

# ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

## ISO RECOMMENDATION R 1721

ROCK DRILLING

EXTENSION DRILL-STEEL EQUIPMENT  
FOR PERCUSSIVE LONG-HOLE DRILLING  
REVERSE-BUTTRESS-THREADED EQUIPMENTS

$1\frac{1}{16}$  and  $1\frac{1}{4}$  in (27 and 32 mm)

1st EDITION

November 1970

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## BRIEF HISTORY

The ISO Recommendation R 1721, *Rock drilling – Extension drill-steel equipment for percussive long-hole drilling – Reverse-buttress-threaded equipments  $1\frac{1}{16}$  and  $1\frac{1}{4}$  (27 and 32 mm)*, was drawn up by Technical Committee ISO/TC 82, *Mining*, the Secretariat of which is held by the Deutscher Normenausschuss (DNA).

Work on this question led to the adoption of Draft ISO Recommendation No. 1721, which was circulated to all the ISO Member Bodies for enquiry in March 1969. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

|                |             |                       |
|----------------|-------------|-----------------------|
| Austria        | India       | South Africa, Rep. of |
| Belgium        | Iran        | Spain                 |
| Canada         | Israel      | Sweden                |
| Czechoslovakia | Italy       | Thailand              |
| France         | Japan       | Turkey                |
| Germany        | Netherlands | U.A.R.                |
| Greece         | New Zealand | United Kingdom        |
| Hungary        | Poland      | Yugoslavia            |

No Member Body opposed the approval of the Draft.

This Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided to accept it as an ISO RECOMMENDATION.

**ROCK DRILLING**

**EXTENSION DRILL-STEEL EQUIPMENT**

**FOR PERCUSSIVE LONG-HOLE DRILLING**

**REVERSE-BUTTRESS-THREADED EQUIPMENTS**

**$1\frac{1}{16}$  and  $1\frac{1}{4}$  in (27 and 32 mm)**

**1. SCOPE**

This ISO Recommendation specifies the basic dimensions for reverse-buttress-threaded extension drill-steel equipment for percussive long-hole drilling, of the following nominal sizes :

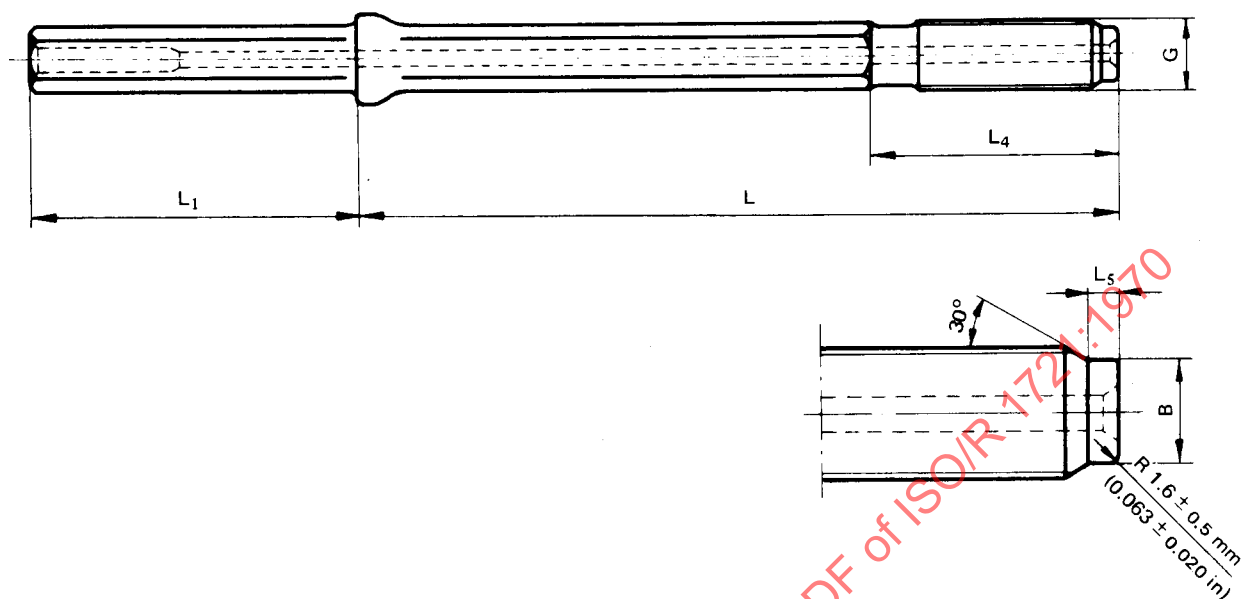
$1\frac{1}{16}$  in light (27 mm)

$1\frac{1}{4}$  in light (32 mm)

## 2. LIST OF COMPONENTS

|                                                 |                                       |                 |                                     |                 |
|-------------------------------------------------|---------------------------------------|-----------------|-------------------------------------|-----------------|
| Equipment                                       | 1 $\frac{1}{16}$ in light<br>(27 mm)  |                 | 1 $\frac{1}{4}$ in light<br>(32 mm) |                 |
| Thread diameter                                 | 1 $\frac{1}{16}$ in                   |                 | 1 $\frac{1}{4}$ in                  |                 |
| Size of drill rod<br>in bar form                | $\frac{7}{8}$ in hexagonal<br>(22 mm) |                 | 1 in hexagonal<br>(25 mm)           |                 |
| Shank adapters<br>hexagon type                  | See page 5                            |                 |                                     |                 |
| Shank adapters<br>lug-shank type                | See page 6                            |                 |                                     |                 |
| Lengths of<br>extension rods.<br>See page 7     | mm                                    | ft              | mm                                  | ft              |
|                                                 | 915                                   | 3               | 915                                 | 3               |
|                                                 | 1220                                  | 4               | 1220                                | 4               |
|                                                 | —                                     | —               | 1525                                | 5               |
|                                                 | 1830                                  | 6               | 1830                                | 6               |
|                                                 | 2435                                  | 8               | 2435                                | 8               |
|                                                 | —                                     | —               | 3050                                | 10              |
| Coupling sleeves                                | See page 8                            |                 |                                     |                 |
| Bit diameters<br>(four-wing bits)<br>See page 9 | mm                                    | in              | mm                                  | in              |
|                                                 | 41                                    | 1 $\frac{5}{8}$ | —                                   | —               |
|                                                 | 45                                    | 1 $\frac{3}{4}$ | —                                   | —               |
|                                                 | —                                     | —               | 48                                  | 1 $\frac{7}{8}$ |
|                                                 | 51                                    | 2               | 51                                  | 2               |
|                                                 | —                                     | —               | 57                                  | 2 $\frac{1}{4}$ |
|                                                 | —                                     | —               | 64                                  | 2 $\frac{1}{2}$ |
| Reverse-buttress threads                        | See page 10                           |                 |                                     |                 |
| Rod section<br>specification                    | See page 11                           |                 |                                     |                 |

### 3. SHANK ADAPTERS FOR CENTRAL FLUSHING HEXAGON TYPE



Dimensions in millimetres

| Equipment                               | Hexagonal drill steel<br>Nominal size | Thread diameter<br><i>G</i> nominal | <i>L</i>   |           | <i>L</i> <sub>1</sub> | <i>L</i> <sub>4</sub><br>± 1 | <i>B</i>   |            | <i>L</i> <sub>5</sub> |           |
|-----------------------------------------|---------------------------------------|-------------------------------------|------------|-----------|-----------------------|------------------------------|------------|------------|-----------------------|-----------|
|                                         |                                       |                                     | Basic size | Tolerance |                       |                              | Basic size | Tolerance  | Basic size            | Tolerance |
| 1 <sup>1</sup> / <sub>16</sub> in light | 22                                    | 1 <sup>1</sup> / <sub>16</sub> in   | 255        | ± 25      | 108                   | 85.7                         | 22.10      | 0<br>- 0.2 | 7.14                  | ± 0.5     |
| 1 <sup>1</sup> / <sub>4</sub> in light  | 25                                    | 1 <sup>1</sup> / <sub>4</sub> in    | 255        | ± 25      | 108<br>159            | 92.1                         | 25.27      | 0<br>- 0.2 | 6.35                  | ± 0.5     |

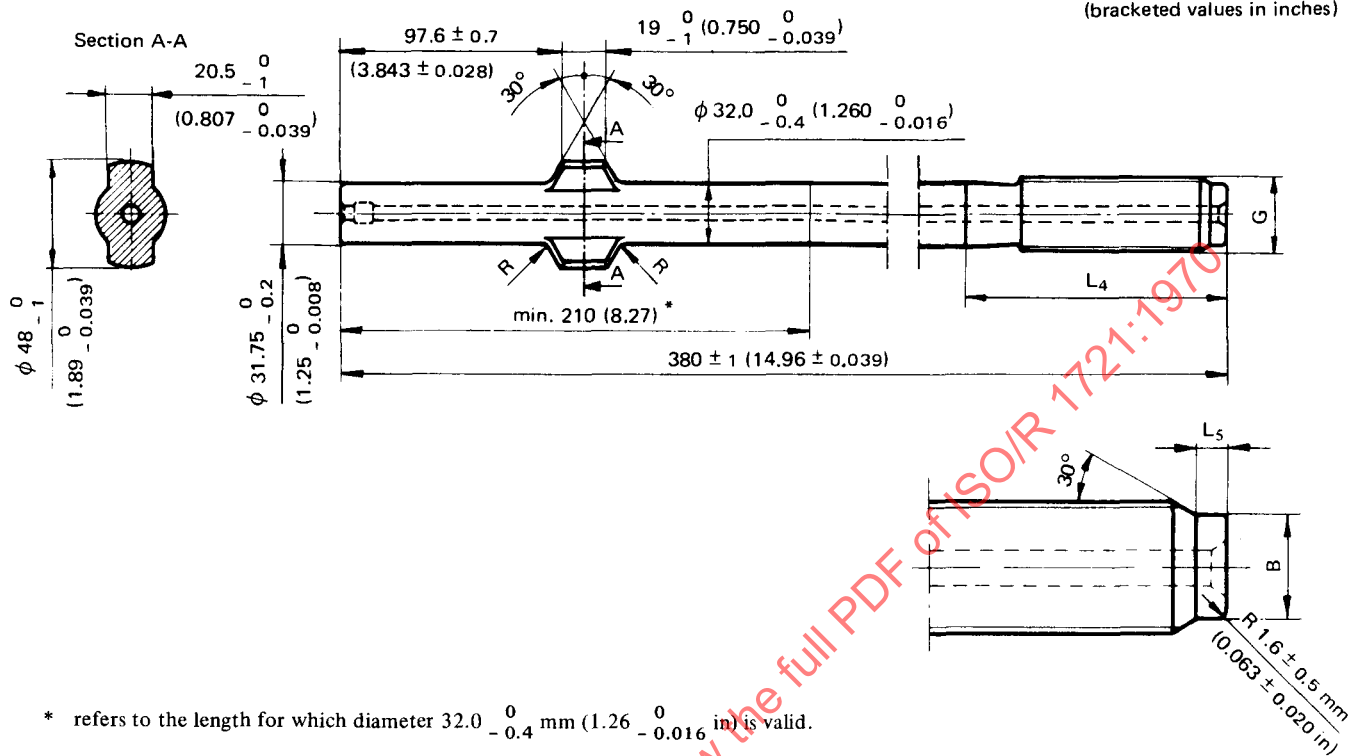
Dimensions in inches

| Equipment                               | Hexagonal drill steel<br>Nominal size | Thread diameter<br><i>G</i> nominal | <i>L</i>   |           | <i>L</i> <sub>1</sub>                                          | <i>L</i> <sub>4</sub><br>± .039 | <i>B</i>   |              | <i>L</i> <sub>5</sub> |           |
|-----------------------------------------|---------------------------------------|-------------------------------------|------------|-----------|----------------------------------------------------------------|---------------------------------|------------|--------------|-----------------------|-----------|
|                                         |                                       |                                     | Basic size | Tolerance |                                                                |                                 | Basic size | Tolerance    | Basic size            | Tolerance |
| 1 <sup>1</sup> / <sub>16</sub> in light | <sup>7</sup> / <sub>8</sub>           | 1 <sup>1</sup> / <sub>16</sub> in   | 10         | ± 1       | 4 <sup>1</sup> / <sub>4</sub>                                  | 3.375                           | 0.870      | 0<br>- 0.008 | 0.281                 | ± 0.020   |
| 1 <sup>1</sup> / <sub>4</sub> in light  | 1                                     | 1 <sup>1</sup> / <sub>4</sub> in    | 10         | ± 1       | 4 <sup>1</sup> / <sub>4</sub><br>6 <sup>1</sup> / <sub>4</sub> | 3.625                           | 0.955      | 0<br>- 0.008 | 0.250                 | ± 0.020   |

For sizes and tolerances of forged collared shanks, see ISO Recommendation R 723, *Rock drilling – Forged collared shanks and chuck bushings for hollow hexagonal drill steels*.

#### 4. SHANK ADAPTERS FOR CENTRAL FLUSHING LUG-SHANK TYPE

Dimensions in millimetres  
(bracketed values in inches)



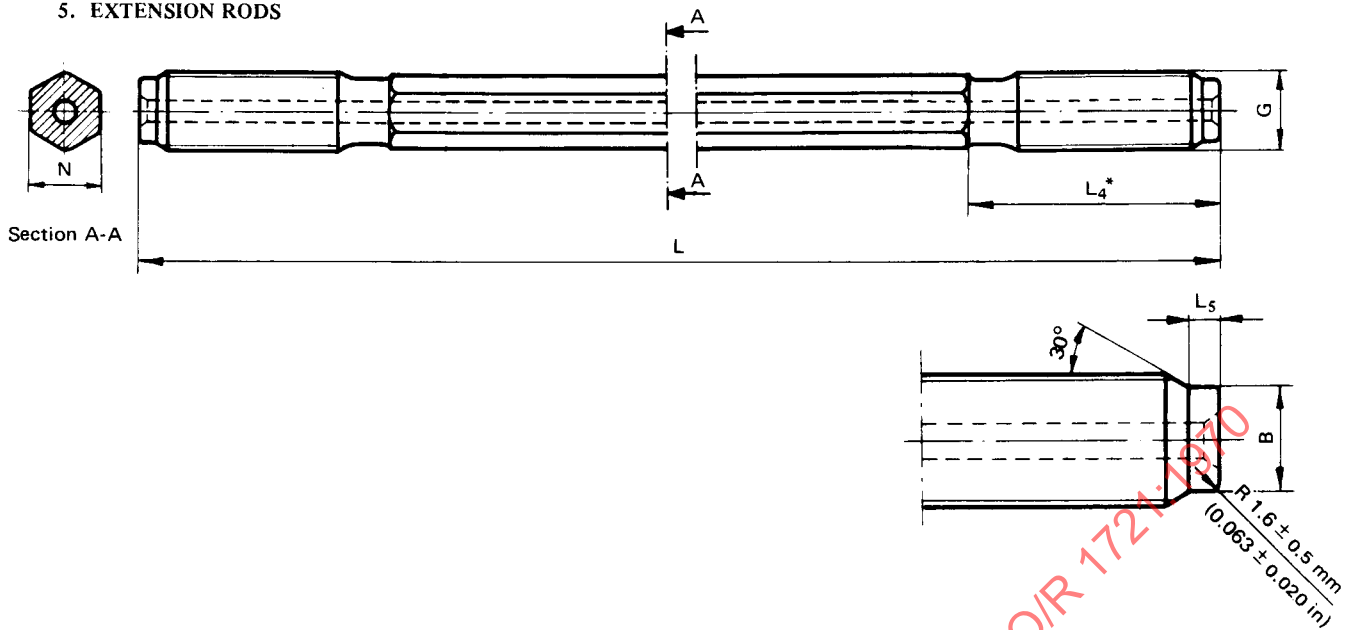
Dimensions in millimetres

| Equipment                               | Thread diameter<br><i>G</i><br>nominal | <i>L</i> <sub>4</sub><br>± 1 | <i>B</i>   |            | <i>L</i> <sub>5</sub> |           | <i>R</i><br>max. | Flushing tube             |                      |
|-----------------------------------------|----------------------------------------|------------------------------|------------|------------|-----------------------|-----------|------------------|---------------------------|----------------------|
|                                         |                                        |                              | Basic size | Tolerance  | Basic size            | Tolerance |                  | Outside diameter<br>± 0.1 | Entry length<br>max. |
| 1 <sup>1</sup> / <sub>16</sub> in light | 1 <sup>1</sup> / <sub>16</sub> in      | 85.7                         | 22.10      | 0<br>- 0.2 | 7.14                  | ± 0.5     | 4                | 10                        | 82.5                 |
| 1 <sup>1</sup> / <sub>4</sub> in light  | 1 <sup>1</sup> / <sub>4</sub> in       | 92.1                         | 25.27      | 0<br>- 0.2 | 6.35                  | ± 0.5     | 4                | 10                        | 82.5                 |

Dimensions in inches

| Equipment                               | Thread diameter<br><i>G</i><br>nominal | <i>L</i> <sub>4</sub><br>± 0.039 | <i>B</i>   |              | <i>L</i> <sub>5</sub> |           | <i>R</i><br>max. | Flushing tube                 |                               |
|-----------------------------------------|----------------------------------------|----------------------------------|------------|--------------|-----------------------|-----------|------------------|-------------------------------|-------------------------------|
|                                         |                                        |                                  | Basic size | Tolerance    | Basic size            | Tolerance |                  | Outside diameter<br>± 0.004   | Entry length<br>max.          |
| 1 <sup>1</sup> / <sub>16</sub> in light | 1 <sup>1</sup> / <sub>16</sub> in      | 3.375                            | 0.870      | 0<br>- 0.008 | 0.281                 | ± 0.020   | 0.157            | <sup>25</sup> / <sub>64</sub> | 3 <sup>1</sup> / <sub>4</sub> |
| 1 <sup>1</sup> / <sub>4</sub> in light  | 1 <sup>1</sup> / <sub>4</sub> in       | 3.625                            | 0.995      | 0<br>- 0.008 | 0.250                 | ± 0.020   | 0.157            | <sup>25</sup> / <sub>64</sub> | 3 <sup>1</sup> / <sub>4</sub> |

5. EXTENSION RODS

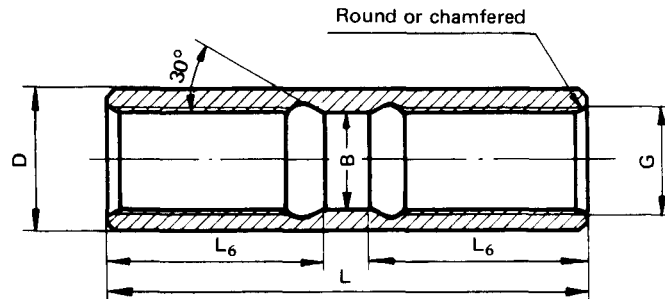


| Equipment       | Hexagonal drill rod<br><i>N</i><br>nominal | Thread diameter<br><i>G</i><br>nominal | <i>L</i>                                    |           | <i>L</i> <sub>4</sub> *<br>± 1 | <i>B</i>   |           | <i>L</i> <sub>5</sub> |           |
|-----------------|--------------------------------------------|----------------------------------------|---------------------------------------------|-----------|--------------------------------|------------|-----------|-----------------------|-----------|
|                 |                                            |                                        | Basic size                                  | Tolerance |                                | Basic size | Tolerance | Basic size            | Tolerance |
| 1 1/16 in light | 22                                         | 1 1/16 in                              | 915<br>1220<br>1830<br>2435                 | ± 25      | 85.7                           | 22.10      | 0<br>-0.2 | 7.14                  | ± 0.5     |
| 1 1/4 in light  | 25                                         | 1 1/4 in                               | 915<br>1220<br>1525<br>1830<br>2435<br>3050 | ± 25      | 92.1                           | 25.27      | 0<br>-0.2 | 6.35                  | ± 0.5     |

| Equipment       | Hexagonal drill rod<br><i>N</i><br>nominal | Thread diameter<br><i>G</i><br>nominal | <i>L</i>                    |                 | <i>L</i> <sub>4</sub> *<br>± 0.039 | <i>B</i>   |             | <i>L</i> <sub>5</sub> |           |
|-----------------|--------------------------------------------|----------------------------------------|-----------------------------|-----------------|------------------------------------|------------|-------------|-----------------------|-----------|
|                 |                                            |                                        | Basic size<br>ft            | Tolerance<br>in |                                    | Basic size | Tolerance   | Basic size            | Tolerance |
| 1 1/16 in light | 7/8                                        | 1 1/16 in                              | 3<br>4<br>6<br>8            | ± 1             | 3.375                              | 0.870      | 0<br>-0.008 | 0.281                 | ± 0.020   |
| 1 1/4 in light  | 1                                          | 1 1/4 in                               | 3<br>4<br>5<br>6<br>8<br>10 | ± 1             | 3.625                              | 0.995      | 0<br>-0.008 | 0.250                 | ± 0.020   |

\* No thread undercut is required in this instance.

# 6. COUPLING SLEEVES



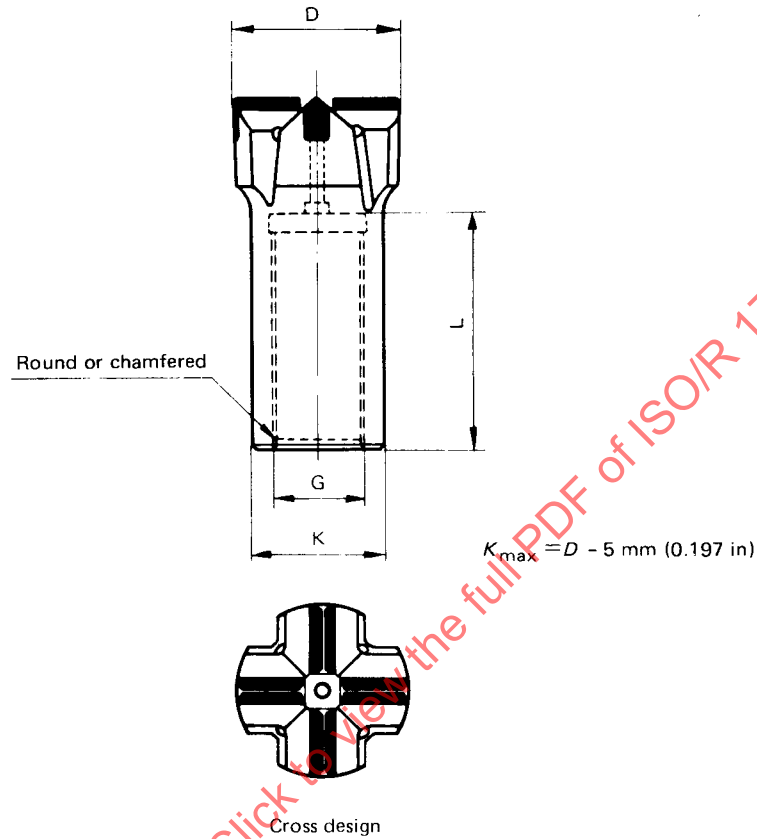
Dimensions in millimetres

| Equipment                | $L \begin{smallmatrix} 0 \\ -1 \end{smallmatrix}$ | $D$<br>max. | Thread<br>diameter<br>$G$<br>nominal | $B$           |                                                   | $L_6$         |                                                   |
|--------------------------|---------------------------------------------------|-------------|--------------------------------------|---------------|---------------------------------------------------|---------------|---------------------------------------------------|
|                          |                                                   |             |                                      | Basic<br>size | Tolerance                                         | Basic<br>size | Tolerance                                         |
| $1\frac{1}{16}$ in light | 127                                               | 36.8        | $1\frac{1}{16}$ in                   | 22.23         | $\begin{smallmatrix} +0.5 \\ 0 \end{smallmatrix}$ | 57.38         | $\begin{smallmatrix} +1.0 \\ 0 \end{smallmatrix}$ |
| $1\frac{1}{4}$ in light  | 152                                               | 45.7        | $1\frac{1}{4}$ in                    | 25.53         | $\begin{smallmatrix} +0.5 \\ 0 \end{smallmatrix}$ | 70.87         | $\begin{smallmatrix} +1.0 \\ 0 \end{smallmatrix}$ |

Dimensions in inches

| Equipment                | $L \begin{smallmatrix} 0 \\ -0.039 \end{smallmatrix}$ | $D$<br>max. | Thread<br>diameter<br>$G$<br>nominal | $B$           |                                                     | $L_6$         |                                                     |
|--------------------------|-------------------------------------------------------|-------------|--------------------------------------|---------------|-----------------------------------------------------|---------------|-----------------------------------------------------|
|                          |                                                       |             |                                      | Basic<br>size | Tolerance                                           | Basic<br>size | Tolerance                                           |
| $1\frac{1}{16}$ in light | 5.00                                                  | 1.45        | $1\frac{1}{16}$ in                   | 0.875         | $\begin{smallmatrix} +0.020 \\ 0 \end{smallmatrix}$ | 2.259         | $\begin{smallmatrix} +0.039 \\ 0 \end{smallmatrix}$ |
| $1\frac{1}{4}$ in light  | 6.00                                                  | 1.80        | $1\frac{1}{4}$ in                    | 1.005         | $\begin{smallmatrix} +0.020 \\ 0 \end{smallmatrix}$ | 2.790         | $\begin{smallmatrix} +0.039 \\ 0 \end{smallmatrix}$ |

# 7. FOUR-WING BITS – CROSS-DESIGN



| Equipment                | Nominal diameter |                | Basic size<br>$D$<br>$+0.3$<br>$0$ mm (0.012) |       | Thread<br>diameter<br>$G$<br>nominal | $L$<br>max. |       |
|--------------------------|------------------|----------------|-----------------------------------------------|-------|--------------------------------------|-------------|-------|
|                          | mm               | in             | mm                                            | in    | in                                   | mm          | in    |
| $1\frac{1}{16}$ in light | 41               | $1\frac{5}{8}$ | 41.28                                         | 1.625 | $1\frac{1}{16}$                      | 76.2        | 3.000 |
|                          | 45               | $1\frac{3}{4}$ | 44.45                                         | 1.750 |                                      |             |       |
|                          | 51               | 2              | 50.80                                         | 2.000 |                                      |             |       |
| $1\frac{1}{4}$ in light  | 48               | $1\frac{7}{8}$ | 47.62                                         | 1.875 | $1\frac{1}{4}$                       | 76.2        | 3.000 |
|                          | 51               | 2              | 50.80                                         | 2.000 |                                      |             |       |
|                          | 57               | $2\frac{1}{4}$ | 57.15                                         | 2.250 |                                      |             |       |
|                          | 64               | $2\frac{1}{2}$ | 63.50                                         | 2.500 |                                      |             |       |