUN (left hand flute) tap features high relief geometry for through hole tapping in titanium alloys
- for tapping right hand threads
- nitride surface treated for added toughness and wear life
- plug, modified bottoming, or full bottoming chamfer
- neck design for CNC equipment

Application Information:

- titanium, titanium alloys (MAXI) (TiN+Cr/C)
- magnesium (MAXI)
- beryllium copper (MAXI)
- soft plastics (MAXI)



D = Shank Diameter D1 = Tap Size L = Overall Length
L3 = Thread Length L4 = Neck Length

EM-TI® Left Hand Spiral / Right Hand Cut Taps for Through Holes

Series No. 8901 Plug Chamfer 4 1/2 to 5 Pitches

									EDP Number
D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	L4	D	Flutes	Pitch Dia. Limit	MAXI Nitride
2	56	-	1.75	.256	.181	.141	2	H2	85623
4	40	-	1.88	.335	.227	.141	3	H2	85601
5	40	-	1.94	.374	.251	.141	3	H2	85603
6	32	-	2.00	.413	.274	.141	3	H3	85605
6	32	-	2.00	.413	.274	.141	3	H5	85635
8	32	-	2.13	.453	.297	.168	3	H3	85607
8	32	-	2.13	.453	.297	.168	3	H5	85637
10	24	-	2.38	.531	.344	.194	3	H3	85609
10	24	-	2.38	.531	.344	.194	3	H5	85639
10	-	32	2.38	.531	.344	.194	3	H3	85610
10	-	32	2.38	.531	.344	.194	3	H5	85640
1/4	20	-	2.50	.591	.409	.255	3	H3	85613
1/4	20	-	2.50	.591	.409	.255	3	H5	85643
1/4	-	28	2.50	.591	.409	.255	3	H3	85614
1/4	-	28	2.50	.591	.409	.255	3	H5	85644
5/16	18	-	2.72	.669	.456	.318	3	H3	85615
5/16	18	-	2.72	.669	.456	.318	3	H5	85645
5/16	-	24	2.72	.669	.456	.318	3	H3	85616
5/16	-	24	2.72	.669	.456	.318	3	H5	85646
3/8	16	-	2.94	.748	.502	.381	3	H3	85617
3/8	16	-	2.94	.748	.502	.381	3	H5	85647
3/8	-	24	2.94	.748	.502	.381	3	H3	85618
3/8	-	24	2.94	.748	.502	.381	3	H5	85648
7/16	14	-	3.16	.866	.984	.323	3	H3	85619
7/16	14	-	3.16	.866	.984	.323	3	H5	85649
7/16	-	20	3.16	.866	.984	.323	3	H3	85620
7/16	-	20	3.16	.866	.984	.323	3	H5	85650
1/2	13	-	3.38	.984	1.063	.367	3	H3	85621
1/2	13	-	3.38	.984	1.063	.367	3	H5	85651
1/2	-	20	3.38	.984	1.063	.367	3	H3	85622
1/2	-	20	3.38	.984	1.063	.367	3	H5	85652

EM taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.

EM-TI® Metric Left Hand Spiral / Right Hand Cut Taps for Through Holes

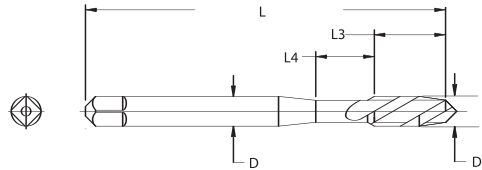
■ Series No. 8951 Plug Chamfer 4 1/2 to 5 Pitches

N Non-Ferrous

S High-Temp Alloys



For Through
Hole Tapping



D = Shank Diameter **D1** = Tap Size **L** = Overall Length
L3 = Thread Length **L4** = Neck Length

Size	L	L3	L4	D	Flutes	Pitch Dia. Limit	EDP Number
							MAXI nitride
M2,5 x 0,45	1.81	.295	.205	.141	3	D3	85700
M3 x 0,5	1.94	.374	.251	.141	3	D3	85701
M3,5 x 0,6	2.00	.413	.274	.141	3	D4	85702
M4 x 0,7	2.13	.453	.297	.168	3	D4	85703
M5 x 0,8	2.38	.531	.344	.194	3	D4	85704
M6 x 1	2.50	.591	.409	.255	3	D5	85705
M7 x 1	2.72	.669	.456	.318	3	D5	85706
M8 x 1	2.72	.669	.456	.318	3	D5	85707
M10 x 1,25	2.94	.748	.502	.381	3	D5	85709
M10 x 1,5	2.94	.748	.502	.381	3	D6	85710
M12 x 1,25	3.38	.984	-	.367	3	D5	85711
M12 x 1,75	3.38	.984	-	.367	3	D6	85712

Metric taps for 6H class of fit are suitable for MJ Aerospace internal threading applications.

Metric taps are manufactured to USCTI specifications and dimensions.

Metric tap blank dimensions are equivalent to inch taps.



TAPPING: Tapping Titanium

Titanium and titanium alloys are most often found in aerospace applications due to their light weight and high strength. However, other industries are discovering the benefits of titanium as well.

One of the characteristics that makes titanium difficult to tap is its tremendous elastic memory. During tapping, the material closes tightly around the cutting tool, generating friction and heat, and resulting in increased wear of the cutting edges. This material also easily work hardens.

To successfully tap titanium, consider the following:

- Choose a tap specifically designed with additional clearance to overcome the extreme elastic memory of the material. Tap clearances would include extra back taper of the threads from the front to the back of the thread section, full radial clearance in the threads across the tap lands, and additional relief in the tap chamfer area. All of these features are used to reduce friction and heat.
- In some cases, larger H limits might be required to overcome the shrinkage.
- Choose a tap made from premium grade materials to prevent heat and wear resistance. Greenfield Tap and Die offers these in our standard product lines.
- TiN+Cr/C surface treatment was developed to improve tapping performance in titanium alloys.
- Lubrication and proper pre-tapped hole size are vital to success. Use a compatible tapping fluid that provides plenty of lubrication to reduce friction.
- Select a drill that will produce the largest hole size allowed by the thread class callout (2B or 3B).
- Due to the additional clearances required, positive feeding of the tap is highly recommended.

EM-TI® Taps

For Blind Holes in Titanium and Titanium Alloys



EM-TI® High-Performance Right Hand Spiral Taps for Blind Holes

N Non-Ferrous
S High-Temp Alloys

Features/Benefits:

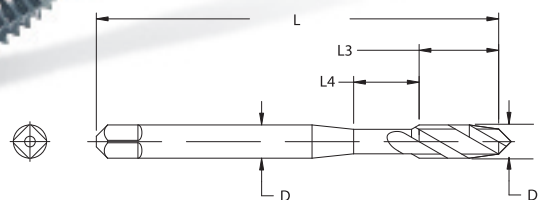
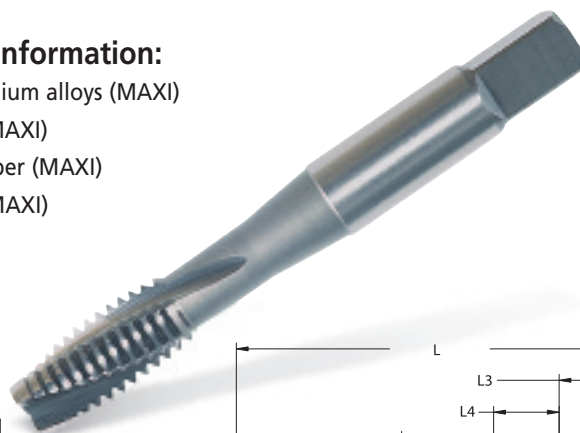
- manufactured from premium cobalt high-vanadium PMT15
- high relief geometry right hand spiral flute for blind hole tapping in titanium
- surface treatment MAXI (nitride)
- bottoming or modified bottoming chamfer
- neck design for CNC equipment

Application Information:

- titanium, titanium alloys (MAXI)
- magnesium (MAXI)
- beryllium copper (MAXI)
- soft plastics (MAXI)



For Blind Hole Tapping



D = Shank Diameter D1 = Tap Size L = Overall Length
L3 = Thread Length L4 = Neck Length

EM-TI® Spiral Fluted Taps for Blind Holes

Series No. 8904 Modified Bottoming Chamfer 3 to 4 Pitches

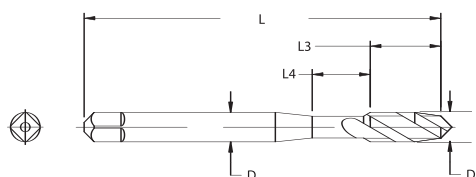
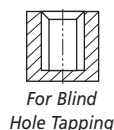
									EDP Number
D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	L4	D	Flutes	Pitch Dia. Limit	MAXI Nitride
2	56	-	1.75	.157	.280	.141	3	H2	87638
4	40	-	1.88	.236	.326	.141	3	H2	87601
4	40	-	1.88	.236	.326	.141	3	H4	87612
5	40	-	1.94	.236	.389	.141	3	H3	87603
6	32	-	2.00	.276	.411	.141	3	H3	87605
6	32	-	2.00	.276	.411	.141	3	H5	87635
8	32	-	2.13	.276	.474	.168	3	H3	87607
8	32	-	2.13	.276	.474	.168	3	H5	87637
10	24	-	2.38	.354	.521	.194	3	H3	87609
10	-	32	2.38	.276	.599	.194	3	H3	87610
10	-	32	2.38	.276	.599	.194	3	H5	87640
1/4	20	-	2.50	.433	.567	.255	3	H3	87613
1/4	20	-	2.50	.433	.567	.255	3	H5	87624
1/4	-	28	2.50	.354	.653	.255	3	H3	87614
1/4	-	28	2.50	.354	.653	.255	3	H5	87644
5/16	18	-	2.72	.472	.438	.318	3	H3	87615
5/16	18	-	2.72	.472	.438	.318	3	H5	87623
5/16	-	24	2.72	.394	.731	.318	3	H3	87616
5/16	-	24	2.72	.394	.731	.318	3	H5	87646
3/8	16	-	2.94	.551	.699	.381	3	H3	87617
3/8	16	-	2.94	.551	.699	.381	3	H5	87625
3/8	-	24	2.94	.394	.856	.381	3	H3	87618
3/8	-	24	2.94	.394	.856	.381	3	H5	87648
7/16	14	-	3.16	.591	1.259	.323	3	H3	87619
7/16	-	20	3.16	.472	1.378	.323	3	H3	87620
7/16	-	20	3.16	.472	1.378	.323	3	H5	87650
1/2	13	-	3.38	.630	1.417	.367	3	H3	87621
1/2	13	-	3.38	.630	1.417	.367	3	H5	87626
1/2	-	20	3.38	.472	1.575	.367	3	H3	87622
1/2	-	20	3.38	.472	1.575	.367	3	H5	87652

EM taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.

Series No. 8904 Full Bottoming Taps begin on next page.

EM-TI® Right Hand Spiral Fluted Taps for Threading Close to the Bottom in a Blind Hole

■ Series No. 8904 Full Bottoming Chamfer 1 to 2 Pitches



D = Shank Diameter D1 = Tap Size L = Overall Length
L3 = Thread Length L4 = Neck Length

									EDP Number
D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	L4	D	Flutes	Pitch Dia. Limit	MAXI Nitride
4	40	-	1.88	.236	.326	.141	3	H4	87001
6	32	-	2.00	.276	.411	.141	3	H3	87606
8	32	-	2.13	.276	.474	.168	3	H3	87007
10	24	-	2.38	.354	.521	.194	3	H3	87608
10	-	32	2.38	.276	.599	.194	3	H3	87010
1/4	20	-	2.50	.433	.567	.255	3	H3	87628
1/4	20	-	2.50	.433	.567	.255	3	H5	87627
1/4	-	28	2.50	.354	.653	.255	3	H3	87014
5/16	18	-	2.72	.472	.438	.318	3	H3	87695
5/16	18	-	2.72	.472	.699	.318	3	H5	87079
5/16	-	24	2.72	.394	.731	.318	3	H3	87016
3/8	16	-	2.94	.551	.699	.381	3	H3	87611
3/8	16	-	2.94	.551	.699	.381	3	H5	87685
3/8	-	24	2.94	.394	.856	.381	3	H3	87018
7/16	14	-	3.16	.591	1.259	.323	3	H3	87629
7/16	-	20	3.16	.472	1.378	.323	3	H3	87020
1/2	13	-	3.38	.630	1.417	.367	3	H3	87021
1/2	-	20	3.38	.472	1.575	.367	3	H3	87023

EM taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.



THREADING: Shrinking Threaded Holes

At times, threaded holes will "close in" or shrink due to either heat or build-up. In both cases, the threaded hole becomes tighter in the process. To correct this condition, use a slightly larger tap to compensate for shrinkage. This practice is common for parts to be plated.

If build-up occurs, try this simple solution: Multiply the amount of build-up by four, and then increase the tap's H limit size accordingly. For example, if the build-up equals .00025" build-up, then .00025 x 4 = .0010. .001" is equivalent to two H limits; therefore, if you were using H6, you should use H8.

If the shrinkage occurs due to heat, the solution is to use a larger tap. While there is no formula that will give you an exact number for choosing a larger tap, our recommendation is to use your GO gage as a guide. If the GO fits snugly, but still enters all the way, one or two H limits should be sufficient. If the gage locks up tight from the start, then three, four, or more H limits are probably necessary. (Each H limit is .0005" larger than the previous one.)

One important note regarding heat shrinkage: When parts shrink, they shrink in ALL directions. A threaded hole affected by heat shrinkage will get smaller in diameter and also shrink along the axis of the thread, producing less than the desired pitch thread. (Think of this as if you were compressing a coiled spring, making the distance between each coil smaller.) The effect would be similar to attempting to screw a 1.5mm pitch thread gage into a 1.25mm threaded hole. While this kind of error isn't overly significant, it does happen. Refrain from choosing a tap with a long lead, anticipating that it will shrink to normal after heating. Generally, the configuration of the part determines the amount of shrinkage. We recommend starting with a tap that is a few H limits larger to see how it gages.

EM-TI® Taps

For Blind Holes in Titanium and Titanium Alloys



EM-TI® Metric Spiral Fluted Taps for Blind Holes

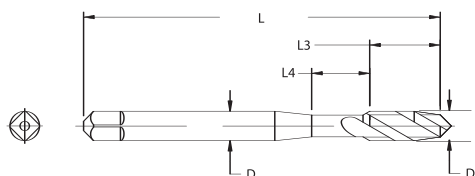
■ Series No. 8954 Modified Bottoming Chamfer 3 to 4 Pitches

N Non-Ferrous

S High-Temp Alloys



For Blind
Hole Tapping



D = Shank Diameter **D1** = Tap Size **L** = Overall Length
L3 = Thread Length **L4** = Neck Length

Size	L	L3	L4	D	Flutes	Pitch Dia. Limit	EDP Number
							MAXI Nitride
M2,5 x 0,45	1.81	.295	.205	.141	3	D3	87700
M3 x 0,5	1.94	.197	.428	.141	3	D3	87701
M3,5 x 0,6	2.00	.276	.411	.141	3	D4	87702
M4 x 0,7	2.13	.276	.474	.168	3	D4	87703
M5 x 0,8	2.38	.354	.521	.194	3	D4	87704
M6 x 1	2.50	.433	.567	.255	3	D5	87705
M7 x 1	2.72	.433	.692	.318	3	D5	87706
M8 x 1	2.72	.472	.653	.318	3	D5	87707
M8 x 1,25	2.72	.472	.653	.318	3	D5	87708
M10 x 1,25	2.94	.472	.778	.381	3	D5	87709
M10 x 1,5	2.94	.512	.738	.381	3	D6	87710
M12 x 1,25	3.38	.551	-	.367	3	D5	87711
M12 x 1,75	3.38	.591	-	.367	3	D6	87712

Metric taps for 6H class of fit are suitable for MJ Aerospace internal threading applications.

Metric taps are manufactured to USCTI specifications and dimensions.

Metric tap blank dimensions are equivalent to inch taps.



THREADING: Tap Drill Charts – The Right Information?

While many factors contribute to tap failure, drill hole size is one that is often overlooked. When a problem arises, you may check the drill size being used against a tap/drill chart. If it appears correct, you might look for some other cause for the failure. But, are the tap/drill charts giving us the right information?

First, it is important to note that these tap/drill charts were developed in the 1950s and 60s. Drill diameters for the various thread sizes were selected based upon the "probable" hole size a standard bright jobber drill with a conventional point would produce. For example, a #7 (.201") diameter drill used for a 1/4-20 thread would generally produce a hole that was approximately .004" larger than the drill's diameter, or about .205". Comparing that to the .196-.207 hole size required for that tap, the #7 drill produces a hole near the maximum limit, which is ideal. This results in an approximate 70% thread height. Removing most of the excess material with the drill significantly reduces the load on the tap without reducing the strength of the thread.

Today, things have changed significantly. There are many advanced drill designs, materials, points, coolant holes, and coatings. The accuracy of all drills has also improved dramatically due to enhanced drill manufacturing equipment and processes. Today's advanced drills, powered by more accurate, high-speed, computer-controlled machine tools, are producing holes much closer to, or even the same as, the actual size of the drill.

Using modern drills, CNCs, and holders with conventional drill charts could result in tap breakage where none existed before. The #7 drill may no longer be the correct drill size for a 1/4-20 thread. It may be producing a hole much too small for successful tapping. While it is recommended that the tap/drill chart be used as a reference, or starting point, for selecting a drill diameter for the best hole size, the finished hole size is the most important factor. In the case of the 1/4-20 thread, any drill that produces a hole close to .207" could be used. Even a #5 (.2055") or a special diameter may be acceptable based upon the drill design and conditions.

EM-MS Straight Flute Hand Taps For Through and Blind Holes in Pre-Hardened Mold Steels

P	Steel
K	Cast Iron
H	Hardened Materials

Features/Benefits:

- manufactured from premium cobalt HSS
- special tap geometry combined with a cobalt HSS tap blank helps improve tap toughness for use in mold steel 30-45 Rc
- straight flute design
- uncoated taps standard; coated tools available as modifications

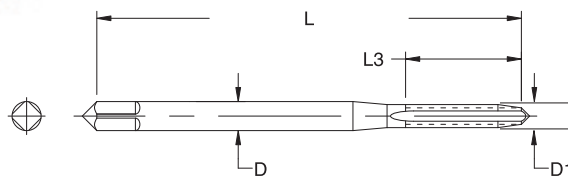
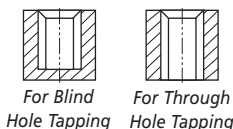
Application Information:

- tool steels (TiCN, TiN, uncoated)
- pre-hardened mold steels (TiCN, TiN, uncoated)
- steel alloys > 275 Bhn (TiCN, TiN, uncoated)
- gray iron (TiCN, TiN, uncoated)
- hardened steel > 30Rc (TiCN, TiN, uncoated)
- cast iron (TiCN, TiN, uncoated)



Alternate Coatings Available.

(Full package quantities only)



D1 = Tap Size
L = Overall Length
D = Shank Diameter
L3 = Thread Length

EM-MS Straight Flute Taps for Through and Blind Holes

Series No. 8330 Plug Chamfer 4 to 6 Pitches

								EDP Number
D1	NC/UNC	NF/UNF	L	L3	D	Flutes	Pitch Dia. Limit	Uncoated
4	40	-	1.88	.56	.141	3	H2	89599
5	40	-	1.94	.63	.141	3	H2	89601
6	32	-	2.00	.69	.141	3	H3	89602
8	32	-	2.13	.75	.168	3	H3	89604
10	24	-	2.38	.88	.194	3	H3	89606
10	-	32	2.38	.88	.194	3	H3	89607
1/4	20	-	2.50	1.00	.255	3	H3	89613
1/4	-	28	2.50	1.00	.255	3	H3	89614
5/16	18	-	2.72	1.13	.318	4	H3	89615
5/16	-	24	2.72	1.13	.318	4	H3	89616
3/8	16	-	2.94	1.25	.381	4	H3	89617
3/8	-	24	2.94	1.25	.381	4	H3	89618
7/16	14	-	3.16	1.44	.323	4	H3	89619
7/16	-	20	3.16	1.44	.323	4	H3	89620
1/2	13	-	3.38	1.66	.367	4	H3	89621
1/2	-	20	3.38	1.66	.367	4	H3	89622
5/8	11	-	3.81	1.81	.480	4	H3	89625
5/8	-	18	3.81	1.81	.480	4	H3	89626
3/4	10	-	4.25	2.00	.590	4	H3	89627
3/4	-	16	4.25	2.00	.590	4	H3	89628

Greenfield LIGHTNING® SERVICE Available



EM-MS Mold Taps

For Through and Blind Holes in Pre-Hardened Mold Steels

HIGH-PERFORMANCE TAPS

THREAD MILLS

PRODUCTION TAPS

MAINTENANCE TOOLS

GAGES

TECHNICAL
INFORMATION & INDEX

NPT Taper Pipe Taps, Straight Flute, for Tapping Mold Steels

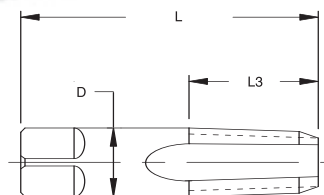
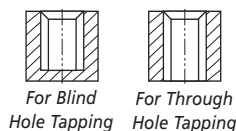
Features/Benefits:

- manufactured from premium cobalt HSS
- special tap geometry combined with a cobalt HSS tap blank helps improve tap toughness
- uncoated taps standard; coated taps available as modification

Application Information:

- tool steels (TiCN, TiN, uncoated)
- pre-hardened mold steels (TiCN, TiN, uncoated)
- steel alloys > 275 Bhn (TiCN, TiN, uncoated)
- gray iron (TiCN, TiN, uncoated)
- hardened steel > 30Rc (TiCN, TiN, uncoated)
- cast iron (TiCN, TiN, uncoated)

P	Steel
K	Cast Iron
H	Hardened Materials



D1 = Tap Size
L = Overall Length
D = Shank Diameter
L3 = Thread Length

EM-MS NPT Straight Flute Taper Pipe Taps

Series No. 8320 Chamfer 2 1/2 to 3 1/2 Pitches

D1	TPI	L	L3	D	Flutes	Gage Measurement		EDP Number
						Standard Projection**	Tolerance	Uncoated
1/8*	27	2.13	.750	.313	4	.312	±1/16	89641
1/4	18	2.44	1.063	.563	4	.459	±1/16	89643
3/8	18	2.56	1.063	.703	4	.454	±1/16	89644
1/2	14	3.13	1.375	.367	4	.579	±1/16	89645
3/4	14	3.25	1.375	.906	5	.565	±1/16	89646

*Large shank.

**Standard projection is the distance the small end of the tap projects through an American National Standard Pipe Thread Ring Gage.

Alternate Coatings Available.
(Full package quantities only)



Typical Mold Steels

Material	American Iron & Steel Institute (AISI) Specification
Hardened Steel (HRc 30-45)	1045, 1046, 1049, 1050, 1053, 1055, 1060, 4135, 4140, 4125, D2, H13
Heat-Resistant Steel	304, 309, 310, 330, 409, 446, 309S, 310S
Cast Iron	ASTM A48-64

■ Solid Carbide Straight Four-Flute Taps for Tapping Through and Blind Holes in Cast Irons

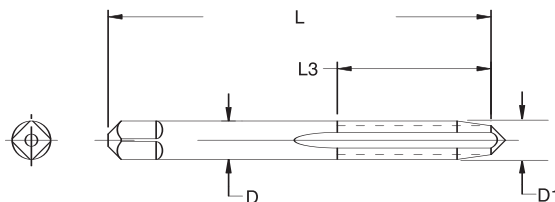
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys

Features/Benefits:

- solid carbide taps are manufactured from ultrafine micrograin carbide for exceptional wear life
- ideal for long production runs where fewer tool changes mean improved production efficiency
- straight flute design
- four flutes for cast iron and hard materials < 40 Rc
- uncoated taps standard; alternate tap coatings are available as stock modifications
- for improved wear life in cast irons, add TiCN coating

Application Information:

- cast irons (TiCN)
- cast brass
- cobalt chrome alloy steel
- fiberglass
- not recommended for materials over 40 Rc



D1 = Tap Size D = Shank Diameter
L = Overall Length L3 = Thread Length

Solid Carbide Straight Four-Flute Taps

■ Series No. 8603 Plug Chamfer 4 to 5 Pitches

								EDP Number
D1	NC/UNC	NF/UNF	L	L3	D	Flutes	Pitch Dia. Limit	Uncoated
10	24	-	2.38	.875	.194	4	H3	83806
10	-	32	2.38	.875	.194	4	H3	83808
1/4	20	-	2.50	1.000	.255	4	H3	83810
1/4	20	-	2.50	1.000	.255	4	H5	83860
1/4	-	28	2.50	1.000	.255	4	H3	83812
1/4	-	28	2.50	1.000	.255	4	H5	83862
5/16	18	-	2.72	1.125	.318	4	H3	83814
5/16	18	-	2.72	1.125	.318	4	H5	83864
5/16	-	24	2.72	1.125	.318	4	H3	83816
5/16	-	24	2.72	1.125	.318	4	H5	83866
3/8	16	-	2.94	1.250	.381	4	H3	83818
3/8	16	-	2.94	1.250	.381	4	H5	83868
3/8	-	24	2.94	1.250	.381	4	H3	83820
3/8	-	24	2.94	1.250	.381	4	H5	83870
7/16	14	-	3.16	1.438	.323	4	H3	83822
7/16	14	-	3.16	1.438	.323	4	H5	83872
7/16	-	20	3.16	1.438	.323	4	H3	83824
7/16	-	20	3.16	1.438	.323	4	H5	83874
1/2	13	-	3.38	1.656	.367	4	H3	83826
1/2	13	-	3.38	1.656	.367	4	H5	83876
1/2	-	20	3.38	1.656	.367	4	H3	83828
1/2	-	20	3.38	1.656	.367	4	H5	83878
5/8	11	-	3.81	1.813	.480	4	H3	83834
5/8	11	-	3.81	1.813	.480	4	H5	83884
5/8	-	18	3.81	1.813	.480	4	H3	83836
5/8	-	18	3.81	1.813	.480	4	H5	83886



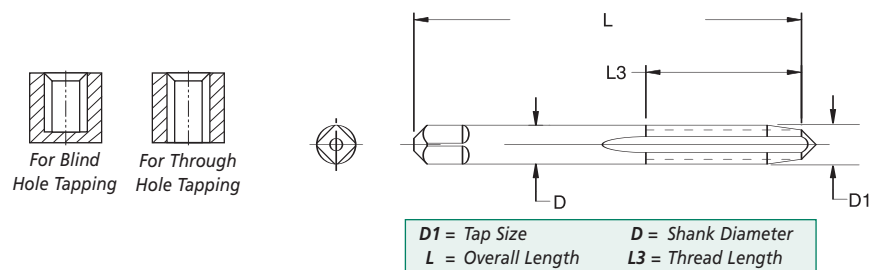
Solid Carbide Taps

For Exceptional Wear Life in Cast Iron

Solid Carbide Straight Four-Flute Taps for Cast Irons

■ Series No. 8603 Full Bottoming Chamfer 1 to 2 Pitches

K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys



Alternate Coatings Available.
 (Full package quantities only)

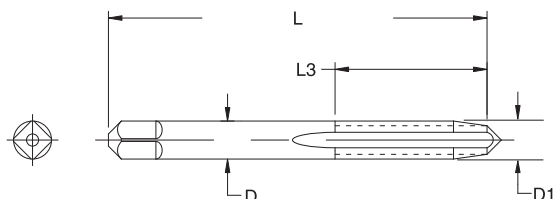
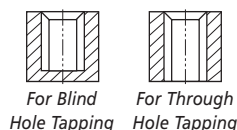


								EDP Number
D1	NC/UNC	NF/UNF	L	L3	D	Flutes	Pitch Dia. Limit	Uncoated
10	24	-	2.38	.875	.194	4	H3	83807
10	-	32	2.38	.875	.194	4	H3	83809
1/4	20	-	2.50	1.000	.255	4	H3	83811
1/4	20	-	2.50	1.000	.255	4	H5	83861
1/4	-	28	2.50	1.000	.255	4	H3	83813
1/4	-	28	2.50	1.000	.255	4	H5	83863
5/16	18	-	2.72	1.125	.318	4	H3	83815
5/16	18	-	2.72	1.125	.318	4	H5	83865
5/16	-	24	2.72	1.125	.318	4	H3	83817
5/16	-	24	2.72	1.125	.318	4	H5	83867
3/8	16	-	2.94	1.250	.381	4	H3	83819
3/8	16	-	2.94	1.250	.381	4	H5	83869
3/8	-	24	2.94	1.250	.381	4	H3	83821
3/8	-	24	2.94	1.250	.381	4	H5	83871
7/16	14	-	3.16	1.438	.323	4	H3	83823
7/16	14	-	3.16	1.438	.323	4	H5	83873
7/16	-	20	3.16	1.438	.323	4	H3	83825
7/16	-	20	3.16	1.438	.323	4	H5	83875
1/2	13	-	3.38	1.656	.367	4	H3	83827
1/2	13	-	3.38	1.656	.367	4	H5	83877
1/2	-	20	3.38	1.656	.367	4	H3	83829
1/2	-	20	3.38	1.656	.367	4	H5	83879
5/8	11	-	3.81	1.813	.480	4	H3	83835
5/8	11	-	3.81	1.813	.480	4	H5	83885
5/8	-	18	3.81	1.813	.480	4	H3	83837
5/8	-	18	3.81	1.813	.480	4	H5	83887

Solid Carbide Metric Straight Four-Flute Taps for Cast Irons

Series No. 8653 Plug Chamfer 4 to 5 Pitches

K Cast Iron
N Non-Ferrous
S High-Temp Alloys



D1 = Tap Size
L = Overall Length
D = Shank Diameter
L3 = Thread Length

Size	L	L3	D	Flutes	Pitch Dia. Limit	EDP Number
						Uncoated
M3 x 0,5	1.94	.625	.141	4	D3	70000
M4 x 0,7	2.13	.750	.168	4	D4	70002
M5 x 0,8	2.38	.875	.194	4	D4	70004
M6 x 1	2.50	1.000	.255	4	D5	70006
M8 x 1	2.72	1.125	.318	4	D5	70008
M8 x 1,25	2.72	1.125	.318	4	D5	70010
M10 x 1,25	2.94	1.250	.381	4	D5	70012
M10 x 1,5	2.94	1.250	.381	4	D6	70014
M12 x 1,25	3.38	1.656	.367	4	D5	70016
M12 x 1,5	3.38	1.656	.367	4	D6	70018
M12 x 1,75	3.38	1.656	.367	4	D6	70020
M14 x 1,5	3.59	1.656	.429	4	D6	70022
M14 x 2	3.59	1.656	.429	4	D7	70024
M16 x 1,5	3.81	1.813	.480	4	D6	70026
M16 x 2	3.81	1.813	.480	4	D7	70028

Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.

Solid Carbide Metric Straight Four-Flute Taps for Cast Irons

Series No. 8653 Full Bottoming Chamfer 1 to 2 Pitches

Size	L	L3	D	Flutes	Pitch Dia. Limit	EDP Number
						Uncoated
M3 x 0,5	1.94	.625	.141	4	D3	70001
M4 x 0,7	2.13	.750	.168	4	D4	70003
M5 x 0,8	2.38	.875	.194	4	D4	70005
M6 x 1	2.50	1.000	.255	4	D5	70007
M8 x 1	2.72	1.125	.318	4	D5	70009
M8 x 1,25	2.72	1.125	.318	4	D5	70011
M10 x 1,25	2.94	1.250	.381	4	D5	70013
M10 x 1,5	2.94	1.250	.381	4	D6	70015
M12 x 1,25	3.38	1.656	.367	4	D5	70017
M12 x 1,5	3.38	1.656	.367	4	D6	70019
M12 x 1,75	3.38	1.656	.367	4	D6	70021
M14 x 1,5	3.59	1.656	.429	4	D6	70023
M14 x 2	3.59	1.656	.429	4	D7	70025
M16 x 1,5	3.81	1.813	.480	4	D6	70027
M16 x 2	3.81	1.813	.480	4	D7	70029

Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.



Solid Carbide Taps

For Exceptional Wear Life in Aluminum

HIGH-PERFORMANCE TAPS

THREAD MILLS

PRODUCTION TAPS

MAINTENANCE TOOLS

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Solid Carbide Straight Three-Flute Taps for Tapping Through and Blind Holes in Non-Ferrous Materials

N Non-Ferrous

Features/Benefits:

- solid carbide taps are manufactured from ultrafine micrograin carbide for exceptional wear life
- straight flute design
- three flutes for aluminum and ductile materials
- uncoated taps standard; alternate tap coatings are available as stock modifications
- ideal for long production runs where fewer tool changes mean improved production efficiency
- for improved wear life in aluminums, add TiN+CrC/C coating

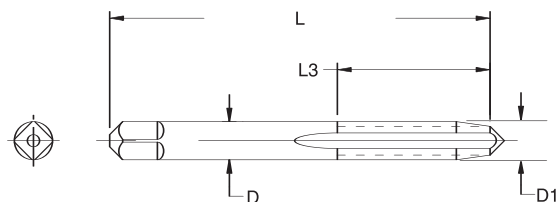
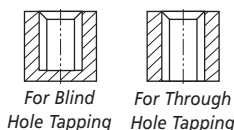
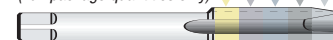
Application Information:

- non-ferrous materials
- wrought aluminum and cast aluminum (TiN+CrC/C)
- brass
- zinc
- soft plastics
- copper alloys



Alternate Coatings Available.

(Full package quantities only)



D1 = Tap Size
L = Overall Length
D = Shank Diameter
L3 = Thread Length

Solid Carbide Straight Three-Flute Taps for Aluminum

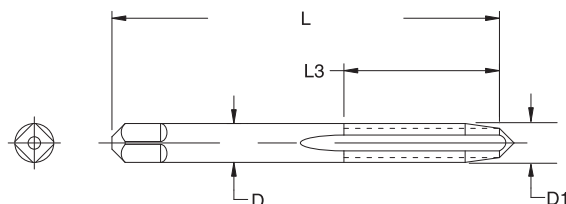
Series No. 8703 Plug Chamfer 4 to 5 Pitches

								EDP Number
D1	NC/UNC	NF/UNF	L	L3	D	Flutes	Pitch Dia. Limit	Uncoated
5	40	-	1.94	.625	.141	3	H3	84800
6	32	-	2.00	.688	.141	3	H3	84802
8	32	-	2.13	.750	.168	3	H3	84804
10	24	-	2.38	.875	.194	3	H3	84806
10	-	32	2.38	.875	.194	3	H3	84808
1/4	20	-	2.50	1.000	.255	3	H3	84810
1/4	20	-	2.50	1.000	.255	3	H5	84860
1/4	-	28	2.50	1.000	.255	3	H3	84812
1/4	-	28	2.50	1.000	.255	3	H5	84862
5/16	18	-	2.72	1.125	.318	3	H3	84814
5/16	18	-	2.72	1.125	.318	3	H5	84864
5/16	-	24	2.72	1.125	.318	3	H3	84816
5/16	-	24	2.72	1.125	.318	3	H5	84866
3/8	16	-	2.94	1.250	.381	3	H3	84818
3/8	16	-	2.94	1.250	.381	3	H5	84868
3/8	-	24	2.94	1.250	.381	3	H3	84820
3/8	-	24	2.94	1.250	.381	3	H5	84870
7/16	14	-	3.16	1.438	.323	3	H3	84822
7/16	14	-	3.16	1.438	.323	3	H5	84872
7/16	-	20	3.16	1.438	.323	3	H3	84824
7/16	-	20	3.16	1.438	.323	3	H5	84874
1/2	13	-	3.38	1.656	.367	3	H3	84826
1/2	13	-	3.38	1.656	.367	3	H5	84876
1/2	-	20	3.38	1.656	.367	3	H3	84828
1/2	-	20	3.38	1.656	.367	3	H5	84878

Series No. 8703 Bottoming Chamfer Taps begin on next page.

Solid Carbide Straight Three-Flute Taps for Threading Close to the Bottom in a Blind Hole in Aluminum

Series No. 8703 Full Bottoming Chamfer 1 to 2 Pitches



D1 = Tap Size **D** = Shank Diameter
L = Overall Length **L3** = Thread Length

								EDP Number
D1	NC/UNC	NF/UNF	L	L3	D	Flutes	Pitch Dia. Limit	Uncoated
5	40	-	1.94	.625	.141	3	H3	84801
6	32	-	2.00	.688	.141	3	H3	84803
8	32	-	2.13	.750	.168	3	H3	84805
10	24	-	2.38	.875	.194	3	H3	84807
10	-	32	2.38	.875	.194	3	H3	84809
1/4	20	-	2.50	1.000	.255	3	H3	84811
1/4	20	-	2.50	1.000	.255	3	H5	84861
1/4	-	28	2.50	1.000	.255	3	H3	84813
1/4	-	28	2.50	1.000	.255	3	H5	84863
5/16	18	-	2.72	1.125	.318	3	H3	84815
5/16	18	-	2.72	1.125	.318	3	H5	84865
5/16	-	24	2.72	1.125	.318	3	H3	84817
5/16	-	24	2.72	1.125	.318	3	H5	84867
3/8	16	-	2.94	1.250	.381	3	H3	84819
3/8	16	-	2.94	1.250	.381	3	H5	84869
3/8	-	24	2.94	1.250	.381	3	H3	84821
3/8	-	24	2.94	1.250	.381	3	H5	84871
7/16	14	-	3.16	1.438	.323	3	H3	84823
7/16	14	-	3.16	1.438	.323	3	H5	84873
7/16	-	20	3.16	1.438	.323	3	H3	84825
7/16	-	20	3.16	1.438	.323	3	H5	84875
1/2	13	-	3.38	1.656	.367	3	H3	84827
1/2	13	-	3.38	1.656	.367	3	H5	84877
1/2	-	20	3.38	1.656	.367	3	H3	84829
1/2	-	20	3.38	1.656	.367	3	H5	84879



THREADING: Selecting Coarse vs. Fine Threads

Coarse Threads:

Coarse threads are commonly used in applications requiring rapid assembly or disassembly and when corrosion or damage from handling or use is likely to occur. They allow for easier starting with less cross threading. In relatively low-strength materials such as cast iron, aluminum, magnesium, brass, bronze, and plastic, coarse threads provide more resistance to stripping than fine or extra fine threads. If subjected to heat, they are less likely to seize than fine threads.

Fine Threads:

Fine threads are commonly used for nuts and bolts in high-strength applications. While applications vary, in general, fine threads are approximately 10% stronger than coarse threads. They have less tendency to loosen under vibration because the smaller lead or thread helix angle provides better wedging action when the assembly is tightened. Fine threads are also used for fine adjustment and thin-walled applications due to the shallower thread height. The shallower thread height lowers the chip load per tooth and chip volume, resulting in less tapping torque and breakage, particularly in difficult to machine materials. Less chip volume also means that more lubrication will reach the cutting teeth yielding longer tap life. Fine threads are generally easier to tap but require a larger tap drill than coarse threads, which improves the performance of the drill and tap.



Solid Carbide Taps

For Exceptional Wear Life in Aluminum

Solid Carbide Metric Straight Three-Flute Taps for Aluminum

■ Series No. 8753 Plug Chamfer 4 to 5 Pitches

N Non-Ferrous

Alternate Coatings Available.
(Full package quantities only)



HIGH-PERFORMANCE TAPS

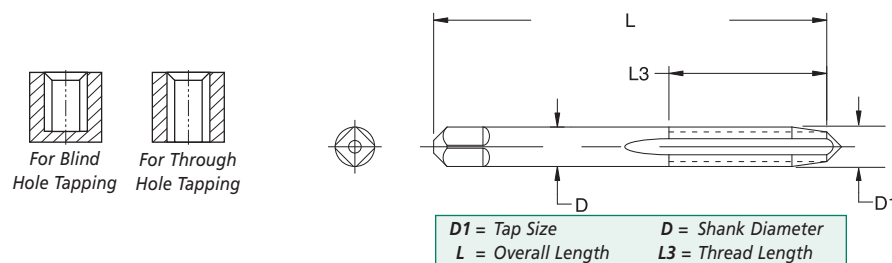
THREAD MILLS

PRODUCTION TAPS

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Size	L	L3	D	Flutes	Pitch Dia. Limit	EDP Number
						Uncoated
M3 x 0,5	1.94	.625	.141	3	D3	71000
M4 x 0,7	2.13	.750	.168	3	D4	71002
M5 x 0,8	2.38	.875	.194	3	D4	71004
M6 x 1	2.50	1.000	.255	3	D5	71006
M8 x 1	2.72	1.125	.318	3	D5	71008
M8 x 1,25	2.72	1.125	.318	3	D5	71010
M10 x 1,25	2.94	1.250	.381	3	D5	71012
M10 x 1,5	2.94	1.250	.381	3	D6	71014
M12 x 1,25	3.38	1.656	.367	3	D5	71016
M12 x 1,5	3.38	1.656	.367	3	D6	71018
M12 x 1,75	3.38	1.656	.367	3	D6	71020

Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.

Solid Carbide Metric Straight Three-Flute Taps for Aluminum

■ Series No. 8753 Full Bottoming Chamfer 1 to 2 Pitches

Size	L	L3	D	Flutes	Pitch Dia. Limit	EDP Number
						Uncoated
M3 x 0,5	1.94	.625	.141	3	D3	71001
M4 x 0,7	2.13	.750	.168	3	D4	71003
M5 x 0,8	2.38	.875	.194	3	D4	71005
M6 x 1	2.50	1.000	.255	3	D5	71007
M8 x 1	2.72	1.125	.318	3	D5	71009
M8 x 1,25	2.72	1.125	.318	3	D5	71011
M10 x 1,25	2.94	1.250	.381	3	D5	71013
M10 x 1,5	2.94	1.250	.381	3	D6	71015
M12 x 1,25	3.38	1.656	.367	3	D5	71017
M12 x 1,5	3.38	1.656	.367	3	D6	71019
M12 x 1,75	3.38	1.656	.367	3	D6	71021

Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.

EM-TLD High-Performance Form Taps for Through Holes

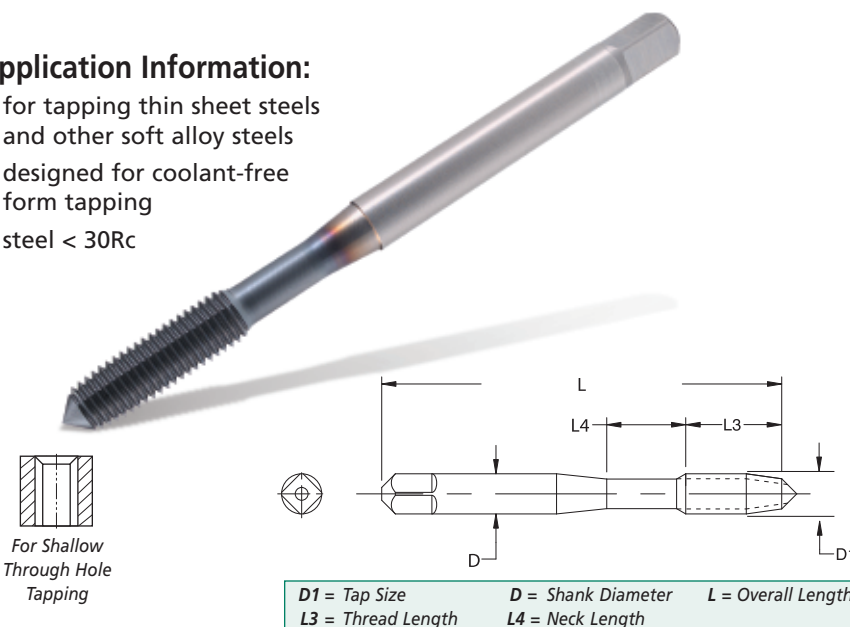
Features/Benefits:

- manufactured from premium cobalt high-vanadium PMT15
- TiCN coating for increased speeds and increased tap tool life
- made to DIN tap lengths, ANSI shank dimensions
- neck design for CNC equipment
- special tap geometry designed to tap dry or with minimum amount of lubricant (MQL)
- no lube grooves

Application Information:

- for tapping thin sheet steels and other soft alloy steels
- designed for coolant-free form tapping
- steel < 30Rc

P Steel
M Stainless Steel



EM-TLD High-Performance Forming Taps MQL (DIN Length)

Series No. 8580 Plug Chamfer 3 to 5 Pitches

D1	NC/UNC	NF/UNF	L	L3	L4	D	No. of Lube Grooves	Pitch Dia. Limit	EDP Number	
									TiCN	
2	56	-	1.77	.354	-	.141	0	H3	86600	
4	40	-	2.21	.433	.276	.141	0	H5	86601	
4	-	48	2.21	.433	.276	.141	0	H5	86602	
5	40	-	2.21	.433	.276	.141	0	H5	86603	
6	32	-	2.21	.512	.275	.141	0	H5	86604	
8	32	-	2.48	.512	.315	.168	0	H5	86605	
10	24	-	2.76	.630	.354	.194	0	H6	86606	
10	-	32	2.76	.630	.354	.194	0	H6	86607	
1/4	20	-	3.15	.748	.433	.255	0	H6	86608	
1/4	-	28	3.15	.748	.433	.255	0	H6	86609	

EM-TLD form taps can be run 1.5 to 2 times faster than the tapping speeds recommended for thread cutting taps.

Taps can be run dry or with mist coolant.

Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.

EM-TLD Metric High-Performance Forming Taps MQL (DIN Length)

Series No. 8590 Plug Chamfer 3 to 5 Pitches

Size	L	L3	L4	D	No. of Lube Grooves	Pitch Dia. Limit	EDP Number	
							TiCN	
M3 x 0,5	2.21	.433	.276	.141	0	D5	86610	
M3,5 x 0,6	2.21	.512	.275	.141	0	D6	86611	
M4 x 0,7	2.48	.512	.315	.168	0	D7	86612	
M5 x 0,8	2.76	.630	.354	.194	0	D7	86614	
M6 x 1	3.15	.748	.433	.255	0	D8	86615	

EM-TLD form taps can be run 1.5 to 2 times faster than the tapping speeds recommended for thread cutting taps.

Taps can be run dry or with mist coolant.

Metric tap shank dimensions are equivalent to inch taps.

Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.



EM-TL Taps

For Form Tapping Blind Holes in Soft Steels

HIGH-PERFORMANCE TAPS

THREAD MILLS

PRODUCTION TAPS

MAINTENANCE TOOLS

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TECHNICAL INFORMATION & INDEX

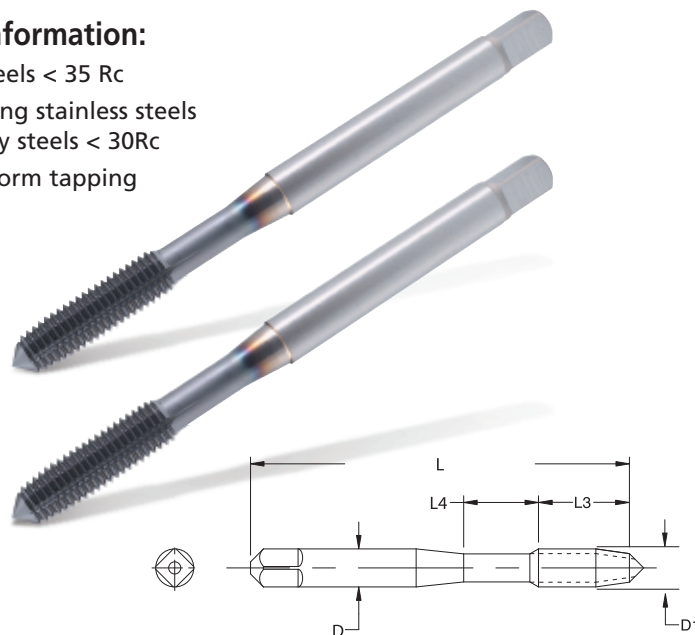
EM-TL High-Performance Forming Taps for Blind Hole Tapping

Features/Benefits:

- manufactured from premium cobalt high-vanadium PMT15
- TiCN coating for increased speeds and improved tap tool life
- bottoming and plug chamfers for blind and through hole tapping
- made to DIN tap lengths, ANSI shank dimensions
- special tap geometry includes neck design for CNC equipment with lube grooves #6MS and larger
- can operate at tapping speeds up to 2X faster than recommended sfm for taps that cut product threads

Application Information:

- for tapping steels < 35 Rc
- for form tapping stainless steels and other alloy steels < 30Rc
- designed for form tapping with coolant



D1 = Tap Size D = Shank Diameter L = Overall Length
L3 = Thread Length L4 = Neck Length

EM-TL TRU-LEDE® High-Performance Forming Taps (DIN Length)

Series No. 8502 Full Bottoming Chamfer 2 to 2 1/2 Pitches

D1	NC/UNC	NF/UNF	L	L3	L4	D	No. of Lube Grooves	Pitch Dia. Limit	EDP Number
									TiCN
0	-	80	1.58	.315	-	.141	0	H2	86800
2	56	-	1.77	.354	-	.141	0	H3	86801
3	48	-	1.97	.276	.216	.141	0	H3	86802
3	-	56	1.97	.276	.216	.141	0	H3	86803
4	40	-	2.21	.433	.276	.141	0	H3	86804
4	40	-	2.21	.433	.276	.141	0	H5	86805
4	-	48	2.21	.433	.276	.141	0	H3	86806
4	-	48	2.21	.433	.276	.141	0	H5	86807
5	40	-	2.21	.433	.276	.141	0	H5	86799
6	32	-	2.21	.512	.275	.141	2	H3	86808
6	32	-	2.21	.512	.275	.141	2	H5	86809
8	32	-	2.48	.512	.315	.168	2	H3	86812
8	32	-	2.48	.512	.315	.168	2	H5	86813
10	24	-	2.76	.630	.354	.194	2	H4	86816
10	24	-	2.76	.630	.354	.194	2	H6	86817
10	-	32	2.76	.630	.354	.194	2	H4	86820
10	-	32	2.76	.630	.354	.194	2	H6	86821

EM-TL form taps can be run 1.5 to 2 times faster than the tapping speeds recommended for thread cutting taps.

Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.

Made to DIN tap lengths, ANSI shank dimensions.

Fractional sizes continued on next page.

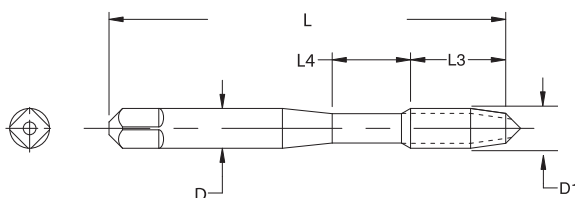
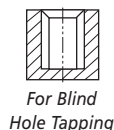
(continued)

EM-TL TRU-LEDE® High-Performance Forming Taps (DIN Length)

Series No. 8502 Full Bottoming Chamfer 2 to 2 1/2 Pitches

P Steel

M Stainless Steel



D1 = Tap Size D = Shank Diameter L = Overall Length
L3 = Thread Length L4 = Neck Length

									EDP Number
D1	NC/UNC	NF/UNF	L	L3	L4	D	No. of Lube Grooves	Pitch Dia. Limit	TiCN
1/4	20	-	3.15	.748	.433	.255	2	H4	86824
1/4	20	-	3.15	.748	.433	.255	2	H6	86825
1/4	-	28	3.15	.748	.433	.255	2	H4	86828
1/4	-	28	3.15	.748	.433	.255	2	H6	86829
5/16	18	-	3.54	.866	.512	.318	3	H5	86832
5/16	18	-	3.54	.866	.512	.318	3	H7	86833
5/16	-	24	3.54	.866	.512	.318	3	H5	86836
5/16	-	24	3.54	.866	.512	.318	3	H7	86837
3/8	16	-	3.94	.945	.590	.381	3	H5	86840
3/8	16	-	3.94	.945	.590	.381	3	H7	86841
3/8	-	24	3.54	.787	.748	.381	3	H5	86844
3/8	-	24	3.54	.787	.748	.381	3	H7	86845
7/16	14	-	3.94	.945	-	.323	4	H5	86848
7/16	14	-	3.94	.945	-	.323	4	H7	86849
7/16	-	20	3.94	.945	-	.323	4	H5	86852
7/16	-	20	3.94	.945	-	.323	4	H7	86853
1/2	13	-	4.33	1.142	-	.367	4	H5	86856
1/2	13	-	4.33	1.142	-	.367	4	H7	86857
1/2	-	20	3.94	.866	-	.367	4	H5	86860
1/2	-	20	3.94	.866	-	.367	4	H7	86861

EM-TL form taps can be run 1.5 to 2 times faster than the tapping speeds recommended for thread cutting taps.

Made to DIN tap lengths, ANSI shank dimensions.

Metric EM-TL taps begin on the next page.



BASIC MACHINING: Coolant Considerations

Although Greenfield Tap and Die manufactures cutting tools and not coolant, we understand how coolant can dramatically affect the performance of our tools and, ultimately, the cost of your operation.

Coolant performs two basic functions when used in drilling, milling, and threading applications: 1) to reduce the heat generated during cutting, and 2) to lubricate and reduce friction between the chip and the tool.

Coolant, which is mostly water, helps to cool the chip when it is sheared away from the workpiece. It includes a small amount of oil which acts as a lubricant to improve the surface finish and evacuate cut chips from the flutes.

Because excessive heat and friction can dull a tool, coolant helps to extend tool life. Using the recommended water/oil ratio is important. Too often, users will alter this ratio significantly in an effort to reduce cost. This can cause tool life to decrease rapidly. For example, a drill which normally yields thousands of holes, may now only last for a few hundred holes.

When selecting a coolant, choose one that is suitable for both the material and the particular machining operation and follow the manufacturer's mixing recommendations. For example, high-speed machining with carbide tools might require coolant, while tapping might require cutting oil.



EM-TL Taps

For Form Tapping Blind Holes in Soft Steels

EM-TL TRU-LEDE® Metric High-Performance Forming Taps (DIN Length)

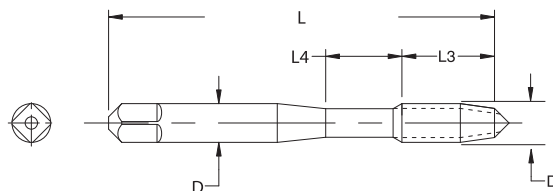
■ Series No. 8512 Full Bottoming Chamfer 2 to 2 1/2 Pitches

P Steel

M Stainless Steel



For Blind Hole Tapping



D1 = Tap Size D = Shank Diameter L = Overall Length
L3 = Thread Length L4 = Neck Length

Size	L	L3	L4	D	No. of Lube Grooves	Pitch Dia. Limit	EDP Number
							TiCN
M3 x 0,5	2.21	.433	.275	.141	2	D5	86864
M3,5 x 0,6	2.21	.512	.275	.141	2	D6	86865
M4 x 0,7	2.48	.512	.315	.168	2	D6	86866
M5 x 0,8	2.76	.630	.354	.194	2	D7	86867
M6 x 1	3.15	.748	.433	.255	2	D8	86868
M7 x 1	3.15	.748	.433	.318	2	D9	86869
M8 x 1	3.54	.866	.512	.318	3	D9	86871
M8 x 1,25	3.54	.866	.512	.318	3	D9	86873
M10 x 1,25	3.94	.945	.590	.381	4	D9	86875
M10 x 1,5	3.94	.945	.590	.381	4	D10	86877
M12 x 1,25	3.94	.866	-	.367	4	D9	86879
M12 x 1,5	3.94	.866	-	.367	4	D9	86881
M12 x 1,75	4.33	1.142	-	.367	4	D11	86883

EM-TL form taps can be run 1.5 to 2 times faster than the tapping speeds recommended for thread cutting taps.

Metric tap shank dimensions are equivalent to inch taps.

Made to DIN tap lengths, ANSI shank dimensions.

Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.



THREADING: Proper Tap Lubrication

To produce high quality threads, it is important that the tap be well lubricated. A good tapping fluid helps to minimize galling and "built-up edge" (BUE), allowing the cutting edges to remain sharp, produce a smoother finish, and provide better size control in the part. It also reduces the friction that generates heat and affects tool life and helps to evacuate chips, allowing the tool to run at higher speeds.

Generally, for best tap performance, straight cutting oil should be used. For non-ferrous and non-metallic materials, a coolant or a cutting fluid (light oil or soluble oil) is recommended.

Often, machining centers are equipped with a coolant or a cutting fluid that contains enough water and oil to provide adequate cooling and lubrication for a variety of tools and workpieces. However, most soluble blends are not suitable for tapping applications. Tapping, especially with thread-forming taps, requires more lubrication than cooling. A coolant or cutting fluid might lack the lubrication necessary to obtain acceptable tool life and part finish.

One method for increasing the lubrication of soluble oils is to use special-purpose additives. Consult your coolant specialist for recommendations.

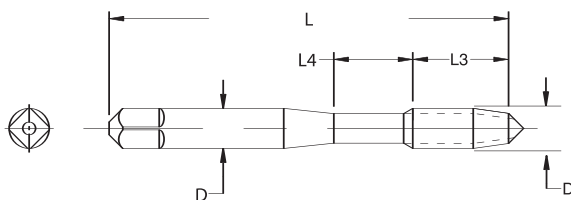
After you select the proper coolant, cutting fluid, or cutting oil, it is also important to choose the right method of application and pressure. For tapping, use more than one nozzle around the tap. The nozzles should be located as close to the surface of the part as possible, be positioned at an angle close to the axis of the tool, and point directly into the hole to flush the chips from the flutes. Brushing or squirting oil or fluid onto the tap does not provide sufficient lubrication. In fact, heavy viscosity oil may cause the chips to "stick" or "cling" to the tap, increasing the chance of breakage.

P Steel

M Stainless Steel

EM-TL TRU-LEDE® High-Performance Forming Taps (DIN Length)

Series No. 8500 Plug Chamfer 3 to 4 Pitches



D1 = Tap Size D = Shank Diameter L = Overall Length
L3 = Thread Length L4 = Neck Length

									EDP Number
D1	NC/UNC	NF/UNF	L	L3	L4	D	No. of Lube Grooves	Pitch Dia. Limit	TiCN
6	32	-	2.21	.512	.275	.141	2	H3	86810
6	32	-	2.21	.512	.275	.141	2	H5	86811
8	32	-	2.48	.512	.275	.168	2	H3	86814
8	32	-	2.48	.512	.275	.168	2	H5	86815
10	24	-	2.76	.630	.354	.194	2	H4	86818
10	24	-	2.76	.630	.354	.194	2	H6	86819
10	-	32	2.76	.630	.354	.194	2	H4	86822
10	-	32	2.76	.630	.354	.194	2	H6	86823
1/4	20	-	3.15	.748	.433	.255	2	H4	86826
1/4	20	-	3.15	.748	.433	.255	2	H6	86827
1/4	-	28	3.15	.748	.433	.255	2	H4	86830
1/4	-	28	3.15	.748	.433	.255	2	H6	86831
5/16	18	-	3.54	.866	.512	.318	3	H5	86834
5/16	18	-	3.54	.866	.512	.318	3	H7	86835
5/16	-	24	3.54	.866	.512	.318	3	H5	86838
5/16	-	24	3.54	.866	.512	.318	3	H7	86839
3/8	16	-	3.94	.945	.590	.381	3	H5	86842
3/8	16	-	3.94	.945	.590	.381	3	H7	86843
3/8	-	24	3.54	.787	.748	.381	3	H5	86846
3/8	-	24	3.54	.787	.748	.381	3	H7	86847
7/16	14	-	3.94	.945	-	.323	4	H5	86850
7/16	14	-	3.94	.945	-	.323	4	H7	86851
7/16	-	20	3.94	.945	-	.323	4	H5	86854
7/16	-	20	3.94	.945	-	.323	4	H7	86855
1/2	13	-	4.33	1.142	-	.367	4	H5	86858
1/2	13	-	4.33	1.142	-	.367	4	H7	86859
1/2	-	20	3.94	.866	-	.367	4	H5	86862
1/2	-	20	3.94	.866	-	.367	4	H7	86863

EM-TL form taps can be run 1.5 to 2 times faster than the tapping speeds recommended for thread cutting taps.

Made to DIN tap lengths, ANSI shank dimensions.

Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.

Bottoming chamfer taps are listed on previous page.



EM-TL Taps

For Form Tapping Through Holes in Soft Steels

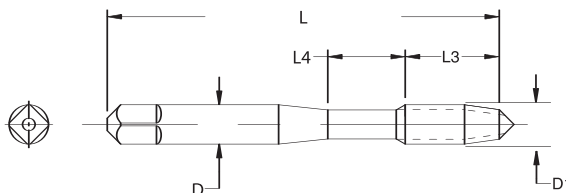
EM-TL TRU-LEDE® Metric High-Performance Forming Taps (DIN Length)

■ Series No. 8510 Plug Chamfer 3 to 4 Pitches

P Steel
M Stainless Steel



For Through Hole Tapping



D1 = Tap Size *D* = Shank Diameter *L* = Overall Length
L3 = Thread Length *L4* = Neck Length

							EDP Number
Size	L	L3	L4	D	No. of Lube Grooves	Pitch Dia. Limit	TiCN
M3 x 0,5	2.21	.433	.276	.141	2	D5	86885
M3,5 x 0,6	2.21	.512	.275	.141	2	D6	86886
M4 x 0,7	2.48	.512	.315	.168	2	D6	86887
M5 x 0,8	2.76	.630	.354	.194	2	D7	86888
M6 x 1	3.15	.748	.433	.255	2	D8	86889
M7 x 1	3.15	.748	.433	.318	2	D9	86870
M8 x 1	3.54	.866	.512	.318	3	D9	86872
M8 x 1,25	3.54	.866	.512	.318	3	D9	86874
M10 x 1,25	3.94	.945	.590	.381	4	D9	86876
M10 x 1,5	3.94	.945	.590	.381	4	D10	86878
M12 x 1,25	3.94	.866	-	.367	4	D9	86880
M12 x 1,5	3.94	.866	-	.367	4	D9	86882
M12 x 1,75	4.33	1.142	-	.367	4	D11	86884

EM-TL form taps can be run 1.5 to 2 times faster than the tapping speeds recommended for thread cutting taps.

Metric tap shank dimensions are equivalent to inch taps.

Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps.

HIGH-PERFORMANCE THREAD MILLS

Greenfield LIGHTNING® SERVICE

Rely on Greenfield's Lightning® Service program to deliver the special taps you need, when and where you need them, via your local authorized distributor. Within minutes of a call, Greenfield can quote, process, and release your order to the factory. This rapid response allows us to make and ship your order quickly, often with only a 24-hour lead time.

Greenfield special taps can be used for tapping popular materials such as Steels, Cast Iron, Aluminum, or Brass. We can also custom design tools to thread even the most difficult materials such as Inconel, Titanium, and other High-Temperature Alloys. When success is measured by accurate thread pitch diameters and proper gage fits, you can depend on Greenfield Tap and Die for special taps made to your order.

Let Greenfield's Lightning Service program spark your production. Contact your authorized Greenfield distributor for details.

**Greenfield LIGHTNING®
SERVICE Available**

► QUICK REFERENCE

Solid Thread Mills

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HIGH-PERFORMANCE THREAD MILLS

- One tool generates right- or left-hand threads for both internal and external threading applications requiring coarse or fine pitch threads
- Helical carbide thread mills are manufactured from micrograin carbide for excellent resistance to wear and shock loading, and feature PVD TiAlN coating standard
- Helical PM Plus™ thread mills reduce chatter, are constructed from powder metal to minimize breakage, and feature TiAlN coating standard
- Operate at up to 40% higher feed rates with up to 50% longer tool life than comparable thread mills
- Quick ship and specials programs for carbide and PM thread mills ensure you get the product you need, when you need it



Alternate Coatings Available

Greenfield's in-house tool coating capabilities lead the industry! Choose from Titanium Nitride (TiN), Titanium Carbonitride (TiCN), Titanium Nitride and Chromium Carbide Carbon (TiN + CrC/C), Titanium Aluminum Nitride (TiAlN), and Chromium Nitride (CrN). Available in full package quantities only. Contact your authorized Greenfield distributor for details.

Alternate Coatings Available.

(Full package quantities only)



Helical Flute Solid Carbide Thread Mills

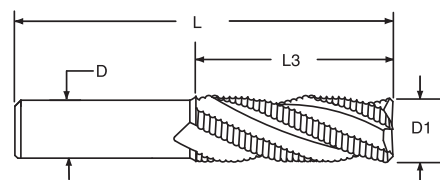
Features/Benefits:

- manufactured from proprietary 12% cobalt micrograin carbide with excellent wear resistance and superior resistance to shock loading
- PVD TiAlN coating standard
- helical flute design reduces chatter
- solid carbide thread mills produce full threads to within one pitch of a shoulder, 100% thread height to UN specifications
- more cost effective than indexable thread mills
- same tool can produce
 - right or left hand threads
 - single or multiple lead threads
 - internal or external threads
- threads smaller than 1/2" (12,00mm) have reinforced shanks to minimize deflection

Application Information:

- steel
- stainless steel
- titanium
- high-temperature alloys
- non-ferrous materials

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials



D1 = Cutter Diameter **D** = Shank Diameter
L = Overall Length **L3** = Thread Length

Solid Carbide Thread Mills

Series TMH-UN UNC/UNF Internal Threads

Standard Thread Size	TPI	D1	L	L3	D	Flutes	EDP Number
8-10	32	.125	2.000	.375	.188	2	22602
10	24	.125	2.000	.375	.188	2	22604
1/4	28	.183	2.500	.562	.250	3	22603
1/4	20	.183	2.500	.562	.250	3	22606
5/16	18	.250	2.750	.750	.313	3	22608
5/16 & 3/8	24	.250	2.750	.750	.313	3	22605
3/8	16	.250	2.750	.750	.313	3	22610
7/16	14	.305	2.750	.875	.313	4	22612
7/16	14	.305	2.750	.875	.375	4	22622
7/16 & 1/2	20	.305	2.750	.875	.313	4	22607
7/16 & 1/2	20	.305	2.750	.875	.375	4	22621
1/2	13	.305	2.750	.875	.313	4	22614
1/2	13	.305	2.750	.875	.375	4	22623
5/8	11	.370	2.750	1.125	.375	4	22617
9/16 & 5/8	18	.370	2.750	1.125	.375	4	22609
9/16	12	.370	2.750	1.125	.375	4	22615
3/4	12	.495	3.219	1.250	.500	4	22616
3/4	10	.495	3.219	1.250	.500	4	22618
13/16 +	16	.495	3.219	1.250	.500	4	22611
7/8	14	.495	3.219	1.250	.500	4	22613
1	8	.620	3.938	1.562	.625	4	22620

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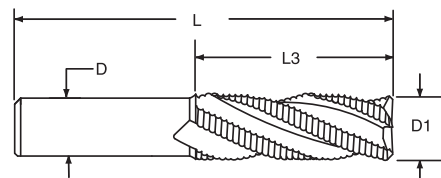


Solid Thread Mills

Solid Carbide Helical Flute

Metric Solid Carbide Thread Mills

Series TMH-ISO Internal Threads



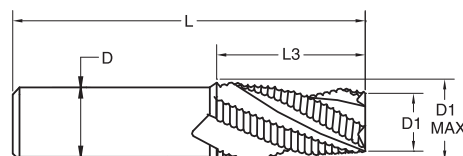
D1 = Cutter Diameter **D** = Shank Diameter
L = Overall Length **L3** = Thread Length

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

Alternate Coatings Available.
(Full package quantities only)



Standard Thread Size	D1	L	L3	D	Flutes	EDP Number
M4,5 x 0,75	.125	2.000	.375	.188	2	22637
M6 x 1	.183	2.500	.562	.250	3	22640
M8-M11 x 0,75	.250	2.750	.750	.313	3	22638
M8 x 1,25	.183	2.500	.562	.250	3	22642
M10 x 1,5	.250	2.750	.750	.313	3	22643
M12-M30 x 1	.305	2.750	.875	.313	4	22641
M12 x 1,75	.305	2.750	.875	.313	4	22646
M14-M80 x 1,5	.370	2.750	1.125	.375	4	22644
M16 x 2	.370	2.750	1.125	.375	4	22647
M18-M150 x 1,5	.495	3.219	1.250	.500	4	22645
M20 x 2,5	.495	3.219	1.250	.500	4	22648
M24 x 3	.620	3.938	1.562	.625	4	22649



D1 = Cutter Diameter at small end **D1MAX** = Cutter Diameter at large end
D = Shank Diameter **L** = Overall Length **L3** = Thread Length

Taper Pipe Size Solid Carbide Thread Mills

Series TMH-NPT and TMH-NPTF Internal and External Threads

Standard Thread Size	TPI	D1*	D1 Max*	L	L3	D	Flutes	EDP Number	
								NPT	NPTF
1/16 & 1/8	27	.2170	.248	2.500	.500	.250	3	22624	22630
1/4 & 3/8	18	.3120	.359	2.500	.750	.375	4	22625	22631
1/2 & 3/4	14	.4380	.500	2.500	1.000	.500	4	22626	22632
1/2 & 3/4	14	.4380	.500	2.750	1.000	.500	4	22636	22651
1-2	11 1/2	.5500	.620	2.750	1.125	.625	4	22627	22634
1-2	11 1/2	.5500	.620	3.500	1.125	.625	4	22650	22639

* D1 represents the small end diameter and D1MAX represents the large end diameter; helical NPT/NPTF thread mills are tapered.

PM Plus™ Powder Metal Thread Mills

P Steel

K Cast Iron

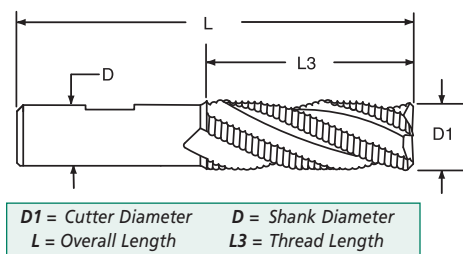
N Non-Ferrous

Features/Benefits:

- patent-pending helical flute design that reduces thread chatter, improving product thread finish and quality
- made from high-quality powder metal material
- standard TiAlN coating allows faster speed and feed rates for higher productivity
- same tool is capable of generating
 - both right hand and left hand threads
 - several thread diameters for the same TPI
 - different class of fits with a CNC offset
 - both bottoming and through hole threads
- provide a greater percentage of engagement than HSS or carbide taps
- perform well in materials < 30 Rc

Application Information:

- superior performance over carbide thread mills in these applications:
 - interrupted cuts - chipping is less likely to occur due to tougher PM substrate
 - less than ideal machining conditions, i.e., slower spindle speeds
 - small job/lot sizes where tool cost does not justify use of a carbide threadmill
- the ideal choice when:
 - material has proven difficult to tap *and is* < 30 Rc, including:
 - non-ferrous materials
 - low carbon steels
 - ductile cast iron
 - thread specification calls for full threads close to bottom of hole
 - thread specification requires a special tap
 - small lot size to be threaded



PM Plus Powder Metal Solid Thread Mills

Series PMTME-UN UNC/UNF External Threads

Standard Thread Size	D1	L	L3	D	Flutes	EDP Number
32	.310	2.500	.625	.375	4	20400
28	.375	2.500	.750	.375	4	20401
20	.435	2.500	.813	.375	4	20402
18	.500	3.000	1.000	.500	4	20403
16	.500	3.000	1.000	.500	4	20404
12	.750	3.500	1.250	.750	4	20405
10	1.000	4.500	2.000	1.000	5	20406
8	1.000	4.500	2.000	1.000	5	20407

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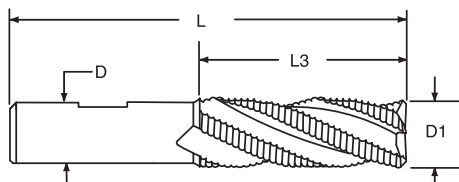


Solid Thread Mills

Powder Metal Helical Flute

PM Plus™ Powder Metal Solid Thread Mills

■ Series PMTMN-UN UNC/UNF Internal Threads



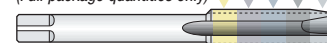
D1 = Cutter Diameter **D** = Shank Diameter
L = Overall Length **L3** = Thread Length

P	Steel
K	Cast Iron
N	Non-Ferrous

< 30 Rc only

Alternate Coatings Available.

(Full package quantities only)



Standard Thread Size	TPI	D1	L	L3	D	Flutes	EDP Number
8-10	32	.120	2.250	.250	.375	2	20350
10	24	.125	2.250	.250	.375	2	20372
12	28	.160	2.250	.312	.375	2	20352
12	24	.160	2.250	.312	.375	2	20354
1/4	20	.160	2.250	.312	.375	2	20356
5/16 & 3/8	24	.185	2.250	.375	.375	3	20355
5/16	18	.185	2.250	.375	.375	3	20359
3/8	16	.260	2.500	.625	.375	3	20361
7/16 +	32	.260	2.500	.625	.375	3	20351
7/16 +	28	.310	2.500	.625	.375	4	20353
7/16 & 1/2	20	.310	2.500	.625	.375	4	20357
7/16	14	.310	2.500	.625	.375	4	20363
1/2	13	.375	2.500	.625	.375	4	20365
9/16 +	20	.375	2.500	.750	.375	4	20358
9/16 & 5/8	18	.375	2.500	.750	.375	4	20360
9/16	12	.375	2.500	.750	.375	4	20366
5/8	11	.435	2.500	.812	.375	4	20368
3/4	16	.500	3.000	1.000	.500	4	20362
3/4	12	.500	3.000	1.000	.500	4	20367
3/4	10	.500	3.000	1.000	.500	4	20369
7/8	14	.500	3.000	1.000	.500	4	20364
7/8	9	.625	3.250	1.125	.625	4	20370
1	8	.625	3.250	1.125	.625	4	20371

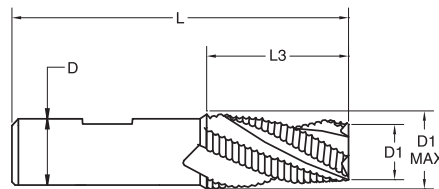
Greenfield LIGHTNING®
SERVICE Available

PM Plus™ Powder Metal NPT and NPTF Taper Pipe Thread Mills

■ Series PMTMX Internal and External Threads

P Steel
K Cast Iron
N Non-Ferrous

< 30 Rc only



D1 = Cutter Diameter at small end
L = Overall Length
D1MAX = Cutter Diameter at large end
L3 = Thread Length
D = Shank Diameter

								EDP Number	
Standard Thread Size	TPI	D1*	D1MAX*	L	L3	D	Flutes	NPT	NPTF
1/16 & 1/8	27	.217	.240	2.250	.375	.375	3	20450	20455
1/4 & 3/8	18	.275	.310	2.310	.562	.375	4	20451	20456
1/2 & 3/4	14	.443	.490	2.750	.750	.500	4	20452	20457
1-2	11 1/2	.550	.620	3.250	1.125	.625	4	20453	20458
2 1/2-6	8	.904	1.000	4.000	1.500	1.000	5	20454	20459

* D1 represents the small end diameter and D1MAX represents the large end diameter; helical NPT/NPTF thread mills are tapered.

PM Plus™ Powder Metal NPSM Straight Pipe Thread Mills

■ Series PMTMN Internal Threads

Standard Thread Size	TPI	D1	L	L3	D	Flutes	EDP Number
1/16 & 1/8	27	.260	2.500	.625	.375	3	21981
1/4 & 3/8	18	.310	2.500	.625	.375	4	21982
1/2 & 3/4	14	.500	3.000	1.000	.500	4	21983
1-2	11 1/2	.625	3.250	1.125	.625	4	21984
2 1/2-6	8	.750	3.500	1.250	.750	4	21985



THREADING: Controlled Feed Rates When Thread Milling

For thread milling applications, we recommend setting controlled feed rates within the program for the centerline of the spindle or tool. This method ensures absolute feed control of the tool through the entire thread milling operation.

As the tool moves around the centerline of the bore, the tool centerline must traverse at a slower IPM rate than the periphery of the tool at the cutting edge or major thread diameter. If the standard feed rate of RPM x feed per flute x number of flutes was applied to the spindle centerline, the tool would have an effective feed rate at the cutting edge that may exceed the capability of the thread mill, resulting in poor tool life and possible breakage. The programmed feed rate for the centerline is based upon the thread mill diameter selected. The larger the tool diameter, the greater the reduction required to ensure the proper operating parameters on the periphery.

Feed Compensation Formula for Internal Threading:

$$\text{Centerline IPM}_2 = \frac{\text{IPM}_1 \times (\text{Major Thread Diameter} - \text{Tool Cutting Diameter})}{\text{Major Thread Diameter}}$$

Feed Compensation Formula for External Threading:

$$\text{Centerline IPM}_2 = \frac{\text{IPM}_1 \times (\text{Major Thread Diameter} + \text{Tool Cutting Diameter})}{\text{Major Thread Diameter}}$$



Solid Thread Mills

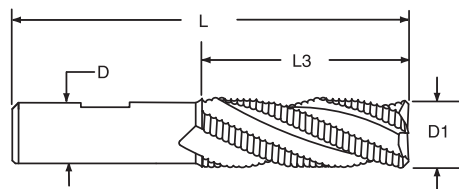
Powder Metal Helical Flute

PM Plus™ Powder Metal Metric Solid Thread Mills

■ Series PMTMN-ISO Internal Metric Threads

P	Steel
K	Cast Iron
N	Non-Ferrous

< 30 Rc only



D1 = Cutter Diameter D = Shank Diameter
L = Overall Length L3 = Thread Length

Alternate Coatings Available.

(Full package quantities only)



Standard Thread Size	D1	L	L3	D	Flutes	EDP Number
M4,5 x 0,75	.120	2.250	.250	.375	2	21961
M8 x 0,75	.260	2.500	.625	.375	3	21962
M6 x 1	.160	2.250	.312	.375	2	21963
M8 x 1,25	.185	2.250	.375	.375	3	21965
M12 x 1	.310	2.500	.625	.375	4	21964
M10 x 1,5	.260	2.500	.625	.375	3	21966
M14 x 1,5	.375	2.500	.750	.375	4	21967
M18 x 1,5	.500	3.000	1.000	.500	4	21968
M12 x 1,75	.310	2.500	.625	.375	4	21969
M16 x 2	.375	2.500	.750	.375	4	21970
M20 x 2,5	.500	3.000	1.000	.500	4	21971
M24 x 3	.625	3.250	1.125	.625	4	21972

PM Plus™ Powder Metal Metric Solid Thread Mills

■ Series PMTME-ISO External Metric Threads

Standard Thread Size	D1	L	L3	D	Flutes	EDP Number
M4,5 x 0,75	.310	2.500	.625	.375	4	21973
M6 x 1	.375	2.500	.750	.375	4	21974
M10 x 1,5	.500	3.000	1.000	.500	4	21975
M14 x 2	.500	3.000	1.000	.500	4	21976
M24 x 3	.625	3.250	1.125	.625	4	21977

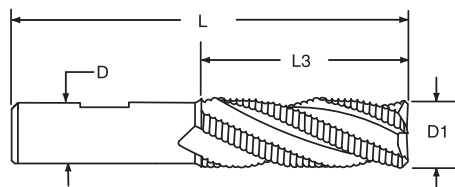
Greenfield LIGHTNING®
SERVICE Available

PM Plus™ Powder Metal British Standard Pipe Straight "G" Thread Mills

■ Series PMTME-BSPF Internal Threads

P Steel
K Cast Iron
N Non-Ferrous

< 30 Rc only



D1 = Cutter Diameter **D** = Shank Diameter
L = Overall Length **L3** = Thread Length

Standard Thread Size	TPI	D1	L	L3	D	Flutes	EDP Number
1/8	28	.260	2.500	.625	.375	3	20448
1/4 & 3/8	19	.310	2.500	.625	.375	4	20447
1/2 & 3/4	14	.500	3.000	1.000	.500	4	20446
1 & 1 1/4	11	.625	3.250	1.125	.625	4	20445
1 1/2	11	.750	3.500	1.250	.750	4	20444
1 3/4 - 2	11	1.000	4.500	2.000	1.000	5	20443

PM Plus™ Thread Mill Sets

- Our most popular sizes packaged for your convenience
- UNC, UNF, NPT, NPTF thread style sets

Series Number	Set Description	Standard Thread Sizes	EDP Number
PMTMN-SET	UNCSET-4PC	8 & 10-32; 1/4-20; 3/8-16; 1/2-13	21987
PMTMN-SET	UNFSET-4PC	5/16-24 & 3/8-24; 7/16-20 & 1/2-20; 9/16-18 & 5/8-18; 3/4-16	21989
PMTMN-SET	UNCSET-7PC	8 & 10-32; 10-24; 1/4-20; 5/16-18; 3/8-16; 7/16-14; 1/2-13	21978
PMTMX-SET	NPTSET-4PC	1/16 & 1/8-27; 1/4 & 3/8-18; 1/2 & 3/4-14; 1-2	21979
PMTMX-SET	NPTFSET-4PC	1/16 & 1/8-27; 1/4 & 3/8-18; 1/2 & 3/4-14; 1-2	21988

Solid Carbide Straight Flute

■ Solid Carbide Thread Mills UN Threads

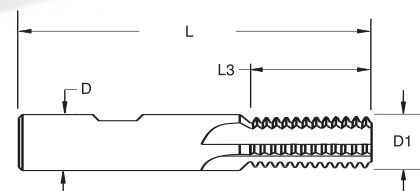
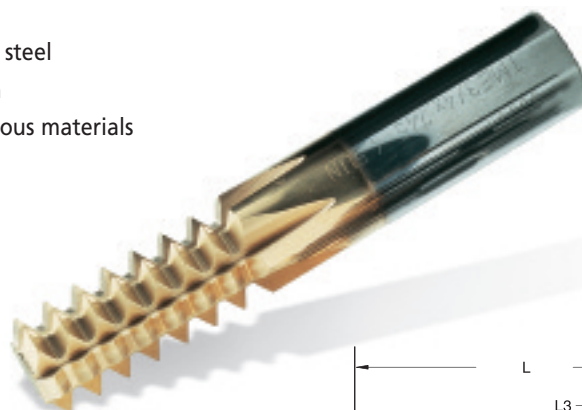
Features/Benefits:

- manufactured from a 10% cobalt micrograin carbide with excellent wear resistance and good resistance to shock loading
- PVD TiN coating is standard
- solid carbide thread mills produce full threads to within one pitch of a shoulder, 100% thread height to UN specifications
- more cost effective than indexable thread mills
- same tool can produce
 - right or left hand threads
 - single or multiple lead threads

Application Information:

- use in materials up to 62 Rc hardness
- steel
- stainless steel
- cast iron
- non-ferrous materials

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials



D1 = Cutter Diameter D = Shank Diameter
L = Overall Length L3 = Thread Length

Solid Carbide UN Straight Flute Thread Mills

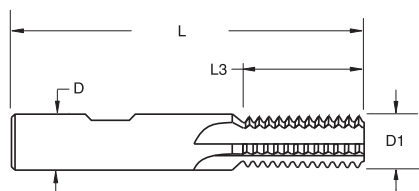
■ Series TMN-UN UNC/UNCF Internal Threads

Standard Thread Size	TPI	D1	L	L3	D	Flutes	EDP Number
2 & 3	56	.060	1.500	.125	.125	3	85071
4 - 6	40	.085	1.500	.175	.125	3	85074
8	36	.120	1.500	.250	.125	3	85094
6	32	.085	1.500	.219	.125	3	85008
8-10	32	.120	1.500	.250	.125	3	85009
7/16-1	32	.240	2.250	.563	.250	5	85013
12	28	.145	1.650	.321	.187	3	85010
7/16-1 1/2	28	.310	2.480	.786	.312	5	85017
12	24	.160	1.650	.333	.187	3	85011
5/16 & 3/8	24	.200	2.250	.500	.250	3	85014
1/4	20	.060	1.650	.400	.187	3	85012
7/16 & 1/2	20	.310	2.480	.750	.312	5	85018
9/16	20	.370	2.840	.900	.375	5	85021
5/16	18	.200	2.250	.500	.250	3	85015
9/16	18	.370	2.840	.944	.375	5	85022
5/8	18	.470	3.270	1.111	.500	5	85024
3/8 & 3/4	16	.240	2.250	.562	.250	5	85016
13/16-6	16	.470	3.270	1.125	.500	5	85025
7/16 & 7/8	14	.310	2.480	.642	.312	5	85019
7/8	14	.470	3.270	1.143	.500	5	85026
1/2	13	.310	2.480	.769	.312	5	85020
9/16	12	.370	2.840	.916	.375	5	85023
3/4	12	.470	3.270	1.167	.500	5	85027
5/8	11	.470	3.270	1.091	.500	5	85028
3/4	10	.470	3.270	1.100	.500	5	85029
1	8	.620	3.620	1.500	.625	6	85030

Note: Thread mills with shank diameter (D) less than 0.375" do not have flat on shank.
Metric and pipe sizes begin on the next page.

Solid Carbide ISO Metric Straight Flute Thread Mills

Series TMN Internal Threads



D1 = Cutter Diameter **D** = Shank Diameter
L = Overall Length **L3** = Thread Length

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials

Alternate Coatings Available.
(Full package quantities only)



Standard Thread Size	D1	L	L3	D	Flutes	EDP Number
M4 x 0,7	.105	1.500	.248	.125	3	85125
M6 x 1	.160	1.650	.354	.187	3	85056
M12 x 1	.310	2.480	.787	.312	5	85060
M16 x 1	.470	3.270	1.181	.500	5	85127
M8 x 1,25	.200	2.250	.492	.250	3	85058
M10 x 1,5	.240	2.250	.590	.250	5	85059
M14 x 1,5	.370	2.840	.945	.376	5	85062
M22 x 1,5	.470	3.270	1.181	.500	5	85064
M12 x 1,75	.310	2.480	.758	.312	5	85061
M16 x 2	.370	2.840	.945	.375	5	85063
M18 x 2	.470	3.270	1.181	.500	5	85065
M24 x 3	.620	3.620	1.417	.625	6	85067

Note: Thread mills with shank diameter (D) less than 0.375" do not have flat on shank.

Solid Carbide NPT and NPTF Straight Flute Thread Mills

Series TMX Internal or External Threads

Standard Thread Size	TPI	D1	L	L3	D	Flutes	EDP Number	
							NPT	NPTF
1/16 & 1/8	27	.240	2.250	.370	.250	5	85035	85040
1/4 & 3/8	18	.310	2.480	.555	.312	5	85036	85041
1/2 & 3/4	14	.470	3.270	.785	.500	5	85037	85042
1-2	11 1/2	.620	3.620	1.043	.625	6	85038	85043
2 1/2-6	8	.620	3.620	1.250	.625	6	85039	—
2 1/2-6	8	.745	4.100	1.500	.750	6	85098	—

Note: Thread mills with shank diameter (D) less than 0.375" do not have flat on shank.

Solid Carbide NPSM Straight Flute Thread Mills

Series TMX Mechanical Internal Threads

Standard Thread Size	TPI	D1	L	L3	D	Flutes	EDP Number
1/16 & 1/8	27	.240	2.250	.550	.250	5	85045
1/4 & 3/8	18	.310	2.480	.555	.312	5	85046
1/2 & 3/4	14	.470	3.270	.785	.500	5	85047

Note: Thread mills with shank diameter (D) less than 0.375" do not have flat on shank.



Indexable Thread Mills

Solid Carbide Inserts

Indexable Thread Mill Inserts - UN Threads

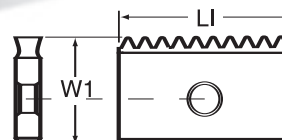
Features/Benefits:

- one grade machines all materials
- precision ground inserts and milled pockets ensure accurate thread form alignment with 2 flute holders
- produce threads in materials up to 62 Rc hardness
- ground to CNC tolerances for exact repeatability
- positive cutting geometry
- chamfered side, secure locking in dovetail pocket
- single screw and fixed pocket design, no presetting
- 100% thread form geometry
- produces most accurate thread form in the industry

Application Information:

- steel
- stainless steel
- cast iron
- non-ferrous materials

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials



L1 = Length of Insert W1 = Width of Insert

External UN Inserts

14mm UN External

External TPI	LI	W1	EDP Number
32	.551	.295	85151
28	.551	.295	85152
24	.551	.295	85154
20	.551	.295	85155
18	.551	.295	85156
16	.551	.295	85157

21mm UN External

External TPI	LI	W1	EDP Number
20	.827	.472	85170
18	.827	.472	85171
16	.827	.472	85172
14	.827	.472	85173
12	.827	.472	85174
10	.827	.472	85175
8	.827	.472	85176

Internal UN Inserts

14mm UN Internal

Internal TPI	LI	W1	EDP Number
40	.551	.295	85160
28	.551	.295	85162
24	.551	.295	85164
20	.551	.295	85165
18	.551	.295	85166
16	.551	.295	85167
14	.551	.295	85168
12	.551	.295	85169

21mm UN Internal

Internal TPI	LI	W1	EDP Number
32	.827	.472	85146
20	.827	.472	85177
18	.827	.472	85178
16	.827	.472	85179
14	.827	.472	85180
12	.827	.472	85181
8	.827	.472	85183

30mm UN Internal

Internal TPI	LI	W1	EDP Number
16	1.181	.630	85194
12	1.181	.630	85196
8	1.181	.630	85198
6	1.181	.630	85200

40mm UN Internal

Internal TPI	LI	W1	EDP Number
16	1.575	.787	85214
4.5	1.575	.787	85221

■ NPT Pipe Thread Inserts and NPTF (Dryseal)

Internal and External

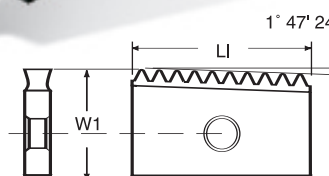
Features/Benefits:

- one grade machines all materials
- precision ground inserts and milled pockets ensure accurate thread form alignment with 2 flute holders
- produce threads in materials up to 62 Rc hardness
- ground to CNC tolerances for exact repeatability
- positive cutting geometry
- chamfered side, secure locking in dovetail pocket
- single screw and fixed pocket design, no presetting
- 100% thread form geometry
- produces most accurate thread form in the industry

Application Information:

- steel
- stainless steel
- cast iron
- non-ferrous materials

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials



LI = Length of Insert **W1** = Width of Insert

Internal or External NPT Inserts

■ 14mm NPT

TPI	LI	W1	EDP Number
18	.551	.295	85257
14	.551	.295	85258

■ 21mm NPT

TPI	LI	W1	EDP Number
18	.827	.472	85259
14	.827	.472	85260
12	.827	.472	85261

■ 30mm NPT

TPI	LI	W1	EDP Number
11 1/2	1.181	.630	85262
8	1.181	.630	85263

■ 40mm NPT

TPI	LI	W1	EDP Number
11 1/2	1.575	.787	85264
8	1.575	.787	85265

Internal or External NPTF Inserts

■ 14mm NPTF

TPI	LI	W1	EDP Number
18	.551	.295	85266
14	.551	.295	85267

■ 21mm NPTF

TPI	LI	W1	EDP Number
18.0	.827	.472	85268
14.0	.827	.472	85269
11.5	.827	.472	85270

■ 30mm NPTF

TPI	LI	W1	EDP Number
11 1/2	1.181	.630	85271

■ 40mm NPTF

TPI	LI	W1	EDP Number
8	1.575	.787	85274



Indexable Thread Mills

Solid Carbide Inserts

HIGH-PERFORMANCE TAPS

THREAD MILLS

PRODUCTION TAPS

MAINTENANCE TOOLS

GAGES

TECHNICAL
INFORMATION & INDEX

ISO Metric Thread Mill Inserts - Internal

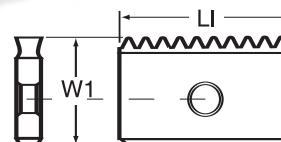
Features/Benefits:

- one grade machines all materials
- precision ground inserts and milled pockets ensure accurate thread form alignment with 2 flute holders
- produce threads in materials up to 62 Rc hardness
- ground to CNC tolerances for exact repeatability
- positive cutting geometry
- chamfered side, secure locking in dovetail pocket
- single screw and fixed pocket design, no presetting
- 100% thread form geometry
- produces most accurate thread form in the industry

Application Information:

- steel
- stainless steel
- cast iron
- non-ferrous materials

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials



LI = Length of Insert W1 = Width of Insert

Internal ISO Metric Inserts

14mm ISO

Thread Pitch mm	LI	W1	EDP Number
1	.551	.295	85227
1,5	.551	.295	85228
2	.551	.295	85229

21mm ISO

Thread Pitch mm	LI	W1	EDP Number
1	.827	.472	85236
1,5	.827	.472	85237
2	.827	.472	85238
3	.827	.472	85240
3,5	.827	.472	85241

30mm ISO

Thread Pitch mm	LI	W1	EDP Number
1,5	1.181	.630	85248
2	1.181	.630	85249
3	1.181	.630	85251
4	1.181	.630	85253
4,5	1.181	.630	85254
5	1.181	.630	85255

Indexable Thread Mill Holders

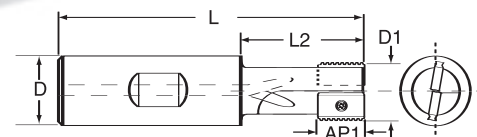
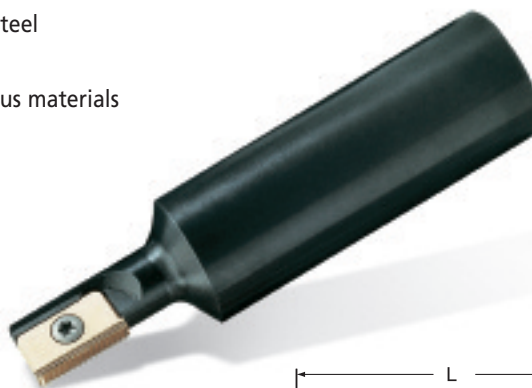
Features/Benefits:

- available in one- and two-flute styles
- precision milled pockets align inserts for accurate thread form production
- holders available to produce threads from 48 UN to 3 threads per inch
- can mill threads in materials up to 62 Rc hardness
- produce coarse threads using minimal horsepower
- allow low cost thread production for small lot runs
- produce internal or external, right or left hand threads with same tool holder
- produce single or multiple lead threads
- control pitch diameter or size to within 0.0001"
- produce 100% thread form height to UN specifications

Application Information:

- steel
- stainless steel
- cast iron
- non-ferrous materials

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous
S	High-Temp Alloys
H	Hardened Materials



L = Overall Length L2 = Useable Length
 D = Shank Diameter D1 = Head Diameter
 AP1 = Insert Length

Single Flute Indexable Thread Mill Holders

D1	D	L	L2	Flutes	AP1	Insert Screw	EDP Number
.450	.750	3.390	1.000	1	14mm	85113	85099*
.500	.750	3.000	.800	1	14mm	85113	85100
.500	.750	3.350	1.000	1	14mm	85113	85101
.540	.750	3.390	1.250	1	14mm	85113	85116*
.540	.750	3.000	.880	1	14mm	85113	85117
.540	.750	3.390	1.000	1	14mm	85113	85118
.670	.750	3.390	1.180	1	14mm	85113	85102
.700	.750	3.750	1.375	1	21mm	85114	85119*
.750	.750	3.750	1.575	1	21mm	85114	85103
1.140	1.000	4.370	1.968	1	30mm	85115	85104
1.730	1.500	6.000	3.070	1	40mm	85115	85105

* For taper pipe thread inserts only.

Two-Flute Indexable Thread Mill Holders

D1	D	L	L2	Flutes	AP1	Insert Screw	EDP Number
.790	.750	3.750	1.630	2	14mm	85113	85106
1.180	1.000	4.250	2.000	2	21mm	85114	85107
1.580	1.250	5.120	2.850	2	30mm	85114	85108
1.970	1.500	6.000	3.250	2	40mm	85114	85109

Insert Screws For Indexable Thread Mill Holders

Wrench Size	External Thread Size	Description	EDP Number
T7	M2.5	M2,5 x 0,45 ISO x 6,35 OAL	85113
T20	M4	M4x0,7 ISO x 10,15 OAL	85114
T20	M5	M5 x 0,8 ISO x 12,25	85115



Thread Mill Technical Information

Starting Speeds and Feeds for Solid Thread Mills

HIGH-PERFORMANCE TAPS	Starting Speeds and Feeds for Solid Thread Mills												A PRODUCT OF KENNAMETAL INC.	
	Material Group	Classification	Typical Grades	Thread Mill Type	SFM	Feed (inches per tooth) Cutter Diameter (D1)								
						1/8" (.125")	3/16" (.187")	1/4" (.250")	5/16" (.312")	3/8" (.375")	1/2" (.500")	3/4" (.750")		1" (1.000")
THREAD MILLS	steel	plain carbon and low carbon up to 22RC	AISI/SAE 1005-1020, 1108-1119, 1213-1215, 1513-1518, 4012, 5015, 9310	PM Plus	250	.0007	.0012	.0015	.0018	.0020	.0030	.0040	.0050	
				Solid Carbide	600	.0003	.0003	.0005	.0006	.0007	.0010	.0015	.0020	
	medium carbon and alloy steel	heat treatable carbon and alloy steel from 22 to 32 Rc	AISI/SAE 1025-1095, 1130-1151, 1330-1345, 1520-1572, 4023-4063, 4120-4161, 4320-4340	PM Plus	175	.0005	.0007	.0010	.0012	.0015	.0020	.0030	.0040	
				Solid Carbide	575	.0003	.0003	.0005	.0006	.0007	.0010	.0015	.0020	
PRODUCTION TAPS	medium carbon and alloy steel	heat treatable carbon and alloy steel from 32 to 42 Rc	AISI/SAE 1040-1095, 1130-1151, 1330-1345, 1520-1572, 4023-4063, 4120-4161, 4320-4340, 4620-4640, 8620-8660, 8740-8750, 6150, 51000, 52100	PM Plus *	—	—	—	—	—	—	—	—	—	
				Solid Carbide	525	.0003	.0003	.0005	.0006	.0007	.0010	.0015	.0020	
MAINTENANCE TOOLS	stainless steel	austenitic	301-304, 310, 316, 321, 347	PM Plus	100	.0005	.0007	.0008	.0012	.0015	.0020	.0030	.0040	
				Solid Carbide	525	.0003	.0003	.0005	.0006	.0007	.0010	.0015	.0020	
	stainless steel	martensitic	403, 410, 416, 420, 430, 431, 440C	PM Plus	125	.0005	.0007	.0008	.0012	.0015	.0018	.0025	.0035	
				Solid Carbide	550	.0003	.0003	.0005	.0006	.0007	.0010	.0015	.0020	
GAGES	stainless steel	precipitation hardening	15-5PH, 17-4PH, AM350, AM355, AM363, 13-8Mo, 14-8Mo	PM Plus	75	.0005	.0007	.0008	.0012	.0015	.0020	.0030	.0040	
				Solid Carbide	300	.0003	.0003	.0005	.0006	.0007	.0008	.0012	.0018	
	nickel	nickel and nickel base alloys	Udimet 500 & 700	PM Plus *	—	—	—	—	—	—	—	—	—	
				Solid Carbide	120	.0003	.0003	.0005	.0006	.0007	.0008	.0010	.0015	
TECHNICAL INFORMATION & INDEX	titanium	titanium and titanium alloys	commercially pure, 6AL-4V, 8AL-1Mo, 7AL-4Mo	PM Plus *	—	—	—	—	—	—	—	—	—	
				Solid Carbide	100	.0003	.0003	.0005	.0006	.0007	.0007	.0007	.0010	
	cast iron	gray malleable, ductile (nodular)	ASTM A48, A220, A436, A319, A536, A602, SAE J158 and J434	PM Plus	150	.0007	.0012	.0015	.0018	.0020	.0030	.0040	.0060	
				Solid Carbide	600	.0003	.0003	.0006	.0007	.0008	.0010	.0015	.0020	
	non-ferrous	wrought and low Si cast aluminum, brass	2024, 6061, 356, 360	PM Plus	700+	.0010	.0015	.0020	.0025	.0030	.0040	.0060	.0080	
				Solid Carbide	1700	.0003	.0003	.006	.0007	.0008	.0010	.0015	.0020	

* Not recommended for these materials.

Minimum feed rate for any thread mill is 0.0003" per flute. If severe conditions are present, first reduce feed per tooth, then reduce speed. The speeds & feeds shown are recommended as starting parameters only. Condition of material, machine rigidity, part fixturing, tool overhang, and material hardness should all be considered before attempting any machining operation.

For indexable thread mills, refer to chart for starting speeds only. Feed rate should start at 0.0015" per flute for cutting diameters less than 1.00". For diameters 1.00" and larger, 0.0020" is recommended. For all taper pipe threads, reduce speed and feed chart values by 30%.



Thread Mill Technical Information

Thread Mill Programming Request

HIGH-PERFORMANCE TAPS

THREAD MILLS

PRODUCTION TAPS

MAINTENANCE TOOLS

GAGES

TECHNICAL
INFORMATION & INDEX

Greenfield Tap and Die offers free programming assistance to users of any Greenfield thread milling product. If you are not familiar with thread milling, we highly recommend you complete the program request form below and fax it to 1-888-GFI-FAXX (1-888-434-3299) or 706-860-8559. The technical department will return a suggested CNC program.

Distributor
or End User
Purchase Order: _____

End User
Company: _____ Contact: _____

E-mail: _____ Telephone: _____ Fax: _____

Street Address: _____

City: _____ State: _____ Zip: _____

Distributor: _____ Contact: _____

E-mail: _____ Telephone: _____ Fax: _____

Street Address: _____

City: _____ State: _____ Zip: _____

GTD
Salesperson: _____ Extension: _____

Deliver Completed Program to: _____ End User _____ GTD Salesperson _____ Distributor

Delivery Method (choose one): _____ Via Fax _____ Via E-mail

Specifications:

CNC Machine Information:

Tool Specification:

Thread Type: _____ Brand or Make: _____ Description: _____

RH/LH: _____ Model: _____

Thread Diameter: _____ Controller
Model: _____ EDP Number: _____

TPI or mm Pitch: _____ _____ Milling Machine
Tool Diameter: _____

Class of Thread
(2B, 3B, 3A, 2A): _____ _____ Lathe
Number of Flutes: _____

Minimum Drill Depth: _____ Is machine capable of
helical Interpolation? _____ Yes _____ No

Full Thread
Required: _____ Maximum RPM: _____

Material: _____

Hardness: _____



Thread Mill Technical Information

Thread Mill Selection

Choose the proper style of thread mill for your application.

PM Plus™ HSS

- Smaller lot quantities, short runs
- Materials < 30 Rc hardness
- Spindle speed limited, especially for small sizes
- Lower tool cost

Indexable Carbide

- Low production
- Harder materials
- Flexibility to mill a variety of threads per inch
- Thread sizes over 3/4"

Solid Carbide

- High speed, high production
- Hardened materials < 62 Rc
- Most efficient for small diameters
- Maximum tool life

Helical thread mills reduce chatter.

In performance testing, helical flute thread mills outperformed conventional thread mills.



The threads on the left were cut by a Greenfield helical thread mill, while the threads on the right were cut by a competitor's conventional thread mill. Notice the chatter on the competitor's workpiece. The helical tool was so quiet, the operator wasn't sure it was cutting!

THREADING: *Selecting Thread Mill Diameters*

When producing internal threads, selecting the right thread mill diameter is key to operating efficiency. Thread mills are usually offered in several cutting diameters for a given threads per inch (TPI).

Generally, for coarser pitches (coarser than 14 TPI), select a cutting diameter no larger than 70% of the nominal thread size to be produced. For finer pitches, the thread mill can be as large as 75% of the nominal diameter. Although the tool has radial clearances similar to end mills, if the tool diameter is too close to the thread diameter, the tool may rub and produce more heat, resulting in excessive wear. This rubbing may also distort the thread form affecting the thread angle.

When choosing a thread mill, it may not be necessary to use the largest one that will fit the hole. The larger diameter thread mill will minimize deflection, particularly on coarse thread series, but is more prone to rubbing and chip congestion. A smaller mill will remove more cubic inches of metal than a larger one, resulting in greater efficiency and productivity. There will be more clearance for the tool and more space for coolant and chips. However, for optimum results, the tool may need to rotate much faster than the capability of the machine. Also, the thread length of the tool may be too short for the thread depth required.



Greenfield LIGHTNING® SERVICE

Rely on Greenfield's Lightning® Service program to deliver the special taps you need, when and where you need them, via your local authorized distributor. Within minutes of a call, Greenfield can quote, process, and release your order to the factory. This rapid response allows us to make and ship your order quickly, often with only a 24-hour lead time.

Greenfield special taps can be used for tapping popular materials such as Steels, Cast Iron, Aluminum, or Brass. We can also custom design tools to thread even the most difficult materials such as Inconel, Titanium, and other High-Temperature Alloys. When success is measured by accurate thread pitch diameters and proper gage fits, you can depend on Greenfield Tap and Die for special taps made to your order.

Let Greenfield's Lightning Service program spark your production. Contact your authorized Greenfield distributor for details.

**Greenfield LIGHTNING®
SERVICE Available**

► QUICK REFERENCE

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PRODUCTION TAPS

- Extensive offering of thread-cutting and thread-forming taps for any industrial application, manufactured using the highest quality materials and workmanship since 1872
- GP+ GUN® taps feature an optimized low torque design for better quality threads and longer tap life, as well as DIN length and ANSI shank with neck for CNC use
- GTD Fe Form tap, designed for tapping ferrous and non-ferrous materials at increased production rates, leads the industry in low torque, high production internal thread forming
- Wide range of sizes, tap limits, chamfers, and styles available for through and blind holes



Alternate Coatings Available

Greenfield's in-house tool coating capabilities lead the industry! Choose from Titanium Nitride (TiN), Titanium Carbonitride (TiCN), Titanium Nitride and Chromium Carbide Carbon (TiN + CrC/C), Titanium Aluminum Nitride (TiAlN), and Chromium Nitride (CrN). Available in full package quantities only. Contact your authorized Greenfield distributor for details.

Alternate Coatings Available. (Full package quantities only)



■ Hand Taps

Features/Benefits:

- the most popular style of tap
- manufactured from select high-speed steel for increased wear life
- straight flute design
- can be used by hand or for tapping under power
- versatile taps for use in general machine tapping or CNC tapping applications
- use for through hole or blind hole tapping
- standard in right hand sizes in Unified and American National thread form
- hand taps store chips in their flutes next to the chamfered teeth during the threading operation
- for deep-hole threading more than 1 1/2 diameters of the tap-in depth, use a hand tap with fewer flutes for increased chip handling capabilities
- through coolant holes available upon request

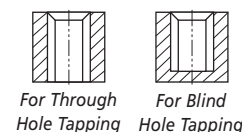
Hand taps are available in three chamfer lengths for through hole or blind hole tapping:

- taper (7-10 pitches) - longest standard chamfer ensures easier starting and requires less tapping torque because of more working teeth
- plug (3-5 pitches) - the most universally used chamfer for hand or machine tapping in through or blind holes
- bottoming (1-2 pitches) - for threading close to the bottom of blind holes; the least efficient standard chamfer

**Greenfield LIGHTNING®
SERVICE Available**



P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous



Application Information:

All TiN and TiCN coated taps are recommended for:

- steels
- stainless steel < 30Rc
- cast iron

SH50 oxide treated taps are also recommended for:

- steels
- ductile irons
- cast iron

Uncoated and MAXI treated taps are also recommended for:

- non-ferrous materials
- cast iron

Coating Information:

TiCN (Titanium Carbonitride) coated taps:

- enables higher tapping speeds for increased productivity and excellent tool life
- high wear resistance and extended tap wear life
- in abrasive materials, higher wear resistance and longer tap wear life than TiN
- appropriate for a wide array of ferrous (steel) materials

TiN (Titanium Nitride) coated taps:

- provides increased tap wear life and improved product thread finish
- higher tapping speeds are possible
- appropriate for a wide array of ferrous materials

TiAlN (Titanium Aluminum Nitride) coated taps:

- offers improved wear life and thread finish
- especially useful under high temperature conditions
- use with caution in non-ferrous materials

TiN+Cr/C (Titanium Nitride plus Chromium Carbide Carbon) coated taps:

- combines the wear resistance of TiN with a lubricious top layer of chromium carbide carbon
- proprietary coating for both ferrous and non-ferrous materials
- effective in stainless steel (304, 316 only) and aluminum

SH50 steam oxide treated taps:

- SH50 oxide treatment provides increased lubricity; applied primarily to prevent galling and loading in steels
- ideal for tapping a wide array of ferrous materials



Hand Taps

For Through or Blind Holes in General Machining Applications

Hand Taps, Machine Screw and Fractional Sizes

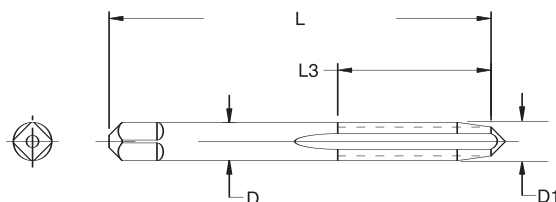
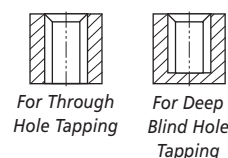
Taper Chamfer 7 to 10 Pitches

- Series No. 5305S / 5303S SH50 Steam Oxide
- Series No. 5305 / 5303 Uncoated

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous

HIGH-PERFORMANCE TAPS

THREAD MILLS



D1 = Tap Size D = Shank Diameter
L = Overall Length L3 = Thread Length

Alternate Coatings Available.
(Full package quantities only)



PRODUCTION TAPS

MACHINE SCREW

D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	D	Flutes	Pitch Dia. Limit	EDP Number - Taper Chamfer	
								Oxide SH50	Uncoated
0	-	80	1.63	.313	.141	2	H1	—	15102
1	64	-	1.69	.375	.141	2	H1	—	15114
1	-	72	1.69	.375	.141	2	H1	—	15120
2	56	-	1.75	.438	.141	3	H1	—	15128
2	56	-	1.75	.438	.141	3	H2	—	15134
2	-	64	1.75	.438	.141	3	H1	—	15141
2	-	64	1.75	.438	.141	3	H2	—	15144
3	48	-	1.81	.500	.141	3	H2	—	15156
3	-	56	1.81	.500	.141	3	H2	—	15166
4	40	-	1.88	.563	.141	3	H2	19563	15184
4	-	48	1.88	.563	.141	3	H2	—	15196
5	40	-	1.94	.625	.141	3	H2	—	15209
5	-	44	1.94	.625	.141	3	H2	—	15220
6	32	-	2.00	.688	.141	3	H1	—	15225
6	32	-	2.00	.688	.141	3	H2	—	15231
6	32	-	2.00	.688	.141	3	H3	19573	15237
6	-	40	2.00	.688	.141	3	H2	—	15257
8	32	-	2.13	.750	.168	4	H2	—	15275
8	32	-	2.13	.750	.168	4	H3	19583	15283
8	-	36	2.13	.750	.168	4	H2	—	15301
10	24	-	2.38	.875	.194	4	H2	—	15320
10	24	-	2.38	.875	.194	4	H3	19597	15327
10	-	32	2.38	.875	.194	4	H1	—	15344
10	-	32	2.38	.875	.194	4	H2	—	15352
10	-	32	2.38	.875	.194	4	H3	19613	15360
12	24	-	2.38	.938	.220	4	H3	—	15383
12	-	28	2.38	.938	.220	4	H3	—	15390

Hand taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.
Taper chamfer fractional sizes continue on the next page.

GAGES

MAINTENANCE TOOLS

TECHNICAL
INFORMATION & INDEX

Greenfield LIGHTNING®
SERVICE Available

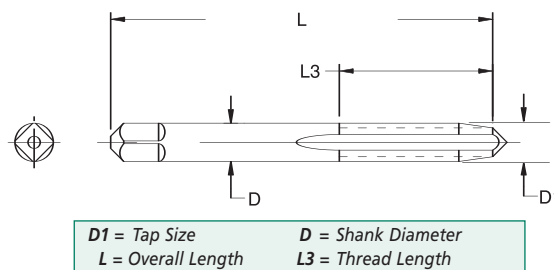
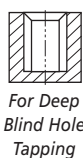
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Hand Taps, Machine Screw and Fractional Sizes

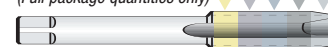
Taper Chamfer 7 to 10 Pitches

- Series No. 5305S / 5303S SH50 Steam Oxide
- Series No. 5305 / 5303 Uncoated

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous



Alternate Coatings Available.
(Full package quantities only)



FRACTIONAL

								EDP Number - Taper Chamfer	
D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	D	Flutes	Pitch Dia. Limit	SH50 Oxide	Uncoated
1/4	20	-	2.50	1.000	.255	4	H1	—	14010
1/4	20	-	2.50	1.000	.255	4	H2	—	14015
1/4	20	-	2.50	1.000	.255	4	H3	19167	14022
1/4	-	28	2.50	1.000	.255	4	H3	19208	14055
5/16	18	-	2.72	1.125	.318	4	H3	19237	14092
5/16	-	24	2.72	1.125	.318	4	H3	19257	14122
3/8	16	-	2.94	1.250	.381	4	H3	19278	14157
3/8	-	24	2.94	1.250	.381	4	H3	19304	14190
7/16	14	-	3.16	1.438	.323	4	H3	—	14221
7/16	-	20	3.16	1.438	.323	4	H3	—	14246
1/2	13	-	3.38	1.656	.367	4	H3	19354	14281
1/2	-	20	3.38	1.656	.367	4	H3	19377	14308
9/16	12	-	3.59	1.656	.429	4	H3	—	14338
9/16	-	18	3.59	1.656	.429	4	H3	—	14356
5/8	11	-	3.81	1.813	.480	4	H3	19407	14379
5/8	-	18	3.81	1.813	.480	4	H3	—	14402
11/16	11	-	4.03	1.063	.542	4	H3	—	14423
11/16	-	16	4.03	1.063	.542	4	H3	—	14427
3/4	10	-	4.25	2.000	.590	4	H3	19443	14448
3/4	-	16	4.25	2.000	.590	4	H3	—	14471
7/8	9	-	4.69	2.219	.697	4	H4	—	14499
7/8	-	14	4.69	2.219	.697	4	H4	—	14516
1	8	-	5.13	2.500	.800	4	H4	—	14544
1	-	12	5.13	2.500	.800	4	H4	—	14557
1	-	14	5.13	2.500	.800	4	H4	—	14568
1 1/8	7	-	5.44	2.563	.896	4	H4	—	14594
1 1/8	-	12	5.44	2.563	.896	4	H4	—	14603
1 1/4	7	-	5.75	2.563	1.021	4	H4	—	14612
1 1/4	-	12	5.75	2.563	1.021	6	H4	—	14620
1 3/8	6	-	6.06	3.000	1.108	4	H4	—	14632
1 3/8	-	12	6.06	3.000	1.108	6	H4	—	14640
1 1/2	6	-	6.38	3.000	1.233	4	H4	—	14645
1 1/2	-	12	6.38	3.000	1.233	6	H4	—	14653

Hand taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.
Plug chamfer machine screw sizes begin on the next page.



Hand Taps

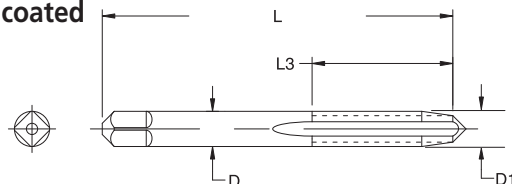
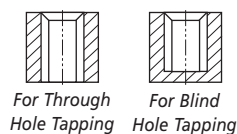
For Through or Blind Holes in General Machining Applications

Hand Taps, Machine Screw and Fractional Sizes

Plug Chamfer 3 to 5 Pitches

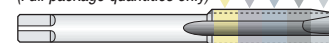
- Series No. 5305TC / 5303TC TiCN Coated
- Series No. 2305 / 2303 TiN Coated
- Series No. 5305S / 5303S SH50 Steam Oxide
- Series No. 5305 / 5303 Uncoated

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous



D1 = Tap Size
L = Overall Length
D = Shank Diameter
L3 = Thread Length

Alternate Coatings Available.
(Full package quantities only)



MACHINE SCREW

EDP Number - Plug Chamfer

D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	D	Flutes	Pitch Dia. Limit	TiCN	TiN	SH50 Oxide	Uncoated
0	-	80	1.63	.313	.141	2	H1	—	—	—	15103
0	-	80	1.63	.313	.141	2	H2	19121	19202	—	15107
1	64	-	1.69	.375	.141	2	H1	—	—	—	15115
1	64	-	1.69	.375	.141	2	H2	—	—	—	15118
1	-	72	1.69	.375	.141	2	H1	—	—	—	15121
1	-	72	1.69	.375	.141	2	H2	—	—	—	15125
2	56	-	1.75	.438	.141	2	H2	—	—	—	15138
2	56	-	1.75	.438	.141	3	H1	—	—	—	15129
2	56	-	1.75	.438	.141	3	H2	19122	19207	—	15135
2	-	64	1.75	.438	.141	3	H1	—	—	—	15142
2	-	64	1.75	.438	.141	3	H2	—	—	—	15145
3	48	-	1.81	.500	.141	2	H2	—	15433	—	15160
3	48	-	1.81	.500	.141	3	H2	—	—	—	15157
3	-	56	1.81	.500	.141	3	H2	—	—	—	15167
4	40	-	1.88	.563	.141	2	H1	—	—	—	15182
4	40	-	1.88	.563	.141	2	H2	—	15435	—	15189
4	40	-	1.88	.563	.141	3	H1	—	—	—	15179
4	40	-	1.88	.563	.141	3	H2	19123	19211	19565	15185
4	-	48	1.88	.563	.141	3	H1	—	—	—	15192
4	-	48	1.88	.563	.141	3	H2	—	—	—	15197
5	40	-	1.94	.625	.141	2	H2	—	—	—	15214
5	40	-	1.94	.625	.141	3	H1	—	—	—	15204
5	40	-	1.94	.625	.141	3	H2	19124	19216	—	15210
5	-	44	1.94	.625	.141	3	H2	—	—	—	15221
6	32	-	2.00	.688	.141	2	H2	—	—	—	15235
6	32	-	2.00	.688	.141	2	H3	—	15439	—	15245
6	32	-	2.00	.688	.141	3	H1	—	—	—	15226
6	32	-	2.00	.688	.141	3	H2	—	19221	—	15232
6	32	-	2.00	.688	.141	3	H3	15224	—	19575	15238
6	-	40	2.00	.688	.141	2	H2	—	15440	—	15262
6	-	40	2.00	.688	.141	3	H2	—	—	—	15258
8	32	-	2.13	.750	.168	2	H2	—	—	—	15279
8	32	-	2.13	.750	.168	2	H3	—	—	—	15291
8	32	-	2.13	.750	.168	3	H2	—	—	—	15281
8	32	-	2.13	.750	.168	3	H3	—	—	—	15293
8	32	-	2.13	.750	.168	4	H1	—	—	—	15268
8	32	-	2.13	.750	.168	4	H2	—	19226	—	15276
8	32	-	2.13	.750	.168	4	H3	15270	—	19585	15284
8	32	-	2.13	.750	.168	4	H7	—	—	—	15295
8	-	36	2.13	.750	.168	4	H1	—	—	—	15300
8	-	36	2.13	.750	.168	4	H2	—	—	—	15302

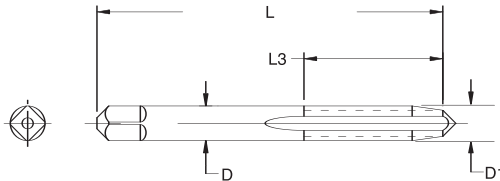
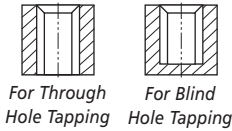
Hand taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.
Plug chamfer machine screw sizes continue on the next page.

(continued)

Hand Taps, Machine Screw and Fractional Sizes

Plug Chamfer 3 to 5 Pitches

- Series No. 5305TC / 5303TC TiCN Coated
- Series No. 2305 / 2303 TiN Coated
- Series No. 5305S / 5303S SH50 Steam Oxide
- Series No. 5305 / 5303 Uncoated



D1 = Tap Size D = Shank Diameter
L = Overall Length L3 = Thread Length

Alternate Coatings Available.

(Full package quantities only)



MACHINE SCREW

EDP Number - Plug Chamfer											
D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	D	Flutes	Pitch Dia. Limit	TiCN	TiN	SH50 Oxide	Uncoated
10	24	-	2.38	.875	.194	2	H2	—	—	—	15324
10	24	-	2.38	.875	.194	2	H3	—	—	—	15335
10	24	-	2.38	.875	.194	3	H3	—	15444	—	15337
10	24	-	2.38	.875	.194	4	H1	—	—	—	15314
10	24	-	2.38	.875	.194	4	H2	—	—	—	15321
10	24	-	2.38	.875	.194	4	H3	19126	19231	19600	15328
10	-	32	2.38	.875	.194	2	H2	—	—	—	15356
10	-	32	2.38	.875	.194	2	H3	—	15448	—	15368
10	-	32	2.38	.875	.194	3	H2	—	15449	—	15358
10	-	32	2.38	.875	.194	3	H3	—	15450	—	15370
10	-	32	2.38	.875	.194	3	H7	—	—	—	15374
10	-	32	2.38	.875	.194	4	H1	—	—	—	15345
10	-	32	2.38	.875	.194	4	H2	—	—	—	15353
10	-	32	2.38	.875	.194	4	H3	15348	19236	19615	15361
12	24	-	2.38	.938	.220	4	H3	19127	19241	—	15384
12	-	28	2.38	.938	.220	4	H3	—	—	—	15391

FRACTIONAL

EDP Number - Plug Chamfer											
D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	D	Flutes	Pitch Dia. Limit	TiCN	TiN	SH50 Steam Oxide	Uncoated
1/4	20	-	2.50	1.000	.255	2	H3	—	15453	—	14030
1/4	20	-	2.50	1.000	.255	3	H2	—	—	—	14020
1/4	20	-	2.50	1.000	.255	3	H3	—	15454	—	14032
1/4	20	-	2.50	1.000	.255	3	H5	—	—	—	14039
1/4	20	-	2.50	1.000	.255	4	H1	—	—	—	14011
1/4	20	-	2.50	1.000	.255	4	H2	—	—	—	14016
1/4	20	-	2.50	1.000	.255	4	H3	14009	19247	19170	14023
1/4	20	-	2.50	1.000	.255	4	H5	—	—	—	14036
1/4	20	-	2.50	1.000	.255	4	H11	—	—	—	14041
1/4	-	28	2.50	1.000	.255	2	H3	—	—	—	14063
1/4	-	28	2.50	1.000	.255	3	H3	—	15456	—	14065
1/4	-	28	2.50	1.000	.255	4	H1	—	—	—	14048
1/4	-	28	2.50	1.000	.255	4	H2	—	—	—	14052
1/4	-	28	2.50	1.000	.255	4	H3	19128	19253	19210	14056
1/4	-	28	2.50	1.000	.255	4	H4	—	—	—	14067

Hand taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.
Plug chamfer fractional sizes are continued on the next page.

**Greenfield LIGHTNING®
SERVICE Available**



Hand Taps

For Through or Blind Holes in General Machining Applications

(continued)

Hand Taps, Machine Screw and Fractional Sizes

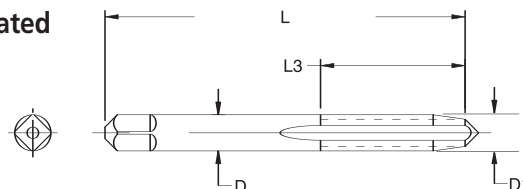
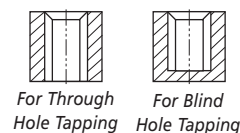
Plug Chamfer 3 to 5 Pitches

- Series No. 5305TC / 5303TC TiCN Coated
- Series No. 2305 / 2303 TiN Coated
- Series No. 5305S / 5303S SH50 Steam Oxide
- Series No. 5305 / 5303 Uncoated

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous

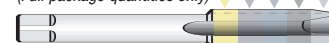
HIGH-PERFORMANCE TAPS

THREAD MILLS



D1 = Tap Size D = Shank Diameter
L = Overall Length L3 = Thread Length

Alternate Coatings Available.
(Full package quantities only)



FRACTIONAL

EDP Number - Plug Chamfer

D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	D	Flutes	Pitch Dia. Limit	TiCN	TiN	SH50 Oxide	Uncoated
5/16	18	-	2.72	1.125	.318	2	H3	—	15459	—	14100
5/16	18	-	2.72	1.125	.318	3	H3	—	15460	—	14102
5/16	18	-	2.72	1.125	.318	4	H1	—	—	—	14082
5/16	18	-	2.72	1.125	.318	4	H2	—	—	—	14087
5/16	18	-	2.72	1.125	.318	4	H3	19129	19258	19240	14093
5/16	18	-	2.72	1.125	.318	4	H5	—	—	—	14104
5/16	18	-	2.72	1.125	.318	4	H11	—	—	—	14109
5/16	-	24	2.72	1.125	.318	3	H3	—	15462	—	14130
5/16	-	24	2.72	1.125	.318	4	H1	—	—	—	14113
5/16	-	24	2.72	1.125	.318	4	H2	—	—	—	14118
5/16	-	24	2.72	1.125	.318	4	H3	19131	19263	19260	14123
5/16	-	24	2.72	1.125	.318	4	H4	—	—	—	14133
3/8	16	-	2.94	1.250	.381	3	H3	—	15464	—	14165
3/8	16	-	2.94	1.250	.381	4	H1	—	—	—	14147
3/8	16	-	2.94	1.250	.381	4	H2	—	—	—	14152
3/8	16	-	2.94	1.250	.381	4	H3	19132	19268	19280	14158
3/8	16	-	2.94	1.250	.381	4	H5	—	—	—	14169
3/8	16	-	2.94	1.250	.381	4	H11	—	—	—	14174
3/8	-	24	2.94	1.250	.381	3	H3	—	15466	—	14198
3/8	-	24	2.94	1.250	.381	4	H1	—	—	—	14180
3/8	-	24	2.94	1.250	.381	4	H2	—	—	—	14185
3/8	-	24	2.94	1.250	.381	4	H3	19134	19273	19305	14191
3/8	-	24	2.94	1.250	.381	4	H4	—	—	—	14201
7/16	14	-	3.16	1.438	.323	3	H3	—	15467	—	14229
7/16	14	-	3.16	1.438	.323	4	H3	19135	19277	—	14222
7/16	14	-	3.16	1.438	.323	4	H5	—	—	—	14232
7/16	-	20	3.16	1.438	.323	4	H3	19136	19283	—	14247
7/16	-	20	3.16	1.438	.323	4	H5	—	—	—	14256
1/2	13	-	3.38	1.656	.367	3	H3	—	15469	—	14289
1/2	13	-	3.38	1.656	.367	4	H1	—	—	—	14274
1/2	13	-	3.38	1.656	.367	4	H3	19137	19291	19360	14282
1/2	13	-	3.38	1.656	.367	4	H5	—	—	—	14293
1/2	13	-	3.38	1.656	.367	4	H11	—	—	—	14297
1/2	-	20	3.38	1.656	.367	3	H3	—	15470	—	14316
1/2	-	20	3.38	1.656	.367	4	H1	—	—	—	14301
1/2	-	20	3.38	1.656	.367	4	H3	19138	19297	19375	14309
1/2	-	20	3.38	1.656	.367	4	H5	—	—	—	14319
9/16	12	-	3.59	1.656	.429	4	H3	—	—	—	14339
9/16	12	-	3.59	1.656	.429	4	H5	—	—	—	14346
9/16	-	18	3.59	1.656	.429	4	H2	—	—	—	14353
9/16	-	18	3.59	1.656	.429	4	H3	—	—	—	14357
9/16	-	18	3.59	1.656	.429	4	H5	—	—	—	14364

Hand taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.
Plug chamfer fractional sizes are continued on the next page.

(continued)

Hand Taps, Machine Screw and Fractional Sizes

Plug Chamfer 3 to 5 Pitches

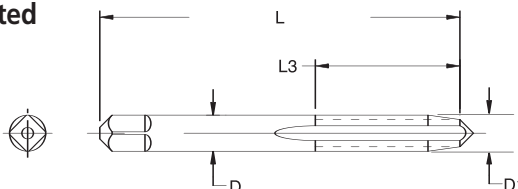
- Series No. 5305TC / 5303TC TiCN Coated
- Series No. 2305 / 2303 TiN Coated
- Series No. 5305S / 5303S SH50 Steam Oxide
- Series No. 5305 / 5303 Uncoated



For Through
Hole Tapping



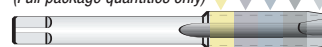
For Blind
Hole Tapping



D1 = Tap Size D = Shank Diameter
L = Overall Length L3 = Thread Length

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous

Alternate Coatings Available.
(Full package quantities only)



FRACTIONAL

D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	D	Flutes	Pitch Dia. Limit	EDP Number - Plug Chamfer			
								TiCN	TiN	SH50 Oxide	Uncoated
5/8	11	-	3.81	1.813	.480	4	H2	—	—	—	14378
5/8	11	-	3.81	1.813	.480	4	H3	19139	19307	19410	14380
5/8	11	-	3.81	1.813	.480	4	H5	—	—	—	14388
5/8	11	-	3.81	1.813	.480	4	H11	—	—	—	14391
5/8	-	18	3.81	1.813	.480	4	H2	—	—	—	14400
5/8	-	18	3.81	1.813	.480	4	H3	19140	19317	—	14403
5/8	-	18	3.81	1.813	.480	4	H5	—	—	—	14411
11/16	11	-	4.03	1.063	.542	4	H3	—	—	—	14424
11/16	-	16	4.03	1.063	.542	4	H3	—	—	—	14428
3/4	10	-	4.25	2.000	.590	4	H3	19141	19327	19445	14449
3/4	10	-	4.25	2.000	.590	4	H5	—	—	—	14457
3/4	-	16	4.25	2.000	.590	4	H3	19142	19337	19455	14472
3/4	-	16	4.25	2.000	.590	4	H4	—	—	—	14479
3/4	-	16	4.25	2.000	.590	4	H5	—	—	—	14482
7/8	9	-	4.69	2.219	.697	4	H4	—	19347	19465	14500
7/8	9	-	4.69	2.219	.697	4	H6	—	—	—	14508
7/8	-	14	4.69	2.219	.697	4	H4	—	19357	—	14517
7/8	-	14	4.69	2.219	.697	4	H6	—	—	—	14524
1	8	-	5.13	2.500	.800	4	H4	—	19367	19475	14545
1	8	-	5.13	2.500	.800	4	H6	—	—	—	14553
1	-	12	5.13	2.500	.800	4	H4	—	—	—	14558
1	-	14	5.13	2.500	.800	4	H2	—	—	—	14567
1	-	14	5.13	2.500	.800	4	H4	—	—	—	14569
1 1/8	7	-	5.44	2.563	.896	4	H4	—	—	—	14595
1 1/8	-	12	5.44	2.563	.896	4	H4	—	—	—	14604
1 1/4	7	-	5.75	2.563	1.021	4	H4	—	—	—	14613
1 1/4	-	12	5.75	2.563	1.021	6	H4	—	—	—	14621
1 3/8	6	-	6.06	3.000	1.108	4	H4	—	—	—	14633
1 3/8	-	12	6.06	3.000	1.108	6	H4	—	—	—	14641
1 1/2	6	-	6.38	3.000	1.233	4	H4	—	—	—	14646
1 1/2	-	12	6.38	3.000	1.233	6	H4	—	—	—	14654

Hand taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.
Bottoming chamfer machine screw sizes begin on the next page.

Greenfield LIGHTNING®
SERVICE Available



Hand Taps

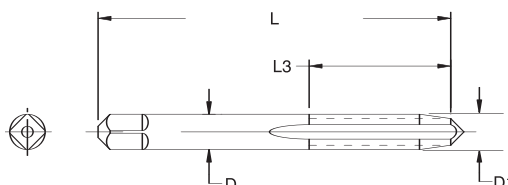
For Through or Blind Holes in General Machining Applications

Hand Taps, Machine Screw and Fractional Sizes

Bottoming Chamfer 1 to 2 Pitches

- Series No. 5305TC / 5303TC TiCN Coated
- Series No. 2305 / 2303 TiN Coated
- Series No. 5305S / 5303S SH50 Steam Oxide
- Series No. 5305 / 5303 Uncoated

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous



D1 = Tap Size
L = Overall Length
D = Shank Diameter
L3 = Thread Length

Alternate Coatings Available.
(Full package quantities only)



MACHINE SCREW

EDP Number - Bottoming Chamfer

D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	D	Flutes	Pitch Dia. Limit	TiCN	TiN	SH50 Oxide	Uncoated
0	-	80	1.63	.313	.141	2	H1	—	—	—	15104
0	-	80	1.63	.313	.141	2	H2	19174	19204	—	15108
1	64	-	1.69	.375	.141	2	H1	—	—	—	15116
1	-	72	1.69	.375	.141	2	H1	—	—	—	15122
1	-	72	1.69	.375	.141	2	H2	—	—	—	15126
2	56	-	1.75	.438	.141	2	H2	—	—	—	15139
2	56	-	1.75	.438	.141	3	H1	—	—	—	15130
2	56	-	1.75	.438	.141	3	H2	19175	15430	—	15136
2	-	64	1.75	.438	.141	3	H1	—	—	—	15143
2	-	64	1.75	.438	.141	3	H2	—	—	—	15146
3	48	-	1.81	.500	.141	2	H2	—	15432	—	15161
3	48	-	1.81	.500	.141	3	H2	—	—	—	15158
3	-	56	1.81	.500	.141	3	H2	—	—	—	15168
4	40	-	1.88	.563	.141	2	H2	—	—	—	15190
4	40	-	1.88	.563	.141	2	H2	19176	19213	19570	15186
4	-	48	1.88	.563	.141	3	H2	—	—	—	15198
5	40	-	1.94	.625	.141	2	H2	—	—	—	15215
5	40	-	1.94	.625	.141	3	H2	19177	15436	—	15211
5	-	44	1.94	.625	.141	3	H2	—	—	—	15222
6	32	-	2.00	.688	.141	2	H2	—	—	—	15236
6	32	-	2.00	.688	.141	2	H3	—	15438	—	15246
6	32	-	2.00	.688	.141	3	H1	—	—	—	15227
6	32	-	2.00	.688	.141	3	H2	19178	19223	—	15233
6	32	-	2.00	.688	.141	3	H3	—	—	19580	15239
6	-	40	2.00	.688	.141	3	H2	—	—	—	15259
8	32	-	2.13	.750	.168	2	H2	—	—	—	15280
8	32	-	2.13	.750	.168	2	H3	—	—	—	15292
8	32	-	2.13	.750	.168	3	H2	—	—	—	15282
8	32	-	2.13	.750	.168	3	H3	—	15441	—	15294
8	32	-	2.13	.750	.168	4	H1	—	—	—	15269
8	32	-	2.13	.750	.168	4	H2	19179	19228	—	15277
8	32	-	2.13	.750	.168	4	H3	—	—	19590	15285
8	-	36	2.13	.750	.168	4	H2	—	—	—	15303
10	24	-	2.38	.875	.194	2	H3	—	—	—	15336
10	24	-	2.38	.875	.194	3	H3	—	15443	—	15338
10	24	-	2.38	.875	.194	4	H2	—	—	—	15322
10	24	-	2.38	.875	.194	4	H3	19181	19233	19605	15329
10	-	32	2.38	.875	.194	3	H2	—	15446	—	15359

Hand taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.
Bottoming chamfer machine screw sizes continue on the next page.

(continued)

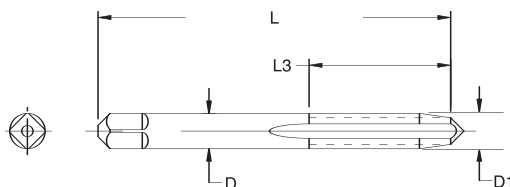
Hand Taps, Machine Screw and Fractional Sizes

Bottoming Chamfer 1 to 2 Pitches

- Series No. 5305TC / 5303TC TiCN Coated
- Series No. 2305 / 2303 TiN Coated
- Series No. 5305S / 5303S SH50 Steam Oxide
- Series No. 5305 / 5303 Uncoated



For Blind
Hole Tapping



D1 = Tap Size D = Shank Diameter
L = Overall Length L3 = Thread Length

Alternate Coatings Available.
(Full package quantities only)



MACHINE SCREW

									EDP Number - Bottoming Chamfer			
D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	D	Flutes	Pitch Dia. Limit		TiCN	TiN	SH50 Oxide	Uncoated
10	-	32	2.38	.875	.194	2	H2		—	—	—	15357
10	-	32	2.38	.875	.194	2	H3		—	15445	—	15369
10	-	32	2.38	.875	.194	3	H3		—	15447	—	15371
10	-	32	2.38	.875	.194	4	H1		—	—	—	15346
10	-	32	2.38	.875	.194	4	H2		—	—	—	15354
10	-	32	2.38	.875	.194	4	H3		19182	19238	19620	15362
12	24	-	2.38	.938	.220	4	H3		19183	19243	—	15385
12	-	28	2.38	.938	.220	4	H3		—	—	—	15392

FRACTIONAL

									EDP Number - Bottoming Chamfer			
D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	D	Flutes	Pitch Dia. Limit		TiCN	TiN	SH50 Steam Oxide	Uncoated
1/4	20	-	2.50	1.000	.255	2	H3		—	—	—	14031
1/4	20	-	2.50	1.000	.255	3	H3		—	—	—	14033
1/4	20	-	2.50	1.000	.255	4	H1		—	—	—	14012
1/4	20	-	2.50	1.000	.255	4	H2		—	—	—	14017
1/4	20	-	2.50	1.000	.255	4	H3		19184	19251	19180	14024
1/4	20	-	2.50	1.000	.255	4	H5		—	—	—	14037
1/4	-	28	2.50	1.000	.255	2	H3		—	—	—	14064
1/4	-	28	2.50	1.000	.255	3	H3		—	15455	—	14066
1/4	-	28	6.00	1.000	.255	4	H3		19185	19256	19220	14057
1/4	-	28	2.50	1.000	.255	4	H4		—	—	—	14068
5/16	18	-	2.72	1.125	.318	2	H3		—	15457	—	14101
5/16	18	-	2.72	1.125	.318	3	H3		—	15458	—	14103
5/16	18	-	2.72	1.125	.318	4	H1		—	—	—	14083
5/16	18	-	2.72	1.125	.318	4	H2		—	—	—	14088
5/16	18	-	2.72	1.125	.318	4	H3		19186	19261	19245	14094
5/16	18	-	2.72	1.125	.318	4	H5		—	—	—	14105
5/16	-	24	2.72	1.125	.318	3	H3		—	15461	—	14131
5/16	-	24	2.72	1.125	.318	4	H1		—	—	—	14114
5/16	-	24	2.72	1.125	.318	4	H3		19187	19266	19265	14124
5/16	-	24	2.72	1.125	.318	4	H4		—	—	—	14134
3/8	16	-	2.94	1.250	.381	3	H3		—	15463	—	14166
3/8	16	-	2.94	1.250	.381	4	H1		—	—	—	14148
3/8	16	-	2.94	1.250	.381	4	H2		—	—	—	14153
3/8	16	-	6.00	1.250	.381	4	H3		19188	19271	19285	14159
3/8	16	-	2.94	1.250	.381	4	H5		—	—	—	14170

Hand taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.
Bottoming chamfer fractional sizes continue on the next page.



Hand Taps

For Through or Blind Holes in General Machining Applications

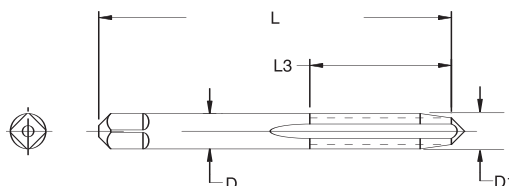
(continued)

Hand Taps, Machine Screw and Fractional Sizes

Bottoming Chamfer 1 to 2 Pitches

- Series No. 5305TC / 5303TC TiCN Coated
- Series No. 2305 / 2303 TiN Coated
- Series No. 5305S / 5303S SH50 Steam Oxide
- Series No. 5305 / 5303 Uncoated

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous



D1 = Tap Size D = Shank Diameter
L = Overall Length L3 = Thread Length

Alternate Coatings Available.

(Full package quantities only)



FRACTIONAL

								EDP Number - Bottoming Chamfer			
D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	D	Flutes	Pitch Dia. Limit	TiCN	TiN	SH50 Oxide	Uncoated
3/8	-	24	2.94	1.250	.381	3	H3	—	15465	—	14199
3/8	-	24	2.94	1.250	.381	4	H1	—	—	—	14181
3/8	-	24	6.00	1.250	.381	4	H3	19189	19275	19310	14192
3/8	-	24	2.94	1.250	.381	4	H4	—	—	—	14202
7/16	14	-	3.16	1.438	.323	4	H3	19191	19281	—	14223
7/16	14	-	3.16	1.438	.323	4	H5	—	—	—	14233
7/16	-	20	3.16	1.438	.323	4	H3	19192	19287	—	14248
7/16	-	20	3.16	1.438	.323	4	H5	—	—	—	14257
1/2	13	-	3.38	1.656	.367	3	H3	—	15468	—	14290
1/2	13	-	3.38	1.656	.367	4	H1	—	—	—	14275
1/2	13	-	3.38	1.656	.367	4	H3	19193	19293	19355	14283
1/2	13	-	3.38	1.656	.367	4	H5	—	—	—	14294
1/2	-	20	3.38	1.656	.367	4	H3	19194	19303	19380	14310
9/16	12	-	3.59	1.656	.429	4	H3	—	—	—	14340
9/16	-	18	3.59	1.656	.429	4	H3	—	—	—	14358
5/8	11	-	3.81	1.813	.480	4	H3	19197	19313	19415	14381
5/8	11	-	3.81	1.813	.480	4	H5	—	—	—	14389
5/8	-	18	3.81	1.813	.480	4	H3	19198	19323	—	14404
5/8	-	18	3.81	1.813	.480	4	H5	—	—	—	14412
11/16	11	-	4.03	1.063	.542	4	H3	—	—	—	14425
11/16	-	16	4.03	1.063	.542	4	H3	—	—	—	14429
3/4	10	-	4.25	2.000	.590	4	H3	19199	19333	19450	14450
3/4	10	-	4.25	2.000	.590	4	H5	—	—	—	14458
3/4	-	16	4.25	2.000	.590	4	H3	—	19343	19460	14473
3/4	-	16	4.25	2.000	.590	4	H5	—	—	—	14483
7/8	9	-	4.69	2.219	.697	4	H4	—	19353	19470	14501
7/8	-	14	4.69	2.219	.697	4	H4	—	19363	—	14518
1	8	-	5.13	2.500	.800	4	H4	—	19373	19480	14546
1	-	12	5.13	2.500	.800	4	H4	—	—	—	14559
1	-	14	5.13	2.500	.800	4	H4	—	—	—	14570
1 1/8	7	-	5.44	2.563	.896	4	H4	—	—	—	14596
1 1/8	-	12	5.44	2.563	.896	4	H4	—	—	—	14605
1 1/4	7	-	5.75	2.563	1.021	4	H4	—	—	—	14614
1 1/4	-	12	5.75	2.563	1.021	6	H4	—	—	—	14622
1 3/8	6	-	6.06	3.000	1.108	4	H4	—	—	—	14634
1 3/8	-	12	6.06	3.000	1.108	6	H4	—	—	—	14642
1 1/2	6	-	6.38	3.000	1.233	4	H4	—	—	—	14647
1 1/2	-	12	6.38	3.000	1.233	6	H4	—	—	—	14655

Hand taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.

Tap sets - one of each taper, plug, and bottoming chamfers begin on the next page.

Hand Tap Sets, Machine Screw and Fractional Sizes, for Tool Room Applications or Maintenance and Repair

One Each Taper, Plug, and Bottoming Chamfer

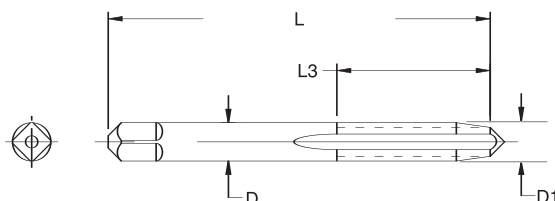
■ Series No. 5305 / 5303 Uncoated



For Through
Hole Tapping



For Blind
Hole Tapping



D1 = Tap Size D = Shank Diameter
L = Overall Length L3 = Thread Length



Set of One Each Taper, Plug,
and Bottoming Chamfer

MACHINE SCREW

EDP Number - Set of One Each
Taper, Plug, Bottoming Chamfer

D1	NC/UNC	NF/UNF	L	L3	D	Flutes	Pitch Dia. Limit	Uncoated
0	-	80	1.63	.313	.141	2	H1	15105
1	64	-	1.69	.375	.141	2	H1	15117
1	-	72	1.69	.375	.141	2	H1	15123
2	56	-	1.75	.438	.141	3	H1	15131
2	56	-	1.75	.438	.141	3	H2	15137
2	-	64	1.75	.438	.141	3	H1	15148
2	-	64	1.75	.438	.141	3	H2	15147
3	48	-	1.81	.500	.141	3	H2	15159
3	-	56	1.81	.500	.141	3	H2	15169
4	40	-	1.88	.563	.141	3	H2	15187
4	-	48	1.88	.563	.141	3	H2	15199
5	40	-	1.94	.625	.141	3	H2	15212
5	-	44	1.94	.625	.141	3	H2	15223
6	32	-	2.00	.688	.141	3	H1	15228
6	32	-	2.00	.688	.141	3	H2	15234
6	32	-	2.00	.688	.141	3	H3	15240
6	-	40	2.00	.688	.141	3	H2	15260
8	32	-	2.13	.750	.168	4	H2	15278
8	32	-	2.13	.750	.168	4	H3	15286
8	-	36	2.13	.750	.168	4	H2	15304
10	24	-	2.38	.875	.194	4	H2	15323
10	24	-	2.38	.875	.194	4	H3	15330
10	-	32	2.38	.875	.194	4	H1	15347
10	-	32	2.38	.875	.194	4	H2	15355
10	-	32	2.38	.875	.194	4	H3	15363
12	24	-	2.38	.938	.220	4	H3	15386
12	-	28	2.38	.938	.220	4	H3	15393

Tap sets - one of each taper, plug, and bottoming chamfers. Fractional sizes begin on the next page.

**Greenfield LIGHTNING®
SERVICE Available**



Hand Taps

For Through or Blind Holes in General Machining Applications

(continued)

Hand Tap Sets, Machine Screw and Fractional Sizes

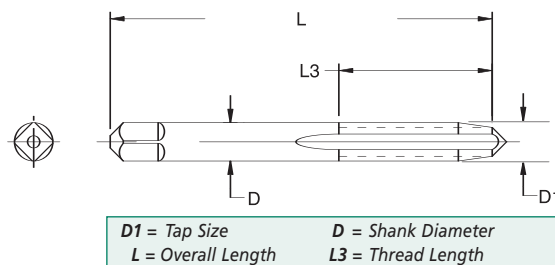
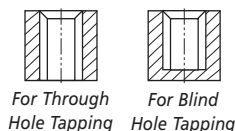
One Each Taper, Plug, and Bottoming Chamfer

■ Series No. 5305 / 5303 Uncoated

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous

HIGH-PERFORMANCE TAPS

THREAD MILLS



Set of One Each Taper, Plug, and Bottoming Chamfer

PRODUCTION TAPS

FRACTIONAL

EDP Number - Set of One Each Taper, Plug, Bottoming Chamfer

D1	NC/UNC	NF/UNF	L	L3	D	Flutes	Pitch Dia. Limit	Uncoated
1/4	20	-	2.50	1.000	.255	4	H1	14013
1/4	20	-	2.50	1.000	.255	4	H2	14018
1/4	20	-	2.50	1.000	.255	4	H3	14025
1/4	-	28	2.50	1.000	.255	4	H3	14058
5/16	18	-	2.72	1.125	.318	4	H3	14095
5/16	-	24	2.72	1.125	.318	4	H3	14125
3/8	16	-	2.94	1.250	.381	4	H3	14160
3/8	-	24	2.94	1.250	.381	4	H3	14193
7/16	14	-	3.16	1.438	.323	4	H3	14224
7/16	-	20	3.16	1.438	.323	4	H3	14249
1/2	13	-	3.38	1.656	.367	4	H3	14284
1/2	-	20	3.38	1.656	.367	4	H3	14311
9/16	12	-	3.59	1.656	.429	4	H3	14341
9/16	-	18	3.59	1.656	.429	4	H3	14359
5/8	11	-	3.81	1.813	.480	4	H3	14382
5/8	-	18	3.81	1.813	.480	4	H3	14405
11/16	11	-	4.03	1.063	.542	4	H3	14426
11/16	-	16	4.03	1.063	.542	4	H3	14430
3/4	10	-	4.25	2.000	.590	4	H3	14451
3/4	-	16	4.25	2.000	.590	4	H3	14474
7/8	9	-	4.69	2.219	.697	4	H4	14502
7/8	-	14	4.69	2.219	.697	4	H4	14519
1	8	-	5.13	2.500	.800	4	H4	14547
1	-	12	5.13	2.500	.800	4	H4	14560
1	-	14	5.13	2.500	.800	4	H4	14571
1 1/8	7	-	5.44	2.563	.896	4	H4	14597
1 1/8	-	12	5.44	2.563	.896	4	H4	14606
1 1/4	7	-	5.75	2.563	1.021	4	H4	14615
1 1/4	-	12	5.75	2.563	1.021	6	H4	14623
1 3/8	6	-	6.06	3.000	1.108	4	H4	14635
1 3/8	-	12	6.06	3.000	1.108	6	H4	14643
1 1/2	6	-	6.38	3.000	1.233	4	H4	14648
1 1/2	-	12	6.38	3.000	1.233	6	H4	14656

MAINTENANCE TOOLS

GAGES

TECHNICAL INFORMATION & INDEX

Metric Hand Taps

Features/Benefits:

- the most popular style of tap
- manufactured from select high-speed steel for increased wear life
- straight flute design
- can be used by hand or for tapping under power
- versatile taps for use in general machine tapping or CNC tapping applications
- use for through hole or blind hole tapping
- standard in right hand sizes in Unified and American National thread form
- hand taps store chips in their flutes next to the chamfered teeth during the threading operation
- for deep-hole threading more than 1 1/2 diameters of the tap-in depth, use a hand tap with fewer flutes for increased chip handling capabilities

Hand taps are available in three chamfer lengths for through hole or blind hole tapping:

- taper (7-10 pitches) - longest standard chamfer ensures easier starting and requires less tapping torque because of more working teeth
- plug (3-5 pitches) - the most universally used chamfer for hand or machine tapping in through or blind holes
- bottoming (1-2 pitches) - for threading close to the bottom of blind holes; the least efficient standard chamfer

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous



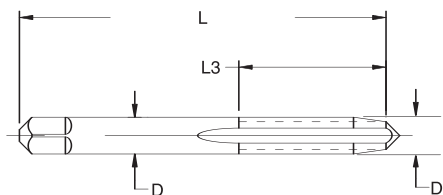
For Through Hole Tapping



For Blind Hole Tapping

Application Information:

- steels < 30Rc (TiN, TiCN, SH50)
- stainless steel < 30Rc (TiN, TiCN)
- cast iron and ductile iron (TiN, TiCN, SH50)
- non-ferrous materials (uncoated, MAXI)
- cast iron (uncoated, MAXI)
- aluminum (TiN+CrC/C)



D1 = Tap Size **D = Shank Diameter**
L = Overall Length **L3 = Thread Length**

Metric Hand Taps

Taper Chamfer 7-10 Pitches

Series No. 5353 Uncoated

EDP Number - Taper Chamfer

Size	L	L3	D	Flutes	Pitch Dia. Limit	Uncoated
M2 x 0,4	1.75	.438	.141	3	D3	14725
M3 x 0,5	1.94	.625	.141	3	D3	14741
M4 x 0,7	2.13	.750	.168	4	D4	14757
M5 x 0,8	2.38	.875	.194	4	D4	14773
M6 x 1	2.50	1.000	.255	4	D5	14781
M7 x 1	2.72	1.125	.318	4	D5	14789
M8 x 1,25	2.72	1.125	.318	4	D5	14797
M10 x 1,5	2.94	1.250	.381	4	D6	14813
M12 x 1,75	3.38	1.656	.367	4	D6	14829
M14 x 2	3.59	1.656	.429	4	D7	14845
M16 x 2	3.81	1.813	.480	4	D7	14861
M18 x 2,5	4.03	1.063	.542	4	D7	14877
M20 x 2,5	4.47	2.000	.652	4	D7	14893
M24 x 3	4.91	2.219	.760	4	D8	14909
M30 x 3,5	5.44	2.563	1.021	4	D9	14925
M36 x 4	6.06	3.000	1.233	4	D9	14941

Metric taps for 6H class of fit are suitable for MJ Aerospace internal threading applications.

Metric taps are manufactured to USCTI specifications and dimensions.

Metric tap blank dimensions are equivalent to inch taps.

Metric hand taps with plug chamfer begin on the next page.



Metric Hand Taps

For Through Holes in General Machining Applications

Metric Hand Taps

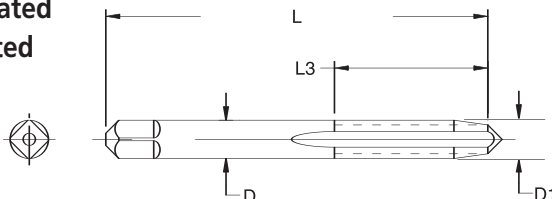
Plug Chamfer 3 to 5 Pitches

- Series No. 5353TC TiCN Coated
- Series No. 2353 TiN Coated
- Series No. 5353 Uncoated

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous

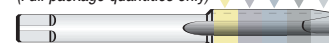


For Through Hole Tapping



$D1 = \text{Tap Size}$ $D = \text{Shank Diameter}$
 $L = \text{Overall Length}$ $L3 = \text{Thread Length}$

Alternate Coatings Available.
(Full package quantities only)



EDP Number - Plug Chamfer

Size	L	L3	D	Flutes	Pitch Dia. Limit	TiCN	TiN	Uncoated
M1,6 x 0,35	1.63	.313	.141	2	D3	—	—	14718
M2 x 0,4	1.75	.438	.141	3	D3	—	—	14726
M2,5 x 0,45	1.81	.500	.141	3	D3	—	—	14734
M3 x 0,5	1.94	.625	.141	3	D3	19217	15471	14742
M3,5 x 0,6	2.00	.688	.141	3	D4	—	—	14750
M4 x 0,7	2.13	.750	.168	4	D4	19219	15473	14758
M4,5 x 0,75	2.38	.875	.194	4	D4	—	—	14766
M5 x 0,8	2.38	.875	.194	4	D4	19222	19906	14774
M6 x 1	2.50	1.000	.255	4	D5	19224	19909	14782
M7 x 1	2.72	1.125	.318	4	D5	—	—	14790
M8 x 1,25	2.72	1.125	.318	4	D5	19225	19912	14798
M10 x 1,5	2.94	1.250	.381	4	D6	19227	19915	14814
M12 x 1,75	3.38	1.656	.367	4	D6	19229	19955	14830
M14 x 2	3.59	1.656	.429	4	D7	—	—	14846
M16 x 2	3.81	1.813	.480	4	D7	—	—	14862
M18 x 2,5	4.03	1.063	.542	4	D7	—	—	14878
M20 x 2,5	4.47	2.000	.652	4	D7	—	—	14894
M24 x 3	4.91	2.219	.760	4	D8	—	—	14910
M30 x 3,5	5.44	2.563	1.021	4	D9	—	—	14926
M36 x 4	6.06	3.000	1.233	4	D9	—	—	14942

Metric taps for 6H class of fit are suitable for MJ Aerospace internal threading applications.
Metric taps are manufactured to USCTI specifications and dimensions.

Metric tap blank dimensions are equivalent to inch taps.
Metric taps for 6H class of fit are suitable for MJ Aerospace internal threading applications.

Coating Information:

TiCN (Titanium Carbonitride) coated taps:

- TiCN coating enables higher tapping speeds for increased productivity and excellent tool life
- for tapping under power with extended tap wear life
- appropriate for a wide array of ferrous (steel) materials

TiN (Titanium Nitride) coated taps:

- TiN coating provides increased tap wear life and improved product thread finish
- higher tapping speeds may be possible with TiN coated taps
- for hand tapping or tapping under power
- appropriate for a wide array of ferrous materials

SH50 steam oxide treated taps:

- SH50 oxide treatment provides increased lubricity; applied primarily to prevent galling and loading in steels
- ideal for tapping a wide array of ferrous materials

TiN+CrC/C (Titanium Nitride plus Chromium Carbide Carbon) coated taps:

- combines the wear resistance of TiN with a lubricous top layer of chromium carbide carbon
- proprietary coating for both ferrous and non-ferrous materials
- effective in stainless steel (304, 316 only) and aluminum

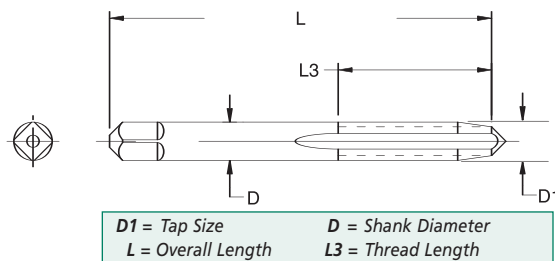
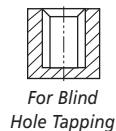
SH50 steam oxide treated taps:

- SH50 oxide treatment provides increased lubricity; applied primarily to prevent galling and loading in steels
- ideal for tapping a wide array of ferrous materials

Metric Hand Taps

Bottoming Chamfer 1 to 2 Pitches

- Series No. 5353TC TiCN Coated
- Series No. 2353 TiN Coated
- Series No. 5353 Uncoated



Alternate Coatings Available.
(Full package quantities only)



						EDP Number - Bottoming Chamfer		
Size	L	L3	D	Flutes	Pitch Dia. Limit	TiCN	TiN	Uncoated
M2 x 0,4	1.75	.438	.141	3	D3	—	—	14727
M3 x 0,5	1.94	.625	.141	3	D3	19201	15472	14743
M4 x 0,7	2.13	.750	.168	4	D4	19203	15474	14759
M5 x 0,8	2.38	.875	.194	4	D4	19205	19907	14775
M6 x 1	2.50	1.000	.255	4	D5	19206	19910	14783
M7 x 1	2.72	1.125	.318	4	D5	—	—	14791
M8 x 1,25	2.72	1.125	.318	4	D5	19212	19913	14799
M10 x 1,5	2.94	1.250	.381	4	D6	19214	19916	14815
M12 x 1,75	3.38	1.656	.367	4	D6	19215	19918	14831
M14 x 2	3.59	1.656	.429	4	D7	—	—	14847
M16 x 2	3.81	1.813	.480	4	D7	—	—	14863
M18 x 2,5	4.03	1.063	.542	4	D7	—	—	14879
M20 x 2,5	4.47	2.000	.652	4	D7	—	—	14895
M24 x 3	4.91	2.219	.760	4	D8	—	—	14911
M30 x 3,5	5.44	2.563	1.021	4	D9	—	—	14927
M36 x 4	6.06	3.000	1.233	4	D9	—	—	14943

Metric taps for 6H class of fit are suitable for MJ Aerospace internal threading applications.

Metric taps are manufactured to USCTI specifications and dimensions.

Metric tap blank dimensions are equivalent to inch taps.

Metric hand taps sets begin on the next page.

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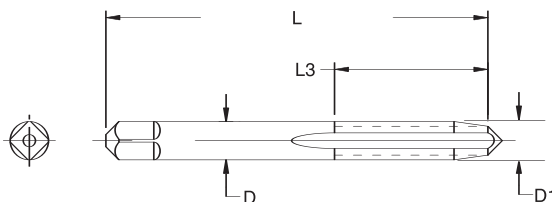
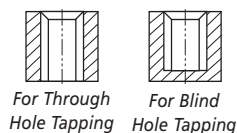
Metric Hand Taps

For Through or Blind Holes in General Machining Applications

Metric Hand Taps, Sets of One Each, Taper, Plug, Bottoming Chamfer

■ Series No. 5353 Uncoated

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous



D1 = Tap Size D = Shank Diameter
L = Overall Length L3 = Thread Length

Set of One Each Taper, Plug, and Bottoming Chamfer

EDP Number - Set of One Each Taper, Plug, Bottoming Chamfer

Size	L	L3	D	Flutes	Pitch Dia. Limit	Uncoated
M2 x 0,4	1.75	.438	.141	3	D3	14728
M3 x 0,5	1.94	.625	.141	3	D3	14744
M4 x 0,7	2.13	.750	.168	4	D4	14760
M5 x 0,8	2.38	.875	.194	4	D4	14777
M6 x 1	2.50	1.000	.255	4	D5	14784
M7 x 1	2.72	1.125	.318	4	D5	14792
M8 x 1,25	2.72	1.125	.318	4	D5	14800
M10 x 1,5	2.94	1.250	.381	4	D6	14816
M12 x 1,75	3.38	1.656	.367	4	D6	14832
M14 x 2	3.59	1.656	.429	4	D7	14848
M16 x 2	3.81	1.813	.480	4	D7	14864
M18 x 2,5	4.03	1.063	.542	4	D7	14880
M20 x 2,5	4.47	2.000	.652	4	D7	14896
M24 x 3	4.91	2.219	.760	4	D8	14912
M30 x 3,5	5.44	2.563	1.021	4	D9	14928
M36 x 4	6.06	3.000	1.233	4	D9	14944

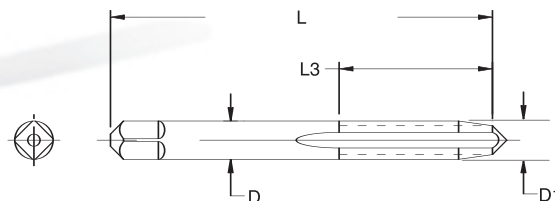
■ Metric Spark Plug Taps

Features/Benefits:

- ground thread, straight flute design
- plug chamfer 3-5 pitches
- standard sizes for spark plugs
- made from select high-speed steel
- SH50 steam oxide surface treatment standard

Application Information:

- steel < 30Rc
- stainless steel < 30Rc
- cast iron and ductile iron



D1 = Tap Size D = Shank Diameter
L = Overall Length L3 = Thread Length

Series 5353 Metric Spark Plug Taps, Surface Treated, Plug Chamfer

Size	L	L3	D	Flutes	Pitch Dia. Limit	EDP Number SH50 Oxide
M14 x 1,25	3.594	1.656	.429	4	H4	14586
M18 x 1,5	4.031	1.063	.542	4	H4	14590

Left Hand Production Hand Taps for Left Hand Threads

Features/Benefits:

- left hand ground thread taps for tapping left hand threads
- made from select high-speed steel
- straight flute design
- uncoated for use in most production materials

Hand taps are available in three chamfer lengths for through hole or blind hole tapping:

- taper (7-10 pitches) - longest standard chamfer ensures easier starting and requires less tapping torque because of more working teeth
- plug (3-5 pitches) - the most universally used chamfer for hand or machine tapping in through or blind holes
- bottoming (1-2 pitches) - for threading close to the bottom of blind holes; the least efficient standard chamfer

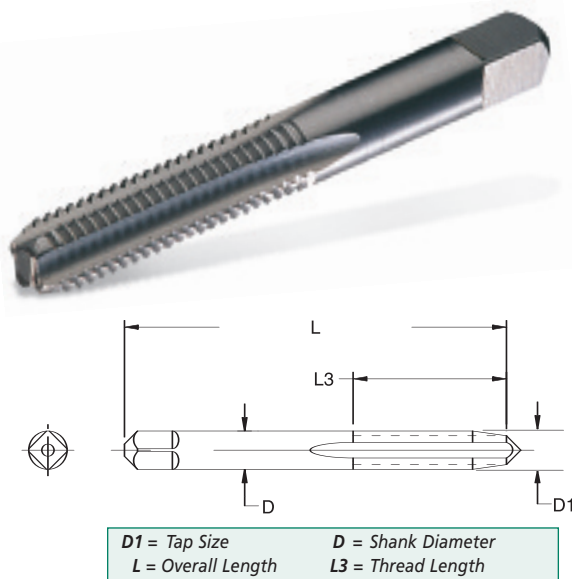
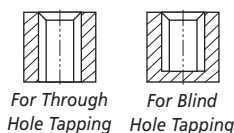
Application Information:

- steel < 30 Rc
- stainless steel < 30 Rc
- non-ferrous materials
- cast iron and ductile iron

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous

Alternate Coatings Available.

(Full package quantities only)



Left Hand Taps, Machine Screw and Fractional Sizes

Taper, Plug, and Bottoming Chamfer and Sets

Series 5305L and Series 5303L

Series 5305L and Series 5303L								EDP Number - Uncoated			Set of one each Taper, Plug, Bottoming
D1	NC/UNC	NF/UNF	L	L3	D	Flutes	Pitch Dia. Limit	Taper Chamfer 7-10 Pitch	Plug Chamfer 3-5 Pitch	Full Bottoming Chamfer 1-2 Pitch	
10	-	32	2.38	.875	.194	4	H3	—	15365	15366	—
1/4	20	-	2.50	1.000	.255	4	H3	14026	14027	14028	14029
1/4	-	28	2.50	1.000	.255	4	H3	—	14060	—	—
5/16	18	-	2.72	1.125	.318	4	H3	14096	14097	14098	14099
5/16	-	24	2.72	1.125	.318	4	H3	14126	14127	14128	14129
3/8	16	-	2.94	1.250	.381	4	H3	14161	14162	14163	14164
3/8	-	24	2.94	1.250	.381	4	H3	14194	14195	14196	14197
7/16	14	-	3.16	1.438	.323	4	H3	14225	14226	14227	14228
7/16	-	20	3.16	1.438	.323	4	H3	14250	14251	14252	14253
1/2	13	-	3.38	1.656	.367	4	H3	14285	14286	14287	14288
1/2	-	20	3.38	1.656	.367	4	H3	14312	14313	14314	14315
9/16	12	-	3.59	1.656	.429	4	H3	14342	14343	14344	14345
9/16	-	18	3.59	1.656	.429	4	H3	14360	14361	14362	14363
5/8	11	-	3.81	1.813	.480	4	H3	14383	14384	14385	14386
5/8	-	18	3.81	1.813	.480	4	H3	14406	14407	14408	14409
3/4	10	-	4.25	2.000	.590	4	H3	14452	14453	14454	14455
3/4	-	16	4.25	2.000	.590	4	H3	14475	14476	14477	14478



Extended-Length Hand Taps

For Through or Blind Holes in General Machining Applications

6" Extension Hand Taps for Long-Reach Applications

Features/Benefits:

- ground thread one-piece taps for long-reach applications
- made from select high-speed steel
- made to standard USCTI tap dimensions with shanks extended to 6" overall length
- straight flute design
- uncoated for use in most production materials
- long shank enables tapping in places that might be inaccessible for regular ANSI length taps

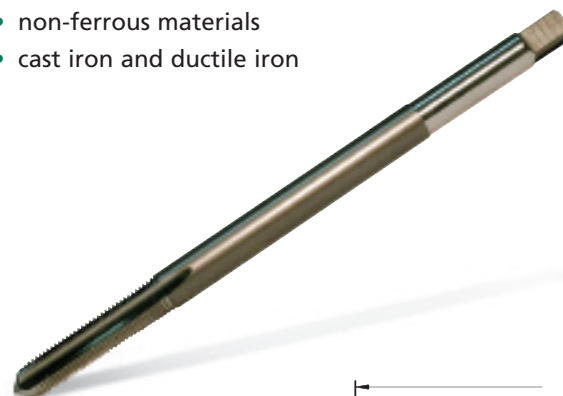
Hand taps are available in three chamfer lengths for through hole or blind hole tapping:

- taper (7-10 pitches) - longest standard chamfer ensures easier starting and requires less tapping torque because of more working teeth
- plug (3-5 pitches) - the most universally used chamfer for hand or machine tapping in through or blind holes
- bottoming (1-2 pitches) - for threading close to the bottom of blind holes; the least efficient standard chamfer

Application Information:

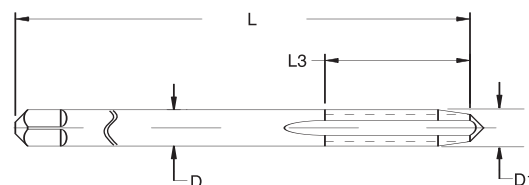
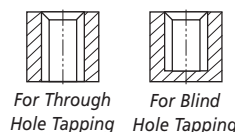
- steel < 30 Rc
- stainless steel < 30 Rc
- non-ferrous materials
- cast iron and ductile iron

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous



Alternate Coatings Available.

(Full package quantities only)



D1 = Tap Size
L = Overall Length
D = Shank Diameter
L3 = Thread Length

6" Extended-Length Hand Taps, Machine Screw and Fractional Sizes

Series 5305 (EXT) and Series 5303 (EXT) Uncoated, Plug, and Bottoming Chamfer

D1	NC/UNC	NF/UNF	L	L3	D	Flutes	Pitch Dia. Limit	EDP Number - Uncoated	
								Plug Chamfer 3-5 Pitches	Full Bottoming Chamfer 1-2 Pitches
6	32	-	6.00	.688	.141	3	H3	18827	18828
8	32	-	6.00	.750	.168	4	H3	18891	18892
10	24	-	6.00	.875	.194	4	H3	18833	18834
10	-	32	6.00	.875	.194	4	H3	18836	18837
1/4	20	-	6.00	1.000	.255	4	H3	18839	18840
1/4	-	28	6.00	1.000	.255	4	H3	18842	18843
5/16	-	24	6.00	.591	.318	4	H3	18848	18849
5/16	18	-	6.00	.669	.318	4	H3	18845	18846
3/8	-	24	6.00	1.250	.381	4	H3	18854	18855

Also available in GUN Tap Series No. 5301 (EXT). See page 94.

■ GP+ GUN® Taps for Through Holes (DIN Length)

High-Performance Spiral Point Taps for Industrial Applications (Patent Pending)

P	Steel
M	Stainless Steel
K	Cast Iron

Features/Benefits:

- manufactured from vanadium HSS
- improved performance
- optimized low torque design for free cutting action
- improved geometry for longer tool life
- better quality threads
- DIN length with ANSI shank with a neck for CNC use
- TiCN coating; harder and more resistant than TiN

Application Information:

- steel (TiCN)
- stainless steel < 30 Rc (TiCN)
- stainless steel 304, 316 < 275 Bhn (TiN+Cr/C available by special order)
- ductile cast iron (TiCN)



For Through Hole Tapping



D1 = Tap Size D = Shank Diameter
L = Overall Length L3 = Thread Length L4 = Neck Length

HIGH-PERFORMANCE TAPS

THREAD MILLS

PRODUCTION TAPS

MAINTENANCE TOOLS

GAGES

TECHNICAL INFORMATION & INDEX

GP+ GUN® Taps for Through Holes

■ Series No. 2331 Spiral Point Plug Chamfer 3 to 5 Pitches

									EDP Number
D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L*	L3*	L4*	D*	Flutes	Pitch Dia. Limit	TiCN
4	40	-	2.09	.310	.250	.141	2	H2	25830
5	40	-	2.21	.433	.276	.141	2	H2	25833
6	32	-	2.21	.380	.310	.141	2	H3	25836
8	32	-	2.48	.380	.380	.168	3	H3	25839
10	24	-	2.76	.500	.380	.194	3	H3	25842
10	-	32	2.76	.500	.380	.194	3	H3	25843
1/4	20	-	3.15	.630	.380	.255	3	H3	25848
1/4	-	28	3.15	.630	.380	.255	3	H3	25850
5/16	18	-	3.54	.690	.440	.318	3	H3	25852
5/16	-	24	3.54	.690	.440	.318	3	H3	25854
3/8	16	-	3.94	.750	.500	.381	3	H3	25856
3/8	-	24	3.94	.750	.500	.381	3	H3	25858
7/16	14	-	3.94	.880	-	.323	3	H3	25860
7/16	-	20	3.94	.880	-	.323	3	H3	25862
1/2	13	-	4.33	.940	-	.367	3	H3	25864
1/2	-	20	4.33	.940	-	.367	3	H3	25866

*GP+ GUN taps are built to DIN lengths with ANSI shank dimensions
GUN® taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.

GP+ Metric GUN® Taps for Through Holes

■ Series No. 2361 Spiral Point Plug Chamfer 3 to 5 Pitches

								EDP Number
Size	L*	L3*	L4*	D*	Flutes	Pitch Dia. Limit	TiCN	
M3 x 0,5	2.21	.380	.310	.141	2	D3	25867	
M4 x 0,7	2.48	.380	.380	.168	3	D4	25868	
M5 x 0,8	2.76	.500	.380	.194	3	D4	25869	
M6 x 1	3.15	.630	.380	.255	3	D5	25870	
M8 x 1,25	3.54	.690	.440	.318	3	D5	25871	
M10 x 1,5	3.94	.750	.500	.381	3	D6	25872	
M12 x 1,75	4.33	.940	-	.367	3	D6	25873	

*GP+ GUN taps are built to DIN lengths with ANSI shank dimensions
Metric taps for 6H class of fit are suitable for MJ Aerospace internal threading applications.

GUN® Taps

For Through Holes in General Machining Applications



HIGH-PERFORMANCE TAPS

THREAD MILLS

PRODUCTION TAPS

MAINTENANCE TOOLS

GAGES

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GUN® Taps for Through Holes

Spiral Point

Features/Benefits:

- GUN taps, the most efficient taps for through holes, "shoot" chips ahead of the cutting action to reduce loading and clogging the flutes
- steam oxide finish gives added wear life in ferrous materials
- high-performance TiN, TiN+CrC/C, and TiCN coatings enable higher tapping speeds for increased productivity; alternate tap coatings are available as stock modifications

Application Information:

- use for through hole tapping in a wide variety of materials:
 - steel (SH50, TiCN, TiN, TiN+CrC/C)
 - stainless steel < 30 Rc (SH50, TiN+CrC/C, TiCN, TiN)
 - non-ferrous materials (uncoated)
 - cast iron and ductile iron (uncoated, SH50, TiCN, TiN)

Coating Information:

TiCN (Titanium Carbonitride) coated taps:

- enables higher tapping speeds for increased productivity and excellent tool life

- high wear resistance and extended tap wear life
- in abrasive materials, higher wear resistance and longer tap wear life than TiN
- appropriate for a wide array of ferrous (steel) materials

TiN (Titanium Nitride) coated taps:

- provides increased tap wear life and improved product thread finish
- higher tapping speeds are possible
- appropriate for a wide array of ferrous materials

TiAlN (Titanium Aluminum Nitride) coated taps:

- offers improved wear life and thread finish
- especially useful under high temperature conditions
- use with caution in non-ferrous materials

TiN+CrC/C (Titanium Nitride plus Chromium Carbide Carbon) coated taps:

- combines wear resistance of TiN with a lubricious top layer of chromium carbide carbon
- proprietary coating for both ferrous and non-ferrous materials
- effective in stainless steel (304, 316 only), and aluminum

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous

SH50 steam oxide treated taps:

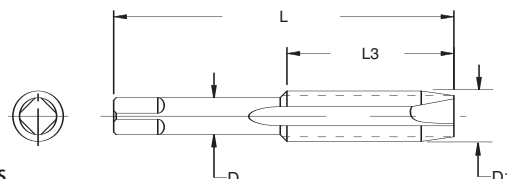
- SH50 oxide treatment provides increased lubricity; applied primarily to prevent galling and loading in steels
- ideal for tapping a wide array of ferrous materials



GUN® taps "shoot" chips ahead of the cutting action.



For Through Hole Tapping



D1 = Tap Size D = Shank Diameter
L = Overall Length L3 = Thread Length

GUN® Taps for Through Holes

Spiral Point, Plug Chamfer 3 to 5 Pitches

- Series No. 5301TC TiCN Coated
- Series No. 2301 TiN Coated
- Series No. 5301S SH50 Oxide Coated
- Series No. 5301 Uncoated

MACHINE SCREW

D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	D	Flutes	Pitch Dia. Limit	EDP Number			
								TiCN	TiN	SH50 Oxide	Uncoated
0	-	80	1.63	.313	.141	2	H1	—	—	—	13201
0	-	80	1.63	.313	.141	2	H2	19011	19001	13111	13202
1	64	-	1.69	.375	.141	2	H1	—	—	—	13203
1	64	-	1.69	.375	.141	2	H2	—	19770	—	13204
1	-	72	1.69	.375	.141	2	H1	—	—	—	13205
1	-	72	1.69	.375	.141	2	H2	—	19771	13115	13206
2	56	-	1.75	.438	.141	2	H1	—	—	—	13207
2	56	-	1.75	.438	.141	2	H2	19012	19006	13117	13208
2	-	64	1.75	.438	.141	2	H2	—	19772	—	13211
3	48	-	1.81	.500	.141	2	H2	—	19007	13119	13213
3	-	56	1.81	.500	.141	2	H1	—	—	—	13214
3	-	56	1.81	.500	.141	2	H2	—	19773	13121	13215

Machine screw size GUN taps are continued on the next page.

(continued)

GUN® Taps for Through Holes

Spiral Point, Plug Chamfer 3 to 5 Pitches

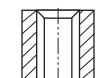
- Series No. 5301TC TiCN Coated
- Series No. 2301 TiN Coated
- Series No. 5301S SH50 Oxide Coated
- Series No. 5301 Uncoated

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous

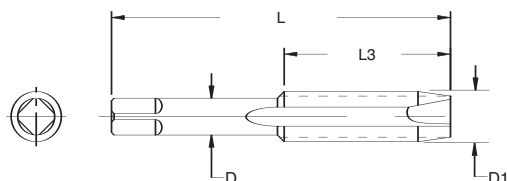
Alternate Coatings Available.
(Full package quantities only)



D1 = Tap Size D = Shank Diameter
L = Overall Length L3 = Thread Length



For Through Hole Tapping



MACHINE SCREW

								EDP Number			
D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	D	Flutes	Pitch Dia. Limit	TiCN	TiN	SH50 Oxide	Uncoated
4	-	36	1.88	.563	.141	2	H2	—	—	13126	13217
4	40	-	1.88	.563	.141	2	H1	—	—	—	13218
4	40	-	1.88	.563	.141	2	H2	19013	19016	13123	13219
4	-	48	1.88	.563	.141	2	H2	—	19774	—	13223
5	40	-	1.94	.625	.141	2	H1	—	—	—	13224
5	40	-	1.94	.625	.141	2	H2	19014	19021	13128	13225
5	44	44	1.94	.625	.141	2	H2	—	19775	—	13229
6	32	-	2.00	.688	.141	2	H1	—	19777	—	13230
6	32	-	2.00	.688	.141	2	H2	—	19031	13131	13231
6	32	-	2.00	.688	.141	2	H3	19032	19036	13132	13232
6	32	-	2.00	.688	.141	2	H7	—	19779	—	13235
6	-	40	2.00	.688	.141	2	H2	19037	19038	13134	13237
8	32	-	2.13	.750	.168	2	H1	—	19780	—	13240
8	32	-	2.13	.750	.168	2	H2	—	19039	13136	13241
8	32	-	2.13	.750	.168	2	H3	19040	19046	13137	13242
8	32	-	2.13	.750	.168	2	H7	—	19781	—	13244
8	-	36	2.13	.750	.168	2	H2	—	19782	13139	13246
10	24	-	2.38	.875	.194	2	H1	—	19783	—	13249
10	24	-	2.38	.875	.194	2	H2	—	19784	13141	13250
10	24	-	2.38	.875	.194	2	H3	19015	19056	13142	13251
10	24	-	2.38	.875	.194	2	H7	—	19785	—	13252
10	-	32	2.38	.875	.194	2	H1	—	19786	—	13255
10	-	32	2.38	.875	.194	2	H2	—	19069	13145	13256
10	-	32	2.38	.875	.194	2	H3	19072	19071	13146	13257
10	-	32	2.38	.875	.194	2	H7	—	19787	—	13260
12	24	-	2.38	.938	.220	2	H3	19017	19076	13148	13262
12	-	28	2.38	.938	.220	2	H3	—	19788	13149	13264

FRACTIONAL

								EDP Number			
D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	D	Flutes	Pitch Dia. Limit	TiCN	TiN	SH50 Oxide	Uncoated
1/4	20	-	2.50	1.000	.255	2	H1	—	19789	—	13268
1/4	20	-	2.50	1.000	.255	2	H2	—	19079	13151	13269
1/4	20	-	2.50	1.000	.255	2	H3	19485	19086	13152	13270
1/4	20	-	2.50	1.000	.255	2	H5	—	19096	—	13273
1/4	20	-	2.50	1.000	.255	3	H3	19081	19088	13154	13272
1/4	20	-	2.50	1.000	.255	3	H5	—	—	—	13274
1/4	-	28	2.50	1.000	.255	2	H1	—	—	—	13277
1/4	-	28	2.50	1.000	.255	2	H2	—	19790	13157	13278
1/4	-	28	2.50	1.000	.255	2	H3	—	19101	13158	13280
1/4	-	28	2.50	1.000	.255	2	H4	—	19793	—	13282
1/4	-	28	2.50	1.000	.255	3	H2	19018	19791	—	13279
1/4	-	28	2.50	1.000	.255	3	H4	—	19794	—	13283

Fractional size GUN taps are continued on the next page.

GUN® Taps

For Through Holes in General Machining Applications



(continued)

GUN® Taps for Through Holes

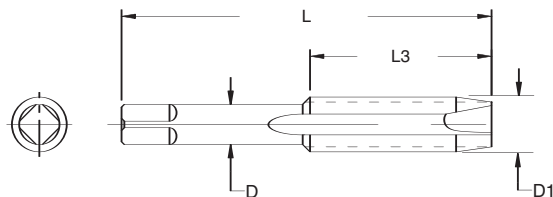
Spiral Point, Plug Chamfer 3 to 5 Pitches

- Series No. 5301TC TiCN Coated
- Series No. 2301 TiN Coated
- Series No. 5301S SH50 Oxide Coated
- Series No. 5301 Uncoated

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous

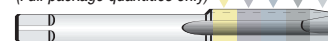


For Through Hole Tapping



D1 = Tap Size D = Shank Diameter
L = Overall Length L3 = Thread Length

Alternate Coatings Available.
(Full package quantities only)



FRACTIONAL

D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	D	Flutes	Pitch Dia. Limit	EDP Number			
								TiCN	TiN	SH50 Oxide	Uncoated
5/16	18	-	2.72	1.125	.318	2	H1	—	19795	—	13289
5/16	18	-	2.72	1.125	.318	2	H2	—	19796	—	13290
5/16	18	-	2.72	1.125	.318	2	H3	—	19106	13164	13291
5/16	18	-	2.72	1.125	.318	2	H5	—	19797	—	13294
5/16	18	-	2.72	1.125	.318	3	H3	19019	—	13166	13293
5/16	18	-	2.72	1.125	.318	3	H5	—	19798	—	13295
5/16	-	24	2.72	1.125	.318	2	H1	—	—	—	13297
5/16	-	24	2.72	1.125	.318	2	H2	—	19799	13169	13298
5/16	-	24	2.72	1.125	.318	2	H3	—	19108	13170	13300
5/16	-	24	2.72	1.125	.318	2	H4	—	—	—	13302
5/16	-	24	2.72	1.125	.318	3	H4	19020	—	—	13303
3/8	16	-	2.94	1.250	.381	3	H1	—	—	—	13305
3/8	16	-	2.94	1.250	.381	3	H2	—	19800	—	13306
3/8	16	-	2.94	1.250	.381	3	H3	19022	19111	13176	13307
3/8	16	-	2.94	1.250	.381	3	H5	—	19801	—	13309
3/8	-	24	2.94	1.250	.381	3	H1	—	—	—	13311
3/8	-	24	2.94	1.250	.381	3	H2	—	19802	—	13312
3/8	-	24	2.94	1.250	.381	3	H3	19023	19112	13180	13313
3/8	-	24	2.94	1.250	.381	3	H4	—	19803	—	13315
7/16	14	-	3.16	1.438	.323	3	H2	—	—	—	13318
7/16	14	-	3.16	1.438	.323	3	H3	19024	19113	13183	13319
7/16	14	-	3.16	1.438	.323	3	H5	—	19804	—	13320
7/16	-	20	3.16	1.438	.323	3	H3	19025	19114	13185	13324
7/16	-	20	3.16	1.438	.323	3	H5	—	19805	—	13325
1/2	13	-	3.38	1.656	.367	3	H2	—	19806	—	13327
1/2	13	-	3.38	1.656	.367	3	H3	19026	19116	13189	13328
1/2	13	-	3.38	1.656	.367	3	H5	—	19807	—	13330
1/2	-	20	3.38	1.656	.367	3	H1	—	—	—	13332
1/2	-	20	3.38	1.656	.367	3	H2	—	—	—	13333
1/2	-	20	3.38	1.656	.367	3	H3	19027	19117	13193	13334
1/2	-	20	3.38	1.656	.367	3	H5	—	19808	—	13336
5/8	11	-	3.81	1.813	.480	3	H3	19028	19118	13195	13339
5/8	11	-	3.81	1.813	.480	3	H5	—	—	—	13340
5/8	-	18	3.81	1.813	.480	3	H3	—	19809	13199	13342
3/4	10	-	4.25	2.000	.590	3	H3	19029	19119	13197	13343
3/4	10	-	4.25	2.000	.590	3	H5	—	19810	—	13344

GUN® taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.

**Greenfield LIGHTNING®
SERVICE Available**

■ **Oversize GUN® Taps for Through Holes**

Spiral Point

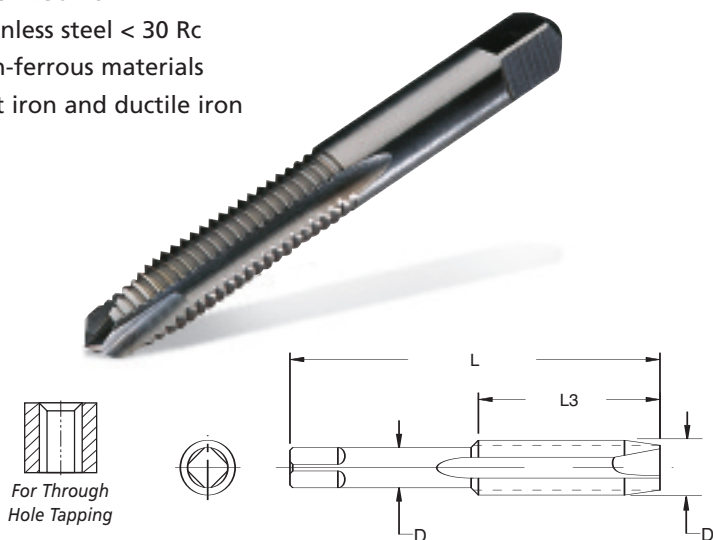
Features/Benefits:

- GUN taps, the most efficient taps for through holes, "shoot" chips ahead of the cutting action to reduce loading and clogging the flutes
- H11 (.005" oversize) taps are for applications where the workpiece will be plated or heat-treated after tapping
- manufactured from select HSS
- reduces tapping problems in through hole tapping
- metric tap blank dimensions are equivalent to inch taps and manufactured to USCTI specifications and dimensions
- uncoated taps standard; alternate coatings are available as stock modifications

Application Information:

- steel < 30 Rc
- stainless steel < 30 Rc
- non-ferrous materials
- cast iron and ductile iron

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous



D1 = Tap Size **D = Shank Diameter**
L = Overall Length **L3 = Thread Length**



GUN® taps "shoot" chips ahead of the cutting action.

Oversize GUN® Taps for Through Holes

■ Series No. 5301F Spiral Point, Plug Chamfer 3 to 5 Pitches

D1	NC/UNC	L	L3	D	Flutes	Pitch Dia. Limit	EDP Number
							Uncoated
1/4	20	2.50	1.000	.255	2	H11	13275
5/16	18	2.72	1.125	.318	2	H11	13296
3/8	16	2.94	1.250	.381	3	H11	13310
1/2	13	3.38	1.656	.367	3	H11	13331
5/8	11	3.81	1.813	.480	3	H11	13341

Greenfield LIGHTNING®
SERVICE Available

GUN® Taps

Extended Shank for Long Reach Applications



HIGH-PERFORMANCE TAPS

THREAD MILLS

PRODUCTION TAPS

MAINTENANCE TOOLS

GAGES

TECHNICAL
INFORMATION & INDEX

Extended Shank GUN® Taps for Through Holes

Spiral Point

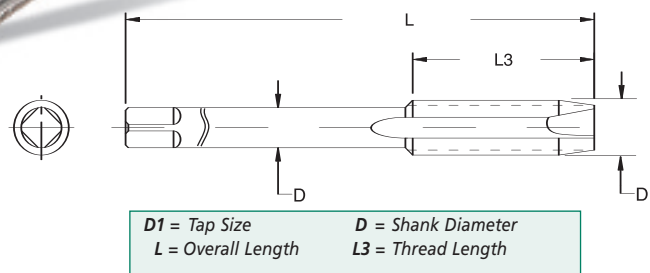
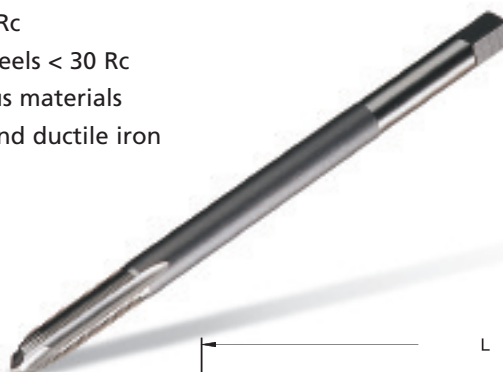
Features/Benefits:

- GUN taps, the most efficient taps for through holes, "shoot" chips ahead of the cutting action to reduce loading and clogging the flutes
- shanks are extended for long-reach applications
- standard USCTI dimensions except for shank length
- uncoated taps standard; high-performance coatings available as stock modifications

Application Information:

- steel < 30 Rc
- stainless steels < 30 Rc
- non-ferrous materials
- cast iron and ductile iron

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous



6" Extension GUN® Taps for Through Holes

Series No. 5301 (EXT) Spiral Point, Plug Chamfer 3 to 5 Pitches

								EDP Number
D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	D	Flutes	Pitch Dia. Limit	Uncoated
6	32	-	6.00	.688	.141	2	H3	18930
8	32	-	6.00	.750	.168	2	H3	18932
10	24	-	6.00	.875	.194	2	H3	18934
10	-	32	6.00	.875	.194	2	H3	18935
1/4	20	-	6.00	1.000	.255	2	H3	18936
1/4	-	28	6.00	1.000	.255	2	H3	18937
5/16	18	-	6.00	1.125	.318	2	H3	18938
5/16	-	24	6.00	1.125	.318	2	H3	18939
3/8	16	-	6.00	1.250	.381	3	H3	18940
3/8	-	24	6.00	1.250	.381	3	H3	18941

Also available in Hand Tap Series No. 5305 / 5303 see page 88.

GUN® taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.



GUN® taps "shoot" chips ahead of the cutting action.

Alternate Coatings Available.
(Full package quantities only)



THREADING: Extension Taps

Extension taps are hand or GUN (spiral point) taps with a longer shank designed for reach. The shanks on all standard extension taps follow the same rules per USCTI Table 302 and are supplied with the same size shanks as all other taps of the same sizes. Taps 3/8" or smaller must be special ordered to have shanks smaller than the tap major diameter.

■ Heavy Duty GUN® Taps for Tough Tapping Through Hole Applications

Spiral Point

Features/Benefits:

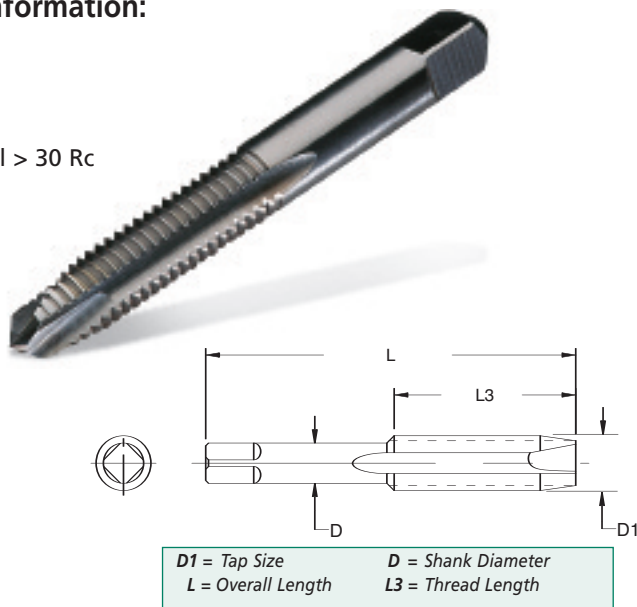
- GUN taps, the most efficient taps for through holes, "shoot" chips ahead of the cutting action to reduce loading and clogging the flutes
- heavy-duty construction for tapping tough or hardened ferrous materials
- three flutes for extra cutting edges in difficult applications
- use when conventional GUN taps produce marginal results
- SH-47 oxide/nitride surface treatment extends tap wear life and helps improve thread quality



GUN® taps "shoot" chips ahead of the cutting action.

Application Information:

- steel
- stainless steel
- cast iron
- hardened steel > 30 Rc



Heavy Duty GUN® Taps for Through Holes

■ Series No. 5601 Spiral Point, Plug Chamfer 3 to 5 Pitches

D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	D	Flutes	Pitch Dia. Limit	EDP Number
								SH47 Nitride Oxide
6	32	-	2.00	.688	.141	3	H3	16802
8	32	-	2.13	.750	.168	3	H3	16805
10	24	-	2.38	.875	.194	3	H3	16807
10	-	32	2.38	.875	.194	3	H3	16809
1/4	20	-	2.50	1.000	.255	3	H3	16810
1/4	-	28	2.50	1.000	.255	3	H3	16812
5/16	18	-	2.72	1.125	.318	3	H3	16814
5/16	-	24	2.72	1.125	.318	3	H3	16816
3/8	16	-	2.94	1.250	.381	3	H3	16818
3/8	-	24	2.94	1.250	.381	3	H3	16820
7/16	14	-	3.16	1.438	.323	3	H3	16822
7/16	-	20	3.16	1.438	.323	3	H3	16824
1/2	13	-	3.38	1.656	.367	3	H3	16826
1/2	-	20	3.38	1.656	.367	3	H3	16828
5/8	11	-	3.81	1.813	.480	3	H3	16830
3/4	10	-	4.25	2.000	.590	3	H3	16832

GUN® taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.

Greenfield LIGHTNING®
SERVICE Available

GUN® Taps

For Blind Hole Tapping



Bottoming Chamfer GUN® Taps for Blind Holes

Spiral Point

Features/Benefits:

- GUN taps "shoot" chips ahead of the cutting action to reduce loading and clogging the flutes
- bottoming chamfer enables threading close to the bottom of blind holes
- recommended for use in blind holes where a short chamfer is required
- least efficient GUN tap design; for improved wear life, use GUN taps with longer chamfers (plug style)

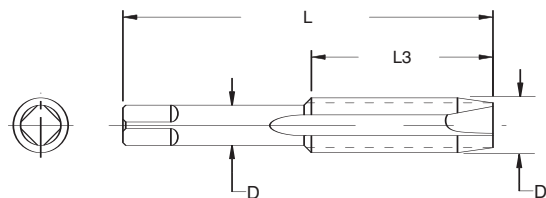
Application Information:

- use for blind hole tapping in a wide variety of materials:
 - steel (oxide, TiCN, TiN)
 - stainless steel < 30 Rc (oxide, TiCN, TiN)
 - stainless steel 304, 316 (TiN+CrC/C)
 - non-ferrous materials (uncoated)
 - cast iron (uncoated, oxide, TiCN, TiN)

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous



For Blind Hole Tapping



D1 = Tap Size
L = Overall Length
D = Shank Diameter
L3 = Thread Length

GUN® Taps for Through Holes

Series No. 5302 Spiral Point, Bottoming Chamfer 1 to 2 Pitches

								EDP Number
D1	NC/UNC	NF/UNF	L	L3	D	Flutes	Pitch Dia. Limit	Uncoated
0	-	80	1.63	0.313	0.141	2	H2	13602
2	56	-	1.75	0.438	0.141	2	H2	13606
3	48	-	1.81	0.500	0.141	2	H2	13609
4	40	-	1.88	0.563	0.141	2	H2	13614
5	40	-	1.94	0.625	0.141	2	H2	13617
6	32	-	2.00	0.688	0.141	2	H2	13619
6	32	-	2.00	0.688	0.141	2	H3	13620
6	-	40	2.00	0.688	0.141	2	H2	13623
8	32	-	2.13	0.750	0.168	2	H2	13625
8	32	-	2.13	0.750	0.168	2	H3	13626
10	24	-	2.38	0.875	0.194	2	H2	13629
10	24	-	2.38	0.875	0.194	2	H3	13630
10	-	32	2.38	0.875	0.194	2	H2	13633
10	-	32	2.38	0.875	0.194	2	H3	13634
12	24	-	2.38	0.938	0.220	2	H3	13636
1/4	20	-	2.50	1.000	0.255	2	H3	13638
1/4	-	28	2.50	1.000	0.255	2	H3	13639
5/16	18	-	2.72	1.125	0.318	2	H3	13641
5/16	-	24	2.72	1.125	0.318	2	H3	13642

Alternate Coatings Available.
(Full package quantities only)



Greenfield LIGHTNING® SERVICE Available

■ Metric GUN® Taps for Through Holes

Spiral Point

Features/Benefits:

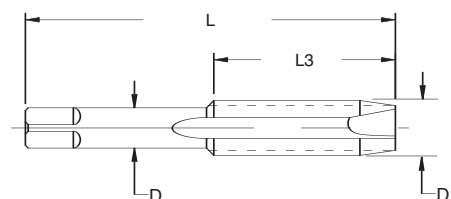
- GUN taps, the most efficient taps for through holes, "shoot" chips ahead of the cutting action to reduce loading and clogging the flutes
- most common metric sizes offered
- manufactured from select HSS
- reduce tapping problems in through hole tapping
- metric tap blank dimensions are equivalent to inch taps and are manufactured to USCTI specifications and dimensions
- high-performance TiN, TiN+CrC/C, and TiCN coatings enable higher feeds and speeds for increased productivity; alternate coatings are available as stock modifications

Application Information:

- use for through hole tapping in a wide variety of materials:
 - steel (oxide, TiCN, TiN)
 - stainless steel < 30 Rc (oxide, TiCN, TiN)
 - stainless steel 304, 316 (TiN+CrC/C)
 - non-ferrous materials (uncoated)
 - cast iron (uncoated, oxide, TiCN, TiN)



GUN® taps "shoot" chips ahead of the cutting action.



D1 = Tap Size D = Shank Diameter
L = Overall Length L3 = Thread Length

Metric GUN® Taps for Through Holes

Spiral Point Plug Chamfer 3 to 5 Pitches

■ Series No. 5351TC TiCN Coated

■ Series No. 5351 Uncoated

■ Series No. 2351 TiN Coated

Size	L	L3	D	Flutes	Pitch Dia. Limit	EDP Number		
						TiCN	TiN	Uncoated
M1,6 x 0,35	1.63	.313	.141	2	D3	—	—	13365
M2 x 0,4	1.75	.438	.141	2	D3	—	—	13367
M2,5 x 0,45	1.81	.500	.141	2	D3	—	—	13369
M3 x 0,5	1.94	.625	.141	2	D3	19002	19920	13371
M3,5 x 0,6	2.00	.688	.141	2	D4	—	—	13373
M4 x 0,7	2.13	.750	.168	2	D4	19003	19921	13375
M4,5 x 0,75	2.38	.875	.194	2	D4	—	—	13377
M5 x 0,8	2.38	.875	.194	2	D4	19004	19922	13379
M6 x 1	2.50	1.000	.255	2	D5	19005	19923	13381
M6,3 x 1	2.50	1.000	.255	2	D5	—	—	13382
M7 x 1	2.72	1.125	.318	2	D5	—	—	13383
M8 x 1,25	2.72	1.125	.318	2	D5	19008	19924	13385
M10 x 1,5	2.94	1.250	.381	3	D6	19009	19925	13389
M12 x 1,75	3.38	1.656	.367	3	D6	19010	19926	13393
M14 x 2	3.59	1.656	.429	3	D7	—	—	13397
M16 x 2	3.81	1.813	.480	3	D7	—	—	13401
M18 x 2,5	4.03	1.063	.542	3	D7	—	—	13405
M20 x 2,5	4.47	2.000	.652	4	D7	—	—	13409

Metric taps for 6H class of fit are suitable for MJ Aerospace internal threading applications.

Metric taps are manufactured to USCTI specifications and dimensions.

Metric tap blank dimensions are equivalent to inch taps.

Metric D limits suitable for ISO 6H tolerance class.

TRU-LEDE® Fe Thread Forming Taps

For Through Holes in General Machining Applications

TRU-LEDE® Fe Forming Taps

The Next Generation of Forming Taps!

The Tru-Leede Fe family of taps was developed in our test laboratory through extensive research and design evaluation. This new form tap family requires lower torque to form threads and will perform at two times the tapping speeds recommended for threading with more conventional cutting taps.

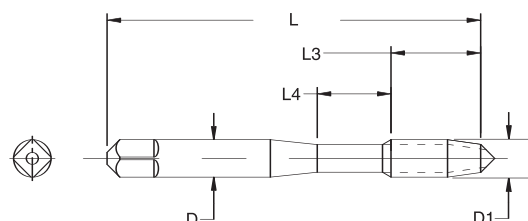
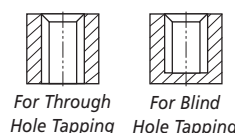
Features/Benefits:

- made from vanadium high-speed steel for extended wear life and better part finish
- new tap lobe design improves roll threading in ductile steels and non-ferrous materials for better tool life
- necked design with short thread length for tapping at reduced torque levels
- plug and bottoming chamfers for form tapping without troublesome chips that clog and break taps
- performance-enhancing surface treatments available as stock standards; alternate coatings available as stock modifications

Application Information:

- steel (SH50 steam oxide, TiCN, TiN)
- stainless steel <30 Rc (SH50 steam oxide, TiCN, TiN)
- non-ferrous materials (uncoated)
- aluminum (TiN+CrC/C)

P	Steel
M	Stainless Steel
N	Non-Ferrous



D1 = Tap Size D = Shank Diameter
L = Overall Length L3 = Thread Length
L4 = Neck Length

Fe Forming Taps Plug Chamfer 4 Pitches Tapered, Machine Screw and Fractional Sizes

- Series No. 5900TC TiCN Coated
- Series No. 5900T TiN Coated
- Series No. 5900 Uncoated

MACHINE SCREW

D1	NC/UNC	NF/UNF	L	L3	L4	D	No. of Lube Grooves	Pitch Dia. Limit	EDP Number		
									TiCN	TiN	Uncoated
6	-	32	2.00	0.375	0.310	0.141	4	H3	18703	18303	18203
6	-	32	2.00	0.375	0.310	0.141	4	H5	18702	18302	18202
6	-	40	2.00	0.375	0.310	0.141	4	H3	18706	18306	18206
6	-	40	2.00	0.375	0.310	0.141	4	H5	18707	18307	18207
8	32	-	2.13	0.375	0.380	0.168	4	H3	18711	18311	18211
8	32	-	2.13	0.375	0.380	0.168	4	H5	18710	18310	18210
10	24	-	2.38	0.500	0.380	0.194	4	H4	18717	18317	18217
10	24	-	2.38	0.500	0.380	0.194	4	H6	18716	18316	18216
10	-	32	2.38	0.500	0.380	0.194	4	H4	18721	18321	18221
10	-	32	2.38	0.500	0.380	0.194	4	H6	18720	18320	18220
12	24	-	2.38	0.500	0.440	0.220	4	H4	—	—	18224
12	24	-	2.38	0.500	0.440	0.220	4	H6	—	—	18225

Plug chamfer Fe forming taps are continued on the next page.

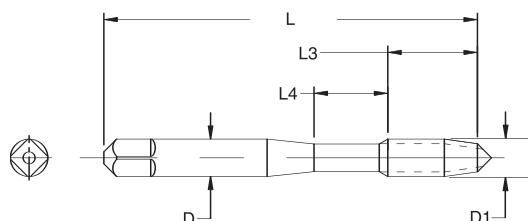
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Fe Forming Taps Plug Chamfer, 4 Pitches Tapered, Machine Screw and Fractional Sizes

- Series No. 5900TC TiCN Coated
- Series No. 5900T TiN Coated
- Series No. 5900 Uncoated



For Through Hole Tapping



Alternate Coatings Available.

(Full package quantities only)



D1 = Tap Size D = Shank Diameter
L = Overall Length L3 = Thread Length
L4 = Neck Length

FRACTIONAL

									EDP Number		
D1	NC/UNC	NF/UNF	L	L3	L4	D	No. of Lube Grooves	Pitch Dia. Limit	TiCN	TiN	Uncoated
1/4	20	-	2.50	0.625	0.380	0.255	4	H4	18729	18329	18229
1/4	20	-	2.50	0.625	0.380	0.255	4	H6	18728	18328	18228
1/4	-	28	2.50	0.625	0.380	0.255	4	H4	18733	18333	18233
1/4	-	28	2.50	0.625	0.380	0.255	4	H6	18732	18332	18232
5/16	18	-	2.72	0.688	0.440	0.318	4	H5	18737	18337	18237
5/16	18	-	2.72	0.688	0.440	0.318	4	H7	18736	18336	18236
5/16	-	24	2.72	0.688	0.440	0.318	4	H5	18741	18341	18241
5/16	-	24	2.72	0.688	0.440	0.318	4	H7	18740	18340	18240
3/8	16	-	2.94	0.750	0.500	0.381	4	H5	18745	18345	18245
3/8	16	-	2.94	0.750	0.500	0.381	4	H7	18744	18344	18244
3/8	-	24	2.94	0.750	0.500	0.381	4	H5	18748	18348	18248
1/2	13	-	3.38	0.938	-	0.367	4	H5	18752	18352	18252
1/2	13	-	3.38	0.938	-	0.367	4	H7	18751	18351	18251
1/2	-	20	3.38	0.938	-	0.367	4	H5	18754	18354	18254

Bottoming chamfer Fe forming taps are listed on the next page.

Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps. See Greenfield Screw Thread Manuals for hole size recommendations.



THREADING: Why Are "H" Limits for Roll Form Taps Higher Than for Cut Thread Taps?

Roll form tapping is an effective way to produce internal threads in production applications. There are many benefits to this process, including the absence of chips. Before proceeding with roll form tapping, consider the material to be tapped, the hole size before tapping, the machine capabilities, and the class of fit requirement after tapping.

In the case of fit, the requirement for the finished thread is the same regardless of whether it is a cut or rolled form thread. Use 5/16-18 2B internal thread as an example. 2B is the designation for internal thread minimum and maximum values after tapping. It is normally checked with GO and NOT GO thread gages. For cutting this thread, the recommended tap "H" limit value is H-5; but, when roll forming the same thread, the recommended value is H-7. There are published charts in our catalogs detailing other sizes and for recommendations.

The reason for the larger "H" value is the slight shrinkage that occurs in the hole after the tap is removed. All metals have a memory and will try to spring back to their original shape. When displacing metal using a roll form tap, this condition will occur. The higher "H" limit compensates by forming a slightly larger thread which shrinks slightly after the tap is removed. Other factors may interfere, but, generally, the recommended "H" limit values published for cut or roll form threads will deliver acceptable gaging results.

TRU-LEDE® Fe Thread Forming Taps

For Blind Holes in General Machining Applications

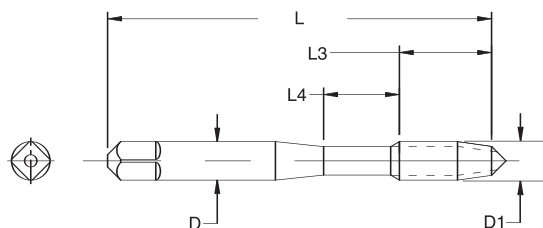
Fe Forming Taps Bottoming Chamfer 2 Pitches Tapered

- Series No. 5902TC TiCN Coated
- Series No. 5902T TiN Coated
- Series No. 5902 Uncoated

P	Steel
M	Stainless Steel
N	Non-Ferrous



For Blind Hole Tapping



D1 = Tap Size
L = Overall Length
L3 = Thread Length
L4 = Neck Length
D = Shank Diameter

Alternate Coatings Available.
(Full package quantities only)



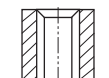
	D1	NC/UNC	NF/UNF	L	L3	L4	D	No. of Lube Grooves	Pitch Dia. Limit	EDP Number		
										TiCN	TiN	Uncoated
PRODUCTION TAPS	6	32	-	2.00	.375	.310	.141	4	H3	18700	18300	18200
	6	32	-	2.00	.375	.310	.141	4	H5	18701	18301	18201
	6	-	40	2.00	.375	.310	.141	4	H3	18705	18305	18205
	6	-	40	2.00	.375	.310	.141	4	H5	18704	18304	18204
	8	32	-	2.13	.375	.380	.168	4	H3	18709	18309	18209
	8	32	-	2.13	.375	.380	.168	4	H5	18708	18308	18208
	8	-	36	2.13	.375	.380	.168	4	H3	18712	18312	18212
	8	-	36	2.13	.375	.380	.168	4	H5	18713	18313	18213
MAINTENANCE TOOLS	10	24	-	2.38	.500	.380	.194	4	H4	18715	18315	18215
	10	24	-	2.38	.500	.380	.194	4	H6	18714	18314	18214
	10	-	32	2.38	.500	.380	.194	4	H4	18719	18319	18219
	10	-	32	2.38	.500	.380	.194	4	H6	18718	18318	18218
	12	24	-	2.38	.500	.440	.220	4	H4	—	—	18223
	1/4	20	-	2.50	.625	.380	.255	4	H4	18726	18326	18226
	1/4	20	-	2.50	.625	.380	.255	4	H6	18727	18327	18227
	1/4	-	28	2.50	.625	.380	.255	4	H4	18731	18331	18231
GAGES	1/4	-	28	2.50	.625	.380	.255	4	H6	18730	18330	18230
	5/16	18	-	2.72	.688	.440	.318	4	H5	18734	18334	18234
	5/16	18	-	2.72	.688	.440	.318	4	H7	18735	18335	18235
	5/16	-	24	2.72	.688	.440	.318	4	H5	18739	18339	18239
	5/16	-	24	2.72	.688	.440	.318	4	H7	18738	18338	18238
	3/8	16	-	2.94	.750	.500	.381	4	H5	18742	18342	18242
	3/8	16	-	2.94	.750	.500	.381	4	H7	18743	18343	18243
	3/8	-	24	2.94	.750	.500	.381	4	H5	18746	18346	18246
TECHNICAL INFORMATION & INDEX	3/8	-	24	2.94	.750	.500	.381	4	H7	18747	18347	18247
	1/2	13	-	3.38	.938	-	.367	4	H5	18750	18350	18250
	1/2	13	-	3.38	.938	-	.367	4	H7	18749	18349	18249
	1/2	-	20	3.38	.938	-	.367	4	H5	18753	18353	18253

Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps. See Greenfield Screw Thread Manuals for hole size recommendations.

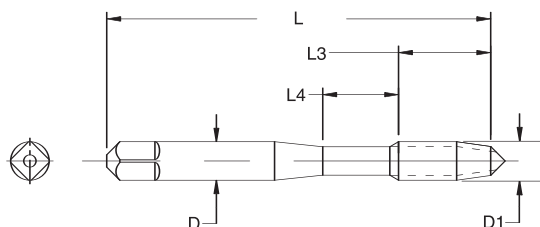
Greenfield LIGHTNING®
SERVICE Available

Metric Fe Forming Taps Plug Chamfer 4 Pitches Tapered

- Series No. 5910TC TiCN Coated
- Series No. 5910T TiN Coated
- Series No. 5910 Uncoated



For Through
Hole Tapping



D1 = Tap Size
L = Overall Length
L4 = Neck Length
D = Shank Diameter
L3 = Thread Length

Alternate Coatings Available.
(Full package quantities only)



Size	L	L3	L4	D	No. of Lube Grooves	Pitch Dia. Limit	EDP Number		
							TiCN	TiN	Uncoated
M4 x 0,7	2.13	.375	.380	.168	4	D6	18756	18356	18256
M5 x 0,8	2.38	.500	.380	.194	4	D7	18758	18358	18258
M6 x 1	2.50	.625	.380	.255	4	D8	18760	18360	18260
M8 x 1,25	2.72	.688	.440	.318	4	D9	18762	18362	18262
M10 x 1,5	2.94	.750	.500	.381	4	D10	18764	18364	18264
M12 x 1,75	3.38	.938	-	.367	4	D11	18766	18366	18266

Metric taps are manufactured to USCTI specifications and dimensions.

Metric tap blank dimensions are equivalent to inch taps.

Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps. See Greenfield Screw Thread Manuals for hole size recommendations.

Metric Fe Forming Taps Bottoming Chamfer, 2 Pitches Tapered

- Series No. 5912TC TiCN Coated
- Series No. 5912T TiN Coated
- Series No. 5912 Uncoated

Size	L	L3	L4	D	No. of Lube Grooves	Pitch Dia. Limit	EDP Number		
							TiCN	TiN	Uncoated
M4 x 0,7	2.13	.375	.380	.168	4	D6	18755	18355	18255
M5 x 0,8	2.38	.500	.380	.194	4	D7	18757	18357	18257
M6 x 1	2.50	.625	.380	.255	4	D8	18759	18359	18259
M8 x 1,25	2.72	.688	.440	.318	4	D9	18761	18361	18261
M10 x 1,5	2.94	.750	.500	.381	4	D10	18763	18363	18263
M12 x 1,75	3.38	.938	-	.367	4	D11	18765	18365	18265

Metric taps are manufactured to USCTI specifications and dimensions.

Metric tap blank dimensions are equivalent to inch taps.

Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps. See Greenfield Screw Thread Manuals for hole size recommendations.

TRU-LEDE® Thread Forming Taps

For Through or Blind Holes in General Machining Applications

TRU-LEDE® Thread Forming Taps

Features/Benefits:

- made from vanadium high-speed steel
- necked design in sizes #4 through 3/8" improves coolant flow when threading deep blind holes
- forming taps displace metal, comparable to external thread rolling; conventional cutting taps remove metal as chips that can clog the threaded hole
- improved lobe groove design on machine screw sizes #5 and larger improves threading efficiency in blind hole applications
- tapping speeds can be almost doubled above conventional cutting taps, improving efficiency of the forming action
- available in plug and bottoming chamfer, machine screw, inch, fractional, and metric sizes
- Uncoated, TiCN, and TiN coated taps standard; alternate tap coatings are available as stock modifications

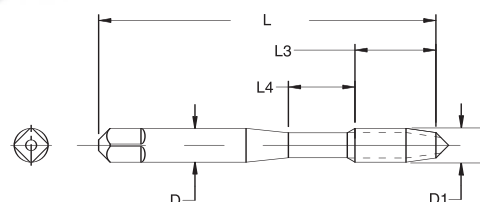
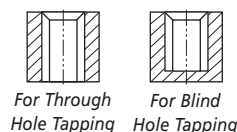
Application Information:

- steel (SH50, TiCN, TiN)
- stainless steel < 30 Rc (SH50, TiCN, TiN)
- non-ferrous materials (uncoated)
- aluminum (TiN+CrC/C)

P	Steel
M	Stainless Steel
N	Non-Ferrous

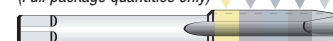


Greenfield LIGHTNING® SERVICE Available



D1 = Tap Size
L = Overall Length
L4 = Neck Length
D = Shank Diameter
L3 = Thread Length

Alternate Coatings Available.
(Full package quantities only)



TRU-LEDE® Forming Taps Plug Chamfer 4 Pitches Tapered

- Series No. 2500 TiN Coated
- Series No. 5500 Uncoated

									EDP Number	
D1	NC/UNC	NF/UNF	L	L3	L4	D	No. of Lube Grooves	Pitch Dia. Limit	TiN	Uncoated
4	40	-	1.88	.313	.250	.141	0	H3	19821	17000
4	40	-	1.88	.313	.250	.141	0	H5	—	17001
4	-	48	1.88	.313	.250	.141	0	H3	—	17002
5	40	-	1.94	.313	.313	.141	4	H3	—	17004
6	32	-	2.00	.375	.313	.141	4	H3	19822	17008
6	32	-	2.00	.375	.313	.141	4	H5	19823	17009
6	-	40	2.00	.375	.313	.141	4	H3	—	17011
6	-	40	2.00	.375	.313	.141	4	H5	—	17012
8	32	-	2.13	.375	.375	.168	4	H3	19824	17013
8	32	-	2.13	.375	.375	.168	4	H5	19826	17014
10	24	-	2.38	.500	.375	.194	4	H4	19827	17018
10	24	-	2.38	.500	.375	.194	4	H6	—	17019
10	-	32	2.38	.500	.375	.194	4	H4	19828	17020
10	-	32	2.38	.500	.375	.194	4	H6	—	17021
12	24	-	2.38	.500	.438	.220	4	H4	—	17023
12	24	-	2.38	.500	.438	.220	4	H6	—	17024

Plug chamfer TRU-LEDE forming taps are continued on the next page.

Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps. See Greenfield Screw Thread Manuals for hole size recommendations.

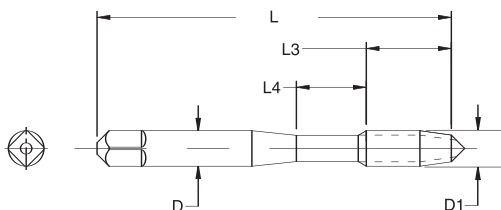
TRU-LEDE® Forming Taps Plug Chamfer, 4 Pitches Tapered

■ Series No. 2500 TiN Coated

■ Series No. 5500 Uncoated



For Through
Hole Tapping



D1 = Tap Size D = Shank Diameter
L = Overall Length L3 = Thread Length L4 = Neck Length

Alternate Coatings Available.
(Full package quantities only)



EDP Number											
D1	NC/UNC	NF/UNF	L	L3	L4	D	No. of Lube Grooves	Pitch Dia. Limit	TiN	Uncoated	
1/4	20	-	2.50	.625	.375	.255	4	H4	19841	17027	
1/4	20	-	2.50	.625	.375	.255	4	H6	—	17028	
1/4	-	28	2.50	.625	.375	.255	4	H4	19842	17030	
1/4	-	28	2.50	.625	.375	.255	4	H6	—	17031	
5/16	18	-	2.72	.688	.438	.318	4	H5	19846	17033	
5/16	18	-	2.72	.688	.438	.318	4	H7	—	17034	
5/16	-	24	2.72	.688	.438	.318	4	H5	—	17036	
5/16	-	24	2.72	.688	.438	.318	4	H7	—	17037	
3/8	16	-	2.94	.750	.500	.381	4	H5	19847	17039	
3/8	16	-	2.94	.750	.500	.381	4	H7	—	17040	
3/8	-	24	2.94	.750	.500	.381	4	H5	—	17042	
7/16	14	-	3.16	.875	-	.323	4	H8	—	17046	
1/2	13	-	3.38	.938	-	.367	4	H5	—	17049	
1/2	13	-	3.38	.938	-	.367	4	H8	—	17050	
1/2	-	20	3.38	.938	-	.367	4	H5	—	17051	
5/8	11	-	3.81	1.094	-	.480	4	H7	—	17053	
5/8	-	18	3.81	1.094	-	.480	4	H7	—	17055	
3/4	10	-	4.25	1.219	-	.590	4	H7	—	17057	
3/4	-	16	4.25	1.219	-	.590	4	H7	—	17059	

TRU-LEDE® Forming Taps, Bottoming Chamfer 2 Pitches Tapered

■ Series No. 5502TC TiCN Coated

■ Series No. 2502 TiN Coated

■ Series No. 5502 Uncoated



For Blind
Hole Tapping

EDP Number											
D1	NC/UNC	NF/UNF	L	L3	L4	D	No. of Lube Grooves	Pitch Dia. Limit	TiCN	TiN	Uncoated
0	-	80	1.63	.313	-	.141	0	H2	19500	19816	17200
0	-	80	1.63	.313	-	.141	0	H3	—	—	17201
1	64	-	1.69	.375	-	.141	0	H2	—	—	17202
1	-	72	1.69	.375	-	.141	0	H2	—	—	17204
1	-	72	1.69	.375	-	.141	0	H3	—	—	17205
2	56	-	1.75	.438	-	.141	0	H2	19506	19817	17206
2	56	-	1.75	.438	-	.141	0	H3	—	—	17207
2	-	64	1.75	.438	-	.141	0	H2	—	—	17208
2	-	64	1.75	.438	-	.141	0	H3	—	—	17209
3	48	-	1.81	.500	-	.141	0	H2	—	—	17210
3	48	-	1.81	.500	-	.141	0	H3	19511	19818	17211
3	-	56	1.81	.500	-	.141	0	H3	—	—	17213
4	40	-	1.88	.313	.250	.141	0	H3	19514	19849	17214
4	40	-	1.88	.313	.250	.141	0	H5	—	—	17215
4	-	48	1.88	.313	.250	.141	0	H3	—	—	17216
4	-	48	1.88	.313	.250	.141	0	H5	—	—	17217
5	40	-	1.94	.313	.313	.141	4	H3	19518	19851	17218
5	40	-	1.94	.313	.313	.141	4	H5	—	—	17219

Bottoming chamfer TRU-LEDE forming taps continue on the next page.

TRU-LEDE® Thread Forming Taps

For Through or Blind Holes in General Machining Applications



(continued)

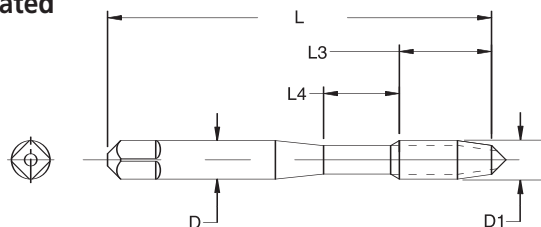
TRU-LEDE® Forming Taps, Bottoming Chamfer 2 Pitches Tapered

- Series No. 5502TC TiCN Coated
- Series No. 2502 TiN Coated
- Series No. 5502 Uncoated

P	Steel
M	Stainless Steel
N	Non-Ferrous

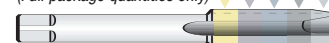


For Blind Hole Tapping



D1 = Tap Size D = Shank Diameter
L = Overall Length L3 = Thread Length
L4 = Neck Length

Alternate Coatings Available.
(Full package quantities only)



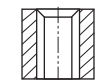
	D1	NC/UNC	NF/UNF	L	L3	L4	D	No. of Lube Grooves	Pitch Dia. Limit	EDP Number		
										TiCN	TiN	Uncoated
PRODUCTION TAPS	6	32	-	2.00	.375	.313	.141	4	H3	19522	19852	17222
	6	32	-	2.00	.375	.313	.141	4	H5	19523	19856	17223
	6	-	40	2.00	.375	.313	.141	4	H3	—	—	17225
	6	-	40	2.00	.375	.313	.141	4	H5	—	—	17226
	8	32	-	2.13	.375	.375	.168	4	H3	19527	19857	17227
	8	32	-	2.13	.375	.375	.168	4	H5	19528	19861	17228
	8	-	36	2.13	.375	.375	.168	4	H3	—	—	17230
	8	-	36	2.13	.375	.375	.168	4	H5	—	—	17231
	10	24	-	2.38	.500	.375	.194	4	H4	19532	19862	17232
	10	24	-	2.38	.500	.375	.194	4	H6	—	—	17233
	10	-	32	2.38	.500	.375	.194	4	H4	19535	19866	17235
	10	-	32	2.38	.500	.375	.194	4	H6	—	—	17236
MAINTENANCE TOOLS	12	24	-	2.38	.500	.438	.220	4	H4	—	—	17238
	12	24	-	2.38	.500	.438	.220	4	H6	—	—	17239
	1/4	20	-	2.50	.625	.375	.255	4	H4	19542	19869	17242
	1/4	20	-	2.50	.625	.375	.255	4	H6	—	—	17243
	1/4	-	28	2.50	.625	.375	.255	4	H4	19545	19871	17245
	1/4	-	28	2.50	.625	.375	.255	4	H6	—	—	17246
	5/16	18	-	2.72	.688	.438	.318	4	H5	19548	19872	17248
	5/16	18	-	2.72	.688	.438	.318	4	H7	—	—	17249
	5/16	-	24	2.72	.688	.438	.318	4	H5	19549	19848	17251
	5/16	-	24	2.72	.688	.438	.318	4	H7	—	—	17252
	3/8	16	-	2.94	.750	.500	.381	4	H5	19554	19873	17254
	3/8	16	-	2.94	.750	.500	.381	4	H7	—	—	17255
GAGES	3/8	-	24	2.94	.750	.500	.381	4	H5	19555	19874	17257
	3/8	-	24	2.94	.750	.500	.381	4	H7	—	—	17258
	1/2	13	-	3.38	.938	-	.367	4	H5	19556	19875	17264
	1/2	13	-	3.38	.938	-	.367	4	H8	—	—	17265
	1/2	-	20	3.38	.938	-	.367	4	H5	—	—	17266
	5/8	11	-	3.81	1.094	-	.480	4	H7	—	—	17280
	5/8	-	18	3.81	1.094	-	.480	4	H7	—	—	17282
	3/4	10	-	4.25	1.219	-	.590	4	H7	—	—	17284
	3/4	-	16	4.25	1.219	-	.590	4	H7	—	—	17286

Metric TRU-LEDE taps are listed on the next page.

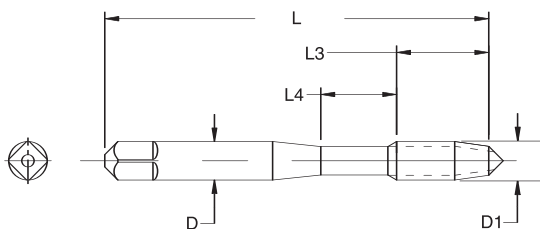
Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps. See Greenfield Screw Thread Manuals for hole size recommendations.

Metric TRU-LEDE® Forming Taps, Plug Chamfer 4 Pitches Tapered

- Series No. 2510 TiN Coated
- Series No. 5510 Uncoated



For Through
Hole Tapping



D1 = Tap Size D = Shank Diameter
L = Overall Length L3 = Thread Length
L4 = Neck Length

P	Steel
M	Stainless Steel
N	Non-Ferrous

Alternate Coatings Available.
(Full package quantities only)



Size	L	L3	L4	D	No. of Lube Grooves	Pitch Dia. Limit	EDP Number	
							TiN	Uncoated
M3 x 0,5	1.9375	.313	.313	.141	4	D5	19941	17082
M4 x 0,7	2.1250	.375	.375	.168	4	D6	19942	17084
M5 x 0,8	2.3750	.500	.375	.194	4	D7	19943	17086
M6 x 1	2.5000	.625	.375	.255	4	D8	19944	17087
M8 x 1,25	2.7188	.688	.438	.318	4	D9	19945	17090
M10 x 1,5	2.9375	.750	.500	.381	4	D10	19946	17091
M12 x 1,75	3.3750	.938	-	.367	4	D11	19947	17092

Metric taps are manufactured to USCTI specifications and dimensions.

Metric tap blank dimensions are equivalent to inch taps.

Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps. See Greenfield Screw Thread Manuals for hole size recommendations.

Metric TRU-LEDE® Forming Taps, Bottoming Chamfer 2 Pitches Tapered

- Series No. 5512TC TiCN Coated
- Series No. 2512 TiN Coated
- Series No. 5512 Uncoated



For Blind
Hole Tapping

Size	L	L3	L4	D	No. of Lube Grooves	Pitch Dia. Limit	EDP Number		
							TiCN	TiN	Uncoated
M3 x 0,5	1.94	.313	.313	.141	4	D5	19567	19948	17267
M4 x 0,7	2.13	.375	.375	.168	4	D6	19569	19949	17269
M5 x 0,8	2.38	.500	.375	.194	4	D7	19571	19950	17271
M6 x 1	2.50	.625	.375	.255	4	D8	19572	19951	17272
M8 x 1,25	2.72	.688	.438	.318	4	D9	19574	19952	17275
M10 x 1,5	2.94	.750	.500	.381	4	D10	19576	19953	17276
M12 x 1,75	3.38	.938	-	.367	4	D11	19577	19954	17277

Metric taps are manufactured to USCTI specifications and dimensions.

Metric tap blank dimensions are equivalent to inch taps.

Form taps require a larger drilled hole size prior to tapping than corresponding cutting taps. See Greenfield Screw Thread Manuals for hole size recommendations.

**Greenfield LIGHTNING®
SERVICE Available**

Spiral Fluted Taps

For Blind Holes



HIGH-PERFORMANCE TAPS

THREAD MILLS

PRODUCTION TAPS

MAINTENANCE TOOLS

GAGES

TECHNICAL
INFORMATION & INDEX

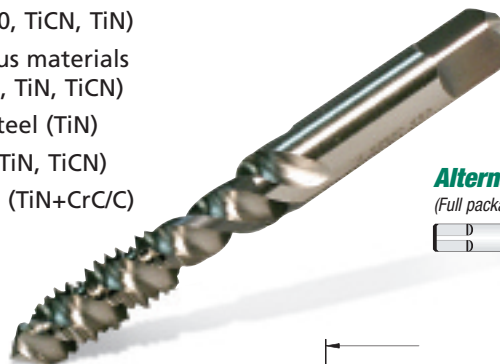
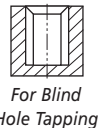
Spiral Fluted Taps

Features/Benefits:

- manufactured from vanadium HSS
- necked design
- faster spiral flutes (approx. 52°) improve the chip-lifting action
- fast spiral fluted taps span wider spaces in the hole during tapping
- excellent results in deep blind holes
- metric taps are manufactured to USCTI specifications and dimensions
- plug chamfer taps have 3 to 5 pitches
- bottoming chamfer taps have 1 to 2 pitches
- standard in uncoated, TiCN, and TiN coatings; alternate coatings are available as stock modifications

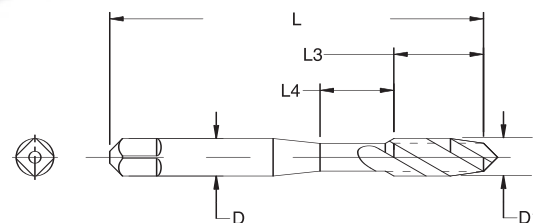
Application Information:

- steel (SH50, TiCN, TiN)
- non-ferrous materials (uncoated, TiN, TiCN)
- stainless steel (TiN)
- cast iron (TiN, TiCN)
- aluminum (TiN+CrC/C)



Alternate Coatings Available.

(Full package quantities only)



D1 = Tap Size
L = Overall Length
L4 = Neck Length
D = Shank Diameter
L3 = Thread Length

Spiral Fluted Taps Plug Chamfer

- Series No. 5314TC TiCN Coated
- Series No. 2314 TiN Coated
- Series No. 5314 Uncoated

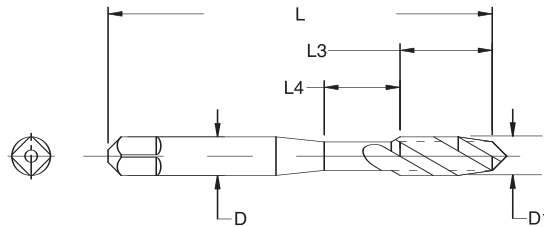
Greenfield LIGHTNING®
SERVICE Available

									EDP Number - Plug Chamfer		
D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	L4	D	Flutes	Pitch Dia. Limit	TiCN	TiN	Uncoated
4	40	-	1.88	.561	-	.141	2	H2	19144	19619	16003
5	40	-	1.94	.625	-	.141	2	H2	—	—	16005
6	32	-	2.00	.375	.313	.141	2	H3	19146	19622	16007
8	32	-	2.13	.375	.375	.168	3	H3	19148	19626	16009
10	24	-	2.38	.500	.375	.194	3	H3	19151	19628	16011
10	-	32	2.38	.500	.375	.194	3	H3	19153	19624	16013
12	24	-	2.38	.500	.438	.220	3	H3	—	—	16015
1/4	20	-	2.50	.625	.375	.255	3	H3	19155	19632	16017
1/4	-	28	2.50	.625	.375	.255	3	H3	19157	19634	16021
5/16	18	-	2.72	.685	.438	.318	3	H3	19160	19636	16023
5/16	-	24	2.72	.685	.438	.318	3	H3	19162	19638	16027
3/8	16	-	2.94	.745	.500	.381	3	H3	19164	19641	16029
3/8	-	24	2.94	.745	.500	.381	3	H3	19166	19643	16033
7/16	14	-	3.16	.875	-	.323	3	H3	19169	19646	16035
7/16	-	20	3.16	.875	-	.323	3	H3	—	—	16037
1/2	13	-	3.38	.935	-	.367	3	H3	19172	19648	16039
1/2	-	20	3.38	.935	-	.367	3	H3	—	—	16041
5/8	11	-	3.81	1.094	-	.480	4	H3	—	—	16047
3/4	10	-	4.25	1.219	-	.590	4	H3	—	—	16051

Spiral taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.
Bottoming chamfer spiral fluted taps are listed on the next page.

Spiral Fluted Taps Bottoming Chamfer

- Series No. 5314TC TiCN Coated
- Series No. 2314 TiN Coated
- Series No. 5314 Uncoated



$D1$ = Tap Size D = Shank Diameter
 L = Overall Length $L3$ = Thread Length
 $L4$ = Neck Length

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous

Alternate Coatings Available.
(Full package quantities only)



EDP Number - Bottoming Chamfer												
$D1$	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	L4	D	Flutes	Pitch Dia. Limit	TiCN	TiN	Uncoated	
4	40	-	1.88	.561	-	.141	2	H2	19145	19621	16004	
5	40	-	1.94	.561	-	.141	2	H2	—	—	16006	
6	32	-	2.00	.375	.313	.141	2	H3	19147	19623	16008	
8	32	-	2.13	.375	.375	.168	3	H3	19149	19627	16010	
10	24	-	2.38	.500	.375	.194	3	H3	19152	19629	16012	
10	-	32	2.38	.500	.375	.194	3	H3	19154	19631	16014	
12	24	-	2.38	.500	.438	.220	3	H3	—	—	16016	
1/4	20	-	2.50	.625	.375	.255	3	H3	19156	19633	16018	
1/4	-	28	2.50	.625	.375	.255	3	H3	19158	19651	16022	
5/16	18	-	2.72	.685	.438	.318	3	H3	19161	19637	16024	
5/16	-	24	2.72	.685	.438	.318	3	H3	19163	19639	16028	
3/8	16	-	2.94	.745	.500	.381	3	H3	19165	19642	16030	
3/8	-	24	2.94	.745	.500	.381	3	H3	19168	19644	16034	
7/16	14	-	3.16	.875	-	.323	3	H3	19171	19647	16036	
7/16	-	20	3.16	.875	-	.323	3	H3	—	—	16038	
1/2	13	-	3.38	.935	-	.367	3	H3	19173	19649	16040	
1/2	-	20	3.38	.935	-	.367	3	H3	—	—	16042	
5/8	11	-	3.81	1.094	-	.480	4	H3	—	—	16048	
3/4	10	-	4.25	1.219	-	.590	4	H3	—	—	16052	

Spiral taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.
Metric spiral fluted taps are listed on the next page.

Greenfield LIGHTNING®
SERVICE Available



Metric Spiral Fluted Taps

Fast Spiral

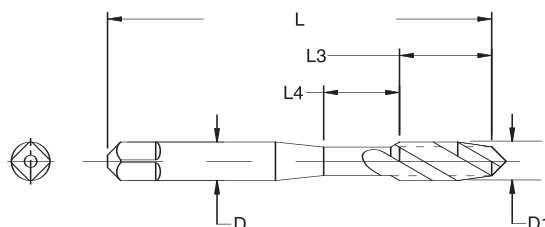
Metric Fast Spiral Fluted Taps Plug Chamfer

- Series No. 5364TC TiCN Coated
- Series No. 2364 TiN Coated
- Series No. 5364 Uncoated

P	Steel
N	Non-Ferrous

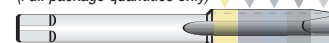


For Blind Hole Tapping



D1 = Tap Size D = Shank Diameter
L = Overall Length L3 = Thread Length
L4 = Neck Length

Alternate Coatings Available.
(Full package quantities only)



Size	L	L3	L4	D	Flutes	Pitch Dia. Limit	EDP Number - Plug Chamfer		
							TiCN	TiN	Uncoated
M3 x 0,5	1.94	.313	-	.141	2	D3	19044	19927	16053
M4 x 0,7	2.13	.375	.375	.168	3	D4	19047	19929	16057
M5 x 0,8	2.38	.500	.375	.194	3	D4	19049	19931	16061
M6 x 1	2.50	.625	.375	.255	3	D5	19052	19933	16063
M8 x 1,25	2.72	.685	.438	.318	3	D5	19054	19935	16069
M10 x 1,5	2.94	.745	.500	.381	3	D6	19058	19937	16071
M12 x 1,75	3.38	.935	-	.367	3	D6	19061	19939	16073

Metric D limits are suitable for ISO 6H tolerance class.
Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.

Metric Fast Spiral Fluted Taps Bottoming Chamfer

- Series 5364TC TiCN Coated
- Series 2364 TiN Coated
- Series 5364 Uncoated

Size	L	L3	L4	D	Flutes	Pitch Dia. Limit	EDP Number - Bottoming Chamfer		
							TiCN	TiN	Uncoated
M3 x 0,5	1.94	.313	-	.141	2	D3	19045	19928	16054
M4 x 0,7	2.13	.375	.375	.168	3	D4	19048	19930	16058
M5 x 0,8	2.38	.500	.375	.194	3	D4	19051	19932	16062
M6 x 1	2.50	.375	.375	.255	3	D5	19053	19934	16064
M8 x 1,25	2.72	.685	.438	.318	3	D5	19057	19936	16070
M10 x 1,5	2.94	.745	.500	.381	3	D6	19059	19938	16072
M12 x 1,75	3.38	.935	-	.367	3	D6	19062	19940	16074

Metric D limits are suitable for ISO 6H tolerance class.
Metric taps are manufactured to USCTI specifications and dimensions.
Metric tap blank dimensions are equivalent to inch taps.

Greenfield LIGHTNING®
SERVICE Available

Heavy Duty Spiral Fluted Taps for Blind Holes

Features/Benefits:

- heavy-duty spiral tap made of vanadium high-speed steel
- rugged three-flute construction
- CNC neck design
- approximate 45° spiral flutes to lift chips in blind hole tapping
- ideal for tough blind hole tapping
- SH-50 steam oxide surface treatment to resist loading and galling in steels
- plug chamfer (3-5 pitches) and bottoming chamfer (1-2 pitches)

Application Information:

- steel (SH50 steam oxide)
- ductile cast iron (SH50 steam oxide)
- cast iron (SH50 steam oxide)
- hardened steel > 30 Rc (SH50 steam oxide)

P	Steel
M	Stainless Steel
K	Cast Iron
H	Hardened Materials



For Blind Hole Tapping

D1 = Tap Size D = Shank Diameter
L = Overall Length L3 = Thread Length
L4 = Neck Length

Heavy Duty Spiral Fluted Taps

Series No. 5344 SH-50 Oxide Surface Treatment, Plug or Bottoming Chamfer

D1	NC/UNC/ UNJC	NF/UNF/ UNJF	L	L3	L4	D	Flutes	Pitch Dia. Limit	EDP Number SH50 Oxide Treated	
									Plug Chamfer	Bottoming Chamfer
6	32	-	2.00	.380	.310	.141	3	H3	16501	16502
8	32	-	2.13	.380	.380	.168	3	H3	16503	16504
10	24	-	2.38	.500	.380	.194	3	H3	16505	16506
10	-	32	2.38	.500	.380	.194	3	H3	16507	16508
1/4	20	-	2.50	.630	.380	.255	3	H3	16509	16510
1/4	-	28	2.50	.630	.380	.255	3	H3	16511	16512
5/16	18	-	2.72	.690	.440	.318	3	H3	16513	16514
5/16	-	24	2.72	.690	.440	.318	3	H3	16515	16516
3/8	16	-	2.94	.750	.500	.381	3	H3	16517	16518
3/8	-	24	2.94	.750	.500	.381	3	H3	16519	16520
7/16	14	-	3.16	.880	-	.323	3	H3	16521	16522
7/16	-	20	3.16	.880	-	.323	3	H3	16523	16524
1/2	13	-	3.38	.940	-	.367	3	H3	16525	16526
1/2	-	20	3.38	.940	-	.367	3	H3	16527	16528
5/8	11	-	3.81	1.090	-	.480	4	H3	16533	16534
3/4	10	-	4.25	1.220	-	.590	4	H3	16537	16538

Spiral taps for 3B class of fit are suitable for UNJ Aerospace internal threading applications.



Taper Pipe Taps

For General Purpose Applications

Taper Pipe Taps – NPT, NPTF, ANPT

Features/Benefits:

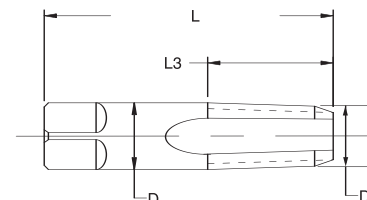
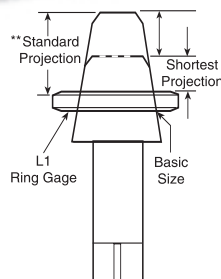
- manufactured from select high-speed steel
- ground thread pipe taps are standard in American Standard Pipe Form (NPT) and American Standard Dryseal Pipe Thread Form (NPTF)
- NPT threads require the use of a sealer, such as Teflon® tape or pipe compound
- NPTF dryseal threads provide a pressure-tight joint without the use of sealer
- the nominal size of a pipe tap is that of the pipe fitting to be tapped, not the actual size of the tap; thread taper is 3/4" per foot
- alternate tap coatings are available as stock modifications

Application Information:

- steel (TiCN, TiN, SH50)
- non-ferrous materials (uncoated)
- cast iron and ductile iron (TiCN, TiN)
- aluminum (TiN+CrC/C)

P	Steel
K	Cast Iron
N	Non-Ferrous

Alternate Coatings Available.
(Full package quantities only)



D1 = Tap Size D = Shank Diameter
L = Overall Length L3 = Thread Length

Production Taper Pipe Taps

NPT/ANPT and NPTF, Standard Pipe Chamfer 2 1/2 to 3 1/2 Pitches

- Series No. 2320 TiN Coated
- Series No. 5320S SH50 Steam Oxide Finish
- Series No. 5320 Uncoated

D1	TPI	L	Length of Thread	D	Flutes	Gage Measurement Standard Projection**	EDP Number				
							TiN	TiN	SH50 Oxide	Uncoated	Uncoated
1/16	27	2.13	.688	.313	4	.312	19698	19691	19690	16201	16203
1/8	27	2.13	.750	.313	4	.312	19707	19701	—	16204	16209
1/8*	27	2.13	.750	.438	4	.312	19712	19702	19695	16205	16210
1/4	18	2.44	1.063	.563	4	.459	19728	19721	19710	16212	16215
3/8	18	2.56	1.063	.700	4	.454	19738	19736	19730	16217	16220
1/2	14	3.13	1.656	.687	4	.579	19748	19746	19740	16222	16225
3/4	14	3.25	1.375	.906	5	.565	19768	19766	19760	16227	16230
1	11 1/2	3.75	1.750	1.125	5	.678	19778	19776	—	16232	16235
1 1/4	11 1/2	4.00	1.750	1.313	5	.686	—	—	—	16237	16239
1 1/2	11 1/2	4.25	3.000	1.500	7	.699	—	—	—	16240	16242
2	11 1/2	4.25	1.750	1.875	7	.667	—	—	—	16243	16245

* Large shank.

** Pipe tap projection is the distance the small end of the tap projects through an American National Standard L1 Pipe Thread Ring Gage.

ANPT Taps marked NPT may be used for NPT and ANPT applications.

Greenfield LIGHTNING®
SERVICE Available

Taper Pipe Taps with Interrupted Threads

Features/Benefits:

- manufactured from select high-speed steel
- interrupted threads reduce drag while taper pipe threading
- use where chip disposal is a concern
- odd number of flutes standard
- NPT threads require the use of a sealer, such as Teflon® tape or pipe compound
- NPTF dryseal threads provide a pressure-tight joint without the use of sealer
- all pipe taps are furnished with 2 1/2 to 3 1/2 pitches chamfered
- alternate tap coatings available as stock modifications

Application Information:

- steel (TiCN, TiN, SH50)
- non-ferrous materials (uncoated)
- cast iron and ductile iron (TiCN, TiN)
- aluminum (TiN+CrC/C)

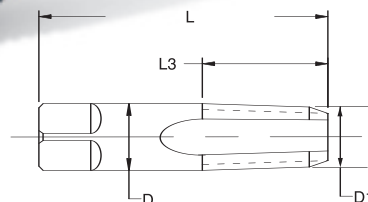
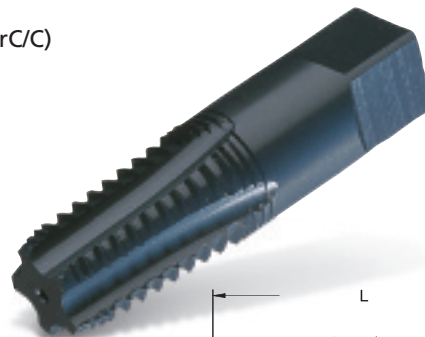
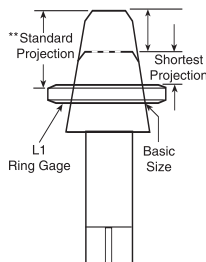
P Steel

K Cast Iron

N Non-Ferrous

Alternate Coatings Available.

(Full package quantities only)



D1 = Tap Size D = Shank Diameter
L = Overall Length L3 = Thread Length

Production Taper Pipe Taps with Interrupted Threads

Standard Chamfer 2 1/2 to 3 1/2 Pitches

- Series No. 5319-S SH50 Steam Oxide Treated
- Series No. 5319 Uncoated

D1	TPI	L	Length of Thread	D	Flutes	Gage Measurement Standard Projection**	EDP Number		
							SH50 Oxide	Uncoated	
1/8	27	2.13	.750	.313	5	.312	—	16101	16103
1/8*	27	2.13	.750	.438	5	.312	19650	16102	16104
1/4	18	2.44	1.063	.563	5	.459	19655	16105	16106
3/8	18	2.56	1.063	.700	5	.454	19656	16107	16108
1/2	14	3.13	1.656	.688	5	.579	19665	16109	16110
3/4	14	3.25	1.375	.906	5	.565	19675	16111	16112
1	11 1/2	3.75	1.750	1.125	5	.678	—	16113	16114
1 1/4	11 1/2	4.00	1.750	1.313	5	.686	—	16115	—
1 1/2	11 1/2	4.25	3.000	1.500	7	.699	—	16117	—
2	11 1/2	4.25	1.750	1.875	7	.667	—	16118	—

* Large shank.

** Pipe tap projection is the distance the small end of the tap projects through an American National Standard L1 Pipe Thread Ring Gage.

NPT taps can be used for ANPT applications.



Taper Pipe Taps

Spiral Flute

Spiral Flute Taper Pipe Taps

Features/Benefits:

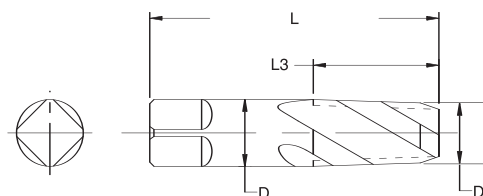
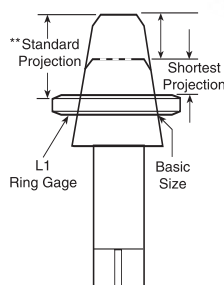
- manufactured from select tap high-speed steel
- ground threads standard in American Standard Pipe Form (NPT) and American Standard Dryseal Pipe Form (NPTF)
- NPT threads require the use of a sealer, such as Teflon® tape or pipe compound
- NPTF dryseal threads provide a pressure-tight joint without the use of sealer
- uncoated taps standard; coatings available as a stock modification
- spiral flutes lift chips out of the tapped hole reducing stop lines
- most effective in materials that produce long, stringy chips

Application Information:

- steel (TiCN, TiN, oxide)
- non-ferrous materials (uncoated)
- ductile cast iron (TiCN, TiN)
- aluminum (TiN+CrC/C)

P	Steel
K	Cast Iron
N	Non-Ferrous

Alternate Coatings Available.
(Full package quantities only)



D1 = Tap Size
L = Overall Length
D = Shank Diameter
L3 = Thread Length

Spiral Fluted Taper Pipe Taps

Series No. 5321 Standard Chamfer 2 1/2 to 3 1/2 Pitches

D1	TPI	L	Length of Thread	D	Flutes	Gage Measurement	EDP Number	
						Standard Projection**	Uncoated NPT/ANPT	Uncoated NPTF
1/8*	27	2.13	.750	.438	4	.312	16281	16282
1/4	18	2.44	1.063	.563	4	.459	16283	16284
3/8	18	2.56	1.063	.700	4	.454	16285	16286
1/2	14	3.13	1.656	.688	4	.579	16287	16288
3/4	14	3.25	1.375	.906	5	.565	16289	16290

*Large shank.

**Pipe tap projection is the distance the small end of the tap projects through an American National Standard L1 Pipe Thread Ring Gage.
NPT taps can be used for ANPT applications.

High Hook Taper Pipe Taps

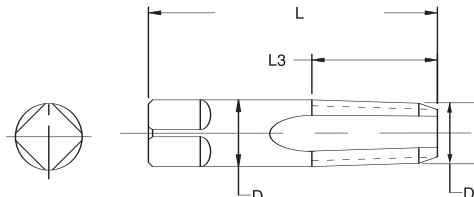
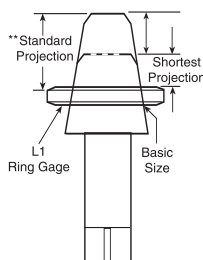
P	Steel
N	Non-Ferrous

Features/Benefits:

- manufactured from select high-speed steel
- ground thread pipe taps are standard in American Standard Pipe Form (NPT) and American Standard Dryseal Pipe Thread Form (NPTF)
- NPT threads require the use of a sealer, such as Teflon® tape or pipe compound
- NPTF dryseal threads provide a pressure-tight joint without the use of sealer
- uncoated taps standard; coatings available as specials
- hook designed for use in ductile materials that produce long, continuous chips
- all pipe taps are furnished with 2 1/2 to 3 1/2 pitches chamfered

Application Information:

- steel (TiCN, TiN, SH50)
- non-ferrous materials (uncoated)
- aluminum (TiN+CrC/C)



D1 = Tap Size
L = Overall Length
D = Shank Diameter
L3 = Thread Length

Production High Hook Taper Pipe Taps

Series No. 5820 NPT, NPTF, 2 1/2 to 3 1/2 Pitches, Uncoated

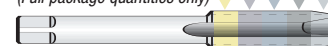
D1	TPI	L	Length of Thread	D	Flutes	Gage Measurement Standard Projection**	EDP Number	
							Uncoated NPT/ANPT	Uncoated NPTF
1/8*	27	2.13	.750	.438	4	.312	16206	16211
1/4	18	2.44	1.063	.563	4	.459	16213	16216
3/8	18	2.56	1.063	.700	4	.454	16218	16221
1/2	14	3.13	1.656	.688	4	.579	16223	16226
3/4	14	3.25	1.375	.906	5	.565	16228	16231
1	11 1/2	3.75	1.750	1.125	5	.678	16233	16236

*Large shank.

**Pipe tap projection is the distance the small end of the tap projects through an American National Standard L1 Pipe Thread Ring Gage.

NPT taps can be used for ANPT applications.

Alternate Coatings Available.
(Full package quantities only)



Greenfield LIGHTNING® SERVICE Available



Straight Pipe Taps

For General Machining Applications

Straight Pipe Taps

Features/Benefits:

- manufactured from select tap high-speed steel
- ground thread pipe taps are standard in American National Standard Straight Pipe (NPS) thread form and American National Standard Dryseal Straight Pipe (NPSF) thread form
- NPS threads are suitable for tapping holes or couplings for low pressure work when used with a sealer; also suitable for NPSC and NPSM work
- NPSF dryseal taps are intended for low pressure work such as fuel and oil lines where a sealer is not used
- dryseal threads give a low-pressure, pressure-tight joint without the use of sealer
- modified chamfer, 3-5 pitches

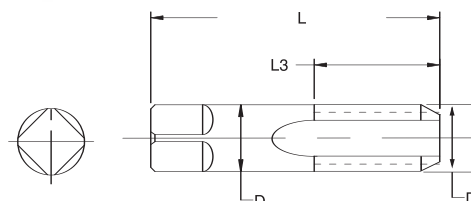
Application Information:

- steel (TiCN, TiN, oxide)
- non-ferrous materials (uncoated)
- cast iron and ductile iron (TiN+CrC/C)
- aluminum (TiN+CrC/C)

P	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous



Alternate Coatings Available.
(Full package quantities only)



D1 = Tap Size
L = Overall Length
D = Shank Diameter
L3 = Thread Length

Straight Pipe Taps NPS, NPSF

Series Number 5323 Uncoated, Modified Bottoming Chamfer 3-5 Pitches

							EDP Number	
D1	TPI	L	L3	D	Flutes	Recommended Tap Drill Size	Uncoated NPS	Uncoated NPSF
1/8	27	2.125	.750	.313	4	11/32	16351	16353
1/8*	27	2.125	.750	.438	4	11/32	16352	16354
1/4	18	2.438	1.063	.563	4	7/16	16355	16356
3/8	18	2.563	1.063	.700	4	37/64	16357	16358
1/2	14	3.125	1.656	.688	4	23/32	16359	16360
3/4	14	3.250	1.375	.906	5	59/64	16361	16362
1	11 1/2	3.750	1.750	1.125	5	1 5/32	16363	—

*Large shank

Greenfield LIGHTNING®
SERVICE Available



THREADING: Pipe Taps... How Deep to Thread?

Do you know how deep to run a pipe tap into a drilled hole before it stops? In other words, do you know when the pipe thread is either too small to accept the L-1 thread plug gage, or too large to be flush with the surface of the hole being tapped within ± 1 turn on the gage?

Pipe threads are sized differently than standard straight threads. They are based on the basic size at the top of the threaded hole produced by the pipe tap. The basic size, commonly called the 12-thread count, occurs approximately 12 threads from the front of the taper pipe tap. This means you can run any standard projection pipe tap into a drilled hole approximately 12 threads from the front of the tap, which should be the approximate basic size for that pipe thread.



► QUICK REFERENCE

Maintenance Tools

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MAINTENANCE TAPS & DIES

- Complete line of high-speed steel fully ground taps offer the strength and durability required for maintenance jobs
- Wide variety of high-speed and carbon steel dies for hand and machine threading
- Multiple tap, die, and drill sets available for use in maintenance, repair, and operations applications
- Tap wrenches and die stocks made from selected steels for durability



Maintenance Hand Taps

Taper, Plug, Bottoming Chamfers, and Sets of 1 of Each Chamfer

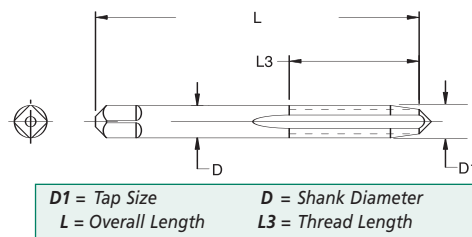
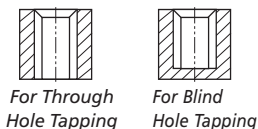
Features/Benefits:

- constructed from select high-speed steel
- ground thread straight flute design for sharp cutting action
- ideal for hand and power tapping for through or blind holes
- class 2B maintenance pitch diameter tolerances for longer life
- industrial quality taps at maintenance prices

Application Information:

- steel < 30 Rc
- stainless steel < 30 Rc
- non-ferrous materials
- aluminum
- cast iron and ductile iron

S	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous



Maintenance Hand Taps Machine Screw Sizes

■ Series No. 7305 Uncoated Taper, Plug, Bottoming Chamfer, and Sets

MACHINE SCREW

D1	NC/UNC	NF/UNF	L	L3	D	Class of Fit	EDP Number			
							Taper Chamfer	Plug Chamfer	Bottoming Chamfer	Taper, Plug, Bottoming Set
4	40	-	1.88	.563	.141	2B	11516	11517	11518	11519
4	-	48	1.88	.563	.141	2B	-	11521	-	-
5	40	-	1.94	.625	.141	2B	11524	11525	11526	11527
6	32	-	2.00	.688	.141	2B	11528	11529	11530	11531
6	-	40	2.00	.688	.141	2B	-	11537	-	-
8	32	-	2.13	.750	.168	2B	11540	11541	11542	11543
8	-	36	2.13	.750	.168	2B	-	11545	-	-
10	24	-	2.38	.875	.194	2B	11548	11549	11550	11551
10	-	32	2.38	.875	.194	2B	11552	11553	11554	11555
12	24	-	2.38	.938	.220	2B	11556	11557	11558	11559
12	-	28	2.38	.938	.220	2B	-	11561	-	-

Fractional sizes are listed on the next page.



Maintenance Hand Taps

For General Machining and Maintenance Applications

Maintenance Hand Taps Fractional Sizes

■ Series No. 7303 Uncoated Taper, Plug, Bottoming Chamfer Taps and Sets

S	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous

HIGH-PERFORMANCE TAPS

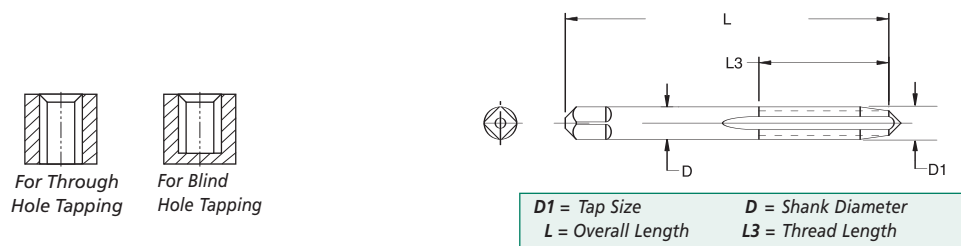
THREAD MILLS

PRODUCTION TAPS

MAINTENANCE TOOLS

GAGES

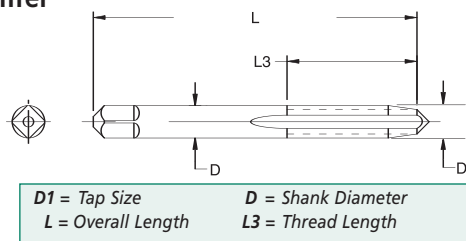
TECHNICAL
INFORMATION & INDEX



FRACTIONAL							EDP Number			
D1	NC/UNC	NF/UNF	L	L3	D	Class of Fit	Taper Chamfer	Plug Chamfer	Bottoming Chamfer	Taper, Plug, Bottoming Set
1/4	20	-	2.50	1.000	.255	2B	11596	11597	11598	11599
1/4	-	28	2.50	1.000	.255	2B	11600	11601	11602	11603
5/16	18	-	2.72	1.125	.318	2B	11604	11605	11606	11607
5/16	-	24	2.72	1.125	.318	2B	11608	11609	11610	11611
3/8	16	-	2.94	1.250	.381	2B	11612	11613	11614	11615
3/8	-	24	2.94	1.250	.381	2B	11616	11617	11618	11619
7/16	14	-	3.16	1.438	.323	2B	11620	11621	11622	11623
7/16	-	20	3.16	1.438	.323	2B	11624	11625	11626	11627
1/2	13	-	3.38	1.656	.367	2B	11628	11629	11630	11631
1/2	-	20	3.38	1.656	.367	2B	11632	11633	11634	11635
9/16	12	-	3.59	1.656	.429	2B	11636	11637	11638	11639
9/16	-	18	3.59	1.656	.429	2B	11640	11641	11642	11643
5/8	11	-	3.81	1.813	.480	2B	11644	11645	11646	11647
5/8	-	18	3.81	1.813	.480	2B	11648	11649	11650	11651
3/4	10	-	4.25	2.000	.590	2B	11652	11653	11654	11655
3/4	-	16	4.25	2.000	.590	2B	11656	11657	11658	11659
7/8	9	-	4.69	2.219	.697	2B	11660	11661	11662	11663
7/8	-	14	4.69	2.219	.697	2B	11664	11665	11666	11667
1	8	-	5.13	2.500	.800	2B	11668	11669	11670	11671
1	-	12	5.13	2.500	.800	2B	11672	11673	11674	11675
1	-	14 NS	5.13	2.500	.800	2B	11676	11677	11678	11679
1 1/8	7	-	5.44	2.563	.896	2B	11680	11681	11682	11683
1 1/8	8	-	5.44	2.563	.896	2B	11684	11685	11686	11687
1 1/8	-	12	5.44	2.563	.896	2B	11688	11689	11690	11691
1 1/4	7	-	5.75	2.563	1.021	2B	11692	11693	11694	11695
1 1/4	8	-	5.75	2.563	1.021	2B	11696	11697	11698	11699
1 1/4	-	12	5.75	2.563	1.021	2B	11700	11701	11702	11703
1 3/8	6	-	6.06	3.000	1.108	2B	11704	11705	11706	11707
1 3/8	8	-	6.06	3.000	1.108	2B	11708	11709	11710	11711
1 3/8	-	12	6.06	3.000	1.108	2B	11712	11713	11714	11715
1 1/2	6	-	6.38	3.000	1.233	2B	11716	11717	11718	11719
1 1/2	8	-	6.38	3.000	1.233	2B	11720	11721	11722	11723
1 1/2	-	12	6.38	3.000	1.233	2B	11724	11725	11726	11727

Metric Maintenance Hand Taps

Series No. 7353 Uncoated Plug Chamfer



S	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous

Size	L	L3	D	Class of Fit	EDP Number
					Plug Chamfer
M6 x 1	2.50	1.000	.255	6H	11900
M8 x 1,25	2.72	1.125	.318	6H	11901
M10 x 1,5	2.94	1.250	.381	6H	11902
M12 x 1,75	3.38	1.656	.367	6H	11903
M14 x 1,25	3.59	1.656	.429	6H	11904
M14 x 2	3.59	1.656	.429	6H	11905
M16 x 2	3.81	1.813	.480	6H	11906
M18 x 1,5	4.03	1.594	.542	6H	11907
M18 x 2,5	4.03	1.594	.542	6H	11908
M20 x 2,5	4.47	2.000	.652	6H	11909
M22 x 2,5	4.69	2.219	.697	6H	11910
M24 x 3	4.91	2.219	.760	6H	11911

Metric taps are manufactured to USCTI specifications and dimensions.

Metric tap blank dimensions are equivalent to inch taps.



THREADING: Determining the Minimum Tap Drill Depth

The tap drill depth for tapped holes should be deep enough to allow for the minimum thread depth, the tap's chamfer, any chips that may accumulate in the bottom of the hole, and any over-travel of the spindle as it slows to a stop before reversing.

To determine the ideal minimum drill depth, start with the basic rule: the tap drill depth should be at least one thread or one pitch beyond the chamfer of the tap. In other words, for a 1/4-20 tapped hole requiring a 3/8" (.375") thread depth, using a two-thread bottoming chamfer with a length of .100", and adding a minimum of one additional thread or .050", the minimum drill depth would be .525" (.375 + .100 + .050 = .525").

It is important to note that using the "one-pitch rule" does not always prevent the tap from hitting the bottom of the hole. In this case, consider the following three factors:

- 1) Understand the machine's capability to stop the spindle rotation at the bottom. Many newer machines are able to stop and reverse in one-half turn or less. If this is the case, the "one-pitch rule" may be sufficient. However, an older machine may allow the spindle to over-travel one, two, or even three pitches. Here, the additional drill depth should be at least one pitch beyond the over-travel amount.
- 2) Consider how the chips are produced. Spiral taps extract chips, preventing them from accumulating in the bottom of the hole. Chips produced from straight flute hand taps are likely to be flushed to the bottom by the coolant. The front of the tap may bottom on these chips, chipping or breaking the tap. In this case, one diameter of additional depth is recommended.
- 3) Understand the tap design. If using a plug or taper chamfer, note the tap sizes through 3/8" diameter are manufactured with 90° external centers that could hit the bottom. A general rule is to add one-half the diameter to the length for sufficient clearance.



Maintenance GUN® Taps

For Through Holes in Maintenance Applications

Maintenance GUN® Taps

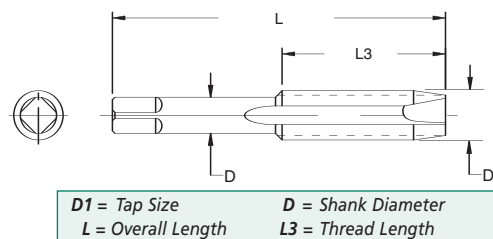
Features/Benefits:

- constructed from select high-speed steel
- ground thread straight flute design for sharp cutting action
- ideal for hand and power tapping for through holes
- class 2B maintenance pitch diameter tolerances for longer life
- industrial quality GUN taps at maintenance prices

Application Information:

- steel < 30Rc
- stainless steel < 30Rc
- non-ferrous materials
- aluminum
- cast iron and ductile iron

S	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous



Maintenance GUN® Taps

Series No. 7301 Uncoated Plug Chamfer

D1	NC/UNC	NF/UNF	L	L3	D	Class of Fit	EDP Number
4	40	-	1.88	.563	.141	2B	12027
5	40	-	1.94	.625	.141	2B	12030
5	-	44	1.94	.625	.141	2B	12031
6	32	-	2.00	.688	.141	2B	12032
6	-	40	2.00	.688	.141	2B	12033
8	32	-	2.15	.750	.168	2B	12034
8	-	36	2.15	.750	.168	2B	12035
10	24	-	2.38	.875	.194	2B	12036
10	-	32	2.38	.875	.194	2B	12037
12	24	-	2.38	.938	.220	2B	12038
12	-	28	2.38	.938	.220	2B	12039
1/4	20	-	2.50	1.000	.255	2B	12040
1/4	-	28	2.50	1.000	.255	2B	12041
5/16	18	-	2.72	1.125	.318	2B	12042
5/16	-	24	2.72	1.125	.318	2B	12043
3/8	16	-	2.94	1.250	.381	2B	12044
3/8	-	24	2.94	1.250	.381	2B	12045
7/16	14	-	3.16	1.438	.323	2B	12046
7/16	-	20	3.16	1.438	.323	2B	12047
1/2	13	-	3.38	1.656	.367	2B	12048
1/2	-	20	3.38	1.656	.367	2B	12049
5/8	11	-	3.81	1.813	.480	2B	12050
5/8	-	18	3.81	1.813	.480	2B	12051
3/4	10	-	4.25	1.813	.590	2B	12052

Maintenance Taper Pipe Taps

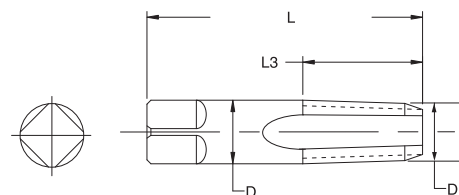
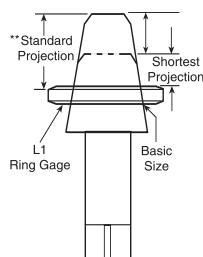
Features/Benefits:

- made from select high-speed steel
- American Standard Pipe Tap (NPT) thread form with a taper of 3/4" per foot
- made for the most difficult maintenance applications
- use for hand tapping or tapping under power
- furnished with 2 1/2 to 3 1/2 pitches chamfered
- standard projection

Application Information:

- steel < 30Rc
- stainless steel < 30Rc
- non-ferrous materials
- aluminum
- cast iron and ductile iron

S	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous



D1 = Tap Size *D = Shank Diameter*
L = Overall Length *L3 = Thread Length*

Maintenance Taper Pipe Taps

Series No. 7320 Uncoated Standard Chamfer 2 1/2 to 3 1/2 Pitches

D1	TPI	L	L3	D	Flutes	Gage Measurement Standard Projection**	EDP Number
1/8*	27	2.13	.750	.438	4	.312	11801
1/8	27	2.13	.750	.313	4	.312	11800
1/4	18	2.44	1.063	.563	4	.459	11802
3/8	18	2.56	1.063	.700	4	.454	11803
1/2	14	3.13	1.375	.688	4	.579	11804
3/4	14	3.25	1.375	.906	5	.565	11805
1	11 1/2	3.75	1.750	1.125	5	.678	11806
1 1/4	11 1/2	4.00	1.750	1.313	5	.686	11807
1 1/2	11 1/2	4.25	1.750	1.500	7	.699	11808
2	11 1/2	4.50	1.750	1.875	7	.667	11809

*Large shank.

** Pipe tap projection is the distance the small end of the tap projects through an American National Standard L1 Pipe Thread Ring Gage.

Dies

Little Giant® Die System



Little Giant® Collet Complete with Die for Most Maintenance Applications

Features/Benefits:

- constructed from carbon steel
- complete range of cutting sizes
- most cutting sizes may be ordered by size only; however, sizes 3/16", 1/4", and 1/2" can be furnished in two different blanks (order by size and collet number)
- Unified and American National thread form standard
- use with Little Giant die stocks (see page 125)

Little Giant Collet Complete with Die

- collets for use with Little Giant dies consist of a cap and a guide
- die halves are seated in the beveled cap slot and held in place by the guide, which screws into the underside of the cap
- die is adjusted by set screws at either end of slot
- caps of a given outside diameter are made with several different sizes of slots to accept different sized die blanks
- a separate guide is required for each cutting size
- to order separate guides, specify cutting size of the die and size of the collet for 3/16", 1/4", and 1/2" dies



Little Giant® die assemblies consist of

- collet - combination of cap and guide
- matched dies

Order by desired thread size.

All parts can be ordered as separate items, see pages 123-125.

Little Giant® Collet and Die Assembly

Series No. 1386

MACHINE SCREW and FRACTIONAL

Nominal Size	NC/UNC	NF/UNF	Collet Number	Collet O.D.	EDP Number	
					Right Hand	Left Hand
4	40	-	A-1	1 1/4	01466	—
6	32	-	A-1	1 1/4	01468	—
8	32	-	A-1	1 1/4	01469	—
10	24	-	A-1	1 1/4	01470	—
10	-	32	A-1	1 1/4	01549	—
12	24	-	A-1	1 1/4	01471	—
1/16	-	64 NS	A-1	1 1/4	01618	—
1/8	-	40 NS	A-1	1 1/4	01620	—
3/16	-	24 NS	A-1	1 1/4	01623	—
7/32	-	24 NS	A-1	1 1/4	01625	—
1/4	20	-	A-1	1 1/4	01472	—
1/4	-	28	A-1	1 1/4	01551	—
3/16	-	24 NS	1	2	01628	—
1/4	20	-	1	2	01473	—
1/4	-	28	1	2	01552	—
5/16	18	-	1	2	01474	—
5/16	-	24	1	2	01553	—
3/8	16	-	1	2	01475	01509
3/8	-	24	1	2	01554	01589
7/16	14	-	1	2	01476	01510
7/16	-	20	1	2	01555	01590
1/2	13	-	1	2	01477	01511
1/2	-	20	1	2	01556	—

FRACTIONAL

Nominal Size	NC/UNC	NF/UNF	Collet Number	Collet O.D.	EDP Number	
					Right Hand	Left Hand
1/4	20	-	5	2 3/4	01478	—
1/4	-	28	5	2 3/4	01557	—
5/16	18	-	5	2 3/4	01479	—
5/16	-	24	5	2 3/4	01558	—
3/8	16	-	5	2 3/4	01480	01514
3/8	-	24	5	2 3/4	01559	01594
7/16	14	-	5	2 3/4	01481	01515
7/16	-	20	5	2 3/4	01560	01595
1/2	13	-	5	2 3/4	01482	01516
1/2	-	20	5	2 3/4	01561	—
9/16	12	-	5	2 3/4	01483	—
9/16	-	18	5	2 3/4	01562	—
5/8	11	-	5	2 3/4	01484	01518
5/8	-	18	5	2 3/4	01563	01598
3/4	10	-	5	2 3/4	01485	01519
3/4	-	16	5	2 3/4	01564	01599
7/8	9	-	5	2 3/4	01486	01520
7/8	-	14	5	2 3/4	01565	—
1	8	-	5	2 3/4	01487	01521
1	-	12	5	2 3/4	01566	—
1	-	14 NS	5	2 3/4	01567	—

■ Little Giant® Two-Piece Dies

Features/Benefits:

- two-piece construction with two cutting edges in each piece
- easy to sharpen
- one side has a 2 to 3 thread chamfer for threading; the other side has a 1 to 1 1/2 thread chamfer for threading close to a shoulder
- standard with Unified and American National thread form
- manufactured from carbon steel
- enables a wide range of adjustments
- Little Giant dies are used in No. 1381 Little Giant stocks or No. 1382 Little Giant Jr. stocks

Application Information:

- use in most maintenance applications
- ideal for hand threading operations



Matched Dies

Little Giant dies are used in the Little Giant Die System. See the collet listings on page 122. Dies are inserted into the beveled cap slot in the appropriate collet and are held in place by the guide, which screws into the underside of the cap.

Little Giant® Dies

■ Series No. 380

MACHINE SCREW and FRACTIONAL

Nominal Size	NC/UNC	NF/UNF	NS	Collet Number	Blank Number	EDP Number	
						Right Hand	Left Hand
4	40	-	-	A-1	A1	21006	—
6	32	-	-	A-1	A-1	21010	—
8	32	-	-	A-1	A-1	21013	—
10	24	-	-	A-1	A-1	21016	—
10	-	32	-	A-1	A-1	21018	—
12	24	-	-	A-1	A-1	21020	—
1/16	-	-	64	A-1	A-1	21026	—
3/32	-	-	48	A-1	A-1	21027	—
1/8	-	-	40	A-1	A-1	21029	—
5/32	-	-	36	A-1	A-1	21033	—
7/32	-	-	24	A-1	A-1	21041	—
1/4	20	-	-	A-1	A-1	21048	—
1/4	20	-	-	1,5	A	21049	—
1/4	-	28	-	A-1	A-1	21058	—
1/4	-	28	-	1,5	A	21059	—
5/16	18	-	-	1,5	A	21064	—
5/16	-	24	-	1,5	A	21069	—
3/8	16	-	-	1,5	B	21073	21074
3/8	-	24	-	1,5	B	21079	21080
7/16	14	-	-	1,5	B	21082	21083
7/16	-	20	-	1,5	B	21087	21088
1/2	13	-	-	1	B	21094	21096
1/2	13	-	-	5	C	21095	21097
1/2	-	20	-	1	B	21101	—
1/2	-	20	-	5	C	21102	—
9/16	12	-	-	5	C	21107	21108
9/16	-	18	-	5	C	21112	—
5/8	11	-	-	5	C	21115	21116
5/8	-	18	-	5	C	21120	21121

FRACTIONAL

Nominal Size	NC/UNC	NF/UNF	NS	Collet Number	Blank Number	EDP Number	
						Right Hand	Left Hand
3/4	10	-	-	5	C	21126	21127
3/4	-	16	-	5	C	21132	21133
7/8	9	-	-	5	D	21136	21137
7/8	-	14	-	5	D	21141	—
1	8	-	-	5	D	21144	21145
1	-	12	-	5	D	21150	—
1	-	14	-	5	D	21153	—

Metric Little Giant® Dies

■ Series No. 380

METRIC

Size	Collet Number	Die Blank Size	EDP Number
			Right Hand
M6 x 1	5	A	21205
M8 x 1,25	5	A	21207
M10 x 1,5	5	B	21209
M12 x 1,75	5	B	21212
M14 x 2	5	C	21213
M16 x 2	5	C	21214
M18 x 2,5	5	C	21215
M20 x 2,5	5	C	21216
M22 x 2,5	5	D	21217
M24 x 3	5	D	21218



Dies

Little Giant® Two-Piece System

Little Giant® Two-Piece Die System Parts

- collets for use with Little Giant dies consist of a cap and a guide; order cap and guide separately, or assembled as a collet
- table below shows the EDP number for the cap (Series 1383), the guide (Series 1384), and the collet (Series 1385)
- die halves are seated in the beveled cap slot and held in place by the guide, which screws into the underside of the cap
- die is adjusted by set screws at either end of the slot
- caps of a given outside diameter are made with several different sizes of slots to take different sizes of dies as indicated in the table below
- separate guide is required for each cutting size
- to order separate guides, specify cutting size of the die and the size of the collet for 3/16", 1/4", and 1/2" dies



Series 1383 Cap



Series 1385 Collet (cap and guide assembly)



Series 1384 Guide

Little Giant® Two-Piece Die System

- Series 1383 - Cap
- Series 1384 - Guide
- Series 1385 - Collet

Nominal Size	Collet Number	Die Blank Size	Cap O.D.	EDP Number		
				Cap - Series 1383	Guide - Series 1384	Collet - Series 1385 Cap & Guide
4	A-1	A-1	1 1/4	01122	01137	01187
6	A-1	A-1	1 1/4	01122	01139	01189
8	A-1	A-1	1 1/4	01122	01140	01190
10	A-1	A-1	1 1/4	01122	01141	01191
12	A-1	A-1	1 1/4	01122	01142	01192
1/16	A-1	A-1	1 1/4	01122	01144	01194
3/32	A-1	A-1	1 1/4	01122	01145	01195
1/8	A-1	A-1	1 1/4	01122	01146	01196
5/32	A-1	A-1	1 1/4	01122	01147	01197
3/16	A-1	A-1	1 1/4	01122	01148	01198
7/32	A-1	A-1	1 1/4	01122	01149	01199
1/4	A-1	A-1	1 1/4	01122	01150	01200
3/16	1	A	2	01123	01151	01201
1/4	1	A	2	01123	01153	01203
5/16	1	A	2	01123	01154	01204
3/8	1	B	2	01124	01155	01205
7/16	1	B	2	01124	01156	01206
1/2	1	B	2	01124	01157	01207
3/16	5	A	2 3/4	01125	01158	01208
1/4	5	A	2 3/4	01125	01160	01210
5/16	5	A	2 3/4	01125	01161	01211
3/8	5	B	2 3/4	01126	01162	01212
7/16	5	B	2 3/4	01126	01163	01213
1/2	5	C	2 3/4	01127	01164	01215
9/16	5	C	2 3/4	01127	01165	01216
5/8	5	C	2 3/4	01127	01166	01217
3/4	5	C	2 3/4	01127	01168	01219
7/8	5	D	2 3/4	01128	01169	01221
1	5	D	2 3/4	01128	01170	01223

■ Little Giant® Die Stocks

Features/Benefits:

- carbon steel construction
- use with all Series 1386 Little Giant collets with two-piece dies

Application Information:

- Series 1381 Little Giant die stocks have center holes corresponding to the outside diameter of Little Giant collets



Little Giant® Die Stocks

■ Series No. 1381

Stock Number	Collet Number	Collet Capacity	Length of Stock	EDP Number
A-1	A-1	1 1/4	7.50	01108
1	1	2	14.50	01109
5	5	2 3/4	23.00	01110
5A	5	2 3/4	26.00	01111
5B	5	2 3/4	29.00	01112

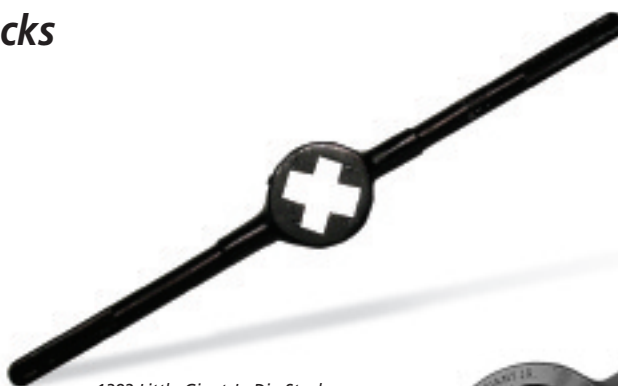
■ Little Giant® Jr. Die Stocks

Features/Benefits:

- carbon steel construction
- use with all Series 380 Little Giant two-piece dies without collets

Application Information:

- Series 1382 Little Giant Jr. die stocks are designed to use Little Giant dies without collets
- double slots enable use of two different size blanks in the same stock
- dies fit directly into the stock and are held in place by a screw guide



Little Giant® Jr. Die Stocks

■ Series No. 1382

Stock Number	Cutting Sizes	Die Blank Sizes	Guide Number	Cutting Size Range	Length of Stock	EDP Number
31	1/4 to 5/16 3/8 to 1/2	A B	1	1/4 to 1/2	14.50	01117
35	9/16 to 3/4 7/8 to 1	C D	5	9/16 to 1	23.00	01118
35A	9/16 to 3/4 7/8 to 1	C D	5	9/16 to 1	26.00	01119



Dies

Carbon Steel Round Adjustable

Carbon Steel Round Adjustable Dies

Features/Benefits:

- carbon steel construction
- chamfered on both faces, 2 to 3 threads on one face and 1 to 2 1/2 threads on the other for threading close to the shoulder
- beveled slot to remove screw when die is used in a machine holder with its own adjusting screw

Application Information:

- for use in hand-held die stocks or machine holders
- for minor size adjustments, fine pitch screw adjusts edges of the die closer together or further apart; range of adjustment of round dies is slight



D1 = Cutting Size

Carbon Steel Round Adjustable Dies

Series 382

MACHINE SCREW

D1	NC/UNF	NF/UNF	EDP Number	
			13/16" Die O.D. 1/4" Thickness	1" Die O.D. 3/8" Thickness
0	-	80	23019	—
1	64	-	23021	—
1	-	72	23022	—
2	56	-	23023	—
2	-	64	23025	—
3	48	-	23026	—
3	-	56	23027	—
4	40	-	23029	—
4	-	48	23031	—
5	40	-	23032	—
5	-	44	23034	—
6	32	-	23035	23105
6	-	40	23038	—
8	32	-	23039	23107
8	-	36	23041	—
10	24	-	23043	23109
10	-	32	23045	23112
12	24	-	23048	23115
12	-	28	23049	—

Sizes and/or dimensions not listed and left hand dies are available as specials.
Fractional sizes are listed on the next page.

Carbon Steel Round Adjustable Dies

Series 382

FRACTIONAL			EDP Number					
D1	NC/UNC	NF/UNF	13/16" Die O.D. 1/4" Thickness	1" Die O.D. 3/8" Thickness	1 1/2" Die O.D. 1/2" Thickness	2" Die O.D. 5/8" Thickness	2 1/2" Die O.D. 3/4" Thickness	3" Die O.D. 1" Thickness
1/4	20	-	23051	23133	23204	23284	—	—
1/4	-	28	—	23138	23209	23287	—	—
5/16	18	-	—	23143	23211	23289	—	—
5/16	-	24	—	23147	23216	23293	—	—
3/8	16	-	—	23152	23220	23295	—	—
3/8	-	24	—	23157	23225	23300	—	—
7/16	14	-	—	23162	23230	23303	—	—
7/16	-	20	—	23166	23234	23306	—	—
1/2	13	-	—	23170	23241	23310	—	—
1/2	-	20	—	23171	23245	23313	—	—
9/16	12	-	—	—	23251	23316	—	—
9/16	-	18	—	—	23255	23319	—	—
5/8	11	-	—	—	23259	23321	23361	—
5/8	-	18	—	—	23263	23324	—	—
3/4	10	-	—	—	23268	23331	23363	—
3/4	-	16	—	—	23269	23336	23365	—
7/8	9	-	—	—	—	23340	23366	—
7/8	-	14	—	—	—	23343	23367	—
1	8	-	—	—	—	23347	23368	23376
1	-	12	—	—	—	23348	23372	23377
1	-	14	—	—	—	23349	—	—
1 1/8	7	-	—	—	—	—	—	23379
1 1/8	-	12	—	—	—	—	—	23380
1 1/4	7	-	—	—	—	—	—	23381
1 1/4	-	12	—	—	—	—	—	23384
1 3/8	6	-	—	—	—	—	—	23386
1 3/8	-	12	—	—	—	—	—	23388
1 1/2	6	-	—	—	—	—	—	23389
1 1/2	-	12	—	—	—	—	—	23390

Sizes and/or dimensions not listed and left hand dies are available as specials.

Carbon Steel Round Adjustable Dies

Series 382

NPT TAPER PIPE		EDP Number		
D1	TPI	1" Die O.D. 3/8" Thickness	1 1/2" Die O.D. 1/2" Thickness	2" Die O.D. 5/8" Thickness
1/8	27	23118	23200	—
1/4	18	—	23202	23283
3/8	18	—	23223	23298
1/2	14	—	—	23312

Sizes and/or dimensions not listed and left hand dies are available as specials.



Dies

High-Speed Steel Round Adjustable

High-Speed Steel Round Adjustable Dies

Features/Benefits:

- made from high-speed steel for improved wear life
- chamfered on both faces, 2 to 3 threads on one face and 1 to 2 1/2 threads on the other for threading close to the shoulder
- beveled screw slot to remove screw when die is used in a machine holder; range of adjustment of round dies is slight

Application Information:

- ideal for maintenance in the shop or in the field
- use in round die stocks, Series 1750, or Series 1790 (see page 130)
- for minor size adjustments, fine pitch screw adjusts edges of the die closer together or further apart



D1 = Cutting Size

High-Speed Steel Round Adjustable Dies

Series 6382

MACHINE SCREW

			EDP Number	
D1	NC/UNC	NF/UNF	13/16" Die O.D. 1/4" Thickness	1" Die O.D. 3/8" Thickness
5	40	-	23710	—
5	-	44	23712	—
6	32	-	23713	23730
6	-	40	23715	—
8	32	-	23716	23731
8	-	36	23718	—
10	24	-	23719	23732
10	-	32	23720	23733
12	24	-	23722	23735
12	-	28	23723	—

FRACTIONAL

			EDP Number			
D1	NC/UNC	NF/UNF	13/16" Die O.D. 1/4" Thickness	1" Die O.D. 3/8" Thickness	1" Die O.D. 1/2" Thickness	2" Die O.D. 5/8" Thickness
1/4	20	-	23724	23739	23761	—
1/4	-	28	23725	23742	23764	—
5/16	18	-	23727	23746	23768	—
5/16	-	24	23728	23748	23770	—
3/8	16	-	—	23751	23773	—
3/8	-	24	—	23753	23776	—
7/16	14	-	—	23757	23779	—
7/16	-	20	—	23758	23781	—
1/2	13	-	—	—	23785	—
1/2	-	20	—	—	23787	—
9/16	12	-	—	—	23792	—
9/16	-	18	—	—	23793	—
5/8	11	-	—	—	23796	23811
5/8	-	18	—	—	23798	23813
3/4	10	-	—	—	—	23816
3/4	-	16	—	—	—	23818
7/8	9	-	—	—	—	23823
7/8	-	14	—	—	—	23824

Sizes and/or dimensions not listed and left hand dies are available as specials.

High-Speed Steel Round Adjustable Dies

■ Series 6385

METRIC Size	EDP Number		
	13/16" Die O.D. 1/4" Thickness	1" Die O.D. 3/8" Thickness	1 1/2" Die O.D. 1/2" Thickness
M2,5 x 0,45	23855	—	—
M3 x 0,5	23857	—	—
M3,5 x 0,6	23859	—	—
M4 x 0,7	23861	—	—
M4,5 x 0,75	23863	—	—
M5 x 0,8	23865	—	—
M6 x 1	23867	23869	—
M7 x 1	—	23871	—
M8 x 1,25	—	23873	—
M10 x 1,5	—	23877	—
M12 x 1,75	—	23881	—
M14 x 2	—	—	23885
M16 x 2	—	—	23889
M18 x 1,5	—	—	23893
M20 x 2,5	—	—	23897

Sizes and/or dimensions not listed and left hand dies are available as specials.



Dies

Stocks for Round Adjustable Dies

Die Stocks for Round Adjustable Dies

- series 1750 die stocks hold round adjustable dies of any construction
- these die stocks are specifically manufactured for holding dies with the open-type adjustment
- steel construction



Series 1750 Die Stock

Die Stocks

Series 1750 Die Stocks with Three-Screw-Type Construction

Stock Number	Length	Die O.D.	EDP Number
1751	6.25	13/16	01238
1752	9.00	1	01240
1753	14.00	1 1/2	01241
1757	23.00	2	01243
1758	29.00	2 1/2	01245
1759	40.00	3	01247

- series 1790 die stocks have built-in workpiece guide
- turn cam plate and lock in place with two set screws to fit any size rod within the range of the stock
- steel construction



Series 1790 Die Stock

Die Stocks

Series 1790 O.K. Jr. Adjustable Guide Die Stocks

Stock Number	Length	Die O.D.	EDP Number
13	6.25	13/16	01248
14	13.00	1	01249
15	17.75	1 1/2	01250
16	26.00	2	01251

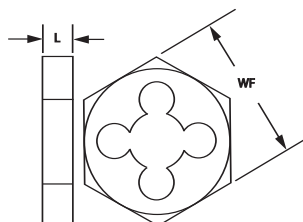
Hexagon Rethreading Bolt Dies

Features/Benefits:

- made from carbon steel
- standard with right hand Unified and American National thread form
- available in metric and American National Taper Pipe (NPT) thread form
- cost-effective rethreading die

Application Information:

- use to dress over bruised or rusty threads
- no special holder required; use standard wrench
- ideal for maintenance in the shop or in the field



D1 = Thread Size WF = Width Across Flat L = Thickness

Hexagon Rethreading Bolt Dies

Series No. 377

FRACTIONAL

D1	NC/UNC	NF/UNF	WF Width Across Flat	L	EDP Number
1/4	20	-	19/32	1/4	24107
1/4	-	28	19/32	1/4	24110
5/16	18	-	11/16	5/16	24112
5/16	-	24	11/16	5/16	24115
3/8	16	-	25/32	3/8	24117
3/8	-	24	25/32	3/8	24121
7/16	14	-	7/8	7/16	24123
7/16	-	20	7/8	7/16	24126
1/2	13	-	1 1/16	1/2	24130
1/2	-	20	1 1/16	1/2	24133
9/16	12	-	1 1/16	1/2	24137
9/16	-	18	1 1/16	1/2	24139
5/8	11	-	1 1/4	5/8	24141
5/8	-	18	1 1/4	5/8	24144
11/16	11	-	1 7/16	3/4	24146
11/16	-	16	1 7/16	3/4	24148
3/4	10	-	1 7/16	3/4	24149
3/4	-	16	1 7/16	3/4	24153
7/8	9	-	1 5/8	7/8	24156
7/8	-	14	1 5/8	7/8	24159
1	8	-	1 13/16	1	24162
1	-	12	1 13/16	1	24166
1	-	14	1 13/16	1	24167
1 1/8	7	-	2	1	24170
1 1/8	-	12	2	1	24174
1 1/4	7	-	2 3/16	1	24176
1 1/4	-	12	2 3/16	1	24180
1 3/8	6	-	2 3/8	1	24182
1 3/8	-	12	2 3/8	1	24185
1 1/2	6	-	2 9/16	1	24187
1 1/2	-	12	2 9/16	1	24191

Hexagon Rethreading Bolt Dies

Series No. 377

METRIC

Size	WF Width Across Flat	L	EDP Number
M5 x 0,8	19/32	1/4	24219
M6 x 1	19/32	1/4	24221
M8 x 1,25	11/16	5/16	24227
M10 x 1,5	7/8	7/16	24229
M12 x 1,75	1 1/16	1/2	24231
M14 x 2	1 1/16	1/2	24233
M16 x 2	1 1/4	5/8	24235
M20 x 2,5	1 5/8	7/8	24239

Hexagon Rethreading Bolt Dies

Series No. 377

NPT PIPE

D1	Thread Pitch NPT	WF Width Across Flat	L	EDP Number
1/8	27	1 1/16	3/8	24104
1/4	18	1 1/4	5/8	24106
3/8	18	1 7/16	5/8	24120
1/2	14	1 5/8	3/4	24132
3/4	14	2	13/16	24152
1	12	2 3/8	1	24165



Accessories

Tap Wrenches

T-Handle Tap Wrenches

Features/Benefits:

- made from carefully selected steel
- high quality tools designed for use in hand tapping
- can also be used with reamers, drills, screw extractors, and any other tools that can be turned by hand

Numbers 328 and 332 Slip Handle Tap Wrench

- T-handle on this wrench may be slipped from side to side to enable complete turn in close quarters

Numbers 329 and 333 Plain Handle Tap Wrench

- all-purpose wrench with fixed handle
- ideal for out-in-the-open tapping jobs

Numbers 336 and 337 Long Shank Tap Wrench

- long shank enables tapping in hard-to-reach places in machine and automobile repair work

Numbers 338 and 339 Ratchet Handle Tap Wrench

- combination of ratchet and slip handle makes this all-around wrench able to handle most hand tapping jobs



Number 328 and 332
Slip Handle Tap Wrench



Number 338 and 339
Ratchet and Slip Handle Tap Wrench



Number 336 and 337
Long Handle Tap Wrench

T-Handle Tap Wrenches

Wrench Number	Wrench Capacity			Overall Length	EDP Number
	Fractional Taps	Machine Screw Taps	Metric Taps		
328	1/16 to 1/4	0 - 14	M1.5 - M6.3	2 3/4	01350
332	7/32 to 1/2	12 - 14	M5.5 - M12.5	3 5/8	01355
329	1/16 to 1/4	0 - 14	M1.5 - M6.3	2 3/4	01352
333	7/32 to 1/2	12 - 14	M5.5 - M12.5	3 5/8	01358
336	1/16 to 1/4	0 - 14	M1.5 - M6.3	8 3/4	01362
337	7/32 to 1/2	12 - 14	M5.5 - M12.5	10 5/8	01364
338	1/16 to 1/4	0 - 14	M1.5 - M6.3	3 3/4	01366
339	7/32 to 1/2	12 - 14	M5.5 - M12.5	5	01377

■ Straight Handle Tap Wrenches

Features/Benefits:

- made from rugged steel
- jaws are made of carefully hardened and tempered tool steel
- high quality tools designed for use in hand tapping
- straight handle design provides greater leverage
- especially useful with larger diameter taps or reamers



Number 22 Straight Tap Wrench

Straight Tap Wrenches

Wrench Number	Capacity			Overall Length	EDP Number
	Fractional Taps	Machine Screw Taps	Pipe Tap or Reamers		
0	1/16 - 1/4	0 - 14	-	7	01287
14	1/16 - 3/8	0 - 14	-	9	01292
15	5/32 - 1/2	7 - 14	1/8	11 1/8	01299
13	5/32 - 3/4	7 - 14	1/8 - 1/4	14 7/8	01304
7	1/4 - 1 1/8	1/4 - 1 1/8	1/8 - 3/4	19	01311
8	3/4 - 1 5/8	3/4 - 1 5/8	3/8 - 1 1/4	40	01325
22	1 - 2 1/2	1 - 2 1/2	3/4 - 2	54	01338



Accessories

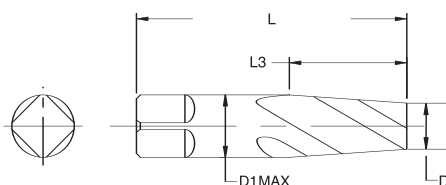
Screw Extractors

■ Little Giant® Screw Extractors

Using Little Giant Screw Extractors

Use in maintenance departments, machine shops, garages, and workshops to remove broken screws, bolts, or other threaded parts:

- drill a hole into the broken part using the recommended drill size in the table below
- insert the extractor and twist to the left
- extractor will grip into the hole wall, and broken part can be backed out without damaging the threads



D1 = Diameter of Small End **D1MAX** = Diameter of Large End
L = Overall Length **L3** = Taper Length

Little Giant Screw Extractors

■ Series 800

Extractor Size	D1	D1 MAX	L	L3	Capacity (inch) Screws and Bolts	Capacity (inch) Pipe Sizes	Capacity (mm) Screws and Bolts	Recommended Drill Size	EDP Number
1	.054	5/32	2	11/16	MS 8 to 1/4"	-	2,5 to 6,0	5/64	65001
2	.086	3/16	2	7/8	MS 12 to 5/16"	-	6,0 to 8,0	7/64	65003
3	1/8	1/4	2	1	5/16" to 7/16"	-	8,0 to 12,0	5/32	65005
4	3/16	11/32	3	1 1/4	7/16" to 9/16"	-	12,0 to 14,0	1/4	65007
5	1/4	7/16	3 3/8	1 1/2	9/16" to 3/4"	1/8	14,0 to 20,0	17/64	65009
5 1/4	11/32	17/32	3 3/8	1 1/2	11/16" to 15/16"	-	-	23/64	65011
6	3/8	19/32	3 3/4	1 3/4	3/4" to 1"	-	-	13/32	65013
6 3/8	15/32	11/16	3 3/4	1 11/16	15/16" to 1 1/8"	3/8	-	31/64	65015
7	1/2	25/32	4 1/8	2 1/4	1" to 1 3/8"	-	24,0 to 35,0	17/32	65017
7 1/2	19/32	7/8	4 1/8	2 1/4	1 1/8" to 1 1/2"	1/2	-	39/64	65019
8	3/4	1 1/32	4 3/8	2 1/4	1 3/8" to 1 3/4"	3/4	35,0 to 44,0	13/16	65021
9	1	1 9/32	4 5/8	2 1/4	1 3/4" to 2 1/8"	1	44,0 to 54,0	1 1/16	65023
10	1 1/4	1 9/16	5	2 1/2	2 1/8" to 2 1/2"	1 1/4	54,0 to 63,0	1 5/16	65025
11	1 1/2	1 7/8	5 5/8	3	2 1/2" to 3"	1 1/2	63,0 to 76,0	1 9/16	65027
12	1 27/32	2 9/32	6 1/4	3 1/2	3" to 3 1/2"	2	76,0 to 88,0	1 15/16	65029

Note: Recommended drill size and extractor size shown above are for normal conditions. Unusual conditions will require the use of other size extractors and drills, depending on the length of broken section and depth of hole. In general, use the largest possible screw extractor.

■ Little Giant® Jr. Tap & Die Sets

HSS Taps and Little Giant Two-Piece Dies



Set Number 3312

- consist of:
 - series no. 380 Little Giant two-piece dies
 - series no. 1384 Little Giant guide
 - series no. 7303 maintenance hand taps
 - series no. 1382 Little Giant Jr. die stocks
- tap wrenches
- die stocks are designed to use Little Giant dies without collets
- stocks are double-slotted to permit the use of two different sizes of dies in a single stock
- ideal for hand threading operations
- dies and taps furnished with American National Form threads
- packaged in special case with special moisture- and oil-resistant Ethafoam liner for tool protection

Little Giant Jr. Tap & Die Sets

Set Number	Number of Cutting Sizes	7303 Tap and 380 Die Sizes		Tap Wrench	Die Stock Number	Set EDP Number
		NC	NF			
3310	10	1/4-20	1/4-28	15	31	00606
		5/16-18	5/16-24			
		3/8-16	3/8-24			
		7/16-14	7/16-20			
		1/2-13	1/2-20			
3311	16	1/4-20	1/4-28	13	31, 35	00607
		5/16-18	5/16-24			
		3/8-16	3/8-24			
		7/16-14	7/16-20			
		1/2-13	1/2-20			
3312	20	9/16-12	9/16-18	15, 7	33, 35A	00608
		5/8-11	5/8-18			
		3/4-10	3/4-16			
		1/4-20	1/4-28			
		5/16-18	5/16-24			
		3/8-16	3/8-24			
		7/16-14	7/16-20			
		1/2-13	1/2-20			
		9/16-12	9/16-18			
		5/8-11	5/8-18			
		3/4-10	3/4-16			
		7/8-9	7/8-14			
		1-8	1-14 NS			

Maintenance

Tap and Die Sets



HIGH-PERFORMANCE TAPS

THREAD MILLS

PRODUCTION TAPS

MAINTENANCE TOOLS

GAGES

TECHNICAL
INFORMATION & INDEX

■ Little Giant® Tap & Die Sets

HSS Taps and Little Giant Two-Piece Dies



Set Number AA4

- consist of:
 - series no. 380 Little Giant two-piece dies
 - series no. 1385 Little Giant collet
 - series no. 7305-7303-7353 HSS maintenance hand taps
 - series no. 1381 Little Giant die stocks
 - tap wrenches
- die stocks have center holes corresponding to the outside diameter of Little Giant collets
- ideal for hand threading operations
- dies and taps furnished with American National Form threads
- packaged in special case with moisture- and oil-resistant Ethafoam liner for tool protection

Little Giant Tap & Die Sets

7305 / 7303 / 7353 Tap
and 380 Die Sizes

Set Number	Number of Cutting Sizes	NC	NF	Collet Number	Tap Wrench	Die Stock	Set EDP Number
AA4	7	4-40 6-32 8-32 10-24 12-24 1/4-20	10-32	A-1	329	A-1	00020
1	5	1/4-20 5/16-18 3/8-16 7/16-14 1/2-13	—	1	1	15	00039
343	10	1/4-20 5/16-18 3/8-16 7/16-14 1/2-13	1/4-28 5/16-24 3/8-24 7/16-20 1/2-20	1	1	15	00061
5-1/2	8	1/4-20 5/16-18 3/8-16 7/16-14 1/2-13 9/16-12 5/8-11 3/4-10	—	5	5	13	00043
342	16	1/4-20 5/16-18 3/8-16 7/16-14 1/2-13 9/16-12 5/8-11 3/4-10	1/4-28 5/16-24 3/8-24 7/16-20 1/2-20 9/16-18 5/8-18 3/4-16	1, 5	1, 5	13	00062
7-1/2	10	1/4-20 5/16-18 3/8-16 7/16-14 1/2-13 9/16-12 5/8-11 3/4-10 7/8-9 1-8	—	5	5A	15, 7	00047
37-1/2	10	—	1/4-28 5/16-24 3/8-24 7/16-20 1/2-20 9/16-18 5/8-18 3/4-16 7/8-14 1-14 NS	5	5A	15, 7	00082

Little Giant Tap & Die Sets are
continued on the next page.



Set Number 45

(continued)
Little Giant Tap & Die Sets

7305 / 7303 / 7353 Tap
and 380 Die Sizes

Set Number	Number of Cutting Sizes	NC	NF	Collet Number	Tap Wrench	Die Stock	Set EDP Number
312	20	1/4-20 5/16-18 3/8-16 7/16-14 1/2-13 9/16-12 5/8-11 3/4-10 7/8-9 1-8	1/4-28 5/16-24 3/8-24 7/16-20 1/2-20 9/16-18 5/8-18 3/4-16 7/8-14 1-14 NS	1, 5	1, 5B	15, 7	00063
45	7	M6 x 1 M8 x 1,25 M10 x 1,5 M12 x 1,75 M14 x 2 M16 x 2 M18 x 2,5	—	5	5	13	00159
47-1/2	10	M6 x 1 M8 x 1,25 M10 x 1,5 M12 x 1,75 M14 x 2 M16 x 2 M18 x 2,5 M20 x 2,5 M22 x 2,5 M24 x 3	—	5	5A	15, 7	00160

HIGH-PERFORMANCE TAPS

THREAD MILLS

PRODUCTION TAPS

MAINTENANCE TOOLS

GAGES

TECHNICAL
INFORMATION & INDEX



Maintenance

Tap and Die Sets



HIGH-PERFORMANCE TAPS

THREAD MILLS

PRODUCTION TAPS

MAINTENANCE TOOLS

GAGES

TECHNICAL
INFORMATION & INDEX

OK Jr. Tap & Die Sets

HSS Taps and Carbon Steel
Round Adjustable Dies



Set Number C5

- consist of:
 - series no. 382 carbon steel round adjustable dies
 - series no. 7305-7303-7320-7353 HSS maintenance hand taps
 - series no. 1790 die stocks
 - tap wrenches
- dies and taps furnished with American National Form threads
- packaged in special case with moisture- and oil-resistant Ethafoam liner for tool protection

OK Jr. Tap & Die Sets

Set Number	Number of Cutting Sizes	7305 / 7303 Tap 7320 Taper Pipe Tap 7353 Metric Tap				Tap Wrench	Die Stock	Set EDP Number
		and 382 Die Sizes						
		NC	NF	NPT	Metric			
B7	7	4-40	10-32	—	—	329	13	00517
		6-32						
		8-32						
		10-24						
		12-24						
		1/4-20						
B8	8	2-56	0-80	—	—	329	13	00525
		3-48	1-72					
		4-40						
		6-32						
		8-32						
		10-24						
B10	10	4-40	4-48	—	—	329	13	00526
		6-32	6-40					
		8-32	8-36					
		10-24	10-32					
		12-24	12-28					
C5	5	1/4-20	—	—	—	333	14	00518
		5/16-18						
		3/8-16						
		7/16-14						
		1/2-13						
407	9	1/4-20	—	—	—	15 7	14 15 16	00522
		5/16-18						
		3/8-16						
		7/16-14						
		1/2-13						
		5/8-11						
		3/4-10						
		7/8-9 1-8						
3100	11	1/4-20	1/4-28	1/8-27	—	333	1	00528
		5/16-18	5/16-24					
		3/8-16	3/8-24					
		7/16-14	7/16-20					
		1/2-13	1/2-20					
4132	21	1/4-20	1/4-28	1/8-27	—	15 7	14 15 16	00532
		5/16-18	5/16-24					
		3/8-16	3/8-24					
		7/16-14	7/16-20					
		1/2-13	1/2-20					
		9/16-12	9/16-18					
		5/8-11	5/8-18					
		3/4-10	3/4-16					
		7/8-9	7/8-14					
		1-8	1-14 NS					
4700	28 taps 15 dies	4-40	10-32	1/8-27	M14 x 1,25	329	14	00533
		6-32	1/4-28	1/4-18	M18 x 1,5	336	15	
		8-32	5/16-24	3/8-18		15	16	
		10-24	3/8-24	1/2-14		7		
		12-24	7/16-20					
		1/4-20	1/2-20					
		5/16-18	9/16-18					
		3/8-16	5/8-18					
		7/16-14	3/4-16					
		1/2-13	7/8-14					
		9/16-12	1-14 NS					

■ Metric Tap, Die, and Drill Sets

Industrial-Quality HSS Hand Taps with Hexagonal or Round Adjustable Dies



Tap, Die, and Drill Set Number 4800

- consist of:
 - series no. 377 carbon steel hexagon rethreading dies or series no. 6385 HSS round adjustable dies
 - series no. 5353 industrial-quality metric hand taps
 - series 150 HSS jobber drill with black oxide surface treatment (except sets 48 and 49)
 - series no. 1790 or 1750 die stocks
 - tap wrenches
 - screwdriver (except set 4800)
- packaged in special case with moisture- and oil-resistant Ethafoam liner for tool protection

Metric Tap, Die and Drill Sets

Set Number	Number of Cutting Sizes	7353 Tap and 377 Hexagon Die Sizes	150 HSS Black Oxide Jobber Drill Size	Tap Wrench	Die Stock Number	Screwdriver Number	Set EDP Number
4800	6	M5 x 0,8 M6 x 1 M8 x 1,25 M10 x 1,5 M12 x 1,75 M14 x 2	4,2 5,0 6,7 8,5 10,2 12,0	15	—	—	00606

Set Number	Number of Cutting Sizes	7353 Tap and 6385 HSS Round Adjustable Die Sizes	150 HSS Black Oxide Jobber Drill Size	Tap Wrench	Die Stock Number	Screwdriver Number	Set EDP Number
2001	13	M2,5 x 0,45 M3 x 0,5 M3,5 x 0,6 M4 x 0,7 M5 x 0,8 M6 x 1 M8 x 1,25 M10 x 1,5 M12 x 1,75 M14 x 2 M16 x 2 M18 x 2,5 M20 x 2,5	2,05 2,5 2,9 3,3 4,2 5,0 6,7 8,5 10,2 12,0 14,0 15,5 17,5	14 7	1851 1852 1853	300	00527
48	7	M2,5 x 0,45 M3 x 0,5 M3,5 x 0,6 M4 x 0,7 M4,5 x 0,75 M5 x 0,8 M6 x 1	—	329	1790	300	00448
48D	7	M2,5 x 0,45 M3 x 0,5 M3,5 x 0,6 M4 x 0,7 M4,5 x 0,75 M5 x 0,8 M6 x 1	2,05 2,5 2,9 3,3 3,7 4,2 5,0	329	1790	300	00448
49	5	M6 x 1 M7 x 1 M8 x 1,25 M10 x 1,5 M12 x 1,75	—	333	1790	300	00449
49D	5	M6 x 1 M7 x 1 M8 x 1,25 M10 x 1,5 M12 x 1,75	5,0 6,0 6,7 8,5 10,2	333	1790	300	00451

S	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous



Maintenance

Tap and Drill Sets

HIGH-PERFORMANCE TAPS

THREAD MILLS

PRODUCTION TAPS

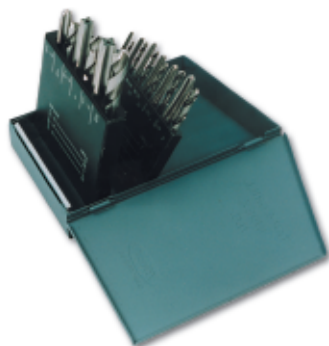
MAINTENANCE TOOLS

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Tap and Drill Sets

Industrial Quality HSS Taps and Drills



Tap and Drill Set Number HT18

- Set HT18 consists of:
 - series no. 150D (uncoated) HSS jobber drills
 - series no. 5305-5303 industrial-quality HSS plug chamfer hand taps
 - packaged in index case
- Set GT18 consists of:
 - series no. 150D (uncoated) HSS jobber drills
 - series no. 5301 industrial-quality HSS plug chamfer GUN (spiral point) taps
 - packaged in index case
- Set HM18 consists of metric sizes of:
 - series no. 150 (black oxide) HSS jobber drills
 - series no. 5353 industrial-quality HSS plug chamfer hand taps
 - packaged in index case
- Set HT36 consists of:
 - series no. 150D (uncoated) HSS jobber drills
 - series no. 5305-5303 industrial-quality HSS plug chamfer hand taps
 - packaged in index case
- Set 68 consists of:
 - series no. 157 (uncoated) HSS screw machine drills
 - series no. 5305-5303 industrial-quality HSS plug chamfer hand taps
 - packaged in special case with moisture- and oil-resistant Ethafoam liner

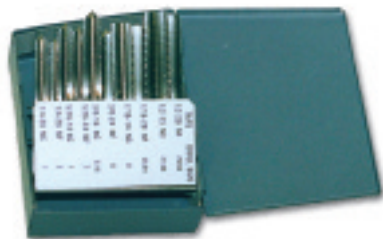
Tap and Drill Sets

Set Number	Tap Sizes		Drill Sizes	EDP Number
	NC	NF		
HT18	6-32	10-32	#36	52580
5303-5305 Hand Taps	8-32		#29	
150D HSS Uncoated Jobber Drills	10-24		#25	
	1/4-20		#21	
	5/16-18		#7	
	3/8-16		F	
	7/16-14		5/16	
	1/2-13		U	
			27/64	
GT18	6-32	10-32	#36	52581
5301 GUN Taps	8-32		#29	
150D HSS Uncoated Jobber Drills	10-24		#25	
	1/4-20		#21	
	5/16-18		#7	
	3/8-16		F	
	7/16-14		5/16	
	1/2-13		U	
			27/64	
HT36	6-32	6-40	#36 F	55305
5303-5305 Hand Taps	8-32	8-36	#33 I	
150D HSS Uncoated Jobber Drills	10-24	10-32	#29 5/16	
	12-24	12-28	#25 Q	
	1/4-20	1/4-28	#21 U	
	5/16-18	5/16-24	#16 25/64	
	3/8-16	3/8-24	#15 27/64	
	7/16-14	7/16-20	#7 29/64	
	1/2-13	1/2-20	#3	
HM18	M2,5 x 0,45		2,05	52541
5353 Hand Taps	M3 x 0,5		2,5	
150 HSS Black Oxide Jobber Drills	M3,5 x 0,6		2,9	
	M4 x 0,7		3,3	
	M5 x 0,8		4,2	
	M6 x 1		5,0	
	M8 x 1,25		6,7	
	M10 x 1,5		8,5	
	M12 x 1,75		10,2	
68	4-40		#44	12910
5305-5303 Hand Taps	5-40		#39	
157 Screw Machine Drills	6-32		#36	
	8-32		#29	
	10-24		#25	
	1/4-20		#7	
	5/16-18		F	
	3/8-16		5/16	
	7/16-14		U	
	1/2-13		27/64	

S	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous

Tap Sets

HSS Hand Taps



Tap Set Number 5333

- consists of 5305-5303 plug chamfer hand taps
- the most frequently used combinations of sizes
- packaged for portability and tool protection

S	Steel
M	Stainless Steel
K	Cast Iron
N	Non-Ferrous

Tap Sets

Set Number	5305 - 5303 Tap Sizes		Set EDP Number
	NC	NF	
5333	1/4-20	1/4-28	16401
10 Cutting Sizes	5/16-18	5/16-24	
	3/8-16	3/8-24	
	7/16-14	7/16-20	
	1/2-13	1/2-20	
5335		0-80	16451
19 Cutting Sizes	1-64	1-72	
	2-56	2-64	
	3-48	3-56	
	4-40	4-48	
	5-40	5-44	
	6-32	6-40	
	8-32	8-36	
	10-24	10-32	
	12-24	12-28	
5334	1/4-20	1/4-28	16441
20 Cutting Sizes	5/16-18	5/16-24	
	3/8-16	3/8-24	
	7/16-14	7/16-20	
	1/2-13	1/2-20	
	9/16-12	9/16-18	
	5/8-11	5/8-18	
	3/4-10	3/4-16	
	7/8-9	7/8-14	
	1-8	1-14 NS	

Screw Extractor Sets



Screw Extractor Set 1815

- the most frequently used combinations of sizes
- packaged in plastic pouch

Little Giant Screw Extractor Sets

Set Number For Screws	Extractor Numbers	HSS Jobber Drill Sizes	Capacity			Set EDP Number
			Screws Inch	Screws Metric	Pipe	
1815	1, 2, 3, 4, 5	—	3/16 to 3/4	2,5 to 20,0	1/8	65035
1816	1, 2, 3, 4, 5, 6	—	3/16 to 1	2,5 to 24,0	1/8	65036
1818	6, 7, 8, 9	—	3/4 to 2 1/8	24,0 to 54,0	3/4 to 1	65038
1819	1, 2, 3, 4, 5, 6, 7, 8, 9	—	3/16 to 2 1/8	2,5 to 54,0	1/8, 3/4, 1	65039
1823	4, 5, 6	—	7/16 to 1	12,0 to 24,0	1/8	65037
1820	1, 2, 3, 4, 5, 6	5/64, 7/64, 5/32, 1/4, 17/64, 13/32	3/16 to 1	2,5 to 24,0	1/8	65040
Set Number For Pipe	Extractor Numbers		Capacity			Set EDP Number
			Screws Inch	Screws Metric	Pipe	
1821	5, 5 1/4, 6 3/8, 7 1/2		9/16 to 1 1/2	—	1/8 to 1/2	65041
1822	5, 5 1/4, 6 3/8, 7 1/2, 8, 9		9/16 to 2 1/8	—	1/8 to 1	65042



Maintenance

Hexagon Die Sets

Hexagon Rethreading Die Sets



Die Set Number 491

- consist of series 377 carbon steel hexagon rethreading dies
- can be used in bit brace sockets, ratchet, monkey, open end, and box wrenches
- used for dressing over bruised or rusty threads
- the most frequently used combinations of sizes
- packaged for portability and tool protection

Hexagon Rethreading Die Sets

		Die Sizes		
Set Number		NC	NF	Set EDP Number
481		1/4-20	1/2-13	24300
8 Cutting Sizes		5/16-18	9/16-12	
		3/8-16	5/8-11	
		7/16-14	3/4-10	
482		1/4-20	9/16-12	24401
10 Cutting Sizes		5/16-18	5/8-11	
		3/8-16	3/4-10	
		7/16-14	7/8-9	
483	14 Cutting Sizes	1/2-13	1-8	24501
		1/4-20	3/4-10	
		5/16-18	7/8-9	
		3/8-16	1-8	
		7/16-14	1 1/8-7	
490	10 Cutting Sizes	1/2-13	1 1/4-7	24600
		9/16-12	1 3/8-6	
		5/8-11	1 1/2-6	
491	16 Cutting Sizes	1/4-20	1/4-28	24701
		5/16-18	5/16-24	
		3/8-16	3/8-24	
		7/16-14	7/16-20	
		1/2-13	1/2-20	
492	20 Cutting Sizes	9/16-12	9/16-18	24801
		5/8-11	5/8-18	
		3/4-10	3/4-16	
		1/4-20	1/4-28	
		5/16-18	5/16-24	
Metric Set Number	7 Cutting Sizes	3/8-16	3/8-24	24505
		7/16-14	7/16-20	
		1/2-13	1/2-20	
		9/16-12	9/16-18	
		5/8-11	5/8-18	
		3/4-10	3/4-16	
		7/8-9	7/8-14	
		1-8	1-14NS	
Metric Set Number		Die Sizes		Set EDP Number
485		M6 x 1	M14 x 2	24505
7 Cutting Sizes		M8 x 1,25	M16 x 2	
		M10 x 1,5	M20 x 2,5	
		M12 x 1,75		

Certificates of Calibration

Calibrations traceable to National Institute of Standards and Technology (NIST)

Certificates of calibration and compliance are available for the following gages:*

*Thread plug and ring gages sizes
0.000" to 2.000"*

*Plain plug and ring gages sizes
0.040" to 2.000"*

*Pipe plug and ring gages sizes
0.000" to 5.000"*

Certificates of calibration are available with new or used gages after inspection. Calibration certificates show actual measurements. Each certificate is numbered to match a number etched on the gage during inspection.

Gages returned for recalibration, regardless of manufacturer, should be sent to:

*Greenfield Gage Lab
Attn: Gage Recalibration Manager
825 Chase Avenue
Elk Grove Village, IL 60007*

Specify either "inspect and certify" or "inspect and calibrate" when requesting gage service. Our return form shows traceability of our measuring standards to the National Institute of Standards and Technology (NIST) plus the environment requirement of our gage lab.

**Certificates of Calibration available for an extra charge.*

► QUICK REFERENCE

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Certificates of Compliance

Certificates of compliance are available on new gages only. A certificate of compliance certifies that a gage as listed is within proper tolerances and proper physical condition.

GAGES

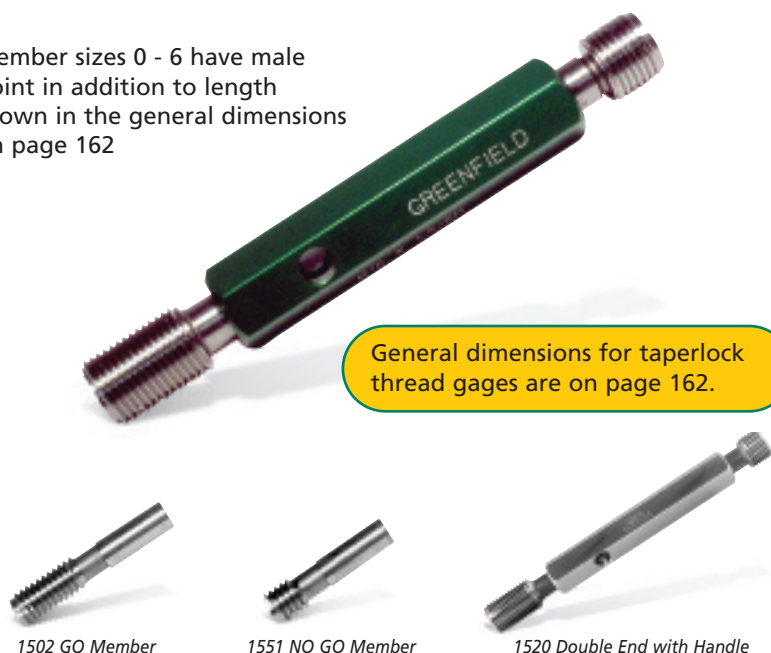
- Reduce scrapped parts and rework with precision thread, plain pin, and ring gages that meet American Gage Design Standards for accurate thread measurements
- TiN-coated HSS Taperlock Thread Plug Gages, available in sizes from #2 machine screw to 3/4" UNC and UNF, extend wear life by as much as 10 to 1 over uncoated gages
- Made from the highest quality steel, then ground, accurately lapped, and meticulously inspected
- Available in inch, metric, NPT, and NPTF sizes to accommodate any application
- Complete gage maintenance program and used gage inspection service available



Thread Plug Gages - Taperlock

Features/Benefits:

- manufactured from select steel
- ground, accurately lapped, and meticulously inspected in every thread element
- standard in "X" tolerance
- optional color gage handles available upon request — ideal to identify metric versus inch or master versus working gages
- shanks on gaging members are tapered to fit corresponding taper holes in the handles
- worn members may be removed and the handles salvaged for use with new members
- member sizes 0 - 6 have male point in addition to length shown in the general dimensions on page 162



1502 GO Member

1551 NO GO Member

1520 Double End with Handle

Taperlock Thread Gages

- Series No. 1502 - GO Member
- Series No. 1551 - NO GO Member
- Series No. 1520 - Double End with Handle

MACHINE SCREW

Nominal Size				EDP Number					Handle Hex Size	Handle Number
	UNC	UNF	UNEF	Classes 2B,3B	Class 2B	Class 3B	Class 2B	Class 3B		
0	-	80	-	150100	160100	170100	150116	150117	3/16	000
1	64	-	-	150200	160200	170200	150216	150217	3/16	000
1	-	72	-	150300	160300	170300	150316	150317	3/16	000
2	56	-	-	150400	160400	170400	150416	150417	3/16	000
2	-	64	-	150500	160500	170500	150516	150517	3/16	000
3	48	-	-	150600	160600	170600	150616	150617	3/16	000
3	-	56	-	150700	160700	170700	150716	150717	3/16	000
4	40	-	-	150900	160900	170900	150916	150917	1/4	00
4	-	48	-	151000	161000	171000	151016	151017	1/4	00
5	40	-	-	151100	161100	171100	151116	151117	1/4	00
5	-	44	-	151200	161200	171200	151216	151217	1/4	00
6	32	-	-	151300	161300	171300	151316	151317	1/4	00
6	-	40	-	151400	161400	171400	151416	151417	1/4	00
8	32	-	-	151500	161500	171500	151516	151517	5/16	0
8	-	36	-	151600	161600	171600	151616	151617	5/16	0
10	24	-	-	151700	161700	171700	151716	151717	5/16	0
10	-	32	-	151800	161800	171800	151816	151817	5/16	0
12	24	-	-	151900	161900	171900	151916	151917	5/16	0
12	-	28	-	152000	162000	172000	152016	152017	5/16	0
12	-	-	32	152100	162100	172100	152116	152117	5/16	0

Please use EDP numbers when ordering.

Taperlock HSS thread gages are continued on the next page.

Thread Gages

Taperlock Thread Plug

(continued)

Taperlock Thread Gages

- Series No. 1502 - GO Member
- Series No. 1551 - NO GO Member
- Series No. 1520 - Double End with Handle



1502 GO Member



1551 NO GO Member



1520 Double End with Handle

FRACTIONAL

	Nominal Size				EDP Number					Handle Hex Size	Handle Number
		UNC	UNF	UNEF	Classes 2B,3B	Class 2B	Class 3B	Class 2B	Class 3B		
1/4	20	-	-	-	152200	162200	172200	152216	152217	3/8	1
	-	28	-	-	152300	162300	172300	152316	152317	3/8	1
	-	-	32	-	152400	162400	172400	152416	152417	3/8	1
5/16	18	-	-	-	152500	162500	172500	152516	152517	3/8	1
	-	24	-	-	152600	162600	172600	152616	152617	3/8	1
	-	-	32	-	152700	162700	172700	152716	152717	3/8	1
3/8	16	-	-	-	152800	162800	172800	152816	152817	1/2	2
	-	24	-	-	152900	162900	172900	152916	152917	1/2	2
	-	-	32	-	153000	163000	173000	153016	153017	1/2	2
7/16	14	-	-	-	153100	163100	173100	153116	153117	1/2	2
	-	20	-	-	153200	163200	173200	153216	153217	1/2	2
	-	-	28	-	153300	163300	173300	153316	153317	1/2	2
1/2	13	-	-	-	153400	163400	173400	153416	153417	1/2	2
	-	20	-	-	153500	163500	173500	153516	153517	1/2	2
	-	-	28	-	153600	163600	173600	153616	153617	1/2	2
9/16	12	-	-	-	153700	163700	173700	153716	153717	11/16	3
	-	18	-	-	153800	163800	173800	153816	153817	11/16	3
	-	-	24	-	153900	163900	173900	153916	153917	11/16	3
5/8	11	-	-	-	154000	164000	174000	154016	154017	11/16	3
	-	18	-	-	154100	164100	174100	154116	154117	11/16	3
	-	-	24	-	154200	164200	174200	154216	154217	11/16	3
3/4	10	-	-	-	154400	164400	174400	154416	154417	11/16	3
	-	16	-	-	154500	164500	174500	154516	154517	11/16	3
	-	-	20	-	154600	164600	174600	154616	154617	11/16	3
7/8	9	-	-	-	154800	164800	174800	154816	154817	7/8	4
	-	14	-	-	154900	164900	174900	154916	154917	7/8	4
	-	-	20	-	155000	165000	175000	155016	155017	7/8	4
1	8	-	-	-	155200	165200	175200	155216	155217	7/8	4
	-	12	-	-	155300	165300	175300	155316	155317	7/8	4
	-	-	14 NS	-	155400	165400	175400	155416	155417	7/8	4
	-	-	20	-	155500	165500	175500	155516	155517	7/8	4
1 1/8	7	-	-	-	155700	165700	175700	155716	155717	7/8	4
	-	12	-	-	155800	165800	175800	155816	155817	7/8	4
	-	-	18	-	155900	165900	175900	155916	155917	7/8	4
1 1/4	7	-	-	-	156100	166100	176100	156116	156117	1	5
	-	12	-	-	156200	166200	176200	156216	156217	1	5
	-	-	18	-	156300	166300	176300	156316	156317	1	5
1 3/8	6	-	-	-	156500	166500	176500	156516	156517	1	5
	-	12	-	-	156600	166600	176600	156616	156617	1	5
	-	-	18	-	156700	166700	176700	156716	156717	1	5
1 1/2	6	-	-	-	156900	166900	176900	156916	156917	1	5
	-	12	-	-	157000	167000	177000	157016	157017	1	5
	-	-	18	-	157100	167100	177100	157116	157117	1	5

Handles are not included with single members. If handles are required for GO or NO GO members, specify "with handle."
 Chrome plating available as a stock modification. When ordering, please use EDP numbers.

Thread Plug Gages HSS - TiN Coated Taperlock for Extended Gage Wear Life

Features/Benefits:

- manufactured from select high-speed steel
- coated with TiN (titanium nitride)
- ground, accurately lapped, and meticulously inspected in every thread element
- standard in "X" tolerance
- optional color gage handles available upon request — ideal to identify metric versus inch or master versus working gages
- shanks on gaging members are tapered to fit corresponding taper holes in the handles
- worn members may be removed and the handles salvaged for use with new members
- member sizes 0 - 6 have male point in addition to length shown in the general dimensions on page 162
- TiN coating provides added hardness and lubricity for:
 - greatly increased gage life - up to 10 times more life than uncoated gages
 - surface hardness greater than HSS of base gage
 - increased corrosion and abrasion resistance due to inert, hard characteristics of TiN coating
 - reduced material build-up due to added lubricity of coating



General dimensions for taperlock thread gages are on page 162.



2526 GO Member



2551 NO GO Member



2520 Double End with Handle

TiN Coated Taperlock

- Series No. 2526 - GO Member
- Series No. 2551 - NO GO Member
- Series No. 2520 - Double End with Handle

MACHINE SCREW

Nominal Size		UNC UNF		EDP Number				Handle Hex Size	Handle Number
				2526 GO Member	2551 NO GO Member	2520 Double End with Handle			
				Classes 2B,3B	Class 2B	Class 3B	Class 2B	Class 3B	
2	56	-		450400	460400	470400	450446	450447	3/16 000
2	-	64		450500	460500	470500	450546	450547	3/16 000
3	48	-		450600	460600	470600	450646	450647	3/16 000
3	-	56		450700	460700	470700	450746	450747	3/16 000
4	40	-		450900	460900	470900	450946	450947	1/4 00
4	-	48		451000	461000	471000	451046	451047	1/4 00
5	40	-		451100	461100	471100	451146	451147	1/4 00
5	-	44		451200	461200	471200	451246	451247	1/4 00
6	32	-		451300	461300	471300	451346	451347	1/4 00
6	-	40		451400	461400	471400	451446	451447	1/4 00
8	32	-		451500	461500	471500	451546	451547	5/16 0
8	-	36		451600	461600	471600	451646	451647	5/16 0
10	24	-		451700	461700	474700	451746	451747	5/16 0
10	-	32		451800	461800	471800	451846	451847	5/16 0
12	24	-		451900	461900	471900	451946	451947	5/16 0
12	-	28		452000	462000	472000	452046	452047	5/16 0

Handles are not included with single members. If handles are required for GO or NO GO members, specify "with handle."

When ordering, please use EDP numbers.

TiN-coated taperlock thread plug gages are continued on the next page.

Thread Gages

TiN Coated Taperlock Thread Plug

(continued)

TiN Coated Taperlock

- Series No. 2526 - GO Member
- Series No. 2551 - NO GO Member
- Series No. 2520 - Double End with Handle



2526 GO Member



2551 NO GO Member



2520 Double End with Handle

FRACTIONAL			EDP Number						Handle Hex Size	Handle Number
			2526 GO Member	2551 NO GO Member		2520 Double End with Handle				
Nominal Size	UNC	UNF	Classes 2B,3B	Class 2B	Class 3B	Class 2B	Class 3B			
1/4	20	-	452200	462200	472200	452246	452247	3/8	1	
1/4	-	28	452300	462300	472300	452346	452347	3/8	1	
5/16	18	-	452500	462500	472500	452546	452547	3/8	1	
5/16	-	24	452600	462600	472600	452646	452647	3/8	1	
3/8	16	-	452800	462800	472800	452846	452847	1/2	2	
3/8	-	24	452900	462900	472900	452946	452947	1/2	2	
7/16	14	-	453100	463100	473100	453146	453147	1/2	2	
7/16	-	20	453200	463200	473200	453246	453247	1/2	2	
1/2	13	-	453400	463400	473400	453446	453447	1/2	2	
1/2	-	20	453500	463500	473500	453546	453547	1/2	2	
9/16	12	-	453700	463700	473700	453746	453747	11/16	3	
9/16	-	18	453800	463800	473800	453846	453847	11/16	3	
5/8	11	-	454000	464000	474000	454046	454047	11/16	3	
5/8	-	18	454100	464100	474100	454146	454147	11/16	3	
3/4	10	-	454400	464400	474400	454446	454447	11/16	3	
3/4	-	16	454500	464500	474500	454546	454547	11/16	3	

Handles are not included with single members. If handles are required for GO or NO GO members, specify "with handle."
When ordering, please use EDP numbers.

GAGING: TiN (Titanium Nitride) Coated Plug Gages

When are TiN-coated gages recommended?

1. When the product material is abrasive (causing excessive wear on the gage), or in any high-volume application where there is continuous or frequent usage. The extra hard surface and lubricity of titanium nitride greatly extend the wear life, by as much as 10 times, permitting longer frequencies between recalibration. The gold color is a wear indicator. When the gold is worn off, the gage is undersized.
2. Due to its inert, hard characteristics, titanium nitride provides a high resistance to corrosion, making it ideal when humidity and other atmospheric conditions create corrosion problems.
3. When gaging, certain soft materials or plated product threads tend to "load up" on the flanks of steel gages. The lubricity properties of TiN greatly aid in preventing this buildup.

When is TiN better than chrome?

1. TiN is harder than chrome; therefore, it is more wear resistant.
2. TiN provides better lubricity than chrome, cutting down wear and galling.
3. TiN is a more uniform coating than chrome, eliminating possible uneven buildup on the gage flanks.
4. TiN does not gall in aerospace-type materials.
5. TiN-coated gages outlast chrome gages by as much as 8 times.



Metric Taperlock Thread Gages Class 6H

- Series No. 1571 - GO Member
- Series No. 1572 - NO GO Member
- Series No. 1573 - Double End with Handle



1571 GO Member



1572 NO GO Member



1573 Double End with Handle

Nominal Size	EDP Number			Handle Hex Size	Handle Number
	1571 GO Member	1572 NO GO Member	1573 Double End with Handle		
M2,5 x 0,45	227200	237200	227223	3/16	000
M3 x 0,5	227300	237300	227323	1/4	00
M3,5 x 0,6	227400	237400	227423	1/4	00
M4 x 0,7	227500	237500	227523	5/16	0
M5 x 0,8	227600	237600	227623	5/16	0
M6 x 1,0	227700	237700	227723	3/8	1
M8 x 1,25	227800	237800	227823	3/8	1
M10 x 1,25	228100	238100	228123	1/2	2
M10 x 1,5	228000	238000	228023	1/2	2
M12 x 1,25	228500	238500	228523	1/2	2
M12 x 1,75	228300	238300	228323	1/2	2
M14 x 1,5	228800	238800	228823	11/16	3
M14 x 2,0	228700	238700	228723	11/16	3
M16 x 1,5	229100	239100	229123	11/16	3
M16 x 2,0	229000	239000	229023	11/16	3
M18 x 1,5	229300	239300	229323	11/16	3
M20 x 2,5	229400	239400	229423	11/16	3
M20 x 1,5	229500	239500	229523	11/16	3

Handles are not included with single members. If handles are required for GO or NO GO members, specify "with handle."

Uncoated gages standard; chrome plating or TiN coating available as a stock modification. Reversible members can be ordered and are priced on application.

When ordering, please use EDP numbers.

Helical Coil Gages (STI) Taperlock Gages

- Series No. 3502 - GO Member
- Series No. 3551 - NO GO Member
- Series No. 3520 - Double End with Handle



3502 GO Member



3551 NO GO Member



3520 Double End with Handle

Nominal Size	UNC	UNF	Classes 2B,3B	EDP Number				Handle Hex Size	Handle Number
				3502 GO Member	3551 NO GO Member	3520 Double End with Handle			
2	56	-	550400	560400	570400	550456	550457	3/16	00
4	40	-	550900	560900	570900	550956	550957	1/4	00
6	32	-	551300	561300	571300	551356	551357	1/4	0
8	32	-	551500	561500	571500	551556	551557	5/16	0
10	24	-	551700	561700	571700	551756	551757	5/16	0
10	-	32	551800	561800	571800	551856	551857	5/16	0
1/4	20	-	552200	562200	572200	552256	552257	3/8	1
1/4	-	28	552300	562300	572300	552356	552357	3/8	1
5/16	18	-	552500	562500	572500	552556	552557	3/8	2
5/16	-	24	552600	562600	572600	552656	552657	3/8	2
3/8	16	-	552800	562800	572800	552856	552857	1/2	2
3/8	-	24	552900	562900	572900	552956	552957	1/2	2
7/16	-	20	553200	563200	573200	553256	553257	1/2	3
1/2	13	-	553400	563400	573400	553456	553457	1/2	3
1/2	-	20	553500	563500	573500	553556	553557	1/2	3

Handles are not included with single members. If handles are required for GO or NO GO members, specify "with handle."

Uncoated gages standard; chrome plated and TiN available as a stock modification. W tolerance available and priced on application.

When ordering, please use EDP numbers.



Thread Gages

Reversible Thread Plug

Thread Plug Gages - Reversible

Features/Benefits:

- manufactured from select high-speed steel
- made with the finest equipment available and meticulously inspected in every thread element
- standard in "X" tolerance
- reversible thread plug gages are straight and held to size over their entire length, which enables use of both ends
- worn end can be quickly reversed in the specially designed handle to put unused end into action, doubling gage life
- reversible design enables repositioning in the handle to extend the effective length of the gage member for deeper hole gaging
- aluminum handles are made to American Gage design
- gaging members are securely held by bushings that compress when aluminum nuts are tightened



General dimensions for reversible thread gages are on page 163.



1509 GO Member



1559 NO GO Member



1529 Double End with Handle

Reversible Thread Gages

- Series No. 1509 - GO Member
- Series No. 1559 - NO GO Member
- Series No. 1529 - Double End with Handle

MACHINE SCREW

Nominal Size				EDP Number			Handle Hex Size	Handle Number
	UNC	UNF	Class 2B, 3B	1509 GO Member	1559 NO GO Member	1529 Double End with Handle		
0	-	80	100100		110100	100111	1/4	1W
1	64	-	100200		110200	100211	1/4	1W
1	-	72	100300		110300	100311	1/4	1W
2	56	-	100400		110400	100411	3/8	2W
2	-	64	100500		110500	100511	3/8	2W
3	48	-	100600		110600	100611	3/8	2W
3	-	56	100700		110700	100711	3/8	2W
4	40	-	100900		110900	100911	3/8	2W
4	-	48	101000		111000	101011	3/8	2W
5	40	-	101100		111100	101111	3/8	2W
5	-	44	101200		111200	101211	3/8	2W
6	32	-	101300		111300	101311	3/8	2W
6	-	40	101400		111400	101411	3/8	2W
8	32	-	101500		111500	101511	3/8	2W
8	-	36	101600		111600	101611	3/8	2W
10	24	-	101700		111700	101711	9/16	3W
10	-	32	101800		111800	101811	9/16	3W
12	24	-	101900		111900	101911	9/16	3W
12	-	28	102000		112000	102011	9/16	3W

Handles are not included with single members. If handles are required for GO or NO GO members, specify "with handle."

Uncoated gages are standard; chrome plated gages are available as a stock modification. 3B NO GO gages are available and priced on application.

When ordering, please use EDP numbers.

Reversible thread plug gages continue on the next page.

(continued)

Reversible Thread Gages

- Series No. 1509 - GO Member
- Series No. 1559 - NO GO Member
- Series No. 1529 - Double End with Handle

FRACTIONAL

			EDP Number			Handle Hex Size	Handle Number
			1509 GO Member	1559 NO GO Member	1529 Double End with Handle		
Nominal Size	UNC	UNF	Class 2B, 3B	Class 2B	Class 3B		
1/4	20	-	102200	112200	102211	9/16	3W
1/4	-	28	102300	112300	102311	9/16	3W
5/16	18	-	102500	112500	102511	11/16	4W
5/16	-	24	102600	112600	102611	11/16	4W
3/8	16	-	102800	112800	102811	13/16	4W
3/8	-	24	102900	112900	102911	13/16	4W
7/16	14	-	103100	113100	103111	13/16	5W
7/16	-	20	103200	113200	103211	13/16	5W
1/2	13	-	103400	113400	103411	13/16	5W
1/2	-	20	103500	113500	103511	13/16	5W
9/16	12	-	103700	113700	103711	15/16	6W
9/16	-	18	103800	113800	103811	15/16	6W
5/8	11	-	104000	114000	104011	15/16	6W
5/8	-	18	104100	114100	104111	15/16	6W
3/4	10	-	104400	114400	104411	1 1/16	7W
3/4	-	16	104500	114500	104511	1 1/16	7W

Handles are not included with single members. If handles are required for GO or NO GO members, specify "with handle."

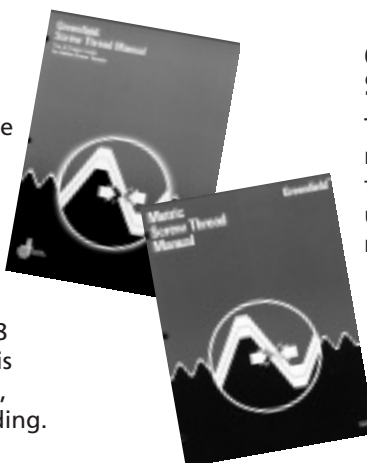
Uncoated gages are standard; chrome plated gages are available as a stock modification. 3B NO GO gages are available and priced on application.

When ordering, please use EDP numbers.

Greenfield Inch Screw Thread Manual

This 52-page manual contains invaluable information on the Unified Screw Thread System, including functional tables, diagrams, and formulas for suggested tap and drill sizes, internal and external thread limits for threaded products, and thread limits for taps. Covering UNC-NC sizes 1-64 through 1-8 and UNF-NF sizes 0-80 through 1-12, this guide is a must for engineers, specifiers, and machinists involved in screw threading. Over 1,000,000 copies in print!

EDP Number GI039



Greenfield Metric Screw Thread Manual

Totally revised to put more than 50 years of metric screw threading experience at your fingertips. This 36-page publication presents useful design, specification, and manufacturing information for the most commonly used ISO Metric Screw Threads. Easy-to-read diagrams and charts complement detailed descriptions, formulas, and recommendations to outline current internal and external limits for product threads, tools, and gages. Includes an expanded listing for both metric and decimal inch translations by tolerance class for allowance, major diameter, and minor diameter.

EDP Number GI040

Call your Greenfield Tap and Die distributor to order your copies today!

Thread Gages

Thread Ring

Thread Ring Gages For Gaging External Threads

Features/Benefits:

- made of selected graphite steels
- machined, accurately lapped, and meticulously inspected in every thread element
- set with GTD first quality truncated thread setting plug gages
- NO GO gage members have a groove around the rim to distinguish them from GO members
- uncoated gages are standard; chrome plated ring gages are available as stock modifications
- ring gage setting is unique to the setting plug and cannot be duplicated on any other setting plug without readjustment
- setting plug gages should be ordered at the same time as ring gages so they can be mated before shipping
- functional pitch diameter is transferred by the setting of the ring gage to the applicable truncated setting plug
- relative feel of the inspector setting the gage plays a major role in the evaluation of this attribute
- functional pitch diameter of two given setting plugs, both within tolerance specifications, could vary by more than .0003" from each other



1504 GO Ring Gage



1555 NO GO Ring Gage



1524 GO - NO GO without Holder

General dimensions for thread ring gages are on page 164.

Thread Ring Gages Machine Screw Sizes

- Series No. 1504 - GO Ring
- Series No. 1555 - NO GO Ring
- Series No. 1524 - GO and NO GO Rings

MACHINE SCREW

EDP Number

Nominal Size	UNC	UNF	UNEF	1504 GO Ring Gage						1555 NO GO Ring Gage		1524 GO - NO GO without Holder	
				Class 2A	Class 3A / Basic	Class 2A	Class 3A	Class 2A	Class 3A	Class 2A	Class 3A	Class 2A	Class 3A
0	-	80	-	240100	250100	260100	270100	240126	250127				
1	64	-	-	240200	250200	260200	270200	240226	250227				
1	-	72	-	240300	250300	260300	270300	240326	250327				
2	56	-	-	240400	250400	260400	270400	240426	250427				
2	-	64	-	240500	250500	260500	270500	240526	250527				
3	48	-	-	240600	250600	260600	270600	240626	250627				
3	-	56	-	240700	250700	260700	270700	240726	250727				
4	40	-	-	240900	250900	260900	270900	240926	250927				
4	-	48	-	241000	251000	261000	271000	241026	251027				
5	40	-	-	241100	251100	261100	271100	241126	251127				
5	-	44	-	241200	251200	261200	271200	241226	251227				
6	32	-	-	241300	251300	261300	271300	241326	251327				
6	-	40	-	241400	251400	261400	271400	241426	251427				
8	32	-	-	241500	251500	261500	271500	241526	251527				
8	-	36	-	241600	251600	261600	271600	241626	251627				
10	24	-	-	241700	251700	261700	271700	241726	251727				
10	-	32	-	241800	251800	261800	271800	241826	251827				
12	24	-	-	241900	251900	261900	271900	241926	251927				
12	-	28	-	242000	252000	262000	272000	242026	252027				
12	-	-	32	242100	252100	262100	272100	242126	252127				

When ordering, please use EDP numbers.

Thread ring gage fractional sizes are listed on the next page.

(continued)

Thread Ring Gages Fractional Sizes

- Series No. 1504 - GO Ring
- Series No. 1555 - NO GO Ring
- Series No. 1524 - GO and NO GO Rings

FRACTIONAL				EDP Number					
Nominal Size	UNC	UNF	UNEF	1504 GO Ring Gage		1555 NO GO Ring Gage		1524 GO - NO GO without Holder	
				Class 2A	Class 3A / Basic	Class 2A	Class 3A	Class 2A	Class 3A
1/4	20	-	-	242200	252200	262200	272200	242226	252227
1/4	-	28	-	242300	252300	262300	272300	242326	252327
1/4	-	-	32	242400	252400	262400	272400	242426	252427
5/16	18	-	-	242500	252500	262500	272500	242526	252527
5/16	-	24	-	242600	252600	262600	272600	242626	252627
5/16	-	-	32	242700	252700	262700	272700	242726	252727
3/8	16	-	-	242800	252800	262800	272800	242826	252827
3/8	-	24	-	242900	252900	262900	272900	242926	252927
3/8	-	-	32	243000	253000	263000	273000	243026	253027
7/16	14	-	-	243100	253100	263100	273100	243126	253127
7/16	-	20	-	243200	253200	263200	273200	243226	253227
7/16	-	-	28	243300	253300	263300	273300	243326	253327
1/2	13	-	-	243400	253400	263400	273400	243426	253427
1/2	-	20	-	243500	253500	263500	273500	243526	253527
1/2	-	-	28	243600	253600	263600	273600	243626	253627
9/16	12	-	-	243700	253700	263700	273700	243726	253727
9/16	-	18	-	243800	253800	263800	273800	243826	253827
9/16	-	-	24	243900	253900	263900	273900	243926	253927
5/8	11	-	-	244000	254000	264000	274000	244026	254027
5/8	-	18	-	244100	254100	264100	274100	244126	254127
5/8	-	-	24	244200	254200	264200	274200	244226	254227
3/4	10	-	-	244400	254400	264400	274400	244426	254427
3/4	-	16	-	244500	254500	264500	274500	244526	254527
3/4	-	-	20	244600	254600	264600	274600	244626	254627
7/8	9	-	-	244800	254800	264800	274800	244826	254827
7/8	-	14	-	244900	254900	264900	274900	244926	254927
7/8	-	-	20	245000	255000	265000	275000	245026	255027
1	8	-	-	245200	255200	265200	275200	245226	255227
1	-	12	-	245300	255300	265300	275300	245326	255327
1	-	-	14 UNS	245400	255400	265400	275400	245426	255427
1	-	-	20	245500	255500	265500	275500	245526	255527
1 1/8	7	-	-	245700	255700	265700	275700	245726	255727
1 1/8	-	12	-	245800	255800	265800	275800	245826	255827
1 1/8	-	-	18	245900	255900	265900	275900	245926	255927
1 1/4	7	-	-	246100	256100	266100	276100	246126	256127
1 1/4	-	12	-	246200	256200	266200	276200	246226	256227
1 1/4	-	-	18	246300	256300	266300	276300	246326	256327
1 3/8	6	-	-	246500	256500	266500	276500	246526	256527
1 3/8	-	12	-	246600	256600	266600	276600	246626	256627
1 3/8	-	-	18	246700	256700	266700	276700	246726	256727
1 1/2	6	-	-	246900	256900	266900	276900	246926	256927
1 1/2	-	12	-	247000	257000	267000	277000	247026	257027
1 1/2	-	-	18	247100	257100	267100	277100	247126	257127

When ordering, please use EDP numbers.
Thread ring gage metric sizes are listed on the next page.

HIGH-PERFORMANCE TAPS

THREAD MILLS

PRODUCTION TAPS

MAINTENANCE TOOLS

GAGES

TECHNICAL
INFORMATION & INDEX



Thread Gages

Thread Ring

Thread Ring Gages Metric Sizes - Class 6g

- Series No. 1586 - GO Ring
- Series No. 1587 - NO GO Ring
- Series No. 1524 - GO and NO GO Ring



1586 GO Ring



1587 NO GO Ring



1524 GO - NO GO without Holder

Nominal Size	EDP Number		
	1586 GO Ring	1587 NO GO Ring	1524 GO NO GO without Holder
M2,5 x 0,45	367200	377200	367237
M3 x 0,5	367300	377300	367337
M3,5 x 0,6	367400	377400	367437
M4 x 0,7	367500	377500	367537
M5 x 0,8	367600	377600	367637
M6 x 1,0	367700	377700	367737
M8 x 1,25	367800	377800	367837
M10 x 1,25	368100	378100	368137
M10 x 1,5	368000	378000	368037
M12 x 1,25	368500	378500	368537
M12 x 1,75	368300	378300	368337
M14 x 1,5	368800	378800	368837
M14 x 2,0	368700	378700	368737
M16 x 1,5	369100	379100	369137
M16 x 2,0	369000	379000	369037
M18 x 1,5	369300	379300	369337
M20 x 1,5	369500	379500	369537
M20 x 2,5	369400	379400	369437

When ordering, please use EDP numbers.

Thread Ring Gage Holder (optional)

- Series No. 1535



Ring Gage Holder Number	Nominal Size		EDP Number
	Inch	mm	1535 Holder Only
1	#0 through #12 MS	M1,6 through M5	701022
2	1/4 through 5/16	M6 through M8	701023
3	3/8 through 1/2	M10 through M12	701024
4	9/16 through 3/4	M14 through M20	701025
5	7/8 through 1 1/8	M24	701026
6	1 1/4 through 1 1/2		701027



GAGING: Threaded Holes

To confirm the accuracy of a tapped hole, always use a GO-NO GO gage. Never use a fastener (screw or bolt). Using a screw or bolt will not allow you to verify the size of the thread produced, only indicate that the bolt used will fit in that particular hole. GO-NO GO gages can give indications as to whether the thread produced is within the thread specification. A screw or bolt is not capable of giving such an indication. Accurate gages will also help predict remaining tool life by indicating tightness or looseness of the gage in the part.

■ Truncated Thread Setting Plug Gages

Features/Benefits:

- manufactured of select steel
- ground, accurately lapped, and meticulously inspected in every thread element
- class "X" tolerance on pitch diameter
- class "W" tolerance on lead and angles
- shanks of gaging members are tapered to fit tapered holes in the handle
- handle can be used with new gaging members when old members are worn
- sizes 0 - 6 members have male point in addition to length listed in general dimensions on page 165

Application Information:

- used for setting and evaluating adjustable thread ring gages
- truncated-type gages have a full form threaded portion and a truncated portion
- the full form portion checks pitch diameter and major diameter clearance
- the truncated portion checks pitch diameter and flank angle wear, assuring the proper setting and control of thread ring gages
- pitch diameter is constant over the full length of the gage



1527T GO - NO GO Member with Handle



1556T GO Member



1557T NO GO Member

General dimensions for truncated thread setting plug gages are on page 165.

Truncated Thread Setting Plug Gage - Class X

- Series No. 1556T - GO Member
- Series No. 1557T - NO GO Member
- Series No. 1527T - Double End with Handle

MACHINE SCREW

EDP Number											
				1556T GO Member				1557T NO GO Member			
								1527T GO - NO GO Member with Handle			
Nominal Size	UNC	UNF	UNEF	Class 2A	Basic	Class 2A	Class 3A	Class 2A	Class 3A	Handle Hex Size	Handle Number
0	-	80	-	300100	310100	320100	330100	300132	310133	3/16	000
1	64	-	-	300200	310200	320200	330200	300232	310233	3/16	000
1	-	72	-	300300	310300	320300	330300	300332	310333	3/16	000
2	56	-	-	300400	310400	320400	330400	300432	310433	3/16	000
2	-	64	-	300500	310500	320500	330500	300532	310533	3/16	000
3	48	-	-	300600	310600	320600	330600	300632	310633	3/16	000
3	-	56	-	300700	310700	320700	330700	300732	310733	3/16	000
4	40	-	-	300900	310900	320900	330900	300932	310933	1/4	00
4	-	48	-	301000	311000	321000	331000	301032	311033	1/4	00
5	40	-	-	301100	311100	321100	331100	301132	311133	1/4	00
5	-	44	-	301200	311200	321200	331200	301232	311233	1/4	00
6	32	-	-	301300	311300	321300	331300	301332	311333	1/4	00
6	-	40	-	301400	311400	321400	331400	301432	311433	1/4	00
8	32	-	-	301500	311500	321500	331500	301532	311533	5/16	0
8	-	36	-	301600	311600	321600	331600	301632	311633	5/16	0
10	24	-	-	301700	311700	321700	331700	301732	311733	5/16	0
10	-	32	-	301800	311800	321800	331800	301832	311833	5/16	0
12	24	-	-	301900	311900	321900	331900	301932	311933	5/16	0
12	-	28	-	302000	312000	322000	332000	302032	312033	5/16	0
12	-	-	32	302100	312100	322100	332100	302132	312133	5/16	0

Handles are not included with single members. If handles are required for GO or NO GO members, specify "with handle."

W tolerance is available and priced on application.

When ordering, please use EDP numbers.

Thread setting plug gages are continued on the next page.

Thread Gages

Truncated Thread Setting Plug

(continued)

Truncated Thread Setting Plug Gage – Class X

- Series No. 1556T - GO Member
- Series No. 1557T - NO GO Member
- Series No. 1527T - Double End with Handle



FRACTIONAL				EDP Number							Handle Hex Size	Handle Number
				1556T GO Member		1557T NO GO Member		1527T GO - NO GO Member with Handle				
								Class 2A	Class 3A	Class 2A		
Nominal Size	UNC	UNF	UNEF	Class 2A	Basic	Class 2A	Class 3A	Class 2A	Class 3A			
1/4	20	-	-	302200	312200	322200	332200	302232	312233	3/8	1	
1/4	-	28	-	302300	312300	322300	332300	302332	312333	3/8	1	
1/4	-	-	32	302400	312400	322400	332400	302432	312433	3/8	1	
5/16	18	-	-	302500	312500	322500	332500	302532	312533	3/8	1	
5/16	-	24	-	302600	312600	322600	332600	302632	312633	3/8	1	
5/16	-	-	32	302700	312700	322700	332700	302732	312733	3/8	1	
3/8	16	-	-	302800	312800	322800	332800	302832	312833	1/2	2	
3/8	-	24	-	302900	312900	322900	332900	302932	312933	1/2	2	
3/8	-	-	32	303000	313000	323000	333000	303032	313033	1/2	2	
7/16	14	-	-	303100	313100	323100	333100	303132	313133	1/2	2	
7/16	-	20	-	303200	313200	323200	333200	303232	313233	1/2	2	
7/16	-	-	28	303300	313300	323300	333300	303332	313333	1/2	2	
1/2	13	-	-	303400	313400	323400	333400	303432	313433	1/2	2	
1/2	-	20	-	303500	313500	323500	333500	303532	313533	1/2	2	
1/2	-	-	28	303600	313600	323600	333600	303632	313633	1/2	2	
9/16	12	-	-	303700	313700	323700	333700	303732	313733	11/16	3	
9/16	-	18	-	303800	313800	323800	333800	303832	313833	11/16	3	
9/16	-	-	24	303900	313900	323900	333900	303932	313933	11/16	3	
5/8	11	-	-	304000	314000	324000	334000	304032	314033	11/16	3	
5/8	-	18	-	304100	314100	324100	334100	304132	314133	11/16	3	
5/8	-	-	24	304200	314200	324200	334200	304232	314233	11/16	3	
3/4	10	-	-	304400	314400	324400	334400	304432	314433	11/16	3	
3/4	-	16	-	304500	314500	324500	334500	304532	314533	11/16	3	
3/4	-	-	20	304600	314600	324600	334600	304632	314633	11/16	3	
7/8	9	-	-	304800	314800	324800	334800	304832	314833	7/8	4	
7/8	-	14	-	304900	314900	324900	334900	304932	314933	7/8	4	
7/8	-	-	20	305000	315000	325000	335000	305032	315033	7/8	4	
1	8	-	-	305200	315200	325200	335200	305232	315233	7/8	4	
1	-	12	-	305300	315300	325300	335300	305332	315333	7/8	4	
1	-	-	14 NS	305400	315400	325400	335400	305432	315433	7/8	4	
1	-	-	20	305500	315500	325500	335500	305532	315533	7/8	4	
1 1/8	7	-	-	305700	315700	325700	335700	305732	315733	7/8	4	
1 1/8	-	12	-	305800	315800	325800	335800	305832	315833	7/8	4	
1 1/8	-	-	18	305900	315900	325900	335900	305932	315933	7/8	4	
1 1/4	7	-	-	306100	316100	326100	336100	306132	316133	1	5	
1 1/4	-	12	-	306200	316200	326200	336200	306232	316233	1	5	
1 1/4	-	-	18	306300	316300	326300	336300	306332	316333	1	5	
1 3/8	6	-	-	306500	316500	326500	336500	306532	316533	1	5	
1 3/8	-	12	-	306600	316600	326600	336600	306632	316633	1	5	
1 3/8	-	-	18	306700	316700	326700	336700	306732	316733	1	5	
1 1/2	6	-	-	306900	316900	326900	336900	306932	316933	1	5	
1 1/2	-	12	-	307000	317000	327000	337000	307032	317033	1	5	
1 1/2	-	-	18	307100	317100	327100	337100	307132	317133	1	5	

Handles are not included with single members. If handles are required for GO or NO GO members, specify "with handle."

W tolerance is available and priced on application.

When ordering, please use EDP numbers.

Metric Truncated Thread Setting Plug Gage - Taperlock - Class X (6g)

- Series No. 1576T - GO Member
- Series No. 1577T - NO GO Member
- Series No. 1578T - Double End with Handle

METRIC	EDP Number				
Nominal Size	1576T GO Member	1577T NO GO Member	1578T Double End with Handle	Handle Hex Size	Handle Number
M2,5 x 0,45	387200	397200	387239	3/16	000
M3 x 0,5	387300	397300	387339	1/4	00
M3,5 x 0,6	387400	397400	387439	1/4	00
M4 x 0,7	387500	397500	387539	5/16	0
M5 x 0,8	387600	397600	387639	5/16	0
M6 x 1,0	387700	397700	387739	3/8	1
M8 x 1,25	387800	397800	387839	3/8	1
M10 x 1,25	388100	398100	388139	1/2	2
M10 x 1,5	388000	398000	388039	1/2	2
M12 x 1,25	388500	398500	388539	1/2	2
M12 x 1,75	388300	398300	388339	1/2	2
M14 x 1,5	388800	398800	388839	11/16	3
M14 x 2,0	388700	398700	388739	11/16	3
M16 x 1,5	389100	399100	389139	11/16	3
M16 x 2,0	389000	399000	389039	11/16	3
M18 x 1,5	389300	399300	389339	11/16	3
M20 x 1,5	389500	399500	389539	11/16	3
M20 x 2,5	389400	399400	389439	11/16	3

Handles are not included with single members. If handles are required for GO or NO GO members, specify "with handle."

W tolerance available and priced on application.

When ordering, please use EDP numbers.



THREADING: H Limits vs. D Limits

H limits are a sequence of numbers in .0005" increments larger than the minimum limit of the part, starting with H1. An H1 limit is one .0005" increment larger than the minimum limit or GO gage, an H2 is two .0005" increments (or .001) larger, an H3 is three .0005" increments (or .0015"), and so on. The recommended H limit for a particular size should be approximately 40% of the thread tolerance larger than the minimum limit of the thread.

D limits are similar to H limits and follow the same numbering system. However, H limits are used primarily for inch threads, while D limits are used exclusively for metric threads. As is the case with H limits, D limits are a sequence of numbers in increments larger than the minimum limit or GO gage, but the increments are .013mm or .00051". Starting with D1, a D1 is one .013mm increment larger, a D2 is two .013mm (or .026mm) increments larger, and so forth. As with inch threads, the "40% rule" is applied based upon the tolerance or class of thread.

There are two primary differences between H limits and D limits. First, D limits are slightly larger than H limits. Second, the tap manufacturing tolerances are different. An H or D limit number defines the maximum size of the tap. A tap manufacturing tolerance is then applied to establish the minimum limit. For H limit taps, the tolerance is minus .0005" for all sizes through 1" diameter. Tap tolerances for D limits are larger for all thread sizes. The smallest tolerance is .015mm (.00059") and becomes larger with the diameter. For example, an M3 has a .015mm (or .0006") tolerance, an M6 has a .020mm (or .00079") tolerance, and an M20 tap has a .041mm (or .00161") tolerance. That is over 3 times the amount of tolerance of an equivalent 3/4" tap.



Thread Gages

Taper Pipe NPT Thread Plug

■ Taper Pipe Gages - NPT

Features/Benefits:

- manufactured from select steel
- ground, accurately lapped, and meticulously inspected in every thread element
- standard in "X" tolerance
- optional color gage handles available upon request — ideal to identify metric versus inch or master versus working gages
- shanks on gaging members are tapered to fit corresponding taper holes in the handles
- worn members may be removed and the handles salvaged for use with new members
- American National Taper Pipe Thread Gages (NPT) are furnished to thread specifications that comply with National Institute of Standards and Technology Handbook H-28 and to American Gage Design dimensions as shown on page 166
- master and reference gages can be furnished upon request



NPT Plug Gages

- Series 1560 - Member Only
- Series 1560 - Plug Gage w/Handle

General dimensions for pipe thread taperlock gages are on page 166.

		EDP Number - NPT			
Nominal Size	TPI	1560 L1 Plug Gage	1560 L1 Plug Gage with Handle	Handle Hex Size	Handle Number
1/16	27	701140	7011401	3/8	1
1/8	27	701141	7011411	1/2	2
1/4	18	701142	7011421	11/16	3
3/8	18	701143	7011431	11/16	3
1/2	14	701144	7011441	7/8	4
3/4	14	701145	7011451	7/8	4
1	11 1/2	701146	7011461	1	5
1 1/4	11 1/2	701147	7011471	1	5
1 1/2	11 1/2	701148	7011481	1	5
2	11 1/2	701149	7011491	1	5
2 1/2	8	701150	7011501	1 1/8	6
3	8	701151	7011511	1 1/8	6

NPTF taper pipe thread plug gages begin on the next page.

NPTF Plug Gages

- Series 1541D - L1 for Hand Tight Make Up
- Series 1543D - L3 for Wrench Make Up
- Series 1540D - With L1 and L3 Members



Series 1541D L1



Series 1543D L3



Series 1540D L1 and L3

		EDP Number - NPTF							
		Series 1541D L1		Series 1543D L3		Series 1540D L1 and L3			
Nominal Size	TPI	Member Only	Member with Handle	Member Only	Member with Handle	Double End with Handle	Handle Hex Size	Handle Number	
1/16	27	701164	7011641	701171	7011711	37401	3/8	1	
1/8	27	701165	7011651	701172	7011721	37403	1/2	2	
1/4	18	701166	7011661	701173	7011731	37405	11/16	3	
3/8	18	701167	7011671	701174	7011741	37407	11/16	3	
1/2	14	701168	7011681	701175	7011751	37409	7/8	4	
3/4	14	701169	7011691	701176	7011761	37411	7/8	4	
1	11 1/2	701170	7011701	701177	7011771	37413	1	5	

When ordering, please use EDP numbers.

NPTF 6-Step Plain Plug Gages

- Series No. 1640D



		EDP Number - NPTF					
Nominal Size	TPI	Member Only	Member with Handle	Handle Number	Handle Hex Size		
1/16	27	701178	7011781	1	3/8		
1/8	27	701179	7011791	2	1/2		
1/4	18	701180	7011801	3	11/16		
3/8	18	701181	7011811	3	11/16		
1/2	14	701182	7011821	4	7/8		
3/4	14	701183	7011831	4	7/8		
1	11 1/2	701184	7011841	5	1		

When ordering, please use EDP numbers.



NPTF (Dryseal) Taper Pipe Gages

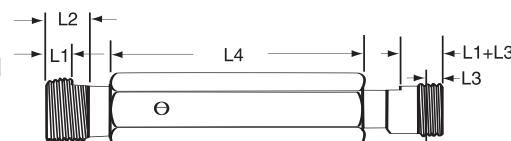
Dryseal pipe threads are generally used in more critical applications than NPT threads; therefore, a greater variety of gages and/or measuring equipment is used to more adequately check size, taper, and thread form.

L1 and L3 plugs are supplied with one step as standard.

L1 = Length of engagement in hand tight make up.

L2 = Length of effective thread (external).

L3 = Length of three threads beyond L1 for wrench make up.





Thread Gages

NPT and NPTF Ring

NPT and NPTF Thread Ring Gages For Gaging External Pipe Threads

Features/Benefits:

- made of selected graphitic steels
- machined, accurately lapped, and meticulously inspected in every thread element
- American National taper pipe thread gages (NPT) are furnished to thread specifications which are in agreement with the National Institute of Standards and Technology, American Gage Design dimensions
- master and reference gages can be furnished on request
- larger sizes and ANPT are available on request
- straight pipe (NPSF, NPSL, NPSC, NPSM) and other special pipe gages are available upon request



1562 NPT L1 Thin Ring



1544D NPTF L1 Thin Ring



1545D NPTF L2 Thick Ring



1642D NPTF Six-Step Plain Ring

General dimensions for NPT and NPTF thread ring gages are on page 167.

NPT and NPTF Ring Thread Gages

- Series No. 1562 - NPT L1 Thin Ring
- Series No. 1544D - NPTF Thin Ring
- Series No. 1545D - NPTF Thick Ring
- Series No. 1642D - Six-Step Plain Ring

Nominal Size	TPI	EDP Number - NPT		EDP Number - NPTF	
		1562 NPT Thin Ring	1544D NPTF L1 Thin Ring	1545D NPTF L2 Thick Ring	1642D NPTF Six-Step Plain Ring
1/16	27	701152	701185	701192	701199
1/8	27	701153	701186	701193	701200
1/4	18	701154	701187	701194	701201
3/8	18	701155	701188	701195	701202
1/2	14	701156	701189	701196	701203
3/4	14	701157	701190	701197	701204
1	11 1/2	701158	701191	701198	701205
1 1/4	11 1/2	701159	—	—	—
1 1/2	11 1/2	701160	—	—	—
2	11 1/2	701161	—	—	—
2 1/2	8	701162	—	—	—
3	8	701163	—	—	—

Note: Holders are not available for ring gages in taper pipe thread sizes. When ordering, please use EDP numbers.

Class X Thread Gage Tolerances



Threads per Inch	Tolerance Lead, Inch	Tolerance on Half-Angle of Thread $\pm N^{\circ} NN'$	Tolerance on Major or Minor Diameter		Tolerance on Pitch Diameter			
			Through 4" Dia.	Above 4" Dia.	Through 1 1/2" Dia.	Above 1 1/2" Dia. Through 4" Dia.	Above 4" Dia. Through 8" Dia.	Above 8" Dia. Through 12" Dia.
80	0.0002	0° 30'	0.0003	—	0.0002	—	—	—
72	0.0002	0° 30'	0.0003	—	0.0002	—	—	—
64	0.0002	0° 30'	0.0004	—	0.0002	—	—	—
56	0.0002	0° 30'	0.0004	—	0.0002	0.0003	—	—
48	0.0002	0° 30'	0.0004	—	0.0002	0.0003	—	—
40	0.0002	0° 20'	0.0004	—	0.0002	0.0003	—	—
36	0.0002	0° 20'	0.0004	—	0.0002	0.0003	—	—
32	0.0003	0° 15'	0.0005	0.0007	0.0003	0.0004	0.0005	0.0006
28	0.0003	0° 15'	0.0005	0.0007	0.0003	0.0004	0.0005	0.0006
27	0.0003	0° 15'	0.0005	0.0007	0.0003	0.0004	0.0005	0.0006
24	0.0003	0° 15'	0.0005	0.0007	0.0003	0.0004	0.0005	0.0006
20	0.0003	0° 15'	0.0005	0.0007	0.0003	0.0004	0.0005	0.0006
18	0.0003	0° 10'	0.0005	0.0007	0.0003	0.0004	0.0005	0.0006
16	0.0003	0° 10'	0.0006	0.0009	0.0003	0.0004	0.0006	0.0008
14	0.0003	0° 10'	0.0006	0.0009	0.0003	0.0004	0.0006	0.0008
13	0.0003	0° 10'	0.0006	0.0009	0.0003	0.0004	0.0006	0.0008
12	0.0003	0° 10'	0.0006	0.0009	0.0003	0.0004	0.0006	0.0008
11 1/2	0.0003	0° 10'	0.0006	0.0009	0.0003	0.0004	0.0006	0.0008
11	0.0003	0° 10'	0.0006	0.0009	0.0003	0.0004	0.0006	0.0008
10	0.0003	0° 10'	0.0006	0.0009	0.0003	0.0004	0.0006	0.0008
9	0.0003	0° 10'	0.0007	0.0011	0.0003	0.0004	0.0006	0.0008
8	0.0004	0° 5'	0.0007	0.0011	0.0004	0.0005	0.0006	0.0008
7	0.0004	0° 5'	0.0007	0.0011	0.0004	0.0005	0.0006	0.0008
6	0.0004	0° 5'	0.0008	0.0013	0.0004	0.0005	0.0006	0.0008
5	0.0004	0° 5'	0.0008	0.0013	—	0.0005	0.0006	0.0008
4 1/2	0.0004	0° 5'	0.0008	0.0013	—	0.0005	0.0006	0.0008
4	0.0004	0° 5'	0.0009	0.0015	—	0.0005	0.0006	0.0008



Properly Handling Gages

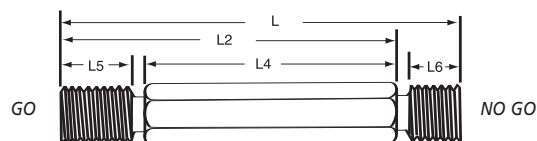
- Clean the part before gaging to remove dirt and chips.
- Do not force the gage; use reasonably light pressure only.
- Protect the gage from damage; nicks and burrs allow inaccurate results.
- Keep the gage clean and lightly oiled to increase wear life.
- Avoid direct handling of gaging surfaces; fingerprints cause rust.



Thread Gages

Taperlock Thread Plug

General Dimensions - Taperlock Thread Plug Gages

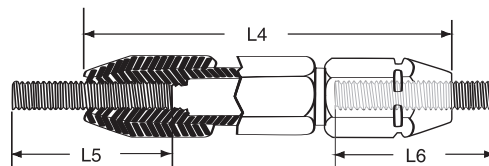


L = Overall Length *L2* = GO Member & Handle Length *L4* = Handle Only Length
L5 = GO Member Length *L6* = NO GO Member Length

Nominal Size		Length					Handle Hex Size	Handle Number
Inch	mm	L Overall	L2 Go Member with Handle	L4 Handle Only	L5 GO Member	L6 NO GO Member		
0	1,60	2 1/2	2 1/32	1 1/2	1/4	3/16	3/16	000
1	2,00							
2	2,5							
3								
4	3,00	2 31/32	2 13/32	1 3/4	5/16	7/32	1/4	00
5	3,50							
6								
8	4,00	3 3/16	2 21/32	2	13/32	9/32	5/16	0
10	4,50							
12	5,00							
1/4	6,00	4 1/16	3 1/2	2 3/4	1/2	5/16	3/8	1
5/16	6,30							
	7,00							
	8,00							
3/8	10,00	4 5/8	4	3	3/4	3/8	1/2	2
7/16	12,00							
1/2								
9/16	14,00	5 1/8	4 3/8	3 1/4	7/8	1/2	11/16	3
5/8	16,00							
3/4	18,00							
	20,00							
7/8	24,00	5 7/8	4 15/16	3 5/8	1	5/8	7/8	4
1								
1 1/8								
1 1/4		5 1/2 + L5	4 3/8 + L5	4	1*	3/4	1	5
1 3/8								
1 1/2								

* L5 = 1 inch for 12 threads per inch and finer
= 1 1/4 inches for threads per inch coarser than 12

General Dimensions — Reversible Thread Plug Gages



L4 = Handle Only Length L5 = GO Member Length L6 = NO GO Member Length

Nominal Size	Length			Handle Hex Size	Handle Number
	L4 Handle Only	L5 GO Member	L6 NO GO Member		
Inch					
0	1 29/32	1/2	1/2	1/4	1W
1					
2	2 15/32	5/8	5/8	3/8	2W
3					
4					
5					
6	2 15/32	3/4	3/4	3/8	2W
8					
10	3 1/8	7/8	7/8	9/16	3W
12					
1/4					
5/16	3 19/32	1	1	11/16	4W
3/8	3 19/32	1 1/8	1 1/8	13/16	4W
7/16	4 3/16	1 1/4	1 1/4	13/16	5W
1/2	4 3/16	1 3/8	1 3/8	13/16	5W
9/16	4 17/32	1 1/2	1 3/8	15/16	6W
3/4	4 21/32	1 3/4	1 3/8	1 1/16	7W

Handles are made to American Gage Design Standards.

Metric-Inch Pitch Equivalents

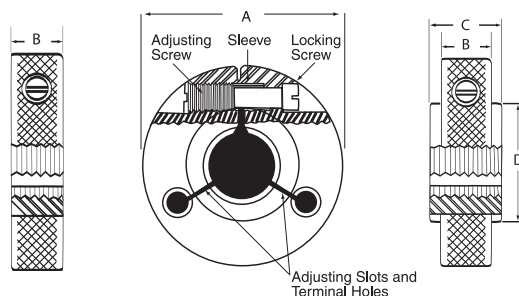
Pitch (mm)	Pitch (inch)	Threads Per Inch
0,35	0.01378	72.57
0,40	0.01575	63.50
0,45	0.01772	56.44
0,50	0.01969	50.80
0,60	0.02362	42.33
0,70	0.02756	36.29
0,75	0.02953	33.87
0,80	0.03150	31.75
0,90	0.03543	28.22
1,00	0.03937	25.40
1,25	0.04921	20.32
1,50	0.05906	16.93
1,75	0.06890	14.51
2,00	0.07874	12.70
2,50	0.09843	10.16
3,00	0.11811	8.46
4,00	0.15748	6.35
4,50	0.17717	5.64
5,00	0.19685	5.08
6,00	0.23622	4.23



Thread Gages

General Dimensions

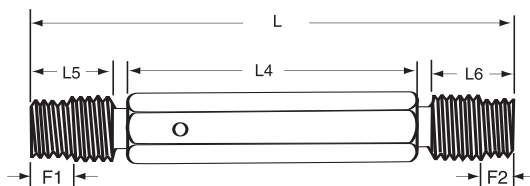
General Dimension - Thread Ring Gages



A = Outside Diameter B = Thickness C = Thickness of Hub D = Diameter of Hub

Nominal Size		Holder and Ring Blank Number	All Blanks	Thin Blanks			Thick Blanks		
Inch	mm		A Outside Diameter	B Thickness of Flange	Depth of Counterbore	Length of Thread	B Thickness of Flange	C Thickness of Hub	D Diameter of Hub
0	1,60	1	1	1/4	5/64	3/32	—	—	—
1	2,00								
2									
3	2,50	1	1	1/4	3/64	5/32	—	—	—
4	3,00								
5	3,50								
6									
8	4,00	1	1	1/4	1/32	3/16	—	—	—
10	5,00								
12									
1/4	6,00								
5/16	8,00	2	1 3/8	11/32	—	—	—	—	—
3/8	10,00	3	1 3/4	7/16	—	—	—	—	—
7/16	12,00								
1/2									
9/16	14,00	4	2 3/16	9/16	—	—	9/16	3/4	1 1/16
5/8	16,00								
3/4	20,00								
7/8	24,00	5	2 5/8	11/16	—	—	11/16	15/16	1 1/2
1									
1 1/8									
1 1/4		6	3 1/4	3/4	—	—	3/4	1 1/8	1 7/8
1 3/8									
1 1/2									

General Dimensions — Thread Setting Plug Gages



L = Overall Length **L4** = Handle Only Length **L5** = GO Member Length
L6 = NO GO Member Length **F1** = GO Member Truncation **F2** = NO GO Member Truncation

Nominal Size		GO Member - Thin Ring			GO Member - Thick Ring			NO GO Member			
Inch	mm	L Overall Length	L5 Member Length	F1 Truncation 1	L Overall Length	L5 Member Length	F1 Truncation 1	L6 Member Length	F2 Truncation 2	L4 Handle Length	Handle Number
0	1,60	2 1/4	7/32	7/64	—	—	—	7/32	7/64	1 1/2	000
1	2,00										
2											
3	2,50	2 9/16	3/8	3/16	—	—	—	3/8	3/16	1 1/2	000
4	3,00	2 7/8	3/8	3/16	—	—	—	3/8	3/16	1 3/4	00
5											
6											
8	4,00	3 5/16	13/32	13/64	—	—	—	13/32	13/64	2	0
10	5,00										
12											
1/4	6,00	4 3/4	3/4	3/8	—	—	—	3/4	3/8	2 3/4	1
5/16	8,00										
3/8	10,00	5 1/2	1	1/2	—	—	—	1	1/2	3	2
7/16	12,00										
1/2											
9/16	14,00	6 1/4	1 1/4	5/8	6 7/8	1 7/8	15/16	1 1/4	5/8	3 1/4	3
5/8	16,00										
3/4	20,00										
7/8	24,00	7 1/4	1 1/2	3/4	7 7/8	2 1/8	1 1/16	3 5/8	3/4	3 5/8	4
1											
1 1/8											
1 1/4		8	1 5/8	13/16	8 3/4	2 3/8	1 3/16	1 5/8	13/16	4	5
1 3/8											
1 1/2											

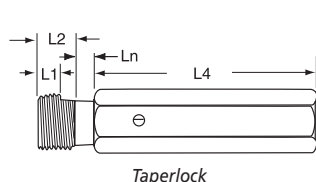
Note: Thread setting plug gages set thread ring gages. Thread setting plug gages have different length dimensions for thin and thick ring gages.



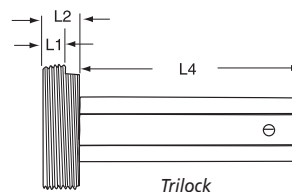
Thread Gages

General Dimensions

General Dimensions - NPT Taper Pipe L1 Plug Gage



L1 = GO Member Thread Length to Notch Ln = Neck Length (taperlock only)
L2 = GO Member Thread Length Minimum L4 = Handle Length

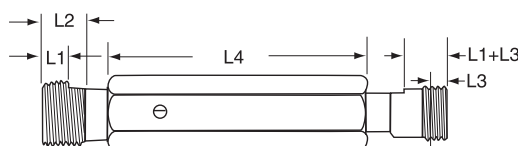


L1 = GO Member Thread Length to Notch
L2 = GO Member Thread Length Minimum L4 = Handle Length

Nominal Size		Length Member				L4 Handle Length	Handle Hex Size	Handle Number
Diameter	TPI	L1 to Notch Length	Tolerance Minus	L2 Minimum Length	Ln Taperlock Style Only			
1/16	27	0.160	.001	0.261	1/4	2 3/4	3/8	1
1/8	27	0.1615	.001	0.264	1/4	3	1/2	2
1/4	18	0.2278	.001	0.402	1/4	3 1/4	11/16	3
3/8	18	0.240	.001	0.408	1/4	3 1/4	11/16	3
1/2	14	0.320	.001	0.534	5/16	3 5/8	7/8	4
3/4	14	0.339	.001	0.546	5/16	3 5/8	7/8	4
1	11 1/2	0.400	.001	0.683	3/8	4	1	5
1 1/4	11 1/2	0.420	.001	0.707	3/8	4	1	5
1 1/2	11 1/2	0.420	.001	0.723	3/8	4	1	5
2	11 1/2	0.436	.001	0.757	3/8	4	1	5
2 1/2	8	0.682	.002	1.138	—	5	1 1/8	6
3	8	0.766	.002	1.200	—	5	1 1/8	6

Sizes 1/16 through 2 are taperlock style; sizes 2 1/2 and above are trilock style.

General Dimensions — NPTF Taper Pipe Plug Gage

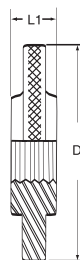


L1 = Length of engagement in hand tight make up
L3 = Length of 3 threads beyond L1 for wrench make up
Fourth thread on L3 is for manufacturing and checking purposes only.

Nominal Size		Length Member					L4 Handle Length	Handle Hex Size	Handle Number
Diameter	TPI	L1 to Basic Notch	Tolerance Minus	L2 Minimum	L3 L1 + L2	Tolerance Minus			
1/16	27	0.160	.001	.26113	.2711	.001	2 3/4	3/8	1
1/8	27	0.1615	.001	.26385	.2726	.001	3	1/2	2
1/4	18	0.2278	.001	.40178	.3945	.001	3 1/4	11/16	3
3/8	18	0.240	.001	.40778	.4067	.001	3 1/4	11/16	3
1/2	14	0.320	.001	.53371	.5343	.001	3 5/8	7/8	4
3/4	14	0.339	.001	.54571	.5533	.001	3 5/8	7/8	4
1	11 1/2	0.400	.001	.68278	.6609	.001	4	1	5
1 1/4	11 1/2	0.420	.001	.70678	.6809	.001	4	1	5
1 1/2	11 1/2	0.420	.001	.72348	.6809	.001	4	1	5
2	11 1/2	0.436	.001	.75652	.6969	.001	4	1	5
2 1/2	8	0.682	.002	1.13750	1.0570	.002	5	1 1/8	6
3	8	0.766	.002	1.20000	1.1410	.002	5	1 1/8	6

Sizes 1/16 through 2 are taperlock style; sizes 2 1/2 and above are trilock style.

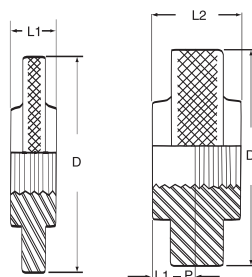
General Dimensions - NPT Taper Pipe L1 Ring Gage



$L1$ = Thickness of Ring D = Outside Diameter

Nominal Size		Tolerance		
Diameter	TPI	$L1$	Plus	D
1/16	27	0.1600	.001	1 1/8
1/8	27	0.1615	.001	1 1/8
1/4	18	0.2278	.001	1 3/8
3/8	18	0.2400	.001	1 1/2
1/2	14	0.3200	.001	1 3/4
3/4	14	0.3390	.001	2
1	11 1/2	0.4000	.001	2 1/2
1 1/4	11 1/2	0.4200	.001	3
1 1/2	11 1/2	0.4200	.001	3 1/4
2	11 1/2	0.4360	.001	3 3/4
2 1/2	8	0.6820	.002	4 1/4
3	8	0.7660	.002	5

General Dimensions — NPTF Taper Pipe Ring Gage



$L1$ = Thickness of Thin Ring $L2$ = Thickness of Thick Ring D = Outside Diameter

Nominal Size		$L1$	$L2$	Tolerance Plus	D
Diameter	TPI	Thin Ring	Thick Ring		
1/16	27	0.160	0.26113	.001	1 1/8
1/8	27	0.1615	0.26385	.001	1 1/8
1/4	18	0.2278	0.40178	.001	1 3/8
3/8	18	0.240	0.40778	.001	1 1/2
1/2	14	0.320	0.53371	.001	1 3/4
3/4	14	0.339	0.54571	.001	2
1	11 1/2	0.400	0.68278	.001	2 1/2
1 1/4	11 1/2	0.420	0.70678	.001	3
1 1/2	11 1/2	0.420	0.72348	.001	3 1/4
2	11 1/2	0.436	0.75652	.001	3 3/4
2 1/2	8	0.682	1.13750	.002	4 1/4
3	8	0.766	1.20000	.002	5



Plain Gages

Taperlock

Plain Cylindrical Plug Taperlock Gages

Features/Benefits:

- made-to-order using American Gage Design Standards
- precision lapped for overall accuracy, finish, and wearability of the gaging surface
- shanks on the gaging members are tapered to fit corresponding taper holes in the handles
- worn members may be removed and the handle salvaged for use with new members
- gaging lengths for progressive style may vary from table shown
- chrome plated gages are available
- premium 5-day manufacturing service is available (.120" to 1.500" only); specify at time of order



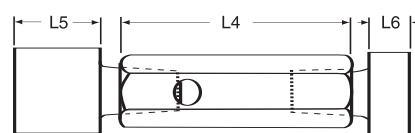
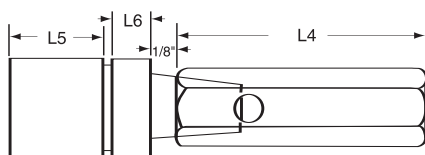
1611 Double End with Handle



1602 GO Member



1603 NO GO Member



Gage Tolerances:

- selection of gage tolerance should be in relation to the amount of tolerance on the product being gaged
- normal rule of thumb is that gage tolerance should not exceed 10% of the product tolerance equally divided between the GO and NO GO conditions
- furnished in four classes of tolerance:
Class XX: used where product limits are extremely close, or for master gages
Class X: used where product limits are relatively close, or occasionally for master gages

Class Y: used where product limits are normal to liberal

Class Z: used where product limits are quite liberal

- application of tolerances (unless otherwise specified):

GO = Plus

NO GO = Minus

Master Taperlock = Bilateral

Master Taperlock Gage Style #1620

Taperlock Cylindrical Plug Gages

- Series No. 1602 - GO Member
- Series No. 1603 - NO GO Member
- Series No. 1611 - Double End with Handle

Size Ranges		Tolerance Class (Inches)				Length				
Inches	mm	XX	X	Y	Z	L5 GO Member	L6 NO GO Member	L4 Handle	Handle Number	Handle Hex Size
.040 - .1049	1,016 - 2,664	.00002	.00004	.00007	.00010	3/8	3/16	1 1/2	000	3/16
.105 - .1499	2,667 - 3,807	.00002	.00004	.00007	.00010	3/8	7/32	1 3/4	00	1/4
.150 - .2399	3,810 - 6,093	.00002	.00004	.00007	.00010	13/32	9/32	2	0	5/16
.240 - .3649	6,096 - 9,268	.00002	.00004	.00007	.00010	3/4	5/16	2 3/4	1	3/8
.365 - .599	9,271 - 12,951	.00002	.00004	.00007	.00010	1	3/8	3	2	1/2
.510 - .8249	12,954 - 20,952	.00002	.00004	.00007	.00010	1 1/4	1/2	3 1/4	3	11/16
.825 - 1.1349	20,955 - 28,826	.00003	.00006	.00009	.00012	1 3/8	5/8	3 5/8	4	7/8
1.135 - 1.510	28,829 - 38,354	.00003	.00006	.00009	.00012	1 1/2	3/4	4	5	1

Cylindrical gages are made to order. Specify exact diameter, inch or metric, within the range of sizes shown. Call your Greenfield Gage Distributor for ordering information

Reversible style on page 169 is recommended for sizes smaller than .240. Sizes smaller than .040 are available in reversible style only. Handles are not included with single members. If handles are required with either GO or NO GO members, specify "with handle." Carbide or chrome plated gage members are available and priced on application. Depth step available on .093" diameter and above. Air grooves available price on application.

Plain Cylindrical Plug Reversible Gages

Features/Benefits:

- made-to-order using American Gage Design Standards
- precision lapped for overall accuracy, finish, and wearability of the gaging surface
- reversible plug gage members are straight and held to size their entire length, permitting use of both ends
- reversible design enables repositioning in the handle to extend the effective length of the gage member for deeper hole gaging
- when worn at one end, the member may be quickly reversed in the specially designed handle, and the unused end put into use
- chrome plated gages are available; priced on application
- aluminum handles are made to American Gage Design Standards
- gaging members are securely held by brass or aluminum bushings that are compressed when the aluminum nuts are tightened
- premium 5-day manufacturing service is available (.030" to 1.000" only); specify at time of order

Gage Tolerances:

- selection of gage tolerance should be in relation to the amount of tolerance on the product being gaged
- normal rule of thumb is that gage tolerance should not exceed 10% of the product tolerance equally divided between the GO and NO GO conditions
- furnished in four classes of tolerance:
Class XX: used where product limits are extremely close, or for master gages

Class X: used where product limits are relatively close, or occasionally for master gages

Class Y: used where product limits are normal to liberal

Class Z: used where product limits are quite liberal

- application of tolerances (unless otherwise specified):

GO = Plus

NO GO = Minus

Master = Bilateral

Master Reversible Plug Gage

Style #1615



Reversible Cylindrical Plug Gages

- Series No. 1609 - GO Member
- Series No. 1659 - NO GO Member
- Series No. 1629 - Double End with Handle

Size Ranges		Tolerance Class (Inches)				Length				
Inches	mm	XX	X	Y	Z	L5 and L6 GO or NO GO Member	L4 Handle	Handle Number	Handle Hex Size	
.0071 - .0749	0,180 - 1,902	.00002	.00004	.00007	.00010	2	1 29/32	1W	1/4	
.075 - .1799	1,905 - 4,569	.00002	.00004	.00007	.00010	2	2 15/32	2W	3/8	
.180 - .2809	4,572 - 7,135	.00002	.00004	.00007	.00010	2	3 1/8	3W	9/16	
.281 - .4059	7,1374 - 10,309	.00002	.00004	.00007	.00010	2	3 19/32	4W	11/16	
.406 - .5099	10,3124 - 12,951	.00002	.00004	.00007	.00010	2	4 3/16	5W	13/16	
.510 - .6349	12,954 - 16,126	.00002	.00004	.00007	.00010	2	4 17/32	6W	15/16	
.635 - .7559	16,129 - 19,304	.00002	.00004	.00007	.00010	2	4 21/32	7W	1 1/16	
.760 - .8249	19,329 - 20,959	.00002	.00004	.00007	.00010	2	5 1/4	8W	1 1/4	
.825 - 1.010	20,96 - 25,65	.00003	.00006	.00009	.00012	2	5 1/4	8W	1 1/4	

Cylindrical gages are made to order. Specify exact diameter, inch or metric, and tolerance class within the range of sizes shown. Call your Greenfield Gage Distributor for ordering information.

Handles are not included with single members. If handles are required with either GO or NO GO members, specify "with handle."

Carbide or chrome plated gage members are available and priced on application.

Depth step available on .093" diameter and above. Air grooves available and priced on application.

Plain Gages

Trilock



Plain Cylindrical Plug Trilock Gages

Features/Benefits:

- made-to-order using American Gage Design Standards
- precision lapped for overall accuracy, finish, and wearability of the gaging surface
- three wedge-shaped prongs at the end of the hexagon handle engage in corresponding grooves in the gaging member; a locking screw runs through the gaging member
- trilock gage members are reversible; when worn out at one end, they may be reversed on the specially designed handle, and the unused end put into use
- premium 5-day manufacturing service is available (.760" to 4.000" only); specify at time of order



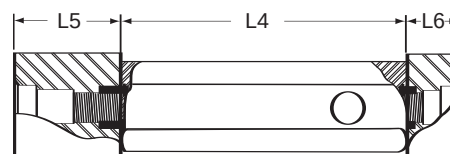
1631 Double End with Handle



1622 GO Member



1623 NO GO Member



Gage Tolerances:

- selection of gage tolerance should be in relation to the amount of tolerance on the product being gaged
- normal rule of thumb is that gage tolerance should not exceed 10% of the product tolerance equally divided between the GO and NO GO conditions
- furnished in four classes of tolerance:
Class XX: used where product limits are extremely close, or for master gages

Class X: used where product limits are relatively close, or occasionally for master gages

Class Y: used where product limits are normal to liberal

Class Z: used where product limits are quite liberal

- application of tolerances (unless otherwise specified):

GO = Plus

NO GO = Minus

Master = Bilateral

Master Trilock Gage Style #1619

Trilock Cylindrical Plug Gages

- Series No. 1622 - GO Member**
- Series No. 1623 - NO GO Member**
- Series No. 1631 - Double End with Handle**

Size Ranges		Tolerance Class (Inches)				Length			
Inches	mm	XX	X	Y	Z	L5 GO Member	L6 NO GO Member	L4 Handle	Handle Number
.760 - .8259	19,30 - 20,96	.00002	.00004	.00007	.00010	1 1/4	3/4	4	2 1/2
.826 - .9479	20,980 - 24,059	.00003	.00006	.00009	.00012	1 1/4	3/4	4	2 1/2
.948 - 1.1359	24,079 - 28,852	.00003	.00006	.00009	.00012	1 3/8	3/4	4	3 1/2
1.136 - 1.509	28,854 - 38,377	.00003	.00006	.00009	.00012	1 1/2	3/4	4	4 1/2
1.511 - 2.0109	38,3794 - 51,077	.00004	.00008	.00012	.00016	1 7/8	7/8	4 1/2	5 1/2
2.011 - 2.5109	51,080 - 63,777	.00004	.00008	.00012	.00016	2	7/8	5	6
2.511 - 3.0109	63,779 - 76,477	.00005	.00010	.00015	.00020	2	1	6	7
3.011 - 4.5109	76,480 - 114,77	.00005	.00010	.00015	.00020	2 1/8	1	6	7
4.511 - 6.509	114,554 - 165,354	.000065	.00013	.00019	.00025	2 1/8	1	6	7
6.510 - 8.010	165,35 - 203,45	.00008	.00016	.00025	.00032	2 1/8	1	6	7

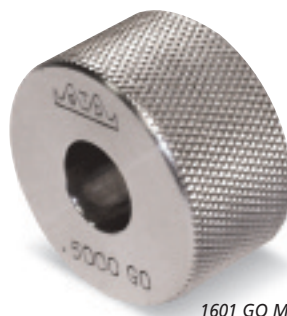
Cylindrical gages are made to order. Specify exact diameter, inch or metric, and tolerance class within the range of sizes shown. Call your Greenfield Gage Distributor for ordering information.

Reversible style on page 169 is recommended for sizes smaller than .240. Sizes smaller than .040 are available in reversible style only. Handles are not included with single members. If handles are required with either GO or NO GO members, specify "with handle." Chrome plated gage members are available and priced on application.

Cylindrical Ring Plain Gages

Features/Benefits:

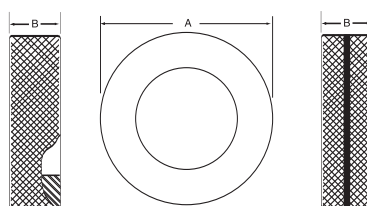
- made-to-order using American Gage Design Standards
- precision lapped for overall accuracy, finish, and wearability of the gaging surface
- handles are not available for cylindrical ring plain gages
- chrome plated gages are available
- premium 5-day manufacturing service is available; specify at time of order



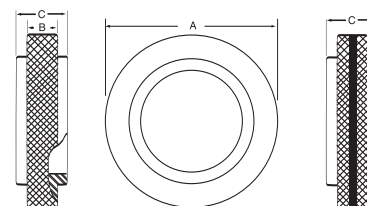
1601 GO Member



1606 NO GO Member



Thick ring gages are furnished in sizes up to and including 1.510". The NO GO ring is identified by the groove around the outside diameter.



Thin ring gages are furnished in sizes above 1.510". The NO GO ring is identified by the groove around the outside diameter.

Gage Tolerances:

- selection of gage tolerance should be in relation to the amount of tolerance on the product being gaged
- normal rule of thumb is that gage tolerance should not exceed 10% of the product tolerance equally divided between the GO and NO GO conditions
- furnished in four classes of tolerance:
 - Class XX:** used where product limits are extremely close, or for master gages
 - Class X:** used where product limits are relatively close, or occasionally for master gages
 - Class Y:** used where product limits are normal to liberal
 - Class Z:** used where product limits are quite liberal
- application of tolerances (unless otherwise specified):
 - GO = Minus
 - NO GO = Plus
 - Master = Bilateral
 - Master Trilock Gage Style #1607

Cylindrical Ring Gages

■ Series No. 1601 - GO Member

■ Series No. 1606 - NO GO Member

Size Ranges		Tolerance Classes (inches)				Dimensions			
Inches (above - to)	mm (above - to)	XX	X	Y	Z	A Diameter	B Flange Thickness	C Hub Thickness	Blank Number
.059 - .1509	1,50 - 3,81	.00002	.00004	.00007	.00010	15/16	3/16	—	00
.151 - .2409	3,811 - 6,096	.00002	.00004	.00007	.00010	15/16	3/8	—	0
.241 - .3659	6,097 - 9,27	.00002	.00004	.00007	.00010	1 1/8	9/16	—	1
.366 - .5109	9,28 - 12,95	.00002	.00004	.00007	.00010	1 3/8	3/4	—	2
.511 - .8259	12,96 - 20,96	.00002	.00004	.00007	.00010	1 3/4	15/16	—	3
.826 - 1.1359	20,97 - 28,83	.00003	.00006	.00009	.00012	2 1/8	1 1/8	—	4
1.136 - 1.510	28,94 - 38,35	.00003	.00006	.00009	.00012	2 1/2	1 5/16	—	5
1.511 - 2.010	38,36 - 51,05	.00004	.00008	.00012	.00016	4	1 1/2	1/2	6
2.011 - 2.510	51,06 - 63,75	.00004	.00008	.00012	.00016	4 1/2	1 1/2	9/16	7
2.511 - 3.010	63,76 - 76,45	.00005	.00010	.00015	.00020	5	1 1/2	5/8	8
3.011 - 3.510	76,46 - 89,15	.00005	.00010	.00015	.00020	5 1/2	1 1/2	11/16	9
3.511 - 4.010	89,16 - 101,85	.00005	.00010	.00015	.00020	6 3/8	1 1/2	3/4	10
4.011 - 4.510	101,86 - 114,55	.00005	.00010	.00015	.00020	7 1/4	1 1/2	7/8	11
4.511 - 4.760	114,56 - 120,90	.00005	.00013	.00019	.00025	7 1/4	1 1/2	7/8	11

Cylindrical gages are made to order. Specify exact diameter, inch or metric, and tolerance class within the range of sizes shown. Call your Greenfield Gage Distributor for ordering information.

Larger sizes and carbide gages are available upon request.
Chrome plated cylindrical ring gages are not available below .250" diameter.



Plain Gages

Snap Gages

■ Snap Gages

Features/Benefits:

- adjustable limit
- equipped with one stationary and two adjustable button-type anvils
- stationary anvil aids in locating and aligning gage with piece being inspected
- gaging surfaces are ground and lapped
- manufactured to American Gage Design (AGD) standards
- series 1617 is a miniature version of series 1616; used for small parts where a light, sensitive gage is desired
- ideal for in process gaging of parts still in the machine
- ideal for a quick check of incoming flat or round stock
- not recommended for component tolerances below .001"



Series 1616 ADG Model SC



Series 1617 ADG Model SMC

Snap Gages

- Series No. 1616 - AGD Model SC
- Series No. 1617 - AGD Model SMC

Frame Number	Capacity		EDP Number
	Inches	mm	1616 Model SC
1	.000 - 1/4	0,0 - 6,4	701092
2	1/4 - 1/2	6,4 - 12,7	701093
2A	1/2 - 3/4	12,7 - 19,1	701094
3	3/4 - 1	19,1 - 25,4	701095
3A	1 - 1 1/4	25,4 - 31,8	701096
4	1 1/4 - 1 1/2	31,8 - 38,1	701097
4A	1 1/2 - 1 3/4	38,1 - 44,5	701098
5	1 3/4 - 2	44,5 - 50,8	701099
5A	2 - 2 1/4	50,8 - 57,2	701100
6	2 1/4 - 2 1/2	57,2 - 63,5	701101
6A	2 1/2 - 2 3/4	63,5 - 69,9	701102
7	2 3/4 - 3 1/6	69,9 - 77,8	701103
7A	3 1/16 - 3 7/16	77,8 - 87,3	701104
8	3 7/16 - 3 13/16	87,3 - 96,8	701105
8A	3 13/16 - 4 3/16	96,8 - 106,4	701106
9	4 3/16 - 4 9/16	106,4 - 115,9	701107
9A	4 9/16 - 4 15/16	115,9 - 125,4	701108
10	4 15/16 - 5 5/16	125,4 - 134,9	701109
10A	5 5/16 - 5 11/16	134,9 - 144,5	701110
11	5 11/16 - 6 1/8	144,5 - 155,6	701111
11A	6 1/8 - 6 5/8	155,6 - 168,3	701112

Frame Number	Capacity		EDP Number
	Inches	mm	1616 Model SC
12	6 5/8 - 7 1/8	168,3 - 181,0	701113
12A	7 1/8 - 7 5/8	181,0 - 193,7	701114
13	7 5/8 - 8 1/8	193,7 - 206,4	701115
13A	8 1/8 - 8 5/8	206,4 - 219,1	701116
14	8 5/8 - 9 1/8	219,1 - 231,8	701117
14A	9 1/8 - 9 5/8	231,8 - 244,5	701118
15	9 5/8 - 10 1/8	244,5 - 257,2	701119
15A	10 1/8 - 10 5/8	257,2 - 269,9	701120
16	10 5/8 - 11 1/8	269,9 - 282,6	701121
16A	11 1/8 - 11 5/8	282,6 - 295,3	701122

Frame Number	Capacity		EDP Number
	Inches	mm	1617 Model SMC
00	.000 - .195	0,0 - 5,0	701136
00A	.195 - .385	5,0 - 9,8	701137
0	.385 - .570	9,8 - 14,5	701138
0A	.570 - .760	14,5 - 19,3	701139

When ordering, please use EDP numbers.
Can be set and sealed at time of order as a modification.

Master Discs

Features/Benefits:

- made-to-order using American Gage Design (AGD) Standards
- AGD Style No. 1 features bilateral tolerance (split plus and minus)
- AGD Style No. 2 features unilateral tolerance (GO and NO GO on one member)
- AGD Style No. 3 is the same as Style No. 1, but in shorter lengths (unilateral tolerance)
- precision lapped for overall accuracy, finish, and wearability of the gaging surface
- roundness and taper of all gages will not exceed 50% of the applicable gagemaker's size tolerance and are non-accumulative
- composition insulating grips for ease of handling
- series 1685 and 1690 feature relief on gage ends to avoid wear when handling
- premium 5-day manufacturing service is available (.151" through 4.000"); specify at time of order

Gage Tolerances:

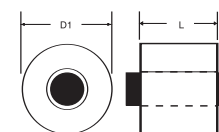
- selection of gage tolerance should be in relation to the amount of tolerance on the product being gaged
- the normal rule of thumb is that gage tolerance should not exceed 10% of the product tolerance equally divided between the GO and NO GO conditions
- these gages are furnished in three classes of tolerance:
Class XX: used where product limits are extremely close, or for master gages
Class X: used where product limits are relatively close, or occasionally for master gages
Class Y: used where product limits are normal to liberal
- application of tolerances (unless otherwise specified):
 NO GO = Plus

Application Information:

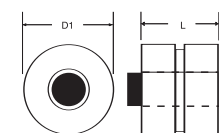
- master discs are used for setting snap gages, comparators, and other types of gages and gaging equipment



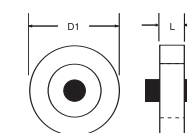
Series 1685 Master Disc



Series No. 1685
AGD Style No. 1



Series No. 1690
AGD Style No. 2



Series No. 1695
AGD Style No. 3

Master Discs

- Series No. 1685 - ADG Style No. 1 Bilateral Tolerance (Split)
- Series No. 1690 - ADG Style No. 2 Unilateral Tolerance (GO Minus, NO GO Plus)
- Series No. 1695 - ADG Style No. 3 Bilateral Tolerance (Split)

D1 Size Range (above - to and including)		Tolerance Classes			L AGD Style 1		L AGD Style 2		L AGD Style 3	
Inches	mm	XX	X	Y	Inch	mm	Inch	mm	Inch	mm
.150 - .229	3,81 - 5,84	.00002	.00004	.00007	7/8	22,2	7/8	22,2	7/16	11,1
.230 - .364	5,84 - 9,27	.00002	.00004	.00007	1	25,4	1	25,4	1/2	12,7
.365 - .509	9,27 - 12,95	.00002	.00004	.00007	1 1/8	28,6	1 1/8	28,6	9/16	14,3
.510 - .824	12,95 - 20,96	.00002	.00004	.00007	1 1/4	31,8	1 1/4	31,8	5/8	15,9
.825 - 1.134	20,96 - 28,83	.00003	.00006	.00009	1 3/8	34,9	1 3/8	34,9	11/16	17,5
1.135 - 1.509	28,83 - 38,35	.00003	.00006	.00009	1 5/8	41,3	1 5/8	41,3	13/16	20,6
1.510 - 2.009	38,35 - 51,05	.00004	.00008	.00012	1 7/8	47,6	2	50,8	7/8	22,2
2.010 - 2.509	51,05 - 63,75	.00004	.00008	.00012	2	50,8	2	50,8	7/8	22,2
2.510 - 3.009	63,75 - 76,45	.00005	.00010	.00015	2	50,8	2 1/4	57,2	1	25,4
3.010 - 3.509	76,45 - 89,15	.00005	.00010	.00015	2	50,8	2 1/4	57,2	1	25,4
3.510 - 4.009	89,15 - 101,85	.00005	.00010	.00015	2 1/8	54,0	2 1/4	57,2	1	25,4
4.010 - 4.510	101,85 - 114,55	.00005	.00010	.00015	2 1/8	54,0	2 1/4	57,2	1	25,4

Larger sizes are available upon request.

Steel or chrome plated gages are available and priced on application.

Master Disc gages are made to order. Specify exact diameter, inch or metric, within the range of sizes shown. Call your Greenfield Gage Distributor for ordering information.



Plain Gages

Micrometer Set Masters

■ Surveillance Set Masters

Are your shop measuring tools out of tolerance and out of control?

Greenfield masters provide one single reference master to replace the miscellaneous pieces of size often used to set shop micrometers and calipers.

Features/Benefits:

- available in inch and metric sizes
- micrometer set masters - series no. 1670
- vernier caliper masters - series no. 1675
- depth micrometer masters series no. 1680
- marked with inch or metric measurements
- case-hardened, stabilized, ground, and lapped
- certifiable to the National Institute of Standards and Technology upon request
- masters will survey out-of-parallel anvils in 45° increments and identify any other wear in the micrometer



Set Master 701266 9-Step



Set Master 701283 6-Step



Set Master 701324 12-Step



Set Master 701295 12-Step

Micrometer Set Masters

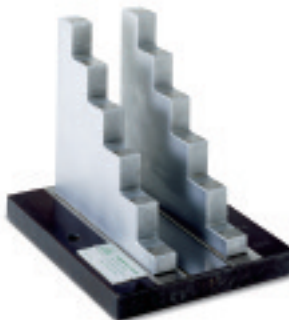
■ Series No. 1670

Inch Set Masters		Metric Set Masters	
Size Range*	EDP Number	Size Range*	EDP Number
0 - 1	701266	0,0 - 25,0	701266M
0 - 3	701271	0,0 - 75,0	701271M
1 - 6	701283	25,0 - 150,0	701283M
1/2 - 6	701295	12,5 - 150,0	701295M
1 - 12	701324	25,0 - 300,0	701324M

* Sizes are accurate to $\pm 0.0001"$.
Please use EDP numbers when ordering.



Vernier Caliper Master EDP No. 701277



Depth Micrometer Masters
EDP No. 701346 6-Step



Depth Micrometer Masters
EDP No. 701350 6-Step

Vernier Caliper Masters

Series No. 1675

- accurately check outside jaws, inside jaws, and parallax of jaws over a 6" range
- EDP No. 70127 ideal for checking inside and outside jaws of vernier calipers

Inch Set Masters		Metric Set Masters	
Size Range	EDP Number	Size Range	EDP Number
1 - 6*	701277	25, 0 - 150,0*	701277M
1 - 12**	701280	25,0 - 300,0**	701280M

* Accuracy $\pm .0001"$.

** Accuracy $\pm .0002"$.

Please use EDP Numbers when ordering.

Depth Micrometer Masters

Series No. 1680

- step size 1" for all models
- EDP No. 701346 has 6 steps for checking accuracy of depth micrometers and proper seating of rods

Inch Set Masters		Metric Set Masters	
Size Range	EDP Number	Size Range	EDP Number
1/2 - 5 1/2*	701346	12,5 - 137,5*	701346M
1/2 - 11 1/2**	701350	12,5 - 287,5**	701350M

* Accuracy $\pm .0001"$.

** Accuracy $\pm .0001"$ up to 5 1/2" and $\pm .0003"$ up to 11 1/2".

Please use EDP Numbers when ordering.



Gage Technical Information

Pitch Diameters and Gage Limits*

HIGH-PERFORMANCE TAPS

THREAD MILLS

PRODUCTION TAPS

MAINTENANCE TOOLS

GAGES

TECHNICAL
INFORMATION & INDEX

Nominal Size Threads Per Inch and Series	For Bolts & Screws Ring Thread Gages					Basic P.D.	For Nuts & Tapped Holes Plug Thread Gages				
	Unified Series			National Series			Unified Series			National Series	
	1A	2A	3A	2	3		1B	2B	3B	2	3
0 (.060)-80 NF		.0514	.0519	.0519	.0519	.0519		.0519	.0519	.0519	.0519
		.0496	.0506	.0502	.0506			.0542	.0536	.0536	.0532
1 (.073)-64 NC		.0623	.0629	.0629	.0629	.0629		.0629	.0629	.0629	.0629
		.0603	.0614	.0610	.0615			.0655	.0648	.0648	.0643
1 (.073)-72 NF		.0634	.0640	.0640	.0640	.0640		.0640	.0640	.0640	.0640
		.0615	.0626	.0622	.0627			.0665	.0659	.0658	.0653
2 (.006)-56 NC		.0738	.0744	.0744	.0744	.0744		.0744	.0744	.0744	.0744
		.0717	.0728	.0724	.0729			.0772	.0765	.0764	.0759
2 (.086)-64 NF		.0753	.0759	.0759	.0759	.0759		.0759	.0759	.0759	.0759
		.0733	.0744	.0740	.0745			.0786	.0779	.0778	.0773
3 (.099)-48 NC		.0848	.0855	.0855	.0855	.0855		.0855	.0855	.0855	.0855
		.0825	.0838	.0833	.0839			.0885	.0877	.0877	.0871
3 (.099)-56 NF		.0867	.0874	.0874	.0874	.0874		.0874	.0874	.0874	.0874
		.0845	.0858	.0854	.0859			.0902	.0895	.0894	.0889
4 (.112)-40 NC		.0950	.0958	.0958	.0958	.0958		.0958	.0958	.0958	.0958
		.0925	.0939	.0934	.0941			.0991	.0982	.0982	.0975
4 (.112)-48 NF		.0978	.0985	.0985	.0985	.0985		.0985	.0985	.0985	.0985
		.0954	.0967	.0963	.0969			.1016	.1008	.1007	.1001
5 (.125)-40 NC		.1080	.1088	.1088	.1088	.1088		.1088	.1088	.1088	.1088
		.1054	.1069	.1064	.1071			.1121	.1113	.1112	.1105
5 (.125)-44 NF		.1095	.1102	.1102	.1102	.1102		.1102	.1102	.1102	.1102
		.1070	.1083	.1079	.1086			.1134	.1126	.1125	.1118
6 (.138)-32 NC		.1169	.1177	.1177	.1177	.1177		.1177	.1177	.1177	.1177
		.1141	.1156	.1150	.1158			.1214	.1204	.1204	.1196
6 (.138)-40 NF		.1210	.1218	.1218	.1218	.1218		.1218	.1218	.1218	.1218
		.1184	.1198	.1194	.1201			.1252	.1243	.1242	.1235
8 (.164)-32 NC		.1428	.1437	.1437	.1437	.1437		.1437	.1437	.1437	.1437
		.1399	.1415	.1410	.1418			.1475	.1465	.1464	.1456
8 (.164)-36 NF		.1452	.1460	.1460	.1460	.1460		.1460	.1460	.1460	.1460
		.1424	.1439	.1435	.1442			.1496	.1487	.1485	.1478
10 (.190)-24 NC		.1619	.1629	.1629	.1629	.1629		.1629	.1629	.1629	.1629
		.1586	.1604	.1696	.1605			.1672	.1661	.1662	.1653
10 (.190)-32 NF		.1688	.1697	.1697	.1697	.1697		.1697	.1697	.1697	.1697
		.1658	.1674	.1670	.1678			.1736	.1726	.1724	.1716
12 (.216)-24 NC		.1879	.1889	.1889	.1889	.1889		.1889	.1889	.1889	.1889
		.1845	.1863	.1856	.1865			.1933	.1922	.1922	.1913
12 (.216)-28 NF		.1918	.1928	.1928	.1928	.1928		.1928	.1928	.1928	.1928
		.1886	.1904	.1897	.1906			.1970	.1959	.1959	.1950
12 (.216)-32 NEF		.1948 (b)	.1957	.1957	.1957	.1957		.1957	.1957	.1957	.1957
		.1917 (d)	.1933	.1926	.1935			.1998	.1988	.1988	.1979
1/4-20 NC	.2164	.2164	.2175	.2175	.2175	.2175	.2175	.2175	.2175	.2175	.2175
	.2108	.2127	.2147	.2139	.2149		.2248	.2224	.2211	.2211	.2201
1/4-28 NF	.2258	.2258	.2268	.2268	.2268	.2268	.2268	.2268	.2268	.2268	.2268
	.2208	.2225	.2243	.2237	.2246		.2333	.2311	.2300	.2299	.2290

continued on next page

*The values listed for 1A/1B, 2A/2B, and 3A/3B are from **ASME B1.1-1989 Unified Inch Screw Threads (UN and UNR) Thread Form**. A few of these values have changed due to revisions in **ASME B1.1-2003**. These revisions are the result of applying the standard practices for calculating and rounding screw thread dimensions. By establishing this practice, all parties using a calculator, computer spreadsheet program, or any other means, will derive the same values.

The values from past issues of **B1.1** along with the revised values are both considered acceptable until future revisions of **B1.1** make the revised values the only acceptable values.

Values for B1.1 - 2003 can be calculated by adding or subtracting the values where indicated:

(a) +.0001 (b) -.0001 (c) +.0002 (d) -.0002

(continued) Nominal Size Threads Per Inch and Series	For Bolts & Screws Ring Thread Gages					Basic P.D.	For Nuts & Tapped Holes Plug Thread Gages				
	Unified Series			National Series			Unified Series			National Series	
	1A	2A	3A	2	3		1B	2B	3B	2	3
1/4-32 NEF		.2287	.2297	.2297	.2297	.2297		.2297	.2297	.2297	.2297
		.2255	.2273	.2265	.2275			.2339	.2328	.2329	.2319
5/16-18 NC	.2752	.2752	.2764	.2764	.2164	.2764	.2764	.2764	.2764	.2764	.2764
	.2691	.2712	.2734	.2723	.2734		.2843	.2817	.2803	.2805	.2794
5/16-24 NF	.2843	.2843	.2854	.2854	.2854	.2854	.2854	.2854	.2854	.2854	.2854
	.2788	.2806	.2827	.2821	.2830		.2925	.2902	.2890	.2887	.2878
5/16-32 NEF		.2912	.2922	.2922	.2922	.2922		.2922	.2922	.2922	.2922
		.2880 (b)	.2898 (b)	.2889	.2899			.2964 (a)	.2953 (a)	.2955	.2945
3/8-16 NC	.3331	.3331	.3344	.3344	.3344	.3344	.3344	.3344	.3344	.3344	.3344
	.3266	.3287	.3311	.3299	.3312		.3429	.3401	.3387	.3389	.3376
3/8-24 NF	.3468	.3468	.3479	.3479	.3479	.3479	.3479	.3479	.3479	.3479	.3479
	.3411	.3430	.3450	.3446	.3455		.3553	.3528	.3516	.3512	.3503
3/8-32 NEF		.3537	.3547	.3547	.3547	.3547		.3547	.3547	.3547	.3547
		.3503	.3522	.3513	.3523			.3591	.3580	.3581	.3571
7/16-14 NC	.3897	.3897	.3911	.3911	.3911	.3911	.3911	.3911	.3911	.3911	.3911
	.3826	.3850	.3876	.3862	.3875		.4003	.3972	.3957	.3960	.3947
7/16-20 NF	.4037	.4037	.4050	.4050	.4050	.4050	.4050	.4050	.4050	.4050	.4050
	.3975 (b)	.3995	.4019	.4014	.4024		.4131	.4104	.4091	.4086	.4076
7/16-28 NEF		.4132	.4143	.4143	.4143	.4143		.4143	.4143	.4143	.4143
		.4096	.4116	.4107	.4118			.4189 (a)	.4178	.4179	.4168
1/2-13 NC	.4485	.4485	.4500	.4500	.4500	.4500	.4500	.4500	.4500	.4500	.4500
	.4411	.4435	.4463	.4448	.4463		.4597	.4565	.4548	.4552	.4537
1/2-20 NF	.4662	.4662	.4675	.4675	.4675	.4675	.4675	.4675	.4675	.4675	.4675
	.4598	.4619	.4643	.4639	.4649		.4759	.4731	.4717	.4711	.4701
1/2-28 NEF		.4757	.4768	.4768	.4768	.4768		.4768	.4768	.4768	.4768
		.4720	.4740	.4731	.4742			.4816	.4804	.4805	.4794
9/16-12 NC	.5068	.5068	.5084	.5084	.5084	.5084	.5084	.5084	.5084	.5084	.5084
	.4990	.5016	.5045	.5028	.5044		.5186	.5152	.5135	.5140	.5124
9/16-18 NF	.5250	.5250	.5264	.5264	.5264	.5264	.5264	.5264	.5264	.5264	.5264
	.5182	.5205	.5230	.5223	.5234		.5353	.5323	.5308	.5305	.5294
9/16-24 NEF		.5342	.5354	.5354	.5354	.5354		.5354	.5354	.5354	.5354
		.5303 (b)	.5325 (b)	.5314	.5326			.5405	.5392 (a)	.5394	.5382
5/8-11 NC	.5644 (b)	.5644 (b)	.5660	.5660	.5660	.5660	.5660	.5660	.5660	.5660	.5660
	.5561 (b)	.5589 (b)	.5619	.5601	.5618		.5767	.5732	.5714	.5719	.5702
5/8-18 NF	.5875	.5875	.5889	.5889	.5889	.5889	.5889	.5889	.5889	.5889	.5889
	.5805	.5828	.5854	.5848	.5859		.5980	.5949	.5934	.5930	.5919
5/8-24 NEF		.5967	.5979	.5979	.5979	.5979		.5979	.5979	.5979	.5979
		.5927	.5949	.5938	.5950			.6031	.6018	.6020	.6008
11/16-24 NEF		.6592	.6604	.6604	.6604	.6604		.6604	.6604	.6604	.6604
		.6552	.6574	.6563	.6575			.6656 (a)	.6643	.6645	.6633
3/4-10 NC	.6832	.6832	.6850	.6850	.6850	.6850	.6850	.6850	.6850	.6850	.6850
	.6744	.6773	.6806	.6786	.6805		.6965	.6927	.6907	.6914	.6895
3/4-16 NF	.7079	.7079	.7094	.7094	.7094	.7094	.7094	.7094	.7094	.7094	.7079
	.7004	.7029	.7056	.7049	.7062		.7192	.7159	.7143	.7139	.7126
3/4-20 NEF		.7162	.7175	.7175	.7175	.7175		.7175	.7175	.7175	.7175
		.7118	.7142	.7129	.7143			.7232	.7218	.7221	.7207
13/16-20 NEF		.7787	.7800	.7800	.7800	.7800		.7800	.7800	.7800	.7800
		.7743	.7767	.7754	.7768			.7857	.7843	.7846	.7832

continued on next page

*Values for B1.1 - 2003 can be calculated by adding or subtracting the values where indicated:

(a) +.0001 (b) -.0001 (c) +.0002 (d) -.0002

Gage Technical Information



Pitch Diameters and Gage Limits*

(continued)	For Bolts & Screws Ring Thread Gages					Basic P.D.	For Nuts & Tapped Holes Plug Thread Gages				
	Unified Series			National Series			Unified Series			National Series	
	1A	2A	3A	2	3		1B	2B	3B	2	3
7/8-9 NC	.8009	.8009	.8028	.8028	.8028	.8028	.8028	.8028	.8028	.8028	.8028
	.7914	.7946	.7981	.7958	.7979		.8151	.8110	.8089	.8098	.8077
7/8-14 NF	.8270	.8270	.8286	.8286	.8286	.8286	.8286	.8286	.8286	.8286	.8286
	.8189	.8216	.8245	.8237	.8250		.8392	.8356	.8339	.8335	.8322
7/8-20 NEF		.8412	.8425	.8425	.8425	.8425		.8425	.8425	.8425	.8425
		.8368 (b)	.8392 (b)	.8378	.8392			.8482 (a)	.8468 (a)	.8472	.8458
15/16-20 NEF		.9036	.9050	.9050	.9050	.9050		.9050	.9050	.9050	.9050
		.8991	.9016	.9003	.9017			.9109	.9094	.9097	.9083
1-8 NC	.9168	.9168	.9188	.9188	.9188	.9188	.9188	.9188	.9188	.9188	.9188
	.9067	.9100 (a)	.9137	.9112	.9134		.9320	.9276	.9254	.9264	.9242
1-12 UNF	.9441	.9441	.9459	.9459	.9459	.9459	.9459	.9459	.9459	.9459	.9459
	.9353	.9382	.9415	.9403	.9419		.9573	.9535	.9516	.9515	.9499
1-20 NEF		.9661	.9675	.9675	.9675	.9675		.9675	.9675	.9675	.9675
		.9616	.9641	.9627	.9641			.9734	.9719	.9723	.9609
1-1/16-18 NEF		1.0250	1.0264	1.0264	1.0264	1.0264		1.0264	1.0264	1.0264	1.0264
		1.0203	1.0228	1.0213	1.0228			1.0326	1.0310	1.0315	1.0300
1-1/8-7 NC	1.0300	1.0300	1.0322	1.0322	1.0322	1.0322	1.0322	1.0322	1.0322	1.0322	1.0322
	1.0191	1.0228	1.0268	1.0237	1.0263		1.0463	1.0416	1.0393	1.0407	1.0381
1-1/8-12 NF	1.0691	1.0691	1.0709	1.0709	1.0709	1.0709	1.0709	1.0709	1.0709	1.0709	1.0709
	1.0601	1.0631	1.0664	1.0653	1.0669		1.0826	1.0787	1.0768	1.0765	1.0749
1-1/8-18 NEF		1.0875	1.0889	1.0889	1.0889	1.0889		1.0889	1.0889	1.0889	1.0889
		1.0828 (b)	1.0853	1.0837	1.0853			1.0951	1.0935 (a)	1.0941	1.0925
1-3/16-18 NEF		1.1499 (a)	1.1514	1.1514	1.1514	1.1514		1.1514	1.1514	1.1514	1.1514
		1.1450 (c)	1.1478	1.1462	1.1478			1.1577	1.1561	1.1566	1.1550
1-1/4-7 NC	1.1550	1.1550	1.1572	1.1572	1.1572	1.1572	1.1572	1.1572	1.1572	1.1572	1.1572
	1.1439	1.1476	1.1517	1.1487	1.1513		1.1716	1.1668	1.1644	1.1657	1.1631
1-1/4-12 NF	1.1941	1.1941	1.1959	1.1959	1.1959	1.1959	1.1959	1.1959	1.1959	1.1959	1.1959
	1.1849	1.1879	1.1913	1.1903	1.1919		1.2079	1.2039	1.2019	1.2015	1.1999
1-1/4-18 NEF		1.2124	1.2139	1.2139	1.2139	1.2139		1.2139	1.2139	1.2139	1.2139
		1.2075	1.2103	1.2086	1.2102			1.2202	1.2186	1.2192	1.2176
1-5/16-18 NEF		1.2749	1.2764	1.2764	1.2764	1.2764		1.2764	1.2764	1.2764	1.2764
		1.2700	1.2728 (b)	1.2711	1.2727			1.2827 (a)	1.2811 (a)	1.2817	1.2801
1-3/8-6 NC	1.2643	1.2643	1.2667	1.2667	1.2667	1.2667	1.2667	1.2667	1.2667	1.2667	1.2667
	1.2523	1.2563	1.2607	1.2566	1.2596		1.2822	1.2771	1.2745	1.2768	1.2738
1-3/8-12 NF	1.3190	1.3190	1.3209	1.3209	1.3209	1.3209	1.3209	1.3209	1.3209	1.3209	1.3209
	1.3096	1.3127	1.3162	1.3153	1.3169		1.3332	1.3291	1.2370	1.3265	1.3249
1-3/8-18 NEF		1.3374	1.3389	1.3389	1.3389	1.3389		1.3389	1.3389	1.3389	1.3389
		1.3325	1.3353	1.3335	1.3351			1.3452	1.3436	1.3443	1.3427
1-7/16-18 NEF		1.3999	1.4014 (b)	1.4014	1.4014	1.4014		1.4014 (a)	1.4014 (a)	1.4014	1.4014
		1.3949 (b)	1.3977	1.3960	1.3976			1.4079	1.4062	1.4068	1.4052
1-1/2-6 NC	1.3893	1.3893	1.3917	1.3917	1.3917	1.3917	1.3917	1.3917	1.3917	1.3917	1.3917
	1.3772	1.3812	1.3856	1.3816	1.3846		1.4075	1.4022	1.3996	1.4018	1.3988
1-1/2-12 NF	1.4440	1.4440	1.4459	1.4459	1.4459	1.4459	1.4459	1.4459	1.4459	1.4459	1.4459
	1.4344	1.4376	1.4411	1.4403	1.4419		1.4584	1.4542	1.4522	1.4515	1.4499
1-1/2-18 NEF		1.4624	1.4639	1.4639	1.4639	1.4639		1.4639	1.4639	1.4639	1.4639
		1.4574	1.1402	1.4584	1.4601			1.4704	1.4687	1.4694	1.4677

*Values for B1.1 - 2003 can be calculated by adding or subtracting the values where indicated:

(a) +.0001 (b) -.0001 (c) +.0002 (d) -.0002

The Proper Use and Care of Gages

Limit-type thread plug and ring gages are important tools in any Quality Control program. These gages are used to determine whether a product's threads fall within maximum and minimum functional size limits.

Product size limits are expressed in terms of pitch diameter, which is theoretical. Limit-type gages check the "functional" size of the threads, or the capability of product threads to assemble with mating parts, and the degree of tightness or looseness of the fit. Functional size takes into account not only the pitch diameter, but also the effects of deviations in other factors such as lead, angle, roundness, and helical path.

Decisions regarding whether to accept or reject a product are made based on its functional size. Obtaining an accurate functional size evaluation depends upon three key factors:

1) the accuracy of the gages used, 2) proper care of the gages, and 3) correct use of the gages.

Gage Accuracy

The initial accuracy of the gage is the responsibility of the gage manufacturer, who should manufacture the gage within specified allowable tolerances. Maintaining gage accuracy then becomes the responsibility of the user and involves properly caring for and correctly using the gages.

Properly Caring for Gages

Gages should be handled with care to avoid damage and premature wear. Mishandling gages can result in unnecessary costs, both for replacement gages and, more importantly, for improperly rejected products. Gages should also be calibrated regularly to ensure they are within acceptable tolerances.

Use the following tips to properly maintain your gages:

1. Keep gages clean and lightly oiled, if possible, both during use and when in storage. Light oil will prevent rusting, greatly increase wear life, and help to prevent "loading" or "smearing" of product material onto the gage threads. (In some applications, using oil on a workpiece might not be acceptable, so be sure to check the material specifications before using an oiled gage.) Using Seal Peel plastic dip on gage threads in storage is also acceptable.
2. Protect gages from nicks, jams, and other damage by providing a protective box in the work area.

Using Gages Correctly

Correctly using gages will not only extend their life but also yield accurate results when evaluating threads. Refer to the following usage tips:

- 1) Clean parts before gaging. Remove any dirt or chips so the gage can check product size unaffected by foreign material.
- 2) Align and start threads carefully. Cross-threading can damage the end threads of both the product and the gage.
- 3) Gages are not sizing tools! They must travel over the full length of the product threads or, in the case of blind holes or imperfect run-out threads, they should travel as much of the length required to enable assembly.
- 4) GO gages must enter or be entered by product threads without undue force or pressure.
- 5) NO GO gages have limitations on entry. It is usually preferable that they do not enter; however, some entry is generally allowable and the limitations vary for different gage standards. For inch threads, NO GO entry is limited to not more than 3 turns; for metric threads, NO GO entry is limited to not more than 2 turns.
- 6) Don't force the gage. Use reasonable light pressure only.
- 7) Use thread ring gages equally from both faces. We often find that ring gages submitted for re-inspection or reconditioning are tapered from wear only on the stamped side. The ring gage is designed to be used from either face, and alternating use from each end will prolong wear life.

By properly using and caring for your gages, you can achieve a number of sound, economical benefits:

- Prolonged wear life
- Extended periods between calibrations
- More reliable results in evaluating product threads
- Acceptance of the maximum size range of the product tolerance
- Preventing defective threads from reaching the market

Greenfield LIGHTNING® SERVICE

Rely on Greenfield's Lightning® Service program to deliver the special taps you need, when and where you need them, via your local authorized distributor. Within minutes of a call, Greenfield can quote, process, and release your order to the factory. This rapid response allows us to make and ship your order quickly, often with only a 24-hour lead time.

Greenfield special taps can be used for tapping popular materials such as Steels, Cast Iron, Aluminum, or Brass. We can also custom design tools to thread even the most difficult materials such as Inconel, Titanium, and other High-Pressure Alloys. When success is measured by accurate thread pitch diameters and proper gage fits, you can depend on Greenfield Tap and Die for special taps made to your order.

Let Greenfield's Lightning Service program spark your production. Contact your authorized Greenfield distributor for details.

**Greenfield LIGHTNING®
SERVICE Available**

► QUICK REFERENCE

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Material	Condition	Hardness		Speed FPM	EM Style Taps										Forming Taps *EM- EM-TL TLD #5500		GUN® GUN GP+
		BHN	HRC		SS	SS TiN	SS TiCN	Mold	NI	NI TiCN	TI	AL	ALS	EM-TL TiCN	TLD TiCN	#5500	
Low Carbon Steel, Wrought 1005-1029, 1513-1522	Normalized or	< 175	< 9	50-75	•	•	•							•	•	•	•
	Cold Drawn	< 276	< 30	40-60	•	•	•										•
Medium Carbon Steel, Wrought 1030-1055, 1525-1522	Normalized	< 250	< 25	30-50	•	•	•							•	•	•	•
	Hardened	< 350	< 38	15-25	■	■	■	•	•	•							
High Carbon Steel, Wrought 1060-1069, 1070-1078	Annealed	< 275	<30	30-50	•	•	•							•	•	•	•
	Hardened	<350	< 38	15-25				■	•	•							
Low Carbon Alloy Steel, Wrought 4023, 4320, 5120	Normalized	< 250	< 25	30-45	•	•	•							•	•	•	•
	Hardened	< 350	<38	25-35				•	•	•							
Medium Carbon Alloy Steel, Wrought 4032, 4130	Normalized	< 250	< 25	25-35	•	•	•							•	•	•	•
	Hardened	< 350	< 38	15-20				•	•	•							
Aluminum Alloys, Wrought 2011-2025, 5050	Cold Drawn	< 80	-	95-125	■†	•						•	•	■	■	•	
	Treated	< 150	-	75-100	■†	•						•	•	■	■	•	
Aluminum Die Cast	As Cast	< 100	-	100-150	■†	•						•	•	■	■	•	
	Treated	<125	-	70-100	■†	•						•	•	■	■	•	
High Silicon Aluminum	Si > 10%	<125	-	25-40	■†	•						•	•	■	■	•	■
Brass, Cast		-	-	50-70	■†	•			■					■	■	•	
Bronze, Cast		-	-	40-60	■†	•			■					■	■	•	
Copper		-	-	30-50	■†	•					■	•	•	■	■	•	
Copper, Beryllium		-	-	35-80	■†	•					■	•		■	■	•	
Magnesium Alloys		< 100	-	100-150	■†	•					■		•	■	■	•	
Type 8 Exotic Cobalt Base Alloys																	
Wrought and Cast																	
AiResist 213, V36, S-816	Treated	< 230	< 22	5-8	■				•	•							
Haynes 25(L-605), Stellite	Treated/Aged	<320	<34	3-5					•	•	■						
HS-31, HS-51	Cast/Aged	<290	<32	3-5					•	•	■						
Type 9 Exotic Iron Base Alloys, Wrought																	
A-286, Discaloy, N-155	Treated	<230	<22	10-15	■	■			•								
V57, W-545, Incoloy 800, Incoloy 801	Treated/Aged	<320	<34	7-10					•		■						
Incoloy 802, 16-25-6, 19-90L									•								
Type 10 Tool Steels, Wrought																	
H10, H11, H12, H13, H14	Annealed	<250	<25	15-25	•	■	■	•									
H19, H21, H26, H42	Hardened	<375	<41	15-20				•	■	•							
D2, D3, D4, D5, D7, A7	Annealed	<150		30-45	•	■		•									
P2, P4, P5, P6	Annealed	<250	<25	10-15	■		■	•									
P20, P21	Annealed	<200	<16	25-35	■	■	■	•									
Type 11 Armor Plate, Wrought																	
HY80, HY100	Annealed	<250	<25	25-35	•	•		■	•	•							
MIL-S-12560, MIL-S-16216	Hardened	<300	<33	18-30	■	■		■	•	•							
	Hardened	<350	<38	15-25				■	•	•							
Type 12 High Strength Steels, Wrought																	
300M, 4340, D6AC, 4340Si	Normalized	<350	<38	15-20	■	■	■	■	•	•							
98BV40	Normalized	<400	<43	10-15				■	•	•							
	Hardened	<460	<48	5-7					•	•							
HP9-4-20, HP25, HP30, HP45	Annealed	<375	<41	10-15				■	•	•							
	Hardened	<460	<48	7-10					•	•							
Type 13 Maraging Steels, Wrought																	
200Grade, 250Grade, 300Grade	Annealed	<325	<35	15-20	■		■	■	•	•							
350Grade, HY230																	
120Grade, 180Grade	Annealed	<325	<35	25-35	■		■	■	•	•							
	Maraged	<425	<45	7-10					•	•							

• FIRST CHOICE ■ ALTERNATE

* EM-TLD a TiCN coated forming tap designed to tap dry, or with mist coolant for 1 to 1 1/2 diameters in tapping depth. EM forming taps & TRU-LEDE forming taps can be run 1.5 to 2 times faster than the tapping speeds recommended for thread cutting taps.

Recommendations adapted from the Machining Data Handbook, 3rd edition, by permission of the Machinability Data Center, © 1980 by Metcut Research Associates, Inc.
Continued on next page.

†Uncoated finish

Technical Data



Tapping Guide

HIGH PERFORMANCE TAPS

THREAD MILLS

PRODUCTION TAPS

MAINTENANCE TOOLS

GAGES

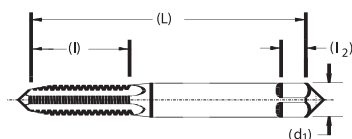
TECHNICAL
INFORMATION & INDEX

Material	Condition	Hardness		Speed FPM	EM Style Taps							Forming Taps		GUN® GUN GP+
		BHN	HRC		SS	SS TiN	SS TiCN	Mold	NI	NI TiCN	TI	EM-TL TiCN	*EM-TLD TiCN	
Type 1 Ferritic Stainless Steel, Wrought 405, 409, 430, 434, 436, 442, 446, 502	Annealed	< 185	<12	25-40	•	•	•					•	■	•
Type 2 Austenitic Stainless Steel, Wrought 201, 202, 301, 302, 303, 304, 305, 308, 309, 310, 314, 316, 317, 321, 330, 347, 384, 385	Annealed	< 185	<12	18-25	•	•	•					•	■	•
	Cold Drawn	< 275	< 30	12-20	•	•	•		•	•		•	■	•
	Annealed	< 250	< 25	12-20	•	•	•		•	•		•	■	•
	Cold Drawn	< 375	< 41	7-15		■	■		•	•				
Type 3 Martensitic Stainless - Steel Wrought 403, 410, 420, 422	Annealed	< 175	< 9	25-40	•	•	•		■			•	■	•
501, 502	Annealed	< 225	< 21	18-30	•	•	•		■			•	■	•
	Hardened	< 325	< 35	18-25	■	•	•		•	•				
	Hardened	< 425	< 45	10-18		■	■		•	•				
414, 431	Annealed	< 275	< 30	18-25	■	■	■		•	•				
Greek Ascoloy	Hardened	< 325	< 35	12-20	■	■	■		•	•				
	Hardened	< 425	< 45	7-15					•	•				
440A, 440B, 440C	Annealed	< 275	< 30	12-20	■	■	■		•	•				
	Hardened	< 325	< 35	10-18		■	■		•	•				
	Hardened	< 425	< 45	7-15					•	•				
Type 4 Precipitation Hardening - Stainless Steel Wrought 15-5PH, 16-6PH, 17-4PH	Annealed	< 200	< 16	18-30		■		•	•	•				
17-7PH, AF71, AM350, AM355	Hardened	< 325	< 35	15-25		■		■	•	•				
PH13-8MO, PH14-8MO, PH15-7MO	Hardened	< 375	< 41	12-20				■	•	•				
Custom 450 HNM	Hardened	<440	< 47	6-12				■	•	•				
Type 5 Titanium Alloys, Wrought Commercial Pure	Annealed	< 170	< 7	40-60	•	•					•			
Commercial Pure	Annealed	< 200	< 16	30-50	■	■					•			
Commercial Pure	Annealed	< 275	< 30	25-40		■					•			
Ti-5AL-2.5Sn	Annealed	< 340	< 37	15-25							•			
Ti-6AL-4V	Annealed	< 350	< 38	15-20							•			
Ti-6AL-6V-2Sn	Annealed	< 370	< 40	10-15							•			
Ti-6AL-4V	Treated	< 380	< 41	7-10							•			
Ti-6AL-6V-2Sn	Treated	< 440	< 46	5-7							•			
Type 6 Nickel Alloys, Wrought and Cast Nickel 200 - Nickel 270	Annealed	< 170	< 7	15-25					•	•	■			
Monel 400, 401, 404, Monel R405	Annealed	< 240	< 23	15-20					•	•	■			
Monel 502, Monel K500	Treated	< 360	< 39	3-5					•	•	■			
Perma Nickel 300, Duranickel 301									•	•				
Type 7 Exotic Nickel, Base Alloys - Wrought and Cast Inconel 625, 702, 706, 718, 721, 722	Annealed	< 300	< 33	7-10					•	•	■			
Inconel X-759, 751, 901, Haynes 263	Treated	< 400	< 43	4-7					•	•	■			
M252, Nimonic 75, 80, Waspaloy									•	•				
Astroloy, Inconel 700	Treated	< 300	< 33	5-8					•	•	■			
Nimonic 90, 95, Rene 41, 63	Treated	< 400	< 43	3-5					•	•	■			
Udimett 500, 700, 710									•	•				
AF2-1DA, Rene 77, Rene 95	Treated	< 390	< 43	4-7					•	•	■			
Unitemp 1753	Treated	< 475	< 49	3-5					•	•	■			
Hastelloy B, C, G, S, X	Annealed	< 220	< 20	7-10					•	•	■			
Incoloy 804, Incoloy 825	Cold Drawn	< 310	< 34	4-7					•	•	■			
Inconel 600, Inconel 601									•	•				
Udimet 630, Retractaloy 26									•	•				
M252, Rene 80, Rene 125	As cast or	< 320	< 34	3-5					•	•	■			
B-1900, GMR-235, IN-100, IN-738	Cast/Aged								•	•				
MAR-M200, 246, 421, 432									•	•				
Inconel 718, Udimet 500, 700									•	•				

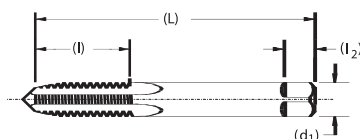
*See note on page 181.

• FIRST CHOICE ■ ALTERNATE

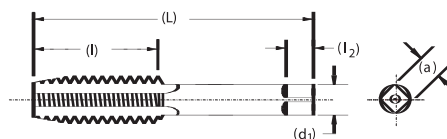
Standard Tap Dimensions, Ground Thread - Reference USCTI Table 302



Blank Design 1



Blank Design 2



Blank Design 3

Nominal Diameter Range Inches Over To (Inc.)	Machine Screw Size Number (Inches)	Nominal Fractional Diameter Inches	Nominal Metric Diameter Millimeters, (Inches)	Blank Design No.	Overall Length L	Thread Length l	Square Length l2	Shank Diameter d1	Square Size 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
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

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HIGH PERFORMANCE TAPS

THREAD MILLS

PRODUCTION TAPS

MAINTENANCE TOOLS

GAGES

TECHNICAL INFORMATION & INDEX



Technical Data

Standard Tap Dimensions, Ground Thread - Reference USCTI Table 302

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 - l2	.0520	1.0100	Plus or Minus	.031
	1.0100	4.0100	Plus or Minus	.063
Diameter of shank - d1	.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

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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 USCTI Table 303.

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

NOTES

Tap sizes .395" and smaller have an external center on the thread end (may be removed on bottoming taps). Sizes .125" 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 USCTI Table 327 and for Metric Threads see USCTI Table 337.

For eccentricity tolerances of tap elements see USCTI Table 317.

Importance of Proper Lubricants in Tapping

Applying the proper lubricants in tapping operations can result in longer tap life, increased production, better workpiece size control, smoother and more accurate threads, less resharping, and more efficient chip removal.

Generally, for best tap performance, straight cutting oil should be used. For non-ferrous and non-metallic materials, a coolant or a cutting fluid (light oil or soluble oil) is recommended.

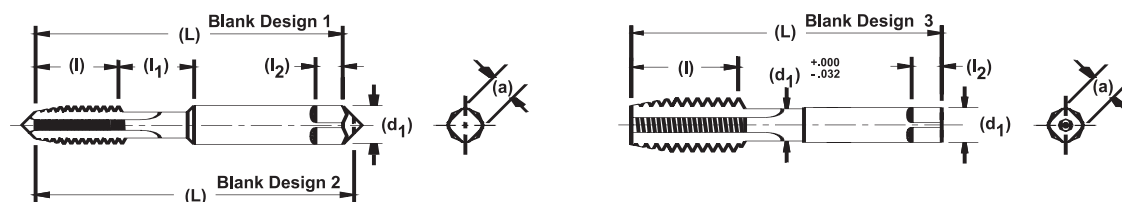
Often, machining centers are equipped with a coolant or a cutting fluid that contains enough water and oil to provide adequate cooling and lubrication for a variety of tools and workpieces. However, most soluble blends are not suitable for tapping applications. Tapping, especially with thread-forming taps, requires more lubrication than cooling. A coolant or cutting fluid might lack the lubrication necessary to obtain acceptable tool life and part finish. Consult your coolant specialist for recommendations.

After you select the proper lubricant, it is also important to choose the right method of application and pressure. For tapping, use more than one nozzle around the tap. The nozzles should be located as close to the surface of the part as possible, be positioned at an angle close to the axis of the tool, and point directly into the hole to flush the chips from the flutes. For horizontal tapping, where the tap is stationary and the workpieces is rotating, consider using two streams of lubricant, one on each side of the tap.

Whether you are tapping vertically, horizontally, or on an angle, make sure the lubricant reaches the cutting lands of the tap at all times, especially at the point or chamfered portion. Brushing or squirting oil or fluid onto the tap does not provide sufficient lubrication. In fact, heavy viscosity oil may cause the chips to "stick" or "cling" to the tap, increasing the chance of breakage. In addition, when the lubricant is automatically applied only on the forward motion of the tap, you should time the application of the lubricant so that it will reach the hole before the tap starts to cut. This applies particularly to machines on which the cutting fluid is automatically shut off during the tap's reversal.

For maximum effectiveness, it is often best to force the lubricant into the hole under pressure. The amount of pressure applied varies depending on the tapping method, hole depth, and tapping speed.

Try to keep tapping lubricants as clean as possible using a filtering system or other equipment. Dust and other foreign particles can contaminate the oil and decrease its effectiveness. Be sure to thoroughly clean machines and oil tanks when adding new lubricant and at regular intervals to ensure optimum tapping results.



General Dimensions

Nominal Diameter Range—Inches Over To (inc.)		Machine Screw Size No. (Inches)	Nominal Fractional Diameter Inches	Nominal Metric Diameter MM (inches)	Blank Design No.	Overall Length L	Tap Dimensions—Inches				
							Thread Length l	Neck Length l1	Square Length l2	Shank Diameter d1	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)	1	2.38	.50	.38	.25	.1940	.152
				M5 (.1969)							
.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 (.5541)	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	.3670	.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

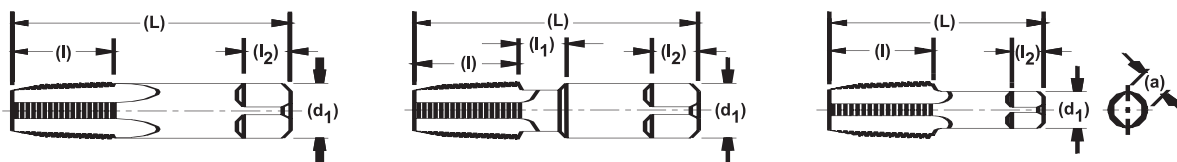
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Notes: Thread Length l is based on a length of 12 pitches of the UNC thread series.
 Thread Length l is a minimum value and has no tolerance.
 When Thread Length l is added to Neck Length l1, the total shall be no less than the minimum USCTI Table 302 Thread Length l.
 Unless otherwise specified, all tolerances are in accordance with USCTI Table 302.
 For eccentricity tolerances, see USCTI Table 317.
 Table 302 is provided for reference only. GTD's tap dimensions may differ.



Technical Data

Standard Pipe Tap Dimensions, Straight and Taper, Ground Thread - Ref. USCTI Table 311



General Dimensions

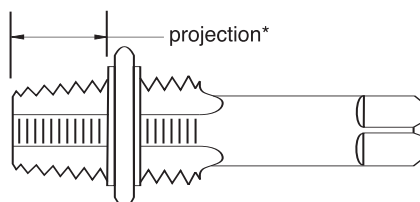
Dimensions—Inches						
Nominal Size Inches	Length Overall L	Length of Thread l	Length of Square l2	Diameter of Shank d1	Size of Square a	Length Optional Neck l1
1/16	2.13	.69	.38	.3125	.234	.375
1/8	2.13	.75	.38	.3125	.234	—
1/8	2.13	.75	.38	.4375	.328	.375
1/4	2.44	1.06	.44	.5625	.421	.375
3/8	2.56	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	4.25	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	—

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" inc.	Plus or Minus	.125
Length of Square - l2	1/16" to 3/4" inc.	Plus or Minus	.031
	1" to 4" inc.	Plus or Minus	.063
Diameter of Shank - d1	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

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



Nominal Size Inches	Threads Per Inch	Projection* (inches)	Projection Tolerance + or -	Taper Per Foot Limits		L1 Length	Tap Drill Size** NPT, ANPT, NPTF
				Min.	Max.		
1/16	27	.312	.063	.719	.781	.160	C
1/8	27	.312	.063	.719	.781	.1615	Q
1/4	18	.459	.063	.719	.781	.2278	7/16
3/8	18	.454	.063	.719	.781	.240	9/16
1/2	14	.579	.063	.719	.781	.320	45/64
3/4	14	.565	.063	.719	.781	.339	29/32
1	11 1/2	.678	.094	.719	.781	.400	1 9/64
1 1/4	11 1/2	.686	.094	.719	.781	.420	1 31/64
1 1/2	11 1/2	.699	.094	.719	.781	.420	1 23/32
2	11 1/2	.667	.094	.719	.781	.436	2 3/16
2 1/2	8	.925	.094	.734	.781	.682	2 39/64
3	8	.925	.094	.734	.781	.766	3 15/64
3 1/2	8	.938	.125	.734	.781	.821	-
4	8	.950	.125	.734	.781	.844	-

NOTE:

*Distance small end of tap projects through L1 Taper Thread Ring Gage.

**Recommended size given permits direct tapping without reaming the hole, but only gives a full thread for approximately the L1 length.

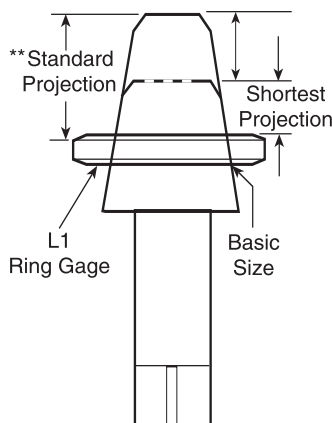
Pipe Taps

General purpose pipe taps are appropriate for threading a wide variety of materials, both ferrous and non-ferrous.

Ground thread pipe taps are standard in American Standard Pipe Form (NPT) and American Standard Dryseal Pipe Form (NPTF). NPT threads require the use of a sealer, like Teflon® tape or pipe compound. Dryseal taps are used to tap fittings which will give a pressure-tight joint without the use of a sealer.

The nominal size of a pipe tap is that of the pipe fitting to be tapped, not the actual size of the tap. The thread tapers 3/4" per foot.

All pipe taps are furnished with 2 1/2 to 3 1/2 thread chamfer.



Short projection pipe taps are made with a projection shorter than standard for taper pipe tapping where the depth of tapping is limited.

Special short projection taper pipe taps can be furnished with American National Standard Taper Pipe thread (ANPT), or Dryseal American National Standard Taper Pipe thread (NPTF, PTF-SAE Short, or PTF-SPL Extra Short).

For information on short projection pipe taps and hole preparation for NPT, NPTF, and ANPT internal pipe threads, consult Greenfield's Technical Bulletins.

Special short projection pipe taps and left hand pipe taps are available through Lightning® Service.

**Greenfield LIGHTNING®
SERVICE Available**

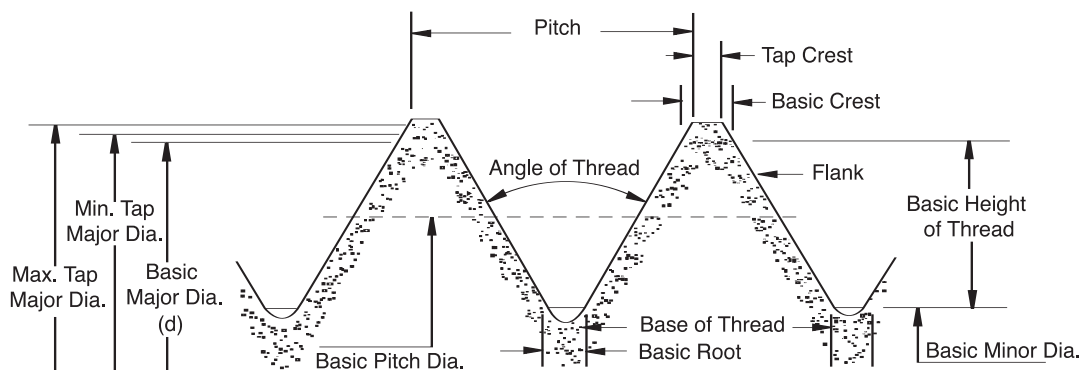


Technical Data

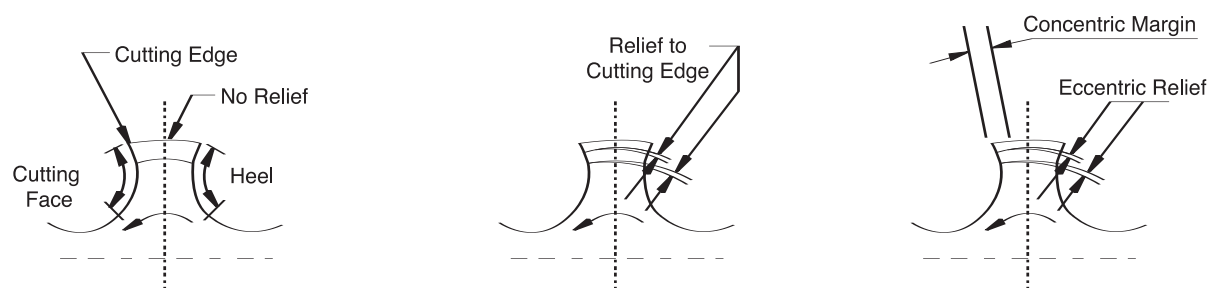
Illustrations of Tap Terms

HIGH PERFORMANCE TAPS

THREAD MILLS



PRODUCTION TAPS

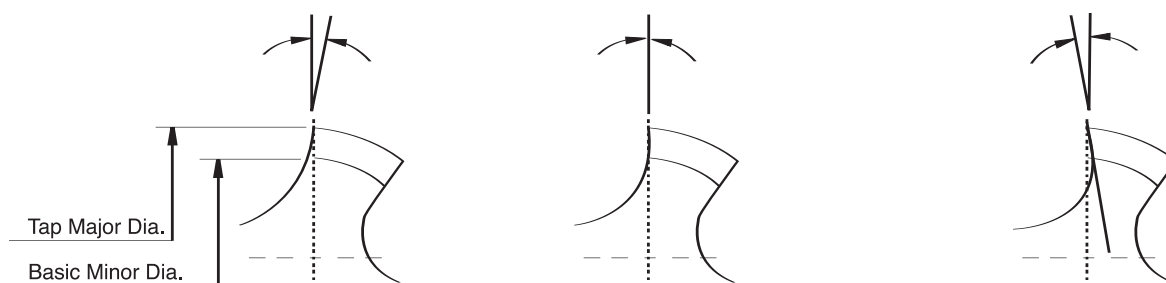


Concentric

Eccentric Relief

Con-Eccentric Relief

MAINTENANCE TOOLS

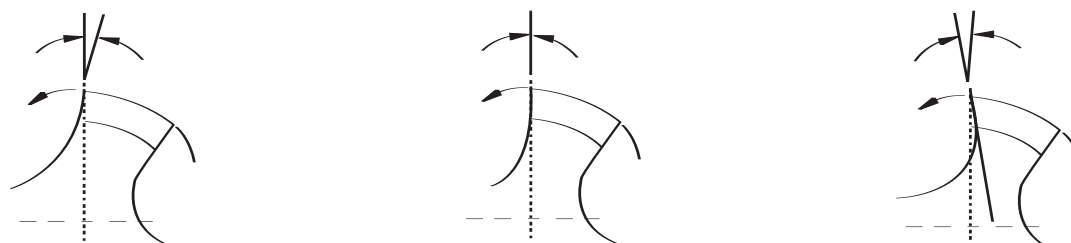


Negative Hook

0° Hook

Positive Hook

GAGES



Negative Rake

Radial Rake

Positive Rake

TECHNICAL
INFORMATION & INDEX

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Coating	Properties and Application	Precautions
Titanium Nitride (TiN)	Proprietary TiN coating (hardness 2300 Vickers) offers significantly improved wear life and thread finish, often at higher tapping speeds, in a broad range of materials, especially steels, irons, and plastics. Golden color.	Use with caution in non-ferrous materials such as aluminum because of tendency to gall.
Titanium Carbonitride (TiCN)	Proprietary TiCN coating (hardness 3000 Vickers) is harder, tougher, and more wear resistant than TiN under conditions of moderate cutting temperatures. Like TiN, TiCN may be used at higher cutting speeds in a broad range of materials, especially steels and irons. Blue-gray color.	Use with caution in non-ferrous materials such as aluminum because of tendency to gall. TiAlN is a better choice when used at extreme temperatures.
Titanium Nitride + Chromium Carbide Carbon (TiN + CrC/C)	Proprietary coating (hardness 2300 Vickers) that combines the wear resistance of smooth TiN coating with a lubricous top layer of chromium carbide carbon. Effective in stainless steel and non-ferrous materials including aluminum and titanium. Ideal choice for 300 series stainless steels, wrought and diecast aluminums. Black-gray color.	Effective in both ferrous and non-ferrous materials.
Titanium Aluminum Nitride (TiAlN)	Nanolayer TiAlN coating (hardness 3300 Vickers) offers improved wear life and thread finish, especially in conditions where high temperatures can be generated. Use for PH stainless steels and nickel-based alloys like inconel. Violet-gray color.	Use with caution in non-ferrous materials because of tendency to gall.
Chromium Nitride (CrN)	CrN is medium hard (hardness 1800 Vickers) and has a lower wear resistance than TiN, TiCN, and TiAlN. However, unlike these coatings, CrN does not gall when used in some non-ferrous work materials. Use for brass, bronze, zinc alloys, and magnesium alloys. Silver color.	Ineffective in ferrous materials.
Nitride (MAXI #1)	Hardened case extends wear life in abrasive materials. Use for aluminum and other non-ferrous materials.	Avoid on taper pipe, fast spiral, and small diameter (<#6) or fine pitch taps due to tendency for thread chipping.
Oxide (SH-50)	Helps prevent galling in ferrous (iron-based) materials. For free machining steel. Use for steels, stainless steels, and irons.	Has a tendency to cause galling in non-ferrous materials such as aluminum.
Nitride and Oxide (SH-47)	Combines the benefits of nitride and oxide surface treatments. For steels, stainless steels, and nickel alloys.	See precautions for nitride and oxide surface treatments.

Alternate Coatings Available.

(Full package quantities only)



Technical Data



HSS Tap Coating & Surface Treatment Guide

Material Class	Material Type	Examples	TiN +					Nitride	Oxide	Nitride/Oxide
			TiN	TiCN	CrC/C	TiAlN	CrN	MAXI#1	SH-50	SH-47
Speed compared to uncoated >			+50% Speed	+50% Speed	+50% Speed	+100% Speed	Same Speed	Same Speed	Same Speed	Same Speed
Steel	Carbon steels	1010, 1045	ALT	BEST	ALT	NR	NR	NR	POSS	POSS
	Alloy steels	4140, 8620	ALT	BEST	ALT	POSS	NR	NR	POSS	POSS
	Tool steels	A2, D2, H13	ALT	BEST	ALT	ALT	NR	NR	POSS	POSS
Stainless	Martensitic stainless	414, 440	ALT	BEST	ALT	ALT	NR	NR	POSS	POSS
	PH stainless	15-5PH, 17-4PH	ALT	ALT	ALT	BEST	NR	NR	POSS	POSS
	Austenitic stainless	304, 316	ALT	ALT	BEST	ALT	NR	NR	POSS	POSS
Cast iron	Cast irons, ductile		ALT	BEST	ALT	ALT	NR	POSS	POSS	POSS
	Cast irons, gray	Class 20 -50	ALT	BEST	ALT	ALT	NR	POSS	POSS	POSS
Non-ferrous	Aluminum, wrought	1100, 2024	NR	NR	BEST	NR	ALT	ALT	NR	NR
	Aluminum silicon, cast	319, 360, 380	POSS	ALT	BEST	NR	POSS	ALT	NR	NR
	Copper and alloys		NR	NR	POSS	NR	ALT	ALT	NR	NR
	Brass		NR	NR	POSS	NR	ALT	ALT	NR	NR
	Bronze		NR	NR	POSS	NR	ALT	ALT	NR	NR
	Zinc		NR	NR	POSS	NR	ALT	ALT	NR	NR
	Magnesium and alloys		NR	NR	POSS	NR	ALT	ALT	NR	NR
	High-temp	Titaniums, pure	CP Ti	NR	NR	BEST	NR	POSS	ALT	NR
	Titanium, alloys	Ti-6Al-4V	POSS	POSS	BEST	POSS	POSS	ALT	NR	NR
	Nickel-based alloys	Monel, Inconel	ALT	ALT	ALT	BEST	ALT	POSS	POSS	POSS
	Iron-based alloys	A-286, Incoloy	ALT	ALT	ALT	BEST	NR	POSS	POSS	POSS
	Cobalt-based alloys	Haynes	ALT	ALT	ALT	BEST	NR	POSS	POSS	POSS
Other	Plastics, soft		BEST	ALT	POSS	NR	POSS	ALT	NR	NR
	Plastics, abrasive		ALT	BEST	POSS	NR	POSS	ALT	NR	NR
	Graphite		ALT	BEST	POSS	NR	POSS	ALT	NR	NR

BEST: First choice among all commercially available coatings. Should provide superior results in the proper application.

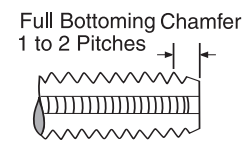
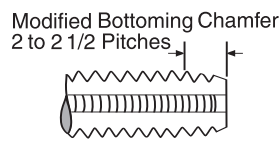
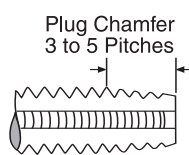
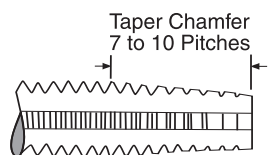
ALT (Alternate): Provides a significant performance benefit over uncoated tool. This may include improved life, productivity, size, finish, or any combination of these benefits.

POSS (Possible): Performance often application dependent. Results are difficult to predict and may be variable.

NR (Not Recommended): Not compatible with the selected material. Likely to perform worse than an uncoated tool and the benefit may not justify the cost.

Chart applies to non-heat-treated materials, generally with hardness levels less than 275 Bhn or 28 HRC.

■ Tap Chamfers



Hand Tap Chamfers

Taper (7 to 10 pitches)

The taper chamfer has the longest standard chamfer ensuring easier starting. It requires less tapping torque because of more working teeth.

Plug (3 to 5 pitches)

The most common chamfer for use by hand or machine in through or blind holes. This chamfer is more efficient than a bottoming or modified-bottoming chamfer.

Modified-Bottoming (2 to 2 1/2 pitches)

This short chamfer allows for threading close to the bottom of blind holes. Due to the slightly longer chamfer and more working teeth, this chamfer is more efficient than a bottoming chamfer.

Bottoming (1 to 2 pitches)

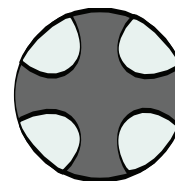
For threading close to the bottom of blind holes, the bottoming chamfer is the least efficient chamfer available.

■ Hand Tap Optional Flutes

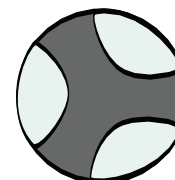
Many sizes of hand taps are available with optional fluting, or fewer flutes than standard. Having two or three fewer flutes provides more space for the storage of chips.

The selection of the proper tap depends entirely on the conditions under which the tap is to be used. Try a three-fluted tap first. Due to its construction, it is stronger than a two-fluted tap. The two-fluted tap, having wider flutes, has less total land width and therefore does not give as much support in tapping as the three-fluted tap. It is also more difficult to maintain the size of the tapped hole with a two-fluted tap than with taps having three flutes.

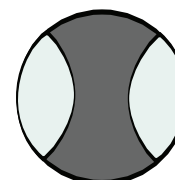
4-flute tap available chip storage space = 100%



3-flute tap available chip storage space = 127%



2-flute tap available chip storage space = 122%



Chip storage space shown in green



Technical Data

Hardness Conversion Table

Knowing the hardness of the work material to be tapped is essential in the selection of the best tap for the job.

10 M/M Ball 3000 Kg	120° Cone 150 Kg	1/16" Ball 100 Kg	Model C	1000 Lb. Per Sq. In.	10 M/M Ball 3000 Kg	120° Cone 150 Kg	1/16" Ball 100 Kg	Model C	1000 Lb. Per Sq. In.
Brinell	Rockwell C	Rockwell B	Shore Scleroscope	Tensile Strength	Brinell	Rockwell C	Rockwell B	Shore Scleroscope	Tensile Strength
800	72	—	100	—	276	30	105	42	136
780	71	—	99	—	269	29	104	41	132
760	70	—	98	—	261	28	103	40	129
745	68	—	97	367	258	27	102	39	127
725	67	—	96	357	255	26	102	39	125
712	66	—	95	350	249	25	101	38	123
682	65	—	93	337	245	24	100	37	119
668	64	—	91	326	240	23	99	36	117
652	63	—	89	318	237	23	99	35	115
626	62	—	87	306	229	22	98	34	113
614	61	—	85	299	224	21	97	33	110
601	60	—	83	292	217	20	96	33	107
590	59	—	81	290	211	19	95	32	104
576	57	—	79	281	206	18	94	32	102
552	56	—	76	270	203	17	94	31	100
545	55	—	75	268	200	16	93	31	98
529	54	—	74	259	196	15	92	30	96
514	53	120	72	254	191	14	92	30	94
502	52	119	70	247	187	13	91	29	92
495	51	119	69	244	185	12	91	29	91
477	49	118	67	233	183	11	90	28	90
461	48	117	66	227	180	10	89	28	89
451	47	117	65	223	175	9	88	27	86
444	46	116	64	219	170	7	87	27	84
427	45	115	62	209	167	6	87	27	82
415	44	115	60	204	165	5	86	26	81
401	43	114	58	196	163	4	85	26	80
388	42	114	57	191	160	3	84	25	78
375	41	113	55	184	156	2	83	25	76
370	40	112	54	182	154	1	82	25	75
362	39	111	53	179	152	—	82	24	74
351	38	111	51	173	150	—	81	24	74
346	37	110	50	170	147	—	80	24	72
341	37	110	49	168	145	—	79	23	71
331	36	109	47	163	143	—	79	23	70
323	35	109	46	158	141	—	78	23	69
311	34	108	46	153	140	—	77	22	69
301	33	107	45	148	135	—	75	22	67
293	32	106	44	144	130	—	72	22	65
285	31	105	43	140	—	—	—	—	—

Drill Size	Decimal Inches	Drill Size	Decimal Inches	Drill Size	Decimal Inches	Drill Size	Decimal Inches	Drill Size	Decimal Inches	Drill Size	Decimal Inches
0,30 mm	.0118	54	.0550	3,10 mm	.1220	5,50 mm	.2165	8,50 mm	.3346	9/16	.5625
0,32 mm	.0126	1,40 mm	.0551	1/8	.1250	7/32	.2188	8,60 mm	.3386	14,50 mm	.5709
80	.0135	1,45 mm	.0571	3,20 mm	.1260	5,60 mm	.2205	R	.3390	37/64	.5781
0,35 mm	.0138	1,50 mm	.0591	30	.1285	2	.2210	8,70 mm	.3425	14,75 mm	.5807
79	.0145	53	.0595	3,30 mm	.1299	5,70 mm	.2244	11/32	.3438	15,00 mm	.5906
0,38 mm	.0150	1,55 mm	.0610	3,40 mm	.1339	1	.2280	8,80 mm	.3465	19/32	.5938
1/64	.0156	1/16	.0625	29	.1360	5,80 mm	.2283	S	.3480	15,25 mm	.6004
0,40 mm	.0157	1,60 mm	.0630	3,50 mm	.1378	5,90 mm	.2323	8,90 mm	.3504	39/64	.6094
78	.0160	52	.0635	28	.1405	A	.2340	9,00 mm	.3543	15,50 mm	.6102
0,42 mm	.0165	1,65 mm	.0650	9/64	.1406	15/64	.2344	T	.3580	15,75 mm	.6201
0,45 mm	.0177	1,70 mm	.0669	3,60 mm	.1417	6,00 mm	.2362	9,10 mm	.3583	5/8	.6250
77	.0180	51	.0670	27	.1440	B	.2380	23/64	.3594	16,00 mm	.6299
0,48 mm	.0189	1,75 mm	.0689	3,70 mm	.1457	6,10 mm	.2402	9,20 mm	.3622	16,25 mm	.6398
0,50 mm	.0197	50	.0700	26	.1470	C	.2420	9,30 mm	.3661	41/64	.6406
76	.0200	1,80 mm	.0709	25	.1495	6,20 mm	.2441	U	.3680	16,50 mm	.6496
75	.0210	1,85 mm	.0728	3,80 mm	.1496	D	.2460	9,40 mm	.3701	21/32	.6562
0,55 mm	.0217	49	.0730	24	.1520	6,30 mm	.2480	9,50 mm	.3740	16,75 mm	.6594
74	.0225	1,90 mm	.0748	3,90 mm	.1535	1/4, E	.2500	3/8	.3750	17,00 mm	.6693
0,60 mm	.0236	48	.0760	23	.1540	6,40 mm	.2520	V	.3770	43/64	.6719
73	.0240	1,95 mm	.0768	5/32	.1562	6,50 mm	.2559	9,60 mm	.3780	17,25 mm	.6791
0,62 mm	.0244	5/64	.0781	22	.1570	F	.2570	9,70 mm	.3819	11/16	.6875
72	.0250	47	.0785	4,00 mm	.1575	6,60 mm	.2598	9,80 mm	.3858	17,50 mm	.6890
0,65 mm	.0256	2,00 mm	.0787	21	.1590	G	.2610	W	.3860	45/64	.7031
71	.0260	2,05 mm	.0807	20	.1610	6,70 mm	.2638	9,90 mm	.3898	18,00 mm	.7087
0,70 mm	.0276	46	.0810	4,10 mm	.1614	17/64	.2656	25/64	.3906	23/32	.7188
70	.0280	45	.0820	4,20 mm	.1654	H	.2660	10,00 mm	.3937	18,50 mm	.7283
69	.0292	2,10 mm	.0827	19	.1660	6,80 mm	.2677	X	.3970	47/64	.7344
0,75 mm	.0295	2,15 mm	.0846	4,30 mm	.1693	6,90 mm	.2717	10,20 mm	.4016	19,00 mm	.7480
68	.0310	44	.0860	18	.1695	I	.2720	Y	.4040	3/4	.7500
1/32	.0312	2,20 mm	.0866	11/64	.1719	7,00 mm	.2756	13/32	.4062	49/64	.7656
0,80 mm	.0315	2,25 mm	.0886	17	.1730	J	.2770	Z	.4130	19,50 mm	.7677
67	.0320	43	.0890	4,40 mm	.1732	7,10 mm	.2795	10,50 mm	.4134	25/32	.7812
66	.0330	2,30 mm	.0906	16	.1770	K	.2810	27/64	.4219	20,00 mm	.7874
0,85 mm	.0335	2,35 mm	.0925	4,50 mm	.1772	9/32	.2812	10,80 mm	.4252	51/64	.7969
65	.0350	42	.0935	15	.1800	7,20 mm	.2835	11,00 mm	.4331	20,50 mm	.8071
0,90 mm	.0354	3/32	.0938	4,60 mm	.1811	7,30 mm	.2874	7/16	.4375	13/16	.8125
64	.0360	2,40 mm	.0945	14	.1820	L	.2900	11,20 mm	.4409	21,00 mm	.8268
63	.0370	41	.0960	4,70 mm, 13	.1850	7,40 mm	.2913	11,50 mm	.4528	53/64	.8281
0,95 mm	.0374	2,45 mm	.0965	3/16	.1875	M	.2950	29/64	.4531	27/32	.8438
62	.0380	40	.0980	4,80 mm, 12	.1890	7,50 mm	.2953	11,80 mm	.4646	21,50 mm	.8465
61	.0390	2,50 mm	.0984	11	.1910	19/64	.2969	15/32	.4688	55/64	.8594
1,00 mm	.0394	39	.0995	4,90 mm	.1929	7,60 mm	.2992	12,00 mm	.4724	22,00 mm	.8661
60	.0400	38	.1015	10	.1935	N	.3020	12,20 mm	.4803	7/8	.8750
59	.0410	2,60 mm	.1024	9	.1960	7,70 mm	.3031	31/64	.4844	22,50 mm	.8858
1,05 mm	.0413	37	.1040	5,00 mm	.1969	7,80 mm	.3071	12,50 mm	.4921	57/64	.8906
58	.0420	2,70 mm	.1063	8	.1990	7,90 mm	.3110	1/2	.5000	23,00 mm	.9055
57	.0430	36	.1065	5,10 mm	.2008	5/16	.3125	12,80 mm	.5039	29/32	.9062
1,10 mm	.0433	7/64	.1094	7	.2010	8,00 mm	.3150	13,00 mm	.5118	59/64	.9219
1,15 mm	.0453	35	.1100	13/64	.2031	O	.3160	33/64	.5156	23,50 mm	.9252
56	.0465	2,80 mm	.1102	6	.2040	8,10 mm	.3189	13,20 mm	.5197	15/16	.9375
3/64	.0469	34	.1110	5,20 mm	.2047	8,20 mm	.3228	17/32	.5312	24,00 mm	.9449
1,20 mm	.0472	33	.1130	5	.2055	P	.3230	13,50 mm	.5315	61/64	.9531
1,25 mm	.0492	2,90 mm	.1142	5,30 mm	.2087	8,30 mm	.3268	13,80 mm	.5433	24,50 mm	.9646
1,30 mm	.0512	32	.1160	4	.2090	21/64	.3281	35/64	.5469	31/32	.9688
55	.0520	3,00 mm	.1181	5,40 mm	.2126	8,40 mm	.3307	14,00 mm	.5512	25,00 mm	.9843
1,35 mm	.0531	31	.1200	3	.2130	Q	.3320	14,25 mm	.5610	63/64	.9844
										1"	1.0000



Technical Data

Ground Thread Tap Limits

In addition to the nominal size and pitch of a tap, there is another important dimensional factor to be considered when selecting a ground thread tap for a given job. This factor is the pitch diameter tap limit, "H" and "L." "H" represents (high) above basic pitch diameter; "L" (low) is below basic pitch diameter. Tap limits have been established to provide a choice in the selection of the tap size best suited to produce the class of thread desired.

Figure 1 illustrates the numbering system and the .0005" diameter increment separation between successive limits. Because the starting point is basic pitch diameter, dividing the limit number by two establishes, in thousandths of an inch, the amount the maximum tap pitch diameter is above basic in the "H" series and the amount the minimum tap pitch diameter is under basic in the "L" series.

Figure 2 illustrates the positioning of the tap limits in relation to the various classes of threads for a 1/4-20 size.

Figure 1

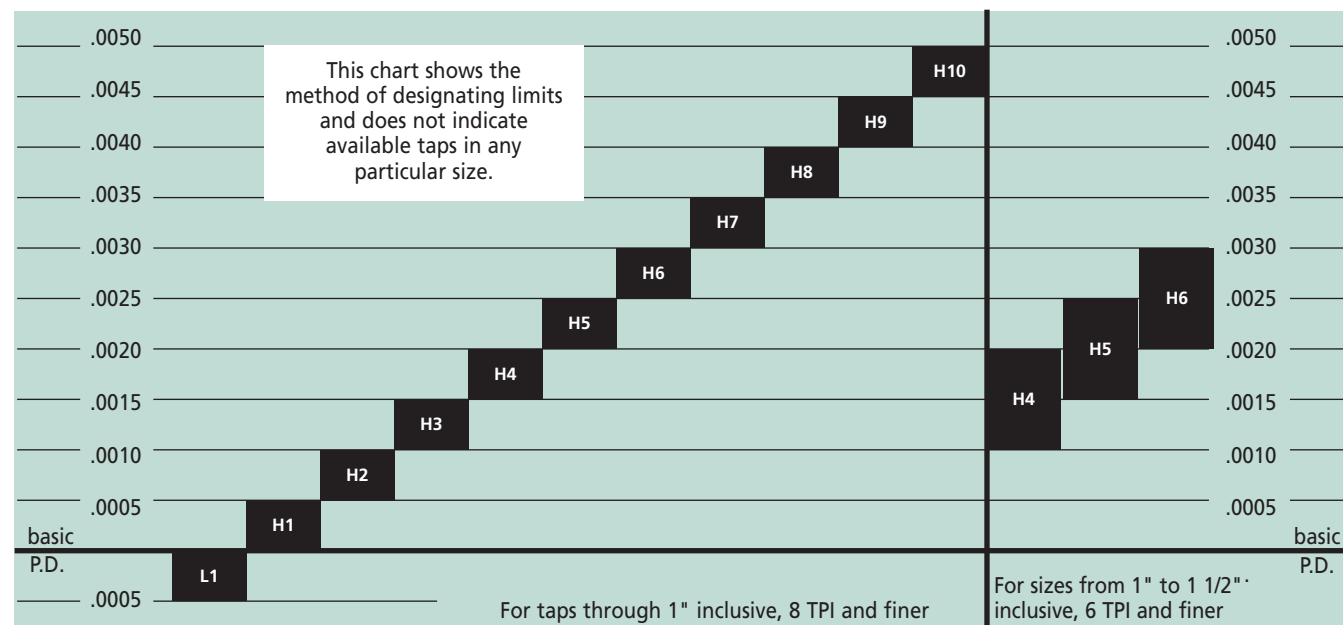
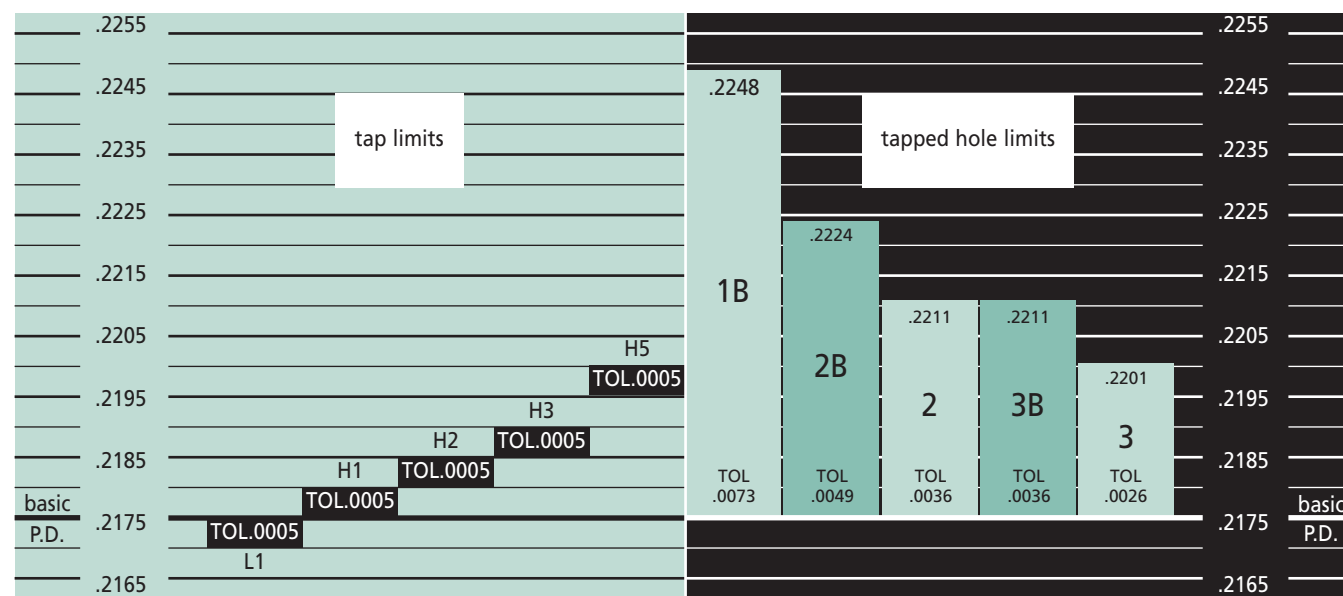


Figure 2

Class of Thread – 1/4 -20 UNC and NC



Tap Size & Pitch		Cutting Taps		Forming Taps		Tap Size & Pitch		Cutting Taps		Forming Taps	
Inch	Metric	Drill Size	Dec. Equiv.	Drill Size	Dec. Equiv.	Inch	Metric	Drill Size	Dec. Equiv.	Drill Size	Dec. Equiv.
0-80		3/64	.0469	54	.0550	5/8-11		17/32	.5312	14,75	.5807
	M1,6 x 0,35	1,25	.0492	1,45	.0571	5/8-18		37/64	.5781	15,25	.6004
	M1,8 x 0,35	1,45	.0571	1,65	.0650		M16 x 2,00	14,00	.5512	19/32	.5938
1-64		53	.0595	51	.0670		M16 x 1,50	14,50	.5709	15,25	.6004
1-72		53	.0595	51	.0670		M18 x 2,50	15,50	.6102	39/64	.6094
	M2 x 0,40	1,60	.0630	1,80	.0709		M18 x 1,50	16,50	.6496	17,25	.6791
2-56		50	.0700	5/64	.0781	3/4-10		21/32	.6562	45/64	.7031
2-64		50	.0700	47	.0785	3/4-16		11/16	.6875	23/32	.7188
	M2,2 x 0,45	1,75	.0689	2,00	.0787		M20 x 2,50	17,50	.6890	*	*
	M2,5 x 0,45	2,05	.0807	2,30	.0906		M20 x 1,50	18,50	.7283	*	*
3-48		47	.0785	43	.0890		M22 x 2,50	19,50	.7677	*	*
3-56		46	.0810	2,30	.0905		M22 x 1,50	20,50	.8071	*	*
4-40		43	.0890	38	.1015	7/8-9		49/64	.7656	*	*
4-48		42	.0935	2,60	.1024	7/8-14		13/16	.8125	*	*
	M3 x 0,50	2,50	.0984	7/64	.1094		M24 x 3,00	21,00	.8268	*	*
5-40		38	.1015	33	.1130		M24 x 2,00	22,00	.8661	*	*
5-44		37	.1040	2,90	.1142	1-8		7/8	.8750	*	*
	M3,5 x 0,60	2,90	.1142	3,20	.1260	1-12		59/64	.9219	*	*
6-32		36	.1065	1/8	.1250		M27 x 3,00	24,00	.9449	*	*
6-40		33	.1130	3,25	.1280		M27 x 2,00	25,00	.9843	*	*
	M4 x 0,70	3,30	.1299	3,70	.1476	1 1/8-7		63/64	.9844	*	*
8-32		29	.1360	25	.1495	1 1/8-12		1 3/64	1.0469	*	*
8-36		29	.1360	24	.1520		M30 x 3,50	26,50	1.0433	*	*
	M4,5 x 0,75	3,70	.1476	4,10	.1614		M30 x 2,00	28,00	1.1024	*	*
10-24		26	.1470	11/64	.1719	1 1/4-7		1 7/64	1.1094	*	*
10-32		21	.1590	16	.1770	1 1/4-12		1 11/64	1.1719	*	*
	M5 x 0,80	4,20	.1654	14	.1820		M33 x 3,50	29,50	1.1614	*	*
12-24		16	.1770	8	.1990		M33 x 2,00	31,00	1.2205	*	*
12-28		15	.1800	7	.2010	1 3/8-6		1 7/32	1.2188	*	*
	M6 x 1,00	5,00	.1969	7/32	.2188	1 3/8-12		1 19/64	1.2969	*	*
1/4-20		7	.2010	1	.2280		M36 x 4,00	32,00	1.2598	*	*
1/4-28		3	.2130	15/64	.2340		M36 x 3,00	33,00	1.2992	*	*
	M7 x 1,00	6,00	.2362	F	.2570	1 1/2-6		1 11/32	1.3438	*	*
5/16-18		F	.2570	L	.2900	1 1/2-12		1 27/64	1.4219	*	*
5/16-24		I	.2720	M	.2950		M39 x 4,00	35,00	1.3780	*	*
	M8 x 1,25	6,70	.2638	7,40	.2913		M39 x 3,00	36,00	1.4173	*	*
	M8 x 1,00	7,00	.2756	19/64	.2969	* Contact Technical Service for recommendations. Hole sizes shown may not suit UNJ and MJ hole requirements.					
3/8-16		5/16	.3125	S	.3480	Pipe Taps — NPT, NPTF, NPSM, NPSC, NPSF					
3/8-24		Q	.3320	T	.3580						
	M10 x 1,50	8,50	.3346	U	.3680						
	M10 x 1,25	8,70	.3425	9,40	.3701						
7/16-14		U	.3680	Y	.4040						
7/16-20		25/64	.3906	Z	.4130						
	M12 x 1,75	10,20	.4016	11,20	.4409						
	M12 x 1,25	10,80	.4252	11,50	.4528						
1/2-13		27/64	.4219	15/32	.4682						
1/2-20		29/64	.4531	12,25	.4823						
	M14 x 2,00	12,00	.4724	33/64	.5156						
9/16-12		31/64	.4844	17/32	.5312						
9/16-18		33/64	.5156	13,50	.5315						

metric fractional wire gage letter size

**special



Technical Data

Calculating Tap Drill Sizes

Simplified Tap-Drill Formulas for Taps That Cut Threads (for 60° Threads)

INCH TAP-DRILL SIZES

BASIC MAJOR DIAMETER	–	PITCH	=	HOLE SIZE
either decimal equivalent or fraction		either decimal equivalent or fraction		where hole size is expressed as a decimal size, convert to nearest standard tap-drill size; the probable hole size results in approximately 70-75% thread height due to the drill normally cutting larger than itself

Examples:

	BASIC MAJOR DIAMETER	–	PITCH	=	HOLE SIZE	RECOMMENDED DRILL SIZE
1/4-20 NC	.250"	–	.050" 1/20 = .050"	=	.200"	#7 (.201")
1/4-64 NS	16/64" convert 1/4 to 64ths	–	1/64"	=	15/64"	15/64"
.860-32 NS	.860"	–	.031" (1/32 = .03125)	=	.829"	53/64" (.8261") (nearest standard drill size)

METRIC TAP-DRILL SIZES

BASIC MAJOR DIAMETER	–	PITCH	=	HOLE SIZE
M6X1	6mm	–	1mm	= 5mm

Tap-Drill Formulas for TRU-LEDE® Thread Forming Tap

In tapping with forming taps there is no method of predicting the percent of thread that will be obtained because of the many variables involved. However, 55% for maximum drill size and 75% for minimum drill size may be used as a guide, and any desired percent of thread may be approximated by using

drill sizes in between. If percent of thread is critical, the user must experiment to establish the desired hole size. Minor diameter of formed threads should be within specified limits. The formulas for determining theoretical maximum and minimum drill sizes for average conditions are illustrated below.

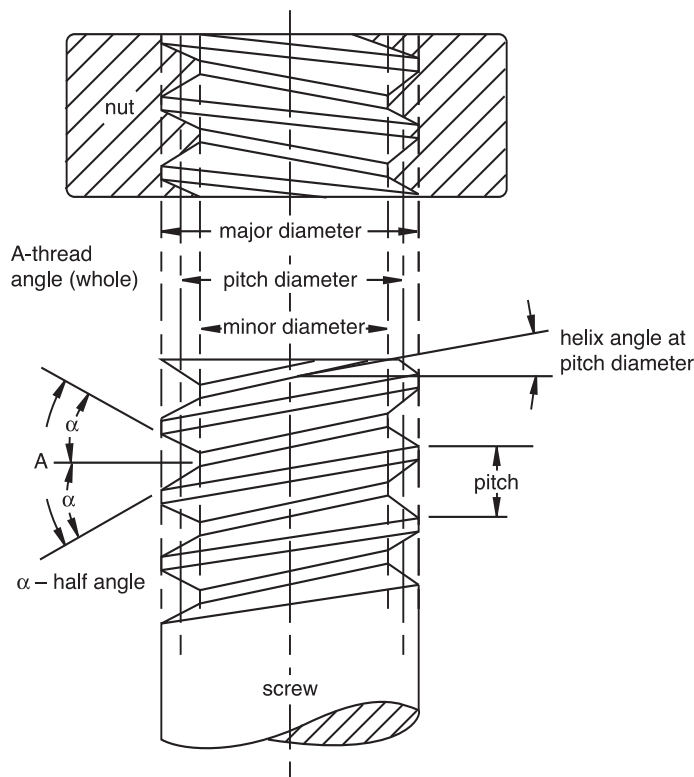
UNIFIED INCH THREADS

BASIC MAJOR DIAMETER	–	$\frac{3}{8N}$	=	MAXIMUM DRILL SIZE
BASIC MAJOR DIAMETER	–	$\frac{1}{2N}$	=	MINIMUM DRILL SIZE
<i>N = Number of threads per inch</i>				

60° METRIC THREADS

BASIC MAJOR DIAMETER	–	0.375P	=	MAXIMUM DRILL SIZE
BASIC MAJOR DIAMETER	–	0.5P	=	MINIMUM DRILL SIZE
<i>P = Pitch (mm)</i>				

Note: Use millimeter value for Basic Major Diameter and Pitch, and the drill size will be in millimeters



It is generally recognized that, in mass production, it is impossible to reproduce in exact detail the theoretically perfect product as laid out on the drawing board. The allowed slight variation between the theoretically perfect product and each unit of the actual product is called the **TOLERANCE**.

Allowance

An intentional difference in correlated dimensions of mating parts. It is the minimum clearance or maximum interference between such parts.

Angle of Thread

The angle included between the flanks of the thread measured in an axial plane.

Half Angle of Thread

The angle included between a flank of the thread and the normal (90°) to the axis, measured in an axial plane.

Lead of Thread

The distance a screw thread advances axially in one turn. On a single-thread screw, the lead and pitch are identical. On a double thread, the lead is 2X pitch; on a triple thread, the lead is 3X pitch, etc.

Major Diameter

The largest diameter of a straight screw thread.

Minor Diameter

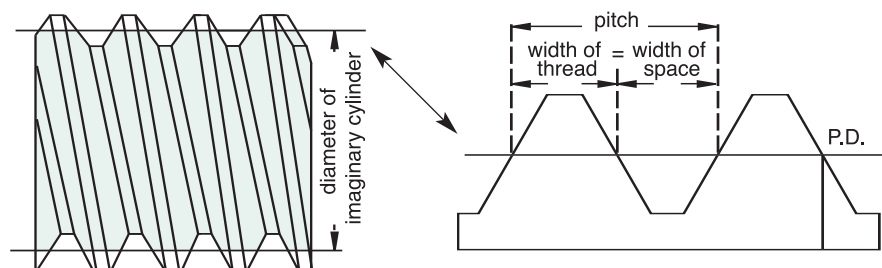
The smallest diameter of a straight screw thread.

Pitch

The distance from a point on a screw thread to a corresponding point on the next thread measured parallel to the axis.

The pitch in inches =

$$\frac{1}{\text{Number of threads per inch}}$$



Pitch Diameter

On a straight screw thread, the diameter of an imaginary cylinder, the surface of which would pass through the threads at such points as to make equal the width of the threads and the width of the spaces cut by the surface of the cylinder.



Technical Data

Tapping Speeds

HIGH PERFORMANCE TAPS

The factors considered when trying to determine the best tapping speeds are:

- Material to be tapped
- Length of chamfer on tap
- Percentage of full thread to be cut
- Length of hole (depth of thread)
- Pitch of thread
- Cutting fluids
- Machine equipment
- Horizontal or vertical tapping

THREAD MILLS

The best and most efficient operating speeds for taps cannot be calculated with the same certainty as for many other metalcutting tools.

With other tools, the feed per revolution can be set at any desired point and can be varied as conditions demand. Taps, on the other hand, must always be advanced at a rate equal to one pitch for every revolution. The style of tap may vary the conditions. For example, with a bottoming tap, the first thread on each land cuts the full height of thread, while, with a taper or starting tap, a number of threads do their share of the cutting before the full height of thread is reached.

The depth of thread also varies, depending on the pitch. The coarser the thread, the greater the advance of the tap per revolution and the greater the amount of material removed.

PRODUCTION TAPS

MAINTENANCE TOOLS

GAGES

TECHNICAL
INFORMATION & INDEX

The method of feeding the tap, and the type of equipment for driving, also influence the permissible speeds. If taps are mechanically fed at the proper rate of advance, they can be operated at higher speeds than if they are required to feed themselves and pull some part of the machine along with them.

Speeds may be modified to take into account any or all of the factors listed to the left.

Speeds must be lowered as length of thread increases because, in deep thread holes, the accumulated chips increase friction and interfere with lubrication.

Bottoming taps must be run slower than plug taps.

Tapping of full height of thread calls for slower speed than if the commercial 75% height only is required.

Coarse-thread taps in the larger diameters should be run more slowly than fine-thread taps of the same diameters.

The quantity and quality of cutting fluid may affect the permissible speeds as much as 100%.

Taper threaded taps, such as pipe taps, should be operated at from 1/2 to 3/4 the speed of a straight thread tap of comparable major diameter.

RPM Formulas

SFM = Surface Feet per Minute

RPM = Revolutions Per Minute

IPM = Inches Per Minute

TPI = Threads Per Inch

S m/m = Surface Meters per Minute

$\pi = 3.1416$

mm/m = Millimeters per Minute

P = Pitch (1/ No of Threads Per Inch)

INCH SIZES

$$\text{SFM} = \frac{\text{RPM} \times \text{TOOL DIAMETER}}{3.82} \quad \text{or} \quad 0.26 \times \text{RPM} \times \text{TOOL DIAMETER}$$

$$\text{RPM} = \frac{3.82 \times \text{SFM}}{\text{TOOL DIAMETER}}$$

$$\text{IPM} = \frac{\text{RPM}}{\text{TPI}^*} \quad \text{or} \quad *P \times \text{RPM}$$

METRIC SIZES

$$\text{S m/m} = \frac{\pi \times \text{TOOL DIAMETER} \times \text{RPM}}{1000}$$

$$\text{RPM} = \frac{\text{m/m} \times 1000}{\pi \times \text{TOOL DIAMETER}}$$

$$\text{mm/m} = \text{mm P} \times \text{RPM}$$

■ UNC/UNF and NPT/NPTF

Tap Size	Taper Pipe Taps	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		318	637	955	1273	1592	1910	2546	3183	3820	4456	5093	5729	6366	7003	7639	8276	8913	9549
1		273	546	819	1046	1308	1570	2093	2617	3140	3663	4186	4710	5233	5756	6279	6805	7326	1849
2		212	424	637	888	1110	1333	1777	2221	2665	3109	3554	3999	4442	4886	5330	5774	6218	6662
3		191	382	573	772	964	1157	1543	1929	2315	2701	3086	3472	3858	4244	4629	5015	5401	5787
4		174	347	521	682	853	1023	1364	1705	2046	2387	2728	3069	3411	3751	4092	4434	4775	5115
5		147	294	441	611	764	917	1222	1528	1833	2139	2445	2750	3056	3361	3667	3973	4278	4584
6		136	273	409	553	691	829	1106	1382	1859	1935	2212	2488	2766	3042	3318	3595	3871	4148
8		119	239	358	466	583	699	932	1165	1398	1631	1864	2097	2330	2563	2796	3029	3262	3495
10		101	201	302	402	502	603	804	1005	1205	1406	1607	1808	2009	2210	2411	2612	2813	3014
12		87	174	260	354	442	531	707	884	1061	1238	1415	1592	1769	1945	2122	2300	2476	2653
1/4		76	153	229	306	382	458	611	764	917	1070	1222	1375	1528	1681	1833	1986	2139	2292
5/16		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	—	25	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		11	22	33	44	55	65	87	109	131	153	175	196	218	240	262	284	306	327
1 7/8		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

Metric Taps	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	490	979	1469	1959	2449	2938	3918	4897	5877	6856	7836	8815	9795	10774	11754	12733	13713	14692
M2	242	484	725	967	1209	1451	1934	2418	2901	3385	3868	4352	4835	5319	5803	6286	6770	7253
M3	162	324	486	647	809	971	1295	1619	1942	2266	2590	2914	3237	3561	3885	4208	4532	4856
M3.5	138	277	415	554	692	830	1107	1384	1661	1938	2214	2491	2768	3045	3322	3599	3875	4152
M4	122	243	365	487	608	730	973	1217	1460	1703	1946	2190	2433	2676	2920	3163	3406	3650
M5	97	194	291	388	485	582	776	970	1163	1357	1551	1745	1939	2133	2327	2521	2715	2905
M6	81	162	243	324	405	486	647	809	971	1133	1295	1457	1619	1781	1942	2104	2266	2428
M7	69	138	208	277	346	415	554	692	830	969	1107	1246	1384	1522	1661	1799	1938	2076
M8	61	121	182	243	303	364	485	606	728	849	970	1091	1213	1334	1455	1577	1698	1819
M10	48	97	145	194	242	291	388	485	582	679	776	873	970	1067	1163	1260	1357	1454
M12	40	81	121	162	202	243	324	405	486	567	647	728	809	890	971	1052	1133	1214
M14	35	69	104	139	173	208	277	347	416	485	555	624	693	763	832	901	971	1040
M16	30	61	91	121	152	182	243	303	364	424	485	546	606	667	728	788	849	910
M18	27	54	81	108	135	162	216	269	323	377	431	485	539	593	647	700	754	808
M20	24	49	73	97	121	146	194	243	291	340	388	437	485	534	582	631	680	728
M22	22	44	66	88	110	132	176	221	265	309	353	397	441	485	529	573	618	662
M24	20	40	61	81	101	121	162	202	243	283	323	364	404	445	485	526	566	606
M27	18	36	54	72	90	108	144	180	216	252	287	323	359	395	431	467	503	539
M30	16	32	49	65	81	97	129	162	194	226	259	291	323	356	388	420	453	485



Special Taps Order Form

Custom Solutions Improve Machining Productivity!

Greenfield Distributors: To address the special needs of your taps customers, fax this completed order form today!

Name _____ ☐ Purchase Order ☐ Quote

GTD Distributor _____

Ship to Address _____ Purchase Order No. _____

Quote No. _____

Customer _____

Ship Via _____

Contact _____

Phone _____

Tap Specifications

Tap Size (Diameter & TPI/Pitch mm) _____

Class of Fit, "H" Limit, or Metric "D" Limit _____ 2B ☐ 3B ☐

Quantity _____ Customer Drawing Number _____

Style of Tap:

Tap Surface Treatment:

☐ Hand

☐ None

☐ GUN® (Spiral Point)

☐ Maxi (nitride)

☐ NPT ☐ NPTF

☐ TiN (Titanium Nitride)

☐ STI Hand

☐ Oxide (SH-50)

☐ STI GUN®

☐ Oxide & Maxi (SH-47)

☐ 52° Fast Spiral

☐ TiCN
(Titanium Carbonitride)

☐ TRU-LEDE® (Form Tap)

☐ TiN + CrC/C (Titanium Nitride +
Chromium Carbide Carbon)

☐ With oil hole (specify)

☐ Other

☐ Other

Note: Surface treated taps take longer to manufacture.

Special Pipe Taps

For NPT or NPTF Pipe Taps:

Interrupted Thread Tap?

☐ Yes ☐ No

Is this a short projection application?

☐ Yes ☐ No

If you want GTD to determine tap projection, please provide:

Minimum Hole Depth _____

Minimum Full Thread
Required _____

**Greenfield LIGHTNING®
SERVICE Available**

For Special Engineering Design Help, Fill Out the Information Below This Line.

Material Being Tapped _____

Material Hardness: Tap Chamfer (pitches):

Tap Size: (Diameter & TPI/Pitch mm) _____

☐ Unknown

☐ Taper (7-10)

Hole Condition: ☐ Blind ☐ Through

☐ < 20 Rc

☐ Plug (3-5)

Drill Hole

☐ 20-30 Rc

☐ Semi-Bottoming
(2-2 1/2)

Depth _____ Full Thread Depth _____

☐ 30-40 Rc

☐ Bottoming (1-2)

☐ > 40 Rc

☐ GTD to Specify

Fax This Form Toll Free (U.S.A. and Canada) 1-888-434-4313



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00522	138	01197	124	01477	122	100400	150	104000	151
00525	138	01198	124	01478	122	100411	150	104011	151
00526	138	01199	124	01479	122	100500	150	104100	151
00527	139	01200	124	01480	122	100511	150	104111	151
00528	138	01201	124	01481	122	100600	150	104400	151
00532	138	01203	124	01482	122	100611	150	104411	151
00533	138	01204	124	01483	122	100700	150	104500	151
00534	139	01205	124	01484	122	100711	150	104511	151
00606	135	01206	124	01485	122	100900	150	110100	150
00607	135	01207	124	01486	122	100911	150	110200	150
00608	135	01208	124	01487	122	101000	150	110300	150
01108	125	01210	124	01509	122	101011	150	110400	150
01109	125	01211	124	01510	122	101100	150	110500	150
01110	125	01212	124	01511	122	101111	150	110600	150
01111	125	01213	124	01514	122	101200	150	110700	150
01112	125	01215	124	01515	122	101211	150	110900	150
01117	125	01216	124	01516	122	101300	150	111000	150
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01141	124	01240	130	01551	122	101600	150	111600	150
01142	124	01241	130	01552	122	101611	150	111700	150
01144	124	01243	130	01553	122	101700	150	111800	150
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Metalcutting Safety

(read this before using Greenfield Tap & Die products)

Modern metalcutting operations involve high energy, high spindle or cutter speeds, and high temperatures and cutting forces. Hot, flying chips may be projected from the workpiece during metalcutting. Although advanced cutting tool materials are designed and manufactured to withstand the high cutting forces and temperatures that normally occur in these operations, they are susceptible to fragmenting in service, particularly if they are subjected to over-stress, severe impact or otherwise abused. Therefore, precautions should be taken to adequately protect workers, observers and equipment against hot, flying chips, fragmented cutting tools, broken workpieces or other similar projectiles. Machines should be fully guarded and personal protective equipment should be used at all times.

When grinding advanced cutting tool materials, a suitable means for collection and disposal of dust, mist or sludge should be provided. Overexposure to dust or mist containing metallic particles can be hazardous to health particularly if exposure continues over an extended period of time and may cause eye, skin and mucous membrane irritation and temporary or permanent respiratory disease. Certain existing pulmonary and skin conditions may be aggravated by exposure to dust or mist. Adequate ventilation, respiratory protection and eye protection should be provided when grinding and workers should avoid breathing of and prolonged skin contact with dust or mist.

General Industry Safety and Health Regulations, Part 1910. U.S. Department of Labor, published in Title 29 of the Code of Federal Regulations should be consulted. Obtain from Greenfield Tap & Die and read the applicable Material Safety Data Sheet before grinding.

Cutting tools are only one part of the worker-machine-tool system. Many variables exist in machining operations, including the metal removal rate; the workpiece size, shape, strength and rigidity; the chucking and fixturing; the load carrying capability of centers; the cutter and spindle speed and torque limitations; the holder and boring bar overhang; the available power; and the condition of the tooling and the machine. A safe metalcutting operation must take all of these variables, and others, into consideration.

Greenfield Tap & Die has no control over the end use of its products or the environment into which those products are placed. Greenfield Tap & Die urges that its customers adhere to the recommended standards of use of their metalcutting machines and tools, and that they follow procedures that ensure safe metalcutting operations. The information included throughout this catalog under the heading "Technical Data" and other recommendations on machining practices referred to herein are only advisory in nature and do not constitute representations or warranties and are not necessarily appropriate for any particular work environment or application.

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GTD05001C