

## **EXOCARB®-Thread Mill**

Premium thread mills suited for cast iron, steels, exotics and difficult-to-machine materials.

## **EXOCARB® Taps**

High Performance taps made from micrograin carbide. Available in a variety of styles and coatings.

## **EXOCARB® VX Taps**

Tapping solutions for hardened material from 55 HRC to 65 HRC.

## **EXOCARB®-Diamond**

CVD Diamond coated carbide taps for aerospace applications in non-ferrous materials.

## **EXOTAP® NRT®**

High Performance forming taps made from VC-10 powdered metal. Available in a variety of styles and coatings.

## **EXOTAP® VC-10**

High Performance taps made from VC-10 powdered metal. Available in a variety of styles and coatings.



### **EXOTAP VA-3®**

High Performance taps made from VA-3 vanadium high speed steel. Available in a variety of styles and coatings.

### **HY-PRO® TAP**

Premium general purpose taps designed for exceptional tool life in a variety of materials.

### **HY-PRO® SEVEN**

Premium general purpose taps designed for use in aluminum, mild steels and medium carbon steels, Taps designed to produce standard classes of fit.

### **GENERAL PURPOSE**

Premium general purpose taps for general machining applications. Available in a variety of styles and coatings.

### **SCREW THREAD INSERT (STI) Taps**

Standard and premium taps for screw thread insert (Helicoil) thread.

### **PIPE Taps**

Standard and premium pipe taps for a wide range of materials.

### **Adjustable Round Dies**

Adjustable split round dies for cutting external threads.



# Tapping Application Guide

| Materials            |                      | Condition  | Hardness |       | Cutting Speed* |
|----------------------|----------------------|------------|----------|-------|----------------|
|                      |                      |            | BHN      | HRC   | SFM            |
| Aluminum Alloy       | 6061, 7075, 2011     | Normalized | ~150     |       | 30~80          |
| Die Cast Aluminum    | 356AL, 390AL         | As Cast    | ~150     |       | 40~65          |
| Cast Iron            | Nodular, Grey        | As Cast    | ~208     | ~15   | 25~75          |
| Low Carbon Steel     | 1010, 1018           | Normalized | ~190     | ~10   | 25~80          |
| Medium Carbon Steel  | 1035, 1045           | Normalized | ~208     | ~15   | 20~50          |
| High Carbon Steel    | 1065, 1095           | Normalized | ~253     | ~25   | 20~45          |
| Alloy Steel          | 4140, 4340, 8620     | Normalized | 253~301  | 25~32 | 20~50          |
|                      | 4140, 4340, 8620     | Hardened   | 327~393  | 35~42 | 15~20          |
| Stainless Steel      | 303, 304, 316        | Annealed   | ~253     | ~25   | 20~45          |
|                      | 410, 430             | Hardened   | 327~393  | 35~42 | 12~20          |
|                      | 17-4, 15-5, A286     | Annealed   | ~253     | ~25   | 15~20          |
|                      | 17-4, 15-5, A286     | Hardened   | 327~393  | 35~42 | 8~20           |
| Tool Steel           | D2, H13, P20, S7     | Annealed   | 190~253  | 10~25 | 15~35          |
|                      | H13, P20             | Hardened   | 327~450  | 35~48 | 8~15           |
|                      | D2, A2               | Hardened   |          | 55~63 | 3~10           |
| Titanium Alloy       | 6AL4V                | Annealed   | 253~301  | 25~32 | 15~20          |
|                      | 6AL4V, 6AL6V         | Hardened   | 327~393  | 35~42 | 8~15           |
| Nickel Base Alloy    | Inconel 718, 625     | Annealed   | 253~301  | 25~32 | 8~15           |
|                      | Inconel 718          | Hardened   | 327~393  | 35~42 | 8~15           |
|                      | Hastelloy, Waspalloy | Normalized | 253~390  | 25~40 | 8~15           |
|                      | Kovar                | Normalized | 253~390  | 25~40 | 8~15           |
| Magnesium            |                      |            | ~100     |       | 40~80          |
| Brass, Bronze        |                      |            | ~150     |       | 40~80          |
| Copper               |                      |            | ~150     |       | 30~60          |
| Beryllium Copper     |                      |            | ~253     | ~25   | 20~30          |
| Cobalt-Chrome        | Stellite             |            |          |       | 8~25           |
| Fiber Filler Plastic | Fiberglass, REN      |            |          |       | 20~30          |
| MMC                  | Al-SiC70%            |            |          |       | 20~30          |

\*Speeds can be increased when coatings, synchronized spindles or coolant through taps are utilized.

\*Pipe taps should be run at half of these velocities.

\*\* SFM to RPM conversion chart on page 280.



● = 1<sup>st</sup> Choice  
○ = 2<sup>nd</sup> Choice



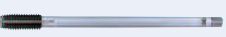
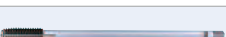
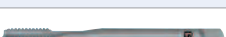
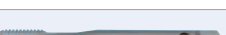
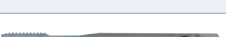
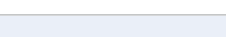
# Taps: Illustrated Index

| List | Item | Series | Page | Tech Page | Inch Metric | Material | Feature |
|------|------|--------|------|-----------|-------------|----------|---------|
|------|------|--------|------|-----------|-------------|----------|---------|

## EXOCARB®-Thread Mill

|       |                                                                                               |                      |     |         |        |         |                                    |
|-------|-----------------------------------------------------------------------------------------------|----------------------|-----|---------|--------|---------|------------------------------------|
| 41000 |              | EXOCARB®-Thread Mill | 174 | 308-309 | Inch   | Carbide | UNC, UNF, UNEF, UNS, Helical Flute |
| 41100 |  <b>NEW!</b> | EXOCARB®-Thread Mill | 175 | 308-309 | Metric | Carbide | Helical Flute                      |
| 42000 |              | EXOCARB®-Thread Mill | 176 | 308-309 | Inch   | Carbide | NPT, Helical Flute                 |
| 42001 |              | EXOCARB®-Thread Mill | 177 | 308-309 | Inch   | Carbide | NPTF, Helical Flute                |

## EXOCARB®-Taps

|       |                                                                                                               |                  |     |         |        |         |                                                                         |
|-------|---------------------------------------------------------------------------------------------------------------|------------------|-----|---------|--------|---------|-------------------------------------------------------------------------|
| 14153 |                              | EXOCARB® Taps    | 178 | 281     | Metric | Carbide | Forming Tap, Carbide Inlaid, DIN/DIN                                    |
| 369   |                              | EXOCARB® Taps    | 178 | 281     | Metric | Carbide | Forming Tap, JIS                                                        |
| 357   |                              | EXOCARB® Taps    | 179 | 281     | Metric | Carbide | Forming Tap, Long Shank, JIS                                            |
| 389   |                              | EXOCARB® Taps    | 179 | 278-279 | Metric | Carbide | Spiral Flute, JIS                                                       |
| 329   |  <b>NEW SIZES</b>            | EXOCARB®-Diamond | 180 | 278-279 | Inch   | Carbide | Straight Flute, UNJC, UNJF, DIN Overall Length                          |
| 359   |  <b>NEW IMPROVED PRICING</b> | EXOCARB®-Diamond | 180 | 278-279 | Metric | Carbide | Straight Flute, JIS                                                     |
| 311   |                             | EXOCARB®-VX      | 181 | 282     | Inch   | Carbide | Straight Flute, DIN Overall Length, For Hardened Materials up to 65 HRC |
| 341   |                            | EXOCARB®-VX      | 182 | 282     | Metric | Carbide | Straight Flute, JIS For Hardened Materials up to 65 HRC                 |
| 379   |                            | EXOCARB® Taps    | 183 | 278-279 | Metric | Carbide | Straight Flute, Coolant Thru, Synchronized, JIS                         |
| 319   |                            | EXOCARB® Taps    | 184 | 278-279 | Inch   | Carbide | Straight Flute, DIN Overall Length                                      |
| 10059 |                            | EXOCARB® Taps    | 184 | 278-279 | Inch   | Carbide | Straight Flute                                                          |
| 349   |                            | EXOCARB® Taps    | 185 | 278-279 | Metric | Carbide | Straight Flute, JIS                                                     |
| 356   |                            | EXOCARB® Taps    | 185 | 278-279 | Metric | Carbide | Straight Flute, Long Shank, JIS                                         |

| List | Item | Series | Page | Tech Page | Inch Metric | Material | Feature |
|------|------|--------|------|-----------|-------------|----------|---------|
|------|------|--------|------|-----------|-------------|----------|---------|

## Forming Taps

|       |                                                                                     |               |         |     |               |        |                             |
|-------|-------------------------------------------------------------------------------------|---------------|---------|-----|---------------|--------|-----------------------------|
| 14050 |  | EXOTAP® NRT®  | 186-187 | 281 | Inch          | VC10   |                             |
| 14150 |  | EXOTAP® NRT®  | 188-189 | 281 | Metric        | VC10   |                             |
| 14001 |  | HY-PRO® NRT®  | 190-193 | 281 | Inch          | HSS-C0 | For Wide Range of Materials |
| 14101 |  | HY-PRO® NRT®  | 194-195 | 281 | Metric        | HSS-C0 | For Wide Range of Materials |
| 286   |  | HY-PRO® SEVEN | 196     | 281 | Inch & Metric | HSS    |                             |

# Taps: Application Guide

| List No. | Aluminum |         | Cast Iron | CoCr | Carbon Steel | Alloy Steel and Die | Ductile Cast Iron | MMC | Copper Alloys | Fiberglass | High Heat Material |                    | Stainless Steels |     |        | Hardened Steels |           |           |
|----------|----------|---------|-----------|------|--------------|---------------------|-------------------|-----|---------------|------------|--------------------|--------------------|------------------|-----|--------|-----------------|-----------|-----------|
|          | Alloys   | Casting |           |      |              |                     |                   |     |               |            | Ti-Alloy           | Inconel & Waspaloy | 300              | 400 | 17-4PH | ~55 Hrc         | 55-60 Hrc | 60-65 Hrc |

## EXOCARB®-Thread Mill

|       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
|-------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|--|
| 41000 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |  |  |
| 41100 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |  |  |
| 42000 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |  |  |
| 42001 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |  |  |

## EXOCARB®-Taps

|       |   |   |   |   |  |  |   |   |   |   |  |  |  |  |  |   |   |   |
|-------|---|---|---|---|--|--|---|---|---|---|--|--|--|--|--|---|---|---|
| 14153 | ○ | ○ |   |   |  |  |   |   | ○ |   |  |  |  |  |  |   |   |   |
| 369   | ○ | ○ |   |   |  |  |   |   | ○ |   |  |  |  |  |  |   |   |   |
| 357   | ○ | ○ |   |   |  |  |   |   | ○ |   |  |  |  |  |  |   |   |   |
| 389   | ○ | ○ | ○ | ○ |  |  | ○ |   | ○ |   |  |  |  |  |  |   |   |   |
| 329   | ○ | ○ |   |   |  |  |   | ○ | ○ | ○ |  |  |  |  |  |   |   |   |
| 359   | ○ | ○ |   |   |  |  |   | ○ | ○ | ○ |  |  |  |  |  |   |   |   |
| 311   |   |   |   | ○ |  |  |   |   |   |   |  |  |  |  |  | ○ | ○ | ○ |
| 341   |   |   |   | ○ |  |  |   |   |   |   |  |  |  |  |  | ○ | ○ | ○ |
| 379   | ○ | ○ | ○ |   |  |  | ○ |   |   |   |  |  |  |  |  |   |   |   |
| 319   | ○ | ○ | ○ | ○ |  |  | ○ |   | ○ |   |  |  |  |  |  |   |   |   |
| 10059 | ○ | ○ | ○ | ○ |  |  | ○ |   | ○ |   |  |  |  |  |  |   |   |   |
| 349   | ○ | ○ | ○ | ○ |  |  | ○ |   | ○ |   |  |  |  |  |  |   |   |   |
| 356   | ○ | ○ | ○ | ○ |  |  | ○ |   | ○ |   |  |  |  |  |  |   |   |   |

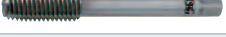
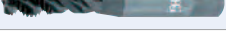
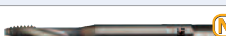
| List No. | Aluminum     |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium          | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|--------------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|-------------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061<br>7075 | Casting |           | 1010<br>1018     | 1035<br>1045      | 1065              | 4140<br>4340 | 20 Hrc     | 6AL4V<br>(30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |

## Forming Taps

|       |   |   |  |   |   |   |   |   |  |  |   |   |   |   |  |  |
|-------|---|---|--|---|---|---|---|---|--|--|---|---|---|---|--|--|
| 14050 | ○ | ○ |  | ○ | ○ | ○ | ○ | ○ |  |  | ○ | ○ | ○ | ○ |  |  |
| 14150 | ○ | ○ |  | ○ | ○ | ○ | ○ | ○ |  |  | ○ | ○ | ○ | ○ |  |  |
| 14001 | ○ | ○ |  | ○ | ○ | ○ | ○ | ○ |  |  | ○ | ○ | ○ |   |  |  |
| 14101 | ○ | ○ |  | ○ | ○ | ○ | ○ | ○ |  |  | ○ | ○ | ○ |   |  |  |
| 286   | ○ | ○ |  | ○ | ○ | ○ | ○ | ○ |  |  | ○ | ○ |   |   |  |  |



# Taps: Illustrated Index

| List                      | Item                                                                                | Series             | Page    | Tech Page | Inch Metric   | Material | Feature                                                         |
|---------------------------|-------------------------------------------------------------------------------------|--------------------|---------|-----------|---------------|----------|-----------------------------------------------------------------|
| <b>Spiral Fluted Taps</b> |                                                                                     |                    |         |           |               |          |                                                                 |
| 313TI                     |    | EXOTAP® VC-10 TI   | 197     | 278-279   | Inch          | VC10     | For Titanium Alloys                                             |
| 313NI                     |    | EXOTAP® VC-10 NI   | 198     | 278-279   | Inch          | VC10     | For Nickel Based Alloys                                         |
| 313                       |    | EXOTAP® VC-10      | 199-200 | 278-279   | Inch          | VC10     | For Difficult to Machine Materials                              |
| 345                       |    | EXOTAP® VC-10      | 200     | 278-279   | Metric        | VC10     | For Difficult to Machine Materials                              |
| 303                       |    | EXOTAP VA-3®       | 201-202 | 278-279   | Inch          | HSSE     | For Stainless Steel                                             |
| 343                       |    | EXOTAP VA-3®       | 202     | 278-279   | Metric        | HSSE     | For Stainless Steel                                             |
| 398                       |    | EXOTAP VA-3®       | 203     | 278-279   | Inch          | HSSE     | Long Shank, For Stainless Steel                                 |
| 220                       |    | HY-PRO® DIN        | 204     | 281       | Inch          | HSSE     | DIN Overall Length<br>For Wide Range of Materials               |
| 229                       |    | HY-PRO® DIN        | 205     | 281       | Metric        | HSSE     | DIN Overall Length<br>For Wide Range of Materials               |
| 230                       |    | HY-PRO® DIN        | 206     | 281       | Inch          | HSSE     | Coolant Thru, DIN Overall Length<br>For Wide Range of Materials |
| 239                       |   | HY-PRO® DIN        | 206     | 281       | Metric        | HSSE     | Coolant Thru, DIN Overall Length<br>For Wide Range of Materials |
| 13013                     |  | HY-PRO® ALLOY      | 207     | 281       | Inch          | HSSE     | Coolant Thru, DIN Overall Length<br>For Alloy Steels            |
| 13113                     |  | HY-PRO® ALLOY      | 207     | 281       | Metric        | HSSE     | Coolant Thru, DIN Overall Length<br>For Alloy Steels            |
| 13058                     |  | HY-PRO® SYNCHRO AL | 208     | 281       | Inch          | HSSE     | For Aluminum and Aluminum Alloy                                 |
| 13158                     |  | HY-PRO® SYNCHRO AL | 208     | 281       | Metric        | HSSE     | For Aluminum and Aluminum Alloy                                 |
| 295                       |  | HY-PRO® AL         | 209     | 281       | Inch          | HSSE     | For Aluminum                                                    |
| 296                       |  | HY-PRO® AL         | 209     | 281       | Metric        | HSSE     | For Aluminum                                                    |
| 290                       |  | HY-PRO®            | 210     | 281       | Inch          | HSSE     | For Wide Range of Materials                                     |
| 299                       |  | HY-PRO®            | 211     | 281       | Metric        | HSSE     | For Wide Range of Materials                                     |
| 298                       |  | HY-PRO® SEVEN      | 212     | 281       | Inch & Metric | HSS      |                                                                 |
| 107                       |  | GENERAL PURPOSE    | 213     | 278-279   | Inch          | HSS      |                                                                 |
| 143                       |  | GENERAL PURPOSE    | 214     | 278-279   | Metric        | HSS      |                                                                 |
| 123                       |  | GENERAL PURPOSE    | 214     | 278-279   | Metric        | HSS      | JIS                                                             |
| 918                       |  | GENERAL PURPOSE    | 215     | 278-279   | Inch          | HSS      | Long Shank                                                      |



# Taps: Application Guide

| List No. | Aluminum     |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium          | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|--------------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|-------------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061<br>7075 | Casting |           | 1010<br>1018     | 1035<br>1045      | 1065              | 4140<br>4340 | 20 Hrc     | 6AL4V<br>(30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |

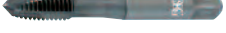
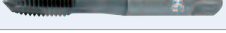
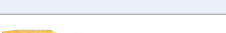
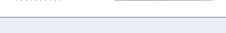
## Spiral Fluted Taps

|       |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|-------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 313TI |   |   |   |   |   |   |   |   | ⊙ | ○ |   |   | ○ | ⊙ | ○ |   |
| 313NI |   |   |   |   |   |   |   |   | ○ | ⊙ |   |   | ○ | ○ | ⊙ | ○ |
| 313   |   |   |   |   |   |   | ○ | ○ | ○ | ○ |   | ⊙ | ⊙ | ⊙ | ○ |   |
| 345   |   |   |   |   |   |   | ○ | ○ | ○ | ○ |   | ⊙ | ⊙ | ⊙ | ○ |   |
| 303   |   |   |   | ○ | ○ |   |   |   |   |   | ⊙ | ○ | ⊙ | ○ |   |   |
| 343   |   |   |   | ○ | ○ |   |   |   |   |   | ⊙ | ○ | ⊙ | ○ |   |   |
| 398   |   |   |   | ○ | ○ |   |   |   |   |   | ⊙ | ○ | ⊙ | ○ |   |   |
| 220   |   |   | ○ | ○ | ○ | ⊙ | ⊙ | ⊙ |   |   | ⊙ | ○ | ○ | ○ |   |   |
| 229   |   |   | ○ | ○ | ○ | ⊙ | ⊙ | ⊙ |   |   | ○ | ○ | ○ | ○ | ○ |   |
| 230   | ○ | ○ | ○ | ○ | ○ | ⊙ | ⊙ | ⊙ |   |   | ○ | ○ | ⊙ | ○ | ○ |   |
| 239   | ○ | ○ | ○ | ○ | ○ | ⊙ | ⊙ | ⊙ |   |   | ○ | ○ | ⊙ | ○ | ○ |   |
| 13013 |   | ○ | ○ |   |   | ○ | ⊙ | ○ |   |   |   |   |   |   |   |   |
| 13113 |   | ○ | ○ |   |   | ○ | ⊙ | ○ |   |   |   |   |   |   |   |   |
| 13058 | ⊙ | ⊙ |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 13158 | ⊙ | ⊙ |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 295   | ⊙ | ⊙ |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 296   | ⊙ | ⊙ |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 290   |   |   | ○ | ○ | ○ | ⊙ | ⊙ | ⊙ |   |   | ○ | ○ | ○ | ○ | ○ |   |
| 299   |   |   | ○ | ○ | ○ | ⊙ | ⊙ | ⊙ |   |   | ○ | ○ | ○ | ○ | ○ |   |
| 298   | ○ | ○ |   | ⊙ | ⊙ |   |   |   |   |   |   |   |   |   |   |   |
| 107   | ○ | ○ | ○ | ○ | ○ | ○ |   |   |   |   |   |   |   | ○ |   |   |
| 143   | ○ | ○ | ○ | ○ | ○ | ○ |   |   |   |   |   |   |   | ○ |   |   |
| 123   | ○ | ○ | ○ | ○ | ○ | ○ |   |   |   |   |   |   |   | ○ |   |   |
| 918   | ○ | ○ | ○ | ○ | ○ | ○ |   |   |   |   |   |   |   | ○ |   |   |





# Taps: Illustrated Index

| List                       | Item                                                                                          | Series             | Page    | Tech Page | Inch Metric   | Material | Feature                                                           |
|----------------------------|-----------------------------------------------------------------------------------------------|--------------------|---------|-----------|---------------|----------|-------------------------------------------------------------------|
| <b>Spiral Pointed Taps</b> |                                                                                               |                    |         |           |               |          |                                                                   |
| 312TI                      |              | EXOTAP® VC-10 TI   | 216     | 278-279   | Inch          | VC10     | For Titanium Alloys                                               |
| 312NI                      |              | EXOTAP® VC-10 NI   | 217     | 278-279   | Inch          | VC10     | For Nickel Based Alloys                                           |
| 312                        |              | EXOTAP® VC-10      | 218     | 278-279   | Inch          | VC10     | For Difficult to Machine Materials                                |
| 344                        |              | EXOTAP® VC-10      | 218     | 278-279   | Metric        | VC10     | For Difficult to Machine Materials                                |
| 300                        |              | EXOTAP VA-3®       | 219     | 278-279   | Inch          | HSSE     | For Stainless Steel                                               |
| 342                        |              | EXOTAP VA-3®       | 220     | 278-279   | Metric        | HSSE     | For Stainless Steel                                               |
| 397                        |              | EXOTAP VA-3®       | 221     | 278-279   | Inch          | HSSE     | Long Shank, For Stainless Steel                                   |
| 320                        |              | EXOTAP® TIN        | 222     | 278-279   | Inch          | HSSE     | For Difficult to Machine Materials                                |
| 250                        |              | HY-PRO® DIN        | 223     | 281       | Inch          | HSSE     | DIN Overall Length<br>For Wide Range of Materials                 |
| 259                        |              | HY-PRO® DIN        | 223     | 281       | Metric        | HSSE     | DIN Overall Length<br>For Wide Range of Materials                 |
| 260                        |             | HY-PRO® DIN        | 224     | 281       | Inch          | HSSE     | Coolant Thru, DIN Overall Length<br>For Wide Range of Materials   |
| 269                        |            | HY-PRO® DIN        | 224     | 281       | Metric        | HSSE     | Coolant Thru, DIN Overall Length<br>For Wide Range of Materials   |
| 13059                      |            | HY-PRO® SYNCHRO AL | 225     | 281       | Inch          | HSSE     | Synchronized, Left Hand Spiral<br>For Aluminum and Aluminum Alloy |
| 13159                      |            | HY-PRO® SYNCHRO AL | 225     | 281       | Metric        | HSSE     | Synchronized, Left Hand Spiral<br>For Aluminum and Aluminum Alloy |
| 280                        |  NEW SIZES | HY-PRO®            | 226     | 281       | Inch          | HSSE     | For Wide Range of Materials                                       |
| 289                        |  NEW SIZES | HY-PRO®            | 227     | 281       | Metric        | HSSE     | For Wide Range of Materials                                       |
| 288                        |            | HY-PRO® SEVEN      | 228     | 281       | Inch & Metric | HSSE     |                                                                   |
| 105                        |            | GENERAL PURPOSE    | 229-230 | 278-279   | Metric        | HSS      |                                                                   |
| 105B                       |            | GENERAL PURPOSE    | 231     | 278-279   | Inch          | HSS      |                                                                   |
| 105A                       |            | GENERAL PURPOSE    | 232     | 278-279   | Inch          | HSS      | Assembly Type Taps                                                |
| 105 (GH7)                  |            | GENERAL PURPOSE    | 232     | 278-279   | Inch          | HSS      |                                                                   |
| 105H                       |            | GENERAL PURPOSE    | 233     | 278-279   | Inch          | HSS      | +.005" Oversize                                                   |
| 142H                       |            | GENERAL PURPOSE    | 233     | 278-279   | Metric        | HSS      | +.005" Oversize                                                   |
| 142                        |            | GENERAL PURPOSE    | 234     | 278-279   | Metric        | HSS      |                                                                   |
| 122                        |            | GENERAL PURPOSE    | 235     | 278-279   | Metric        | HSS      | JIS                                                               |
| 917                        |            | GENERAL PURPOSE    | 235     | 278-279   | Inch          | HSS      | Long Shank                                                        |
| S110                       |            | MINIATURE          | 236     | 278-279   | Inch          | HSS      |                                                                   |



# Taps: Application Guide

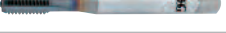
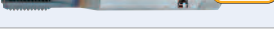
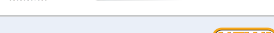
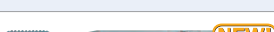
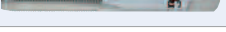
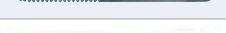
| List No. | Aluminum     |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium          | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|--------------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|-------------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061<br>7075 | Casting |           | 1010<br>1018     | 1035<br>1045      | 1065              | 4140<br>4340 | 20 Hrc     | 6AL4V<br>(30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |

## Spiral Pointed Taps

|           |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|-----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| 312TI     |   |   |   |   |   |   |   |   | ⊙ | ○ |   |   | ○ | ⊙ | ○ |  |
| 312NI     |   |   |   |   |   |   |   |   | ○ | ⊙ |   | ○ | ○ | ⊙ | ○ |  |
| 312       |   |   |   |   |   |   | ○ | ○ | ○ | ○ |   | ⊙ | ⊙ | ⊙ | ○ |  |
| 344       |   |   |   |   |   |   | ○ | ○ | ○ | ○ |   | ⊙ | ⊙ | ⊙ | ⊙ |  |
| 300       |   |   |   | ○ | ○ |   |   |   |   |   | ⊙ | ○ | ⊙ | ○ |   |  |
| 342       |   |   |   | ○ | ○ |   |   |   |   |   | ⊙ | ○ | ⊙ | ○ |   |  |
| 397       |   |   |   | ○ | ○ |   |   |   |   |   | ⊙ | ○ | ⊙ | ○ |   |  |
| 320       | ○ | ○ |   | ○ | ○ | ⊙ |   |   |   |   | ⊙ | ○ | ⊙ | ○ |   |  |
| 250       |   |   | ○ | ○ | ○ | ⊙ | ⊙ | ⊙ |   |   | ○ | ○ | ○ | ○ | ○ |  |
| 259       |   |   | ○ | ○ | ○ | ⊙ | ⊙ | ⊙ |   |   | ○ | ○ | ○ | ○ | ○ |  |
| 260       |   | ○ | ○ | ○ | ○ | ⊙ | ⊙ | ⊙ |   |   | ○ | ○ | ⊙ | ○ | ○ |  |
| 269       |   | ○ | ○ | ○ | ○ | ⊙ | ⊙ | ⊙ |   |   | ○ | ○ | ⊙ | ○ | ○ |  |
| 13059     | ⊙ | ⊙ |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 13159     | ⊙ | ⊙ |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
| 280       |   |   | ○ | ○ | ○ | ⊙ | ⊙ | ⊙ |   |   | ○ | ○ | ○ | ○ | ○ |  |
| 289       |   |   | ○ | ○ | ○ | ⊙ | ⊙ | ⊙ |   |   | ○ | ○ | ○ | ○ | ○ |  |
| 288       | ○ | ○ |   | ⊙ | ⊙ |   |   |   |   |   |   |   |   |   |   |  |
| 105       | ○ | ○ | ○ | ○ | ○ | ○ |   |   |   |   |   |   |   |   | ○ |  |
| 105B      | ○ | ○ | ○ | ○ | ○ | ○ |   |   |   |   |   |   |   |   | ○ |  |
| 105A      | ○ | ○ | ○ | ○ | ○ | ○ |   |   |   |   |   |   |   |   | ○ |  |
| 105 (GH7) | ○ | ○ | ○ | ○ | ○ | ○ |   |   |   |   |   |   |   |   | ○ |  |
| 105H      | ○ | ○ | ○ | ○ | ○ | ○ |   |   |   |   |   |   |   |   | ○ |  |
| 142H      | ○ | ○ | ○ | ○ | ○ | ○ |   |   |   |   |   |   |   |   | ○ |  |
| 142       | ○ | ○ | ○ | ○ | ○ | ○ |   |   |   |   |   |   |   |   |   |  |
| 122       | ○ | ○ | ○ | ○ | ○ |   |   |   |   |   |   |   |   | ○ |   |  |
| 917       | ○ | ○ | ○ | ○ | ○ | ○ |   |   |   |   |   |   |   | ○ |   |  |
| S110      | ○ | ○ | ○ | ○ | ○ | ○ |   |   |   |   |   |   |   | ○ |   |  |



# Taps: Illustrated Index

| List                        | Item                                                                                | Series          | Page    | Tech Page | Inch Metric | Material | Feature                                                                         |
|-----------------------------|-------------------------------------------------------------------------------------|-----------------|---------|-----------|-------------|----------|---------------------------------------------------------------------------------|
| <b>Straight Fluted Taps</b> |                                                                                     |                 |         |           |             |          |                                                                                 |
| 10051                       |    | EXOTAP® VCX     | 237     | 278-279   | Inch        | XPM      | For Hard Steels 42-52 HRC                                                       |
| 11051                       |    | EXOTAP® VCX     | 237     | 278-279   | Metric      | XPM      | For Hard Steels 42-52 HRC                                                       |
| 305                         |    | EXOTAP-MOLD®    | 238     | 278-279   | Inch        | HSS-C0   | For Mold Steels                                                                 |
| 10052                       |    | EXOTAP® DC      | 239     | 278-279   | Inch        | VC10     | DIN Overall Length<br>For Cast Iron and Cast Aluminum                           |
| 11052                       |    | EXOTAP® DC      | 239     | 278-279   | Metric      | VC10     | DIN Overall Length<br>For Cast Iron and Cast Aluminum                           |
| 10053                       |    | EXOTAP® DC OIL  | 240     | 278-279   | Inch        | VC10     | Coolant Thru, DIN Overall Length<br>For Cast Iron and Cast Aluminum             |
| 11053                       |    | EXOTAP® DC OIL  | 240     | 278-279   | Metric      | VC10     | Coolant Thru, DIN Overall Length<br>For Cast Iron and Cast Aluminum             |
| 11054                       |    | EXOTAP® DC      | 241     | 278-279   | Metric      | VC10     | DIN Shank, DIN Overall Length<br>For Cast Iron and Cast Aluminum                |
| 11055                       |    | EXOTAP® DC OIL  | 242     | 278-279   | Metric      | VC10     | Coolant Thru, DIN Shank, DIN Overall Length,<br>For Cast Iron and Cast Aluminum |
| 10056                       |    | EXOTAP® DC      | 243     | 278-279   | Inch        | VC10     | For Cast Iron and Cast Aluminum                                                 |
| 11056                       |   | EXOTAP® DC      | 243     | 278-279   | Metric      | VC10     | For Cast Iron and Cast Aluminum                                                 |
| 10057                       |  | EXOTAP® DC OIL  | 244     | 278-279   | Inch        | VC10     | Coolant Thru, For Cast Iron and Cast Aluminum                                   |
| 11057                       |  | EXOTAP® DC OIL  | 244     | 278-279   | Metric      | VC10     | Coolant Thru, For Cast Iron and Cast Aluminum                                   |
| 240                         |  | HY-PRO® DC      | 245     | 281       | Inch        | HSSE     | For Aluminum Alloy and Cast Aluminum                                            |
| 241                         |  | HY-PRO® DC      | 245     | 281       | Metric      | HSSE     | For Aluminum Alloy and Cast Aluminum                                            |
| 101C                        |  | FOR CAST IRON   | 246     | 278-279   | Inch        | HSS      |                                                                                 |
| 141C                        |  | FOR CAST IRON   | 246     | 278-279   | Metric      | HSS      |                                                                                 |
| 101                         |  | GENERAL PURPOSE | 247-248 | 278-279   | Inch        | HSS      |                                                                                 |
| 101H                        |  | GENERAL PURPOSE | 249     | 278-279   | Inch        | HSS      | +.005" Oversize                                                                 |
| 102                         |  | GENERAL PURPOSE | 250     | 278-279   | Inch        | HSS      |                                                                                 |
| 102H                        |  | GENERAL PURPOSE | 251     | 278-279   | Inch        | HSS      | +.005" Oversize                                                                 |
| 103                         |  | GENERAL PURPOSE | 251     | 278-279   | Inch        | HSS      | 3 Flute                                                                         |
| 104                         |  | GENERAL PURPOSE | 252     | 278-279   | Inch        | HSS      | 2 Flute                                                                         |
| 101N                        |  | GENERAL PURPOSE | 253     | 278-279   | Inch        | HSS      | UNEF                                                                            |
| 141                         |  | GENERAL PURPOSE | 254     | 278-279   | Metric      | HSS      |                                                                                 |
| 121                         |  | GENERAL PURPOSE | 255     | 278-279   | Metric      | HSS      | JIS                                                                             |
| 916                         |  | PULLEY TAPS     | 256     | 278-279   | Inch        | HSS      | Long Shank                                                                      |



# Taps: Application Guide

| List No. | Aluminum     |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium          | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|--------------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|-------------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061<br>7075 | Casting |           | 1010<br>1018     | 1035<br>1045      | 1065              | 4140<br>4340 | 20 Hrc     | 6AL4V<br>(30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |

## Straight Fluted Taps

|       |   |   |   |   |   |   |   |   |  |  |   |   |  |   |   |   |
|-------|---|---|---|---|---|---|---|---|--|--|---|---|--|---|---|---|
| 10051 |   |   |   |   |   |   |   |   |  |  |   |   |  |   |   | ⊙ |
| 11051 |   |   |   |   |   |   |   |   |  |  |   |   |  |   |   | ⊙ |
| 305   |   |   | ○ |   | ○ | ○ | ○ | ⊙ |  |  | ○ | ○ |  | ⊙ | ○ |   |
| 10052 |   | ⊙ | ⊙ |   |   | ○ |   |   |  |  |   |   |  |   |   |   |
| 11052 |   | ⊙ | ⊙ |   |   | ○ |   |   |  |  |   |   |  |   |   |   |
| 10053 |   | ⊙ | ⊙ |   |   | ○ |   |   |  |  |   |   |  |   |   |   |
| 11053 |   | ⊙ | ⊙ |   |   | ○ |   |   |  |  |   |   |  |   |   |   |
| 11054 |   | ⊙ | ⊙ |   |   | ○ |   |   |  |  |   |   |  |   |   |   |
| 11055 |   | ⊙ | ⊙ |   |   | ○ |   |   |  |  |   |   |  |   |   |   |
| 10056 |   | ⊙ | ⊙ |   |   | ○ |   |   |  |  |   |   |  |   |   |   |
| 11056 |   | ⊙ | ⊙ |   |   | ○ |   |   |  |  |   |   |  |   |   |   |
| 10057 |   | ⊙ | ⊙ |   |   | ○ |   |   |  |  |   |   |  |   |   |   |
| 11057 |   | ⊙ | ⊙ |   |   | ○ |   |   |  |  |   |   |  |   |   |   |
| 240   | ⊙ | ⊙ | ○ |   |   |   |   |   |  |  |   |   |  |   |   |   |
| 241   | ⊙ | ⊙ | ○ |   |   |   |   |   |  |  |   |   |  |   |   |   |
| 101C  |   | ○ | ⊙ |   |   |   |   |   |  |  |   |   |  |   |   |   |
| 141C  |   | ○ | ⊙ |   |   |   |   |   |  |  |   |   |  |   |   |   |
| 101   | ○ | ○ | ○ | ○ | ○ | ○ |   |   |  |  |   |   |  |   |   |   |
| 101H  | ○ | ○ | ○ | ○ | ○ | ○ |   |   |  |  |   |   |  |   |   |   |
| 102   | ○ | ○ | ○ | ○ | ○ | ○ |   |   |  |  |   |   |  |   |   |   |
| 102H  | ○ | ○ | ○ | ○ | ○ | ○ |   |   |  |  |   |   |  |   |   |   |
| 103   | ○ | ○ | ○ | ○ | ○ | ○ |   |   |  |  |   |   |  |   |   |   |
| 104   | ○ | ○ | ○ | ○ | ○ | ○ |   |   |  |  |   |   |  |   |   |   |
| 101N  | ○ | ○ | ○ | ○ | ○ | ○ |   |   |  |  |   |   |  |   |   |   |
| 141   | ○ | ○ | ○ | ○ | ○ | ○ |   |   |  |  |   |   |  |   |   |   |
| 121   | ○ | ○ | ○ | ○ | ○ | ○ |   |   |  |  |   |   |  |   |   |   |
| 916   | ○ | ○ | ○ | ○ | ○ | ○ |   |   |  |  |   |   |  |   |   |   |



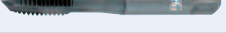
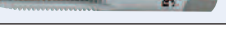
# Taps: Illustrated Index

| List | Item | Series | Page | Tech Page | Inch Metric | Material | Feature |
|------|------|--------|------|-----------|-------------|----------|---------|
|------|------|--------|------|-----------|-------------|----------|---------|

## Straight Fluted Taps

|      |                                                                                   |             |     |         |      |        |  |
|------|-----------------------------------------------------------------------------------|-------------|-----|---------|------|--------|--|
| S110 |  | MINIATURE   | 257 | 278-279 | Inch | HSS    |  |
| 114  |  | FOR PLASTIC | 258 | 278-279 | Inch | HSS-CO |  |
| 180  |  | 8 PITCH     | 259 | 278-279 | Inch | HSS    |  |
| 101L |  | LEFT HAND   | 260 | 278-279 | Inch | HSS    |  |

## STI Taps

|      |                                                                                     |                 |     |         |      |      |                                                        |
|------|-------------------------------------------------------------------------------------|-----------------|-----|---------|------|------|--------------------------------------------------------|
| 315  |    | EXOTAP® VC-10   | 261 | 278-279 | Inch | VC10 | STI, Spiral Fluted For Difficult to Machine Materials  |
| 302  |    | EXOTAP VA-3®    | 262 | 278-279 | Inch | HSSE | STI, Spiral Fluted, For Stainless Steel                |
| S108 |    | GENERAL PURPOSE | 263 | 278-279 | Inch | HSS  | STI, Spiral Fluted                                     |
| 314  |    | EXOTAP® VC-10   | 264 | 278-279 | Inch | VC10 | STI, Spiral Pointed For Difficult to Machine Materials |
| 301  |    | EXOTAP VA-3®    | 265 | 278-279 | Inch | HSSE | STI, Spiral Fluted, For Stainless Steel                |
| 125  |    | GENERAL PURPOSE | 266 | 278-279 | Inch | HSS  | STI, Spiral Pointed                                    |
| 126  |  | GENERAL PURPOSE | 267 | 278-279 | Inch | HSS  | STI, Straight Fluted                                   |

## Pipe Taps

|      |                                                                                     |               |     |         |      |        |                                                     |
|------|-------------------------------------------------------------------------------------|---------------|-----|---------|------|--------|-----------------------------------------------------|
| 308  |  | EXOPIPE®      | 268 | 283     | Inch | HSSE   | NPT, For Stainless Steel                            |
| 318  |  | EXOPIPE®      | 268 | 283     | Inch | HSSE   | NPT, For Stainless Steel                            |
| 328  |  | EXOTAP-MOLD®  | 269 | 278-279 | Inch | HSS-CO | NPT, For Mold Steel                                 |
| 108  |  | TAPER PIPE    | 270 | 278-279 | Inch | HSS    | General Purpose, NPT, ANPT                          |
| 118  |  | TAPER PIPE    | 270 | 278-279 | Inch | HSS    | General Purpose, NPTF                               |
| 108G |  | TAPER PIPE    | 271 | 278-279 | Inch | HSS    | General Purpose, Interrupted Thread NPT, NPTF, ANPT |
| S125 |  | TAPER PIPE    | 271 | 278-279 | Inch | HSS    | Short Projection, NPT, NPTF                         |
| 109  |  | STRAIGHT PIPE | 272 | 278-279 | Inch | HSS    | NPS, NPSF                                           |

## Adjustable Round Split Dies

|      |                                                                                     |         |         |   |        |     |            |
|------|-------------------------------------------------------------------------------------|---------|---------|---|--------|-----|------------|
| 134  |  | GENERAL | 273-275 | - | Inch   | HSS |            |
| 134P |  | GENERAL | 275     | - | Inch   | HSS | Taper Pipe |
| 135  |  | GENERAL | 276     | - | Metric | HSS |            |



# Taps: Application Guide

| List No. | Aluminum     |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium          | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|--------------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|-------------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061<br>7075 | Casting |           | 1010<br>1018     | 1035<br>1045      | 1065              | 4140<br>4340 | 20 Hrc     | 6AL4V<br>(30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |

## Straight Fluted Taps

|      |   |   |   |   |   |   |  |  |  |  |  |  |  |  |  |  |
|------|---|---|---|---|---|---|--|--|--|--|--|--|--|--|--|--|
| S110 | ○ | ○ | ○ | ○ | ○ | ○ |  |  |  |  |  |  |  |  |  |  |
| 114  |   |   |   |   |   |   |  |  |  |  |  |  |  |  |  |  |
| 180  | ○ | ○ | ○ | ○ | ○ | ○ |  |  |  |  |  |  |  |  |  |  |
| 101L | ○ | ○ | ○ | ○ | ○ | ○ |  |  |  |  |  |  |  |  |  |  |

## STI Taps

|      |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |  |
|------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|--|
| 315  |   |   |   |   |   |   | ○ | ○ | ○ | ○ |   | ⊙ | ⊙ | ⊙ | ⊙ |  |
| 302  |   |   |   | ○ | ○ |   |   |   |   |   | ⊙ | ○ | ⊙ | ○ |   |  |
| S108 | ○ | ○ | ○ | ○ | ○ | ○ |   |   |   |   |   |   |   | ○ |   |  |
| 314  |   |   |   |   |   |   | ○ | ○ | ○ | ○ |   | ⊙ | ⊙ | ⊙ | ⊙ |  |
| 301  |   |   |   | ○ | ○ |   |   |   |   |   | ⊙ | ○ | ⊙ | ○ |   |  |
| 125  | ○ | ○ | ○ | ○ | ○ | ○ |   |   |   |   |   |   |   | ○ |   |  |
| 126  | ○ | ○ | ○ | ○ | ○ | ○ |   |   |   |   |   |   |   | ○ |   |  |

## Pipe Taps

|      |   |   |   |   |   |   |   |  |  |  |   |   |   |   |   |  |
|------|---|---|---|---|---|---|---|--|--|--|---|---|---|---|---|--|
| 308  |   |   |   | ○ | ○ |   |   |  |  |  | ⊙ | ○ | ⊙ | ○ |   |  |
| 318  |   |   |   | ○ | ○ |   |   |  |  |  | ⊙ | ○ | ⊙ | ○ |   |  |
| 328  |   |   |   | ○ | ○ | ○ | ⊙ |  |  |  | ○ | ○ |   | ⊙ | ○ |  |
| 108  | ○ | ○ | ○ | ○ | ○ | ○ |   |  |  |  |   |   |   | ○ |   |  |
| 118  | ○ | ○ | ○ | ○ | ○ | ○ |   |  |  |  |   |   |   | ○ |   |  |
| 108G | ○ | ○ | ○ | ○ | ○ | ○ |   |  |  |  |   |   |   | ○ |   |  |
| S125 | ○ | ○ | ○ | ○ | ○ | ○ |   |  |  |  |   |   |   | ○ |   |  |
| 109  | ○ | ○ | ○ | ○ | ○ | ○ |   |  |  |  |   |   |   | ○ |   |  |



# EXOCARB®-Thread Mill

Cast Iron, Steels, Exotics and Difficult to Machine Materials

## List 41000

UNC, UNF, UNEF, UNS, Helical Flute

SPEED  
FEED  
P308-309

CARBIDE

EXO®

30°



| Size | Threads Per Inch |     |      |     | Cutter Diameter | Overall Length | Length of Cut | Neck Length | Shank Diameter | No. of Flutes | Type | EDP Number | List Price (Each) |
|------|------------------|-----|------|-----|-----------------|----------------|---------------|-------------|----------------|---------------|------|------------|-------------------|
|      | UNC              | UNF | UNEF | UNS | D               | L              | Lc            | L1          | d              |               |      |            |                   |
| 10   | 24               | —   | —    | —   | 0.130           | 2.5            | 0.396         | 0.44        | 3/16           | 3             | 1    | 4100000411 | 264.57            |
| 10   | —                | 32  | —    | —   | 0.130           | 2.5            | 0.391         | 0.44        | 3/16           | 3             | 1    | 4100000511 | 264.57            |
| 12   | 24               | —   | —    | —   | 0.160           | 3              | 0.354         | 0.37        | 1/4            | 3             | 1    | 4100000611 | 264.57            |
| 12   | —                | 28  | —    | —   | 0.160           | 3              | 0.339         | 0.36        | 1/4            | 3             | 1    | 4100000711 | 264.57            |
| 1/4  | 20               | —   | —    | —   | 0.180           | 3              | 0.425         | 0.45        | 1/4            | 3             | 1    | 4100000811 | 264.57            |
| 1/4  | —                | 28  | —    | —   | 0.180           | 3              | 0.411         | 0.43        | 1/4            | 3             | 1    | 4100000911 | 264.57            |
| 1/4  | —                | —   | 32   | —   | 0.190           | 3              | 0.390         | 0.41        | 1/4            | 3             | 1    | 4100002811 | 264.57            |
| 5/16 | 18               | —   | —    | —   | 0.245           | 3              | 0.528         | —           | 1/4            | 3             | 2    | 4100001011 | 264.57            |
| 5/16 | —                | 24  | —    | —   | 0.245           | 3              | 0.521         | —           | 1/4            | 3             | 2    | 4100001111 | 264.57            |
| 5/16 | —                | —   | 32   | —   | 0.250           | 3              | 0.484         | —           | 1/4            | 3             | 2    | 4100002911 | 264.57            |
| 3/8  | 16               | —   | —    | —   | 0.300           | 3              | 0.594         | —           | 5/16           | 3             | 2    | 4100001211 | 283.47            |
| 3/8  | —                | 24  | —    | —   | 0.300           | 3              | 0.604         | —           | 5/16           | 3             | 2    | 4100001311 | 283.47            |
| 3/8  | —                | —   | 32   | —   | 0.310           | 3              | 0.578         | —           | 5/16           | 3             | 2    | 4100003011 | 283.47            |
| 7/16 | 14               | —   | —    | —   | 0.350           | 3              | 0.750         | 0.78        | 3/8            | 3             | 1    | 4100001411 | 311.82            |
| 7/16 | —                | 20  | —    | —   | 0.350           | 3              | 0.725         | 0.75        | 3/8            | 3             | 1    | 4100001511 | 311.82            |
| 1/2  | 13               | —   | —    | —   | 0.370           | 3              | 0.808         | —           | 3/8            | 4             | 2    | 4100001611 | 377.96            |
| 1/2  | —                | 20  | —    | —   | 0.370           | 3              | 0.775         | —           | 3/8            | 4             | 2    | 4100001711 | 377.96            |
| 1/2  | —                | —   | —    | 32  | 0.375           | 3              | 0.766         | —           | 3/8            | 4             | 2    | 4100003111 | 377.96            |
| 9/16 | 12               | —   | —    | —   | 0.430           | 4              | 0.958         | 1.00        | 1/2            | 4             | 1    | 4100001811 | 415.76            |
| 9/16 | —                | 18  | —    | —   | 0.450           | 4              | 0.917         | 0.99        | 1/2            | 4             | 1    | 4100001911 | 415.76            |
| 5/8  | 11               | —   | —    | —   | 0.430           | 4              | 1.045         | 1.09        | 1/2            | 4             | 1    | 4100002011 | 415.76            |
| 5/8  | —                | 18  | —    | —   | 0.495           | 4              | 0.972         | —           | 1/2            | 4             | 2    | 4100002111 | 415.76            |
| 3/4  | 10               | —   | —    | —   | 0.620           | 4              | 1.250         | —           | 5/8            | 4             | 2    | 4100002211 | 453.55            |
| 3/4  | —                | 16  | —    | —   | 0.620           | 4              | 1.156         | —           | 5/8            | 4             | 2    | 4100002311 | 453.55            |
| 7/8  | 9                | —   | —    | —   | 0.745           | 4              | 1.389         | —           | 3/4            | 4             | 2    | 4100002411 | 472.45            |
| 7/8  | —                | 14  | —    | —   | 0.745           | 4              | 1.393         | —           | 3/4            | 4             | 2    | 4100002511 | 472.45            |
| 1    | 8                | —   | —    | —   | 0.745           | 4              | 1.688         | —           | 3/4            | 4             | 2    | 4100002611 | 529.14            |
| 1    | —                | 12  | —    | —   | 0.745           | 4              | 1.625         | —           | 3/4            | 4             | 2    | 4100002711 | 529.14            |

Packed: 1 pc. Available EXO® coating only.

For more information on thread mill applications, visit [www.osgthreadmill.com](http://www.osgthreadmill.com).

Please contact customer service if you would like to request the thread mill program on CD-ROM.

### Work Material

| List No. | Aluminum  |         | Cast Iron | CoCr | Carbon Steel | Alloy Steel and Die | Ductile Cast Iron | MMC | Copper Alloys | Fiberglass | High Heat Material |                    | Stainless Steels |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------|--------------|---------------------|-------------------|-----|---------------|------------|--------------------|--------------------|------------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           |      |              |                     |                   |     |               |            | Ti-Alloy           | Inconel & Waspaloy | 300              | 400 | 17-4PH | ~55 Hrc         | 55-60 Hrc | 60-65 Hrc |
| 41000    | ○         | ◎       | ◎         | ◎    | ◎            | ◎                   | ◎                 | ◎   | ◎             | ◎          | ◎                  | ◎                  | ◎                | ◎   | ◎      | ○               |           |           |

○ good ◎ best



# EXOCARB®-Thread Mill

Cast Iron, Steels, Exotics and Difficult to Machine Materials

**List 41100** **NEW!**

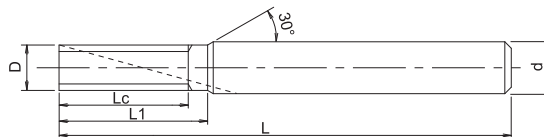


Helical Flute

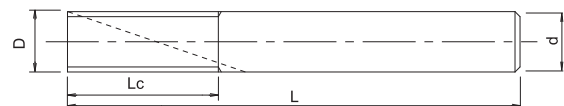


| Size | Pitch | Cutter Diameter | Overall Length | Length of Cut | Neck Length | Shank Diameter | No. of Flutes | Type | EDP Number | List Price (Each) |
|------|-------|-----------------|----------------|---------------|-------------|----------------|---------------|------|------------|-------------------|
|      |       | D               | L              | Lc            | L1          | d              |               |      |            |                   |
| M6   | 1.0   | 4.5             | 60             | 10            | 15          | 6              | 3             | 1    | 4110000111 | 264.57            |
| M8   | 1.0   | 6.0             | 65             | 13            | —           | 6              | 3             | 2    | 4110000211 | 264.57            |
| M8   | 1.25  | 6.0             | 65             | 13.8          | —           | 6              | 3             | 2    | 4110000311 | 264.57            |
| M10  | 1.0   | 7.5             | 70             | 16            | 26          | 8              | 3             | 1    | 4110000411 | 283.47            |
| M10  | 1.25  | 7.5             | 70             | 16.25         | 26          | 8              | 3             | 1    | 4110000511 | 283.47            |
| M10  | 1.5   | 7.5             | 70             | 16.5          | 26          | 8              | 3             | 1    | 4110000611 | 283.47            |
| M12  | 1.25  | 9.5             | 85             | 20            | 28          | 10             | 4             | 1    | 4110000711 | 377.96            |
| M12  | 1.75  | 9.5             | 85             | 21            | 28          | 10             | 4             | 1    | 4110000811 | 377.96            |
| M14  | 1.5   | 10.0            | 85             | 22.5          | —           | 10             | 4             | 2    | 4110000911 | 415.76            |
| M14  | 2.0   | 10.0            | 85             | 24            | —           | 10             | 4             | 2    | 4110001011 | 415.76            |
| M16  | 1.5   | 12.0            | 95             | 25.5          | —           | 12             | 4             | 2    | 4110001111 | 415.76            |
| M20  | 1.5   | 16.0            | 105            | 31.5          | —           | 16             | 4             | 2    | 4110001211 | 472.45            |

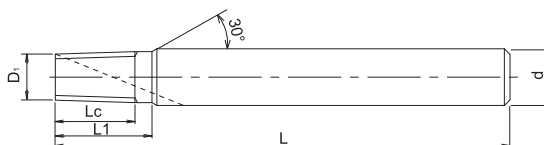
Packed: 1 pc. Available EXO® coating only.



Type 1



Type 2



Type 3



Type 4

For more information on thread mill applications, visit [www.osgthreadmill.com](http://www.osgthreadmill.com).

Please contact customer service if you would like to request the thread mill program on CD-ROM.

## Work Material

| List No. | Aluminum  |         | Cast Iron | CoCr | Carbon Steel | Alloy Steel and Die | Ductile Cast Iron | MMC | Copper Alloys | Fiberglass | High Heat Material |                    | Stainless Steels |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------|--------------|---------------------|-------------------|-----|---------------|------------|--------------------|--------------------|------------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           |      |              |                     |                   |     |               |            | Ti-Alloy           | Inconel & Waspaloy | 300              | 400 | 17-4PH | ~55 Hrc         | 55-60 Hrc | 60-65 Hrc |
| 41100    | ○         | ⊗       | ⊗         | ⊗    | ⊗            | ⊗                   | ⊗                 | ⊗   | ⊗             | ⊗          | ⊗                  | ⊗                  | ⊗                | ⊗   | ⊗      | ○               |           |           |

○ good ⊗ best



# EXOCARB®-Thread Mill

Cast Iron, Steels, Exotics and Difficult to Machine Materials

## List 42000

NPT, Helical Flute



| Thread Form | TPI    | Tip Diameter | Overall Length | Length of Cut | Neck Length | Shank Diameter | No. of Flutes | Type | EDP Number | List Price (Each) |
|-------------|--------|--------------|----------------|---------------|-------------|----------------|---------------|------|------------|-------------------|
|             |        | D1           | L              | Lc            | L1          | d              |               |      |            |                   |
| 1/16        | 27     | 0.184        | 3              | 0.426         | 0.44        | 1/4            | 3             | 3    | 4200000111 | 340.16            |
| 1/8         | 27     | 0.284        | 3              | 0.426         | —           | 5/16           | 3             | 4    | 4200000211 | 340.16            |
| 1/4 or 3/8  | 18     | 0.331        | 3              | 0.639         | —           | 3/8            | 4             | 4    | 4200000311 | 415.76            |
| 1/2 or 3/4  | 14     | 0.570        | 4              | 0.821         | —           | 5/8            | 4             | 4    | 4200000411 | 566.94            |
| 1 thru 2    | 11-1/2 | 0.780        | 4              | 1.000         | 1.04        | 1              | 4             | 3    | 4200000511 | 623.63            |
| 2-1/2       | 8      | 0.910        | 4              | 1.438         | —           | 1              | 4             | 4    | 4200000611 | 661.43            |

Packed: 1 pc. Available EXO® coating only.

EXOCARB® Thread Mill

For more information on thread mill applications, visit [www.osgthreadmill.com](http://www.osgthreadmill.com).

Please contact customer service if you would like to request the thread mill program on CD-ROM.

| Work Material |           |         |           |      |              |                     |                   |     |               |            |                    |                    |                  |     |        |                 |           |           |
|---------------|-----------|---------|-----------|------|--------------|---------------------|-------------------|-----|---------------|------------|--------------------|--------------------|------------------|-----|--------|-----------------|-----------|-----------|
| List No.      | Aluminum  |         | Cast Iron | CoCr | Carbon Steel | Alloy Steel and Die | Ductile Cast Iron | MMC | Copper Alloys | Fiberglass | High Heat Material |                    | Stainless Steels |     |        | Hardened Steels |           |           |
|               | 6061 7075 | Casting |           |      |              |                     |                   |     |               |            | Ti-Alloy           | Inconel & Waspaloy | 300              | 400 | 17-4PH | ~55 Hrc         | 55-60 Hrc | 60-65 Hrc |
| 42000         | ○         | ⊗       | ⊗         | ⊗    | ⊗            | ⊗                   | ⊗                 | ⊗   | ⊗             | ⊗          | ⊗                  | ⊗                  | ⊗                | ⊗   | ⊗      | ○               |           |           |

○ good ○ best



# EXOCARB®-Thread Mill

Cast Iron, Steels, Exotics and Difficult to Machine Materials

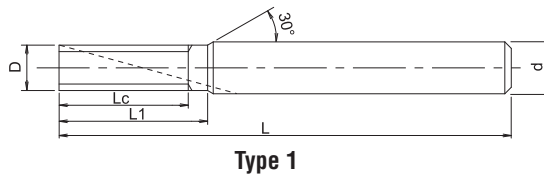
## List 42001

NPTF, Helical Flute

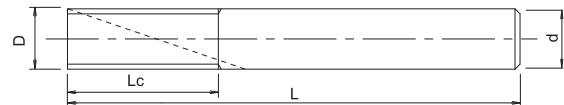


| Thread Form | TPI    | Tip Diameter | Overall Length | Length of Cut | Neck Length | Shank Diameter | No. of Flutes | Type | EDP Number | List Price (Each) |
|-------------|--------|--------------|----------------|---------------|-------------|----------------|---------------|------|------------|-------------------|
|             |        | D1           | L              | Lc            | L1          | d              |               |      |            |                   |
| 1/16        | 27     | 0.184        | 3              | 0.426         | 0.44        | 1/4            | 3             | 3    | 4200100111 | 340.16            |
| 1/8         | 27     | 0.284        | 3              | 0.426         | —           | 5/16           | 3             | 4    | 4200100211 | 340.16            |
| 1/4 or 3/8  | 18     | 0.331        | 3              | 0.639         | —           | 3/8            | 4             | 4    | 4200100311 | 415.76            |
| 1/2         | 14     | 0.570        | 4              | 0.821         | —           | 5/8            | 4             | 4    | 4200100411 | 566.94            |
| 3/4         | 14     | 0.570        | 4              | 0.821         | —           | 5/8            | 4             | 4    | 4200100711 | 566.94            |
| 1 or 1-1/4  | 11-1/2 | 0.780        | 4              | 1.000         | 1.04        | 1              | 4             | 3    | 4200100511 | 623.63            |
| 1-1/2 or 2  | 11-1/2 | 0.780        | 4              | 1.000         | 1.04        | 1              | 4             | 3    | 4200100811 | 623.63            |
| 2-1/2       | 8      | 0.910        | 4              | 1.438         | —           | 1              | 4             | 4    | 4200100611 | 661.43            |

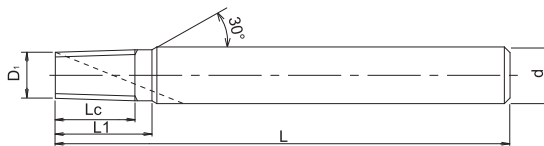
Packed: 1 pc. Available EXO<sup>®</sup> coating only.



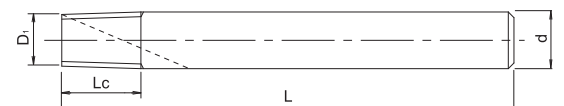
Type 1



Type 2



Type 3



Type 4

For more information on thread mill applications, visit [www.osgthreadmill.com](http://www.osgthreadmill.com).

Please contact customer service if you would like to request the thread mill program on CD-ROM.

### Work Material

| List No. | Aluminum  |         | Cast Iron | CoCr | Carbon Steel | Alloy Steel and Die | Ductile Cast Iron | MMC | Copper Alloys | Fiberglass | High Heat Material |                    | Stainless Steels |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------|--------------|---------------------|-------------------|-----|---------------|------------|--------------------|--------------------|------------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           |      |              |                     |                   |     |               |            | Ti-Alloy           | Inconel & Waspaloy | 300              | 400 | 17-4PH | ~55 Hrc         | 55-60 Hrc | 60-65 Hrc |
| 42001    | ○         | ◎       | ◎         | ◎    | ◎            | ◎                   | ◎                 | ◎   | ◎             | ◎          | ◎                  | ◎                  | ◎                | ◎   | ◎      | ○               |           |           |

○ good ◎ best





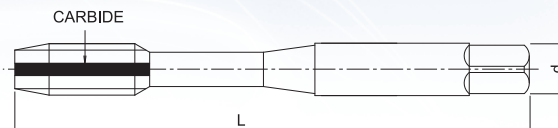
# EXOCARB® Taps

Tungsten Carbide Taps

## List 14153

Forming Tap, Carbide Inlaid, DIN/DIN, Bottom(1.5P-2P)

|                       |         |    |
|-----------------------|---------|----|
| SPEED<br>FEED<br>P281 | CARBIDE | BR |
|-----------------------|---------|----|



| Tap Size | Pitch | Thread Limit | Overall Length | Shank Dia. | EDP Number | List Price (Each) |
|----------|-------|--------------|----------------|------------|------------|-------------------|
|          |       |              | L              | d          |            |                   |
| M6       | 1.0   | RH7          | 80             | 6          | 1415310100 | 268.33            |
| M8       | 1.25  | RH7          | 90             | 8          | 1415310200 | 348.88            |

| Tap Size | Pitch | Thread Limit | Overall Length | Shank Dia. | EDP Number | List Price (Each) |
|----------|-------|--------------|----------------|------------|------------|-------------------|
|          |       |              | L              | d          |            |                   |
| M10      | 1.25  | RH7          | 100            | 10         | 1415310300 | 479.01            |
| M10      | 1.5   | RH7          | 100            | 10         | 1415310400 | 479.01            |

Packed: 1 pc. Available Bright finish only.

## List 369

Forming Taps, JIS, Plug(4P-4.5P), Bottom(1.5P-2P)

|                       |         |    |
|-----------------------|---------|----|
| SPEED<br>FEED<br>P281 | CARBIDE | BR |
|-----------------------|---------|----|



| Tap Size | Pitch | Thread Limit | Overall Length | EDP Number |         | List Price (Each) |
|----------|-------|--------------|----------------|------------|---------|-------------------|
|          |       |              |                | Plug       | Bottom  |                   |
| M3       | 0.5   | RH5          | 46             | 8315054    | 8315055 | 161.88            |
| M4       | 0.7   | RH6          | 52             | 8315060    | 8315061 | 170.89            |
| M5       | 0.8   | RH6          | 60             | 8315066    | 8315067 | 180.18            |
| M6       | 1.0   | RH7          | 62             | 8315072    | 8315073 | 194.95            |
| M8       | 1.25  | RH7          | 70             | 8315084    | 8315085 | 253.56            |

| Tap Size | Pitch | Thread Limit | Overall Length | EDP Number |         | List Price (Each) |
|----------|-------|--------------|----------------|------------|---------|-------------------|
|          |       |              |                | Plug       | Bottom  |                   |
| M10      | 1.5   | RH7          | 75             | 8315096    | 8315097 | 348.13            |
| M10      | 1.25  | RH7          | 75             | 8315102    | 8315103 | 348.13            |
| M12      | 1.75  | RH8          | 82             | 8315114    | 8315115 | 458.37            |
| M12      | 1.5   | RH7          | 82             | 8315120    | 8315121 | 458.37            |
| M12      | 1.25  | RH7          | 82             | 8315126    | 8315127 | 458.37            |

Packed: 1 pc. TiAlN, TiCN coatings available on request.

### Work Material

| List No. | Aluminum  |         | Cast Iron | CoCr | Carbon Steel | Alloy Steel and Die | Ductile Cast Iron | MMC | Copper Alloys | Fiberglass | High Heat Material |                    | Stainless Steels |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------|--------------|---------------------|-------------------|-----|---------------|------------|--------------------|--------------------|------------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           |      |              |                     |                   |     |               |            | Ti-Alloy           | Inconel & Waspaloy | 300              | 400 | 17-4PH | ~55 Hrc         | 55-60 Hrc | 60-65 Hrc |
| 14153    | ⊙         | ⊙       |           |      |              |                     |                   |     | ○             |            |                    |                    |                  |     |        |                 |           |           |
| 369      | ⊙         | ⊙       |           |      |              |                     |                   |     | ○             |            |                    |                    |                  |     |        |                 |           |           |

○ good ⊙ best



## List 357

Forming Taps, Long Shank, JIS, Bottom(1.5P-2P)

|                       |         |    |
|-----------------------|---------|----|
| SPEED<br>FEED<br>P281 | CARBIDE | BR |
|-----------------------|---------|----|



| Tap Size | Pitch | Thread Limit | Overall Length | EDP Number | List Price (Each) |
|----------|-------|--------------|----------------|------------|-------------------|
| M6       | 1.0   | RH7          | 100            | 8315633    | 301.72            |
| M8       | 1.25  | RH7          | 150            | 8315639    | 380.05            |
| M10      | 1.5   | RH7          | 150            | 8315645    | 472.88            |
| M10      | 1.25  | RH7          | 150            | 8315649    | 472.88            |

| Tap Size | Pitch | Thread Limit | Overall Length | EDP Number | List Price (Each) |
|----------|-------|--------------|----------------|------------|-------------------|
| M12      | 1.75  | RH8          | 150            | 8315653    | 571.52            |
| M12      | 1.5   | RH7          | 150            | 8315657    | 571.52            |
| M12      | 1.25  | RH8          | 150            | 8315661    | 571.52            |

Packed: 1 pc. TiAlN, TiCN coatings available on request.

## List 389

Spiral Flute, JIS, Modified Bottom(2.5P-3P), Bottom(1.5P-2P)

|                           |         |    |     |
|---------------------------|---------|----|-----|
| SPEED<br>FEED<br>P278-279 | CARBIDE | BR | 15° |
|---------------------------|---------|----|-----|



| Tap Size | Pitch | Thread Limit | Chamfer Length | No. of Flutes | EDP Number  |         | List Price (Each) |
|----------|-------|--------------|----------------|---------------|-------------|---------|-------------------|
|          |       |              |                |               | Mod. Bottom | Bottom  |                   |
| M3       | 0.5   | OH3          | 2.5P           | 3             | 8315254     | 8315255 | 156.70            |
| M4       | 0.7   | OH3          | 2.5P           | 3             | 8315260     | 8315261 | 165.34            |
| M5       | 0.8   | OH3          | 2.5P           | 3             | 8315266     | 8315267 | 174.00            |
| M6       | 1.0   | OH3          | 2.5P           | 3             | 8315272     | 8315273 | 188.63            |
| M8       | 1.25  | OH4          | 2.5P           | 3             | 8315284     | 8315285 | 242.83            |

| Tap Size | Pitch | Thread Limit | Chamfer Length | No. of Flutes | EDP Number  |         | List Price (Each) |
|----------|-------|--------------|----------------|---------------|-------------|---------|-------------------|
|          |       |              |                |               | Mod. Bottom | Bottom  |                   |
| M10      | 1.5   | OH4          | 2.5P           | 3             | 8315296     | 8315297 | 335.97            |
| M10      | 1.25  | OH4          | 2.5P           | 3             | 8315302     | 8315303 | 335.97            |
| M12      | 1.75  | OH4          | 2.5P           | 3             | 8315314     | 8315315 | 442.42            |
| M12      | 1.5   | OH4          | 2.5P           | 3             | 8315320     | 8315321 | 442.42            |
| M12      | 1.25  | OH4          | 2.5P           | 3             | 8315326     | 8315327 | 442.42            |

Packed: 1 pc. TiCN, TiAlN coatings available on request.

| Work Material |           |         |           |      |              |                     |                   |     |               |            |                    |                    |                  |     |        |                 |           |           |
|---------------|-----------|---------|-----------|------|--------------|---------------------|-------------------|-----|---------------|------------|--------------------|--------------------|------------------|-----|--------|-----------------|-----------|-----------|
| List No.      | Aluminum  |         | Cast Iron | CoCr | Carbon Steel | Alloy Steel and Die | Ductile Cast Iron | MMC | Copper Alloys | Fiberglass | High Heat Material |                    | Stainless Steels |     |        | Hardened Steels |           |           |
|               | 6061 7075 | Casting |           |      |              |                     |                   |     |               |            | Ti-Alloy           | Inconel & Waspaloy | 300              | 400 | 17-4PH | ~55 Hrc         | 55-60 Hrc | 60-65 Hrc |
| 357           | ⊙         | ⊙       |           |      |              |                     |                   |     | ○             |            |                    |                    |                  |     |        |                 |           |           |
| 389           | ⊙         | ⊙       | ⊙         | ○    |              |                     | ⊙                 |     | ○             |            |                    |                    |                  |     |        |                 |           |           |

○ good ⊙ best



# EXOCARB®-Diamond

OSG Patented Diamond Coated Taps For High SiC Aluminum, MMC, and Carbon Fiber

## List 329 NEW SIZES

Straight Flute, UNJC, UNJF, DIN Overall Length, Modified Bottom(2.5P-3P)



| Tap Size | Threads Per Inch |     | Class of Fit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|-----|------------|-------------------|
|          | UNC              | UNF |              |               |     |            |                   |
| 4        | 40               | —   | 3B           | 3             | 56  | 3291216    | 278.11            |
| 4        | 40               | —   | 2B           | 3             | 56  | 3297016    | 278.11            |
| 6        | 32               | —   | 3B           | 3             | 56  | 3291316    | 283.52            |
| 6        | 32               | —   | 2B           | 3             | 56  | 3297116    | 283.53            |
| 8        | 32               | —   | 3B           | 3             | 63  | 3291416    | 403.08            |
| 8        | 32               | —   | 2B           | 3             | 63  | 3297216    | 403.07            |
| 10       | 24               | —   | 3B           | 4             | 70  | 3291516    | 408.46            |
| 10       | 24               | —   | 2B           | 4             | 70  | 3297316    | 408.46            |
| 10       | —                | 32  | 3B           | 4             | 70  | 3291616    | 408.46            |
| 10       | —                | 32  | 2B           | 4             | 70  | 3297416    | 408.45            |
| 1/4      | 20               | —   | 3B           | 4             | 80  | 3291716    | 419.25            |
| 1/4      | 20               | —   | 2B           | 4             | 80  | 3297516    | 419.24            |
| 1/4      | —                | 28  | 3B           | 4             | 80  | 3291816    | 419.25            |
| 1/4      | —                | 28  | 2B           | 4             | 80  | 3297616    | 419.25            |
| 5/16     | 18               | —   | 3B           | 4             | 80  | 3298516    | 518.87            |

| Tap Size | Threads Per Inch |     | Class of Fit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|-----|------------|-------------------|
|          | UNC              | UNF |              |               |     |            |                   |
| 5/16     | 18               | —   | 2B           | 4             | 90  | 3297716    | 518.87            |
| 5/16     | —                | 24  | 3B           | 4             | 90  | 3298616    | 518.87            |
| 5/16     | —                | 24  | 2B           | 4             | 90  | 3297816    | 518.88            |
| 3/8      | 16               | —   | 3B           | 4             | 90  | 3298716    | 672.48            |
| 3/8      | 16               | —   | 2B           | 4             | 100 | 3297916    | 672.46            |
| 3/8      | —                | 24  | 3B           | 4             | 100 | 3298816    | 672.46            |
| 3/8      | —                | 24  | 2B           | 4             | 100 | 3298016    | 672.48            |
| 7/16     | 14               | —   | 3B           | 5             | 100 | 3298916    | 776.25            |
| 7/16     | 14               | —   | 2B           | 5             | 100 | 3298116    | 776.25            |
| 7/16     | —                | 20  | 3B           | 5             | 100 | 3299016    | 776.25            |
| 7/16     | —                | 20  | 2B           | 5             | 100 | 3298216    | 776.25            |
| 1/2      | 13               | —   | 3B           | 5             | 110 | 3299116    | 809.46            |
| 1/2      | 13               | —   | 2B           | 5             | 110 | 3298316    | 809.46            |
| 1/2      | —                | 20  | 3B           | 5             | 110 | 3299216    | 809.46            |
| 1/2      | —                | 20  | 2B           | 5             | 110 | 3298416    | 809.46            |

Packed: 1 pc. Available Diamond finish only.

\*3B fit taps conform to UNJ Aerospace internal threading applications.

## List 359

Straight Flute, JIS, Modified Bottom(2.5P-3P)



| Tap Size | Pitch | Class of Fit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|------------|-------------------|
| M3       | 0.5   | 6H           | 3             | 3590116    | 254.80            |
| M4       | 0.7   | 6H           | 4             | 3590216    | 369.27            |
| M5       | 0.8   | 6H           | 4             | 3590316    | 374.18            |
| M6       | 1.0   | 6H           | 4             | 3590416    | 384.07            |

| Tap Size | Pitch | Class of Fit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|------------|-------------------|
| M8       | 1.25  | 6H           | 4             | 3590516    | 475.36            |
| M10      | 1.5   | 6H           | 5             | 3590616    | 616.06            |
| M12      | 1.75  | 6H           | 5             | 3590716    | 741.56            |

Packed: 1 pc. Available Diamond finish only.

### Work Material

| List No. | Aluminum |         | Cast Iron | CoCr | Carbon Steel | Alloy Steel and Die | Ductile Cast Iron | MMC | Copper Alloys | Fiberglass | High Heat Material |                    | Stainless Steels |     |        | Hardened Steels |           |           |
|----------|----------|---------|-----------|------|--------------|---------------------|-------------------|-----|---------------|------------|--------------------|--------------------|------------------|-----|--------|-----------------|-----------|-----------|
|          | Alloys   | Casting |           |      |              |                     |                   |     |               |            | Ti-Alloy           | Inconel & Waspaloy | 300              | 400 | 17-4PH | ~55 Hrc         | 55-60 Hrc | 60-65 Hrc |
| 329      | ⊙        | ⊙       |           |      |              |                     |                   | ⊙   | ○             | ⊙          |                    |                    |                  |     |        |                 |           |           |
| 359      | ⊙        | ⊙       |           |      |              |                     |                   | ⊙   | ○             | ⊙          |                    |                    |                  |     |        |                 |           |           |

○ good ⊙ best



## List 311

Straight Flute, DIN Overall Length, Modified Bottom(2.5P-3P)

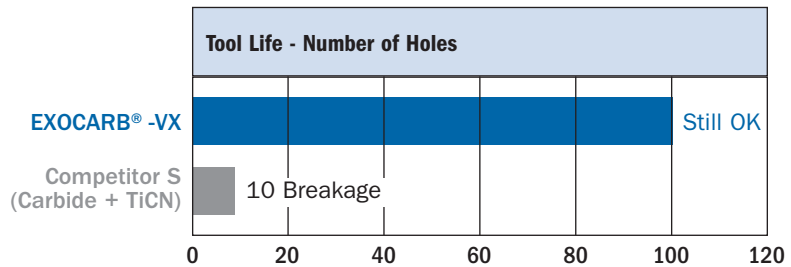


| Tap Size | Threads Per Inch |     | Class of Fit | No. Of Flutes | OAL | Recomm'd SH-DRL | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|-----|-----------------|------------|-------------------|
|          | UNC              | UNF |              |               |     |                 |            |                   |
| 4        | 40               | —   | 2B           | 4             | 56  | 2.3mm           | 3110108    | 191.28            |
| 6        | 32               | —   | 2B           | 4             | 56  | 2.8mm           | 3110208    | 198.07            |
| 8        | 32               | —   | 2B           | 4             | 63  | 3.5mm           | 3110308    | 198.09            |
| 10       | 24               | —   | 2B           | 4             | 70  | 4.0mm           | 3110408    | 207.54            |
| 10       | —                | 32  | 2B           | 4             | 70  | 4.2mm           | 3110508    | 207.54            |
| 1/4      | 20               | —   | 2B           | 5             | 80  | 5.3mm           | 3110608    | 226.40            |
| 1/4      | —                | 28  | 2B           | 5             | 80  | 5.6mm           | 3110708    | 226.40            |
| 5/16     | 18               | —   | 2B           | 5             | 90  | 6.8mm           | 3110808    | 278.81            |
| 5/16     | —                | 24  | 2B           | 5             | 90  | 7.1mm           | 3110908    | 278.81            |
| 3/8      | 16               | —   | 2B           | 5             | 100 | 8.2mm           | 3111008    | 374.69            |
| 3/8      | —                | 24  | 2B           | 5             | 100 | 8.7mm           | 3111108    | 374.69            |
| 7/16     | 14               | —   | 2B           | 5             | 100 | 9.6mm           | 3111208    | 417.14            |
| 7/16     | —                | 20  | 2B           | 5             | 100 | 10.1mm          | 3111308    | 417.14            |
| 1/2      | 13               | —   | 2B           | 5             | 110 | 11.1mm          | 3111408    | 482.63            |
| 1/2      | —                | 20  | 2B           | 5             | 110 | 11.7mm          | 3111508    | 482.63            |

Packed: 1 pc. Available TiCN finish only.

\*Please see page 24-26 to find the recommended EXOCARB® SH-DRL drill.

| EXOCARB®-VX Tap Performance: |                    |
|------------------------------|--------------------|
| Tool:                        | List 311 1/4-20 NC |
| Material:                    | D2 (55HRC)         |
| Speed:                       | 100 RPM            |
| Depth:                       | 1.5D               |
| Coolant:                     | Water soluble oil  |
| Drill used:                  | EXOCARB® SH-DRL    |



### Tapping Guidelines

1. Set tapping speed between 3 ~ 10 SFM.
2. Choose largest hole-size possible, within the recommended tolerance range.
3. Use a non-water soluble cutting fluid.
4. Use highly rigid machine and tool holders.
5. Tapping by hand is NOT recommended.
6. For tapping length over 1.5D, step feed is recommended.

| Work Material |          |         |           |      |              |                     |                   |     |               |            |                    |                    |                  |     |        |                 |           |           |
|---------------|----------|---------|-----------|------|--------------|---------------------|-------------------|-----|---------------|------------|--------------------|--------------------|------------------|-----|--------|-----------------|-----------|-----------|
| List No.      | Aluminum |         | Cast Iron | CoCr | Carbon Steel | Alloy Steel and Die | Ductile Cast Iron | MMC | Copper Alloys | Fiberglass | High Heat Material |                    | Stainless Steels |     |        | Hardened Steels |           |           |
|               | Alloys   | Casting |           |      |              |                     |                   |     |               |            | Ti-Alloy           | Inconel & Waspaloy | 300              | 400 | 17-4PH | ~55 Hrc         | 55-60 Hrc | 60-65 Hrc |
| 311           |          |         |           | ○    |              |                     |                   |     |               |            |                    |                    |                  |     |        | ⊗               | ⊗         | ⊗         |

○ good ⊗ best



# EXOCARB®-VX Taps

For Hardened Materials up to **65HRC**

## List 341

Straight Flute, JIS, Modified Bottom(2.5P-3P)



| Tap Size | Pitch | Thread Limit | No. Of Flutes | Recomm'd SH-DRL | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|-----------------|------------|-------------------|
| M2.6     | 0.45  | OH3          | 4             | 2.2mm           | 8330049    | 162.18            |
| M3       | 0.5   | OH3          | 4             | 2.6mm           | 8330055    | 162.18            |
| M4       | 0.7   | OH3          | 4             | 3.4mm           | 8330061    | 169.20            |
| M5       | 0.8   | OH3          | 4             | 4.3mm           | 8330067    | 176.23            |
| M6       | 1.0   | OH3          | 5             | 5.2mm           | 8330073    | 192.08            |
| M8       | 1.25  | OH3          | 5             | 7.0mm           | 8330085    | 237.20            |
| M8       | 1.0   | OH3          | 5             | 7.2mm           | 8330087    | 237.20            |
| M10      | 1.5   | OH3          | 5             | 8.8mm           | 8330097    | 317.08            |
| M10      | 1.25  | OH3          | 5             | 9.0mm           | 8330099    | 317.08            |
| M10      | 1.0   | OH3          | 5             | 9.2mm           | 8330101    | 317.08            |
| M12      | 1.75  | OH3          | 5             | 10.6mm          | 8330115    | 411.59            |

| Tap Size | Pitch | Thread Limit | No. Of Flutes | Recomm'd SH-DRL | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|-----------------|------------|-------------------|
| M12      | 1.5   | OH3          | 5             | 10.8mm          | 8330117    | 411.59            |
| M12      | 1.25  | OH4          | 5             | 11.0mm          | 8330119    | 411.59            |
| M12      | 1.0   | OH3          | 5             | 11.2mm          | 8330121    | 409.40            |
| M14      | 2.0   | OH4          | 6             | 12.4mm          | 8330123    | 854.07            |
| M14      | 1.5   | OH3          | 6             | 12.8mm          | 8330125    | 854.07            |
| M16      | 2.0   | OH4          | 6             | 14.4mm          | 8330131    | 1,037.53          |
| M16      | 1.5   | OH3          | 6             | 14.8mm          | 8330133    | 1,037.53          |
| M18      | 2.5   | OH4          | 6             | 16.0mm          | 8330139    | 1,242.69          |
| M18      | 1.5   | OH4          | 6             | 16.8mm          | 8330141    | 1,242.69          |
| M20      | 2.5   | OH4          | 6             | 18.0mm          | 8330147    | 1,454.31          |
| M20      | 1.5   | OH4          | 6             | 18.8mm          | 8330149    | 1,512.48          |

Packed: 1 pc. Available TiCN finish only.

\*Please see page 24-26 to find the recommended EXOCARB® SH-DRL drill.

### Tapping Guidelines

1. Set tapping speed between 3 ~ 10 SFM.
2. Choose largest hole-size possible, within the recommended tolerance range.
3. Use a non-water soluble cutting fluid.
4. Use highly rigid machine and tool holders.
5. Tapping by hand is NOT recommended.
6. For tapping length over 1.5D, step feed is recommended.

### Work Material

| List No. | Aluminum |         | Cast Iron | CoCr | Carbon Steel | Alloy Steel and Die | Ductile Cast Iron | MMC | Copper Alloys | Fiberglass | High Heat Material |                    | Stainless Steels |     |        | Hardened Steels |           |           |
|----------|----------|---------|-----------|------|--------------|---------------------|-------------------|-----|---------------|------------|--------------------|--------------------|------------------|-----|--------|-----------------|-----------|-----------|
|          | Alloys   | Casting |           |      |              |                     |                   |     |               |            | Ti-Alloy           | Inconel & Waspaloy | 300              | 400 | 17-4PH | ~55 Hrc         | 55-60 Hrc | 60-65 Hrc |
| 341      |          |         |           | ○    |              |                     |                   |     |               |            |                    |                    |                  |     |        | ◎               | ◎         | ◎         |

○ good ◎ best





## List 379

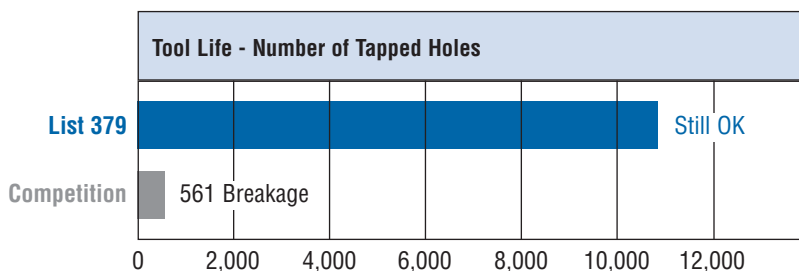
Synchronized, Straight Flute, Coolant Thru, JIS, Bottom(1.5P-2P)



| Tap Size | Pitch | Thread Limit | No. Of Flutes | OAL | Shank Diameter | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|-----|----------------|------------|-------------------|
| M6       | 1.0   | OH3          | 3             | 100 | 6              | 8315722    | 415.27            |
| M8       | 1.25  | OH4          | 4             | 100 | 8              | 8315728    | 477.72            |
| M10      | 1.5   | OH4          | 4             | 100 | 8              | 8315734    | 595.05            |
| M10      | 1.25  | OH4          | 4             | 100 | 8              | 8315736    | 595.05            |
| M12      | 1.75  | OH4          | 4             | 100 | 10             | 8315739    | 729.15            |
| M12      | 1.5   | OH4          | 4             | 100 | 10             | 8315742    | 729.15            |
| M12      | 1.25  | OH4          | 4             | 100 | 10             | 8315745    | 729.15            |

Packed: 1 pc. Available EXO® coating only.

| List 379 Tap Performance: |                    |
|---------------------------|--------------------|
| <b>Tool:</b>              | List 379 M8x1.25   |
| <b>Material:</b>          | Cast Iron          |
| <b>Speed:</b>             | 3000 RPM (246 SFM) |
| <b>Depth:</b>             | 1 inch             |
| <b>Coolant:</b>           | Water soluble oil  |



| Recommended Tapping Conditions for List 379: |             |
|----------------------------------------------|-------------|
| Material                                     | Speed (SFM) |
| Aluminum Alloy Casting                       | 250 - 1,000 |
| Cast Iron                                    | 150 - 330   |
| Brass, Brass Casting                         | 150 - 330   |
| Magnesium Alloy Casting                      | 250 - 1,000 |

| Work Material |          |         |           |      |              |                     |                   |     |               |            |                    |                    |                  |     |        |                 |           |           |
|---------------|----------|---------|-----------|------|--------------|---------------------|-------------------|-----|---------------|------------|--------------------|--------------------|------------------|-----|--------|-----------------|-----------|-----------|
| List No.      | Aluminum |         | Cast Iron | CoCr | Carbon Steel | Alloy Steel and Die | Ductile Cast Iron | MMC | Copper Alloys | Fiberglass | High Heat Material |                    | Stainless Steels |     |        | Hardened Steels |           |           |
|               | Alloys   | Casting |           |      |              |                     |                   |     |               |            | Ti-Alloy           | Inconel & Waspaloy | 300              | 400 | 17-4PH | ~55 Hrc         | 55-60 Hrc | 60-65 Hrc |
| 379           | ⊙        | ⊙       | ⊙         |      |              |                     | ⊙                 |     |               |            |                    |                    |                  |     |        |                 |           |           |

○ good ⊙ best



# EXOCARB® Taps

Tungsten Carbide Taps

## List 319

Straight Flute, DIN Overall Length, Bottom(1.5P-2P)

|                           |         |    |
|---------------------------|---------|----|
| SPEED<br>FEED<br>P278-279 | CARBIDE | BR |
|---------------------------|---------|----|



| Tap Size | Threads Per Inch |     | Class of Fit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|-----|------------|-------------------|
|          | UNC              | UNF |              |               |     |            |                   |
| 4        | 40               | —   | 2B           | 3             | 56  | 3190000    | 135.93            |
| 6        | 32               | —   | 2B           | 3             | 56  | 3190100    | 142.86            |
| 8        | 32               | —   | 2B           | 3             | 63  | 3190200    | 150.91            |
| 10       | 24               | —   | 2B           | 3             | 70  | 3190300    | 150.91            |
| 10       | —                | 32  | 2B           | 3             | 70  | 3190400    | 150.91            |
| 1/4      | 20               | —   | 2B           | 3             | 80  | 3190500    | 162.86            |
| 1/4      | —                | 28  | 2B           | 3             | 80  | 3190600    | 162.86            |
| 5/16     | 18               | —   | 2B           | 4             | 90  | 3190700    | 210.04            |

| Tap Size | Threads Per Inch |     | Class of Fit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|-----|------------|-------------------|
|          | UNC              | UNF |              |               |     |            |                   |
| 5/16     | —                | 24  | 2B           | 4             | 90  | 3190800    | 210.04            |
| 3/8      | 16               | —   | 2B           | 4             | 100 | 3190900    | 291.10            |
| 3/8      | —                | 24  | 2B           | 4             | 100 | 3191000    | 291.10            |
| 7/16     | 14               | —   | 2B           | 4             | 100 | 3191100    | 337.25            |
| 7/16     | —                | 20  | 2B           | 4             | 100 | 3191200    | 337.25            |
| 1/2      | 13               | —   | 2B           | 4             | 110 | 3191300    | 383.39            |
| 1/2      | —                | 20  | 2B           | 4             | 110 | 3191400    | 383.39            |

Packed: 1 pc. TiCN, TiAlN coatings available on request.

## List 10059

Straight Flute, Bottom(1.5P-2P)

|                           |         |    |
|---------------------------|---------|----|
| SPEED<br>FEED<br>P278-279 | CARBIDE | BR |
|---------------------------|---------|----|



| Tap Size | Threads Per Inch |     | Class of Fit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|-------------------|
|          | UNC              | UNF |              |               |            |                   |
| 10       | 24               | —   | 2B           | 4             | 1005910100 | 121.08            |
| 10       | —                | 32  | 2B           | 4             | 1005910200 | 121.08            |
| 12       | 24               | —   | 2B           | 4             | 1005910300 | 124.19            |
| 1/4      | 20               | —   | 2B           | 4             | 1005910400 | 126.40            |
| 1/4      | —                | 28  | 2B           | 4             | 1005910500 | 126.40            |

| Tap Size | Threads Per Inch |     | Class of Fit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|-------------------|
|          | UNC              | UNF |              |               |            |                   |
| 5/16     | 18               | —   | 2B           | 4             | 1005910600 | 164.11            |
| 5/16     | —                | 24  | 2B           | 4             | 1005910700 | 164.11            |
| 3/8      | 16               | —   | 2B           | 4             | 1005910800 | 224.86            |
| 3/8      | —                | 24  | 2B           | 4             | 1005910900 | 224.86            |

Packed: 1 pc. TiCN, TiAlN coatings available on request.

### Work Material

| List No. | Aluminum |         | Cast Iron | CoCr | Carbon Steel | Alloy Steel and Die | Ductile Cast Iron | MMC | Copper Alloys | Fiberglass | High Heat Material |                    | Stainless Steels |     |        | Hardened Steels |           |           |
|----------|----------|---------|-----------|------|--------------|---------------------|-------------------|-----|---------------|------------|--------------------|--------------------|------------------|-----|--------|-----------------|-----------|-----------|
|          | Alloys   | Casting |           |      |              |                     |                   |     |               |            | Ti-Alloy           | Inconel & Waspaloy | 300              | 400 | 17-4PH | ~55 Hrc         | 55-60 Hrc | 60-65 Hrc |
| 319      | ⊙        | ⊙       | ⊙         | ⊙    |              |                     | ⊙                 |     | ○             |            |                    |                    |                  |     |        |                 |           |           |
| 10059    | ⊙        | ⊙       | ⊙         | ⊙    |              |                     | ⊙                 |     | ○             |            |                    |                    |                  |     |        |                 |           |           |

○ good ⊙ best



## List 349

Straight Flute, JIS, Modified Bottom(2.5P-3P), Bottom(1.5P-2P)

|                           |         |    |
|---------------------------|---------|----|
| SPEED<br>FEED<br>P278-279 | CARBIDE | BR |
|---------------------------|---------|----|



| Tap Size | Pitch | Thread Limit | No. of Flutes | OAL | EDP Number |        | List Price (Each) |
|----------|-------|--------------|---------------|-----|------------|--------|-------------------|
|          |       |              |               |     | Mod.Bottom | Bottom |                   |
| M1.4     | 0.3   | OH2          | 3             | 34  | 24000      | 22800  | 171.74            |
| M1.6     | 0.35  | OH3          | 3             | 36  | 24001      | 22801  | 153.48            |
| M1.7     | 0.35  | OH3          | 3             | 36  | 24002      | 22802  | 153.48            |
| M1.8     | 0.35  | OH3          | 3             | 36  | 24003      | 22803  | 153.48            |
| M2       | 0.4   | OH3          | 3             | 40  | 24004      | 22804  | 126.48            |
| M2.3     | 0.4   | OH3          | 3             | 42  | 24006      | 22806  | 134.61            |
| M2.5     | 0.45  | OH3          | 3             | 44  | 24007      | 22807  | 131.71            |
| M2.6     | 0.45  | OH3          | 3             | 44  | 24008      | 22808  | 118.94            |
| M3       | 0.5   | OH3          | 3             | 46  | 24010      | 22810  | 82.31             |
| M4       | 0.7   | OH3          | 3             | 52  | 24014      | 22814  | 86.85             |
| M5       | 0.8   | OH3          | 3             | 60  | 24017      | 22817  | 91.40             |
| M6       | 1.0   | OH3          | 3             | 62  | 24020      | 22820  | 99.02             |
| M8       | 1.25  | OH4          | 4             | 70  | 24030      | 22830  | 127.69            |
| M8       | 1.0   | OH3          | 4             | 70  | 24031      | 22831  | 127.69            |
| M10      | 1.5   | OH4          | 4             | 75  | 24033      | 22833  | 177.00            |
| M10      | 1.25  | OH4          | 4             | 75  | 24034      | 22834  | 177.00            |
| M10      | 1.0   | OH3          | 4             | 75  | 24035      | 22835  | 177.00            |

| Tap Size | Pitch | Thread Limit | No. of Flutes | OAL | EDP Number |        | List Price (Each) |
|----------|-------|--------------|---------------|-----|------------|--------|-------------------|
|          |       |              |               |     | Mod.Bottom | Bottom |                   |
| M12      | 1.75  | OH5          | 4             | 82  | 24037      | 22837  | 233.12            |
| M12      | 1.5   | OH4          | 4             | 82  | 24039      | 22839  | 233.12            |
| M12      | 1.25  | OH4          | 4             | 80  | 24040      | 22840  | 233.12            |
| M12      | 1.0   | OH3          | 4             | 80  | 24041      | 22841  | 233.12            |
| *M14     | 2.0   | OH4          | 4             | 88  | 24045      | 24046  | 330.72            |
| *M14     | 1.5   | OH4          | 4             | 88  | 24047      | 24048  | 330.72            |
| *M16     | 2.0   | OH5          | 4             | 95  | 24051      | 24052  | 400.35            |
| *M16     | 1.5   | OH4          | 4             | 95  | 24053      | 24054  | 400.35            |
| *M18     | 2.5   | OH5          | 4             | 100 | 24055      | 24056  | 481.58            |
| *M18     | 1.5   | OH4          | 4             | 95  | 24059      | 24060  | 481.58            |
| *M20     | 2.5   | OH5          | 4             | 105 | 24061      | 24062  | 559.91            |
| *M20     | 1.5   | OH4          | 4             | 95  | 24065      | 24066  | 559.91            |
| *M22     | 2.5   | OH5          | 4             | 115 | 24067      | 24068  | 641.14            |
| *M22     | 1.5   | OH4          | 4             | 95  | 24071      | 24072  | 641.14            |
| *M24     | 3.0   | OH5          | 4             | 120 | 24073      | 24074  | 719.48            |
| *M24     | 1.5   | OH4          | 4             | 95  | 24077      | 24078  | 719.48            |

Packed: 1 pc. TiCN, TiAlN coatings available on request.

\*Brazed Carbide

## List 356

Straight Flute, Long Shank, JIS, Bottom(1.5P-2P)

|                           |         |    |
|---------------------------|---------|----|
| SPEED<br>FEED<br>P278-279 | CARBIDE | BR |
|---------------------------|---------|----|



| Tap Size | Pitch | Thread Limit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|-----|------------|-------------------|
| M6       | 1.0   | OH3          | 3             | 100 | 22929      | 285.42            |
| M8       | 1.25  | OH4          | 4             | 150 | 22933      | 349.27            |
| M8       | 1.0   | OH4          | 4             | 150 | 22937      | 349.27            |
| M10      | 1.5   | OH4          | 4             | 150 | 22941      | 425.79            |
| M10      | 1.25  | OH4          | 4             | 150 | 22945      | 425.79            |

| Tap Size | Pitch | Thread Limit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|-----|------------|-------------------|
| M10      | 1.0   | OH4          | 4             | 150 | 22949      | 425.79            |
| M12      | 1.75  | OH4          | 4             | 150 | 22953      | 505.62            |
| M12      | 1.5   | OH4          | 4             | 150 | 22957      | 505.62            |
| M12      | 1.25  | OH4          | 4             | 150 | 22961      | 505.62            |

Packed: 1 pc. TiCN, TiAlN coatings available on request.

| Work Material |          |         |           |      |              |                     |                   |     |               |            |                    |                    |                  |     |        |                 |           |           |
|---------------|----------|---------|-----------|------|--------------|---------------------|-------------------|-----|---------------|------------|--------------------|--------------------|------------------|-----|--------|-----------------|-----------|-----------|
| List No.      | Aluminum |         | Cast Iron | CoCr | Carbon Steel | Alloy Steel and Die | Ductile Cast Iron | MMC | Copper Alloys | Fiberglass | High Heat Material |                    | Stainless Steels |     |        | Hardened Steels |           |           |
|               | Alloys   | Casting |           |      |              |                     |                   |     |               |            | Ti-Alloy           | Inconel & Waspaloy | 300              | 400 | 17-4PH | ~55 Hrc         | 55-60 Hrc | 60-65 Hrc |
| 349           | ⊙        | ⊙       | ⊙         | ○    |              |                     | ⊙                 |     | ○             |            |                    |                    |                  |     |        |                 |           |           |
| 356           | ⊙        | ⊙       | ⊙         | ○    |              |                     | ⊙                 |     | ○             |            |                    |                    |                  |     |        |                 |           |           |

○ good ⊙ best



## List 14050

Bottom(2P-2.5P), Short Bottom(1P-1.5P)



| Tap Size | Threads Per Inch |     | Chamfer | EDP Number |            |            |            |            |
|----------|------------------|-----|---------|------------|------------|------------|------------|------------|
|          | UNC              | UNF |         | H2         | H3         | H4         | H5         | H6         |
| 0        | —                | 80  | 1.5P    | 1405000008 | 1405000108 | —          | —          | —          |
| 0        | —                | 80  | 2.5P    | 1405000208 | 1405000308 | —          | —          | —          |
| 1        | 64               | —   | 1.5P    | 1405000408 | 1405000508 | —          | —          | —          |
| 1        | 64               | —   | 2.5P    | 1405000608 | 1405000708 | —          | —          | —          |
| 2        | 56               | —   | 1.5P    | 1405000808 | 1405000908 | 1405001008 | —          | —          |
| 2        | 56               | —   | 2.5P    | 1405001108 | 1405001208 | 1405001308 | —          | —          |
| 3        | 48               | —   | 1.5P    | 1405001408 | 1405001508 | 1405001608 | —          | —          |
| 3        | 48               | —   | 2.5P    | 1405001708 | 1405001808 | 1405001908 | —          | —          |
| 4        | 40               | —   | 1.5P    | —          | 1405002008 | 1405002108 | 1405002208 | —          |
| 4        | 40               | —   | 2.5P    | —          | 1405002308 | 1405002408 | 1405002508 | —          |
| 5        | 40               | —   | 1.5P    | —          | 1405002608 | 1405002708 | 1405002808 | —          |
| 5        | 40               | —   | 2.5P    | —          | 1405002908 | 1405003008 | 1405003108 | —          |
| 6        | 32               | —   | 1.5P    | —          | 1405003208 | 1405003308 | 1405003408 | 1405003508 |
| 6        | 32               | —   | 2.5P    | —          | 1405003608 | 1405003708 | 1405003808 | 1405003908 |
| 8        | 32               | —   | 1.5P    | —          | 1405004008 | 1405004108 | 1405004208 | 1405004308 |
| 8        | 32               | —   | 2.5P    | —          | 1405004408 | 1405004508 | 1405004608 | 1405004708 |
| 10       | 24               | —   | 1.5P    | —          | 1405004808 | 1405004908 | 1405005008 | 1405005108 |
| 10       | 24               | —   | 2.5P    | —          | 1405005208 | 1405005308 | 1405005408 | 1405005508 |
| 10       | —                | 32  | 1.5P    | —          | 1405005608 | 1405005708 | 1405005808 | 1405005908 |
| 10       | —                | 32  | 2.5P    | —          | 1405006008 | 1405006108 | 1405006208 | 1405006308 |
| 12       | 24               | —   | 1.5P    | —          | —          | —          | 1405006408 | —          |
| 12       | 24               | —   | 2.5P    | —          | —          | —          | 1405006608 | —          |
| 1/4      | 20               | —   | 1.5P    | —          | —          | —          | 1405006808 | 1405006908 |
| 1/4      | 20               | —   | 2.5P    | —          | —          | —          | 1405007208 | 1405007308 |
| 1/4      | —                | 28  | 1.5P    | —          | —          | 1405007608 | 1405007708 | 1405007808 |
| 1/4      | —                | 28  | 2.5P    | —          | —          | 1405008008 | 1405008108 | 1405008208 |
| 5/16     | 18               | —   | 1.5P    | —          | —          | —          | 1405008408 | 1405008508 |
| 5/16     | 18               | —   | 2.5P    | —          | —          | —          | 1405008908 | 1405009008 |
| 5/16     | —                | 24  | 1.5P    | —          | —          | 1405009408 | 1405009508 | 1405009608 |
| 5/16     | —                | 24  | 2.5P    | —          | —          | 1405009908 | 1405010008 | 1405010108 |
| 3/8      | 16               | —   | 1.5P    | —          | —          | —          | 1405010408 | 1405010508 |
| 3/8      | 16               | —   | 2.5P    | —          | —          | —          | 1405010908 | 1405011008 |
| 3/8      | —                | 24  | 1.5P    | —          | —          | 1405011408 | 1405011508 | 1405011608 |
| 3/8      | —                | 24  | 2.5P    | —          | —          | 1405011908 | 1405012008 | 1405012108 |

Packed: 10 pcs. Available TiCN finish only.

## List 14050

Bottom(2P-2.5P), Short Bottom(1P-1.5P)



SPEED  
FEED  
P281

VC-10

TiCN

| EDP Number |            |            | Approx.<br>Recomm'd | Tap Drill Sizes<br>Hole Sizes |       | Class of Fit Tolerances |    | List Price<br>(Each) |
|------------|------------|------------|---------------------|-------------------------------|-------|-------------------------|----|----------------------|
| H7         | H8         | H9         |                     | Min.                          | Max.  | 2B                      | 3B |                      |
| —          | —          | —          | #54                 | 0.055                         | 0.056 | H3                      | H2 | 49.81                |
| —          | —          | —          | #54                 | 0.055                         | 0.056 | H3                      | H2 | 49.81                |
| —          | —          | —          | #51                 | 0.066                         | 0.068 | H3                      | H2 | 47.98                |
| —          | —          | —          | #51                 | 0.066                         | 0.068 | H3                      | H2 | 47.98                |
| —          | —          | —          | 5/64                | 0.078                         | 0.080 | H3                      | H2 | 42.98                |
| —          | —          | —          | 5/64                | 0.078                         | 0.080 | H3                      | H2 | 42.98                |
| —          | —          | —          | #43                 | 0.090                         | 0.092 | H3                      | H2 | 42.98                |
| —          | —          | —          | #43                 | 0.090                         | 0.092 | H3                      | H2 | 42.98                |
| —          | —          | —          | #39                 | 0.100                         | 0.103 | H5                      | H3 | 40.80                |
| —          | —          | —          | #39                 | 0.100                         | 0.103 | H5                      | H3 | 40.80                |
| —          | —          | —          | 2.9mm               | 0.113                         | 0.116 | H5                      | H3 | 40.80                |
| —          | —          | —          | 2.9mm               | 0.113                         | 0.116 | H5                      | H3 | 40.80                |
| —          | —          | —          | 1/8                 | 0.124                         | 0.126 | H5                      | H3 | 40.80                |
| —          | —          | —          | 1/8                 | 0.124                         | 0.126 | H5                      | H3 | 40.80                |
| —          | —          | —          | #25                 | 0.149                         | 0.152 | H5                      | H3 | 41.48                |
| —          | —          | —          | #25                 | 0.149                         | 0.152 | H5                      | H3 | 41.48                |
| —          | —          | —          | 11/64               | 0.170                         | 0.174 | H6                      | H4 | 42.57                |
| —          | —          | —          | 11/64               | 0.170                         | 0.174 | H6                      | H4 | 42.57                |
| —          | —          | —          | #16                 | 0.175                         | 0.178 | H6                      | H4 | 42.57                |
| —          | —          | —          | #16                 | 0.175                         | 0.178 | H6                      | H4 | 42.57                |
| 1405006508 | —          | —          | #8                  | 0.196                         | 0.200 | H7                      | H5 | 44.74                |
| 1405006708 | —          | —          | #8                  | 0.196                         | 0.2   | H7                      | H5 | 44.74                |
| 1405007008 | 1405007108 | —          | #1                  | 0.225                         | 0.23  | H6                      | H4 | 44.74                |
| 1405007408 | 1405007508 | —          | #1                  | 0.225                         | 0.23  | H6                      | H4 | 44.74                |
| 1405007908 | —          | —          | A                   | 0.233                         | 0.237 | H6                      | H4 | 44.74                |
| 1405008308 | —          | —          | A                   | 0.233                         | 0.237 | H6                      | H4 | 44.74                |
| 1405008608 | 1405008708 | 1405008808 | 7.3mm               | 0.285                         | 0.291 | H7                      | H5 | 54.41                |
| 1405009108 | 1405009208 | 1405009308 | 7.3mm               | 0.285                         | 0.291 | H7                      | H5 | 54.41                |
| 1405009708 | 1405009808 | —          | 7.45mm              | 0.292                         | 0.297 | H7                      | H5 | 54.41                |
| 1405010208 | 1405010308 | —          | 7.45mm              | 0.292                         | 0.297 | H7                      | H5 | 54.41                |
| 1405010608 | 1405010708 | 1405010808 | S                   | 0.344                         | 0.35  | H7                      | H5 | 59.82                |
| 1405011108 | 1405011208 | 1405011308 | S                   | 0.344                         | 0.35  | H7                      | H5 | 59.82                |
| 1405011708 | 1405011808 | —          | 9.05mm              | 0.355                         | 0.359 | H7                      | H5 | 59.82                |
| 1405012208 | 1405012308 | —          | 9.05mm              | 0.355                         | 0.359 | H7                      | H5 | 59.82                |

Forming Tap

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |                     |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|---------------------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |                     |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc 45-50 Hrc |
| 14050         | ⊙         | ⊙       |           | ⊙                | ⊙                 | ⊙                 | ⊙            | ⊙          |                |                   | ⊙               | ⊙   | ○      | ○               |                     |

○ good ⊙ best





## List 14150

Bottom(2P-2.5P), Short Bottom(1P-1.5P)



| Tap Size | Pitch | Chamfer | EDP Number |            |            |            |            |            |
|----------|-------|---------|------------|------------|------------|------------|------------|------------|
|          |       |         | D3         | D4         | D5         | D6         | D7         | D8         |
| M1.6     | 0.35  | 2.5P    | 1415000008 | —          | 1415000108 | —          | —          | —          |
| M1.7     | 0.35  | 2.5P    | 1415000208 | —          | 1415000308 | —          | —          | —          |
| M2.0     | 0.4   | 2.5P    | 1415000408 | —          | 1415000508 | —          | —          | —          |
| M2.5     | 0.45  | 2.5P    | 1415000608 | —          | 1415000708 | —          | —          | —          |
| M2.6     | 0.45  | 2.5P    | 1415000808 | —          | 1415000908 | —          | —          | —          |
| M3.0     | 0.5   | 1.5P    | 1415001008 | —          | 1415001108 | —          | —          | —          |
| M3.0     | 0.5   | 2.5P    | 1415001208 | —          | 1415001308 | —          | —          | —          |
| M3.5     | 0.6   | 1.5P    | —          | 1415001408 | —          | 1415001508 | —          | —          |
| M3.5     | 0.6   | 2.5P    | —          | 1415001608 | —          | 1415001708 | —          | —          |
| M4.0     | 0.7   | 1.5P    | —          | 1415001808 | —          | 1415001908 | —          | —          |
| M4.0     | 0.7   | 2.5P    | —          | 1415002008 | —          | 1415002108 | —          | —          |
| M5.0     | 0.8   | 1.5P    | —          | 1415002208 | —          | —          | 1415002308 | —          |
| M5.0     | 0.8   | 2.5P    | —          | 1415002408 | —          | —          | 1415002508 | —          |
| M6.0     | 1.0   | 1.5P    | —          | —          | 1415002608 | —          | —          | 1415002708 |
| M6.0     | 1.0   | 2.5P    | —          | —          | 1415002808 | —          | —          | 1415002908 |
| M8.0     | 1.25  | 1.5P    | —          | —          | 1415003008 | —          | —          | —          |
| M8.0     | 1.25  | 2.5P    | —          | —          | 1415003208 | —          | —          | —          |
| M10.0    | 1.0   | 1.5P    | —          | —          | 1415003408 | —          | —          | —          |
| M10.0    | 1.0   | 2.5P    | —          | —          | 1415003608 | —          | —          | —          |
| M10.0    | 1.25  | 1.5P    | —          | —          | 1415004608 | —          | —          | —          |
| M10.0    | 1.25  | 2.5P    | —          | —          | 1415004808 | —          | —          | —          |
| M10.0    | 1.5   | 1.5P    | —          | —          | —          | 1415003808 | —          | —          |
| M10.0    | 1.5   | 2.5P    | —          | —          | —          | 1415004008 | —          | —          |
| M12.0    | 1.75  | 1.5P    | —          | —          | —          | 1415004208 | —          | —          |
| M12.0    | 1.75  | 2.5P    | —          | —          | —          | 1415004408 | —          | —          |

Packed: Up to M10 = 10 pcs; M12 = 5 pcs.  
Available TiCN finish only.

## List 14150

Bottom(2P-2.5P), Short Bottom(1P-1.5P)



SPEED  
FEED  
P281

VC-10

TiCN

| EDP Number |            |            | 6H<br>Recomm'd | Tap Drill Sizes<br>Hole Sizes |       | 4H<br>Recomm'd | Class of Fit Tolerances |    | List Price<br>(Each) |
|------------|------------|------------|----------------|-------------------------------|-------|----------------|-------------------------|----|----------------------|
| D9         | D10        | D11        |                | Min.                          | Max.  |                | 6H                      | 4H |                      |
| —          | —          | —          | 1.45mm         | 0.056                         | 0.059 | #54            | D5                      | D3 | 51.63                |
| —          | —          | —          | 1.55mm         | 0.060                         | 0.063 | #53            | D5                      | D3 | 47.98                |
| —          | —          | —          | 1.85mm         | 0.071                         | 0.074 | 1.8mm          | D5                      | D3 | 44.40                |
| —          | —          | —          | 2.3mm          | 0.089                         | 0.093 | #43            | D5                      | D3 | 42.98                |
| —          | —          | —          | 2.4mm          | 0.093                         | 0.097 | 2.35mm         | D5                      | D3 | 42.23                |
| —          | —          | —          | #35            | 0.108                         | 0.112 | 2.75mm         | D5                      | D3 | 40.80                |
| —          | —          | —          | #35            | 0.108                         | 0.112 | 2.75mm         | D5                      | D3 | 40.80                |
| —          | —          | —          | #30            | 0.126                         | 0.130 | 3.2mm          | D6                      | D4 | 40.80                |
| —          | —          | —          | #30            | 0.126                         | 0.130 | 3.2mm          | D6                      | D4 | 40.80                |
| —          | —          | —          | 3.7mm          | 0.144                         | 0.148 | #27            | D6                      | D4 | 41.48                |
| —          | —          | —          | 3.7mm          | 0.144                         | 0.148 | #27            | D6                      | D4 | 41.48                |
| —          | —          | —          | #14            | 0.181                         | 0.185 | 4.6mm          | D7                      | D4 | 42.57                |
| —          | —          | —          | #14            | 0.181                         | 0.185 | 4.6mm          | D7                      | D4 | 42.57                |
| —          | —          | —          | 5.5mm          | 0.216                         | 0.220 | 5.5mm          | D8                      | D5 | 44.74                |
| —          | —          | —          | 5.5mm          | 0.216                         | 0.220 | 5.5mm          | D8                      | D5 | 44.74                |
| 1415003108 | —          | —          | 7.4mm          | 0.289                         | 0.296 | 7.3mm          | D9                      | D5 | 59.21                |
| 1415003308 | —          | —          | 7.4mm          | 0.289                         | 0.296 | 7.3mm          | D9                      | D5 | 59.21                |
| 1415003508 | —          | —          | 9.55mm         | 0.374                         | 0.379 | 9.5mm          | D9                      | D5 | 72.22                |
| 1415003708 | —          | —          | 9.55mm         | 0.374                         | 0.379 | 9.5mm          | D9                      | D5 | 72.22                |
| 1415004708 | —          | —          | 9.4mm          | 0.367                         | 0.372 | 9.35mm         | D9                      | D5 | 72.22                |
| 1415004908 | —          | —          | 9.4mm          | 0.367                         | 0.372 | 9.35mm         | D9                      | D5 | 72.22                |
| —          | 1415003908 | —          | 9.3mm          | 0.362                         | 0.371 | 9.2mm          | D10                     | D6 | 72.22                |
| —          | 1415004108 | —          | 9.3mm          | 0.362                         | 0.371 | 9.2mm          | D10                     | D6 | 72.22                |
| —          | —          | 1415004308 | 7/16           | 0.436                         | 0.446 | 11mm           | D11                     | D6 | 109.70               |
| —          | —          | 1415004508 | 7/16           | 0.436                         | 0.446 | 11mm           | D11                     | D6 | 109.70               |

Forming Tap

| Work Material |              |         |           |                  |                   |                   |              |            |                   |                   |                 |     |        |                 |           |
|---------------|--------------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|-------------------|-------------------|-----------------|-----|--------|-----------------|-----------|
| List No.      | Aluminum     |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium          | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |
|               | 6061<br>7075 | Casting |           | 1010<br>1018     | 1035<br>1045      | 1065              | 4140<br>4340 | 20 Hrc     | 6AL4V<br>(30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc |
| 14150         | ⊙            | ⊙       |           | ⊙                | ⊙                 | ⊙                 | ⊙            | ⊙          |                   |                   | ⊙               | ⊙   | ○      | ○               |           |

○ good ⊙ best



## List 1400I

Plug(3.5P-4.5P), Bottom(2P-2.5P), Short Bottom(1P-2.5P)



| Tap Size | Threads Per Inch |     | Chamfer | EDP Number |          |          |          |          |          |          |          |
|----------|------------------|-----|---------|------------|----------|----------|----------|----------|----------|----------|----------|
|          | UNC              | UNF |         | H2         | H3       | H4       | H5       | H6       | H7       | H8       | H9       |
| 0        | —                | 80  | 1.5P    | 14001000   | 14001001 | —        | —        | —        | —        | —        | —        |
| 0        | —                | 80  | 2.5P    | 14001002   | 14001003 | 14001004 | 14001005 | 14001006 | 14001007 | —        | —        |
| 1        | 64               | —   | 2.5P    | 14001008   | 14001009 | 14001010 | 14001011 | 14001012 | 14001013 | —        | —        |
| 1        | —                | 72  | 1.5P    | 14001014   | 14001015 | —        | —        | —        | —        | —        | —        |
| 1        | —                | 72  | 2.5P    | 14001016   | 14001017 | 14001018 | 14001019 | 14001020 | 14001021 | —        | —        |
| 2        | 56               | —   | 1.5P    | 14001022   | 14001023 | 14001024 | —        | —        | —        | —        | —        |
| 2        | 56               | —   | 2.5P    | 14001025   | 14001026 | 14001027 | 14001028 | 14001029 | 14001030 | —        | —        |
| 2        | —                | 64  | 2.5P    | 14001031   | 14001032 | 14001033 | 14001034 | 14001035 | 14001036 | —        | —        |
| 3        | 48               | —   | 2.5P    | 14001037   | 14001038 | 14001039 | 14001040 | 14001041 | 14001042 | —        | —        |
| 3        | —                | 56  | 2.5P    | 14001043   | 14001044 | 14001045 | 14001046 | 14001047 | 14001048 | —        | —        |
| 4        | 40               | —   | 1.5P    | —          | 14001049 | 14001050 | 14001051 | —        | —        | —        | —        |
| 4        | 40               | —   | 2.5P    | 14001052   | 14001053 | 14001054 | 14001055 | 14001056 | 14001057 | —        | —        |
| 4        | 40               | —   | 4.5P    | 14001058   | 14001059 | 14001060 | 14001061 | 14001062 | 14001063 | —        | —        |
| 4        | —                | 48  | 2.5P    | 14001064   | 14001065 | 14001066 | 14001067 | 14001068 | 14001069 | —        | —        |
| 4        | —                | 48  | 4.5P    | 14001070   | 14001071 | 14001072 | 14001073 | 14001074 | 14001075 | —        | —        |
| 5        | 40               | —   | 2.5P    | 14001076   | 14001077 | 14001078 | 14001079 | 14001080 | 14001081 | —        | —        |
| 5        | 40               | —   | 4.5P    | 14001082   | 14001083 | 14001084 | 14001085 | 14001086 | 14001087 | —        | —        |
| 5        | —                | 44  | 2.5P    | 14001088   | 14001089 | 14001090 | 14001091 | 14001092 | 14001093 | —        | —        |
| 5        | —                | 44  | 4.5P    | 14001094   | 14001095 | 14001096 | 14001097 | 14001098 | 14001099 | —        | —        |
| 6        | 32               | —   | 1.5P    | —          | 14001100 | 14001101 | 14001102 | —        | —        | —        | —        |
| 6        | 32               | —   | 2.5P    | 14001103   | 14001104 | 14001105 | 14001106 | 14001107 | 14001108 | 14001109 | 14001110 |
| 6        | 32               | —   | 4.5P    | 14001112   | 14001113 | 14001114 | 14001115 | 14001116 | 14001117 | 14001118 | 14001119 |
| 6        | —                | 40  | 2.5P    | 14001121   | 14001122 | 14001123 | 14001124 | 14001125 | 14001126 | 14001127 | 14001128 |
| 6        | —                | 40  | 4.5P    | 14001130   | 14001131 | 14001132 | 14001133 | 14001134 | 14001135 | 14001136 | 14001137 |
| 8        | 32               | —   | 1.5P    | —          | 14001139 | 14001140 | 14001141 | —        | —        | —        | —        |
| 8        | 32               | —   | 2.5P    | 14001142   | 14001143 | 14001144 | 14001145 | 14001146 | 14001147 | 14001148 | 14001149 |
| 8        | 32               | —   | 4.5P    | 14001151   | 14001152 | 14001153 | 14001154 | 14001155 | 14001156 | 14001157 | 14001158 |
| 8        | —                | 36  | 2.5P    | 14001160   | 14001161 | 14001162 | 14001163 | 14001164 | 14001165 | 14001166 | 14001167 |
| 8        | —                | 36  | 4.5P    | 14001169   | 14001170 | 14001171 | 14001172 | 14001173 | 14001174 | 14001175 | 14001176 |
| 10       | 24               | —   | 1.5P    | —          | 14001178 | 14001179 | 14001180 | 14001571 | —        | —        | —        |
| 10       | 24               | —   | 2.5P    | 14001181   | 14001182 | 14001183 | 14001184 | 14001185 | 14001186 | 14001187 | 14001188 |
| 10       | 24               | —   | 4.5P    | 14001190   | 14001191 | 14001192 | 14001193 | 14001194 | 14001195 | 14001196 | 14001197 |
| 10       | —                | 32  | 1.5P    | —          | 14001199 | 14001200 | 14001201 | 14001572 | —        | —        | —        |
| 10       | —                | 32  | 2.5P    | 14001202   | 14001203 | 14001204 | 14001205 | 14001206 | 14001207 | 14001208 | 14001209 |
| 10       | —                | 32  | 4.5P    | 14001211   | 14001212 | 14001213 | 14001214 | 14001215 | 14001216 | 14001217 | 14001218 |
| 12       | 24               | —   | 2.5P    | 14001220   | 14001221 | 14001222 | 14001223 | 14001224 | 14001225 | 14001226 | 14001227 |
| 12       | 24               | —   | 4.5P    | 14001229   | 14001230 | 14001231 | 14001232 | 14001233 | 14001234 | 14001235 | 14001236 |
| 12       | —                | 28  | 2.5P    | 14001238   | 14001239 | 14001240 | 14001241 | 14001242 | 14001243 | 14001244 | 14001245 |
| 12       | —                | 28  | 4.5P    | 14001247   | 14001248 | 14001249 | 14001250 | 14001251 | 14001252 | 14001253 | 14001254 |

Packed: Up to 3/8" = 10 pcs; 7/16" to 5/8" = 5 pcs; 3/4 and up = 1 pc.

Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide; 05=TiN; 08 = TiCN 06 = CrN: take 14 days to ship.

## List 14001

Plug(3.5P-4.5P), Bottom(2P-2.5P), Short Bottom(1P-2.5P)



|                       |        |      |     |    |     |     |
|-----------------------|--------|------|-----|----|-----|-----|
| SPEED<br>FEED<br>P281 | HSS-CO | TiCN | TiN | BR | S/O | CrN |
|-----------------------|--------|------|-----|----|-----|-----|

| EDP Number |     |     |     |     | Approx.<br>Recomm'd | Tap Drill Sizes<br>Hole Sizes |       | Class of Fit<br>Tolerances |    | List Price (Each) |          |       |
|------------|-----|-----|-----|-----|---------------------|-------------------------------|-------|----------------------------|----|-------------------|----------|-------|
| H10        | H11 | H12 | H13 | H14 |                     | Min.                          | Max.  | 6H                         | 4H | S/O-Br            | TiN/TiCN | CrN   |
| —          | —   | —   | —   | —   | #54                 | 0.055                         | 0.056 | H3                         | H2 | 15.85             | 17.85    | 20.17 |
| —          | —   | —   | —   | —   | #54                 | 0.055                         | 0.056 | H3                         | H2 | 15.85             | 17.85    | 20.17 |
| —          | —   | —   | —   | —   | #52                 | 0.066                         | 0.068 | H3                         | H2 | 15.85             | 17.85    | 20.17 |
| —          | —   | —   | —   | —   | #51                 | 0.067                         | 0.069 | H3                         | H2 | 15.85             | 17.85    | 20.17 |
| —          | —   | —   | —   | —   | #51                 | 0.067                         | 0.069 | H3                         | H2 | 15.85             | 17.85    | 20.17 |
| —          | —   | —   | —   | —   | 5/64                | 0.078                         | 0.080 | H3                         | H2 | 15.73             | 17.74    | 20.03 |
| —          | —   | —   | —   | —   | 5/64                | 0.078                         | 0.080 | H3                         | H2 | 15.73             | 17.74    | 20.03 |
| —          | —   | —   | —   | —   | #47                 | 0.079                         | 0.081 | H3                         | H2 | 15.73             | 17.74    | 20.03 |
| —          | —   | —   | —   | —   | #43                 | 0.090                         | 0.092 | H3                         | H2 | 15.73             | 17.74    | 20.03 |
| —          | —   | —   | —   | —   | 2.3mm               | 0.091                         | 0.093 | H3                         | H2 | 15.73             | 17.74    | 20.03 |
| —          | —   | —   | —   | —   | #39                 | 0.100                         | 0.103 | H5                         | H3 | 14.29             | 16.29    | 18.46 |
| —          | —   | —   | —   | —   | #39                 | 0.100                         | 0.103 | H5                         | H3 | 14.29             | 16.29    | 18.46 |
| —          | —   | —   | —   | —   | #39                 | 0.100                         | 0.103 | H5                         | H3 | 14.29             | 16.29    | 18.46 |
| —          | —   | —   | —   | —   | 2.6mm               | 0.103                         | 0.105 | H5                         | H3 | 14.29             | 16.29    | 18.46 |
| —          | —   | —   | —   | —   | 2.6mm               | 0.103                         | 0.105 | H5                         | H3 | 14.29             | 16.29    | 18.46 |
| —          | —   | —   | —   | —   | 2.9mm               | 0.113                         | 0.116 | H5                         | H3 | 14.29             | 16.29    | 18.46 |
| —          | —   | —   | —   | —   | 2.9mm               | 0.113                         | 0.116 | H5                         | H3 | 14.29             | 16.29    | 18.46 |
| —          | —   | —   | —   | —   | #32                 | 0.114                         | 0.117 | H5                         | H3 | 14.29             | 16.29    | 18.46 |
| —          | —   | —   | —   | —   | #32                 | 0.114                         | 0.117 | H5                         | H3 | 14.29             | 16.29    | 18.46 |
| —          | —   | —   | —   | —   | 1/8                 | 0.124                         | 0.126 | H5                         | H3 | 11.68             | 13.68    | 15.65 |
| 14001111   | —   | —   | —   | —   | 1/8                 | 0.124                         | 0.126 | H5                         | H3 | 11.68             | 13.68    | 15.65 |
| 14001120   | —   | —   | —   | —   | 1/8                 | 0.124                         | 0.126 | H5                         | H3 | 11.68             | 13.68    | 15.65 |
| 14001129   | —   | —   | —   | —   | 3.23mm              | 0.126                         | 0.128 | H5                         | H3 | 11.68             | 13.68    | 15.65 |
| 14001138   | —   | —   | —   | —   | 3.23mm              | 0.126                         | 0.128 | H5                         | H3 | 11.68             | 13.68    | 15.65 |
| —          | —   | —   | —   | —   | #25                 | 0.149                         | 0.152 | H5                         | H3 | 11.68             | 15.62    | 18.53 |
| 14001150   | —   | —   | —   | —   | #25                 | 0.149                         | 0.152 | H5                         | H3 | 11.68             | 15.62    | 18.53 |
| 14001159   | —   | —   | —   | —   | #25                 | 0.149                         | 0.152 | H5                         | H3 | 11.68             | 15.62    | 18.53 |
| 14001168   | —   | —   | —   | —   | #24                 | 0.151                         | 0.153 | H5                         | H3 | 11.68             | 15.62    | 18.53 |
| 14001177   | —   | —   | —   | —   | #24                 | 0.151                         | 0.153 | H5                         | H3 | 11.68             | 15.62    | 18.53 |
| —          | —   | —   | —   | —   | #17                 | 0.170                         | 0.174 | H6                         | H4 | 11.68             | 15.62    | 18.53 |
| 14001189   | —   | —   | —   | —   | #17                 | 0.170                         | 0.174 | H6                         | H4 | 11.68             | 15.62    | 18.53 |
| 14001198   | —   | —   | —   | —   | #17                 | 0.170                         | 0.174 | H6                         | H4 | 11.68             | 15.62    | 18.53 |
| —          | —   | —   | —   | —   | #16                 | 0.175                         | 0.178 | H6                         | H4 | 11.68             | 15.62    | 18.53 |
| 14001210   | —   | —   | —   | —   | #16                 | 0.175                         | 0.178 | H6                         | H4 | 11.68             | 15.62    | 18.53 |
| 14001219   | —   | —   | —   | —   | #16                 | 0.175                         | 0.178 | H6                         | H4 | 11.68             | 15.62    | 18.53 |
| 14001228   | —   | —   | —   | —   | #8                  | 0.196                         | 0.200 | H7                         | H5 | 12.41             | 16.35    | 19.31 |
| 14001237   | —   | —   | —   | —   | #8                  | 0.196                         | 0.200 | H7                         | H5 | 12.41             | 16.35    | 19.31 |
| 14001246   | —   | —   | —   | —   | #7                  | 0.199                         | 0.203 | H7                         | H5 | 12.41             | 16.35    | 19.31 |
| 14001255   | —   | —   | —   | —   | #7                  | 0.199                         | 0.203 | H7                         | H5 | 12.41             | 16.35    | 19.31 |

continued on next page

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |           |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 14001         | ⊙         | ⊙       |           | ⊙                | ⊙                 | ⊙                 | ○            | ○          |                |                   | ○               | ○   | ○      |                 |           |           |

○ good ⊙ best



## List 1400I (continued)

Plug(3.5P-4.5P), Bottom(2P-2.5P), Short Bottom(1P-2.5P)



| Tap Size | Threads Per Inch |     | Chamfer | EDP Number |          |          |          |          |          |          |          |
|----------|------------------|-----|---------|------------|----------|----------|----------|----------|----------|----------|----------|
|          | UNC              | UNF |         | H2         | H3       | H4       | H5       | H6       | H7       | H8       | H9       |
| 1/4      | 20               | —   | 1.5P    | —          | —        | —        | 14001256 | 14001257 | 14001258 | 14001259 | —        |
| 1/4      | 20               | —   | 2.5P    | 14001260   | 14001261 | 14001262 | 14001263 | 14001264 | 14001265 | 14001266 | 14001267 |
| 1/4      | 20               | —   | 4.5P    | 14001269   | 14001270 | 14001271 | 14001272 | 14001273 | 14001274 | 14001275 | 14001276 |
| 1/4      | —                | 28  | 1.5P    | —          | —        | 14001278 | 14001279 | 14001280 | 14001281 | —        | —        |
| 1/4      | —                | 28  | 2.5P    | 14001282   | 14001283 | 14001284 | 14001285 | 14001286 | 14001287 | 14001288 | 14001289 |
| 1/4      | —                | 28  | 4.5P    | 14001291   | 14001292 | 14001293 | 14001294 | 14001295 | 14001296 | 14001297 | 14001298 |
| 5/16     | 18               | —   | 1.5P    | —          | —        | —        | —        | 14001300 | 14001301 | 14001302 | 14001303 |
| 5/16     | 18               | —   | 2.5P    | 14001304   | 14001305 | 14001306 | 14001307 | 14001308 | 14001309 | 14001310 | 14001311 |
| 5/16     | 18               | —   | 4.5P    | 14001313   | 14001314 | 14001315 | 14001316 | 14001317 | 14001318 | 14001319 | 14001320 |
| 5/16     | —                | 24  | 1.5P    | —          | —        | 14001322 | 14001323 | 14001324 | 14001325 | 14001326 | —        |
| 5/16     | —                | 24  | 2.5P    | 14001327   | 14001328 | 14001329 | 14001330 | 14001331 | 14001332 | 14001333 | 14001334 |
| 5/16     | —                | 24  | 4.5P    | 14001336   | 14001337 | 14001338 | 14001339 | 14001340 | 14001341 | 14001342 | 14001343 |
| 3/8      | 16               | —   | 1.5P    | —          | —        | —        | 14001345 | 14001346 | 14001347 | 14001348 | 14001349 |
| 3/8      | 16               | —   | 2.5P    | —          | —        | 14001350 | 14001351 | 14001352 | 14001353 | 14001354 | 14001355 |
| 3/8      | 16               | —   | 4.5P    | —          | —        | 14001359 | 14001360 | 14001361 | 14001362 | 14001363 | 14001364 |
| 3/8      | —                | 24  | 1.5P    | —          | —        | 14001368 | 14001369 | 14001370 | 14001371 | 14001372 | —        |
| 3/8      | —                | 24  | 2.5P    | —          | —        | 14001373 | 14001374 | 14001375 | 14001376 | 14001377 | 14001378 |
| 3/8      | —                | 24  | 4.5P    | —          | —        | 14001382 | 14001383 | 14001384 | 14001385 | 14001386 | 14001387 |
| 7/16     | 14               | —   | 2.5P    | —          | —        | 14001391 | 14001392 | 14001393 | 14001394 | 14001395 | 14001396 |
| 7/16     | 14               | —   | 4.5P    | —          | —        | 14001400 | 14001401 | 14001402 | 14001403 | 14001404 | 14001405 |
| 7/16     | —                | 20  | 2.5P    | —          | —        | 14001409 | 14001410 | 14001411 | 14001412 | 14001413 | 14001414 |
| 7/16     | —                | 20  | 4.5P    | —          | —        | 14001418 | 14001419 | 14001420 | 14001421 | 14001422 | 14001423 |
| 1/2      | 13               | —   | 2.5P    | —          | —        | 14001427 | 14001428 | 14001429 | 14001430 | 14001431 | 14001432 |
| 1/2      | 13               | —   | 4.5P    | —          | —        | 14001436 | 14001437 | 14001438 | 14001439 | 14001440 | 14001441 |
| 1/2      | —                | 20  | 2.5P    | —          | —        | 14001445 | 14001446 | 14001447 | 14001448 | 14001449 | 14001450 |
| 1/2      | —                | 20  | 4.5P    | —          | —        | 14001454 | 14001455 | 14001456 | 14001457 | 14001458 | 14001459 |
| 9/16     | 12               | —   | 2.5P    | —          | —        | 14001463 | 14001464 | 14001465 | 14001466 | 14001467 | 14001468 |
| 9/16     | 12               | —   | 4.5P    | —          | —        | 14001472 | 14001473 | 14001474 | 14001475 | 14001476 | 14001477 |
| 9/16     | —                | 18  | 2.5P    | —          | —        | 14001481 | 14001482 | 14001483 | 14001484 | 14001485 | 14001486 |
| 9/16     | —                | 18  | 4.5P    | —          | —        | 14001490 | 14001491 | 14001492 | 14001493 | 14001494 | 14001495 |
| 5/8      | 11               | —   | 2.5P    | —          | —        | 14001499 | 14001500 | 14001501 | 14001502 | 14001503 | 14001504 |
| 5/8      | 11               | —   | 4.5P    | —          | —        | 14001508 | 14001509 | 14001510 | 14001511 | 14001512 | 14001513 |
| 5/8      | —                | 18  | 2.5P    | —          | —        | 14001517 | 14001518 | 14001519 | 14001520 | 14001521 | 14001522 |
| 5/8      | —                | 18  | 4.5P    | —          | —        | 14001526 | 14001527 | 14001528 | 14001529 | 14001530 | 14001531 |
| 3/4      | 10               | —   | 2.5P    | —          | —        | —        | —        | 14001535 | 14001536 | 14001537 | 14001538 |
| 3/4      | 10               | —   | 4.5P    | —          | —        | —        | —        | 14001544 | 14001545 | 14001546 | 14001547 |
| 3/4      | —                | 16  | 2.5P    | —          | —        | —        | —        | 14001553 | 14001554 | 14001555 | 14001556 |
| 3/4      | —                | 16  | 4.5P    | —          | —        | —        | —        | 14001562 | 14001563 | 14001564 | 14001565 |

Packed: Up to 3/8" = 10 pcs; 7/16" to 5/8" = 5 pcs; 3/4 and up = 1 pc.

Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide; 05 = TiN; 08 = TiCN 06 = CrN: take 14 days to ship.



## List 1400I (continued)



|                       |        |      |     |    |     |     |
|-----------------------|--------|------|-----|----|-----|-----|
| SPEED<br>FEED<br>P281 | HSS-CO | TiCN | TiN | BR | S/O | CrN |
|-----------------------|--------|------|-----|----|-----|-----|

Plug(3.5P-4.5P), Bottom(2P-2.5P), Short Bottom(1P-2.5P)

| EDP Number |          |          |          |          | Approx.<br>Recomn'd | Tap Drill Sizes<br>Hole Sizes |       | Class of Fit<br>Tolerances |    | List Price (Each) |          |       |
|------------|----------|----------|----------|----------|---------------------|-------------------------------|-------|----------------------------|----|-------------------|----------|-------|
| H10        | H11      | H12      | H13      | H14      |                     | Min.                          | Max.  | 6H                         | 4H | S/O-Br            | TiN/TiCN | CrN   |
| —          | —        | —        | —        | —        | #1                  | 0.225                         | 0.23  | H6                         | H4 | 11.94             | 15.87    | 17.36 |
| 14001268   | —        | —        | —        | —        | #1                  | 0.225                         | 0.23  | H6                         | H4 | 11.94             | 15.87    | 17.36 |
| 14001277   | —        | —        | —        | —        | #1                  | 0.225                         | 0.23  | H6                         | H4 | 11.94             | 15.87    | 17.36 |
| —          | —        | —        | —        | —        | A                   | 0.233                         | 0.237 | H6                         | H4 | 11.94             | 15.87    | 17.36 |
| 14001290   | —        | —        | —        | —        | A                   | 0.233                         | 0.237 | H6                         | H4 | 11.94             | 15.87    | 17.36 |
| 14001299   | —        | —        | —        | —        | A                   | 0.233                         | 0.237 | H6                         | H4 | 11.94             | 15.87    | 17.36 |
| —          | —        | —        | —        | —        | 7.3mm               | 0.285                         | 0.291 | H7                         | H5 | 13.83             | 19.98    | 22.28 |
| 14001312   | —        | —        | —        | —        | 7.3mm               | 0.285                         | 0.291 | H7                         | H5 | 13.83             | 19.98    | 22.28 |
| 14001321   | —        | —        | —        | —        | 7.3mm               | 0.285                         | 0.291 | H7                         | H5 | 13.83             | 19.98    | 22.28 |
| —          | —        | —        | —        | —        | 7.45mm              | 0.292                         | 0.297 | H7                         | H5 | 13.83             | 19.98    | 22.28 |
| 14001335   | —        | —        | —        | —        | 7.45mm              | 0.292                         | 0.297 | H7                         | H5 | 13.83             | 19.98    | 22.28 |
| 14001344   | —        | —        | —        | —        | 7.45mm              | 0.292                         | 0.297 | H7                         | H5 | 13.83             | 19.98    | 22.28 |
| —          | —        | —        | —        | —        | S                   | 0.344                         | 0.35  | H7                         | H5 | 18.83             | 24.99    | 27.31 |
| 14001356   | 14001357 | 14001358 | —        | —        | S                   | 0.344                         | 0.35  | H7                         | H5 | 18.83             | 24.99    | 27.31 |
| 14001365   | 14001366 | 14001367 | —        | —        | S                   | 0.344                         | 0.35  | H7                         | H5 | 18.83             | 24.99    | 27.31 |
| —          | —        | —        | —        | —        | 9.05mm              | 0.355                         | 0.359 | H7                         | H5 | 18.83             | 24.99    | 27.31 |
| 14001379   | 14001380 | 14001381 | —        | —        | 9.05mm              | 0.355                         | 0.359 | H7                         | H5 | 18.83             | 24.99    | 27.31 |
| 14001388   | 14001389 | 14001390 | —        | —        | 9.05mm              | 0.355                         | 0.359 | H7                         | H5 | 18.83             | 24.99    | 27.31 |
| 14001397   | 14001398 | 14001399 | —        | —        | 13/32               | 0.402                         | 0.409 | H8                         | H5 | 28.86             | 35.01    | 37.33 |
| 14001406   | 14001407 | 14001408 | —        | —        | 13/32               | 0.402                         | 0.409 | H8                         | H5 | 28.86             | 35.01    | 37.33 |
| 14001415   | 14001416 | 14001417 | —        | —        | Z                   | 0.414                         | 0.418 | H8                         | H5 | 28.86             | 35.01    | 37.33 |
| 14001424   | 14001425 | 14001426 | —        | —        | Z                   | 0.414                         | 0.418 | H8                         | H5 | 28.86             | 35.01    | 37.33 |
| 14001433   | 14001434 | 14001435 | —        | —        | 11.85mm             | 0.462                         | 0.47  | H8                         | H5 | 33.01             | 39.16    | 41.47 |
| 14001442   | 14001443 | 14001444 | —        | —        | 11.85mm             | 0.462                         | 0.47  | H8                         | H5 | 33.01             | 39.16    | 41.47 |
| 14001451   | 14001452 | 14001453 | —        | —        | 12.1mm              | 0.475                         | 0.48  | H8                         | H5 | 33.01             | 39.16    | 41.47 |
| 14001460   | 14001461 | 14001462 | —        | —        | 12.1mm              | 0.475                         | 0.48  | H8                         | H5 | 33.01             | 39.16    | 41.47 |
| 14001469   | 14001470 | 14001471 | —        | —        | 13.3mm              | 0.52                          | 0.528 | H10                        | H7 | 49.51             | 61.16    | 65.51 |
| 14001478   | 14001479 | 14001480 | —        | —        | 13.3mm              | 0.52                          | 0.528 | H10                        | H7 | 49.51             | 61.16    | 65.51 |
| 14001487   | 14001488 | 14001489 | —        | —        | 13.6mm              | 0.535                         | 0.54  | H10                        | H7 | 49.51             | 61.16    | 65.51 |
| 14001496   | 14001497 | 14001498 | —        | —        | 13.6mm              | 0.535                         | 0.54  | H10                        | H7 | 49.51             | 61.16    | 65.51 |
| 14001505   | 14001506 | 14001507 | —        | —        | 14.85mm             | 0.579                         | 0.586 | H10                        | H7 | 51.81             | 63.45    | 67.82 |
| 14001514   | 14001515 | 14001516 | —        | —        | 14.85mm             | 0.579                         | 0.586 | H10                        | H7 | 51.81             | 63.45    | 67.82 |
| 14001523   | 14001524 | 14001525 | —        | —        | 15.2mm              | 0.598                         | 0.603 | H10                        | H7 | 51.81             | 63.45    | 67.82 |
| 14001532   | 14001533 | 14001534 | —        | —        | 15.2mm              | 0.598                         | 0.603 | H10                        | H7 | 51.81             | 63.45    | 67.82 |
| 14001539   | 14001540 | 14001541 | 14001542 | 14001543 | 45/64               | 0.7                           | 0.709 | H10                        | H7 | 64.52             | 77.61    | 82.51 |
| 14001548   | 14001549 | 14001550 | 14001551 | 14001552 | 45/64               | 0.7                           | 0.709 | H10                        | H7 | 64.52             | 77.61    | 82.51 |
| 14001557   | 14001558 | 14001559 | 14001560 | 14001561 | 18.3mm              | 0.72                          | 0.726 | H10                        | H7 | 64.52             | 77.61    | 82.51 |
| 14001566   | 14001567 | 14001568 | 14001569 | 14001570 | 18.3mm              | 0.72                          | 0.726 | H10                        | H7 | 64.52             | 77.61    | 82.51 |

Forming Tap

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |           |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 14001         | ⊙         | ⊙       |           | ⊙                | ⊙                 | ⊙                 | ○            | ○          |                |                   | ○               | ○   | ○      |                 |           |           |

○ good ⊙ best



## List 14101

Plug(3.5P-4.5P), Bottom(2P-2.5P), Short Bottom(1P-1.5P)



| Tap Size | Pitch | Chamfer | EDP Number |          |          |          |          |          |
|----------|-------|---------|------------|----------|----------|----------|----------|----------|
|          |       |         | D3         | D4       | D5       | D6       | D7       | D8       |
| M1.6     | 0.35  | 2.5P    | 14101000   | —        | 14101001 | —        | —        | —        |
| M1.7     | 0.35  | 2.5P    | 14101002   | —        | 14101003 | —        | —        | —        |
| M2.0     | 0.4   | 1.5P    | 14101004   | —        | 14101005 | —        | —        | —        |
| M2.0     | 0.4   | 2.5P    | 14101006   | —        | 14101007 | —        | —        | —        |
| M2.5     | 0.45  | 1.5P    | 14101008   | —        | 14101009 | —        | —        | —        |
| M2.5     | 0.45  | 2.5P    | 14101010   | —        | 14101011 | —        | —        | —        |
| M2.6     | 0.45  | 2.5P    | 14101012   | —        | 14101013 | —        | —        | —        |
| M3.0     | 0.5   | 1.5P    | 14101014   | —        | 14101015 | —        | —        | —        |
| M3.0     | 0.5   | 2.5P    | 14101016   | —        | 14101017 | —        | —        | —        |
| M3.5     | 0.6   | 1.5P    | —          | 14101018 | —        | 14101019 | —        | —        |
| M3.5     | 0.6   | 2.5P    | —          | 14101020 | —        | 14101021 | —        | —        |
| M3.5     | 0.6   | 4.5P    | —          | 14101022 | —        | 14101023 | —        | —        |
| M4.0     | 0.7   | 1.5P    | —          | 14101024 | —        | 14101025 | —        | —        |
| M4.0     | 0.7   | 2.5P    | —          | 14101026 | —        | 14101027 | —        | —        |
| M4.0     | 0.7   | 4.5P    | —          | 14101028 | —        | 14101029 | —        | —        |
| M5.0     | 0.8   | 1.5P    | —          | 14101030 | —        | —        | 14101031 | —        |
| M5.0     | 0.8   | 2.5P    | —          | 14101032 | —        | —        | 14101033 | —        |
| M5.0     | 0.8   | 4.5P    | —          | 14101034 | —        | —        | 14101035 | —        |
| M6.0     | 1.0   | 1.5P    | —          | —        | 14101036 | —        | —        | 14101037 |
| M6.0     | 1.0   | 2.5P    | —          | —        | 14101038 | —        | —        | 14101039 |
| M6.0     | 1.0   | 4.5P    | —          | —        | 14101040 | —        | —        | 14101041 |
| M8.0     | 1.25  | 1.5P    | —          | —        | 14101042 | —        | —        | —        |
| M8.0     | 1.25  | 2.5P    | —          | —        | 14101044 | —        | —        | —        |
| M8.0     | 1.25  | 4.5P    | —          | —        | 14101046 | —        | —        | —        |
| M10.0    | 1.5   | 1.5P    | —          | —        | —        | 14101048 | —        | —        |
| M10.0    | 1.5   | 2.5P    | —          | —        | —        | 14101050 | —        | —        |
| M10.0    | 1.5   | 4.5P    | —          | —        | —        | 14101052 | —        | —        |
| M12.0    | 1.75  | 1.5P    | —          | —        | —        | 14101054 | —        | —        |
| M12.0    | 1.75  | 2.5P    | —          | —        | —        | 14101056 | —        | —        |
| M12.0    | 1.75  | 4.5P    | —          | —        | —        | 14101058 | —        | —        |

Packed: Up to M10 = 10 pcs; M12 = 5pcs.

Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide; 05 = TiN; 08 = TiCN; 06 = CrN: take 14 days to ship.

## List 14101

Plug(3.5P-4.5P), Bottom(2P-2.5P), Short Bottom(1P-1.5P)



| EDP Number |          |          | 6H<br>Recomm'd | Tap Drill Sizes<br>Hole Sizes |       | 4H<br>Recomm'd | Class of<br>Fit Tolerances |    | List Price (Each) |          |       |
|------------|----------|----------|----------------|-------------------------------|-------|----------------|----------------------------|----|-------------------|----------|-------|
| D9         | D10      | D11      |                | Min.                          | Max.  |                | 6H                         | 4H | S/O-Br            | TiN/TiCN | CrN   |
| —          | —        | —        | 1.45mm         | 0.056                         | 0.059 | #54            | D5                         | D3 | 19.15             | 21.15    | 22.90 |
| —          | —        | —        | 1.55mm         | 0.060                         | 0.063 | #53            | D5                         | D3 | 18.68             | 20.68    | 22.40 |
| —          | —        | —        | 1.85mm         | 0.071                         | 0.074 | 1.8mm          | D5                         | D3 | 18.68             | 20.68    | 22.40 |
| —          | —        | —        | 1.85mm         | 0.071                         | 0.074 | 1.8mm          | D5                         | D3 | 18.68             | 20.68    | 22.40 |
| —          | —        | —        | 2.3mm          | 0.089                         | 0.093 | #43            | D5                         | D3 | 18.68             | 20.68    | 22.40 |
| —          | —        | —        | 2.3mm          | 0.089                         | 0.093 | #43            | D5                         | D3 | 18.68             | 20.68    | 22.40 |
| —          | —        | —        | 2.4mm          | 0.093                         | 0.097 | 2.35mm         | D5                         | D3 | 17.91             | 19.92    | 21.58 |
| —          | —        | —        | #35            | 0.108                         | 0.112 | 2.75mm         | D5                         | D3 | 14.19             | 16.20    | 17.55 |
| —          | —        | —        | #35            | 0.108                         | 0.112 | 2.75mm         | D5                         | D3 | 14.19             | 16.20    | 17.55 |
| —          | —        | —        | #30            | 0.126                         | 0.130 | 3.2mm          | D6                         | D4 | 11.94             | 15.87    | 17.19 |
| —          | —        | —        | #30            | 0.126                         | 0.130 | 3.2mm          | D6                         | D4 | 11.94             | 15.87    | 17.19 |
| —          | —        | —        | #30            | 0.126                         | 0.130 | 3.2mm          | D6                         | D4 | 11.94             | 15.87    | 17.19 |
| —          | —        | —        | 3.7mm          | 0.144                         | 0.148 | #27            | D6                         | D4 | 11.94             | 15.87    | 17.19 |
| —          | —        | —        | 3.7mm          | 0.144                         | 0.148 | #27            | D6                         | D4 | 11.94             | 15.87    | 17.19 |
| —          | —        | —        | 3.7mm          | 0.144                         | 0.148 | #27            | D6                         | D4 | 11.94             | 15.87    | 17.19 |
| —          | —        | —        | #14            | 0.181                         | 0.185 | 4.6mm          | D7                         | D4 | 11.94             | 15.87    | 17.19 |
| —          | —        | —        | #14            | 0.181                         | 0.185 | 4.6mm          | D7                         | D4 | 11.94             | 15.87    | 17.19 |
| —          | —        | —        | #14            | 0.181                         | 0.185 | 4.6mm          | D7                         | D4 | 11.94             | 15.87    | 17.19 |
| —          | —        | —        | 5.5mm          | 0.216                         | 0.220 | 5.5mm          | D8                         | D5 | 12.65             | 16.58    | 17.19 |
| —          | —        | —        | 5.5mm          | 0.216                         | 0.220 | 5.5mm          | D8                         | D5 | 12.65             | 16.58    | 17.19 |
| —          | —        | —        | 5.5mm          | 0.216                         | 0.220 | 5.5mm          | D8                         | D5 | 12.65             | 16.58    | 17.19 |
| 14101043   | —        | —        | 7.4mm          | 0.289                         | 0.296 | 7.3mm          | D9                         | D5 | 13.61             | 19.76    | 21.42 |
| 14101045   | —        | —        | 7.4mm          | 0.289                         | 0.296 | 7.3mm          | D9                         | D5 | 13.61             | 19.76    | 21.42 |
| 14101047   | —        | —        | 7.4mm          | 0.289                         | 0.296 | 7.3mm          | D9                         | D5 | 13.61             | 19.76    | 21.42 |
| —          | 14101049 | —        | 9.3mm          | 0.362                         | 0.371 | 9.2mm          | D10                        | D6 | 18.83             | 24.99    | 27.07 |
| —          | 14101051 | —        | 9.3mm          | 0.362                         | 0.371 | 9.2mm          | D10                        | D6 | 18.83             | 24.99    | 27.07 |
| —          | 14101053 | —        | 9.3mm          | 0.362                         | 0.371 | 9.2mm          | D10                        | D6 | 18.83             | 24.99    | 27.07 |
| —          | —        | 14101055 | 7/16           | 0.436                         | 0.446 | 11mm           | D11                        | D6 | 33.01             | 39.16    | 42.42 |
| —          | —        | 14101057 | 7/16           | 0.436                         | 0.446 | 11mm           | D11                        | D6 | 33.01             | 39.16    | 42.42 |
| —          | —        | 14101059 | 7/16           | 0.436                         | 0.446 | 11mm           | D11                        | D6 | 33.01             | 39.16    | 42.42 |

Forming Tap

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |           |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 14101         | ⊙         | ⊙       |           | ⊙                | ⊙                 | ⊙                 | ○            | ○          |                |                   | ○               | ○   | ○      |                 |           |           |

○ good ⊙ best



## List 286

Bottom(1.5P-2P)



| SPEED<br>FEED<br>P281 | HSS | TiCN | TiN | BR |
|-----------------------|-----|------|-----|----|
|-----------------------|-----|------|-----|----|



| Tap Size | Threads Per Inch |     | Class of Fit | EDP Number | List Price (Each) |       |       |
|----------|------------------|-----|--------------|------------|-------------------|-------|-------|
|          | UNC              | UNF |              |            | Bright            | TiN   | TiCN  |
| 0        | 80               | —   | 2B           | 28642      | 20.04             | 25.71 | 29.21 |
| 2        | 56               | —   | 2B           | 28644      | 19.91             | 24.44 | —     |
| 3        | 48               | —   | 2B           | 28646      | 19.91             | —     | 29.06 |
| 4        | 40               | —   | 2B           | 28648      | 17.09             | 21.63 | —     |
| 6        | 32               | —   | 2B           | 28650      | 13.97             | 18.50 | 23.11 |
| 8        | 32               | —   | 2B           | 28652      | 13.97             | 18.50 | 23.11 |
| 10       | 24               | —   | 2B           | 28654      | 13.97             | 18.50 | 23.11 |
| 10       | —                | 32  | 2B           | 28656      | 13.97             | 18.50 | 23.11 |
| 1/4      | 20               | —   | 2B           | 28658      | 14.29             | 18.81 | 23.44 |

| Tap Size | Threads Per Inch |     | Class of Fit | EDP Number | List Price (Each) |       |       |
|----------|------------------|-----|--------------|------------|-------------------|-------|-------|
|          | UNC              | UNF |              |            | Bright            | TiN   | TiCN  |
| 1/4      | —                | 28  | 2B           | 28660      | 14.29             | 18.81 | 23.44 |
| 5/16     | 18               | —   | 2B           | 28662      | 16.52             | 23.32 | 30.13 |
| 5/16     | —                | 24  | 2B           | 28664      | 16.52             | 23.32 | 30.13 |
| 3/8      | 16               | —   | 2B           | 28666      | 22.54             | 29.33 | 36.14 |
| 3/8      | —                | 24  | 2B           | 28668      | 22.54             | —     | 36.14 |
| 7/16     | 14               | —   | 2B           | 28670      | 36.10             | 46.93 | 54.15 |
| 7/16     | —                | 20  | 2B           | 28672      | 36.10             | 46.93 | 54.15 |
| 1/2      | 13               | —   | 2B           | 28674      | 41.29             | 53.67 | 61.93 |
| 1/2      | —                | 20  | 2B           | 28676      | 41.29             | 53.67 | 61.93 |

Packed: Up to 3/8" = 10 pcs; 7/16" to 1/2" = 5 pcs.

Specify treatment at time of order: 00=Bright; 05=TiN; 08=TiCN

## List 286

Bottom(1.5P-2P)



| SPEED<br>FEED<br>P281 | HSS | TiCN | TiN | BR |
|-----------------------|-----|------|-----|----|
|-----------------------|-----|------|-----|----|

| Tap Size | Pitch | Class of Fit | EDP Number | List Price (Each) |       |       |
|----------|-------|--------------|------------|-------------------|-------|-------|
|          |       |              |            | Bright            | TiN   | TiCN  |
| M3       | 0.5   | 6H           | 28681      | 19.61             | 23.62 | 30.21 |
| M4       | 0.7   | 6H           | 28683      | 16.49             | 21.03 | —     |
| M5       | 0.8   | 6H           | 28685      | 16.49             | 21.03 | 25.65 |
| M6       | 1.0   | 6H           | 28687      | 17.46             | 22.07 | 26.63 |

| Tap Size | Pitch | Class of Fit | EDP Number | List Price (Each) |       |       |
|----------|-------|--------------|------------|-------------------|-------|-------|
|          |       |              |            | Bright            | TiN   | TiCN  |
| M8       | 1.25  | 6H           | 28689      | 18.79             | 25.61 | 31.42 |
| M10      | 1.5   | 6H           | 28691      | 26.03             | —     | 45.45 |
| M12      | 1.75  | 6H           | 28693      | 41.29             | —     | —     |

Packed: Up to M10 = 10 pcs; M12 = 5 pcs.

00 = Bright; 05 = TiN; 08 = TiCN

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 286      | ⊙         | ⊙       |           | ○                | ○                 | ○                 | ○            | ○          |                |                   | ○               | ○   |        |                 |           |           |

○ good ⊙ best



## List 313TI

For Titanium Alloys, Modified Bottom(2.5P-3P)



SPEED  
FEED  
P278-279

VC-10

TiCN

10°



| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|-------------------|
|          | UNC              | UNF |              |               |            |                   |
| 2        | 56               | —   | H2           | 3             | 1305710108 | 82.31             |
| 4        | 40               | —   | H2           | 3             | 1305710208 | 51.49             |
| 6        | 32               | —   | H2           | 3             | 1305710408 | 42.21             |
| 6        | 32               | —   | H3           | 3             | 1305710508 | 42.22             |
| 6        | —                | 40  | H2           | 3             | 1305710608 | 42.21             |
| 8        | 32               | —   | H2           | 3             | 1305710708 | 42.21             |
| 8        | 32               | —   | H3           | 3             | 1305710808 | 42.22             |
| 8        | —                | 36  | H2           | 3             | 1305710908 | 42.22             |
| 10       | 24               | —   | H3           | 3             | 1305711008 | 43.29             |
| 10       | —                | 32  | H2           | 3             | 1305711108 | 43.29             |
| 10       | —                | 32  | H3           | 3             | 1305711208 | 43.29             |
| 1/4      | 20               | —   | H3           | 3             | 1305711308 | 47.63             |
| 1/4      | 20               | —   | H5           | 3             | 1305711408 | 47.63             |
| 1/4      | —                | 28  | H3           | 3             | 1305711508 | 47.63             |
| 1/4      | —                | 28  | H4           | 3             | 1305711608 | 47.63             |
| 5/16     | 18               | —   | H3           | 3             | 1305711708 | 52.60             |

| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|-------------------|
|          | UNC              | UNF |              |               |            |                   |
| 5/16     | 18               | —   | H5           | 3             | 1305711808 | 52.60             |
| 5/16     | —                | 24  | H3           | 3             | 1305711908 | 52.60             |
| 5/16     | —                | 24  | H4           | 3             | 1305712008 | 52.60             |
| 3/8      | 16               | —   | H3           | 3             | 1305712108 | 58.44             |
| 3/8      | 16               | —   | H5           | 3             | 1305712208 | 58.44             |
| 3/8      | —                | 24  | H3           | 3             | 1305712308 | 58.44             |
| 3/8      | —                | 24  | H4           | 3             | 1305712408 | 58.44             |
| 7/16     | 14               | —   | H3           | 3             | 1305712508 | 72.52             |
| 7/16     | 14               | —   | H5           | 3             | 1305712608 | 72.52             |
| 7/16     | —                | 20  | H3           | 3             | 1305712708 | 72.52             |
| 7/16     | —                | 20  | H5           | 3             | 1305712808 | 72.52             |
| 1/2      | 13               | —   | H3           | 3             | 1305712908 | 85.07             |
| 1/2      | 13               | —   | H5           | 3             | 1305713008 | 85.07             |
| 1/2      | —                | 20  | H3           | 3             | 1305713108 | 85.07             |
| 1/2      | —                | 20  | H5           | 3             | 1305713208 | 85.07             |

Packed: Up to 3/8" = 10 pcs; 7/16" to 1/2" = 5 pcs.

Available TiCN finish only.

Spiral Fluted

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 313TI    |           |         |           |                  |                   |                   |              |            | ⊙              | ○                 |                 |     | ○      | ⊙               | ○         |           |

○ good ⊙ best





## List 313NI

For Nickel Based Alloys, Modified Bottom(2.5P-3P), Bottom(1.5P-2P)



SPEED  
FEED  
P278-279

VC-10

S/O



| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number  |         | List Price (Each) |
|----------|------------------|-----|--------------|---------------|-------------|---------|-------------------|
|          | UNC              | UNF |              |               | Mod. Bottom | Bottom  |                   |
| 4        | 40               | —   | H2           | 3             | 1719001     | —       | 47.85             |
| 4        | 40               | —   | H3           | 3             | 1719101     | —       | 47.85             |
| 6        | 32               | —   | H2           | 3             | —           | 0140101 | 39.71             |
| 6        | 32               | —   | H3           | 3             | 1709101     | —       | 39.71             |
| 6        | 32               | —   | H5           | 3             | 1709201     | —       | 39.71             |
| 8        | 32               | —   | H2           | 3             | —           | 0140201 | 39.71             |
| 8        | 32               | —   | H3           | 3             | 1709301     | —       | 39.71             |
| 8        | 32               | —   | H5           | 3             | 1709401     | —       | 39.71             |
| 10       | 24               | —   | H3           | 3             | 1719501     | —       | 39.71             |
| 10       | 24               | —   | H5           | 3             | 1719601     | —       | 39.71             |
| 10       | —                | 32  | H2           | 3             | —           | 0140301 | 40.61             |
| 10       | —                | 32  | H3           | 3             | 1709501     | —       | 39.71             |
| 10       | —                | 32  | H5           | 3             | 1709601     | —       | 39.71             |
| 1/4      | 20               | —   | H3           | 3             | 1719701     | 0140401 | 40.72             |
| 1/4      | 20               | —   | H5           | 3             | 1719801     | —       | 40.72             |
| 1/4      | —                | 28  | H3           | 3             | 1709701     | 0140501 | 40.72             |
| 1/4      | —                | 28  | H4           | 3             | —           | 0140601 | 40.72             |
| 1/4      | —                | 28  | H5           | 3             | 1709801     | —       | 40.72             |
| 5/16     | 18               | —   | H3           | 3             | 1719901     | —       | 44.79             |
| 5/16     | 18               | —   | H5           | 3             | 1720001     | —       | 44.79             |

| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number  |         | List Price (Each) |
|----------|------------------|-----|--------------|---------------|-------------|---------|-------------------|
|          | UNC              | UNF |              |               | Mod. Bottom | Bottom  |                   |
| 5/16     | —                | 24  | H3           | 3             | 1709901     | 0140701 | 44.79             |
| 5/16     | —                | 24  | H4           | 3             | —           | 0140801 | 44.79             |
| 5/16     | —                | 24  | H5           | 3             | 1710001     | —       | 44.79             |
| 3/8      | 16               | —   | H3           | 3             | 1720101     | —       | 54.98             |
| 3/8      | 16               | —   | H5           | 3             | 1720201     | —       | 54.98             |
| 3/8      | —                | 24  | H3           | 3             | 1710101     | 0140901 | 54.98             |
| 3/8      | —                | 24  | H4           | 3             | —           | 0141001 | 54.98             |
| 3/8      | —                | 24  | H5           | 3             | 1710201     | —       | 54.98             |
| 7/16     | 14               | —   | H3           | 3             | 1720301     | —       | 68.21             |
| 7/16     | 14               | —   | H5           | 3             | 1720401     | —       | 68.21             |
| 7/16     | —                | 20  | H3           | 3             | 1710301     | 0141101 | 68.21             |
| 7/16     | —                | 20  | H5           | 3             | —           | 0141201 | 68.21             |
| 7/16     | —                | 20  | H5           | 3             | 1710401     | —       | 68.21             |
| 1/2      | 13               | —   | H3           | 3             | 1720501     | —       | 80.01             |
| 1/2      | 13               | —   | H5           | 3             | 1720601     | —       | 80.01             |
| 1/2      | —                | 20  | H3           | 3             | 1710501     | 0141301 | 80.01             |
| 1/2      | —                | 20  | H5           | 3             | —           | 0141401 | 80.01             |
| 1/2      | —                | 20  | H5           | 3             | 1710601     | —       | 80.01             |
| 9/16     | —                | 18  | H3           | 3             | —           | 0141501 | 110.45            |
| 9/16     | —                | 18  | H5           | 3             | —           | 0141601 | 110.45            |

Packed: Up to 3/8" = 10 pcs; 7/16" to 9/16" = 5 pcs  
Available Steam Oxide finish only.

Spiral Fluted

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 313NI    |           |         |           |                  |                   |                   |              |            | ○              | ⊗                 |                 |     | ○      | ○               | ⊗         | ○         |

○ good ⊗ best



## List 313

Modified Bottom(2.5P-3P), Bottom(1.5P-2P)



SPEED  
FEED  
P278-279

VC10

TiCN

S/O

15°



| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number  |        | List Price (Each) |       |
|----------|------------------|-----|--------------|---------------|-------------|--------|-------------------|-------|
|          | UNC              | UNF |              |               | Mod. Bottom | Bottom | S/O               | TiCN  |
| 2        | 56               | —   | H2           | 2             | 17540       | 01417  | 59.64             | 68.01 |
| 4        | 40               | —   | H2           | 2             | 17520       | 01418  | 37.16             | 42.55 |
| 4        | 40               | —   | H3           | 2             | 17541       | —      | 37.16             | 42.55 |
| 4        | 40               | —   | H4           | 2             | 17542       | —      | 37.16             | 42.55 |
| 5        | 40               | —   | H2           | 2             | 17521       | —      | 37.32             | 42.55 |
| 6        | 32               | —   | H2           | 2             | 17543       | —      | 30.49             | 34.80 |
| 6        | 32               | —   | H3           | 2             | 17522       | 01419  | 30.49             | 34.80 |
| 6        | 32               | —   | H4           | 2             | 17544       | 01420  | 30.49             | 34.80 |
| 6        | 32               | —   | H5           | 2             | 17545       | —      | 30.49             | 48.29 |
| 8        | 32               | —   | H2           | 2             | 17546       | 01421  | 30.49             | 34.80 |
| 8        | 32               | —   | H3           | 2             | 17523       | 01422  | 30.49             | 34.80 |
| 8        | 32               | —   | H4           | 2             | 17547       | 01423  | 30.49             | 34.80 |
| 8        | 32               | —   | H5           | 2             | 17548       | —      | 30.49             | 34.80 |
| 8        | 32               | —   | H6           | 2             | 17549       | —      | 30.49             | 34.80 |
| 10       | 24               | —   | H3           | 3             | 17524       | —      | 31.24             | 35.63 |
| 10       | 24               | —   | H5           | 3             | 17030       | —      | 31.24             | 35.63 |
| 10       | —                | 32  | H2           | 3             | 17031       | 01424  | 31.24             | 35.63 |
| 10       | —                | 32  | H3           | 3             | 17525       | 01425  | 31.24             | 35.63 |
| 10       | —                | 32  | H4           | 3             | 17032       | 01426  | 31.24             | 35.63 |
| 10       | —                | 32  | H5           | 3             | 17033       | —      | 31.24             | 35.63 |
| 10       | —                | 32  | H6           | 3             | 17034       | —      | 31.24             | 35.63 |
| 1/4      | 20               | —   | H3           | 3             | 17526       | —      | 34.30             | 39.11 |
| 1/4      | 20               | —   | H5           | 3             | 17035       | —      | 34.30             | 39.11 |
| 1/4      | —                | 28  | H3           | 3             | 17527       | 01427  | 34.30             | 39.11 |
| 1/4      | —                | 28  | H4           | 3             | 17036       | 01428  | 34.30             | 39.11 |
| 1/4      | —                | 28  | H5           | 3             | 17037       | —      | 34.30             | 39.11 |
| 1/4      | —                | 28  | H6           | 3             | 17038       | —      | 34.30             | 39.11 |
| 5/16     | 18               | —   | H3           | 3             | 17528       | —      | 38.07             | 43.43 |
| 5/16     | 18               | —   | H5           | 3             | 17039       | —      | 38.07             | 43.43 |
| 5/16     | —                | 24  | H3           | 3             | 17529       | 01429  | 38.07             | 43.43 |
| 5/16     | —                | 24  | H4           | 3             | 17040       | 01430  | 38.07             | 43.43 |
| 5/16     | —                | 24  | H5           | 3             | 17041       | —      | 38.07             | 43.43 |
| 5/16     | —                | 24  | H6           | 3             | 17042       | —      | 38.07             | 43.43 |
| 3/8      | 16               | —   | H3           | 3             | 17530       | —      | 42.35             | 48.29 |
| 3/8      | 16               | —   | H5           | 3             | 17043       | —      | 42.35             | 48.29 |
| 3/8      | —                | 24  | H3           | 3             | 17531       | 01431  | 42.35             | 48.29 |
| 3/8      | —                | 24  | H4           | 3             | 17044       | 01432  | 42.35             | 48.29 |
| 3/8      | —                | 24  | H5           | 3             | 17045       | —      | 42.35             | 48.29 |
| 3/8      | —                | 24  | H6           | 3             | 17046       | —      | 42.35             | 48.29 |

Packed: Up to 3/8" = 10 pcs; 7/16" to 5/8" = 5 pcs; 3/4 and up = 1 pc.  
Specify treatment at time of order: 01 = Steam Oxide; 08 = TiCN

continued on next page

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |                     |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|---------------------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |                     |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc 45-50 Hrc |
| 313           |           |         |           |                  |                   |                   | ○            | ○          | ○              | ○                 |                 | ○   | ○      | ○               | ○                   |

○ good ○ best



## List 313 (continued)

Modified Bottom(2.5P-3P), Bottom(1.5P-2P)



SPEED  
FEED  
P278-279

VC10

TiCN

S/O

15°



| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number  |        | List Price (Each) |        |
|----------|------------------|-----|--------------|---------------|-------------|--------|-------------------|--------|
|          | UNC              | UNF |              |               | Mod. Bottom | Bottom | S/O               | TiCN   |
| 7/16     | 14               | —   | H3           | 3             | 17532       | —      | 52.44             | 59.80  |
| 7/16     | 14               | —   | H5           | 3             | 17047       | —      | 52.44             | 59.80  |
| 7/16     | —                | 20  | H3           | 3             | 17533       | 01433  | 52.44             | 59.80  |
| 7/16     | —                | 20  | H5           | 3             | 17048       | 01434  | 52.44             | 59.80  |
| 1/2      | 13               | —   | H3           | 3             | 17534       | —      | 61.51             | 70.17  |
| 1/2      | 13               | —   | H5           | 3             | 17049       | —      | 61.51             | 70.17  |
| 1/2      | —                | 20  | H3           | 3             | 17535       | 01435  | 61.51             | 70.17  |
| 1/2      | —                | 20  | H5           | 3             | 17050       | 01436  | 61.51             | 70.17  |
| 5/8      | 11               | —   | H3           | 4             | 17536       | —      | 116.99            | 133.42 |
| 5/8      | —                | 18  | H3           | 4             | 17537       | —      | 116.99            | 133.42 |
| 5/8      | —                | 18  | H5           | 4             | 17051       | —      | 116.99            | 133.42 |
| 3/4      | 10               | —   | H3           | 4             | 17538       | —      | 149.52            | 170.50 |
| 3/4      | —                | 16  | H3           | 4             | 17539       | —      | 149.52            | 170.50 |

Packed: Up to 3/8" = 10 pcs; 7/16" to 5/8" = 5 pcs; 3/4 and up = 1 pc.  
Specify treatment at time of order: 01 = Steam Oxide; 08 = TiCN.

## List 345

Modified Bottom(2.5P-3P)



SPEED  
FEED  
P278-279

VC10

TiCN

S/O

15°



| Tap Size | Pitch | Thread Limit | No. of Flutes | EDP Number | List Price (Each) |       |
|----------|-------|--------------|---------------|------------|-------------------|-------|
|          |       |              |               |            | S/O               | TiCN  |
| M3       | 0.5   | D3           | 3             | 17055      | 42.43             | 48.36 |
| M4       | 0.7   | D4           | 3             | 17056      | 35.35             | 40.32 |
| M5       | 0.8   | D4           | 3             | 17057      | 36.06             | 41.14 |
| M6       | 1.0   | D5           | 3             | 17058      | 39.83             | 45.41 |

| Tap Size | Pitch | Thread Limit | No. of Flutes | EDP Number | List Price (Each) |       |
|----------|-------|--------------|---------------|------------|-------------------|-------|
|          |       |              |               |            | S/O               | TiCN  |
| M8       | 1.25  | D5           | 3             | 17059      | 44.08             | 50.29 |
| M10      | 1.25  | D5           | 3             | 17060      | 60.1              | 68.54 |
| M10      | 1.5   | D6           | 3             | 17061      | 60.1              | 68.54 |
| M12      | 1.75  | D6           | 3             | 17062      | 71.64             | 81.74 |

Packed: Up to M10 = 10pcs; M12 = 5 pcs.  
Specify treatment at time of order: 01 = Steam Oxide; 08 = TiCN.

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 313      |           |         |           |                  |                   |                   | ○            | ○          | ○              | ○                 |                 | ⊗   | ⊗      | ⊗               | ○         |           |
| 345      |           |         |           |                  |                   |                   | ○            | ○          | ○              | ○                 |                 | ⊗   | ⊗      | ⊗               | ○         |           |

○ good ⊗ best



## List 303

Modified Bottom(2.5P-3P), Bottom(1.5P-2P)



SPEED  
FEED  
P278-279

HSSE

TiCN

S/O

45°



| Tap Size | Threads Per Inch |     | Thread Limit | No. of Flutes | EDP Number  |        | List Price (Each) |       |
|----------|------------------|-----|--------------|---------------|-------------|--------|-------------------|-------|
|          | UNC              | UNF |              |               | Mod. Bottom | Bottom | S/O               | TiCN  |
| 2        | 56               | —   | H2           | 2             | —           | 01354  | 42.82             | 49.27 |
| 3        | 48               | —   | H2           | 2             | —           | 01355  | 37.57             | 43.22 |
| 4        | 40               | —   | H2           | 3             | 17320       | 01356  | 31.05             | 35.58 |
| 4        | 40               | —   | H3           | 3             | 17220       | 01357  | 31.05             | 35.58 |
| 4        | —                | 48  | H2           | 3             | —           | 01358  | 31.05             | 35.58 |
| 5        | 40               | —   | H2           | 3             | 17321       | 01359  | 31.05             | 35.58 |
| 6        | 32               | —   | H2           | 3             | 17242       | 01360  | 25.43             | 29.11 |
| 6        | 32               | —   | H3           | 3             | 17322       | 01361  | 25.43             | 29.11 |
| 6        | 32               | —   | H5           | 3             | 17222       | —      | 25.43             | 29.11 |
| 6        | —                | 40  | H2           | 3             | —           | 01362  | 25.29             | 29.11 |
| 8        | 32               | —   | H2           | 3             | 17243       | 01363  | 25.29             | 29.11 |
| 8        | 32               | —   | H3           | 3             | 17323       | 01364  | 25.29             | 29.11 |
| 8        | 32               | —   | H5           | 3             | 17223       | —      | 25.29             | 29.11 |
| 8        | —                | 36  | H3           | 3             | —           | 01365  | 25.29             | 29.11 |
| 10       | 24               | —   | H2           | 3             | 17245       | 01366  | 25.97             | 29.77 |
| 10       | 24               | —   | H3           | 3             | 17324       | 01367  | 25.97             | 29.77 |
| 10       | —                | 32  | H2           | 3             | 17246       | 01368  | 25.97             | 29.77 |
| 10       | —                | 32  | H3           | 3             | 17325       | 01369  | 25.97             | 29.77 |
| 10       | —                | 32  | H5           | 3             | 17225       | —      | 25.97             | 29.77 |
| 12       | 24               | —   | H3           | 3             | —           | 01370  | 28.05             | 32.30 |
| 1/4      | 20               | —   | H3           | 3             | 17326       | 01371  | 28.52             | 32.69 |
| 1/4      | 20               | —   | H5           | 3             | 17226       | 01372  | 28.52             | 32.69 |
| 1/4      | —                | 28  | H3           | 3             | 17327       | 01373  | 28.52             | 32.69 |
| 1/4      | —                | 28  | H4           | 3             | 17227       | 01374  | 28.52             | 32.69 |
| 5/16     | 18               | —   | H3           | 3             | 17328       | 01375  | 31.65             | 36.24 |
| 5/16     | 18               | —   | H5           | 3             | 17228       | 01376  | 31.65             | 36.24 |
| 5/16     | —                | 24  | H3           | 3             | 17329       | 01377  | 31.65             | 36.24 |
| 5/16     | —                | 24  | H4           | 3             | 17229       | 01378  | 31.65             | 36.24 |
| 3/8      | 16               | —   | H3           | 3             | 17330       | 01379  | 35.30             | 40.43 |
| 3/8      | 16               | —   | H5           | 3             | 17230       | 01380  | 35.30             | 40.43 |
| 3/8      | —                | 24  | H3           | 3             | 17331       | 01381  | 35.30             | 40.43 |
| 3/8      | —                | 24  | H4           | 3             | 17231       | 01382  | 35.30             | 40.43 |
| 7/16     | 14               | —   | H3           | 3             | 17332       | 01383  | 45.49             | 52.10 |
| 7/16     | 14               | —   | H5           | 3             | 17232       | —      | 45.49             | 52.10 |
| 7/16     | —                | 20  | H3           | 3             | 17333       | 01384  | 45.49             | 52.10 |
| 7/16     | —                | 20  | H5           | 3             | 17233       | 01385  | 45.49             | 52.10 |
| 1/2      | 13               | —   | H3           | 3             | 17334       | 01386  | 53.39             | 61.18 |
| 1/2      | 13               | —   | H5           | 3             | 17234       | 01387  | 53.39             | 61.18 |
| 1/2      | —                | 20  | H3           | 3             | 17335       | 01388  | 53.39             | 61.18 |

Packed: Up to 3/8" = 10 pcs; 7/16" to 5/8" = 5 pcs; 3/4" and up = 1 pc.  
Specify treatment at time of order: 01 = Steam Oxide; 08 = TiCN

continued on next page

| Work Material |              |         |           |                  |                   |                   |              |            |                   |                   |                 |     |        |                 |           |           |
|---------------|--------------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|-------------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
| List No.      | Aluminum     |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium          | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|               | 6061<br>7075 | Casting |           | 1010<br>1018     | 1035<br>1045      | 1065              | 4140<br>4340 | 20 Hrc     | 6AL4V<br>(30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 303           |              |         |           | ○                | ○                 |                   |              |            |                   |                   | ⊙               | ○   | ⊙      | ○               |           |           |

○ good ⊙ best



## List 303 (continued)

Modified Bottom(2.5P-3P), Bottom(1.5P-2P)



SPEED  
FEED  
P278-279

HSSE

TiCN

S/O



| Tap Size | Threads Per Inch |     | Thread Limit | No. of Flutes | EDP Number  |        | List Price (Each) |        |
|----------|------------------|-----|--------------|---------------|-------------|--------|-------------------|--------|
|          | UNC              | UNF |              |               | Mod. Bottom | Bottom | S/O               | TiCN   |
| 1/2      | —                | 20  | H5           | 3             | 17235       | 01389  | 53.39             | 61.18  |
| 9/16     | 12               | —   | H3           | 4             | 17260       | 01390  | 86.22             | 98.75  |
| 9/16     | —                | 18  | H3           | 4             | 17261       | 01391  | 86.22             | 98.75  |
| 5/8      | 11               | —   | H3           | 4             | 17336       | 01392  | 101.68            | 116.50 |
| 5/8      | 11               | —   | H5           | 4             | —           | 01393  | 101.68            | 116.50 |
| 5/8      | —                | 18  | H3           | 4             | 17337       | 01394  | 101.68            | 116.50 |
| 5/8      | —                | 18  | H5           | 4             | —           | 01395  | 101.68            | 116.50 |
| 3/4      | 10               | —   | H3           | 4             | 17338       | 01396  | 129.91            | 148.83 |
| 3/4      | 10               | —   | H6           | 4             | —           | 01397  | 129.91            | 148.83 |
| 3/4      | —                | 16  | H3           | 4             | 17339       | 01398  | 129.91            | 148.83 |
| 3/4      | —                | 16  | H5           | 4             | —           | 01399  | 129.91            | 148.83 |
| 7/8      | 9                | —   | H4           | 4             | 17262       | —      | 174.76            | 200.22 |
| 7/8      | —                | 14  | H4           | 4             | 17263       | 01400  | 174.76            | 200.22 |
| 1        | 8                | —   | H4           | 4             | 17264       | —      | 224.49            | 257.18 |

Packed: Up to 3/8" = 10 pcs; 7/16" to 5/8" = 5 pcs; 3/4" and up = 1 pc.  
Specify treatment at time of order: 01 = Steam Oxide; 08 = TiCN

## List 343

Modified Bottom(2.5P-3P)



SPEED  
FEED  
P278-279

HSSE

TiCN

S/O



| Tap Size | Pitch | Thread Limit | No. of Flutes | EDP Number | List Price (Each) |       |
|----------|-------|--------------|---------------|------------|-------------------|-------|
|          |       |              |               |            | S/O               | TiCN  |
| M3       | 0.5   | D3           | 3             | 17551      | 30.56             | 34.88 |
| M4       | 0.7   | D4           | 3             | 17554      | 29.37             | 33.65 |
| M5       | 0.8   | D4           | 3             | 17557      | 29.93             | 33.50 |
| M6       | 1.0   | D5           | 3             | 17560      | 33.00             | 37.65 |

| Tap Size | Pitch | Thread Limit | No. of Flutes | EDP Number | List Price (Each) |       |
|----------|-------|--------------|---------------|------------|-------------------|-------|
|          |       |              |               |            | S/O               | TiCN  |
| M8       | 1.25  | D5           | 3             | 17563      | 36.70             | 41.86 |
| M10      | 1.5   | D6           | 3             | 17566      | 52.25             | 59.59 |
| M12      | 1.75  | D6           | 3             | 17569      | 62.14             | 70.86 |

Packed: Up to M10 = 10 pcs; M12 = 5 pcs.  
Specify treatment at time of order: 01 = Steam Oxide; 08 = TiCN.

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 303      |           |         |           | ○                | ○                 |                   |              |            |                |                   | ⊙               | ○   | ⊙      | ○               |           |           |
| 343      |           |         |           | ○                | ○                 |                   |              |            |                |                   | ⊙               | ○   | ⊙      | ○               |           |           |

○ good ⊙ best





## List 398

Long Shank, Modified Bottom(2.5P-3P), Bottom(1.5P-2P)



SPEED  
FEED  
P278-279

HSSE

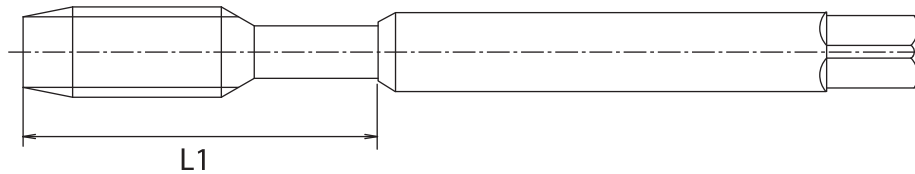
S/O

30°



| Tap Size | Threads Per Inch |     | Thread Limit | No. of Flutes | OAL | Neck Length<br>L1 | EDP Number  |         | List Price (Each) |
|----------|------------------|-----|--------------|---------------|-----|-------------------|-------------|---------|-------------------|
|          | UNC              | UNF |              |               |     |                   | Mod. Bottom | Bottom  |                   |
| 4        | 40               | —   | H2           | 3             | 6   | 0.843             | —           | 0143701 | 71.93             |
| 4        | 40               | —   | H2           | 3             | 4   | 0.843             | 1766101     | —       | 62.21             |
| 6        | 32               | —   | H3           | 3             | 6   | 1.031             | 1766501     | 0143801 | 71.61             |
| 6        | 32               | —   | H3           | 3             | 4   | 1.031             | 1766301     | —       | 62.21             |
| 8        | 32               | —   | H3           | 3             | 6   | 1.125             | 1766901     | 0143901 | 70.93             |
| 8        | 32               | —   | H3           | 3             | 4   | 1.125             | 1766701     | —       | 61.49             |
| 10       | 24               | —   | H3           | 3             | 4   | 1.312             | 1767101     | —       | 58.76             |
| 10       | 24               | —   | H3           | 3             | 6   | 1.312             | 1767301     | —       | 67.31             |
| 10       | —                | 32  | H3           | 3             | 6   | 1.312             | 1767701     | 0144001 | 67.31             |
| 10       | —                | 32  | H3           | 3             | 4   | 1.312             | 1767501     | —       | 58.76             |
| 1/4      | 20               | —   | H3           | 3             | 6   | 1.500             | 1768101     | 0144101 | 62.01             |
| 1/4      | 20               | —   | H3           | 3             | 4   | 1.500             | 1767901     | —       | 49.67             |
| 1/4      | —                | 28  | H3           | 3             | 6   | 1.500             | 1768301     | 0144201 | 62.01             |
| 5/16     | 18               | —   | H3           | 3             | 6   | 1.687             | 1768501     | 0144301 | 64.76             |
| 5/16     | —                | 24  | H3           | 3             | 6   | 1.687             | 1768601     | —       | 64.76             |
| 3/8      | 16               | —   | H3           | 3             | 6   | 1.875             | 1768701     | 0144401 | 72.64             |
| 3/8      | —                | 24  | H3           | 3             | 6   | 1.875             | 1768801     | 0144501 | 72.64             |
| 7/16     | 14               | —   | H3           | 3             | 6   | —                 | 1768901     | 0144601 | 77.09             |
| 7/16     | —                | 20  | H3           | 3             | 6   | —                 | 1769001     | —       | 77.09             |
| 1/2      | 13               | —   | H3           | 3             | 6   | —                 | 1769101     | —       | 77.95             |
| 1/2      | —                | 20  | H3           | 3             | 6   | —                 | 1769201     | —       | 77.95             |
| 5/8      | 11               | —   | H3           | 4             | 6   | —                 | 1769301     | —       | 103.98            |

Packed: 1 pc. Available Steam Oxide finish only.



Neck length is designed for reaching 50% deeper holes than ANSI standard taps.

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |                     |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|---------------------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |                     |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc 45-50 Hrc |
| 398           |           |         |           | ○                | ○                 |                   |              |            |                |                   | ⊗               | ○   | ⊗      | ○               |                     |

○ good ⊗ best



## List 220

DIN Overall Length, Modified Bottom(2.5P-3P)



SPEED  
FEED  
P281

HSSE

S/O

45°



Spiral Fluted

| Tap Size | Threads Per Inch |     |         | Class of Fit | No. of Flutes | OAL | EDP Number | List Price (Each) |
|----------|------------------|-----|---------|--------------|---------------|-----|------------|-------------------|
|          | UNC              | UNF | 8 Pitch |              |               |     |            |                   |
| 4        | 40               | —   | —       | 2B           | 3             | 56  | 2211401    | 22.90             |
| 6        | 32               | —   | —       | 2B           | 3             | 56  | 2212401    | 18.66             |
| 8        | 32               | —   | —       | 2B           | 3             | 63  | 2217801    | 18.66             |
| 10       | 24               | —   | —       | 2B           | 3             | 70  | 2213401    | 18.66             |
| 10       | —                | 32  | —       | 2B           | 3             | 70  | 2218801    | 18.66             |
| 1/4      | 20               | —   | —       | 2B           | 3             | 80  | 2230001    | 20.23             |
| 1/4      | —                | 28  | —       | 2B           | 3             | 80  | 2230401    | 20.23             |
| 5/16     | 18               | —   | —       | 2B           | 3             | 90  | 2230801    | 24.84             |
| 5/16     | —                | 24  | —       | 2B           | 3             | 90  | 2231201    | 24.84             |
| 3/8      | 16               | —   | —       | 2B           | 3             | 100 | 2231601    | 28.88             |
| 3/8      | —                | 24  | —       | 2B           | 3             | 100 | 2231801    | 28.88             |
| 7/16     | 14               | —   | —       | 2B           | 3             | 100 | 2232001    | 43.12             |
| 7/16     | —                | 20  | —       | 2B           | 3             | 100 | 2232201    | 43.12             |
| 1/2      | 13               | —   | —       | 2B           | 3             | 110 | 2232401    | 50.81             |
| 1/2      | —                | 20  | —       | 2B           | 3             | 100 | 2232601    | 50.81             |
| 5/8      | 11               | —   | —       | 2B           | 4             | 110 | 2233201    | 89.47             |
| 5/8      | —                | 18  | —       | 2B           | 4             | 100 | 2233401    | 89.47             |
| 3/4      | 10               | —   | —       | 2B           | 4             | 125 | 2233601    | 115.06            |
| 3/4      | —                | 16  | —       | 2B           | 4             | 110 | 2233801    | 115.06            |
| 7/8      | 9                | —   | —       | 2B           | 4             | 140 | 2244001    | 175.47            |
| 7/8      | —                | 14  | —       | 2B           | 4             | 125 | 2239201    | 183.69            |
| 1        | 8                | —   | —       | 2B           | 4             | 160 | 2244401    | 220.74            |
| 1        | —                | 12  | —       | 2B           | 4             | 140 | 2239601    | 231.76            |
| 1-1/8    | 7                | —   | —       | 2B           | 4             | 180 | 2247201    | 321.59            |
| 1-1/8    | —                | 12  | —       | 2B           | 4             | 150 | 2245001    | 342.14            |
| 1-1/8    | —                | —   | 8       | 2B           | 4             | 180 | 2247601    | 353.21            |
| 1-1/4    | 7                | —   | —       | 2B           | 4             | 180 | 2247701    | 410.81            |
| 1-1/4    | —                | 12  | —       | 2B           | 4             | 150 | 2245601    | 416.13            |
| 1-1/4    | —                | —   | 8       | 2B           | 4             | 180 | 2247901    | 433.74            |
| 1-3/8    | 6                | —   | —       | 2B           | 4             | 200 | 2248001    | 487.50            |
| 1-3/8    | —                | 12  | —       | 2B           | 4             | 170 | 2246201    | 490.52            |
| 1-3/8    | —                | —   | 8       | 2B           | 4             | 200 | 2248201    | 486.88            |
| 1-1/2    | 6                | —   | —       | 2B           | 4             | 200 | 2248301    | 560.62            |
| 1-1/2    | —                | 12  | —       | 2B           | 4             | 170 | 2246801    | 572.79            |
| 1-1/2    | —                | —   | 8       | 2B           | 4             | 200 | 2248501    | 610.73            |
| 1-5/8    | —                | —   | 8       | 2B           | 4             | 200 | 2248601    | 621.15            |
| 1-3/4    | 5                | —   | —       | 2B           | 4             | 220 | 2248701    | 635.81            |
| 1-3/4    | —                | —   | 8       | 2B           | 4             | 200 | 2248801    | 635.81            |
| 1-7/8    | —                | —   | 8       | 2B           | 4             | 225 | 2248901    | 731.28            |
| 2        | 4-1/2            | —   | —       | 2B           | 5             | 250 | 2249001    | 882.75            |
| 2        | —                | —   | 8       | 2B           | 5             | 225 | 2249101    | 882.75            |

Packed: Up to 3/8" = 10 pcs; 7/16" to 5/8" = 5 pcs; 3/4" and up = 1 pc.

Available Steam Oxide finish only.

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 220      |           |         | ○         | ○                | ○                 | ⊗                 | ⊗            | ⊗          |                |                   | ⊗               | ○   | ○      | ○               |           |           |

○ good ⊗ best



## List 229

DIN Overall Length, Modified Bottom(2.5P-3P)



SPEED  
FEED  
P281

HSSE

S/O

45°



| Tap Size | Pitch | Class of Fit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|-----|------------|-------------------|
| M3       | 0.5   | 6H           | 3             | 56  | 2290401    | 28.59             |
| M4       | 0.7   | 6H           | 3             | 63  | 2290601    | 26.42             |
| M5       | 0.8   | 6H           | 3             | 70  | 2290801    | 26.42             |
| M6       | 1.0   | 6H           | 3             | 80  | 2291001    | 26.42             |
| M8       | 1.25  | 6H           | 3             | 90  | 2291401    | 28.59             |
| M10      | 1.25  | 6H           | 3             | 100 | 2291701    | 40.34             |
| M10      | 1.5   | 6H           | 3             | 100 | 2291801    | 40.34             |
| M12      | 1.25  | 6H           | 3             | 100 | 2292101    | 48.62             |
| M12      | 1.5   | 6H           | 3             | 100 | 2292201    | 48.62             |

| Tap Size | Pitch | Class of Fit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|-----|------------|-------------------|
| M12      | 1.75  | 6H           | 3             | 110 | 2292301    | 48.62             |
| M14      | 1.5   | 6H           | 3             | 100 | 2292501    | 73.38             |
| M14      | 2.0   | 6H           | 3             | 110 | 2292601    | 73.38             |
| M16      | 1.5   | 6H           | 3             | 100 | 2292801    | 86.10             |
| M16      | 2.0   | 6H           | 3             | 110 | 2292901    | 86.10             |
| M18      | 1.5   | 6H           | 4             | 110 | 2293001    | 124.69            |
| M18      | 2.5   | 6H           | 4             | 125 | 2293201    | 124.69            |
| M20      | 1.5   | 6H           | 4             | 125 | 2293401    | 171.40            |
| M20      | 2.5   | 6H           | 4             | 140 | 2293601    | 171.40            |

Packed: Up to M10 = 10 pcs; M12 to M16 = 5 pcs; M18 and up = 1 pc.  
Available Steam Oxide finish only.

Spiral Fluted

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc |
| 229           |           |         | ○         | ○                | ○                 | ⊗                 | ⊗            | ⊗          |                |                   | ○               | ○   | ○      | ○               | ○         |

○ good ⊗ best



## List 230

Coolant Thru, DIN Overall Length, Modified Bottom(2.5P-3P)



| Tap Size | Threads Per Inch |     | Class of Fit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|-----|------------|-------------------|
|          | UNC              | UNF |              |               |     |            |                   |
| 1/4      | 20               | —   | 2B           | 3             | 80  | 2330005    | 47.69             |
| 1/4      | —                | 28  | 2B           | 3             | 80  | 2330405    | 47.69             |
| 5/16     | 18               | —   | 2B           | 3             | 90  | 2330805    | 52.78             |
| 5/16     | —                | 24  | 2B           | 3             | 90  | 2331205    | 52.78             |
| 3/8      | 16               | —   | 2B           | 3             | 100 | 2331605    | 53.78             |
| 3/8      | —                | 24  | 2B           | 3             | 100 | 2331805    | 53.78             |
| 7/16     | 14               | —   | 2B           | 3             | 100 | 2332005    | 69.47             |

| Tap Size | Threads Per Inch |     | Class of Fit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|-----|------------|-------------------|
|          | UNC              | UNF |              |               |     |            |                   |
| 7/16     | —                | 20  | 2B           | 3             | 100 | 2332205    | 69.47             |
| 1/2      | 13               | —   | 2B           | 3             | 110 | 2332405    | 77.91             |
| 1/2      | —                | 20  | 2B           | 3             | 100 | 2332605    | 77.91             |
| 5/8      | 11               | —   | 2B           | 4             | 110 | 2333205    | 123.87            |
| 5/8      | —                | 18  | 2B           | 4             | 100 | 2333405    | 123.87            |
| 3/4      | 10               | —   | 2B           | 4             | 125 | 2333605    | 152.88            |
| 3/4      | —                | 16  | 2B           | 4             | 110 | 2333805    | 152.88            |

Packed: Up to 3/8" = 10 pcs; 7/16" to 5/8" = 5 pcs; 3/4" and up = 1 pc.  
Available TiN finish only.

## List 239

Coolant Thru, DIN Overall Length, Modified Bottom (2.5P-3P)



| Tap Size | Pitch | Class of Fit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|-----|------------|-------------------|
| M6       | 1.0   | 6H           | 3             | 80  | 2391005    | 54.51             |
| M8       | 1.25  | 6H           | 3             | 90  | 2391405    | 56.90             |
| M10      | 1.25  | 6H           | 3             | 100 | 2391705    | 66.42             |
| M10      | 1.5   | 6H           | 3             | 100 | 2391805    | 66.42             |
| M12      | 1.25  | 6H           | 3             | 100 | 2392105    | 75.52             |
| M12      | 1.5   | 6H           | 3             | 100 | 2392205    | 75.52             |
| M12      | 1.75  | 6H           | 3             | 110 | 2392305    | 75.52             |
| M14      | 1.5   | 6H           | 3             | 100 | 2392505    | 106.15            |

| Tap Size | Pitch | Class of Fit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|-----|------------|-------------------|
| M14      | 2.0   | 6H           | 3             | 110 | 2392605    | 106.15            |
| M16      | 1.5   | 6H           | 3             | 100 | 2392805    | 120.15            |
| M16      | 2.0   | 6H           | 3             | 110 | 2392905    | 120.15            |
| M18      | 1.5   | 6H           | 4             | 110 | 2393005    | 163.46            |
| M18      | 2.5   | 6H           | 4             | 125 | 2393205    | 163.46            |
| M20      | 1.5   | 6H           | 4             | 125 | 2393405    | 214.86            |
| M20      | 2.5   | 6H           | 4             | 140 | 2393605    | 214.86            |

Packed: Up to M10 = 10 pcs; M12 to M16 = 5 pcs; M18 and up = 1 pc.  
Available TiN finish only.

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 230      | ○         | ○       | ○         | ○                | ○                 | ⊗                 | ⊗            | ⊗          |                |                   | ○               | ○   | ⊗      | ○               | ○         |           |
| 239      | ○         | ○       | ○         | ○                | ○                 | ⊗                 | ⊗            | ⊗          |                |                   | ○               | ○   | ⊗      | ○               | ○         |           |

○ good ⊗ best



## List 13013 **NEW!**

Coolant Thru, DIN Overall Length, Bottom(1.5P-2P)



| Tap Size | Threads Per Inch |     | Class of Fit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|-----|------------|-------------------|
|          | UNC              | UNF |              |               |     |            |                   |
| 1/4      | 20               | —   | 2B           | 3             | 80  | 1301300508 | 50.63             |
| 1/4      | —                | 28  | 2B           | 3             | 80  | 1301300608 | 50.63             |
| 5/16     | 18               | —   | 2B           | 3             | 90  | 1301300708 | 56.04             |
| 5/16     | —                | 24  | 2B           | 3             | 90  | 1301300808 | 56.04             |
| 3/8      | 16               | —   | 2B           | 3             | 100 | 1301300908 | 57.11             |
| 3/8      | —                | 24  | 2B           | 3             | 100 | 1301301008 | 57.11             |
| 7/16     | 14               | —   | 2B           | 3             | 100 | 1301301108 | 73.75             |

| Tap Size | Threads Per Inch |     | Class of Fit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|-----|------------|-------------------|
|          | UNC              | UNF |              |               |     |            |                   |
| 7/16     | —                | 20  | 2B           | 3             | 100 | 1301301208 | 73.75             |
| 1/2      | 13               | —   | 2B           | 3             | 110 | 1301301308 | 82.73             |
| 1/2      | —                | 20  | 2B           | 3             | 100 | 1301301408 | 82.73             |
| 5/8      | 11               | —   | 2B           | 4             | 110 | 1301301508 | 130.24            |
| 5/8      | —                | 18  | 2B           | 4             | 100 | 1301301608 | 130.24            |
| 3/4      | 10               | —   | 2B           | 4             | 125 | 1301301708 | 159.22            |
| 3/4      | —                | 16  | 2B           | 4             | 110 | 1301301808 | 159.22            |

Packed: Up to 3/8" = 10 pcs; 7/16" to 5/8" = 5 pcs; 3/4" = 1 pc.  
Available V coating only.

## List 13113 **NEW!**

Coolant Thru, DIN Overall Length, Bottom(1.5P-2P)



| Tap Size | Pitch | Class of Fit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|-----|------------|-------------------|
| M6       | 1.0   | 6H           | 3             | 80  | 1311300508 | 57.87             |
| M8       | 1.25  | 6H           | 3             | 90  | 1311300608 | 60.43             |
| M10      | 1.25  | 6H           | 3             | 100 | 1311300708 | 70.52             |
| M10      | 1.5   | 6H           | 3             | 100 | 1311300808 | 70.52             |
| M12      | 1.25  | 6H           | 3             | 100 | 1311300908 | 80.19             |
| M12      | 1.5   | 6H           | 3             | 100 | 1311301008 | 80.19             |
| M12      | 1.75  | 6H           | 3             | 110 | 1311301108 | 80.19             |
| M14      | 1.5   | 6H           | 3             | 100 | 1311301208 | 112.72            |

| Tap Size | Pitch | Class of Fit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|-----|------------|-------------------|
| M14      | 2.0   | 6H           | 3             | 110 | 1311301308 | 112.72            |
| M16      | 1.5   | 6H           | 3             | 100 | 1311301408 | 127.57            |
| M16      | 2.0   | 6H           | 3             | 110 | 1311301508 | 127.57            |
| M18      | 1.5   | 6H           | 4             | 110 | 1311301608 | 170.25            |
| M18      | 2.5   | 6H           | 4             | 125 | 1311301708 | 170.25            |
| M20      | 1.5   | 6H           | 4             | 125 | 1311301808 | 221.61            |
| M20      | 2.5   | 6H           | 4             | 140 | 1311301908 | 221.61            |

Packed: Up to M10 = 10 pcs; M12 to M16 = 5 pcs; M18 and up = 1 pc.  
Available V coating only.

### Work Material

| List No. | Aluminum     |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium          | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|--------------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|-------------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061<br>7075 | Casting |           | 1010<br>1018     | 1035<br>1045      | 1065              | 4140<br>4340 | 20 Hrc     | 6AL4V<br>(30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 13013    |              | ○       | ○         |                  |                   | ○                 | ⊗            | ○          |                   |                   |                 |     |        |                 |           |           |
| 13113    |              | ○       | ○         |                  |                   | ○                 | ⊗            | ○          |                   |                   |                 |     |        |                 |           |           |

○ good ⊗ best





# HY-PRO<sup>®</sup> SYNCHRO AL

High Speed Tapping of Aluminum and Aluminum Alloy

## List 13058

Modified Bottom(2.5P-3P)



SPEED  
FEED  
P281

HSSE

TiCN



| Tap Size | Threads Per Inch |     | Class of Fit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|-------------------|
|          | UNC              | UNF |              |               |            |                   |
| 6        | 32               | —   | 2B           | 2             | 1305800108 | 23.82             |
| 8        | 32               | —   | 2B           | 2             | 1305800208 | 23.82             |
| 10       | 24               | —   | 2B           | 2             | 1305800308 | 24.00             |
| 10       | —                | 32  | 2B           | 2             | 1305800408 | 24.00             |
| 1/4      | 20               | —   | 2B           | 2             | 1305800508 | 24.61             |
| 1/4      | —                | 28  | 2B           | 2             | 1305800608 | 24.61             |

| Tap Size | Threads Per Inch |     | Class of Fit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|-------------------|
|          | UNC              | UNF |              |               |            |                   |
| 5/16     | 18               | —   | 2B           | 2             | 1305800708 | 31.25             |
| 5/16     | —                | 24  | 2B           | 2             | 1305800808 | 31.25             |
| 3/8      | 16               | —   | 2B           | 2             | 1305800908 | 37.90             |
| 3/8      | —                | 24  | 2B           | 2             | 1305801008 | 37.90             |
| 1/2      | 13               | —   | 2B           | 2             | 1305801108 | 49.48             |
| 1/2      | —                | 20  | 2B           | 2             | 1305801208 | 49.48             |

Packed: Up to 3/8" = 10 pcs; 1/2" = 5 pcs.  
Available TiCN finish only.

## List 13158

Modified Bottom(2.5P-3P)



SPEED  
FEED  
P281

HSSE

TiCN



| Tap Size | Pitch | Class of Fit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|------------|-------------------|
| M3       | 0.5   | 6H           | 2             | 1315800108 | 24.23             |
| M4       | 0.7   | 6H           | 2             | 1315800208 | 23.82             |
| M5       | 0.8   | 6H           | 2             | 1315800308 | 24.00             |
| M6       | 1.0   | 6H           | 2             | 1315800408 | 24.61             |
| M8       | 1.25  | 6H           | 2             | 1315800508 | 31.25             |

| Tap Size | Pitch | Class of Fit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|------------|-------------------|
| M10      | 1.25  | 6H           | 2             | 1315800608 | 37.90             |
| M10      | 1.5   | 6H           | 2             | 1315800708 | 37.90             |
| M12      | 1.5   | 6H           | 2             | 1315800808 | 49.48             |
| M12      | 1.75  | 6H           | 2             | 1315800908 | 49.48             |

Packed: Up to M10 = 10 pcs; M12 = 5 pcs.  
Available TiCN finish only.

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 13058    | ⊙         | ⊙       |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |           |
| 13158    | ⊙         | ⊙       |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |           |

○ good ⊙ best



## List 295

Modified Bottom(2.5P-3P)



SPEED  
FEED  
P281

HSSE

BR



| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|-------------------|
|          | UNC              | UNF |              |               |            |                   |
| 4        | 40               | —   | H2           | 2             | 2951300    | 23.20             |
| 4        | 40               | —   | H3           | 2             | 2951400    | 23.20             |
| 6        | 32               | —   | H2           | 2             | 2952500    | 18.48             |
| 6        | 32               | —   | H3           | 2             | 2952600    | 18.48             |
| 8        | 32               | —   | H2           | 2             | 2953100    | 18.48             |
| 8        | 32               | —   | H3           | 2             | 2953200    | 18.48             |
| 10       | 24               | —   | H3           | 2             | 2953800    | 18.48             |
| 10       | —                | 32  | H2           | 2             | 2954300    | 18.48             |
| 10       | —                | 32  | H3           | 2             | 2954400    | 18.48             |
| 10       | —                | 32  | H5           | 2             | 2954600    | 18.48             |

| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|-------------------|
|          | UNC              | UNF |              |               |            |                   |
| 1/4      | 20               | —   | H3           | 2             | 2955000    | 20.05             |
| 1/4      | 20               | —   | H5           | 2             | 2955200    | 20.05             |
| 1/4      | —                | 28  | H3           | 2             | 2955600    | 20.05             |
| 5/16     | 18               | —   | H3           | 2             | 2956200    | 24.53             |
| 5/16     | 18               | —   | H5           | 2             | 2956400    | 24.53             |
| 5/16     | —                | 24  | H3           | 2             | 2956800    | 24.53             |
| 5/16     | —                | 24  | H4           | 2             | 2956900    | 24.53             |
| 3/8      | 16               | —   | H3           | 2             | 2957400    | 28.58             |
| 3/8      | 16               | —   | H5           | 2             | 2957600    | 28.58             |
| 3/8      | —                | 24  | H3           | 2             | 2958000    | 28.58             |

Packed: 10 pcs. TiCN coating available on request.

## List 296

Modified Bottom(2.5P-3P)



SPEED  
FEED  
P281

HSSE

BR



| Tap Size | Pitch | Thread Limit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|------------|-------------------|
| M3       | 0.5   | D3           | 2             | 2963300    | 27.57             |
| M4       | 0.7   | D4           | 2             | 2963400    | 25.41             |
| M5       | 0.8   | D5           | 2             | 2963500    | 25.41             |
| M6       | 1.0   | D5           | 2             | 2963600    | 25.41             |

| Tap Size | Pitch | Thread Limit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|------------|-------------------|
| M8       | 1.25  | D5           | 2             | 2963800    | 27.57             |
| M10      | 1.25  | D5           | 2             | 2964000    | 38.82             |
| M10      | 1.5   | D6           | 2             | 2964100    | 38.82             |

Packed: 10 pcs. TiCN coating available on request.

Spiral Fluted

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 295      | ⊙         | ⊙       |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |           |
| 296      | ⊙         | ⊙       |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |           |

○ good ⊙ best



## List 290 **NEW SIZES**



Modified Bottom(2.5P-3P)



Spiral Fluted

| Tap Size | Threads Per Inch |     |         | No. Of Flutes | EDP Number |       |       |       |       |       |       | List Price (Each) |        |
|----------|------------------|-----|---------|---------------|------------|-------|-------|-------|-------|-------|-------|-------------------|--------|
|          | UNC              | UNF | 8 pitch |               | H2         | H3    | H4    | H5    | H6    | H7    | H11   | S/O-Br            | TiCN   |
| 2        | 56               | —   | —       | 2             | 29056      | —     | —     | —     | —     | —     | —     | 33.39             | 38.33  |
| 3        | 48               | —   | —       | 2             | 29060      | —     | —     | —     | —     | —     | —     | 26.83             | 30.84  |
| 4        | 40               | —   | —       | 3             | 29064      | 29114 | 29165 | 29166 | —     | —     | —     | 22.03             | 25.31  |
| 4        | —                | 48  | —       | 3             | 29168      | —     | —     | —     | —     | —     | —     | 22.03             | 24.33  |
| 5        | 40               | —   | —       | 3             | 29070      | —     | —     | —     | —     | —     | —     | 22.03             | 25.31  |
| 6        | 32               | —   | —       | 3             | 29074      | 29124 | —     | 29174 | —     | 29175 | 29177 | 17.90             | 20.54  |
| 6        | —                | 40  | —       | 3             | 29072      | —     | —     | —     | —     | —     | —     | 17.90             | 25.31  |
| 8        | 32               | —   | —       | 3             | 29078      | 29128 | —     | 29178 | —     | 29180 | 29181 | 17.90             | 20.54  |
| 10       | 24               | —   | —       | 3             | —          | 29134 | —     | 29184 | —     | —     | 29234 | 17.90             | 20.54  |
| 10       | —                | 32  | —       | 3             | 29088      | 29138 | —     | 29188 | —     | 29190 | 29191 | 17.90             | 20.54  |
| 12       | 24               | —   | —       | 3             | —          | 29236 | —     | —     | —     | —     | —     | 19.43             | 22.30  |
| 12       | —                | 28  | —       | 3             | —          | 29238 | —     | —     | —     | —     | —     | 19.43             | 22.30  |
| 1/4      | 20               | —   | —       | 3             | 29280      | 29300 | —     | 29400 | —     | 29402 | 29403 | 21.44             | 22.30  |
| 1/4      | —                | 28  | —       | 3             | 29303      | 29304 | 29354 | 29404 | —     | 29406 | 29407 | 21.44             | 22.30  |
| 5/16     | 18               | —   | —       | 3             | 29306      | 29308 | —     | 29408 | —     | 29410 | 29411 | 23.88             | 27.40  |
| 5/16     | —                | 24  | —       | 3             | 29264      | 29312 | 29362 | 29412 | 29413 | 29414 | 29415 | 23.88             | 27.40  |
| 3/8      | 16               | —   | —       | 3             | 29315      | 29316 | —     | 29416 | —     | 29421 | 29419 | 23.88             | 31.87  |
| 3/8      | —                | 24  | —       | 3             | 29268      | 29318 | 29368 | 29418 | —     | 29417 | 29423 | 27.74             | 31.87  |
| 7/16     | 14               | —   | —       | 3             | —          | 29320 | —     | 29420 | —     | 29431 | 29433 | 41.45             | 47.60  |
| 7/16     | —                | 20  | —       | 3             | —          | 29322 | —     | 29422 | —     | 29490 | 29428 | 41.45             | 47.60  |
| 1/2      | 13               | —   | —       | 3             | —          | 29324 | —     | 29424 | —     | 29425 | 29427 | 48.86             | 56.09  |
| 1/2      | —                | 20  | —       | 3             | 29276      | 29326 | —     | 29426 | —     | 29429 | 29430 | 48.86             | 56.09  |
| 9/16     | 12               | —   | —       | 4             | —          | 29486 | —     | —     | —     | —     | —     | 74.46             | 77.46  |
| 9/16     | —                | 18  | —       | 4             | —          | 29488 | —     | —     | —     | —     | —     | 74.46             | 77.46  |
| 5/8      | 11               | —   | —       | 4             | —          | 29332 | —     | 29432 | —     | —     | —     | 86.04             | 98.79  |
| 5/8      | —                | 18  | —       | 4             | —          | 29334 | —     | —     | —     | —     | —     | 86.04             | 98.79  |
| 3/4      | 10               | —   | —       | 4             | —          | 29336 | —     | 29436 | —     | —     | —     | 110.67            | 127.06 |
| 3/4      | —                | 16  | —       | 4             | —          | 29338 | —     | 29438 | —     | —     | —     | 110.67            | 127.06 |
| 7/8      | 9                | —   | —       | 4             | —          | —     | —     | 29440 | —     | —     | —     | 153.90            | 176.40 |
| 7/8      | —                | 14  | —       | 4             | —          | —     | 29392 | —     | —     | —     | —     | 161.14            | 184.68 |
| 1        | 8                | —   | —       | 4             | —          | —     | —     | 29444 | —     | —     | —     | 205.33            | 235.32 |
| 1        | —                | 12  | —       | 4             | —          | —     | 29396 | —     | —     | —     | —     | 215.58            | 247.07 |
| 1-1/8    | 7                | —   | —       | 4             | —          | —     | —     | —     | 29472 | —     | —     | 299.12            | —      |
| 1-1/8    | —                | 12  | —       | 4             | —          | —     | —     | 29450 | —     | —     | —     | 318.30            | —      |
| 1-1/8    | —                | —   | 8       | 4             | —          | —     | —     | —     | 29476 | —     | —     | 338.33            | —      |
| 1-1/4    | 7                | —   | —       | 4             | —          | —     | —     | —     | 29477 | —     | —     | 393.50            | —      |
| 1-1/4    | —                | 12  | —       | 4             | —          | —     | —     | 29456 | —     | —     | —     | 398.62            | —      |
| 1-1/4    | —                | —   | 8       | 4             | —          | —     | —     | —     | 29479 | —     | —     | 415.46            | —      |
| 1-3/8    | 6                | —   | —       | 4             | —          | —     | —     | —     | 29480 | —     | —     | 466.93            | —      |
| 1-3/8    | —                | 12  | —       | 4             | —          | —     | —     | 29462 | —     | —     | —     | 469.85            | —      |
| 1-3/8    | —                | —   | 8       | 4             | —          | —     | —     | —     | 29482 | —     | —     | 500.18            | —      |
| 1-1/2    | 6                | —   | —       | 4             | —          | —     | —     | —     | 29483 | —     | —     | 536.98            | —      |
| 1-1/2    | —                | 12  | —       | 4             | —          | —     | —     | 29468 | —     | —     | —     | 548.65            | —      |
| 1-1/2    | —                | —   | 8       | 4             | —          | —     | —     | —     | 29485 | —     | —     | 585.01            | —      |

Packed: Up to 3/8" = 10 pcs; 7/16" to 5/8" = 5 pcs; 3/4" and up = 1 pc. **Red EDP Numbers** indicate available Bright or Steam Oxide finish. All others available Steam Oxide only. Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide; 08 = TiCN. TiN coating available on request for **Red EDP Numbers** only.

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |           |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 290           |           |         | ○         | ○                | ○                 | ⊙                 | ⊙            | ⊙          |                |                   | ○               | ○   | ○      | ○               | ○         |           |

○ good ⊙ best



## List 299 NEW SIZES

Modified Bottom(2.5P-3P)



| Tap Size | Pitch | No. Of Flutes | EDP Number |       |       |       |       |       |       |       | List Price (Each) |        |
|----------|-------|---------------|------------|-------|-------|-------|-------|-------|-------|-------|-------------------|--------|
|          |       |               | D3         | D4    | D5    | D6    | D7    | D8    | D9    | D11   | S/O-Br            | TiCN   |
| M3       | 0.5   | 3             | 29904      | —     | —     | —     | —     | —     | —     | 29931 | 27.50             | 31.51  |
| M3.5     | 0.6   | 3             | —          | 29905 | —     | —     | —     | —     | —     | 29933 | 25.41             | 29.10  |
| M4       | 0.7   | 3             | —          | 29906 | —     | —     | —     | —     | —     | 29935 | 25.41             | 29.10  |
| M5       | 0.8   | 3             | —          | 29908 | —     | —     | —     | —     | —     | 29937 | 25.41             | 29.10  |
| M6       | 1.0   | 3             | —          | —     | 29910 | —     | —     | —     | —     | 29939 | 25.41             | 29.10  |
| M7       | 1.0   | 3             | —          | —     | 29911 | —     | —     | —     | —     | 29941 | 27.50             | 31.51  |
| M8       | 1.0   | 3             | —          | —     | 29913 | —     | —     | —     | —     | 29943 | 27.50             | 31.51  |
| M8       | 1.25  | 3             | —          | —     | 29914 | —     | —     | —     | —     | 29945 | 27.50             | 31.51  |
| M10      | 1.0   | 3             | —          | —     | 29916 | —     | —     | —     | —     | 29947 | 38.82             | 44.48  |
| M10      | 1.25  | 3             | —          | —     | 29917 | —     | —     | —     | —     | 29949 | 38.82             | 44.48  |
| M10      | 1.5   | 3             | —          | —     | —     | 29918 | —     | —     | —     | 29951 | 38.82             | 44.48  |
| M12      | 1.25  | 3             | —          | —     | 29921 | —     | —     | —     | —     | 29952 | 46.75             | 53.57  |
| M12      | 1.5   | 3             | —          | —     | —     | 29922 | —     | —     | —     | 29955 | 46.75             | 53.57  |
| M12      | 1.75  | 3             | —          | —     | —     | 29923 | —     | —     | —     | 29957 | 46.75             | 53.57  |
| M14      | 1.5   | 3             | —          | —     | —     | 29925 | —     | —     | —     | —     | 70.55             | 86.45  |
| M14      | 2.0   | 3             | —          | —     | —     | —     | 29926 | —     | —     | —     | 70.55             | 86.45  |
| M16      | 1.5   | 3             | —          | —     | —     | 29928 | —     | —     | —     | —     | 82.85             | 98.75  |
| M16      | 2.0   | 3             | —          | —     | —     | —     | 29929 | —     | —     | —     | 82.85             | 98.75  |
| M18      | 1.5   | 4             | —          | —     | —     | 29930 | —     | —     | —     | —     | 119.94            | 137.94 |
| M18      | 2.5   | 4             | —          | —     | —     | —     | 29932 | —     | —     | —     | 119.94            | 137.94 |
| M20      | 1.5   | 4             | —          | —     | —     | 29934 | —     | —     | —     | —     | 165.14            | 186.07 |
| M20      | 2.5   | 4             | —          | —     | —     | —     | —     | 29936 | —     | —     | 157.30            | 178.17 |
| M22      | 1.5   | 4             | —          | —     | —     | 29938 | —     | —     | —     | —     | 176.39            | —      |
| M22      | 2.5   | 4             | —          | —     | —     | —     | —     | 29940 | —     | —     | 167.92            | —      |
| M24      | 1.5   | 4             | —          | —     | —     | 29942 | —     | —     | —     | —     | 242.25            | —      |
| M24      | 3.0   | 4             | —          | —     | —     | —     | —     | 29944 | —     | —     | 230.73            | —      |
| M27      | 1.5   | 4             | —          | —     | —     | 29946 | —     | —     | —     | —     | 327.44            | —      |
| M27      | 3.0   | 4             | —          | —     | —     | —     | —     | 29948 | —     | —     | 307.74            | —      |
| M30      | 1.5   | 4             | —          | —     | —     | 29950 | —     | —     | —     | —     | 385.96            | —      |
| M30      | 3.5   | 4             | —          | —     | —     | —     | —     | —     | 29953 | —     | 379.98            | —      |

Packed: Up to M10 = 10 pcs; M12 to M16 = 5 pcs; M18 and up = 1 pc  
 Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide; 08 = TiCN.  
 Black EDP Numbers are not available Bright finish.  
 TiN coating available on request for Red EDP Numbers only.

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |           |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 299           |           |         | ○         | ○                | ○                 | ⊙                 | ⊙            | ⊙          |                |                   | ○               | ○   | ○      | ○               | ○         |           |

○ good ⊙ best



## List 298

Bottom(1.5P-2P)



|                       |     |     |    |     |     |
|-----------------------|-----|-----|----|-----|-----|
| SPEED<br>FEED<br>P281 | HSS | S/O | BR | TiN | 50° |
|-----------------------|-----|-----|----|-----|-----|



| Tap Size | Threads Per Inch |     | Class of Fit | No. Of Flutes | EDP Number | List Price (Each) |       |
|----------|------------------|-----|--------------|---------------|------------|-------------------|-------|
|          | UNC              | UNF |              |               |            | S/O-Br            | TiN   |
| 3        | 48               | —   | 2B           | 2             | 29845      | 19.28             | 23.83 |
| 3        | —                | 56  | 2B           | 2             | 29846      | 19.28             | 23.83 |
| 4        | 40               | —   | 2B           | 2             | 29850      | 15.83             | 20.37 |
| 4        | —                | 48  | 2B           | 2             | 29864      | 15.83             | —     |
| 5        | 40               | —   | 2B           | 2             | 29865      | 15.83             | 20.37 |
| 6        | 32               | —   | 2B           | 2             | 29852      | 12.96             | 17.40 |
| 6        | —                | 40  | 2B           | 2             | 29866      | 12.86             | 17.40 |
| 8        | 32               | —   | 2B           | 3             | 29853      | 12.86             | 17.40 |
| 8        | —                | 36  | 2B           | 3             | 29867      | 12.86             | 17.40 |
| 10       | 24               | —   | 2B           | 3             | 29854      | 12.86             | 17.40 |
| 10       | —                | 32  | 2B           | 3             | 29855      | 12.86             | 17.40 |

| Tap Size | Threads Per Inch |     | Class of Fit | No. Of Flutes | EDP Number | List Price (Each) |       |
|----------|------------------|-----|--------------|---------------|------------|-------------------|-------|
|          | UNC              | UNF |              |               |            | S/O-Br            | TiN   |
| 12       | 24               | —   | 2B           | 3             | 29868      | 13.97             | 18.50 |
| 1/4      | 20               | —   | 2B           | 3             | 29856      | 13.97             | 18.50 |
| 1/4      | —                | 28  | 2B           | 3             | 29857      | 13.97             | 18.50 |
| 5/16     | 18               | —   | 2B           | 3             | 29858      | 17.16             | 23.96 |
| 5/16     | —                | 24  | 2B           | 3             | 29859      | 17.16             | 23.96 |
| 3/8      | 16               | —   | 2B           | 3             | 29860      | 19.95             | 26.75 |
| 3/8      | —                | 24  | 2B           | 3             | 29861      | 19.95             | 26.75 |
| 7/16     | 14               | —   | 2B           | 3             | 29869      | 29.79             | 39.72 |
| 7/16     | —                | 20  | 2B           | 3             | 29870      | 29.79             | 39.72 |
| 1/2      | 13               | —   | 2B           | 3             | 29862      | 35.12             | 45.05 |
| 1/2      | —                | 20  | 2B           | 3             | 29863      | 35.12             | 45.05 |

Packed: Up to 3/8" = 10 pcs; 7/16" to 1/2"=5 pcs  
Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide; 05 = TiN.

## List 298

Bottom(1.5P-2P)



|                       |     |     |    |     |     |
|-----------------------|-----|-----|----|-----|-----|
| SPEED<br>FEED<br>P281 | HSS | S/O | BR | TiN | 50° |
|-----------------------|-----|-----|----|-----|-----|

| Tap Size | Pitch | Class of Fit | No. of Flutes | EDP Number | List Price (Each) |       |
|----------|-------|--------------|---------------|------------|-------------------|-------|
|          |       |              |               |            | S/O-Br            | TiN   |
| M3       | 0.5   | 6H           | 2             | 29880      | 18.16             | 22.70 |
| M4       | 0.7   | 6H           | 3             | 29881      | 16.04             | 21.10 |
| M5       | 0.8   | 6H           | 3             | 29882      | 16.04             | 21.10 |
| M6       | 1.0   | 6H           | 3             | 29883      | 16.04             | 20.56 |

| Tap Size | Pitch | Class of Fit | No. of Flutes | EDP Number | List Price (Each) |       |
|----------|-------|--------------|---------------|------------|-------------------|-------|
|          |       |              |               |            | S/O-Br            | TiN   |
| M8       | 1.25  | 6H           | 3             | 29884      | 19.70             | 26.50 |
| M10      | 1.5   | 6H           | 3             | 29885      | 34.20             | 41.00 |
| M12      | 1.75  | 6H           | 3             | 29886      | 41.10             | 46.49 |

Packed: Up to M10 = 10 pcs; M12 = 5 pcs.  
Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide; 05 = TiN.

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 298      | ○         | ○       |           | ◎                | ◎                 |                   |              |            |                |                   |                 |     |        |                 |           |           |

○ good ◎ best





# GENERAL PURPOSE

## List 107

Plug(4P-4.5P), Bottom(1.5P-2P)



| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number |        | List Price (Each) |        |
|----------|------------------|-----|--------------|---------------|------------|--------|-------------------|--------|
|          | UNC              | UNF |              |               | Plug       | Bottom | S/O-Br            | TiCN   |
| 3        | 48               | —   | H2           | 2             | 14060      | 14061  | 27.14             | —      |
| 4        | 40               | —   | H2           | 2             | 14064      | 14065  | 22.33             | 25.32  |
| 5        | 40               | —   | H2           | 2             | 14070      | 14071  | 22.33             | 25.32  |
| 6        | 32               | —   | H2           | 2             | 50014      | 50015  | 18.15             | —      |
| 6        | 32               | —   | H3           | 2             | 14124      | 14125  | 18.15             | 21.12  |
| 8        | 32               | —   | H2           | 3             | 50018      | 50019  | 18.15             | —      |
| 8        | 32               | —   | H3           | 3             | 14128      | 14129  | 18.15             | 23.97  |
| 10       | 24               | —   | H3           | 3             | 14132      | 14133  | 18.15             | 23.97  |
| 10       | —                | 32  | H2           | 3             | 50026      | 50027  | 18.15             | —      |
| 10       | —                | 32  | H3           | 3             | 14134      | 14135  | 18.15             | 23.97  |
| 12       | 24               | —   | H3           | 3             | 14136      | 14137  | 19.69             | —      |
| 1/4      | 20               | —   | H5           | 3             | 50034      | 50035  | 19.69             | 25.52  |
| 1/4      | 20               | —   | H3           | 3             | 14300      | 14301  | 19.69             | 25.52  |
| 1/4      | —                | 28  | H3           | 3             | 14302      | 14303  | 19.69             | 24.54  |
| 5/16     | 18               | —   | H5           | 3             | 50046      | 50047  | 24.21             | —      |
| 5/16     | 18               | —   | H3           | 3             | 14304      | 14305  | 24.21             | 33.34  |
| 5/16     | —                | 24  | H3           | 3             | 14306      | 14307  | 24.21             | —      |
| 3/8      | 16               | —   | H5           | 3             | 50054      | 50055  | 28.23             | 37.25  |
| 3/8      | 16               | —   | H3           | 3             | 14308      | 14309  | 28.23             | 37.25  |
| 3/8      | —                | 24  | H3           | 3             | 14310      | 14311  | 28.23             | 37.25  |
| 7/16     | 14               | —   | H5           | 3             | —          | 50062  | 42.03             | —      |
| 7/16     | 14               | —   | H3           | 3             | 14312      | 14313  | 42.03             | 51.14  |
| 7/16     | —                | 20  | H3           | 3             | 14316      | 14317  | 42.03             | 51.14  |
| 1/2      | 13               | —   | H5           | 3             | 50070      | 50071  | 52.80             | 58.70  |
| 1/2      | 13               | —   | H3           | 3             | 14320      | 14321  | 49.53             | 58.70  |
| 1/2      | —                | 20  | H3           | 3             | 14324      | 14325  | 49.54             | 58.70  |
| 5/8      | 11               | —   | H3           | 4             | 14328      | 14329  | 87.26             | 104.52 |
| 5/8      | —                | 18  | H3           | 4             | 14332      | 14333  | 87.26             | 104.52 |
| 3/4      | 10               | —   | H3           | 4             | 14336      | 14337  | 112.21            | 131.63 |
| 3/4      | —                | 16  | H3           | 4             | 14340      | 14341  | 112.21            | 126.58 |

Packed: Up to 3/8" = 10 pcs; 7/16" to 5/8" = 5pcs; 3/4" = 1 pc.

Specify treatment at time of order; 00 = Bright; 01 = Steam Oxide; 08 = TiCN

Red EDP numbers indicate available Steam Oxide, Bright, and TiCN. All others available Bright and TiCN.

TiN coating available on request.

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |                     |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|---------------------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |                     |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc 45-50 Hrc |
| 107           | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     |        | ○               |                     |

○ good ○ best



# GENERAL PURPOSE

## List 143

Plug(4P-4.5P), Bottom(1.5P-2P)

|                                   |            |           |            |  |
|-----------------------------------|------------|-----------|------------|--|
| <b>SPEED<br/>FEED</b><br>P278-279 | <b>HSS</b> | <b>BR</b> | <b>S/O</b> |  |
|-----------------------------------|------------|-----------|------------|--|



| Tap Size | Pitch | Thread Limit | No. of Flutes | EDP Number |        | S/O-Br Price (Each) |
|----------|-------|--------------|---------------|------------|--------|---------------------|
|          |       |              |               | Plug       | Bottom |                     |
| M3       | 0.5   | D3           | 2             | 19851      | 19852  | 22.33               |
| M4       | 0.7   | D4           | 3             | 19854      | 19855  | 19.69               |
| M5       | 0.8   | D4           | 3             | 19857      | 19858  | 19.69               |
| M6       | 1.0   | D5           | 3             | 19860      | 19861  | 19.69               |

| Tap Size | Pitch | Thread Limit | No. of Flutes | EDP Number |        | S/O-Br Price (Each) |
|----------|-------|--------------|---------------|------------|--------|---------------------|
|          |       |              |               | Plug       | Bottom |                     |
| M8       | 1.25  | D5           | 3             | 19863      | 19864  | 24.21               |
| M10      | 1.5   | D6           | 3             | 19866      | 19867  | 42.03               |
| M12      | 1.75  | D6           | 3             | 19869      | 19870  | 50.48               |

Packed: Up to M10 = 10 pcs; M12 = 5 pcs.

Red EDP numbers indicate available Steam Oxide and Bright. All others available Bright Only.

Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide.

TiCN, TiN coatings available on request.

## List 123

JIS, Modified Bottom(2.5P-3P)

|                                   |            |           |  |
|-----------------------------------|------------|-----------|--|
| <b>SPEED<br/>FEED</b><br>P278-279 | <b>HSS</b> | <b>BR</b> |  |
|-----------------------------------|------------|-----------|--|



| Tap Size | Pitch | Class of Fit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|------------|-------------------|
| M3       | 0.5   | 2            | 3             | 1960100    | 22.33             |
| M4       | 0.7   | 2            | 3             | 1960400    | 19.69             |
| M5       | 0.8   | 2            | 3             | 1960700    | 19.69             |
| M6       | 1.0   | 2            | 3             | 1961000    | 19.69             |
| M8       | 1.25  | 2            | 3             | 1961300    | 24.21             |
| M10      | 1.25  | 2            | 3             | 1961600    | 42.03             |
| M10      | 1.5   | 2            | 3             | 1961900    | 42.03             |
| M12      | 1.5   | 2            | 3             | 1962200    | 50.48             |
| M12      | 1.75  | 2            | 3             | 1962500    | 50.48             |
| M14      | 1.5   | 2            | 3             | 1962800    | 68.48             |

| Tap Size | Pitch | Class of Fit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|------------|-------------------|
| M14      | 2.0   | 2            | 3             | 1963100    | 68.48             |
| M16      | 1.5   | 2            | 3             | 1963400    | 78.06             |
| M16      | 2.0   | 2            | 3             | 1963700    | 78.06             |
| M18      | 1.5   | 2            | 4             | 1964000    | 116.51            |
| M18      | 2.5   | 2            | 4             | 1964300    | 116.51            |
| M20      | 1.5   | 2            | 4             | 1964600    | 150.88            |
| M20      | 2.5   | 2            | 4             | 1964900    | 150.88            |
| M22      | 2.5   | 2            | 4             | 1965500    | 194.57            |
| M24      | 3.0   | 2            | 4             | 1966100    | 243.54            |

Packed: Up to M10 = 10 pcs; M12 to M16 = 5 pcs; M18 and up = 1 pc.

Note: List 123 Taps will normally produce JIS Class II and ISO 6H Limits.

TiCN, TiN coatings available on request.

### Work Material

| List No.   | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|            | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| <b>143</b> | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     |        | ○               |           |           |
| <b>123</b> | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     |        | ○               |           |           |

○ good ⊗ best



# GENERAL PURPOSE

## List 918

Long Shank, Plug(4P-4.5P), Bottom(1.5P-2P)



| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | OAL | EDP Number |         | List Price (Each) |
|----------|------------------|-----|--------------|---------------|-----|------------|---------|-------------------|
|          | UNC              | UNF |              |               |     | Plug       | Bottom  |                   |
| 4        | 40               | —   | H2           | 2             | 4   | 1296000    | 1296100 | 68.13             |
| 6        | 32               | —   | H3           | 2             | 4   | 1296200    | 1296300 | 68.13             |
| 6        | 32               | —   | H3           | 2             | 6   | 1296400    | 1296500 | 78.43             |
| 8        | 32               | —   | H3           | 3             | 4   | 1296600    | 1296700 | 67.35             |
| 8        | 32               | —   | H3           | 3             | 6   | 1296800    | 1296900 | 77.67             |
| 10       | 24               | —   | H3           | 3             | 4   | 1297000    | 1297100 | 64.37             |
| 10       | 24               | —   | H3           | 3             | 6   | 1297200    | 1297300 | 73.74             |
| 10       | —                | 32  | H3           | 3             | 4   | 1297400    | 1297500 | 64.37             |
| 10       | —                | 32  | H3           | 3             | 6   | 1297600    | 1297700 | 73.74             |
| 1/4      | 20               | —   | H3           | 3             | 4   | 1297800    | 1297900 | 54.42             |
| 1/4      | 20               | —   | H3           | 3             | 6   | 1298000    | 1298100 | 67.93             |
| 1/4      | —                | 28  | H3           | 3             | 6   | 1298200    | 1298300 | 67.93             |
| 5/16     | 18               | —   | H3           | 3             | 6   | 1298400    | 1298500 | 70.94             |
| 3/8      | 16               | —   | H3           | 3             | 6   | 1298600    | 1298700 | 79.57             |
| 7/16     | 14               | —   | H3           | 3             | 6   | 1298800    | 1298900 | 84.43             |
| 1/2      | 13               | —   | H3           | 3             | 6   | 1299000    | 1299100 | 85.36             |
| 5/8      | 11               | —   | H3           | 4             | 6   | 1299200    | 1299300 | 113.89            |

Packed: 1 pc. TiCN, TiN coatings available on request.

Spiral Fluted

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |           |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 918           | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     |        | ○               |           |           |

○ good ⊗ best



# EXOTAP® VC-10 TI

Ideal for Difficult to Machine Materials

## List 312TI

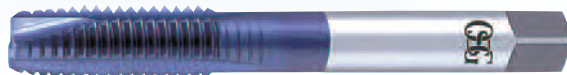
For Titanium Alloys, Plug(4P-4.5P)



SPEED  
FEED  
P278-279

VC10

TiCN



| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|-------------------|
|          | UNC              | UNF |              |               |            |                   |
| 2        | 56               | —   | H2           | 3             | 1105610108 | 62.79             |
| 4        | 40               | —   | H2           | 3             | 1105610208 | 39.92             |
| 6        | 32               | —   | H2           | 3             | 1105610408 | 32.47             |
| 6        | 32               | —   | H3           | 3             | 1105610508 | 32.47             |
| 6        | —                | 40  | H2           | 3             | 1105610608 | 32.47             |
| 8        | 32               | —   | H2           | 3             | 1105610708 | 32.47             |
| 8        | 32               | —   | H3           | 3             | 1105610808 | 32.47             |
| 8        | —                | 36  | H2           | 3             | 1105610908 | 32.47             |
| 10       | 24               | —   | H3           | 3             | 1105611008 | 33.12             |
| 10       | —                | 32  | H2           | 3             | 1105611108 | 33.12             |
| 10       | —                | 32  | H3           | 3             | 1105611208 | 33.12             |
| 1/4      | 20               | —   | H3           | 3             | 1105611308 | 42.86             |
| 1/4      | 20               | —   | H5           | 3             | 1105611408 | 42.86             |
| 1/4      | —                | 28  | H3           | 3             | 1105611508 | 42.86             |
| 1/4      | —                | 28  | H4           | 3             | 1105611608 | 42.86             |
| 5/16     | 18               | —   | H3           | 3             | 1105611708 | 46.74             |

| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|-------------------|
|          | UNC              | UNF |              |               |            |                   |
| 5/16     | 18               | —   | H5           | 3             | 1105611808 | 46.74             |
| 5/16     | —                | 24  | H3           | 3             | 1105611908 | 46.74             |
| 5/16     | —                | 24  | H4           | 3             | 1105612008 | 46.74             |
| 3/8      | 16               | —   | H3           | 3             | 1105612108 | 52.60             |
| 3/8      | 16               | —   | H5           | 3             | 1105612208 | 52.60             |
| 3/8      | —                | 24  | H3           | 3             | 1105612308 | 52.60             |
| 3/8      | —                | 24  | H4           | 3             | 1105612408 | 52.60             |
| 7/16     | 14               | —   | H3           | 3             | 1105612508 | 67.98             |
| 7/16     | 14               | —   | H5           | 3             | 1105612608 | 67.98             |
| 7/16     | —                | 20  | H3           | 3             | 1105612708 | 67.98             |
| 7/16     | —                | 20  | H5           | 3             | 1105612808 | 67.98             |
| 1/2      | 13               | —   | H3           | 3             | 1105612908 | 79.45             |
| 1/2      | 13               | —   | H5           | 3             | 1105613008 | 79.45             |
| 1/2      | —                | 20  | H3           | 3             | 1105613108 | 79.45             |
| 1/2      | —                | 20  | H5           | 3             | 1105613208 | 79.45             |

Packed: Up to 3/8" = 10 pcs; 7/16" to 1/2" = 5 pcs  
Available TiCN finish only.

Spiral Pointed

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 312TI    |           |         |           |                  |                   |                   |              |            | ⊙              | ○                 |                 |     | ○      | ⊙               | ○         |           |

○ good ⊙ best



## List 312NI

For Nickel Based Alloys, Plug(4P-4.5P)



SPEED  
FEED  
P278-279

VC10

S/O



| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|-------------------|
|          | UNC              | UNF |              |               |            |                   |
| 4        | 40               | —   | H2           | 3             | 1776201    | 35.39             |
| 4        | 40               | —   | H3           | 3             | 1776301    | 35.39             |
| 6        | 32               | —   | H3           | 3             | 1706301    | 30.54             |
| 6        | 32               | —   | H5           | 3             | 1706401    | 30.54             |
| 8        | 32               | —   | H3           | 3             | 1706501    | 30.54             |
| 8        | 32               | —   | H5           | 3             | 1706601    | 30.54             |
| 10       | 24               | —   | H3           | 3             | 1706701    | 31.15             |
| 10       | 24               | —   | H5           | 3             | 1706801    | 31.15             |
| 10       | —                | 32  | H3           | 3             | 1706901    | 31.15             |
| 10       | —                | 32  | H5           | 3             | 1707001    | 31.15             |
| 1/4      | 20               | —   | H3           | 3             | 1707101    | 40.30             |
| 1/4      | 20               | —   | H5           | 3             | 1707201    | 40.30             |
| 1/4      | —                | 28  | H3           | 3             | 1707301    | 40.30             |
| 1/4      | —                | 28  | H5           | 3             | 1707401    | 40.30             |
| 5/16     | 18               | —   | H3           | 3             | 1707501    | 43.98             |

| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|-------------------|
|          | UNC              | UNF |              |               |            |                   |
| 5/16     | 18               | —   | H5           | 3             | 1707601    | 43.98             |
| 5/16     | —                | 24  | H3           | 3             | 1707701    | 43.98             |
| 5/16     | —                | 24  | H5           | 3             | 1707801    | 43.98             |
| 3/8      | 16               | —   | H3           | 3             | 1707901    | 49.48             |
| 3/8      | 16               | —   | H5           | 3             | 1708001    | 49.48             |
| 3/8      | —                | 24  | H3           | 3             | 1708101    | 49.48             |
| 3/8      | —                | 24  | H5           | 3             | 1708201    | 49.48             |
| 7/16     | 14               | —   | H3           | 3             | 1708301    | 63.93             |
| 7/16     | 14               | —   | H5           | 3             | 1708401    | 63.93             |
| 7/16     | —                | 20  | H3           | 3             | 1708501    | 63.93             |
| 7/16     | —                | 20  | H5           | 3             | 1708601    | 63.93             |
| 1/2      | 13               | —   | H3           | 3             | 1708701    | 74.72             |
| 1/2      | 13               | —   | H5           | 3             | 1708801    | 74.72             |
| 1/2      | —                | 20  | H3           | 3             | 1708901    | 74.72             |
| 1/2      | —                | 20  | H5           | 3             | 1709001    | 74.72             |

Packed: Up to 3/8" = 10 pcs; 7/16" to 1/2" = 5pcs.  
Available Steam Oxide finish only.

Spiral Pointed

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |           |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 312NI         |           |         |           |                  |                   |                   |              |            | ○              | ⊙                 |                 | ○   | ○      | ⊙               | ○         |           |

○ good ⊙ best





## List 312

Plug(4P-4.5P)



| SPEED<br>FEED<br>P278-279 | VC-10 | TiCN | S/O |
|---------------------------|-------|------|-----|
|---------------------------|-------|------|-----|



| Tap Size | Threads Per Inch |     | No. Of<br>Flutes | EDP Number |       |       |       |       | List Price (Each) |        |
|----------|------------------|-----|------------------|------------|-------|-------|-------|-------|-------------------|--------|
|          | UNC              | UNF |                  | H2         | H3    | H4    | H5    | H6    | S/O               | TiCN   |
| 2        | 56               | —   | 2                | 17590      | —     | —     | —     | —     | 44.08             | 50.29  |
| 4        | 40               | —   | 2                | 17570      | 17591 | 17592 | 17593 | —     | 27.98             | 31.91  |
| 5        | 40               | —   | 3                | 17571      | —     | —     | —     | —     | 27.98             | 31.91  |
| 6        | 32               | —   | 3                | 17594      | 17572 | 17595 | 17596 | 17597 | 23.46             | 26.75  |
| 8        | 32               | —   | 3                | 17598      | 17573 | 17599 | 17600 | 17601 | 23.46             | 26.75  |
| 10       | 24               | —   | 3                | —          | 17574 | —     | 17602 | —     | 23.95             | 27.31  |
| 10       | —                | 32  | 3                | 17603      | 17575 | 17604 | 17605 | 17606 | 23.95             | 27.31  |
| 1/4      | 20               | —   | 3                | —          | 17576 | —     | 17002 | —     | 31.01             | 35.40  |
| 1/4      | —                | 28  | 3                | —          | 17577 | 17003 | 17004 | 17005 | 31.01             | 35.40  |
| 5/16     | 18               | —   | 3                | —          | 17578 | —     | 17006 | —     | 33.78             | 38.52  |
| 5/16     | —                | 24  | 3                | —          | 17579 | 17007 | 17008 | 17009 | 33.78             | 38.52  |
| 3/8      | 16               | —   | 3                | —          | 17580 | —     | 17010 | —     | 38.07             | 43.42  |
| 3/8      | —                | 24  | 3                | —          | 17581 | 17011 | 17012 | 17013 | 38.07             | 43.42  |
| 7/16     | 14               | —   | 3                | —          | 17582 | —     | 17014 | —     | 49.17             | 56.08  |
| 7/16     | —                | 20  | 3                | —          | 17583 | —     | 17015 | —     | 49.17             | 56.08  |
| 1/2      | 13               | —   | 3                | —          | 17584 | —     | 17016 | —     | 57.23             | 65.29  |
| 1/2      | —                | 20  | 3                | —          | 17585 | —     | 17017 | —     | 57.23             | 65.29  |
| 5/8      | 11               | —   | 3                | —          | 17586 | —     | —     | —     | 94.82             | 108.12 |
| 5/8      | —                | 18  | 3                | —          | 17587 | —     | 17018 | —     | 94.82             | 108.12 |
| 3/4      | 10               | —   | 4                | —          | 17588 | —     | —     | —     | 149.52            | 170.56 |
| 3/4      | —                | 16  | 4                | —          | 17589 | —     | —     | —     | 149.52            | 170.56 |

Packed: Up to 3/8" = 10 pcs; 7/16" to 5/8" = 5 pcs; 3/4 = 1 pc.  
Specify treatment at time of order: 01 = Steam Oxide; 08 = TiCN.

## List 344

Plug(4P-4.5P)



| SPEED<br>FEED<br>P278-279 | VC-10 | TiCN | S/O |
|---------------------------|-------|------|-----|
|---------------------------|-------|------|-----|



| Tap Size | Pitch | Thread Limit | No. of Flutes | EDP Number | List Price (Each) |       |
|----------|-------|--------------|---------------|------------|-------------------|-------|
|          |       |              |               |            | S/O               | TiCN  |
| M3       | 0.5   | D3           | 3             | 17022      | 32.54             | 37.11 |
| M4       | 0.7   | D4           | 3             | 17023      | 26.87             | 30.65 |
| M5       | 0.8   | D4           | 3             | 17024      | 27.58             | 31.45 |
| M6       | 1.0   | D5           | 3             | 17025      | 34.90             | 39.80 |

| Tap Size | Pitch | Thread Limit | No. of Flutes | EDP Number | List Price (Each) |       |
|----------|-------|--------------|---------------|------------|-------------------|-------|
|          |       |              |               |            | S/O               | TiCN  |
| M8       | 1.25  | D5           | 3             | 17026      | 38.18             | 43.55 |
| M10      | 1.25  | D5           | 3             | 17027      | 55.15             | 62.91 |
| M10      | 1.5   | D6           | 3             | 17028      | 55.15             | 62.91 |
| M12      | 1.75  | D6           | 3             | 17029      | 63.64             | 72.58 |

Packed: Up to M10 = 10 pcs; M12 = 5 pcs.  
Specify treatment at time of order: 01 = Steam Oxide; 08 = TiCN.

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |           |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 312           |           |         |           |                  |                   |                   | ○            | ○          | ○              | ○                 |                 | ⊗   | ⊗      | ⊗               | ○         |           |
| 344           |           |         |           |                  |                   |                   | ○            | ○          | ○              | ○                 |                 | ⊗   | ⊗      | ⊗               | ⊗         |           |

○ good ⊗ best



## List 300

Plug(4P-4.5P)



|                           |      |      |     |
|---------------------------|------|------|-----|
| SPEED<br>FEED<br>P278-279 | HSSE | TiCN | S/O |
|---------------------------|------|------|-----|



| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number | List Price |       |
|----------|------------------|-----|--------------|---------------|------------|------------|-------|
|          | UNC              | UNF |              |               |            | S/O        | TiCN  |
| 2        | 56               | —   | H2           | 2             | 17346      | 33.90      | 38.68 |
| 2        | 56               | —   | H3           | 2             | 17347      | 33.90      | 38.68 |
| 4        | 40               | —   | H2           | 2             | 17300      | 21.46      | 24.48 |
| 4        | 40               | —   | H3           | 2             | 17348      | 21.46      | 24.48 |
| 4        | 40               | —   | H5           | 2             | 17349      | 21.46      | 24.48 |
| 5        | 40               | —   | H2           | 2             | 17301      | 21.46      | 24.48 |
| 6        | 32               | —   | H2           | 2             | 17358      | 18.08      | 20.61 |
| 6        | 32               | —   | H3           | 2             | 17302      | 18.08      | 20.61 |
| 6        | 32               | —   | H5           | 2             | 17371      | 18.08      | 20.61 |
| 8        | 32               | —   | H2           | 3             | 17359      | 18.08      | 20.64 |
| 8        | 32               | —   | H3           | 3             | 17303      | 18.08      | 20.61 |
| 8        | 32               | —   | H5           | 3             | 17372      | 18.08      | 20.61 |
| 10       | 24               | —   | H4           | 3             | 17304      | 18.38      | 20.97 |
| 10       | —                | 32  | H2           | 3             | 17365      | 18.38      | 20.97 |
| 10       | —                | 32  | H3           | 3             | 17305      | 18.38      | 20.97 |
| 10       | —                | 32  | H4           | 3             | 17764      | 18.38      | 20.97 |
| 10       | —                | 32  | H5           | 3             | 17373      | 18.38      | 20.97 |
| 1/4      | 20               | —   | H2           | 3             | 17366      | 20.03      | 22.85 |
| 1/4      | 20               | —   | H3           | 3             | 17306      | 20.03      | 22.85 |
| 1/4      | 20               | —   | H5           | 3             | 17374      | 20.03      | 22.85 |
| 1/4      | —                | 28  | H2           | 3             | 17367      | 20.03      | 22.85 |
| 1/4      | —                | 28  | H3           | 3             | 17307      | 20.03      | 22.85 |
| 1/4      | —                | 28  | H4           | 3             | 17368      | 20.03      | 22.85 |
| 5/16     | 18               | —   | H3           | 3             | 17308      | 21.75      | 24.82 |
| 5/16     | 18               | —   | H5           | 3             | 17383      | 21.75      | 24.82 |

| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number | List Price |        |
|----------|------------------|-----|--------------|---------------|------------|------------|--------|
|          | UNC              | UNF |              |               |            | S/O        | TiCN   |
| 5/16     | —                | 24  | H3           | 3             | 17309      | 21.75      | 24.82  |
| 5/16     | —                | 24  | H4           | 3             | 17369      | 21.75      | 24.82  |
| 3/8      | 16               | —   | H3           | 3             | 17310      | 24.55      | 28.01  |
| 3/8      | 16               | —   | H5           | 3             | 17384      | 24.55      | 28.01  |
| 3/8      | —                | 24  | H3           | 3             | 17311      | 24.55      | 28.01  |
| 3/8      | —                | 24  | H4           | 3             | 17370      | 24.55      | 28.01  |
| 7/16     | 14               | —   | H3           | 3             | 17312      | 31.65      | 36.07  |
| 7/16     | 14               | —   | H5           | 3             | 17385      | 31.65      | 36.07  |
| 7/16     | —                | 20  | H3           | 3             | 17313      | 31.65      | 36.07  |
| 7/16     | —                | 20  | H5           | 3             | 17386      | 31.65      | 36.07  |
| 1/2      | 13               | —   | H3           | 3             | 17314      | 36.97      | 42.21  |
| 1/2      | 13               | —   | H5           | 3             | 17387      | 36.97      | 42.21  |
| 1/2      | —                | 20  | H3           | 3             | 17315      | 36.97      | 42.21  |
| 1/2      | —                | 20  | H5           | 3             | 17388      | 36.97      | 42.21  |
| 9/16     | 12               | —   | H3           | 3             | 17250      | 59.27      | 67.61  |
| 9/16     | —                | 18  | H3           | 3             | 17251      | 59.27      | 67.61  |
| 5/8      | 11               | —   | H3           | 3             | 17316      | 67.78      | 77.34  |
| 5/8      | 11               | —   | H5           | 3             | 17389      | 67.78      | 77.34  |
| 5/8      | —                | 18  | H3           | 3             | 17317      | 67.78      | 77.34  |
| 3/4      | 10               | —   | H3           | 3             | 17318      | 107.33     | 122.39 |
| 3/4      | —                | 16  | H3           | 3             | 17319      | 107.33     | 122.39 |
| 7/8      | 9                | —   | H4           | 3             | 17252      | 139.85     | 159.50 |
| 7/8      | —                | 14  | H4           | 3             | 17253      | 139.85     | 159.50 |
| 1        | 8                | —   | H4           | 3             | 17254      | 185.71     | 211.83 |

Packed: Up to 3/8" = 10 pcs; 7/16" to 5/8" = 5 pcs; 3/4" and Up = 1 pc.  
Specify treatment at time of order: 01 = Steam Oxide; 08 = TiCN.

Spiral Pointed

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |                     |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|---------------------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |                     |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc 45-50 Hrc |
| 300           |           |         |           | ○                | ○                 |                   |              |            |                |                   | ⊙               | ○   | ⊙      | ○               |                     |

○ good ⊙ best



# EXOTAP VA-3®

Ideal for Stainless Steel

## List 342

Plug (4P-4.5P)



SPEED  
FEED  
P278-279

HSSE

TiCN

S/O



| Tap Size | Pitch | Thread Limit | No. of Flutes | EDP Number | List Price (Each) |       |
|----------|-------|--------------|---------------|------------|-------------------|-------|
|          |       |              |               |            | S/O               | TiCN  |
| M3       | 0.5   | D3           | 3             | 17501      | 24.88             | 28.38 |
| M4       | 0.7   | D4           | 3             | 17504      | 20.63             | 23.54 |
| M5       | 0.8   | D4           | 3             | 17507      | 21.16             | 24.15 |
| M6       | 1.0   | D5           | 3             | 17510      | 23.17             | 26.38 |

| Tap Size | Pitch | Thread Limit | No. of Flutes | EDP Number | List Price (Each) |       |
|----------|-------|--------------|---------------|------------|-------------------|-------|
|          |       |              |               |            | S/O               | TiCN  |
| M8       | 1.25  | D5           | 3             | 17513      | 25.43             | 28.99 |
| M10      | 1.5   | D6           | 3             | 17516      | 36.70             | 41.86 |
| M12      | 1.75  | D6           | 3             | 17519      | 42.35             | 48.29 |

Packed: Up to M10 = 10 pcs; M12 = 5 pcs.

Specify treatment at time of order: 01 = Steam Oxide; 08 = TiCN.

Spiral Pointed

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 342      |           |         |           | ○                | ○                 |                   |              |            |                |                   | ◎               | ○   | ◎      | ○               |           |           |

○ good ◎ best



## List 397

Long Shank, Plug(4P-4.5P)



SPEED  
FEED  
P278-279

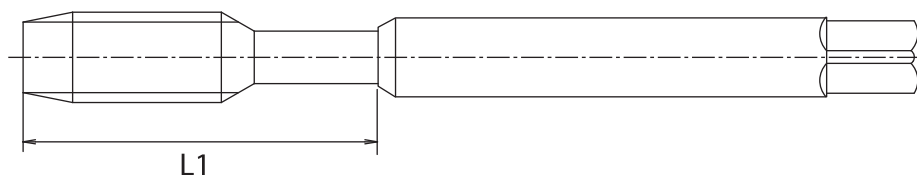
HSSE

S/O



| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | OAL | Neck Length | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|-----|-------------|------------|-------------------|
|          | UNC              | UNF |              |               |     | L1          |            |                   |
| 4        | 40               | —   | H2           | 2             | 4   | 0.843       | 1764001    | 54.14             |
| 6        | 32               | —   | H3           | 2             | 4   | 1.031       | 1764101    | 54.14             |
| 6        | 32               | —   | H3           | 2             | 6   | 1.031       | 1764201    | 62.36             |
| 8        | 32               | —   | H3           | 3             | 4   | 1.125       | 1764301    | 53.43             |
| 8        | 32               | —   | H3           | 3             | 6   | 1.125       | 1764401    | 61.69             |
| 10       | 24               | —   | H3           | 3             | 4   | 1.312       | 1764501    | 51.05             |
| 10       | 24               | —   | H3           | 3             | 6   | 1.312       | 1764601    | 58.56             |
| 10       | —                | 32  | H3           | 3             | 4   | 1.312       | 1764701    | 51.05             |
| 10       | —                | 32  | H3           | 3             | 6   | 1.312       | 1764801    | 58.56             |
| 1/4      | 20               | —   | H3           | 3             | 4   | 1.500       | 1764901    | 43.18             |
| 1/4      | 20               | —   | H3           | 3             | 6   | 1.500       | 1765001    | 53.96             |
| 1/4      | —                | 28  | H3           | 3             | 6   | 1.500       | 1765101    | 53.96             |
| 5/16     | 18               | —   | H3           | 3             | 6   | 1.687       | 1765201    | 56.20             |
| 5/16     | —                | 24  | H3           | 3             | 6   | 1.687       | 1765701    | 56.20             |
| 3/8      | 16               | —   | H3           | 3             | 6   | 1.875       | 1765301    | 63.22             |
| 3/8      | —                | 24  | H3           | 3             | 6   | 1.875       | 1765801    | 63.22             |
| 7/16     | 14               | —   | H3           | 3             | 6   | —           | 1765401    | 67.14             |
| 7/16     | —                | 20  | H3           | 3             | 6   | —           | 1765901    | 67.14             |
| 1/2      | 13               | —   | H3           | 3             | 6   | —           | 1765501    | 67.67             |
| 1/2      | —                | 20  | H3           | 3             | 6   | —           | 1766001    | 67.67             |
| 5/8      | 11               | —   | H3           | 3             | 6   | —           | 1765601    | 90.45             |

Packed: 1 pc. Available Steam Oxide finish only.



Neck length is designed for reaching 50% deeper holes than ANSI standard taps.

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |                     |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|---------------------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |                     |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc 45-50 Hrc |
| 397           |           |         |           | ○                | ○                 |                   |              |            |                |                   | ⊙               | ○   | ⊙      | ○               |                     |

○ good ⊙ best



## List 320

Plug(4P-4.5P)



SPEED  
FEED  
P278-279

HSSE

TiN



| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|-------------------|
|          | UNC              | UNF |              |               |            |                   |
| 4        | 40               | —   | H2           | 2             | 1740005    | 27.15             |
| 5        | 40               | —   | H2           | 2             | 1740105    | 27.15             |
| 6        | 32               | —   | H3           | 2             | 1740205    | 23.62             |
| 6        | 32               | —   | H5           | 2             | 1742005    | 23.62             |
| 6        | 32               | —   | H7           | 2             | 1742105    | 23.62             |
| 8        | 32               | —   | H3           | 3             | 1740305    | 23.62             |
| 10       | 24               | —   | H3           | 3             | 1740405    | 23.20             |
| 10       | —                | 32  | H3           | 3             | 1740505    | 23.90             |
| 10       | —                | 32  | H5           | 3             | 1742205    | 23.90             |
| 10       | —                | 32  | H7           | 3             | 1742305    | 23.90             |
| 1/4      | 20               | —   | H3           | 3             | 1740605    | 26.07             |
| 1/4      | —                | 28  | H3           | 3             | 1740705    | 25.31             |
| 1/4      | —                | 28  | H5           | 3             | 1742405    | 25.31             |
| 1/4      | —                | 28  | H7           | 3             | 1742505    | 25.31             |
| 5/16     | 18               | —   | H3           | 3             | 1740805    | 27.41             |

| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|-------------------|
|          | UNC              | UNF |              |               |            |                   |
| 5/16     | —                | 24  | H3           | 3             | 1740905    | 28.23             |
| 5/16     | —                | 24  | H5           | 3             | 1742605    | 28.23             |
| 5/16     | —                | 24  | H7           | 3             | 1742705    | 28.23             |
| 3/8      | 16               | —   | H3           | 3             | 1741005    | 32.03             |
| 3/8      | —                | 24  | H3           | 3             | 1741105    | 31.11             |
| 3/8      | —                | 24  | H5           | 3             | 1742805    | 31.11             |
| 3/8      | —                | 24  | H7           | 3             | 1742905    | 31.11             |
| 7/16     | 14               | —   | H3           | 3             | 1741205    | 40.05             |
| 7/16     | —                | 20  | H3           | 3             | 1741305    | 40.05             |
| 1/2      | 13               | —   | H3           | 3             | 1741405    | 48.03             |
| 1/2      | —                | 20  | H3           | 3             | 1741505    | 48.03             |
| 5/8      | 11               | —   | H3           | 3             | 1741605    | 88.23             |
| 5/8      | —                | 18  | H3           | 3             | 1741705    | 88.23             |
| 3/4      | 10               | —   | H3           | 3             | 1741805    | 139.83            |
| 3/4      | —                | 16  | H3           | 3             | 1741905    | 139.83            |

Packed: Up to 3/8" = 10 pcs; 7/16" to 5/8" = 5 pcs; 3/4 and up = 1 pc.  
Available TiN finish only.

### Recommended Tapping Speeds

| Material                    | SFM       |
|-----------------------------|-----------|
| Tool Steels, Alloyed Steels | 25 to 50  |
| Heat resistant Steels       | 16 to 20  |
| Stainless Steels            | 30 to 60  |
| Hardened Steels             | 20 to 40  |
| Aluminum Cast, Die Cast     | 50 to 100 |

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 320      | ○         | ○       |           | ○                | ○                 | ⊙                 |              |            |                |                   | ⊙               | ○   | ⊙      | ○               |           |           |

○ good ⊙ best





## List 250

DIN Overall Length, Plug(4P-4.5P)



| Tap Size | Threads Per Inch |     | Class of Fit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|-----|------------|-------------------|
|          | UNC              | UNF |              |               |     |            |                   |
| 4        | 40               | —   | 2B           | 2             | 56  | 2511401    | 15.27             |
| 6        | 32               | —   | 2B           | 2             | 56  | 2512401    | 12.73             |
| 8        | 32               | —   | 2B           | 3             | 63  | 2517801    | 12.73             |
| 10       | 24               | —   | 2B           | 3             | 70  | 2513401    | 12.73             |
| 10       | —                | 32  | 2B           | 3             | 70  | 2518801    | 12.73             |
| 1/4      | 20               | —   | 2B           | 3             | 80  | 2530001    | 14.12             |
| 1/4      | —                | 28  | 2B           | 3             | 80  | 2530401    | 14.12             |
| 5/16     | 18               | —   | 2B           | 3             | 90  | 2530801    | 15.77             |
| 5/16     | —                | 24  | 2B           | 3             | 90  | 2531201    | 15.77             |
| 3/8      | 16               | —   | 2B           | 3             | 100 | 2531601    | 17.86             |

| Tap Size | Threads Per Inch |     | Class of Fit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|-----|------------|-------------------|
|          | UNC              | UNF |              |               |     |            |                   |
| 3/8      | —                | 24  | 2B           | 3             | 100 | 2531801    | 17.86             |
| 7/16     | 14               | —   | 2B           | 3             | 100 | 2532001    | 23.22             |
| 7/16     | —                | 20  | 2B           | 3             | 100 | 2532201    | 23.22             |
| 1/2      | 13               | —   | 2B           | 3             | 110 | 2532401    | 26.83             |
| 1/2      | —                | 20  | 2B           | 3             | 100 | 2532601    | 26.83             |
| 5/8      | 11               | —   | 2B           | 3             | 110 | 2533201    | 48.63             |
| 5/8      | —                | 18  | 2B           | 3             | 100 | 2533401    | 48.63             |
| 3/4      | 10               | —   | 2B           | 3             | 125 | 2533601    | 76.29             |
| 3/4      | —                | 16  | 2B           | 3             | 110 | 2533801    | 76.29             |

Packed: Up to 3/8" = 10 pcs; 7/16" to 5/8" = 5 pcs; 3/4 = 1 pc.  
Available Steam Oxide finish only.

## List 259

DIN Overall Length, Plug(4P-4.5P)



| Tap Size | Pitch | Class of Fit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|-----|------------|-------------------|
| M3       | 0.5   | 6H           | 3             | 56  | 2590401    | 19.80             |
| M4       | 0.7   | 6H           | 3             | 63  | 2590601    | 17.63             |
| M5       | 0.8   | 6H           | 3             | 70  | 2590801    | 17.63             |
| M6       | 1.0   | 6H           | 3             | 80  | 2591001    | 17.63             |
| M8       | 1.25  | 6H           | 3             | 90  | 2591401    | 19.80             |
| M10      | 1.25  | 6H           | 3             | 100 | 2591701    | 27.53             |
| M10      | 1.5   | 6H           | 3             | 100 | 2591801    | 27.53             |
| M12      | 1.25  | 6H           | 3             | 100 | 2592101    | 33.03             |
| M12      | 1.5   | 6H           | 3             | 100 | 2592201    | 33.03             |

| Tap Size | Pitch | Class of Fit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|-----|------------|-------------------|
| M12      | 1.75  | 6H           | 3             | 110 | 2592301    | 33.03             |
| M14      | 1.5   | 6H           | 3             | 100 | 2592501    | 49.18             |
| M14      | 2.0   | 6H           | 3             | 110 | 2592601    | 49.18             |
| M16      | 1.5   | 6H           | 3             | 100 | 2592801    | 59.64             |
| M16      | 2.0   | 6H           | 3             | 110 | 2592901    | 59.64             |
| M18      | 1.5   | 6H           | 3             | 110 | 2593001    | 83.60             |
| M18      | 2.5   | 6H           | 3             | 125 | 2593201    | 83.60             |
| M20      | 1.5   | 6H           | 3             | 125 | 2593401    | 119.78            |
| M20      | 2.5   | 6H           | 3             | 140 | 2593601    | 119.78            |

Packed: Up to M10 = 10 pcs; M12 to M16 = 5 pcs; M18 and up = 1 pc.  
Available Steam Oxide finish only.

### Work Material

| List No. | Aluminum     |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium          | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|--------------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|-------------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061<br>7075 | Casting |           | 1010<br>1018     | 1035<br>1045      | 1065              | 4140<br>4340 | 20 Hrc     | 6AL4V<br>(30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 250      |              |         | ○         | ○                | ○                 | ⊗                 | ⊗            | ⊗          |                   |                   | ○               | ○   | ○      | ○               | ○         |           |
| 259      |              |         | ○         | ○                | ○                 | ⊗                 | ⊗            | ⊗          |                   |                   | ○               | ○   | ○      | ○               | ○         |           |

○ good ⊗ best



## List 260

Coolant Thru, DIN Overall Length, Plug(4P-4.5P)



SPEED  
FEED  
P281

HSSE

TiN



| Tap Size | Threads Per Inch |     | Class of Fit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|-----|------------|-------------------|
|          | UNC              | UNF |              |               |     |            |                   |
| 1/4      | 20               | —   | 2B           | 3             | 80  | 2630005    | 48.47             |
| 1/4      | —                | 28  | 2B           | 3             | 80  | 2630405    | 48.47             |
| 5/16     | 18               | —   | 2B           | 3             | 90  | 2630805    | 50.60             |
| 5/16     | —                | 24  | 2B           | 3             | 90  | 2631205    | 50.60             |
| 3/8      | 16               | —   | 2B           | 3             | 100 | 2631605    | 49.21             |
| 3/8      | —                | 24  | 2B           | 3             | 100 | 2631805    | 49.21             |
| 7/16     | 14               | —   | 2B           | 3             | 100 | 2632005    | 56.21             |

| Tap Size | Threads Per Inch |     | Class of Fit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|-----|------------|-------------------|
|          | UNC              | UNF |              |               |     |            |                   |
| 7/16     | —                | 20  | 2B           | 3             | 100 | 2632205    | 56.21             |
| 1/2      | 13               | —   | 2B           | 3             | 110 | 2632405    | 60.96             |
| 1/2      | —                | 20  | 2B           | 3             | 100 | 2632605    | 60.96             |
| 5/8      | 11               | —   | 2B           | 3             | 110 | 2633205    | 93.31             |
| 5/8      | —                | 18  | 2B           | 3             | 100 | 2633405    | 93.31             |
| 3/4      | 10               | —   | 2B           | 3             | 125 | 2633605    | 130.30            |
| 3/4      | —                | 16  | 2B           | 3             | 110 | 2633805    | 130.30            |

Packed: Up to 3/8" = 10 pcs; 7/16" to 5/8" = 5 pcs; 3/4 = 1 pc.  
Available TiN finish only.

## List 269

Coolant Thru, DIN Overall Length, Plug(4P-4.5P)



SPEED  
FEED  
P281

HSSE

TiN



| Tap Size | Pitch | Class of Fit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|-----|------------|-------------------|
| M6       | 1.0   | 6H           | 3             | 80  | 2691005    | 52.99             |
| M8       | 1.25  | 6H           | 3             | 90  | 2691405    | 55.81             |
| M10      | 1.25  | 6H           | 3             | 100 | 2691705    | 61.83             |
| M10      | 1.5   | 6H           | 3             | 100 | 2691805    | 61.83             |
| M12      | 1.25  | 6H           | 3             | 100 | 2692105    | 68.99             |
| M12      | 1.5   | 6H           | 3             | 100 | 2692205    | 68.99             |
| M12      | 1.75  | 6H           | 3             | 110 | 2692305    | 68.99             |
| M14      | 1.5   | 6H           | 3             | 100 | 2692505    | 94.01             |

| Tap Size | Pitch | Class of Fit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|-----|------------|-------------------|
| M14      | 2.0   | 6H           | 3             | 110 | 2692605    | 94.01             |
| M16      | 1.5   | 6H           | 3             | 100 | 2692805    | 107.59            |
| M16      | 2.0   | 6H           | 3             | 110 | 2692905    | 107.59            |
| M18      | 1.5   | 6H           | 3             | 110 | 2693005    | 139.78            |
| M18      | 2.5   | 6H           | 3             | 125 | 2693205    | 139.78            |
| M20      | 1.5   | 6H           | 3             | 125 | 2693405    | 186.81            |
| M20      | 2.5   | 6H           | 3             | 140 | 2693605    | 186.81            |

Packed: Up to M10 = 10 pcs; M12 to M16 = 5 pcs; M18 and up = 1 pc.  
Available TiN finish only.

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 260      |           | ○       | ○         | ○                | ○                 | ⊗                 | ⊗            | ⊗          |                |                   | ○               | ○   | ⊗      | ○               | ○         |           |
| 269      |           | ○       | ○         | ○                | ○                 | ⊗                 | ⊗            | ⊗          |                |                   | ○               | ○   | ⊗      | ○               | ○         |           |

○ good ⊗ best



# HY-PRO® SYNCHRO AL

High Speed Tapping of Aluminum and Aluminum Alloy

## List 13059

Synchronized, Left Hand Spiral, Plug(4P-4.5P)



SPEED  
FEED  
P281

HSSE

TiCN

LH



| Tap Size | Threads Per Inch |     | Class of Fit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|-------------------|
|          | UNC              | UNF |              |               |            |                   |
| 6        | 32               | —   | 2B           | 2             | 1305900108 | 23.82             |
| 8        | 32               | —   | 2B           | 2             | 1305900208 | 23.82             |
| 10       | 24               | —   | 2B           | 2             | 1305900308 | 24.01             |
| 10       | —                | 32  | 2B           | 2             | 1305900408 | 24.01             |
| 1/4      | 20               | —   | 2B           | 2             | 1305900508 | 24.60             |
| 1/4      | —                | 28  | 2B           | 2             | 1305900608 | 24.60             |

| Tap Size | Threads Per Inch |     | Class of Fit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|-------------------|
|          | UNC              | UNF |              |               |            |                   |
| 5/16     | 18               | —   | 2B           | 2             | 1305900708 | 31.25             |
| 5/16     | —                | 24  | 2B           | 2             | 1305900808 | 31.25             |
| 3/8      | 16               | —   | 2B           | 2             | 1305900908 | 37.90             |
| 3/8      | —                | 24  | 2B           | 2             | 1305901008 | 37.90             |
| 1/2      | 13               | —   | 2B           | 2             | 1305901108 | 49.48             |
| 1/2      | —                | 20  | 2B           | 2             | 1305901208 | 49.48             |

Packed: Up to 3/8" = 10 pcs; 7/16" to 1/2" = 5 pcs.  
Available TiCN finish only.

## List 13159

Synchronized, Left Hand Spiral, Plug(4P-4.5P)



SPEED  
FEED  
P281

HSSE

TiCN

LH



| Tap Size | Pitch | Class of Fit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|------------|-------------------|
| M3       | 0.5   | 6H           | 2             | 1315900108 | 24.23             |
| M4       | 0.7   | 6H           | 2             | 1315900208 | 23.82             |
| M5       | 0.8   | 6H           | 2             | 1315900308 | 24.01             |
| M6       | 1.0   | 6H           | 2             | 1315900408 | 24.60             |
| M8       | 1.25  | 6H           | 2             | 1315900508 | 31.25             |

| Tap Size | Pitch | Class of Fit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|------------|-------------------|
| M10      | 1.25  | 6H           | 2             | 1315900608 | 37.90             |
| M10      | 1.5   | 6H           | 2             | 1315900708 | 37.90             |
| M12      | 1.5   | 6H           | 2             | 1315900808 | 49.48             |
| M12      | 1.75  | 6H           | 2             | 1315900908 | 49.48             |

Packed: M10 = 10 pcs; M12 = 5 pcs.  
Available TiCN finish only.

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 13059    | ⊙         | ⊙       |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |           |
| 13159    | ⊙         | ⊙       |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |           |

⊙ good ⊙ best





SPEED  
FEED  
P281

HSSE

TiCN

S/O

BR



Spiral Pointed

| Tap Size | Threads Per Inch |     |         | No. Of Flutes | EDP Number |       |       |       |       |       |       | List Price (Each) |        |
|----------|------------------|-----|---------|---------------|------------|-------|-------|-------|-------|-------|-------|-------------------|--------|
|          | UNC              | UNF | 8 pitch |               | H2         | H3    | H4    | H5    | H6    | H7    | H11   | S/O-Br            | TiCN   |
| 2        | 56               | —   | —       | 2             | 28056      | —     | —     | —     | —     | —     | —     | 22.30             | 28.19  |
| 3        | 48               | —   | —       | 2             | 28060      | —     | —     | —     | —     | —     | —     | 17.83             | 22.56  |
| 4        | 40               | —   | —       | 2             | 28064      | 28114 | 28163 | 28164 | —     | —     | —     | 14.71             | 18.57  |
| 4        | —                | 48  | —       | 2             | 28165      | —     | —     | —     | —     | —     | —     | 14.71             | 17.84  |
| 5        | 40               | —   | —       | 2             | 28070      | —     | —     | —     | —     | —     | —     | 14.71             | 18.57  |
| 6        | 32               | —   | —       | 2             | 28074      | 28124 | 28125 | 28174 | 28175 | 28176 | 28177 | 12.22             | 15.44  |
| 6        | —                | 40  | —       | 2             | 28076      | —     | —     | —     | —     | —     | —     | 12.22             | 15.44  |
| 8        | 32               | —   | —       | 3             | 28078      | 28128 | 28129 | 28178 | 28179 | 28180 | 28181 | 12.22             | 15.44  |
| 8        | —                | 36  | —       | 3             | 28080      | —     | —     | —     | —     | —     | —     | 12.22             | 15.44  |
| 10       | 24               | —   | —       | 3             | —          | 28134 | —     | 28184 | —     | —     | 28234 | 12.22             | 15.44  |
| 10       | —                | 32  | —       | 3             | 28088      | 28138 | 28139 | 28188 | 28189 | 28190 | 28191 | 12.22             | 15.44  |
| 12       | 24               | —   | —       | 3             | 28090      | —     | —     | —     | —     | —     | —     | 12.22             | 14.84  |
| 12       | —                | 28  | —       | 3             | 28092      | —     | —     | —     | —     | —     | —     | 12.22             | 15.44  |
| 1/4      | 20               | —   | —       | 3             | 28094      | 28300 | —     | 28400 | —     | 28548 | 28550 | 13.56             | 17.13  |
| 1/4      | —                | 28  | —       | 3             | 28096      | 28304 | 28354 | 28404 | 28405 | 28406 | 28407 | 13.56             | 17.13  |
| 5/16     | 18               | —   | —       | 3             | —          | 28308 | —     | 28408 | —     | 28556 | 28558 | 15.19             | 19.22  |
| 5/16     | —                | 24  | —       | 3             | 28264      | 28312 | 28362 | 28412 | 28413 | 28414 | 28415 | 15.19             | 19.22  |
| 3/8      | 16               | —   | —       | 3             | —          | 28316 | —     | 28416 | —     | 28564 | 28566 | 17.16             | 21.69  |
| 3/8      | —                | 24  | —       | 3             | 28268      | 28318 | 28368 | 28418 | 28419 | 28417 | 28568 | 17.16             | 21.69  |
| 7/16     | 14               | —   | —       | 3             | —          | 28320 | —     | 28420 | —     | 28421 | 28423 | 22.30             | 28.19  |
| 7/16     | —                | 20  | —       | 3             | —          | 28322 | —     | 28422 | —     | 28425 | 28430 | 22.30             | 28.19  |
| 1/2      | 13               | —   | —       | 3             | —          | 28324 | —     | 28424 | —     | 28428 | 28574 | 25.76             | 32.59  |
| 1/2      | —                | 20  | —       | 3             | 28276      | 28326 | —     | 28426 | —     | 28427 | 28429 | 25.76             | 32.59  |
| 9/16     | 12               | —   | —       | 3             | —          | 28576 | —     | —     | —     | —     | —     | 35.56             | 45.01  |
| 9/16     | —                | 18  | —       | 3             | —          | 28578 | —     | —     | —     | —     | —     | 35.56             | 45.01  |
| 5/8      | 11               | —   | —       | 3             | —          | 28332 | —     | 28432 | —     | —     | —     | 46.76             | 59.10  |
| 5/8      | —                | 18  | —       | 3             | —          | 28334 | —     | 28434 | —     | 28580 | —     | 46.76             | 59.10  |
| 3/4      | 10               | —   | —       | 3             | —          | 28336 | —     | 28436 | —     | —     | —     | 73.36             | 92.71  |
| 3/4      | —                | 16  | —       | 3             | —          | 28338 | —     | 28438 | —     | —     | —     | 73.36             | 92.71  |
| 7/8      | 9                | —   | —       | 3             | —          | —     | —     | 28440 | —     | —     | —     | 104.96            | 137.71 |
| 7/8      | —                | 14  | —       | 3             | —          | —     | 28392 | —     | —     | —     | —     | 114.61            | 144.59 |
| 1        | 8                | —   | —       | 4             | —          | —     | —     | 28444 | —     | —     | —     | 139.80            | 183.41 |
| 1        | —                | 12  | —       | 4             | —          | —     | 28396 | —     | —     | —     | —     | 152.65            | 192.58 |
| 1-1/8    | 7                | —   | —       | 4             | —          | —     | —     | —     | 28498 | —     | —     | 235.32            | —      |
| 1-1/8    | —                | 12  | —       | 4             | —          | —     | —     | 28450 | —     | —     | —     | 250.39            | —      |
| 1-1/8    | —                | —   | 8       | 4             | —          | —     | —     | —     | 28502 | —     | —     | 266.12            | —      |
| 1-1/4    | 7                | —   | —       | 4             | —          | —     | —     | —     | 28504 | —     | —     | 308.73            | —      |
| 1-1/4    | —                | 12  | —       | 4             | —          | —     | —     | 28456 | —     | —     | —     | 312.99            | —      |
| 1-1/4    | —                | —   | 8       | 4             | —          | —     | —     | —     | 28508 | —     | —     | 326.79            | —      |
| 1-3/8    | 6                | —   | —       | 4             | —          | —     | —     | —     | 28510 | —     | —     | 388.96            | —      |
| 1-3/8    | —                | 12  | —       | 4             | —          | —     | —     | 28462 | —     | —     | —     | 391.92            | —      |
| 1-3/8    | —                | —   | 8       | 4             | —          | —     | —     | —     | 28514 | —     | —     | 416.56            | —      |
| 1-1/2    | 6                | —   | —       | 4             | —          | —     | —     | —     | 28516 | —     | —     | 447.29            | —      |
| 1-1/2    | —                | 12  | —       | 4             | —          | —     | —     | 28468 | —     | —     | —     | 457.03            | —      |
| 1-1/2    | —                | —   | 8       | 4             | —          | —     | —     | —     | 28520 | —     | —     | 487.22            | —      |

Packed: Up to 3/8" = 10 pcs; 7/16" to 5/8" = 5 pcs; 3/4 and up = 1 pc. Red EDP Numbers indicate available Bright or Steam Oxide finish. All others available Steam Oxide only. Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide; 08 = TiCN. TiCN coating available on request for Red EDP Numbers only.

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 280      |           |         | ○         | ○                | ○                 | ◎                 | ◎            | ◎          |                |                   | ○               | ○   | ○      | ○               | ○         |           |

○ good ◎ best



## List 289 NEW SIZES

Plug (4P-4.5P)



| Tap Size | Pitch | No. Of Flutes | EDP Number |       |       |       |       |       |       |       | List Price (Each) |        |
|----------|-------|---------------|------------|-------|-------|-------|-------|-------|-------|-------|-------------------|--------|
|          |       |               | D3         | D4    | D5    | D6    | D7    | D8    | D9    | D11   | S/O-Br            | TiCN   |
| M3       | 0.5   | 3             | 28904      | —     | —     | —     | —     | —     | —     | 28931 | 19.04             | 21.74  |
| M3.5     | 0.6   | 3             | —          | 28905 | —     | —     | —     | —     | —     | 28933 | 16.94             | 21.88  |
| M4       | 0.7   | 3             | —          | 28906 | —     | —     | —     | —     | —     | 28935 | 16.94             | 21.88  |
| M5       | 0.8   | 3             | —          | 28908 | —     | —     | —     | —     | —     | 28937 | 16.94             | 21.88  |
| M6       | 1.0   | 3             | —          | —     | 28910 | —     | —     | —     | —     | 28939 | 16.94             | 30.66  |
| M7       | 1.0   | 3             | —          | —     | 28911 | —     | —     | —     | —     | 28941 | 19.04             | 33.63  |
| M8       | 1.0   | 3             | —          | —     | 28913 | —     | —     | —     | —     | 28943 | 19.04             | 27.29  |
| M8       | 1.25  | 3             | —          | —     | 28914 | —     | —     | —     | —     | 28945 | 19.04             | 27.29  |
| M10      | 1.0   | 3             | —          | —     | 28916 | —     | —     | —     | —     | 28947 | 26.47             | 34.72  |
| M10      | 1.25  | 3             | —          | —     | 28917 | —     | —     | —     | —     | 28949 | 26.47             | 34.72  |
| M10      | 1.5   | 3             | —          | —     | —     | 28918 | —     | —     | —     | 28951 | 26.47             | 34.72  |
| M12      | 1.25  | 3             | —          | —     | 28921 | —     | —     | —     | —     | 28952 | 31.76             | 39.99  |
| M12      | 1.5   | 3             | —          | —     | —     | 28922 | —     | —     | —     | 28955 | 31.76             | 39.99  |
| M12      | 1.75  | 3             | —          | —     | —     | 28923 | —     | —     | —     | 28957 | 31.76             | 39.99  |
| M14      | 1.5   | 3             | —          | —     | —     | 28925 | —     | —     | —     | —     | 47.29             | 62.90  |
| M14      | 2.0   | 3             | —          | —     | —     | —     | 28926 | —     | —     | —     | 47.29             | 62.90  |
| M16      | 1.5   | 3             | —          | —     | —     | 28928 | —     | —     | —     | —     | 57.35             | 72.97  |
| M16      | 2.0   | 3             | —          | —     | —     | —     | 28929 | —     | —     | —     | 57.35             | 72.97  |
| M18      | 1.5   | 3             | —          | —     | —     | 28930 | —     | —     | —     | —     | 80.44             | 98.02  |
| M18      | 2.5   | 3             | —          | —     | —     | —     | 28932 | —     | —     | —     | 80.44             | 98.02  |
| M20      | 1.5   | 3             | —          | —     | —     | 28934 | —     | —     | —     | —     | 115.45            | 135.89 |
| M20      | 2.5   | 3             | —          | —     | —     | —     | —     | 28936 | —     | —     | 109.95            | 130.39 |
| M22      | 1.5   | 3             | —          | —     | —     | 28938 | —     | —     | —     | —     | 123.02            | —      |
| M22      | 2.5   | 3             | —          | —     | —     | —     | —     | 28940 | —     | —     | 121.86            | —      |
| M24      | 1.5   | 4             | —          | —     | —     | 28942 | —     | —     | —     | —     | 170.80            | —      |
| M24      | 3.0   | 4             | —          | —     | —     | —     | —     | 28944 | —     | —     | 162.66            | —      |
| M27      | 1.5   | 4             | —          | —     | —     | 28946 | —     | —     | —     | —     | 280.15            | —      |
| M27      | 3.0   | 4             | —          | —     | —     | —     | —     | 28948 | —     | —     | 263.31            | —      |
| M30      | 1.5   | 4             | —          | —     | —     | 28950 | —     | —     | —     | —     | 350.89            | —      |
| M30      | 3.5   | 4             | —          | —     | —     | —     | —     | —     | 28953 | —     | 345.42            | —      |

Packed: Up to M10 = 10 pcs; M12 to M16 = 5 pcs; M18 and up = 1 pc.  
Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide; 08 = TiCN.  
Black EDP Numbers are not available Bright finish.  
TiN coating available on request for Red EDP Numbers only.

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |           |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 289           |           |         | ○         | ○                | ○                 | ⊗                 | ⊗            | ⊗          |                |                   | ○               | ○   | ○      | ○               | ○         |           |

○ good ⊗ best





# HY-PRO® SEVEN

General Purpose Class of Fit Taps

## List 288

Plug(4P-4.5P)



| SPEED<br>FEED<br>P281 | HSSE | TiN | S/O | BR |
|-----------------------|------|-----|-----|----|
|-----------------------|------|-----|-----|----|



| Tap<br>Size | Threads<br>Per Inch |     | No. Of<br>Flutes | EDP Number |        | List Price (Each) |       |
|-------------|---------------------|-----|------------------|------------|--------|-------------------|-------|
|             | UNC                 | UNF |                  | 2B Fit     | 3B Fit | S/O-Br            | TiN   |
| 0           | 80                  | —   | 2                | 28841      | —      | 19.89             | 22.41 |
| 1           | 64                  | —   | 2                | 28842      | —      | 18.02             | 22.56 |
| 1           | —                   | 72  | 2                | 28843      | —      | 18.02             | 22.56 |
| 2           | 56                  | —   | 2                | 28844      | —      | 15.27             | 19.79 |
| 3           | 48                  | —   | 2                | 28845      | —      | 12.24             | 16.79 |
| 3           | —                   | 56  | 2                | 28846      | —      | 13.61             | —     |
| 4           | 40                  | —   | 2                | 28850      | 28800  | 9.08              | 13.61 |
| 4           | —                   | 48  | 2                | 28864      | —      | 10.51             | 15.05 |
| 5           | 40                  | —   | 2                | 28865      | —      | 9.08              | 13.61 |
| 6           | 32                  | —   | 2                | 28852      | 28802  | 7.63              | 11.44 |
| 6           | —                   | 40  | 2                | 28866      | —      | 8.70              | 11.44 |
| 8           | 32                  | —   | 2                | 28853      | 28803  | 7.63              | 11.44 |
| 8           | —                   | 36  | 2                | 28867      | —      | 8.70              | 12.52 |

| Tap<br>Size | Threads<br>Per Inch |     | No. Of<br>Flutes | EDP Number |        | List Price (Each) |       |
|-------------|---------------------|-----|------------------|------------|--------|-------------------|-------|
|             | UNC                 | UNF |                  | 2B Fit     | 3B Fit | S/O-Br            | TiN   |
| 10          | 24                  | —   | 2                | 28854      | 28804  | 7.63              | 11.44 |
| 10          | —                   | 32  | 2                | 28855      | 28805  | 7.63              | 11.44 |
| 12          | 24                  | —   | 2                | 28868      | —      | 8.70              | 12.52 |
| 1/4         | 20                  | —   | 2                | 28856      | 28806  | 7.63              | 11.44 |
| 1/4         | —                   | 28  | 3                | 28857      | 28807  | 7.63              | 11.44 |
| 5/16        | 18                  | —   | 2                | 28858      | 28808  | 8.23              | 12.36 |
| 5/16        | —                   | 24  | 3                | 28859      | 28809  | 8.23              | 12.36 |
| 3/8         | 16                  | —   | 3                | 28860      | 28810  | 9.80              | 14.70 |
| 3/8         | —                   | 24  | 3                | 28861      | 28811  | 10.51             | 15.76 |
| 7/16        | 14                  | —   | 3                | 28869      | —      | 16.69             | 26.63 |
| 7/16        | —                   | 20  | 3                | 28870      | —      | 16.69             | 26.63 |
| 1/2         | 13                  | —   | 3                | 28862      | 28812  | 19.86             | 32.56 |
| 1/2         | —                   | 20  | 3                | 28863      | 28813  | 19.86             | 32.56 |

Packed: Up to 3/8" = 10 pcs; 7/16" to 1/2" = 5 pcs  
Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide; 05 = TiN.

## List 288

Plug(4P-4.5P)



| SPEED<br>FEED<br>P281 | HSSE | TiN | S/O | BR |
|-----------------------|------|-----|-----|----|
|-----------------------|------|-----|-----|----|



| Tap<br>Size | Pitch | No. of<br>Flute | EDP<br>Number | List Price (Each) |       |
|-------------|-------|-----------------|---------------|-------------------|-------|
|             |       |                 |               | 6H Fit            | TiN   |
| M3          | 0.5   | 2               | 28880         | 12.46             | 17.02 |
| M4          | 0.7   | 3               | 28881         | 10.76             | 15.28 |
| M5          | 0.8   | 3               | 28882         | 10.76             | 15.28 |
| M6          | 1.0   | 3               | 28883         | 10.76             | 15.28 |

| Tap<br>Size | Pitch | No. of<br>Flute | EDP<br>Number | List Price (Each) |       |
|-------------|-------|-----------------|---------------|-------------------|-------|
|             |       |                 |               | S/O-Br            | TiN   |
| M8          | 1.25  | 3               | 28884         | 12.46             | 19.26 |
| M10         | 1.5   | 3               | 28885         | 20.69             | 27.49 |
| M12         | 1.75  | 3               | 28886         | 25.15             | 35.09 |

Packed: Up to M10 = 10 pcs; M12 = 5 pcs  
Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide; 05 = TiN.

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 288      | ○         | ○       |           | ⊗                | ⊗                 |                   |              |            |                |                   |                 |     |        |                 |           |           |

○ good ⊗ best



# GENERAL PURPOSE

## List 105

Plug(4P-4.5P)

|                           |     |      |     |    |
|---------------------------|-----|------|-----|----|
| SPEED<br>FEED<br>P278-279 | HSS | TiCN | S/O | BR |
|---------------------------|-----|------|-----|----|



| Tap Size | Threads Per Inch |     | No. Of<br>Flutes | EDP Number |       |       |       |       | List Price (Each) |       |
|----------|------------------|-----|------------------|------------|-------|-------|-------|-------|-------------------|-------|
|          | UNC              | UNF |                  | H1         | H2    | H3    | H4    | H5    | S/O-Br            | TiCN  |
| 0        | —                | 80  | 2                | 12000      | 12050 | 12100 | —     | —     | 24.02             | 27.57 |
| 1        | 64               | —   | 2                | 12002      | 12052 | —     | —     | —     | 21.76             | 25.28 |
| 1        | —                | 72  | 2                | 12004      | 12054 | —     | —     | —     | 21.76             | 25.28 |
| 2        | 56               | —   | 2                | 12006      | —     | 12106 | —     | 12156 | 20.83             | 24.33 |
| 2        | 56               | —   | 2                | —          | 12056 | —     | —     | —     | 18.44             | 21.88 |
| 2        | —                | 64  | 2                | 12008      | —     | —     | —     | —     | 21.76             | —     |
| 2        | —                | 64  | 2                | —          | 12058 | —     | —     | —     | 20.83             | 24.33 |
| 3        | 48               | —   | 2                | 12010      | —     | 12110 | —     | 20021 | 14.78             | 19.85 |
| 3        | 48               | —   | 2                | —          | 12060 | —     | —     | —     | 14.78             | 18.22 |
| 3        | —                | 56  | 2                | 12012      | —     | —     | —     | —     | 14.78             | —     |
| 3        | —                | 56  | 2                | —          | 12062 | —     | —     | —     | 16.41             | 19.85 |
| 4        | 40               | —   | 2                | 12014      | —     | 12114 | —     | 12164 | 13.71             | 17.13 |
| 4        | 40               | —   | 2                | —          | 12064 | —     | —     | —     | 11.84             | 15.21 |
| 4        | —                | 48  | 2                | 12016      | —     | —     | —     | —     | 14.12             | —     |
| 4        | —                | 48  | 2                | —          | 12066 | —     | —     | —     | 13.71             | 17.13 |
| 4        | —                | 36  | 2                | —          | 12068 | —     | —     | —     | 13.71             | —     |
| 5        | 40               | —   | 2                | 12020      | —     | —     | —     | 20033 | 11.84             | 17.13 |
| 5        | 40               | —   | 2                | —          | 12070 | —     | —     | —     | 11.84             | 15.21 |
| 5        | —                | 44  | 2                | —          | 12072 | —     | —     | —     | 13.71             | 17.13 |
| 6        | 32               | —   | 2                | 12024      | —     | —     | 20039 | 12174 | 11.32             | 14.72 |
| 6        | 32               | —   | 2                | —          | 12074 | 12124 | —     | —     | 9.94              | 13.32 |
| 6        | —                | 40  | 2                | 12026      | —     | —     | —     | —     | 12.35             | —     |
| 6        | —                | 40  | 2                | —          | 12076 | —     | —     | 20042 | 11.32             | 14.72 |
| 8        | 32               | —   | 2                | 12028      | —     | —     | —     | 12178 | 11.32             | 17.80 |
| 8        | 32               | —   | 2                | —          | 12078 | 12128 | —     | —     | 9.94              | 16.40 |
| 8        | 32               | —   | 2                | —          | —     | —     | 20050 | —     | 9.94              | 17.81 |
| 8        | —                | 36  | 2                | 12032      | —     | —     | —     | —     | 12.35             | —     |
| 8        | —                | 36  | 2                | —          | 12082 | —     | —     | —     | 11.32             | 17.81 |
| 10       | 24               | —   | 2                | 12034      | —     | —     | 20065 | 20066 | 12.35             | 18.80 |
| 10       | 24               | —   | 2                | —          | 12084 | —     | —     | —     | 11.32             | 17.80 |
| 10       | 24               | —   | 2                | —          | —     | 12134 | —     | —     | 9.94              | 16.40 |
| 10       | —                | 32  | 2                | 12038      | —     | —     | 20060 | 12188 | 11.32             | 17.81 |
| 10       | —                | 32  | 2                | —          | 12088 | 12138 | —     | —     | 9.94              | 16.40 |
| 12       | 24               | —   | 2                | 12042      | —     | —     | —     | —     | 12.73             | —     |
| 12       | 24               | —   | 2                | —          | —     | 12142 | —     | —     | 11.32             | 17.80 |
| 12       | —                | 28  | 2                | —          | —     | 12144 | —     | —     | 11.32             | 17.80 |
| 1/4      | 20               | —   | 2                | 12200      | 12250 | —     | —     | 12400 | 11.32             | 17.77 |
| 1/4      | 20               | —   | 2                | —          | —     | 12300 | —     | —     | 9.94              | 16.40 |
| 1/4      | 20               | —   | 3                | —          | —     | 12302 | —     | 12402 | 12.35             | 18.80 |

Packed: Up to 3/8" = 10 pcs; 7/16" to 5/8" = 5 pcs; 3/4 and up = 1 pc.  
Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide; 08 = TiCN.  
Red EDP numbers indicate available Steam Oxide, Bright and TiCN.  
All others available Bright and TiCN. TiN coating available on request.

continued on next page

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |           |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 105           | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     |        | ○               |           |           |

○ good ○ best



# GENERAL PURPOSE

## List 105 (continued)

Plug(4P-4.5P)

| HSS | TiCN | S/O | BR |
|-----|------|-----|----|
|-----|------|-----|----|

| Tap Size | Threads Per Inch |     | No. Of Flutes | EDP Number |       |       |       |       | List Price (Each) |       |
|----------|------------------|-----|---------------|------------|-------|-------|-------|-------|-------------------|-------|
|          | UNC              | UNF |               | H1         | H2    | H3    | H4    | H5    | S/O-Br            | TiCN  |
| 1/4      | —                | 28  | 2             | 12204      | —     | —     | 12354 | —     | 12.35             | 18.80 |
| 1/4      | —                | 28  | 2             | —          | 12254 | —     | —     | —     | 11.32             | 17.77 |
| 1/4      | —                | 28  | 2             | —          | —     | 12304 | —     | —     | 9.94              | 16.40 |
| 1/4      | —                | 28  | 3             | —          | 12256 | —     | 12356 | —     | 12.35             | 18.80 |
| 5/16     | 18               | —   | 2             | 12208      | —     | —     | —     | —     | 14.18             | 24.26 |
| 5/16     | 18               | —   | 2             | —          | 12258 | —     | —     | 12408 | 12.35             | 22.37 |
| 5/16     | 18               | —   | 2             | —          | —     | 12308 | —     | —     | 11.32             | 20.77 |
| 5/16     | 18               | —   | 3             | —          | —     | 12310 | —     | 12410 | 14.18             | 24.26 |
| 5/16     | —                | 24  | 2             | 12212      | 12262 | —     | 12362 | —     | 14.18             | 24.26 |
| 5/16     | —                | 24  | 2             | —          | —     | 12312 | —     | —     | 10.74             | 20.77 |
| 5/16     | —                | 24  | 3             | —          | 12264 | —     | 12364 | —     | 14.18             | 24.26 |
| 3/8      | 16               | —   | 3             | 12216      | —     | —     | —     | 12416 | 16.14             | 26.22 |
| 3/8      | 16               | —   | 3             | —          | 12266 | —     | —     | —     | 14.78             | 24.87 |
| 3/8      | 16               | —   | 3             | —          | —     | 12316 | —     | —     | 12.76             | 22.81 |
| 3/8      | —                | 24  | 3             | 12218      | 12268 | —     | 12368 | —     | 16.14             | 26.22 |
| 3/8      | —                | 24  | 3             | —          | —     | 12318 | —     | —     | 13.71             | 23.78 |
| 7/16     | 14               | —   | 3             | —          | 12270 | —     | —     | 12420 | 23.83             | 34.01 |
| 7/16     | 14               | —   | 3             | —          | —     | 12320 | —     | —     | 21.76             | 31.94 |
| 7/16     | —                | 20  | 3             | —          | 12272 | —     | —     | 12422 | 23.83             | 34.01 |
| 7/16     | —                | 20  | 3             | —          | —     | 12322 | —     | —     | 21.76             | 31.94 |
| 1/2      | 13               | —   | 3             | 12224      | 12274 | —     | —     | —     | 28.91             | 39.15 |
| 1/2      | 13               | —   | 3             | —          | —     | 12324 | —     | —     | 22.14             | 32.32 |
| 1/2      | 13               | —   | 3             | —          | —     | —     | —     | 12424 | 25.88             | 36.12 |
| 1/2      | —                | 20  | 3             | 12226      | 12276 | —     | —     | 12426 | 28.91             | 39.15 |
| 1/2      | —                | 20  | 3             | —          | —     | 12326 | —     | —     | 25.88             | 36.12 |
| 5/8      | 11               | —   | 3             | —          | —     | 12332 | —     | 12432 | 49.35             | 72.16 |
| 5/8      | —                | 18  | 3             | —          | —     | 12334 | —     | 20130 | 49.35             | 72.16 |
| 3/4      | 10               | —   | 3             | —          | —     | 12336 | —     | 12436 | 69.61             | 96.44 |
| 3/4      | —                | 16  | 3             | —          | —     | 12338 | —     | 20134 | 69.61             | 96.44 |

Packed: Up to 3/8" = 10 pcs; 7/16" to 5/8" = 5 pcs; 3/4 and up = 1 pc.

Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide; 08 = TiCN.

Red EDP numbers indicate available Steam Oxide, Bright and TiCN.

All others available Bright and TiCN. TiN coating available on request.

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 105      | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     |        |                 | ○         |           |

○ good ⊗ best



# GENERAL PURPOSE

## List 105B

Bottom(1.5P-2P)

|                                   |            |            |           |
|-----------------------------------|------------|------------|-----------|
| <b>SPEED<br/>FEED</b><br>P278-279 | <b>HSS</b> | <b>S/O</b> | <b>BR</b> |
|-----------------------------------|------------|------------|-----------|



| Tap Size | Threads Per Inch |     | No. Of<br>Flutes | EDP Number |       |       |       |       | S/O-Br Price<br>(Each) |
|----------|------------------|-----|------------------|------------|-------|-------|-------|-------|------------------------|
|          | UNC              | UNF |                  | H1         | H2    | H3    | H4    | H7    |                        |
| 0        | —                | 80  | 2                | 12001      | 30001 | —     | —     | —     | 28.72                  |
| 1        | 64               | —   | 2                | —          | 12053 | —     | —     | —     | 28.72                  |
| 1        | —                | 72  | 2                | 12005      | 12055 | —     | —     | —     | 28.72                  |
| 2        | 56               | —   | 2                | 12007      | 12057 | —     | —     | —     | 22.70                  |
| 3        | 48               | —   | 2                | —          | 12061 | —     | —     | —     | 20.45                  |
| 3        | —                | 56  | 2                | —          | 12063 | —     | —     | —     | 20.45                  |
| 4        | 40               | —   | 2                | —          | 12065 | —     | —     | —     | 15.22                  |
| 4        | —                | 48  | 2                | —          | 12067 | —     | —     | —     | 15.64                  |
| 5        | 40               | —   | 2                | —          | 12071 | —     | —     | —     | 15.64                  |
| 5        | —                | 44  | 2                | —          | 12073 | —     | —     | —     | 15.64                  |
| 6        | 32               | —   | 2                | —          | 12075 | 12125 | —     | —     | 12.44                  |
| 6        | 32               | —   | 2                | —          | —     | —     | —     | 30031 | 14.26                  |
| 6        | —                | 40  | 2                | —          | 12077 | —     | —     | —     | 14.26                  |
| 8        | 32               | —   | 2                | —          | 12079 | 12129 | —     | 30039 | 12.44                  |
| 8        | —                | 36  | 2                | —          | 12083 | —     | —     | —     | 12.44                  |
| 10       | 24               | —   | 2                | —          | 30045 | —     | —     | —     | 14.26                  |
| 10       | 24               | —   | 2                | —          | —     | 12135 | —     | —     | 12.06                  |
| 10       | —                | 32  | 2                | 30048      | —     | —     | —     | —     | 14.26                  |
| 10       | —                | 32  | 2                | —          | 12089 | 12139 | —     | —     | 12.06                  |
| 12       | 24               | —   | 2                | —          | —     | 12143 | —     | —     | 14.26                  |
| 12       | —                | 28  | 2                | —          | —     | 12145 | —     | —     | 14.26                  |
| 1/4      | 20               | —   | 2                | —          | —     | 12301 | —     | —     | 12.44                  |
| 1/4      | —                | 28  | 2                | —          | 12255 | 12305 | —     | —     | 14.26                  |
| 5/16     | 18               | —   | 2                | —          | —     | 12309 | —     | —     | 15.22                  |
| 5/16     | —                | 24  | 2                | —          | —     | 12313 | 12365 | —     | 15.22                  |
| 3/8      | 16               | —   | 3                | —          | —     | 12317 | —     | —     | 17.11                  |
| 7/16     | 14               | —   | 3                | —          | —     | 12321 | —     | —     | 25.44                  |

Packed: Up to 3/8" = 10 pcs; 7/16" = 5 pcs.

Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide.

Red EDP numbers indicate available Steam Oxide and Bright. All others available Bright only.

TiCN, TiN coatings available on request.

Spiral Pointed

| Work Material |              |         |           |                  |                   |                   |              |            |                   |                   |                 |     |        |                 |           |
|---------------|--------------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|-------------------|-------------------|-----------------|-----|--------|-----------------|-----------|
| List No.      | Aluminum     |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium          | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |
|               | 6061<br>7075 | Casting |           | 1010<br>1018     | 1035<br>1045      | 1065              | 4140<br>4340 | 20 Hrc     | 6AL4V<br>(30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc |
| <b>105B</b>   | ○            | ○       | ○         | ○                | ○                 | ○                 |              |            |                   |                   |                 |     |        |                 | ○         |

○ good    ⊗ best



# GENERAL PURPOSE

## List 105A

|                           |     |     |    |
|---------------------------|-----|-----|----|
| SPEED<br>FEED<br>P278-279 | HSS | S/O | BR |
|---------------------------|-----|-----|----|

Plug(4P-4.5P), Assembly Type Taps



| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number | S/O-Br Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|---------------------|
|          | UNC              | UNF |              |               |            |                     |
| 4        | 40               | —   | H2           | 2             | 16054      | 17.85               |
| 5        | 40               | —   | H2           | 2             | 16060      | 17.85               |
| 6        | 32               | —   | H3           | 2             | 16114      | 15.29               |
| 8        | 32               | —   | H3           | 2             | 16118      | 15.29               |
| 10       | 24               | —   | H3           | 2             | 16122      | 15.29               |
| 10       | —                | 32  | H3           | 2             | 16124      | 15.29               |

| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number | S/O-Br Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|---------------------|
|          | UNC              | UNF |              |               |            |                     |
| 12       | 24               | —   | H3           | 2             | 16126      | 15.29               |
| 1/4      | 20               | —   | H3           | 2             | 16300      | 15.29               |
| 5/16     | 18               | —   | H3           | 2             | 16304      | 17.35               |
| 3/8      | 16               | —   | H3           | 3             | 16308      | 20.46               |
| 1/2      | 13               | —   | H3           | 3             | 16316      | 36.61               |

Packed: Up to 3/8" = 10 pcs; 7/16" to 1/2" = 5 pcs.

Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide.

Red EDP numbers indicate available Steam Oxide and Bright. All others available Bright only.

TiCN, TiN coatings available on request.

## List 105 (GH7)

|                           |     |    |
|---------------------------|-----|----|
| SPEED<br>FEED<br>P278-279 | HSS | BR |
|---------------------------|-----|----|

Plug(4P-4.5P)



| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number | S/O-Br Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|---------------------|
|          | UNC              | UNF |              |               |            |                     |
| 4        | 40               | —   | H7           | 2             | 2003100    | 12.80               |
| 6        | 32               | —   | H7           | 2             | 1720800    | 11.32               |
| 8        | 32               | —   | H7           | 2             | 1721200    | 11.32               |

| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number | S/O-Br Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|---------------------|
|          | UNC              | UNF |              |               |            |                     |
| 10       | 24               | —   | H7           | 2             | 1721600    | 12.35               |
| 10       | —                | 32  | H7           | 2             | 1721800    | 12.35               |

Packed: 10 pcs.

Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide.

Red EDP numbers indicate available Steam Oxide and Bright. All others available Bright only.

TiCN, TiN coatings available on request.

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 105A     | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     |        |                 | ○         |           |
| 105      | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     |        |                 | ○         |           |

○ good ⊗ best





# GENERAL PURPOSE

## List 105H

+0.005" Oversize, Plug(4P-4.5P)

| SPEED<br>FEED | HSS | TiCN | S/O | BR |
|---------------|-----|------|-----|----|
| P278-279      |     |      |     |    |



| Tap Size | Threads Per Inch |     | No. Of Flutes | EDP Number | List Price (Each) |       |
|----------|------------------|-----|---------------|------------|-------------------|-------|
|          | UNC              | UNF |               |            | S/O-Br            | TiCN  |
| 6        | 32               | —   | 2             | 15920      | 11.32             | 13.35 |
| 8        | 32               | —   | 2             | 15928      | 11.32             | —     |
| 10       | 24               | —   | 2             | 15934      | 11.32             | —     |
| 10       | —                | 32  | 2             | 15936      | 11.32             | 13.35 |
| 1/4      | 20               | —   | 2             | 15900      | 12.35             | 14.58 |
| 1/4      | —                | 28  | 2             | 15902      | 12.35             | —     |
| 5/16     | 18               | —   | 2             | 15908      | 14.19             | 16.74 |
| 5/16     | —                | 24  | 2             | 15912      | 14.19             | —     |

| Tap Size | Threads Per Inch |     | No. Of Flutes | EDP Number | List Price (Each) |       |
|----------|------------------|-----|---------------|------------|-------------------|-------|
|          | UNC              | UNF |               |            | S/O-Br            | TiCN  |
| 3/8      | 16               | —   | 3             | 15916      | 16.13             | 19.03 |
| 3/8      | —                | 24  | 3             | 15918      | 16.13             | 19.03 |
| 7/16     | 14               | —   | 3             | 15940      | 23.83             | —     |
| 7/16     | —                | 20  | 3             | 15942      | 23.83             | 28.12 |
| 1/2      | 13               | —   | 3             | 15924      | 28.92             | 34.12 |
| 1/2      | —                | 20  | 3             | 15926      | 28.92             | —     |
| 5/8      | 11               | —   | 3             | 15932      | 49.35             | —     |
| 3/4      | 10               | —   | 3             | 15938      | 71.75             | —     |

Packed: Up to 3/8" = 10 pcs; 7/16" to 5/8" = 5 pcs; 3/4" = 1 pc.

Red EDP numbers indicate available Steam Oxide, Bright and TiCN. All others available Bright and TiCN.

Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide; 08 = TiCN.

## List 142H

+0.005" Oversize, Plug(4P-4.5P)

| SPEED<br>FEED | HSS | BR |
|---------------|-----|----|
| P278-279      |     |    |



| Tap Size | Pitch | No. Of Flutes | EDP Number | List Price (Each) |
|----------|-------|---------------|------------|-------------------|
| M4       | 0.7   | 2             | 11012001   | 15.68             |
| M5       | 0.8   | 2             | 11012003   | 15.68             |
| M6       | 1.0   | 2             | 11012005   | 15.68             |

| Tap Size | Pitch | No. Of Flutes | EDP Number | List Price (Each) |
|----------|-------|---------------|------------|-------------------|
| M8       | 1.25  | 3             | 11012007   | 18.18             |
| M10      | 1.5   | 3             | 11012009   | 30.17             |
| M12      | 1.75  | 3             | 11012011   | 36.72             |

Packed: Up to M10 = 10 pcs; M12 = 5 pcs

Available Bright finish only.

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |           |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 105H          | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     |        | ○               |           |           |
| 142H          | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     |        | ○               |           |           |

○ good ◎ best



# GENERAL PURPOSE

## List 142

Plug(4P-4.5P)

|                           |     |     |    |
|---------------------------|-----|-----|----|
| SPEED<br>FEED<br>P278-279 | HSS | S/O | BR |
|---------------------------|-----|-----|----|



| Tap Size | Pitch | Thread Limit | No. Of Flutes | EDP Number | S/O-Br Price (Each) |
|----------|-------|--------------|---------------|------------|---------------------|
| M2       | 0.4   | D3           | 2             | 19820      | 25.95               |
| M2.5     | 0.45  | D3           | 2             | 19821      | 18.68               |
| M3       | 0.5   | D3           | 2             | 19801      | 15.16               |
| M3.5     | 0.6   | D4           | 2             | 19822      | 13.09               |
| M4       | 0.7   | D4           | 2             | 19804      | 13.09               |
| M4.5     | 0.75  | D4           | 2             | 19823      | 13.09               |
| M5       | 0.8   | D4           | 2             | 19807      | 13.09               |
| M6       | 1.0   | D5           | 2             | 19810      | 13.09               |
| M7       | 1.0   | D5           | 2             | 19824      | 15.16               |
| M8       | 1.0   | D5           | 3             | 19825      | 15.16               |
| M8       | 1.25  | D5           | 2             | 19813      | 15.16               |
| M8       | 1.25  | D5           | 3             | 19814      | 15.16               |
| M10      | 1.0   | D5           | 3             | 19826      | 25.16               |
| M10      | 1.25  | D5           | 3             | 19827      | 25.16               |

| Tap Size | Pitch | Thread Limit | No. Of Flutes | EDP Number | S/O-Br Price (Each) |
|----------|-------|--------------|---------------|------------|---------------------|
| M10      | 1.5   | D6           | 3             | 19816      | 25.16               |
| M12      | 1.25  | D5           | 3             | 19828      | 30.59               |
| M12      | 1.5   | D6           | 3             | 19829      | 30.59               |
| M12      | 1.75  | D6           | 3             | 19819      | 30.59               |
| M14      | 1.25  | D5           | 3             | 19830      | 45.61               |
| M14      | 1.5   | D6           | 3             | 19838      | 45.61               |
| M14      | 2.0   | D7           | 3             | 19831      | 45.61               |
| M16      | 1.5   | D6           | 3             | 19832      | 53.27               |
| M16      | 2.0   | D7           | 3             | 19833      | 53.27               |
| M18      | 1.5   | D6           | 3             | 19834      | 77.31               |
| M18      | 2.5   | D7           | 3             | 19835      | 77.31               |
| M20      | 1.5   | D6           | 3             | 19836      | 100.35              |
| M20      | 2.5   | D7           | 3             | 19837      | 100.35              |

Packed: Up to M10 = 10 pcs; M12 to M16 = 5 pcs; M18 and up = 1 pc.

Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide.

Red EDP numbers indicate available Steam Oxide and Bright.

All others available Bright only. TiCN, TiN coatings available on request.

Spiral Pointed

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 142      | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     |        |                 |           |           |

○ good ⊗ best



# GENERAL PURPOSE

## List 122

JIS, Plug(4P-4.5P)

| SPEED<br>FEED<br>P278-279 | HSS | S/O | BR |
|---------------------------|-----|-----|----|
|---------------------------|-----|-----|----|



| Tap Size | Pitch | Class of Fit | No. Of Flutes | EDP Number | S/O-Br Price (Each) |
|----------|-------|--------------|---------------|------------|---------------------|
| M3       | 0.5   | 2            | 3             | 19501      | 15.16               |
| M4       | 0.7   | 2            | 3             | 19504      | 13.09               |
| M5       | 0.8   | 2            | 3             | 19507      | 13.09               |
| M6       | 1.0   | 2            | 3             | 19510      | 13.09               |
| M8       | 1.25  | 2            | 3             | 19513      | 15.16               |
| M10      | 1.25  | 2            | 3             | 19516      | 25.15               |
| M10      | 1.5   | 2            | 3             | 19519      | 25.15               |
| M12      | 1.5   | 2            | 3             | 19522      | 30.59               |
| M12      | 1.75  | 2            | 3             | 19525      | 30.59               |
| M14      | 1.5   | 2            | 3             | 19528      | 45.60               |

| Tap Size | Pitch | Class of Fit | No. Of Flutes | EDP Number | S/O-Br Price (Each) |
|----------|-------|--------------|---------------|------------|---------------------|
| M14      | 2.0   | 2            | 3             | 19531      | 45.60               |
| M16      | 1.5   | 2            | 3             | 19534      | 53.28               |
| M16      | 2.0   | 2            | 4             | 19537      | 53.28               |
| M18      | 1.5   | 2            | 4             | 19540      | 77.30               |
| M18      | 2.5   | 2            | 4             | 19543      | 77.30               |
| M20      | 1.5   | 2            | 4             | 19546      | 100.31              |
| M20      | 2.5   | 2            | 4             | 19549      | 100.31              |
| M22      | 2.5   | 2            | 4             | 19555      | 128.92              |
| M24      | 3.0   | 2            | 4             | 19561      | 161.58              |

Packed: Up to M10 = 10 pcs; M12 to M16 = 5 pcs; M18 and up = 1 pc.

Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide.

Red EDP numbers indicate available Steam Oxide and Bright. All others available Bright only.

TiCN, TiN coatings available on request.

## List 917

Long Shank, Plug(4P-4.5P)

| SPEED<br>FEED<br>P278-279 | HSS | BR |
|---------------------------|-----|----|
|---------------------------|-----|----|



| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|-----|------------|-------------------|
|          | UNC              | UNF |              |               |     |            |                   |
| 4        | 40               | —   | H2           | 2             | 4   | 1294000    | 59.29             |
| 6        | 32               | —   | H3           | 2             | 4   | 1294100    | 59.29             |
| 6        | 32               | —   | H3           | 2             | 6   | 1294200    | 68.31             |
| 8        | 32               | —   | H3           | 2             | 4   | 1294300    | 58.53             |
| 8        | 32               | —   | H3           | 2             | 6   | 1294400    | 67.54             |
| 10       | 24               | —   | H3           | 2             | 4   | 1294500    | 55.94             |
| 10       | 24               | —   | H3           | 2             | 6   | 1294600    | 64.17             |
| 10       | —                | 32  | H3           | 2             | 4   | 1294700    | 55.94             |
| 10       | —                | 32  | H3           | 2             | 6   | 1294800    | 64.17             |
| 1/4      | 20               | —   | H3           | 2             | 4   | 1294900    | 47.28             |
| 1/4      | 20               | —   | H3           | 2             | 6   | 1295000    | 59.10             |
| 1/4      | —                | 28  | H3           | 2             | 6   | 1295100    | 59.10             |

| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|-----|------------|-------------------|
|          | UNC              | UNF |              |               |     |            |                   |
| 5/16     | 18               | —   | H3           | 2             | 6   | 1295200    | 61.55             |
| 5/16     | 18               | —   | H3           | 2             | 4   | 2103000    | 53.59             |
| 5/16     | —                | 24  | H3           | 2             | 6   | 2103600    | 61.55             |
| 3/8      | 16               | —   | H3           | 3             | 6   | 1295300    | 69.23             |
| 3/8      | 16               | —   | H3           | 3             | 4   | 2103800    | 60.13             |
| 3/8      | —                | 24  | H3           | 3             | 6   | 2104400    | 69.23             |
| 7/16     | 14               | —   | H3           | 3             | 6   | 1295400    | 73.54             |
| 7/16     | —                | 20  | H3           | 3             | 6   | 2105200    | 73.54             |
| 1/2      | 13               | —   | H3           | 3             | 6   | 1295500    | 74.12             |
| 1/2      | —                | 20  | H3           | 3             | 6   | 2106000    | 74.12             |
| 5/8      | 11               | —   | H3           | 3             | 6   | 1295600    | 99.08             |

Packed: 1 pc. TiCN, TiN coatings available on request.

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 122      | ○         | ○       | ○         | ○                | ○                 |                   |              |            |                |                   |                 |     |        | ○               |           |           |
| 917      | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     |        | ○               |           |           |

○ good ⊗ best



# MINIATURE

## List S110

|                           |     |    |
|---------------------------|-----|----|
| SPEED<br>FEED<br>P278-279 | HSS | BR |
|---------------------------|-----|----|

Plug(4P-4.5P)



| Tap Size | Threads Per Inch<br>UNS | Thread Limit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|-------------------------|--------------|---------------|------------|-------------------|
| 00       | 90                      | H1           | 2             | 1050000    | 55.46             |
| 00       | 90                      | H2           | 2             | 1320000    | 55.46             |

| Tap Size | Threads Per Inch<br>UNS | Thread Limit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|-------------------------|--------------|---------------|------------|-------------------|
| 00       | 96                      | H1           | 2             | 1080000    | 55.46             |
| 00       | 96                      | H2           | 2             | 2056000    | 55.46             |

Packed: 10 pcs. TiCN, TiN coatings available on request.

Spiral Pointed

### Work Material

| List No.    | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|-------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|             | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| <b>S110</b> | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     |        | ○               |           |           |

○ good ⊗ best



## List 10051

Modified Bottom(2.5P-3P)



SPEED  
FEED  
P278-279

XPM

TiCN



| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|-------------------|
|          | UNC              | UNF |              |               |            |                   |
| 6        | 32               | —   | H3           | 4             | 1005110508 | 34.10             |
| 8        | 32               | —   | H3           | 4             | 1005110808 | 34.10             |
| 10       | 24               | —   | H3           | 4             | 1005111008 | 34.77             |
| 10       | —                | 32  | H3           | 4             | 1005111208 | 34.77             |
| 1/4      | 20               | —   | H5           | 4             | 1005111408 | 45.00             |
| 1/4      | —                | 28  | H4           | 4             | 1005111608 | 45.00             |

| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|-------------------|
|          | UNC              | UNF |              |               |            |                   |
| 5/16     | 18               | —   | H5           | 5             | 1005111808 | 49.07             |
| 5/16     | —                | 24  | H4           | 5             | 1005112008 | 49.07             |
| 3/8      | 16               | —   | H5           | 5             | 1005112208 | 55.23             |
| 3/8      | —                | 24  | H4           | 5             | 1005112408 | 55.23             |
| 1/2      | 13               | —   | H5           | 5             | 1005113008 | 83.42             |
| 1/2      | —                | 20  | H5           | 5             | 1005113208 | 83.42             |

Packed: Up to 3/8" = 10 pcs; 1/2" = 5 pcs.  
Available TiCN finish only.

## List 11051 NEW!

Modified Bottom(2.5P-3P)



SPEED  
FEED  
P278-279

XPM

TiCN



| Tap Size | Pitch | Number of Flutes | EDP Number |            |            |            | List Price (Each) |
|----------|-------|------------------|------------|------------|------------|------------|-------------------|
|          |       |                  | D3         | D4         | D5         | D6         |                   |
| M3       | 0.5   | 4                | 1105100108 | —          | —          | —          | 34.18             |
| M4       | 0.7   | 4                | —          | 1105100208 | —          | —          | 34.18             |
| M5       | 0.8   | 4                | —          | 1105100308 | —          | —          | 34.88             |
| M6       | 1.0   | 4                | —          | —          | 1105100408 | —          | 45.13             |
| M8       | 1.0   | 4                | —          | —          | 1105100608 | —          | 49.22             |
| M8       | 1.25  | 4                | —          | —          | 1105100508 | —          | 49.22             |
| M10      | 1.0   | 5                | —          | —          | 1105100908 | —          | 55.37             |
| M10      | 1.25  | 5                | —          | —          | 1105100808 | —          | 55.37             |
| M10      | 1.5   | 5                | —          | —          | —          | 1105100708 | 55.37             |
| M12      | 1.25  | 5                | —          | —          | 1105101208 | —          | 83.66             |
| M12      | 1.5   | 5                | —          | —          | —          | 1105101108 | 83.66             |
| M12      | 1.75  | 5                | —          | —          | —          | 1105101008 | 83.66             |

Packed: Up to M10 = 10 pcs; M12 = 5 pcs.  
Available TiCN finish only.

### Work Material

| List No. | Aluminum     |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium          | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|--------------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|-------------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061<br>7075 | Casting |           | 1010<br>1018     | 1035<br>1045      | 1065              | 4140<br>4340 | 20 Hrc     | 6AL4V<br>(30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 10051    |              |         |           |                  |                   |                   |              |            |                   |                   |                 |     |        |                 |           | ⊙         |
| 11051    |              |         |           |                  |                   |                   |              |            |                   |                   |                 |     |        |                 |           | ⊙         |

○ good ⊙ best





# EXOTAP-MOLD®

Ideal for Tapping Mold Steel

## List 305

Plug(4P-4.5P)



SPEED  
FEED  
P278-279

HSS-CO

BR



| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|-------------------|
|          | UNC              | UNF |              |               |            |                   |
| 1/4      | 20               | —   | H3           | 4             | 1734000    | 18.38             |
| 1/4      | —                | 28  | H3           | 4             | 1739000    | 18.38             |
| 5/16     | 18               | —   | H3           | 4             | 1734100    | 19.76             |
| 5/16     | —                | 24  | H3           | 4             | 1739100    | 19.76             |
| 3/8      | 16               | —   | H3           | 4             | 1734200    | 22.31             |
| 3/8      | —                | 24  | H3           | 4             | 1739200    | 22.31             |
| 7/16     | 14               | —   | H3           | 4             | 1739600    | 29.66             |

| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|-------------------|
|          | UNC              | UNF |              |               |            |                   |
| 7/16     | —                | 20  | H3           | 4             | 1739700    | 29.66             |
| 1/2      | 13               | —   | H3           | 4             | 1734300    | 33.00             |
| 1/2      | —                | 20  | H3           | 4             | 1739300    | 33.00             |
| 5/8      | 11               | —   | H3           | 4             | 1734400    | 65.53             |
| 5/8      | —                | 18  | H3           | 4             | 1739400    | 65.53             |
| 3/4      | 10               | —   | H3           | 4             | 1734500    | 90.95             |
| 3/4      | —                | 16  | H3           | 4             | 1739500    | 90.95             |

Packed: Up to 3/8" = 10 pcs; 7/16" to 5/8" = 5 pcs; 3/4 = 1 pc.  
TiCN, TiN coatings available on request.

Straight Fluted

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 305      |           |         | ○         |                  | ○                 | ○                 | ○            | ⊙          |                |                   | ○               | ○   |        | ⊙               | ○         |           |

○ good ⊙ best



## List 10052

DIN Overall Length, Bottom(1.5P-2P)



SPEED  
FEED  
P278-279

VC-10

TiCN



| Tap Size | Threads Per Inch |     | No. Of Flutes | OAL | EDP Number |            | List Price (Each) |
|----------|------------------|-----|---------------|-----|------------|------------|-------------------|
|          | UNC              | UNF |               |     | H3         | H5         |                   |
| 1/4      | 20               | —   | 4             | 80  | 1005200108 | 1005200208 | 34.24             |
| 1/4      | —                | 28  | 4             | 80  | 1005200308 | —          | 34.24             |
| 5/16     | 18               | —   | 4             | 90  | 1005200408 | 1005200508 | 37.25             |
| 5/16     | —                | 24  | 4             | 90  | 1005200608 | —          | 37.25             |
| 3/8      | 16               | —   | 4             | 100 | 1005200708 | 1005200808 | 42.01             |
| 3/8      | —                | 24  | 4             | 100 | 1005200908 | —          | 42.01             |
| 7/16     | 14               | —   | 4             | 100 | 1005201008 | 1005201108 | 54.26             |
| 7/16     | —                | 20  | 4             | 100 | 1005201208 | 1005201308 | 54.26             |
| 1/2      | 13               | —   | 4             | 110 | 1005201408 | 1005201508 | 63.17             |
| 1/2      | —                | 20  | 4             | 100 | 1005201608 | 1005201708 | 63.17             |
| 9/16     | 12               | —   | 5             | 110 | 1005201808 | 1005201908 | 86.31             |
| 9/16     | —                | 18  | 5             | 100 | 1005202008 | 1005202108 | 86.31             |
| 5/8      | 11               | —   | 5             | 110 | 1005202208 | 1005202308 | 92.49             |
| 5/8      | —                | 18  | 5             | 100 | 1005202408 | 1005202508 | 92.49             |
| 3/4      | 10               | —   | 5             | 125 | 1005202608 | 1005202708 | 120.24            |
| 3/4      | —                | 16  | 5             | 110 | 1005202808 | 1005202908 | 120.24            |

Packed: Up to 3/8" = 10 pcs; 7/16" to 5/8" = 5 pcs; 3/4 = 1 pc.

Available TiCN finish only.

See page 144 to find the recommended step drills.

## List 11052

DIN Overall Length, Bottom(1.5P-2P)



SPEED  
FEED  
P278-279

VC-10

TiCN



| Tap Size | Pitch | Thread Limit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|-----|------------|-------------------|
| M6       | 1.0   | D5           | 3             | 80  | 1105200108 | 34.24             |
| M8       | 1.25  | D5           | 4             | 90  | 1105200208 | 37.25             |
| M10      | 1.0   | D5           | 4             | 90  | 1105200308 | 42.01             |
| M10      | 1.25  | D6           | 4             | 100 | 1105200408 | 42.01             |
| M10      | 1.5   | D6           | 4             | 100 | 1105200508 | 42.01             |

| Tap Size | Pitch | Thread Limit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|-----|------------|-------------------|
| M12      | 1.25  | D6           | 4             | 100 | 1105200608 | 63.17             |
| M12      | 1.5   | D6           | 4             | 100 | 1105200708 | 63.17             |
| M12      | 1.75  | D6           | 4             | 110 | 1105200808 | 63.17             |
| M14      | 1.5   | D7           | 5             | 100 | 1105200908 | 99.00             |
| M14      | 2.0   | D7           | 5             | 110 | 1105201008 | 99.00             |

Packed: Up to M10 = 10 pcs; M12 to M14 = 5 pcs.

Available TiCN finish only.

See page 144 to find the recommended step drills.

### Work Material

| List No. | Aluminum     |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium          | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|--------------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|-------------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061<br>7075 | Casting |           | 1010<br>1018     | 1035<br>1045      | 1065              | 4140<br>4340 | 20 Hrc     | 6AL4V<br>(30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 10052    |              | ⊙       | ⊙         |                  |                   | ○                 |              |            |                   |                   |                 |     |        |                 |           |           |
| 11052    |              | ⊙       | ⊙         |                  |                   | ○                 |              |            |                   |                   |                 |     |        |                 |           |           |

○ good ⊙ best



## List 10053

Coolant Thru, DIN Overall Length, Bottom(1.5P-2P)



SPEED  
FEED  
P278-279

VC-10

TiCN



| Tap Size | Threads Per Inch |     | No. Of Flutes | OAL | EDP Number |            | List Price (Each) |
|----------|------------------|-----|---------------|-----|------------|------------|-------------------|
|          | UNC              | UNF |               |     | H3         | H5         |                   |
| 1/4      | 20               | —   | 4             | 80  | 1005300108 | 1005300208 | 61.26             |
| 1/4      | —                | 28  | 4             | 80  | 1005300308 | —          | 61.26             |
| 5/16     | 18               | —   | 4             | 90  | 1005300408 | 1005300508 | 66.19             |
| 5/16     | —                | 24  | 4             | 90  | 1005300608 | —          | 67.28             |
| 3/8      | 16               | —   | 4             | 100 | 1005300708 | 1005300808 | 72.74             |
| 3/8      | —                | 24  | 4             | 100 | 1005300908 | —          | 91.89             |
| 7/16     | 14               | —   | 4             | 100 | 1005301008 | 1005301108 | 91.89             |
| 7/16     | —                | 20  | 4             | 100 | 1005301208 | 1005301308 | 91.89             |
| 1/2      | 13               | —   | 4             | 110 | 1005301408 | 1005301508 | 115.89            |
| 1/2      | —                | 20  | 4             | 100 | 1005301608 | 1005301708 | 115.89            |

Packed: Up to 3/8" = 10 pcs; 7/16" to 1/2" = 5 pcs.

Available TiCN finish only.

See page 144 to find the recommended step drills.

## List 11053

Coolant Thru, DIN Overall Length, Bottom(1.5P-2P)



SPEED  
FEED  
P278-279

VC-10

TiCN



| Tap Size | Pitch | Thread Limit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|-----|------------|-------------------|
| M6       | 1.0   | D5           | 3             | 80  | 1105300108 | 61.26             |
| M8       | 1.25  | D5           | 4             | 90  | 1105300208 | 66.19             |
| M10      | 1.25  | D6           | 4             | 100 | 1105300308 | 72.74             |
| M10      | 1.5   | D6           | 4             | 100 | 1105300408 | 72.74             |

| Tap Size | Pitch | Thread Limit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|-----|------------|-------------------|
| M12      | 1.5   | D6           | 4             | 100 | 1105300508 | 91.89             |
| M12      | 1.75  | D6           | 4             | 110 | 1105300608 | 91.89             |
| M14      | 1.5   | D7           | 5             | 100 | 1105300708 | 125.80            |
| M14      | 2.0   | D7           | 5             | 110 | 1105300808 | 125.80            |

Packed: Up to M10 = 10 pcs; M12 to M14 = 5 pcs.

Available TiCN finish only.

See page 144 to find the recommended step drills.

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 10053    |           | ⊙       | ⊙         |                  |                   | ○                 |              |            |                |                   |                 |     |        |                 |           |           |
| 11053    |           | ⊙       | ⊙         |                  |                   | ○                 |              |            |                |                   |                 |     |        |                 |           |           |

○ good ⊙ best



## List 11054 **NEW!**

DIN Shank, DIN Overall Length, Bottom(1.5P-2P)



| Tap Size | Pitch | Thread Limit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|-----|------------|-------------------|
| M6       | 1.0   | D5           | 3             | 80  | 1105400108 | 34.18             |
| M8       | 1.25  | D5           | 4             | 90  | 1105400208 | 37.17             |

| Tap Size | Pitch | Thread Limit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|-----|------------|-------------------|
| M10      | 1.5   | D6           | 4             | 100 | 1105400308 | 41.96             |

Packed: 10 pcs. Available TiCN finish only.  
See page 144 to find the recommended step drills.

### Option 1 uses 2 processes prior to tapping:

Step 1: Drilling

Step 2: Chamfering

### Option 2 uses 1 process prior to tapping:

Step 1: **NAS Step Drilling (drilling & chamfering in ONE TOOL)**

Less tools, less time, less money.

The choice is obvious.

**NAS Precision Step Drills.**

Custom made for your application.



For more information, please visit page 144.

Straight Fluted

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |           |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 11054         |           | ☉       | ☉         |                  |                   | ○                 |              |            |                |                   |                 |     |        |                 |           |           |

○ good ☉ best



## List 11055 **NEW!**

Coolant Thru, DIN Shank, DIN Overall Length, Bottom(1.5P-2P)



SPEED  
FEED  
P278-279

VC-10

TiCN



| Tap Size | Pitch | Thread Limit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|-----|------------|-------------------|
| M6       | 1.0   | D5           | 3             | 80  | 1105500108 | 61.16             |
| M8       | 1.25  | D5           | 4             | 90  | 1105500208 | 66.09             |

| Tap Size | Pitch | Thread Limit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|-----|------------|-------------------|
| M10      | 1.5   | D6           | 4             | 100 | 1105500308 | 72.63             |
| M12      | 1.75  | D6           | 4             | 110 | 1105500408 | 78.64             |

Packed: Up to M10 = 10 pcs; M12 = 5 pcs.

Available TiCN finish only.

See page 144 to find the recommended step drills

**Option 1 uses 2 processes prior to tapping:**

**Step 1: Drilling**

**Step 2: Chamfering**

**Option 2 uses 1 process prior to tapping:**

**Step 1: NAS Step Drilling (drilling & chamfering in ONE TOOL)**

**Less tools, less time, less money.**

**The choice is obvious.**

**NAS Precision Step Drills.**

**Custom made for your application.**



### NAS Precision

The Special Cutting Tool and Regrinding Authority

For more information, please visit page 144.

#### Work Material

| List No.     | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|--------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|              | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| <b>11055</b> |           | ⊙       | ⊙         |                  |                   | ○                 |              |            |                |                   |                 |     |        |                 |           |           |

○ good ⊙ best





## List 10056 NEW!



|                           |       |      |
|---------------------------|-------|------|
| SPEED<br>FEED<br>P278-279 | VC-10 | TiCN |
|---------------------------|-------|------|

Bottom(1.5P-2P)



| Tap Size | Thread Per Inch |     | No. of Flutes | EDP Number |            | List Price (Each) |
|----------|-----------------|-----|---------------|------------|------------|-------------------|
|          | UNC             | UNF |               | H3         | H5         |                   |
| 1/4      | 20              | —   | 4             | 1005600108 | 1005600208 | 32.47             |
| 1/4      | —               | 28  | 4             | 1005600308 | —          | 32.47             |
| 5/16     | 18              | —   | 4             | 1005600408 | 1005600508 | 35.32             |
| 5/16     | —               | 24  | 4             | 1005600608 | —          | 35.32             |
| 3/8      | 16              | —   | 4             | 1005600708 | 1005600808 | 39.86             |
| 3/8      | —               | 24  | 4             | 1005600908 | —          | 39.86             |
| 7/16     | 14              | —   | 4             | 1005601008 | 1005601108 | 51.48             |
| 7/16     | —               | 20  | 4             | 1005601208 | 1005601308 | 51.48             |

| Tap Size | Thread Per Inch |     | No. of Flutes | EDP Number |            | List Price (Each) |
|----------|-----------------|-----|---------------|------------|------------|-------------------|
|          | UNC             | UNF |               | H3         | H5         |                   |
| 1/2      | 13              | —   | 4             | 1005601408 | 1005601508 | 59.91             |
| 1/2      | —               | 20  | 4             | 1005601608 | 1005601708 | 59.91             |
| 9/16     | 12              | —   | 5             | 1005601808 | 1005601908 | 82.00             |
| 9/16     | —               | 18  | 5             | 1005602008 | 1005602108 | 82.00             |
| 5/8      | 11              | —   | 5             | 1005602208 | 1005602308 | 87.84             |
| 5/8      | —               | 18  | 5             | 1005602408 | 1005602508 | 87.84             |
| 3/4      | 10              | —   | 5             | 1005602608 | 1005602708 | 114.24            |
| 3/4      | —               | 16  | 5             | 1005602808 | 1005602908 | 114.24            |

Packed: Up to 3/8" = 10 pcs; 7/16" to 5/8" = 5 pcs; 3/4" = 1 pc.  
Available TiCN finish only.  
See page 144 to find the recommended step drills.

## List 11056 NEW!



|                           |       |      |
|---------------------------|-------|------|
| SPEED<br>FEED<br>P278-279 | VC-10 | TiCN |
|---------------------------|-------|------|

Bottom(1.5P-2P)



| Tap Size | Pitch | Thread Limit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|------------|-------------------|
| M6       | 1.0   | D5           | 3             | 1105600108 | 32.47             |
| M8       | 1.25  | D5           | 4             | 1105600208 | 35.32             |
| M10      | 1.0   | D5           | 4             | 1105600308 | 39.86             |
| M10      | 1.25  | D6           | 4             | 1105600408 | 39.86             |
| M10      | 1.5   | D6           | 4             | 1105600508 | 39.86             |

| Tap Size | Pitch | Thread Limit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|------------|-------------------|
| M12      | 1.25  | D6           | 4             | 1105600608 | 59.91             |
| M12      | 1.5   | D6           | 4             | 1105600708 | 59.91             |
| M12      | 1.75  | D6           | 4             | 1105600808 | 59.91             |
| M14      | 1.5   | D7           | 5             | 1105600908 | 93.88             |
| M14      | 2.0   | D7           | 5             | 1105601008 | 93.88             |

Packed: Up to M10 = 10 pcs; M12 to M14 = 5 pcs.  
Available TiCN finish only.  
See page 144 to find the recommended step drills.

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc |
| 10056         |           | ⊙       | ⊙         |                  |                   | ○                 |              |            |                |                   |                 |     |        |                 |           |
| 11056         |           | ⊙       | ⊙         |                  |                   | ○                 |              |            |                |                   |                 |     |        |                 |           |



# EXOTAP® DC OIL

Premium Design for Cast Iron and Cast Aluminum

## List 10057 **NEW!**

Coolant Thru, Bottom(1.5P-2P)



SPEED  
FEED  
P278-279

VC-10

TiCN



| Tap Size | Thread Per Inch |     | No. of Flutes | EDP Number |            | List Price (Each) |
|----------|-----------------|-----|---------------|------------|------------|-------------------|
|          | UNC             | UNF |               | H3         | H5         |                   |
| 1/4      | 20              | —   | 4             | 1005700108 | 1005700208 | 58.12             |
| 1/4      | —               | 28  | 4             | 1005700308 | —          | 58.12             |
| 5/16     | 18              | —   | 4             | 1005700408 | 1005700508 | 62.80             |
| 5/16     | —               | 24  | 4             | 1005700608 | —          | 62.80             |
| 3/8      | 16              | —   | 4             | 1005700708 | 1005700808 | 63.78             |

| Tap Size | Thread Per Inch |     | No. of Flutes | EDP Number |            | List Price (Each) |
|----------|-----------------|-----|---------------|------------|------------|-------------------|
|          | UNC             | UNF |               | H3         | H5         |                   |
| 3/8      | —               | 24  | 4             | 1005700908 | —          | 63.78             |
| 7/16     | 14              | —   | 4             | 1005701008 | 1005701108 | 68.97             |
| 7/16     | —               | 20  | 4             | 1005701208 | 1005701308 | 68.97             |
| 1/2      | 13              | —   | 4             | 1005701408 | 1005701508 | 87.16             |
| 1/2      | —               | 20  | 4             | 1005701608 | 1005701708 | 87.16             |

Packed: Up to 3/8" = 10 pcs; 7/16" to 1/2" = 5 pcs.

Available TiCN finish only.

See page 144 to find the recommended step drills.

## List 11057 **NEW!**

Coolant Thru, Bottom(1.5P-2P)



SPEED  
FEED  
P278-279

VC-10

TiCN



| Tap Size | Pitch | Thread Limit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|------------|-------------------|
| M6       | 1.0   | D5           | 3             | 1105700108 | 58.12             |
| M8       | 1.25  | D5           | 4             | 1105700208 | 62.80             |
| M10      | 1.25  | D6           | 4             | 1105700308 | 68.97             |
| M10      | 1.5   | D6           | 4             | 1105700408 | 68.97             |

| Tap Size | Pitch | Thread Limit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|-------|--------------|---------------|------------|-------------------|
| M12      | 1.5   | D6           | 4             | 1105700508 | 74.71             |
| M12      | 1.75  | D6           | 4             | 1105700608 | 74.71             |
| M14      | 1.5   | D7           | 5             | 1105700708 | 119.31            |
| M14      | 2.0   | D7           | 5             | 1105700808 | 119.31            |

Packed: Up to M10 = 10 pcs; M12 to M14 = 5 pcs.

Available TiCN finish only.

See page 144 to find the recommended step drills.

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 10057    |           | ⊙       | ⊙         |                  |                   | ○                 |              |            |                |                   |                 |     |        |                 |           |           |
| 11057    |           | ⊙       | ⊙         |                  |                   | ○                 |              |            |                |                   |                 |     |        |                 |           |           |

○ good ⊙ best





SPEED  
FEED  
P281

HSSE

N

BR

## List 240

Plug(4P-4.5P), Bottom(1.5P-2P)



| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number |         | N-Br Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|---------|-------------------|
|          | UNC              | UNF |              |               | Plug       | Bottom  |                   |
| 2        | 56               | —   | H2           | 3             | 2492800    | 2492900 | 19.77             |
| 4        | 40               | —   | H2           | 3             | 2493000    | 2493100 | 13.15             |
| 5        | 40               | —   | H2           | 3             | 2401103    | 2401203 | 13.15             |
| 6        | 32               | —   | H3           | 3             | 2401503    | 2401603 | 10.82             |
| 8        | 32               | —   | H3           | 3             | 2401903    | 2493203 | 10.82             |
| 10       | 24               | —   | H3           | 3             | 2402303    | 2402403 | 10.82             |
| 10       | —                | 32  | H3           | 3             | 2402703    | 2402803 | 10.82             |
| 1/4      | 20               | —   | H3           | 3             | 2493303    | 2403203 | 11.77             |
| 1/4      | 20               | —   | H5           | 3             | 2493403    | 2403603 | 12.12             |
| 1/4      | —                | 28  | H3           | 3             | 2493503    | 2493603 | 12.12             |

| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number |         | N-Br Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|---------|-------------------|
|          | UNC              | UNF |              |               | Plug       | Bottom  |                   |
| 5/16     | 18               | —   | H3           | 4             | 2404303    | 2404403 | 13.56             |
| 5/16     | 18               | —   | H5           | 4             | 2493703    | 2493803 | 13.56             |
| 5/16     | —                | 24  | H3           | 4             | 2493903    | 2494003 | 13.56             |
| 3/8      | 16               | —   | H3           | 4             | 2494103    | 2494203 | 15.30             |
| 3/8      | 16               | —   | H5           | 4             | 2494303    | 2494403 | 15.30             |
| 3/8      | —                | 24  | H3           | 4             | 2406303    | 2406403 | 15.30             |
| 7/16     | 14               | —   | H3           | 4             | 2494503    | 2494603 | 19.93             |
| 7/16     | —                | 20  | H3           | 4             | 2494703    | 2494803 | 19.93             |
| 1/2      | 13               | —   | H3           | 4             | 2407503    | 2407603 | 22.95             |
| 1/2      | —                | 20  | H3           | 4             | 2407903    | 2408003 | 22.95             |

Packed: Up to 3/8" = 10 pcs; 7/16" to 1/2" = 5 pcs  
Red EDP Numbers indicate Bright only. All other items Nitride only.

## List 241

Plug(4P-4.5P), Bottom(1.5P-2P)



SPEED  
FEED  
P281

HSSE

N



| Tap Size | Pitch | Thread Limit | No. of Flutes | EDP Number |         | List Price (Each) |
|----------|-------|--------------|---------------|------------|---------|-------------------|
|          |       |              |               | Plug       | Bottom  |                   |
| M3       | 0.5   | D3           | 3             | 2494903    | 2410203 | 17.16             |
| M4       | 0.7   | D4           | 3             | 2410303    | 2495003 | 15.29             |
| M5       | 0.8   | D5           | 3             | 2495103    | 2410603 | 15.29             |
| M6       | 1.0   | D5           | 3             | 2495203    | 2410803 | 15.29             |

| Tap Size | Pitch | Thread Limit | No. of Flutes | EDP Number |         | List Price (Each) |
|----------|-------|--------------|---------------|------------|---------|-------------------|
|          |       |              |               | Plug       | Bottom  |                   |
| M8       | 1.25  | D5           | 4             | 2411103    | 2411203 | 17.16             |
| M10      | 1.25  | D5           | 4             | 2495303    | 2411603 | 23.96             |
| M10      | 1.5   | D6           | 4             | 2411703    | 2495403 | 23.96             |
| M12      | 1.75  | D6           | 4             | 2412103    | 2495503 | 28.58             |

Packed: Up to M10 = 10 pcs; M12 = 5 pcs.  
Available Nitride finish only.

### Work Material

| List No. | Aluminum     |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium          | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|--------------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|-------------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061<br>7075 | Casting |           | 1010<br>1018     | 1035<br>1045      | 1065              | 4140<br>4340 | 20 Hrc     | 6AL4V<br>(30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 240      | ⊙            | ⊙       | ○         |                  |                   |                   |              |            |                   |                   |                 |     |        |                 |           |           |
| 241      | ⊙            | ⊙       | ○         |                  |                   |                   |              |            |                   |                   |                 |     |        |                 |           |           |

○ good ⊙ best



# FOR CAST IRON

## List 101C

Plug(4P-4.5P), Bottom(1.5P-2P)

|                                   |            |                     |
|-----------------------------------|------------|---------------------|
| <b>SPEED<br/>FEED</b><br>P278-279 | <b>HSS</b> | <b>N</b> <b>S/O</b> |
|-----------------------------------|------------|---------------------|



| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number |         | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|---------|-------------------|
|          | UNC              | UNF |              |               | Plug       | Bottom  |                   |
| 1/4      | 20               | —   | H3           | 4             | 1600107    | 1600207 | 8.60              |
| 1/4      | 20               | —   | H5           | 4             | 1600307    | 1600407 | 10.29             |
| 1/4      | —                | 28  | H3           | 4             | 1600507    | 1600607 | 8.60              |
| 5/16     | 18               | —   | H3           | 4             | 1600707    | 1600807 | 10.59             |
| 5/16     | 18               | —   | H5           | 4             | 1600907    | 1601007 | 11.98             |
| 5/16     | —                | 24  | H3           | 4             | 1601107    | 1601207 | 10.59             |
| 3/8      | 16               | —   | H3           | 4             | 1601307    | 1601407 | 11.98             |
| 3/8      | 16               | —   | H5           | 4             | 1601507    | 1601607 | 13.51             |
| 3/8      | —                | 24  | H3           | 4             | 1601707    | 1601807 | 11.98             |
| 7/16     | 14               | —   | H3           | 4             | 1601907    | 1602007 | 20.45             |
| 7/16     | 14               | —   | H5           | 4             | 1602107    | 1602207 | 22.51             |
| 7/16     | —                | 20  | H3           | 4             | 1602307    | 1602407 | 20.45             |
| 7/16     | —                | 20  | H5           | 4             | 1602507    | 1602607 | 22.51             |
| 1/2      | 13               | —   | H3           | 4             | 1602707    | 1602807 | 21.58             |

| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number |         | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|---------|-------------------|
|          | UNC              | UNF |              |               | Plug       | Bottom  |                   |
| 1/2      | 13               | —   | H5           | 4             | 1602907    | 1603007 | 26.44             |
| 1/2      | —                | 20  | H3           | 4             | 1603107    | 1603207 | 24.21             |
| 1/2      | —                | 20  | H5           | 4             | 1603307    | 1603407 | 26.44             |
| 9/16     | 12               | —   | H3           | 4             | 1603507    | 1603607 | 36.01             |
| 9/16     | —                | 18  | H3           | 4             | 1603707    | 1603807 | 36.01             |
| 9/16     | —                | 18  | H5           | 4             | —          | 1600007 | 36.01             |
| 5/8      | 11               | —   | H3           | 4             | 1603907    | 1604007 | 43.16             |
| 5/8      | 11               | —   | H5           | 4             | 1604707    | 1604807 | 43.16             |
| 5/8      | —                | 18  | H3           | 4             | 1604107    | 1604207 | 43.16             |
| 5/8      | —                | 18  | H5           | 4             | —          | 1605207 | 43.16             |
| 3/4      | 10               | —   | H3           | 4             | 1604307    | 1604407 | 60.43             |
| 3/4      | —                | 16  | H3           | 4             | 1604507    | 1604607 | 60.43             |
| 3/4      | —                | 16  | H5           | 4             | 1604907    | 1605007 | 60.43             |

Packed: Up to 3/8" = 10 pcs; 7/16" to 5/8" = 5 pcs; 3/4 = 1 pc.  
Available Nitride / Steam Oxide finish only.

## List 141C

Plug(4P-4.5P), Bottom(1.5P-2P)

|                                   |            |                     |
|-----------------------------------|------------|---------------------|
| <b>SPEED<br/>FEED</b><br>P278-279 | <b>HSS</b> | <b>N</b> <b>S/O</b> |
|-----------------------------------|------------|---------------------|



| Tap Size | Pitch | Thread Limit | No. of Flutes | EDP Number |         | List Price (Each) |
|----------|-------|--------------|---------------|------------|---------|-------------------|
|          |       |              |               | Plug       | Bottom  |                   |
| M6       | 1.0   | D5           | 3             | 1608107    | 1608207 | 13.50             |
| M8       | 1.25  | D5           | 4             | 1608307    | 1608407 | 15.32             |

| Tap Size | Pitch | Thread Limit | No. of Flutes | EDP Number |         | List Price (Each) |
|----------|-------|--------------|---------------|------------|---------|-------------------|
|          |       |              |               | Plug       | Bottom  |                   |
| M10      | 1.5   | D6           | 4             | 1608507    | 1608607 | 26.72             |
| M12      | 1.75  | D6           | 4             | 1608707    | 1608807 | 32.62             |

Packed: Up to M10 = 10 pcs; M12 = 5 pcs.  
Available Nitride / Steam Oxide finish only.

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 101C     |           | ○       | ⊙         |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |           |
| 141C     |           | ○       | ⊙         |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |           |

○ good ⊙ best



# GENERAL PURPOSE

## List 101

Taper(5P and up), Plug(4P-4.5P), Bottom(1.5P-2P)

|                                   |            |             |            |           |
|-----------------------------------|------------|-------------|------------|-----------|
| <b>SPEED<br/>FEED</b><br>P278-279 | <b>HSS</b> | <b>TiCN</b> | <b>S/O</b> | <b>BR</b> |
|-----------------------------------|------------|-------------|------------|-----------|



| Tap Size | Threads Per Inch |     |     | Thread Limit | No. of Flutes | EDP Number |       |        | List Price (Each) |       |
|----------|------------------|-----|-----|--------------|---------------|------------|-------|--------|-------------------|-------|
|          | UNC              | UNF | UNS |              |               | Taper      | Plug  | Bottom | S/O-Br            | TiCN  |
| 1/4      | 20               | —   | —   | H1           | 4             | 11000      | 11001 | 11002  | 10.74             | 17.36 |
| 1/4      | 20               | —   | —   | H2           | 4             | 11100      | 11101 | 11102  | 10.29             | 16.90 |
| 1/4      | 20               | —   | —   | H3           | 4             | 11200      | 11201 | 11202  | 8.60              | 15.15 |
| 1/4      | 20               | —   | —   | H5           | 4             | —          | 11401 | 11402  | 10.29             | 16.90 |
| 1/4      | —                | 28  | —   | H1           | 4             | —          | 11004 | 11005  | 10.29             | —     |
| 1/4      | —                | 28  | —   | H2           | 4             | —          | 11104 | 11105  | 10.74             | —     |
| 1/4      | —                | 28  | —   | H3           | 4             | 11203      | 11204 | 11205  | 8.60              | 15.15 |
| 1/4      | —                | 28  | —   | H4           | 4             | —          | 11304 | 11305  | 10.74             | —     |
| 5/16     | 18               | —   | —   | H1           | 4             | —          | 11007 | 11008  | 11.98             | —     |
| 5/16     | 18               | —   | —   | H2           | 4             | 10088      | 11107 | 11108  | 11.98             | —     |
| 5/16     | 18               | —   | —   | H3           | 4             | 11206      | 11207 | 11208  | 10.59             | 20.80 |
| 5/16     | 18               | —   | —   | H5           | 4             | —          | 11407 | 11408  | 11.98             | 22.04 |
| 5/16     | —                | 24  | —   | H1           | 4             | —          | 11010 | 11011  | 11.98             | —     |
| 5/16     | —                | 24  | —   | H2           | 4             | —          | 11110 | 11111  | 11.98             | —     |
| 5/16     | —                | 24  | —   | H3           | 4             | 11209      | 11210 | 11211  | 10.59             | —     |
| 5/16     | —                | 24  | —   | H4           | 4             | —          | 11310 | 11311  | 11.98             | —     |
| 3/8      | 16               | —   | —   | H1           | 4             | —          | 11013 | 11014  | 15.46             | —     |
| 3/8      | 16               | —   | —   | H2           | 4             | —          | 11113 | 11114  | 13.51             | —     |
| 3/8      | 16               | —   | —   | H3           | 4             | 11212      | 11213 | 11214  | 11.98             | 22.19 |
| 3/8      | 16               | —   | —   | H5           | 4             | —          | 11413 | 11414  | 13.51             | 23.74 |
| 3/8      | —                | 24  | —   | H1           | 4             | —          | 11016 | 11017  | 15.46             | —     |
| 3/8      | —                | 24  | —   | H2           | 4             | —          | 11116 | 11117  | 13.51             | —     |
| 3/8      | —                | 24  | —   | H3           | 4             | 11215      | 11216 | 11217  | 11.98             | 22.19 |
| 3/8      | —                | 24  | —   | H4           | 4             | —          | 11316 | 11317  | 13.51             | —     |
| 7/16     | 14               | —   | —   | H2           | 4             | —          | 10516 | —      | 22.51             | 32.98 |
| 7/16     | 14               | —   | —   | H3           | 4             | 11218      | 11219 | 11220  | 20.45             | 30.88 |
| 7/16     | 14               | —   | —   | H5           | 4             | —          | 11419 | 11420  | 22.51             | —     |
| 7/16     | —                | 20  | —   | H2           | 4             | —          | 11122 | —      | 22.51             | —     |
| 7/16     | —                | 20  | —   | H3           | 4             | 11221      | 11222 | 11223  | 20.45             | 30.88 |
| 7/16     | —                | 20  | —   | H5           | 4             | —          | 11422 | 11423  | 22.51             | —     |
| 1/2      | 13               | —   | —   | H1           | 4             | —          | 11025 | 11026  | 26.44             | —     |
| 1/2      | 13               | —   | —   | H2           | 4             | —          | 11125 | 11126  | 26.44             | —     |
| 1/2      | 13               | —   | —   | H3           | 4             | 11224      | 11225 | 11226  | 21.58             | 32.00 |
| 1/2      | 13               | —   | —   | H5           | 4             | —          | 11425 | 11426  | 26.42             | —     |
| 1/2      | —                | 20  | —   | H1           | 4             | —          | 11028 | 11029  | 26.44             | —     |
| 1/2      | —                | 20  | —   | H3           | 4             | 11227      | 11228 | 11229  | 24.21             | 34.70 |
| 1/2      | —                | 20  | —   | H5           | 4             | —          | 11428 | 11429  | 26.44             | —     |
| 9/16     | 12               | —   | —   | H3           | 4             | 11230      | 11231 | 11232  | 36.01             | 58.20 |
| 9/16     | 12               | —   | —   | H5           | 4             | —          | 11431 | 10611  | 39.23             | —     |
| 9/16     | —                | 18  | —   | H2           | 4             | —          | 11134 | —      | 39.23             | —     |
| 9/16     | —                | 18  | —   | H3           | 4             | 11233      | 11234 | 11235  | 36.01             | 58.20 |
| 9/16     | —                | 18  | —   | H5           | 4             | —          | 11434 | 11435  | 39.23             | 61.68 |

Packed: Up to 3/8" = 10 pcs; 7/16" to 5/8" = 5 pcs; 3/4 and up = 1 pc.

Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide; 05 = TiN; 08 = TiCN.

Red EDP numbers indicate available Steam Oxide, Bright and TiCN. All others available Bright and TiCN.

TiN coating available on request.

continued on next page

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |           |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 101           | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     |        |                 |           |           |

○ good ○ best





# GENERAL PURPOSE

## List 101 (continued)

|                                   |            |             |            |           |
|-----------------------------------|------------|-------------|------------|-----------|
| <b>SPEED<br/>FEED</b><br>P278-279 | <b>HSS</b> | <b>TiCN</b> | <b>S/O</b> | <b>BR</b> |
|-----------------------------------|------------|-------------|------------|-----------|

Taper(5P and up), Plug(4P-4.5P), Bottom(1.5P-2P)

| Tap Size | Threads Per Inch |     |     | Thread Limit | No. of Flutes | EDP Number |       |        | List Price (Each) |        |
|----------|------------------|-----|-----|--------------|---------------|------------|-------|--------|-------------------|--------|
|          | UNC              | UNF | UNS |              |               | Taper      | Plug  | Bottom | S/O-Br            | TiCN   |
| 5/8      | 11               | —   | —   | H1           | 4             | —          | 11037 | —      | 49.71             | —      |
| 5/8      | 11               | —   | —   | H2           | 4             | —          | 11137 | 10632  | 49.71             | —      |
| 5/8      | 11               | —   | —   | H3           | 4             | 11236      | 11237 | 11238  | 43.16             | 66.00  |
| 5/8      | 11               | —   | —   | H5           | 4             | —          | 11437 | 11438  | 49.71             | —      |
| 5/8      | —                | 18  | —   | H1           | 4             | —          | 11040 | —      | 49.71             | —      |
| 5/8      | —                | 18  | —   | H2           | 4             | —          | 11140 | —      | 49.71             | —      |
| 5/8      | —                | 18  | —   | H3           | 4             | 11239      | 11240 | 11241  | 43.16             | 66.00  |
| 5/8      | —                | 18  | —   | H5           | 4             | —          | 11440 | 11441  | 49.71             | —      |
| 11/16    | —                | —   | 11  | H3           | 4             | 11242      | 11243 | 11244  | 53.66             | —      |
| 11/16    | —                | —   | 16  | H3           | 4             | 11245      | 11246 | 11247  | 48.78             | 79.86  |
| 3/4      | 10               | —   | —   | H1           | 4             | —          | 10089 | 10665  | 65.30             | —      |
| 3/4      | 10               | —   | —   | H2           | 4             | —          | 11149 | —      | 65.30             | —      |
| 3/4      | 10               | —   | —   | H3           | 4             | 11248      | 11249 | 11250  | 60.43             | 87.25  |
| 3/4      | 10               | —   | —   | H5           | 4             | —          | 11449 | 11450  | 65.30             | —      |
| 3/4      | —                | 16  | —   | H1           | 4             | —          | 11052 | —      | 65.30             | —      |
| 3/4      | —                | 16  | —   | H2           | 4             | —          | 11152 | —      | 65.30             | —      |
| 3/4      | —                | 16  | —   | H3           | 4             | 11251      | 11252 | 11253  | 60.43             | 101.52 |
| 3/4      | —                | 16  | —   | H5           | 4             | —          | 11452 | 11453  | 65.30             | —      |
| 7/8      | 9                | —   | —   | H1           | 4             | —          | —     | 10692  | 88.55             | —      |
| 7/8      | 9                | —   | —   | H2           | 4             | —          | 10090 | —      | 84.24             | —      |
| 7/8      | 9                | —   | —   | H4           | 4             | 11354      | 11355 | 11356  | 84.24             | 116.96 |
| 7/8      | 9                | —   | —   | H6           | 4             | —          | 11455 | —      | 88.55             | —      |
| 7/8      | —                | 14  | —   | H2           | 4             | —          | 11158 | —      | 88.55             | —      |
| 7/8      | —                | 14  | —   | H4           | 4             | 11357      | 11358 | 11359  | 84.24             | 116.96 |
| 7/8      | —                | 14  | —   | H6           | 4             | —          | 11458 | —      | 88.55             | —      |
| 1        | 8                | —   | —   | H1           | 4             | —          | 10718 | 10719  | 115.76            | —      |
| 1        | 8                | —   | —   | H2           | 4             | —          | 11161 | —      | 115.76            | —      |
| 1        | 8                | —   | —   | H4           | 4             | 11360      | 11361 | 11362  | 112.21            | 153.42 |
| 1        | 8                | —   | —   | H6           | 4             | —          | 11461 | —      | 115.76            | —      |
| 1        | —                | 12  | —   | H4           | 4             | 11363      | 11364 | 11365  | 115.76            | 163.44 |
| 1        | —                | —   | 14  | H2           | 4             | —          | 11167 | —      | 112.21            | —      |
| 1        | —                | —   | 14  | H4           | 4             | 11366      | 11367 | 11368  | 115.76            | 250.12 |
| 1-1/8    | 7                | —   | —   | H4           | 4             | 11369      | 11370 | 11371  | 181.63            | 235.48 |
| 1-1/8    | —                | 12  | —   | H4           | 4             | 11372      | 11373 | 11374  | 193.26            | 248.19 |
| 1-1/4    | 7                | —   | —   | H4           | 4             | 11375      | 11376 | 11377  | 238.27            | 334.55 |
| 1-1/4    | —                | 12  | —   | H4           | 6             | 11378      | 11379 | 11380  | 242.03            | 338.64 |
| 1-3/8    | 6                | —   | —   | H4           | 4             | 11381      | 11382 | 11383  | 300.20            | —      |
| 1-3/8    | —                | 12  | —   | H4           | 6             | 11384      | 11385 | 11386  | 302.09            | 404.29 |
| 1-1/2    | 6                | —   | —   | H4           | 4             | 11387      | 11388 | 11389  | 345.22            | 451.49 |
| 1-1/2    | —                | 12  | —   | H4           | 6             | 11390      | 11391 | 11392  | 352.75            | 459.70 |

Packed: Up to 3/8" = 10 pcs; 7/16" to 5/8" = 5 pcs; 3/4 and up = 1 pc.

Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide; 05 = TiN; 08 = TiCN.

Red EDP numbers indicate available Steam Oxide, Bright and TiCN. All others available Bright and TiCN.

TiN coating available on request.

### Work Material

| List No.   | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|            | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| <b>101</b> | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     |        |                 |           |           |

○ good ⊗ best



# GENERAL PURPOSE

## List 101H

+ .005" Over Size, Plug(4P-4.5P), Bottom(2.5P-3P)

|                           |     |      |     |    |
|---------------------------|-----|------|-----|----|
| SPEED<br>FEED<br>P278-279 | HSS | TiCN | S/O | BR |
|---------------------------|-----|------|-----|----|



| Tap Size | Threads Per Inch |     | No. Of Flutes | EDP Number |        | List Price (Each) |      |
|----------|------------------|-----|---------------|------------|--------|-------------------|------|
|          | UNC              | UNF |               | Plug       | Bottom | S/O-Br            | TiCN |
| 1/4      | 20               | —   | 4             | 15901      | 10091  | 10.73             | —    |
| 1/4      | —                | 28  | 4             | 15903      | —      | 10.73             | —    |
| 5/16     | 18               | —   | 4             | 15907      | 10092  | 13.51             | —    |
| 5/16     | —                | 24  | 4             | 15911      | —      | 13.51             | —    |
| 3/8      | 16               | —   | 4             | 15913      | 10093  | 15.49             | —    |
| 3/8      | —                | 24  | 4             | 15915      | —      | 15.49             | —    |
| 7/16     | 14               | —   | 4             | 15919      | —      | 22.52             | —    |

| Tap Size | Threads Per Inch |     | No. Of Flutes | EDP Number |        | List Price (Each) |       |
|----------|------------------|-----|---------------|------------|--------|-------------------|-------|
|          | UNC              | UNF |               | Plug       | Bottom | S/O-Br            | TiCN  |
| 7/16     | —                | 20  | 4             | 15921      | —      | 22.52             | —     |
| 1/2      | 13               | —   | 4             | 15925      | 10094  | 26.44             | —     |
| 1/2      | —                | 20  | 4             | 15927      | —      | 26.44             | —     |
| 5/8      | 11               | —   | 4             | 15937      | —      | 49.71             | —     |
| 5/8      | —                | 18  | 4             | 11259      | 11257  | 49.71             | 73.17 |
| 3/4      | 10               | —   | 4             | 15947      | —      | 65.23             | —     |

Packed: Up to 3/8" = 10 pcs; 7/16" to 5/8" = 5 pcs; 3/4 = 1 pc.

Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide; 05 = TiN; 08 = TiCN.

Red EDP numbers indicate available Steam Oxide, Bright and TiCN. All others available Bright and TiCN.

Straight Fluted

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |                     |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|---------------------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |                     |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc 45-50 Hrc |
| 101H          | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     |        |                 |                     |

○ good ⊗ best



# GENERAL PURPOSE

## List 102

Taper(5P and up), Plug(4P-4.5P), Bottom(1.5P-2P)

|                                   |            |             |            |           |
|-----------------------------------|------------|-------------|------------|-----------|
| <b>SPEED<br/>FEED</b><br>P278-279 | <b>HSS</b> | <b>TiCN</b> | <b>S/O</b> | <b>BR</b> |
|-----------------------------------|------------|-------------|------------|-----------|



Straight Fluted

| Tap Size | Threads Per Inch |     |     | Thread Limit | No. of Flutes | EDP Number |       |        | List Price (Each) |       |
|----------|------------------|-----|-----|--------------|---------------|------------|-------|--------|-------------------|-------|
|          | UNC              | UNF | UNS |              |               | Taper      | Plug  | Bottom | S/O-Br            | TiCN  |
| 0        | —                | 80  | —   | H1           | 2             | 10000      | 10001 | 10002  | 19.51             | —     |
| 0        | —                | 80  | —   | H2           | 2             | —          | 10101 | 10102  | 19.51             | —     |
| 1        | 64               | —   | —   | H1           | 2             | 10003      | 10004 | 10005  | 18.15             | —     |
| 1        | 64               | —   | —   | H2           | 2             | —          | 10104 | 10080  | 18.15             | —     |
| 1        | —                | 72  | —   | H1           | 2             | 10006      | 10007 | 10008  | 18.15             | —     |
| 1        | —                | 72  | —   | H2           | 2             | —          | 10107 | 10108  | 18.15             | 21.80 |
| 2        | 56               | —   | —   | H1           | 3             | 10009      | 10010 | 10011  | 16.85             | —     |
| 2        | 56               | —   | —   | H2           | 3             | 10109      | 10110 | 10111  | 15.59             | —     |
| 2        | —                | 64  | —   | H1           | 3             | —          | 10013 | 10014  | 16.85             | —     |
| 2        | —                | 64  | —   | H2           | 3             | 10112      | 10113 | 10114  | 16.85             | —     |
| 3        | 48               | —   | —   | H1           | 3             | —          | 10016 | —      | 13.41             | —     |
| 3        | 48               | —   | —   | H2           | 3             | 10115      | 10116 | 10117  | 12.00             | —     |
| 3        | —                | 56  | —   | H1           | 3             | —          | 10019 | —      | 13.41             | —     |
| 3        | —                | 56  | —   | H2           | 3             | 10118      | 10119 | 10120  | 13.41             | —     |
| 4        | 40               | —   | —   | H1           | 3             | 10021      | 10022 | 10023  | 10.59             | —     |
| 4        | 40               | —   | —   | H2           | 3             | 10121      | 10122 | 10123  | 9.83              | 13.31 |
| 4        | —                | 48  | —   | H1           | 3             | —          | 10025 | —      | 11.07             | —     |
| 4        | —                | 48  | —   | H2           | 3             | 10124      | 10125 | 10126  | 10.59             | —     |
| 4        | —                | —   | 36  | H2           | 3             | 10127      | 10128 | 10129  | 10.59             | —     |
| 5        | 40               | —   | —   | H1           | 3             | —          | 10031 | 10032  | 10.59             | —     |
| 5        | 40               | —   | —   | H2           | 3             | 10130      | 10131 | 10132  | 9.83              | —     |
| 5        | —                | 44  | —   | H1           | 3             | —          | 10034 | —      | 10.59             | —     |
| 5        | —                | 44  | —   | H2           | 3             | 10133      | 10134 | 10135  | 10.59             | —     |
| 6        | 32               | —   | —   | H1           | 3             | 10036      | 10037 | 10038  | 9.24              | —     |
| 6        | 32               | —   | —   | H2           | 3             | 10136      | 10137 | 10138  | 7.96              | 11.40 |
| 6        | 32               | —   | —   | H3           | 3             | 10236      | 10237 | 10238  | 7.49              | 10.93 |
| 6        | —                | 40  | —   | H1           | 3             | —          | 10040 | —      | 9.24              | —     |
| 6        | —                | 40  | —   | H2           | 3             | 10139      | 10140 | 10141  | 7.96              | —     |
| 8        | 32               | —   | —   | H1           | 4             | 10042      | 10043 | 10044  | 9.24              | —     |
| 8        | 32               | —   | —   | H2           | 4             | 10142      | 10143 | 10144  | 7.96              | —     |
| 8        | 32               | —   | —   | H3           | 4             | 10242      | 10243 | 10244  | 7.74              | 14.27 |
| 8        | —                | 36  | —   | H1           | 4             | —          | 10046 | —      | 9.24              | —     |
| 8        | —                | 36  | —   | H2           | 4             | 10145      | 10146 | 10147  | 7.96              | —     |
| 10       | 24               | —   | —   | H1           | 4             | 10048      | 10049 | 10050  | 8.24              | —     |
| 10       | 24               | —   | —   | H2           | 4             | 10148      | 10149 | 10150  | 8.24              | —     |
| 10       | 24               | —   | —   | H3           | 4             | 10248      | 10249 | 10250  | 7.96              | —     |
| 10       | —                | 32  | —   | H1           | 4             | 10051      | 10052 | 10053  | 8.24              | —     |
| 10       | —                | 32  | —   | H2           | 4             | 10151      | 10152 | 10153  | 8.24              | —     |
| 10       | —                | 32  | —   | H3           | 4             | 10251      | 10252 | 10253  | 7.96              | —     |
| 12       | 24               | —   | —   | H1           | 4             | —          | 10055 | —      | 9.23              | —     |
| 12       | 24               | —   | —   | H3           | 4             | 10254      | 10255 | 10256  | 8.44              | 14.99 |
| 12       | —                | 28  | —   | H1           | 4             | —          | 10058 | —      | 9.83              | —     |
| 12       | —                | 28  | —   | H3           | 4             | 10257      | 10258 | 10259  | 9.24              | 15.79 |

Packed: 10 pcs. Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide; 05= TiN; 08 = TiCN.

Red EDP numbers indicate available Steam Oxide, Bright and TiCN. All others available Bright and TiCN.

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |           |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 102           | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     |        |                 |           |           |

○ good ⊗ best



# GENERAL PURPOSE

## List 102H

+.005" Oversize, Plug(4P-4.5P)



| SPEED<br>FEED | HSS | S/O | BR |
|---------------|-----|-----|----|
| P278-279      |     |     |    |



| Tap Size | Threads Per Inch |     | No. Of Flutes | EDP Number | S/O-Br Price (Each) |
|----------|------------------|-----|---------------|------------|---------------------|
|          | UNC              | UNF |               | Plug       |                     |
| 6        | 32               | —   | 3             | 15935      | 7.15                |
| 8        | 32               | —   | 4             | 15943      | 7.15                |

| Tap Size | Threads Per Inch |     | No. Of Flutes | EDP Number | S/O-Br Price (Each) |
|----------|------------------|-----|---------------|------------|---------------------|
|          | UNC              | UNF |               | Plug       |                     |
| 10       | 24               | —   | 4             | 15949      | 7.15                |
| 10       | —                | 32  | 4             | 15951      | 7.15                |

Packed: 10 pcs.

Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide.

Red EDP numbers indicate available Steam Oxide and Bright. All others available Bright only.

TiCN, TiN coatings available on request.

## List 103

Three Flute, Plug(4P-4.5P), Bottom(1.5P-2P)

| SPEED<br>FEED | HSS | S/O | BR |
|---------------|-----|-----|----|
| P278-279      |     |     |    |



| Tap<br>Size | Threads<br>Per Inch |     | Thread<br>Limit | No. Of<br>Flutes | EDP Number |        | S/O-Br Price<br>(Each) |
|-------------|---------------------|-----|-----------------|------------------|------------|--------|------------------------|
|             | UNC                 | UNF |                 |                  | Plug       | Bottom |                        |
| 8           | 32                  | —   | H1              | 3                | 10401      | 10402  | 9.24                   |
| 8           | 32                  | —   | H2              | 3                | 10451      | 10452  | 9.24                   |
| 8           | 32                  | —   | H3              | 3                | 10501      | 10502  | 7.96                   |
| 8           | 32                  | —   | H7              | 3                | 10198      | 10199  | 9.24                   |
| 10          | 24                  | —   | H1              | 3                | 10407      | —      | 9.24                   |
| 10          | 24                  | —   | H2              | 3                | 10457      | —      | 9.24                   |
| 10          | 24                  | —   | H3              | 3                | 10507      | 10508  | 7.49                   |
| 10          | 24                  | —   | H7              | 3                | 10086      | 10087  | 9.24                   |
| 10          | —                   | 32  | H3              | 3                | 10510      | 10511  | 8.24                   |
| 10          | —                   | 32  | H2              | 3                | 10460      | 10461  | 9.24                   |
| 10          | —                   | 32  | H7              | 3                | 10285      | 10286  | 9.24                   |
| 1/4         | 20                  | —   | H1              | 3                | 11601      | —      | 10.74                  |
| 1/4         | 20                  | —   | H2              | 3                | 11651      | 10356  | 10.74                  |
| 1/4         | 20                  | —   | H3              | 3                | 11701      | 11702  | 10.24                  |

| Tap<br>Size | Threads<br>Per Inch |     | Thread<br>Limit | No. Of<br>Flutes | EDP Number |        | S/O-Br Price<br>(Each) |
|-------------|---------------------|-----|-----------------|------------------|------------|--------|------------------------|
|             | UNC                 | UNF |                 |                  | Plug       | Bottom |                        |
| 1/4         | 20                  | —   | H5              | 3                | 11801      | 11802  | 10.74                  |
| 1/4         | —                   | 28  | H3              | 3                | 11704      | 11705  | 10.74                  |
| 5/16        | 18                  | —   | H1              | 3                | 11607      | —      | 12.96                  |
| 5/16        | 18                  | —   | H3              | 3                | 11707      | 11708  | 11.98                  |
| 5/16        | 18                  | —   | H5              | 3                | 11807      | 11808  | 12.96                  |
| 5/16        | —                   | 24  | H3              | 3                | 11710      | 11711  | 11.98                  |
| 3/8         | 16                  | —   | H1              | 3                | 11613      | 10462  | 15.49                  |
| 3/8         | 16                  | —   | H3              | 3                | 11713      | 11714  | 13.51                  |
| 3/8         | 16                  | —   | H5              | 3                | 11813      | 11814  | 15.49                  |
| 3/8         | —                   | 24  | H3              | 3                | 11716      | 11717  | 15.49                  |
| 7/16        | 14                  | —   | H3              | 3                | 11719      | 11720  | 22.51                  |
| 7/16        | —                   | 20  | H3              | 3                | 11722      | 10547  | 22.51                  |
| 1/2         | 13                  | —   | H3              | 3                | 11725      | 11726  | 26.65                  |
| 1/2         | —                   | 20  | H3              | 3                | 11728      | 10593  | 26.65                  |

Packed: Up to 3/8" = 10 pcs; 7/16" to 1/2" = 5 pcs.

Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide.

Red EDP numbers indicate available Steam Oxide and Bright. All others available Bright only.

TiCN, TiN coatings available on request.

### Work Material

| List No. | Aluminum     |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium          | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|--------------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|-------------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061<br>7075 | Casting |           | 1010<br>1018     | 1035<br>1045      | 1065              | 4140<br>4340 | 20 Hrc     | 6AL4V<br>(30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 102H     | ○            | ○       | ○         | ○                | ○                 | ○                 |              |            |                   |                   |                 |     |        |                 |           |           |
| 103      | ○            | ○       | ○         | ○                | ○                 | ○                 |              |            |                   |                   |                 |     |        |                 |           |           |

○ good ○ best



# GENERAL PURPOSE

## List 104

Two Flute, Plug(4P-4.5P), Bottom(1.5P-2P)

|                                   |            |            |           |
|-----------------------------------|------------|------------|-----------|
| <b>SPEED<br/>FEED</b><br>P278-279 | <b>HSS</b> | <b>S/O</b> | <b>BR</b> |
|-----------------------------------|------------|------------|-----------|



| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number |        | S/O-Br Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|--------|---------------------|
|          | UNC              | UNF |              |               | Plug       | Bottom |                     |
| 2        | 56               | —   | H1           | 2             | 10601      | 10602  | 18.33               |
| 2        | 56               | —   | H2           | 2             | 10651      | 10652  | 16.85               |
| 3        | 48               | —   | H2           | 2             | 10657      | 10658  | 13.54               |
| 4        | 40               | —   | H1           | 2             | 10613      | 10079  | 11.84               |
| 4        | 40               | —   | H2           | 2             | 10663      | 10664  | 10.59               |
| 5        | 40               | —   | H2           | 2             | 10672      | 10673  | 10.59               |
| 5        | —                | 44  | H2           | 2             | 10675      | —      | 11.56               |
| 6        | 32               | —   | H1           | 2             | 10628      | 10081  | 9.24                |
| 6        | 32               | —   | H2           | 2             | 10678      | 10679  | 9.24                |
| 6        | 32               | —   | H3           | 2             | 10728      | 10729  | 7.96                |
| 6        | —                | 40  | H2           | 2             | 10681      | 10164  | 9.24                |

| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number |        | S/O-Br Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|--------|---------------------|
|          | UNC              | UNF |              |               | Plug       | Bottom |                     |
| 8        | 32               | —   | H2           | 2             | 10684      | 10685  | 9.24                |
| 8        | 32               | —   | H3           | 2             | 10734      | 10735  | 7.96                |
| 10       | 24               | —   | H2           | 2             | 10690      | 10691  | 9.24                |
| 10       | 24               | —   | H3           | 2             | 10740      | 10741  | 8.24                |
| 10       | —                | 32  | H1           | 2             | 10261      | 10262  | 9.24                |
| 10       | —                | 32  | H2           | 2             | 10693      | 10694  | 9.24                |
| 10       | —                | 32  | H3           | 2             | 10743      | 10744  | 8.24                |
| 1/4      | 20               | —   | H3           | 2             | 11951      | 11952  | 10.74               |
| 1/4      | —                | 28  | H3           | 2             | 11954      | 11955  | 10.74               |
| 5/16     | 18               | —   | H3           | 2             | 11957      | 11958  | 13.51               |

Packed: 10 pcs.

Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide.

Red EDP numbers indicate available Steam Oxide and Bright. All others available Bright only.

TiCN, TiN coatings available on request.

Straight Fluted

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 104      | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     |        |                 |           |           |

○ good ⊗ best





# GENERAL PURPOSE

## List 101N

UNEF, Plug(4P-4.5P), Bottom(1.5P-2P)

|                           |     |    |
|---------------------------|-----|----|
| SPEED<br>FEED<br>P278-279 | HSS | BR |
|---------------------------|-----|----|



| Tap Size | Threads Per Inch | Thread Limit | No. of Flutes | EDP Number |         | List Price (Each) |
|----------|------------------|--------------|---------------|------------|---------|-------------------|
|          |                  |              |               | Plug       | Bottom  |                   |
| 12       | 32               | H3           | 4             | 1670100    | 1670200 | 9.94              |
| 1/4      | 32               | H3           | 4             | 1680100    | 1680200 | 10.74             |
| 5/16     | 32               | H3           | 4             | 1680300    | 1680400 | 11.98             |
| 3/8      | 32               | H3           | 4             | 1680500    | 1680600 | 15.46             |
| 7/16     | 28               | H3           | 4             | 1680700    | 1680800 | 22.51             |
| 1/2      | 28               | H3           | 4             | 1680900    | 1681000 | 26.44             |
| 9/16     | 24               | H3           | 4             | 1681100    | 1681200 | 39.23             |

| Tap Size | Threads Per Inch | Thread Limit | No. of Flutes | EDP Number |         | List Price (Each) |
|----------|------------------|--------------|---------------|------------|---------|-------------------|
|          |                  |              |               | Plug       | Bottom  |                   |
| 5/8      | 24               | H3           | 6             | 1681300    | 1681400 | 49.71             |
| 11/16    | 24               | H3           | 6             | 1681500    | 1681600 | 62.12             |
| 3/4      | 20               | H3           | 6             | 1681700    | 1681800 | 65.30             |
| 13/16    | 20               | H3           | 6             | 1681900    | 1682000 | 88.18             |
| 7/8      | 20               | H3           | 6             | 1682100    | 1682200 | 88.18             |
| 15/16    | 20               | H3           | 6             | 1682300    | 1682400 | 115.76            |
| 1        | 20               | H3           | 6             | 1682500    | 1682600 | 115.76            |

Packed: Up to 3/8" = 10 pcs; 7/16" to 5/8" = 5 pcs; 3/4 and up = 1 pc.  
TiCN, TiN coatings available on request.

Straight Fluted

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |           |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 101N          | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     |        |                 |           |           |

○ good ⊗ best



# GENERAL PURPOSE

## List 141

Plug(4P-4.5P), Bottom(1.5P-2P)

|  |     |     |    |
|--|-----|-----|----|
|  | HSS | S/O | BR |
|--|-----|-----|----|



| Tap Size | Pitch | Thread Limit | No. of Flutes | EDP Number |        | S/O-Br Price (Each) |
|----------|-------|--------------|---------------|------------|--------|---------------------|
|          |       |              |               | Plug       | Bottom |                     |
| M2       | 0.4   | D3           | 3             | 19773      | 19774  | 24.75               |
| M2.5     | 0.45  | D3           | 3             | 19722      | 19723  | 15.42               |
| M3       | 0.5   | D3           | 3             | 19701      | 19702  | 13.09               |
| M3.5     | 0.6   | D4           | 3             | 19725      | 19726  | 10.78               |
| M4       | 0.7   | D4           | 4             | 19704      | 19705  | 10.78               |
| M4.5     | 0.75  | D4           | 4             | 19728      | 19729  | 10.78               |
| M5       | 0.8   | D4           | 4             | 19707      | 19708  | 10.78               |
| M6       | 1.0   | D5           | 4             | 19710      | 19711  | 11.42               |
| M7       | 1.0   | D5           | 4             | 19731      | 19732  | 12.44               |
| M8       | 1.0   | D5           | 4             | 19734      | 19735  | 12.44               |
| M8       | 1.25  | D5           | 4             | 19713      | 19714  | 12.44               |
| M10      | 1.0   | D5           | 4             | 19737      | 19738  | 23.45               |
| M10      | 1.25  | D5           | 4             | 19740      | 19741  | 23.45               |

| Tap Size | Pitch | Thread Limit | No. of Flutes | EDP Number |        | S/O-Br Price (Each) |
|----------|-------|--------------|---------------|------------|--------|---------------------|
|          |       |              |               | Plug       | Bottom |                     |
| M10      | 1.5   | D6           | 4             | 19716      | 19717  | 23.45               |
| M12      | 1.25  | D5           | 4             | 19743      | 19744  | 27.58               |
| M12      | 1.5   | D6           | 4             | 19746      | 19747  | 27.58               |
| M12      | 1.75  | D6           | 4             | 19719      | 19720  | 27.58               |
| M14      | 1.25  | D5           | 4             | 19749      | 19750  | 41.07               |
| M14      | 1.5   | D6           | 4             | 19776      | 19777  | 41.07               |
| M14      | 2.0   | D7           | 4             | 19752      | 19753  | 41.07               |
| M16      | 1.5   | D6           | 4             | 19755      | 19756  | 50.30               |
| M16      | 2.0   | D7           | 4             | 19758      | 19759  | 50.30               |
| M18      | 1.5   | D6           | 4             | 19761      | 19762  | 67.54               |
| M18      | 2.5   | D7           | 4             | 19764      | 19765  | 67.54               |
| M20      | 1.5   | D6           | 4             | 19767      | 19768  | 91.94               |
| M20      | 2.5   | D7           | 4             | 19770      | 19771  | 91.94               |

Packed: Up to M10 = 10 pcs; M12 to M16 = 5 pcs; M18 and up = 1 pc.  
Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide.

Red EDP numbers indicate available Steam Oxide and Bright.

All others available Bright only.

TiCN, TiN coatings available on request.

Straight Flute

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 141      | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     |        |                 |           |           |

○ good ⊗ best



# GENERAL PURPOSE

## List 121

JIS, Taper(5P and up), Plug(4P-4.5P), Bottom(1.5P-2P)

|                           |     |     |    |
|---------------------------|-----|-----|----|
| SPEED<br>FEED<br>P278-279 | HSS | S/O | BR |
|---------------------------|-----|-----|----|



| Tap Size | Pitch | Class of Fit | No. of Flutes | EDP Number |       |        | S/O-Br Price (Each) |
|----------|-------|--------------|---------------|------------|-------|--------|---------------------|
|          |       |              |               | Taper      | Plug  | Bottom |                     |
| M2       | 0.4   | 2            | 3             | —          | 19001 | 19002  | 25.51               |
| M2.3     | 0.4   | 2            | 3             | —          | 19004 | 19005  | 15.74               |
| M2.6     | 0.45  | 2            | 3             | —          | 19007 | 19008  | 15.74               |
| M3       | 0.5   | 2            | 3             | 19009      | 19010 | 19011  | 13.09               |
| M3.5     | 0.6   | 2            | 3             | 19012      | 19013 | 19014  | 10.78               |
| M4       | 0.7   | 2            | 3             | 19015      | 19016 | 19017  | 10.78               |
| M4.5     | 0.75  | 2            | 3             | —          | 19019 | —      | 10.78               |
| M5       | 0.8   | 2            | 3             | 19021      | 19022 | 19023  | 10.78               |
| M6       | 0.75  | 2            | 3             | 19024      | 19025 | 19026  | 11.42               |
| M6       | 1.0   | 2            | 3             | 19124      | 19125 | 19126  | 11.42               |
| M7       | 1.0   | 2            | 4             | —          | 19028 | —      | 12.44               |
| M8       | 0.75  | 2            | 4             | —          | 19031 | —      | 12.44               |
| M8       | 1.0   | 2            | 4             | 19130      | 19131 | 19132  | 12.44               |
| M8       | 1.25  | 2            | 4             | 19230      | 19231 | 19232  | 12.44               |
| M9       | 1.25  | 2            | 4             | —          | 19034 | —      | 16.32               |
| M10      | 1.0   | 2            | 4             | 19036      | 19037 | 19038  | 23.45               |
| M10      | 1.25  | 2            | 4             | 19136      | 19137 | 19138  | 23.45               |
| M10      | 1.5   | 2            | 4             | 19236      | 19237 | 19238  | 23.45               |
| M11      | 1.5   | 2            | 4             | —          | 19040 | —      | 23.45               |
| M12      | 1.0   | 2            | 4             | 19042      | 19043 | 19044  | 27.58               |
| M12      | 1.25  | 2            | 4             | 19142      | 19143 | 19144  | 27.58               |
| M12      | 1.5   | 2            | 4             | —          | 19243 | —      | 27.58               |
| M12      | 1.75  | 2            | 4             | 19342      | 19343 | 19344  | 27.58               |
| M14      | 1.25  | 2            | 4             | 19045      | 19046 | 19047  | 41.09               |

| Tap Size | Pitch | Class of Fit | No. of Flutes | EDP Number |       |        | S/O-Br Price (Each) |
|----------|-------|--------------|---------------|------------|-------|--------|---------------------|
|          |       |              |               | Taper      | Plug  | Bottom |                     |
| M14      | 1.5   | 2            | 4             | 19145      | 19146 | 19147  | 41.10               |
| M14      | 2.0   | 2            | 4             | 19245      | 19246 | 19247  | 41.10               |
| M16      | 1.0   | 2            | 4             | —          | 19049 | —      | 50.29               |
| M16      | 1.5   | 2            | 4             | 19148      | 19149 | 19150  | 50.30               |
| M16      | 2.0   | 2            | 4             | 19248      | 19249 | 19250  | 50.30               |
| M18      | 1.5   | 2            | 4             | 19051      | 19052 | 19053  | 67.54               |
| M18      | 2.0   | 2            | 4             | —          | 19152 | —      | 67.54               |
| M18      | 2.5   | 2            | 4             | 19251      | 19252 | 19253  | 67.54               |
| M20      | 1.5   | 2            | 4             | 19054      | 19055 | 19056  | 91.93               |
| M20      | 2.5   | 2            | 4             | 19154      | 19155 | 19156  | 91.94               |
| M22      | 1.5   | 2            | 4             | —          | 19058 | 19059  | 101.31              |
| M22      | 2.5   | 2            | 4             | 19157      | 19158 | 19159  | 101.31              |
| M24      | 1.5   | 2            | 4             | —          | 19061 | —      | 127.96              |
| M24      | 3.0   | 2            | 4             | 19160      | 19161 | 19162  | 127.96              |
| M26      | 1.5   | 2            | 4             | 19063      | 19064 | 19065  | 227.02              |
| M26      | 3.0   | 2            | 4             | 19163      | 19164 | 19165  | 227.02              |
| M28      | 1.5   | 2            | 4             | 19066      | 19067 | 19068  | 281.45              |
| M30      | 1.5   | 2            | 4             | 19069      | 19070 | 19071  | 281.45              |
| M30      | 3.5   | 2            | 4             | 19169      | 19170 | 19171  | 281.45              |
| M32      | 1.5   | 2            | 4             | 19072      | 19073 | 19074  | 315.21              |
| M33      | 1.5   | 2            | 4             | 19075      | 19076 | 19077  | 315.21              |
| M34      | 1.5   | 2            | 4             | 19078      | 19079 | 19080  | 356.49              |
| M36      | 1.5   | 2            | 4             | 19081      | 19082 | 19083  | 356.49              |

\* All threads classified as JIS Class II

Packed: Up to M10 = 10 pcs; M12 to M16 = 5 pcs; M18 and up = 1 pc.

Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide.

Red EDP numbers indicate available Steam Oxide and Bright. All others available Bright only.

TiCN, TiN coatings available on request.

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |           |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 121           | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     |        |                 |           |           |

○ good ○ best



# PULLEY TAPS

## List 916

Long Shank, Plug(4P-4.5P)

|                                   |            |            |
|-----------------------------------|------------|------------|
| <b>SPEED<br/>FEED</b><br>P278-279 | <b>HSS</b> | <b>S/O</b> |
|-----------------------------------|------------|------------|



| Tap Size | Threads Per Inch<br>UNC | Thread Limit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|-------------------------|--------------|---------------|-----|------------|-------------------|
| 1/4      | 20                      | H3           | 4             | 6   | 1290001    | 62.67             |
| 1/4      | 20                      | H3           | 4             | 8   | 1290201    | 76.01             |
| 5/16     | 18                      | H3           | 4             | 6   | 1290401    | 65.30             |
| 5/16     | 18                      | H3           | 4             | 8   | 1290601    | 78.06             |
| 3/8      | 16                      | H3           | 4             | 6   | 1290801    | 73.36             |
| 3/8      | 16                      | H3           | 4             | 8   | 1291001    | 87.07             |
| 3/8      | 16                      | H3           | 4             | 10  | 1291201    | 109.19            |
| 7/16     | 14                      | H3           | 4             | 6   | 1291401    | 78.06             |
| 7/16     | 14                      | H3           | 4             | 8   | 1291601    | 99.45             |
| 1/2      | 13                      | H3           | 4             | 6   | 1292001    | 78.62             |

| Tap Size | Threads Per Inch<br>UNC | Thread Limit | No. Of Flutes | OAL | EDP Number | List Price (Each) |
|----------|-------------------------|--------------|---------------|-----|------------|-------------------|
| 1/2      | 13                      | H3           | 4             | 8   | 1292201    | 102.27            |
| 1/2      | 13                      | H3           | 4             | 10  | 1292401    | 125.71            |
| 1/2      | 13                      | H3           | 4             | 12  | 1292601    | 154.98            |
| 5/8      | 11                      | H3           | 4             | 6   | 1292801    | 105.07            |
| 5/8      | 11                      | H3           | 4             | 8   | 1293001    | 134.34            |
| 5/8      | 11                      | H3           | 4             | 10  | 1293201    | 169.62            |
| 5/8      | 11                      | H3           | 4             | 12  | 1293401    | 198.89            |
| 3/4      | 10                      | H3           | 4             | 10  | 1293601    | 198.89            |
| 3/4      | 10                      | H3           | 4             | 12  | 1293801    | 236.42            |

Packed: 1 pc. Available Steam Oxide finish only.

Straight Fluted

### Work Material

| List No.   | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|            | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| <b>916</b> | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     |        |                 |           |           |

○ good ⊗ best



## List S110

Plug(4P-4.5P), Bottom(1.5P-2P)

|                           |     |    |
|---------------------------|-----|----|
| SPEED<br>FEED<br>P278-279 | HSS | BR |
|---------------------------|-----|----|



| Tap Size | Threads Per Inch<br>UNS | Thread Limit | No. of Flutes | EDP Number |         | List Price (Each) |
|----------|-------------------------|--------------|---------------|------------|---------|-------------------|
|          |                         |              |               | Plug       | Bottom  |                   |
| 00       | 90                      | H1           | 2             | 1030000    | 1040000 | 49.02             |
| 00       | 90                      | H2           | 2             | 3370000    | 2055000 | 49.02             |
| 00       | 96                      | H1           | 2             | 1060000    | 1070000 | 49.02             |

| Tap Size | Threads Per Inch<br>UNS | Thread Limit | No. of Flutes | EDP Number |         | List Price (Each) |
|----------|-------------------------|--------------|---------------|------------|---------|-------------------|
|          |                         |              |               | Plug       | Bottom  |                   |
| 00       | 96                      | H2           | 2             | 3380000    | 1322000 | 49.02             |
| 000      | 120                     | H1           | 2             | 1010000    | 1020000 | 65.21             |
| 000      | 120                     | H2           | 2             | 1929000    | 2054000 | 49.02             |

Packed: 10 pcs. TiCN, TiN coatings available on request.

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |           |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| S110          | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     |        |                 |           |           |

○ good ⊗ best





# FOR PLASTIC

## List 114

|                           |        |   |
|---------------------------|--------|---|
| SPEED<br>FEED<br>P278-279 | HSS-CO | N |
|---------------------------|--------|---|

Plug(4P-4.5P), Bottom(1.5P-2P)



| Tap Size | Threads Per Inch |     | Thread Limit | No. of Flutes | EDP Number |         | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|---------|-------------------|
|          | UNC              | UNF |              |               | Plug       | Bottom  |                   |
| 2        | 56               | —   | Oversize 2B+ | 3             | 3141803    | 3141903 | 20.36             |
| 2        | 56               | —   | Oversize H7  | 3             | 3141203    | 3141303 | 20.36             |
| 4        | 40               | —   | Oversize 2B+ | 4             | 3142803    | 3142903 | 13.40             |
| 4        | 40               | —   | Oversize H7  | 4             | 3142203    | 3142303 | 13.40             |
| 6        | 32               | —   | Oversize 2B+ | 4             | 3144803    | 3144903 | 11.08             |
| 6        | 32               | —   | Oversize H7  | 4             | 3144203    | 3144303 | 11.08             |
| 8        | 32               | —   | Oversize 2B+ | 4             | 3145803    | 3145903 | 11.08             |

| Tap Size | Threads Per Inch |     | Thread Limit | No. of Flutes | EDP Number |         | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|---------|-------------------|
|          | UNC              | UNF |              |               | Plug       | Bottom  |                   |
| 8        | 32               | —   | Oversize H7  | 4             | 3145203    | 3145303 | 11.08             |
| 10       | 24               | —   | Oversize 2B+ | 4             | 3146803    | 3146903 | 12.06             |
| 10       | 24               | —   | Oversize H7  | 4             | 3146203    | 3146303 | 11.76             |
| 10       | —                | 32  | Oversize 2B+ | 4             | 3146403    | 3146503 | 12.06             |
| 10       | —                | 32  | Oversize H7  | 4             | 3146603    | 3146703 | 12.06             |
| 1/4      | 20               | —   | Oversize 2B+ | 4             | 3147803    | 3147903 | 12.06             |
| 1/4      | 20               | —   | Oversize H7  | 4             | 3147203    | 3147303 | 12.06             |

Packed: 10 pcs. Available Nitride finish only.

The H7 series are designed for tapping thermoplastic materials such as nylon and vinyl.

The 2B+ are designed for tapping thermosetting, reinforced plastics and laminated plastics such as epoxy, bakelite, fiberglass, etc. The 2B+ limit is based on the actual products limit and machining properties, taking the guess work out of H limit selection.

\* Oversize 2B+ Series = +.0005"-.001"

\* Oversize H7 Series = +.002"-.0025"

Straight Flute

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 114      |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |           |

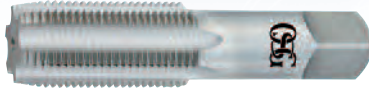
○ good ◎ best



## List 180

Plug(4P-4.5P), Bottom(1.5P-2P)

|                           |     |    |
|---------------------------|-----|----|
| SPEED<br>FEED<br>P278-279 | HSS | BR |
|---------------------------|-----|----|



| Tap Size | Threads Per Inch<br>8 Pitch | Thread Limit | No. of Flutes | EDP Number |         | List Price (Each) |
|----------|-----------------------------|--------------|---------------|------------|---------|-------------------|
|          |                             |              |               | Plug       | Bottom  |                   |
| 1-1/8    | 8                           | H5           | 4             | 1690100    | 1690200 | 193.26            |
| 1-1/4    | 8                           | H5           | 4             | 1690400    | 1690500 | 242.03            |
| 1-3/8    | 8                           | H5           | 6             | 1690700    | 1690800 | 302.09            |
| 1-1/2    | 8                           | H5           | 6             | 1691000    | 1691100 | 352.75            |
| 1-5/8    | 8                           | H6           | 6             | 1691300    | 1691400 | 394.01            |
| 1-3/4    | 8                           | H6           | 6             | 1691600    | 1691700 | 427.79            |

| Tap Size | Threads Per Inch<br>8 Pitch | Thread Limit | No. of Flutes | EDP Number |         | List Price (Each) |
|----------|-----------------------------|--------------|---------------|------------|---------|-------------------|
|          |                             |              |               | Plug       | Bottom  |                   |
| 1-7/8    | 8                           | H6           | 6             | 1691900    | 1692000 | 508.46            |
| 2        | 8                           | H6           | 6             | 1692200    | 1692300 | 604.15            |
| 2-1/4    | 8                           | H6           | 6             | 8019000    | 8020000 | 755.54            |
| 2-3/8    | 8                           | H6           | 6             | 8021000    | 8023000 | 820.88            |
| 2-1/2    | 8                           | H6           | 6             | 8024000    | 8025000 | 902.97            |

Packed: 1 pc. TiCN, TiN coatings available on request.

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |           |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 180           | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     |        |                 |           |           |

○ good ⊗ best



# LEFT HAND

## List 101L

Plug(4P-4.5P), Bottom(1.5P-2P)

|                                   |            |           |           |
|-----------------------------------|------------|-----------|-----------|
| <b>SPEED<br/>FEED</b><br>P278-279 | <b>HSS</b> | <b>BR</b> | <b>LH</b> |
|-----------------------------------|------------|-----------|-----------|



| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number |         | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|---------|-------------------|
|          | UNC              | UNF |              |               | Plug       | Bottom  |                   |
| 6        | 32               | —   | H3           | 3             | 1650100    | 1650200 | 9.24              |
| 6        | —                | 40  | H2           | 3             | 1650300    | 1650400 | 9.24              |
| 8        | 32               | —   | H3           | 4             | 1650500    | 1650600 | 9.24              |
| 8        | —                | 36  | H2           | 4             | 1650700    | 1650800 | 9.24              |
| 10       | 24               | —   | H3           | 4             | 1650900    | 1651000 | 9.24              |
| 10       | —                | 32  | H3           | 4             | 1651100    | 1651200 | 9.24              |
| 1/4      | 20               | —   | H3           | 4             | 1660100    | 1660200 | 10.74             |
| 1/4      | —                | 28  | H3           | 4             | 1660300    | 1660400 | 10.74             |
| 5/16     | 18               | —   | H3           | 4             | 1660500    | 1660600 | 11.98             |
| 5/16     | —                | 24  | H3           | 4             | 1660700    | 1660800 | 11.98             |
| 3/8      | 16               | —   | H3           | 4             | 1660900    | 1661000 | 15.46             |
| 3/8      | —                | 24  | H3           | 4             | 1661100    | 1661200 | 15.46             |
| 7/16     | 14               | —   | H3           | 4             | 1661300    | 1661400 | 22.51             |

| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number |         | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|---------|-------------------|
|          | UNC              | UNF |              |               | Plug       | Bottom  |                   |
| 7/16     | —                | 20  | H3           | 4             | 1661500    | 1661600 | 22.51             |
| 1/2      | 13               | —   | H3           | 4             | 1661700    | 1661800 | 26.44             |
| 1/2      | —                | 20  | H3           | 4             | 1661900    | 1662000 | 26.44             |
| 9/16     | 12               | —   | H3           | 4             | 1662100    | 1662200 | 39.23             |
| 9/16     | —                | 18  | H3           | 4             | 1662300    | 1662400 | 39.23             |
| 5/8      | 11               | —   | H3           | 4             | 1662500    | 1662600 | 49.71             |
| 5/8      | —                | 18  | H3           | 4             | 1662700    | 1662800 | 49.71             |
| 3/4      | 10               | —   | H3           | 4             | 1663300    | 1663400 | 65.30             |
| 3/4      | —                | 16  | H3           | 4             | 1663500    | 1663600 | 65.30             |
| 7/8      | 9                | —   | H4           | 4             | 1663700    | 1663800 | 88.18             |
| 7/8      | —                | 14  | H4           | 4             | 1663900    | 1664000 | 88.18             |
| 1        | 8                | —   | H4           | 4             | 1664100    | 1664200 | 115.76            |
| 1        | —                | 12  | H4           | 4             | 1664300    | 1664400 | 115.76            |

Packed: Up to 3/8" = 10 pcs; 7/16" to 5/8" = 5 pcs; 3/4 and up = 1 pc.  
TiCN, TiN coatings available on request.

Straight Fluted

### Work Material

| List No.    | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|-------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|             | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| <b>101L</b> | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     |        |                 |           |           |

○ good ⊗ best



## List 315

Spiral Fluted, Modified Bottom(2.5P-3P)



SPEED  
FEED  
P278-279

VC-10

S/O

STI



| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|-------------------|
|          | UNC              | UNF |              |               |            |                   |
| 2        | 56               | —   | H2           | 2             | 1715701    | 75.66             |
| 4        | 40               | —   | H2           | 2             | 1715801    | 50.45             |
| 6        | 32               | —   | H2           | 3             | 1715901    | 41.23             |
| 6        | 32               | —   | H3           | 3             | 1716001    | 41.23             |
| 8        | 32               | —   | H2           | 3             | 1716101    | 41.23             |
| 8        | 32               | —   | H3           | 3             | 1716201    | 41.23             |

| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|-------------------|
|          | UNC              | UNF |              |               |            |                   |
| 10       | —                | 32  | H2           | 3             | 1716301    | 42.19             |
| 10       | —                | 32  | H3           | 3             | 1716401    | 42.19             |
| 1/4      | —                | 28  | H2           | 3             | 1716501    | 46.19             |
| 1/4      | —                | 28  | H3           | 3             | 1716601    | 46.19             |
| 5/16     | —                | 24  | H3           | 3             | 1716701    | 51.39             |

Packed: 10 pcs. Available Steam Oxide finish only.

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc |
| 315           |           |         |           |                  |                   |                   | ○            | ○          | ○              | ○                 |                 | ◎   | ◎      | ◎               | ◎         |

○ good ◎ best



## List 302

Spiral Fluted, Modified Bottom(2.5P-3P), Bottom(1.5P-2P)



SPEED  
FEED  
P278-279

HSSE

S/O

STI

10°



| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number  |         | List Price (Each) |
|----------|------------------|-----|--------------|---------------|-------------|---------|-------------------|
|          | UNC              | UNF |              |               | Mod. Bottom | Bottom  |                   |
| 2        | 56               | —   | H2           | 2             | 1713501     | 0144701 | 62.65             |
| 4        | 40               | —   | H2           | 3             | 1713601     | 0144801 | 41.76             |
| 6        | 32               | —   | H2           | 3             | 1713701     | 0144901 | 34.66             |
| 6        | 32               | —   | H3           | 3             | 1713801     | 0145001 | 34.66             |
| 6        | —                | 40  | H2           | 3             | —           | 0145101 | 34.66             |
| 8        | 32               | —   | H2           | 3             | 1713901     | 0145201 | 34.66             |
| 8        | 32               | —   | H3           | 3             | 1714001     | 0145301 | 34.66             |
| 8        | 32               | —   | H4           | 3             | —           | 0145401 | 34.66             |
| 10       | 24               | —   | H2           | 3             | —           | 0145501 | 34.96             |
| 10       | 24               | —   | H3           | 3             | —           | 0145601 | 34.96             |
| 10       | —                | 32  | H2           | 3             | 1714101     | 0145701 | 34.96             |
| 10       | —                | 32  | H3           | 3             | 1714201     | 0145801 | 34.96             |
| 10       | —                | 32  | H4           | 3             | —           | 0145901 | 34.96             |
| 1/4      | 20               | —   | H2           | 3             | —           | 0146001 | 38.28             |
| 1/4      | 20               | —   | H3           | 3             | —           | 0146101 | 38.28             |
| 1/4      | —                | 28  | H2           | 3             | 1714301     | 0146201 | 38.28             |
| 1/4      | —                | 28  | H3           | 3             | 1714401     | 0146301 | 38.28             |
| 5/16     | 18               | —   | H3           | 3             | —           | 0146401 | 42.47             |
| 5/16     | 18               | —   | H4           | 3             | —           | 0146501 | 42.47             |

| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number  |         | List Price (Each) |
|----------|------------------|-----|--------------|---------------|-------------|---------|-------------------|
|          | UNC              | UNF |              |               | Mod. Bottom | Bottom  |                   |
| 5/16     | —                | 24  | H2           | 3             | 1714501     | 0146601 | 42.47             |
| 5/16     | —                | 24  | H3           | 3             | —           | 0146701 | 42.47             |
| 3/8      | 16               | —   | H3           | 3             | —           | 0146801 | 62.84             |
| 3/8      | 16               | —   | H4           | 3             | —           | 0146901 | 62.84             |
| 3/8      | —                | 24  | H2           | 3             | —           | 0147001 | 62.84             |
| 3/8      | —                | 24  | H3           | 3             | —           | 0147101 | 62.84             |
| 7/16     | 14               | —   | H3           | 3             | —           | 0147201 | 91.21             |
| 7/16     | 14               | —   | H4           | 3             | —           | 0147301 | 91.21             |
| 7/16     | —                | 20  | H3           | 3             | —           | 0147401 | 91.21             |
| 7/16     | —                | 20  | H4           | 3             | —           | 0147501 | 91.21             |
| 1/2      | 13               | —   | H3           | 4             | —           | 0147601 | 113.51            |
| 1/2      | 13               | —   | H4           | 4             | —           | 0147701 | 113.51            |
| 1/2      | —                | 20  | H3           | 4             | —           | 0147801 | 113.51            |
| 1/2      | —                | 20  | H4           | 4             | —           | 0147901 | 113.51            |
| 9/16     | —                | 18  | H3           | 4             | —           | 0148001 | 129.22            |
| 5/8      | —                | 18  | H3           | 4             | —           | 0148101 | 129.22            |
| 3/4      | —                | 16  | H4           | 4             | —           | 0148201 | 185.45            |
| 7/8      | —                | 14  | H4           | 4             | —           | 0148301 | 237.66            |

Packed: Up to 3/8" = 10 pcs; 7/16" to 5/8" = 5 pcs; 3/4" and Up = 1 pc.  
Available Steam Oxide finish only.

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 302      |           |         |           | ○                | ○                 |                   |              |            |                |                   | ◎               | ○   | ◎      | ○               |           |           |

○ good ◎ best





# GENERAL PURPOSE

## List S108

Spiral Fluted, Bottom(1.5P-2P)



| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|-------------------|
|          | UNC              | UNF |              |               |            |                   |
| 2        | 56               | —   | H2           | 2             | 8003000    | 31.47             |
| 4        | 40               | —   | H2           | 2             | 8003600    | 24.87             |
| 6        | 32               | —   | H2           | 3             | 8005400    | 24.87             |
| 6        | 32               | —   | H3           | 3             | 8005700    | 24.87             |
| 8        | 32               | —   | H2           | 3             | 8006900    | 25.52             |
| 8        | 32               | —   | H3           | 3             | 8007200    | 25.52             |
| 10       | 24               | —   | H2           | 3             | 8007800    | 27.20             |
| 10       | 24               | —   | H3           | 3             | 8008100    | 27.20             |
| 10       | —                | 32  | H2           | 3             | 8008700    | 27.20             |
| 10       | —                | 32  | H3           | 3             | 8009000    | 27.20             |
| 1/4      | 20               | —   | H2           | 3             | 8010900    | 28.77             |
| 1/4      | 20               | —   | H3           | 3             | 8011200    | 28.77             |
| 1/4      | —                | 28  | H2           | 3             | 8011800    | 28.78             |
| 1/4      | —                | 28  | H3           | 3             | 8012100    | 28.78             |

| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|-------------------|
|          | UNC              | UNF |              |               |            |                   |
| 5/16     | 18               | —   | H3           | 3             | 8013000    | 31.32             |
| 5/16     | 18               | —   | H4           | 3             | 8013300    | 31.32             |
| 5/16     | —                | 24  | H2           | 3             | 8013600    | 31.32             |
| 5/16     | —                | 24  | H3           | 3             | 8013700    | 30.40             |
| 3/8      | 16               | —   | H3           | 3             | 8015400    | 41.57             |
| 3/8      | 16               | —   | H4           | 3             | 8015700    | 41.57             |
| 3/8      | —                | 24  | H2           | 3             | 8015800    | 41.57             |
| 3/8      | —                | 24  | H3           | 3             | 8015900    | 41.57             |
| 7/16     | 14               | —   | H3           | 4             | 8017000    | 52.56             |
| 7/16     | —                | 20  | H3           | 3             | 8017400    | 52.56             |
| 7/16     | —                | 20  | H4           | 3             | 8017500    | 52.56             |
| 1/2      | 13               | —   | H3           | 4             | 8018000    | 57.82             |
| 1/2      | —                | 20  | H3           | 4             | 8018400    | 57.82             |

Packed: Up to 3/8" = 10 pcs; 7/16" to 1/2" = 5 pcs.  
TiCN, TiN coatings available on request.

STI Tap

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |           |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| S108          | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     |        | ○               |           |           |

○ good ○ best



# EXOTAP® VC-10

Ideal for Difficult to Machine Materials

## List 314

Spiral Pointed, Plug(4P-4.5P)



SPEED  
FEED  
P278-279

VC-10

S/O

STI



| Tap Size | Thread Per Inch |     | No. of Flutes | EDP Number |         | List Price (Each) |
|----------|-----------------|-----|---------------|------------|---------|-------------------|
|          | UNC             | UNF |               | H2         | H3      |                   |
| 2        | 56              | —   | 2             | 1714601    | —       | 56.55             |
| 4        | 40              | —   | 3             | 1714701    | —       | 37.70             |
| 6        | 32              | —   | 3             | 1714801    | 1714901 | 31.58             |
| 8        | 32              | —   | 3             | 1715001    | 1715101 | 31.58             |

| Tap Size | Thread Per Inch |     | No. of Flutes | EDP Number |         | List Price (Each) |
|----------|-----------------|-----|---------------|------------|---------|-------------------|
|          | UNC             | UNF |               | H2         | H3      |                   |
| 10       | —               | 32  | 3             | 1715201    | 1715301 | 32.29             |
| 1/4      | —               | 28  | 3             | 1715401    | 1715501 | 41.98             |
| 5/16     | —               | 24  | 3             | —          | 1715601 | 45.51             |

Packed: 10 pcs. Available Steam Oxide finish only.

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 314      |           |         |           |                  |                   |                   | ○            | ○          | ○              | ○                 |                 | ◎   | ◎      | ◎               | ◎         |           |

○ good ◎ best



## List 301

Spiral Pointed, Plug(4P-4.5P)



SPEED  
FEED  
P278-279

HSSE

S/O

STI



| Tap Size | Thread Per Inch |     | No. of Flutes | EDP Number |         | List Price (Each) |
|----------|-----------------|-----|---------------|------------|---------|-------------------|
|          | UNC             | UNF |               | H2         | H3      |                   |
| 2        | 56              | —   | 2             | 1712401    | —       | 45.72             |
| 4        | 40              | —   | 2             | 1712501    | —       | 29.01             |
| 6        | 32              | —   | 3             | 1712601    | 1712701 | 24.29             |
| 8        | 32              | —   | 3             | 1712801    | 1712901 | 24.29             |

| Tap Size | Thread Per Inch |     | No. of Flutes | EDP Number |         | List Price (Each) |
|----------|-----------------|-----|---------------|------------|---------|-------------------|
|          | UNC             | UNF |               | H2         | H3      |                   |
| 10       | —               | 32  | 3             | 1713001    | 1713101 | 24.73             |
| 1/4      | —               | 28  | 3             | 1713201    | 1713301 | 27.12             |
| 5/16     | —               | 24  | 3             | —          | 1713401 | 29.46             |

Packed: 10 pcs. Available Steam Oxide finish only.

STI Tap

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |                     |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|---------------------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |                     |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc 45-50 Hrc |
| 301           |           |         |           | ○                | ○                 |                   |              |            |                |                   | ⊙               | ○   | ⊙      | ○               |                     |

○ good ⊙ best



# GENERAL PURPOSE

## List 125

Spiral Pointed, Plug(4P-4.5P)

SPEED  
FEED  
P278-279

HSS

BR

STI



| Tap Size | Threads Per Inch |     | No. Of Flutes | EDP Number |         |         |         | List Price (Each) |
|----------|------------------|-----|---------------|------------|---------|---------|---------|-------------------|
|          | UNC              | UNF |               | H1         | H2      | H3      | H4      |                   |
| 2        | 56               | —   | 2             | —          | 7002600 | —       | —       | 21.19             |
| 3        | 48               | —   | 2             | —          | 7003200 | —       | —       | 25.61             |
| 4        | 40               | —   | 2             | 1820400    | 1824000 | —       | —       | 24.63             |
| 4        | —                | 48  | 2             | —          | 7004400 | —       | —       | 24.63             |
| 5        | 40               | —   | 2             | —          | 7005000 | —       | —       | 24.99             |
| 6        | 32               | —   | 2             | —          | 1824800 | 1830400 | —       | 24.63             |
| 6        | —                | 40  | 2             | —          | 7007100 | —       | —       | 24.63             |
| 8        | 32               | —   | 2             | —          | 1825200 | 1830800 | —       | 25.21             |
| 8        | —                | 36  | 2             | —          | 7008600 | —       | —       | 25.21             |
| 10       | 24               | —   | 2             | —          | 1825600 | 7009800 | —       | 25.21             |
| 10       | —                | 32  | 2             | —          | 1825800 | 7010700 | —       | 25.21             |
| 1/4      | 20               | —   | 3             | —          | 1826400 | 1832000 | —       | 26.69             |
| 1/4      | —                | 28  | 3             | —          | 1826600 | 1832200 | —       | 26.69             |
| 5/16     | 18               | —   | 3             | —          | —       | 7014700 | 7015300 | 31.03             |
| 5/16     | —                | 24  | 3             | —          | 7015900 | 7016200 | —       | 31.03             |
| 3/8      | 16               | —   | 3             | —          | —       | 7017100 | 7017400 | 38.67             |
| 3/8      | —                | 24  | 3             | —          | 7018000 | 7018300 | —       | 38.67             |

Packed: 10 pcs. TiCN, TiN coatings available on request.

STI Tap

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 125      | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     |        | ○               |           |           |

○ good ⊗ best



# GENERAL PURPOSE

## List 126

Straight Fluted, Plug(4P-4.5P), Bottom(1.5P-2P)

|                                   |            |           |            |
|-----------------------------------|------------|-----------|------------|
| <b>SPEED<br/>FEED</b><br>P278-279 | <b>HSS</b> | <b>BR</b> | <b>STI</b> |
|-----------------------------------|------------|-----------|------------|



| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number |         | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|---------|-------------------|
|          | UNC              | UNF |              |               | Plug       | Bottom  |                   |
| 2        | 56               | —   | H2           | 3             | 6002600    | 6002700 | 25.30             |
| 3        | 48               | —   | H2           | 3             | 6003200    | 6003300 | 25.30             |
| 4        | 40               | —   | H1           | 3             | 6004500    | 6004600 | 22.89             |
| 4        | 40               | —   | H2           | 3             | 1804000    | 1804100 | 22.89             |
| 5        | 40               | —   | H2           | 3             | 6006000    | 6006100 | 22.89             |
| 6        | 32               | —   | H2           | 3             | 6006600    | 6006700 | 22.22             |
| 6        | 32               | —   | H3           | 3             | 1810400    | 1810500 | 22.89             |
| 6        | —                | 40  | H2           | 3             | 6007500    | 6007600 | 22.22             |
| 8        | 32               | —   | H2           | 3             | 6008100    | 6008200 | 22.22             |
| 8        | 32               | —   | H3           | 3             | 1810800    | 1810900 | 22.89             |
| 10       | 24               | —   | H2           | 3             | 1805600    | 1805700 | 24.63             |
| 10       | 24               | —   | H3           | 3             | 6010200    | 6010300 | 23.91             |
| 10       | —                | 32  | H2           | 3             | 1805800    | 1805900 | 24.63             |
| 10       | —                | 32  | H3           | 3             | 1811400    | 1811500 | 24.63             |
| 1/4      | 20               | —   | H2           | 3             | 6013200    | 6013300 | 25.07             |

| Tap Size | Threads Per Inch |     | Thread Limit | No. Of Flutes | EDP Number |         | List Price (Each) |
|----------|------------------|-----|--------------|---------------|------------|---------|-------------------|
|          | UNC              | UNF |              |               | Plug       | Bottom  |                   |
| 1/4      | 20               | —   | H3           | 3             | 1812000    | 1812100 | 25.07             |
| 1/4      | —                | 28  | H2           | 3             | 1806600    | 1806700 | 25.07             |
| 1/4      | —                | 28  | H3           | 3             | 6014400    | 6014500 | 25.07             |
| 5/16     | 18               | —   | H3           | 4             | 1812400    | 1812500 | 26.69             |
| 5/16     | 18               | —   | H4           | 4             | 6015600    | 6015700 | 26.69             |
| 5/16     | —                | 24  | H3           | 4             | 6016500    | 6016600 | 26.69             |
| 3/8      | 16               | —   | H3           | 4             | 1812800    | 1812900 | 33.03             |
| 3/8      | —                | 24  | H2           | 4             | 6018300    | 6018400 | 33.03             |
| 3/8      | —                | 24  | H3           | 4             | 6018600    | 6018700 | 33.03             |
| 7/16     | 14               | —   | H3           | 4             | 1813200    | 6019600 | 40.72             |
| 7/16     | 14               | —   | H4           | 4             | 6019800    | 6019900 | 40.72             |
| 7/16     | —                | 20  | H3           | 4             | 1813400    | 1813500 | 40.72             |
| 1/2      | 13               | —   | H3           | 4             | 1813600    | 6022000 | 45.02             |
| 1/2      | —                | 20  | H3           | 4             | 1813800    | 1813900 | 45.02             |

Packed: Up to 3/8" = 10 pcs; 7/16" to 1/2" = 5 pcs.  
TiCN, TiN coatings available on request.

STI Tap

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |                     |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|---------------------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |                     |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc 45-50 Hrc |
| <b>126</b>    | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     |        | ○               |                     |

○ good ○ best





## List 308

NPT



SPEED  
FEED  
P283

HSSE

S/O



| Tap Size      | Threads Per Inch | No. Of Flutes | EDP Number | List Price (Each) |
|---------------|------------------|---------------|------------|-------------------|
| 1/16          | 27               | 4             | 1735001    | 42.06             |
| 1/8 (Lg. Shk) | 27               | 4             | 1735101    | 42.06             |
| 1/8 (Sm. Shk) | 27               | 4             | 1735201    | 42.06             |
| 1/4           | 18               | 4             | 1735301    | 46.31             |

| Tap Size | Threads Per Inch | No. Of Flutes | EDP Number | List Price (Each) |
|----------|------------------|---------------|------------|-------------------|
| 3/8      | 18               | 4             | 1735401    | 61.27             |
| 1/2      | 14               | 4             | 1735501    | 97.43             |
| 3/4      | 14               | 5             | 1735601    | 136.13            |
| 1        | 11-1/2           | 5             | 1735701    | 207.02            |

Packed: 1/8 = 10 pcs; 1/4 = 5 pcs; 3/8 and up = 1 pc.  
Available Steam Oxide finish only.

## List 318

NPTF



SPEED  
FEED  
P283

HSSE

S/O



| Tap Size      | Threads Per Inch | No. Of Flutes | EDP Number | List Price (Each) |
|---------------|------------------|---------------|------------|-------------------|
| 1/16          | 27               | 4             | 1737501    | 42.06             |
| 1/8 (Lg. Shk) | 27               | 4             | 1737601    | 42.06             |
| 1/8 (Sm. Shk) | 27               | 4             | 1737701    | 42.06             |
| 1/4           | 18               | 4             | 1737801    | 46.31             |

| Tap Size | Threads Per Inch | No. Of Flutes | EDP Number | List Price (Each) |
|----------|------------------|---------------|------------|-------------------|
| 3/8      | 18               | 4             | 1737901    | 61.27             |
| 1/2      | 14               | 4             | 1738001    | 97.43             |
| 3/4      | 14               | 5             | 1738101    | 136.13            |
| 1        | 11-1/2           | 5             | 1738201    | 207.02            |

Packed: 1/8 = 10 pcs; 1/4 = 5 pcs; 3/8 and up = 1 pc.  
Available Steam Oxide finish only.

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 308      |           |         |           | ○                | ○                 |                   |              |            |                |                   | ⊙               | ○   | ⊙      | ○               |           |           |
| 318      |           |         |           | ○                | ○                 |                   |              |            |                |                   | ⊙               | ○   | ⊙      | ○               |           |           |

○ good ⊙ best



## List 328

NPT



SPEED  
FEED  
P278-279

HSS-CO

BR



| Tap Size      | Thread Per Inch | No. Of Flutes | EDP Number | List Price (Each) |
|---------------|-----------------|---------------|------------|-------------------|
| 1/8 (Lg. Shk) | 27              | 4             | 1736000    | 54.78             |
| 1/4           | 18              | 4             | 1736100    | 60.71             |
| 3/8           | 18              | 4             | 1736200    | 79.35             |

| Tap Size | Thread Per Inch | No. Of Flutes | EDP Number | List Price (Each) |
|----------|-----------------|---------------|------------|-------------------|
| 1/2      | 14              | 4             | 1736300    | 126.52            |
| 3/4      | 14              | 5             | 1736400    | 177.06            |

Packed: 1/8 = 10 pcs; 1/4 = 5 pcs; 3/8 and up = 1 pc.  
TiN, TiCN coating available on request.

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |           |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 328           |           |         |           | ○                | ○                 | ○                 | ◎            |            |                |                   | ○               | ○   |        | ◎               | ○         |           |

○ good ◎ best



# TAPER PIPE

## List 108

General Purpose, NPT, ANPT

| SPEED<br>FEED<br>P278-279 | HSS | TiCN | S/O | BR |
|---------------------------|-----|------|-----|----|
|---------------------------|-----|------|-----|----|



| Tap Size      | Threads<br>Per Inch | No. Of<br>Flutes | EDP<br>Number | List Price (Each) |        |
|---------------|---------------------|------------------|---------------|-------------------|--------|
|               |                     |                  | NPT or ANPT   | S/O-Br            | TiCN   |
| 1/16          | 27                  | 4                | 13100         | 36.01             | 43.60  |
| 1/8 (Lg.Shk.) | 27                  | 4                | 13101         | 36.01             | 45.01  |
| 1/8 (Sm.Shk.) | 27                  | 4                | 13102         | 36.01             | 46.62  |
| 1/4           | 18                  | 4                | 13103         | 39.77             | 55.89  |
| 3/8           | 18                  | 4                | 13104         | 52.54             | 75.45  |
| 1/2           | 14                  | 4                | 13105         | 83.50             | 107.91 |

| Tap Size | Threads<br>Per Inch | No. Of<br>Flutes | EDP<br>Number | List Price (Each) |        |
|----------|---------------------|------------------|---------------|-------------------|--------|
|          |                     |                  | NPT or ANPT   | S/O-Br            | TiCN   |
| 3/4      | 14                  | 5                | 13106         | 116.69            | 152.76 |
| 1        | 11-1/2              | 5                | 13107         | 177.69            | 222.12 |
| 1-1/4    | 11-1/2              | 5                | 13108         | 253.29            | 316.61 |
| 1-1/2    | 11-1/2              | 7                | 13109         | 339.61            | —      |
| 2        | 11-1/2              | 7                | 13110         | 461.56            | 576.95 |

Packed: 1/8 = 10 pcs; 1/4 = 5 pcs; 3/8 and up = 1 pc.  
Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide; 08 = TiCN.  
TiN coating available on request.

## List 118

General Purpose, NPTF

| SPEED<br>FEED<br>P278-279 | HSS | TiCN | S/O | BR |
|---------------------------|-----|------|-----|----|
|---------------------------|-----|------|-----|----|



| Tap Size      | Threads<br>Per Inch | No. Of<br>Flutes | EDP<br>Number | List Price (Each) |        |
|---------------|---------------------|------------------|---------------|-------------------|--------|
|               |                     |                  | NPTF          | S/O-Br            | TiCN   |
| 1/16          | 27                  | 4                | 13125         | 36.01             | —      |
| 1/8 (Lg.Shk.) | 27                  | 4                | 13126         | 36.01             | 45.01  |
| 1/8 (Sm.Shk.) | 27                  | 4                | 13127         | 36.01             | 45.01  |
| 1/4           | 18                  | 4                | 13128         | 39.77             | 49.71  |
| 3/8           | 18                  | 4                | 13129         | 52.54             | 65.67  |
| 1/2           | 14                  | 4                | 13130         | 83.50             | 104.38 |

| Tap Size | Threads<br>Per Inch | No. Of<br>Flutes | EDP<br>Number | List Price (Each) |        |
|----------|---------------------|------------------|---------------|-------------------|--------|
|          |                     |                  | NPTF          | S/O-Br            | TiCN   |
| 3/4      | 14                  | 5                | 13131         | 116.69            | 145.87 |
| 1        | 11-1/2              | 5                | 13132         | 177.69            | 222.12 |
| 1-1/4    | 11-1/2              | 5                | 13133         | 253.29            | —      |
| 1-1/2    | 11-1/2              | 7                | 13134         | 339.61            | —      |
| 2        | 11-1/2              | 7                | 13135         | 461.56            | —      |

Packed: 1/8 = 10 pcs; 1/4 = 5 pcs; 3/8 and up = 1 pc.  
Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide; 08 = TiCN.  
TiN coating available on request.

### Work Material

| List No. | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|----------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|          | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 108      | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     |        | ○               |           |           |
| 118      | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     |        | ○               |           |           |

○ good ⊗ best



# TAPER PIPE

## List 108G

General Purpose, Interrupted Thread, NPT, NPTF, ANPT

|                                   |            |             |            |           |
|-----------------------------------|------------|-------------|------------|-----------|
| <b>SPEED<br/>FEED</b><br>P278-279 | <b>HSS</b> | <b>TiCN</b> | <b>S/O</b> | <b>BR</b> |
|-----------------------------------|------------|-------------|------------|-----------|



| Tap Size       | Threads Per Inch | No. Of Flutes | EDP Number  |       | List Price (Each) |        |
|----------------|------------------|---------------|-------------|-------|-------------------|--------|
|                |                  |               | NPT or ANPT | NPTF  | S/O-Br            | TiCN   |
| 1/8 (Lg. Shk.) | 27               | 5             | 13151       | 33101 | 55.94             | 69.93  |
| 1/8 (Sm. Shk.) | 27               | 5             | 13152       | 33105 | 55.94             | 69.93  |
| 1/4            | 18               | 5             | 13153       | 33109 | 62.12             | 80.75  |
| 3/8            | 18               | 5             | 13154       | 13113 | 78.25             | 97.82  |
| 1/2            | 14               | 5             | 13155       | 13117 | 124.96            | 151.49 |

| Tap Size | Threads Per Inch | No. Of Flutes | EDP Number  |       | List Price (Each) |        |
|----------|------------------|---------------|-------------|-------|-------------------|--------|
|          |                  |               | NPT or ANPT | NPTF  | S/O-Br            | TiCN   |
| 3/4      | 14               | 5             | 13156       | 13121 | 177.69            | 222.12 |
| 1        | 11-1/2           | 5             | 13157       | 33125 | 272.05            | —      |
| 1-1/4    | 11-1/2           | 5             | 13158       | 33129 | 382.76            | —      |
| 1-1/2    | 11-1/2           | 7             | 13159       | —     | 515.97            | —      |
| 2        | 11-1/2           | 7             | 13160       | —     | 694.21            | —      |

Packed: 1/8 = 10 pcs; 1/4 = 5 pcs; 3/8 and up = 1 pc.  
Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide; 08 = TiCN.  
TiN coating available on request.

## List S125

Short Projection, NPT, NPTF

|                                   |            |             |            |           |  |
|-----------------------------------|------------|-------------|------------|-----------|--|
| <b>SPEED<br/>FEED</b><br>P278-279 | <b>HSS</b> | <b>TiCN</b> | <b>S/O</b> | <b>BR</b> |  |
|-----------------------------------|------------|-------------|------------|-----------|--|



| Tap Size       | Threads Per Inch | No. of Flutes | Projection | EDP Number  |       | List Price (Each) |        |
|----------------|------------------|---------------|------------|-------------|-------|-------------------|--------|
|                |                  |               |            | NPT or ANPT | NPTF  | S/O-Br            | TiCN   |
| 1/8 (Lg. Shk.) | 27               | 4             | .2344      | 12505       | 12506 | 55.69             | 69.61  |
| 1/4            | 18               | 4             | .3750      | 12513       | 12514 | 63.62             | 79.53  |
| 3/8            | 18               | 4             | .3750      | 12517       | 12518 | 80.14             | 100.17 |
| 1/2            | 14               | 4             | .4687      | 12521       | 12522 | 101.73            | 127.16 |
| 3/4            | 14               | 5             | .4531      | 12525       | 12526 | 162.87            | —      |
| 1              | 11-1/2           | 5             | .5781      | 12529       | 12530 | 250.76            | 313.45 |

Packed: 1/8 = 10 pcs; 1/4 = 5 pcs; 3/8 and up = 1 pc.  
Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide; 08 = TiCN.

| Work Material |           |         |           |                  |                   |                   |              |            |                |                   |                 |     |        |                 |           |           |
|---------------|-----------|---------|-----------|------------------|-------------------|-------------------|--------------|------------|----------------|-------------------|-----------------|-----|--------|-----------------|-----------|-----------|
| List No.      | Aluminum  |         | Cast Iron | Low Carbon Steel | Med. Carbon Steel | High Carbon Steel | Alloy Steels | Die Steels | Titanium       | High Nickel Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|               | 6061 7075 | Casting |           | 1010 1018        | 1035 1045         | 1065              | 4140 4340    | 20 Hrc     | 6AL4V (30 Hrc) | 20 Hrc            | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| 108G          | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     | ○      |                 |           |           |
| S125          | ○         | ○       | ○         | ○                | ○                 | ○                 |              |            |                |                   |                 |     | ○      |                 |           |           |

○ good    ⊗ best



# STRAIGHT PIPE

## List 109

NPS, NPSF

|                                   |            |            |           |
|-----------------------------------|------------|------------|-----------|
| <b>SPEED<br/>FEED</b><br>P278-279 | <b>HSS</b> | <b>S/O</b> | <b>BR</b> |
|-----------------------------------|------------|------------|-----------|



| Tap Size      | Threads<br>Per Inch | No. of<br>Flutes | EDP Number |       | S/O-Br<br>Price<br>(Each) |
|---------------|---------------------|------------------|------------|-------|---------------------------|
|               |                     |                  | NPS        | NPSF  |                           |
| 1/8 (Lg. Shk) | 27                  | 4                | 13301      | 13326 | 39.03                     |
| 1/8 (Sm. Shk) | 27                  | 4                | 13302      | 13327 | 39.03                     |
| 1/4           | 18                  | 4                | 13303      | 13328 | 43.33                     |
| 3/8           | 18                  | 4                | 13304      | 13329 | 56.66                     |

| Tap Size | Threads<br>Per Inch | No. of<br>Flutes | EDP Number |       | S/O-Br<br>Price<br>(Each) |
|----------|---------------------|------------------|------------|-------|---------------------------|
|          |                     |                  | NPS        | NPSF  |                           |
| 1/2      | 14                  | 4                | 13305      | 13330 | 90.44                     |
| 3/4      | 14                  | 5                | 13306      | 13331 | 126.67                    |
| 1        | 11-1/2              | 5                | 13307      | 13332 | 193.26                    |

Packed: 1/8 = 10 pcs; 1/4 = 5 pcs; 3/8 and up = 1 pc.  
Specify treatment at time of order: 00 = Bright; 01 = Steam Oxide.  
TiCN, TiN coatings available on request.

### Work Material

| List No.   | Aluminum     |         | Cast Iron | Low Carbon<br>Steel | Med. Carbon<br>Steel | High Carbon<br>Steel | Alloy<br>Steels | Die<br>Steels | Titanium          | High Nickel<br>Alloy | Stainless Steel |     |        | Hardened Steels |           |           |
|------------|--------------|---------|-----------|---------------------|----------------------|----------------------|-----------------|---------------|-------------------|----------------------|-----------------|-----|--------|-----------------|-----------|-----------|
|            | 6061<br>7075 | Casting |           | 1010<br>1018        | 1035<br>1045         | 1065                 | 4140<br>4340    | 20 Hrc        | 6AL4V<br>(30 Hrc) | 20 Hrc               | 300             | 400 | 17-4PH | ~35 Hrc         | 35-45 Hrc | 45-50 Hrc |
| <b>109</b> | ○            | ○       | ○         | ○                   | ○                    | ○                    |                 |               |                   |                      |                 |     |        | ○               |           |           |

○ good ⊗ best





# Adjustable Round Split Dies

## List 134

HSS

BR



### Special Alloy Tool Steel: 5/8" Outside Diameter (1/4" thick)

| Tap Size | Major Diameter | Threads Per Inch |     |     | EDP Number | List Price (Each) |
|----------|----------------|------------------|-----|-----|------------|-------------------|
|          |                | UNC              | UNF | UNS |            |                   |
| 0        | 0.060          | —                | 80  | —   | 2723000    | 45.82             |
| 1        | 0.073          | —                | 72  | —   | 2723300    | 45.82             |
| 2        | 0.086          | 56               | —   | —   | 2723400    | 40.49             |
| 2        | —              | —                | 64  | —   | 2723500    | 40.49             |
| 3        | 0.099          | 48               | —   | —   | 2723600    | 36.23             |
| 3        | —              | —                | 56  | —   | 2723700    | 36.23             |

| Tap Size | Major Diameter | Threads Per Inch |     |     | EDP Number | List Price (Each) |
|----------|----------------|------------------|-----|-----|------------|-------------------|
|          |                | UNC              | UNF | UNS |            |                   |
| 4        | 0.112          | 40               | —   | —   | 2724000    | 30.91             |
| 4        | —              | —                | 48  | —   | 2724100    | 30.91             |
| 5        | 0.125          | 40               | —   | —   | 2724200    | 30.91             |
| 6        | 0.138          | 32               | —   | —   | 2724400    | 30.91             |
| 6        | —              | —                | 40  | —   | 2724600    | 30.91             |
| 8        | 0.164          | 32               | —   | —   | 2724700    | 30.91             |

### Special Alloy Tool Steel: 13/16" Outside Diameter (1/4" thick)

|   |       |    |    |    |         |       |
|---|-------|----|----|----|---------|-------|
| 0 | 0.060 | —  | 80 | —  | 2726000 | 45.82 |
| 1 | 0.073 | 64 | —  | —  | 2726200 | 45.82 |
| 1 | —     | —  | 72 | —  | 2726300 | 45.82 |
| 2 | 0.086 | 56 | —  | —  | 2726400 | 40.49 |
| 2 | —     | —  | 64 | —  | 2726500 | 40.49 |
| 3 | 0.099 | 48 | —  | —  | 2726600 | 36.23 |
| 3 | —     | —  | 56 | —  | 2726700 | 36.23 |
| 4 | 0.112 | —  | —  | 36 | 2726900 | 30.91 |
| 4 | —     | 40 | —  | —  | 2727000 | 30.91 |
| 4 | —     | —  | 48 | —  | 2727100 | 30.91 |

|    |       |    |    |   |         |       |
|----|-------|----|----|---|---------|-------|
| 5  | 0.125 | 40 | —  | — | 2727200 | 30.91 |
| 5  | —     | —  | 44 | — | 2727300 | 30.91 |
| 6  | 0.138 | 32 | —  | — | 2727400 | 30.91 |
| 6  | —     | —  | 40 | — | 2727600 | 30.91 |
| 8  | 0.164 | 32 | —  | — | 2727700 | 30.91 |
| 8  | —     | —  | 36 | — | 2727800 | 30.91 |
| 10 | 0.190 | 24 | —  | — | 2728000 | 30.91 |
| 10 | —     | —  | 32 | — | 2728200 | 30.91 |
| 12 | 0.216 | 24 | —  | — | 2728300 | 30.91 |
| 12 | —     | —  | 28 | — | 2728400 | 30.91 |

### Special Alloy Tool Steel: 1" Outside Diameter (3/8" thick)

|    |       |    |   |   |         |       |
|----|-------|----|---|---|---------|-------|
| 6  | 0.138 | 32 | — | — | 2728800 | 38.39 |
| 8  | 0.164 | 32 | — | — | 2729100 | 38.39 |
| 10 | 0.190 | 24 | — | — | 2729400 | 38.39 |

|    |       |    |    |   |         |       |
|----|-------|----|----|---|---------|-------|
| 10 | —     | —  | 32 | — | 2729600 | 38.39 |
| 12 | 0.216 | 24 | —  | — | 2729700 | 38.39 |

Packed: All sizes - 1 pc. Available Bright finish only.



# Adjustable Round Split Dies

## List 134 (continued)

HSS

BR



Special Alloy Tool Steel: 13/16" Outside Diameter (1/4" thick)

| Cutting Size | Threads Per Inch |     |     | EDP Number | List Price (Each) |
|--------------|------------------|-----|-----|------------|-------------------|
|              | UNC              | UNF | UNS |            |                   |
| 1/16         | —                | 64  | —   | 2700100    | 45.82             |
| 3/32         | —                | —   | 48  | 2700200    | 45.82             |
| 1/8          | —                | —   | 40  | 2700300    | 45.82             |
| 5/32         | —                | —   | 32  | 2700400    | 45.82             |
| 5/32         | —                | —   | 36  | 2700500    | 45.82             |
| 3/16         | —                | —   | 24  | 2700600    | 45.82             |

| Cutting Size | Threads Per Inch |     |     | EDP Number | List Price (Each) |
|--------------|------------------|-----|-----|------------|-------------------|
|              | UNC              | UNF | UNS |            |                   |
| 3/16         | —                | —   | 32  | 2700700    | 45.82             |
| 7/32         | —                | —   | 24  | 2700800    | 45.82             |
| 1/4          | 20               | —   | —   | 2701000    | 30.91             |
| 1/4          | —                | 28  | —   | 2701200    | 30.91             |
| 5/16         | 18               | —   | —   | 2701400    | 30.91             |
| 5/16         | —                | 24  | —   | 2701500    | 30.91             |

Special Alloy Tool Steel: 1-5/16" Outside Diameter (7/16" Thick)

|      |    |    |   |         |       |
|------|----|----|---|---------|-------|
| 1/4  | 20 | —  | — | 2704100 | 60.49 |
| 1/4  | —  | 28 | — | 2704300 | 60.49 |
| 5/16 | 18 | —  | — | 2704500 | 60.49 |
| 5/16 | —  | 24 | — | 2704600 | 60.49 |
| 3/8  | 16 | —  | — | 2704800 | 60.49 |

|      |    |    |   |         |       |
|------|----|----|---|---------|-------|
| 3/8  | —  | 24 | — | 2704900 | 60.49 |
| 7/16 | 14 | —  | — | 2705000 | 60.49 |
| 7/16 | —  | 20 | — | 2705100 | 60.49 |
| 1/2  | 13 | —  | — | 2705200 | 60.49 |
| 1/2  | —  | 20 | — | 2705300 | 60.49 |

Special Alloy Tool Steel: 2" Outside Diameter (5/8" Thick)

|      |    |    |   |         |        |
|------|----|----|---|---------|--------|
| 1/4  | 20 | —  | — | 2710000 | 107.68 |
| 1/4  | —  | 28 | — | 2710100 | 107.68 |
| 5/16 | 18 | —  | — | 2710400 | 107.68 |
| 5/16 | —  | 24 | — | 2710500 | 107.68 |
| 3/8  | 16 | —  | — | 2710700 | 107.68 |
| 3/8  | —  | 24 | — | 2710800 | 107.68 |
| 7/16 | 14 | —  | — | 2710900 | 107.68 |
| 7/16 | —  | 20 | — | 2711000 | 107.68 |
| 1/2  | 13 | —  | — | 2711100 | 107.68 |
| 1/2  | —  | 20 | — | 2711200 | 107.68 |

|       |    |    |    |         |        |
|-------|----|----|----|---------|--------|
| 9/16  | 12 | —  | —  | 2711300 | 107.68 |
| 9/16  | —  | 18 | —  | 2711400 | 107.68 |
| 5/8   | 11 | —  | —  | 2711500 | 107.68 |
| 5/8   | —  | 18 | —  | 2711600 | 107.68 |
| 11/16 | —  | —  | 11 | 2711700 | 107.68 |
| 11/16 | —  | —  | 16 | 2711800 | 107.68 |
| 3/4   | 10 | —  | —  | 2712000 | 107.68 |
| 3/4   | —  | 16 | —  | 2712100 | 107.68 |
| 7/8   | 9  | —  | —  | 2712200 | 107.68 |
| 7/8   | —  | 14 | —  | 2712300 | 107.68 |

Special Alloy Tool Steel: 1" Outside Diameter (3/8" Thick)

|      |    |    |     |         |       |
|------|----|----|-----|---------|-------|
| 3/16 | —  | —  | 24  | 2702400 | 38.39 |
| 3/16 | —  | —  | 32  | 2702500 | 38.39 |
| 1/4  | 20 | —  | —   | 2702800 | 38.39 |
| 1/4  | —  | —  | 24  | 2702900 | 38.39 |
| 1/4  | —  | 28 | —   | 2703000 | 38.39 |
| 1/4  | —  | —  | 32* | 2703100 | 38.39 |
| 5/16 | 18 | —  | —   | 2703200 | 38.39 |

|      |    |    |     |         |       |
|------|----|----|-----|---------|-------|
| 5/16 | —  | 24 | —   | 2703300 | 38.39 |
| 5/16 | —  | —  | 32* | 2703400 | 38.39 |
| 3/8  | 16 | —  | —   | 2703500 | 38.39 |
| 3/8  | —  | 24 | —   | 2703600 | 38.39 |
| 7/16 | 14 | —  | —   | 2703700 | 38.39 |
| 7/16 | —  | 20 | —   | 2703800 | 38.39 |

Special Alloy Tool Steel: 1-1/2" Outside Diameter (1/2" Thick)

|      |    |    |   |         |       |
|------|----|----|---|---------|-------|
| 1/4  | 20 | —  | — | 2706100 | 60.49 |
| 1/4  | —  | 28 | — | 2706300 | 60.49 |
| 5/16 | 18 | —  | — | 2706500 | 60.49 |
| 5/16 | —  | 24 | — | 2706600 | 60.49 |
| 3/8  | 16 | —  | — | 2706800 | 60.49 |
| 3/8  | —  | 24 | — | 2706900 | 60.49 |
| 7/16 | 14 | —  | — | 2707000 | 60.49 |

|      |    |    |   |         |       |
|------|----|----|---|---------|-------|
| 7/16 | —  | 20 | — | 2707100 | 60.49 |
| 1/2  | 13 | —  | — | 2707200 | 60.49 |
| 1/2  | —  | 20 | — | 2707300 | 60.49 |
| 9/16 | 12 | —  | — | 2707400 | 60.49 |
| 9/16 | —  | 18 | — | 2707500 | 60.49 |
| 5/8  | 11 | —  | — | 2707600 | 60.49 |
| 5/8  | —  | 18 | — | 2707700 | 60.49 |

Packed: All sizes - 1 pc. Available Bright finish only.

\*32 - pitch properly designated NEF or UNEF.



# Adjustable Round Split Dies

## List I34 (continued)

HSS

BR



Special Alloy Tool Steel: 2-1/2" Outside Diameter (3/4" Thick)

| Cutting Size | Threads Per Inch |     |     | EDP Number | List Price (Each) |
|--------------|------------------|-----|-----|------------|-------------------|
|              | UNC              | UNF | UNS |            |                   |
| 5/8          | 11               | —   | —   | 2713400    | 152.19            |
| 3/4          | 10               | —   | —   | 2713800    | 152.19            |
| 3/4          | —                | 16  | —   | 2713900    | 152.19            |
| 7/8          | 9                | —   | —   | 2714000    | 152.19            |

| Cutting Size | Threads Per Inch |     |     | EDP Number | List Price (Each) |
|--------------|------------------|-----|-----|------------|-------------------|
|              | UNC              | UNF | UNS |            |                   |
| 7/8          | —                | 14  | —   | 2714100    | 152.19            |
| 1            | 8                | —   | —   | 2714200    | 152.19            |
| 1            | —                | 12  | —   | 2714300    | 152.19            |
| 1            | —                | —   | 14  | 2714400    | 152.19            |

Special Alloy Tool Steel: 3" Outside Diameter (1" Thick)

|       |   |    |    |         |        |
|-------|---|----|----|---------|--------|
| 1     | 8 | —  | —  | 2715000 | 298.49 |
| 1     | — | 12 | —  | 2715100 | 298.49 |
| 1     | — | —  | 14 | 2715200 | 298.49 |
| 1-1/8 | 7 | —  | —  | 2715300 | 298.49 |
| 1-1/8 | — | 12 | —  | 2715400 | 298.49 |
| 1-1/4 | 7 | —  | —  | 2715500 | 298.49 |

|       |   |    |   |         |        |
|-------|---|----|---|---------|--------|
| 1-1/4 | — | 12 | — | 2715600 | 298.49 |
| 1-3/8 | 6 | —  | — | 2715700 | 298.49 |
| 1-3/8 | — | 12 | — | 2715800 | 298.49 |
| 1-1/2 | 6 | —  | — | 2715900 | 298.49 |
| 1-1/2 | — | 12 | — | 2716000 | 298.49 |

Packed: All sizes - 1 pc. Available Bright finish only.  
\*32 - Pitch properly designated NEF or UNEF.

## List I34P

HSS

BR

Taper Pipe



| Cutting Size | Thread Per Inch | O.D.  | Thickness | EDP Number | List Price (Each) |
|--------------|-----------------|-------|-----------|------------|-------------------|
| 1/8          | 27              | 1     | 3/8       | 2734000    | 45.82             |
| 1/8          | 27              | 1-1/2 | 1/2       | 2734100    | 60.49             |
| 1/4          | 18              | 1-1/2 | 1/2       | 2734200    | 60.49             |
| 1/4          | 18              | 2     | 5/8       | 2734400    | 107.68            |

| Cutting Size | Thread Per Inch | O.D.  | Thickness | EDP Number | List Price (Each) |
|--------------|-----------------|-------|-----------|------------|-------------------|
| 3/8          | 18              | 1-1/2 | 1/2       | 2734300    | 77.30             |
| 3/8          | 18              | 2     | 5/8       | 2734500    | 107.68            |
| 1/2          | 14              | 2     | 5/8       | 2734600    | 107.68            |

Packed: All sizes - 1 pc. Available Bright finish only.



# Adjustable Round Split Dies

## List 135

HSS

BR



Special Alloy Tool Steel: 20 mm (13/16") Outside Diameter; 7 mm (1/4") thick

| Cutting Size | Pitch | EDP Number | List Price (Each) |
|--------------|-------|------------|-------------------|
| M2.0         | 0.4   | 2200200    | 40.49             |
| M2.3         | 0.4   | 2200300    | 40.49             |

| Cutting Size | Pitch | EDP Number | List Price (Each) |
|--------------|-------|------------|-------------------|
| M2.6         | 0.45  | 2200400    | 40.49             |
| M3.0         | 0.5   | 2200500    | 40.49             |

Special Alloy Tool Steel: 25 mm (1") Outside Diameter; 9 mm (3/8") Thick

|      |      |         |       |
|------|------|---------|-------|
| M3.5 | 0.6  | 2250600 | 38.39 |
| M4.0 | 0.7  | 2250700 | 38.39 |
| M4.5 | 0.75 | 2250800 | 38.39 |
| M5.0 | 0.8  | 2250900 | 38.39 |
| M6.0 | 0.75 | 2251000 | 38.39 |
| M6.0 | 1.0  | 2251100 | 38.39 |

|      |      |         |       |
|------|------|---------|-------|
| M7.0 | 1.0  | 2251200 | 38.39 |
| M8.0 | 0.75 | 2251300 | 38.39 |
| M8.0 | 1.0  | 2251400 | 38.39 |
| M8.0 | 1.25 | 2251500 | 38.39 |
| M9.0 | 1.25 | 2251600 | 38.39 |

Special Alloy Tool Steel: 38 mm (1-1/2") Outside Diameter; 13 mm (1/2") Thick

|     |      |         |       |
|-----|------|---------|-------|
| M10 | 1.0  | 2381700 | 60.49 |
| M10 | 1.25 | 2381800 | 60.49 |
| M10 | 1.5  | 2381900 | 60.49 |
| M11 | 1.5  | 2382000 | 60.49 |
| M12 | 1.0  | 2382100 | 60.49 |
| M12 | 1.25 | 2382200 | 60.49 |

|     |      |         |       |
|-----|------|---------|-------|
| M12 | 1.5  | 2382300 | 60.49 |
| M12 | 1.75 | 2382400 | 60.49 |
| M14 | 1.25 | 2382500 | 60.49 |
| M14 | 1.5  | 2382600 | 60.49 |
| M14 | 2.0  | 2382700 | 60.49 |

Special Alloy Tool Steel: 50 mm (2") Outside Diameter; 16 mm (5/8") Thick

|     |     |         |        |
|-----|-----|---------|--------|
| M16 | 1.0 | 2502800 | 107.68 |
| M16 | 1.5 | 2502900 | 107.68 |
| M16 | 2.0 | 2503000 | 107.68 |
| M18 | 1.5 | 2503100 | 107.68 |
| M18 | 2.5 | 2503200 | 107.68 |
| M20 | 1.5 | 2503300 | 107.68 |

|     |     |         |        |
|-----|-----|---------|--------|
| M20 | 2.5 | 2503400 | 107.68 |
| M22 | 1.5 | 2503500 | 107.68 |
| M22 | 2.5 | 2503600 | 107.68 |
| M24 | 1.5 | 2503700 | 107.68 |
| M24 | 3.0 | 2503800 | 107.68 |

Special Alloy Tool Steel: 57 mm (2-1/4") Outside Diameter; 20 mm (13/16") Thick

|     |     |         |        |
|-----|-----|---------|--------|
| M26 | 1.5 | 2573900 | 152.19 |
| M26 | 3.0 | 2574000 | 152.19 |
| M28 | 1.5 | 2574100 | 152.19 |

|     |     |         |        |
|-----|-----|---------|--------|
| M30 | 1.5 | 2574200 | 152.19 |
| M30 | 3.5 | 2574300 | 152.19 |

Packed: All sizes - 1 pc. Available Bright finish only.





# Technical Data

## Speeds and Feeds





# Tapping Application Guide

| Materials            |                      | Condition  | Hardness |       | Cutting Speed* |
|----------------------|----------------------|------------|----------|-------|----------------|
|                      |                      |            | BHN      | HRC   | SFM            |
| Aluminum Alloy       | 6061, 7075, 2011     | Normalized | ~150     |       | 30~80          |
| Die Cast Aluminum    | 356AL, 390AL         | As Cast    | ~150     |       | 40~65          |
| Cast Iron            | Nodular, Grey        | As Cast    | ~208     | ~15   | 25~75          |
| Low Carbon Steel     | 1010, 1018           | Normalized | ~190     | ~10   | 25~80          |
| Medium Carbon Steel  | 1035, 1045           | Normalized | ~208     | ~15   | 20~50          |
| High Carbon Steel    | 1065, 1095           | Normalized | ~253     | ~25   | 20~45          |
| Alloy Steel          | 4140, 4340, 8620     | Normalized | 253~301  | 25~32 | 20~50          |
|                      | 4140, 4340, 8620     | Hardened   | 327~393  | 35~42 | 15~20          |
| Stainless Steel      | 303, 304, 316        | Annealed   | ~253     | ~25   | 20~45          |
|                      | 410, 430             | Hardened   | 327~393  | 35~42 | 12~20          |
|                      | 17-4, 15-5, A286     | Annealed   | ~253     | ~25   | 15~20          |
|                      | 17-4, 15-5, A286     | Hardened   | 327~393  | 35~42 | 8~20           |
| Tool Steel           | D2, H13, P20, S7     | Annealed   | 190~253  | 10~25 | 15~35          |
|                      | H13, P20             | Hardened   | 327~450  | 35~48 | 8~15           |
|                      | D2, A2               | Hardened   |          | 55~63 | 3~10           |
| Titanium Alloy       | 6AL4V                | Annealed   | 253~301  | 25~32 | 15~20          |
|                      | 6AL4V, 6AL6V         | Hardened   | 327~393  | 35~42 | 8~15           |
| Nickel Base Alloy    | Inconel 718, 625     | Annealed   | 253~301  | 25~32 | 8~15           |
|                      | Inconel 718          | Hardened   | 327~393  | 35~42 | 8~15           |
|                      | Hastelloy, Waspalloy | Normalized | 253~390  | 25~40 | 8~15           |
|                      | Kovar                | Normalized | 253~390  | 25~40 | 8~15           |
| Magnesium            |                      |            | ~100     |       | 40~80          |
| Brass, Bronze        |                      |            | ~150     |       | 40~80          |
| Copper               |                      |            | ~150     |       | 30~60          |
| Beryllium Copper     |                      |            | ~253     | ~25   | 20~30          |
| Cobalt-Chrome        | Stellite             |            |          |       | 8~25           |
| Fiber Filler Plastic | Fiberglass, REN      |            |          |       | 20~30          |
| MMC                  | Al-SiC70%            |            |          |       | 20~30          |

\*Speeds can be increased when coatings, synchronized spindles or coolant through taps are utilized.

\*Pipe taps should be run at half of these velocities.

\*\* SFM to RPM conversion chart on page 280.



| Carbide     |                  |                   |                      | Powdered Metal HSS |                     |               |                 |                 |                      | HSS-Va, HSS-Co, HSS |               |         |               |            |            |                      |                   |           |                |               |
|-------------|------------------|-------------------|----------------------|--------------------|---------------------|---------------|-----------------|-----------------|----------------------|---------------------|---------------|---------|---------------|------------|------------|----------------------|-------------------|-----------|----------------|---------------|
| EXOCARB® VX | EXOCARB® Cut Tap | EXOCARB® Form Tap | EXOCARB® Diamond Tap | EXOTAP® VCX        | EXOTAP® DC & DC OIL | EXOTAP® VC-10 | EXOTAP® VC-10Ni | EXOTAP® VC-10Ti | EXOTAP® NRT® Forming | EXOTAP® VA-3®       | EXOTAP® Mold® | HY-PRO® | HY-PRO® ALLOY | HY-PRO® AL | HY-PRO® DC | HY-PRO® NRT® Forming | HY-PRO® 7 Forming | HY-PRO® 7 | 101C Cast Iron | Standard Taps |
|             | ●                | ●                 | ●                    |                    | ●                   |               |                 |                 | ●                    |                     |               |         |               | ●          | ○          | ●                    | ○                 | ●         |                | ○             |
|             | ●                | ●                 | ●                    |                    | ●                   |               |                 |                 |                      |                     |               |         | ○             | ●          | ●          |                      | ●                 | ●         |                | ○             |
|             | ●                |                   |                      |                    | ●                   |               |                 |                 |                      |                     |               | ○       | ○             |            | ●          |                      |                   |           | ●              | ○             |
|             |                  |                   |                      |                    |                     |               |                 |                 |                      | ●                   |               | ○       | ○             |            |            | ●                    | ○                 | ●         |                | ○             |
|             |                  |                   |                      |                    |                     |               |                 |                 |                      | ○                   |               | ●       | ○             |            |            | ●                    |                   | ●         |                | ○             |
|             |                  |                   |                      |                    |                     |               |                 |                 | ●                    |                     |               | ○       | ●             |            |            | ●                    |                   | ○         |                | ○             |
|             |                  |                   |                      | ○                  |                     | ●             |                 |                 | ●                    | ●                   |               | ○       | ●             |            |            | ○                    |                   |           |                |               |
|             |                  |                   |                      | ○                  |                     | ●             |                 |                 | ●                    | ○                   |               | ○       |               |            |            | ○                    |                   |           |                |               |
|             |                  |                   |                      | ○                  |                     | ●             | ○               | ●               | ●                    | ○                   |               | ○       |               |            |            | ○                    |                   |           |                |               |
|             |                  |                   |                      | ○                  |                     | ○             |                 |                 | ●                    |                     | ○             | ○       |               |            |            | ○                    |                   |           |                |               |
| ●           |                  |                   |                      | ○                  |                     | ○             |                 |                 |                      |                     | ○             |         |               |            |            |                      |                   |           |                |               |
|             |                  |                   |                      | ○                  |                     | ○             |                 | ●               |                      |                     |               |         |               |            |            |                      |                   |           |                |               |
|             |                  |                   |                      |                    |                     | ○             |                 | ○               | ●                    |                     |               |         |               |            |            |                      |                   |           |                |               |
|             |                  |                   |                      | ●                  |                     | ○             | ●               | ○               |                      |                     |               |         |               |            |            |                      |                   |           |                |               |
|             |                  |                   |                      | ●                  |                     | ○             | ●               | ○               |                      |                     |               |         |               |            |            |                      |                   |           |                |               |
|             |                  |                   |                      | ●                  |                     | ○             | ●               | ○               |                      | ○                   |               |         |               |            |            |                      |                   |           |                |               |
|             |                  |                   |                      | ●                  |                     | ○             | ●               | ○               |                      |                     |               | ○       |               |            |            |                      |                   |           |                |               |
|             | ●                | ●                 |                      |                    |                     |               |                 |                 |                      |                     |               | ○       |               | ●          |            |                      |                   | ○         |                | ○             |
|             | ●                | ●                 | ●                    |                    |                     |               |                 |                 |                      | ○                   |               | ○       |               | ●          |            |                      | ●                 |           |                | ○             |
| ○           | ●                |                   |                      |                    |                     |               |                 |                 |                      | ●                   |               | ○       |               |            |            |                      |                   | ●         |                |               |
|             | ○                |                   | ●                    |                    |                     |               |                 |                 |                      |                     |               |         |               |            |            |                      |                   |           |                | ○             |
|             |                  |                   | ●                    |                    |                     |               |                 |                 |                      |                     |               |         |               |            |            |                      |                   |           |                |               |
|             |                  |                   | ●                    |                    |                     |               |                 |                 |                      |                     |               |         |               |            |            |                      |                   |           |                |               |

● = 1<sup>st</sup> Choice  
○ = 2<sup>nd</sup> Choice

# Taps: Tapping Speed Guide

| Surface Footage | CONVERSION TABLE - SURFACE FEET PER MINUTE (SFM) TO REVOLUTIONS PER MINUTE (RPM) - Inch |     |     |       |       |       |       |       |       |       |       |       |       |       |       |
|-----------------|-----------------------------------------------------------------------------------------|-----|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                 | 5                                                                                       | 10  | 15  | 20    | 25    | 30    | 40    | 50    | 60    | 70    | 80    | 90    | 100   | 125   | 150   |
| Tap Size        | Revolutions Per Minute                                                                  |     |     |       |       |       |       |       |       |       |       |       |       |       |       |
| 0               | 318                                                                                     | 637 | 955 | 1,273 | 1,592 | 1,910 | 2,547 | 3,183 | 3,820 | 4,457 | 5,093 | 5,730 | 6,367 | 7,958 | 9,550 |
| 1               | 262                                                                                     | 523 | 785 | 1,047 | 1,308 | 1,570 | 2,093 | 2,616 | 3,140 | 3,663 | 4,186 | 4,710 | 5,233 | 6,541 | 7,849 |
| 2               | 222                                                                                     | 444 | 666 | 888   | 1,110 | 1,333 | 1,777 | 2,221 | 2,665 | 3,109 | 3,553 | 3,998 | 4,442 | 5,552 | 6,663 |
| 3               | 193                                                                                     | 386 | 579 | 772   | 965   | 1,158 | 1,543 | 1,929 | 2,315 | 2,701 | 3,087 | 3,473 | 3,859 | 4,823 | 5,788 |
| 4               | 171                                                                                     | 341 | 512 | 682   | 853   | 1,023 | 1,364 | 1,705 | 2,046 | 2,388 | 2,729 | 3,070 | 3,411 | 4,263 | 5,116 |
| 5               | 153                                                                                     | 306 | 458 | 611   | 764   | 917   | 1,222 | 1,528 | 1,834 | 2,139 | 2,445 | 2,750 | 3,056 | 3,820 | 4,584 |
| 6               | 138                                                                                     | 277 | 415 | 554   | 692   | 830   | 1,107 | 1,384 | 1,661 | 1,938 | 2,214 | 2,491 | 2,768 | 3,460 | 4,152 |
| 8               | 116                                                                                     | 233 | 349 | 466   | 582   | 699   | 932   | 1,165 | 1,398 | 1,630 | 1,863 | 2,096 | 2,329 | 2,912 | 3,494 |
| 10              | 101                                                                                     | 201 | 302 | 402   | 503   | 603   | 804   | 1,005 | 1,206 | 1,407 | 1,608 | 1,809 | 2,011 | 2,513 | 3,016 |
| 12              | 88                                                                                      | 177 | 265 | 354   | 442   | 531   | 707   | 884   | 1,061 | 1,238 | 1,415 | 1,592 | 1,769 | 2,211 | 2,653 |
| 1/4             | 76                                                                                      | 153 | 229 | 306   | 382   | 458   | 611   | 764   | 917   | 1,070 | 1,222 | 1,375 | 1,528 | 1,910 | 2,292 |
| 5/16            | 61                                                                                      | 122 | 183 | 244   | 306   | 367   | 489   | 611   | 733   | 856   | 978   | 1,100 | 1,222 | 1,528 | 1,834 |
| 3/8             | 51                                                                                      | 102 | 153 | 204   | 255   | 306   | 407   | 509   | 611   | 713   | 815   | 917   | 1,019 | 1,273 | 1,528 |
| 7/16            | 44                                                                                      | 87  | 131 | 175   | 218   | 262   | 349   | 437   | 524   | 611   | 699   | 786   | 873   | 1,091 | 1,310 |
| 1/2             | 38                                                                                      | 76  | 115 | 153   | 191   | 229   | 306   | 382   | 458   | 535   | 611   | 688   | 764   | 955   | 1,146 |
| 9/16            | 34                                                                                      | 68  | 102 | 136   | 170   | 204   | 272   | 340   | 407   | 475   | 543   | 611   | 679   | 849   | 1,019 |
| 5/8             | 31                                                                                      | 61  | 92  | 122   | 153   | 183   | 244   | 306   | 367   | 428   | 489   | 550   | 611   | 764   | 917   |
| 3/4             | 25                                                                                      | 51  | 76  | 102   | 127   | 153   | 204   | 255   | 306   | 357   | 407   | 458   | 509   | 637   | 764   |
| 7/8             | 22                                                                                      | 44  | 65  | 87    | 109   | 131   | 175   | 218   | 262   | 306   | 349   | 393   | 437   | 546   | 655   |
| 1               | 19                                                                                      | 38  | 57  | 76    | 96    | 115   | 153   | 191   | 229   | 267   | 306   | 344   | 382   | 478   | 573   |

| Surface Footage | CONVERSION TABLE - SURFACE FEET PER MINUTE (SFM) TO REVOLUTIONS PER MINUTE (RPM) - Metric |     |     |     |     |     |       |       |       |       |       |       |       |       |       |
|-----------------|-------------------------------------------------------------------------------------------|-----|-----|-----|-----|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|                 | 5                                                                                         | 10  | 15  | 20  | 25  | 30  | 40    | 50    | 60    | 70    | 80    | 90    | 100   | 125   | 150   |
| Tap Size        | Revolutions Per Minute                                                                    |     |     |     |     |     |       |       |       |       |       |       |       |       |       |
| M3              | 162                                                                                       | 323 | 485 | 647 | 809 | 970 | 1,294 | 1,617 | 1,941 | 2,264 | 2,587 | 2,911 | 3,234 | 4,043 | 4,851 |
| M4              | 121                                                                                       | 243 | 364 | 485 | 606 | 728 | 970   | 1,213 | 1,455 | 1,698 | 1,941 | 2,183 | 2,426 | 3,032 | 3,639 |
| M5              | 97                                                                                        | 194 | 291 | 388 | 485 | 582 | 776   | 970   | 1,164 | 1,358 | 1,552 | 1,747 | 1,941 | 2,426 | 2,911 |
| M6              | 81                                                                                        | 162 | 243 | 323 | 404 | 485 | 647   | 809   | 970   | 1,132 | 1,294 | 1,455 | 1,617 | 2,021 | 2,426 |
| M8              | 61                                                                                        | 121 | 182 | 243 | 303 | 364 | 485   | 606   | 728   | 849   | 970   | 1,092 | 1,213 | 1,516 | 1,819 |
| M10             | 49                                                                                        | 97  | 146 | 194 | 243 | 291 | 388   | 485   | 582   | 679   | 776   | 873   | 970   | 1,213 | 1,455 |
| M12             | 40                                                                                        | 81  | 121 | 162 | 202 | 243 | 323   | 404   | 485   | 566   | 647   | 728   | 809   | 1,011 | 1,213 |
| M14             | 35                                                                                        | 69  | 104 | 139 | 173 | 208 | 277   | 347   | 416   | 485   | 554   | 624   | 693   | 866   | 1,040 |
| M16             | 30                                                                                        | 61  | 91  | 121 | 152 | 182 | 243   | 303   | 364   | 424   | 485   | 546   | 606   | 758   | 910   |
| M18             | 27                                                                                        | 54  | 81  | 108 | 135 | 162 | 216   | 270   | 323   | 377   | 431   | 485   | 539   | 674   | 809   |
| M20             | 24                                                                                        | 49  | 73  | 97  | 121 | 146 | 194   | 243   | 291   | 340   | 388   | 437   | 485   | 606   | 728   |
| M24             | 20                                                                                        | 40  | 61  | 81  | 101 | 121 | 162   | 202   | 243   | 283   | 323   | 364   | 404   | 505   | 606   |



# Taps: Recommended Tapping Conditions

## HY-PRO® and HY-PRO® DIN\* Cutting Conditions for Machining Centers

| Work Material       | Examples                               | HY-PRO® Speed (SFM) | HY-PRO® Coolant Through** Speed (SFM) |
|---------------------|----------------------------------------|---------------------|---------------------------------------|
| Low Carbon Steel    | A36, 1018, 12L14                       | 50 - 90             | 150 - 250                             |
| Medium Carbon Steel | 1025, 1035, 1144                       | 40 - 80             | 100 - 200                             |
| High Carbon Steel   | 1065                                   | 40 - 60             | 100 - 120                             |
| Alloy Steels        | 4140, 4340, 8620                       | 40 - 80             | 50 - 150                              |
| Hardened Steels     | Up to 35 HRC                           | 20 - 60             | 40 - 120                              |
| Stainless Steels    | 303, 304, 316, 400                     | 40 - 80             | 50 - 120                              |
| Copper and Alloys   | Cu, Brass, Bronze (Including castings) | 30 - 80             | 150 - 250                             |
| Aluminum Alloys     | 2024, 6061, 7075                       | 30 - 80             | 150 - 300                             |
| Aluminum Casting    | 326, 390, < 16% Si                     | 30 - 80             | 150 - 250                             |
| Zinc Alloy Casting  | ZDC                                    | 30 - 80             | 150 - 200                             |

## EXOTAP® NRT® and HY-PRO® NRT® (Nu-Roll Tap) Cutting Conditions for OSG Forming Taps

| Work Material       | Examples                                | HY-PRO® - NRT® Speed (SFM) | EXOTAP® - NRT® Speed (SFM) |
|---------------------|-----------------------------------------|----------------------------|----------------------------|
| Low Carbon Steel    | A36, 1018, 12L14                        | 35 - 100                   | 35 - 130                   |
| Medium Carbon Steel | 1025, 1035, 1144                        | 20 - 50                    | 20 - 50                    |
| High Carbon Steel   | 1080, 1095                              | 15 - 25                    | 15 - 30                    |
| Alloy Steels        | 4140, 4340, 8620                        | 15 - 25                    | 15 - 30                    |
| Hardened Steels     | (HYPRO up to 30 HRC) (EXO up to 35 HRC) | 10 - 15                    | 10 - 15                    |
| Stainless Steels    | 303, 304, 316, 400                      | 15 - 40                    | 15 - 50                    |
| Copper and Alloys   | Cu, Brass, Bronze (Including castings)  | 30 - 90                    | 30 - 100                   |
| Aluminum Alloys     | 2024, 6061, 6063, 7075                  | 50 - 90                    | 65 - 150                   |
| Aluminum Casting    | 326, 390, < 16% Si                      | 45 - 100                   | 65 - 130                   |
| Zinc Alloy Casting  | ZDC                                     | 30 - 80                    | 30 - 100                   |

\* Rigid Setup Required to run these speeds.

\*\* 250psi minimum recommended for these speeds.

## Recommended Tapping Conditions 55 to 65 HRC

### List 311

#### Inch Sizes

| Work Material | Hardened Steels D2, H13 |
|---------------|-------------------------|
| Speed (SFM)   | 3 - 10                  |
| Tap Size      | Speed RPM               |
| 4 - 40        | 102 - 341               |
| 6 - 32        | 83 - 277                |
| 8 - 32        | 70 - 233                |
| 10 - 24       | 60 - 201                |
| 10 - 32       | 60 - 201                |
| 1/4 - 20      | 46 - 153                |
| 1/4 - 28      | 46 - 153                |
| 5/16 - 18     | 37 - 122                |
| 5/16 - 24     | 37 - 122                |
| 3/8 - 16      | 31 - 102                |
| 3/8 - 24      | 31 - 102                |
| 7/16 - 14     | 26 - 87                 |
| 7/16 - 20     | 26 - 87                 |
| 1/2 - 13      | 23 - 76                 |
| 1/2 - 20      | 23 - 76                 |

1. Use a non-water soluble cutting fluid.
2. Set the tapping speed between 3-10 SFM.
3. Choose the largest hole-size possible, within the recommended tolerance range.
4. Use highly rigid machines and tool holders.

### List 341

#### Metric Sizes

| Work Material | Hardened Steels D2, H13 |
|---------------|-------------------------|
| Speed (SFM)   | 3 - 10                  |
| Tap Size      | Speed RPM               |
| M 2.6 x 0.45  | 122 - 367               |
| 3 x 0.5       | 106 - 318               |
| 4 x 0.7       | 80 - 239                |
| 5 x 0.8       | 64 - 191                |
| 6 x 1.0       | 53 - 159                |
| 8 x 1.25      | 40 - 119                |
| 8 x 1.0       | 40 - 119                |
| 10 x 1.5      | 32 - 95                 |
| 10 x 1.25     | 32 - 95                 |
| 10 x 1.0      | 32 - 95                 |
| 12 x 1.75     | 27 - 80                 |
| 12 x 1.5      | 27 - 80                 |
| 12 x 1.25     | 27 - 80                 |
| 12 x 1.0      | 27 - 80                 |
| 14 x 2.0      | 23 - 68                 |
| 14 x 1.5      | 23 - 68                 |
| 16 x 2.0      | 20 - 60                 |
| 16 x 1.5      | 20 - 60                 |
| 18 x 2.5      | 18 - 53                 |
| 18 x 1.5      | 18 - 53                 |
| 20 x 2.5      | 16 - 48                 |
| 20 x 1.5      | 16 - 48                 |

1. Use a non-water soluble cutting fluid.
2. Set the tapping speed between 3-10 SFM.
3. Choose the largest hole-size possible, within the recommended tolerance range.
4. Use highly rigid machines and tool holders.





## EXOPIPE®

### Recommended Tapping Speed for 300 Stainless Steel

| Size | Drill Size | Speeds and Feeds |           |           |           |           |
|------|------------|------------------|-----------|-----------|-----------|-----------|
|      |            | 9 S.F.M.         | 12 S.F.M. | 15 S.F.M. | 18 S.F.M. | 25 S.F.M. |
| 1/16 | D          | 110              | 150       | 180       | 220       | 300       |
| 1/8  | R          | 80               | 105       | 130       | 160       | 220       |
| 1/4  | 7/16       | 60               | 80        | 100       | 120       | 170       |
| 3/8  | 37/64      | 50               | 65        | 80        | 100       | 140       |
| 1/2  | 45/64      | 40               | 50        | 65        | 80        | 110       |
| 3/4  | 59/64      | 30               | 40        | 50        | 60        | 85        |
| 1"   | 1 5/32     | 25               | 35        | 45        | 50        | 70        |

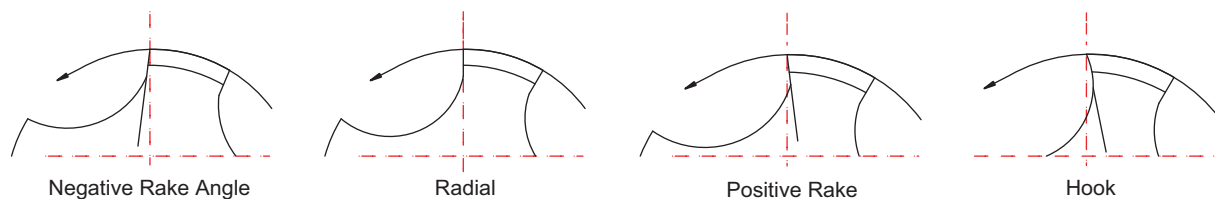
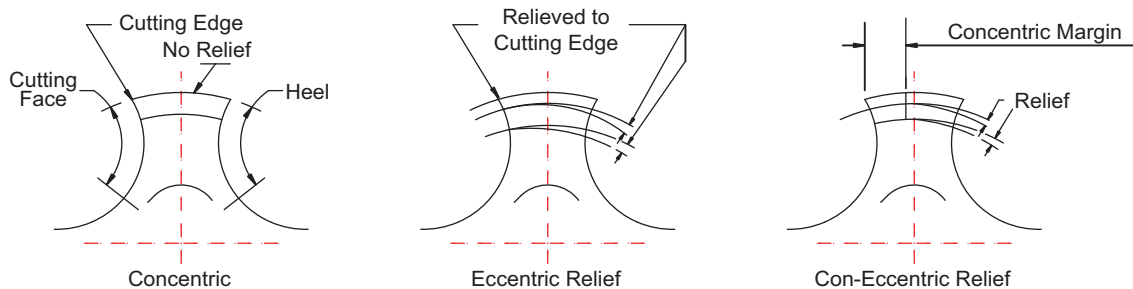
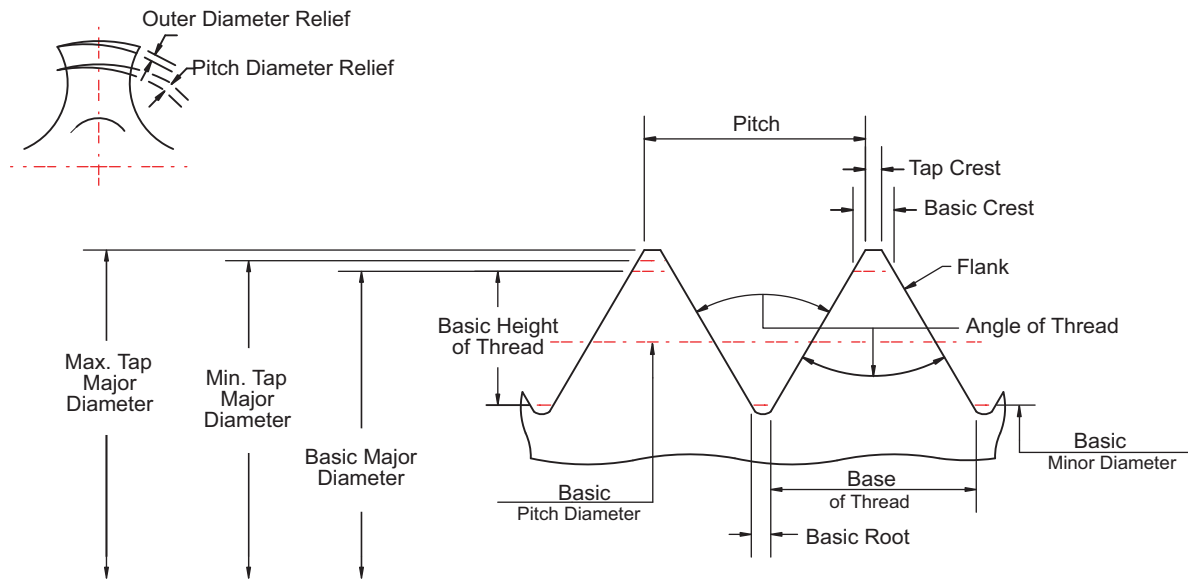
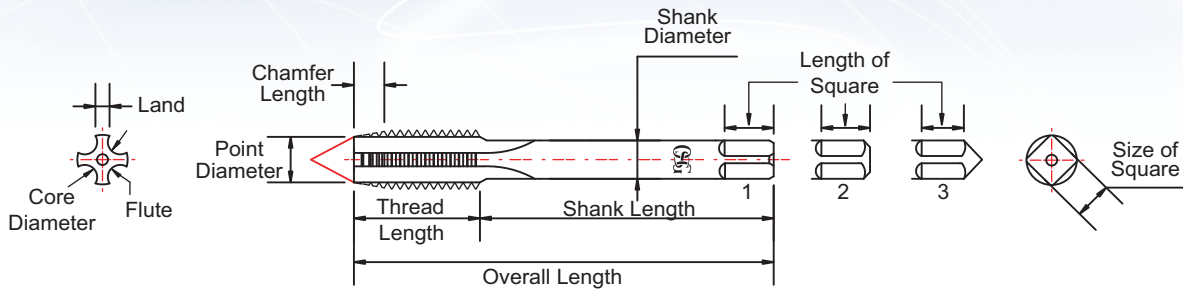
Formulas: I.P.M. (inch/min.) = R.P.M./T.P.I x (90%-100%)

### Troubleshooting

| Problem                    | Causes                                                                                  | Solution                                                                                                                                      |
|----------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Chipping                   | Excessive tapping speed<br>Misalignment<br>Hole size is too small<br>Poor tapping fluid | Increase tapping speed to 15-18 S.F.M.<br>Adjust alignment and use radial float tapping head<br>Check hole size<br>Use a heavy duty lubricant |
| Poor Finish (chatter mark) | Excessive tapping speed<br>Excessive hook angle (regrind)<br>Poor tapping fluid         | Reduce tapping speed to 10-15 S.F.M.<br>Adjust hook angle during regrind<br>Use cutting oil or tapping lubricant                              |
| Stop Mark                  | Excessive tapping speed<br>Poor tapping head<br>Poor set-up                             | Reduce tapping speed to 10-15 S.F.M.<br>Use floating tapping head<br>Special designed taps or Threadmill                                      |

# Taps: Illustration of Tap Terms

## Illustration of Tap Terms



## **Tap and Screw Thread Nomenclature**

**Allowance:** The minimum clearance or maximum interference which is intended between mating parts.

**Angle of thread:** The angle included between the flanks of a thread measured in an axial plane.

**Back taper:** A slight taper on the threaded portion of the tap making the pitch diameter near the shank smaller than that at the chamfer.

**Basic:** The theoretical or nominal standard size from which all variations are made.

**Chamfer:** The tapered and relieved cutting teeth at the front end of the threaded section. Common types of chamfer are taper, 8 to 10 threads long, plug, 3 to 5 threads, semi (or modified) bottom = 2.5 - 3 threads and bottoming, 1-1/2 threads.

**Crest:** The top surface joining the two sides or flanks of a thread.

**Cutting face:** The leading side of the land.

**Flute:** The longitudinal channels formed on a tap to create cutting edges on the thread profile.

**Heel:** The following side of the land.

**Height of thread:** In profile, distance between crest and bottom section of thread measured to the axis.

**Hook face:** A concave cutting face of the land. This may be varied for different materials and conditions.

**Interrupted thread:** Alternate teeth are removed in the thread helix on a tap having an odd number of flutes.

**Land:** Threaded sections between the flutes of a tap.

**Lead of thread:** The distance a screw thread advances axially in one turn.

**Major diameter:** The largest diameter of the screw or nut on a straight screw thread.

**Minor diameter:** The smallest diameter of the screw or nut on a straight screw thread.

**Neck:** The reduced diameter, on some taps, between the threaded portion and the shank.

**Pitch:** The distance from a point on one thread to a corresponding point on the next thread, measured parallel to the axis.

**Pitch diameter:** On a straight screw thread, the diameter of an imaginary cylinder where the width of the thread and the width of the space between threads is equal.

**Point diameter:** The diameter at the leading end of the chamfered portion.

**Radial:** The straight face of a land, the plane of which passes through the axis of the tap.

**Rake:** The angle of the cutting face of the land in relation to an axial plane intersecting the cutting face at the major diameter.

**Relief:** The removal of metal behind the cutting edge to provide clearance between the part being threaded and a portion of the threaded land. Also, see back taper.

**CHAMFER RELIEF:** The gradual decrease in land height from cutting edge to heel on the chamfered portion of the tap land to provide radial clearance for the cutting edge.

**CON-ECCENTRIC RELIEF:** Radial relief in the thread form starting back of a concentric margin.

**ECCENTRIC THREAD RELIEF:** Radial relief in the thread form starting at the cutting edge and continuing to the heel.

**Root:** The bottom surface joining the flanks of two adjacent threads.

**Side or flank thread:** The surface of the thread which connects the crest to the root.

**Shank:** The portion of the tap by which it is held.

**Spiral point:** An oblique cutting edge ground into the lands to provide a shear cutting action on the first few threads.

**Square:** The squared end of the tap shank by which the tap is driven.

**Thread:** The helical formed portion of the tap which produces the pitch in a pre-existing hole.

**Thread lead angle:** The angle made by the helix of the thread at the pitch diameter, with a plane perpendicular to the axis.

**Threads per inch:** The number of threads in one inch of length.

**Thread:** SINGLE: A thread in which lead is equal to pitch.

DOUBLE: A thread in which lead is equal to twice the pitch.

TRIPLE: A thread in which lead is equal to triple the pitch.

## Surface Treatments

Generally, a tap properly designed and used under ideal conditions will produce surface results without the use of superficial treatments. However, under certain conditions and types of materials, additional tap life, improvement in finish and better gaging will be noted through the use of surface treatments applied to the finished tap.

The treatments applied can be divided into two groups - those which penetrate the surface and those which are applied to the external surface itself.

The second group covers a wider range of choices including external treatments such as TiN, TiCN, TiAlN and oxide finishes.

### Steam Oxide:

A black oxidized surface ( $\text{Fe}_3\text{O}_4$ ) produced on the surface of a finished tap by means of a steam furnace. This oxidized surface is porous and helps retain cutting fluid in the working portion of the tap. The materials on which steam oxide has shown improvement in performance are stainless steels, steel forgings, tool and die steels, hot and cold rolled steels, and high nickel alloys.

### Nitride:

A hard superficial case, approximately 69.0 HRC, on the surface of a finished tap produced by means of an ion furnace. The advantages of a Nitride surface treatment is increased wear resistance due to the higher surface hardness. This surface treatment is very effective in both abrasive and tough materials such as cast iron, plastics and high silicon cast aluminum. Note: Care must be used when selecting a Nitride surface treatment because the increased hardness is not recommended for fast spiral flute taps and taps smaller than machine screw No. 2.

### Titanium Nitride (TiN):

A thin deposit (approx. 0.0001") applied to the surface of a finished tap utilizing PVD coating technology. TiN coating increases the surface hardness and wear resistance. Use of TiN coating on standard tools will help increase tool life in harder materials (up to 32 HRC), such as stainless steels, steel forgings, tool and die steels and hot and cold rolled steels. TiN coating also works very well with water-base cutting fluids.

### Titanium Carbo-Nitride (TiCN):

Similar to TiN, TiCN is applied utilizing PVD coating technology. This coating combines high hardness (approx. 2800 vickers) with the anti-seizure properties of Nitride. A lower coefficient of friction helps reduce welding by 75% over TiN coated tools. These features make TiCN especially beneficial in non-ferrous material and hardened steels. OSG's special TiCN coating is incorporated into many of our stocked items.

### Titanium Aluminum Nitride (TiAlN):

TiAlN is applied using PVD coating technology. The addition of aluminum reduces friction and increases the coating oxidation temperature. As a result, TiAlN has increased resistance to heat and oxidation wear. This makes TiAlN better suited for High Speed/High Heat applications. OSG's special TiAlN coating is incorporated into many of our tools.

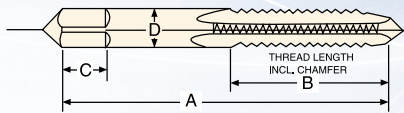
### Chrome Nitride (CrN):

An extremely high surface lubricity makes CrN the proper selection of coating for non-ferrous materials. Aluminum (6061, 7075, etc.) and copper alloys (bronze, brass, etc.) are notorious for their tendency to adhere to the tool when heat is generated. This coating negates the effects of heat by reducing the amount of friction caused when these materials are being machined, while adding increased hardness.

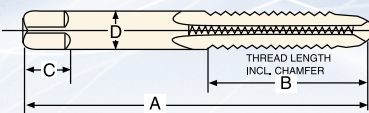
### Diamond:

OSG's patented Ultra-Fine diamond coating is grown on the tools at our laboratories in OSG Japan. It is ideal for materials such as graphite, aluminum, and copper alloys. Commonly mistaken for a "Diamond-like" coating because of its shiny and smooth surface, this tool promotes finer surface finishes versus the competition's diamond coating and exponentially more tool life than that of PVD coated tools. Special processes enable high adherence to the tool and prevent it from flaking off. Diamond is not intended to cut steel.

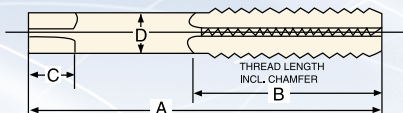
# Taps: MCTI Standard Tap Dimensions



STYLE 1



STYLE 2



STYLE 3

MCTI Table 302 — General Dimensions

| Nominal Diameter Range - Inches |            | Mach. Screw Size No. | Nominal Fractional Diameter Inches | Nominal Metric Diameter Millimeters | Style* | Tap Dimensions — Inches |                 |                 |                  |                |
|---------------------------------|------------|----------------------|------------------------------------|-------------------------------------|--------|-------------------------|-----------------|-----------------|------------------|----------------|
| Over                            | To (Incl.) |                      |                                    |                                     |        | Overall Length A        | Thread Length B | Square Length C | Shank Diameter D | Size of Square |
| 0.052                           | 0.065      | 0                    | 1/16                               | M1.6                                | 1      | 1-5/8                   | 5/16            | 3/16            | 0.141            | 0.110          |
| 0.065                           | 0.078      | 1                    |                                    | M1.8                                | 1      | 1-11/16                 | 3/8             | 3/16            | 0.141            | 0.110          |
| 0.078                           | 0.091      | 2                    |                                    | M2,M2.2                             | 1      | 1-3/4                   | 7/16            | 3/16            | 0.141            | 0.110          |
| 0.091                           | 0.104      | 3                    | 3/32                               | M2.5                                | 1      | 1-13/16                 | 1/2             | 3/16            | 0.141            | 0.110          |
| 0.104                           | 0.117      | 4                    |                                    |                                     | 1      | 1-7/8                   | 9/16            | 3/16            | 0.141            | 0.110          |
| 0.117                           | 0.130      | 5                    | 1/8                                | M3,M3.15                            | 1      | 1-15/16                 | 5/8             | 3/16            | 0.141            | 0.110          |
| 0.130                           | 0.145      | 6                    |                                    | M3.5                                | 1      | 2                       | 11/16           | 3/16            | 0.141            | 0.110          |
| 0.145                           | 0.171      | 8                    | 5/32                               | M4                                  | 1      | 2-1/8                   | 3/4             | 1/4             | 0.168            | 0.131          |
| 0.171                           | 0.197      | 10                   | 3/16                               | M4.5,M5                             | 1      | 2-3/8                   | 7/8             | 1/4             | 0.194            | 0.152          |
| 0.197                           | 0.223      | 12                   | 7/32                               |                                     | 1      | 2-3/8                   | 15/16           | 9/32            | 0.220            | 0.165          |
| 0.223                           | 0.260      | 14                   | 1/4                                | M6,M6.3                             | 2      | 2-1/2                   | 1               | 5/16            | 0.255            | 0.191          |
| 0.260                           | 0.323      |                      | 5/16                               | M7,M8                               | 2      | 2-23/32                 | 1-1/8           | 3/8             | 0.318            | 0.238          |
| 0.323                           | 0.385      |                      | 3/8                                | M10                                 | 2      | 2-15/16                 | 1-1/4           | 7/16            | 0.381            | 0.286          |
| 0.385                           | 0.448      |                      | 7/16                               |                                     | 3      | 3-5/32                  | 1-7/16          | 13/32           | 0.323            | 0.242          |
| 0.448                           | 0.510      |                      | 1/2                                | M12,M12.5                           | 3      | 3-3/8                   | 1-21/32         | 7/16            | 0.367            | 0.275          |
| 0.510                           | 0.573      |                      | 9/16                               | M14                                 | 3      | 3-19/32                 | 1-21/32         | 1/2             | 0.429            | 0.322          |
| 0.573                           | 0.635      |                      | 5/8                                | M16                                 | 3      | 3-13/16                 | 1-13/16         | 9/16            | 0.480            | 0.360          |
| 0.635                           | 0.709      |                      | 11/16                              | M18                                 | 3      | 4-1/32                  | 1-13/16         | 5/8             | 0.542            | 0.406          |
| 0.709                           | 0.760      |                      | 3/4                                |                                     | 3      | 4-1/4                   | 2               | 11/16           | 0.590            | 0.442          |
| 0.760                           | 0.823      |                      | 13/16                              | M20                                 | 3      | 4-15/32                 | 2               | 11/16           | 0.652            | 0.489          |
| 0.823                           | 0.885      |                      | 7/8                                | M22                                 | 3      | 4-11/16                 | 2-7/32          | 3/4             | 0.697            | 0.523          |
| 0.885                           | 0.948      |                      | 15/16                              | M24                                 | 3      | 4-29/32                 | 2-7/32          | 3/4             | 0.760            | 0.570          |
| 0.948                           | 1.010      |                      | 1                                  | M25                                 | 3      | 5-1/8                   | 2-1/2           | 13/16           | 0.800            | 0.600          |
| 1.010                           | 1.073      |                      | 1-1/16                             | M27                                 | 3      | 5-1/8                   | 2-1/2           | 7/8             | 0.896            | 0.672          |
| 1.073                           | 1.135      |                      | 1-1/8                              |                                     | 3      | 5-7/16                  | 2-9/16          | 7/8             | 0.896            | 0.672          |
| 1.135                           | 1.198      |                      | 1-3/16                             | M30                                 | 3      | 5-7/16                  | 2-9/16          | 1               | 1.021            | 0.766          |
| 1.198                           | 1.260      |                      | 1-1/4                              |                                     | 3      | 5-3/4                   | 2-9/16          | 1               | 1.021            | 0.766          |
| 1.260                           | 1.323      |                      | 1-5/16                             | M33                                 | 3      | 5-3/4                   | 2-9/16          | 1-1/16          | 1.108            | 0.831          |
| 1.323                           | 1.385      |                      | 1-3/8                              |                                     | 3      | 6-1/16                  | 3               | 1-1/16          | 1.108            | 0.831          |
| 1.385                           | 1.448      |                      | 1-7/16                             | M36                                 | 3      | 6-1/16                  | 3               | 1-1/8           | 1.233            | 0.925          |
| 1.448                           | 1.510      |                      | 1-1/2                              |                                     | 3      | 6-3/8                   | 3               | 1-1/8           | 1.233            | 0.925          |
| 1.510                           | 1.635      |                      | 1-5/8                              | M39                                 | 3      | 6-11/16                 | 3-3/16          | 1-1/8           | 1.305            | 0.979          |
| 1.635                           | 1.760      |                      | 1-3/4                              | M42                                 | 3      | 7                       | 3-3/16          | 1-1/4           | 1.430            | 1.072          |
| 1.760                           | 1.885      |                      | 1-7/8                              |                                     | 3      | 7-5/16                  | 3-9/16          | 1-1/4           | 1.519            | 1.139          |
| 1.885                           | 2.010      |                      | 2                                  | M48                                 | 3      | 7-5/8                   | 3-9/16          | 1-3/8           | 1.644            | 1.233          |
| 2.010                           | 2.135      |                      | 2-1/8                              |                                     | 3      | 8                       | 3-9/16          | 1-3/8           | 1.769            | 1.327          |
| 2.135                           | 2.260      |                      | 2-1/4                              | M56                                 | 3      | 8-1/4                   | 3-9/16          | 1-7/16          | 1.894            | 1.420          |
| 2.260                           | 2.385      |                      | 2-3/8                              |                                     | 3      | 8-1/2                   | 4               | 1-7/16          | 2.019            | 1.514          |
| 2.385                           | 2.510      |                      | 2-1/2                              |                                     | 3      | 8-3/4                   | 4               | 1-1/2           | 2.100            | 1.575          |
| 2.510                           | 2.635      |                      | 2-5/8                              | M64                                 | 3      | 8-3/4                   | 4               | 1-1/2           | 2.225            | 1.669          |
| 2.635                           | 2.760      |                      | 2-3/4                              |                                     | 3      | 9-1/4                   | 4               | 1-9/16          | 2.350            | 1.762          |
| 2.760                           | 2.885      |                      | 2-7/8                              | M72                                 | 3      | 9-1/4                   | 4               | 1-9/16          | 2.475            | 1.856          |
| 2.885                           | 3.010      |                      | 3                                  |                                     | 3      | 9-3/4                   | 4-9/16          | 1-5/8           | 2.543            | 1.907          |
| 3.010                           | 3.135      |                      | 3-1/8                              |                                     | 3      | 9-3/4                   | 4-9/16          | 1-5/8           | 2.668            | 2.001          |
| 3.135                           | 3.260      |                      | 3-1/4                              | M80                                 | 3      | 10                      | 4-9/16          | 1-3/4           | 2.793            | 2.095          |
| 3.260                           | 3.385      |                      | 3-3/8                              |                                     | 3      | 10                      | 4-9/16          | 1-3/4           | 2.883            | 2.162          |
| 3.385                           | 3.510      |                      | 3-1/2                              |                                     | 3      | 10-1/4                  | 4-15/16         | 2               | 3.008            | 2.256          |
| 3.510                           | 3.635      |                      | 3-5/8                              | M90                                 | 3      | 10-1/4                  | 4-15/16         | 2               | 3.133            | 2.350          |
| 3.635                           | 3.760      |                      | 3-3/4                              |                                     | 3      | 10-1/2                  | 5-5/16          | 2-1/8           | 3.217            | 2.413          |
| 3.760                           | 3.885      |                      | 3-7/8                              |                                     | 3      | 10-1/2                  | 5-5/16          | 2-1/8           | 3.342            | 2.506          |
| 3.885                           | 4.010      |                      | 4                                  | M100                                | 3      | 10-3/4                  | 5-5/16          | 2-1/4           | 3.467            | 2.600          |

\* Styles shown are for ground thread taps.



# Taps: Metric Taps General Dimensions

**Table 350, Spiral Pointed and Spiral Fluted, JIS**

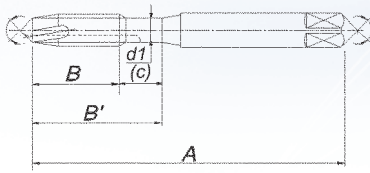
| Diam.<br>of Tap<br>m/m | Pitch | General Dimension—Metric |                          |                          |                     |                        | Ground<br>Thread<br>Limits<br>Class | Pitch Diameter Limit |              |              |
|------------------------|-------|--------------------------|--------------------------|--------------------------|---------------------|------------------------|-------------------------------------|----------------------|--------------|--------------|
|                        |       | Overall<br>Length<br>A   | Length of<br>Thread<br>B | Length of<br>Square<br>C | Shank<br>Diam.<br>D | Size of<br>Square<br>E |                                     | Basic<br>mm          | Mini-<br>mum | Maxi-<br>mum |
| M2.0                   | 0.4   | 40                       | 15                       | 5                        | 3                   | 2.5                    | 2                                   | 1.740                | 1.750        | 1.770        |
| M2.3                   | 0.4   | 42                       | 15                       | 5                        | 3                   | 2.5                    | 2                                   | 2.040                | 2.050        | 2.070        |
| M2.6                   | 0.45  | 44                       | 16                       | 5                        | 3                   | 2.5                    | 2                                   | 2.308                | 2.318        | 2.333        |
| M3.0                   | 0.5   | 46                       | 18                       | 6                        | 4                   | 3.2                    | 2                                   | 2.675                | 2.685        | 2.700        |
| M3.5                   | 0.6   | 48                       | 18                       | 6                        | 4                   | 3.2                    | 2                                   | 3.110                | 3.120        | 3.135        |
| M4.0                   | 0.7   | 52                       | 20                       | 7                        | 5                   | 4                      | 2                                   | 3.545                | 3.555        | 3.575        |
| M4.5                   | 0.75  | 55                       | 20                       | 7                        | 5                   | 4                      | 2                                   | 4.013                | 4.023        | 4.043        |
| M5.0                   | 0.8   | 60                       | 22                       | 7                        | 5.5                 | 4.5                    | 2                                   | 4.480                | 4.490        | 4.510        |
| M6.0                   | 0.75  | 62                       | 20                       | 7                        | 6                   | 4.5                    | 2                                   | 5.513                | 5.523        | 5.543        |
| M6.0                   | 1.0   | 62                       | 24                       | 7                        | 6                   | 4.5                    | 2                                   | 5.350                | 5.360        | 5.380        |
| M7.0                   | 1.0   | 65                       | 26                       | 8                        | 6.2                 | 5                      | 2                                   | 6.350                | 6.360        | 6.380        |
| M8.0                   | 0.75  | 62                       | 20                       | 8                        | 6.2                 | 5                      | 2                                   | 7.513                | 7.525        | 7.550        |
| M8.0                   | 1.0   | 70                       | 30                       | 8                        | 6.2                 | 5                      | 2                                   | 7.350                | 7.360        | 7.380        |
| M8.0                   | 1.25  | 70                       | 30                       | 8                        | 6.2                 | 5                      | 2                                   | 7.188                | 7.198        | 7.223        |
| M9.0                   | 1.25  | 72                       | 30                       | 8                        | 7                   | 5.5                    | 2                                   | 8.188                | 8.198        | 8.223        |
| M10.0                  | 1.0   | 70                       | 30                       | 8                        | 7                   | 5.5                    | 2                                   | 9.350                | 9.362        | 9.387        |
| M10.0                  | 1.25  | 75                       | 32                       | 8                        | 7                   | 5.5                    | 2                                   | 9.188                | 9.198        | 9.223        |
| M10.0                  | 1.5   | 75                       | 32                       | 8                        | 7                   | 5.5                    | 2                                   | 9.026                | 9.041        | 9.066        |
| M11.0                  | 1.5   | 80                       | 38                       | 9                        | 8                   | 6                      | 2                                   | 10.026               | 10.041       | 10.066       |
| M12.0                  | 1.0   | 70                       | 30                       | 9                        | 8.5                 | 6.5                    | 2                                   | 11.350               | 11.365       | 11.395       |
| M12.0                  | 1.25  | 80                       | 38                       | 9                        | 8.5                 | 6.5                    | 2                                   | 11.188               | 11.203       | 11.233       |
| M12.0                  | 1.5   | 82                       | 38                       | 9                        | 8.5                 | 6.5                    | 2                                   | 11.026               | 11.041       | 11.071       |
| M12.0                  | 1.75  | 82                       | 38                       | 9                        | 8.5                 | 6.5                    | 2                                   | 10.863               | 10.878       | 10.908       |
| M14.0                  | 1.25  | 80                       | 38                       | 11                       | 10.5                | 8                      | 2                                   | 13.188               | 13.203       | 13.233       |
| M14.0                  | 1.5   | 88                       | 42                       | 11                       | 10.5                | 8                      | 2                                   | 13.026               | 13.041       | 13.071       |
| M14.0                  | 2.0   | 88                       | 42                       | 11                       | 10.5                | 8                      | 2                                   | 12.701               | 12.716       | 12.746       |
| M16.0                  | 1.0   | 75                       | 30                       | 13                       | 12.5                | 10                     | 2                                   | 15.350               | 15.365       | 15.395       |
| M16.0                  | 1.5   | 95                       | 45                       | 13                       | 12.5                | 10                     | 2                                   | 15.026               | 15.041       | 15.071       |
| M16.0                  | 2.0   | 95                       | 45                       | 13                       | 12.5                | 10                     | 2                                   | 14.701               | 14.716       | 14.746       |
| M18.0                  | 1.5   | 95                       | 45                       | 14                       | 14                  | 11                     | 2                                   | 17.026               | 17.041       | 17.071       |
| M18.0                  | 2.0   | 95                       | 45                       | 14                       | 14                  | 11                     | 2                                   | 16.701               | 16.716       | 16.751       |
| M18.0                  | 2.5   | 100                      | 48                       | 14                       | 14                  | 11                     | 2                                   | 16.376               | 16.396       | 16.431       |
| M20.0                  | 1.5   | 95                       | 45                       | 15                       | 15                  | 12                     | 2                                   | 19.026               | 19.041       | 19.076       |
| M20.0                  | 2.5   | 100                      | 48                       | 15                       | 15                  | 12                     | 2                                   | 18.376               | 18.396       | 18.431       |
| M22.0                  | 1.5   | 95                       | 45                       | 16                       | 17                  | 13                     | 2                                   | 21.026               | 21.041       | 21.076       |
| M22.0                  | 2.5   | 115                      | 55                       | 16                       | 17                  | 13                     | 2                                   | 20.376               | 20.396       | 20.431       |
| M24.0                  | 1.5   | 95                       | 45                       | 18                       | 19                  | 15                     | 2                                   | 23.026               | 23.041       | 23.076       |
| M24.0                  | 3.0   | 120                      | 58                       | 18                       | 19                  | 15                     | 2                                   | 22.051               | 22.071       | 22.111       |
| M26.0                  | 1.5   | 95                       | 45                       | 18                       | 20                  | 15                     | 2                                   | 25.026               | 25.041       | 25.076       |
| M26.0                  | 3.0   | 130                      | 62                       | 18                       | 20                  | 15                     | 2                                   | 24.051               | 24.071       | 24.076       |
| M28.0                  | 1.5   | 105                      | 45                       | 18                       | 21                  | 17                     | 2                                   | 27.026               | 27.041       | 27.076       |
| M30.0                  | 1.5   | 105                      | 45                       | 20                       | 23                  | 17                     | 2                                   | 29.026               | 29.041       | 29.076       |
| M30.0                  | 3.5   | 135                      | 65                       | 20                       | 23                  | 17                     | 2                                   | 27.727               | 27.747       | 27.787       |
| M32.0                  | 1.5   | 105                      | 45                       | 22                       | 24                  | 19                     | 2                                   | 31.026               | 31.041       | 31.076       |
| M33.0                  | 1.5   | 110                      | 45                       | 22                       | 25                  | 19                     | 2                                   | 32.026               | 32.041       | 32.076       |
| M34.0                  | 1.5   | 110                      | 45                       | 24                       | 26                  | 21                     | 2                                   | 33.026               | 33.041       | 33.076       |
| M36.0                  | 1.5   | 110                      | 45                       | 24                       | 28                  | 21                     | 2                                   | 35.026               | 35.041       | 35.076       |

**Note:** Dimensions are in millimeters

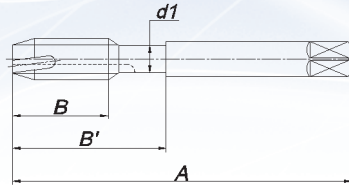


# Taps: OSG Standard Tap Dimensions

## SPIRAL POINT TAP List Numbers 105, 105A, 105B, 125, 142, 917\*



From M3~M10



From M12~M20

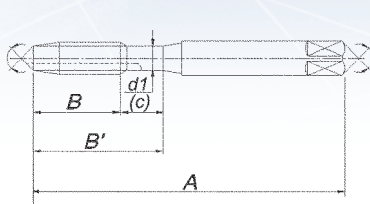
| Diameter | A    | B    | (C)  | B'   | d1     |
|----------|------|------|------|------|--------|
| No.4     | 1.88 | 0.31 | 0.25 | 0.56 | 0.0827 |
| No.5     | 1.94 | 0.31 | 0.31 | 0.62 | 0.0945 |
| No.6     | 2.00 | 0.38 | 0.31 | 0.69 | 0.0984 |
| No. 8    | 2.13 | 0.38 | 0.38 | 0.76 | 0.1260 |
| No.10    | 2.38 | 0.50 | 0.38 | 0.88 | 0.1378 |
| No. 12   | 2.38 | 0.50 | 0.44 | 0.94 | 0.1614 |
| 1/4      | 2.50 | 0.63 | 0.38 | 1.01 | 0.1850 |
| 5/16     | 2.72 | 0.69 | 0.44 | 1.13 | 0.2362 |
| 3/8      | 2.94 | 0.75 | 0.50 | 1.25 | 0.2835 |
| 7/16     | 3.16 | 0.88 | 0.43 | 1.31 | 0.3165 |
| 1/2      | 3.38 | 0.94 | 0.43 | 1.37 | 0.3606 |
| 5/8      | 3.81 | 1.09 | 0.47 | 1.56 | 0.4720 |
| 3/4      | 4.25 | 1.22 | 0.49 | 1.71 | 0.5823 |
| M3       | 1.94 | 0.31 | 0.31 | 0.62 | 0.0906 |
| M3.5     | 2.00 | 0.38 | 0.31 | 0.69 | 0.1063 |
| M4       | 2.13 | 0.38 | 0.38 | 0.76 | 0.1181 |
| M4.5     | 2.38 | 0.50 | 0.38 | 0.88 | 0.1339 |
| M5       | 2.38 | 0.50 | 0.38 | 0.88 | 0.1496 |
| M6       | 2.50 | 0.63 | 0.38 | 1.01 | 0.1850 |
| M7       | 2.72 | 0.69 | 0.44 | 1.13 | 0.2244 |
| M8       | 2.72 | 0.69 | 0.44 | 1.13 | 0.2480 |
| M10      | 2.94 | 0.75 | 0.50 | 1.25 | 0.3150 |
| M12      | 3.38 | 0.94 | 0.43 | 1.37 | 0.3598 |
| M14      | 3.59 | 1.00 | 0.47 | 1.47 | 0.4213 |
| M16      | 3.81 | 1.09 | 0.47 | 1.56 | 0.4720 |
| M18      | 4.03 | 1.09 | 0.51 | 1.60 | 0.5343 |
| M20      | 4.47 | 1.22 | 0.55 | 1.77 | 0.6441 |

Thread Length B is a minimum value

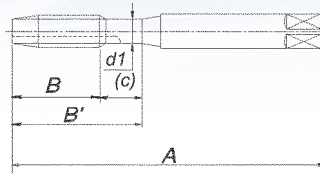
\*List 917 (long shank standard) is same value except overall length.

# Taps: OSG Standard Tap Dimensions

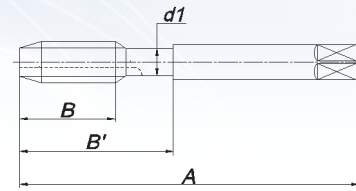
## SPIRAL FLUTE TAP List Numbers 107, 143, S108, 918\*



No.4~1/4, M3~M6



5/16~3/8, M7~M10



7/16~3/4, M12~M20

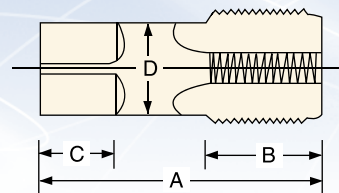
| Diameter | A    | B    | (C)  | B'   | D1     |
|----------|------|------|------|------|--------|
| No.4     | 1.88 | 0.31 | 0.25 | 0.56 | 0.0827 |
| No.5     | 1.94 | 0.31 | 0.31 | 0.62 | 0.0945 |
| No.6     | 2.00 | 0.38 | 0.31 | 0.69 | 0.0984 |
| No. 8    | 2.13 | 0.38 | 0.38 | 0.76 | 0.1260 |
| No.10    | 2.38 | 0.50 | 0.38 | 0.88 | 0.1378 |
| No. 12   | 2.38 | 0.50 | 0.44 | 0.94 | 0.1614 |
| 1/4      | 2.50 | 0.63 | 0.38 | 1.01 | 0.1850 |
| 5/16     | 2.72 | 0.69 | 0.44 | 1.13 | 0.2362 |
| 3/8      | 2.94 | 0.75 | 0.50 | 1.25 | 0.2835 |
| 7/16     | 3.16 | 0.88 | 0.83 | 1.71 | 0.3165 |
| 1/2      | 3.38 | 0.94 | 0.99 | 1.93 | 0.3606 |
| 5/8      | 3.81 | 1.09 | 1.04 | 2.13 | 0.4720 |
| 3/4      | 4.25 | 1.22 | 1.21 | 2.43 | 0.5823 |
| M3       | 1.94 | 0.31 | 0.31 | 0.62 | 0.0906 |
| M4       | 2.13 | 0.38 | 0.38 | 0.76 | 0.1181 |
| M5       | 2.38 | 0.50 | 0.38 | 0.88 | 0.1496 |
| M6       | 2.50 | 0.63 | 0.38 | 1.01 | 0.1850 |
| M8       | 2.72 | 0.69 | 0.44 | 1.13 | 0.2480 |
| M10      | 2.94 | 0.75 | 0.50 | 1.25 | 0.3150 |
| M12      | 3.38 | 0.94 | 0.99 | 1.93 | 0.3606 |

Thread Length B is a minimum value

\*List 918 (long shank standard) is same value except overall length.

# Taps: Special Fine Pitch Taps

Unless otherwise specified, special taps 1.010" to 1.510" diameter inclusive, having 14 or more threads per inch or 1.75 millimeter pitch and finer; and sizes over 1.510" diameter with 10 or more threads per inch, or 2.5 millimeter pitch and finer, will be made to the general dimensions shown below:



**MCTI TABLE 303**

| Nominal Diameter Range - Inches |            | Nominal Fractional Diameter Inches | Nominal Metric Diameter Millimeters | Tap Dimensions — Inches |                 |                 |                  |                |
|---------------------------------|------------|------------------------------------|-------------------------------------|-------------------------|-----------------|-----------------|------------------|----------------|
|                                 |            |                                    |                                     | Overall Length A        | Thread Length B | Square Length C | Shank Diameter D | Size of Square |
| Over                            | To (Incl.) |                                    |                                     |                         |                 |                 |                  |                |
| 1.010                           | 1.073      | 1-1/16                             | M27                                 | 4                       | 1-1/2           | 7/8             | 0.896            | 0.672          |
| 1.073                           | 1.135      | 1-1/8                              | —                                   | 4                       | 1-1/2           | 7/8             | 0.896            | 0.672          |
| 1.135                           | 1.198      | 1-3/16                             | M30                                 | 4                       | 1-1/2           | 1               | 1.021            | 0.766          |
| 1.198                           | 1.260      | 1-1/4                              | —                                   | 4                       | 1-1/2           | 1               | 1.021            | 0.766          |
| 1.260                           | 1.323      | 1-5/16                             | M33                                 | 4                       | 1-1/2           | 1               | 1.108            | 0.831          |
| 1.323                           | 1.385      | 1-3/8                              | —                                   | 4                       | 1-1/2           | 1               | 1.108            | 0.831          |
| 1.385                           | 1.448      | 1-7/16                             | M36                                 | 4                       | 1-1/2           | 1               | 1.233            | 0.925          |
| 1.448                           | 1.510      | 1-1/2                              | —                                   | 4                       | 1-1/2           | 1               | 1.233            | 0.925          |
| 1.510                           | 1.635      | 1-5/8                              | M39                                 | 5                       | 2               | 1-1/8           | 1.305            | 0.979          |
| 1.635                           | 1.760      | 1-3/4                              | M42                                 | 5                       | 2               | 1-1/4           | 1.430            | 1.072          |
| 1.760                           | 1.885      | 1-7/8                              | —                                   | 5                       | 2               | 1-1/4           | 1.519            | 1.139          |
| 1.885                           | 2.010      | 2                                  | M48                                 | 5                       | 2               | 1-3/8           | 1.644            | 1.233          |
| 2.010                           | 2.135      | 2-1/8                              | —                                   | 5-1/4                   | 2               | 1-3/8           | 1.769            | 1.327          |
| 2.135                           | 2.260      | 2-1/4                              | M56                                 | 5-1/4                   | 2               | 1-7/16          | 1.894            | 1.420          |
| 2.260                           | 2.385      | 2-3/8                              | —                                   | 5-1/4                   | 2               | 1-7/16          | 2.019            | 1.514          |
| 2.385                           | 2.510      | 2-1/2                              | —                                   | 5-1/4                   | 2               | 1-1/2           | 2.100            | 1.575          |
| 2.510                           | 2.635      | 2-5/8                              | M64                                 | 5-1/2                   | 2               | 1-1/2           | 2.100            | 1.575          |
| 2.635                           | 2.760      | 2-3/4                              | —                                   | 5-1/2                   | 2               | 1-1/2           | 2.100            | 1.575          |
| 2.760                           | 2.885      | 2-7/8                              | M72                                 | 5-1/2                   | 2               | 1-1/2           | 2.100            | 1.575          |
| 2.885                           | 3.010      | 3                                  | —                                   | 5-1/2                   | 2               | 1-1/2           | 2.100            | 1.575          |
| 3.010                           | 3.135      | 3-1/8                              | —                                   | 5-3/4                   | 2               | 1-1/2           | 2.100            | 1.575          |
| 3.135                           | 3.260      | 3-1/4                              | M80                                 | 5-3/4                   | 2               | 1-1/2           | 2.100            | 1.575          |
| 3.260                           | 3.385      | 3-3/8                              | —                                   | 5-3/4                   | 2               | 1-1/2           | 2.100            | 1.575          |
| 3.385                           | 3.510      | 3-1/2                              | —                                   | 5-3/4                   | 2               | 1-1/2           | 2.100            | 1.575          |
| 3.510                           | 3.635      | 3-5/8                              | M90                                 | 6                       | 2               | 1-3/4           | 2.100            | 1.575          |
| 3.635                           | 3.760      | 3-3/4                              | —                                   | 6                       | 2               | 1-3/4           | 2.100            | 1.575          |
| 3.760                           | 3.885      | 3-7/8                              | —                                   | 6                       | 2               | 1-3/4           | 2.100            | 1.575          |
| 3.885                           | 4.010      | 4                                  | M100                                | 6                       | 2               | 1-3/4           | 2.100            | 1.575          |

**MCTI TABLE 302 Tolerances**

| Element               | Nominal Diameter Range - Inches |            | Direction     | Tolerance-Inches |
|-----------------------|---------------------------------|------------|---------------|------------------|
|                       | Over                            | To (Incl.) |               |                  |
| Length Overall — A    | 0.052                           | 1.010      | Plus or Minus | 1/32             |
|                       | 1.010                           | 4.010      | Plus or Minus | 1/16             |
| Length of Thread — B  | 0.052                           | 0.223      | Plus or Minus | 3/64             |
|                       | 0.223                           | 0.510      | Plus or Minus | 1/16             |
|                       | 0.510                           | 1.510      | Plus or Minus | 3/32             |
|                       | 1.510                           | 4.010      | Plus or Minus | 1/8              |
| Length of Square — C  | 0.052                           | 1.010      | Plus or Minus | 1/32             |
|                       | 1.010                           | 4.010      | Plus or Minus | 1/16             |
| Diameter of Shank — D | 0.052                           | 0.223      | Minus         | 0.0015           |
|                       | 0.223                           | 0.635      | Minus         | 0.0015           |
|                       | 0.635                           | 1.010      | Minus         | 0.002            |
|                       | 1.010                           | 1.510      | Minus         | 0.002            |
|                       | 1.510                           | 2.010      | Minus         | 0.003            |
|                       | 2.010                           | 4.010      | Minus         | 0.003            |
|                       | 0.052                           | 0.510      | Minus         | 0.004            |
| Size of Square — E    | 0.510                           | 1.010      | Minus         | 0.006            |
|                       | 1.010                           | 2.010      | Minus         | 0.008            |
|                       | 2.010                           | 4.010      | Minus         | 0.010            |

# Taps: Pitch Diameter Limit

## FOR INTERNAL SCREW THREAD CLASSES AND TAP RECOMMENDATIONS

| Size  | Threads Per Inch |        | Basic Pitch Diameter | Unified Classes of Thread         |            |                            |            | American National Classes of Thread |            |                            |            | ISO Metric Class of Threads     |          |                              |        |           |
|-------|------------------|--------|----------------------|-----------------------------------|------------|----------------------------|------------|-------------------------------------|------------|----------------------------|------------|---------------------------------|----------|------------------------------|--------|-----------|
|       |                  |        |                      | CLASS 2B For General Applications |            | CLASS 3B For Closer Fits   |            | CLASS 2                             |            | CLASS 3                    |            | CLASS 6H For Commercial Threads |          |                              |        |           |
|       | NC UNC           | NF UNF | All Classes Minimum  | Pitch Diam. Limits Maximum        | Rec.* Taps | Pitch Diam. Limits Maximum | Rec.* Taps | Pitch Diam. Limits Maximum          | Rec.* Taps | Pitch Diam. Limits Maximum | Rec.* Taps | Size mm                         | Pitch mm | Pitch Diameter Limits-Inches |        | Rec. Taps |
|       |                  |        |                      | Min.                              | Max.       | Min.                       | Max.       | Min.                                | Max.       | Min.                       | Max.       | Min.                            | Max.     | Min.                         | Max.   |           |
| 0     | —                | 80     | 0.0519               | 0.0542                            | H2         | 0.0536                     | H1         | 0.0536                              | H1         | 0.0532                     | H1         | M1.6                            | 0.35     | 0.0541                       | 0.0574 | D3        |
| 1     | 64               | —      | 0.0629               | 0.0655                            | H2         | 0.0648                     | H1         | 0.0648                              | H1         | 0.0643                     | H1         | M2                              | 0.4      | 0.0686                       | 0.0720 | D3        |
| 1     | —                | 72     | 0.0640               | 0.0665                            | H2         | 0.0659                     | H1         | 0.0658                              | H1         | 0.0653                     | H1         | M2.5                            | 0.45     | 0.0870                       | 0.0906 | D3        |
| 2     | 56               | —      | 0.0744               | 0.0772                            | H2         | 0.0765                     | H1         | 0.0764                              | H1         | 0.0759                     | H1         | M3                              | 0.5      | 0.1054                       | 0.1092 | D3        |
| 2     | —                | 64     | 0.0759               | 0.0786                            | H2         | 0.0779                     | H1         | 0.0778                              | H1         | 0.0773                     | H1         | M3.5                            | 0.6      | 0.1225                       | 0.1268 | D4        |
| 3     | 48               | —      | 0.0855               | 0.0885                            | H2         | 0.0877                     | H1         | 0.0877                              | H1         | 0.0871                     | H1         | M4                              | 0.7      | 0.1396                       | 0.1442 | D4        |
| 3     | —                | 56     | 0.0874               | 0.0902                            | H2         | 0.0895                     | H1         | 0.0894                              | H1         | 0.0889                     | H1         | M5                              | 0.8      | 0.1764                       | 0.1812 | D4        |
| 4     | 40               | —      | 0.0958               | 0.0991                            | H2         | 0.0982                     | H2         | 0.0982                              | H2         | 0.0975                     | H1         | M6                              | 1.0      | 0.2107                       | 0.2165 | D5        |
| 4     | —                | 48     | 0.0985               | 0.1016                            | H2         | 0.1008                     | H1         | 0.1007                              | H1         | 0.1001                     | H1         | M8                              | 1.25     | 0.2830                       | 0.2892 | D5        |
| 5     | 40               | —      | 0.1088               | 0.1121                            | H2         | 0.1113                     | H2         | 0.1112                              | H2         | 0.1105                     | H1         | M10                             | 1.5      | 0.3554                       | 0.3624 | D6        |
| 5     | —                | 44     | 0.1102               | 0.1134                            | H2         | 0.1126                     | H1         | 0.1125                              | H1         | 0.1118                     | H1         | M12                             | 1.75     | 0.4277                       | 0.4355 | D6        |
| 6     | 32               | —      | 0.1177               | 0.1214                            | H3         | 0.1204                     | H2         | 0.1204                              | H2         | 0.1196                     | H1         | M14                             | 2.0      | 0.5001                       | 0.5083 | D7        |
| 6     | —                | 40     | 0.1218               | 0.1252                            | H2         | 0.1243                     | H2         | 0.1242                              | H2         | 0.1235                     | H1         | M16                             | 2.0      | 0.5788                       | 0.5871 | D7        |
| 8     | 32               | —      | 0.1437               | 0.1475                            | H3         | 0.1465                     | H2         | 0.1464                              | H2         | 0.1456                     | H1         | M20                             | 2.5      | 0.7235                       | 0.7322 | D7        |
| 8     | —                | 36     | 0.1460               | 0.1496                            | H2         | 0.1487                     | H2         | 0.1485                              | H2         | 0.1478                     | H1         | M24                             | 3.0      | 0.8682                       | 0.8785 | D8        |
| 10    | 24               | —      | 0.1629               | 0.1672                            | H3         | 0.1661                     | H3         | 0.1662                              | H3         | 0.1653                     | H1         | M30                             | 3.5      | 1.0917                       | 1.1026 | D9        |
| 10    | —                | 32     | 0.1697               | 0.1736                            | H3         | 0.1726                     | H2         | 0.1724                              | H2         | 0.1716                     | H1         | M36                             | 4.0      | 1.3151                       | 1.3268 | D9        |
| 12    | 24               | —      | 0.1889               | 0.1933                            | H3         | 0.1922                     | H3         | 0.1922                              | H3         | 0.1913                     | H1         |                                 |          |                              |        |           |
| 12    | —                | 28     | 0.1928               | 0.1970                            | H3         | 0.1959                     | H3         | 0.1959                              | H3         | 0.1950                     | H1         |                                 |          |                              |        |           |
| 1/4   | 20               | —      | 0.2175               | 0.2224                            | H5         | 0.2211                     | H3         | 0.2211                              | H3         | 0.2201                     | H2         |                                 |          |                              |        |           |
| 1/4   | —                | 28     | 0.2268               | 0.2311                            | H4         | 0.2300                     | H3         | 0.2299                              | H3         | 0.2290                     | H1         |                                 |          |                              |        |           |
| 5/16  | 18               | —      | 0.2764               | 0.2817                            | H5         | 0.2803                     | H3         | 0.2805                              | H3         | 0.2794                     | H2         |                                 |          |                              |        |           |
| 5/16  | —                | 24     | 0.2854               | 0.2902                            | H4         | 0.2890                     | H3         | 0.2887                              | H3         | 0.2878                     | H1         |                                 |          |                              |        |           |
| 3/8   | 16               | —      | 0.3344               | 0.3401                            | H5         | 0.3387                     | H3         | 0.3389                              | H3         | 0.3376                     | H2         |                                 |          |                              |        |           |
| 3/8   | —                | 24     | 0.3479               | 0.3528                            | H4         | 0.3516                     | H3         | 0.3512                              | H3         | 0.3503                     | H1         |                                 |          |                              |        |           |
| 7/16  | 14               | —      | 0.3911               | 0.3972                            | H5         | 0.3957                     | H3         | 0.3960                              | H5         | 0.3947                     | H3         |                                 |          |                              |        |           |
| 7/16  | —                | 20     | 0.4050               | 0.4104                            | H5         | 0.4091                     | H3         | 0.4086                              | H3         | 0.4076                     | H1         |                                 |          |                              |        |           |
| 1/2   | 13               | —      | 0.4500               | 0.4565                            | H5         | 0.4548                     | H3         | 0.4552                              | H5         | 0.4537                     | H3         |                                 |          |                              |        |           |
| 1/2   | —                | 20     | 0.4675               | 0.4731                            | H5         | 0.4717                     | H3         | 0.4711                              | H3         | 0.4701                     | H1         |                                 |          |                              |        |           |
| 9/16  | 12               | —      | 0.5084               | 0.5152                            | H5         | 0.5135                     | H3         | 0.5140                              | H5         | 0.5124                     | H3         |                                 |          |                              |        |           |
| 9/16  | —                | 18     | 0.5264               | 0.5323                            | H5         | 0.5308                     | H3         | 0.5305                              | H3         | 0.5294                     | H2         |                                 |          |                              |        |           |
| 5/8   | 11               | —      | 0.5660               | 0.5732                            | H5         | 0.5714                     | H3         | 0.5719                              | H5         | 0.5702                     | H3         |                                 |          |                              |        |           |
| 5/8   | —                | 18     | 0.5889               | 0.5949                            | H5         | 0.5934                     | H3         | 0.5930                              | H3         | 0.5919                     | H2         |                                 |          |                              |        |           |
| 3/4   | 10               | —      | 0.6850               | 0.6927                            | H5         | 0.6907                     | H5         | 0.6914                              | H5         | 0.6895                     | H3         |                                 |          |                              |        |           |
| 3/4   | —                | 16     | 0.7094               | 0.7159                            | H5         | 0.7143                     | H3         | 0.7139                              | H3         | 0.7126                     | H2         |                                 |          |                              |        |           |
| 7/8   | 9                | —      | 0.8028               | 0.8110                            | H6         | 0.8089                     | H4         | 0.8098                              | H6         | 0.8077                     | H4         |                                 |          |                              |        |           |
| 7/8   | —                | 14     | 0.8286               | 0.8356                            | H4         | 0.8339                     | H4         | 0.8335                              | H4         | 0.8322                     | H2         |                                 |          |                              |        |           |
| 1     | 8                | —      | 0.9188               | 0.9276                            | H4         | 0.9254                     | H4         | 0.9264                              | H4         | 0.9242                     | H4         |                                 |          |                              |        |           |
| 1     | —                | 12     | 0.9459               | 0.9535                            | H4         | 0.9516                     | H4         | 0.9515                              | H4         | 0.9499                     | H4         |                                 |          |                              |        |           |
| 1     | —                | 14NS   | 0.9536               | 0.9609                            | H4         | 0.9590                     | H4         | 0.9585                              | H4         | 0.9572                     | H4         |                                 |          |                              |        |           |
| 1-1/8 | 7                | —      | 1.0322               | 1.0416                            | H4         | 1.0393                     | H4         | 1.0407                              | H4         | 1.0381                     | H4         |                                 |          |                              |        |           |
| 1-1/8 | —                | 12     | 1.0709               | 1.0787                            | H4         | 1.0768                     | H4         | 1.0765                              | H4         | 1.0749                     | H4         |                                 |          |                              |        |           |
| 1-1/4 | 7                | —      | 1.1572               | 1.1668                            | H4         | 1.1644                     | H4         | 1.1657                              | H4         | 1.1631                     | H4         |                                 |          |                              |        |           |
| 1-1/4 | —                | 12     | 1.1959               | 1.2039                            | H4         | 1.2019                     | H4         | 1.2015                              | H4         | 1.1999                     | H4         |                                 |          |                              |        |           |
| 1-3/8 | 6                | —      | 1.2667               | 1.2771                            | H4         | 1.2745                     | H4         | 1.2768                              | H4         | 1.2738                     | H4         |                                 |          |                              |        |           |
| 1-3/8 | —                | 12     | 1.3209               | 1.3291                            | H4         | 1.3270                     | H4         | 1.3265                              | H4         | 1.3249                     | H4         |                                 |          |                              |        |           |
| 1-1/2 | 6                | —      | 1.3917               | 1.4022                            | H4         | 1.3996                     | H4         | 1.4018                              | H4         | 1.3988                     | H4         |                                 |          |                              |        |           |
| 1-1/2 | —                | 12     | 1.4459               | 1.4542                            | H4         | 1.4522                     | H4         | 1.4515                              | H4         | 1.4499                     | H4         |                                 |          |                              |        |           |

\*Basic Pitch Diameter:

NOTE: RD. Limits for recommended taps:

D3 = Basic Plus 0.0009" to Basic Plus 0.0015"  
D4 = Basic Plus 0.0012" to Basic Plus 0.002"  
D5 = Basic Plus 0.0015" to Basic Plus 0.0025"  
D6 = Basic Plus 0.0018" to Basic Plus 0.003"  
D7 = Basic Plus 0.0019" to Basic Plus 0.0035"  
D8 = Basic Plus 0.0024" to Basic Plus 0.004"  
D9 = Basic Plus 0.0025" to Basic Plus 0.0045"

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.

\*\*Sizes through 1" diameter:

H1 = Basic to Basic Plus 0.0005"  
H2 = Basic Plus 0.0005" to Basic Plus 0.0010"  
H3 = Basic Plus 0.0010" to Basic Plus 0.0015"  
H4 = Basic Plus 0.0015" to Basic Plus 0.0020"  
H5 = Basic Plus 0.0020" to Basic Plus 0.0025"  
H6 = Basic Plus 0.0025" to Basic Plus 0.0030"  
Sizes larger than 1" diameter through 1-1/2"  
H4 = Basic Plus 0.0010" to Basic Plus 0.0020"





## For External and Internal Screw Threads

**CLASSES 2A, 3A and 2B, 3B, UNIFIED THREAD FORM**  
**CLASSES 2 AND 3, AMERICAN NATIONAL THREAD FORM**

|       | Threads Per Inch |        | External Thread (Bolt) |                    |          |          |                             |             |         | Internal Thread (Nut)        |             |             |                   |            |
|-------|------------------|--------|------------------------|--------------------|----------|----------|-----------------------------|-------------|---------|------------------------------|-------------|-------------|-------------------|------------|
|       |                  |        | Unified                |                    |          |          | American National           |             |         | Basic Pitch Dia.             | Unified     |             | American National |            |
|       |                  |        | Maximum                |                    | Minimum  |          | Max.                        | Minimum     |         |                              | Maximum     |             | Maximum           |            |
| Size  | NC UNC           | NF UNF | Class 2A               | Class 3A Basic No. | Class 2A | Class 3A | Classes 2, 3 Basic Size No. | Class 2 No. | Class 3 | All Classes Minimum Size No. | 2B Size No. | 3B Size No. | 2 Size No.        | 3 Size No. |
| 0     | —                | 80     | 0.0514                 | 0.0519             | 0.0496   | 0.0506   | 0.0519                      | 0.0502      | 0.0506  | 0.0519                       | 0.0542      | 0.0356      | 0.0536            | 0.0532     |
| 1     | 64               | —      | 0.0623                 | 0.0629             | 0.0603   | 0.0614   | 0.0629                      | 0.0610      | 0.0615  | 0.0629                       | 0.0655      | 0.0648      | 0.0648            | 0.0643     |
| 1     | —                | 72     | 0.0634                 | 0.0640             | 0.0615   | 0.0626   | 0.0640                      | 0.0622      | 0.0627  | 0.0640                       | 0.0665      | 0.0659      | 0.0658            | 0.0653     |
| 2     | 56               | —      | 0.0738                 | 0.0744             | 0.0717   | 0.0728   | 0.0744                      | 0.0724      | 0.0729  | 0.0744                       | 0.0772      | 0.0765      | 0.0764            | 0.0759     |
| 2     | —                | 64     | 0.0753                 | 0.0759             | 0.0733   | 0.0744   | 0.0759                      | 0.074       | 0.0745  | 0.0759                       | 0.0786      | 0.0779      | 0.0778            | 0.0773     |
| 3     | 48               | —      | 0.0848                 | 0.0855             | 0.0825   | 0.0838   | 0.0855                      | 0.0833      | 0.0839  | 0.0855                       | 0.0885      | 0.0877      | 0.0877            | 0.0871     |
| 3     | —                | 56     | 0.0867                 | 0.0874             | 0.0845   | 0.0858   | 0.0874                      | 0.0854      | 0.0859  | 0.0874                       | 0.0902      | 0.0895      | 0.0894            | 0.0889     |
| 4     | 40               | —      | 0.0950                 | 0.0958             | 0.0925   | 0.0939   | 0.0958                      | 0.0934      | 0.0941  | 0.0958                       | 0.0991      | 0.0982      | 0.0982            | 0.0975     |
| 4     | —                | 48     | 0.0978                 | 0.0985             | 0.0954   | 0.0967   | 0.0985                      | 0.0963      | 0.0969  | 0.0985                       | 0.1016      | 0.1008      | 0.1007            | 0.1001     |
| 5     | 40               | —      | 0.1080                 | 0.1088             | 0.1054   | 0.1069   | 0.1088                      | 0.1064      | 0.1071  | 0.1088                       | 0.1121      | 0.1113      | 0.1112            | 0.1105     |
| 5     | —                | 44     | 0.1095                 | 0.1102             | 0.1070   | 0.1083   | 0.1102                      | 0.1079      | 0.1086  | 0.1102                       | 0.1134      | 0.1126      | 0.1125            | 0.1118     |
| 6     | 32               | —      | 0.1169                 | 0.1177             | 0.1141   | 0.1156   | 0.1177                      | 0.1150      | 0.1158  | 0.1177                       | 0.1214      | 0.1204      | 0.1204            | 0.1196     |
| 6     | —                | 40     | 0.1210                 | 0.1218             | 0.1184   | 0.1198   | 0.1218                      | 0.1194      | 0.1201  | 0.1218                       | 0.1252      | 0.1243      | 0.1242            | 0.1235     |
| 8     | 32               | —      | 0.1428                 | 0.1437             | 0.1399   | 0.1415   | 0.1437                      | 0.141       | 0.1418  | 0.1437                       | 0.1475      | 0.1465      | 0.1464            | 0.1456     |
| 8     | —                | 36     | 0.1452                 | 0.1460             | 0.1424   | 0.1439   | 0.1460                      | 0.1435      | 0.1442  | 0.1460                       | 0.1496      | 0.1487      | 0.1485            | 0.1478     |
| 10    | 24               | —      | 0.1619                 | 0.1629             | 0.1586   | 0.1604   | 0.1629                      | 0.1596      | 0.1605  | 0.1629                       | 0.1672      | 0.1661      | 0.1662            | 0.1653     |
| 10    | —                | 32     | 0.1688                 | 0.1697             | 0.1658   | 0.1674   | 0.1697                      | 0.1670      | 0.1678  | 0.1697                       | 0.1736      | 0.1726      | 0.1724            | 0.1716     |
| 12    | 24               | —      | 0.1879                 | 0.1889             | 0.1845   | 0.1863   | 0.1889                      | 0.1856      | 0.1865  | 0.1889                       | 0.1933      | 0.1922      | 0.1922            | 0.1913     |
| 12    | —                | 28     | 0.1918                 | 0.1928             | 0.1886   | 0.1904   | 0.1928                      | 0.1897      | 0.1906  | 0.1928                       | 0.1970      | 0.1959      | 0.1959            | 0.1950     |
| 1/4   | 20               | —      | 0.2164                 | 0.2175             | 0.2127   | 0.2147   | 0.2175                      | 0.2139      | 0.2149  | 0.2175                       | 0.2224      | 0.2211      | 0.2211            | 0.2201     |
| 1/4   | —                | 28     | 0.2258                 | 0.2268             | 0.2225   | 0.2243   | 0.2268                      | 0.2237      | 0.2246  | 0.2268                       | 0.2311      | 0.2300      | 0.2299            | 0.2290     |
| 5/16  | 18               | —      | 0.2752                 | 0.2764             | 0.2712   | 0.2734   | 0.2764                      | 0.2723      | 0.2734  | 0.2764                       | 0.2817      | 0.2803      | 0.2805            | 0.2794     |
| 5/16  | —                | 24     | 0.2843                 | 0.2854             | 0.2806   | 0.2827   | 0.2854                      | 0.2821      | 0.2830  | 0.2854                       | 0.2902      | 0.2890      | 0.2887            | 0.2878     |
| 3/8   | 16               | —      | 0.3331                 | 0.3344             | 0.3287   | 0.3311   | 0.3344                      | 0.3299      | 0.3312  | 0.3344                       | 0.3401      | 0.3387      | 0.3389            | 0.3376     |
| 3/8   | —                | 24     | 0.3468                 | 0.3479             | 0.3430   | 0.3450   | 0.3479                      | 0.3446      | 0.3455  | 0.3479                       | 0.3528      | 0.3516      | 0.3512            | 0.3503     |
| 7/16  | 14               | —      | 0.3897                 | 0.3911             | 0.3850   | 0.3876   | 0.3911                      | 0.3862      | 0.3875  | 0.3911                       | 0.3972      | 0.3957      | 0.3960            | 0.3947     |
| 7/16  | —                | 20     | 0.4037                 | 0.4050             | 0.3995   | 0.4019   | 0.4050                      | 0.4014      | 0.4024  | 0.4050                       | 0.4104      | 0.4091      | 0.4086            | 0.4076     |
| 1/2   | 13               | —      | 0.4485                 | 0.4500             | 0.4435   | 0.4463   | 0.4500                      | 0.4448      | 0.4463  | 0.4500                       | 0.4565      | 0.4548      | 0.4552            | 0.4537     |
| 1/2   | —                | 20     | 0.4662                 | 0.4675             | 0.4619   | 0.4643   | 0.4675                      | 0.4639      | 0.4649  | 0.4675                       | 0.4731      | 0.4717      | 0.4711            | 0.4701     |
| 9/16  | 12               | —      | 0.5068                 | 0.5084             | 0.5016   | 0.5045   | 0.5084                      | 0.5028      | 0.5044  | 0.5084                       | 0.5152      | 0.5135      | 0.514             | 0.5124     |
| 9/16  | —                | 18     | 0.5250                 | 0.5264             | 0.5205   | 0.523    | 0.5264                      | 0.5223      | 0.5234  | 0.5264                       | 0.5323      | 0.5308      | 0.5305            | 0.5294     |
| 5/8   | 11               | —      | 0.5644                 | 0.5660             | 0.5589   | 0.5619   | 0.5660                      | 0.5601      | 0.5618  | 0.5660                       | 0.5732      | 0.5714      | 0.5719            | 0.5702     |
| 5/8   | —                | 18     | 0.5875                 | 0.5889             | 0.5828   | 0.5854   | 0.5889                      | 0.5848      | 0.5859  | 0.5889                       | 0.5949      | 0.5934      | 0.5930            | 0.5919     |
| 3/4   | 10               | —      | 0.6832                 | 0.6850             | 0.6773   | 0.6806   | 0.6850                      | 0.6786      | 0.6805  | 0.6850                       | 0.6927      | 0.6907      | 0.6914            | 0.6985     |
| 3/4   | —                | 16     | 0.7079                 | 0.7094             | 0.7029   | 0.7056   | 0.7094                      | 0.7049      | 0.7062  | 0.7094                       | 0.7159      | 0.7143      | 0.7139            | 0.7126     |
| 7/8   | 9                | —      | 0.8009                 | 0.8028             | 0.7946   | 0.7981   | 0.8028                      | 0.7958      | 0.7979  | 0.8028                       | 0.811       | 0.8089      | 0.8098            | 0.8077     |
| 7/8   | —                | 14     | 0.8270                 | 0.8286             | 0.8216   | 0.8245   | 0.8286                      | 0.8237      | 0.8250  | 0.8286                       | 0.8356      | 0.8339      | 0.8335            | 0.8322     |
| 1     | 8                | —      | 0.9168                 | 0.9188             | 0.9100   | 0.9137   | 0.9188                      | 0.9112      | 0.9134  | 0.9188                       | 0.9276      | 0.9254      | 0.9264            | 0.9242     |
| 1     | —                | 12     | 0.9441                 | 0.9459             | 0.9382   | 0.9415   | 0.9459                      | 0.9403      | 0.9419  | 0.9459                       | 0.9535      | 0.9516      | 0.9515            | 0.9499     |
| 1     | —                | 14NS   | 0.9519                 | 0.9536             | 0.9463   | 0.9494   | 0.9536                      | 0.9487      | 0.9500  | 0.9536                       | 0.9609      | 0.9590      | 0.9585            | 0.9572     |
| 1-1/8 | 7                | —      | 1.0300                 | 1.0322             | 1.0228   | 1.0268   | 1.0322                      | 1.0237      | 1.0263  | 1.0322                       | 1.0416      | 1.0393      | 1.0407            | 1.0381     |
| 1-1/8 | —                | 12     | 1.0691                 | 1.0709             | 1.0631   | 1.0664   | 1.0709                      | 1.0653      | 1.0669  | 1.0709                       | 1.0787      | 1.0768      | 1.0765            | 1.0749     |
| 1-1/4 | 7                | —      | 1.1550                 | 1.1572             | 1.1476   | 1.1517   | 1.1572                      | 1.1487      | 1.1513  | 1.1572                       | 1.1668      | 1.1644      | 1.1657            | 1.1631     |
| 1-1/4 | —                | 12     | 1.1941                 | 1.1959             | 1.1879   | 1.1913   | 1.1959                      | 1.1903      | 1.1919  | 1.1959                       | 1.2039      | 1.2019      | 1.2015            | 1.1999     |
| 1-3/8 | 6                | —      | 1.2643                 | 1.2667             | 1.2563   | 1.2607   | 1.2667                      | 1.2566      | 1.2596  | 1.2667                       | 1.2771      | 1.2745      | 1.2768            | 1.2738     |
| 1-3/8 | —                | 12     | 1.3190                 | 1.33209            | 1.3127   | 1.3162   | 1.3209                      | 1.3153      | 1.3169  | 1.3209                       | 1.3291      | 1.3270      | 1.3265            | 1.3249     |
| 1-1/2 | 6                | —      | 1.3893                 | 1.3917             | 1.3812   | 1.3856   | 1.3917                      | 1.3816      | 1.3846  | 1.3917                       | 1.4022      | 1.3996      | 1.4018            | 1.3988     |
| 1-1/2 | —                | 12     | 1.4440                 | 1.4459             | 1.4376   | 1.4411   | 1.4459                      | 1.4403      | 1.4419  | 1.4459                       | 1.4542      | 1.4522      | 1.4515            | 1.4499     |

**Table 327—FRACTIONAL SIZE TAPS—GROUND THREAD  
UNIFIED AND AMERICAN NATIONAL FORM**

| Tap Size Inches | Threads Per Inch |         |    | Major Diameter |        |        | Basic Pitch Diam. | Pitch Diameter Limits |        |          |        |          |        |          |        |          |        |          |      |
|-----------------|------------------|---------|----|----------------|--------|--------|-------------------|-----------------------|--------|----------|--------|----------|--------|----------|--------|----------|--------|----------|------|
|                 | NC UNC           | UNF UNF | NS | 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               | —       | —  | 0.2500         | 0.2533 | 0.2565 | 0.2175            | 0.2175                | 0.2180 | 0.2180   | 0.2185 | 0.2190   |        |          | 0.2195 | 0.2200   |        |          |      |
| 1/4             | —                | 28      | —  | 0.2500         | 0.2523 | 0.2546 | 0.2268            | 0.2268                | 0.2273 | 0.2273   | 0.2278 | 0.2283   | 0.2283 | 0.2288   |        |          |        |          |      |
| 5/16            | 18               | —       | —  | 0.3125         | 0.3161 | 0.3197 | 0.2764            | 0.2764                | 0.2769 | 0.2769   | 0.2774 | 0.2774   | 0.2779 |          | 0.2784 | 0.2789   |        |          |      |
| 5/16            | —                | 24      | —  | 0.3125         | 0.3152 | 0.3179 | 0.2854            | 0.2854                | 0.2859 | 0.2859   | 0.2864 | 0.2864   | 0.2869 | 0.2869   | 0.2874 |          |        |          |      |
| 3/8             | 16               | —       | —  | 0.3750         | 0.3790 | 0.3831 | 0.3344            | 0.3344                | 0.3349 | 0.3349   | 0.3354 | 0.3354   | 0.3359 |          | 0.3364 | 0.3369   |        |          |      |
| 3/8             | —                | 24      | —  | 0.3750         | 0.3777 | 0.3804 | 0.3479            | 0.3479                | 0.3484 | 0.3484   | 0.3489 | 0.3489   | 0.3494 | 0.3494   | 0.3499 |          |        |          |      |
| 7/16            | 14               | —       | —  | 0.4375         | 0.4422 | 0.4468 | 0.3911            | 0.3911                | 0.3916 | 0.3916   | 0.3921 | 0.3921   | 0.3926 |          | 0.3931 | 0.3936   |        |          |      |
| 7/16            | —                | 20      | —  | 0.4375         | 0.4408 | 0.4440 | 0.4050            | 0.4050                | 0.4055 | 0.4055   | 0.4060 | 0.4060   | 0.4065 |          | 0.4070 | 0.4075   |        |          |      |
| 1/2             | 13               | —       | —  | 0.5000         | 0.5050 | 0.5100 | 0.4500            | 0.4500                | 0.4505 | 0.4505   | 0.4510 | 0.4510   | 0.4515 |          | 0.4520 | 0.4525   |        |          |      |
| 1/2             | —                | 20      | —  | 0.5000         | 0.5033 | 0.5065 | 0.4675            | 0.4675                | 0.4680 | 0.4680   | 0.4685 | 0.4685   | 0.4690 |          | 0.4695 | 0.4700   |        |          |      |
| 9/16            | 12               | —       | —  | 0.5625         | 0.5679 | 0.5733 | 0.5084            | 0.5084                | 0.5089 | 0.5089   | 0.5094 | 0.5094   | 0.5099 |          | 0.5104 | 0.5109   |        |          |      |
| 9/16            | —                | 18      | —  | 0.5625         | 0.5661 | 0.5697 | 0.5264            | 0.5264                | 0.5269 | 0.5269   | 0.5274 | 0.5274   | 0.5279 |          | 0.5284 | 0.5289   |        |          |      |
| 5/8             | 11               | —       | —  | 0.6250         | 0.6309 | 0.6368 | 0.5660            | 0.5660                | 0.5665 | 0.5665   | 0.5670 | 0.5670   | 0.5675 |          | 0.5680 | 0.5685   |        |          |      |
| 5/8             | —                | 18      | —  | 0.6250         | 0.6286 | 0.6322 | 0.5889            | 0.5889                | 0.5894 | 0.5894   | 0.5899 | 0.5899   | 0.5904 |          | 0.5909 | 0.5914   |        |          |      |
| 11/16           | —                | —       | 11 | 0.6875         | 0.6934 | 0.6993 | 0.6285            |                       |        |          |        | 0.6295   | 0.6300 |          |        |          |        |          |      |
| 11/16           | —                | —       | 16 | 0.6875         | 0.6915 | 0.6956 | 0.6469            |                       |        |          |        | 0.6479   | 0.6484 |          |        |          |        |          |      |
| 3/4             | 10               | —       | —  | 0.7500         | 0.7565 | 0.7630 | 0.6850            | 0.6850                | 0.6855 | 0.6855   | 0.6860 | 0.6860   | 0.6865 |          | 0.8048 | 0.6870   | 0.6875 |          |      |
| 3/4             | —                | 16      | —  | 0.7500         | 0.7540 | 0.7581 | 0.7094            | 0.7094                | 0.7099 | 0.7099   | 0.7104 | 0.7104   | 0.7109 |          | 0.8306 | 0.7114   | 0.7119 |          |      |
| 7/8             | 9                | —       | —  | 0.8750         | 0.8822 | 0.8894 | 0.8028            | 0.8028                | 0.8033 | 0.8033   | 0.8038 |          |        | 0.8043   | 0.9208 |          |        | 0.8053   |      |
| 7/8             | —                | 14      | —  | 0.8750         | 0.8797 | 0.8843 | 0.8286            | 0.8286                | 0.8291 | 0.8291   | 0.8296 |          |        | 0.8301   | 0.9479 |          |        | 0.8311   |      |
| 1               | 8                | —       | —  | 1.0000         | 1.0081 | 1.0162 | 0.9188            | 0.9188                | 0.9193 | 0.9193   | 0.9198 |          |        | 0.9203   | 0.9556 |          |        | 0.9213   |      |
| 1               | —                | 12      | —  | 1.0000         | 1.0054 | 1.0108 | 0.9459            |                       |        |          |        |          |        | 0.9474   | 1.0342 |          |        |          |      |
| 1               | —                | —       | 14 | 1.0000         | 1.0047 | 1.0093 | 0.9536            |                       |        | .9541    | .9546  |          |        | 0.9551   | 1.0729 |          |        | 0.9561   |      |
| 1 1/8           | 7                | —       | —  | 1.1250         | 1.1343 | 1.1436 | 1.0322            |                       |        |          |        |          |        | 1.0332   | 1.1592 |          |        |          |      |
| 1 1/8           | —                | 12      | —  | 1.1250         | 1.1304 | 1.1358 | 1.0709            |                       |        |          |        |          |        | 1.0719   | 1.1979 |          |        |          |      |
| 1 1/4           | 7                | —       | —  | 1.2500         | 1.2593 | 1.2686 | 1.1572            |                       |        |          |        |          |        | 1.1582   | 1.2687 |          |        |          |      |
| 1 1/4           | —                | 12      | —  | 1.2500         | 1.2554 | 1.2608 | 1.1959            |                       |        |          |        |          |        | 1.1969   | 1.3229 |          |        |          |      |
| 1 3/8           | 6                | —       | —  | 1.3750         | 1.3859 | 1.3967 | 1.2667            |                       |        |          |        |          |        | 1.2677   | 1.3937 |          |        |          |      |
| 1 3/8           | —                | 12      | —  | 1.3750         | 1.3804 | 1.3858 | 1.3209            |                       |        |          |        |          |        | 1.3219   | 1.4479 |          |        |          |      |
| 1 1/2           | 6                | —       | —  | 1.5000         | 1.5109 | 1.5217 | 1.3917            |                       |        |          |        |          |        | 1.3927   |        |          |        |          |      |
| 1 1/2           | —                | 12      | —  | 1.5000         | 1.5054 | 1.5108 | 1.4459            |                       |        |          |        |          |        | 1.4469   |        |          |        |          |      |

**Table 329—MACHINE SCREW TAPS—GROUND THREAD  
UNIFIED AND AMERICAN NATIONAL FORM**

| Tap Size<br>Inches | Threads<br>Per Inch |           |    | Major Diameter |        |        | Basic<br>Pitch<br>Diam. | Pitch Diameter Limits |        |          |        |          |        |           |        |
|--------------------|---------------------|-----------|----|----------------|--------|--------|-------------------------|-----------------------|--------|----------|--------|----------|--------|-----------|--------|
|                    | NC<br>UNC           | NF<br>UNF | NS | Basic          | Min.   | Max.   |                         | H1 Limit              |        | H2 Limit |        | H3 Limit |        | H7 Limit* |        |
|                    |                     |           |    |                |        |        |                         | Min.                  | Max.   | Min.     | Max.   | Min.     | Max.   | Min.      | Max.   |
| 0                  | —                   | 80        | —  | 0.0600         | 0.0605 | 0.0616 | 0.0519                  | 0.0519                | 0.0524 | 0.0524   | 0.0529 |          |        |           |        |
| 1                  | 64                  | —         | —  | 0.0730         | 0.0736 | 0.0750 | 0.0629                  | 0.0629                | 0.0634 | 0.0634   | 0.0639 |          |        |           |        |
| 1                  | —                   | 72        | —  | 0.0730         | 0.0736 | 0.0748 | 0.0640                  | 0.0640                | 0.0645 | 0.0645   | 0.0650 |          |        |           |        |
| 2                  | 56                  | —         | —  | 0.0860         | 0.0867 | 0.0883 | 0.0744                  | 0.0744                | 0.0749 | 0.0749   | 0.0754 |          |        |           |        |
| 2                  | —                   | 64        | —  | 0.0860         | 0.0866 | 0.0880 | 0.0759                  | 0.0759                | 0.0764 | 0.0764   | 0.0769 |          |        |           |        |
| 3                  | 48                  | —         | —  | 0.0990         | 0.0999 | 0.1017 | 0.0855                  | 0.0855                | 0.0860 | 0.0860   | 0.0865 |          |        |           |        |
| 3                  | —                   | 56        | —  | 0.0990         | 0.0997 | 0.1013 | 0.0874                  | 0.0874                | 0.0879 | 0.0879   | 0.0884 |          |        |           |        |
| 4                  | —                   | —         | 36 | 0.1120         | 0.1135 | 0.1156 | 0.0940                  |                       |        | 0.0945   | 0.0950 |          |        |           |        |
| 4                  | 40                  | —         | —  | 0.1120         | 0.1133 | 0.1152 | 0.0958                  | 0.0958                | 0.0963 | 0.0963   | 0.0968 |          |        |           |        |
| 4                  | —                   | 48        | —  | 0.1120         | 0.1129 | 0.1147 | 0.0985                  | 0.0985                | 0.0990 | 0.0990   | 0.0995 |          |        |           |        |
| 5                  | 40                  | —         | —  | 0.1250         | 0.1263 | 0.1282 | 0.1088                  | 0.1088                | 0.1093 | 0.1093   | 0.1098 |          |        |           |        |
| 5                  | —                   | 44        | —  | 0.1250         | 0.1263 | 0.1280 | 0.1102                  |                       |        | 0.1107   | 0.1112 |          |        |           |        |
| 6                  | 32                  | —         | —  | 0.1380         | 0.1401 | 0.1421 | 0.1177                  | 0.1177                | 0.1182 | 0.1182   | 0.1187 | 0.1187   | 0.1192 | 0.1207    | 0.1212 |
| 6                  | —                   | 40        | —  | 0.1380         | 0.1393 | 0.1412 | 0.1218                  | 0.1218                | 0.1223 | 0.1223   | 0.1228 |          |        |           |        |
| 8                  | 32                  | —         | —  | 0.1640         | 0.1661 | 0.1681 | 0.1437                  | 0.1437                | 0.1442 | 0.1442   | 0.1447 | 0.1447   | 0.1452 | 0.1467    | 0.1472 |
| 8                  | —                   | 36        | —  | 0.1640         | 0.1655 | 0.1676 | 0.1460                  | 0.1460                | 0.1465 | 0.1465   | 0.1470 |          |        |           |        |
| 10                 | 24                  | —         | —  | 0.1900         | 0.1927 | 0.1954 | 0.1629                  | 0.1629                | 0.1634 | 0.1634   | 0.1639 | 0.1639   | 0.1644 | 0.1659    | 0.1664 |
| 10                 | —                   | 32        | —  | 0.1900         | 0.1921 | 0.1941 | 0.1697                  | 0.1697                | 0.1702 | 0.1702   | 0.1707 | 0.1707   | 0.1712 | 0.1727    | 0.1732 |
| 12                 | 24                  | —         | —  | 0.2160         | 0.2187 | 0.2214 | 0.1889                  | 0.1889                | 0.1894 |          |        | 0.1899   | 0.1904 |           |        |
| 12                 | —                   | 28        | —  | 0.2160         | 0.2183 | 0.2206 | 0.1928                  | 0.1928                | 0.1933 |          |        | 0.1938   | 0.1943 |           |        |

\*Major diameter for H7 Limit Taps is .002" larger than values shown in minimum and maximum columns.

## LEAD TOLERANCE

A maximum lead deviation of plus or minus 0.0005" within any two threads not farther apart than one inch is permitted.

## ANGLE TOLERANCE

6 to 9 threads per inch incl. = 25° plus or minus in 1/2 angle.

10 to 80 threads per inch incl., = 30° plus or minus in 1/2 angle.

## FORMULA

Maximum major diameter = Basic plus A. Minimum major diameter = Maximum minus B. For values of A and B see table 331, page 275.

## PITCH DIAMETER LIMITS FOR TAPS THROUGH 1" DIAMETER

H1 Limit = Basic to basic plus 0.0005".

H2 Limit = Basic plus 0.0005" to basic plus 0.0001".

H3 Limit = Basic plus 0.001" to basic plus 0.0015".

H4 Limit = Basic plus 0.0015" to basic plus 0.002".

H5 Limit = Basic plus 0.002" to basic plus 0.0025".

H6 Limit = Basic plus 0.0025" to basic plus 0.003".

## PITCH DIAMETER LIMITS FOR TAPS OVER 1" DIAMETER THROUGH 1-1/2" DIAMETER

H4 Limit = Basic plus 0.001" to basic plus 0.002".



# Taps: Thread Limits, Tolerances, Formulas

## Ref. MCTI TABLE 331

The following tables and formula are used in determining the limits and tolerances for ground thread taps having a thread lead angle not in excess of 5°, unless otherwise specified.

### LEAD TOLERANCE

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

### ANGLE TOLERANCE

| Threads Per Inch | Deviation in Half Angle |
|------------------|-------------------------|
| 4 to 5-1/2 incl. | 20' Plus or Minus       |
| 6 to 9 incl.     | 25' Plus or Minus       |
| 10 to 80 incl.   | 30' Plus or Minus       |

### FORMULA

Max. Major Dia. = Basic plus A

Max. Pitch Dia. = Min. plus D

Min. Major Dia. = Max. minus B

Min. Pitch Dia. = Basic plus C

In the above formula:

A = Constant to add = 0.130P for all Pitches

B = Major Diameter Tolerance = 0.087P for 48 Through 80 TPI  
 = 0.076P for 36 Through 47 TPI  
 = 0.065P for 4 Through 35 TPI

C = Amount over basic for minimum pitch diameter

D = Pitch diameter tolerance

Note: When the tap major diameter must be determined from a specified tap pitch diameter, the maximum major diameter equals the minimum specified pitch diameter minus Constant C, plus 0.64952P, plus Constant A.

| Threads Per Inch | A      | B      | C             |                           |             | D           |                         |                             |             |
|------------------|--------|--------|---------------|---------------------------|-------------|-------------|-------------------------|-----------------------------|-------------|
|                  |        |        | To 5/8" Incl. | Over 5/8" to 2 1/2" Incl. | Over 2 1/2" | To 1" Incl. | Over 1" to 1 1/2" Incl. | Over 1 1/2" to 2 1/2" Incl. | Over 2 1/2" |
| 80               | 0.0016 | 0.0011 | 0.0005        | 0.0010                    | 0.0015      | 0.0005      | 0.0010                  | 0.0010                      | 0.0015      |
| 72               | 0.0018 | 0.0012 | 0.0005        | 0.0010                    | 0.0015      | 0.0005      | 0.0010                  | 0.0010                      | 0.0015      |
| 64               | 0.0020 | 0.0014 | 0.0005        | 0.0010                    | 0.0015      | 0.0005      | 0.0010                  | 0.0010                      | 0.0015      |
| 56               | 0.0023 | 0.0016 | 0.0005        | 0.0010                    | 0.0015      | 0.0005      | 0.0010                  | 0.0010                      | 0.0015      |
| 48               | 0.0027 | 0.0018 | 0.0005        | 0.0010                    | 0.0015      | 0.0005      | 0.0010                  | 0.0010                      | 0.0015      |
| 44               | 0.0030 | 0.0017 | 0.0005        | 0.0010                    | 0.0015      | 0.0005      | 0.0010                  | 0.0010                      | 0.0015      |
| 40               | 0.0032 | 0.0019 | 0.0005        | 0.0010                    | 0.0015      | 0.0005      | 0.0010                  | 0.0010                      | 0.0015      |
| 36               | 0.0036 | 0.0021 | 0.0005        | 0.0010                    | 0.0015      | 0.0005      | 0.0010                  | 0.0010                      | 0.0015      |
| 32               | 0.0041 | 0.0020 | 0.0010        | 0.0010                    | 0.0015      | 0.0005      | 0.0010                  | 0.0010                      | 0.0015      |
| 28               | 0.0046 | 0.0023 | 0.0010        | 0.0010                    | 0.0015      | 0.0005      | 0.0010                  | 0.0010                      | 0.0015      |
| 24               | 0.0054 | 0.0027 | 0.0010        | 0.0010                    | 0.0015      | 0.0005      | 0.0010                  | 0.0015                      | 0.0015      |
| 20               | 0.0065 | 0.0032 | 0.0010        | 0.0010                    | 0.0015      | 0.0005      | 0.0010                  | 0.0015                      | 0.0015      |
| 18               | 0.0072 | 0.0036 | 0.0010        | 0.0010                    | 0.0015      | 0.0005      | 0.0010                  | 0.0015                      | 0.0015      |
| 16               | 0.0081 | 0.0041 | 0.0010        | 0.0010                    | 0.0015      | 0.0005      | 0.0010                  | 0.0015                      | 0.0020      |
| 14               | 0.0093 | 0.0046 | 0.0010        | 0.0015                    | 0.0015      | 0.0005      | 0.0010                  | 0.0015                      | 0.0020      |
| 13               | 0.0100 | 0.0050 | 0.0010        | 0.0015                    | 0.0015      | 0.0005      | 0.0010                  | 0.0015                      | 0.0020      |
| 12               | 0.0108 | 0.0054 | 0.0010        | 0.0015                    | 0.0015      | 0.0005      | 0.0010                  | 0.0015                      | 0.0020      |
| 11               | 0.0118 | 0.0059 | 0.0010        | 0.0015                    | 0.0020      | 0.0005      | 0.0010                  | 0.0015                      | 0.0020      |
| 10               | 0.0130 | 0.0065 |               | 0.0015                    | 0.0020      | 0.0005      | 0.0010                  | 0.0015                      | 0.0020      |
| 9                | 0.0144 | 0.0072 |               | 0.0015                    | 0.0020      | 0.0005      | 0.0010                  | 0.0015                      | 0.0020      |
| 8                | 0.0162 | 0.0081 |               | 0.0015                    | 0.0020      | 0.0005      | 0.0010                  | 0.0015                      | 0.0020      |
| 7                | 0.0186 | 0.0093 |               | 0.0015                    | 0.0020      | 0.0010      | 0.0010                  | 0.0020                      | 0.0025      |
| 6                | 0.0217 | 0.0108 |               | 0.0015                    | 0.0020      | 0.0010      | 0.0010                  | 0.0020                      | 0.0025      |
| 5 1/2            | 0.0236 | 0.0118 |               | 0.0015                    | 0.0020      | 0.0010      | 0.0015                  | 0.0020                      | 0.0025      |
| 5                | 0.0260 | 0.0130 |               | 0.0015                    | 0.0020      | 0.0010      | 0.0015                  | 0.0020                      | 0.0025      |
| 4 1/2            | 0.0289 | 0.0144 |               | 0.0015                    | 0.0020      | 0.0010      | 0.0015                  | 0.0020                      | 0.0025      |
| 4                | 0.0325 | 0.0162 |               | 0.0015                    | 0.0020      | 0.0010      | 0.0015                  | 0.0020                      | 0.0025      |

For intermediate pitches use values for next coarser pitch for C7D, but use formulas for A&B.

**Table 337-STANDARD METRIC TAPS-GROUND THREAD**

| Nom-inal Size | Pitch | Major Diameter Inches |        |        | Standard Pitch Diameter Limits Inches |           |        |           |        |           |        |           |        |           |        |           |        |           |        |
|---------------|-------|-----------------------|--------|--------|---------------------------------------|-----------|--------|-----------|--------|-----------|--------|-----------|--------|-----------|--------|-----------|--------|-----------|--------|
|               |       | Basic                 | Min.   | Max.   | Basic Pitch Diam.                     | D3 Limits |        | D4 Limits |        | D5 Limits |        | D6 Limits |        | D7 Limits |        | D8 Limits |        | D9 Limits |        |
|               |       |                       |        |        |                                       | Min.      | Max.   | Min.      | Max.   | Min.      | Max.   | Min.      | Max.   | Min.      | Max.   | Min.      | Max.   | Min.      | Max.   |
| 1.6           | 0.35  | 0.062992              | 0.0641 | 0.0651 | 0.054042                              | 0.0550    | 0.0556 |           |        |           |        |           |        |           |        |           |        |           |        |
| 2.0           | 0.4   | 0.078740              | 0.0801 | 0.0811 | 0.068511                              | 0.0695    | 0.0701 |           |        |           |        |           |        |           |        |           |        |           |        |
| 2.5           | 0.45  | 0.098425              | 0.0999 | 0.1009 | 0.086918                              | 0.0879    | 0.0885 |           |        |           |        |           |        |           |        |           |        |           |        |
| 3.0           | 0.5   | 0.118110              | 0.1198 | 0.1208 | 0.105324                              | 0.1063    | 0.1069 |           |        |           |        |           |        |           |        |           |        |           |        |
| 3.5           | 0.6   | 0.137795              | 0.1397 | 0.1407 | 0.122452                              |           |        | 0.1237    | 0.1245 |           |        |           |        |           |        |           |        |           |        |
| 4.0           | 0.7   | 0.157480              | 0.1597 | 0.1613 | 0.139580                              |           |        | 0.1408    | 0.1416 |           |        |           |        |           |        |           |        |           |        |
| 5.0           | 0.8   | 0.196850              | 0.1994 | 0.2010 | 0.176393                              |           |        | 0.1776    | 0.1784 |           |        |           |        |           |        |           |        |           |        |
| 6.0           | 1.0   | 0.236220              | 0.2395 | 0.2411 | 0.210648                              |           |        |           |        | 0.2122    | 0.2132 |           |        |           |        |           |        |           |        |
| 8.0           | 1.25  | 0.314960              | 0.3189 | 0.3214 | 0.282995                              |           |        |           |        | 0.2843    | 0.2855 |           |        |           |        |           |        |           |        |
| 10            | 1.5   | 0.393700              | 0.3985 | 0.4010 | 0.355343                              |           |        |           |        |           |        | 0.3572    | 0.3584 |           |        |           |        |           |        |
| 12            | 1.75  | 0.472440              | 0.4780 | 0.4805 | 0.427690                              |           |        |           |        |           |        | 0.4295    | 0.4307 |           |        |           |        |           |        |
| 14            | 2.0   | 0.551180              | 0.5575 | 0.5600 | 0.500037                              |           |        |           |        |           |        |           |        | 0.5020    | 0.5036 |           |        |           |        |
| 16            | 2.0   | 0.629920              | 0.6363 | 0.6388 | 0.578777                              |           |        |           |        |           |        |           |        | 0.5807    | 0.5823 |           |        |           |        |
| 20            | 2.5   | 0.787400              | 0.7954 | 0.7979 | 0.723471                              |           |        |           |        |           |        |           |        | 0.7254    | 0.7270 |           |        |           |        |
| 24            | 3.0   | 0.944880              | 0.9544 | 0.9583 | 0.868165                              |           |        |           |        |           |        |           |        |           |        | 0.8706    | 0.8722 | 1.0942    | 1.0962 |
| 30            | 3.5   | 1.181100              | 1.1922 | 1.1961 | 1.091599                              |           |        |           |        |           |        |           |        |           |        |           |        | 1.3176    | 1.3196 |
| 36            | 4.0   | 1.417320              | 1.4300 | 1.4339 | 1.315034                              |           |        |           |        |           |        |           |        |           |        |           |        |           |        |

## LEAD TOLERANCE

A maximum lead deviation of  $\pm 0.013$  mm within any two threads not farther apart than 25 mm is permitted.

## ANGLE TOLERANCE

Pitch (mm)  
Over 0.25 to 2.5 Incl.  
Over 2.5 to 4 Incl.  
Over 4 to 6 Incl.

Deviation in Half Angle  
30' Plus or Minus  
25' Plus or Minus  
20" Plus or Minus

## FORMULA

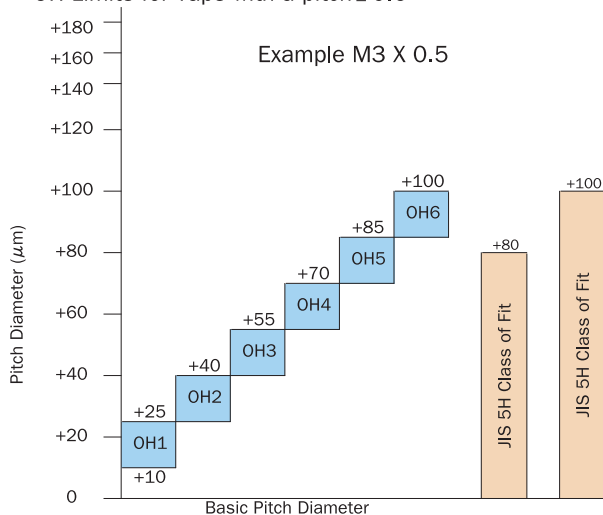
Min. Major Dia. = Basic Plus W  
Max. Major Dia. = Min. Plus X  
For Values of W, Y & Z, See Table 341

Max. Pitch Dia. = Basic Plus Y  
Min. Pitch Dia. = Max. Minus Z

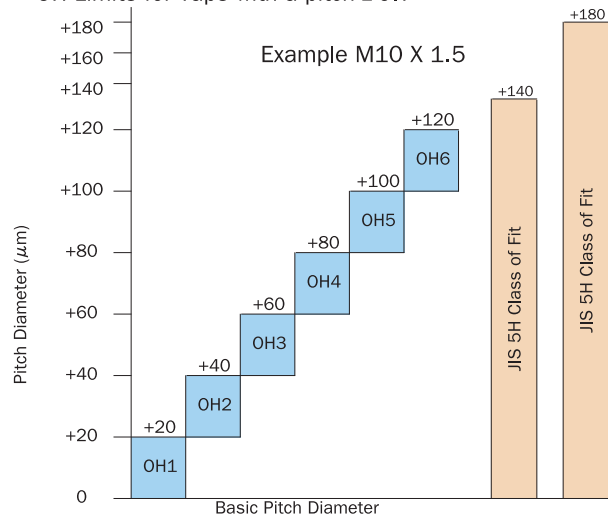
In all cases, the tap major and pitch diameter inch conversions have been rounded upwards to the next ten thousandth of an inch. Basic values agree with B1 Report—ISO Metric Screw Threads, Table 9B.

## OH Tap Limits

OH Limits for Taps with a pitch  $\leq 0.6$



OH Limits for Taps with a pitch  $\geq 0.7$



**TABLE 341 GROUND THREAD TAP LIMITS  
FOR STANDARD AND SPECIAL METRIC THREADS**

The following tables and formula 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.

## LEAD TOLERANCE

A maximum lead deviation of  $\pm 0.013$  mm within any two threads not farther apart than 25 mm is permitted.

## ANGLE TOLERANCE

|                        |                         |
|------------------------|-------------------------|
| Pitch (mm)             | Deviation in Half Angle |
| Over 0.25 to 2.5 incl. | 30' Plus or Minus       |
| Over 2.5 to 4. incl.   | 25' Plus or Minus       |
| Over 4 to 6 incl.      | 20' Plus or Minus       |

## FORMULA

|                               |                                |
|-------------------------------|--------------------------------|
| Min. Major Dia = Basic Plus W | Max. Pitch Dia. = Basic plus Y |
| Max. Major Dia. = Min. plus X | Min. Pitch Dia. = Max. minus Z |

W = Constant to add to Basic Major Diameter\*  
 X = Major Diameter Tolerance  
 Y = Amount over Basic for Maximum Pitch Diameter  
 Z = Pitch Diameter Tolerance

\*W = .080P Converted to inches

**NOTE:** When the tap major diameter must be determined from a specified tap pitch diameter, the minimum major diameter equals the maximum specified tap pitch diameter minus constant Y, plus the basic single height of thread, plus constant W.

| P<br>Pitch |                | Symmet-<br>rical<br>Thread<br>Height<br><br>0.64952<br>P Inches | Tap Limits for Metric Threads. Values are in inches |        |                             |                                    |                                   |             |                             |                                    |                                   |             |
|------------|----------------|-----------------------------------------------------------------|-----------------------------------------------------|--------|-----------------------------|------------------------------------|-----------------------------------|-------------|-----------------------------|------------------------------------|-----------------------------------|-------------|
|            |                |                                                                 | W                                                   | X      | Y                           |                                    |                                   |             | Z                           |                                    |                                   |             |
|            |                |                                                                 |                                                     |        | M1.6<br>To<br>M6.3<br>Incl. | Over<br>M6.3<br>To<br>M25<br>Incl. | Over<br>M25<br>To<br>M90<br>Incl. | Over<br>M90 | M1.6<br>To<br>M6.3<br>Incl. | Over<br>M6.3<br>To<br>M25<br>Incl. | Over<br>M25<br>To<br>M90<br>Incl. | Over<br>M90 |
| mm         | Inch<br>Equiv. |                                                                 |                                                     |        |                             |                                    |                                   |             |                             |                                    |                                   |             |
| 0.3        | 0.011811       | 0.007671                                                        | 0.0009                                              | 0.0010 | 0.0015                      | 0.0015                             | 0.0020                            | 0.0020      | 0.0006                      | 0.0006                             | 0.0008                            | 0.0008      |
| 0.35       | 0.013779       | 0.008950                                                        | 0.0011                                              | 0.0010 | 0.0015                      | 0.0015                             | 0.0020                            | 0.0020      | 0.0006                      | 0.0006                             | 0.0008                            | 0.0008      |
| 0.4        | 0.015748       | 0.010229                                                        | 0.0013                                              | 0.0010 | 0.0015                      | 0.0020                             | 0.0020                            | 0.0020      | 0.0006                      | 0.0006                             | 0.0008                            | 0.0010      |
| 0.45       | 0.017716       | 0.011507                                                        | 0.0014                                              | 0.0010 | 0.0015                      | 0.0020                             | 0.0020                            | 0.0020      | 0.0006                      | 0.0008                             | 0.0008                            | 0.0010      |
| 0.5        | 0.019685       | 0.012786                                                        | 0.0016                                              | 0.0010 | 0.0015                      | 0.0020                             | 0.0020                            | 0.0025      | 0.0006                      | 0.0008                             | 0.0010                            | 0.0010      |
| 0.6        | 0.236220       | 0.015343                                                        | 0.0019                                              | 0.0010 | 0.0020                      | 0.0020                             | 0.0025                            | 0.0025      | 0.0008                      | 0.0008                             | 0.0010                            | 0.0010      |
| 0.7        | 0.027559       | 0.017900                                                        | 0.0022                                              | 0.0016 | 0.0020                      | 0.0020                             | 0.0025                            | 0.0025      | 0.0008                      | 0.0008                             | 0.0010                            | 0.0010      |
| 0.75       | 0.029527       | 0.019178                                                        | 0.0024                                              | 0.0016 | 0.0020                      | 0.0025                             | 0.0025                            | 0.0030      | 0.0008                      | 0.0010                             | 0.0010                            | 0.0012      |
| 0.8        | 0.031496       | 0.020457                                                        | 0.0025                                              | 0.0016 | 0.0020                      | 0.0025                             | 0.0025                            | 0.0030      | 0.0008                      | 0.0010                             | 0.0010                            | 0.0012      |
| 0.9        | 0.035433       | 0.023014                                                        | 0.0028                                              | 0.0016 | 0.0020                      | 0.0025                             | 0.0025                            | 0.0030      | 0.0008                      | 0.0010                             | 0.0010                            | 0.0012      |
| 1.0        | 0.039370       | 0.025572                                                        | 0.0032                                              | 0.0016 | 0.0025                      | 0.0025                             | 0.0030                            | 0.0030      | 0.0010                      | 0.0010                             | 0.0012                            | 0.0012      |
| 1.25       | 0.049212       | 0.031964                                                        | 0.0039                                              | 0.0025 | 0.0025                      | 0.0025                             | 0.0030                            | 0.0035      | 0.0010                      | 0.0012                             | 0.0012                            | 0.0016      |
| 1.5        | 0.059055       | 0.038357                                                        | 0.0047                                              | 0.0025 | 0.0025                      | 0.0030                             | 0.0030                            | 0.0035      | 0.0010                      | 0.0012                             | 0.0012                            | 0.0016      |
| 1.75       | 0.068897       | 0.044750                                                        | 0.0055                                              | 0.0025 |                             | 0.0030                             | 0.0035                            | 0.0040      |                             | 0.0012                             | 0.0016                            | 0.0016      |
| 2.0        | 0.078740       | 0.051143                                                        | 0.0063                                              | 0.0025 |                             | 0.0035                             | 0.0035                            | 0.0040      |                             | 0.0016                             | 0.0016                            | 0.0016      |
| 2.5        | 0.098425       | 0.063929                                                        | 0.0079                                              | 0.0025 |                             | 0.0035                             | 0.0040                            | 0.0045      |                             | 0.0016                             | 0.0016                            | 0.0020      |
| 3.0        | 0.118110       | 0.076715                                                        | 0.0095                                              | 0.0039 |                             | 0.0040                             | 0.0040                            | 0.0050      |                             | 0.0016                             | 0.0020                            | 0.0020      |
| 3.5        | 0.137795       | 0.089501                                                        | 0.0110                                              | 0.0039 |                             | 0.0040                             | 0.0045                            | 0.0050      |                             | 0.0016                             | 0.0020                            | 0.0020      |
| 4.0        | 0.157480       | 0.102286                                                        | 0.0126                                              | 0.0039 |                             | 0.0040                             | 0.0045                            | 0.0055      |                             | 0.0020                             | 0.0020                            | 0.0025      |
| 4.5        | 0.177165       | 0.115072                                                        | 0.0142                                              | 0.0039 |                             |                                    | 0.0050                            | 0.0055      |                             | 0.0020                             | 0.0020                            | 0.0025      |
| 5.0        | 0.196850       | 0.127858                                                        | 0.0158                                              | 0.0039 |                             |                                    | 0.0050                            | 0.0060      |                             |                                    | 0.0025                            | 0.0025      |
| 5.5        | 0.216535       | 0.140644                                                        | 0.0173                                              | 0.0039 |                             |                                    | 0.0055                            | 0.0060      |                             |                                    | 0.0025                            | 0.0025      |
| 6.0        | 0.236220       | 0.153430                                                        | 0.0189                                              | 0.0039 |                             |                                    | 0.0055                            | 0.0060      |                             |                                    | 0.0025                            | 0.0025      |

For intermediate pitches use value for next coarser pitch. NOTE: Symmetrical Thread Height; Equivalent to the basic height, h, of the original American National Form.



## ISO TOLERANCE SYSTEM

The ISO Metric Screw Thread Tolerance System provides for tolerance grades and tolerance positions (allowances) for the pitch diameter and crest diameter

### TOLERANCE GRADES

A series of numbers, 3 through 9, were established as symbols, to reflect the size of the tolerance; the higher the number the larger the tolerance.

### TOLERANCE POSITIONS

They define the maximum-material limits of the pitch and crest diameters and indicate their relationship to the basic profile. For plating requirements and ease of assembly, a series of tolerance positions were established.

### FOR EXTERNAL THREADS

(lower case letter symbols)

Tolerance Position "e" has a large allowance. The upper limit is below basic by a large amount.

Tolerance Position "g" has a small allowance. The upper limit is below basic by a small amount.

Tolerance Position "h" has no allowance and the upper limit is basic.

### FOR INTERNAL THREADS

(capital letter symbols)

Tolerance Position "G" has a small allowance. The lower limit is above basic by a small amount.

Tolerance Position "H" has no allowance and the lower limit is basic.

### SELECTION OF TOLERANCE CLASSES

Two factors determine the selection of a suitable tolerance class:

1. Length of thread engagement (short, normal or long)
2. Quality requirement (fine, medium or coarse) See table below for preferred tolerance classes

## PREFERRED TOLERANCE CLASSES

| Quality Requirement                                   | External Thread (Bolts)                |        |       |                                        |        |       |                                     |        |       |                                        |        |      |                                     |  |  |
|-------------------------------------------------------|----------------------------------------|--------|-------|----------------------------------------|--------|-------|-------------------------------------|--------|-------|----------------------------------------|--------|------|-------------------------------------|--|--|
|                                                       | Tolerance Position e (large Allowance) |        |       | Tolerance Position g (Small Allowance) |        |       | Tolerance Position h (No Allowance) |        |       | Tolerance Position G (Small Allowance) |        |      | Tolerance Position H (No Allowance) |  |  |
|                                                       | Length of Thread Engagement            |        |       | Length of Thread Engagement            |        |       | Length of Thread Engagement         |        |       | Length of Thread Engagement            |        |      | Length of Thread Engagement         |  |  |
|                                                       | Short                                  | Normal | Long  | Short                                  | Normal | Long  | Short                               | Normal | Long  | Short                                  | Normal | Long | Short                               |  |  |
| <b>FINE</b><br>Close Fit Applications                 |                                        |        |       |                                        |        |       | 3h-4h                               | 4h     | 5h-4h |                                        |        |      | 4H                                  |  |  |
| <b>MEDIUM</b><br>General Purpose Applications         |                                        | 6e     | 7e-6e | 5g-6g                                  | 6g     | 7g-6g | 5h-6h                               | 6h     | 7h-6h | 5G                                     | 6G     | 7G   | 5H                                  |  |  |
| <b>COARSE</b><br>Difficult Manufacturing Applications |                                        |        |       |                                        | 8g     | 9g-8g |                                     |        |       |                                        | 7G     | 8G   |                                     |  |  |

NOTE: Tolerance Position "e" is not to be applied to pitches finer than 0.5 mm. Tolerance classes 6g and 6H are for commercial screw, bolt and nut threads.

## THREAD DESIGNATIONS

**Basic Designations:** The letter "M" and the nominal size (basic major diameter in millimeters) followed by "X" and the pitch in millimeters, designates metric screw threads. For coarse series thread, the "X" and pitch may be omitted.

Example: Coarse series threads; M6  
other threads; M8 x 1

A complete designation comprises, in addition to the basic designation, the tolerance class symbol separated by a dash. When the pitch and crest diameter tolerance classes are identical, the symbol need only be given once.  
Example: M20 x 2—6H

When the pitch and crest diameters have different tolerance classes, the pitch diameter symbol is followed by the crest diameter symbol.

Example: M6 x 0.75—5g—6g

To indicate a specified thread fit between mating parts, the internal thread tolerance class symbol is followed by that of the external thread, separated by a slash.

Example: M20 x 2—6H/5g—6g

When rounded root external threads are to be specified, the minimum root radius value shall be added to the tolerance class designation.

Example: M6—5g—6g 0.100R



# Taps: ISO Metric Screw Threads

## Limiting Dimensions of Standard Series Threads for Commercial Screws, Bolts and Nuts (inches)

| Nominal Size<br>Diam.<br>(mm) | Pitch<br>P<br>(mm) | Basic Thread Designation | External Thread (Bolt) |           |                |        |                |        |        |                |        | Internal Thread (Nut) |                |        |                |        |        |            |
|-------------------------------|--------------------|--------------------------|------------------------|-----------|----------------|--------|----------------|--------|--------|----------------|--------|-----------------------|----------------|--------|----------------|--------|--------|------------|
|                               |                    |                          | Tol. Cl.               | Allowance | Major Diameter |        | Pitch Diameter |        |        | Minor Diameter |        | Tol. Cl.              | Minor Diameter |        | Pitch Diameter |        |        | Major Dia. |
|                               |                    |                          |                        |           | Max            | Min    | Max            | Min    | Tol.   | Max            | Min    |                       | Min            | Max    | Min            | Max    | Tol.   | Min        |
| 1.6                           | 0.35               | M1.6                     | 6g                     | 0.0008    | 0.0622         | 0.0589 | 0.0533         | 0.0509 | 0.0024 | 0.0453         | 0.0419 | 6H                    | 0.0481         | 0.0520 | 0.0541         | 0.0574 | 0.0033 | 0.0630     |
| 1.8                           | 0.35               | M1.8                     | 6g                     | 0.0008    | 0.0701         | 0.0668 | 0.0611         | 0.0588 | 0.0023 | 0.0531         | 0.0498 | 6H                    | 0.0560         | 0.0598 | 0.0620         | 0.0652 | 0.0032 | 0.0709     |
| 2                             | 0.4                | M2.0                     | 6g                     | 0.0009    | 0.0779         | 0.0743 | 0.0677         | 0.0652 | 0.0025 | 0.0586         | 0.0549 | 6H                    | 0.0617         | 0.0661 | 0.0686         | 0.0720 | 0.0034 | 0.0788     |
| 2.2                           | 0.45               | M2.2                     | 6g                     | 0.0009    | 0.0858         | 0.0819 | 0.0743         | 0.0716 | 0.0027 | 0.0640         | 0.0601 | 6H                    | 0.0675         | 0.0723 | 0.0752         | 0.0788 | 0.0036 | 0.0867     |
| 2.5                           | 0.45               | M2.5                     | 6g                     | 0.0009    | 0.0976         | 0.0938 | 0.0861         | 0.0834 | 0.0027 | 0.0759         | 0.0719 | 6H                    | 0.0793         | 0.0841 | 0.0870         | 0.0906 | 0.0036 | 0.0985     |
| 3                             | 0.5                | M3.0                     | 6g                     | 0.0009    | 0.1173         | 0.1132 | 0.1045         | 0.1016 | 0.0029 | 0.0931         | 0.0889 | 6H                    | 0.0969         | 0.1023 | 0.1054         | 0.1092 | 0.0038 | 0.1182     |
| 3.5                           | 0.6                | M3.5                     | 6g                     | 0.0009    | 0.1369         | 0.1321 | 0.1216         | 0.1183 | 0.0033 | 0.1079         | 0.1030 | 6H                    | 0.1123         | 0.1185 | 0.1225         | 0.1268 | 0.0043 | 0.1378     |
| 4                             | 0.7                | M4.0                     | 6g                     | 0.0009    | 0.1566         | 0.1512 | 0.1387         | 0.1352 | 0.0034 | 0.1227         | 0.1173 | 6H                    | 0.1277         | 0.1347 | 0.1396         | 0.1442 | 0.0046 | 0.1575     |
| 4.5                           | 0.75               | M4.5                     | 6g                     | 0.0010    | 0.1762         | 0.1708 | 0.1571         | 0.1536 | 0.0035 | 0.1400         | 0.1345 | 6H                    | 0.1452         | 0.1526 | 0.1580         | 0.1626 | 0.0046 | 0.1772     |
| 5                             | 0.8                | M5.0                     | 6g                     | 0.0010    | 0.1959         | 0.1900 | 0.1754         | 0.1717 | 0.0037 | 0.1572         | 0.1513 | 6H                    | 0.1628         | 0.1706 | 0.1764         | 0.1812 | 0.0048 | 0.1969     |
| 6                             | 1.0                | M6.0                     | 6g                     | 0.0012    | 0.2351         | 0.2282 | 0.2096         | 0.2052 | 0.0044 | 0.1868         | 0.1797 | 6H                    | 0.1936         | 0.2028 | 0.2107         | 0.2165 | 0.0058 | 0.2363     |
| 7                             | 1.0                | M7.0                     | 6g                     | 0.0011    | 0.2745         | 0.2675 | 0.2489         | 0.2446 | 0.0043 | 0.2262         | 0.2191 | 6H                    | 0.2330         | 0.2422 | 0.2501         | 0.2559 | 0.0058 | 0.2756     |
| 8                             | 1.25               | M8.0                     | 6g                     | 0.0012    | 0.3138         | 0.3056 | 0.2818         | 0.2773 | 0.0045 | 0.2535         | 0.2454 | 6H                    | 0.2617         | 0.2721 | 0.2830         | 0.2892 | 0.0062 | 0.3150     |
| 8                             | 1.0                | M8 x 1.0                 | 6g                     | 0.0011    | 0.3139         | 0.3069 | 0.2883         | 0.2840 | 0.0043 | 0.2656         | 0.2584 | 6H                    | 0.2724         | 0.2816 | 0.2894         | 0.2952 | 0.0058 | 0.3150     |
| 10                            | 1.5                | M10                      | 6g                     | 0.0013    | 0.3924         | 0.3832 | 0.3540         | 0.3489 | 0.0051 | 0.3199         | 0.3102 | 6H                    | 0.3298         | 0.3415 | 0.3554         | 0.3624 | 0.0070 | 0.3937     |
| 10                            | 1.25               | M10 x 1.25               | 6g                     | 0.0012    | 0.3925         | 0.3843 | 0.3606         | 0.3560 | 0.0046 | 0.3322         | 0.3241 | 6H                    | 0.3404         | 0.3508 | 0.3618         | 0.3680 | 0.0062 | 0.3937     |
| 12                            | 1.75               | M12                      | 6g                     | 0.0014    | 0.4711         | 0.4607 | 0.4263         | 0.4205 | 0.0058 | 0.3865         | 0.3758 | 6H                    | 0.3979         | 0.4110 | 0.4277         | 0.4355 | 0.0078 | 0.4725     |
| 12                            | 1.25               | M12 x 1.25               | 6g                     | 0.0012    | 0.4713         | 0.4630 | 0.4393         | 0.4342 | 0.0051 | 0.4109         | 0.4023 | 6H                    | 0.4192         | 0.4295 | 0.4405         | 0.4475 | 0.0070 | 0.4725     |
| 14                            | 2.0                | M14                      | 6g                     | 0.0016    | 0.5496         | 0.5387 | 0.4985         | 0.4923 | 0.0062 | 0.4530         | 0.4412 | 6H                    | 0.4660         | 0.4807 | 0.5001         | 0.5083 | 0.0082 | 0.5512     |
| 14                            | 1.5                | M14 x 1.5                | 6g                     | 0.0013    | 0.5499         | 0.5407 | 0.5115         | 0.5061 | 0.0054 | 0.4774         | 0.4677 | 6H                    | 0.4873         | 0.4990 | 0.5129         | 0.5203 | 0.0074 | 0.5512     |
| 16                            | 2.0                | M16                      | 6g                     | 0.0016    | 0.6284         | 0.6175 | 0.5772         | 0.5710 | 0.0062 | 0.5318         | 0.5199 | 6H                    | 0.5447         | 0.5594 | 0.5788         | 0.5871 | 0.0083 | 0.6300     |
| 16                            | 1.5                | M16 x 1.5                | 6g                     | 0.0014    | 0.6286         | 0.6194 | 0.5903         | 0.5849 | 0.0054 | 0.5561         | 0.5465 | 6H                    | 0.5660         | 0.5777 | 0.5916         | 0.5990 | 0.0074 | 0.6300     |
| 18                            | 2.5                | M18                      | 6g                     | 0.0017    | 0.7070         | 0.6939 | 0.6430         | 0.6364 | 0.0066 | 0.5862         | 0.5725 | 6H                    | 0.6022         | 0.6198 | 0.6448         | 0.6535 | 0.0087 | 0.7087     |
| 18                            | 1.5                | M18 x 1.5                | 6g                     | 0.0013    | 0.7074         | 0.6982 | 0.6690         | 0.6636 | 0.0054 | 0.6349         | 0.6252 | 6H                    | 0.6448         | 0.6565 | 0.6704         | 0.6777 | 0.0073 | 0.7087     |
| 20                            | 2.5                | M20                      | 6g                     | 0.0018    | 0.7857         | 0.7726 | 0.7218         | 0.7152 | 0.0066 | 0.6649         | 0.6513 | 6H                    | 0.6809         | 0.6985 | 0.7235         | 0.7322 | 0.0087 | 0.7875     |
| 20                            | 1.5                | M20 x 1.5                | 6g                     | 0.0014    | 0.7861         | 0.7769 | 0.7477         | 0.7423 | 0.0054 | 0.7136         | 0.7039 | 6H                    | 0.7235         | 0.7352 | 0.7491         | 0.7565 | 0.0074 | 0.7875     |
| 22                            | 2.5                | M22                      | 6g                     | 0.0018    | 0.8644         | 0.8513 | 0.8005         | 0.7939 | 0.0066 | 0.7437         | 0.7300 | 6H                    | 0.7597         | 0.7773 | 0.8023         | 0.8110 | 0.0087 | 0.8662     |
| 22                            | 1.5                | M22 x 1.5                | 6g                     | 0.0014    | 0.8648         | 0.8556 | 0.8265         | 0.8211 | 0.0054 | 0.7924         | 0.7827 | 6H                    | 0.8023         | 0.8140 | 0.8278         | 0.8352 | 0.0074 | 0.8662     |
| 24                            | 3.0                | M24                      | 6g                     | 0.0020    | 0.9429         | 0.9283 | 0.8662         | 0.8584 | 0.0078 | 0.7980         | 0.7817 | 6H                    | 0.8171         | 0.8366 | 0.8682         | 0.8785 | 0.0103 | 0.9449     |
| 24                            | 2.0                | M24 x 2.0                | 6g                     | 0.0016    | 0.9433         | 0.9324 | 0.8922         | 0.8856 | 0.0066 | 0.8467         | 0.8345 | 6H                    | 0.8597         | 0.8744 | 0.8938         | 0.9025 | 0.0087 | 0.9449     |
| 27                            | 3.0                | M27                      | 6g                     | 0.0019    | 1.0611         | 1.0464 | 0.9843         | 0.9765 | 0.0078 | 0.9161         | 0.8999 | 6H                    | 0.9352         | 0.9548 | 0.9863         | 0.9966 | 0.0103 | 1.0630     |
| 27                            | 2.0                | M27 x 2.0                | 6g                     | 0.0016    | 1.0614         | 1.0505 | 1.0103         | 1.0037 | 0.0066 | 0.9648         | 0.9526 | 6H                    | 0.9778         | 0.9925 | 1.0119         | 1.0206 | 0.0087 | 1.0630     |
| 30                            | 3.5                | M30                      | 6g                     | 0.0022    | 1.1790         | 1.1623 | 1.0895         | 1.0812 | 0.0083 | 1.0099         | 0.9917 | 6H                    | 1.0320         | 1.0539 | 1.0917         | 1.1026 | 0.0109 | 1.1812     |
| 30                            | 2.0                | M30 x 2.0                | 6g                     | 0.0016    | 1.1796         | 1.1686 | 1.1284         | 1.1218 | 0.0066 | 1.0829         | 1.0707 | 6H                    | 1.0959         | 1.1106 | 1.1300         | 1.1387 | 0.0087 | 1.1812     |
| 33                            | 3.5                | M33                      | 6g                     | 0.0022    | 1.2971         | 1.2804 | 1.2076         | 1.1993 | 0.0083 | 1.1280         | 1.1099 | 6H                    | 1.1501         | 1.1720 | 1.2098         | 1.2207 | 0.0109 | 1.2993     |
| 33                            | 2.0                | M33 x 2.0                | 6g                     | 0.0016    | 1.2977         | 1.2867 | 1.2465         | 1.2399 | 0.0066 | 1.2011         | 1.1888 | 6H                    | 1.2140         | 1.2287 | 1.2481         | 1.2568 | 0.0087 | 1.2993     |
| 36                            | 4.0                | M36                      | 6g                     | 0.0025    | 1.4149         | 1.3963 | 1.3126         | 1.3039 | 0.0087 | 1.2217         | 1.2017 | 6H                    | 1.2469         | 1.2704 | 1.3151         | 1.3268 | 0.0117 | 1.4174     |
| 36                            | 3.0                | M36 x 3.0                | 6g                     | 0.0020    | 1.4154         | 1.4007 | 1.3386         | 1.3309 | 0.0077 | 1.2705         | 1.2542 | 6H                    | 1.2895         | 1.3091 | 1.3406         | 1.3510 | 0.0104 | 1.4174     |
| 39                            | 4.0                | M39                      | 6g                     | 0.0025    | 1.5330         | 1.5144 | 1.4307         | 1.4220 | 0.0087 | 1.3398         | 1.3198 | 6H                    | 1.3650         | 1.3885 | 1.4332         | 1.4449 | 0.0117 | 1.5355     |
| 39                            | 3.0                | M39 x 3.0                | 6g                     | 0.0020    | 1.5335         | 1.5188 | 1.4568         | 1.4490 | 0.0078 | 1.3886         | 1.3723 | 6H                    | 1.4076         | 1.4272 | 1.4587         | 1.4691 | 0.0104 | 1.5355     |

**NOTE:** Excerpt from American National Standard B1. 16-1972, American Gaging Practices for Metric Screw Threads; "In all cases the inch conversion values have been rounded toward the interior of the tolerance zone, that is, maximum limits have been rounded downward and minimum limits have been rounded upward. Due to the fact that the majority of machinery and measuring equipment in the United States is based on the inch system, all gages should be made to the inch conversions."

**TAP RECOMMENDATIONS:** The pitch diameter high limits of the recommended tap for 6H tolerance class is 40% of the product tolerance rounded to the nearest .0005."

**Example:** M10 x 1.5; product tolerance = .00070" x .40 = .0028" rounded to .0030". This is the amount over basic pitch diameter. Based on .0005" increments over basic pitch diameter, the recommended tap has a D6 high limit (.0030 ÷ .0005").

# Taps: Straight & Taper Pipe Taps

## Standards & Dimensions

**Table 311: General Dimensions**

| Nominal Size Inches | Dimensions-Inches |                    |                    |                     |                  |
|---------------------|-------------------|--------------------|--------------------|---------------------|------------------|
|                     | Length Overall A  | Length of Thread B | Length of Square C | Diameter of Shank D | Size of Square E |
| 1/16                | 2-1/8             | 11/16              | 3/8                | 0.3125              | 0.234            |
| 1/8                 | 2-1/8             | 3/4                | 3/8                | 0.3125              | 0.234            |
| 1/8                 | 2-1/8             | 3/4                | 3/8                | 0.4375              | 0.328            |
| 1/4                 | 2-7/16            | 1-1/16             | 7/16               | 0.5625              | 0.421            |
| 3/8                 | 2-9/16            | 1-1/16             | 1/2                | 0.7000              | 0.531            |
| 1/2                 | 3-1/8             | 1-3/8              | 5/8                | 0.6875              | 0.515            |
| 3/4                 | 3-1/4             | 1-3/8              | 11/16              | 0.9063              | 0.679            |
| 1                   | 3-3/4             | 1-3/4              | 13/16              | 1.1250              | 0.843            |
| 1-1/4               | 4                 | 1-3/4              | 15/16              | 1.3125              | 0.984            |
| 1-1/2               | 4-1/4             | 1-3/4              | 1                  | 1.5000              | 1.125            |
| 2                   | 4-1/2             | 1-3/4              | 1-1/8              | 1.8750              | 1.406            |

### Tolerances

| Element             | Range Inches      | Direction     | Tolerance-Inches |               |
|---------------------|-------------------|---------------|------------------|---------------|
|                     |                   |               | Cut Thread       | Ground Thread |
| Length Overall-A    | 1/6 to 3/4 incl.  | Plus or Minus | 1/32             | 1/32          |
|                     | 1 to 4 incl.      | Plus or Minus | 1/16             | 1/16          |
| Length of Thread-B  | 1/6 to 3/4 incl.  | Plus or Minus | 1/16             | 1/16          |
|                     | 1 to 1-1/4 incl.  | Plus or Minus | 3/32             | 3/32          |
|                     | 1-1/2 to 4 incl.  | Plus or Minus | 1/8              | 1/8           |
| Length of Square-C  | 1/6 to 3/4 incl.  | Plus or Minus | 1/32             | 1/32          |
|                     | 1 to 4 incl.      | Plus or Minus | 1/16             | 1/16          |
| Diameter of Shank-D | 1/6 to 1/8 incl.  | Minus         | 0.0070           | 0.0015        |
|                     | 1/4 to 1/2 incl.  | Minus         | 0.0070           | 0.0020        |
|                     | 3/4 to 1 incl.    | Minus         | 0.0090           | 0.0020        |
|                     | 1-1/4 to 4 incl.  | Minus         | 0.0090           | 0.0030        |
| Size of Square-E    | 1/16 to 1/8 incl. | Minus         | 0.0040           | 0.0040        |
|                     | 1/4 to 3/4 incl.  | Minus         | 0.0060           | 0.0060        |
|                     | 1 to 4 incl.      | Minus         | 0.0080           | 0.0080        |

### Thread Limits

| Nominal Size Inches | Threads per Inch NPT | *Gage Measurement-Inches |                         |               | Taper per Foot-Inches |       |               |       |
|---------------------|----------------------|--------------------------|-------------------------|---------------|-----------------------|-------|---------------|-------|
|                     |                      | Pro-jection              | Tolerance Plus or Minus |               | Cut Thread            |       | Ground Thread |       |
|                     |                      |                          | Cut Thread              | Ground Thread | Min.                  | Max.  | Min.          | Max.  |
| 1/16                | 27                   | .312                     | 1/16                    | 1/16          | 23/32                 | 27/32 | 23/32         | 25/32 |
| 1/8                 | 27                   | .312                     | 1/16                    | 1/16          | 23/32                 | 27/32 | 23/32         | 25/32 |
| 1/4                 | 18                   | .459                     | 1/16                    | 1/16          | 23/32                 | 27/32 | 23/32         | 25/32 |
| 3/8                 | 18                   | .454                     | 1/16                    | 1/16          | 23/32                 | 27/32 | 23/32         | 25/32 |
| 1/2                 | 14                   | .579                     | 1/16                    | 1/16          | 23/32                 | 13/16 | 23/32         | 25/32 |
| 3/4                 | 14                   | .565                     | 1/16                    | 1/16          | 23/32                 | 13/16 | 23/32         | 25/32 |
| 1                   | 11-1/2               | .678                     | 3/32                    | 3/32          | 23/32                 | 13/16 | 23/32         | 25/32 |
| 1-1/4               | 11-1/2               | .686                     | 3/32                    | 3/32          | 23/32                 | 13/16 | 23/32         | 25/32 |
| 1-1/2               | 11-1/2               | .699                     | 3/32                    | 3/32          | 23/32                 | 13/16 | 23/32         | 25/32 |
| 2                   | 11-1/2               | .667                     | 3/32                    | 3/32          | 23/32                 | 13/16 | 23/32         | 25/32 |

\*Distance small end of tap projects through American Standard Pipe Thread Ring Gage.



**TABLE 338-TAPER PIPE TAPS GROUND THREAD**

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

## THREAD LIMITS

| Nominal Size Inches | Threads Per Inch NPT | Gage Measurement -Inches |                      | Taper Per Foot -Inches |       |
|---------------------|----------------------|--------------------------|----------------------|------------------------|-------|
|                     |                      | Projection               | Tolerance Plus/Minus | Min.                   | Max.  |
| 1/16                | 27                   | 0.312                    | 1/16                 | 23/32                  | 25/32 |
| 1/8                 | *27                  | 0.312                    | 1/16                 | 23/32                  | 25/32 |
| 1/4                 | 18                   | 0.459                    | 1/16                 | 23/32                  | 25/32 |
| 3/8                 | 18                   | 0.454                    | 1/16                 | 23/32                  | 25/32 |
| 1/2                 | 14                   | 0.579                    | 1/16                 | 23/32                  | 25/32 |
| 3/4                 | 14                   | 0.565                    | 1/16                 | 23/32                  | 25/32 |
| 1                   | 11-1/2               | 0.678                    | 3/32                 | 23/32                  | 25/32 |
| 1 1/4               | 11-1/2               | 0.686                    | 3/32                 | 23/32                  | 25/32 |
| 1 1/2               | 11-1/2               | 0.699                    | 3/32                 | 23/32                  | 25/32 |
| 2                   | 11-1/2               | 0.667                    | 3/32                 | 23/32                  | 25/32 |
| 2 1/2               | 8                    | 0.925                    | 3/32                 | 47/64                  | 25/32 |
| 3                   | 8                    | 0.925                    | 3/32                 | 47/64                  | 25/32 |
| 3 1/2               | 8                    | 0.938                    | 1/8                  | 47/64                  | 25/32 |
| 4                   | 8                    | 0.950                    | 1/8                  | 47/64                  | 25/32 |

\*Distance small end of tap projects through an L1 American Standard Taper Pipe Thread Ring Gage (See Table 357 page A 111).

## ANGLE TOLERANCE

| Threads Per Inch       | Tolerance Half Angle |
|------------------------|----------------------|
| 8                      | 25' plus or minus    |
| 11 1/2 to 27 inclusive | 30' plus or minus    |

## FORMULA VALUES

| Threads Per Inch | A      | B      | C      | D      | E      |
|------------------|--------|--------|--------|--------|--------|
| 27               | 0.0267 | 0.0296 | 0.0257 | 0.0234 | 0.0251 |
| 18               | 0.0408 | 0.0444 | 0.0401 | 0.0377 | 0.0395 |
| 14               | 0.0535 | 0.0571 | 0.0525 | 0.0515 | 0.0533 |
| 11 1/2           | 0.0658 | 0.0696 | 0.0647 | 0.0614 | 0.0649 |
| 8                | 0.0966 | 0.1000 | 0.0946 |        |        |

**NOTE:** For essential dimensions of American National Standard Pipe Threads (See Table 357 page A 111).

Ground Thread American Standard Pipe Form Taps made to this table are to be marked NPT. Ground Thread Dryseal American National Standard Pipe Taps made to this table are to be marked NPTF. Ground Thread Taps, Aeronautical National Thread Form, made to this table are marked ANPT.

## WIDTH OF FLATS—TAPS

| Threads Per Inch | Element    | Width of Flats at Tap Crest and Roots |       |        |       |
|------------------|------------|---------------------------------------|-------|--------|-------|
|                  |            | NPT                                   |       | NPTF   |       |
|                  |            | Min.                                  | Max.  | Min.   | Max.  |
| 27               | Major Dia. | 0.0014                                | .0041 | 0.0040 | .0055 |
|                  | Minor Dia. |                                       | .0041 |        | .0040 |
| 18               | Major Dia. | 0.0021                                | .0057 | 0.0050 | .0065 |
|                  | Minor Dia. |                                       | .0057 |        | .0050 |
| 14               | Major Dia. | 0.0027                                | .0064 | 0.0050 | .0065 |
|                  | Minor Dia. |                                       | .0064 |        | .0050 |
| 11 1/2           | Major Dia. | 0.0033                                | .0073 | 0.0060 | .0083 |
|                  | Minor Dia. |                                       | .0073 |        | .0060 |
| 8                | Major Dia. | 0.0048                                | .0090 | 0.0080 | .0103 |
|                  | Minor Dia. |                                       | .0090 |        | .0030 |

Minimum minor diameter flats are not specified. May be as sharp as practicable. Ground Thread Taps marked NPT may be used for NPT and ANPT applications.

## LEAD TOLERANCE

A maximum lead deviation of  $\pm 0.0005$ " within any two threads not farther apart than one inch is permitted.

## FORMULA FOR AMERICAN NATIONAL STANDARD PIPE FORM

Minimum major diameter = Measured pitch diameter plus A.  
Maximum major diameter = Measured pitch diameter plus B.  
Minimum minor diameter = Measured pitch diameter minus B.  
Maximum minor diameter = Measured pitch diameter minus C.

## FORMULA FOR DRYSEAL AMERICAN NATIONAL STANDARD PIPE FORM

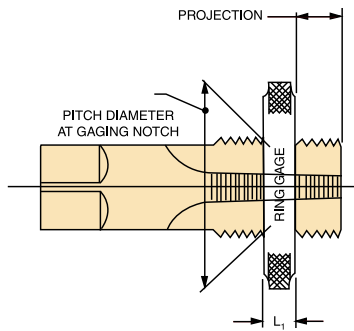
Minimum major diameter = Measured pitch diameter plus D.  
Maximum major diameter = Measured pitch diameter plus E.  
Minimum minor diameter = Maximum or smaller.  
Maximum minor diameter = Measured pitch diameter minus E.

# Taps: Taper Pipe Taps

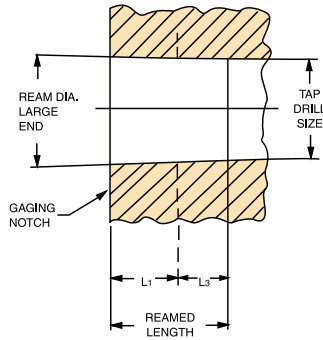
**Table 357: Measurement of Taper Pipe Taps, Reaming Data and Tap Drill Sizes**

| Size         | Projection |       |           |       | Ream Dia.<br>Large<br>End | Gage<br>Width<br>L1 | Reamed<br>Length<br>L1 + L3 | Tap Drill<br>for Use w/<br>Reaming | Tap Drill<br>for Use w/o<br>Reaming |
|--------------|------------|-------|-----------|-------|---------------------------|---------------------|-----------------------------|------------------------------------|-------------------------------------|
|              | NPT & NPTF |       | SAE-SHORT |       |                           |                     |                             |                                    |                                     |
|              | Min.       | Max.  | Min.      | Max.  |                           |                     |                             |                                    |                                     |
| 1/16-27      | 0.250      | 0.375 | 0.222     | 0.259 | 0.2515                    | 0.1600              | 0.2711                      | 15/64                              | C                                   |
| 1/8-27       | 0.250      | 0.375 | 0.222     | 0.259 | 0.3340                    | 0.1615              | 0.2726                      | 21/64                              | Q                                   |
| 1/4-18       | 0.397      | 0.521 | 0.333     | 0.389 | 0.4472                    | 0.2278              | 0.3945                      | 27/94                              | 7/16                                |
| 3/8-18       | 0.392      | 0.516 | 0.333     | 0.389 | 0.5826                    | 0.240               | 0.4067                      | 9/16                               | 9/16                                |
| 1/2-14       | 0.517      | 0.641 | 0.429     | 0.500 | 0.7213                    | 0.320               | 0.5343                      | 11/16                              | 45/64                               |
| 3/4-14       | 0.503      | 0.627 | 0.429     | 0.500 | 0.9317                    | 0.339               | 0.5533                      | 57/64                              | 29/32                               |
| 1-11-1/2     | 0.584      | 0.772 | -         | -     | 1.1691                    | 0.400               | 0.6609                      | 1-1/8                              | 1-9/64                              |
| 1-1/4-11-1/2 | 0.592      | 0.780 | -         | -     | 1.1538                    | 0.420               | 0.6809                      | 1-15/32                            | 1-31/64                             |
| 1-1/2-11-1/2 | 0.606      | 0.792 | -         | -     | 1.7528                    | 0.420               | 0.6809                      | 1-45/64                            | 1-23/32                             |
| 2-11-1/2     | 0.574      | 0.760 | -         | -     | 2.2267                    | 0.436               | 0.6969                      | 2-3/16                             | 2-3/16                              |

**Projection Thru Ring Gage**



**Reamed Hole Data**





**TABLE 335-STRAIGHT PIPE TAPS**

Ground Threads

American National Standard Straight Pipe Thread Form  
(NPS) (NPSC) (NPSM)

## THREAD LIMITS

| Nominal<br>Sizes<br>Inches | Threads<br>Per<br>Inch | Major Diameter                  |           |           | Pitch Diameter |           |        |
|----------------------------|------------------------|---------------------------------|-----------|-----------|----------------|-----------|--------|
|                            |                        | Plug at<br>Gaging<br>Notch<br>E | Min.<br>G | Max.<br>H | Min.<br>K      | Max.<br>L |        |
| 1/8                        | 27                     | 0.3983                          | 0.4022    | 0.4032    | 0.3736         | 0.3746    | 0.3751 |
| 1/4                        | 18                     | 0.5286                          | 0.5347    | 0.5357    | 0.4916         | 0.4933    | 0.4938 |
| 3/8                        | 18                     | 0.6640                          | 0.6701    | 0.6711    | 0.6270         | 0.6287    | 0.6292 |
| 1/2                        | 14                     | 0.8260                          | 0.8347    | 0.8357    | 0.7784         | 0.7806    | 0.7811 |
| 3/4                        | 14                     | 1.0364                          | 1.0447    | 1.0457    | 0.9889         | 0.9906    | 0.9916 |
| 1                          | 11-1/2                 | 1.2966                          | 1.3062    | 1.3077    | 1.2386         | 1.2402    | 1.2412 |
| 1 1/4                      | 11-1/2                 | 1.6413                          | 1.6507    | 1.6522    | 1.5834         | 1.5847    | 1.5862 |
| 1 1/2                      | 11-1/2                 | 1.8803                          | 1.8897    | 1.8912    | 1.8223         | 1.8237    | 1.8252 |
| 2                          | 11-1/2                 | 2.3542                          | 2.3639    | 2.3654    | 2.2963         | 2.2979    | 2.2994 |
| 2 1/2                      | 8                      | 2.8454                          | 2.8604    | 2.8619    | 2.7622         | 2.7640    | 2.7660 |
| 3                          | 8                      | 3.4718                          | 3.4868    | 3.4883    | 3.3885         | 3.3904    | 3.3924 |
| 3 1/2                      | 8                      | 3.9721                          | 3.9872    | 3.9887    | 3.8888         | 3.8908    | 3.8928 |
| 4                          | 8                      | 4.4704                          | 4.4855    | 4.4870    | 4.3871         | 4.3891    | 4.3911 |

## LEAD TOLERANCE

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

**Note:** Taps made to these specifications are marked NPS and used for NPS, NPSC and NPSM.

## ANGLE TOLERANCE

| Threads Per Inch            | Deviation In Half Angle                |
|-----------------------------|----------------------------------------|
| 8<br>11 1/2 to 27 Inclusive | 25' plus or minus<br>30' plus or minus |

## FORMULA FOR AMERICAN NATIONAL STANDARD PIPE FORM (NPS)

The maximum Pitch Diameter of tap is based upon an allowance deducted from the maximum product pitch diameter of NPSC or NPSM, whichever is smaller. The minimum Pitch Diameter of tap is derived by subtracting the ground thread pitch diameter tolerance for actual equivalent size as shown in Table 331, A 107, Col. D.

| Nominal<br>Sizes<br>Inches | Major Diameter |                | Minor Diameter |
|----------------------------|----------------|----------------|----------------|
|                            | Min.<br>G      | Max.<br>H      | Max.           |
| 1/8                        | H - 0.0010     | K + A - 0.0010 | M - B          |
| 1/4 to 3/4 incl.           | H - 0.0010     | K + A - 0.0020 | M - B          |
| 1 to 4 incl.               | H - 0.0015     | K + A - 0.0021 | M - B          |

## FORMULA VALUES

| Threads<br>Per Inch | A      | B      | M        |
|---------------------|--------|--------|----------|
| 27                  | 0.0296 | 0.0257 | Actual   |
| 18                  | 0.0444 | 0.0401 | measured |
| 14                  | 0.0571 | 0.0525 | pitch    |
| 11 1/2              | 0.0696 | 0.0647 | diameter |
| 8                   | 0.1000 | 0.0946 |          |

**TABLE 335-A-STRAIGHT PIPE TAPS**

Ground Thread

American National Standard Dryseal  
Pipe Thread Form (NPSF)

## THREAD LIMITS

| Nominal<br>Sizes<br>Inches | Threads<br>Per<br>Inch<br>NPSF | Major Diameter |           |                                 | Pitch Diameter |           |                                 |
|----------------------------|--------------------------------|----------------|-----------|---------------------------------|----------------|-----------|---------------------------------|
|                            |                                | Min.<br>G      | Max.<br>H | Plug at<br>Gaging<br>Notch<br>E | Min.<br>K      | Max.<br>L | Minor*<br>Diam.<br>Flat<br>Max. |
| 1/16                       | 27                             | 0.3008         | 0.3018    | 0.2812                          | 0.2772         | 0.2777    | 0.004                           |
| 1/8                        | 27                             | 0.3932         | 0.3942    | 0.3736                          | 0.3696         | 0.3701    | 0.004                           |
| 1/4                        | 18                             | 0.5239         | 0.5249    | 0.4916                          | 0.4859         | 0.4864    | 0.005                           |
| 3/8                        | 18                             | 0.6593         | 0.6603    | 0.6270                          | 0.6213         | 0.6218    | 0.005                           |
| 1/2                        | 14                             | 0.8230         | 0.8240    | 0.7784                          | 0.7712         | 0.7717    | 0.005                           |
| 3/4                        | 14                             | 1.0335         | 1.0345    | 0.9889                          | 0.9817         | 0.9822    | 0.005                           |
| 1                          | 11-1/2                         | 1.2933         | 1.2943    | 1.2386                          | 1.2295         | 1.2305    | 0.006                           |

\*As specified or sharper.

**NOTE:** The major diameter of standard taper pipe plug gages and the minor diameter of standard taper pipe ring gages used for gaging dryseal threads will be truncated .20p minimum to .25p maximum for all pitches.

## ANGLE TOLERANCE

| Threads Per Inch       | Deviation in Half Angles |
|------------------------|--------------------------|
| 11 1/2 to 27 inclusive | 30' plus or minus        |

## FORMULA FOR AMERICAN NATIONAL STANDARD DRYSEAL PIPE FORM (NPSF)

| Nominal<br>Sizes<br>Inches | Major Diameter |                | Pitch Diameter |           | Max.<br>Minor<br>Diam. |
|----------------------------|----------------|----------------|----------------|-----------|------------------------|
|                            | Min.<br>G      | Max.<br>H      | Min.<br>K      | Max.<br>L |                        |
| 1/6                        | H - 0.0010     | K + Q - 0.0005 | L - 0.0005     | E - F     | M - Q                  |
| 1/8                        | H - 0.0010     | K + Q - 0.0005 | L - 0.0005     | E - F     | M - Q                  |
| 1/4                        | H - 0.0010     | K + Q - 0.0005 | L - 0.0005     | E - F     | M - Q                  |
| 3/8                        | H - 0.0010     | K + Q - 0.0005 | L - 0.0005     | E - F     | M - Q                  |
| 1/2                        | H - 0.0010     | K + Q - 0.0005 | L - 0.0005     | E - F     | M - Q                  |
| 3/4                        | H - 0.0010     | K + Q - 0.0005 | L - 0.0005     | E - F     | M - Q                  |
| 1                          | H - 0.0010     | K + Q - 0.0001 | L - 0.0010     | E - F     | M - Q                  |

## FORMULA VALUES

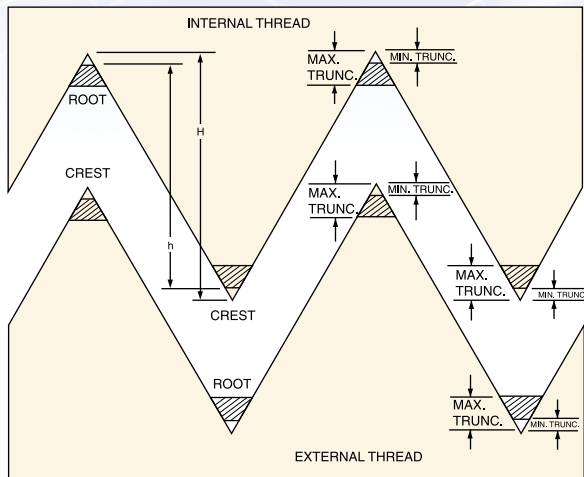
| Threads<br>Per Inch | E              | F      | M        | Q      |
|---------------------|----------------|--------|----------|--------|
| 27                  | Pitch diameter | 0.0035 | Actual   | 0.0251 |
| 18                  | of plug        | 0.0052 | measured | 0.0395 |
| 14                  | at gaging      | 0.0067 | pitch    | 0.0533 |
| 11 1/2              | notch          | 0.0081 | diameter | 0.0649 |

## LEAD TOLERANCE

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

# Taps: Standard Pipe Threads

**TABLE 357-AMERICAN NATIONAL STANDARD PIPE THREADS**



## Crest and root limits for American National Standard External and Internal Taper Pipe Thread (NPT)

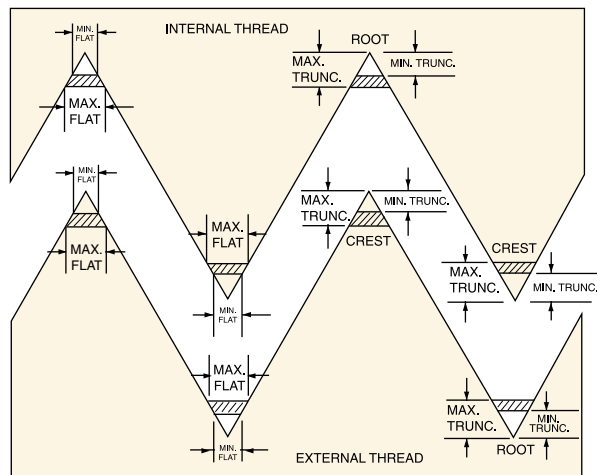
| Threads Per Inch | Height Sharp V Thread Inches H | Height Pipe Thread Max. Inches h | Truncation Inches |        | Equivalent Width of Flat Inches |        |
|------------------|--------------------------------|----------------------------------|-------------------|--------|---------------------------------|--------|
|                  |                                |                                  | Min.              | Max.   | Min.                            | Max.   |
| 27               | 0.03208                        | 0.02963                          | 0.0012            | 0.0036 | 0.0014                          | 0.0041 |
| 18               | 0.04811                        | 0.04444                          | 0.0018            | 0.0049 | 0.0021                          | 0.0057 |
| 14               | 0.06186                        | 0.05714                          | 0.0024            | 0.0056 | 0.0027                          | 0.0064 |
| 11 1/2           | 0.07531                        | 0.06957                          | 0.0029            | 0.0063 | 0.0033                          | 0.0073 |
| 8                | 0.10825                        | 0.10000                          | 0.0041            | 0.0078 | 0.0048                          | 0.0090 |

The limits specified above are intended to serve as a guide for establishing limits for the thread elements of taps, dies and thread chasers. These limits may be required on the product.

For complete specifications see latest edition of USA Standard B2.1.

The Military Aeronautical Specification MIL-P-7105 agrees with all values given in this table

**DRYSEAL AMERICAN NATIONAL STANDARD PIPE THREADS**



## Crest and root limits for Dryseal American National Standard External and Internal Pipe Threads (NPTF)

| Threads Per Inch | Height Sharp V Thread Inches H | Truncation Inches |        | Equivalent Width of Flat Inches |        |
|------------------|--------------------------------|-------------------|--------|---------------------------------|--------|
|                  |                                | Min.              | Max.   | Min.                            | Max.   |
| 27 Crest         | 0.03208                        | 0.0017            | 0.0035 | 0.0020                          | 0.0040 |
| 27 Root          |                                | 0.0035            | 0.0052 | 0.0040                          | 0.0060 |
| 18 Crest         | 0.04811                        | 0.0026            | 0.0043 | 0.0030                          | 0.0050 |
| 18 Root          |                                | 0.0043            | 0.0061 | 0.0050                          | 0.0070 |
| 14 Crest         | 0.06186                        | 0.0026            | 0.0043 | 0.0030                          | 0.0050 |
| 14 Root          |                                | 0.0043            | 0.0061 | 0.0050                          | 0.0070 |
| 11 1/2 Crest     | 0.07531                        | 0.0035            | 0.0052 | 0.0040                          | 0.0060 |
| 11 1/2 Root      |                                | 0.0052            | 0.0078 | 0.0060                          | 0.0090 |
| 8 Crest          | 0.10825                        | 0.0052            | 0.0069 | 0.0060                          | 0.0080 |
| 8 Root           |                                | 0.0069            | 0.0095 | 0.0080                          | 0.0110 |

NOTE: The major diameter of standard taper pipe plug gages and the minor diameter of standard taper pipe ring gages used for gaging dryseal threads will be truncated .20p minimum to .25p maximum for all pitches.

To minimize tapping problems and lengthen tool life, use the largest drill possible to produce a minor diameter that will result in the lowest percentage of full thread consistent with adequate strength. A minor diameter that provides a 55% to 65% thread is sufficient for most requirements, but in some cases a higher percentage of thread may be necessary to conform with the minor diameter limits of the thread class specified.

Drills generally cut holes larger than their diameters. In the table below, the probable percentages of full thread were determined by the average amount oversize the various drills are expected to cut. Reaming becomes necessary when closer control of the hole size is required.

## Tap Drill Sizes.

Probable percentage of full thread produced in tapped hole using stock sizes of drills.

\*Generally, deeper than 1 1/2 times the hole diameter.

## Suggested Percentage of Full Thread in Tapped Holes

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

| Tap   | Tap Drill | Decimal Equiv. of Tap Drill | Theo. % of Thrd. | Probable Oversize (Mean) | Probable Hole Size | % of Thrd. | Tap     | Tap Drill | Decimal Equiv. of Tap Drill | Theo. % of Thrd. | Probable Oversize (Mean) | Probable Hole Size | % of Thrd. | Tap      | Tap Drill | Decimal Equiv. of Tap Drill | Theo. % of Thrd. | Probable Oversize (Mean) | Probable Hole Size | % of Thrd. |                     |  |  |
|-------|-----------|-----------------------------|------------------|--------------------------|--------------------|------------|---------|-----------|-----------------------------|------------------|--------------------------|--------------------|------------|----------|-----------|-----------------------------|------------------|--------------------------|--------------------|------------|---------------------|--|--|
| 0-80  | 56        | 0.0465                      | 83               | 0.0015                   | 0.0480             | 74         | 10-24   | 24        | 0.1520                      | 70               | 0.0032                   | 0.1552             | 64         | 1/2-13   | 27/64     | 0.4219                      | 78               | 0.0047                   | 0.4266             | 73         |                     |  |  |
| 1-64  | 3/64      | 0.4690                      | 81               | 0.0015                   | 0.0484             | 71         |         | 23        | 0.1540                      | 67               | 0.0032                   | 0.1572             | 61         |          | 7/16      | 0.4375                      | 63               | 0.0047                   | 0.4422             | 58         |                     |  |  |
|       | 54        | 0.0550                      | 89               | 0.0015                   | 0.0565             | 81         |         | 5/32      | 0.1563                      | 62               | 0.0032                   | 0.1595             | 56         | 1/2-20   | 29/64     | 0.4531                      | 72               | 0.0047                   | 0.4578             | 65         |                     |  |  |
|       | 53        | 0.0595                      | 67               | 0.0015                   | 0.0610             | 59         |         | 22        | 0.1570                      | 61               | 0.0032                   | 0.1602             | 55         | 9/16-12  | 15/32     | 0.4688                      | 87               | 0.0048                   | 0.4736             | 82         |                     |  |  |
| 1-72  | 53        | 0.0595                      | 75               | 0.0015                   | 0.0610             | 67         | 10-32   | 5/32      | 0.1563                      | 83               | 0.0032                   | 0.1595             | 75         |          | 31/64     | 0.4844                      | 72               | 0.0048                   | 0.4892             | 68         |                     |  |  |
|       | 1/16      | 0.0625                      | 58               | 0.0015                   | 0.0640             | 50         |         | 22        | 0.1570                      | 81               | 0.0032                   | 0.1602             | 73         | 9/16-18  | 1/2       | 0.5000                      | 87               | 0.0048                   | 0.5048             | 80         |                     |  |  |
| 2-56  | 51        | 0.0670                      | 82               | 0.0017                   | 0.0687             | 74         |         | 21        | 0.1590                      | 76               | 0.0032                   | 0.1622             | 68         |          | 33/64     | 0.5156                      | 65               | 0.0048                   | 0.5204             | 58         |                     |  |  |
|       | 50        | 0.0700                      | 69               | 0.0017                   | 0.0717             | 62         |         | 20        | 0.1610                      | 71               | 0.0032                   | 0.1642             | 64         | 5/8-11   | 17/32     | 0.5313                      | 79               | 0.0049                   | 0.5362             | 75         |                     |  |  |
| 2-64  | 49        | 0.0730                      | 56               | 0.0017                   | 0.0747             | 49         |         | 19        | 0.1660                      | 59               | 0.0032                   | 0.1692             | 51         |          | 35/64     | 0.5469                      | 66               | 0.0049                   | 0.5618             | 62         |                     |  |  |
|       | 50        | 0.0700                      | 79               | 0.0017                   | 0.0717             | 70         | 12-24   | 11/64     | 0.1719                      | 82               | 0.0035                   | 0.1754             | 75         | 5/8-18   | 9/16      | 0.5625                      | 87               | 0.0049                   | 0.5674             | 80         |                     |  |  |
| 3-48  | 49        | 0.0730                      | 64               | 0.0017                   | 0.0747             | 56         |         | 17        | 0.1730                      | 79               | 0.0035                   | 0.1765             | 73         |          | 37/64     | 0.5781                      | 65               | 0.0049                   | 0.5831             | 58         |                     |  |  |
|       | 48        | 0.0760                      | 85               | 0.0019                   | 0.0779             | 78         |         | 16        | 0.1770                      | 72               | 0.0035                   | 0.1805             | 66         | 3/4-10   | 41/64     | 0.6406                      | 84               | 0.0050                   | 0.6456             | 80         |                     |  |  |
| 3-56  | 5/64      | 0.0781                      | 77               | 0.0019                   | 0.0800             | 70         |         | 15        | 0.1800                      | 67               | 0.0035                   | 0.1835             | 60         |          | 21/32     | 0.6563                      | 72               | 0.0050                   | 0.6613             | 68         |                     |  |  |
|       | 47        | 0.0785                      | 76               | 0.0019                   | 0.0804             | 69         |         | 14        | 0.1820                      | 63               | 0.0035                   | 0.1855             | 56         | 3/4-16   | 11/16     | 0.6875                      | 77               | 0.0050                   | 0.6925             | 71         |                     |  |  |
|       | 46        | 0.0810                      | 67               | 0.0019                   | 0.0829             | 60         | 12-28   | 16        | 0.1770                      | 84               | 0.0035                   | 0.1805             | 77         | 7/8-9    | 49/64     | 0.7656                      | 76               | 0.0052                   | 0.7708             | 72         |                     |  |  |
|       | 45        | 0.0820                      | 63               | 0.0019                   | 0.0839             | 56         |         | 15        | 0.1800                      | 78               | 0.0035                   | 0.1835             | 70         |          | 25/32     | 0.7812                      | 65               | 0.0052                   | 0.7864             | 61         |                     |  |  |
| 4-40  | 46        | 0.0810                      | 78               | 0.0019                   | 0.0829             | 69         |         | 14        | 0.1820                      | 73               | 0.0035                   | 0.1855             | 66         | 7/8-14   | 51/64     | 0.7969                      | 84               | 0.0052                   | 0.8021             | 79         |                     |  |  |
|       | 45        | 0.0820                      | 73               | 0.0019                   | 0.0839             | 65         |         | 13        | 0.1850                      | 67               | 0.0035                   | 0.1885             | 59         |          | 13/16     | 0.8125                      | 67               | 0.0052                   | 0.8177             | 62         |                     |  |  |
|       | 44        | 0.0860                      | 56               | 0.0020                   | 0.0880             | 47         |         | 3/16      | 0.1875                      | 61               | 0.0035                   | 0.1910             | 54         | 1-8      | 55/64     | 0.8594                      | 87               | 0.0059                   | 0.8653             | 83         |                     |  |  |
| 4-48  | 44        | 0.0860                      | 80               | 0.0020                   | 0.0880             | 74         | 1/4-20  | 9         | 0.1960                      | 83               | 0.0038                   | 0.1998             | 77         |          | 7/8       | 0.8750                      | 77               | 0.0059                   | 0.8809             | 73         |                     |  |  |
|       | 43        | 0.0890                      | 71               | 0.0020                   | 0.0910             | 65         |         | 8         | 0.1990                      | 79               | 0.0038                   | 0.2028             | 73         |          | 57/64     | 0.8906                      | 67               | 0.0059                   | 0.8965             | 64         |                     |  |  |
|       | 42        | 0.0935                      | 57               | 0.0020                   | 0.0955             | 51         |         | 7         | 0.2010                      | 75               | 0.0038                   | 0.2048             | 70         |          | 29/32     | 0.9063                      | 58               | 0.0059                   | 0.9122             | 54         |                     |  |  |
| 4-48  | 3/32      | 0.0938                      | 56               | 0.0020                   | 0.0958             | 50         |         | 13/64     | 0.2031                      | 72               | 0.0038                   | 0.2069             | 66         | 1-12     | 29/32     | 0.9063                      | 87               | 0.0059                   | 0.9122             | 81         |                     |  |  |
|       | 42        | 0.0935                      | 68               | 0.0020                   | 0.0955             | 61         |         | 6         | 0.2040                      | 71               | 0.0038                   | 0.2078             | 65         |          | 59/64     | 0.9219                      | 72               | 0.0060                   | 0.9279             | 67         |                     |  |  |
|       | 3/32      | 0.0938                      | 68               | 0.0020                   | 0.0958             | 60         |         | 5         | 0.2055                      | 69               | 0.0038                   | 0.2093             | 63         |          | 15/16     | 0.9375                      | 58               | 0.0060                   | 0.9435             | 52         |                     |  |  |
| 5-40  | 41        | 0.0960                      | 59               | 0.0020                   | 0.0980             | 52         |         | 4         | 0.2090                      | 63               | 0.0038                   | 0.2128             | 57         | 1-14     | 59/64     | 0.9219                      | 84               | 0.0060                   | 0.9279             | 78         |                     |  |  |
|       | 40        | 0.0980                      | 83               | 0.0023                   | 0.1003             | 76         | 1/4-28  | 3         | 0.2130                      | 80               | 0.0038                   | 0.2168             | 72         |          | 15/16     | 0.9375                      | 67               | 0.0060                   | 0.9435             | 61         |                     |  |  |
|       | 39        | 0.0995                      | 79               | 0.0023                   | 0.1018             | 71         |         | 7/32      | 0.2188                      | 67               | 0.0038                   | 0.2226             | 59         | 1-1/8-7  | 31/32     | 0.9688                      | 84               | 0.0062                   | 0.975              | 81         |                     |  |  |
| 5-44  | 38        | 0.1015                      | 72               | 0.0023                   | 0.1038             | 65         |         | 2         | 0.2210                      | 63               | 0.0038                   | 0.2248             | 55         |          | 63/64     | 0.9844                      | 76               | 0.0067                   | 0.9911             | 72         |                     |  |  |
|       | 37        | 0.1040                      | 65               | 0.0023                   | 0.1063             | 58         | 5/16-18 | F         | 0.2570                      | 77               | 0.0038                   | 0.2608             | 72         |          | 1         | 1.0000                      | 67               | 0.0070                   | 1.0070             | 64         |                     |  |  |
|       | 38        | 0.1015                      | 79               | 0.0023                   | 0.1038             | 72         |         | G         | 0.2610                      | 71               | 0.0041                   | 0.2651             | 66         |          | 1-1/8-12  | 1-1/8                       | 1.0156           | 59                       | 0.0070             | 1.0226     | 55                  |  |  |
| 6-32  | 37        | 0.1040                      | 71               | 0.0023                   | 0.1063             | 63         |         | 17/64     | 0.2656                      | 65               | 0.0041                   | 0.2697             | 59         | 1-1/8-12 | 1-1/32    | 1.0313                      | 87               | 0.0071                   | 1.0384             | 80         |                     |  |  |
|       | 36        | 0.1065                      | 63               | 0.0023                   | 0.1088             | 55         |         | H         | 0.2660                      | 64               | 0.0041                   | 0.2701             | 59         |          | 1-3/64    | 1.0469                      | 72               | 0.0072                   | 1.0541             | 66         |                     |  |  |
|       | 37        | 0.1040                      | 84               | 0.0023                   | 0.1063             | 78         | 5/16-24 | H         | 0.2660                      | 86               | 0.0041                   | 0.2701             | 78         | 11-4/7   | 1-3/32    | 1.0938                      | 84               | Reaming Recommended      |                    |            |                     |  |  |
| 36    | 0.1065    | 78                          | 0.0023           | 0.1088                   | 72                 |            | I       | 0.2720    | 75                          | 0.0041           | 0.2761                   | 67                 |            | 1-7/64   | 1.1094    | 76                          |                  |                          |                    |            |                     |  |  |
| 7/64  | 0.1094    | 70                          | 0.0026           | 0.1120                   | 64                 |            | J       | 0.2770    | 66                          | 0.0041           | 0.2811                   | 58                 |            | 1-1/8    | 1.1250    | 67                          |                  |                          |                    |            |                     |  |  |
| 35    | 0.1100    | 69                          | 0.0026           | 0.1126                   | 63                 | 3/8-16     | 5/16    | 0.3125    | 77                          | 0.0044           | 0.3169                   | 72                 | 1-1/4-12   | 1-5/32   | 1.1563    | 87                          |                  |                          |                    |            |                     |  |  |
| 34    | 0.1110    | 67                          | 0.0026           | 0.1136                   | 60                 |            | O       | 0.3160    | 73                          | 0.0044           | 0.3204                   | 68                 |            | 1-11/64  | 1.1719    | 72                          |                  |                          |                    |            |                     |  |  |
| 6-40  | 33        | 0.1130                      | 62               | 0.0026                   | 0.1156             | 55         |         | P         | 0.3230                      | 64               | 0.0044                   | 0.3274             | 59         | 1-3/8-6  | 1-3/16    | 1.1875                      | 87               | Reaming Recommended      |                    |            |                     |  |  |
|       | 34        | 0.1110                      | 83               | 0.0026                   | 0.1136             | 75         | 3/8-24  | 21/64     | 0.3281                      | 87               | 0.0044                   | 0.3325             | 79         |          | 1-13/64   | 1.2031                      | 79               |                          |                    |            |                     |  |  |
|       | 33        | 0.1130                      | 77               | 0.0026                   | 0.1156             | 69         |         | Q         | 0.3320                      | 79               | 0.0044                   | 0.3364             | 71         |          | 1-7/32    | 1.2188                      | 72               |                          |                    |            |                     |  |  |
| 32    | 0.1160    | 68                          | 0.0026           | 0.1186                   | 60                 |            | R       | 0.3390    | 67                          | 0.0044           | 0.3434                   | 58                 |            | 1-15/64  | 1.2344    | 65                          |                  |                          |                    |            |                     |  |  |
| 8-32  | 29        | 0.1360                      | 69               | 0.0029                   | 0.1389             | 62         | 7/16-14 | T         | 0.3580                      | 86               | 0.0046                   | 0.3626             | 81         | 1-3/8-12 | 1-9/32    | 1.2813                      | 87               |                          |                    |            | Reaming Recommended |  |  |
|       | 28        | 0.1405                      | 58               | 0.0029                   | 0.1434             | 51         |         | 23/64     | 0.3594                      | 84               | 0.0046                   | 0.3640             | 79         |          | 1-19/64   | 1.2969                      | 72               |                          |                    |            |                     |  |  |
| 8-36  | 29        | 0.1360                      | 78               | 0.0029                   | 0.1389             | 70         |         | U         | 0.3680                      | 75               | 0.0046                   | 0.3726             | 70         | 11-2/6   | 1-5/16    | 1.3125                      | 87               | Reaming Recommended      |                    |            |                     |  |  |
|       | 28        | 0.1405                      | 68               | 0.0029                   | 0.1434             | 57         |         | 3/8       | 0.3750                      | 67               | 0.0046                   | 0.3796             | 62         |          | 1-21/64   | 1.3281                      | 79               |                          |                    |            |                     |  |  |
| 10-24 | 9/64      | 0.1406                      | 68               | 0.0029                   | 0.1435             | 57         |         | V         | 0.3770                      | 65               | 0.0046                   | 0.3816             | 60         |          | 1-11/32   | 1.3438                      | 72               |                          |                    |            |                     |  |  |
|       | 27        | 0.1440                      | 85               | 0.0032                   | 0.1472             | 79         | 7/16-20 | W         | 0.3860                      | 79               | 0.0046                   | 0.3906             | 72         |          | 1-23/64   | 1.3594                      | 65               |                          |                    |            |                     |  |  |
|       | 26        | 0.1470                      | 79               | 0.0032                   | 0.1502             | 74         |         | 25/64     | 0.3906                      | 72               | 0.0046                   | 0.3952             | 65         | 1-1/2-12 | 1-13/32   | 1.4063                      | 87               |                          |                    |            |                     |  |  |
|       | 25        | 0.1495                      | 75               | 0.0032                   | 0.1527             | 69         |         | X         | 0.3970                      | 62               | 0.0046                   | 0.4016             | 55         |          | 1-27/64   | 1.4219                      | 72               | Reaming Recommended      |                    |            |                     |  |  |

|                                                               |                                        |              |                                                                               |                                        |                    |
|---------------------------------------------------------------|----------------------------------------|--------------|-------------------------------------------------------------------------------|----------------------------------------|--------------------|
| FORMULA: TAP DRILL SIZE                                       |                                        |              | FORMULA: percentage of full thread                                            |                                        |                    |
| Major Dia.of Tap -                                            | <u>.01299 x Percent of Full Thread</u> | = Drill Size | Threads Per Inch x                                                            | <u>Major Diam. of Tap=Drill Diam.=</u> | Percentage of      |
|                                                               | <u>Number of Threads Per Inch</u>      |              |                                                                               | <u>.01299</u>                          | <u>Full Thread</u> |
| Example: Determine Drill Size for 2"—12N Tap,70% Full Thread. |                                        |              | Example: Determine Percent of Full Thread for 2"—12N Tap using 1.9219" Drill. |                                        |                    |
| Basic Major Diameter of Tap = 2.0000"                         |                                        |              | 2.000-1.9219 = .0781÷.01299 = 6.012                                           |                                        |                    |
| .01299 x 70 = .9093 ÷ 12 = .0758"                             |                                        |              | Threads Per Inch = x 12                                                       |                                        |                    |
| Theoretical Drill Size = 1.9242"                              |                                        |              | Theoretical Percentage of Full Threads = 72.144                               |                                        |                    |
| Nearest Standard Drill Size 1 59/64 = 1.9219"                 |                                        |              |                                                                               |                                        |                    |

| Suggested<br>Pipe Tap<br>Drill sizes | Tap sizes      |                    | 1/16 | 1/8   | 1/4  | 3/8   | 1/2   | 3/4   | 1      | 1-1/4 | 1-1/2   | 2      | 2-1/2   | 3     | 3-1/2 | 4     |
|--------------------------------------|----------------|--------------------|------|-------|------|-------|-------|-------|--------|-------|---------|--------|---------|-------|-------|-------|
|                                      | Drill<br>sizes | Taper Pipe Tap*    | D    | R     | 7/16 | 37/64 | 45/64 | 59/64 | 1-5/32 | 1-1/2 | 1-17/32 | 2-1/32 | 2-5/8   | 3-1/4 | 3-3/4 | 4-1/4 |
|                                      |                | Straight Pipe Tap† | 1/14 | 11/32 | 7/16 | 37/64 | 23/32 | 59/64 | 1-5/32 | 1-1/2 | 1-3/4   | 2-7/32 | 2-21/32 |       |       |       |

# Taps: Tap Drill Sizes for Metric

| Nominal Size<br>mm | Pitch<br>mm | Basic Major Diam.<br>Inches | Tap Drill Size | Decimal Equiv. of Tap Drill<br>Inches | Theo. % of Thrd. | Probable Oversize (Mean)<br>Inches | Probable Hole Size<br>Inches | Prob. % of Thrd. | Nominal Size<br>mm | Pitch<br>mm | Basic Major Diam.<br>Inches | Tap Drill Size | Decimal Equiv. of Tap Drill<br>Inches | Theo. % of Thrd. | Probable Oversize (Mean)<br>Inches | Probable Hole Size<br>Inches | Prob. % of Thrd. |
|--------------------|-------------|-----------------------------|----------------|---------------------------------------|------------------|------------------------------------|------------------------------|------------------|--------------------|-------------|-----------------------------|----------------|---------------------------------------|------------------|------------------------------------|------------------------------|------------------|
| 1.6                | 0.35        | 0.0630                      | 1.25mm         | 0.0492                                | 77               | 0.0015                             | 0.0507                       | 69               | 10                 | 1.25        | 0.3937                      | 8.7mm          | 0.3425                                | 80               | 0.0046                             | 0.3471                       | 73               |
| 1.8                | 0.35        | 0.0709                      | 1.45mm         | 0.0571                                | 77               | 0.0015                             | 0.0586                       | 69               | 10                 | 1.25        | 0.3937                      | 11/32          | 0.3438                                | 78               | 0.0046                             | 0.3483                       | 71               |
| 2                  | 0.40        | 0.0787                      | 1/16           | 0.0625                                | 79               | 0.0015                             | 0.0640                       | 72               | 10                 | 1.25        | 0.3937                      | 8.75mm         | 0.3445                                | 77               | 0.0046                             | 0.3491                       | 70               |
| 2                  | 0.40        | 0.0787                      | 1.60mm         | 0.0630                                | 77               | 0.0017                             | 0.0647                       | 69               | 12                 | 1.75        | 0.4724                      | *10.25mm       | 0.4035                                | 77               | 0.0047                             | 0.4082                       | 72               |
| 2.2                | 0.45        | 0.0866                      | 52             | 0.0635                                | 74               | 0.0017                             | 0.0652                       | 66               | 12                 | 1.75        | 0.4724                      | Y              | 0.4040                                | 76               | 0.0047                             | 0.4087                       | 71               |
| 2.2                | 0.45        | 0.0866                      | 1.75mm         | 0.0689                                | 77               | 0.0017                             | 0.0706                       | 70               | 12                 | 1.75        | 0.4724                      | 13/32          | 0.4062                                | 74               | 0.0047                             | 0.4109                       | 69               |
| 2.5                | 0.45        | 0.0984                      | 2.05mm         | 0.0807                                | 77               | 0.0019                             | 0.0826                       | 69               | 12                 | 1.25        | 0.4724                      | 27/64          | 0.4219                                | 79               | 0.0047                             | 0.4266                       | 72               |
| 2.5                | 0.45        | 0.0984                      | 46             | 0.0810                                | 76               | 0.0019                             | 0.0829                       | 67               | 12                 | 1.25        | 0.4724                      | *10.75mm       | 0.4232                                | 77               | 0.0047                             | 0.4279                       | 70               |
| 2.5                | 0.45        | 0.0984                      | 45             | 0.0820                                | 71               | 0.0019                             | 0.0839                       | 63               | 14                 | 2           | 0.5512                      | 15/32          | 0.4688                                | 81               | 0.0048                             | 0.4736                       | 76               |
| 3                  | 0.50        | 0.1181                      | 40             | 0.0980                                | 79               | 0.0023                             | 0.1003                       | 70               | 14                 | 2           | 0.5512                      | 12mm           | 0.4724                                | 77               | 0.0048                             | 0.4772                       | 72               |
| 3                  | 0.50        | 0.1181                      | 2.5mm          | 0.0984                                | 77               | 0.0023                             | 0.1007                       | 68               | 14                 | 1.5         | 0.5512                      | 12.5mm         | 0.4921                                | 77               | 0.0048                             | 0.4969                       | 71               |
| 3                  | 0.50        | 0.1181                      | 39             | 0.0995                                | 73               | 0.0023                             | 0.1018                       | 64               | 16                 | 2           | 0.6299                      | 35/64          | 0.5469                                | 81               | 0.0049                             | 0.5518                       | 76               |
| 3.5                | 0.60        | 0.1378                      | 33             | 0.1130                                | 81               | 0.0026                             | 0.1156                       | 72               | 16                 | 2           | 0.6299                      | *14mm          | 0.5512                                | 77               | 0.0049                             | 0.5561                       | 72               |
| 3.5                | 0.60        | 0.1378                      | 2.9mm          | 0.1142                                | 77               | 0.0026                             | 0.1168                       | 68               | 16                 | 1.5         | 0.6299                      | *14.5mm        | 0.5709                                | 77               | 0.0049                             | 0.5758                       | 71               |
| 3.5                | 0.60        | 0.1378                      | 32             | 0.1160                                | 71               | 0.0026                             | 0.1186                       | 63               | 18                 | 2.5         | 0.7087                      | 39/64          | 0.6094                                | 78               | 0.0050                             | 0.6144                       | 74               |
| 4                  | 0.70        | 0.1574                      | 3.25mm         | 0.1280                                | 82               | 0.0029                             | 0.1309                       | 74               | 18                 | 2.5         | 0.7087                      | *15.5mm        | 0.6102                                | 77               | 0.0050                             | 0.6152                       | 73               |
| 4                  | 0.70        | 0.1574                      | 30             | 0.1285                                | 81               | 0.0029                             | 0.1314                       | 73               | 18                 | 1.5         | 0.7087                      | *16.5mm        | 0.6496                                | 77               | 0.0050                             | 0.6546                       | 70               |
| 4                  | 0.70        | 0.1574                      | 3.3mm          | 0.1299                                | 77               | 0.0029                             | 0.1328                       | 69               | 18                 | 1.5         | 0.7087                      | *17.5mm        | 0.6875                                | 78               | 0.0050                             | 0.6925                       | 74               |
| 4.5                | 0.75        | 0.1772                      | 3.7mm          | 0.1457                                | 82               | 0.0032                             | 0.1489                       | 74               | 20                 | 2.5         | 0.7874                      | *17.5mm        | 0.6890                                | 77               | 0.0052                             | 0.6942                       | 73               |
| 4.5                | 0.75        | 0.1772                      | 26             | 0.1470                                | 79               | 0.0032                             | 0.1502                       | 70               | 20                 | 1.5         | 0.7874                      | *18.5mm        | 0.7283                                | 77               | 0.0052                             | 0.7335                       | 70               |
| 4.5                | 0.75        | 0.1772                      | 3.75mm         | 0.1476                                | 77               | 0.0032                             | 0.1508                       | 69               | 22                 | 2.5         | 0.8661                      | 49/64          | 0.7656                                | 79               | 0.0052                             | 0.7708                       | 75               |
| 4.5                | 0.75        | 0.1772                      | 25             | 0.1495                                | 72               | 0.0032                             | 0.1527                       | 64               | 22                 | 2.5         | 0.8661                      | *19.5mm        | 0.7677                                | 77               | 0.0052                             | 0.7729                       | 73               |
| 5                  | 0.80        | 0.1968                      | 4.2mm          | 0.1654                                | 77               | 0.0032                             | 0.1686                       | 69               | 22                 | 1.5         | 0.8661                      | *20.5mm        | 0.8071                                | 77               | 0.0052                             | 0.8123                       | 70               |
| 5                  | 0.80        | 0.1968                      | 19             | 0.1660                                | 75               | 0.0032                             | 0.1692                       | 68               | 24                 | 3           | 0.9449                      | *21mm          | 0.8268                                | 77               | 0.0059                             | 0.8327                       | 73               |
| 6                  | 1.00        | 0.2362                      | 10             | 0.1935                                | 84               | 0.0038                             | 0.1973                       | 76               | 24                 | 3           | 0.9449                      | 53/64          | 0.8281                                | 76               | 0.0059                             | 0.8340                       | 72               |
| 6                  | 1.00        | 0.2362                      | 9              | 0.1960                                | 79               | 0.0038                             | 0.1998                       | 71               | 24                 | 2           | 0.9449                      | *22mm          | 0.8661                                | 77               | 0.0059                             | 0.8720                       | 71               |
| 6                  | 1.00        | 0.2362                      | 5.0mm          | 0.1968                                | 77               | 0.0038                             | 0.2006                       | 70               | 27                 | 3           | 1.0630                      | 15/16          | 0.9375                                | 82               | 0.0060                             | 0.9435                       | 78               |
| 6                  | 1.00        | 0.2362                      | 8              | 0.1990                                | 73               | 0.0038                             | 0.2028                       | 65               | 27                 | 3           | 1.0630                      | *24mm          | 0.9449                                | 77               | 0.0062                             | 0.9511                       | 73               |
| 7                  | 1.00        | 0.2756                      | A              | 0.2340                                | 81               | 0.0038                             | 0.2378                       | 74               | 27                 | 2           | 1.0630                      | *25mm          | 0.9843                                | 77               | 0.0070                             | 0.9913                       | 70               |
| 7                  | 1.00        | 0.2756                      | 15/64          | 0.2344                                | 81               | 0.0038                             | 0.2382                       | 73               | 30                 | 3.5         | 1.1811                      | 63/64          | 0.9844                                | 77               | 0.0070                             | 0.9914                       | 70               |
| 7                  | 1.00        | 0.2756                      | 6.0mm          | 0.2362                                | 77               | 0.0038                             | 0.2400                       | 70               | 30                 | 3.5         | 1.1811                      | *26.5mm        | 1.0433                                | 77               | Reaming Recommended                |                              |                  |
| 7                  | 1.00        | 0.2756                      | B              | 0.2380                                | 74               | 0.0038                             | 0.2418                       | 66               | 30                 | 3.5         | 1.1811                      | 1-3/64         | 1.0469                                | 75               |                                    |                              |                  |
| 8                  | 1.25        | 0.3150                      | 6.7mm          | 0.2638                                | 80               | 0.0041                             | 0.2679                       | 74               | 30                 | 2           | 1.1811                      | *28mm          | 1.1024                                | 77               |                                    |                              |                  |
| 8                  | 1.25        | 0.3150                      | 17/64          | 0.2656                                | 77               | 0.0041                             | 0.2697                       | 71               | 30                 | 2           | 1.1811                      | 1-7/64         | 1.1094                                | 70               |                                    |                              |                  |
| 8                  | 1.25        | 0.3150                      | 6.75mm         | 0.2657                                | 77               | 0.0041                             | 0.2698                       | 71               | 33                 | 3.5         | 1.2992                      | 1-5/32         | 1.1562                                | 80               |                                    |                              |                  |
| 8                  | 1.25        | 0.3150                      | H              | 0.2660                                | 77               | 0.0041                             | 0.2701                       | 70               | 33                 | 3.5         | 1.2992                      | *29.5mm        | 1.1614                                | 77               |                                    |                              |                  |
| 8                  | 1.25        | 0.3150                      | 6.8mm          | 0.2677                                | 74               | 0.0041                             | 0.2718                       | 68               | 33                 | 3.5         | 1.2992                      | 1-11/64        | 1.1719                                | 71               |                                    |                              |                  |
| 8                  | 1.00        | 0.3150                      | 7.0mm          | 0.2756                                | 77               | 0.0041                             | 0.2797                       | 69               | 33                 | 2           | 1.2992                      | 1-7/32         | 1.2188                                | 79               |                                    |                              |                  |
| 8                  | 1.00        | 0.3150                      | J              | 0.2770                                | 74               | 0.0041                             | 0.2811                       | 66               | 33                 | 2           | 1.2992                      | *31mm          | 1.2205                                | 77               |                                    |                              |                  |
| 10                 | 1.50        | 0.3937                      | 8.4mm          | 0.3307                                | 82               | 0.0044                             | 0.3351                       | 76               | 36                 | 4           | 1.4173                      | 1-1/4          | 1.2500                                | 82               |                                    |                              |                  |
| 10                 | 1.50        | 0.3937                      | Q              | 0.3320                                | 80               | 0.0044                             | 0.3364                       | 75               | 36                 | 4           | 1.4173                      | *32mm          | 1.2598                                | 77               |                                    |                              |                  |
| 10                 | 1.50        | 0.3937                      | 8.5mm          | 0.3346                                | 77               | 0.0044                             | 0.3390                       | 71               | 36                 | 3           | 1.4173                      | *33mm          | 1.2992                                | 77               |                                    |                              |                  |

NOTE: Sizes with asterisk (\*) are not standard drills.

## METRIC THREAD FORMULA

$$\text{BASIC MAJOR DIA. (mm)} - \frac{\% \text{ THREAD X mm PITCH}}{76.980} = \text{DRILLED HOLE SIZE (mm)}$$

$$\frac{76.980}{\text{mm PITCH}} \times (\text{BASIC MAJOR DIAM. (mm)} - \text{DRILLED HOLE SIZE}) = \% \text{ OF THREAD}$$





# Taps: STI Drill Size

| Nominal Thread Size | Minor Diameter (After Tapping) |        | Suggested Drill Size |                         |
|---------------------|--------------------------------|--------|----------------------|-------------------------|
|                     | Min.                           | Max.   | Aluminum             | Steel Magnesium Plastic |
|                     |                                |        |                      | <b>Unified Coarse</b>   |
| 2 (0.086) - 56      | 0.0899                         | 0.0961 | 3/32 (0.0938)        | #41 (0.0960)            |
| 3 (0.099) - 48      | 0.1036                         | 0.1104 | #36 (0.1065)         | 7/64 (0.1094)           |
| 4 (0.112) - 40      | 0.1175                         | 0.1252 | #31 (0.1200)         | #31 (0.1200)            |
| 5 (0.125) - 40      | 0.1305                         | 0.1373 | 3.4mm (0.1339)       | #29 (0.1360)            |
| 6 (0.138) - 32      | 0.1448                         | 0.1527 | #26 (0.1470)         | #25 (0.1495)            |
| 8 (0.164) - 32      | 0.1708                         | 0.1781 | #17 (0.1730)         | #16 (0.1770)            |
| 10 (0.190) - 24     | 0.1990                         | 0.2000 | 13/64 (0.2031)       | #5 (0.2055)             |
| 12 (0.216) - 24     | 0.2250                         | 0.2340 | #1 (0.2280)          | #1 (0.2280)             |
| 1/4 (0.250) - 20    | 0.2608                         | 0.2704 | H (0.2660)           | H (0.2660)              |
| 5/16 (0.3125) - 18  | 0.3245                         | 0.3342 | Q (0.3320)           | Q (0.3320)              |
| 3/8 (0.3750) - 16   | 0.3885                         | 0.3987 | X (0.3970)           | X (0.3970)              |
| 7/16 (0.4375) - 14  | 0.4530                         | 0.4639 | 29/64 (0.4531)       | 29/64 (0.4531)          |
| 1/2 (0.5000) - 13   | 0.5166                         | 0.5273 | 33/64 (0.5156)       | 17/32 (0.5312)          |
|                     |                                |        |                      | <b>Unified Fine</b>     |
| 3 (0.099) - 56      | 0.1029                         | 0.1086 | #37 (0.1040)         | #36 (0.1065)            |
| 4 (0.112) - 48      | 0.1166                         | 0.1229 | 3mm (0.1181)         | #31 (0.1200)            |
| 6 (0.138) - 40      | 0.1435                         | 0.1503 | #26 (0.1470)         | #25 (0.1495)            |
| 8 (0.164) - 36      | 0.1701                         | 0.1771 | #17 (0.1730)         | #16 (0.1770)            |
| 10 (0.190) - 32     | 0.1968                         | 0.2041 | #7 (0.2010)          | 13/64 (0.2031)          |
| 1/4 (0.2500) - 28   | 0.2577                         | 0.2646 | G (0.2610)           | 6.7mm (0.2638)          |
| 5/16 (0.3125) - 24  | 0.3215                         | 0.3288 | 21/64 (0.3281)       | 21/64 (0.3281)          |
| 3/8 (0.3750) - 24   | 0.3840                         | 0.3910 | 25/64 (0.3906)       | 25/64 (0.3906)          |
| 7/16 (0.4375) - 20  | 0.4483                         | 0.4561 | 29/64 (0.4531)       | 29/64 (0.4531)          |
| 1/2 (0.5000) - 20   | 0.5108                         | 0.5186 | 33/64 (0.5156)       | 33/64 (0.5156)          |

The suggested drill sizes for aluminum listed in the table are within the minor diameter limits for STI tapped holes specified in MS 33537. Alternate drill sizes are suggested in many instances for magnesium, steel and plastics to provide for maximum tap wear life. In the case of magnesium, the larger size is recommended to allow for material close-in. There are suggested drill sizes and any special requirements or specifications will supersede these recommendations.





# Taps: Thread Mill Cutting Conditions

List 41000 UNC, UNF, UNEF, UNS

List 41100

List 42000 NPT

List 42001 NPTF

## List 41000, 41100, 42000, 42001

| Work Material                               | SFM       | Inch/Tooth      | Pass |
|---------------------------------------------|-----------|-----------------|------|
| Low Carbon Steel (SS400, under S25C)        | 300 - 420 | 0.0016 - 0.0050 | 1    |
| Medium Carbon Steel (S3C-S50C)              | 300 - 420 | 0.0016 - 0.0050 | 1    |
| High Carbon Steel (S53C-S58C)               | 250 - 420 | 0.0016 - 0.0050 | 1    |
| Alloy Steel (SCr,SCM,SNC)                   | 180 - 350 | 0.0008 - 0.0040 | 1-2  |
| Heat Treated Steel (28-34HRC)               | 160 - 300 | 0.0008 - 0.0040 | 1    |
| Heat Treated Steel (34-40HRC)               | 130 - 260 | 0.0004 - 0.0040 | 1-2  |
| Heat Treated Steel (40-50HRC)               | 65 - 250  | 0.0004 - 0.0040 | 2-4  |
| Stainless Steel (SUS3**,SUS2**)             | 200 - 450 | 0.0016 - 0.0060 | 1-2  |
| Stainless Steel (SUS405,410L,430)           | 165 - 400 | 0.0016 - 0.0060 | 1-2  |
| Stainless Steel (15-5, 17-4PH)              | 130 - 350 | 0.0016 - 0.0060 | 2    |
| Cast Iron (SC)                              | 300 - 450 | 0.0012 - 0.0040 | 1    |
| Cast Iron (FC)                              | 250 - 400 | 0.0008 - 0.0035 | 1    |
| Ductile Cast Iron (upto FCD500)             | 210 - 310 | 0.0012 - 0.0040 | 1    |
| Ductile Cast Iron (over FCD500)             | 210 - 280 | 0.0012 - 0.0040 | 1    |
| Aluminum Alloy (A****)                      | 300 - 500 | 0.0012 - 0.0040 | 1    |
| Aluminum Alloy Casting Si [12]%             | 280 - 550 | 0.0012 - 0.0050 | 1    |
| Aluminum Alloy Casting Si [12-16]%          | 250 - 460 | 0.0012 - 0.0040 | 1    |
| Aluminum Alloy Casting with Si [16-20]%     | 210 - 400 | 0.0012 - 0.0040 | 1    |
| Aluminum Alloy Casting with Si [20-25]%     | 200 - 350 | 0.0012 - 0.0040 | 1    |
| Copper,Copper Casting (C1***,CuC)           | 300 - 510 | 0.0012 - 0.0040 | 1    |
| Brass, Brass Casting (C2***,C3***,Bs,BsC)   | 300 - 510 | 0.0012 - 0.0040 | 1    |
| Bronze,Bronze Casting (C6***,PB,PBC)        | 300 - 500 | 0.0012 - 0.0040 | 1    |
| Magnesium Alloy Casting                     | 210 - 410 | 0.0012 - 0.0050 | 1    |
| Zinc Alloy Casting                          | 180 - 380 | 0.0012 - 0.0050 | 1    |
| Titanium Alloy (Ti-6Al-4V)                  | 100 - 330 | 0.0012 - 0.0025 | 2    |
| High Heat Resistance Alloy (Inconel)        | 65 - 260  | 0.0008 - 0.0020 | 2    |
| High Heat Resistance Alloy (Inconel >40HRC) | 65 - 200  | 0.0008 - 0.0020 | 4    |
| Thermoplastic                               | 220 - 510 | 0.0012 - 0.0050 | 1    |
| Cobalt/Chrome Alloy (Stellite)              | 65 - 200  | 0.0016 - 0.0060 | 3    |

For chip loads, the smaller cutter diameters use a smaller chip load per tooth within the given range.

Larger cutter diameters use the larger chip load per tooth within the given range.

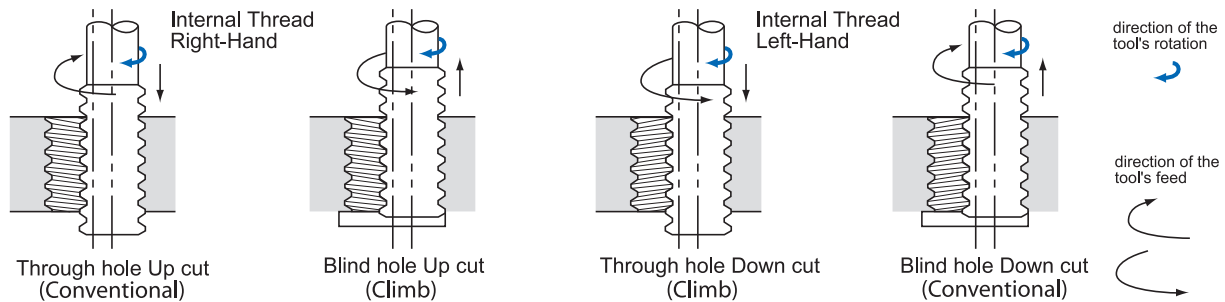
For programming help or other information, please contact our engineering department.



## EXOCARB® Thread Mill Technical: HOW-TO Guide

### Machining Technique

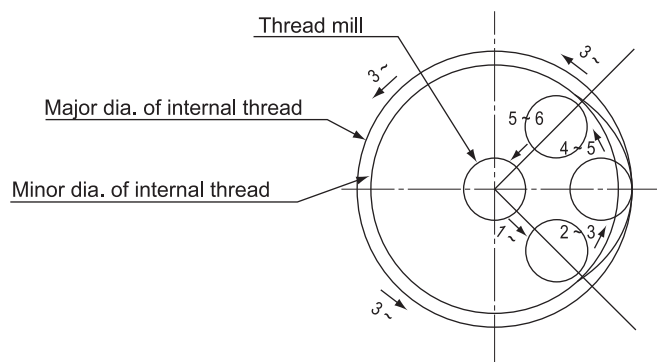
OSG's EXOCARB® Thread Mills have been developed for thread milling on a 3-Axis CNC controlled machine tool. Threads are produced by advancing one pitch feed per revolution in the axial direction, utilizing the planet-like rotation and revolution movements of the tool. Internal/external and right/left hand threads can all be produced with this one tool by simply changing the direction of rotation and/or feed.



### Threading Process

- 1-2 Move to edge (maintain clearance)
- 2-3 Cut with helical milling
- 3-4 Mill the circumference of the circle
- 4-5 Pull away from the edge
- 5-6 Remove tool

The transition between the start and finish of the milling operation must be smooth, and the appropriate amount of feed is essential for minimizing milling resistance. There are many different methods for using this tool, but our research has shown that this technique provides the most precise and efficient operation.



Thread Milling Process (view from above)

# Taps: Trouble Shooting Guide

| Specific Problem                  | Cause                       | Solution                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------------------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Dimensional Accuracy</b>       |                             |                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Oversize Pitch Diameter</b>    | <b>Incorrect Tap</b>        | <ol style="list-style-type: none"> <li>1. Use proper GH limits of taps.</li> <li>2. Use longer chamfered taps.</li> </ol>                                                                                                                                                                                                                                                                                 |
|                                   | <b>Chip Packing</b>         | <ol style="list-style-type: none"> <li>1. Use spiral point or spiral fluted taps.</li> <li>2. Reduce number of flutes to provide extra chip room.</li> <li>3. Use larger hole size.</li> <li>4. If tapping a blind hole, allow deeper holes where applicable or shorten the thread length of the parts.</li> <li>5. Use proper lubricant.</li> </ol>                                                      |
|                                   | <b>Galling</b>              | <ol style="list-style-type: none"> <li>1. Apply proper surface treatment such as steam oxide or TiN.</li> <li>2. Use proper cutting lubricant.</li> <li>3. Reduce tapping speed.</li> <li>4. Use proper cutting angle in accordance with material being tapped.</li> <li>5. Use larger hole size.</li> </ol>                                                                                              |
|                                   | <b>Operating Conditions</b> | <ol style="list-style-type: none"> <li>1. Apply proper tapping speed.</li> <li>2. Correct alignment of tap and drilled hole.</li> <li>3. Use proper tapping speed to avoid torn or rough threads.</li> <li>4. Use lead screw tapper.</li> <li>5. Use proper tapping machine with suitable power.</li> <li>6. Avoid misalignment of the tap and drilled hole from loose spindle or worn holder.</li> </ol> |
|                                   | <b>Tool Conditions</b>      | <ol style="list-style-type: none"> <li>1. Obtain proper indexing angle for the flutes at the cutting edge.</li> <li>2. Grind proper cutting angle and chamfer angle.</li> <li>3. Avoid too narrow a land width.</li> <li>4. Remove burrs from regrinding.</li> </ol>                                                                                                                                      |
| <b>Oversize Internal Diameter</b> | <b>Hole Size</b>            | <ol style="list-style-type: none"> <li>1. Use minimum hole size.</li> <li>2. Avoid tapered hole.</li> <li>3. Use proper chamfered taps.</li> </ol>                                                                                                                                                                                                                                                        |
|                                   | <b>Galling</b>              | Galling solutions 1 through 4 under "Tool Conditions" can be applied to this specific problem.                                                                                                                                                                                                                                                                                                            |



# Taps: Trouble Shooting Guide

| Specific Problem                   | Cause                  | Solution                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Dimensional Accuracy</b>        |                        |                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Undersize Pitch Diameter</b>    | <b>Incorrect Tap</b>   | <ol style="list-style-type: none"> <li>1. Use oversize taps: <ol style="list-style-type: none"> <li>a. Use for cutting materials such as copper alloy, aluminum alloy, and cast iron.</li> <li>b. Use for cutting tubing which will have "spring back" action after tapping.</li> </ol> </li> <li>2. Apply proper chamfer angle.</li> <li>3. Increase cutting angle.</li> </ol> |
|                                    | <b>Damaged Thread</b>  | Use proper reversing speed to avoid damaging tapped thread on the way out of the hole.                                                                                                                                                                                                                                                                                          |
|                                    | <b>Left-over Chips</b> | <ol style="list-style-type: none"> <li>1. Increase cutting performance to avoid any left over chips in the hole.</li> <li>2. Remove left over chips from the hole for gage checking.</li> </ol>                                                                                                                                                                                 |
| <b>Undersize Internal Diameter</b> | <b>Hole Size</b>       | Use maximum drill size.                                                                                                                                                                                                                                                                                                                                                         |

| Specific Problem                   | Cause                      | Solution                                                                                                                                                                                                                                                                                                                                               |
|------------------------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Surface Finish</b>              |                            |                                                                                                                                                                                                                                                                                                                                                        |
|                                    | <b>Chamfer Too Short</b>   | Increase chamfer length.                                                                                                                                                                                                                                                                                                                               |
|                                    | <b>Wrong Cutting Angle</b> | Apply proper cutting angle.                                                                                                                                                                                                                                                                                                                            |
|                                    | <b>Galling</b>             | <ol style="list-style-type: none"> <li>1. Use thread relieved taps .</li> <li>2. Reduce land width.</li> <li>3. Apply surface treatment such as steam oxide or TiN.</li> <li>4. Use proper cutting lubricant.</li> <li>5. Reduce tapping speed.</li> <li>6. Use larger hole size.</li> <li>7. Obtain proper alignment between tap and work.</li> </ol> |
|                                    | <b>Chip Packing</b>        | <ol style="list-style-type: none"> <li>1. Use spiral pointed or spiral fluted taps.</li> <li>2. Use larger drill size.</li> </ol>                                                                                                                                                                                                                      |
| <b>Chattering on Tapped Thread</b> | <b>Tool Free Cutting</b>   | <ol style="list-style-type: none"> <li>1. Reduce cutting angle.</li> <li>2. Reduce amount of thread relief.</li> </ol>                                                                                                                                                                                                                                 |
|                                    | <b>Tool Condition</b>      | <ol style="list-style-type: none"> <li>1. Avoid too narrow a land.</li> <li>2. Do not grind the bottom of the flute.</li> </ol>                                                                                                                                                                                                                        |



# Taps: Trouble Shooting Guide

| Specific Problem | Cause                           | Solution                                                                                                                                                                                                                                                                                                                                   |
|------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Tool Life</b> |                                 |                                                                                                                                                                                                                                                                                                                                            |
| <b>Breakage</b>  | <b>Incorrect Tap Selection</b>  | <ol style="list-style-type: none"> <li>1. Avoid chip packing in the flutes or the bottom of the hole. Use spiral pointed or spiral fluted taps or fluteless taps.</li> <li>2. Apply correct surface treatment such as steam oxide or TiN.</li> </ol>                                                                                       |
|                  | <b>Excessive Tapping Torque</b> | <ol style="list-style-type: none"> <li>1. Use larger drill size.</li> <li>2. Try to shorten thread length.</li> <li>3. Increase cutting angle.</li> <li>4. Use a tap with more thread relief and reduced land width.</li> <li>5. Use spiral pointed or spiral fluted taps.</li> </ol>                                                      |
|                  | <b>Operating Conditions</b>     | <ol style="list-style-type: none"> <li>1. Reduce tapping speed.</li> <li>2. Avoid misalignment between tap and the hole and tapered hole.</li> <li>3. Use floating type of tapping holder.</li> <li>4. Use tapping holder with torque adjustment.</li> <li>5. Avoid hitting bottom of the hole with tap.</li> </ol>                        |
|                  | <b>Tool Condition</b>           | <ol style="list-style-type: none"> <li>1. Do not grind the bottom of the flute.</li> <li>2. Avoid too narrow a land width.</li> <li>3. Remove all worn sections when regrounding the flutes.</li> <li>4. Regrind tool more frequently.</li> </ol>                                                                                          |
| <b>Chipping</b>  | <b>Incorrect Tap Selection</b>  | <ol style="list-style-type: none"> <li>1. Reduce cutting angle.</li> <li>2. Use a different kind of high-speed steel tap.</li> <li>3. Reduce hardness of the tap.</li> <li>4. Increase chamfer length.</li> <li>5. Avoid chip packing in the flutes or in the bottom of the hole by using spiral fluted or spiral pointed taps.</li> </ol> |
|                  | <b>Operating Conditions</b>     | <ol style="list-style-type: none"> <li>1. Reduce tapping speed.</li> <li>2. Avoid misalignment between tap and hole.</li> <li>3. Avoid sudden return of reverse in blind hole tapping.</li> <li>4. Avoid galling.</li> <li>5. Use large hole size.</li> </ol>                                                                              |
| <b>Wear</b>      | <b>Incorrect Tap Selection</b>  | <ol style="list-style-type: none"> <li>1. Use specially designed taps for tapping heat treated material.</li> <li>2. Change to a type of high-speed steel tap that contains vanadium.</li> <li>3. Apply special surface treatment such as steam oxide or TiN.</li> <li>4. Increase chamfer length.</li> </ol>                              |
|                  | <b>Operating Conditions</b>     | <ol style="list-style-type: none"> <li>1. Reduce tapping speed.</li> <li>2. Apply proper cutting lubricants.</li> <li>3. Avoid work hardening.</li> <li>4. Use larger hole size.</li> </ol>                                                                                                                                                |
|                  | <b>Tool Condition</b>           | <ol style="list-style-type: none"> <li>1. Grind proper cutting angle.</li> <li>2. Avoid hardness reduction from grinding process.</li> </ol>                                                                                                                                                                                               |





# Taps: Ordering Instructions

## Standard Taps

The majority of our standard taps are steam oxide surface treated; bright finish available upon request.

## Stock Taps

When ordering stock items, should you choose to use the EDP Number method of ordering, quantity and EDP Number are the only information required. Customers who do not wish to order by EDP Number may order by List Number and description as follows:

1. Name of Tap.
2. List number as shown in catalog.
3. Nominal size and number of threads per inch:  
i.e., 1/4-20 NC.
4. Number of flutes, where there is a choice.
5. Style of chamfer (Taper, Plug, or Bottoming).
6. For Ground Thread Taps indicate the pitch diameter limits:  
i.e., H1, H2, H3, etc.
7. For Pipe Taps indicate NPT, NPTF, ANPT, NPS, or NPSF.

## Special Taps

When ordering OSG special taps, the following information should be given:

1. Type of Tap (Hand Tap, Pipe Tap, Pully Tap, etc.).
2. Direction of cut (Right or Left Hand).
3. General Dimensions of Tap.  
(a) Length Overall (c) Shank Diameter  
(b) Thread Length (d) Chamfer Length  
NOTE: If no general dimensions are given for special taps having American National Thread form, they will be made to dimensions shown in Table 302, except fine pitch taps over 1" which will qualify for Table 303.
4. Flutes:  
(a) Number of Flutes.  
(b) Straight or Helical.  
(c) If Helical, state hand of helix.
5. Threads:  
(a) Form (American National, American Standard Straight Pipe, etc.).  
(b) Nominal Size.  
(c) Threads per inch.  
(d) Single or Multiple.  
NOTE: Specify the number of threads and lead for multiple-lead-taps. (Example: 1/2-12, 1/6 lead double)
6. Pitch Diameter Limits of Tap or Class of Fit Required.
7. Pitch Diameter Limits of Gage.  
(a) Go (b) No Go
8. Material to be tapped.  
(a) Material (c) Annealed or Heat Treated  
(b) Hardness (d) Specification Number
9. Hole:  
(a) Blind or Through.  
(For blind holes, give clearance beyond the thread depth)  
(b) Depth.  
(c) Wall thickness of part, if less than 1/2 inch.
10. Part print, if available.
11. Type of Tapping Machine.

## Acme and Modified Square Thread Taps

Acme and Modified Square Thread Taps are usually designed to tap one specific part, and rarely as a general purpose tool. Therefore, OSG keeps the number of taps (if a set is required) and tap lengths to a minimum in concurrence with good design practice.

For design and quotation purposes the following is essential:

1. Sketch or Part Print.
2. Type of thread (General Purpose Acme, Centralizing Acme, Stub Acme, or Modified Square).
3. Size and Pitch (Basic major diameter and threads per inch).
4. Right or Left Hand Thread.
5. Lead if other than single.
6. Pitch diameter of Go and No Go gages.
7. Class of thread: 2G\*, 3G, or 4G for General.

## Purpose

- Acme; 2C, 3C, 4C, 5C or 6C for Centralizing Acme.
8. Material to be tapped.
  9. Type of tapped hole:  
(a) Through Hole—Give overall thickness of part and length of thread.  
(b) Counterbored Hole—Give overall thickness of part, length of threaded portion, and advise which end tap will enter.  
(c) Blind Hole—Give length of thread and length of clearance at bottom of hole.
  10. Bore Size (Minor diameter of tapped hole).

\*Class 2G furnished, unless otherwise specified.

