

NACHI

**SGSP - DIN
Spiral Fluted Taps**

**SGPO - DIN
Spiral Pointed Taps**

High Performance Tap for a Variety of Materials



UNITED
TOOL SUPPLY LTD.

2018

SGSP Spiral Fluted Taps SGPO Spiral Pointed Taps

High Performance Tap for a Variety of Materials

Covers a wide range of applications -
Aluminum, Cast Iron, Carbon Steel,
Alloy Steel and Stainless Steel
ANSI Shank DIN Overall Length



Features

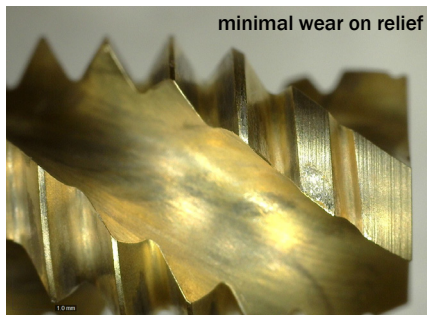
- Made from high grade powder HSS and SG coating for longer tool life
- Optimized edge and flute shape allow for stable cutting threads, high rigidity and chip ejection
- High flexibility for superior performance on a variety of materials, machines, and cutting conditions
- Stable cutting threads and long tool life regardless of cutting speed
- Achieves easy flow of chips while cutting on Stainless Steels, Structural Steels and Aluminum Alloys

Performance

SGSP proved stable tapping in 304 stainless steel with minimal wear after 600 holes

Tool: 1/4-20 Spiral Fluted Tap
Work Material: 304 Stainless Steel
Drill Size: 5.2mm
Tapping Length: 2D (1/2")

Cutting Speed: 25 SFM
Coolant: External - Water Soluble
Machine: Vertical Machining Center (CAT#40)
Tapping Method: Synchronized



minimal wear on relief

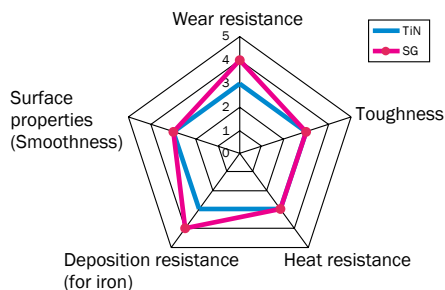


minimal wear on rake

SGSP 25 SFM
304 Stainless Steel - After 600 Holes

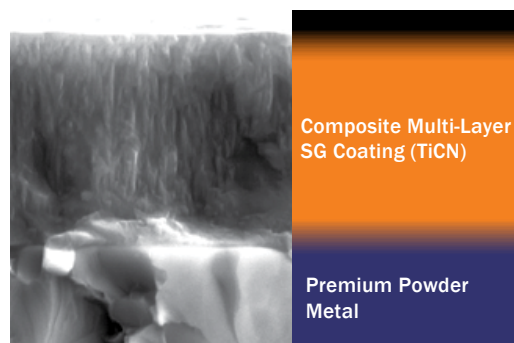
Characteristics

Characteristics of SG Coating



Composite multi-layer film coating method characterized by improved wear resistance as compared to TiN.

SG Coating (TiN + TiCN)



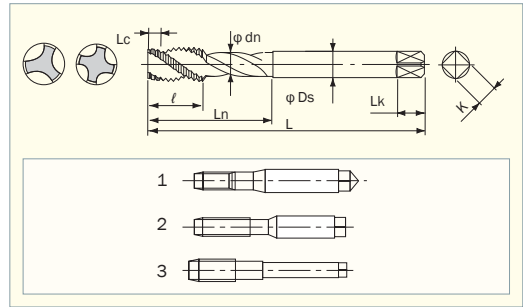
Composite Multi-Layer
SG Coating (TiCN)

Premium Powder
Metal

Stocked Size

SGSP-DIN Spiral Fluted Taps

- Modified Bottoming Style 2.5 Thread Chamfer
- SG Coating
- DIN Overall Length
- Premium Powdered High Speed Steel



List 6801 Machine Screw Sizes & Fractional Sizes

| Nominal Size | Thread/Inch | | No. of Flutes | EDP No | | | | | Dimensions | | | | Style |
|----------------------------|-------------|--------|---------------|---------|---------|---------|---------|---------|----------------|------------------|-------------------|------------|-------|
| | NC/UNC | NF/UNF | | H2 | H3 | H4 | H5 | H6 | Overall Length | Length of Thread | Under Neck Length | Shank Dia. | |
| MACHINE SCREW SIZES | | | | | | | | | L | ℓ | Ln | Ds | |
| 2 | 56 | | 3F | 1539482 | | | | | 1.772 | 0.441 | 0.591 | 0.141 | 1 |
| 4 | 40 | | 3F | 1539499 | | | | | 2.205 | 0.272 | 0.563 | 0.141 | |
| 6 | 32 | | 3F | 1540459 | 1486439 | | | | 2.205 | 0.374 | 0.689 | 0.141 | |
| 8 | 32 | | 3F | 1540465 | 1486451 | | | | 2.480 | 0.374 | 0.752 | 0.168 | |
| 10 | 24 | | 3F | | 1486474 | | | | 2.756 | 0.496 | 0.874 | 0.194 | |
| | | 32 | 3F | 1540471 | 1486480 | | | | 2.756 | 0.374 | 0.874 | 0.194 | |
| 12 | 24 | | 3F | | 1486497 | | | | 3.150 | 0.496 | 0.937 | 0.220 | |
| FRACTIONAL SIZES | | | | | | | | | | | | | |
| 1/4 | 20 | | 3F | | 1486519 | | 1540488 | | 3.150 | 0.606 | 1.000 | 0.255 | 2 |
| | | 28 | 3F | | 1486525 | 1540494 | | | 3.150 | 0.413 | 1.000 | 0.255 | |
| 5/16 | 18 | | 3F | | 1486531 | | 1540500 | | 3.543 | 0.697 | 1.126 | 0.318 | |
| | | 24 | 3F | | 1486548 | 1540516 | | | 3.543 | 0.480 | 1.126 | 0.318 | |
| 3/8 | 16 | | 3F | | 1486554 | | 1540522 | | 3.937 | 0.783 | 1.252 | 0.381 | |
| | | 24 | 3F | | 1486560 | 1540539 | | | 3.543 | 0.480 | 1.252 | 0.381 | |
| 7/16 | 14 | | 3F | | 1486577 | | 1540545 | | 3.937 | 0.894 | 1.236 | 0.323 | |
| | | 20 | 3F | | 1486583 | | 1540551 | | 3.937 | 0.626 | 1.236 | 0.323 | |
| 1/2 | 13 | | 3F | | 1486590 | | 1540568 | | 4.331 | 1.024 | 1.425 | 0.367 | |
| | | 20 | 3F | | 1486605 | | 1540574 | | 3.937 | 0.646 | 1.425 | 0.367 | |
| 5/8 | 11 | | 3F | | | 1514622 | | 1540580 | 4.331 | 1.185 | 1.748 | 0.480 | 3 |
| | | 18 | 3F | | | 1514639 | | 1540597 | 3.937 | 0.732 | 1.748 | 0.480 | |
| 3/4 | 10 | | 4F | | | 1514645 | | 1540602 | 4.921 | 1.303 | 1.937 | 0.590 | |
| | | 16 | 4F | | | 1514651 | | 1540619 | 4.331 | 0.827 | 1.937 | 0.590 | |
| 1 | 8 | | 4F | | | 1514680 | | 1540625 | 6.299 | 1.626 | 2.323 | 0.800 | |

⚠ WARNING: Cancer - www.P65Warnings.ca.gov

Applications

- Suitable for tapping Structural Steels to Stainless Steels, Aluminum Alloys

Selection Chart

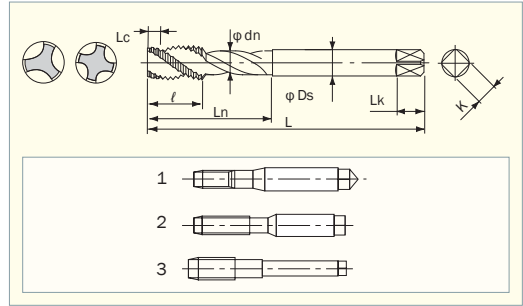
● : Great ○ : Good △ : OK

| Carbon Steel | | | Alloy Steel 4140,4340 | Die Steel ~20HRC D2,H13 | Hardened Steel >35HRC | Aluminum 6061 7075 | Stainless Steel | | | Cast Iron Grey Ductile | Nickel Alloy | Titanium Alloy |
|-------------------------|----------------------------|--------------------------|--------------------------|-------------------------------|--------------------------|-----------------------|-----------------|------------|--------|---------------------------|--------------|----------------|
| Low Carbon 1010,1018 | Medium Carbon 1035,1045 | High Carbon 1065,1095 | | | | | 300 Series | 400 Series | 17-4PH | | | |
| ● | ● | ● | ● | ○ | ○ | ○ | ● | ○ | △ | ○ | | △ |

Stocked Size

SGSP-DIN Spiral Fluted Taps

- Modified Bottoming Style 2.5 Thread Chamfer
- SG Coating
- DIN Overall Length
- Premium Powdered High Speed Steel



List 6800 Metric Sizes

| Nominal Size | Pitch | No. of Flutes | EDP No | | | | | | Dimensions | | | | Style | |
|---------------------|-------|---------------|---------|---------|---------|---------|---------|---------|----------------|------------------|-------------------|------------|-------|---|
| | | | D3 | D4 | D5 | D6 | D7 | D8 | Overall Length | Length of Thread | Under Neck Length | Shank Dia. | | |
| METRIC SIZES | | | | | | | | | | L | ℓ | Ln | Ds | |
| M3 | 0.5 | 3F | 1486233 | | | | | | | 2.205 | 0.228 | 0.626 | 0.141 | 1 |
| M4 | 0.7 | 3F | | 1486256 | | | | | | 2.480 | 0.307 | 0.689 | 0.168 | |
| M5 | 0.8 | 3F | | 1486262 | | | | | | 2.756 | 0.374 | 0.874 | 0.194 | |
| M6 | 1.0 | 3F | | | 1486279 | | | | | 3.150 | 0.453 | 1.000 | 0.255 | |
| M8 | 1.25 | 3F | | | 1486307 | | | | | 3.543 | 0.594 | 1.126 | 0.318 | 2 |
| M10 | 1.25 | 3F | | | 1486313 | | | | | 3.937 | 0.594 | 1.252 | 0.381 | |
| M10 | 1.5 | 3F | | | | 1486320 | | | | 3.937 | 0.740 | 1.252 | 0.381 | 3 |
| M12 | 1.25 | 3F | | | | 1486336 | | | | 3.937 | 0.634 | 1.425 | 0.367 | |
| M12 | 1.5 | 3F | | | | 1514479 | | | | 3.937 | 0.780 | 1.425 | 0.367 | |
| M12 | 1.75 | 3F | | | | 1486342 | | | | 4.331 | 0.882 | 1.425 | 0.367 | |
| M14 | 2.0 | 3F | | | | | 1514491 | | | 4.331 | 1.024 | 1.669 | 0.429 | |
| M16 | 2.0 | 3F | | | | | 1514513 | | | 4.331 | 1.024 | 1.748 | 0.480 | |
| M18 | 2.5 | 4F | | | | | 1514536 | | | 4.921 | 1.280 | 1.937 | 0.542 | |
| M20 | 2.5 | 4F | | | | | 1514559 | | | 5.512 | 1.280 | 1.996 | 0.652 | |
| M24 | 3.0 | 4F | | | | | | 1514594 | | 6.299 | 1.535 | 2.323 | 0.760 | |

1 piece per package

⚠ WARNING: Cancer - www.P65Warnings.ca.gov

SGSP Work Material & Cutting Condition Recommendations

| Work Material | | Tapping Speed SFM |
|---------------------|------------------------|-------------------|
| Low Carbon Steel | 1010 1018 | 50 - 120 |
| Medium Carbon Steel | 1035 1045 | 30 - 120 |
| High Carbon Steel | 1065 1095 | 30 - 120 |
| Alloy Steel | 4140 4130 | 25 - 50 |
| Die Steel | D2 H13 (up to 20 HRC) | 20 - 50 |
| Hardened Steel | ~ 35 HRC | 15 - 45 |
| Stainless Steel | Austenitic 303 304 316 | 15 - 25 |
| | Martensitic 410 430 | 15 - 25 |
| | 17-4PH | 10 - 15 |
| Aluminum | 6061 7075 Casting | 35 - 120 |
| Cast Iron | Grey Nodular | 30 - 80 |

Applications

- Suitable for tapping Structural Steels to Stainless Steels, Aluminum Alloys

Selection Chart

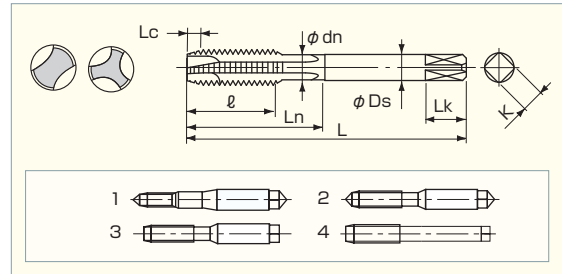
● : Great ○ : Good △ : OK

| Carbon Steel | | | Alloy Steel 4140,4340 | Die Steel ~20HRC D2,H13 | Hardened Steel >35HRC | Aluminum 6061 7075 | Stainless Steel | | | Cast Iron Grey Ductile | Nickel Alloy | Titanium Alloy |
|-------------------------|----------------------------|--------------------------|--------------------------|-------------------------------|--------------------------|-----------------------|-----------------|------------|--------|---------------------------|--------------|----------------|
| Low Carbon 1010,1018 | Medium Carbon 1035,1045 | High Carbon 1065,1095 | | | | | 300 Series | 400 Series | 17-4PH | | | |
| ● | ● | ● | ● | ○ | ○ | ○ | ● | ○ | △ | ○ | | △ |

Stocked Size

SGPO-DIN Spiral Pointed Taps

- Plug Style 5 Thread Chamfer
- SG Coating
- DIN Overall Length
- Premium Powdered High Speed Steel



List 6803 Machine Screw Sizes & Fractional Sizes

| Nominal Size | Thread/Inch | | No. of Flutes | EDP No | | | | | Dimensions | | | | Style |
|----------------------------|-------------|--------|---------------|---------|---------|---------|---------|---------|----------------|------------------|-------------------|------------|-------|
| | NC/UNC | NF/UNF | | H2 | H3 | H4 | H5 | H6 | Overall Length | Length of Thread | Under Neck Length | Shank Dia. | |
| MACHINE SCREW SIZES | | | | | | | | | L | ℓ | Ln | Ds | |
| 2 | 56 | | 2F | 1543378 | | | | | 1.772 | 0.441 | 0.591 | 0.141 | 1 |
| 4 | 40 | | 2F | 1543384 | | | | | 2.205 | 0.469 | 0.602 | 0.141 | 2 |
| 6 | 32 | | 3F | 1542519 | 1542525 | | | | 2.205 | 0.555 | 0.768 | 0.141 | |
| 8 | 32 | | 3F | 1542531 | 1542548 | | | | 2.480 | 0.555 | 0.768 | 0.168 | |
| 10 | 24 | | 3F | | 1542554 | | | | 2.756 | 0.709 | 0.984 | 0.194 | |
| | | 32 | 3F | 1542560 | 1542577 | | | | 2.756 | 0.555 | 0.984 | 0.194 | |
| 12 | 24 | | 3F | | 1542583 | | | | 3.150 | 0.709 | 0.984 | 0.220 | |
| FRACTIONAL SIZES | | | | | | | | | | | | | |
| 1/4 | 20 | | 3F | | 1542590 | | 1542605 | | 3.150 | 0.850 | 1.181 | 0.255 | 3 |
| | | 28 | 3F | | 1542611 | 1542628 | | | 3.150 | 0.618 | 1.181 | 0.255 | |
| 5/16 | 18 | | 3F | | 1542634 | | 1542640 | | 3.543 | 0.945 | 1.299 | 0.318 | |
| | | 24 | 3F | | 1542657 | 1542663 | | | 3.543 | 0.709 | 1.299 | 0.318 | |
| 3/8 | 16 | | 3F | | 1542670 | | 1542686 | | 3.937 | 1.063 | 1.457 | 0.381 | |
| | | 24 | 3F | | 1542692 | 1542708 | | | 3.543 | 0.709 | 1.457 | 0.381 | |
| 7/16 | 14 | | 3F | | 1542714 | | 1542720 | | 3.937 | 1.142 | - | 0.323 | 4 |
| | | 20 | 3F | | 1542737 | | 1542743 | | 3.937 | 0.902 | - | 0.323 | |
| 1/2 | 13 | | 3F | | 1542750 | | 1542766 | | 4.331 | 1.232 | - | 0.367 | |
| | | 20 | 3F | | 1542772 | | 1542789 | | 3.937 | 0.902 | - | 0.367 | |
| 5/8 | 11 | | 3F | | | 1542795 | | 1542800 | 4.331 | 1.181 | - | 0.480 | |
| | | 18 | 3F | | | 1542817 | | 1542823 | 3.937 | 0.835 | - | 0.480 | |
| 3/4 | 10 | | 3F | | | 1542830 | | 1542846 | 4.921 | 1.299 | - | 0.590 | |
| | | 16 | 3F | | | 1542852 | | 1542869 | 4.331 | 0.937 | - | 0.590 | |
| 1 | 8 | | 3F | | | 1542875 | | 1542881 | 6.299 | 1.626 | - | 0.800 | |

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Applications

- Suitable for tapping Structural Steels to Stainless Steels, Aluminum Alloys

Selection Chart

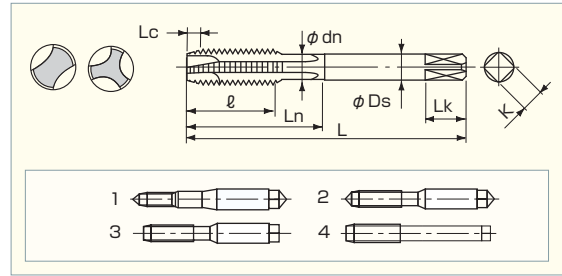
● : Great ○ : Good △ : OK

| Carbon Steel | | | Alloy Steel 4140,4340 | Die Steel ~20HRC D2,H13 | Hardened Steel >35HRC | Aluminum 6061 7075 | Stainless Steel | | | Cast Iron Grey Ductile | Nickel Alloy | Titanium Alloy |
|-------------------------|----------------------------|--------------------------|--------------------------|-------------------------------|--------------------------|-----------------------|-----------------|------------|--------|---------------------------|--------------|----------------|
| Low Carbon 1010,1018 | Medium Carbon 1035,1045 | High Carbon 1065,1095 | | | | | 300 Series | 400 Series | 17-4PH | | | |
| ● | ● | ● | ● | ○ | ○ | ○ | ● | ○ | △ | ○ | | △ |

Stocked Size

SGPO-DIN Spiral Pointed Taps

- Plug Style 5 Thread Chamfer
- SG Coating
- DIN Overall Length
- Premium Powdered High Speed Steel



List 6802 Metric Sizes

| Nominal Size | Pitch | No. of Flutes | EDP No | | | | | | Dimensions | | | | Style | |
|---------------------|-------|---------------|---------|---------|---------|---------|---------|---------|----------------|------------------|-------------------|------------|-------|---|
| | | | D3 | D4 | D5 | D6 | D7 | D8 | Overall Length | Length of Thread | Under Neck Length | Shank Dia. | | |
| METRIC SIZES | | | | | | | | | | L | ℓ | Ln | Ds | |
| M3 | 0.5 | 3F | 1542451 | | | | | | | 2.205 | 0.394 | 0.630 | 0.141 | 2 |
| M4 | 0.7 | 3F | | 1542898 | | | | | | 2.480 | 0.492 | 0.752 | 0.168 | |
| M5 | 0.8 | 3F | | 1542903 | | | | | | 2.756 | 0.571 | 0.882 | 0.194 | |
| M6 | 1.0 | 3F | | | 1542910 | | | | | 3.150 | 0.669 | 1.000 | 0.255 | |
| M8 | 1.25 | 3F | | | 1542926 | | | | | 3.543 | 0.866 | 1.181 | 0.318 | 3 |
| M10 | 1.25 | 3F | | | 1542932 | | | | | 3.937 | 0.866 | 1.437 | 0.381 | |
| M10 | 1.5 | 3F | | | | 1542949 | | | | 3.937 | 1.063 | 1.437 | 0.381 | 4 |
| M12 | 1.25 | 3F | | | 1542955 | | | | | 3.937 | 0.906 | - | 0.367 | |
| M12 | 1.5 | 3F | | | | 1542978 | | | | 3.937 | 1.102 | - | 0.367 | |
| M12 | 1.75 | 3F | | | | 1542961 | | | | 4.331 | 1.260 | - | 0.367 | |
| M14 | 2.0 | 3F | | | | | 1542468 | | | 4.331 | 1.260 | - | 0.429 | 4 |
| M16 | 2.0 | 3F | | | | | 1542474 | | | 4.331 | 1.260 | - | 0.480 | |
| M18 | 2.5 | 3F | | | | | 1542480 | | | 4.921 | 1.476 | - | 0.542 | |
| M20 | 2.5 | 3F | | | | | 1542497 | | | 5.512 | 1.476 | - | 0.652 | |
| M24 | 3.0 | 3F | | | | | | 1542502 | | 6.299 | 1.772 | - | 0.760 | |

1 piece per package

⚠ WARNING: Cancer - www.P65Warnings.ca.gov

SGPO Work Material & Cutting Condition Recommendations

| Work Material | | Tapping Speed SFM |
|---------------------|------------------------|-------------------|
| Low Carbon Steel | 1010 1018 | 50 - 120 |
| Medium Carbon Steel | 1035 1045 | 50 - 160 |
| High Carbon Steel | 1065 1095 | 30 - 160 |
| Alloy Steel | 4140 4130 | 30 - 100 |
| Die Steel | D2 H13 (up to 20 HRC) | 25 - 50 |
| Hardened Steel | ~ 35 HRC | 25 - 60 |
| Stainless Steel | Austenitic 303 304 316 | 15 - 50 |
| | Martensitic 410 430 | 15 - 30 |
| | 17-4PH | 15 - 25 |
| Aluminum | 6061 7075 Casting | 50 - 160 |
| Cast Iron | Grey Nodular | 50 - 150 |

Applications

- Suitable for tapping Structural Steels to Stainless Steels, Aluminum Alloys

Selection Chart

● : Great ○ : Good △ : OK

| Carbon Steel | | | Alloy Steel 4140,4340 | Die Steel ~20HRC D2,H13 | Hardened Steel >35HRC | Aluminum 6061 7075 | Stainless Steel | | | Cast Iron Grey Ductile | Nickel Alloy | Titanium Alloy |
|-------------------------|----------------------------|--------------------------|--------------------------|-------------------------------|--------------------------|-----------------------|-----------------|------------|--------|---------------------------|--------------|----------------|
| Low Carbon 1010,1018 | Medium Carbon 1035,1045 | High Carbon 1065,1095 | | | | | 300 Series | 400 Series | 17-4PH | | | |
| ● | ● | ● | ● | ○ | ○ | ○ | ● | ○ | △ | ○ | | △ |

SGSP/SGPO Tap Drill Size Recommendations

| Tap Size | Theoretical Hole Size % Thread (Inch) | | | | | Class 2B Fit (Inch) | | | Class 3B Fit (Inch) | | |
|-------------------|---------------------------------------|--------|--------|--------|--------|---------------------|-----------------|-------------------|---------------------|-----------------|-------------------|
| | 80% | 75% | 70% | 65% | 60% | Minor Dia. Min. | Minor Dia. Max. | Recommended Drill | Minor Dia. Min. | Minor Dia. Max. | Recommended Drill |
| 2-56 | 0.0674 | 0.0686 | 0.0698 | 0.0709 | 0.0721 | 0.0667 | 0.0737 | #50 (0.070) | 0.0667 | 0.0737 | #50 (0.070) |
| 4-40 | 0.0860 | 0.0876 | 0.0893 | 0.0909 | 0.0925 | 0.0849 | 0.0939 | #43 (0.089) | 0.0849 | 0.0939 | #43 (0.089) |
| 6-32 | 0.1055 | 0.1076 | 0.1096 | 0.1116 | 0.1136 | 0.1040 | 0.1140 | #35 (0.110) | 0.1040 | 0.1140 | #35 (0.110) |
| 8-32 | 0.1315 | 0.1336 | 0.1356 | 0.1376 | 0.1396 | 0.1300 | 0.1390 | #29 (0.136) | 0.1300 | 0.1389 | #29 (0.136) |
| 10-24 | 0.1467 | 0.1494 | 0.1521 | 0.1548 | 0.1575 | 0.1450 | 0.1560 | #24 (0.152) | 0.1450 | 0.1560 | #24 (0.152) |
| 10-32 | 0.1575 | 0.1596 | 0.1616 | 0.1636 | 0.1656 | 0.1560 | 0.1640 | #20 (0.161) | 0.1560 | 0.1641 | #20 (0.161) |
| 12-24 | 0.1727 | 0.1754 | 0.1781 | 0.1808 | 0.1835 | 0.1710 | 0.1810 | #16 (0.177) | 0.1710 | 0.1810 | #16 (0.177) |
| 1/4 - 20 | 0.1980 | 0.2013 | 0.2045 | 0.2078 | 0.2110 | 0.1960 | 0.2070 | 13/64 (0.2031) | 0.1960 | 0.2067 | 13/64 (0.2031) |
| 1/4 - 28 | 0.2129 | 0.2152 | 0.2175 | 0.2198 | 0.2222 | 0.2110 | 0.2200 | 5.5mm (0.2165) | 0.2110 | 0.2190 | 5.5mm (0.2165) |
| 5/16 - 18 | 0.2548 | 0.2584 | 0.2620 | 0.2656 | 0.2692 | 0.2520 | 0.2650 | G (0.261) | 0.2520 | 0.2630 | F (0.257) |
| 5/16 - 24 | 0.2692 | 0.2719 | 0.2746 | 0.2773 | 0.2800 | 0.2670 | 0.2770 | I (0.272) | 0.2670 | 0.2754 | I (0.272) |
| 3/8 - 16 | 0.3101 | 0.3141 | 0.3182 | 0.3222 | 0.3263 | 0.3070 | 0.3210 | O (0.316) | 0.3070 | 0.3182 | 5/16 (0.3125) |
| 3/8 - 24 | 0.3317 | 0.3344 | 0.3371 | 0.3398 | 0.3425 | 0.3300 | 0.3400 | Q (0.332) | 0.3300 | 0.3372 | Q (0.332) |
| 7/16 - 14 | 0.3633 | 0.3679 | 0.3726 | 0.3772 | 0.3818 | 0.3600 | 0.3760 | U (0.368) | 0.3600 | 0.3717 | U (0.368) |
| 7/16 - 20 | 0.3855 | 0.3888 | 0.3920 | 0.3953 | 0.3985 | 0.3830 | 0.3950 | 25/64 (0.3906) | 0.3830 | 0.3916 | W (0.386) |
| 1/2 - 13 | 0.4201 | 0.4251 | 0.4301 | 0.4351 | 0.4400 | 0.4170 | 0.4340 | 27/64 (0.4219) | 0.4170 | 0.4284 | 27/64 (0.4219) |
| 1/2 - 20 | 0.4480 | 0.4513 | 0.4545 | 0.4578 | 0.4610 | 0.4460 | 0.4570 | 29/64 (0.4531) | 0.4460 | 0.4537 | 11.4mm (0.4488) |
| 5/8 - 11 | 0.5305 | 0.5364 | 0.5423 | 0.5482 | 0.5541 | 0.5270 | 0.5460 | 17/32 (0.5312) | 0.5270 | 0.5391 | 17/32 (0.5312) |
| 5/8 - 18 | 0.5673 | 0.5709 | 0.5745 | 0.5781 | 0.5817 | 0.5650 | 0.5780 | 14.5mm (0.5709) | 0.5650 | 0.5730 | 14.5mm (0.5709) |
| 3/4 - 10 | 0.6461 | 0.6526 | 0.6591 | 0.6656 | 0.6721 | 0.6420 | 0.6630 | 21/32 (0.6562) | 0.6420 | 0.6545 | 16.5mm (0.6496) |
| 3/4 - 16 | 0.6851 | 0.6891 | 0.6932 | 0.6972 | 0.7013 | 0.6820 | 0.6960 | 11/16 (0.6875) | 0.6820 | 0.6908 | 11/16 (0.6875) |
| 1 - 8 | 0.8701 | 0.8782 | 0.8863 | 0.8945 | 0.9026 | 0.8650 | 0.8900 | 7/8 (0.875) | 0.8650 | 0.8797 | 7/8 (0.875) |
| Tap Size | Theoretical Hole Size % Thread (Inch) | | | | | Class 6H Fit (Inch) | | | | | |
| | 80% | 75% | 70% | 65% | 60% | Minor Dia. Min. | Minor Dia. Max. | Recommended Drill | | | |
| M3 X 0.5 | 0.0976 | 0.0988 | 0.1004 | 0.1016 | 0.1028 | 0.0968 | 0.1023 | #39 (0.0995) | | | |
| M4 X 0.7 | 0.1287 | 0.1307 | 0.1323 | 0.1343 | 0.1358 | 0.1276 | 0.1347 | 3.3mm (0.1299) | | | |
| M5 X 0.8 | 0.1642 | 0.1661 | 0.1681 | 0.1701 | 0.1724 | 0.1628 | 0.1706 | #19 (0.1660) | | | |
| M6 X 1.0 | 0.1953 | 0.1980 | 0.2004 | 0.2031 | 0.2055 | 0.1936 | 0.2029 | 5.0mm (0.1969) | | | |
| M8 X 1.25 | 0.2638 | 0.2669 | 0.2701 | 0.2732 | 0.2768 | 0.2617 | 0.2721 | H (0.2660) | | | |
| M10 X 1.25 | 0.3425 | 0.3457 | 0.3488 | 0.3520 | 0.3555 | 0.3404 | 0.3509 | 8.8mm (0.3465) | | | |
| M10 X 1.5 | 0.3323 | 0.3362 | 0.3402 | 0.3437 | 0.3476 | 0.3298 | 0.3416 | 8.5mm (0.3346) | | | |
| M12 X 1.25 | 0.4213 | 0.4244 | 0.4276 | 0.4307 | 0.4343 | 0.4192 | 0.4296 | 10.8mm (0.4252) | | | |
| M12 X 1.5 | 0.4110 | 0.4150 | 0.4189 | 0.4224 | 0.4264 | 0.4085 | 0.4203 | 10.6mm (0.4173) | | | |
| M12 X 1.75 | 0.4008 | 0.4055 | 0.4098 | 0.4142 | 0.4189 | 0.3979 | 0.4111 | 13/32 (0.4063) | | | |
| M14 X 2.0 | 0.4693 | 0.4744 | 0.4795 | 0.4846 | 0.4898 | 0.4659 | 0.4807 | 12.2mm (0.4803) | | | |
| M16 X 2.0 | 0.5480 | 0.5531 | 0.5583 | 0.5634 | 0.5685 | 0.5447 | 0.5594 | 14.2mm (0.5591) | | | |
| M20 X 2.5 | 0.6850 | 0.6913 | 0.6980 | 0.7043 | 0.7106 | 0.6809 | 0.6986 | 17.7mm (0.6969) | | | |
| M24 X 3.0 | 0.8220 | 0.8299 | 0.8374 | 0.8453 | 0.8528 | 0.8170 | 0.8367 | 21.2mm (0.8346) | | | |

Suggested Percentage of Full Thread in Tapped Holes

| | Material | Deep Hole Tapping | Average Commercial Work | Thin Sheet Stock or Stamping |
|-----------------------|--|-------------------|-------------------------|------------------------------|
| Free Cutting | Aluminum, Brass, Bronze, Cast Iron, Copper, Mild Steel, Tool Steel | 60%-70% | 65%-70% | 75%-85% |
| Hard or Tough Cutting | Cast Steel, Drop Forging, Monel Metal, Nickel Steel, Stainless Steel | 55%-65% | 60%-70% | |

Classes and Tap Recommendations


| Tap Size | Basic Pitch Diameter | Class 2B | | Class 3B | |
|------------------|----------------------|---------------------------|-----------------|---------------------------|-----------------|
| | All Classes Min. | Pitch Diameter Limits Max | Recommended Tap | Pitch Diameter Limits Max | Recommended Tap |
| 2-56 | 0.0744 | 0.0772 | H2 | 0.0765 | H2 |
| 4-40 | 0.0958 | 0.0991 | H2 | 0.0982 | H2 |
| 6-32 | 0.1177 | 0.1214 | H3 | 0.1204 | H2 |
| 8-32 | 0.1437 | 0.1475 | H3 | 0.1465 | H2 |
| 10-24 | 0.1629 | 0.1672 | H3 | 0.1661 | H3 |
| 10-32 | 0.1697 | 0.1736 | H3 | 0.1726 | H2 |
| 12-24 | 0.1889 | 0.1933 | H3 | 0.1922 | H3 |
| 1/4 - 20 | 0.2175 | 0.2224 | H5 | 0.2211 | H3 |
| 1/4 - 28 | 0.2268 | 0.2311 | H4 | 0.2300 | H3 |
| 5/16 - 18 | 0.2764 | 0.2817 | H5 | 0.2803 | H3 |
| 5/16 - 24 | 0.2854 | 0.2902 | H4 | 0.2890 | H3 |
| 3/8 - 16 | 0.3344 | 0.3401 | H5 | 0.3387 | H3 |
| 3/8 - 24 | 0.3479 | 0.3528 | H4 | 0.3516 | H3 |
| 7/16 - 14 | 0.3911 | 0.3972 | H5 | 0.3957 | H3 |
| 7/16 - 20 | 0.4050 | 0.4104 | H5 | 0.4091 | H3 |
| 1/2 - 13 | 0.4500 | 0.4565 | H5 | 0.4548 | H3 |
| 1/2 - 20 | 0.4675 | 0.4731 | H5 | 0.4717 | H3 |
| 5/8 - 11 | 0.5660 | 0.5732 | H6 | 0.5714 | H4 |
| 5/8 - 18 | 0.5889 | 0.5949 | H6 | 0.5934 | H4 |
| 3/4 - 10 | 0.6850 | 0.6927 | H6 | 0.6907 | H4 |
| 3/4 - 16 | 0.7094 | 0.7159 | H6 | 0.7143 | H4 |
| 1 - 8 | 0.9188 | 0.9276 | H6 | 0.9254 | H4 |

| Tap Size | Pitch Diameter Limits - Class 6H | | Class 6H |
|-------------------|----------------------------------|---------|-----------------|
| | Maximum | Minimum | Recommended Tap |
| M3 x 0.5 | 0.1054 | 0.1092 | D3 |
| M4 x 0.7 | 0.1396 | 0.1442 | D4 |
| M5 x 0.8 | 0.1764 | 0.1812 | D4 |
| M6 x 1.0 | 0.2107 | 0.2165 | D5 |
| M8 x 1.25 | 0.2830 | 0.2892 | D5 |
| M10 x 1.25 | 0.3617 | 0.3680 | D5 |
| M10 x 1.5 | 0.3554 | 0.3624 | D6 |
| M12 x 1.25 | 0.4405 | 0.4476 | D6 |
| M12 x 1.5 | 0.4341 | 0.4416 | D6 |
| M12 x 1.75 | 0.4277 | 0.4355 | D6 |
| M14 x 2.0 | 0.5001 | 0.5083 | D7 |
| M16 x 2.0 | 0.5788 | 0.5871 | D7 |
| M20 x 2.5 | 0.7235 | 0.7322 | D7 |
| M24 x 3.0 | 0.8682 | 0.8785 | D8 |

H2 = Basic P.D. + .0005" to Basic P.D. + .0010"
H3 = Basic P.D. + .0010" to Basic P.D. + .0015"
H4 = Basic P.D. + .0015" to Basic P.D. + .0020"
H5 = Basic P.D. + .0020" to Basic P.D. + .0025"
H6 = Basic P.D. + .0025" to Basic P.D. + .0030"

D3 = Basic P.D. + .0009" to Basic P.D. + .0015"
D4 = Basic P.D. + .0012" to Basic P.D. + .0020"
D5 = Basic P.D. + .0015" to Basic P.D. + .0025"
D6 = Basic P.D. + .0018" to Basic P.D. + .0030"
D7 = Basic P.D. + .0019" to Basic P.D. + .0035"
D8 = Basic P.D. + .0024" to Basic P.D. + .0040"

The above recommended taps normally produce the class of thread indicated in average materials when used with reasonable care. However, if the tap specified does not give a satisfactory gage fit in the work, a choice of some other limit tap may be necessary.

 **WARNING:** This product can expose you to chemicals including cobalt, which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov

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