



**GREENFIELD  
THREADING**

## **Taps And Dies**





Greenfield Industries' tradition of excellence has stood the test of time. Since 1834 the mission remains the same, provide the highest quality cutting tools at the greatest value possible. As part of the TDC Group, that mission is easily fulfilled with direct access to the finest raw materials from our own mines. These materials are then refined in our own mills and made into the raw material used in manufacturing Greenfield's unparalleled drills, end mills, taps, dies and other specially manufactured tools.

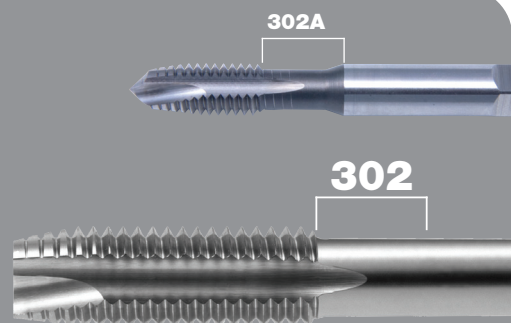
This catalog showcases the range of taps available along with machining parameters. Various coatings are available for our taps designed for specific applications.

This catalog is also available to download at our website, [www.gfii.com](http://www.gfii.com). There you will find catalogs and supplements to our other globally recognized brands.

For more information, contact our Customer Service at 800-348-2885 or by email at [standard.distributors@gfii.com](mailto:standard.distributors@gfii.com), or visit the our web site, [www.gfii.com](http://www.gfii.com).

## Effective May, 2022

Greenfield is moving general purpose Hand and Spiral Point taps from a **302A to a 302 tap blank**. Look for this rolling change in your orders and continue to enjoy the superior quality and reliability you have always known in Greenfield!





VERMONT TAP & DIE



We are proud to announce the combination of our Greenfield Threading brand with Vermont Tap & Die. Greenfield Industries' centuries old **dedication** to our customers has brought these two products lines together, creating a **commitment** of high-quality taps and dies. This provides you, our customer, the confidence that you are receiving the quality and reliability you expect from the

Greenfield family of tools.

All taps in the Greenfield Threading line are designed to machine a broad range of materials and are manufactured out of premium high speed steel.

In the ever-changing demands of industry and technology, we are continuously researching and finding ways to provide our customers with **all of your cutting tool needs.**





## Reference Information

## Index by Style Number

|                   |       |
|-------------------|-------|
| 300 . . . . .     | 37    |
| 330 . . . . .     | 37    |
| 335 . . . . .     | 38    |
| 377 . . . . .     | 28    |
| 380 . . . . .     | 34    |
| 382 . . . . .     | 30    |
| 383 . . . . .     | 32    |
| 1381 . . . . .    | 36    |
| 1382 . . . . .    | 36    |
| 1383 . . . . .    | 34    |
| 1384 . . . . .    | 34    |
| 1385 . . . . .    | 34    |
| 1386 . . . . .    | 34    |
| 1387 . . . . .    | 35    |
| 1750 . . . . .    | 32    |
| 1790 . . . . .    | 32    |
| 6382 . . . . .    | 30 32 |
| A1 . . . . .      | 36    |
| ELPTT . . . . .   | 27    |
| FTGP . . . . .    | 24    |
| HTGP . . . . .    | 7     |
| HTGPL . . . . .   | 10    |
| HTHM . . . . .    | 6     |
| PTS . . . . .     | 27    |
| PTT . . . . .     | 25    |
| PTTI . . . . .    | 26    |
| SFGP . . . . .    | 22    |
| SFGP+5 . . . . .  | 23    |
| SFHD . . . . .    | 21    |
| SFS . . . . .     | 20    |
| SPAR . . . . .    | 18    |
| SPGP . . . . .    | 12    |
| SPGP+5 . . . . .  | 15    |
| SPGPX . . . . .   | 16    |
| SPGPX+5 . . . . . | 16    |
| SPHD . . . . .    | 19    |
| SPLS . . . . .    | 17    |
| SPS . . . . .     | 11    |

## Metal Cutting Safety

*Information to read before using Greenfield Threading 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 a copy from Greenfield 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 has no control over the end use of its products or the environment into which those products are placed. Greenfield 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.

 **WARNING:** This product contains Cobalt and/or Nickel and/or Lead a chemical known to the state of California to cause cancer or birth defects or other reproductive harm. For more information: [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

## TIN - TiCN

## Recommendations

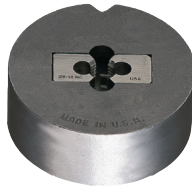
## Surface Treatments for Taps

|  | Recommended Applications  | Precautions  |
|--|---|--|
| <b>TiN</b><br>(Titanium Nitride)       | For ferrous and non-metallic materials: free-machining steels and irons, high tensile steels, tough machining steels, plastics, hard rubber, and fiber. The hard, smooth finish increases tool life, improves finish, and allows higher speeds.   | Use with caution in titanium, titanium alloys, and aluminum die casting due to tendency to gall. |
| <b>TiCN</b><br>(Titanium Carbonitride) | For ferrous and non-ferrous materials: cast iron, aluminum, stainless steel, brass, abrasive materials, high-silicon automotive aluminum, glass-filled plastics, and composites. The hard, smooth finish increases tool life and improves finish. | Use with caution in titanium and titanium alloys due to tendency to gall.                        |





| Style Number                                   | Description  | Page              |
|--|--|-------------------|
| <b>Machine Taps for Through or Blind Holes</b> |  |                   |
| HTHM   | CNC Straight Flute Hand Tap for Cast Iron and Harder Materials.    | 6                 |
| HTGP   | General Purpose Straight Flute Hand Tap                            | 7-9               |
| HTGP Sets                                      | General Purpose Straight Flute Hand Tap Sets                       | 14                |
| HTGPL  | General Purpose Left-Hand Straight Flute Hand Tap                  | 10                |
| <b>Spiral Point Taps for Through Holes</b>     |  |                   |
| SPS  | CNC Spiral Point Tap for Steels and Stainless Steel                | 11                |
| SPGP   | General Purpose Spiral Point Tap                                   | 12-13             |
| SPGP Sets                                      | General Purpose Spiral Point Tap Set                               | 14                |
| SPGP+5   | General Purpose Spiral Point <i>plus 5</i> Tap                     | 15                |
| SPGPX  | 6" Extended Length General Purpose Spiral Point Tap                | 16                |
| SPGPX+5  | 6" Extended Length General Purpose Spiral Point <i>plus 5</i> Tap  | 16                |
| SPLS   | Low Shear General Purpose Spiral Point Tap                         | 17                |
| SPAR   | Spiral Point Tap for Aerospace Fasteners                           | 18                |
| SPHD   | CNC Heavy-Duty Spiral Point  | 19                |
| <b>Spiral Flute Taps for Blind Holes</b>       |  |                   |
| SFS  | CNC Spiral Flute Tap for Steels and Stainless Steel.               | 20                |
| SFHD   | CNC Heavy-Duty Spiral Flute Tap                                    | 21                |
| SFGP   | High-Spiral General Purpose Spiral Flute Tap                       | 22                |
| SFGP+5   | High-Spiral General Purpose Spiral Flute <i>plus 5</i> Tap         | 23                |
| <b>Thread Forming Taps</b>                     |  |                   |
| FTGP   | General Purpose Thread Forming Tap                                 | 24                |
| <b>Pipe Taps</b>                               |  |                   |
| PTT  | NPT/NPTF Medium Hook Taper Pipe Tap                                | 25                |
| PTTI   | NPT/NPTF Medium Hook Interrupted Thread Taper Pipe Tap             | 26                |
| PTS  | NPS/NPSM/NPSC and NPSF Medium Hook Straight Pipe                   | 27                |
| ELPTT  | CNC Extra Length Medium Hook Taper Pipe Tap with Machine Tap Shank | 27                |
| <b>Dies</b>                                    |  |                   |
| 377  | Hexagon Rethreading Dies, Carbon Steel                             | 28-29             |
| 382, 6382                                      | Round Adjustable Dies, Carbon Steel and High-Speed Steel           | 30-32             |
| 1750, 1790                                     | Die Stocks for Round Adjustable Dies                               | 32                |
| T&RAD Sets                                     | Tap & Round Adjustable Die Set                                     | 33                |
| 1386, 1387                                     | Little Giant® Two-Piece Die Systems                                | 34-35             |
| 1381, 1382, A1                                 | Accessories for Little Giant® Two-Piece Dies                       | 36                |
| 300, 330                                       | Tap Wrenches   | 37                |
| 335  | Screw Extractors   | 38                |
| <b>Sets</b>                                    |  |                   |
|  | All available / Cost Saving Sets                                   | 55-56             |
| <b>Index by Order Number</b>                   |  |                   |
|  | Full index   | 57-62             |
| <b>Technical Information</b>                   |  |                   |
|  | Tap / Drill Recommendations  | 4                 |
|  | Pipe Tap Recommendations   | 25                |
|  | Tapping Speeds   | 39-41             |
|  | Tap Nomenclature   | 42-43             |
|  | Standard Tap Marking System  | 44                |
|  | 302 / 302A / 311 Standard Tap Dimensions                           | 45-47             |
|  | Thread Limits – Taper Pipe Taps – Ground Thread                    | 47                |
|  | Thread Limits – Fractional Taps – Ground Thread                    | 48                |
|  | Thread Limits – Machine Screw Taps – Ground Thread                 | 49                |
|  | Thread Limits – Metric Taps – Ground Thread                        | 50                |
|  | Basic Thread Dimensions – Fractional Sizes                         | 51-52             |
|  | Basic Thread Dimensions – Machine Screw Sizes                      | 53                |
|  | Quick Shipment Program – Special Taps – Ground Thread              | 54                |
|  | Decimal Equivalent Chart   | inside back cover |





Color Code: Machine Screw, Fractional, and Metric Sizes

| Tap Size & Pitch |             | Cutting Taps |              | Forming Taps |              |
|------------------|-------------|--------------|--------------|--------------|--------------|
|                  |             | drill size   | decimal inch | drill size   | decimal inch |
| inch             | metric      |              |              |              |              |
| 0-80             |             | 3/64         | .0469        | 54           | .0550        |
|                  | M1,6 x 0,35 | 1,25         | .0492        | 1,45         | .0571        |
|                  | M1,8 x 0,35 | 1,45         | .0571        | 1,65         | .0650        |
| 1-64             |             | 53           | .0595        | 51           | .0670        |
| 1-72             |             | 53           | .0595        | 51           | .0670        |
|                  | M2 x 0,4    | 1,6          | .0630        | 1,8          | .0709        |
| 2-56             |             | 50           | .0700        | 5/64         | .0781        |
| 2-64             |             | 50           | .0700        | 47           | .0785        |
|                  | M2,2 x 0,45 | 1,75         | .0689        | 2,0          | .0787        |
|                  | M2,5 x 0,45 | 2,05         | .0807        | 2,3          | .0906        |
| 3-48             |             | 47           | .0785        | 43           | .0890        |
| 3-56             |             | 46           | .0810        | 2,3          | .0906        |
| 4-40             |             | 43           | .0890        | 38           | .1015        |
| 4-48             |             | 42           | .0935        | 2,6          | .1024        |
|                  | M3 x 0,5    | 2,5          | .0984        | 7/64         | .1094        |
| 5-40             |             | 38           | .1015        | 33           | .1130        |
| 5-44             |             | 37           | .1040        | 2,9          | .1142        |
|                  | M3,5 x 0,6  | 2,9          | .1142        | 3,2          | .1260        |
| 6-32             |             | 36           | .1065        | 1/8          | .1250        |
| 6-40             |             | 33           | .1130        | 3,25         | .1280        |
|                  | M4 x 0,7    | 3,3          | .1299        | 3,7          | .1457        |
| 8-32             |             | 29           | .1360        | 25           | .1495        |
| 8-36             |             | 29           | .1360        | 24           | .1520        |
|                  | M4,5 x 0,75 | 3,7          | .1457        | 4,1          | .1614        |
| 10-24            |             | 26           | .1470        | 11/64        | .1719        |
| 10-32            |             | 21           | .1590        | 16           | .1770        |
|                  | M5 x 0,8    | 4,2          | .1654        | 14           | .1820        |
| 12-24            |             | 16           | .1770        | 8            | .1990        |
| 12-28            |             | 15           | .1800        | 7            | .2010        |
|                  | M6 x 1      | 5,0          | .1969        | 7/32         | .2188        |
| 1/4-20           |             | 7            | .2010        | 1            | .2280        |
| 1/4-28           |             | 3            | .2130        | 15/64        | .2340        |
|                  | M7 x 1      | 6,0          | .2362        | F            | .2570        |
| 5/16-18          |             | F            | .2570        | L            | .2900        |
| 5/16-24          |             | I            | .2720        | M            | .2950        |
|                  | M8 x 1,25   | 6,7          | .2638        | 7,4          | .2913        |
|                  | M8 x 1      | 7,0          | .2756        | 19/64        | .2969        |
| 3/8-16           |             | 5/16         | .3125        | S            | .3480        |
| 3/8-24           |             | Q            | .3320        | T            | .3580        |
|                  | M10 x 1,5   | 8,5          | .3346        | U            | .3680        |
|                  | M10 x 1,25  | 8,7          | .3425        | 9,4          | .3701        |
| 7/16-14          |             | U            | .3680        | Y            | .4040        |
| 7/16-20          |             | 25/64        | .3906        | Z            | .4130        |

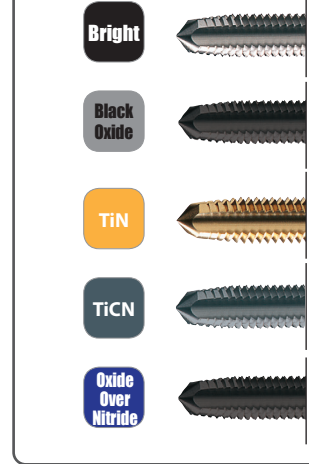
| Tap Size & Pitch |            | Cutting Taps |              | Forming Taps |              |
|------------------|------------|--------------|--------------|--------------|--------------|
|                  |            | drill size   | decimal inch | drill size   | decimal inch |
| inch             | metric     |              |              |              |              |
|                  | M12 x 1,75 | 10,2         | .4016        | 11,2         | .4409        |
|                  | M12 x 1,25 | 10,8         | .4252        | 11,5         | .4528        |
| 1/2-13           |            | 27/64        | .4219        | 15/32        | .4688        |
| 1/2-20           |            | 29/64        | .4531        | 12,25        | .4823        |
|                  | M14 x 2    | 12,0         | .4724        | 33/64        | .5156        |
| 9/16-12          |            | 31/64        | .4844        | 17/32        | .5312        |
| 9/16-18          |            | 33/64        | .5156        | 13,5         | .5315        |
| 5/8-11           |            | 17/32        | .5312        | 14,75        | .5807        |
| 5/8-18           |            | 37/64        | .5781        | 15,25        | .6004        |
|                  | M16 x 2    | 14,0         | .5512        | 19/32        | .5938        |
|                  | M16 x 1,5  | 14,5         | .5709        | 15,25        | .6004        |
|                  | M18 x 2,5  | 15,5         | .6102        | 39/64        | .6094        |
|                  | M18 x 1,5  | 16,5         | .6496        | 17,25        | .6791        |
| 3/4-10           |            | 21/32        | .6562        | 45/64        | .7031        |
| 3/4-16           |            | 11/16        | .6875        | 23/32        | .7188        |
|                  | M20 x 2,5  | 17,5         | .6890        |              |              |
|                  | M20 x 1,5  | 18,5         | .7283        |              |              |
|                  | M22 x 2,5  | 19,5         | .7677        |              |              |
|                  | M22 x 1,5  | 20,5         | .8071        |              |              |
| 7/8-9            |            | 49/64        | .7656        |              |              |
| 7/8-14           |            | 13/16        | .8125        |              |              |
|                  | M24 x 3    | 21,0         | .8268        |              |              |
|                  | M24 x 2    | 22,0         | .8661        |              |              |
| 1-8              |            | 7/8          | .8750        |              |              |
| 1-12             |            | 59/64        | .9219        |              |              |
|                  | M27 x 3    | 24,0         | .9449        |              |              |
|                  | M27 x 2    | 25,0         | .9843        |              |              |
| 1-1/8-7          |            | 63/64        | .9844        |              |              |
| 1-1/8-12         |            | 1-3/64       | 1.0469       |              |              |
|                  | M30 x 3,5  | 26,5         | 1.0433       |              |              |
|                  | M30 x 2    | 28,0         | 1.1024       |              |              |
| 1-1/4-7          |            | 1-7/64       | 1.1094       |              |              |
| 1-1/4-12         |            | 1-11/64      | 1.1719       |              |              |
|                  | M33 x 3,5  | 29,5         | 1.1614       |              |              |
|                  | M33 x 2    | 31,0         | 1.2205       |              |              |
| 1-3/8-6          |            | 1-7/32       | 1.2188       |              |              |
| 1-3/8-12         |            | 1-19/64      | 1.2969       |              |              |
|                  | M36 x 4    | 32,0         | 1.2598       |              |              |
|                  | M36 x 3    | 33,0         | 1.2992       |              |              |
| 1-1/2-6          |            | 1-11/32      | 1.3438       |              |              |
| 1-1/2-12         |            | 1-27/64      | 1.4219       |              |              |
|                  | M39 x 4    | 35,0         | 1.3780       |              |              |
|                  | M39 x 3    | 36,0         | 1.4173       |              |              |

**FORM  
TAPS  
NOT  
AVAILABLE  
IN  
THESE  
SIZES**

✓ = BEST Performance      \* Also Suitable

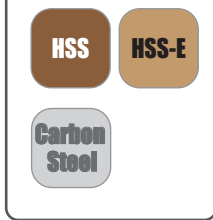
| Icon     | Material                      | Hardness  | Surface Treatment Suggestion |      |
|----------|-------------------------------|-----------|------------------------------|------|
|          |                               |           | TiN                          | TiCN |
| <b>M</b> | Austenitic Stainless Steel    | < 35 HRc  |                              | ✓    |
|          | Martensitic Stainless Steel   | < 35 HRc  |                              | ✓    |
|          | Martensitic Stainless Steel   | >= 35 HRc |                              | ✓    |
|          | PH Stainless Steel            | < 35 HRc  |                              | ✓    |
|          | PH Stainless Steel            | <= 35 HRc |                              | ✓    |
| <b>S</b> | Ni, Co, Fe Based Super Alloys |           |                              | ✓    |
|          | Titanium                      |           |                              | ✓    |
| <b>P</b> | Alloy Steel                   | 16-23 HRc | *                            | ✓    |
|          | Alloy Steel                   | 23-38 HRc | *                            | ✓    |
|          | Alloy Steel                   | > 38 HRc  |                              | ✓    |
|          | Carbon Steel                  | 16-23 HRc | *                            | ✓    |
|          | Carbon Steel                  | 23-38 HRc | *                            | ✓    |
|          | Carbon Steel                  | > 38 HRc  |                              | ✓    |
|          | Low Carbon Steel              | 13-23 HRc | *                            | ✓    |
|          | Low Carbon Steel              | 23-38 HRc | *                            | ✓    |
|          | Low Carbon Steel              | > 38 HRc  |                              | ✓    |
| <b>K</b> | Gray Cast Iron                | 18-22 HRc | *                            | ✓    |
|          | Nodular Cast Iron             | 22-32 HRc | *                            | ✓    |
| <b>N</b> | Aluminum                      | < 10% Si  | *                            | ✓    |
|          | Aluminum                      | > 10% Si  | *                            | ✓    |
| <b>H</b> | Hardened Steel                | >45 HRc   |                              | ✓    |

Surface Treatment

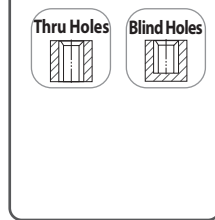


Additional treatments available upon request.

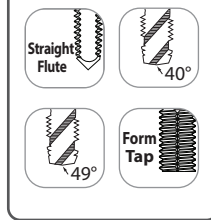
Base Material



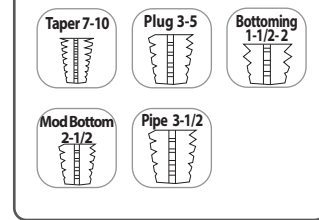
Applications



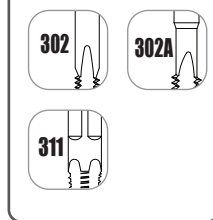
Geometry



Chamfers



Styles



Pipe

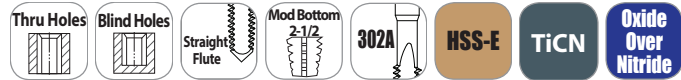


**CNC Straight Flute**  
Cast Iron and Harder Materials

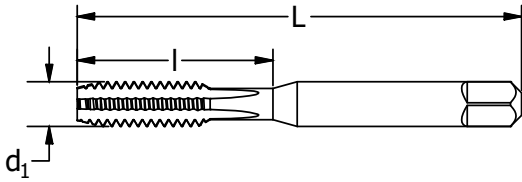
**Machine Tap for Through or Blind Holes**



Style: **HTHM**



**Note**  
Tapping speeds -  
see page 39-41.



| diameter & pitch | thread form | d <sub>1</sub> in | number of flutes | H-limit | L in  | I in  | order number       |        |
|------------------|-------------|-------------------|------------------|---------|-------|-------|--------------------|--------|
|                  |             |                   |                  |         |       |       | Oxide over Nitride | TiCN   |
| 10-24            | UNC         | .1900             | 4                | H3      | 2.375 | .875  | 330259             | —      |
| 10-32            | UNF         | .1900             | 4                | H3      | 2.375 | .875  | 330260             | —      |
| 1/4-20           | UNC         | .2500             | 4                | H3      | 2.500 | 1.000 | 330261             | 300216 |
| 1/4-20           | UNC         | .2500             | 4                | H5      | 2.500 | 1.000 | 330278             | —      |
| 1/4-28           | UNF         | .2500             | 4                | H3      | 2.500 | 1.000 | 330262             | —      |
| 5/16-18          | UNC         | .3125             | 4                | H3      | 2.719 | 1.125 | 330263             | 300217 |
| 5/16-18          | UNC         | .3125             | 4                | H5      | 2.719 | 1.125 | 330279             | —      |
| 5/16-24          | UNF         | .3125             | 4                | H3      | 2.719 | 1.125 | 330264             | —      |
| 3/8-16           | UNC         | .3750             | 4                | H3      | 2.938 | 1.250 | 330265             | —      |
| 3/8-16           | UNC         | .3750             | 4                | H5      | 2.938 | 1.250 | 330280             | —      |
| 7/16-14          | UNC         | .4375             | 4                | H3      | 3.156 | 1.438 | 330267             | —      |
| 7/16-14          | UNC         | .4375             | 4                | H5      | 3.156 | 1.438 | 330281             | —      |
| 1/2-13           | UNC         | .5000             | 4                | H3      | 3.375 | 1.656 | 330269             | —      |
| 1/2-13           | UNC         | .5000             | 4                | H5      | 3.375 | 1.656 | 330283             | —      |
| 1/2-20           | UNF         | .5000             | 4                | H5      | 3.375 | 1.656 | 330284             | —      |
| 3/4-16           | UNF         | .7500             | 6                | H5      | 4.250 | 2.000 | 330290             | —      |

**Metric - CNC Straight Flute**  
Cast Iron and Harder Materials

Style: **HTHM**

| diameter & pitch | d <sub>1</sub> mm | number of flutes | D-limit | L in  | I in  | order number       |        |
|------------------|-------------------|------------------|---------|-------|-------|--------------------|--------|
|                  |                   |                  |         |       |       | Oxide over Nitride | TiCN   |
| M5 x 0.8         | 5.00              | 4                | D4      | 2.375 | .875  | 330291             | —      |
| M6 x 1           | 6.00              | 4                | D5      | 2.500 | 1.000 | 330292             | —      |
| M8 x 1.25        | 8.00              | 4                | D5      | 2.719 | 1.125 | 330293             | —      |
| M10 x 1.5        | 10.00             | 4                | D6      | 2.938 | 1.250 | 330294             | 300218 |
| M12 x 1.25       | 12.00             | 4                | D6      | 3.375 | 1.656 | 330295             | —      |
| M12 x 1.75       | 12.00             | 4                | D6      | 3.375 | 1.656 | 330296             | 300219 |
| M14 x 1.5        | 14.00             | 4                | D6      | 3.594 | 1.656 | 330298             | —      |

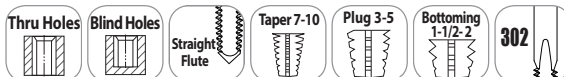




# Machine Tap for Through or Blind Holes

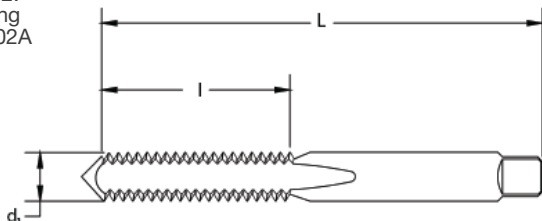
Style: **HTGP**

General Purpose  
Straight Flute



**Note**  
Tapping speeds - see page 39-41.  
Set consists of one each taper, plug, bottoming chamfer.  
**Sets available** - see page 14.

Effective May 2022:  
These tap are being converted from 302A to 302 design.



order number

| diameter & pitch | thrd form | d <sub>1</sub> in | no. flts | H-limit | L in  | I in  | taper  |        | plug   |        |        |        | bottoming |        | set    |        |
|------------------|-----------|-------------------|----------|---------|-------|-------|--------|--------|--------|--------|--------|--------|-----------|--------|--------|--------|
|                  |           |                   |          |         |       |       | Bright | TiN    | Bright | Oxide  | TiN    | TiCN   | Bright    | TiN    | Bright | TiN    |
| 0-80             | UNF       | .0600             | 2        | H1      | 1.625 | 0.313 | 330004 | —      | 330016 | —      | —      | —      | 330066    | —      | —      | —      |
| 0-80             | UNF       | .0600             | 2        | H2      | 1.625 | 0.313 | —      | —      | 300041 | —      | 300047 | —      | 300058    | 300054 | —      | —      |
| 1-64             | UNC       | .0730             | 2        | H1      | 1.688 | 0.375 | 330005 | —      | 330017 | —      | —      | —      | 330067    | —      | —      | —      |
| 1-72             | UNF       | .0730             | 2        | H1      | 1.688 | 0.375 | 330006 | —      | 300165 | —      | —      | —      | 330068    | —      | —      | —      |
| 2-56             | UNC       | .0860             | 2        | H2      | 1.750 | 0.438 | —      | —      | 330018 | —      | —      | —      | 330069    | —      | —      | —      |
| 2-56             | UNC       | .0860             | 3        | H1      | 1.750 | 0.438 | 330007 | —      | 330019 | —      | —      | —      | 300264    | —      | —      | —      |
| 2-56             | UNC       | .0860             | 3        | H2      | 1.750 | 0.438 | 300272 | 300278 | 300280 | —      | 300286 | 330035 | 300299    | 300294 | 341573 | 174511 |
| 2-64             | UNF       | .0860             | 3        | H2      | 1.750 | 0.438 | 330008 | —      | 330020 | —      | —      | —      | 330070    | —      | —      | —      |
| 3-48             | UNC       | .0990             | 3        | H2      | 1.813 | 0.500 | 300512 | 339044 | 300520 | —      | 300526 | —      | 300538    | 339045 | 341599 | 355802 |
| 3-56             | UNF       | .0990             | 3        | H2      | 1.813 | 0.500 | 300637 | 339046 | 300645 | —      | 339047 | —      | 300652    | 339048 | 341607 | 355803 |
| 4-40             | UNC       | .1120             | 2        | H1      | 1.875 | 0.563 | —      | —      | 330021 | —      | —      | —      | —         | —      | —      | —      |
| 4-40             | UNC       | .1120             | 2        | H2      | 1.875 | 0.563 | —      | —      | 300769 | —      | —      | —      | 300778    | —      | —      | —      |
| 4-40             | UNC       | .1120             | 3        | H2      | 1.875 | 0.563 | 300819 | 300815 | 300827 | —      | 300823 | 330036 | 300835    | 300831 | 341623 | 174530 |
| 4-48             | UNF       | .1120             | 3        | H2      | 1.875 | 0.563 | 300934 | 300930 | 300942 | —      | 300948 | —      | 300959    | 300955 | 341649 | 174531 |
| 5-40             | UNC       | .1250             | 2        | H2      | 1.938 | 0.625 | —      | —      | 301007 | —      | —      | —      | 301015    | —      | —      | —      |
| 5-40             | UNC       | .1250             | 3        | H2      | 1.938 | 0.625 | 301056 | 301052 | 301064 | —      | 301060 | —      | 301072    | 301078 | 341664 | 174536 |
| 5-44             | UNF       | .1250             | 3        | H2      | 1.938 | 0.625 | 301171 | 301177 | 301189 | —      | 301185 | —      | 301197    | 301193 | 341672 | 174537 |
| 6-32             | UNC       | .1380             | 2        | H2      | 2.000 | 0.688 | —      | —      | 301247 | —      | —      | —      | 301254    | —      | —      | —      |
| 6-32             | UNC       | .1380             | 2        | H3      | 2.000 | 0.688 | —      | —      | 301270 | —      | —      | —      | 301288    | —      | —      | —      |
| 6-32             | UNC       | .1380             | 3        | H2      | 2.000 | 0.688 | 301320 | —      | 301338 | —      | 330062 | —      | 301346    | —      | 341698 | —      |
| 6-32             | UNC       | .1380             | 3        | H3      | 2.000 | 0.688 | 301353 | 301359 | 301361 | 330037 | 301367 | 330038 | 301379    | 301375 | 341706 | 174538 |
| 6-40             | UNF       | .1380             | 3        | H2      | 2.000 | 0.688 | 301478 | 301474 | 301486 | —      | 301482 | —      | 301494    | 301490 | 341714 | 174539 |
| 8-32             | UNC       | .1640             | 2        | H1      | 2.125 | 0.750 | —      | —      | 330022 | —      | —      | —      | —         | —      | —      | —      |
| 8-32             | UNC       | .1640             | 2        | H2      | 2.125 | 0.750 | —      | —      | 301544 | —      | —      | —      | 301551    | —      | —      | —      |
| 8-32             | UNC       | .1640             | 2        | H3      | 2.125 | 0.750 | —      | —      | 301577 | —      | —      | —      | 301585    | —      | —      | —      |
| 8-32             | UNC       | .1640             | 3        | H2      | 2.125 | 0.750 | —      | —      | 301635 | —      | —      | —      | 301643    | —      | —      | —      |
| 8-32             | UNC       | .1640             | 3        | H3      | 2.125 | 0.750 | —      | —      | 301668 | —      | —      | —      | 301676    | —      | —      | —      |
| 8-32             | UNC       | .1640             | 4        | H2      | 2.125 | 0.750 | 301718 | —      | 301726 | —      | 330063 | —      | 301734    | —      | 341730 | —      |
| 8-32             | UNC       | .1640             | 4        | H3      | 2.125 | 0.750 | 301742 | 301748 | 301759 | 330039 | 301755 | 330040 | 301767    | 301763 | 341748 | 174544 |
| 8-36             | UNF       | .1640             | 4        | H2      | 2.125 | 0.750 | 301924 | 301920 | 301933 | —      | 301938 | —      | 301940    | 301946 | 341755 | 174545 |

continued on next page

**General Purpose  
Straight Flute**

**Machine Tap for Through or Blind Holes**

**Style: HTGP (continued)**



Machine Taps

Spiral Point Taps

Spiral Flute Taps

Thread Forming Taps

Pipe Taps

Dies

Technical Info

Sets

Index

| diameter & pitch                    | thrd form | d <sub>1</sub> in | no. flts | H-limit | L in | I in | order number |        |        |        |        |        |           |        |        |        |   |
|-------------------------------------|-----------|-------------------|----------|---------|------|------|--------------|--------|--------|--------|--------|--------|-----------|--------|--------|--------|---|
|                                     |           |                   |          |         |      |      | taper        |        | plug   |        |        |        | bottoming |        | set    |        |   |
|                                     |           |                   |          |         |      |      | Bright       | TiN    | Bright | Oxide  | TiN    | TiCN   | Bright    | TiN    | Bright | TiN    |   |
| 10-24 UNC .1900 2 H2 2.375 0.875    |           |                   |          |         |      |      | —            | —      | 301999 | —      | —      | —      | —         | —      | —      | —      | — |
| 10-24 UNC .1900 2 H3 2.375 0.875    |           |                   |          |         |      |      | —            | —      | 302021 | —      | —      | —      | 302039    | —      | —      | —      | — |
| 10-24 UNC .1900 3 H3 2.375 0.875    |           |                   |          |         |      |      | —            | —      | 302112 | —      | —      | —      | 302120    | —      | —      | —      | — |
| 10-24 UNC .1900 4 H2 2.375 0.875    |           |                   |          |         |      |      | 302161       | —      | 302179 | —      | —      | —      | 302187    | —      | —      | 341771 | — |
| 10-24 UNC .1900 4 H3 2.375 0.875    |           |                   |          |         |      |      | 302195       | 302191 | 302203 | 330041 | 302209 | 330042 | 302211    | 302217 | 341789 | 174508 | — |
| 10-32 UNF .1900 2 H2 2.375 0.875    |           |                   |          |         |      |      | —            | —      | 302260 | —      | —      | —      | 302278    | —      | —      | —      | — |
| 10-32 UNF .1900 2 H3 2.375 0.875    |           |                   |          |         |      |      | —            | —      | 302294 | —      | —      | —      | 302302    | —      | —      | —      | — |
| 10-32 UNF .1900 3 H3 2.375 0.875    |           |                   |          |         |      |      | —            | —      | 302385 | —      | 330045 | —      | 302393    | —      | —      | —      | — |
| 10-32 UNF .1900 4 H2 2.375 0.875    |           |                   |          |         |      |      | 302435       | —      | 302443 | —      | —      | —      | 302450    | —      | 341805 | —      | — |
| 10-32 UNF .1900 4 H3 2.375 0.875    |           |                   |          |         |      |      | 302468       | 302464 | 302476 | 330043 | 302472 | 330044 | 302484    | 302480 | 341813 | 174509 | — |
| 12-24 UNC .2160 4 H3 2.375 0.938    |           |                   |          |         |      |      | 302526       | 302522 | 302534 | —      | 302530 | —      | 302542    | 302548 | 341821 | 174510 | — |
| 12-28 UNF .2160 4 H3 2.375 0.938    |           |                   |          |         |      |      | 302583       | —      | 302591 | —      | 330046 | —      | 302609    | 330079 | 341839 | —      | — |
| 1/4-20 UNC .2500 2 H3 2.500 1.000   |           |                   |          |         |      |      | —            | —      | 326004 | —      | —      | —      | 326012    | —      | —      | —      | — |
| 1/4-20 UNC .2500 3 H2 2.500 1.000   |           |                   |          |         |      |      | —            | —      | 330024 | —      | —      | —      | —         | —      | —      | —      | — |
| 1/4-20 UNC .2500 3 H3 2.500 1.000   |           |                   |          |         |      |      | —            | —      | 326160 | —      | —      | —      | 326178    | —      | —      | —      | — |
| 1/4-20 UNC .2500 3 H5 2.500 1.000   |           |                   |          |         |      |      | —            | —      | 330025 | —      | —      | —      | —         | —      | —      | —      | — |
| 1/4-20 UNC .2500 4 H1 2.500 1.000   |           |                   |          |         |      |      | 305008       | —      | 305016 | —      | —      | —      | 305024    | —      | 330080 | —      | — |
| 1/4-20 UNC .2500 4 H2 2.500 1.000   |           |                   |          |         |      |      | 305033       | —      | 305040 | —      | —      | —      | 305057    | —      | 342514 | —      | — |
| 1/4-20 UNC .2500 4 H3 2.500 1.000   |           |                   |          |         |      |      | 305065       | 305061 | 305073 | 330047 | 305079 | 330048 | 305081    | 305087 | 342522 | 174506 | — |
| 1/4-20 UNC .2500 4 H5 2.500 1.000   |           |                   |          |         |      |      | —            | —      | 305107 | —      | 305103 | —      | 305115    | 305111 | —      | —      | — |
| 1/4-20 UNC .2500 4 H11 2.500 1.000  |           |                   |          |         |      |      | —            | —      | 330026 | —      | —      | —      | —         | —      | —      | —      | — |
| 1/4-28 UNF .2500 2 H3 2.500 1.000   |           |                   |          |         |      |      | —            | —      | 326087 | —      | —      | —      | 326095    | —      | —      | —      | — |
| 1/4-28 UNF .2500 3 H3 2.500 1.000   |           |                   |          |         |      |      | —            | —      | 326244 | —      | 326240 | —      | 326251    | —      | —      | —      | — |
| 1/4-28 UNF .2500 4 H2 2.500 1.000   |           |                   |          |         |      |      | —            | —      | 305198 | —      | —      | —      | 305206    | 305209 | —      | —      | — |
| 1/4-28 UNF .2500 4 H3 2.500 1.000   |           |                   |          |         |      |      | 305214       | 305210 | 305222 | 330049 | 305228 | 330051 | 305230    | 305236 | 342530 | 174507 | — |
| 5/16-18 UNC .3125 2 H3 2.719 1.125  |           |                   |          |         |      |      | —            | —      | 326285 | —      | —      | —      | 326293    | —      | —      | —      | — |
| 5/16-18 UNC .3125 3 H3 2.719 1.125  |           |                   |          |         |      |      | —            | —      | 326368 | —      | —      | —      | 326376    | —      | —      | —      | — |
| 5/16-18 UNC .3125 4 H2 2.719 1.125  |           |                   |          |         |      |      | —            | —      | 305370 | —      | —      | —      | 305388    | —      | —      | —      | — |
| 5/16-18 UNC .3125 4 H3 2.719 1.125  |           |                   |          |         |      |      | 305396       | 305392 | 305404 | 330052 | 305403 | 330053 | 305412    | 305418 | 342555 | 174532 | — |
| 5/16-18 UNC .3125 4 H5 2.719 1.125  |           |                   |          |         |      |      | —            | —      | 305438 | —      | —      | —      | 305446    | —      | —      | —      | — |
| 5/16-18 UNC .3125 4 H11 2.719 1.125 |           |                   |          |         |      |      | —            | —      | 330027 | —      | —      | —      | —         | —      | —      | —      | — |
| 5/16-24 UNF .3125 3 H3 2.719 1.125  |           |                   |          |         |      |      | —            | —      | 326442 | —      | —      | —      | 326459    | —      | —      | —      | — |
| 5/16-24 UNF .3125 4 H3 2.719 1.125  |           |                   |          |         |      |      | 305511       | 305517 | 305529 | —      | 305525 | —      | 305537    | 305533 | 342563 | 174533 | — |
| 5/16-24 UNF .3125 4 H4 2.719 1.125  |           |                   |          |         |      |      | —            | —      | 305552 | —      | —      | —      | 305560    | —      | —      | —      | — |
| 3/8-16 UNC .3750 3 H3 2.938 1.250   |           |                   |          |         |      |      | —            | —      | 326525 | —      | 326521 | —      | 326533    | 326539 | —      | —      | — |
| 3/8-16 UNC .3750 4 H2 2.938 1.250   |           |                   |          |         |      |      | —            | —      | 305677 | —      | —      | —      | 305685    | —      | —      | —      | — |
| 3/8-16 UNC .3750 4 H3 2.938 1.250   |           |                   |          |         |      |      | 305693       | 305699 | 305701 | 330055 | 305707 | 330057 | 305719    | 305715 | 342589 | 174528 | — |
| 3/8-16 UNC .3750 4 H5 2.938 1.250   |           |                   |          |         |      |      | —            | —      | 305735 | —      | 305731 | —      | 305743    | 305749 | —      | —      | — |
| 3/8-24 UNF .3750 3 H3 2.938 1.250   |           |                   |          |         |      |      | —            | —      | 326608 | —      | —      | —      | 326616    | —      | —      | —      | — |
| 3/8-24 UNF .3750 4 H3 2.938 1.250   |           |                   |          |         |      |      | 305818       | 305814 | 305826 | 330058 | 305822 | —      | 305834    | 305830 | 342597 | 174529 | — |
| 7/16-14 UNC .4375 4 H3 3.156 1.438  |           |                   |          |         |      |      | 305990       | 305996 | 306006 | —      | 306002 | —      | 306014    | 306010 | 342605 | 174540 | — |
| 7/16-14 UNC .4375 4 H5 3.156 1.438  |           |                   |          |         |      |      | —            | —      | 306030 | —      | 306036 | —      | 306048    | 306044 | —      | —      | — |
| 7/16-20 UNF .4375 4 H3 3.156 1.438  |           |                   |          |         |      |      | 306113       | 306119 | 306121 | —      | 306127 | —      | 306139    | 306135 | 342613 | 174541 | — |
| 7/16-20 UNF .4375 4 H5 3.156 1.438  |           |                   |          |         |      |      | —            | —      | 306154 | —      | 306157 | —      | 306162    | 306165 | —      | —      | — |
| 1/2-13 UNC .5000 3 H3 3.375 1.656   |           |                   |          |         |      |      | —            | —      | 326681 | —      | —      | —      | 326699    | —      | —      | —      | — |
| 1/2-13 UNC .5000 4 H1 3.375 1.656   |           |                   |          |         |      |      | —            | —      | 306246 | —      | —      | —      | —         | —      | —      | —      | — |
| 1/2-13 UNC .5000 4 H3 3.375 1.656   |           |                   |          |         |      |      | 306295       | 306291 | 306303 | 330059 | 306309 | 330060 | 306311    | 306317 | 342621 | 174504 | — |
| 1/2-13 UNC .5000 4 H5 3.375 1.656   |           |                   |          |         |      |      | —            | —      | 306337 | —      | —      | —      | 306345    | 306341 | —      | —      | — |
| 1/2-20 UNF .5000 3 H3 3.375 1.656   |           |                   |          |         |      |      | —            | —      | 326707 | —      | —      | —      | —         | —      | —      | —      | — |
| 1/2-20 UNF .5000 4 H3 3.375 1.656   |           |                   |          |         |      |      | 306444       | 306440 | 306451 | —      | 306457 | —      | 306469    | 306465 | 342639 | 174505 | — |
| 1/2-20 UNF .5000 4 H5 3.375 1.656   |           |                   |          |         |      |      | —            | —      | 306485 | —      | —      | —      | —         | —      | —      | —      | — |
| 9/16-12 UNC .5625 4 H3 3.594 1.656  |           |                   |          |         |      |      | 306626       | 306622 | 306634 | —      | 306630 | —      | 306642    | 306648 | 342647 | 174546 | — |
| 9/16-18 UNF .5625 4 H3 3.594 1.656  |           |                   |          |         |      |      | 306741       | —      | 306758 | —      | 306754 | —      | 306766    | 306762 | 342654 | —      | — |

continued on next page



# Machine Tap for Through or Blind Holes

Style: **HTGP** (continued)

General Purpose  
Straight Flute

| diameter & pitch | thrd form | d <sub>1</sub> in | no. flts | H-limit | L in  | I in  | order number |        |        |        |        |      |           |        |        |        |
|------------------|-----------|-------------------|----------|---------|-------|-------|--------------|--------|--------|--------|--------|------|-----------|--------|--------|--------|
|                  |           |                   |          |         |       |       | taper        |        | plug   |        |        |      | bottoming |        | set    |        |
|                  |           |                   |          |         |       |       | Bright       | TiN    | Bright | Oxide  | TiN    | TiCN | Bright    | TiN    | Bright | TiN    |
| 5/8-11           | UNC       | .6250             | 4        | H3      | 3.813 | 1.813 | 306923       | 306929 | 306931 | 330061 | 306937 | —    | 306949    | 306945 | 342662 | 174534 |
| 5/8-11           | UNC       | .6250             | 4        | H5      | 3.813 | 1.813 | —            | —      | 306964 | —      | —      | —    | 306972    | 306978 | —      | —      |
| 5/8-18           | UNF       | .6250             | 4        | H3      | 3.813 | 1.813 | 307046       | 307042 | 307053 | —      | 307059 | —    | 307061    | 307067 | 342670 | 174535 |
| 11/16-11         | UNS       | .6875             | 4        | H3      | 4.031 | 1.813 | 307160       | —      | 307178 | —      | —      | —    | 307186    | —      | 342688 | —      |
| 11/16-16         | UNS       | .6875             | 4        | H3      | 4.031 | 1.813 | 307194       | —      | 307202 | —      | —      | —    | 307210    | —      | 342696 | —      |
| 3/4-10           | UNC       | .7500             | 4        | H3      | 4.250 | 2.000 | 307343       | 307349 | 307350 | —      | 307356 | —    | 307368    | 307364 | 342704 | 174513 |
| 3/4-16           | UNF       | .7500             | 4        | H3      | 4.250 | 2.000 | 307467       | 307463 | 307475 | —      | 307471 | —    | 307483    | 307489 | 342712 | 174514 |
| 7/8-9            | UNC       | .8750             | 4        | H4      | 4.468 | 2.219 | 307707       | 307703 | 307715 | —      | 307711 | —    | 307723    | 307729 | 342720 | 174543 |
| 7/8-14           | UNF       | .8750             | 4        | H4      | 4.468 | 2.219 | 307822       | 307828 | 307830 | —      | 307836 | —    | 307848    | 307844 | 342738 | 174542 |
| 1-8              | UNC       | 1.0000            | 4        | H4      | 5.125 | 2.500 | 308069       | 308065 | 308077 | —      | 308073 | —    | 308085    | 308081 | 342746 | 174503 |
| 1-12             | UNF       | 1.0000            | 4        | H4      | 5.125 | 2.500 | 308184       | —      | 308192 | —      | 330065 | —    | 308200    | —      | —      | —      |
| 1-14             | UNS       | 1.0000            | 4        | H4      | 5.125 | 2.500 | 308275       | —      | 308283 | —      | —      | —    | 308291    | —      | 342761 | —      |
| 1-1/8-7          | UNC       | 1.1250            | 4        | H4      | 5.438 | 2.563 | 308424       | —      | 308432 | —      | —      | —    | 308440    | —      | —      | —      |
| 1-1/8-12         | UNF       | 1.1250            | 4        | H4      | 5.438 | 2.563 | 308457       | —      | 308465 | —      | —      | —    | 308473    | —      | —      | —      |
| 1-1/4-7          | UNC       | 1.2500            | 4        | H4      | 5.750 | 2.563 | 308549       | —      | 308556 | —      | —      | —    | 308564    | —      | —      | —      |
| 1-1/4-12         | UNF       | 1.2500            | 6        | H4      | 5.750 | 2.563 | 308572       | —      | 308580 | —      | —      | —    | 308598    | —      | —      | —      |
| 1-3/8-6          | UNC       | 1.3750            | 4        | H4      | 6.063 | 3.000 | —            | —      | 308671 | —      | —      | —    | —         | —      | —      | —      |
| 1-3/8-12         | UNF       | 1.3750            | 6        | H4      | 6.063 | 3.000 | —            | —      | 308705 | —      | —      | —    | 308713    | —      | —      | —      |
| 1-1/2-6          | UNC       | 1.5000            | 4        | H4      | 6.375 | 3.000 | 308788       | —      | 308796 | —      | —      | —    | 308804    | —      | —      | —      |
| 1-1/2-12         | UNF       | 1.5000            | 6        | H4      | 6.375 | 3.000 | 308812       | —      | 308820 | —      | —      | —    | 308838    | —      | —      | —      |

Style: **HTGP**

Metric - General Purpose  
Straight Flute

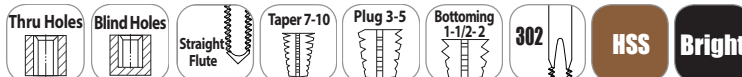
| diameter & pitch | d <sub>1</sub> mm | no. flts | D-limit | L in  | I in  | order number |        |        |        |           |        |        |        |
|------------------|-------------------|----------|---------|-------|-------|--------------|--------|--------|--------|-----------|--------|--------|--------|
|                  |                   |          |         |       |       | taper        |        | plug   |        | bottoming |        | set    |        |
|                  |                   |          |         |       |       | Bright       | TiN    | Bright | TiN    | Bright    | TiN    | Bright | TiN    |
| M1.6 x 0.35      | 1.60              | 2        | D3      | 1.625 | .313  | —            | —      | 328018 | —      | 330071    | —      | —      | —      |
| M2 x 0.4         | 2.00              | 3        | D3      | 1.750 | .438  | 328067       | 328684 | 328075 | 328685 | 328083    | 328686 | 174516 | 343502 |
| M2.5 x 0.45      | 2.50              | 3        | D3      | 1.813 | .500  | 328158       | 328688 | 328166 | 328689 | 328174    | 328690 | 174559 | 343503 |
| M3 x 0.5         | 3.00              | 3        | D3      | 1.938 | .625  | 328182       | 328691 | 328190 | 328188 | 328208    | 328205 | 174519 | 343504 |
| M3.5 x 0.6       | 3.50              | 3        | D4      | 2.000 | .688  | 328240       | —      | 328257 | 328693 | 328265    | —      | 174560 | —      |
| M4 x 0.7         | 4.00              | 4        | D4      | 2.125 | .750  | 328273       | 328695 | 328281 | 328287 | 328299    | 328295 | 174520 | 343506 |
| M4.5 x 0.75      | 4.50              | 4        | D4      | 2.375 | .875  | 328331       | —      | 328349 | 328697 | 328356    | —      | 174561 | —      |
| M5 x 0.8         | 5.00              | 4        | D4      | 2.375 | .875  | 328364       | 328698 | 328372 | 328378 | 328380    | 328386 | 174521 | 343508 |
| M6 x 1.0         | 6.00              | 4        | D5      | 2.500 | 1.000 | 328422       | 328699 | 328430 | 328436 | 328448    | 328444 | 174522 | 343509 |
| M7 x 1.0         | 7.00              | 4        | D5      | 2.719 | 1.125 | 330009       | —      | 328497 | —      | 330072    | —      | —      | —      |
| M8 x 1.0         | 8.00              | 4        | D5      | 2.719 | 1.125 | 330010       | —      | 330028 | —      | 330073    | —      | —      | —      |
| M8 x 1.25        | 8.00              | 4        | D5      | 2.719 | 1.125 | 328547       | 328703 | 328554 | 328550 | 328562    | 328568 | 174524 | 343511 |
| M10 x 1.25       | 10.00             | 4        | D5      | 2.938 | 1.250 | 330011       | —      | 330029 | —      | 330074    | —      | —      | —      |
| M10 x 1.5        | 10.00             | 4        | D6      | 2.938 | 1.250 | 328604       | 328704 | 328612 | 328618 | 328620    | 328626 | 174548 | 343512 |
| M12 x 1.25       | 12.00             | 4        | D5      | 3.375 | 1.656 | 330012       | —      | 330030 | —      | 330075    | —      | —      | —      |
| M12 x 1.75       | 12.00             | 4        | D6      | 3.375 | 1.656 | 328661       | 328705 | 328679 | 328675 | 328687    | 328683 | 174549 | 343513 |
| M14 x 1.5        | 14.00             | 4        | D6      | 3.594 | 1.656 | 330013       | —      | 330031 | —      | 330076    | —      | —      | —      |
| M14 x 2.0        | 14.00             | 4        | D7      | 3.594 | 1.656 | 328752       | 328706 | 328760 | 328707 | 328778    | 328708 | 174550 | 343514 |
| M16 x 1.5        | 16.00             | 4        | D6      | 3.813 | 1.813 | 330014       | —      | 330032 | —      | 330077    | —      | —      | —      |
| M16 x 2.0        | 16.00             | 4        | D7      | 3.813 | 1.813 | 328810       | 328709 | 328828 | 328710 | 328836    | 328711 | 174551 | 343515 |
| M18 x 1.5        | 18.00             | 4        | D6      | 4.031 | 1.813 | 330015       | —      | 330033 | —      | —         | —      | —      | —      |
| M18 x 2.5        | 18.00             | 4        | D7      | 4.031 | 1.813 | 328877       | —      | 328885 | —      | 328893    | —      | 174552 | —      |
| M20 x 1.5        | 20.00             | 4        | D6      | 4.469 | 2.000 | —            | —      | 330034 | —      | 330078    | —      | —      | —      |
| M20 x 2.5        | 20.00             | 4        | D7      | 4.469 | 2.000 | 328935       | —      | 328943 | 328716 | 328950    | 328717 | 174553 | —      |
| M24 x 3.0        | 24.00             | 4        | D8      | 4.906 | 2.219 | 329057       | —      | 329065 | 328719 | 329073    | 328720 | —      | —      |
| M30 x 3.5        | 30.00             | 4        | D9      | 5.438 | 2.563 | —            | —      | 329180 | —      | —         | —      | —      | —      |

# General Purpose Left-Hand Straight Flute

## Machine Tap for Through or Blind Holes

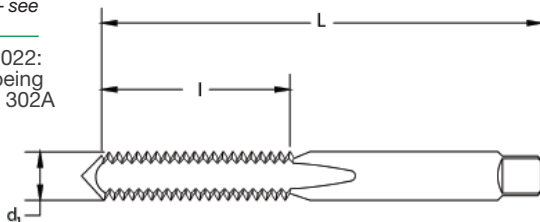


Style: **HTGPL**



**Note**  
Tapping speeds - see page 39-41.

Effective May 2022:  
These tap are being converted from 302A to 302 design.



| diameter & pitch | thread form | d <sub>1</sub> in | number of flutes | H-limit | L in  | I in  | order number |             |                  |                       |
|------------------|-------------|-------------------|------------------|---------|-------|-------|--------------|-------------|------------------|-----------------------|
|                  |             |                   |                  |         |       |       | taper Bright | plug Bright | bottoming Bright | set taper/plug/bottom |
| 6-32             | UNC         | .1380             | 3                | H3      | 2.000 | .688  | —            | 313010      | 313028           | —                     |
| 8-32             | UNC         | .1640             | 4                | H3      | 2.125 | .750  | 313036       | 313044      | 313051           | 341912                |
| 10-24            | UNC         | .1900             | 4                | H3      | 2.375 | .875  | 313069       | 313077      | 313085           | —                     |
| 10-32            | UNF         | .1900             | 4                | H3      | 2.375 | .875  | 313093       | 313102      | 313119           | 341938                |
| 1/4-20           | UNC         | .2500             | 4                | H3      | 2.500 | 1.000 | —            | 317516      | —                | —                     |
| 1/4-28           | UNF         | .2500             | 4                | H3      | 2.500 | 1.000 | 317532       | 317540      | 317557           | 318779                |
| 5/16-18          | UNC         | .3125             | 4                | H3      | 2.719 | 1.125 | —            | 317573      | —                | —                     |
| 5/16-24          | UNF         | .3125             | 4                | H3      | 2.719 | 1.125 | —            | 317607      | —                | —                     |
| 3/8-16           | UNC         | .3750             | 4                | H3      | 2.938 | 1.250 | —            | 317631      | —                | —                     |
| 3/8-24           | UNF         | .3750             | 4                | H3      | 2.938 | 1.250 | —            | 317664      | —                | —                     |
| 7/16-20          | UNF         | .4375             | 4                | H3      | 3.156 | 1.438 | —            | 317722      | —                | —                     |
| 1/2-13           | UNC         | .5000             | 4                | H3      | 3.375 | 1.656 | —            | 317755      | —                | —                     |
| 1/2-20           | UNF         | .5000             | 4                | H3      | 3.375 | 1.656 | —            | 317789      | —                | —                     |
| 5/8-18           | UNF         | .6250             | 4                | H3      | 3.813 | 1.813 | —            | 317904      | —                | —                     |
| 3/4-10           | UNC         | .7500             | 4                | H3      | 4.250 | 2.000 | —            | 317995      | —                | —                     |
| 3/4-16           | UNF         | .7500             | 4                | H3      | 4.250 | 2.000 | —            | 318027      | —                | —                     |

### Tech Tip

## The Proper Use of 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 resharpening, 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. Get recommendations from a coolant specialist.

After you select the proper lubricant, choose the right method of application and pressure. For tapping, use multiple nozzles around the tap. Nozzles should be as close to the surface of the part as possible, positioned at an angle close to the axis of the tool, and should point directly into the hole to flush chips from the flutes. For horizontal tapping, where the tap is stationary and the workpieces rotate, consider using two streams of lubricant, one on each side of the tap.

Whether you are tapping vertically, horizontally, or at an angle, make sure the lubricant reaches the cutting lands of the tap at all times, especially at the point or chamfered sections. 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 a tap, increasing the chance of breakage. In addition, if the lubricant is automatically applied only on the forward motion of the tap, time the application of the lubricant so that it will reach the hole before the tap starts to cut, particularly with machines on which the cutting fluid is automatically shut off when the tap reverses. For maximum effectiveness, it is better to force the lubricant into the hole under pressure, which will vary depending on the tapping method, hole depth, and tapping speed.

Keep tapping lubricants as clean as possible using a filtering system or other equipment. Dust and other foreign particles can contaminate oil and decrease its effectiveness. Thoroughly clean machines and oil tanks when adding new lubricant and at regular intervals to ensure optimum results.





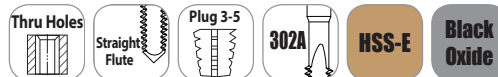
# Spiral Point Taps for Through Holes

Style: **SPS**

**CNC Spiral Point**  
Steels and Stainless Steels



**Note**  
Tapping speeds - see page 39-41.



Machine Taps

Spiral Point Taps

Spiral Flute Taps

Thread Forming Taps

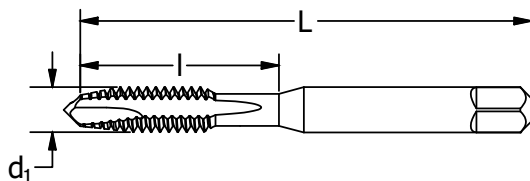
Pipe Taps

Dies

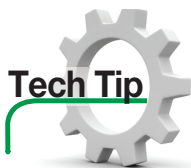
Technical Info

Sets

Index



| diameter & pitch | thread form | d <sub>1</sub> in | number of flutes | H-limit | L in  | I in  | order number |
|------------------|-------------|-------------------|------------------|---------|-------|-------|--------------|
| 4-40             | UNC         | .1120             | 2                | H2      | 1.875 | .563  | 330302       |
| 6-32             | UNC         | .1380             | 2                | H3      | 2.000 | .688  | 330309       |
| 8-32             | UNC         | .1640             | 3                | H3      | 2.125 | .750  | 330310       |
| 8-32             | UNC         | .1640             | 3                | H5      | 2.125 | .750  | 330333       |
| 10-24            | UNC         | .1900             | 3                | H3      | 2.375 | .875  | 330311       |
| 10-32            | UNF         | .1900             | 3                | H3      | 2.375 | .875  | 330312       |
| 1/4-20           | UNC         | .2500             | 3                | H3      | 2.500 | 1.000 | 330313       |
| 1/4-20           | UNC         | .2500             | 3                | H5      | 2.500 | 1.000 | 330336       |
| 5/16-18          | UNC         | .3125             | 3                | H3      | 2.719 | 1.125 | 330315       |
| 5/16-24          | UNF         | .3125             | 3                | H3      | 2.719 | 1.125 | 330316       |
| 3/8-16           | UNC         | .3750             | 3                | H3      | 2.938 | 1.250 | 330317       |
| 1/2-13           | UNC         | .5000             | 3                | H3      | 3.375 | 1.656 | 330321       |



## Tech Tip

### How to request Made-to-Order taps:

#### Information required for every order:

- quantity
- ordering number

#### Information required for some orders, depending on tool style:

- exact tool size
- threads per inch
- pitch
- thread form
- right-hand or left-hand configuration
- limit
- pitch diameter
- class of fit
- chamfer
- number of chamfered threads
- chamfer angle
- number of lube grooves
- short projections

#### Other features available:

- surface treatment
- special hook
- male centers removed
- special back tape
- recessed neck
- shank flats
- special shank diameter
- special rake
- thread relief
- interrupted threads
- controlled root
- ETTCO notch
- shank grooves

**General Purpose**  
Spiral Point - Inch

**Spiral Point Taps for Through Holes**

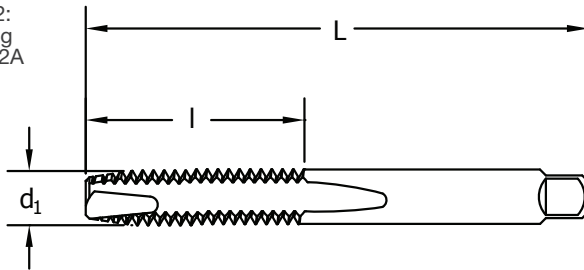


Style: **SPGP**



**Note**  
Tapping speeds - see page 39-41.  
Sets available - see page 14.

Effective May 2022:  
These tap are being converted from 302A to 302 design.



| diameter & pitch | thread form | d <sub>1</sub> in | # of flutes | H-limit | L in  | I in  | order number |             |        |        |           |        |   |
|------------------|-------------|-------------------|-------------|---------|-------|-------|--------------|-------------|--------|--------|-----------|--------|---|
|                  |             |                   |             |         |       |       | plug         |             |        |        | bottoming |        |   |
|                  |             |                   |             |         |       |       | Bright       | Black Oxide | TiN    | TiCN   | Bright    | TiN    |   |
| 0-80             | UNF         | .0600             | 2           | H1      | 1.625 | .313  | 356002       | —           | —      | —      | —         | —      | — |
| 0-80             | UNF         | .0600             | 2           | H2      | 1.625 | .313  | 356027       | 330100      | 356023 | 330148 | 356035    | —      |   |
| 1-64             | UNC         | .0730             | 2           | H2      | 1.688 | .375  | 356068       | —           | 356061 | —      | —         | —      |   |
| 1-72             | UNF         | .0730             | 2           | H1      | 1.688 | .375  | 356084       | —           | —      | —      | —         | —      |   |
| 1-72             | UNF         | .0730             | 2           | H2      | 1.688 | .375  | 356102       | —           | 356106 | —      | —         | —      |   |
| 2-56             | UNC         | .0860             | 2           | H2      | 1.750 | .438  | 356142       | 330101      | 356148 | 330149 | 356159    | —      |   |
| 2-64             | UNF         | .0860             | 2           | H2      | 1.750 | .438  | 356183       | —           | —      | —      | —         | —      |   |
| 3-48             | UNC         | .0990             | 2           | H2      | 1.813 | .500  | 356225       | —           | 356221 | —      | —         | —      |   |
| 3-56             | UNF         | .0990             | 2           | H2      | 1.813 | .500  | 356266       | —           | 356262 | —      | —         | —      |   |
| 4-40             | UNC         | .1120             | 2           | H1      | 1.875 | .563  | 356308       | —           | —      | —      | —         | —      |   |
| 4-40             | UNC         | .1120             | 2           | H2      | 1.875 | .563  | 356324       | 330102      | 356320 | 330150 | 356332    | 356338 |   |
| 4-48             | UNF         | .1120             | 2           | H2      | 1.875 | .563  | 356365       | —           | 356361 | —      | —         | —      |   |
| 5-40             | UNC         | .1250             | 2           | H2      | 1.938 | .625  | 356407       | 330103      | 356403 | 330151 | 356415    | —      |   |
| 6-32             | UNC         | .1380             | 2           | H1      | 2.000 | .688  | 356421       | —           | —      | —      | —         | —      |   |
| 6-32             | UNC         | .1380             | 2           | H2      | 2.000 | .688  | 356422       | 330104      | 356486 | —      | 356498    | —      |   |
| 6-32             | UNC         | .1380             | 2           | H3      | 2.000 | .688  | 356506       | 330105      | 356502 | 330152 | 356514    | 356510 |   |
| 6-32             | UNC         | .1380             | 2           | H7      | 2.000 | .688  | 359005       | —           | —      | —      | —         | —      |   |
| 6-40             | UNF         | .1380             | 2           | H2      | 2.000 | .688  | 356548       | —           | 356544 | —      | —         | —      |   |
| 8-32             | UNC         | .1640             | 2           | H2      | 2.125 | .750  | 356589       | 330106      | 356585 | —      | —         | —      |   |
| 8-32             | UNC         | .1640             | 2           | H3      | 2.125 | .750  | 356633       | 330107      | 356602 | 330153 | 356634    | 356635 |   |
| 8-32             | UNC         | .1640             | 2           | H7      | 2.125 | .750  | 359047       | —           | 330138 | —      | —         | —      |   |
| 8-36             | UNF         | .1640             | 2           | H2      | 2.125 | .750  | 356647       | —           | 330139 | —      | —         | —      |   |
| 10-24            | UNC         | .1900             | 2           | H1      | 2.375 | .875  | 356662       | —           | —      | —      | —         | —      |   |
| 10-24            | UNC         | .1900             | 2           | H2      | 2.375 | .875  | 356688       | —           | 330140 | —      | —         | —      |   |
| 10-24            | UNC         | .1900             | 2           | H3      | 2.375 | .875  | 356704       | —           | 356703 | 330154 | 356712    | 356718 |   |
| 10-24            | UNC         | .1900             | 2           | H7      | 2.375 | .875  | 359088       | —           | 330141 | —      | —         | —      |   |
| 10-32            | UNF         | .1900             | 2           | H2      | 2.375 | .875  | 356746       | —           | 356742 | —      | —         | —      |   |
| 10-32            | UNF         | .1900             | 2           | H3      | 2.375 | .875  | 356761       | —           | 356767 | 330155 | 356779    | 356775 |   |
| 10-32            | UNF         | .1900             | 2           | H7      | 2.375 | .875  | 359120       | —           | 330142 | —      | —         | —      |   |
| 12-24            | UNC         | .2160             | 2           | H3      | 2.375 | .938  | 356803       | 330108      | 356809 | 330156 | —         | —      |   |
| 12-28            | UNF         | .2160             | 2           | H3      | 2.375 | .938  | 356845       | —           | 356841 | —      | —         | —      |   |
| 1/4-20           | UNC         | .2500             | 2           | H1      | 2.500 | 1.000 | 357009       | —           | 330143 | —      | —         | —      |   |
| 1/4-20           | UNC         | .2500             | 2           | H2      | 2.500 | 1.000 | 357025       | 330109      | 357021 | —      | —         | —      |   |
| 1/4-20           | UNC         | .2500             | 2           | H3      | 2.500 | 1.000 | 357041       | 330110      | 357047 | —      | 357058    | 357054 |   |
| 1/4-20           | UNC         | .2500             | 2           | H5      | 2.500 | 1.000 | 357066       | —           | 357062 | —      | —         | —      |   |
| 1/4-20           | UNC         | .2500             | 2           | H11     | 2.500 | 1.000 | 330111       | —           | —      | —      | —         | —      |   |
| 1/4-20           | UNC         | .2500             | 3           | H3      | 2.500 | 1.000 | 357082       | 330112      | 357088 | 330157 | —         | —      |   |
| 1/4-20           | UNC         | .2500             | 3           | H5      | 2.500 | 1.000 | 357108       | —           | 357101 | —      | —         | —      |   |
| 1/4-20           | UNC         | .2500             | 2           | H13     | 2.500 | 1.000 | 358494       | —           | 358490 | —      | —         | —      |   |
| 1/4-28           | UNF         | .2500             | 2           | H2      | 2.500 | 1.000 | 330113       | —           | —      | —      | —         | —      |   |
| 1/4-28           | UNF         | .2500             | 2           | H3      | 2.500 | 1.000 | 357165       | 330114      | 357161 | —      | 357173    | 357179 |   |
| 1/4-28           | UNF         | .2500             | 3           | H2      | 2.500 | 1.000 | 330115       | —           | —      | 330158 | —         | —      |   |

continued on next page



Spiral Point Taps for Through Holes

Style: **SPGP** (continued)

General Purpose  
Spiral Point - Inch

| diameter & pitch | thread form | d <sub>1</sub> in | # of flutes | H-limit | L in  | I in  | order number |             |          |               |        |        |
|------------------|-------------|-------------------|-------------|---------|-------|-------|--------------|-------------|----------|---------------|--------|--------|
|                  |             |                   |             |         |       |       | Bright       | Black Oxide | plug TiN | bottoming TiN |        |        |
| 5/16-18          | UNC         | .3125             | 2           | H1      | 2.719 | 1.125 | 357249       | —           | —        | —             | —      | —      |
| 5/16-18          | UNC         | .3125             | 2           | H2      | 2.719 | 1.125 | 357264       | —           | 330144   | —             | —      | —      |
| 5/16-18          | UNC         | .3125             | 2           | H3      | 2.719 | 1.125 | 357280       | 330116      | 357286   | —             | 357298 | 357294 |
| 5/16-18          | UNC         | .3125             | 2           | H5      | 2.719 | 1.125 | 357306       | —           | 330145   | —             | —      | —      |
| 5/16-18          | UNC         | .3125             | 3           | H3      | 2.719 | 1.125 | 357322       | 330117      | 357328   | 330159        | 300016 | —      |
| 5/16-18          | UNC         | .3125             | 3           | H5      | 2.719 | 1.125 | 357348       | —           | 357344   | —             | —      | —      |
| 5/16-18          | UNC         | .3125             | 3           | H13     | 2.719 | 1.125 | 358510       | —           | —        | —             | —      | —      |
| 5/16-24          | UNF         | .3125             | 2           | H1      | 2.719 | 1.125 | 357363       | —           | —        | —             | —      | —      |
| 5/16-24          | UNF         | .3125             | 2           | H3      | 2.719 | 1.125 | 357405       | 330118      | 357401   | —             | 357413 | —      |
| 5/16-24          | UNC         | .3125             | 3           | H4      | 2.719 | 1.125 | 330119       | —           | —        | 330160        | —      | —      |
| 3/8-16           | UNC         | .3750             | 3           | H2      | 2.938 | 1.250 | 357504       | —           | 330146   | —             | —      | —      |
| 3/8-16           | UNC         | .3750             | 3           | H3      | 2.938 | 1.250 | 357520       | 330120      | 357526   | 330161        | —      | —      |
| 3/8-16           | UNC         | .3750             | 3           | H5      | 2.938 | 1.250 | 357546       | —           | 357542   | —             | —      | —      |
| 3/8-24           | UNF         | .3750             | 3           | H1      | 2.938 | 1.250 | 357561       | —           | —        | —             | —      | —      |
| 3/8-24           | UNF         | .3750             | 3           | H2      | 2.938 | 1.250 | 357587       | —           | —        | —             | —      | —      |
| 3/8-24           | UNF         | .3750             | 3           | H3      | 2.938 | 1.250 | 357603       | 330121      | 357609   | 330162        | —      | —      |
| 3/8-24           | UNF         | .3750             | 3           | H4      | 2.938 | 1.250 | 357629       | —           | —        | —             | —      | —      |
| 7/16-14          | UNC         | .4375             | 3           | H2      | 3.156 | 1.438 | 357660       | —           | —        | —             | —      | —      |
| 7/16-14          | UNC         | .4375             | 3           | H3      | 3.156 | 1.438 | 357686       | 330122      | 357682   | —             | —      | —      |
| 7/16-14          | UNC         | .4375             | 3           | H5      | 3.156 | 1.438 | 357702       | —           | —        | —             | —      | —      |
| 7/16-20          | UNF         | .4375             | 3           | H3      | 3.156 | 1.438 | 357769       | —           | 357765   | 330163        | —      | —      |
| 7/16-20          | UNF         | .4375             | 3           | H5      | 3.156 | 1.438 | 357785       | —           | —        | —             | —      | —      |
| 1/2-13           | UNC         | .5000             | 3           | H2      | 3.375 | 1.656 | 357819       | —           | —        | —             | —      | —      |
| 1/2-13           | UNC         | .5000             | 3           | H3      | 3.375 | 1.656 | 357827       | 330123      | 357823   | 330164        | —      | —      |
| 1/2-13           | UNC         | .5000             | 3           | H5      | 3.375 | 1.656 | 357835       | —           | 357831   | —             | —      | —      |
| 1/2-20           | UNF         | .5000             | 3           | H3      | 3.375 | 1.656 | 357868       | 330125      | 357864   | 330165        | —      | —      |
| 5/8-11           | UNC         | .6250             | 3           | H3      | 3.813 | 1.813 | 357926       | 330126      | 357922   | 330166        | —      | —      |
| 5/8-11           | UNC         | .6250             | 3           | H5      | 3.813 | 1.813 | 357934       | —           | 357930   | —             | —      | —      |
| 5/8-18           | UNF         | .6250             | 3           | H3      | 3.813 | 1.813 | 357942       | 330128      | —        | —             | —      | —      |
| 3/4-10           | UNC         | .7500             | 3           | H3      | 4.250 | 2.000 | 357967       | 330129      | 357963   | 330167        | —      | —      |
| 3/4-10           | UNC         | .7500             | 3           | H5      | 4.250 | 2.000 | 357975       | —           | —        | —             | —      | —      |
| 3/4-16           | UNF         | .7500             | 3           | H3      | 4.250 | 2.000 | 330130       | —           | —        | —             | —      | —      |

Machine Taps  
Spiral Point Taps  
Spiral Flute Taps  
Thread Forming Taps  
Pipe Taps  
Dies  
Technical Info  
Sets  
Index

Style: **SPGP**

General Purpose  
Spiral Point - Metric

| diameter & pitch | d <sub>1</sub> mm | number of flutes | D-limit | L mm  | I mm  | order number |          |        |
|------------------|-------------------|------------------|---------|-------|-------|--------------|----------|--------|
|                  |                   |                  |         |       |       | Bright       | plug TiN | TiCN   |
| M1.6 x 0.35      | 1.60              | 2                | D3      | 1.625 | .313  | 360755       | —        | —      |
| M1.8 x 0.35      | 1.80              | 2                | D3      | 1.688 | .375  | 330131       | —        | —      |
| M2 x 0.4         | 2.00              | 2                | D3      | 1.750 | .438  | 360771       | 360774   | —      |
| M2.2 x 0.45      | 2.20              | 2                | D3      | 1.750 | .438  | 330132       | —        | —      |
| M2.5 x 0.45      | 2.50              | 2                | D3      | 1.813 | .500  | 360797       | —        | —      |
| M3 x 0.5         | 3.00              | 2                | D3      | 1.938 | .625  | 360805       | 360801   | 330168 |
| M3.5 x 0.6       | 3.50              | 2                | D4      | 2.000 | .688  | 360821       | —        | —      |
| M4 x 0.7         | 4.00              | 2                | D4      | 2.125 | .750  | 360839       | 360835   | 330169 |
| M4.5 x 0.75      | 4.50              | 2                | D4      | 2.375 | .875  | 360854       | —        | —      |
| M5 x 0.8         | 5.00              | 2                | D4      | 2.375 | .875  | 360862       | 360868   | 330170 |
| M6 x 1.0         | 6.00              | 2                | D5      | 2.500 | 1.000 | 360888       | 360884   | 330171 |
| M7 x 1.0         | 7.00              | 2                | D5      | 2.719 | 1.125 | 360904       | —        | —      |
| M8 x 1.0         | 8.00              | 2                | D5      | 2.719 | 1.125 | 330133       | —        | —      |
| M8 x 1.25        | 8.00              | 2                | D5      | 2.719 | 1.125 | 360920       | 360926   | 330172 |
| M10 x 1.25       | 10.00             | 3                | D5      | 2.938 | 1.250 | 330134       | —        | —      |
| M10 x 1.5        | 10.00             | 3                | D6      | 2.938 | 1.250 | 360946       | 360942   | 330173 |
| M12 x 1.25       | 12.00             | 3                | D5      | 3.375 | 1.656 | 330135       | 330147   | —      |
| M12 x 1.75       | 12.00             | 3                | D6      | 3.375 | 1.656 | 360961       | 360967   | 330174 |
| M14 x 1.5        | 14.00             | 3                | D6      | 3.594 | 1.656 | 330136       | —        | —      |
| M14 x 2          | 14.00             | 3                | D7      | 3.594 | 1.656 | 360995       | —        | —      |
| M16 x 1.5        | 16.00             | 3                | D6      | 3.813 | 1.813 | 330137       | —        | —      |
| M16 x 2          | 16.00             | 3                | D7      | 3.813 | 1.813 | 361019       | —        | —      |
| M20 x 2.5        | 20.00             | 3                | D7      | 4.469 | 2.000 | 361050       | —        | —      |

**General Purpose**  
Straight Flute Sets

**Machine Tap for Through or Blind Holes**



SET

Styles: **HTGP** and **SPGP**

Machine Taps

**303SET Plug Hand Tap Set (10-Piece)**

| style       | sizes  |
|-------------|--|
| H3, 4 Flute | 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 |

| HTGP | order number |
|------|--------------|
|      | 330082       |



Spiral Point Taps

**HT18 Jobber Drill, Plug Hand Tap Set (18-Piece)**

| style           | sizes  |
|-----------------|--|
| Jobber (Bright) | 5/16, 27/64, LET-F, LET-U, #7, #21, #25, #29, #36                  |
| H3, 4 Flute     | 1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13, 6-32, 8-32, 10-24, 10-32 |

| HTGP | order number |
|------|--------------|
|      | 330083       |



Spiral Flute Taps

**HT18T Jobber Drill, Plug Hand Tap Set - TiN (18-Piece)**

| style             | sizes  |
|-------------------|--|
| Jobber (Titanium) | 5/16, 27/64, #7, #21, #25, #29, #36, LET-F, LET-U                  |
| H3, 4 Flute       | 1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13, 6-32, 8-32, 10-24, 10-32 |

| HTGP | order number |
|------|--------------|
|      | 330084       |



Thread Forming Taps

**GT18 Jobber Drill, Plug Spiral PT Tap Set (18-Piece)**

| style           | sizes   |
|-----------------|---|
| Jobber (Bright) | 5/16, 27/64, LET-F, LET-U, #7, #21, #25, #29, #36 |
| H3, 2 Flute     | 1/4-20, 5/16-18, 6-32, 8-32, 10-24, 10-32         |
| H3, 3 Flute     | 3/8-16, 7/16-14, 1/2-13                           |

| SPGP | order number |
|------|--------------|
|      | 330085       |



Pipe Taps

**HT36 Jobber Drill, Plug NC/NF Hand Tap Set (36-Piece)**

| style           | sizes   |
|-----------------|---|
| Jobber (Bright) | 5/16, 25/64, 27/64, 29/64, LET-F, LET-I, LET-Q, LET-U, #3, #7, #15, #16, #21, #25, #29, #33, #36                      |
| H2, 3 Flute     | 6-40  |
| H2, 4 Flute     | 8-36  |
| H3, 3 Flute     | 6-32  |
| H3, 4 Flute     | 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, 8-32, 10-24, 10-32, 12-24, 12-28, |

| HTGP | order number |
|------|--------------|
|      | 330086       |



Dies

Technical Info

**68 Screw Machine Drill, Plug Hand Tap Set (20-Piece)**

| style               | sizes  |
|---------------------|--|
| Screw Mach (Bright) | 5/16, 27/64, #7, #25, #29, #36, #39, #44, LET-F, LET-U |
| H2, 3 Flute         | 4-40, 5-40   |
| H3, 3 Flute         | 6-32   |
| H3, 4 Flute         | 1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13, 8-32, 10-24  |

| HTGP | order number |
|------|--------------|
|      | 330087       |



Sets

**HM18 Jobber Drill, Plug Hand Tap Set (18-Piece)**

| style                | sizes  |
|----------------------|--|
| Jobber (Black Oxide) | 2.05, 2.50, 2.90, 3.30, 4.20, 5.00, 6.70, 8.5, 10.20 |
| D3, 3 Flute          | M2.5x0.45, M3x0.5                                    |
| D4, 3 Flute          | M3.5x0.6, M4x0.7,                                    |
| D4, 4 Flute          | M5x0.8   |
| D5, 4 Flute          | M6X1.0, M8X1.25,                                     |
| D6, 4 Flute          | M10x1.5, M12x1.75                                    |

| HTGP | order number |
|------|--------------|
|      | 330088       |



Index





## Spiral Point Taps for Through Holes

Style: **SPGP+5**

**General Purpose**  
Spiral Point *plus 5* - Inch

**P N**



Machine Taps

Spiral Point Taps

Spiral Flute Taps

Thread Forming Taps

Pipe Taps

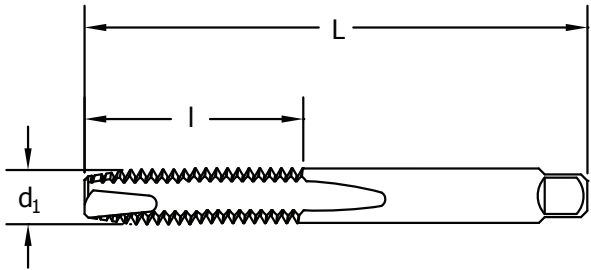
Dies

Technical Info

Sets

Index

**Note**  
Tapping speeds - see page 39-41.



| diameter & pitch | thread form | d <sub>1</sub> mm | number of flutes | H-limit | L in  | I in  | order number plug |             |
|------------------|-------------|-------------------|------------------|---------|-------|-------|-------------------|-------------|
|                  |             |                   |                  |         |       |       | Bright            | Black Oxide |
| 6-32             | UNF         | .1065             | 2                | H11     | 2.000 | .6875 | 313610            | 313616      |
| 8-32             | UNF         | .1360             | 2                | H11     | 2.125 | .7500 | 313611            | 313617      |
| 10-24            | UNC         | .1470             | 2                | H11     | 2.375 | .8750 | 313612            | 131618      |
| 10-32            | UNF         | .1590             | 2                | H11     | 2.375 | .8750 | 313613            | 131619      |
| 1/4-20           | UNC         | .2500             | 3                | H11     | 2.500 | 1.000 | 313500            | 313555      |
| 1/4-28           | UNF         | .2500             | 3                | H11     | 2.500 | 1.000 | 313501            | 313556      |
| 5/16-18          | UNC         | .3125             | 3                | H11     | 2.719 | 1.125 | 313502            | 313557      |
| 5/16-24          | UNF         | .3125             | 3                | H11     | 2.719 | 1.125 | 313503            | 313558      |
| 3/8-16           | UNC         | .3750             | 3                | H11     | 2.938 | 1.250 | 313504            | 313559      |
| 3/8-24           | UNF         | .3750             | 3                | H11     | 2.938 | 1.250 | 313505            | 313560      |
| 7/16-14          | UNC         | .4375             | 3                | H11     | 3.156 | 1.438 | 313506            | 313561      |
| 7/16-20          | UNF         | .4375             | 3                | H11     | 3.156 | 1.438 | 313507            | 313562      |
| 1/2-13           | UNC         | .5000             | 3                | H11     | 3.375 | 1.656 | 313508            | 313563      |
| 1/2-20           | UNF         | .5000             | 3                | H11     | 3.375 | 1.656 | 313509            | 313564      |
| 5/8-11           | UNC         | .6250             | 3                | H11     | 3.813 | 1.813 | 313510            | 313565      |
| 5/8-18           | UNF         | .6250             | 3                | H11     | 3.813 | 1.813 | 313511            | 313566      |
| 3/4-10           | UNC         | .7500             | 4                | H11     | 4.250 | 2.000 | 313512            | 313567      |
| 3/4-16           | UNF         | .7500             | 4                | H11     | 4.250 | 2.000 | 313513            | 313568      |

Style: **SPGP+5**

**Metric - General Purpose**  
Spiral Point *plus 5* - Metric

| d <sub>1</sub> diameter & pitch | number of flutes | D-limit | L in  | I in  | order number plug |             |
|---------------------------------|------------------|---------|-------|-------|-------------------|-------------|
|                                 |                  |         |       |       | Bright            | Black Oxide |
| M4x0.7                          | 2                | D11     | 2.125 | .7500 | 313614            | 313620      |
| M5x0.8                          | 2                | D11     | 2.375 | .8750 | 313615            | 313621      |
| M6x1                            | 3                | D11     | 2.500 | 1.000 | 313514            | 313569      |
| M8x1                            | 3                | D11     | 2.719 | 1.125 | 313515            | 313570      |
| M8x1.25                         | 3                | D11     | 2.719 | 1.125 | 313516            | 313571      |
| M10x1                           | 3                | D11     | 2.938 | 1.25  | 313517            | 313572      |
| M10x1.25                        | 3                | D11     | 2.938 | 1.25  | 313518            | 313573      |
| M10x1.5                         | 3                | D11     | 2.938 | 1.25  | 313519            | 313574      |
| M12x1.25                        | 3                | D11     | 3.375 | 1.656 | 313520            | 313575      |
| M12x1.5                         | 3                | D11     | 3.375 | 1.656 | 313521            | 313576      |
| M12x1.75                        | 3                | D11     | 3.375 | 1.656 | 313522            | 313577      |
| M16x1.5                         | 3                | D11     | 3.813 | 1.813 | 313523            | 313578      |
| M16x2                           | 3                | D11     | 3.813 | 1.813 | 313524            | 313579      |

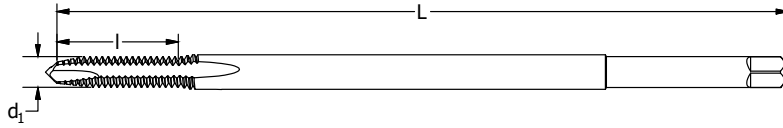
**General Purpose**  
Extended Length (6")

**Spiral Point Taps for Through Holes**

Style: **SPGPX**



**Note**  
Tapping speeds - see page 39-41.



| diameter & pitch | thread form | d <sub>1</sub> in | number of flutes | H-limit | L in  | I in  | order number |
|------------------|-------------|-------------------|------------------|---------|-------|-------|--------------|
| 8-32             | UNC         | .1640             | 2                | H3      | 6.000 | .750  | 918932       |
| 10-24            | UNC         | .1900             | 2                | H3      | 6.000 | .875  | 918934       |
| 10-32            | UNF         | .1900             | 2                | H3      | 6.000 | .875  | 918935       |
| 1/4-20           | UNC         | .2500             | 2                | H3      | 6.000 | 1.000 | 918936       |
| 1/4-28           | UNF         | .2500             | 2                | H3      | 6.000 | 1.000 | 918937       |
| 5/16-18          | UNC         | .3125             | 2                | H3      | 6.000 | 1.125 | 918938       |
| 5/16-24          | UNF         | .3125             | 2                | H3      | 6.000 | 1.125 | 918939       |
| 3/8-16           | UNC         | .3750             | 3                | H3      | 6.000 | 1.250 | 918940       |
| 3/8-24           | UNF         | .3750             | 3                | H3      | 6.000 | 1.250 | 918941       |

**General Purpose - Inch**  
Extended Length (6") **plus 5**

Style: **SPGPX+5**



**Note**  
Tapping speeds - see page 39-41.

| diameter & pitch | thread form | d <sub>1</sub> in | number of flutes | H-limit | L in | I in   | order number |             |
|------------------|-------------|-------------------|------------------|---------|------|--------|--------------|-------------|
|                  |             |                   |                  |         |      |        | Bright       | Black Oxide |
| 1/4-20           | UNC         | .2500             | 3                | H11     | 6"   | 1.0000 | 313544       | 313599      |
| 5/16-18          | UNC         | .3125             | 3                | H11     | 6"   | 1.1250 | 313545       | 313600      |
| 3/8-16           | UNC         | .3750             | 3                | H11     | 6"   | 1.2500 | 313546       | 313601      |
| 7/16-14          | UNC         | .4375             | 3                | H11     | 6"   | 1.4375 | 313547       | 313602      |
| 1/2-13           | UNC         | .5000             | 3                | H11     | 6"   | 1.6562 | 313548       | 313603      |
| 5/8-11           | UNC         | .6250             | 3                | H11     | 6"   | 1.8125 | 313549       | 313604      |

**General Purpose - Metric**  
Extended Length (6") **plus 5**

Style: **SPGPX+5**



**Note**  
Tapping speeds - see page 39-41.

| d <sub>1</sub> diameter & pitch | number of flutes | D-limit | L in | I in   | order number |             |
|---------------------------------|------------------|---------|------|--------|--------------|-------------|
|                                 |                  |         |      |        | Bright       | Black Oxide |
| M6x1                            | 3                | D11     | 6"   | 1.0000 | 313550       | 313605      |
| M8x1.25                         | 3                | D11     | 6"   | 1.1250 | 313551       | 313606      |
| M10x1.5                         | 3                | D11     | 6"   | 1.2500 | 313552       | 313607      |
| M12x1.75                        | 3                | D11     | 6"   | 1.6562 | 313553       | 313608      |
| M16x2                           | 3                | D11     | 6"   | 1.8125 | 313554       | 313609      |



# Spiral Point Taps for Through Holes

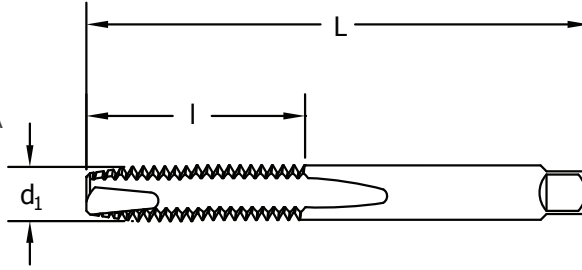
Style: **SPLS**

**General Purpose**  
Low Shear



**Note**  
Tapping speeds - see page 39-41.

Effective May 2022:  
These tap are being converted from 302A to 302 design.



| diameter & pitch | thread form | d <sub>1</sub> in | number of flutes | H-limit | L in  | I in  | order number |
|------------------|-------------|-------------------|------------------|---------|-------|-------|--------------|
| 4-40             | UNC         | .1120             | 2                | H2      | 1.875 | .563  | 330175       |
| 5-40             | UNC         | .1250             | 2                | H2      | 1.938 | .625  | 330176       |
| 6-32             | UNC         | .1380             | 2                | H3      | 2.000 | .688  | 330177       |
| 8-32             | UNC         | .1640             | 2                | H3      | 2.125 | .750  | 330178       |
| 10-24            | UNF         | .1900             | 2                | H3      | 2.375 | .875  | 330179       |
| 10-32            | UNC         | .1900             | 2                | H3      | 2.375 | .875  | 330180       |
| 12-24            | UNC         | .2160             | 2                | H3      | 2.375 | .938  | 330181       |
| 1/4-20           | UNC         | .2500             | 2                | H1      | 2.500 | 1.000 | 330182       |
| 1/4-20           | UNC         | .2500             | 2                | H2      | 2.500 | 1.000 | 330183       |
| 1/4-20           | UNC         | .2500             | 2                | H3      | 2.500 | 1.000 | 330184       |
| 1/4-20           | UNC         | .2500             | 2                | H11     | 2.500 | 1.000 | 330185       |
| 1/4-28           | UNF         | .2500             | 2                | H3      | 2.500 | 1.000 | 330186       |
| 5/16-18          | UNC         | .3125             | 2                | H3      | 2.719 | 1.125 | 330187       |
| 5/16-24          | UNF         | .3125             | 2                | H3      | 2.719 | 1.125 | 330188       |
| 3/8-16           | UNC         | .3750             | 3                | H3      | 2.938 | 1.250 | 330189       |
| 7/16-14          | UNC         | .4375             | 3                | H3      | 3.156 | 1.438 | 330190       |
| 1/2-13           | UNC         | .5000             | 3                | H3      | 3.375 | 1.656 | 330191       |
| 5/8-11           | UNC         | .6250             | 3                | H3      | 3.813 | 1.813 | 330192       |

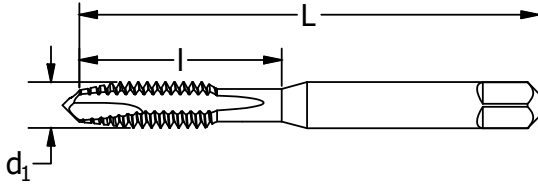
- Machine Taps
- Spiral Point Taps
- Spiral Flute Taps
- Thread Forming Taps
- Pipe Taps
- Dies
- Technical Info
- Sets
- Index



Style: **SPAR**



**Note**  
Tapping speeds - see  
page 39-41.



| diameter & pitch | thread form | d <sub>1</sub> in | number of flutes | H-limit | L in  | I in  | order number<br>plug - TiN |
|------------------|-------------|-------------------|------------------|---------|-------|-------|----------------------------|
| 6-32             | UNC         | .1380             | 3                | H3      | 2.000 | .688  | 285057                     |
| 8-32             | UNC         | .1640             | 3                | H3      | 2.125 | .750  | 285107                     |
| 10-24            | UNC         | .1900             | 3                | H3      | 2.375 | .875  | 285156                     |
| 10-32            | UNF         | .1900             | 3                | H3      | 2.375 | .875  | 285206                     |
| 10-32            | UNF         | .1900             | 3                | H5      | 2.375 | .875  | 285222                     |
| 1/4-20           | UNC         | .2500             | 3                | H3      | 2.500 | 1.000 | 285255                     |
| 1/4-28           | UNF         | .2500             | 3                | H3      | 2.500 | 1.000 | 285354                     |
| 1/4-28           | UNF         | .2500             | 3                | H5      | 2.500 | 1.000 | 285370                     |
| 5/16-18          | UNC         | .3125             | 3                | H3      | 2.719 | 1.125 | 285404                     |
| 5/16-24          | UNF         | .3125             | 3                | H3      | 2.719 | 1.125 | 285453                     |
| 5/16-24          | UNF         | .3125             | 3                | H5      | 2.719 | 1.125 | 285479                     |
| 3/8-16           | UNC         | .3750             | 3                | H3      | 2.938 | 1.250 | 285503                     |
| 3/8-16           | UNC         | .3750             | 3                | H5      | 2.938 | 1.250 | 285552                     |
| 3/8-24           | UNF         | .3750             | 3                | H5      | 2.938 | 1.250 | 285628                     |
| 7/16-14          | UNC         | .4375             | 3                | H3      | 3.156 | 1.438 | 285651                     |
| 7/16-20          | UNF         | .4375             | 3                | H3      | 3.156 | 1.438 | 285701                     |
| 1/2-13           | UNC         | .5000             | 3                | H5      | 3.375 | 1.656 | 285801                     |
| 1/2-20           | UNF         | .5000             | 3                | H3      | 3.375 | 1.656 | 285859                     |





## Spiral Point Taps for Through Holes

Style: **SPHD**

**Spiral Point Taps**  
CNC Heavy-Duty



Machine Taps

Spiral Point Taps

Spiral Flute Taps

Thread Forming Taps

Pipe Taps

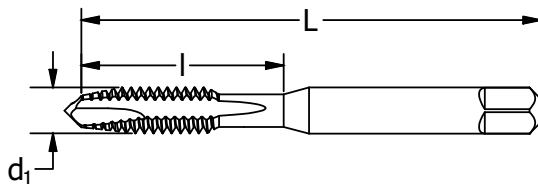
Dies

Technical Info

Sets

Index

**Note**  
Tapping speeds - see page 39-41.



| diameter & pitch | thread form | d <sub>1</sub> in | number of flutes | H-limit | L in  | I in  | order number |        |
|------------------|-------------|-------------------|------------------|---------|-------|-------|--------------|--------|
|                  |             |                   |                  |         |       |       | Bright       | TiN    |
| 6-32             | UNC         | .1380             | 3                | H3      | 2.000 | .688  | 282108       | 280108 |
| 8-32             | UNC         | .1640             | 3                | H3      | 2.125 | .750  | 282157       | 280157 |
| 10-24            | UNC         | .1900             | 3                | H3      | 2.375 | .875  | 282207       | 280207 |
| 10-32            | UNF         | .1900             | 3                | H3      | 2.375 | .875  | 282256       | 280256 |
| 1/4-20           | UNC         | .2500             | 3                | H3      | 2.500 | 1.000 | 282306       | 280306 |
| 1/4-20           | UNC         | .2500             | 3                | H5      | 2.500 | 1.000 | 282355       | 280355 |
| 1/4-28           | UNF         | .2500             | 3                | H3      | 2.500 | 1.000 | 282405       | 280405 |
| 5/16-18          | UNC         | .3125             | 3                | H3      | 2.719 | 1.125 | 282454       | 280454 |
| 5/16-18          | UNC         | .3125             | 3                | H5      | 2.719 | 1.125 | 282470       | 280470 |
| 5/16-24          | UNF         | .3125             | 3                | H3      | 2.719 | 1.125 | 282504       | 280504 |
| 3/8-16           | UNC         | .3750             | 3                | H3      | 2.938 | 1.250 | 282553       | 280553 |
| 3/8-16           | UNC         | .3750             | 3                | H5      | 2.938 | 1.250 | 282603       | 280603 |
| 3/8-24           | UNF         | .3750             | 3                | H3      | 2.938 | 1.250 | 282652       | 280652 |
| 1/2-13           | UNC         | .5000             | 3                | H3      | 3.375 | 1.656 | 282801       | 280801 |
| 1/2-13           | UNC         | .5000             | 3                | H5      | 3.375 | 1.656 | 282850       | 280850 |
| 1/2-20           | UNF         | .5000             | 3                | H3      | 3.375 | 1.656 | 282901       | 280901 |
| 5/8-11           | UNC         | .6250             | 3                | H3      | 3.813 | 1.813 | 282959       | 280959 |

Style: **SPHD**

**Metric - Spiral Point Taps**  
CNC Heavy-Duty

| diameter & pitch | d <sub>1</sub> mm | number of flutes | D-limit | L in  | I in  | order number |
|------------------|-------------------|------------------|---------|-------|-------|--------------|
| M6 x 1.0         | 6.00              | 3                | D5      | 2.500 | 1.000 | 272550       |

**CNC Spiral Flute**  
Steels and Stainless Steels

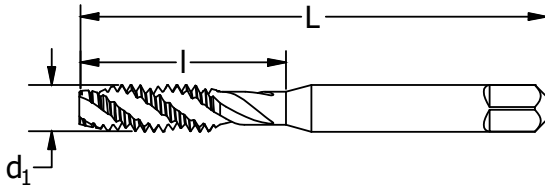
**Spiral Flute Taps for Blind Holes**



Style: **SFS**



**Note**  
Tapping speeds - see page 39-41.



| diameter & pitch | thread form | d <sub>1</sub> in | number of flutes | H-limit | L in  | I in  | order number |
|------------------|-------------|-------------------|------------------|---------|-------|-------|--------------|
| 10-32            | UNF         | .1900             | 3                | H3      | 2.375 | .875  | 330465       |
| 1/4-20           | UNC         | .2500             | 3                | H3      | 2.500 | 1.000 | 330466       |
| 1/4-20           | UNC         | .2500             | 3                | H5      | 2.500 | 1.000 | 330489       |
| 5/16-18          | UNC         | .3125             | 3                | H3      | 2.719 | 1.125 | 330468       |
| 5/16-18          | UNC         | .3125             | 3                | H5      | 2.719 | 1.125 | 330490       |
| 3/8-16           | UNC         | .3750             | 3                | H3      | 2.938 | 1.250 | 330470       |
| 3/8-16           | UNC         | .3750             | 3                | H5      | 2.938 | 1.250 | 330491       |
| 1/2-13           | UNC         | .5000             | 3                | H3      | 3.375 | 1.656 | 330474       |
| 1/2-13           | UNC         | .5000             | 3                | H5      | 3.375 | 1.656 | 330494       |
| 1/2-20           | UNF         | .5000             | 3                | H5      | 3.375 | 1.656 | 330495       |
| 5/8-11           | UNC         | .6250             | 4                | H3      | 3.813 | 1.813 | 330478       |
| 5/8-11           | UNC         | .6250             | 4                | H5      | 3.813 | 1.813 | 330496       |

**Metric - CNC Spiral Flute**  
Steels and Stainless Steels

Style: **SFS**

| diameter & pitch | d <sub>1</sub> mm | number of flutes | D-limit | L in  | I in  | order number |
|------------------|-------------------|------------------|---------|-------|-------|--------------|
| M4 x 0.7         | 4.00              | 3                | D4      | 2.125 | .750  | 330498       |
| M5 x 0.8         | 5.00              | 3                | D4      | 2.375 | .875  | 330499       |
| M6 x 1           | 6.00              | 3                | D5      | 2.500 | 1.000 | 330502       |
| M8 x 1.25        | 8.00              | 3                | D5      | 2.719 | 1.125 | 330503       |
| M10 x 1.5        | 10.00             | 3                | D6      | 2.938 | 1.250 | 330504       |
| M12 x 1.75       | 12.00             | 3                | D6      | 3.375 | 1.656 | 330505       |



## Spiral Flute Taps for Blind Holes

Style: **SFHD**

**Spiral Flute  
CNC Heavy-Duty**



**Note**  
Tapping speeds - see  
page 39-41.



Machine  
Taps

Spiral Point  
Taps

Spiral Flute  
Taps

Thread Forming  
Taps

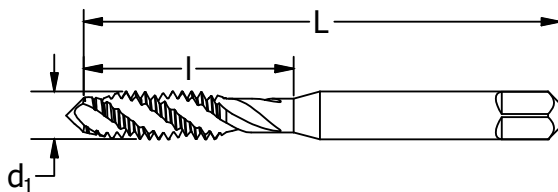
Pipe Taps

Dies

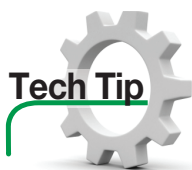
Technical Info

Sets

Index



| diameter<br>& pitch | thread<br>form | d <sub>1</sub><br>in | number<br>of flutes | H-<br>limit | L<br>in | I<br>in | order number        |                          |
|---------------------|----------------|----------------------|---------------------|-------------|---------|---------|---------------------|--------------------------|
|                     |                |                      |                     |             |         |         | plug<br>Black Oxide | bottoming<br>Black Oxide |
| 6-32                | UNC            | .1380                | 3                   | H3          | 2.000   | .688    | 281957              | 282005                   |
| 8-32                | UNC            | .1640                | 3                   | H3          | 2.125   | .750    | 282054              | 282104                   |
| 10-24               | UNC            | .1900                | 3                   | H3          | 2.375   | .875    | 282062              | 282120                   |
| 10-32               | UNF            | .1900                | 3                   | H3          | 2.375   | .875    | 282153              | 282203                   |
| 1/4-20              | UNC            | .2500                | 3                   | H3          | 2.500   | 1.000   | 282252              | 282302                   |
| 1/4-28              | UNF            | .2500                | 3                   | H3          | 2.500   | 1.000   | 282351              | 282401                   |
| 5/16-18             | UNC            | .3125                | 3                   | H3          | 2.719   | 1.125   | 282450              | 282501                   |
| 5/16-24             | UNF            | .3125                | 3                   | H3          | 2.719   | 1.125   | 282468              | 282526                   |
| 3/8-16              | UNC            | .3750                | 3                   | H3          | 2.938   | 1.250   | 282559              | 282609                   |
| 3/8-24              | UNF            | .3750                | 3                   | H3          | 2.938   | 1.250   | 282567              | 282625                   |
| 1/2-13              | UNC            | .5000                | 3                   | H3          | 3.375   | 1.656   | 282757              | 282807                   |
| 1/2-20              | UNF            | .5000                | 3                   | H3          | 3.375   | 1.656   | 282765              | 282823                   |



### Tech Tip

#### Ground Thread Tap Limits

All standard ground thread taps made to USCTI Tables 327 and 329 will be marked **G** to designate ground thread. **G** will be followed by **H** to designate above basic or **L** for below basic and a numeral to designate the pitch diameter limits. For example: **G H3** indicates a ground thread tap with pitch diameter limits .0010" to .0015" over basic. See table at right.

For taps over 1-1/2" diameter with H or L limit numbers, divide the H or L limit number by 2 to get the amount (in thousandths of an inch) the maximum tap pitch diameter is over basic for the H series or under basic for the L series. In H series taps, the tolerance shown in USCTI Table 331, Column D, subtracted from the maximum pitch diameter will give the minimum pitch diameter. In L series taps the tolerance shown in Table 331, Column D, added to the minimum pitch diameter will give the maximum pitch diameter. These taps will be marked with the appropriate H or L limit number.

#### Pitch Diameter Limits

##### for taps through 1" diameter

- L1 = basic to basic - .0005
- H1 = basic to basic + .0005
- H2 = basic + .0005 to basic + .0010
- H3 = basic + .0010 to basic + .0015
- H4 = basic + .0015 to basic + .0020
- H5 = basic + .0020 to basic + .0025
- H6 = basic + .0025 to basic + .0030

##### for taps over 1" diameter through 1-1/2" diameter

- H4 = basic + .0010 to basic + .0020

**General Purpose Spiral Flute**  
High-Spiral - Inch

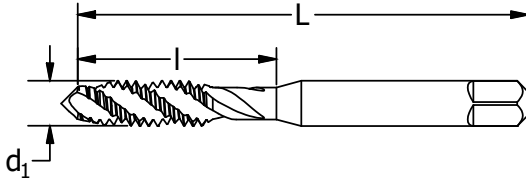
**Spiral Flute Taps for Blind Holes**



Style: **SFGP**



**Note**  
Tapping speeds - see page 39-41.



order number

| diameter & pitch | thread form | d <sub>1</sub> in | number of flutes | H-limit | L in  | I in  | plug   |        | bottoming |        |
|------------------|-------------|-------------------|------------------|---------|-------|-------|--------|--------|-----------|--------|
|                  |             |                   |                  |         |       |       | Bright | TiN    | Bright    | TiN    |
| 4-40             | UNC         | .1120             | 2                | H2      | 1.875 | .563  | 367149 | —      | 367156    | 330202 |
| 6-32             | UNC         | .1380             | 2                | H3      | 2.000 | .688  | 367222 | 330193 | 367230    | 330203 |
| 8-32             | UNC         | .1640             | 3                | H3      | 2.125 | .750  | 367263 | 330194 | 367271    | 330204 |
| 10-24            | UNC         | .1900             | 3                | H3      | 2.375 | .875  | 367305 | 330195 | 367313    | —      |
| 10-32            | UNF         | .1900             | 3                | H3      | 2.375 | .875  | 367321 | 330196 | 367339    | 330205 |
| 1/4-20           | UNC         | .2500             | 3                | H3      | 2.500 | 1.000 | 367909 | —      | 367917    | 367913 |
| 1/4-28           | UNF         | .2500             | 3                | H3      | 2.500 | 1.000 | 367925 | —      | 367933    | —      |
| 5/16-18          | UNC         | .3125             | 3                | H3      | 2.719 | 1.125 | 367941 | —      | 367958    | —      |
| 5/16-24          | UNF         | .3125             | 3                | H3      | 2.719 | 1.125 | 367966 | —      | 367974    | —      |
| 3/8-16           | UNC         | .3750             | 3                | H3      | 2.938 | 1.250 | 367982 | —      | 367990    | —      |
| 3/8-24           | UNF         | .3750             | 3                | H3      | 2.938 | 1.250 | 368006 | —      | 368014    | —      |
| 1/2-13           | UNC         | .5000             | 3                | H3      | 3.375 | 1.656 | 368063 | —      | 368071    | —      |
| 1/2-20           | UNF         | .5000             | 3                | H3      | 3.375 | 1.656 | 368089 | —      | 368097    | —      |

**General Purpose Spiral Flute**  
High-Spiral - Metric

Style: **SFGP**

order number

| diameter & pitch | d <sub>1</sub> mm | number of flutes | D-limit | L in  | I in  | plug   |        | bottoming |        |
|------------------|-------------------|------------------|---------|-------|-------|--------|--------|-----------|--------|
|                  |                   |                  |         |       |       | Bright | TiCN   | Bright    | TiCN   |
| M3 x 0.5         | 3.00              | 2                | D3      | 1.938 | .625  | 366110 | —      | 366112    | 330206 |
| M4 x 0.7         | 4.00              | 3                | D4      | 2.125 | .750  | 366130 | 330197 | 366132    | 330207 |
| M5 x 0.8         | 5.00              | 3                | D4      | 2.375 | .875  | 366140 | 330198 | 366142    | 330208 |
| M6 x 1.0         | 6.00              | 3                | D5      | 2.500 | 1.000 | 366150 | 330199 | 366152    | 330209 |
| M8 x 1.25        | 8.00              | 3                | D5      | 2.719 | 1.125 | 366160 | 330200 | 366162    | 330210 |
| M10 x 1.5        | 10.00             | 3                | D6      | 2.938 | 1.250 | 366170 | 330201 | 366172    | 330211 |
| M12 x 1.75       | 12.00             | 3                | D6      | 3.375 | 1.656 | 366180 | —      | 366182    | —      |



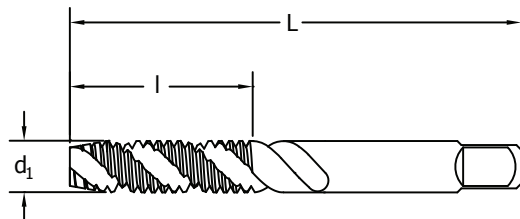
## Spiral Flute Taps for Blind Holes

Style: **SFGP+5**

## General Purpose Spiral Flute Plus 5 - Inch



**Note**  
Tapping speeds - see  
page 39-41.



| diameter & pitch | thread form | d <sub>1</sub> in | number of flutes | H-limit | L in  | I in  | order number semi bottoming |             |
|------------------|-------------|-------------------|------------------|---------|-------|-------|-----------------------------|-------------|
|                  |             |                   |                  |         |       |       | Bright                      | Black Oxide |
| 1/4-20           | UNC         | .2500             | 3                | H11     | 2.500 | 1.000 | 313525                      | 313580      |
| 1/4-28           | UNF         | .2500             | 3                | H11     | 2.500 | 1.000 | 313526                      | 313581      |
| 5/16-18          | UNC         | .3125             | 3                | H11     | 2.719 | 1.125 | 313527                      | 313582      |
| 5/16-24          | UNF         | .3125             | 3                | H11     | 2.719 | 1.125 | 313528                      | 313583      |
| 3/8-16           | UNC         | .3750             | 3                | H11     | 2.938 | 1.250 | 313529                      | 313584      |
| 3/8-24           | UNF         | .3750             | 3                | H11     | 2.938 | 1.250 | 313530                      | 313585      |
| 7/16-14          | UNC         | .4375             | 3                | H11     | 3.156 | 1.438 | 313531                      | 313586      |
| 7/16-20          | UNF         | .4375             | 3                | H11     | 3.156 | 1.438 | 313532                      | 313587      |
| 1/2-13           | UNC         | .5000             | 3                | H11     | 3.375 | 1.656 | 313533                      | 313588      |
| 1/2-20           | UNF         | .5000             | 3                | H11     | 3.375 | 1.656 | 313534                      | 313589      |
| 5/8-11           | UNC         | .6250             | 3                | H11     | 3.813 | 1.813 | 313535                      | 313590      |
| 5/8-18           | UNF         | .6250             | 3                | H11     | 3.813 | 1.813 | 313536                      | 313591      |
| 3/4-10           | UNC         | .7500             | 4                | H11     | 4.250 | 2.000 | 313537                      | 313592      |
| 3/4-16           | UNF         | .7500             | 4                | H11     | 4.250 | 2.000 | 313538                      | 313593      |

Style: **SFGP+5**

## General Purpose Spiral Flute Plus 5 - Metric

| d <sub>1</sub> diameter & pitch | number of flutes | D-limit | L in  | I in  | order number semi bottoming |             |
|---------------------------------|------------------|---------|-------|-------|-----------------------------|-------------|
|                                 |                  |         |       |       | Bright                      | Black Oxide |
| M6x1                            | 3                | D11     | 2.500 | 1.00  | 313539                      | 313594      |
| M8x1.25                         | 3                | D11     | 2.719 | 1.125 | 313540                      | 313595      |
| M10x1.5                         | 3                | D11     | 2.938 | 1.25  | 313541                      | 313596      |
| M12x1.75                        | 3                | D11     | 3.375 | 1.656 | 313542                      | 313597      |
| M16x2                           | 3                | D11     | 3.813 | 1.813 | 313543                      | 313598      |

Machine Taps  
Spiral Point Taps  
Spiral Flute Taps  
Thread Forming Taps  
Pipe Taps  
Dies  
Technical Info  
Sets  
Index



**General Purpose  
Thread Forming**

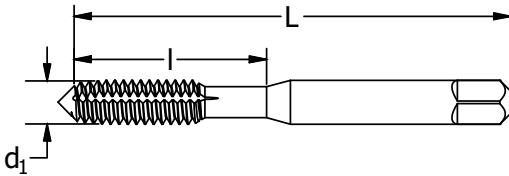
**Thread Forming Taps**



**Styles: FTGP**



**Note**  
Modify tapping speeds listed on page 39-41 as follows: double the speeds versus thread cutting taps.  
\* #0 - #3: 302 blank style.



| diameter & pitch | thrd form | d <sub>1</sub> in | H-limit | L in  | l in  | order number |        |           |        |
|------------------|-----------|-------------------|---------|-------|-------|--------------|--------|-----------|--------|
|                  |           |                   |         |       |       | plug         |        | bottoming |        |
|                  |           |                   |         |       |       | Bright       | TiN    | Bright    | TiN    |
| *0-80            | UNF       | .0600             | H2      | 1.625 | .313  | -            | -      | 330214    | -      |
| *2-56            | UNC       | .0860             | H2      | 1.750 | .438  | -            | -      | 330215    | -      |
| 4-40             | UNC       | .1120             | H3      | 1.875 | .563  | 289004       | -      | 289012    | -      |
| 5-40             | UNC       | .1250             | H3      | 1.938 | .625  | 289087       | -      | 289095    | -      |
| 6-32             | UNC       | .1380             | H3      | 2.000 | .688  | 289202       | 287004 | 289210    | 287053 |
| 6-32             | UNC       | .1380             | H5      | 2.000 | .688  | 289228       | 287103 | 289236    | 287152 |
| 8-32             | UNC       | .1640             | H3      | 2.125 | .750  | 289269       | 287202 | 289277    | 287251 |
| 8-32             | UNC       | .1640             | H5      | 2.125 | .750  | 289285       | 287301 | 289293    | 287350 |
| 10-24            | UNC       | .1900             | H4      | 2.375 | .875  | 289368       | 287400 | 289376    | 287459 |
| 10-24            | UNC       | .1900             | H6      | 2.375 | .875  | 289384       | 287509 | 289392    | 287558 |
| 10-32            | UNF       | .1900             | H4      | 2.375 | .875  | 289426       | -      | 289434    | -      |
| 10-32            | UNF       | .1900             | H6      | 2.375 | .875  | 289442       | 287608 | 289459    | 287657 |
| 1/4-20           | UNC       | .2500             | H4      | 2.500 | 1.000 | 289525       | -      | 289533    | -      |
| 1/4-20           | UNC       | .2500             | H6      | 2.500 | 1.000 | 289541       | 287707 | 289558    | 287756 |
| 1/4-28           | UNF       | .2500             | H4      | 2.500 | 1.000 | 289582       | -      | 289590    | -      |
| 5/16-18          | UNC       | .3125             | H5      | 2.719 | 1.125 | 289640       | -      | 289657    | -      |
| 5/16-18          | UNC       | .3125             | H7      | 2.719 | 1.125 | 289665       | 287905 | 289673    | 287954 |
| 3/8-16           | UNC       | .3750             | H7      | 2.938 | 1.250 | 289780       | 288101 | 289798    | 288150 |
| 3/8-24           | UNF       | .3750             | H5      | 2.938 | 1.250 | 330212       | -      | -         | -      |
| 3/8-24           | UNF       | .3750             | H7      | 2.938 | 1.250 | 330213       | -      | -         | -      |
| 1/2-13           | UNC       | .5000             | H8      | 3.375 | 1.656 | 289988       | 288408 | 289996    | 288457 |

**Metric - General Purpose  
Thread Forming**

**Style: FTGP**

| diameter & pitch | d <sub>1</sub> mm | D-limit | L in  | l in  | order number |        |           |        |
|------------------|-------------------|---------|-------|-------|--------------|--------|-----------|--------|
|                  |                   |         |       |       | plug         |        | bottoming |        |
|                  |                   |         |       |       | Bright       | TiN    | Bright    | TiN    |
| M3 x 0.5         | 3.00              | D5      | 1.938 | .625  | 291001       | 291006 | 291018    | 291014 |
| M4 x 0.7         | 4.00              | D6      | 2.125 | .750  | 291083       | 291089 | 291091    | 291097 |
| M5 x 0.8         | 5.00              | D7      | 2.375 | .875  | 291125       | 291123 | 291133    | 291139 |
| M6 x 1.0         | 6.00              | D8      | 2.500 | 1.000 | 291166       | 291162 | 291174    | 291170 |
| M8 x 1.25        | 8.00              | D9      | 2.719 | 1.125 | 291240       | 291246 | 291257    | 291253 |
| M10 x 1.5        | 10.00             | D10     | 2.938 | 1.250 | 291176       | 291287 | 291178    | 291295 |



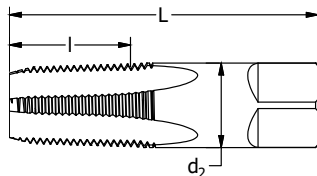
## Pipe Taps

Style: **PTT**

Taper Pipe  
NPT/NPTF Medium Hook

**P**

**Note**  
Tapping speeds - see  
page 39-41.



| diameter<br>& pitch | d <sub>2</sub><br>in | number<br>of flutes | L<br>in | I<br>in | order number  |            |                |             |
|---------------------|----------------------|---------------------|---------|---------|---------------|------------|----------------|-------------|
|                     |                      |                     |         |         | NPT<br>Bright | NPT<br>TiN | NPTF<br>Bright | NPTF<br>TiN |
| 1/16-27             | .3125                | 4                   | 2.1250  | 0.6875  | 385307        | 385328     | 385323         | 385329      |
| *1/8-27             | .3125                | 4                   | 2.1250  | 0.7500  | 385331        | 385357     | 385356         | 385359      |
| 1/8-27              | .4375                | 4                   | 2.1250  | 0.7500  | 385364        | 385385     | 385380         | 385386      |
| 1/4-18              | .5625                | 4                   | 2.4375  | 1.0625  | 385398        | 385409     | 385413         | 385410      |
| 3/8-18              | .7000                | 4                   | 2.5625  | 1.0625  | 385422        | 385443     | 385448         | 385444      |
| 1/2-14              | .6875                | 4                   | 3.1250  | 1.3750  | 385455        | 385458     | 385471         | 385477      |
| 3/4-14              | .9063                | 5                   | 3.2500  | 1.3750  | 385489        | 385500     | 385505         | 385501      |
| 1 - 11-1/2          | 1.1250               | 5                   | 3.7500  | 1.7500  | 385513        | 385534     | 385539         | 385536      |
| 1-1/4 - 11-1/2      | 1.3125               | 5                   | 4.0000  | 1.7500  | 385547        | 385680     | 385562         | 385685      |
| 1-1/2 - 11-1/2      | 1.5000               | 7                   | 4.2500  | 1.7500  | 385570        | 385681     | —              | —           |
| 2 - 11-1/2          | 1.8750               | 7                   | 4.5000  | 1.7500  | 385604        | 385682     | —              | —           |

\* small shank

**SET**

Style: **PTT**

Taper Pipe  
NPT/NPTF Medium Hook



NPT Pipe Tap: 1/8 - 1" NPT

order number

353768

### Tech Tip

### Tap Drill Recommendations - NPT, NPTF, NPSM, NPSC, NPSF Sizes

**Color Code:**

Wire Gage - Purple  
Fractional - Red,  
Letter - Blue,  
and  
Metric Sizes - Green

| Nominal Tap<br>Size & Pitch                                    | NPT & NPTF |           | NPSM     | NPSC    | NPSF     |
|--|------------|-----------|----------|---------|----------|
|  | w/o reamer | w/ reamer |          |         |          |
| 1/16 - 27  | C (.242)   | A (.234)  | —        | 1/4     | D (.246) |
| 1/8 - 27   | Q (.332)   | 21/64     | T (.358) | Q       | R (.339) |
| 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     | 19,0mm   | 23/32   | .705*    |
| 3/4 - 14   | 29/32      | 57/64     | 61/64    | 59/64   | 59/64    |
| 1 - 11 <sup>1</sup> / <sub>2</sub>                             | 1-9/64     | 1-1/8     | 1-13/64  | 1-5/32  | 1-5/32   |
| 1 <sup>1</sup> / <sub>4</sub> - 11 <sup>1</sup> / <sub>2</sub> | 1-31/64    | 1-15/32   | 1.546*   | 1-1/2   | —        |
| 1 <sup>1</sup> / <sub>2</sub> - 11 <sup>1</sup> / <sub>2</sub> | 1-23/32    | 1-45/64   | 1-25/32  | 1-47/64 | —        |
| 2 - 11 <sup>1</sup> / <sub>2</sub>                             | 2-3/16     | 2-11/64   | 2-1/4    | 2-1/4   | —        |

\*special

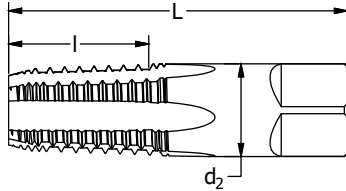


**P**



**Note**

Tapping speeds - see page 39-41.



| diameter & pitch | d <sub>2</sub> in | number of flutes | L in  | I in  | order number |             |          |
|------------------|-------------------|------------------|-------|-------|--------------|-------------|----------|
|                  |                   |                  |       |       | NPT Bright   | NPTF Bright | NPTF TiN |
| *1/8-27          | .3125             | 5                | 2.125 | .750  | —            | 385752      | —        |
| 1/8-27           | .4375             | 5                | 2.125 | .750  | 385737       | 385729      | 385755   |
| 1/4-18           | .5625             | 5                | 2.438 | 1.063 | 385760       | 385786      | 385789   |
| 3/8-18           | .7000             | 5                | 2.563 | 1.063 | 385794       | 385810      | 385813   |
| 1/2-14           | .6875             | 5                | 3.125 | 1.375 | 385828       | 385844      | 385847   |
| 3/4-14           | .9063             | 5                | 3.250 | 1.375 | 385851       | 385877      | 385870   |
| 1-11-1/2         | 1.1250            | 5                | 3.750 | 1.750 | 385885       | —           | —        |

\* small shank

**Tech Tip**

**Pipe Taps**

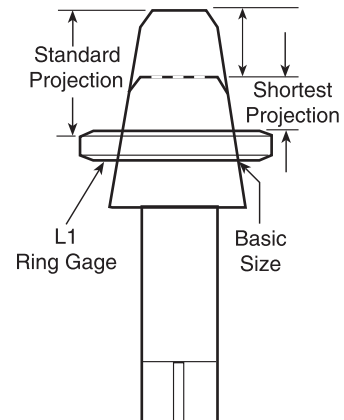
General purpose pipe taps are appropriate for threading a wide variety of materials, both ferrous and non-ferrous.

Ground thread pipe taps are standard in American Standard Pipe Form (NPT) and American Standard Dryseal Pipe Form (NPFT). 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 pipe taps and left hand pipe taps are available as specials.





Pipe Taps

Style: **PTS**

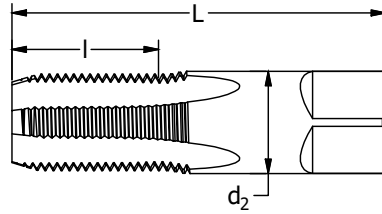
NPS/NPSM/NPSC/NPSF

Medium Hook Straight Pipe

**P**

**Note**

Tapping speeds - see page 39-41.



| diameter & pitch | d <sub>2</sub> in | number of flutes | L in  | I in  | order number         |             |
|------------------|-------------------|------------------|-------|-------|----------------------|-------------|
|                  |                   |                  |       |       | NPS/NPSM NPSC Bright | NPSF Bright |
| *1/8-27          | .3125             | 4                | 2.125 | .750  | —                    | 387212      |
| 1/8-27           | .4375             | 4                | 2.125 | .750  | 387113               | 387220      |
| 1/4-18           | .5625             | 4                | 2.438 | 1.063 | 387121               | 387238      |
| 3/8-18           | .7000             | 4                | 2.563 | 1.063 | 387139               | 387246      |
| 1/2-14           | .6875             | 4                | 3.125 | 1.375 | 387147               | 387253      |

\*small shank

Machine Taps  
Spiral Point Taps  
Spiral Flute Taps  
Thread Forming Taps

Style: **ELPTT**

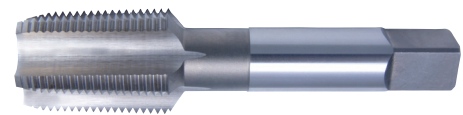
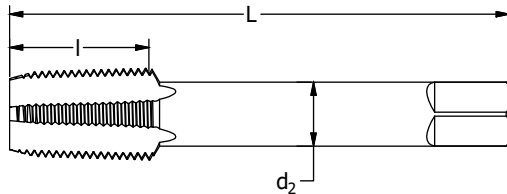
CNC Extra Length Med. Hook

with Machine Tap Shanks

**P**

**Note**

Tapping speeds - see page 39-41.



| diameter & pitch | d <sub>2</sub> in | number of flutes | L in  | I in  | order number |             |          |
|------------------|-------------------|------------------|-------|-------|--------------|-------------|----------|
|                  |                   |                  |       |       | NPT Bright   | NPTF Bright | NPTF TIN |
| 1/8-27           | 0.318             | 4                | 3.000 | .750  | 384524       | 386008      | 386129   |
| 1/4-18           | 0.480             | 4                | 3.500 | 1.063 | 384525       | 386024      | 386152   |
| 3/8-18           | 0.480             | 4                | 3.750 | 1.063 | 384526       | 386040      | 386186   |
| 1/2-14           | 0.480             | 4                | 4.375 | 1.375 | 384527       | —           | —        |
| 3/4-14           | 0.800             | 5                | 4.625 | 1.375 | 384528       | —           | —        |
| 1-11-1/2         | 0.800             | 5                | 5.250 | 1.750 | 384529       | —           | —        |

Pipe Taps  
Dies  
Technical Info  
Sets  
Index

## Inch - Carbon Steel Re-threading Dies

### Hexagon Dies

Style: **377**



**MOST  
GENERAL  
PURPOSE  
MATERIALS**

#### Note

For dressing over bruised or rusty threads.

No special holder required; use standard wrenches.



| die diameter<br>TPI & series | decimal<br>equivalent | length across<br>flats - in | thickness<br>in | order number<br>carbon steel |        |
|------------------------------|-----------------------|-----------------------------|-----------------|------------------------------|--------|
| 1/4-20                       | UNC                   | .2500                       | .5938           | .2500                        | 403108 |
| 1/4-28                       | UNF                   | .2500                       | .5938           | .2500                        | 403116 |
| 5/16-18                      | UNC                   | .3125                       | .6875           | .3125                        | 403124 |
| 5/16-24                      | UNF                   | .3125                       | .6875           | .3125                        | 403132 |
| 3/8-16                       | UNC                   | .3750                       | .7812           | .3750                        | 403140 |
| 3/8-24                       | UNF                   | .3750                       | .7812           | .3750                        | 403157 |
| 7/16-14                      | UNC                   | .4375                       | .8750           | .4375                        | 403165 |
| 7/16-20                      | UNF                   | .4375                       | .8750           | .4375                        | 403173 |
| 1/2-13                       | UNC                   | .5000                       | 1.0625          | .5000                        | 403181 |
| 1/2-20                       | UNF                   | .5000                       | 1.0625          | .5000                        | 403199 |
| 9/16-12                      | UNC                   | .5625                       | 1.0625          | .5000                        | 403207 |
| 9/16-18                      | UNF                   | .5625                       | 1.0625          | .5000                        | 403215 |
| 5/8-11                       | UNC                   | .6250                       | 1.2500          | .6250                        | 403223 |
| 5/8-18                       | UNF                   | .6250                       | 1.2500          | .6250                        | 403231 |
| 11/16-11                     | UNS                   | .6875                       | 1.4375          | .7500                        | 403249 |
| 11/16-16                     | UNS                   | .6875                       | 1.4375          | .7500                        | 403256 |
| 3/4-10                       | UNC                   | .7500                       | 1.4375          | .7500                        | 403264 |
| 3/4-16                       | UNF                   | .7500                       | 1.4375          | .7500                        | 403272 |
| 7/8-9                        | UNC                   | .8750                       | 1.6250          | .8750                        | 403280 |
| 7/8-14                       | UNF                   | .8750                       | 1.6250          | .8750                        | 403298 |
| 1-8                          | UNC                   | 1.0000                      | 1.8125          | 1.0000                       | 403306 |
| 1-12                         | UNF                   | 1.0000                      | 1.8125          | 1.0000                       | 403314 |
| 1-14                         | UNS                   | 1.0000                      | 1.8125          | 1.0000                       | 403322 |
| 1-1/8-7                      | UNC                   | 1.1250                      | 2.0000          | 1.0000                       | 403330 |
| 1-1/8-12                     | UNF                   | 1.1250                      | 2.0000          | 1.0000                       | 403348 |
| 1-1/4-7                      | UNC                   | 1.2500                      | 2.1875          | 1.0000                       | 403355 |
| 1-1/4-12                     | UNF                   | 1.2500                      | 2.1875          | 1.0000                       | 403363 |
| 1-3/8-6                      | UNC                   | 1.4100                      | 2.3750          | 1.0000                       | 403371 |
| 1-3/8-12                     | UNF                   | 1.4100                      | 2.3750          | 1.0000                       | 403389 |
| 1-1/2-6                      | UNC                   | 1.5000                      | 2.5625          | 1.0000                       | 403397 |
| 1-1/2-12                     | UNF                   | 1.5000                      | 2.5625          | 1.0000                       | 403405 |

## Taper - Carbon Steel Re-threading Dies

Style: **377**

| die diameter<br>TPI & series | decimal<br>equiv. | length across<br>flats - in | thickness<br>in | order number<br>carbon steel |        |
|------------------------------|-------------------|-----------------------------|-----------------|------------------------------|--------|
| 1/8-27                       | NPT               | .1250                       | 1.0625          | .3750                        | 411895 |
| 1/4-18                       | NPT               | .2500                       | 1.2500          | .6250                        | 411896 |
| 3/8-18                       | NPT               | .3750                       | 1.4375          | .6250                        | 411897 |
| 1/2-14                       | NPT               | .5000                       | 1.6250          | .7500                        | 411898 |
| 3/4-14                       | NPT               | .7500                       | 2.0000          | .8125                        | 411899 |
| 1 - 11 1/2                   | NPT               | 1.0000                      | 2.3750          | 1.0000                       | 411900 |

metric sizes on next page





### Hexagon Dies

Style: **377**

### Metric - Carbon Steel Re-threading Dies

| die diameter & TPI | decimal equiv. | mm equiv. | length across flats - in | thickness in | order number carbon steel |
|--------------------|----------------|-----------|--------------------------|--------------|---------------------------|
| M5 x 0.8           | .1969          | 5.00      | .5938                    | .2500        | 404808                    |
| M6 x 1             | .2362          | 6.00      | .5938                    | .2500        | 404809                    |
| M8 x 1.25          | .3150          | 8.00      | .6875                    | .3125        | 404833                    |
| M10 x 1.5          | .3937          | 10.00     | .8750                    | .4375        | 404858                    |
| M12 x 1.75         | .4724          | 12.00     | 1.0125                   | .5000        | 404882                    |
| M14 x 2            | .5512          | 14.00     | 1.0125                   | .5000        | 404916                    |
| M16 x 2            | .6299          | 16.00     | 1.2500                   | .6250        | 404932                    |
| M20 x 2.5          | .7874          | 20.00     | 1.6250                   | .8750        | 404973                    |

SET

Style: **377**

### Carbon Steel Re-threading Dies



Order #420363

Order #403553



Order #403520

Order #403595



Order #403522

| set number | number of sizes | die sizes  |            | order number |
|------------|-----------------|------------|------------|--------------|
| 481        | 8               | 1/4-20 NC  | 1/2-13 NC  | 403512       |
|            |                 | 5/16-18 NC | 9/16-12 NC |              |
|            |                 | 3/8-16 NC  | 5/8-11 NC  |              |
|            |                 | 7/16-14 NC | 3/4-10 NC  |              |
| 482        | 8               | 1/4-28 NF  | 1/2-20 NF  | 403553       |
|            |                 | 5/16-24 NF | 9/16-18 NF |              |
|            |                 | 3/8-24 NF  | 5/8-18 NF  |              |
|            |                 | 7/16-20 NF | 3/4-16 NF  |              |
| 490        | 10              | 1/4-20 NC  | 9/16-12 NC | 403520       |
|            |                 | 5/16-18 NC | 5/8-11 NC  |              |
|            |                 | 3/8-16 NC  | 3/4-10 NC  |              |
|            |                 | 7/16-14 NC | 7/8-9 NC   |              |
|            |                 | 1/2-13 NC  | 1-8 NC     |              |
| 492        | 20              | 1/4-20 NC  | 1/4-28 NF  | 403595       |
|            |                 | 5/16-18 NC | 5/16-24 NF |              |
|            |                 | 3/8-16 NC  | 3/8-24 NF  |              |
|            |                 | 7/16-14 NC | 7/16-20 NF |              |
|            |                 | 1/2-13 NC  | 1/2-20 NF  |              |
|            |                 | 9/16-12 NC | 9/16-18 NF |              |
|            |                 | 5/8-11 NC  | 5/8-18 NF  |              |
|            |                 | 3/4-10 NC  | 3/4-16 NF  |              |
|            |                 | 7/8-9 NC   | 7/8-14 NF  |              |
|            |                 | 1-8 NC     | 1-14 NS    |              |
| 485        | 7               | M6 x 1     | M14 x 2    | 403522       |
|            |                 | M8 x 1.25  | M16 x 2    |              |
|            |                 | M10 x 1.5  | M20 x 2.5  |              |
|            |                 | M12 x 1.75 |            |              |

Machine Taps

Spiral Point Taps

Spiral Flute Taps

Thread Forming Taps

Pipe Taps

Dies

Technical Info

Sets

Index

**Inch - Round Adjustable Dies**  
**382 - Carbon Steel / 6392 - HSS**

**Round Adjustable Dies**  
**Styles: 382 and 6382**



**MOST GENERAL PURPOSE MATERIALS**

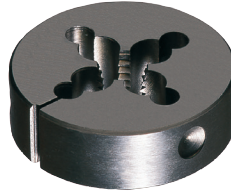
**Note**

Use in hand-held die stocks or machine holders.

Chamfered on both faces, 2 to 3 threads on one side 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.

**Pipe and Metric** sizes after inch.



order number

| die diameter<br>TPI & series | decimal<br>equiv. | outside dia.<br>in | thickness<br>in | style 382<br>carbon steel | style 6382<br>high-speed steel |
|------------------------------|-------------------|--------------------|-----------------|---------------------------|--------------------------------|
| 0-80 UNF                     | .0600             | .8125              | .2500           | 401003                    | —                              |
| 1-64 UNC                     | .0730             | .8125              | .2500           | 401029                    | —                              |
| 1-72 UNF                     | .0730             | .8125              | .2500           | 401037                    | —                              |
| 2-56 UNC                     | .0860             | .8125              | .2500           | 401045                    | —                              |
| 2-64 UNF                     | .0860             | .8125              | .2500           | 401052                    | —                              |
| 3-48 UNC                     | .0990             | .8125              | .2500           | 401060                    | —                              |
| 3-56 UNF                     | .0990             | .8125              | .2500           | 401078                    | —                              |
| 4-40 UNC                     | .1120             | .8125              | .2500           | 401102                    | —                              |
| 4-48 UNF                     | .1120             | .8125              | .2500           | 401110                    | —                              |
| 5-40 UNC                     | .1250             | .8125              | .2500           | 401128                    | 400013                         |
| 5-44 UNF                     | .1250             | .8125              | .2500           | 401129                    | 400021                         |
| 6-32 UNC                     | .1380             | .8125              | .2500           | 401168                    | 400039                         |
| 6-32 UNC                     | .1380             | 1.000              | .3750           | 401409                    | 400138                         |
| 6-40 UNF                     | .1380             | .8125              | .2500           | 401169                    | 400047                         |
| 8-32 UNC                     | .1640             | .8125              | .2500           | 401177                    | 400054                         |
| 8-32 UNC                     | .1640             | 1.0000             | .3750           | 401433                    | 400145                         |
| 8-36 UNF                     | .1640             | .8125              | .2500           | 401178                    | 400062                         |
| 10-24 UNC                    | .1900             | .8125              | .2500           | 401201                    | 400070                         |
| 10-24 UNC                    | .1900             | 1.0000             | .3750           | 401466                    | 400179                         |
| 10-32 UNF                    | .1900             | .8125              | .2500           | 401227                    | 400088                         |
| 10-32 UNF                    | .1900             | 1.0000             | .3750           | 401482                    | 400187                         |
| 12-24 UNC                    | .2160             | .8125              | .2500           | 401242                    | 400096                         |
| 12-24 UNC                    | .2160             | 1.0000             | .3750           | 401490                    | 400195                         |
| 12-28 UNF                    | .2160             | .8125              | .2500           | 401243                    | 400104                         |
| 1/4-20 UNC                   | .2500             | .8125              | .2500           | 401244                    | 400211                         |
| 1/4-20 UNC                   | .2500             | 1.0000             | .3750           | 401979                    | 400302                         |
| 1/4-20 UNC                   | .2500             | 1.5000             | .5000           | 402209                    | 400401                         |
| 1/4-20 UNC                   | .2500             | 2.0000             | .6250           | 402407                    | —                              |
| 1/4-28 UNF                   | .2500             | .8125              | .2500           | —                         | 400229                         |
| 1/4-28 UNF                   | .2500             | 1.0000             | .3750           | 401995                    | 400310                         |
| 1/4-28 UNF                   | .2500             | 1.5000             | .5000           | 402225                    | 400419                         |
| 1/4-28 UNF                   | .2500             | 2.0000             | .6250           | 402423                    | —                              |
| 5/16-18 UNC                  | .3125             | .8125              | .2500           | —                         | 400237                         |
| 5/16-18 UNC                  | .3125             | 1.0000             | .3750           | 402019                    | 400328                         |
| 5/16-18 UNC                  | .3125             | 1.5000             | .5000           | 402241                    | 400427                         |
| 5/16-18 UNC                  | .3125             | 2.0000             | .6250           | 402449                    | —                              |
| 5/16-24 UNF                  | .3125             | .8125              | .2500           | —                         | 400245                         |
| 5/16-24 UNF                  | .3125             | 1.0000             | .3750           | 402027                    | 400336                         |
| 5/16-24 UNF                  | .3125             | 1.5000             | .5000           | 402258                    | 400435                         |
| 5/16-24 UNF                  | .3125             | 2.0000             | .6250           | 402456                    | —                              |

continued on next page



### Round Adjustable Dies

Styles: **382** and **6382** (continued)

### Inch - Round Adjustable Dies

**382** - Carbon Steel / **6382** - HSS

| die diameter<br>TPI & series | decimal<br>equiv. | outside dia<br>in | thickness<br>in | order number              |                                |
|------------------------------|-------------------|-------------------|-----------------|---------------------------|--------------------------------|
|                              |                   |                   |                 | style 382<br>carbon steel | style 6382<br>high-speed steel |
| 3/8-16 UNC                   | .3750             | 1.0000            | .3750           | 402043                    | 400344                         |
| 3/8-16 UNC                   | .3750             | 1.5000            | .5000           | 402274                    | 400445                         |
| 3/8-16 UNC                   | .3750             | 2.0000            | .6250           | 402472                    | —                              |
| 3/8-24 UNF                   | .3750             | 1.0000            | .3750           | 402050                    | 400351                         |
| 3/8-24 UNF                   | .3750             | 1.5000            | .5000           | 402282                    | 400450                         |
| 3/8-24 UNF                   | .3750             | 2.0000            | .6250           | 402480                    | —                              |
| 7/16-14 UNC                  | .4375             | 1.0000            | .3750           | 402068                    | 400369                         |
| 7/16-14 UNC                  | .4375             | 1.5000            | .5000           | 402290                    | 400468                         |
| 7/16-14 UNC                  | .4375             | 2.0000            | .6250           | 402498                    | —                              |
| 7/16-20 UNF                  | .4375             | 1.0000            | .3750           | 402076                    | 400377                         |
| 7/16-20 UNF                  | .4375             | 1.5000            | .5000           | 402308                    | 400476                         |
| 7/16-20 UNF                  | .4375             | 2.0000            | .6250           | 402506                    | —                              |
| 1/2-13 UNC                   | .5000             | 1.0000            | .3750           | 402077                    | —                              |
| 1/2-13 UNC                   | .5000             | 1.5000            | .5000           | 402316                    | 400484                         |
| 1/2-13 UNC                   | .5000             | 2.0000            | .6250           | 402514                    | —                              |
| 1/2-20 UNF                   | .5000             | 1.0000            | .3750           | 402078                    | —                              |
| 1/2-20 UNF                   | .5000             | 1.5000            | .5000           | 402324                    | 400492                         |
| 1/2-20 UNF                   | .5000             | 2.0000            | .6250           | 402522                    | —                              |
| 9/16-12 UNC                  | .5625             | 1.5000            | .5000           | 402332                    | 400500                         |
| 9/16-12 UNC                  | .5625             | 2.0000            | .6250           | 402530                    | —                              |
| 9/16-18 UNF                  | .5625             | 1.5000            | .5000           | 402340                    | 400518                         |
| 9/16-18 UNF                  | .5625             | 2.0000            | .6250           | 402548                    | —                              |
| 5/8-11 UNC                   | .6250             | 1.5000            | .5000           | 402357                    | 400526                         |
| 5/8-11 UNC                   | .6250             | 2.0000            | .6250           | 402555                    | 400609                         |
| 5/8-11 UNC                   | .6250             | 2.5000            | .7500           | 402746                    | —                              |
| 5/8-18 UNF                   | .6250             | 1.5000            | .5000           | 402365                    | 400534                         |
| 5/8-18 UNF                   | .6250             | 2.0000            | .6250           | 402563                    | 400617                         |
| 3/4-10 UNC                   | .7500             | 1.5000            | .5000           | 402370                    | —                              |
| 3/4-10 UNC                   | .7500             | 2.0000            | .6250           | 402597                    | 400625                         |
| 3/4-10 UNC                   | .7500             | 2.5000            | .7500           | 402787                    | —                              |
| 3/4-16 UNF                   | .7500             | 1.5000            | .5000           | 402377                    | —                              |
| 3/4-16 UNF                   | .7500             | 2.0000            | .6250           | 402605                    | 400633                         |
| 3/4-16 UNF                   | .7500             | 2.5000            | .7500           | 402795                    | —                              |
| 7/8-9 UNC                    | .8750             | 2.0000            | .6250           | 402613                    | 400641                         |
| 7/8-9 UNC                    | .8750             | 2.5000            | .7500           | 402803                    | —                              |
| 7/8-14 UNF                   | .8750             | 2.0000            | .6250           | 402621                    | 400658                         |
| 7/8-14 UNF                   | .8750             | 2.5000            | .7500           | 402811                    | —                              |
| 1-8 UNC                      | 1.0000            | 2.0000            | .6250           | 402625                    | —                              |
| 1-8 UNC                      | 1.0000            | 2.5000            | .7500           | 402829                    | —                              |
| 1-8 UNC                      | 1.0000            | 3.0000            | 1.0000          | 402902                    | —                              |
| 1-12 UNF                     | 1.0000            | 2.0000            | .6250           | 402627                    | —                              |
| 1-12 UNF                     | 1.0000            | 2.5000            | .7500           | 402837                    | —                              |
| 1-12 UNF                     | 1.0000            | 3.0000            | 1.0000          | 402910                    | —                              |
| 1-14 UNF                     | 1.0000            | 2.0000            | .7500           | 402630                    | —                              |
| 1-1/8-7 UNC                  | 1.1250            | 3.0000            | 1.0000          | 402936                    | —                              |
| 1-1/8-12 UNF                 | 1.1250            | 3.0000            | 1.0000          | 402944                    | —                              |
| 1-1/4-7 UNC                  | 1.2500            | 3.0000            | 1.0000          | 402951                    | —                              |
| 1-1/4-12 UNF                 | 1.2500            | 3.0000            | 1.0000          | 402969                    | —                              |
| 1-3/8-6 UNC                  | 1.3750            | 3.0000            | 1.0000          | 402977                    | —                              |
| 1-3/8-12 UNF                 | 1.3750            | 3.0000            | 1.0000          | 402985                    | —                              |
| 1-1/2-6 UNC                  | 1.5000            | 3.0000            | 1.0000          | 402993                    | —                              |
| 1-1/2-12 UNF                 | 1.5000            | 3.0000            | 1.0000          | 403009                    | —                              |

pipe and metric sizes continued on next page





**Pipe - Round Adjustable Dies**  
383 - Carbon Steel / 6382 - HSS

Styles: **383**

Machine Taps

Spiral Point Taps

Spiral Flute Taps

Thread Forming Taps

Pipe Taps

Dies

Technical Info

Sets

Index

| die diameter<br>TPI & series |     | decimal<br>equiv. | outside dia<br>in | thickness<br>in | order number<br><b>style 383</b><br>carbon steel |
|------------------------------|-----|-------------------|-------------------|-----------------|--|
| 1/8-27                       | NPT | .1250             | 1.0000            | .3750           | 405202   |
| 1/8-27                       | NPT | .1250             | 1.5000            | .5000           | 405251   |
| 1/4-18                       | NPT | .2500             | 1.5000            | .5000           | 405269   |
| 1/4-18                       | NPT | .2500             | 2.0000            | .6250           | 405301   |
| 3/8-18                       | NPT | .3750             | 1.5000            | .5000           | 405277   |
| 3/8-18                       | NPT | .3750             | 2.0000            | .6250           | 405319   |
| 1/2-14                       | NPT | .5000             | 2.0000            | .6250           | 405327   |

Pipe size round adjustable dies are not split.

**Metric - Round Adjustable Dies**  
6382 - HSS

Styles: **6382** (continued)

| die diameter<br>TPI & series |  | decimal<br>equiv. | mm<br>equiv. | outside dia<br>in | thickness<br>in | order number<br><b>style 6382</b><br>high-speed steel |
|------------------------------|--|-------------------|--------------|-------------------|-----------------|---|
| M2.5 x 0.45                  |  | .0984             | 2.50         | .8125             | .2500           | 415721  |
| M3 x 0.5                     |  | .1181             | 3.00         | .8125             | .2500           | 415724  |
| M3.5 x 0.6                   |  | .1378             | 3.50         | .8125             | .2500           | 415732  |
| M4 x 0.7                     |  | .1575             | 4.00         | .8125             | .2500           | 415737  |
| M4.5 x 0.75                  |  | .1772             | 4.50         | .8125             | .2500           | 415742  |
| M5 x 0.8                     |  | .1969             | 5.00         | .8125             | .2500           | 415747  |
| M6 x 1                       |  | .2362             | 6.00         | .8125             | .2500           | 415757  |
| M6 x 1                       |  | .2362             | 6.00         | 1.0000            | .3750           | 415801  |
| M7 x 1                       |  | .2756             | 7.00         | 1.0000            | .3750           | 415807  |
| M8 x 1.25                    |  | .3150             | 8.00         | 1.0000            | .3750           | 415813  |
| M10 x 1.5                    |  | .3937             | 10.00        | 1.0000            | .3750           | 415824  |
| M12 x 1.75                   |  | .4724             | 12.00        | 1.0000            | .3750           | 415833  |
| M14 x 2                      |  | .5512             | 14.00        | 1.5000            | .5000           | 415880  |
| M16 x 2                      |  | .6300             | 16.00        | 1.5000            | .5000           | 415889  |
| M18 x 2.5                    |  | .7087             | 18.00        | 1.5000            | .5000           | 415896  |
| M20 x 2.5                    |  | .7874             | 20.00        | 1.5000            | .5000           | 415901  |

**Die Stock**

Round Adjustable Dies

Styles: **1750** and **1790**

Style **1750** holds round adjustable dies with three adjusting screws.

Style **1790** stocks have built-in workpiece guide and lock in place with two set screws.

**Obsolete once inventory is depleted.**



| product number | die o.d. | overall length | order no.<br><b>style 1750</b> |
|----------------|----------|----------------|--------------------------------|
| #2             | 13/16    | 7              | 423008                         |
| #3             | 1        | 9-1/4          | 423009                         |
| #5             | 1-1/2    | 13-1/4         | 423010                         |
| #6             | 2        | 15-3/8         | 420555                         |
| #7             | 2-1/2    | 19-1/2         | 420563                         |
| #8             | 3        | 23             | 420571                         |

| product number | die o.d. | overall length | order no.<br><b>style 1790</b> |
|----------------|----------|----------------|--------------------------------|
| #13            | 13/16    | 6-1/4          | 423011                         |
| #14            | 1        | 13             | 423012                         |
| #15            | 1-1/2    | 17-3/4         | 423013                         |
| #16            | 2        | 26             | 423014                         |



OK Jr. Tap & Die Sets with HSS Production Hand Taps and Carbon Steel Round Adjustable Dies - Inch

| set number | no. of sizes | tap and die sizes  | tap wrench   | die stock           | order number |
|------------|--------------|--|--|---------------------|--------------|
| 17         | 7            | 4-40 UNC<br>6-32 UNC<br>8-32 UNC<br>1/4-20 UNC   | 10-24 UNC  | 329 13              | 423001       |
| 18         | 5            | 1/4-20 UNC<br>5/16-18 UNC  | 3/8-16 UNC<br>7/16-14 UNC<br>1/2-13 UNC  | 333 14              | 423002       |
| 25         | 8            | 0-80 UNF<br>1-72 UNF<br>2-56 UNC<br>3-48 UNC   | 4-40 UNC<br>6-32 UNC<br>8-32 UNC<br>10-24 UNC  | 329 13              | 423003       |
| T4         | 8            | 2-56 UNC<br>3-48 UNC<br>4-40 UNC<br>6-32 UNC   | 8-32 UNC<br>10-24 UNC<br>10-32 UNF<br>12-24 UNC  | 0 1851              | 420359       |
| T6         | 20           | 1/4-20 UNC<br>5/16-18 UNC<br>3/8-16 UNC<br>7/16-14 UNC<br>1/2-13 UNC<br>9/16-12 UNC<br>5/8-11 UNC<br>3/4-10 UNC<br>7/8-9 UNC<br>1-8 UNC              | 1/4-28 UNF<br>5/16-24 UNF<br>3/8-24 UNF<br>7/16-20 UNF<br>1/2-20 UNF<br>9/16-18 UNF<br>5/8-18 UNF<br>3/4-16 UNF<br>7/8-14 UNF<br>1-12 UNF                        | 7 1852              | 420363       |
| 28         | 11           | 1/4-20 UNC<br>5/16-18 UNC<br>3/8-16 UNC<br>7/16-14 UNC<br>1/2-13 UNC<br>pipe size  | 1/4-28 UNF<br>5/16-24 UNF<br>3/8-24 UNF<br>7/16-20 UNF<br>1/2-20 UNF<br>1/8-27 (short shank)   | 333 1               | 423004       |
| 32         | 21           | 1/4-20 UNC<br>5/16-18 UNC<br>3/8-16 UNC<br>7/16-14 UNC<br>1/2-13 UNC<br>9/16-12 UNC<br>5/8-11 UNC<br>3/4-10 UNC<br>7/8-9 UNC<br>1-8 UNC<br>pipe size | 1/4-28 UNF<br>5/16-24 UNF<br>3/8-24 UNF<br>7/16-20 UNF<br>1/2-20 UNF<br>9/16-18 UNF<br>5/8-18 UNF<br>3/4-16 UNF<br>7/8-14 UNF<br>1-14 UNS<br>1/8-27 (long shank) | 15 14<br>7 15<br>16 | 423005       |

continued on next column



Order #420363

OK Jr. Tap & Die Sets with HSS Production Hand Taps and Carbon Steel Round Adjustable Dies - Inch

| set number | no. of sizes       | tap and die sizes   | tap wrench  | die stock                   | screw-driver        | order number |
|------------|--------------------|---|---|-----------------------------|---------------------|--------------|
| 33         | 28 Taps<br>15 Dies | 4-40 UNC<br>6-32 UNC<br>8-32 UNC<br>10-24 UNC<br>10-32 UNF<br>12-24 UNC<br>1/4-20 UNC<br>1/4-28 UNF<br>5/16-18 UNC<br>5/16-24 UNF | 3/8-16 UNC<br>3/8-24 UNF<br>7/16-14 UNC<br>7/16-20 UNF<br>1/2-13 UNC<br>1/2-20 UNF<br>9/16-12 UNC<br>9/16-18 UNF<br>5/8-18 UNF<br>3/4-16 UNF<br>7/8-14 UNF<br>1-14 UNS<br>1/8-27 NPT<br>1/4-18NPT<br>3/8-18 NPT<br>1/2-14 NPT | 329<br>336<br>15<br>15<br>7 | 14<br>15<br>16<br>7 | 423006       |

Tap & Die Sets with Production Hand Taps and HSS Round Adjustable Dies - Metric

| set number | no. of sizes | tap and die sizes  | tap wrench | die stock | screw-driver | order number |
|------------|--------------|--|------------|-----------|--------------|--------------|
| 48         | 7            | M2.5 x 0.45<br>M3 x 0.5<br>M3.5 x 0.6<br>M4 x 0.7<br>M4.5 x 0.75<br>M5 x 0.8<br>M6 x 1.0 | 333        | 1790      | 300          | 420365       |

Tap & Die Sets with Production Hand Taps, and HSS Round Adjustable Dies (metric sizes)

| set number | no. of sizes | tap and die sizes  | tap wrench | die stock | screw-driver | order number |
|------------|--------------|--|------------|-----------|--------------|--------------|
| 49         | 5            | M6 x 1.0<br>M7 x 1.0<br>M8 x 1.25<br>M10 x 1.5<br>M12 x 1.75 | 333        | 1790      | 300          | 420367       |

Tap & Die Sets with Production Hand Taps, Black Oxide Jobber Length Drills, and HSS Round Adjustable Dies (metric sizes)

| set number | no. of sizes | tap and die sizes  | drill sizes                      | tap wrench | die stock | screw-driver | order number |
|------------|--------------|--|----------------------------------|------------|-----------|--------------|--------------|
| 49D        | 5            | M6 x 1.0<br>M7 x 1.0<br>M8 x 1.25<br>M10 x 1.5<br>M12 x 1.75 | 5.0<br>6.0<br>6.7<br>8.5<br>10.2 | 333        | 1790      | 300          | 420368       |

Machine Taps  
Spiral Point Taps  
Spiral Flute Taps  
Thread Forming Taps  
Pipe Taps  
Dies  
Technical Info  
Sets  
Index





**Little Giant®**  
Two-Piece Die System

Styles: 380, 1383, 1384, 1385, 1386



- Little Giant® Two-Piece Die System consists of these parts  
Series 380 — Die  
Series 1384 — Guide  
Series 1385 — Collet
- Inch sizes are sold as a complete assembly or in their component parts.
- Metric sizes are sold in their component parts only.

- Use with Style 1381 Little Giant® die stocks.
- Collet assembly for use with Little Giant® dies consists of a cap and a guide; order cap and guide separately, or assembled as a collet.
- 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 the set screws at either end of the slot.
- Caps of a given outside diameter are made with several different sizes of slots.
- 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 1/4" through 1/2" dies.
- For metric sizes where guide and collet assembly are not available, use Style 1382 Little Giant® Jr. die stock to hold dies.



Inch Sizes

| nominal size<br>tpi and series | decimal<br>equiv. | style 1386           |              | style 380           |                        | style 1385 |             | style 1383       |                    | style 1384 |
|--------------------------------|-------------------|----------------------|--------------|---------------------|------------------------|------------|-------------|------------------|--------------------|------------|
|                                |                   | complete<br>assembly | die<br>blank | die order<br>number | collet assembly<br>no. | order no.  | cap<br>o.d. | cap<br>order no. | guide<br>order no. |            |
| 4-40 UNC                       | .1120             | 423019               | A1           | 423058              | A1                     | 423100     | 1.250       | 423121           | 423128             |            |
| 6-32 UNC                       | .1380             | 423020               | A1           | 423059              | A1                     | 423101     | 1.250       | 423121           | 423129             |            |
| 8-32 UNC                       | .1640             | 423021               | A1           | 423060              | A1                     | 423102     | 1.250       | 423121           | 423130             |            |
| 10-24 UNC                      | .1900             | 423022               | A1           | 423061              | A1                     | 423103     | 1.250       | 423121           | 423131             |            |
| 10-32 UNF                      | .1900             | 423023               | A1           | 423062              | A1                     | 423103     | 1.250       | 423121           | 423131             |            |
| 12-24 UNC                      | .2160             | 423024               | A1           | 423063              | A1                     | 423104     | 1.250       | 423121           | 423132             |            |
| 1/4-20 UNC                     | .2500             | 423025               | A1           | 423064              | A1                     | 423105     | 1.250       | 423121           | 423133             |            |
| 1/4-20 UNC                     | .2500             | 423026               | A            | 423065              | 1                      | 423106     | 2.000       | 423122           | 423134             |            |
| 1/4-20 UNC                     | .2500             | 423027               | A            | 423065              | 5                      | 423107     | 2.750       | 423123           | 423135             |            |
| 1/4-28 UNF                     | .2500             | 423028               | A1           | 423067              | A1                     | 423105     | 1.250       | 423121           | 423133             |            |
| 1/4-28 UNF                     | .2500             | 423029               | A            | 423068              | 1                      | 423106     | 2.000       | 423122           | 423134             |            |
| 1/4-28 UNF                     | .2500             | 423030               | A            | 423068              | 5                      | 423107     | 2.750       | 423123           | 423135             |            |
| 5/16-18 UNC                    | .3125             | 423031               | A            | 423069              | 1                      | 423108     | 2.000       | 423122           | 423137             |            |
| 5/16-18 UNC                    | .3125             | 423032               | A            | 423069              | 5                      | 423109     | 2.750       | 423123           | 423136             |            |
| 5/16-24 UNF                    | .3125             | 423033               | A            | 423070              | 1                      | 423108     | 2.000       | 423122           | 423137             |            |
| 5/16-24 UNF                    | .3125             | 423034               | A            | 423070              | 5                      | 423109     | 2.750       | 423123           | 423136             |            |
| 3/8-16 UNC                     | .3750             | 423035               | B            | 423071              | 1                      | 423110     | 2.000       | 423124           | 423138             |            |
| 3/8-16 UNC                     | .3750             | 423036               | B            | 423071              | 5                      | 423111     | 2.750       | 423125           | 423139             |            |
| 3/8-24 UNF                     | .3750             | 423037               | B            | 423072              | 1                      | 423110     | 2.000       | 423124           | 423138             |            |
| 3/8-24 UNF                     | .3750             | 423038               | B            | 423072              | 5                      | 423111     | 2.750       | 423125           | 423139             |            |
| 7/16-14 UNC                    | .4375             | 423039               | B            | 423073              | 1                      | 423112     | 2.000       | 423124           | 423141             |            |
| 7/16-14 UNC                    | .4375             | 423040               | B            | 423073              | 5                      | 423113     | 2.750       | 423125           | 423140             |            |
| 7/16-20 UNF                    | .4375             | 423041               | B            | 423074              | 1                      | 423112     | 2.000       | 423124           | 423141             |            |
| 7/16-20 UNF                    | .4375             | —                    | B            | 423074              | 5                      | 423113     | 2.750       | 423125           | 423140             |            |
| 1/2-13 UNC                     | .5000             | 423043               | B            | 423075              | 1                      | 423114     | 2.000       | 423124           | 423142             |            |
| 1/2-13 UNC                     | .5000             | 423044               | C            | 423076              | 5                      | 423115     | 2.750       | 423126           | 423143             |            |
| 1/2-20 UNF                     | .5000             | 423045               | B            | 423077              | 1                      | 423114     | 2.000       | 423124           | 423142             |            |
| 1/2-20 UNF                     | .5000             | 423046               | C            | 423078              | 5                      | 423115     | 2.750       | 423126           | 423143             |            |
| 9/16-12 UNC                    | .5625             | 423047               | C            | 423079              | 5                      | 423116     | 2.750       | 423126           | 423144             |            |
| 9/16-18 UNF                    | .5625             | 423048               | C            | 423080              | 5                      | 423116     | 2.750       | 423126           | 423144             |            |
| 5/8-11 UNC                     | .6250             | 423049               | C            | 423081              | 5                      | 423117     | 2.750       | 423126           | 423145             |            |
| 5/8-18 UNF                     | .6250             | 423050               | C            | 423082              | 5                      | 423117     | 2.750       | 423126           | 423145             |            |
| 3/4-10 UNC                     | .7500             | 423051               | C            | 423083              | 5                      | 423118     | 2.750       | 423126           | 423146             |            |
| 3/4-16 UNF                     | .7500             | 423052               | C            | 423084              | 5                      | 423118     | 2.750       | 423126           | 423146             |            |
| 7/8-9 UNC                      | .8750             | 423053               | D            | 423085              | 5                      | 423119     | 2.750       | 423127           | 423147             |            |
| 7/8-14 UNF                     | .8750             | 423054               | D            | 423086              | 5                      | 423119     | 2.750       | 423127           | 423147             |            |
| 1-8 UNC                        | 1.0000            | 423055               | D            | 423087              | 5                      | 423120     | 2.750       | 423127           | 423148             |            |
| 1-12 UNF                       | 1.0000            | 423056               | D            | 423088              | 5                      | 423120     | 2.750       | 423127           | 423148             |            |
| 1-14 UNS                       | 1.0000            | 423057               | D            | 423089              | 5                      | 423120     | 2.750       | 423127           | 423148             |            |



## Die Systems

Styles: **1386** (continued)

**Metric - Little Giant®**  
Two-Piece Die System

| nominal size and tpi | decimal equiv. | mm equiv. | style 380 |                  | style 1385 |                    | style 1383 |               | style 1384      |
|----------------------|----------------|-----------|-----------|------------------|------------|--------------------|------------|---------------|-----------------|
|                      |                |           | die blank | die order number | collet no. | assembly order no. | cap o.d.   | cap order no. | guide order no. |
| M6 x 1               | .2362          | 6.00      | A         | 423090           | 5          | *                  | 2.750      | *             | 423149          |
| M8 x 1.25            | .3150          | 8.00      | A         | 423091           | 5          | *                  | 2.750      | *             | 423150          |
| M10 x 1.5            | .3937          | 10.00     | B         | 423092           | 5          | *                  | 2.750      | *             | 423151          |
| M12 x 1.75           | .4724          | 12.00     | B         | 423093           | 5          | *                  | 2.750      | *             | 423152          |
| M14 x 2              | .5512          | 14.00     | C         | 423094           | 5          | 423115             | 2.750      | 423126        | 423153          |
| M16 x 2              | .6300          | 16.00     | C         | 423095           | 5          | 423116             | 2.750      | 423126        | 423154          |
| M18 x 2.5            | .7087          | 18.00     | C         | 423096           | 5          | 423117             | 2.750      | 423126        | 423155          |
| M20 x 2.5            | .7874          | 20.00     | C         | 423097           | 5          | 423118             | 2.750      | 423126        | 423156          |
| M22 x 2.5            | .8661          | 22.00     | D         | 423098           | 5          | 423119             | 2.750      | 423127        | 423157          |
| M24 x 3              | .9449          | 24.00     | D         | 423099           | 5          | 423120             | 2.750      | 423127        | 423158          |

\*Use Style 382 Quick-Set Jr. die stock instead of collet assembly for these sizes.

SET

Style: **1387**

**Little Giant®**  
Two-Piece Die System Set

### Tap & Die Sets with Collet

- Carbon steel two-piece dies and collets
- Hand taps
- Tap wrench, die stock

| set no. | no. of sizes | tap & die sizes   | collet no.  | tap wrench | die stock | order no. |        |
|---------|--------------|---|---|------------|-----------|-----------|--------|
| 59      | 7            | 4-40 NC<br>6-32 NC<br>8-32 NC<br>1/4-20 NC  | 10-24 NC<br>10-32 NF<br>12-24 NC<br>1/4-20 NC   | A1         | T9, A1    | A1        | 423159 |
| 510     | 5            | 1/4-20 NC<br>5/16-18 NC<br>3/8-16 NC  | 7/16-14 NC<br>1/2-13 NC   | 1          | #5        | #1        | 423160 |
| 511     | 10           | 1/4-20 NC<br>5/16-18 NC<br>3/8-16 NC<br>7/16-14 NC<br>1/2-13 NC   | 9/16-18 NC<br>5/8-18 NC<br>3/4-16 NC<br>7/8-9 NC<br>1-8 NC  | 5          | #5, #7    | 5A        | 423161 |
| 512     | 10           | 1/4-20 NC<br>5/16-18 NC<br>3/8-16 NC<br>7/16-14 NC<br>1/2-13 NC   | 1/4-28 NF<br>5/16-24 NF<br>3/8-24 NF<br>7/16-20 NF<br>1/2-20 NF   | 1          | #5        | #1        | 423162 |
| 513     | 20           | 1/4-20 NC<br>5/16-18 NC<br>3/8-16 NC<br>7/16-14 NC<br>1/2-13 NC<br>9/16-12 NC<br>5/8-11 NC<br>3/4-10 NC<br>7/8-9 NC<br>1-8 NC | 1/4-28 NF<br>5/16-24 NF<br>3/8-24 NF<br>7/16-20 NF<br>1/2-20 NF<br>9/16-18 NF<br>5/8-18 NF<br>3/4-16 NF<br>7/8-14 NF<br>1-14 NS | 1,5        | #5, #7    | #1, #5B   | 423163 |
| 514     | 7            | M6 x 1<br>M8 x 1.25<br>M10 x 1.5<br>M12 x 1.75  | M14 x 2<br>M16 x 2<br>M18 x 2.5   | 5          | #6        | #5        | 423164 |

### Tap & Die Set without Collet

- Carbon steel Quick-Set two-piece dies and guides.
- HSS production hand taps
- Tap wrenches
- Die stock to hold dies without collet

| set no. | # of sizes | tap & die sizes   | tap wrench   | die stock | order no. |        |
|---------|------------|---|--|-----------|-----------|--------|
| 58      | 20         | 1/4-20 NC<br>5/16-18 NC<br>3/8-16 NC<br>7/16-14 NC<br>1/2-13 NC<br>9/16-12 NC<br>5/8-11 NC<br>3/4-10 NC<br>7/8-9 NC<br>1-8 NC | 1/4-28 NF<br>5/16-24 NF<br>3/8-24 NF<br>7/16-20 NF<br>1/2-20 NF<br>9/16-18 NF<br>5/8-18 NF<br>3/4-16 NF<br>7/8-14 NF<br>1-14NS | #5, #7    | #1, #5    | 423165 |



Order #423159



Order #423160



Order #423161



Order #423162



Order #423163



Order #423164



Order #423165

Machine Taps  
Spiral Point Taps  
Spiral Flute Taps  
Thread Forming Taps  
Pipe Taps  
Dies  
Technical Info  
Sets  
Index



**Little Giant® Accessories**  
Two-Piece Die with collet

Style: **1381**

**Carbon Steel** **Steam Oxide**

- Use with all Series 1386 Little Giant collets with two-piece dies.
- Little Giant die stocks have center holes corresponding to the outside diameter of the Little Giant collets.



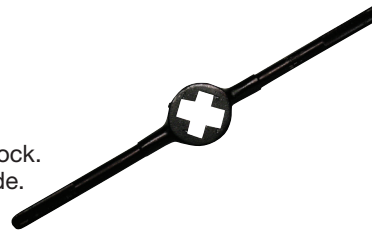
| stock no. | collet no. | collet capacity | length of stock | order number |
|-----------|------------|-----------------|-----------------|--------------|
| #A1       | A1         | 1-1/4           | 7-1/2           | 423166       |
| #1        | 1          | 2               | 14-1/2          | 423167       |
| #5        | 5          | 2-3/4           | 23              | 423168       |
| #5A       | 5          | 2-3/4           | 26              | 423169       |

**Little Giant Jr.® Accessories**  
Two-Piece Die without collet

Style: **1382**

**Carbon Steel** **Steam Oxide**

- Use with all Series 380 Little Giant two-piece dies without collet.
- 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.



| stock no. | cutting size | die blank size | guide no. | cutting size range | length of stock | order number |
|-----------|--------------|----------------|-----------|--------------------|-----------------|--------------|
| #1        | 1/4 to 5/16  | A              | 1         | 1/4 to 1/2         | 14-1/2          | 423171       |
|           | 3/8 to 1/2   | B              |           |                    |                 |              |
| #5        | 9/16 to 3/4  | C              | 5         | 9/16 to 1          | 26              | 423172       |
|           | 7/8 to 1     | D              |           |                    |                 |              |

**Little Giant® Accessories**  
Spanner Wrench

Style: **A1**

- Because A1 guides are so small and round instead of square, a standard wrench cannot be used.
- Fits into two holes to turn guide.



| stock no. | collet no. | collet capacity | order number |
|-----------|------------|-----------------|--------------|
| #A1       | A1         | 1-1/4           | 423173       |



## Accessories

## Dies - Tap Wrenches Standard Straight

### Style: 300

**Note**  
Used for hand tapping



| product number | mach screw | tap size ranges |              |              | overall length | order number |
|----------------|------------|-----------------|--------------|--------------|----------------|--------------|
|                |            | fractional      | metric       | pipe         |                |              |
| 0              | 0 to 14    | 1/16 to 1/4     | M1.5 to M6.3 |              | 7              | 420910       |
| 14             | 0 to 14    | 1/16 to 3/8     | M1.5 to M10  | —            | 9              | 423015       |
| 5              | 8 to 14    | 5/32 to 1/2     | M4 to M12.5  | 1/8          | 11             | 420936       |
| 6              | 8 to 14    | 5/32 to 3/4     | M4 to M19    | 1/8 to 1/4   | 15             | 420944       |
| 7              | —          | 1/4 to 1-1/8    | M12 to M28   | 1/8 to 3/4   | 19             | 420951       |
| 8              | —          | 3/4 to 1-5/8    | M19 to M40   | 3/8 to 1-1/4 | 40             | 420977       |
| 22             | —          | 1 to 2-1/2      | M25 to M56   | 3/4 to 2     | 54             | 423016       |

Machine Taps

Spiral Point Taps

Spiral Flute Taps

Thread Forming Taps

Pipe Taps

Dies

Technical Info

Sets

Index

### Style: 330

## Dies - Tap Wrenches Plain T-Handle

**Note**  
Used for hand tapping in out-in-the-open jobs



| product number | mach screw | tap size ranges |               |       | overall length | order number |
|----------------|------------|-----------------|---------------|-------|----------------|--------------|
|                |            | fractional      | metric        |       |                |              |
| T9             | 0 to 14    | 1/16 to 1/4     | M1.5 to M6.3  | 2-3/4 | 420845         |              |
| T10            | 12 to 14   | 7/32 to 1/2     | M5.5 to M12.5 | 3-5/8 | 421852         |              |

## Dies - Tap Wrenches Slip T-Handle

**Note**  
Used for hand tapping or in difficult spaces requiring a slip handle



| product number | mach screw | tap size ranges |               |       | overall length | order number |
|----------------|------------|-----------------|---------------|-------|----------------|--------------|
|                |            | fractional      | metric        |       |                |              |
| T11            | 0 to 14    | 1/16 to 1/4     | M1.5 to M6.3  | 2-3/4 | 420803         |              |
| T12            | 12 to 14   | 7/32 to 1/2     | M5.5 to M12.5 | 3-5/8 | 420829         |              |

## Dies - Tap Wrenches Combination Ratchet and Slip T-Handle

**Note**  
Used for hand tapping in difficult spaces needing ratchet drive



| product number | mach screw | tap size ranges |               |       | overall length | order number |
|----------------|------------|-----------------|---------------|-------|----------------|--------------|
|                |            | fractional      | metric        |       |                |              |
| T13            | 0 to 14    | 1/16 to 1/4     | M1.5 to M6.3  | 3-3/4 | 420860         |              |
| T14            | 12 to 14   | 7/32 to 1/2     | M5.5 to M12.5 | 5     | 420878         |              |

## Dies - Tap Wrenches Long Shank T-Handle

**Note**  
Used for hand tapping where extra reach is required



| product number | mach screw | tap size ranges |               |        | overall length | order number |
|----------------|------------|-----------------|---------------|--------|----------------|--------------|
|                |            | fractional      | metric        |        |                |              |
| T16            | 0 to 14    | 1/16 to 1/4     | M1.5 to M6.3  | 8-3/4  | 423017         |              |
| T17            | 12 to 14   | 7/32 to 1/2     | M5.5 to M12.5 | 10-5/8 | 423018         |              |



Screw Extractors

Style: 335



| extractor number | small end | large end | OAL     | screw & bolt size | pipe size | drill size | order number |
|------------------|-----------|-----------|---------|-------------------|-----------|------------|--------------|
| # 1              | 1/16      | 1/8       | 2       | 3/16 - 1/4        | -         | 5/64       | 421909       |
| # 2              | 3/32      | 13/64     | 2-3/8   | 1/4 - 5/16        | -         | 7/64       | 421917       |
| # 3              | 1/8       | 1/4       | 2-11/16 | 5/16 - 7/16       | -         | 5/32       | 421925       |
| # 4              | 3/16      | 11/32     | 3       | 7/16 - 9/16       | -         | 1/4        | 421933       |
| # 5              | 1/4       | 7/16      | 3-3/8   | 9/16 - 3/4        | 1/8, 1/4  | 9/32       | 421941       |
| # 6              | 3/8       | 19/32     | 3-3/4   | 3/4 - 1           | 3/8       | 13/32      | 421958       |
| # 7              | 1/2       | 25/32     | 4-1/8   | 1 - 1-3/8         | -         | 17/32      | 421966       |

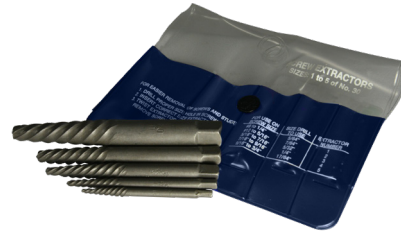
Accessories

Screw Extractors

SET

Style: 335

| extractor number                     | order number |
|--------------------------------------|--------------|
| # 15 Set 5 pieces sizes # 1 thru # 5 | 422006       |



- Machine Taps
- Spiral Point Taps
- Spiral Flute Taps
- Thread Forming Taps
- Pipe Taps
- Dies
- Technical Info
- Sets
- Index





### Tapping Speeds

Consider these factors when trying to determine the best tapping speeds.

- 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

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.

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 above. Speeds must be lowered as the 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 from 1/2 to 3/4 the speed of a straight thread tap of comparable major diameter.

### Tapping Definitions

- SFM = Surface Feet per Minute
- RPM = Revolutions Per Minute
- IPM = Inches Per Minute
- TPI = Threads Per Inch
- S m/m = Surface Meters per Minute
- p = 3.1416
- mm/m = Millimeters per Minute
- P = Pitch (1/ No of Threads Per Inch)

### Suggested Speeds for Uncoated and Coated Taps

| Work Material                              | Speed-feet-per-minute |            |
|--|-----------------------|------------|
|  | Uncoated Tap          | Coated Tap |
| <b>Alloy Steels:</b>                       |                       |            |
| 125-225 Bhn. . . . .                       | 30-60 . . . . .       | 60-120     |
| 225-325 Bhn. . . . .                       | 20-45 . . . . .       | 40-90      |
| 325-425 Bhn. . . . .                       | 10-35 . . . . .       | 20-70      |
| Aluminum Alloys . . . . .                  | 75-150 . . . . .      | 150-300    |
| <b>Carbon Steels, 225 Bhn or less:</b>     |                       |            |
| low carbon (.10-.25C) . . . . .            | 50-75 . . . . .       | 100-150    |
| medium carbon (.30-.55C) . . . . .         | 40-65 . . . . .       | 80-130     |
| high carbon (.60-.95C) . . . . .           | 30-55 . . . . .       | 90-110     |
| <b>Cast Iron</b>                           |                       |            |
| ductile, annealed . . . . .                | 40-60 . . . . .       | 80-120     |
| ductile, as cast . . . . .                 | 20-45 . . . . .       | 40-90      |
| gray (class 20, 25) . . . . .              | 40-80 . . . . .       | 80-160     |
| gray (class 30-50) . . . . .               | 25-50 . . . . .       | 50-100     |
| malleable, 200 Bhn or less . . . . .       | 30-60 . . . . .       | 60-120     |
| Copper Alloys . . . . .                    | 40-100 . . . . .      | 80-200     |
| Graphites & Carbons. . . . .               | 5-10 . . . . .        | 10-20      |
| <b>High-Temperature Alloys:</b>            |                       |            |
| cobalt base (Haynes alloys) . . . . .      | 3-8 . . . . .         | 5-16       |
| iron base (Incoloy, A-286 . . . . .        | 7-15 . . . . .        | 15-30      |
| nickel base (Hastelloy, Inconel) . . . . . | 4-10 . . . . .        | 8-20       |
| Magnesium . . . . .                        | 100-150 . . . . .     | 150-200    |
| Plastics . . . . .                         | 25-50 . . . . .       | 50-100     |
| Stainless Steels. . . . .                  | 15-35 . . . . .       | 30-70      |
| <b>Titanium:</b>                           |                       |            |
| pure. . . . .                              | 25-55 . . . . .       | 50-110     |
| alloys (Ti-6Al-4V) . . . . .               | 10-25 . . . . .       | 20-50      |
| <b>Tool Steels:</b>                        |                       |            |
| 200-275 Bhn. . . . .                       | 15-30 . . . . .       | 30-60      |
| 300-350 Bhn. . . . .                       | 10-25 . . . . .       | 20-50      |
| 40-50 Rc. . . . .                          | 5-15 . . . . .        | 10-30      |
| Zinc Alloys. . . . .                       | 100-150 . . . . .     | 150-250    |

*\*Success of coated taps in non-ferrous materials depends on the machining conditions used.*

### Tapping Formula

#### Inch Sizes

$$\begin{aligned} \text{SFM} &= (\text{RPM} \times \text{tool diameter}) / 3.82 \\ &\text{or } 0.26 \times \text{RPM} \times \text{tool diameter} \\ \text{RPM} &= (3.82 \times \text{SFM}) / \text{tool diameter} \\ \text{IPM} &= \text{RPM} / \text{TPI}^* \\ &\text{or } *P \times \text{RPM} \end{aligned}$$

#### Metric Sizes

$$\begin{aligned} \text{S m/m} &= (\text{p} \times \text{tool diameter} \times \text{RPM}) / 1000 \\ \text{RPM} &= (\text{m/m} \times 1000) / \text{p} \times \text{tool diameter} \\ \text{mm/m} &= \text{mm P} \times \text{RPM} \end{aligned}$$





Tapping Speeds

Tapping Information (continued)

UNC/UNF and NPT/NPTF Sizes

| UNC<br>UNF<br>Tap<br>Size | NPT<br>NPTF<br>Taper<br>Pipe | 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 Sizes

| Tap Size | Surface Feet per Minute (SFM) |                              |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |
|----------|-------------------------------|------------------------------|------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|
|          | 5'                            | 10'                          | 15'  | 20'  | 25'  | 30'  | 40'  | 50'  | 60'  | 70'  | 80'  | 90'  | 100' | 110'  | 120'  | 130'  | 140'  | 150'  |
|          |                               | Revolutions per Minute (RPM) |      |      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |
| M1       | 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 | 1491 | 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   |



# Technical Information

## Tapping Information (continued)

## Tapping Speeds Hardness Conversions

Use this table to match the hardness of your workpiece material to the correct tap.

| 10 M/M<br>Ball<br>3000 Kg | 120°<br>Cone<br>150 Kg | 1/16"<br>Ball<br>100 Kg | Model C              | 1000 Lb.<br>per<br>Sq. In. | 10 M/M<br>Ball<br>3000 Kg | 120°<br>Cone<br>150 Kg | 1/16"<br>Ball<br>100 Kg | Model C              | 1000 Lb.<br>per<br>Sq. In. |
|---------------------------|------------------------|-------------------------|----------------------|----------------------------|---------------------------|------------------------|-------------------------|----------------------|----------------------------|
| Brinell                   | Rockwell C             | Rockwell B              | Shore<br>Scleroscope | Tensile<br>Strength        | Brinell                   | Rockwell C             | Rockwell B              | Shore<br>Scleroscope | Tensile<br>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                        |                           |                        |                         |                      |                            |

Machine  
Taps

Spiral Point  
Taps

Spiral Flute  
Taps

Thread Forming  
Taps

Pipe Taps

Dies

Technical Info

Sets

Index

Definitions

Nomenclature

Tap Nomenclature

**Bottoming Tap**

A tap having a chamfer length of 1-2 threads.

**Chamfer**

The tapering of the threads at the front end of each land of a chaser, tap or die by cutting away and relieving the crest of the first few teeth to distribute the cutting action over several teeth.

**Chamfer Angle**

The angle formed between the chamfer and the axis of the tap or die by cutting away and relieving the crest of the first few teeth to distribute the cutting action over several teeth.

**Crest**

The surface of the thread which joins the flanks of the thread and is farthest from the cylinder or cone from which the thread projects.

**Flank**

The part of a helical thread surface which connects the crest and the root and which is theoretically a straight line in an axial plane section.

**Flute**

The longitudinal channel formed in a tap to create cutting edges on the thread profile and to provide chip spaces and cutting fluid passage.

**Hand of Threads**

A thread, when viewed axially, winds in a clockwise and receding direction for LEFT-HAND THREADS and counter-clockwise and receding direction for RIGHT-HAND THREADS.

**Hook, Chordal**

A concave face having an angle of inclination specified between a chord passing through the root and crest of a thread form at the cutting face, and a radial line through the crest at the cutting edge.

**Hook, Tangential**

A concave face having an angle of inclination specified between a line tangent to the hook surface at the cutting edge and a radial line to the same point.

**Hook Angle**

The angle of inclination of a concave face, usually specified either as CHORDAL HOOK or TANGENTIAL HOOK.

**Interrupted Thread Tap**

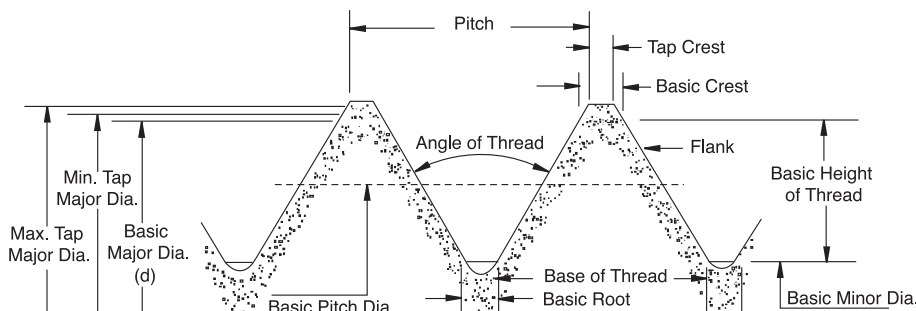
A tap having an odd number of lands with alternate teeth in the thread helix removed. In some cases alternate teeth are removed only for a portion of the thread length.

**Land**

One of the threaded sections between the flutes of a tap.

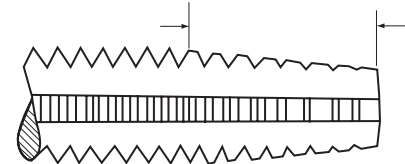
*continued on next page*

Illustration of Tap Terms



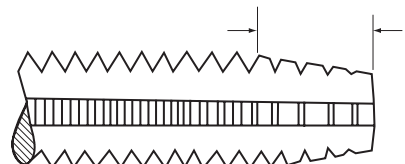
**Tap Chamfers**

Taper Chamfer  
7 - 10 Threads



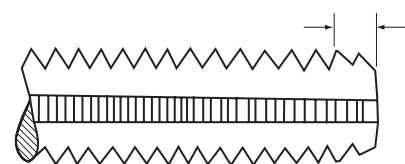
*Taper (7 to 10 pitches) – The taper chamfer has the longest standard chamfer ensuring easier starting. It requires less tapping torque because of more working teeth.*

Plug Chamfer  
3 - 5 Threads



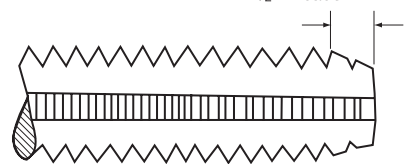
*Plug (3 to 5 pitches) – The most common chamfer for use by hand or machine in through or blind holes. This chamfer is more efficient than a bottoming or modified-bottoming chamfer.*

Bottoming Chamfer  
1 - 2 Threads



*Bottoming (1 to 2 pitches) – For threading close to the bottom of blind holes, the bottoming chamfer is the least efficient chamfer available.*

Modified Bottoming Chamfer  
2 - 2 1/2 Threads



*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.*

Machine Taps  
Spiral Point Taps  
Spiral Flute Taps  
Thread Forming Taps  
Pipe Taps  
Dies  
Technical Info  
Sets  
Index

**Lead of Thread**

The distance a screw thread advances axially in one complete turn. On a single start tap the lead and pitch are identical. On a multiple start tap the lead is the multiple of the pitch.

**Major Diameter**

The diameter of the major cylinder or cone, at a given position on the axis, that bounds the crests of an external thread or the roots of an internal thread.

**Minor Diameter**

The diameter of the minor cylinder or cone, at a given position on the axis, that bounds the roots of an external thread or the crests of an internal thread.

**Pitch Diameter**

The diameter of an imaginary cylinder or cone, at a given point on the axis, of such a diameter and location of its axis that its surface would pass through the thread in such a manner as to make the thread ridge and the thread groove equal and, therefore, is located equidistant between the sharp major and minor cylinders or cones of a given thread form. On a theoretically perfect thread, these widths are equal to one half of the basic pitch (measured parallel to the axis). See illustration below

**Plug Tap**

A tap with 3 to 5 chamfered threads.

**Spiral Point**

The angular fluting in the cutting face of the land at the chamfered end. It is formed at an angle with respect to the tap axis of opposite hand to that of rotation. Its length is usually greater than the chamfer length and its angle with respect to the tap axis is usually made great enough to direct the chips ahead of the tap. The tap may or may not have longitudinal flutes.

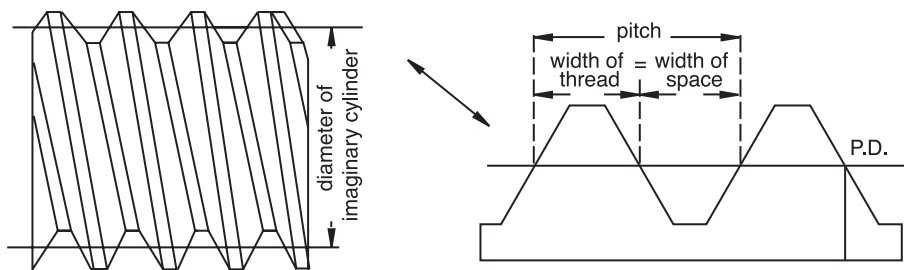
**Square**

Four driving flats parallel to the axis on a tap shank forming a square or square with round corners.

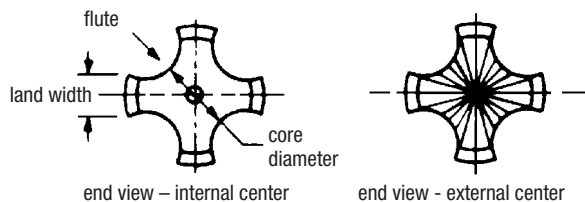
**Taper Tap**

A tap having a chamfer length of 7 to 10 threads.

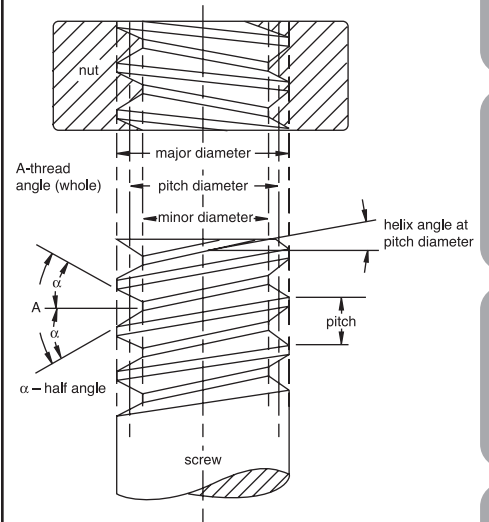
*Pitch Diameter*



*Tap End Views*



**Screw Thread Tolerances**



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 =  $\frac{1}{\text{no. of threads per inch}}$

Machine Taps

Spiral Point Taps

Spiral Flute Taps

Thread Forming Taps

Pipe Taps

Dies

Technical Info

Sets

Index





Definitions

Standard Tap Marking System

Taps, dies, and other threading tools will be marked with the nominal size, number of threads per inch, and the proper symbol to identify the thread form. The symbols below are

in agreement with the ASME B1.7 1965 (R 1972) Standard on nomenclature, definitions and letter symbols for screw threads and other national standards.

| Symbol | Reference   |
|--------|---|
| ACME-C | Acme Thread-Centralizing  |
| ACME-G | Acme Thread-General Purpose   |
| AMO    | American Standard Microscope Objective Thread   |
| ANPT   | Aeronautical National Form Taper Pipe Thread (Ground Thread Tap marked NPT)                                       |
| BA     | British Association Standard Thread   |
| BSF    | British Standard Fine Thread Series   |
| BSPP   | British Standard Pipe (Parallel) Thread   |
| BSPT   | British Standard Taper Pipe Thread  |
| BSW    | British Standard Whitworth Coarse Thread Series   |
| M      | Metric Standard Threads   |
| N      | American National 8, 12 and 16 Thread Series (8N, 12N, 16N)   |
| N BUTT | American Buttress Thread  |
| NC     | American National Coarse Thread Series  |
| NEF    | American National Extra-Fine Thread Series  |
| NF     | American National Fine Thread Series  |
| NGO    | National Gas Outlet Thread (specify right or left hand)   |
| NGS    | National Gas Straight Thread  |
| NGT    | National Gas Taper Thread (See also "SGT")  |
| NH     | American National Hose Coupling & Firehose Coupling Threads   |
| NPS    | For Tap marking Only (See NPSC, NPSM)   |
| NPSC   | American National Standard Straight Pipe Thread in Pipe Couplings (Tap Marked NPS)                                |
| NPSF   | Dryseal American National Standard Fuel Internal Straight Pipe Thread   |
| NPSH   | American National Standard Straight Pipe Thread for Hose Couplings  |
| NPSI   | Dryseal American National Standard Intermediate Internal Straight Pipe Thread                                     |
| NPSL   | American National Standard Straight Pipe Thread for Loose-Fitting Mechanical Joints with locknuts.                |
| NPSM   | American National Standard Straight Pipe Threads for Free-Fitting Mechanical Joints for Fixtures (Tap Marked NPS) |
| NPT    | American National Standard Taper Pipe Thread (see ANPT, NPTR)   |

| Symbol    | Reference  |
|-----------|--|
| NPTF      | Dryseal American National Standard Taper Pipe Thread   |
| NPTR      | American National Standard Taper Pipe Thread for Railing Joints (Tap Marked NPT)   |
| NR        | American National Thread with a 0.108p to 0.144p Controlled Root Radius  |
| NS        | American National Thread-Special   |
| PTF-SAE   | Short Dryseal SAE Short Taper Pipe Thread  |
| SGT       | Special Gas Taper Thread   |
| SPL-PTF   | Dryseal Special Taper Pipe Thread  |
| STI       | Special Thread for Helical Coil Wire Screw Thread Inserts  |
| Stub Acme | Stub Acme Thread   |
| *UN       | Unified Constant-Pitch Thread Series   |
| *UNC      | Unified Coarse Thread Series   |
| *UNEF     | Unified Extra-Fine Thread Series   |
| *UNF      | Unified Fine Thread Series   |
| UNJ       | Unified Thread Series with a 0.150lp to 0.18042p Controlled Root Radius on External Thread only.                           |
| UNJC      | Unified Coarse Thread Series with a 0.150lp to 0.18042p Controlled Root Radius on External Thread only.                    |
| UNJF      | Unified Fine Thread Series with a 0.150lp to 0.18042p Controlled Root Radius on External Thread only.                      |
| UNM       | Unified Miniature Thread Series  |
| UNR       | Unified Constant-pitch Thread Series with a 0.108p to 0.144p Controlled Root Radius  |
| UNRC      | Unified Coarse Thread Series with a 0.108p to 0.144p Controlled Root Radius  |
| UNRF      | Unified Fine Thread Series with a 0.108p to 0.144p Controlled Root Radius  |
| *UNS      | Unified Thread-Special   |
| V         | A 60 "V" thread with Truncated Crest and Root. The theoretical "V" Form is usually flattened to the user's specifications. |

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

Machine Taps

Spiral Point Taps

Spiral Flute Taps

Thread Forming Taps

Pipe Taps

Dies

Technical Info

Sets

Index

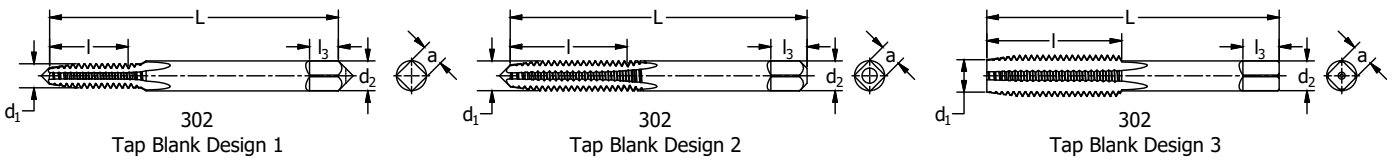




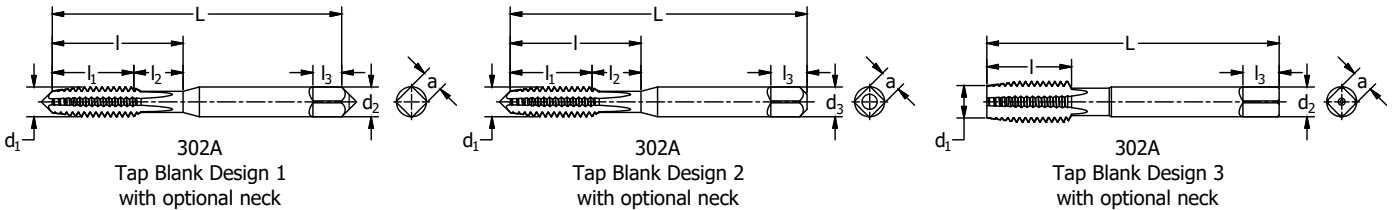
Technical Information  
302 / 302A Specifications

Standard Tap Dimensions  
Ground Thread

USCTI Table 302



USCTI Table 302A



Fractional Sizes

| nominal inch diameter $d_1$ |         | nominal diameter range over to (inclusive) |                | tap blank design (see above) | overall length $L$ | thread length $l$ | optional length short thd $l_1$ | optional length neck $l_2$ | square length $l_3$ | shank diameter $d_2$ | square size $a$ |
|-----------------------------|---------|--|----------------|------------------------------|--------------------|-------------------|---------------------------------|----------------------------|---------------------|----------------------|-----------------|
| fractional                  | decimal | over                                       | to (inclusive) |                              |                    |                   |                                 |                            |                     |                      |                 |
| 1/4                         | .2500   | .223                                       | .260           | 2                            | 2.500              | 1.000             | .630                            | .380                       | .310                | .255                 | .191            |
| 5/16                        | .3125   | .260                                       | .323           | 2                            | 2.719              | 1.125             | .690                            | .440                       | .380                | .318                 | .238            |
| 3/8                         | .3750   | .323                                       | .395           | 2                            | 2.938              | 1.250             | .750                            | .500                       | .440                | .381                 | .286            |
| 7/16                        | .4375   | .395                                       | .448           | 3                            | 3.156              | 1.438             | .880                            | —                          | .410                | .323                 | .242            |
| 1/2                         | .5000   | .448                                       | .510           | 3                            | 3.375              | 1.656             | .940                            | —                          | .440                | .367                 | .275            |
| 9/16                        | .5625   | .510                                       | .573           | 3                            | 3.594              | 1.656             | .940                            | —                          | .500                | .429                 | .322            |
| 5/8                         | .6250   | .573                                       | .635           | 3                            | 3.813              | 1.813             | .090                            | —                          | .560                | .480                 | .360            |
| 11/16                       | .6875   | .635                                       | .709           | 3                            | 4.031              | 1.813             | 1.090                           | —                          | .630                | .542                 | .406            |
| 3/4                         | .7500   | .709                                       | .760           | 3                            | 4.250              | 2.000             | 1.220                           | —                          | .690                | .590                 | .442            |
| 13/16                       | .8125   | .760                                       | .823           | 3                            | 4.470              | 2.000             | 1.220                           | —                          | .690                | .652                 | .489            |
| 7/8                         | .8750   | .823                                       | .885           | 3                            | 4.688              | 2.219             | 1.340                           | —                          | .750                | .697                 | .523            |
| 15/16                       | .9375   | .885                                       | .948           | 3                            | 4.910              | 2.220             | 1.340                           | —                          | .750                | .760                 | .570            |
| 1                           | 1.0000  | .948                                       | 1.010          | 3                            | 5.125              | 2.500             | 1.500                           | —                          | .810                | .800                 | .600            |
| 1-1/16                      | 1.0625  | 1.010                                      | 1.073          | 3                            | 5.130              | 2.500             | —                               | —                          | .880                | .896                 | .672            |
| 1-1/8                       | 1.1250  | 1.073                                      | 1.135          | 3                            | 5.438              | 2.563             | —                               | —                          | .880                | .896                 | .672            |
| 1-3/16                      | 1.1875  | 1.135                                      | 1.198          | 3                            | 5.440              | 2.560             | —                               | —                          | 1.000               | 1.021                | .766            |
| 1-1/4                       | 1.2500  | 1.198                                      | 1.260          | 3                            | 5.750              | 2.563             | —                               | —                          | 1.000               | 1.021                | .766            |
| 1-5/16                      | 1.3125  | 1.260                                      | 1.323          | 3                            | 5.750              | 2.560             | —                               | —                          | 1.060               | 1.108                | .831            |
| 1-3/8                       | 1.3750  | 1.323                                      | 1.385          | 3                            | 6.063              | 3.000             | —                               | —                          | 1.060               | 1.108                | .831            |
| 1-7/16                      | 1.4375  | 1.358                                      | 1.448          | 3                            | 6.060              | 3.000             | —                               | —                          | 1.130               | 1.233                | .925            |
| 1-1/2                       | 1.5000  | 1.448                                      | 1.510          | 3                            | 6.375              | 3.000             | —                               | —                          | 1.130               | 1.233                | .925            |
| 1-5/8                       | 1.6250  | 1.510                                      | 1.635          | 3                            | 6.690              | 3.190             | —                               | —                          | 1.130               | 1.305                | .979            |
| 1-3/4                       | 1.7500  | 1.635                                      | 1.760          | 3                            | 7.000              | 3.190             | —                               | —                          | 1.250               | 1.430                | 1.072           |
| 1-7/8                       | 1.8750  | 1.760                                      | 1.885          | 3                            | 7.310              | 3.560             | —                               | —                          | 1.250               | 1.519                | 1.139           |
| 2                           | 2.0000  | 1.885                                      | 2.010          | 3                            | 7.630              | 3.560             | —                               | —                          | 1.380               | 1.644                | 1.233           |

Machine Screw Sizes

| nominal inch diameter $d_1$ |         | nominal diameter range over to (inclusive) |                | tap blank design (see above) | overall length $L$ | thread length $l$ | optional length short thd $l_1$ | optional length neck $l_2$ | square length $l_3$ | shank diameter $d_2$ | square size $a$ |
|-----------------------------|---------|--|----------------|------------------------------|--------------------|-------------------|---------------------------------|----------------------------|---------------------|----------------------|-----------------|
| MS#                         | decimal | over                                       | to (inclusive) |                              |                    |                   |                                 |                            |                     |                      |                 |
| 0                           | .0600   | .052                                       | .065           | 1                            | 1.625              | .313              | —                               | —                          | .190                | .141                 | .110            |
| 1                           | .0730   | .065                                       | .078           | 1                            | 1.688              | .375              | —                               | —                          | .190                | .141                 | .110            |
| 2                           | .0860   | .078                                       | .091           | 1                            | 1.750              | .438              | —                               | —                          | .190                | .141                 | .110            |
| 3                           | .0990   | .091                                       | .104           | 1                            | 1.813              | .500              | —                               | —                          | .190                | .141                 | .110            |
| 4                           | .1120   | .104                                       | .117           | 1                            | 1.875              | .563              | .310                            | .250                       | .190                | .141                 | .110            |
| 5                           | .1250   | .117                                       | .130           | 1                            | 1.938              | .625              | .310                            | .310                       | .190                | .141                 | .110            |
| 6                           | .1380   | .130                                       | .145           | 1                            | 2.000              | .688              | .380                            | .310                       | .190                | .141                 | .110            |
| 8                           | .1640   | .145                                       | .171           | 1                            | 2.125              | .750              | .380                            | .380                       | .250                | .168                 | .131            |
| 10                          | .1900   | .171                                       | .197           | 1                            | 2.375              | .875              | .500                            | .380                       | .250                | .194                 | .152            |
| 12                          | .2160   | .197                                       | .223           | 1                            | 2.375              | .938              | .500                            | .440                       | .280                | .220                 | .165            |

Machine Taps  
Spiral Point Taps  
Spiral Flute Taps  
Thread Forming Taps  
Pipe Taps  
Dies  
Technical Info  
Sets  
Index

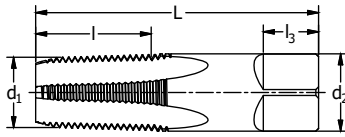


**Metric Sizes**

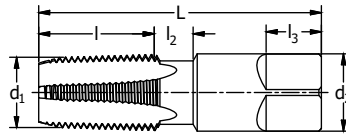
| mm   | decimal | nominal diameter range |                | tap blank design<br>(see above) | overall length<br><b>L</b> | thread length<br><b>l</b> | optional length                   |                              | square length<br><b>l<sub>3</sub></b> | shank diameter<br><b>d<sub>2</sub></b> | square size<br><b>a</b> |
|------|---------|------------------------|----------------|---------------------------------|----------------------------|---------------------------|-----------------------------------|------------------------------|---------------------------------------|--|-------------------------|
|      |         | over                   | to (inclusive) |                                 |                            |                           | short thd<br><b>l<sub>1</sub></b> | neck<br><b>l<sub>2</sub></b> |                                       |  |                         |
| M1.6 | .063    | .052                   | .065           | 1                               | 1.625                      | .313                      | —                                 | —                            | .190                                  | .141                                   | .110                    |
| M1.8 | .071    | .065                   | .078           | 1                               | 1.688                      | .375                      | —                                 | —                            | .190                                  | .141                                   | .110                    |
| M2   | .079    | .078                   | .091           | 1                               | 1.750                      | .438                      | —                                 | —                            | .190                                  | .141                                   | .110                    |
| M2.2 | .087    | .078                   | .091           | 1                               | 1.750                      | .438                      | —                                 | —                            | .190                                  | .141                                   | .110                    |
| M2.5 | .098    | .091                   | .104           | 1                               | 1.813                      | .500                      | —                                 | —                            | .190                                  | .141                                   | .110                    |
| M3   | .118    | .117                   | .130           | 1                               | 1.938                      | .625                      | .310                              | .310                         | .190                                  | .141                                   | .110                    |
| M3.5 | .138    | .130                   | .145           | 1                               | 2.000                      | .688                      | .380                              | .310                         | .190                                  | .141                                   | .110                    |
| M4   | .158    | .145                   | .171           | 1                               | 2.125                      | .750                      | .380                              | .380                         | .250                                  | .168                                   | .131                    |
| M4.5 | .177    | .171                   | .197           | 1                               | 2.375                      | .875                      | .500                              | .380                         | .250                                  | .194                                   | .152                    |
| M5   | .197    | .171                   | .197           | 1                               | 2.375                      | .875                      | .500                              | .440                         | .250                                  | .194                                   | .152                    |
| M6   | .236    | .223                   | .260           | 2                               | 2.500                      | 1.000                     | .630                              | .380                         | .310                                  | .255                                   | .191                    |
| M7   | .276    | .260                   | .323           | 2                               | 2.719                      | 1.125                     | .690                              | .440                         | .380                                  | .318                                   | .238                    |
| M8   | .315    | .260                   | .323           | 2                               | 2.719                      | 1.125                     | .690                              | .440                         | .380                                  | .318                                   | .238                    |
| M10  | .394    | .323                   | .395           | 2                               | 2.938                      | 1.250                     | .750                              | .500                         | .440                                  | .381                                   | .286                    |
| M12  | .472    | .448                   | .510           | 3                               | 3.375                      | 1.656                     | .940                              | —                            | .440                                  | .367                                   | .275                    |
| M14  | .551    | .510                   | .573           | 3                               | 3.594                      | 1.656                     | 1.000                             | —                            | .500                                  | .429                                   | .322                    |
| M16  | .630    | .573                   | .635           | 3                               | 3.813                      | 1.813                     | 1.090                             | —                            | .560                                  | .480                                   | .360                    |
| M18  | .709    | .635                   | .709           | 3                               | 4.031                      | 1.813                     | 1.090                             | —                            | .630                                  | .542                                   | .406                    |
| M20  | .787    | .760                   | .823           | 3                               | 4.469                      | 2.000                     | 1.220                             | —                            | .690                                  | .652                                   | .489                    |
| M22  | .866    | .823                   | .885           | 3                               | 4.690                      | 2.220                     | 1.340                             | —                            | .750                                  | .697                                   | .523                    |
| M24  | .945    | .885                   | .948           | 3                               | 4.906                      | 2.219                     | 1.340                             | —                            | .750                                  | .760                                   | .570                    |
| M25  | .984    | .948                   | 1.010          | 3                               | 5.130                      | 2.500                     | 1.500                             | —                            | .810                                  | .800                                   | .600                    |
| M27  | 1.063   | 1.010                  | 1.073          | 3                               | 5.130                      | 2.500                     | —                                 | —                            | .880                                  | .896                                   | .672                    |
| M30  | 1.181   | 1.135                  | 1.198          | 3                               | 5.438                      | 2.563                     | —                                 | —                            | 1.000                                 | 1.021                                  | .766                    |

**Standard Tap Dimension Tolerances**

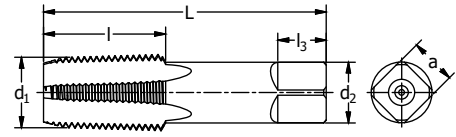
| nominal diameter range<br>(in.) |           | overall length<br><b>L</b> | thread length<br><b>l</b> | tolerances (in.)                      |  |                         |
|---------------------------------|-----------|----------------------------|---------------------------|---------------------------------------|--|-------------------------|
| over                            | to (inc.) |                            |                           | square length<br><b>l<sub>3</sub></b> | shank diameter<br><b>d<sub>2</sub></b> | square size<br><b>a</b> |
| .0520                           | .2230     | +/- .031                   | +/- .047                  | +/- .031                              | -.0015                                 | -.004                   |
| .2230                           | .5100     | +/- .031                   | +/- .063                  | +/- .031                              | -.0015                                 | -.004                   |
| .5100                           | .6350     | +/- .031                   | +/- .094                  | +/- .031                              | -.0015                                 | -.006                   |
| .6350                           | 1.0100    | +/- .031                   | +/- .094                  | +/- .031                              | -.0020                                 | -.006                   |
| 1.0100                          | 1.5100    | +/- .063                   | +/- .094                  | +/- .063                              | -.0020                                 | -.008                   |
| 1.5100                          | 2.0100    | +/- .063                   | +/- .125                  | +/- .063                              | -.0030                                 | -.008                   |
| 2.0100                          | 4.0100    | +/- .063                   | +/- .125                  | +/- .063                              | -.0030                                 | -.010                   |



311  
Pipe Tap Blank Design 1



311  
Pipe Tap Blank Design 2  
with optional neck



311  
Pipe Tap Blank Design 3

Inch Pipe Tap Sizes

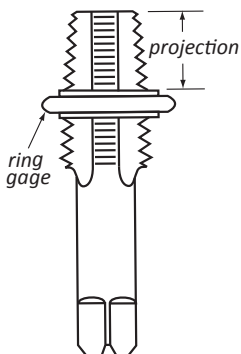
| nominal inch diameter <b>d1</b> |         | tap blank design | overall length | thread length | optional neck length | square length | shank diameter | square size |
|---------------------------------|---------|------------------|----------------|---------------|----------------------|---------------|----------------|-------------|
| fractional                      | decimal | (see above)      | <b>L</b>       | <b>l</b>      | <b>l2</b>            | <b>l3</b>     | <b>d2</b>      | <b>a</b>    |
| 1/16                            | .0625   | 1 or 2           | 2.130          | .690          | .375                 | .380          | .3125          | .234        |
| 1/8                             | .1250   | 1                | 2.130          | .750          | —                    | .380          | .3125          | .234        |
| 1/8                             | .1250   | 1 or 2           | 2.130          | .750          | .375                 | .380          | .4375          | .328        |
| 1/4                             | .2500   | 1 or 2           | 2.440          | 1.060         | .375                 | .440          | .5625          | .421        |
| 3/8                             | .3750   | 1 or 2           | 2.560          | 1.060         | .375                 | .500          | .7000          | .531        |
| 1/2                             | .5000   | 1                | 3.130          | 1.380         | —                    | .630          | .6875          | .515        |
| 3/4                             | .7500   | 1                | 3.250          | 1.380         | —                    | .690          | .9063          | .679        |
| 1                               | 1.0000  | 1                | 3.750          | 1.750         | —                    | .810          | 1.1250         | .843        |
| 1-1/4                           | 1.2500  | 1                | 4.000          | 1.750         | —                    | .940          | 1.3125         | .984        |
| 1-1/2                           | 1.5000  | 1                | 4.250          | 1.750         | —                    | 1.000         | 1.5000         | 1.125       |
| 2                               | 2.0000  | 3                | 4.500          | 1.750         | —                    | 1.130         | 1.8750         | 1.406       |

Standard Pipe Tap Dimension Tolerances

| nominal inch diameter <b>d1</b> |         | overall length | thread length | square length | shank diameter | square size |
|---------------------------------|---------|----------------|---------------|---------------|----------------|-------------|
| fractional                      | decimal | <b>L</b>       | <b>l</b>      | <b>l3</b>     | <b>d2</b>      | <b>a</b>    |
| 1/16                            | .0625   | +/- .031       | +/- .063      | +/- .031      | -.0015         | -.004       |
| 1/8                             | .1250   | +/- .031       | +/- .063      | +/- .031      | -.0015         | -.004       |
| 1/8                             | .1250   | +/- .031       | +/- .063      | +/- .031      | -.0015         | -.004       |
| 1/4                             | .2500   | +/- .031       | +/- .063      | +/- .031      | -.0020         | -.006       |
| 3/8                             | .3750   | +/- .031       | +/- .063      | +/- .031      | -.0020         | -.006       |
| 1/2                             | .5000   | +/- .031       | +/- .063      | +/- .031      | -.0020         | -.006       |
| 3/4                             | .7500   | +/- .031       | +/- .063      | +/- .031      | -.0020         | -.006       |
| 1                               | 1.0000  | +/- .063       | +/- .094      | +/- .063      | -.0020         | -.008       |
| 1-1/4                           | 1.2500  | +/- .063       | +/- .094      | +/- .063      | -.0030         | -.008       |
| 1-1/2                           | 1.5000  | +/- .063       | +/- .125      | +/- .063      | -.0030         | -.008       |
| 2                               | 2.0000  | +/- .063       | +/- .125      | +/- .063      | -.0030         | -.008       |

Thread Limits – Taper Pipe Taps – Ground Thread

| nominal tap size (inch) | threads per inch | projection (inch) | projection tolerance +/- inch | taper per foot (inch) |      | ring gage thickness | tap drill size NPT,ANPT,NFTF |
|-------------------------|------------------|-------------------|-------------------------------|-----------------------|------|---------------------|------------------------------|
|                         |                  |                   |                               | 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                       |



Machine Taps  
Spiral Point Taps  
Spiral Flute Taps  
Thread Forming Taps  
Pipe Taps  
Dies  
Technical Info  
Sets  
Index



Thread Limits

Unified and American National Form

Fractional Taps – Ground Thread

Lead Tolerance

A maximum lead error of + / - .0005" in 1" of thread is permitted.

Angle Tolerance

| Threads Per Inch   | Error in Half Angle |
|--------------------|---------------------|
| 6 to 9 inclusive   | 25' + / -           |
| 10 to 28 inclusive | 30' + / -           |

Pitch Diameter Limits

for taps through 1" diameter:

- H1 = basic to basic plus .0005"
- H2 = basic plus .0005" to basic plus .001"
- H3 = basic plus .001" to basic plus .0015"
- H4 = basic plus .0015" to basic plus .002"
- H5 = basic plus .002" to basic plus .0025"
- H6 = basic plus .0025" to basic plus .003"

for Taps over 1" Diameter Through 1-1/2" diameter:

- H4 = basic plus .001" to basic plus .002"

Formulae (Approximate)

- Max. Major Diameter = Basic Major Diameter + A\*
  - Min. Major Diameter = Max. Major Diameter - B\*
- \*See USCTI Table 331.*

Thread Limits

| nom size | threads per inch |        |        | major diameter |        |        | basic pitch dia | pitch diameter limits |       |          |       |          |       |          |        |          |       |          |       |
|----------|------------------|--------|--------|----------------|--------|--------|-----------------|-----------------------|-------|----------|-------|----------|-------|----------|--------|----------|-------|----------|-------|
|          | NC UNC           | NF UNF | NS UNS | basic          | min    | max    |                 | H1 limit              |       | H2 limit |       | H3 limit |       | H4 limit |        | H5 limit |       | H6 limit |       |
|          |                  |        |        |                |        |        |                 | min                   | max   | min      | max   | min      | max   | min      | max    | min      | max   | min      | max   |
| 1/4      | 20               | -      | -      | .2500          | .2540  | .2550  | .2175           | .2175                 | .2180 | .2180    | .2185 | .2185    | .2190 | -        | -      | .2195    | .2200 | -        | -     |
| 1/4      | -                | 28     | -      | .2500          | .2525  | .2535  | .2268           | .2268                 | .2273 | .2273    | .2278 | .2278    | .2283 | .2283    | .2288  | -        | -     | -        | -     |
| 5/16     | 18               | -      | -      | .3125          | .3170  | .3180  | .2764           | .2764                 | .2769 | .2769    | .2774 | .2774    | .2779 | -        | -      | .2784    | .2789 | -        | -     |
| 5/16     | -                | 24     | -      | .3125          | .3155  | .3165  | .2854           | .2854                 | .2859 | .2859    | .2864 | .2864    | .2869 | .2869    | .2874  | -        | -     | -        | -     |
| 3/8      | 16               | -      | -      | .3750          | .3800  | .3810  | .3344           | .3344                 | .3349 | .3349    | .3354 | .3354    | .3359 | -        | -      | .3364    | .3369 | -        | -     |
| 3/8      | -                | 24     | -      | .3750          | .3780  | .3790  | .3479           | .3479                 | .3484 | .3484    | .3489 | .3489    | .3494 | .3494    | .3499  | -        | -     | -        | -     |
| 7/16     | 14               | -      | -      | .4375          | .4435  | .4445  | .3911           | -                     | -     | .3916    | .3921 | .3921    | .3926 | -        | -      | .3931    | .3936 | -        | -     |
| 7/16     | -                | 20     | -      | .4375          | .4415  | .4425  | .4050           | -                     | -     | -        | .4060 | .4065    | .4065 | -        | -      | .4070    | .4075 | -        | -     |
| 1/2      | 13               | -      | -      | .5000          | .5065  | .5075  | .4500           | .4500                 | .4505 | .4505    | .4510 | .4510    | .4515 | -        | -      | .4520    | .4525 | -        | -     |
| 1/2      | -                | 20     | -      | .5000          | .5040  | .5050  | .4675           | .4675                 | .4680 | .4680    | .4685 | .4685    | .4690 | -        | -      | .4695    | .4700 | -        | -     |
| 9/16     | 12               | -      | -      | .5625          | .5690  | .5700  | .5084           | -                     | -     | .5089    | -     | -        | .5099 | -        | -      | .5104    | .5109 | -        | -     |
| 9/16     | -                | 18     | -      | .5625          | .5670  | .5680  | .5264           | -                     | -     | .5269    | .5274 | .5274    | .5279 | -        | -      | .5284    | .5289 | -        | -     |
| 5/8      | 11               | -      | -      | .6250          | .6320  | .6330  | .5660           | -                     | -     | .5665    | .5670 | .5670    | .5675 | -        | -      | .5680    | .5685 | -        | -     |
| 5/8      | -                | 18     | -      | .6250          | .6295  | .6305  | .5889           | -                     | -     | .5894    | .5899 | .5899    | .5904 | -        | -      | .5909    | .5914 | -        | -     |
| 11/16    | -                | -      | 11     | .6875          | .6945  | .6955  | .6285           | -                     | -     | -        | -     | .6295    | .6300 | -        | -      | -        | -     | -        | -     |
| 11/16    | -                | -      | 16     | .6875          | .6925  | .6935  | .6469           | -                     | -     | -        | -     | .6479    | .6484 | -        | -      | -        | -     | -        | -     |
| 3/4      | 10               | -      | -      | .7500          | .7575  | .7590  | . -             | -                     | .6855 | .6855    | .6860 | .6860    | .6865 | -        | -      | .6870    | .6875 | -        | -     |
| 3/4      | -                | 16     | -      | .7500          | .7550  | .7560  | .7094           | .7094                 | .7099 | .7099    | .7104 | .7104    | .7109 | -        | -      | .7114    | .7119 | -        | -     |
| 7/8      | 9                | -      | -      | .8750          | .8835  | .8850  | .8028           | -                     | -     | -        | -     | -        | -     | .8043    | .8048  | -        | -     | .8053    | .8058 |
| 7/8      | -                | 14     | -      | .8750          | .8810  | .8820  | .8286           | -                     | -     | .8291    | .8296 | -        | -     | .8301    | .8306  | -        | -     | .8311    | .8316 |
| 1        | 8                | -      | -      | 1.0000         | 1.0095 | 1.0110 | .9188           | -                     | -     | .9193    | .9198 | -        | -     | .9203    | .9208  | -        | -     | .9213    | .9218 |
| 1        | -                | 12     | -      | 1.0000         | 1.0065 | 1.0075 | .9459           | -                     | -     | -        | -     | -        | -     | .9474    | .9479  | -        | -     | -        | -     |
| 1        | -                | -      | 14     | 1.0000         | 1.0060 | 1.0070 | .9536           | -                     | -     | -        | -     | -        | -     | .9551    | .9556  | -        | -     | -        | -     |
| 1 1/8    | 7                | -      | -      | 1.1250         | 1.1350 | 1.1370 | 1.0322          | -                     | -     | -        | -     | -        | -     | 1.0332   | 1.0342 | -        | -     | -        | -     |
| 1-1/8    | -                | 12     | -      | 1.1250         | 1.1320 | 1.1325 | 1.0709          | -                     | -     | -        | -     | -        | -     | 1.0719   | 1.0729 | -        | -     | -        | -     |
| 1-1/4    | 7                | -      | -      | 1.2500         | 1.2600 | 1.2620 | 1.1572          | -                     | -     | -        | -     | -        | -     | 1.1582   | 1.1592 | -        | -     | -        | -     |
| 1-1/4    | -                | 12     | -      | 1.2500         | 1.2565 | 1.2575 | 1.1959          | -                     | -     | -        | -     | -        | -     | 1.1969   | 1.1979 | -        | -     | -        | -     |
| 1-3/8    | 6                | -      | -      | 1.3750         | 1.3870 | 1.3890 | 1.2667          | -                     | -     | -        | -     | -        | -     | 1.2677   | 1.2687 | -        | -     | -        | -     |
| 1-3/8    | -                | 12     | -      | 1.3750         | 1.3815 | 1.3825 | 1.3209          | -                     | -     | -        | -     | -        | -     | 1.3219   | 1.3229 | -        | -     | -        | -     |
| 1-1/2    | 6                | -      | -      | 1.5000         | 1.5120 | 1.5140 | 1.3917          | -                     | -     | -        | -     | -        | -     | 1.3927   | 1.3937 | -        | -     | -        | -     |
| 1 1/2    | -                | 12     | -      | 1.5000         | 1.5070 | 1.5075 | 1.4459          | -                     | -     | -        | -     | -        | -     | 1.4469   | 1.4479 | -        | -     | -        | -     |



Machine Screw Taps – Ground Thread

**Lead Tolerance**

A maximum lead error of + / - .0005" in 1" of thread is permitted.

**Angle Tolerance**

Threads Per Inch      Error in Half Angle  
20 to 80 inclusive      30' + / -

**Pitch Diameter Limits**

- H1 = basic to basic + .0005" to basic + .001"
- H2 = basic + .0005" to basic + .001"
- H3 = basic + .001" to basic + .0015"
- H7 = basic + .003" to basic + .0035"

**Formulae**

- Max. Major Diameter = Basic Major Diameter + A
- Min. Major Diameter = Max. Major Diameter - B
- A = Constant to add: 45% of the theoretical truncation to nearest .0005"
- B = Major diameter tolerance.

**Thread Limits**

| nom size | threads per inch |        |        | major diameter |       |       | basic pitch dia | pitch diameter limits |       |          |       |          |       |          |       |
|----------|------------------|--------|--------|----------------|-------|-------|-----------------|-----------------------|-------|----------|-------|----------|-------|----------|-------|
|          | NC UNC           | NF UNF | NS UNS | basic          | min   | max   |                 | H1 limit              |       | H2 limit |       | H3 limit |       | H7 limit |       |
|          |                  |        |        |                |       |       |                 | min                   | max   | min      | max   | min      | max   | min      | max   |
| 0        | -                | 80     | -      | .0600          | .0605 | .0615 | .0519           | .0519                 | .0524 | .0524    | .0529 | -        | -     | -        | -     |
| 1        | 64               | -      | -      | .0730          | .0735 | .0745 | .0629           | .0629                 | .0634 | .0634    | .0639 | -        | -     | -        | -     |
| 1        | -                | 72     | -      | .0730          | .0735 | .0745 | .0640           | .0640                 | .0645 | .0645    | .0650 | -        | -     | -        | -     |
| 2        | 56               | -      | -      | .0860          | .0865 | .0875 | .0744           | .0744                 | .0749 | .0749    | .0754 | -        | -     | -        | -     |
| 2        | -                | 64     | -      | .0860          | .0865 | .0875 | .0759           | -                     | -     | .0764    | .0769 | -        | -     | -        | -     |
| 3        | 48               | -      | -      | .0990          | .1000 | .1010 | .0855           | .0855                 | .0860 | .0860    | .0865 | -        | -     | -        | -     |
| 3        | -                | 56     | -      | .0990          | .0995 | .1005 | .0874           | .0874                 | .0879 | .0879    | .0884 | -        | -     | -        | -     |
| 4        | -                | -      | 36     | .1120          | .1135 | .1145 | .0940           | -                     | -     | .0945    | .0950 | -        | -     | -        | -     |
| 4        | 40               | -      | -      | .1120          | .1135 | .1145 | .0958           | .0958                 | .0963 | .0963    | .0968 | -        | -     | -        | -     |
| 4        | -                | 48     | -      | .1120          | .1130 | .1140 | .0985           | .0985                 | .0990 | .0990    | .0995 | -        | -     | -        | -     |
| 5        | 40               | -      | -      | .1250          | .1265 | .1275 | .1088           | .1088                 | .1093 | .1093    | .1098 | -        | -     | -        | -     |
| 5        | -                | 44     | -      | .1250          | .1260 | .1270 | .1102           | -                     | -     | .1107    | .1112 | -        | -     | -        | -     |
| 6        | 32               | -      | -      | .1380          | .1400 | .1410 | .1177           | .1177                 | .1182 | .1182    | .1187 | .1187    | .1192 | .1207    | .1212 |
| 6        | -                | 40     | -      | .1380          | .1395 | .1405 | .1218           | .1218                 | .1223 | .1223    | .1228 | -        | -     | -        | -     |
| 8        | 32               | -      | -      | .1640          | .1660 | .1670 | .1437           | .1437                 | .1442 | .1442    | .1447 | .1447    | .1452 | .1467    | .1472 |
| 8        | -                | 36     | -      | .1640          | .1655 | .1665 | .1460           | -                     | -     | .1465    | .1470 | -        | -     | -        | -     |
| 10       | 24               | -      | -      | .1900          | .1930 | .1940 | .1629           | .1629                 | .1634 | .1634    | .1639 | .1639    | .1644 | .1659    | .1664 |
| 10       | -                | 32     | -      | .1900          | .1920 | .1930 | .1697           | .1697                 | .1702 | .1702    | .1707 | .1707    | .1712 | .1727    | .1732 |
| 12       | 24               | -      | -      | .2160          | .2190 | .2200 | .1889           | -                     | -     | -        | -     | .1899    | .1904 | -        | -     |
| 12       | -                | 28     | -      | .2160          | .2185 | .2195 | .1928           | -                     | -     | -        | -     | .1938    | .1943 | -        | -     |

Machine Taps  
Spiral Point Taps  
Spiral Flute Taps  
Thread Forming Taps  
Pipe Taps  
Dies  
Technical Info  
Sets  
Index



Thread Limits

Metric Taps

Ground Thread

General

These tables and formulae are used in determining the limits and tolerances for ground thread metric taps unless otherwise specified. They apply only to metric threads having a 60° form with a P/8 flat at the major diameter of the basic thread form.

Note: When the tap major diameter must be determined from a specific tap pitch diameter, the minimum major diameter equals the maximum specified tap pitch diameter minus constant Y, plus the basic size height of thread (.64952P), plus constant W.

Lead Tolerance

A maximum lead error of + / - .0005" in 1" of thread is permitted.

Angle Tolerance

| Pitch mm                   | Deviation in Half Angle |
|----------------------------|-------------------------|
| over 0.25 to 2.5 inclusive | 30' + / -               |
| over 2.5 to 4 inclusive    | 25' + / -               |
| over 4 to 6 inclusive      | 20' + / -               |

Formulae

- Max. Major Diameter = Min. + X
- Min. Major Diameter = Basic + W
- Max. Pitch Diameter = Basic + Y
- Min. Pitch Diameter = Max. - Z
- W = Constant to add to Basic Major Diameter (.080P converted to inches)
- X = Major Diameter Tolerance
- Y = Amount over Basic for Maximum Pitch Diameter
- Z = Pitch Diameter Tolerance

Values for W, X, Y and Z (inches)

| pitch<br>mm | inch<br>equivalent | W     | X     | Y                 | Y                     | Y                    | Y           | Z                 | Z                     | Z                    | Z           |
|-------------|--------------------|-------|-------|-------------------|-----------------------|----------------------|-------------|-------------------|-----------------------|----------------------|-------------|
|             |                    | inch  | inch  | M1.6<br>thru M6.3 | over M6.3<br>thru M25 | over M25<br>thru M90 | over<br>M90 | M1.6<br>thru M6.3 | over M6.3<br>thru M25 | over M25<br>thru M90 | over<br>M90 |
| 0.3         | .01181             | .0009 | .0010 | .0015             | .0015                 | .0020                | .0020       | .0006             | .0006                 | .0008                | .0008       |
| 0.35        | .01378             | .0011 | .0010 | .0015             | .0015                 | .0020                | .0020       | .0006             | .0006                 | .0008                | .0008       |
| 0.4         | .01575             | .0013 | .0010 | .0015             | .0020                 | .0020                | .0020       | .0006             | .0006                 | .0008                | .0010       |
| 0.45        | .01772             | .0014 | .0010 | .0015             | .0020                 | .0020                | .0020       | .0006             | .0008                 | .0008                | .0010       |
| 0.5         | .01968             | .0016 | .0010 | .0015             | .0020                 | .0020                | .0025       | .0006             | .0008                 | .0010                | .0010       |
| 0.6         | .02362             | .0019 | .0010 | .0020             | .0020                 | .0025                | .0025       | .0008             | .0008                 | .0010                | .0010       |
| 0.7         | .02756             | .0022 | .0016 | .0020             | .0020                 | .0025                | .0025       | .0008             | .0008                 | .0010                | .0010       |
| 0.75        | .02953             | .0024 | .0016 | .0020             | .0025                 | .0025                | .0030       | .0008             | .0010                 | .0010                | .0012       |
| 0.8         | .03150             | .0025 | .0016 | .0020             | .0025                 | .0025                | .0030       | .0008             | .0010                 | .0010                | .0012       |
| 0.9         | .03543             | .0028 | .0016 | .0020             | .0025                 | .0025                | .0030       | .0008             | .0010                 | .0010                | .0012       |
| 1           | .03937             | .0032 | .0016 | .0025             | .0025                 | .0030                | .0030       | .0010             | .0010                 | .0012                | .0012       |
| 1.25        | .04921             | .0039 | .0025 | .0025             | .0025                 | .0030                | .0035       | .0010             | .0012                 | .0012                | .0016       |
| 1.5         | .05906             | .0047 | .0025 | .0025             | .0030                 | .0030                | .0035       | .0010             | .0012                 | .0012                | .0016       |
| 1.75        | .06890             | .0055 | .0025 | —                 | .0030                 | .0035                | .0040       | —                 | .0012                 | .0016                | .0016       |
| 2           | .07874             | .0063 | .0025 | —                 | .0035                 | .0035                | .0040       | —                 | .0016                 | .0016                | .0016       |
| 2.5         | .09843             | .0079 | .0025 | —                 | .0035                 | .0040                | .0045       | —                 | .0016                 | .0016                | .0020       |
| 3           | .11811             | .0095 | .0039 | —                 | .0040                 | .0040                | .0050       | —                 | .0016                 | .0020                | .0020       |
| 3.5         | .13780             | .0110 | .0039 | —                 | .0040                 | .0045                | .0050       | —                 | .0016                 | .0020                | .0020       |
| 4           | .15748             | .0126 | .0039 | —                 | .0040                 | .0045                | .0055       | —                 | .0020                 | .0020                | .0025       |
| 4.5         | .17717             | .0142 | .0039 | —                 | —                     | .0050                | .0055       | —                 | .0020                 | .0020                | .0025       |
| 5           | .19685             | .0158 | .0039 | —                 | —                     | .0050                | .0060       | —                 | —                     | .0025                | .0025       |
| 5.5         | .21654             | .0158 | .0039 | —                 | —                     | .0050                | .0060       | —                 | —                     | .0025                | .0025       |
| 6           | .23622             | .0189 | .0039 | —                 | —                     | .0055                | .0060       | —                 | —                     | .0025                | .0025       |





## Technical Information

### Fractional Sizes

### Basic Thread Dimensions

| nominal size & TPI |    | basic major diameter | basic pitch diameter | basic minor diameter | max minor diameter Class 3B internal thread | nominal size & TPI |    | basic major diameter | basic pitch diameter | basic minor diameter | max minor diameter Class 3B internal thread |
|--------------------|----|----------------------|----------------------|----------------------|---|--------------------|----|----------------------|----------------------|----------------------|---|
| 1/16               | 64 | .0625                | .0524                | .0422                | .0518                                       | 3/4                | 16 | .7500                | .7094                | .6688                | .6908                                       |
| 3/32               | 48 | .0938                | .0803                | .0667                | .0793                                       | 3/4                | 20 | .7500                | .7175                | .6850                | .7037                                       |
| 1/8                | 40 | .1250                | .1088                | .0925                | .1062                                       | 13/16              | 12 | .8125                | .7584                | .7042                | .7329                                       |
| 5/32               | 32 | .1563                | .1360                | .1157                | .1311                                       | 13/16              | 16 | .8125                | .7719                | .7313                | .7533                                       |
| 5/32               | 36 | .1563                | .1382                | .1202                | .1339                                       | 13/16              | 20 | .8125                | .7800                | .7475                | .7662                                       |
| 3/16               | 24 | .1875                | .1604                | .1334                | .1530                                       | 7/8                | 9  | .8750                | .8028                | .7307                | .7681                                       |
| 3/16               | 32 | .1875                | .1672                | .1469                | .1616                                       | 7/8                | 12 | .8750                | .8209                | .7668                | .7952                                       |
| 7/32               | 24 | .2188                | .1917                | .1646                | .1834                                       | 7/8                | 14 | .8750                | .8286                | .7822                | .8068                                       |
| 7/32               | 32 | .2188                | .1985                | .1782                | .1922                                       | 7/8                | 16 | .8750                | .8344                | .7938                | .8158                                       |
| 1/4                | 20 | .2500                | .2175                | .1850                | .2067                                       | 7/8                | 18 | .8750                | .8389                | .8028                | .8230                                       |
| 1/4                | 24 | .2500                | .2229                | .1959                | .2139                                       | 7/8                | 20 | .8750                | .8425                | .8100                | .8287                                       |
| 1/4                | 28 | .2500                | .2268                | .2036                | .2190                                       | 15/16              | 12 | .9375                | .8834                | .8293                | .8575                                       |
| 1/4                | 32 | .2500                | .2297                | .2094                | .2229                                       | 15/16              | 16 | .9375                | .8969                | .8563                | .8783                                       |
| 5/16               | 18 | .3125                | .2764                | .2403                | .2630                                       | 15/16              | 20 | .9375                | .9050                | .8725                | .8912                                       |
| 5/16               | 20 | .3125                | .2800                | .2476                | .2680                                       | 1                  | 8  | 1.0000               | .9188                | .8376                | .8797                                       |
| 5/16               | 24 | .3125                | .2854                | .2584                | .2754                                       | 1                  | 12 | 1.0000               | .9459                | .8918                | .9198                                       |
| 5/16               | 32 | .3125                | .2922                | .2719                | .2847                                       | 1                  | 14 | 1.0000               | .9536                | .9072                | .9315                                       |
| 3/8                | 16 | .3750                | .3344                | .2938                | .3182                                       | 1                  | 16 | 1.0000               | .9594                | .9188                | .9408                                       |
| 3/8                | 20 | .3750                | .3425                | .3100                | .3297                                       | 1                  | 20 | 1.0000               | .9675                | .9350                | .9537                                       |
| 3/8                | 24 | .3750                | .3479                | .3209                | .3372                                       | 1 1/16             | 12 | 1.0625               | 1.0084               | .9543                | .9823                                       |
| 3/8                | 32 | .3750                | .3547                | .3344                | .3469                                       | 1 1/16             | 16 | 1.0625               | 1.0219               | .9813                | 1.0033                                      |
| 7/16               | 14 | .4375                | .3911                | .3447                | .3717                                       | 1 1/16             | 18 | 1.0625               | 1.0264               | .9903                | 1.0105                                      |
| 7/16               | 20 | .4375                | .4050                | .3726                | .3916                                       | 1 1/8              | 7  | 1.1250               | 1.0322               | .9394                | .9875                                       |
| 7/16               | 24 | .4375                | .4104                | .3834                | .3994                                       | 1 1/8              | 8  | 1.1250               | 1.0438               | .9626                | 1.0047                                      |
| 7/16               | 28 | .4375                | .4143                | .3911                | .4051                                       | 1 1/8              | 12 | 1.1250               | 1.0709               | 1.0168               | 1.0448                                      |
| 1/2                | 12 | .5000                | .4459                | .3918                | .4223                                       | 1 1/8              | 16 | 1.1250               | 1.0844               | 1.0438               | 1.0658                                      |
| 1/2                | 13 | .5000                | .4500                | .4001                | .4284                                       | 1 1/8              | 18 | 1.1250               | 1.0889               | 1.0528               | 1.0730                                      |
| 1/2                | 20 | .5000                | .4675                | .4351                | .4537                                       | 1 3/16             | 12 | 1.1875               | 1.1334               | 1.0793               | 1.1073                                      |
| 1/2                | 24 | .5000                | .4729                | .4459                | .4619                                       | 1 3/16             | 16 | 1.1875               | 1.1469               | 1.1063               | 1.1283                                      |
| 1/2                | 28 | .5000                | .4768                | .4536                | .4676                                       | 1 3/16             | 18 | 1.1875               | 1.1514               | 1.1153               | 1.1355                                      |
| 9/16               | 12 | .5625                | .5084                | .4542                | .4843                                       | 1 1/4              | 7  | 1.2500               | 1.1572               | 1.0644               | 1.1125                                      |
| 9/16               | 18 | .5625                | .5264                | .4903                | .5106                                       | 1 1/4              | 8  | 1.2500               | 1.1688               | 1.0876               | 1.1297                                      |
| 9/16               | 24 | .5625                | .5354                | .5084                | .5244                                       | 1 1/4              | 12 | 1.2500               | 1.1959               | 1.1418               | 1.1698                                      |
| 5/8                | 11 | .6250                | .5660                | .5069                | .5391                                       | 1 1/4              | 16 | 1.2500               | 1.2094               | 1.1688               | 1.1908                                      |
| 5/8                | 12 | .6250                | .5709                | .5168                | .5463                                       | 1 1/4              | 18 | 1.2500               | 1.2139               | 1.1778               | 1.1980                                      |
| 5/8                | 18 | .6250                | .5889                | .5528                | .5730                                       | 1 5/16             | 12 | 1.3125               | 1.2584               | 1.2043               | 1.2323                                      |
| 5/8                | 24 | .6250                | .5979                | .5709                | .5869                                       | 1 5/16             | 16 | 1.3125               | 1.2719               | 1.2313               | 1.2533                                      |
| 11/16              | 11 | .6875                | .6285                | .5694                | .6012                                       | 1 5/16             | 18 | 1.3125               | 1.2764               | 1.2403               | 1.2605                                      |
| 11/16              | 12 | .6875                | .6334                | .5793                | .6085                                       | 1 3/8              | 6  | 1.3750               | 1.2667               | 1.1585               | 1.2146                                      |
| 11/16              | 16 | .6875                | .6469                | .6063                | .6284                                       | 1 3/8              | 8  | 1.3750               | 1.2938               | 1.2126               | 1.2547                                      |
| 11/16              | 24 | .6875                | .6604                | .6334                | .6494                                       | 1 3/8              | 12 | 1.3750               | 1.3209               | 1.2668               | 1.2948                                      |
| 3/4                | 10 | .7500                | .6850                | .6201                | .6545                                       | 1 3/8              | 16 | 1.3750               | 1.3344               | 1.2938               | 1.3158                                      |
| 3/4                | 12 | .7500                | .6959                | .6418                | .6707                                       | 1 3/8              | 18 | 1.3750               | 1.3389               | 1.3028               | 1.3230                                      |

continued on next page

Machine Taps  
Spiral Point Taps  
Spiral Flute Taps  
Thread Forming Taps  
Pipe Taps  
Dies  
Technical Info  
Sets  
Index



Basic Thread Dimensions

Fractional Sizes (continued)

- Machine Taps
- Spiral Point Taps
- Spiral Flute Taps
- Thread Forming Taps
- Pipe Taps
- Dies
- Technical Info
- Sets
- Index

|  | nominal size & TPI | basic major diameter | basic pitch diameter | basic minor diameter | max minor diameter Class 3B internal thread |
|--|--------------------|----------------------|----------------------|----------------------|---|
|  | 1 7/16 12          | 1.4375               | 1.3834               | 1.3293               | 1.3573                                      |
|  | 1 7/16 16          | 1.4375               | 1.3969               | 1.3563               | 1.3783                                      |
|  | 1 7/16 18          | 1.4375               | 1.4014               | 1.3653               | 1.3855                                      |
|  | 1 1/2 6            | 1.5000               | 1.3917               | 1.2835               | 1.3396                                      |
|  | 1 1/2 8            | 1.5000               | 1.4188               | 1.3376               | 1.3797                                      |
|  | 1 1/2 12           | 1.5000               | 1.4459               | 1.3918               | 1.4198                                      |
|  | 1 1/2 16           | 1.5000               | 1.4594               | 1.4188               | 1.4408                                      |
|  | 1 1/2 18           | 1.5000               | 1.4639               | 1.4278               | 1.4480                                      |
|  | 1 1/2 16           | 1.5625               | 1.5219               | 1.4813               | 1.5033                                      |
|  | 1 1/2 18           | 1.5625               | 1.5264               | 1.4903               | 1.5105                                      |
|  | 1 5/8 6            | 1.6250               | 1.5167               | 1.4085               | 1.4646                                      |
|  | 1 5/8 8            | 1.6250               | 1.5438               | 1.4626               | 1.5047                                      |
|  | 1 5/8 12           | 1.6250               | 1.5709               | 1.5168               | 1.5448                                      |
|  | 1 5/8 16           | 1.6250               | 1.5844               | 1.5438               | 1.5658                                      |
|  | 1 5/8 18           | 1.6250               | 1.5889               | 1.5528               | 1.5730                                      |
|  | 1 11/16 16         | 1.6875               | 1.6469               | 1.6063               | 1.6283                                      |
|  | 1 11/16 18         | 1.6875               | 1.6514               | 1.6153               | 1.6355                                      |
|  | 1 3/4 5            | 1.7500               | 1.6201               | 1.4902               | 1.5575                                      |
|  | 1 3/4 8            | 1.7500               | 1.6688               | 1.5876               | 1.6297                                      |
|  | 1 3/4 12           | 1.7500               | 1.6959               | 1.6418               | 1.6698                                      |
|  | 1 3/4 16           | 1.7500               | 1.7094               | 1.6688               | 1.6908                                      |
|  | 1 13/16 16         | 1.8125               | 1.7719               | 1.7313               | 1.7533                                      |
|  | 1 7/8 8            | 1.8750               | 1.7938               | 1.7126               | 1.7547                                      |
|  | 1 7/8 12           | 1.8750               | 1.8209               | 1.7668               | 1.7948                                      |
|  | 1 7/8 16           | 1.8750               | 1.8344               | 1.7938               | 1.8158                                      |
|  | 1 15/16 16         | 1.9375               | 1.8969               | 1.8563               | 1.8783                                      |
|  | 2 4 1/2            | 2.0000               | 1.8557               | 1.7113               | 1.7861                                      |
|  | 2 8                | 2.0000               | 1.9188               | 1.8376               | 1.8797                                      |
|  | 2 12               | 2.0000               | 1.9459               | 1.8918               | 1.9198                                      |
|  | 2 16               | 2.0000               | 1.9594               | 1.9188               | 1.9408                                      |
|  | 2 1/16 16          | 2.0625               | 2.0219               | 1.9813               | 2.0033                                      |
|  | 2 1/8 8            | 2.1250               | 2.0438               | 1.9626               | 2.0047                                      |
|  | 2 1/8 12           | 2.1250               | 2.0709               | 2.0168               | 2.0448                                      |
|  | 2 1/8 16           | 2.1250               | 2.0844               | 2.0438               | 2.0658                                      |
|  | 2 3/16 16          | 2.1875               | 2.1469               | 2.1063               | 2.1283                                      |
|  | 2 1/4 4 1/2        | 2.2500               | 2.1057               | 1.9613               | 2.0361                                      |
|  | 2 1/4 8            | 2.2500               | 2.1688               | 2.0876               | 2.1297                                      |
|  | 2 1/4 12           | 2.2500               | 2.1959               | 2.1418               | 2.1698                                      |
|  | 2 1/4 16           | 2.2500               | 2.2094               | 2.1688               | 2.1908                                      |
|  | 2 5/16 16          | 2.3125               | 2.2719               | 2.2313               | 2.2533                                      |
|  | 2 3/8 12           | 2.3750               | 2.3209               | 2.2668               | 2.2948                                      |
|  | 2 3/8 16           | 2.3750               | 2.3344               | 2.2938               | 2.3158                                      |

|  | nominal size & TPI | basic major diameter | basic pitch diameter | basic minor diameter | max minor diameter Class 3B internal thread |
|--|--------------------|----------------------|----------------------|----------------------|---|
|  | 2 7/16 16          | 2.4375               | 2.3969               | 2.3563               | 2.3783                                      |
|  | 2 1/2 4            | 2.5000               | 2.3376               | 2.1752               | 2.2594                                      |
|  | 2 1/2 8            | 2.5000               | 2.4188               | 2.3376               | 2.3797                                      |
|  | 2 1/2 12           | 2.5000               | 2.4459               | 2.3918               | 2.4198                                      |
|  | 2 1/2 16           | 2.5000               | 2.4594               | 2.4188               | 2.4408                                      |
|  | 2 5/8 12           | 2.6250               | 2.5709               | 2.5168               | 2.5448                                      |
|  | 2 5/8 16           | 2.6250               | 2.5844               | 2.5438               | 2.5658                                      |
|  | 2 3/4 4            | 2.7500               | 2.5876               | 2.4252               | 2.5094                                      |
|  | 2 3/4 8            | 2.7500               | 2.6688               | 2.5876               | 2.6297                                      |
|  | 2 3/4 12           | 2.7500               | 2.6959               | 2.6418               | 2.6698                                      |
|  | 2 3/4 16           | 2.7500               | 2.7094               | 2.6688               | 2.6908                                      |
|  | 2 7/8 12           | 2.8750               | 2.8209               | 2.7668               | 2.7948                                      |
|  | 2 7/8 16           | 2.8750               | 2.8344               | 2.7938               | 2.8158                                      |
|  | 3 4                | 3.0000               | 2.8376               | 2.6752               | 2.7594                                      |
|  | 3 8                | 3.0000               | 2.9188               | 2.8376               | 2.8797                                      |
|  | 3 12               | 3.0000               | 2.9459               | 2.8918               | 2.9198                                      |
|  | 3 16               | 3.0000               | 2.9594               | 2.9188               | 2.9408                                      |
|  | 3 1/8 12           | 3.1250               | 3.0709               | 3.0168               | 3.0448                                      |
|  | 3 1/8 16           | 3.1250               | 3.0844               | 3.0438               | 3.0658                                      |
|  | 3 1/4 4            | 3.2500               | 3.0876               | 2.9252               | 3.0094                                      |
|  | 3 1/4 8            | 3.2500               | 3.1688               | 3.0876               | 3.1297                                      |
|  | 3 1/4 12           | 3.2500               | 3.1959               | 3.1418               | 3.1698                                      |
|  | 3 1/4 16           | 3.2500               | 3.2094               | 3.1688               | 3.1908                                      |
|  | 3 3/8 12           | 3.3750               | 3.3209               | 3.2668               | 3.2948                                      |
|  | 3 3/8 16           | 3.3750               | 3.3344               | 3.2938               | 3.3158                                      |
|  | 3 3/8 4            | 3.5000               | 3.3376               | 3.1752               | 3.2594                                      |
|  | 3 1/2 8            | 3.5000               | 3.4188               | 3.3376               | 3.3797                                      |
|  | 3 1/2 12           | 3.5000               | 3.4459               | 3.3918               | 3.4198                                      |
|  | 3 1/2 16           | 3.5000               | 3.4594               | 3.4188               | 3.4408                                      |
|  | 3 5/8 12           | 3.6250               | 3.5709               | 3.5168               | 3.5448                                      |
|  | 3 5/8 16           | 3.6250               | 3.5844               | 3.5438               | 3.5658                                      |
|  | 3 3/4 4            | 3.7500               | 3.5876               | 3.4252               | 3.5094                                      |
|  | 3 3/4 8            | 3.7500               | 3.6688               | 3.5876               | 3.6297                                      |
|  | 3 3/4 12           | 3.7500               | 3.6959               | 3.6418               | 3.6698                                      |
|  | 3 3/4 16           | 3.7500               | 3.7094               | 3.6688               | 3.6908                                      |
|  | 3 7/8 12           | 3.8750               | 3.8209               | 3.7669               | 3.7948                                      |
|  | 3 7/8 16           | 3.8750               | 3.8344               | 3.7938               | 3.8158                                      |
|  | 4 4                | 4.0000               | 3.8376               | 3.6752               | 3.7594                                      |
|  | 4 8                | 4.0000               | 3.9188               | 3.8376               | 3.8797                                      |
|  | 4 12               | 4.0000               | 3.9459               | 3.8918               | 3.9198                                      |
|  | 4 16               | 4.0000               | 3.9594               | 3.9188               | 3.9408                                      |
|  | 4 16               | 1.8125               | 1.7719               | 1.7313               | 1.7533                                      |



Thread Dimensions

| nominal size & TPI |    | basic major diameter | basic pitch diameter | basic minor diameter | max minor diameter Class 3B internal thread | nominal size & TPI |    | basic major diameter | basic pitch diameter | basic minor diameter | max minor diameter Class 3B internal thread |
|--------------------|----|----------------------|----------------------|----------------------|---|--------------------|----|----------------------|----------------------|----------------------|---|
| 0                  | 80 | .0600                | .0519                | .0438                | .0514                                       | 6                  | 32 | .1380                | .1177                | .0974                | .1140                                       |
| 1                  | 64 | .0730                | .0629                | .0527                | .0623                                       | 6                  | 36 | .1380                | .1200                | .1019                | .1165                                       |
| 1                  | 72 | .0730                | .0640                | .0550                | .0635                                       | 6                  | 40 | .1380                | .1218                | .1055                | .1186                                       |
| 2                  | 56 | .0860                | .0744                | .0628                | .0737                                       | 8                  | 32 | .1640                | .1437                | .1234                | .1389                                       |
| 2                  | 64 | .0860                | .0759                | .0657                | .0753                                       | 8                  | 36 | .1640                | .1460                | .1279                | .1416                                       |
| 3                  | 48 | .0990                | .0855                | .0719                | .0845                                       | 8                  | 40 | .1640                | .1478                | .1315                | .1437                                       |
| 3                  | 56 | .0990                | .0874                | .0758                | .0865                                       | 10                 | 24 | .1900                | .1629                | .1359                | .1516                                       |
| 4                  | 32 | .1120                | .0917                | .0714                | .0880                                       | 10                 | 28 | .1900                | .1668                | .1436                | .1604                                       |
| 4                  | 36 | .1120                | .0940                | .0759                | .0919                                       | 10                 | 30 | .1900                | .1684                | .1467                | .1630                                       |
| 4                  | 40 | .1120                | .0958                | .0795                | .0939                                       | 10                 | 32 | .1900                | .1697                | .1494                | .1641                                       |
| 4                  | 48 | .1120                | .0985                | .0849                | .0968                                       | 12                 | 24 | .2160                | .1889                | .1619                | .1807                                       |
| 5                  | 40 | .1250                | .1088                | .0925                | .1062                                       | 12                 | 28 | .2160                | .1928                | .1696                | .1857                                       |
| 5                  | 44 | .1250                | .1102                | .0955                | .1079                                       | 12                 | 32 | .2160                | .1957                | .1754                | .1895                                       |
|                    |    |                      |                      |                      |   | 14                 | 20 | .2420                | .2095                | .1770                | .1987                                       |
|                    |    |                      |                      |                      |   | 14                 | 24 | .2420                | .2149                | .1879                | .2059                                       |

Constants for Finding Pitch Diameter and Minor Diameter of Screw Threads

Basic Pitch Diameter = Basic Major Diameter – Constant for Basic Pitch Diameter for TPI

Basic Minor Diameter = Basic Major Diameter – Constant for Basic Minor Diameter for TPI

| threads per inch | pitch |       | constant for basic pitch dia. |        | constant for basic minor dia. |        | threads per inch | pitch |      | constant for basic pitch dia. |        | constant for basic minor dia. |        |
|------------------|-------|-------|-------------------------------|--------|-------------------------------|--------|------------------|-------|------|-------------------------------|--------|-------------------------------|--------|
|                  | in    | mm    | Unified                       | ISO    | Unified                       | ISO    |                  | in    | mm   | Unified                       | ISO    | Unified                       | ISO    |
| -                | .0079 | 0.2   | -                             | .00511 | -                             | .01022 | 18               | .0555 | -    | .03608                        | -      | .07216                        | -      |
| -                | .0088 | 0.225 | -                             | .00575 | -                             | .01150 | -                | .0590 | 1.5  | -                             | .03836 | -                             | .07672 |
| -                | .0098 | 0.25  | -                             | .00639 | -                             | .01278 | 16               | .0625 | -    | .04060                        | -      | .08120                        | -      |
| -                | .0118 | 0.3   | -                             | .00767 | -                             | .01534 | -                | .0689 | 1.75 | -                             | .04475 | -                             | .08950 |
| 80               | .0125 | -     | .00812                        | -      | .01624                        | -      | 14               | .0714 | -    | .04639                        | -      | .09278                        | -      |
| -                | .0138 | 0.35  | -                             | .00895 | -                             | .01790 | 13               | .0769 | -    | .04996                        | -      | .09992                        | -      |
| 72               | .0139 | -     | .00902                        | -      | .01804                        | -      | -                | .0787 | 2.0  | -                             | .05117 | -                             | .10228 |
| 64               | .0156 | -     | .01015                        | -      | .02030                        | -      | 12               | .0833 | -    | .05413                        | -      | .10826                        | -      |
| -                | .0157 | 0.4   | -                             | .01023 | -                             | .02046 | 11.5             | .0869 | -    | .05648                        | -      | .11296                        | -      |
| -                | .0177 | 0.45  | -                             | .01151 | -                             | .02302 | 11               | .0909 | -    | .05905                        | -      | .11810                        | -      |
| 56               | .0178 | -     | .01160                        | -      | .02320                        | -      | -                | .0984 | 2.5  | -                             | .06393 | -                             | .12786 |
| -                | .0197 | 0.5   | -                             | .01279 | -                             | .02558 | 10               | .1000 | -    | .06495                        | -      | .12990                        | -      |
| 48               | .0208 | -     | .01353                        | -      | .02706                        | -      | 9                | .1111 | -    | .07217                        | -      | .14434                        | -      |
| 44               | .0227 | -     | .01476                        | -      | .02952                        | -      | -                | .1181 | 3.0  | -                             | .07672 | -                             | .15344 |
| -                | .0236 | 0.6   | -                             | .01534 | -                             | .03068 | 8                | .1250 | -    | .08119                        | -      | .16238                        | -      |
| 40               | .0250 | -     | .01624                        | -      | .03248                        | -      | -                | .1378 | 3.5  | -                             | .08950 | -                             | .17900 |
| -                | .0275 | 0.7   | -                             | .01790 | -                             | .03580 | 7                | .1428 | -    | .09279                        | -      | .18558                        | -      |
| 36               | .0278 | -     | .01804                        | -      | .03608                        | -      | -                | .1575 | 4.0  | -                             | .10229 | -                             | .20458 |
| -                | .0295 | 0.75  | -                             | .01918 | -                             | .03836 | 6                | .1667 | -    | .10825                        | -      | .21650                        | -      |
| 32               | .0312 | -     | .02030                        | -      | .04060                        | -      | -                | .1772 | 4.5  | -                             | .11507 | -                             | .23014 |
| -                | .0315 | 0.8   | -                             | .02046 | -                             | .04092 | -                | .1968 | 5.0  | -                             | .12786 | -                             | .25572 |
| 28               | .0357 | -     | .02320                        | -      | .04640                        | -      | 5                | .2000 | -    | .12990                        | -      | .25980                        | -      |
| 27               | .0370 | -     | .02406                        | -      | .04812                        | -      | -                | .2165 | 5.5  | -                             | .14064 | -                             | .28128 |
| -                | .0394 | 1.0   | -                             | .02557 | -                             | .05114 | 4.5              | .2222 | -    | .14434                        | -      | .28868                        | -      |
| 24               | .0417 | -     | .02706                        | -      | .05412                        | -      | -                | .2362 | 6.0  | -                             | .15343 | -                             | .30353 |
| -                | .0492 | 1.25  | -                             | .03196 | -                             | .06392 | 4                | .2500 | -    | .16238                        | -      | .32476                        | -      |
| 20               | .0500 | -     | .03248                        | -      | .06496                        | -      |                  |       |      |                               |        |                               |        |

Machine Taps  
Spiral Point Taps  
Spiral Flute Taps  
Thread Forming Taps  
Pipe Taps  
Dies  
Technical Info  
Sets  
Index



Ground Thread

Quick Shipment Program - Special Taps

Prices for special taps are available upon request. Special taps can be furnished in quantities to meet your specific requirements. All special metric taps will produce internal threads which conform to ISO, ISO modified, and the

obsolete OMFS thread systems and are manufactured to USCTI standard blank dimensions to fit the tap holders and machine spindles now in use in the USA.

Call Customer Service at 800.348.2885 for your quote.

General

The following tables and formulae are used in determining the limits and tolerances for ground thread taps having special diameter or special pitch or both and having a thread lead angle not in excess of 5%, unless otherwise specified. This table does not apply to the diameter and pitch combinations shown in Tables 327 and 329.

Note: When the tap major diameter must be determined from a specific tap pitch diameter, the maximum major diameter = the minimum specified pitch diameter - constant C, + constant A.

Lead Tolerance

A maximum lead error of + / - .0005" in 1" of thread is permitted.

Angle Tolerance

| Threads Per Inch     | Error in Half Angle |
|----------------------|---------------------|
| 4 to 5-1/2 inclusive | 20' + / -           |
| 6 to 9 inclusive     | 25' + / -           |
| 10 to 80 inclusive   | 30' + / -           |

Formulae

- Max. Major Diameter = Basic Major Diameter + A
- Min. Major Diameter = Max. Major Diameter - B
- Max. Pitch Diameter = Min. Pitch Diameter + D
- Min. Pitch Diameter = Basic Pitch Diameter + C

A = constant to add:

- 35% of the theoretical truncation for 4 to 5 threads per inch
- 40% for 5-1/2 to 12 threads per inch
- 45% for 13 to 80 threads per inch
- to nearest .005" for 8 or more threads per inch

B = Major diameter tolerance

C = Amount over basic for minimum pitch diameter

D = Pitch diameter tolerance

Values for A, B, C, and D

| threads per inch | A     | B     | C thru 5/8" | C over 5/8" thru 2-1/2" | C over 2-1/2" | D thru 1" | D over 1" thru 1-1/2" | D over 1-1/2" thru 2-1/2" | D over 2-1/2" |
|------------------|-------|-------|-------------|-------------------------|---------------|-----------|-----------------------|---------------------------|---------------|
| 80               | .0015 | .0010 | .0005       | .0010                   | .0015         | .0005     | .0010                 | .0010                     | .0015         |
| 56               | .0015 | .0010 | .0005       | .0010                   | .0015         | .0005     | .0010                 | .0010                     | .0015         |
| 48               | .0020 | .0010 | .0005       | .0010                   | .0015         | .0005     | .0010                 | .0010                     | .0015         |
| 44               | .0020 | .0010 | .0005       | .0010                   | .0015         | .0005     | .0010                 | .0010                     | .0015         |
| 40               | .0025 | .0010 | .0005       | .0010                   | .0015         | .0005     | .0010                 | .0010                     | .0015         |
| 36               | .0025 | .0010 | .0005       | .0010                   | .0015         | .0005     | .0010                 | .0010                     | .0015         |
| 32               | .0030 | .0010 | .0010       | .0010                   | .0015         | .0005     | .0010                 | .0010                     | .0015         |
| 28               | .0035 | .0010 | .0010       | .0010                   | .0015         | .0005     | .0010                 | .0010                     | .0015         |
| 24               | .0040 | .0010 | .0010       | .0010                   | .0015         | .0005     | .0010                 | .0015                     | .0015         |
| 20               | .0050 | .0010 | .0010       | .0010                   | .0015         | .0005     | .0010                 | .0015                     | .0015         |
| 18               | .0055 | .0010 | .0010       | .0010                   | .0015         | .0005     | .0010                 | .0015                     | .0015         |
| 16               | .0060 | .0010 | .0010       | .0010                   | .0015         | .0005     | .0010                 | .0015                     | .0020         |
| 14               | .0070 | .0010 | .0010       | .0015                   | .0015         | .0005     | .0010                 | .0015                     | .0020         |
| 13               | .0075 | .0010 | .0010       | .0015                   | .0015         | .0005     | .0010                 | .0015                     | .0020         |
| 12               | .0075 | .0010 | .0010       | .0015                   | .0015         | .0005     | .0010                 | .0015                     | .0020         |
| 11               | .0080 | .0010 | .0010       | .0015                   | .0020         | .0005     | .0010                 | .0015                     | .0020         |
| 10               | .0090 | .0015 | -           | .0015                   | .0020         | .0005     | .0010                 | .0015                     | .0020         |
| 9                | .0100 | .0015 | -           | .0015                   | .0020         | .0005     | .0010                 | .0015                     | .0020         |
| 8                | .0110 | .0015 | -           | .0015                   | .0020         | .0005     | .0010                 | .0015                     | .0020         |
| 7                | .0120 | .0020 | -           | .0015                   | .0020         | .0010     | .0010                 | .0020                     | .0025         |
| 6                | .0140 | .0020 | -           | .0015                   | .0020         | .0010     | .0010                 | .0020                     | .0025         |
| 5 1/2            | .0160 | .0025 | -           | .0015                   | .0020         | .0010     | .0015                 | .0020                     | .0025         |
| 5                | .0160 | .0025 | -           | .0015                   | .0020         | .0010     | .0015                 | .0020                     | .0025         |
| 4 1/2            | .0170 | .0025 | -           | .0015                   | .0020         | .0010     | .0015                 | .0020                     | .0025         |
| 4                | .0190 | .0025 | -           | .0015                   | .0020         | .0010     | .0015                 | .0020                     | .0025         |

For intermediate pitches use value for next coarser pitch



## Greenfield Threading Sets

### Sets

Cost Saving / Organize

### Sets

**See product specific page for additional information**

| set number  | no. of pieces | H-limit / flutes | sizes  | case type | order number<br><b>HTGP / SPGP</b> |
|---|---------------|------------------|--|-----------|------------------------------------|
| <b>Hand Tap - Straight Flute, General Purpose</b>   |               |                  |  |           |                                    |
|   | 3             |                  | See product page for set - Includes Taper, Plug, and Bottoming Tap   |           | see product page                   |
| <b>Plug Hand Tap</b>                                |               |                  |  |           |                                    |
| 303SET  | 10            | H3, 4            | 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                                   | metal     | 330082                             |
| <b>Jobber Drill (Bright), Plug Hand Tap</b>         |               |                  |  |           |                                    |
| HT18  | 18            | H3, 4            | 1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13, 6-32, 8-32, 10-24, 10-32   |           | 330083                             |
|   |               | Jobber           | 5/16, 27/64, LET-F, LET-U, #7, #21, #25, #29, #36  |           |                                    |
| <b>Jobber Drill (Titanium), Plug Hand Tap - TiN</b> |               |                  |  |           |                                    |
| HT18T   | 18            | H3, 4            | 1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13, 6-32, 8-32, 10-24, 10-32   |           | 330084                             |
|   |               | Jobber           | 5/16, 27/64, #7, #21, #25, #29, #36, LET-F, LET-U  |           |                                    |
| <b>Jobber Drill (Bright), Plug Spiral PT Tap</b>    |               |                  |  |           |                                    |
| GT18  | 18            | H3, 2            | 1/4-20, 5/16-18, 6-32, 8-32, 10-24, 10-32  |           | 330085                             |
|   |               | H3, 3            | 3/8-16, 7/16-14, 1/2-13  |           |                                    |
|   |               | Jobber           | 5/16, 27/64, LET-F, LET-U, #7, #21, #25, #29, #36  |           |                                    |
| <b>Jobber Drill (Bright), Plug NC/NF Hand Tap</b>   |               |                  |  |           |                                    |
| HT36  | 36            | H2, 3            | 6-40   |           | 330086                             |
|   |               | H2, 4            | 8-36   |           |                                    |
|   |               | H3, 4            | 6-32   |           |                                    |
|   |               | H3, 3            | 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, 8-32, 10-24, 10-32, 12-24, 12-28 |           |                                    |
|   |               | Jobber           | 5/16, 25/64, 27/64, 29/64, LET-F, LET-I, LET-Q, LET-U, #3, #7, #15, #16, #21, #25, #29, #33, #36                     |           |                                    |
| <b>Screw Machine Drill (Bright), Plug Hand Tap</b>  |               |                  |  |           |                                    |
| 68  | 20            | H2, 3            | 4-40, 5-40   |           | 330087                             |
|   |               | H3, 3            | 6-32   |           |                                    |
|   |               | H3, 4            | 1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13, 8-32, 10-24  |           |                                    |
|   |               | Screw Machine    | 5/16, 27/64, #7, #25, #29, #36, #39, #44, LET-F, LET-U   |           |                                    |
| <b>Jobber Drill (Black Oxide), Plug Hand Tap</b>    |               |                  |  |           |                                    |
| HM18  | 18            | D3, 3            | M2.5x0.45, M3x0.5  |           | 330088                             |
|   |               | D4, 3            | M3.5x0.6, M4x0.7   |           |                                    |
|   |               | D4, 4            | M5x0.8   |           |                                    |
|   |               | D5, 4            | M6X1.0, M8X1.25  |           |                                    |
|   |               | D6, 4            | M10x1.5, M12x1.75  |           |                                    |
|   |               | Jobber           | 2.05, 2.50, 2.90, 3.30, 4.20, 5.00, 6.70, 8.5, 10.20   |           |                                    |

| set number                                    | no. of sizes | die sizes  | case type | order number                |
|---|--------------|--|-----------|-----------------------------|
| <b>Taper Pipe Sets - NPT/NPTF Medium Hook</b> |              |  |           |                             |
|   |              | NPT Pipe Tap: 1/8 - 1" NPT   | wood      | <b>Style: PTT</b><br>353768 |
| <b>Re-threading Dies - Carbon Steel</b>       |              |  |           |                             |
| 481   | 8            | Course Thrd (UNC): 1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13, 9/16-12, 5/8-11, 3/4-10   | metal     | 403512                      |
| 482   | 10           | Course Thrd (UNC): 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   | metal     | 403553                      |
| 490   | 10           | Course Thrd (UNC): 1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13<br>Fine Thrd (UNF): 1/4-28, 5/16-24, 3/8-24, 7/16-20, 1/2-20   | metal     | 403520                      |
| 492   | 20           | Course Thrd (UNC): 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<br>Fine Thrd (UNF): 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 | metal     | 403595                      |
| 485   | 7            | M6 x 1, M8 x 1.25, M10 x 1.5, M12 x 1.75, M14 x 2, M16 x 2, M20 x 2.5  | metal     | 403522                      |



- Machine Taps
- Spiral Point Taps
- Spiral Flute Taps
- Thread Forming Taps
- Pipe Taps
- Dies
- Technical Info
- Sets
- Index



Sets  
Cost Saving / Organize

Set (continued)

See product specific page for additional information

| set number  | no. of sizes       | tap & die sizes   | tap wrench    | die stock           | order number |              |
|---|--------------------|---|---------------|---------------------|--------------|--------------|
| <b>OK Jr. Tap &amp; Die Sets:</b> HSS Production Hand Taps / Carbon Steel Round Adjustable Dies - Inch                        |                    |   |               |                     |              |              |
| 17  | 7                  | Course Thrd (UNC): 4-40, 6-32, 8-32, 10-24, 12-24, 1/4-20<br>Fine Thrd (UNF): 10-32   | 329           | 13                  | 423001       |              |
| 18  | 5                  | Course Thrd (UNC): 1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13   | 333           | 14                  | 423002       |              |
| 25  | 8                  | Course Thrd (UNC): 2-56, 3-48, 4-40, 6-32, 8-32, 10-24<br>Fine Thrd (UNF): 0-80, 1-72   | 329           | 13                  | 423003       |              |
| T4  | 8                  | Course Thrd (UNC): 2-56, 3-48, 4-40, 6-32, 8-32, 10-24, 12-24<br>Fine Thrd (UNF): 10-32   | 0             | 1851                | 420359       |              |
| T6  | 20                 | Course Thrd (UNC): 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<br>Fine Thrd (UNF): 1/4-28, 5/16-24, 3/8-24, 7/16-20, 1/2-20, 9/16-18, 5/8-18, 3/4-18, 7/8-14, 1-12  | 7             | 1852                | 420363       |              |
| 28  | 11                 | Course Thrd (UNC): 1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13<br>Fine Thrd (UNF): 1/4-28, 5/16-24, 3/8-24, 7/16-20, 1/2-20<br>Pipe Size (Short shank): 1/8-27   | 333           | 1                   | 423004       |              |
| 32  | 21                 | Course Thrd (UNC): 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<br>Fine Thrd (UNF): 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<br>UNS: 1-14<br>Pipe Size (Long shank): 1/8-27                       | 15<br>7       | 14<br>15<br>16      | 423005       |              |
| 33  | 28 Taps<br>15 Dies | Course Thrd (UNC): 4-40, 6-32, 8-32, 10-24, 12-24, 1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13, 9/16-12<br>Fine Thrd (UNF): 10-32, 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<br>UNS: 1-14<br>Pipe Size: 1/8-27, 1/4-18, 3/8-18, 1/2-14 | 329           | 14<br>15<br>16<br>7 | 423006       |              |
| <b>Tap &amp; Die Set:</b> with Production Hand Taps and HSS Round Adjustable Dies - Metric                                    |                    |   |               |                     |              |              |
| 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 1.0<br>Screwdriver: 300  | 333           | 1790                | 420365       |              |
| 49  | 5                  | M6 x 1.0, M7 x 1.0, M8 x 1.25, M10 x 1.5, M12 x 1.75<br>Screwdriver: 300  | 333           | 1790                | 420367       |              |
| <b>Tap &amp; Die Set:</b> with Production Hand Taps, Black Oxide Jobber Length Drills, and HSS Round Adjustable Dies - Metric |                    |   |               |                     |              |              |
| 49D   | 5                  | M6 x 1.0, M7 x 1.0, M8 x 1.25, M10 x 1.5, M12 x 1.75<br>Drill Sizes: 5.0, 6.0, 6.7, 8.5, 10.2<br>Screwdriver: 300   | 333           | 1790                | 420368       |              |
| set number  | no. of sizes       | tap & die sizes   | collet number | tap wrench          | die stock    | order number |
| <b>Tap &amp; Die Set:</b> without Collet  |                    |   |               |                     |              |              |
| 59  | 7                  | Course Thrd (UNC): 4-40, 6-32, 8-32, 10-24, 12-24, 1/4-20 NC<br>Fine Thrd (UNF): 10-32  | A1            | T9, A1              | A1           | 423159       |
| 510   | 5                  | Course Thrd (UNC): 1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13   | 1             | #5, #7              | #1           | 423160       |
| 511   | 10                 | Course Thrd (UNC): 1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13, 9/16-18, 5/8-18, 3/4-16, 7/8-14, 1-8   | 5             | #5                  | 5A           | 423161       |
| 512   | 10                 | Course Thrd (UNC): 1/4-20, 5/16-18, 3/8-16, 7/16-14, 1/2-13<br>Fine Thrd (UNF): 1/4-28, 5/16-24, 3/8-24, 7/16-20, 1/2-20  | 1             | #5                  | #1           | 423162       |
| 513   | 20                 | Course Thrd (UNC): 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<br>Fine Thrd (UNF): 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  | 1, 5          | #5<br>#7            | #1<br>#5B    | 423163       |
| 514   | 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             | #6                  | #5           | 423164       |
| 58  | 20                 | Course Thrd (UNC): 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<br>Fine Thrd (UNF): 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<br>UNS: 1-14   | —             | #5<br>#7            | #1<br>#5     | 423165       |
| <b>Screw Extractors</b>   |                    |   |               |                     |              | Style: 335   |
| 15 Set  | 5 pcs.             | Sizes: #1 through #5  | —             | —                   | —            | 422006       |





# Index by Part Number

## Reference Information

## Index

| Order Number | Style  | Page Number | Order Number | Style | Page Number | Order Number | Style | Page Number | Order Number | Style | Page Number | Order Number | Style | Page Number |
|--------------|--------|-------------|--------------|-------|-------------|--------------|-------|-------------|--------------|-------|-------------|--------------|-------|-------------|
| 131618       | SPGP+5 | 15          | 282054       | SFHD  | 21          | 287509       | FTGP  | 24          | 291257       | FTGP  | 24          | 301379       | HTGP  | 7           |
| 131619       | SPGP+5 | 15          | 282062       | SFHD  | 21          | 287558       | FTGP  | 24          | 291287       | FTGP  | 24          | 301474       | HTGP  | 7           |
| 174503       | HTGP   | 9           | 282104       | SFHD  | 21          | 287608       | FTGP  | 24          | 291295       | FTGP  | 24          | 301478       | HTGP  | 7           |
| 174504       | HTGP   | 8           | 282108       | SPHD  | 19          | 287657       | FTGP  | 24          | 300016       | SPGP  | 13          | 301482       | HTGP  | 7           |
| 174505       | HTGP   | 8           | 282120       | SFHD  | 21          | 287707       | FTGP  | 24          | 300041       | HTGP  | 7           | 301486       | HTGP  | 7           |
| 174506       | HTGP   | 8           | 282153       | SFHD  | 21          | 287756       | FTGP  | 24          | 300047       | HTGP  | 7           | 301490       | HTGP  | 7           |
| 174507       | HTGP   | 8           | 282157       | SPHD  | 19          | 287905       | FTGP  | 24          | 300054       | HTGP  | 7           | 301494       | HTGP  | 7           |
| 174508       | HTGP   | 8           | 282203       | SFHD  | 21          | 287954       | FTGP  | 24          | 300058       | HTGP  | 7           | 301544       | HTGP  | 7           |
| 174509       | HTGP   | 8           | 282207       | SPHD  | 19          | 288101       | FTGP  | 24          | 300165       | HTGP  | 7           | 301551       | HTGP  | 7           |
| 174510       | HTGP   | 8           | 282252       | SFHD  | 21          | 288150       | FTGP  | 24          | 300216       | HTHM  | 6           | 301577       | HTGP  | 7           |
| 174511       | HTGP   | 7           | 282256       | SPHD  | 19          | 288408       | FTGP  | 24          | 300217       | HTHM  | 6           | 301585       | HTGP  | 7           |
| 174513       | HTGP   | 9           | 282302       | SFHD  | 21          | 288457       | FTGP  | 24          | 300218       | HTHM  | 6           | 301635       | HTGP  | 7           |
| 174514       | HTGP   | 9           | 282306       | SPHD  | 19          | 289004       | FTGP  | 24          | 300219       | HTHM  | 6           | 301643       | HTGP  | 7           |
| 174516       | HTGP   | 9           | 282351       | SFHD  | 21          | 289012       | FTGP  | 24          | 300264       | HTGP  | 7           | 301668       | HTGP  | 7           |
| 174519       | HTGP   | 9           | 282355       | SPHD  | 19          | 289087       | FTGP  | 24          | 300272       | HTGP  | 7           | 301676       | HTGP  | 7           |
| 174520       | HTGP   | 9           | 282401       | SFHD  | 21          | 289095       | FTGP  | 24          | 300278       | HTGP  | 7           | 301718       | HTGP  | 7           |
| 174521       | HTGP   | 9           | 282405       | SPHD  | 19          | 289202       | FTGP  | 24          | 300280       | HTGP  | 7           | 301726       | HTGP  | 7           |
| 174522       | HTGP   | 9           | 282450       | SFHD  | 21          | 289210       | FTGP  | 24          | 300286       | HTGP  | 7           | 301734       | HTGP  | 7           |
| 174524       | HTGP   | 9           | 282454       | SPHD  | 19          | 289228       | FTGP  | 24          | 300294       | HTGP  | 7           | 301742       | HTGP  | 7           |
| 174528       | HTGP   | 8           | 282468       | SFHD  | 21          | 289236       | FTGP  | 24          | 300299       | HTGP  | 7           | 301748       | HTGP  | 7           |
| 174529       | HTGP   | 8           | 282470       | SPHD  | 19          | 289269       | FTGP  | 24          | 300512       | HTGP  | 7           | 301755       | HTGP  | 7           |
| 174530       | HTGP   | 7           | 282501       | SFHD  | 21          | 289277       | FTGP  | 24          | 300520       | HTGP  | 7           | 301759       | HTGP  | 7           |
| 174531       | HTGP   | 7           | 282504       | SPHD  | 19          | 289285       | FTGP  | 24          | 300526       | HTGP  | 7           | 301763       | HTGP  | 7           |
| 174532       | HTGP   | 8           | 282526       | SFHD  | 21          | 289293       | FTGP  | 24          | 300538       | HTGP  | 7           | 301767       | HTGP  | 7           |
| 174533       | HTGP   | 8           | 282553       | SPHD  | 19          | 289368       | FTGP  | 24          | 300637       | HTGP  | 7           | 301920       | HTGP  | 7           |
| 174534       | HTGP   | 9           | 282559       | SFHD  | 21          | 289376       | FTGP  | 24          | 300645       | HTGP  | 7           | 301924       | HTGP  | 7           |
| 174535       | HTGP   | 9           | 282567       | SFHD  | 21          | 289384       | FTGP  | 24          | 300652       | HTGP  | 7           | 301933       | HTGP  | 7           |
| 174536       | HTGP   | 7           | 282603       | SPHD  | 19          | 289392       | FTGP  | 24          | 300769       | HTGP  | 7           | 301938       | HTGP  | 7           |
| 174537       | HTGP   | 7           | 282609       | SFHD  | 21          | 289426       | FTGP  | 24          | 300778       | HTGP  | 7           | 301940       | HTGP  | 7           |
| 174538       | HTGP   | 7           | 282625       | SFHD  | 21          | 289434       | FTGP  | 24          | 300815       | HTGP  | 7           | 301946       | HTGP  | 7           |
| 174539       | HTGP   | 7           | 282652       | SPHD  | 19          | 289442       | FTGP  | 24          | 300819       | HTGP  | 7           | 301999       | HTGP  | 8           |
| 174540       | HTGP   | 8           | 282757       | SFHD  | 21          | 289459       | FTGP  | 24          | 300823       | HTGP  | 7           | 302021       | HTGP  | 8           |
| 174541       | HTGP   | 8           | 282765       | SFHD  | 21          | 289525       | FTGP  | 24          | 300827       | HTGP  | 7           | 302039       | HTGP  | 8           |
| 174542       | HTGP   | 9           | 282801       | SPHD  | 19          | 289533       | FTGP  | 24          | 300831       | HTGP  | 7           | 302112       | HTGP  | 8           |
| 174543       | HTGP   | 9           | 282807       | SFHD  | 21          | 289541       | FTGP  | 24          | 300835       | HTGP  | 7           | 302120       | HTGP  | 8           |
| 174544       | HTGP   | 7           | 282823       | SFHD  | 21          | 289558       | FTGP  | 24          | 300930       | HTGP  | 7           | 302161       | HTGP  | 8           |
| 174545       | HTGP   | 7           | 282850       | SPHD  | 19          | 289582       | FTGP  | 24          | 300934       | HTGP  | 7           | 302179       | HTGP  | 8           |
| 174546       | HTGP   | 8           | 282901       | SPHD  | 19          | 289590       | FTGP  | 24          | 300942       | HTGP  | 7           | 302187       | HTGP  | 8           |
| 174548       | HTGP   | 9           | 282959       | SPHD  | 19          | 289640       | FTGP  | 24          | 300948       | HTGP  | 7           | 302195       | HTGP  | 8           |
| 174549       | HTGP   | 9           | 285057       | SPAR  | 18          | 289657       | FTGP  | 24          | 300955       | HTGP  | 7           | 302203       | HTGP  | 8           |
| 174550       | HTGP   | 9           | 285107       | SPAR  | 18          | 289665       | FTGP  | 24          | 300959       | HTGP  | 7           | 302209       | HTGP  | 8           |
| 174551       | HTGP   | 9           | 285156       | SPAR  | 18          | 289673       | FTGP  | 24          | 301007       | HTGP  | 7           | 302211       | HTGP  | 8           |
| 174552       | HTGP   | 9           | 285206       | SPAR  | 18          | 289780       | FTGP  | 24          | 301015       | HTGP  | 7           | 302217       | HTGP  | 8           |
| 174553       | HTGP   | 9           | 285222       | SPAR  | 18          | 289798       | FTGP  | 24          | 301052       | HTGP  | 7           | 302260       | HTGP  | 8           |
| 174559       | HTGP   | 9           | 285255       | SPAR  | 18          | 289988       | FTGP  | 24          | 301056       | HTGP  | 7           | 302278       | HTGP  | 8           |
| 174560       | HTGP   | 9           | 285354       | SPAR  | 18          | 289996       | FTGP  | 24          | 301060       | HTGP  | 7           | 302294       | HTGP  | 8           |
| 174561       | HTGP   | 9           | 285370       | SPAR  | 18          | 291001       | FTGP  | 24          | 301064       | HTGP  | 7           | 302302       | HTGP  | 8           |
| 272550       | SPHD   | 19          | 285404       | SPAR  | 18          | 291006       | FTGP  | 24          | 301072       | HTGP  | 7           | 302385       | HTGP  | 8           |
| 280108       | SPHD   | 19          | 285453       | SPAR  | 18          | 291014       | FTGP  | 24          | 301078       | HTGP  | 7           | 302393       | HTGP  | 8           |
| 280157       | SPHD   | 19          | 285479       | SPAR  | 18          | 291018       | FTGP  | 24          | 301171       | HTGP  | 7           | 302435       | HTGP  | 8           |
| 280207       | SPHD   | 19          | 285503       | SPAR  | 18          | 291083       | FTGP  | 24          | 301177       | HTGP  | 7           | 302443       | HTGP  | 8           |
| 280256       | SPHD   | 19          | 285552       | SPAR  | 18          | 291089       | FTGP  | 24          | 301185       | HTGP  | 7           | 302450       | HTGP  | 8           |
| 280306       | SPHD   | 19          | 285628       | SPAR  | 18          | 291091       | FTGP  | 24          | 301189       | HTGP  | 7           | 302468       | HTGP  | 8           |
| 280355       | SPHD   | 19          | 285651       | SPAR  | 18          | 291097       | FTGP  | 24          | 301193       | HTGP  | 7           | 302472       | HTGP  | 8           |
| 280405       | SPHD   | 19          | 285701       | SPAR  | 18          | 291123       | FTGP  | 24          | 301197       | HTGP  | 7           | 302476       | HTGP  | 8           |
| 280454       | SPHD   | 19          | 285801       | SPAR  | 18          | 291125       | FTGP  | 24          | 301247       | HTGP  | 7           | 302480       | HTGP  | 8           |
| 280470       | SPHD   | 19          | 285859       | SPAR  | 18          | 291133       | FTGP  | 24          | 301254       | HTGP  | 7           | 302484       | HTGP  | 8           |
| 280504       | SPHD   | 19          | 287004       | FTGP  | 24          | 291139       | FTGP  | 24          | 301270       | HTGP  | 7           | 302526       | HTGP  | 8           |
| 280553       | SPHD   | 19          | 287053       | FTGP  | 24          | 291162       | FTGP  | 24          | 301288       | HTGP  | 7           | 302530       | HTGP  | 8           |
| 280603       | SPHD   | 19          | 287103       | FTGP  | 24          | 291166       | FTGP  | 24          | 301320       | HTGP  | 7           | 302534       | HTGP  | 8           |
| 280652       | SPHD   | 19          | 287152       | FTGP  | 24          | 291170       | FTGP  | 24          | 301338       | HTGP  | 7           | 302542       | HTGP  | 8           |
| 280801       | SPHD   | 19          | 287202       | FTGP  | 24          | 291174       | FTGP  | 24          | 301346       | HTGP  | 7           | 302548       | HTGP  | 8           |
| 280850       | SPHD   | 19          | 287251       | FTGP  | 24          | 291176       | FTGP  | 24          | 301353       | HTGP  | 7           | 302583       | HTGP  | 8           |
| 280901       | SPHD   | 19          | 287301       | FTGP  | 24          | 291178       | FTGP  | 24          | 301359       | HTGP  | 7           | 302591       | HTGP  | 8           |
| 280959       | SPHD   | 19          | 287350       | FTGP  | 24          | 291240       | FTGP  | 24          | 301361       | HTGP  | 7           | 302609       | HTGP  | 8           |
| 281957       | SFHD   | 21          | 287400       | FTGP  | 24          | 291246       | FTGP  | 24          | 301367       | HTGP  | 7           | 305008       | HTGP  | 8           |
| 282005       | SFHD   | 21          | 287459       | FTGP  | 24          | 291253       | FTGP  | 24          | 301375       | HTGP  | 7           | 305016       | HTGP  | 8           |

- Machine Taps
- Spiral Point Taps
- Spiral Flute Taps
- Thread Forming Taps
- Pipe Taps
- Dies
- Technical Info
- Sets
- Index



Index

Reference Information

Machine Taps

Spiral Point Taps

Spiral Flute Taps

Thread Forming Taps

Pipe Taps

Dies

Technical Info

Sets

Index

| Order Number | Style | Page Number | Order Number | Style | Page Number | Order Number | Style  | Page Number | Order Number | Style   | Page Number | Order Number | Style   | Page Number |
|--------------|-------|-------------|--------------|-------|-------------|--------------|--------|-------------|--------------|---------|-------------|--------------|---------|-------------|
| 305024       | HTGP  | 8           | 306154       | HTGP  | 8           | 307729       | HTGP   | 9           | 313516       | SPGP+5  | 15          | 313583       | SFGP+5  | 23          |
| 305033       | HTGP  | 8           | 306157       | HTGP  | 8           | 307822       | HTGP   | 9           | 313517       | SPGP+5  | 15          | 313584       | SFGP+5  | 23          |
| 305040       | HTGP  | 8           | 306162       | HTGP  | 8           | 307828       | HTGP   | 9           | 313518       | SPGP+5  | 15          | 313585       | SFGP+5  | 23          |
| 305057       | HTGP  | 8           | 306165       | HTGP  | 8           | 307830       | HTGP   | 9           | 313519       | SPGP+5  | 15          | 313586       | SFGP+5  | 23          |
| 305065       | HTGP  | 8           | 306246       | HTGP  | 8           | 307836       | HTGP   | 9           | 313520       | SPGP+5  | 15          | 313587       | SFGP+5  | 23          |
| 305073       | HTGP  | 8           | 306295       | HTGP  | 8           | 307844       | HTGP   | 9           | 313521       | SPGP+5  | 15          | 313588       | SFGP+5  | 23          |
| 305079       | HTGP  | 8           | 306303       | HTGP  | 8           | 307848       | HTGP   | 9           | 313522       | SPGP+5  | 15          | 313589       | SFGP+5  | 23          |
| 305081       | HTGP  | 8           | 306309       | HTGP  | 8           | 308065       | HTGP   | 9           | 313523       | SPGP+5  | 15          | 313590       | SFGP+5  | 23          |
| 305087       | HTGP  | 8           | 306311       | HTGP  | 8           | 308069       | HTGP   | 9           | 313524       | SPGP+5  | 15          | 313591       | SFGP+5  | 23          |
| 305103       | HTGP  | 8           | 306317       | HTGP  | 8           | 308073       | HTGP   | 9           | 313525       | SFGP+5  | 23          | 313592       | SFGP+5  | 23          |
| 305107       | HTGP  | 8           | 306337       | HTGP  | 8           | 308077       | HTGP   | 9           | 313526       | SFGP+5  | 23          | 313593       | SFGP+5  | 23          |
| 305111       | HTGP  | 8           | 306341       | HTGP  | 8           | 308081       | HTGP   | 9           | 313527       | SFGP+5  | 23          | 313594       | SFGP+5  | 23          |
| 305115       | HTGP  | 8           | 306345       | HTGP  | 8           | 308085       | HTGP   | 9           | 313528       | SFGP+5  | 23          | 313595       | SFGP+5  | 23          |
| 305198       | HTGP  | 8           | 306444       | HTGP  | 8           | 308184       | HTGP   | 9           | 313529       | SFGP+5  | 23          | 313596       | SFGP+5  | 23          |
| 305206       | HTGP  | 8           | 306451       | HTGP  | 8           | 308192       | HTGP   | 9           | 313530       | SFGP+5  | 23          | 313597       | SFGP+5  | 23          |
| 305209       | HTGP  | 8           | 306457       | HTGP  | 8           | 308200       | HTGP   | 9           | 313531       | SFGP+5  | 23          | 313598       | SFGP+5  | 23          |
| 305214       | HTGP  | 8           | 306465       | HTGP  | 8           | 308275       | HTGP   | 9           | 313532       | SFGP+5  | 23          | 313599       | SPGPX+5 | 16          |
| 305222       | HTGP  | 8           | 306469       | HTGP  | 8           | 308283       | HTGP   | 9           | 313533       | SFGP+5  | 23          | 313600       | SPGPX+5 | 16          |
| 305228       | HTGP  | 8           | 306485       | HTGP  | 8           | 308291       | HTGP   | 9           | 313534       | SFGP+5  | 23          | 313601       | SPGPX+5 | 16          |
| 305230       | HTGP  | 8           | 306626       | HTGP  | 8           | 308424       | HTGP   | 9           | 313535       | SFGP+5  | 23          | 313602       | SPGPX+5 | 16          |
| 305236       | HTGP  | 8           | 306630       | HTGP  | 8           | 308432       | HTGP   | 9           | 313536       | SFGP+5  | 23          | 313603       | SPGPX+5 | 16          |
| 305370       | HTGP  | 8           | 306634       | HTGP  | 8           | 308440       | HTGP   | 9           | 313537       | SFGP+5  | 23          | 313604       | SPGPX+5 | 16          |
| 305388       | HTGP  | 8           | 306642       | HTGP  | 8           | 308457       | HTGP   | 9           | 313538       | SFGP+5  | 23          | 313605       | SPGPX+5 | 16          |
| 305396       | HTGP  | 8           | 306648       | HTGP  | 8           | 308465       | HTGP   | 9           | 313539       | SFGP+5  | 23          | 313606       | SPGPX+5 | 16          |
| 305403       | HTGP  | 8           | 306741       | HTGP  | 8           | 308473       | HTGP   | 9           | 313540       | SFGP+5  | 23          | 313607       | SPGPX+5 | 16          |
| 305404       | HTGP  | 8           | 306754       | HTGP  | 8           | 308549       | HTGP   | 9           | 313541       | SFGP+5  | 23          | 313608       | SPGPX+5 | 16          |
| 305412       | HTGP  | 8           | 306758       | HTGP  | 8           | 308556       | HTGP   | 9           | 313542       | SFGP+5  | 23          | 313609       | SPGPX+5 | 16          |
| 305418       | HTGP  | 8           | 306762       | HTGP  | 8           | 308564       | HTGP   | 9           | 313543       | SFGP+5  | 23          | 313610       | SPGP+5  | 15          |
| 305438       | HTGP  | 8           | 306766       | HTGP  | 8           | 308572       | HTGP   | 9           | 313544       | SPGPX+5 | 16          | 313611       | SPGP+5  | 15          |
| 305446       | HTGP  | 8           | 306923       | HTGP  | 9           | 308580       | HTGP   | 9           | 313545       | SPGPX+5 | 16          | 313612       | SPGP+5  | 15          |
| 305511       | HTGP  | 8           | 306929       | HTGP  | 9           | 308598       | HTGP   | 9           | 313546       | SPGPX+5 | 16          | 313613       | SPGP+5  | 15          |
| 305525       | HTGP  | 8           | 306931       | HTGP  | 9           | 308671       | HTGP   | 9           | 313547       | SPGPX+5 | 16          | 313614       | SPGP+5  | 15          |
| 305529       | HTGP  | 8           | 306937       | HTGP  | 9           | 308705       | HTGP   | 9           | 313548       | SPGPX+5 | 16          | 313615       | SPGP+5  | 15          |
| 305533       | HTGP  | 8           | 306945       | HTGP  | 9           | 308713       | HTGP   | 9           | 313549       | SPGPX+5 | 16          | 313616       | SPGP+5  | 15          |
| 305537       | HTGP  | 8           | 306949       | HTGP  | 9           | 308788       | HTGP   | 9           | 313550       | SPGPX+5 | 16          | 313617       | SPGP+5  | 15          |
| 305552       | HTGP  | 8           | 306964       | HTGP  | 9           | 308796       | HTGP   | 9           | 313551       | SPGPX+5 | 16          | 313620       | SPGP+5  | 15          |
| 305560       | HTGP  | 8           | 306972       | HTGP  | 9           | 308804       | HTGP   | 9           | 313552       | SPGPX+5 | 16          | 313621       | SPGP+5  | 15          |
| 305677       | HTGP  | 8           | 306978       | HTGP  | 9           | 308812       | HTGP   | 9           | 313553       | SPGPX+5 | 16          | 317516       | HTGPL   | 10          |
| 305685       | HTGP  | 8           | 307042       | HTGP  | 9           | 308820       | HTGP   | 9           | 313554       | SPGPX+5 | 16          | 317532       | HTGPL   | 10          |
| 305693       | HTGP  | 8           | 307046       | HTGP  | 9           | 308838       | HTGP   | 9           | 313555       | SPGP+5  | 15          | 317540       | HTGPL   | 10          |
| 305701       | HTGP  | 8           | 307053       | HTGP  | 9           | 313010       | HTGPL  | 10          | 313556       | SPGP+5  | 15          | 317557       | HTGPL   | 10          |
| 305707       | HTGP  | 8           | 307059       | HTGP  | 9           | 313028       | HTGPL  | 10          | 313557       | SPGP+5  | 15          | 317573       | HTGPL   | 10          |
| 305715       | HTGP  | 8           | 307061       | HTGP  | 9           | 313036       | HTGPL  | 10          | 313558       | SPGP+5  | 15          | 317607       | HTGPL   | 10          |
| 305719       | HTGP  | 8           | 307067       | HTGP  | 9           | 313044       | HTGPL  | 10          | 313559       | SPGP+5  | 15          | 317631       | HTGPL   | 10          |
| 305731       | HTGP  | 8           | 307160       | HTGP  | 9           | 313051       | HTGPL  | 10          | 313560       | SPGP+5  | 15          | 317664       | HTGPL   | 10          |
| 305735       | HTGP  | 8           | 307178       | HTGP  | 9           | 313069       | HTGPL  | 10          | 313561       | SPGP+5  | 15          | 317722       | HTGPL   | 10          |
| 305743       | HTGP  | 8           | 307186       | HTGP  | 9           | 313077       | HTGPL  | 10          | 313562       | SPGP+5  | 15          | 317755       | HTGPL   | 10          |
| 305749       | HTGP  | 8           | 307194       | HTGP  | 9           | 313085       | HTGPL  | 10          | 313563       | SPGP+5  | 15          | 317789       | HTGPL   | 10          |
| 305818       | HTGP  | 8           | 307202       | HTGP  | 9           | 313093       | HTGPL  | 10          | 313564       | SPGP+5  | 15          | 317904       | HTGPL   | 10          |
| 305822       | HTGP  | 8           | 307210       | HTGP  | 9           | 313102       | HTGPL  | 10          | 313565       | SPGP+5  | 15          | 317995       | HTGPL   | 10          |
| 305826       | HTGP  | 8           | 307343       | HTGP  | 9           | 313119       | HTGPL  | 10          | 313566       | SPGP+5  | 15          | 318027       | HTGPL   | 10          |
| 305830       | HTGP  | 8           | 307349       | HTGP  | 9           | 313500       | SPGP+5 | 15          | 313567       | SPGP+5  | 15          | 318779       | HTGPL   | 10          |
| 305834       | HTGP  | 8           | 307350       | HTGP  | 9           | 313501       | SPGP+5 | 15          | 313568       | SPGP+5  | 15          | 326004       | HTGP    | 8           |
| 305990       | HTGP  | 8           | 307356       | HTGP  | 9           | 313502       | SPGP+5 | 15          | 313569       | SPGP+5  | 15          | 326012       | HTGP    | 8           |
| 306002       | HTGP  | 8           | 307364       | HTGP  | 9           | 313503       | SPGP+5 | 15          | 313570       | SPGP+5  | 15          | 326087       | HTGP    | 8           |
| 306006       | HTGP  | 8           | 307368       | HTGP  | 9           | 313504       | SPGP+5 | 15          | 313571       | SPGP+5  | 15          | 326095       | HTGP    | 8           |
| 306010       | HTGP  | 8           | 307463       | HTGP  | 9           | 313505       | SPGP+5 | 15          | 313572       | SPGP+5  | 15          | 326160       | HTGP    | 8           |
| 306014       | HTGP  | 8           | 307467       | HTGP  | 9           | 313506       | SPGP+5 | 15          | 313573       | SPGP+5  | 15          | 326178       | HTGP    | 8           |
| 306030       | HTGP  | 8           | 307471       | HTGP  | 9           | 313507       | SPGP+5 | 15          | 313574       | SPGP+5  | 15          | 326240       | HTGP    | 8           |
| 306036       | HTGP  | 8           | 307475       | HTGP  | 9           | 313508       | SPGP+5 | 15          | 313575       | SPGP+5  | 15          | 326244       | HTGP    | 8           |
| 306044       | HTGP  | 8           | 307483       | HTGP  | 9           | 313509       | SPGP+5 | 15          | 313576       | SPGP+5  | 15          | 326245       | HTGP    | 8           |
| 306048       | HTGP  | 8           | 307489       | HTGP  | 9           | 313510       | SPGP+5 | 15          | 313577       | SPGP+5  | 15          | 326251       | HTGP    | 8           |
| 306113       | HTGP  | 8           | 307703       | HTGP  | 9           | 313511       | SPGP+5 | 15          | 313578       | SPGP+5  | 15          | 326285       | HTGP    | 8           |
| 306121       | HTGP  | 8           | 307707       | HTGP  | 9           | 313512       | SPGP+5 | 15          | 313579       | SPGP+5  | 15          | 326293       | HTGP    | 8           |
| 306127       | HTGP  | 8           | 307711       | HTGP  | 9           | 313513       | SPGP+5 | 15          | 313580       | SFGP+5  | 23          | 326368       | HTGP    | 8           |
| 306135       | HTGP  | 8           | 307715       | HTGP  | 9           | 313514       | SPGP+5 | 15          | 313581       | SFGP+5  | 23          | 326376       | HTGP    | 8           |
| 306139       | HTGP  | 8           | 307723       | HTGP  | 9           | 313515       | SPGP+5 | 15          | 313582       | SFGP+5  | 23          | 326442       | HTGP    | 8           |
|              |       |             |              |       |             |              |        |             |              |         |             | 326459       | HTGP    | 8           |





# Index by Part Number

## Reference Information

## Index

| Order Number | Style | Page Number | Order Number | Style | Page Number | Order Number | Style | Page Number | Order Number | Style | Page Number | Order Number | Style | Page Number |
|--------------|-------|-------------|--------------|-------|-------------|--------------|-------|-------------|--------------|-------|-------------|--------------|-------|-------------|
| 326521       | HTGP  | 8           | 328697       | HTGP  | 9           | 330040       | HTGP  | 7           | 330123       | SPGP  | 13          | 330192       | SPLS  | 17          |
| 326525       | HTGP  | 8           | 328698       | HTGP  | 9           | 330041       | HTGP  | 8           | 330125       | SPGP  | 13          | 330193       | SFGP  | 22          |
| 326533       | HTGP  | 8           | 328699       | HTGP  | 9           | 330042       | HTGP  | 8           | 330126       | SPGP  | 13          | 330194       | SFGP  | 22          |
| 326539       | HTGP  | 8           | 328703       | HTGP  | 9           | 330043       | HTGP  | 8           | 330128       | SPGP  | 13          | 330195       | SFGP  | 22          |
| 326608       | HTGP  | 8           | 328704       | HTGP  | 9           | 330044       | HTGP  | 8           | 330129       | SPGP  | 13          | 330196       | SFGP  | 22          |
| 326616       | HTGP  | 8           | 328705       | HTGP  | 9           | 330045       | HTGP  | 8           | 330130       | SPGP  | 13          | 330197       | SFGP  | 22          |
| 326681       | HTGP  | 8           | 328706       | HTGP  | 9           | 330046       | HTGP  | 8           | 330131       | SPGP  | 13          | 330198       | SFGP  | 22          |
| 326699       | HTGP  | 8           | 328707       | HTGP  | 9           | 330047       | HTGP  | 8           | 330132       | SPGP  | 13          | 330199       | SFGP  | 22          |
| 326707       | HTGP  | 8           | 328708       | HTGP  | 9           | 330048       | HTGP  | 8           | 330133       | SPGP  | 13          | 330200       | SFGP  | 22          |
| 328018       | HTGP  | 9           | 328709       | HTGP  | 9           | 330049       | HTGP  | 8           | 330134       | SPGP  | 13          | 330201       | SFGP  | 22          |
| 328067       | HTGP  | 9           | 328710       | HTGP  | 9           | 330051       | HTGP  | 8           | 330135       | SPGP  | 13          | 330202       | SFGP  | 22          |
| 328075       | HTGP  | 9           | 328711       | HTGP  | 9           | 330052       | HTGP  | 8           | 330136       | SPGP  | 13          | 330203       | SFGP  | 22          |
| 328083       | HTGP  | 9           | 328716       | HTGP  | 9           | 330053       | HTGP  | 8           | 330137       | SPGP  | 13          | 330204       | SFGP  | 22          |
| 328158       | HTGP  | 9           | 328717       | HTGP  | 9           | 330055       | HTGP  | 8           | 330138       | SPGP  | 12          | 330205       | SFGP  | 22          |
| 328166       | HTGP  | 9           | 328719       | HTGP  | 9           | 330057       | HTGP  | 8           | 330139       | SPGP  | 12          | 330206       | SFGP  | 22          |
| 328174       | HTGP  | 9           | 328720       | HTGP  | 9           | 330058       | HTGP  | 8           | 330140       | SPGP  | 12          | 330207       | SFGP  | 22          |
| 328182       | HTGP  | 9           | 328752       | HTGP  | 9           | 330059       | HTGP  | 8           | 330141       | SPGP  | 12          | 330208       | SFGP  | 22          |
| 328188       | HTGP  | 9           | 328760       | HTGP  | 9           | 330060       | HTGP  | 8           | 330142       | SPGP  | 12          | 330209       | SFGP  | 22          |
| 328190       | HTGP  | 9           | 328778       | HTGP  | 9           | 330061       | HTGP  | 9           | 330143       | SPGP  | 12          | 330210       | SFGP  | 22          |
| 328205       | HTGP  | 9           | 328810       | HTGP  | 9           | 330062       | HTGP  | 7           | 330144       | SPGP  | 13          | 330211       | SFGP  | 22          |
| 328208       | HTGP  | 9           | 328828       | HTGP  | 9           | 330063       | HTGP  | 7           | 330145       | SPGP  | 13          | 330212       | FTGP  | 24          |
| 328240       | HTGP  | 9           | 328836       | HTGP  | 9           | 330065       | HTGP  | 9           | 330146       | SPGP  | 13          | 330213       | FTGP  | 24          |
| 328257       | HTGP  | 9           | 328877       | HTGP  | 9           | 330066       | HTGP  | 7           | 330147       | SPGP  | 13          | 330214       | FTGP  | 24          |
| 328265       | HTGP  | 9           | 328885       | HTGP  | 9           | 330067       | HTGP  | 7           | 330148       | SPGP  | 12          | 330215       | FTGP  | 24          |
| 328273       | HTGP  | 9           | 328893       | HTGP  | 9           | 330068       | HTGP  | 7           | 330149       | SPGP  | 12          | 330259       | HTHM  | 6           |
| 328281       | HTGP  | 9           | 328935       | HTGP  | 9           | 330069       | HTGP  | 7           | 330150       | SPGP  | 12          | 330260       | HTHM  | 6           |
| 328287       | HTGP  | 9           | 328943       | HTGP  | 9           | 330070       | HTGP  | 7           | 330151       | SPGP  | 12          | 330261       | HTHM  | 6           |
| 328295       | HTGP  | 9           | 328950       | HTGP  | 9           | 330071       | HTGP  | 9           | 330152       | SPGP  | 12          | 330262       | HTHM  | 6           |
| 328299       | HTGP  | 9           | 329057       | HTGP  | 9           | 330072       | HTGP  | 9           | 330153       | SPGP  | 12          | 330263       | HTHM  | 6           |
| 328331       | HTGP  | 9           | 329065       | HTGP  | 9           | 330073       | HTGP  | 9           | 330154       | SPGP  | 12          | 330264       | HTHM  | 6           |
| 328349       | HTGP  | 9           | 329073       | HTGP  | 9           | 330074       | HTGP  | 9           | 330155       | SPGP  | 12          | 330265       | HTHM  | 6           |
| 328356       | HTGP  | 9           | 329180       | HTGP  | 9           | 330075       | HTGP  | 9           | 330156       | SPGP  | 12          | 330267       | HTHM  | 6           |
| 328364       | HTGP  | 9           | 330004       | HTGP  | 7           | 330076       | HTGP  | 9           | 330157       | SPGP  | 12          | 330269       | HTHM  | 6           |
| 328372       | HTGP  | 9           | 330005       | HTGP  | 7           | 330077       | HTGP  | 9           | 330158       | SPGP  | 12          | 330278       | HTHM  | 6           |
| 328378       | HTGP  | 9           | 330006       | HTGP  | 7           | 330078       | HTGP  | 9           | 330159       | SPGP  | 13          | 330279       | HTHM  | 6           |
| 328380       | HTGP  | 9           | 330007       | HTGP  | 7           | 330079       | HTGP  | 8           | 330160       | SPGP  | 13          | 330280       | HTHM  | 6           |
| 328386       | HTGP  | 9           | 330008       | HTGP  | 7           | 330080       | HTGP  | 8           | 330161       | SPGP  | 13          | 330281       | HTHM  | 6           |
| 328422       | HTGP  | 9           | 330009       | HTGP  | 9           | 330082       | HTGP  | 14,55       | 330162       | SPGP  | 13          | 330283       | HTHM  | 6           |
| 328430       | HTGP  | 9           | 330010       | HTGP  | 9           | 330083       | HTGP  | 14,55       | 330163       | SPGP  | 13          | 330284       | HTHM  | 6           |
| 328436       | HTGP  | 9           | 330011       | HTGP  | 9           | 330084       | HTGP  | 14,55       | 330164       | SPGP  | 13          | 330290       | HTHM  | 6           |
| 328444       | HTGP  | 9           | 330012       | HTGP  | 9           | 330085       | SPGP  | 14,55       | 330165       | SPGP  | 13          | 330291       | HTHM  | 6           |
| 328448       | HTGP  | 9           | 330013       | HTGP  | 9           | 330086       | HTGP  | 14,55       | 330166       | SPGP  | 13          | 330292       | HTHM  | 6           |
| 328497       | HTGP  | 9           | 330014       | HTGP  | 9           | 330087       | HTGP  | 14,55       | 330167       | SPGP  | 13          | 330293       | HTHM  | 6           |
| 328547       | HTGP  | 9           | 330015       | HTGP  | 9           | 330088       | HTGP  | 14,55       | 330168       | SPGP  | 13          | 330294       | HTHM  | 6           |
| 328550       | HTGP  | 9           | 330016       | HTGP  | 7           | 330100       | SPGP  | 12          | 330169       | SPGP  | 13          | 330295       | HTHM  | 6           |
| 328554       | HTGP  | 9           | 330017       | HTGP  | 7           | 330101       | SPGP  | 12          | 330170       | SPGP  | 13          | 330296       | HTHM  | 6           |
| 328562       | HTGP  | 9           | 330018       | HTGP  | 7           | 330102       | SPGP  | 12          | 330171       | SPGP  | 13          | 330298       | HTHM  | 6           |
| 328568       | HTGP  | 9           | 330019       | HTGP  | 7           | 330103       | SPGP  | 12          | 330172       | SPGP  | 13          | 330302       | SPS   | 11          |
| 328604       | HTGP  | 9           | 330020       | HTGP  | 7           | 330104       | SPGP  | 12          | 330173       | SPGP  | 13          | 330309       | SPS   | 11          |
| 328612       | HTGP  | 9           | 330021       | HTGP  | 7           | 330105       | SPGP  | 12          | 330174       | SPGP  | 13          | 330310       | SPS   | 11          |
| 328618       | HTGP  | 9           | 330022       | HTGP  | 7           | 330106       | SPGP  | 12          | 330175       | SPLS  | 17          | 330311       | SPS   | 11          |
| 328620       | HTGP  | 9           | 330024       | HTGP  | 8           | 330107       | SPGP  | 12          | 330176       | SPLS  | 17          | 330312       | SPS   | 11          |
| 328626       | HTGP  | 9           | 330025       | HTGP  | 8           | 330108       | SPGP  | 12          | 330177       | SPLS  | 17          | 330313       | SPS   | 11          |
| 328661       | HTGP  | 9           | 330026       | HTGP  | 8           | 330109       | SPGP  | 12          | 330178       | SPLS  | 17          | 330315       | SPS   | 11          |
| 328675       | HTGP  | 9           | 330027       | HTGP  | 8           | 330110       | SPGP  | 12          | 330179       | SPLS  | 17          | 330316       | SPS   | 11          |
| 328679       | HTGP  | 9           | 330028       | HTGP  | 9           | 330111       | SPGP  | 12          | 330180       | SPLS  | 17          | 330317       | SPS   | 11          |
| 328683       | HTGP  | 9           | 330029       | HTGP  | 9           | 330112       | SPGP  | 12          | 330181       | SPLS  | 17          | 330321       | SPS   | 11          |
| 328684       | HTGP  | 9           | 330030       | HTGP  | 9           | 330113       | SPGP  | 12          | 330182       | SPLS  | 17          | 330333       | SPS   | 11          |
| 328685       | HTGP  | 9           | 330031       | HTGP  | 9           | 330114       | SPGP  | 12          | 330183       | SPLS  | 17          | 330336       | SPS   | 11          |
| 328686       | HTGP  | 9           | 330032       | HTGP  | 9           | 330115       | SPGP  | 12          | 330184       | SPLS  | 17          | 330465       | SFS   | 20          |
| 328687       | HTGP  | 9           | 330033       | HTGP  | 9           | 330116       | SPGP  | 13          | 330185       | SPLS  | 17          | 330466       | SFS   | 20          |
| 328688       | HTGP  | 9           | 330034       | HTGP  | 9           | 330117       | SPGP  | 13          | 330186       | SPLS  | 17          | 330468       | SFS   | 20          |
| 328689       | HTGP  | 9           | 330035       | HTGP  | 7           | 330118       | SPGP  | 13          | 330187       | SPLS  | 17          | 330470       | SFS   | 20          |
| 328690       | HTGP  | 9           | 330036       | HTGP  | 7           | 330119       | SPGP  | 13          | 330188       | SPLS  | 17          | 330474       | SFS   | 20          |
| 328691       | HTGP  | 9           | 330037       | HTGP  | 7           | 330120       | SPGP  | 13          | 330189       | SPLS  | 17          | 330478       | SFS   | 20          |
| 328693       | HTGP  | 9           | 330038       | HTGP  | 7           | 330121       | SPGP  | 13          | 330190       | SPLS  | 17          | 330489       | SFS   | 20          |
| 328695       | HTGP  | 9           | 330039       | HTGP  | 7           | 330122       | SPGP  | 13          | 330191       | SPLS  | 17          | 330490       | SFS   | 20          |

Machine Taps

Spiral Point Taps

Spiral Flute Taps

Thread Forming Taps

Pipe Taps

Dies

Technical Info

Sets

Index



Index

Reference Information

Machine Taps

Spiral Point Taps

Spiral Flute Taps

Thread Forming Taps

Pipe Taps

Dies

Technical Info

Sets

Index

| Order Number | Style | Page Number | Order Number | Style | Page Number | Order Number | Style | Page Number | Order Number | Style | Page Number | Order Number | Style | Page Number |
|--------------|-------|-------------|--------------|-------|-------------|--------------|-------|-------------|--------------|-------|-------------|--------------|-------|-------------|
| 330491       | SFS   | 20          | 343513       | HTGP  | 9           | 357021       | SPGP  | 12          | 359047       | SPGP  | 12          | 368097       | SFGP  | 22          |
| 330494       | SFS   | 20          | 343514       | HTGP  | 9           | 357025       | SPGP  | 12          | 359088       | SPGP  | 12          | 384524       | ELPTT | 27          |
| 330495       | SFS   | 20          | 343515       | HTGP  | 9           | 357041       | SPGP  | 12          | 359120       | SPGP  | 12          | 384525       | ELPTT | 27          |
| 330496       | SFS   | 20          | 353768       | PTT   | 25,55       | 357047       | SPGP  | 12          | 360755       | SPGP  | 13          | 384526       | ELPTT | 27          |
| 330498       | SFS   | 20          | 355802       | HTGP  | 7           | 357054       | SPGP  | 12          | 360771       | SPGP  | 13          | 384527       | ELPTT | 27          |
| 330499       | SFS   | 20          | 355803       | HTGP  | 7           | 357058       | SPGP  | 12          | 360774       | SPGP  | 13          | 384528       | ELPTT | 27          |
| 330502       | SFS   | 20          | 356002       | SPGP  | 12          | 357062       | SPGP  | 12          | 360797       | SPGP  | 13          | 384529       | ELPTT | 27          |
| 330503       | SFS   | 20          | 356023       | SPGP  | 12          | 357066       | SPGP  | 12          | 360801       | SPGP  | 13          | 385307       | PTT   | 25          |
| 330504       | SFS   | 20          | 356027       | SPGP  | 12          | 357082       | SPGP  | 12          | 360805       | SPGP  | 13          | 385323       | PTT   | 25          |
| 330505       | SFS   | 20          | 356035       | SPGP  | 12          | 357088       | SPGP  | 12          | 360821       | SPGP  | 13          | 385328       | PTT   | 25          |
| 339044       | HTGP  | 7           | 356061       | SPGP  | 12          | 357101       | SPGP  | 12          | 360835       | SPGP  | 13          | 385329       | PTT   | 25          |
| 339045       | HTGP  | 7           | 356068       | SPGP  | 12          | 357108       | SPGP  | 12          | 360839       | SPGP  | 13          | 385331       | PTT   | 25          |
| 339046       | HTGP  | 7           | 356084       | SPGP  | 12          | 357161       | SPGP  | 12          | 360854       | SPGP  | 13          | 385356       | PTT   | 25          |
| 339047       | HTGP  | 7           | 356102       | SPGP  | 12          | 357165       | SPGP  | 12          | 360862       | SPGP  | 13          | 385357       | PTT   | 25          |
| 339048       | HTGP  | 7           | 356106       | SPGP  | 12          | 357173       | SPGP  | 12          | 360868       | SPGP  | 13          | 385359       | PTT   | 25          |
| 341573       | HTGP  | 7           | 356142       | SPGP  | 12          | 357179       | SPGP  | 12          | 360884       | SPGP  | 13          | 385364       | PTT   | 25          |
| 341599       | HTGP  | 7           | 356148       | SPGP  | 12          | 357249       | SPGP  | 13          | 360888       | SPGP  | 13          | 385380       | PTT   | 25          |
| 341607       | HTGP  | 7           | 356159       | SPGP  | 12          | 357264       | SPGP  | 13          | 360904       | SPGP  | 13          | 385385       | PTT   | 25          |
| 341623       | HTGP  | 7           | 356183       | SPGP  | 12          | 357280       | SPGP  | 13          | 360920       | SPGP  | 13          | 385386       | PTT   | 25          |
| 341649       | HTGP  | 7           | 356221       | SPGP  | 12          | 357286       | SPGP  | 13          | 360926       | SPGP  | 13          | 385398       | PTT   | 25          |
| 341664       | HTGP  | 7           | 356225       | SPGP  | 12          | 357294       | SPGP  | 13          | 360942       | SPGP  | 13          | 385409       | PTT   | 25          |
| 341672       | HTGP  | 7           | 356262       | SPGP  | 12          | 357298       | SPGP  | 13          | 360946       | SPGP  | 13          | 385410       | PTT   | 25          |
| 341698       | HTGP  | 7           | 356266       | SPGP  | 12          | 357306       | SPGP  | 13          | 360961       | SPGP  | 13          | 385413       | PTT   | 25          |
| 341706       | HTGP  | 7           | 356308       | SPGP  | 12          | 357322       | SPGP  | 13          | 360967       | SPGP  | 13          | 385422       | PTT   | 25          |
| 341714       | HTGP  | 7           | 356320       | SPGP  | 12          | 357328       | SPGP  | 13          | 360995       | SPGP  | 13          | 385443       | PTT   | 25          |
| 341730       | HTGP  | 7           | 356324       | SPGP  | 12          | 357344       | SPGP  | 13          | 361019       | SPGP  | 13          | 385444       | PTT   | 25          |
| 341748       | HTGP  | 7           | 356332       | SPGP  | 12          | 357348       | SPGP  | 13          | 361050       | SPGP  | 13          | 385448       | PTT   | 25          |
| 341755       | HTGP  | 7           | 356338       | SPGP  | 12          | 357363       | SPGP  | 13          | 366110       | SFGP  | 22          | 385455       | PTT   | 25          |
| 341771       | HTGP  | 8           | 356361       | SPGP  | 12          | 357401       | SPGP  | 13          | 366112       | SFGP  | 22          | 385458       | PTT   | 25          |
| 341789       | HTGP  | 8           | 356365       | SPGP  | 12          | 357405       | SPGP  | 13          | 366130       | SFGP  | 22          | 385471       | PTT   | 25          |
| 341805       | HTGP  | 8           | 356403       | SPGP  | 12          | 357413       | SPGP  | 13          | 366132       | SFGP  | 22          | 385477       | PTT   | 25          |
| 341813       | HTGP  | 8           | 356407       | SPGP  | 12          | 357504       | SPGP  | 13          | 366140       | SFGP  | 22          | 385489       | PTT   | 25          |
| 341821       | HTGP  | 8           | 356415       | SPGP  | 12          | 357520       | SPGP  | 13          | 366142       | SFGP  | 22          | 385500       | PTT   | 25          |
| 341839       | HTGP  | 8           | 356421       | SPGP  | 12          | 357526       | SPGP  | 13          | 366150       | SFGP  | 22          | 385501       | PTT   | 25          |
| 341912       | HTGPL | 10          | 356422       | SPGP  | 12          | 357542       | SPGP  | 13          | 366152       | SFGP  | 22          | 385505       | PTT   | 25          |
| 341938       | HTGPL | 10          | 356486       | SPGP  | 12          | 357546       | SPGP  | 13          | 366160       | SFGP  | 22          | 385513       | PTT   | 25          |
| 342514       | HTGP  | 8           | 356498       | SPGP  | 12          | 357561       | SPGP  | 13          | 366162       | SFGP  | 22          | 385534       | PTT   | 25          |
| 342522       | HTGP  | 8           | 356502       | SPGP  | 12          | 357578       | SPGP  | 13          | 366170       | SFGP  | 22          | 385536       | PTT   | 25          |
| 342530       | HTGP  | 8           | 356506       | SPGP  | 12          | 357603       | SPGP  | 13          | 366172       | SFGP  | 22          | 385539       | PTT   | 25          |
| 342555       | HTGP  | 8           | 356510       | SPGP  | 12          | 357609       | SPGP  | 13          | 366180       | SFGP  | 22          | 385547       | PTT   | 25          |
| 342563       | HTGP  | 8           | 356514       | SPGP  | 12          | 357629       | SPGP  | 13          | 366182       | SFGP  | 22          | 385562       | PTT   | 25          |
| 342589       | HTGP  | 8           | 356544       | SPGP  | 12          | 357660       | SPGP  | 13          | 367149       | SFGP  | 22          | 385570       | PTT   | 25          |
| 342597       | HTGP  | 8           | 356548       | SPGP  | 12          | 357682       | SPGP  | 13          | 367156       | SFGP  | 22          | 385604       | PTT   | 25          |
| 342605       | HTGP  | 8           | 356589       | SPGP  | 12          | 357686       | SPGP  | 13          | 367222       | SFGP  | 22          | 385680       | PTT   | 25          |
| 342613       | HTGP  | 8           | 356602       | SPGP  | 12          | 357702       | SPGP  | 13          | 367230       | SFGP  | 22          | 385681       | PTT   | 25          |
| 342621       | HTGP  | 8           | 356633       | SPGP  | 12          | 357765       | SPGP  | 13          | 367263       | SFGP  | 22          | 385682       | PTT   | 25          |
| 342639       | HTGP  | 8           | 356634       | SPGP  | 12          | 357769       | SPGP  | 13          | 367271       | SFGP  | 22          | 385685       | PTT   | 25          |
| 342647       | HTGP  | 8           | 356635       | SPGP  | 12          | 357785       | SPGP  | 13          | 367305       | SFGP  | 22          | 385729       | PTTI  | 26          |
| 342654       | HTGP  | 8           | 356647       | SPGP  | 12          | 357819       | SPGP  | 13          | 367313       | SFGP  | 22          | 385737       | PTTI  | 26          |
| 342662       | HTGP  | 9           | 356662       | SPGP  | 12          | 357823       | SPGP  | 13          | 367321       | SFGP  | 22          | 385752       | PTTI  | 26          |
| 342670       | HTGP  | 9           | 356688       | SPGP  | 12          | 357827       | SPGP  | 13          | 367339       | SFGP  | 22          | 385755       | PTTI  | 26          |
| 342688       | HTGP  | 9           | 356703       | SPGP  | 12          | 357831       | SPGP  | 13          | 367909       | SFGP  | 22          | 385760       | PTTI  | 26          |
| 342696       | HTGP  | 9           | 356704       | SPGP  | 12          | 357835       | SPGP  | 13          | 367913       | SFGP  | 22          | 385786       | PTTI  | 26          |
| 342704       | HTGP  | 9           | 356712       | SPGP  | 12          | 357864       | SPGP  | 13          | 367917       | SFGP  | 22          | 385789       | PTTI  | 26          |
| 342712       | HTGP  | 9           | 356718       | SPGP  | 12          | 357868       | SPGP  | 13          | 367925       | SFGP  | 22          | 385794       | PTTI  | 26          |
| 342720       | HTGP  | 9           | 356742       | SPGP  | 12          | 357922       | SPGP  | 13          | 367933       | SFGP  | 22          | 385810       | PTTI  | 26          |
| 342738       | HTGP  | 9           | 356746       | SPGP  | 12          | 357926       | SPGP  | 13          | 367941       | SFGP  | 22          | 385813       | PTTI  | 26          |
| 342746       | HTGP  | 9           | 356761       | SPGP  | 12          | 357930       | SPGP  | 13          | 367958       | SFGP  | 22          | 385828       | PTTI  | 26          |
| 342761       | HTGP  | 9           | 356767       | SPGP  | 12          | 357934       | SPGP  | 13          | 367966       | SFGP  | 22          | 385844       | PTTI  | 26          |
| 343502       | HTGP  | 9           | 356775       | SPGP  | 12          | 357942       | SPGP  | 13          | 367974       | SFGP  | 22          | 385847       | PTTI  | 26          |
| 343503       | HTGP  | 9           | 356779       | SPGP  | 12          | 357963       | SPGP  | 13          | 367982       | SFGP  | 22          | 385851       | PTTI  | 26          |
| 343504       | HTGP  | 9           | 356803       | SPGP  | 12          | 357967       | SPGP  | 13          | 367990       | SFGP  | 22          | 385870       | PTTI  | 26          |
| 343506       | HTGP  | 9           | 356809       | SPGP  | 12          | 357975       | SPGP  | 13          | 368006       | SFGP  | 22          | 385877       | PTTI  | 26          |
| 343508       | HTGP  | 9           | 356841       | SPGP  | 12          | 358490       | SPGP  | 12          | 368014       | SFGP  | 22          | 385885       | PTTI  | 26          |
| 343509       | HTGP  | 9           | 356845       | SPGP  | 12          | 358494       | SPGP  | 12          | 368063       | SFGP  | 22          | 386008       | ELPTT | 27          |
| 343511       | HTGP  | 9           | 356858       | SPGP  | 12          | 358510       | SPGP  | 13          | 368071       | SFGP  | 22          | 386024       | ELPTT | 27          |
| 343512       | HTGP  | 9           | 357009       | SPGP  | 12          | 359005       | SPGP  | 12          | 368089       | SFGP  | 22          | 386040       | ELPTT | 27          |







# Index by Part Number

## Reference Information

## Index

| Order Number | Style | Page Number | Order Number | Style | Page Number | Order Number | Style | Page Number | Order Number | Style | Page Number | Order Number | Style | Page Number |
|--------------|-------|-------------|--------------|-------|-------------|--------------|-------|-------------|--------------|-------|-------------|--------------|-------|-------------|
| 386129       | ELPTT | 27          | 401102       | 382   | 30          | 402803       | 382   | 31          | 411897       | 377   | 28          | 423022       | 1386  | 34          |
| 386152       | ELPTT | 27          | 401110       | 382   | 30          | 402811       | 382   | 31          | 411898       | 377   | 28          | 423023       | 1386  | 34          |
| 386186       | ELPTT | 27          | 401128       | 382   | 30          | 402829       | 382   | 31          | 411899       | 377   | 28          | 423024       | 1386  | 34          |
| 387113       | PTS   | 27          | 401129       | 382   | 30          | 402837       | 382   | 31          | 411900       | 377   | 28          | 423025       | 1386  | 34          |
| 387121       | PTS   | 27          | 401168       | 382   | 30          | 402902       | 382   | 31          | 415721       | 6382  | 32          | 423026       | 1386  | 34          |
| 387139       | PTS   | 27          | 401169       | 382   | 30          | 402910       | 382   | 31          | 415724       | 6382  | 32          | 423027       | 1386  | 34          |
| 387147       | PTS   | 27          | 401177       | 382   | 30          | 402936       | 382   | 31          | 415732       | 6382  | 32          | 423028       | 1386  | 34          |
| 387212       | PTS   | 27          | 401201       | 382   | 30          | 402944       | 382   | 31          | 415737       | 6382  | 32          | 423029       | 1386  | 34          |
| 387220       | PTS   | 27          | 401227       | 382   | 30          | 402951       | 382   | 31          | 415742       | 6382  | 32          | 423030       | 1386  | 34          |
| 387238       | PTS   | 27          | 401242       | 382   | 30          | 402969       | 382   | 31          | 415747       | 6382  | 32          | 423031       | 1386  | 34          |
| 387246       | PTS   | 27          | 401243       | 382   | 30          | 402977       | 382   | 31          | 415757       | 6382  | 32          | 423032       | 1386  | 34          |
| 387253       | PTS   | 27          | 401244       | 382   | 30          | 402985       | 382   | 31          | 415801       | 6382  | 32          | 423033       | 1386  | 34          |
| 400013       | 6382  | 30          | 401409       | 382   | 30          | 402993       | 382   | 31          | 415807       | 6382  | 32          | 423034       | 1386  | 34          |
| 400021       | 6382  | 30          | 401433       | 382   | 30          | 403009       | 382   | 31          | 415813       | 6382  | 32          | 423035       | 1386  | 34          |
| 400039       | 6382  | 30          | 401466       | 382   | 30          | 403108       | 377   | 28          | 415824       | 6382  | 32          | 423036       | 1386  | 34          |
| 400047       | 6382  | 30          | 401482       | 382   | 30          | 403116       | 377   | 28          | 415833       | 6382  | 32          | 423037       | 1386  | 34          |
| 400054       | 6382  | 30          | 401490       | 382   | 30          | 403124       | 377   | 28          | 415880       | 6382  | 32          | 423038       | 1386  | 34          |
| 400062       | 6382  | 30          | 401979       | 382   | 30          | 403132       | 377   | 28          | 415889       | 6382  | 32          | 423039       | 1386  | 34          |
| 400070       | 6382  | 30          | 401995       | 382   | 30          | 403140       | 377   | 28          | 415896       | 6382  | 32          | 423040       | 1386  | 34          |
| 400088       | 6382  | 30          | 402019       | 382   | 30          | 403157       | 377   | 28          | 415901       | 6382  | 32          | 423041       | 1386  | 34          |
| 400096       | 6382  | 30          | 402027       | 382   | 30          | 403165       | 377   | 28          | 420359       | Set   | 33,56       | 423043       | 1386  | 34          |
| 400104       | 6382  | 30          | 402043       | 382   | 31          | 403173       | 377   | 28          | 420363       | Set   | 33,56       | 423044       | 1386  | 34          |
| 400138       | 6382  | 30          | 402050       | 382   | 31          | 403181       | 377   | 28          | 420365       | Set   | 33,56       | 423045       | 1386  | 34          |
| 400145       | 6382  | 30          | 402068       | 382   | 31          | 403199       | 377   | 28          | 420367       | Set   | 33,56       | 423046       | 1386  | 34          |
| 400178       | 382   | 30          | 402076       | 382   | 31          | 403207       | 377   | 28          | 420368       | Set   | 33,56       | 423047       | 1386  | 34          |
| 400179       | 6382  | 30          | 402077       | 382   | 31          | 403215       | 377   | 28          | 420555       | 1750  | 32          | 423048       | 1386  | 34          |
| 400187       | 6382  | 30          | 402078       | 382   | 31          | 403223       | 377   | 28          | 420563       | 1750  | 32          | 423049       | 1386  | 34          |
| 400195       | 6382  | 30          | 402209       | 382   | 30          | 403231       | 377   | 28          | 420571       | 1750  | 32          | 423050       | 1386  | 34          |
| 400211       | 6382  | 30          | 402225       | 382   | 30          | 403249       | 377   | 28          | 420803       | 330   | 37          | 423051       | 1386  | 34          |
| 400229       | 6382  | 30          | 402241       | 382   | 30          | 403256       | 377   | 28          | 420829       | 330   | 37          | 423052       | 1386  | 34          |
| 400237       | 6382  | 30          | 402258       | 382   | 30          | 403264       | 377   | 28          | 420845       | 330   | 37          | 423053       | 1386  | 34          |
| 400245       | 6382  | 30          | 402274       | 382   | 31          | 403272       | 377   | 28          | 420860       | 330   | 37          | 423054       | 1386  | 34          |
| 400302       | 6382  | 30          | 402282       | 382   | 31          | 403280       | 377   | 28          | 420878       | 330   | 37          | 423055       | 1386  | 34          |
| 400310       | 6382  | 30          | 402290       | 382   | 31          | 403298       | 377   | 28          | 420910       | 300   | 37          | 423056       | 1386  | 34          |
| 400328       | 6382  | 30          | 402308       | 382   | 31          | 403306       | 377   | 28          | 420936       | 300   | 37          | 423057       | 1386  | 34          |
| 400336       | 6382  | 30          | 402316       | 382   | 31          | 403314       | 377   | 28          | 420944       | 300   | 37          | 423058       | 380   | 34          |
| 400344       | 6382  | 31          | 402324       | 382   | 31          | 403322       | 377   | 28          | 420951       | 300   | 37          | 423059       | 380   | 34          |
| 400351       | 6382  | 31          | 402332       | 382   | 31          | 403330       | 377   | 28          | 420977       | 300   | 37          | 423060       | 380   | 34          |
| 400369       | 6382  | 31          | 402340       | 382   | 31          | 403348       | 377   | 28          | 421852       | 330   | 37          | 423061       | 380   | 34          |
| 400377       | 6382  | 31          | 402357       | 382   | 31          | 403355       | 377   | 28          | 421909       | 335   | 38          | 423062       | 380   | 34          |
| 400401       | 6382  | 30          | 402365       | 382   | 31          | 403363       | 377   | 28          | 421917       | 335   | 38          | 423063       | 380   | 34          |
| 400419       | 6382  | 30          | 402370       | 382   | 31          | 403371       | 377   | 28          | 421925       | 335   | 38          | 423064       | 380   | 34          |
| 400427       | 6382  | 30          | 402377       | 382   | 31          | 403389       | 377   | 28          | 421933       | 335   | 38          | 423065       | 380   | 34          |
| 400435       | 6382  | 30          | 402407       | 382   | 30          | 403397       | 377   | 28          | 421941       | 335   | 38          | 423067       | 380   | 34          |
| 400445       | 6382  | 31          | 402423       | 382   | 30          | 403405       | 377   | 28          | 421958       | 335   | 38          | 423068       | 380   | 34          |
| 400450       | 6382  | 31          | 402449       | 382   | 30          | 403512       | 377   | 29,55       | 421966       | 335   | 38          | 423069       | 380   | 34          |
| 400468       | 6382  | 31          | 402456       | 382   | 30          | 403520       | 377   | 29,55       | 422006       | 335   | 38,56       | 423070       | 380   | 34          |
| 400476       | 6382  | 31          | 402472       | 382   | 31          | 403522       | 377   | 29,55       | 423001       | Set   | 33,56       | 423071       | 380   | 34          |
| 400484       | 6382  | 31          | 402480       | 382   | 31          | 403553       | 377   | 29,55       | 423002       | Set   | 33,56       | 423072       | 380   | 34          |
| 400492       | 6382  | 31          | 402498       | 382   | 31          | 403595       | 377   | 29,55       | 423003       | Set   | 33,56       | 423073       | 380   | 34          |
| 400500       | 6382  | 31          | 402506       | 382   | 31          | 404808       | 377   | 29          | 423004       | Set   | 33,56       | 423074       | 380   | 34          |
| 400518       | 6382  | 31          | 402514       | 382   | 31          | 404809       | 377   | 29          | 423005       | Set   | 33,56       | 423075       | 380   | 34          |
| 400526       | 6382  | 31          | 402522       | 382   | 31          | 404833       | 377   | 29          | 423006       | Set   | 33,56       | 423076       | 380   | 34          |
| 400534       | 6382  | 31          | 402530       | 382   | 31          | 404858       | 377   | 29          | 423008       | 1750  | 32          | 423077       | 380   | 34          |
| 400609       | 6382  | 31          | 402548       | 382   | 31          | 404882       | 377   | 29          | 423009       | 1750  | 32          | 423078       | 380   | 34          |
| 400617       | 6382  | 31          | 402555       | 382   | 31          | 404916       | 377   | 29          | 423010       | 1750  | 32          | 423079       | 380   | 34          |
| 400625       | 6382  | 31          | 402563       | 382   | 31          | 404932       | 377   | 29          | 423011       | 1790  | 32          | 423080       | 380   | 34          |
| 400633       | 6382  | 31          | 402597       | 382   | 31          | 404973       | 377   | 29          | 423012       | 1790  | 32          | 423081       | 380   | 34          |
| 400641       | 6382  | 31          | 402605       | 382   | 31          | 405202       | 383   | 32          | 423013       | 1790  | 32          | 423082       | 380   | 34          |
| 400658       | 6382  | 31          | 402613       | 382   | 31          | 405251       | 383   | 32          | 423014       | 1790  | 32          | 423083       | 380   | 34          |
| 401003       | 382   | 30          | 402621       | 382   | 31          | 405269       | 383   | 32          | 423015       | 300   | 37          | 423084       | 380   | 34          |
| 401029       | 382   | 30          | 402625       | 382   | 31          | 405277       | 383   | 32          | 423016       | 300   | 37          | 423085       | 380   | 34          |
| 401037       | 382   | 30          | 402627       | 382   | 31          | 405301       | 383   | 32          | 423017       | 330   | 37          | 423086       | 380   | 34          |
| 401045       | 382   | 30          | 402630       | 382   | 31          | 405319       | 383   | 32          | 423018       | 330   | 37          | 423087       | 380   | 34          |
| 401052       | 382   | 30          | 402746       | 382   | 31          | 405327       | 383   | 32          | 423019       | 1386  | 34          | 423088       | 380   | 34          |
| 401060       | 382   | 30          | 402787       | 382   | 31          | 411895       | 377   | 28          | 423020       | 1386  | 34          | 423089       | 380   | 34          |
| 401078       | 382   | 30          | 402795       | 382   | 31          | 411896       | 377   | 28          | 423021       | 1386  | 34          | 423090       | 380   | 34          |

- Machine Taps
- Spiral Point Taps
- Spiral Flute Taps
- Thread Forming Taps
- Pipe Taps
- Dies
- Technical Info
- Sets
- Index



Index

Reference Information

- Machine Taps
- Spiral Point Taps
- Spiral Flute Taps
- Thread Forming Taps
- Pipe Taps
- Dies
- Technical Info
- Sets
- Index

| Order Number | Style   | Page Number | Order Number | Style       | Page Number | Order Number | Style | Page Number | Order Number | Style | Page Number | Order Number | Style | Page Number |
|--------------|---------|-------------|--------------|-------------|-------------|--------------|-------|-------------|--------------|-------|-------------|--------------|-------|-------------|
| 423091       | .. 380  | .. 35       | 423158       | .. 1384     | .. 35       |              |       |             |              |       |             |              |       |             |
| 423092       | .. 380  | .. 35       | 423159       | .. 1387 Set | .. 35,56    |              |       |             |              |       |             |              |       |             |
| 423093       | .. 380  | .. 35       | 423160       | .. 1387 Set | .. 35,56    |              |       |             |              |       |             |              |       |             |
| 423094       | .. 380  | .. 35       | 423161       | .. 1387 Set | .. 35,56    |              |       |             |              |       |             |              |       |             |
| 423095       | .. 380  | .. 35       | 423162       | .. 1387 Set | .. 35,56    |              |       |             |              |       |             |              |       |             |
| 423096       | .. 380  | .. 35       | 423163       | .. 1387 Set | .. 35,56    |              |       |             |              |       |             |              |       |             |
| 423097       | .. 380  | .. 35       | 423164       | .. 1387 Set | .. 35,56    |              |       |             |              |       |             |              |       |             |
| 423098       | .. 380  | .. 35       | 423165       | .. 1387 Set | .. 35,56    |              |       |             |              |       |             |              |       |             |
| 423099       | .. 380  | .. 35       | 423166       | .. 1381     | .. 36       |              |       |             |              |       |             |              |       |             |
| 423100       | .. 1385 | .. 34       | 423167       | .. 1381     | .. 36       |              |       |             |              |       |             |              |       |             |
| 423101       | .. 1385 | .. 34       | 423168       | .. 1381     | .. 36       |              |       |             |              |       |             |              |       |             |
| 423102       | .. 1385 | .. 34       | 423169       | .. 1381     | .. 36       |              |       |             |              |       |             |              |       |             |
| 423103       | .. 1385 | .. 34       | 423171       | .. 1382     | .. 36       |              |       |             |              |       |             |              |       |             |
| 423104       | .. 1385 | .. 34       | 423172       | .. 1382     | .. 36       |              |       |             |              |       |             |              |       |             |
| 423105       | .. 1385 | .. 34       | 423173       | .. A1       | .. 36       |              |       |             |              |       |             |              |       |             |
| 423106       | .. 1385 | .. 34       | 918932       | .. SPGPX    | .. 16       |              |       |             |              |       |             |              |       |             |
| 423107       | .. 1385 | .. 34       | 918934       | .. SPGPX    | .. 16       |              |       |             |              |       |             |              |       |             |
| 423108       | .. 1385 | .. 34       | 918935       | .. SPGPX    | .. 16       |              |       |             |              |       |             |              |       |             |
| 423109       | .. 1385 | .. 34       | 918936       | .. SPGPX    | .. 16       |              |       |             |              |       |             |              |       |             |
| 423110       | .. 1385 | .. 34       | 918937       | .. SPGPX    | .. 16       |              |       |             |              |       |             |              |       |             |
| 423111       | .. 1385 | .. 34       | 918938       | .. SPGPX    | .. 16       |              |       |             |              |       |             |              |       |             |
| 423112       | .. 1385 | .. 34       | 918939       | .. SPGPX    | .. 16       |              |       |             |              |       |             |              |       |             |
| 423113       | .. 1385 | .. 34       | 918940       | .. SPGPX    | .. 16       |              |       |             |              |       |             |              |       |             |
| 423114       | .. 1385 | .. 34       | 918941       | .. SPGPX    | .. 16       |              |       |             |              |       |             |              |       |             |
| 423115       | .. 1385 | .. 34, 35   |              |             |             |              |       |             |              |       |             |              |       |             |
| 423116       | .. 1385 | .. 34, 35   |              |             |             |              |       |             |              |       |             |              |       |             |
| 423117       | .. 1385 | .. 34, 35   |              |             |             |              |       |             |              |       |             |              |       |             |
| 423118       | .. 1385 | .. 34, 35   |              |             |             |              |       |             |              |       |             |              |       |             |
| 423119       | .. 1385 | .. 34, 35   |              |             |             |              |       |             |              |       |             |              |       |             |
| 423120       | .. 1385 | .. 34, 35   |              |             |             |              |       |             |              |       |             |              |       |             |
| 423121       | .. 1383 | .. 34       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423122       | .. 1383 | .. 34       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423123       | .. 1383 | .. 34       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423124       | .. 1383 | .. 34       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423125       | .. 1383 | .. 34       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423126       | .. 1383 | .. 34, 35   |              |             |             |              |       |             |              |       |             |              |       |             |
| 423127       | .. 1383 | .. 34, 35   |              |             |             |              |       |             |              |       |             |              |       |             |
| 423128       | .. 1384 | .. 34       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423129       | .. 1384 | .. 34       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423130       | .. 1384 | .. 34       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423131       | .. 1384 | .. 34       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423132       | .. 1384 | .. 34       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423133       | .. 1384 | .. 34       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423134       | .. 1384 | .. 34       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423135       | .. 1384 | .. 34       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423136       | .. 1384 | .. 34       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423137       | .. 1384 | .. 34       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423138       | .. 1384 | .. 34       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423139       | .. 1384 | .. 34       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423140       | .. 1384 | .. 34       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423141       | .. 1384 | .. 34       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423142       | .. 1384 | .. 34       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423143       | .. 1384 | .. 34       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423144       | .. 1384 | .. 34       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423145       | .. 1384 | .. 34       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423146       | .. 1384 | .. 34       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423147       | .. 1384 | .. 34       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423148       | .. 1384 | .. 34       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423149       | .. 1384 | .. 35       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423150       | .. 1384 | .. 35       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423151       | .. 1384 | .. 35       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423152       | .. 1384 | .. 35       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423153       | .. 1384 | .. 35       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423154       | .. 1384 | .. 35       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423155       | .. 1384 | .. 35       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423156       | .. 1384 | .. 35       |              |             |             |              |       |             |              |       |             |              |       |             |
| 423157       | .. 1384 | .. 35       |              |             |             |              |       |             |              |       |             |              |       |             |





Call Greenfield Industries

*Have a great day!*



Call Greenfield Industries

*Have a great day!*



| DRILL SIZE | DECIMAL INCHES | DRILL SIZE | DECIMAL INCHES | DRILL SIZE | DECIMAL INCHES | DRILL SIZE | DECIMAL INCHES | DRILL SIZE | DECIMAL INCHES | DRILL SIZE | DECIMAL INCHES |
|------------|----------------|------------|----------------|------------|----------------|------------|----------------|------------|----------------|------------|----------------|
| 0.30mm     | .0118          | 1.40mm     | .0551          | 3.20mm     | .1260          | 7/32       | .2188          | 8.60mm     | .3386          | 37/64      | .5781          |
| 0.32mm     | .0126          | 1.45mm     | .0571          | 30         | .1285          | 5.60mm     | .2205          | R          | .3390          | 14.75mm    | .5807          |
| 80         | .0135          | 1.50mm     | .0591          | 3.30mm     | .1299          | 2          | .2210          | 8.70mm     | .3425          | 15.00mm    | .5906          |
| 0.35mm     | .0138          | 53         | .0595          | 3.40mm     | .1339          | 5.70mm     | .2244          | 11/32      | .3438          | 19/32      | .5938          |
| 79         | .0145          | 1.55mm     | .0610          | 29         | .1360          | 1          | .2280          | 8.80mm     | .3465          | 15.25mm    | .6004          |
| 0.38mm     | .0150          | 1/16       | .0625          | 3.50mm     | .1378          | 5.80mm     | .2283          | S          | .3480          | 39/64      | .6094          |
| 1/64       | .0156          | 1.60mm     | .0630          | 28         | .1405          | 5.90mm     | .2323          | 8.90mm     | .3504          | 15.50mm    | .6102          |
| 0.40mm     | .0157          | 52         | .0635          | 9/64       | .1406          | A          | .2340          | 9.00mm     | .3543          | 15.75mm    | .6201          |
| 78         | .0160          | 1.65mm     | .0650          | 3.60mm     | .1417          | 15/64      | .2344          | T          | .3580          | 5/8        | .6250          |
| 0.42mm     | .0165          | 1.70mm     | .0669          | 27         | .1440          | 6.00mm     | .2362          | 9.10mm     | .3583          | 16.00mm    | .6299          |
| 0.45mm     | .0177          | 51         | .0670          | 3.70mm     | .1457          | B          | .2380          | 23/64      | .3594          | 16.25mm    | .6398          |
| 77         | .0180          | 1.75mm     | .0689          | 26         | .1470          | 6.10mm     | .2402          | 9.20mm     | .3622          | 41/64      | .6406          |
| 0.48mm     | .0189          | 50         | .0700          | 25         | .1495          | C          | .2420          | 9.30mm     | .3661          | 16.50mm    | .6496          |
| 0.50mm     | .0197          | 1.80mm     | .0709          | 3.80mm     | .1496          | 6.20mm     | .2441          | U          | .3680          | 21/32      | .6562          |
| 76         | .0200          | 1.85mm     | .0728          | 24         | .1520          | D          | .2460          | 9.40mm     | .3701          | 16.75mm    | .6594          |
| 75         | .0210          | 49         | .0730          | 3.90mm     | .1535          | 6.30mm     | .2480          | 9.50mm     | .3740          | 17.00mm    | .6693          |
| 0.55mm     | .0217          | 1.90mm     | .0748          | 23         | .1540          | 1/4        | .2500          | 3/8        | .3750          | 43/64      | .6719          |
| 74         | .0225          | 48         | .0760          | 5/32       | .1562          | E          | .2500          | V          | .3770          | 17.25mm    | .6791          |
| 0.60mm     | .0236          | 1.95mm     | .0768          | 22         | .1570          | 6.40mm     | .2520          | 9.60mm     | .3780          | 11/16      | .6875          |
| 73         | .0240          | 5/64       | .0781          | 4.00mm     | .1575          | 6.50mm     | .2559          | 9.70mm     | .3819          | 17.50mm    | .6890          |
| 0.62mm     | .0244          | 47         | .0785          | 21         | .1590          | F          | .2570          | 9.80mm     | .3858          | 45/64      | .7031          |
| 72         | .0250          | 2.00mm     | .0787          | 20         | .1610          | 6.60mm     | .2598          | W          | .3860          | 18.00mm    | .7087          |
| 0.65mm     | .0256          | 2.05mm     | .0807          | 4.10mm     | .1614          | G          | .2610          | 9.90mm     | .3898          | 23/32      | .7188          |
| 71         | .0260          | 46         | .0810          | 4.20mm     | .1654          | 6.70mm     | .2638          | 25/64      | .3906          | 18.50mm    | .7283          |
| 0.70mm     | .0276          | 45         | .0820          | 19         | .1660          | 17/64      | .2656          | 1.00mm     | .3937          | 47/64      | .7344          |
| 70         | .0280          | 2.10mm     | .0827          | 4.30mm     | .1693          | H          | .2660          | X          | .3970          | 19.00mm    | .7480          |
| 69         | .0292          | 2.15mm     | .0846          | 18         | .1695          | 6.80mm     | .2677          | 1.20mm     | .4016          | 3/4        | .7500          |
| 0.75mm     | .0295          | 44         | .0860          | 11/64      | .1719          | 6.90mm     | .2717          | Y          | .4040          | 49/64      | .7656          |
| 68         | .0310          | 2.20mm     | .0866          | 17         | .1730          | I          | .2720          | 13/32      | .4062          | 19.50mm    | .7677          |
| 1/32       | .0312          | 2.25mm     | .0886          | 4.40mm     | .1732          | 7.00mm     | .2756          | Z          | .4130          | 25/32      | .7812          |
| 0.80mm     | .0315          | 43         | .0890          | 16         | .1770          | J          | .2770          | 10.50mm    | .4134          | 20.00mm    | .7874          |
| 67         | .0320          | 2.30mm     | .0906          | 4.50mm     | .1772          | 7.10mm     | .2795          | 27/64      | .4219          | 51/64      | .7969          |
| 66         | .0330          | 2.35mm     | .0925          | 15         | .1800          | K          | .2810          | 10.80mm    | .4252          | 20.50mm    | .8071          |
| 0.85mm     | .0335          | 42         | .0935          | 4.60mm     | .1811          | 9/32       | .2812          | 11.00mm    | .4331          | 13/16      | .8125          |
| 65         | .0350          | 3/32       | .0938          | 14         | .1820          | 7.20mm     | .2835          | 7/16       | .4375          | 21.00mm    | .8268          |
| 0.90mm     | .0354          | 2.40mm     | .0945          | 4.70mm     | .1850          | 7.30mm     | .2874          | 11.20mm    | .4409          | 53/64      | .8281          |
| 64         | .0360          | 41         | .0960          | 13         | .1850          | L          | .2900          | 11.50mm    | .4528          | 27/32      | .8438          |
| 63         | .0370          | 2.45mm     | .0965          | 3/16       | .1875          | 7.40mm     | .2913          | 29/64      | .4531          | 21.50mm    | .8465          |
| 0.95mm     | .0374          | 40         | .0980          | 12         | .1890          | M          | .2950          | 11.80mm    | .4646          | 55/64      | .8594          |
| 62         | .0380          | 2.50mm     | .0984          | 4.8mm      | .1890          | 7.50mm     | .2953          | 15/32      | .4688          | 22.00mm    | .8661          |
| 61         | .0390          | 39         | .0995          | 11         | .1910          | 19/64      | .2969          | 12.00mm    | .4724          | 7/8        | .8750          |
| 1.00mm     | .0394          | 38         | .1015          | 4.90mm     | .1929          | 7.60mm     | .2992          | 12.20mm    | .4803          | 22.50mm    | .8858          |
| 60         | .0400          | 2.60mm     | .1024          | 10         | .1935          | N          | .3020          | 31/64      | .4844          | 57/64      | .8906          |
| 59         | .0410          | 37         | .1040          | 9          | .1960          | 7.70mm     | .3031          | 12.50mm    | .4921          | 23.00mm    | .9055          |
| 1.05mm     | .0413          | 2.70mm     | .1063          | 5.00mm     | .1969          | 7.80mm     | .3071          | 1/2        | .5000          | 29/32      | .9062          |
| 58         | .0420          | 36         | .1065          | 8          | .1990          | 7.90mm     | .3110          | 12.80mm    | .5039          | 59/64      | .9219          |
| 57         | .0430          | 7/64       | .1094          | 5.10mm     | .2008          | 5/16       | .3125          | 13.00mm    | .5118          | 23.50mm    | .9252          |
| 1.10mm     | .0433          | 35         | .1100          | 7          | .2010          | 8.00mm     | .3150          | 33/64      | .5156          | 15/16      | .9375          |
| 1.15mm     | .0453          | 2.80mm     | .1102          | 13/64      | .2031          | O          | .3160          | 13.20mm    | .5197          | 24.00mm    | .9449          |
| 56         | .0465          | 34         | .1110          | 6          | .2040          | 8.10mm     | .3189          | 17/32      | .5312          | 61/64      | .9531          |
| 3/64       | .0469          | 33         | .1130          | 5.20mm     | .2047          | 8.20mm     | .3228          | 13.50mm    | .5315          | 24.50mm    | .9646          |
| 1.20mm     | .0472          | 2.90mm     | .1142          | 5          | .2055          | P          | .3230          | 13.80mm    | .5433          | 31/32      | .9688          |
| 1.25mm     | .0492          | 32         | .1160          | 5.30mm     | .2087          | 8.30mm     | .3268          | 35/64      | .5469          | 25.00mm    | .9843          |
| 1.30mm     | .0512          | 3.00mm     | .1181          | 4          | .2090          | 21/64      | .3281          | 14.00mm    | .5512          | 63/64      | .9844          |
| 55         | .0520          | 31         | .1200          | 5.40mm     | .2126          | 8.40mm     | .3307          | 14.25mm    | .5610          | 1          | 1.0000         |
| 1.35mm     | .0531          | 3.10mm     | .1220          | 3          | .2130          | Q          | .3320          | 9/16       | .5625          |            |                |
| 54         | .0550          | 1/8        | .1250          | 5.50mm     | .2165          | 8.50mm     | .3346          | 14.50mm    | .5709          |            |                |

FRACTIONAL - RED

WIRE GAGE - PURPLE

LETTER - BLUE

METRIC - GREEN



**TDC**

2501 Davis Creek Road, Seneca, SC 29678 U.S.A.

|           |  |  |
|-----------|--|--|
|           | <b>USA</b>   | <b>Canada</b>  |
| website   | <a href="http://www.gfii.com">www.gfii.com</a>   | <a href="http://www.gfii.ca">www.gfii.ca</a>                                   |
| telephone | 800.348.2885   | 800.348.2885   |
| fax       | 800.892.4290   | 800.387.6649   |
| email     | <a href="mailto:standard.distributors@gfii.com">standard.distributors@gfii.com</a>           | <a href="mailto:canada.distributors@gfii.com">canada.distributors@gfii.com</a> |
| com       |  |  |
|           | <b>International</b>   |  |
| telephone | 864.653.3904   |  |
| email     | <a href="mailto:international.distributors@gfii.com">international.distributors@gfii.com</a> |  |



GTCAT22