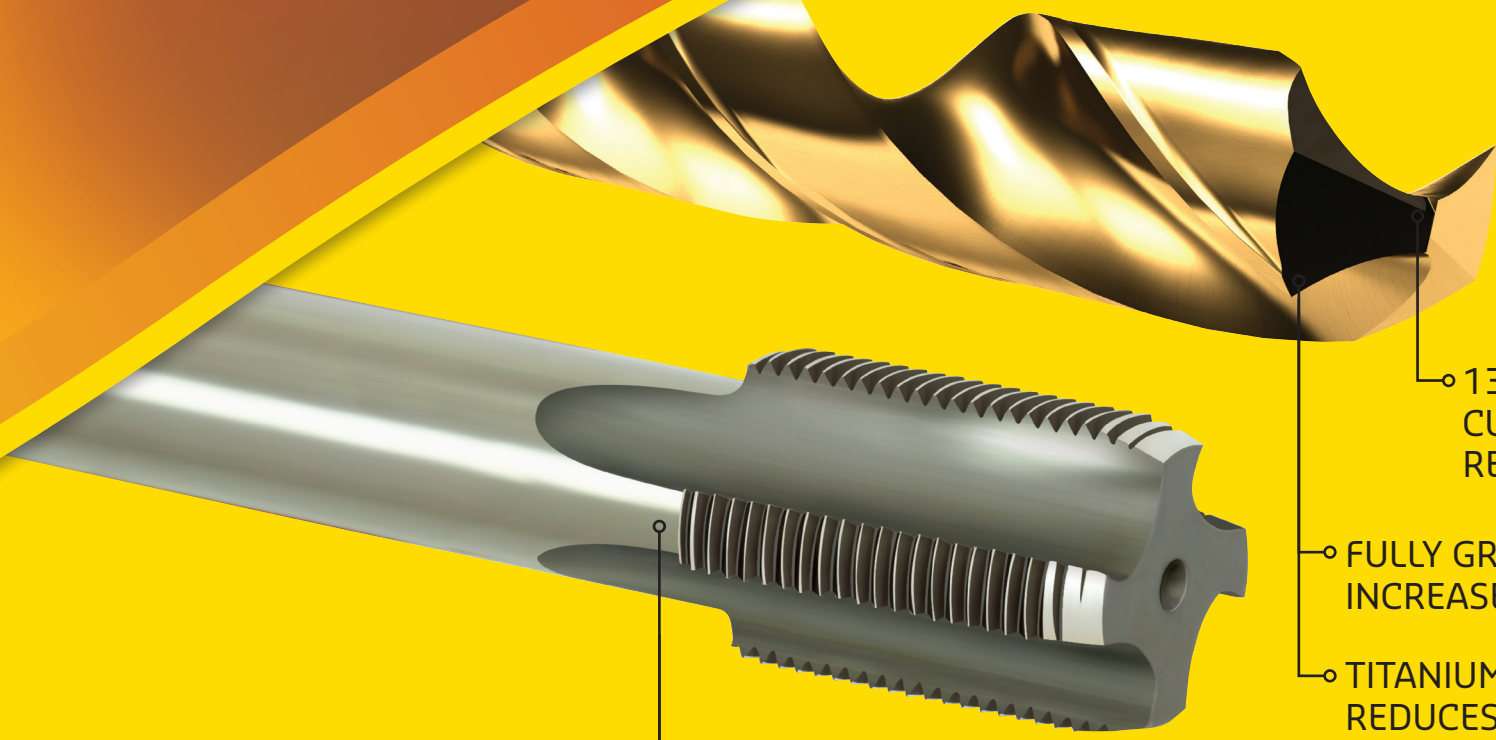


# Alpha



135° SPLIT POINT CUTS FASTER AND REDUCES WANDERING

FULLY GROUND M2 HSS INCREASES DRILL LIFE

TITANIUM NITRIDE COATING REDUCES HEAT AND INCREASES LUBRICITY FOR EXTENDED LIFE

MADE IN EUROPE

PRECISION MANUFACTURED TO I.S.O. & D.I.N. STANDARDS

## TAPPING CHART

M | MF | UNC | UNF | UNEF | 8UN | BSW | Rc (BSPT) | BSF | BA | BSB | Rp (BSPPL) | NPT-NPTF | NPSF | Pg

| M<br>ISO METRIC COARSE (60°) |          |               |
|------------------------------|----------|---------------|
| TAP SIZE                     | PITCH MM | TAPPING DRILL |
| M1.6                         | 0.35     | 1.25          |
| M2                           | 0.4      | 1.6           |
| M2.5                         | 0.45     | 2.05          |
| M3                           | 0.5      | 2.5           |
| M3.5                         | 0.6      | 2.9           |
| M4                           | 0.7      | 3.3           |
| M4.5                         | 0.75     | 3.7           |
| M5                           | 0.8      | 4.2           |
| M6                           | 1.0      | 5.0           |
| M8                           | 1.25     | 6.8           |
| M10                          | 1.5      | 8.5           |
| M12                          | 1.75     | 10.2          |
| M14                          | 2.0      | 12.0          |
| M16                          | 2.0      | 14.0          |
| M18                          | 2.5      | 15.5          |
| M20                          | 2.5      | 17.5          |
| M22                          | 2.5      | 19.5          |
| M24                          | 3.0      | 21.0          |
| M27                          | 3.0      | 24.0          |
| M30                          | 3.5      | 26.5          |
| M33                          | 3.5      | 29.5          |
| M36                          | 4.0      | 32.0          |
| M42                          | 4.5      | 37.5          |
| M45                          | 4.5      | 40.5          |
| M48                          | 5.0      | 43.0          |
| M52                          | 5.0      | 47.0          |
| M56                          | 5.5      | 50.5          |

| MF<br>ISO METRIC FINE (60°) |          |               |
|-----------------------------|----------|---------------|
| TAP SIZE                    | PITCH MM | TAPPING DRILL |
| M4                          | 0.5      | 3.5           |
| M5                          | 0.5      | 4.5           |
| M6                          | 0.75     | 5.3           |
| M8                          | 1.0      | 7.0           |
| M10*                        | 1.0      | 9.0           |
| M10                         | 1.25     | 8.8           |
| M12*                        | 1.25     | 10.8          |
| M12                         | 1.5      | 10.5          |
| M14*                        | 1.25     | 12.8          |
| M14                         | 1.5      | 12.5          |
| M16*                        | 1.5      | 14.5          |
| M18*                        | 1.5      | 16.5          |
| M20*                        | 1.5      | 18.5          |
| M22                         | 1.5      | 20.5          |
| M24                         | 2.0      | 22.0          |
| M25*                        | 1.5      | 23.5          |
| M32*                        | 1.5      | 30.5          |
| M40*                        | 1.5      | 38.5          |
| M50*                        | 1.5      | 48.5          |

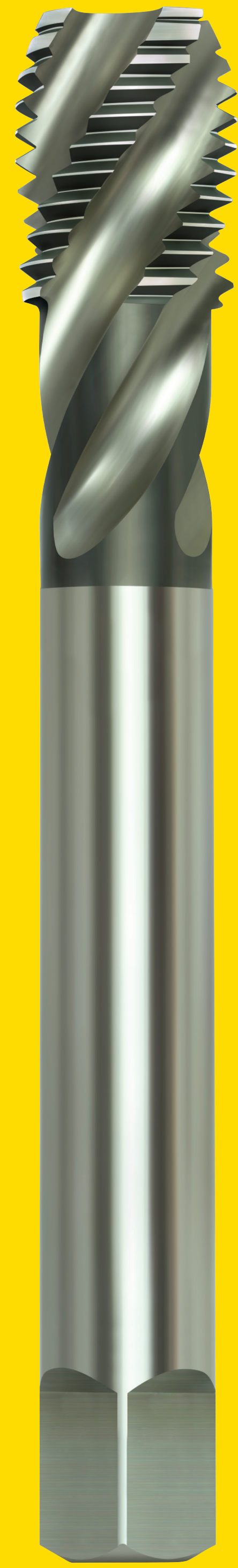
\* Metric Conduit  
\* Spark Plug

| UNF<br>UNIFIED NATIONAL FINE (60°) |        |               |
|------------------------------------|--------|---------------|
| TAP SIZE                           | T.P.I. | TAPPING DRILL |
| #3 (.099)                          | 56     | 2.1           |
| #4 (.112)                          | 48     | 2.35          |
| #5 (.125)                          | 44     | 2.65          |
| #6 (.138)                          | 40     | 2.9           |
| #8 (.164)                          | 36     | 3.5           |
| #10 (.190)                         | 32     | 4.1           |
| #12 (.216)                         | 28     | 4.6           |
| 3/16*                              | 32     | 4.0           |
| 1/4                                | 28     | 5.5           |
| 5/16                               | 24     | 6.9           |
| 3/8                                | 24     | 8.5           |
| 7/16                               | 20     | 9.8           |
| 1/2                                | 20     | 11.5          |
| 9/16                               | 18     | 12.8          |
| 5/8                                | 18     | 14.5          |
| 3/4                                | 16     | 17.5          |
| 7/8                                | 14     | 20.5          |
| 1                                  | 12     | 23.5          |
| 1*                                 | 14     | 24.0          |
| 1 - 1/8                            | 12     | 26.5          |
| 1 - 1/4                            | 12     | 29.5          |
| 1 - 3/8                            | 12     | 33.01         |
| 1 - 1/2                            | 12     | 36.0          |

\* UNS

| UNC<br>UNIFIED NATIONAL COARSE (60°) |        |               |
|--------------------------------------|--------|---------------|
| TAP SIZE                             | T.P.I. | TAPPING DRILL |
| #2 (.086)                            | 56     | 1.85          |
| #3 (.099)                            | 48     | 2.1           |
| #4 (.112)                            | 40     | 2.3           |
| #5 (.125)                            | 40     | 2.6           |
| #6 (.138)                            | 32     | 2.8           |
| #8 (.164)                            | 32     | 3.4           |
| #10 (.190)                           | 24     | 3.8           |
| #12 (.216)                           | 24     | 4.5           |
| 1/4                                  | 20     | 5.1           |
| 5/16                                 | 18     | 6.6           |
| 3/8                                  | 16     | 8.0           |
| 7/16                                 | 14     | 9.4           |
| 1/2                                  | 13     | 10.8          |
| 9/16                                 | 12     | 12.2          |
| 5/8                                  | 11     | 13.5          |
| 3/4                                  | 10     | 16.5          |
| 7/8                                  | 9      | 19.5          |
| 1                                    | 8      | 22.2          |
| 1 - 1/8                              | 7      | 25.0          |
| 1 - 1/4                              | 7      | 28.0          |
| 1 - 3/8                              | 6      | 31.0          |
| 1 - 1/2                              | 6      | 34.0          |
| 1 - 3/4                              | 5      | 39.5          |
| 2                                    | 4.5    | 45.0          |

| THREAD FORMING<br>(FLUTELESS TAPS) |        |               |
|------------------------------------|--------|---------------|
| TAP SIZE                           | T.P.I. | TAPPING DRILL |
| METRIC COARSE                      |        |               |
| M1                                 | 0.25   | 0.9           |
| M1.1                               | 0.25   | 1.0           |
| M1.2                               | 0.25   | 1.1           |
| M1.4                               | 0.3    | 1.28          |
| M1.6                               | 0.35   | 1.45          |
| M1.7                               | 0.35   | 1.55          |
| M1.8                               | 0.35   | 1.65          |
| M2                                 | 0.4    | 1.8           |
| M2.2                               | 0.45   | 2.0           |
| M2.3                               | 0.4    | 2.1           |
| M2.5                               | 0.45   | 2.3           |
| M2.6                               | 0.45   | 2.4           |
| M3                                 | 0.5    | 2.8           |
| M3.5                               | 0.6    | 3.2           |
| M4                                 | 0.7    | 3.7           |
| M5                                 | 0.8    | 4.6           |
| M6                                 | 1.0    | 5.5           |
| M8                                 | 1.25   | 7.4           |
| M10                                | 1.5    | 9.3           |
| M12                                | 1.75   | 11.2          |



| BSW<br>BRITISH STANDARD WHITWORTH (55°) |         |               |
|---|---------|---------------|
| TAP SIZE                                | T.P.I.  | TAPPING DRILL |
| 1/16*                                   | 60      | 1.2           |
| 3/32*                                   | 48      | 1.85          |
| 1/8                                     | 40      | 2.55          |
| 5/32*                                   | 32      | 3.2           |
| 3/16                                    | 24      | 3.7           |
| 7/32*                                   | 24      | 4.5           |
| 1/4                                     | 20      | 5.1           |
| 5/16                                    | 18      | 6.5           |
| 3/8                                     | 16      | 7.9           |
| 7/16                                    | 14      | 9.3           |
| 1/2                                     | 12      | 10.5          |
| 9/16                                    | 12      | 12.1          |
| 5/8                                     | 11      | 13.5          |
| 3/4                                     | 10      | 16.25         |
| 7/8                                     | 9       | 19.25         |
| 1                                       | 8       | 22.0          |
| 1 - 1/8                                 | 7       | 24.75         |
| 1 - 1/4                                 | 7       | 28.0          |
| 1 - 1/2                                 | 6       | 33.5          |
| 1 - 3/4                                 | 5       | 39.0          |
| 2                                       | 4 - 1/2 | 44.5          |

\*WHIT. Form

| Rc (BSPT)<br>ISO Rc TAPER SERIES 1:16 (55°) |        |             |                |
|---|--------|-------------|----------------|
| TAP SIZE                                    | T.P.I. | DRILL ONLY* | DRILL & REAMER |
| Rc 1/16                                     | 28     | 6.4         | 6.2            |
| Rc 1/8                                      | 28     | 8.4         | 8.4            |
| Rc 1/4                                      | 19     | 11.2        | 10.8           |
| Rc 3/8                                      | 19     | 14.75       | 14.5           |
| Rc 1/2                                      | 14     | 18.25       | 18.0           |
| Rc 3/4                                      | 14     | 23.75       | 23.0           |
| Rc 1  | 11     | 30.0        | 29.0           |
| Rc 1 - 1/4                                  | 11     | 38.5        | 38.0           |
| Rc 1 - 1/2                                  | 11     | 44.5        | 44.0           |
| Rc 2  | 11     | 56.0        | 55.0           |

| NPT-NPTF<br>NATIONAL PIPE TAPER 1:16 (60°) |          |             |                |
|--|----------|-------------|----------------|
| TAP SIZE                                   | T.P.I.   | DRILL ONLY* | DRILL & REAMER |
| 1/16                                       | 27       | 6.3         | 6.0            |
| 1/8  | 27       | 8.5         | 8.2            |
| 1/4  | 18       | 11.0        | 10.8           |
| 3/8  | 18       | 14.5        | 14.0           |
| 1/2  | 14       | 18.0        | 17.5           |
| 3/4  | 14       | 23.0        | 23.0           |
| 1  | 11 - 1/2 | 29.0        | 28.5           |
| 1 - 1/4                                    | 11 - 1/2 | 37.5        | 37.0           |
| 1 - 1/2                                    | 11 - 1/2 | 44          | 43.5           |
| 2  | 11 - 1/2 | 55.5        | 55.0           |

| BA<br>(47.5°) |        |                  |
|---------------|--------|------------------|
| TAP SIZE      | T.P.I. | TAPPING DRILL MM |
| 0             | 1      | 5.1              |
| 1             | 0.9    | 4.5              |
| 2             | 0.81   | 4.0              |
| 3             | 0.73   | 3.4              |
| 4             | 0.66   | 3.0              |
| 5             | 0.59   | 2.65             |
| 6             | 0.53   | 2.3              |
| 7             | 0.48   | 2.05             |
| 8             | 0.43   | 1.8              |
| 9             | 0.39   | 1.55             |
| 10            | 0.35   | 1.4              |
| 11            | 0.31   | 1.2              |
| 12            | 0.28   | 1.05             |
| 13            | 0.25   | 0.98             |
| 14            | 0.23   | 0.8              |
| 15            | 0.21   | 0.7              |
| 16            | 0.19   | 0.6              |

| BSW      |        |               |
|----------|--------|---------------|
| TAP SIZE | T.P.I. | TAPPING DRILL |
| 1/8      | 40     | 2.9           |
| 5/32     | 32     | 3.6           |
| 3/16     | 24     | 4.3           |
| 1/4      | 20     | 5.8           |
| 5/16     | 18     | 7.3           |
| 3/8      | 16     | 8.8           |

| BSF<br>BRITISH STANDARD FINE (55°) |        |                  |
|------------------------------------|--------|------------------|
| TAP SIZE                           | T.P.I. | TAPPING DRILL MM |
| 3/16                               | 32     | 4.0              |
| 7/32                               | 28     | 4.6              |
| 1/4                                | 26     | 5.3              |
| 5/16                               | 22     | 6.8              |
| 3/8                                | 20     | 8.3              |
| 7/16                               | 18     | 9.8              |
| 1/2                                | 16     | 11.0             |
| 9/16                               | 16     | 12.7             |
| 5/8                                | 14     | 14.0             |
| 11/16                              | 14     | 15.5             |
| 3/4                                | 12     | 16.75            |
| 7/8                                | 11     | 19.75            |
| 1                                  | 10     | 22.75            |
| 1 - 1/8                            | 9      | 25.5             |
| 1 - 1/4                            | 9      | 28.5             |
| 1 - 1/2                            | 8      | 34.5             |
| 1 - 3/4                            | 7      | 41.0             |

| 8UN (8 TPI)<br>UNIFIED NATIONAL FORM (60°) |        |                  |
|--|--------|------------------|
| TAP SIZE                                   | T.P.I. | TAPPING DRILL MM |
| 1 - 1/8                                    | 8      | 25.5             |
| 1 - 1/4                                    | 8      | 28.5             |
| 1 - 3/8                                    | 8      | 31.75            |
| 1 - 1/2                                    | 8      | 35.0             |
| 1 - 5/8                                    | 8      | 38.0             |
| 1 - 3/4                                    | 8      | 41.5             |
| 1 - 7/8                                    | 8      | 44.5             |
| 2  | 8      | 47.5             |

| BSB<br>BRITISH STANDARD BRASS (55°) |        |                  |
|-------------------------------------|--------|------------------|
| TAP SIZE                            | T.P.I. | TAPPING DRILL MM |
| 1/4                                 | 26     | 5.2              |
| 5/16                                | 26     | 6.8              |
| 3/8                                 | 26     | 8.4              |
| 7/16                                | 26     | 10.0             |
| 1/2                                 | 26     | 11.6             |
| 9/16                                | 26     | 13.2             |
| 5/8                                 | 26     | 14.8             |
| 3/4                                 | 26     | 18.0             |
| 7/8                                 | 26     | 20.8             |
| 1                                   | 26     | 24.3             |

| UNC        |        |               |
|------------|--------|---------------|
| TAP SIZE   | T.P.I. | TAPPING DRILL |
| #1 (.073)  | 64     | 1.7           |
| #2 (.086)  | 56     | 2.0           |
| #3 (.099)  | 48     | 2.3           |
| #4 (.112)  | 40     | 2.6           |
| #5 (.125)  | 40     | 2.9           |
| #6 (.138)  | 32     | 3.2           |
| #8 (.164)  | 32     | 3.8           |
| #10 (.190) | 24     | 4.4           |
| #12 (.216) | 24     | 5.0           |
| 1/4        | 20     | 5.8           |
| 5/16       | 18     | 7.3           |
| 3/8        | 16     | 8.8           |
| 7/16       | 14     | 10.2          |
| 1/2        | 13     | 11.7          |

| NPSF<br>NATIONAL PIPE STRAIGHT (60°) |        |                  |
|--------------------------------------|--------|------------------|
| TAP SIZE                             | T.P.I. | TAPPING DRILL MM |
| 1/8                                  | 27     | 8.6              |
| 1/4                                  | 18     | 11.3             |
| 3/8                                  | 18     | 14.5             |
| 1/2                                  | 14     | 18.0             |

| UNEF<br>UNIFIED NATIONAL FORM (60°) |        |                  |
|-------------------------------------|--------|------------------|
| TAP SIZE                            | T.P.I. | TAPPING DRILL MM |
| 1/4                                 | 32     | 5.6              |
| 5/16                                | 32     | 7.2              |
| 3/8                                 | 32     | 8.8              |
| 1/2                                 | 28     | 11.8             |
| 5/8                                 | 24     | 14.75            |
| 3/4                                 | 20     | 18               |
| 1                                   | 20     | 24.2             |

| Rp (BSPPL)<br>SEALING PIPE THREAD PARALLEL (55°) |        |                  |
|--|--------|------------------|
| TAP SIZE   | T.P.I. | TAPPING DRILL MM |
| Rp 1/8   | 28     | 8.6              |
| Rp 1/4   | 19     | 11.5             |
| Rp 3/8   | 19     | 15.0             |
| Rp 1/2   | 14     | 18.5             |
| Rp 3/4   | 14     | 24.0             |
| Rp 1   | 11     | 30.2             |
| Rp 1 - 1/4                                       | 11     | 39.0             |
| Rp 1 - 1/2                                       | 11     | 45.0             |
| Rp 2   | 11     | 56.4             |

| G (BSPF) |        |               |
|----------|--------|---------------|
| TAP SIZE | T.P.I. | TAPPING DRILL |
| 1/8      | 28     | 9.25          |
| 1/4      | 19     | 12.5          |
| 3/8      | 19     | 16.0          |
| 1/2      | 14     | 20.0          |
| 5/8      | 14     | 22.0          |
| 3/4      | 14     | 25.5          |
| 7/8      | 14     | 29.25         |
| 1        | 11     | 32.0          |

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