

# INTERNATIONAL STANDARD



# 2289

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

## Rotary drilling equipment — Kellys

First edition — 1972-12-15

STANDARDSISO.COM : Click to view the full PDF of ISO 2289:1972

To be withdrawn  
(1991-10-03)

UDC 622.24.051

Ref. No. ISO 2289-1972 (E)

**Descriptors** : rotary drilling rigs, drill strings, dimensions, dimensional tolerances, heat treatment, mechanical properties.

Price based on 6 pages

## FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up has the right to be represented on that Committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 2289 was drawn up by Technical Committee ISO/TC 67, *Materials and equipment for petroleum and natural gas industries*.

It was approved in June 1971 by the Member Bodies of the following countries :

|                     |             |                |
|---------------------|-------------|----------------|
| Austria             | Hungary     | Romania        |
| Czechoslovakia      | India       | Spain          |
| Egypt, Arab Rep. of | Japan       | Turkey         |
| France              | Netherlands | United Kingdom |
| Germany             | New Zealand | U.S.S.R.       |
| Greece              | Poland      |                |

The Member Body of the following country expressed disapproval of the document on technical grounds :

U.S.A.

# Rotary drilling equipment — Kellys

## 1 SCOPE AND FIELD OF APPLICATION

This International Standard lays down specifications for kellys manufactured as a single piece, used for transmitting the rotational movement from the rotary table to the drill stem.

## 2 REFERENCES

ISO/R 79, *Brinell hardness test for steel*.

ISO/R 82, *Tensile testing of steel*.

ISO/R 83, *Charpy impact test (U-Notch) for steel*.

## 3 DEFINITIONS

**3.1 upper upset** : Cylindrical extremity of the kelly, having left-hand box connection for coupling with the swivel.

**3.2 lower upset** : Cylindrical extremity of the kelly, having right-hand pin connection for coupling with the drill-pipe string.

**3.3 length of drive** : Part of the kelly limited by the upper and lower upsets, taking over the rotational movement from the rotary table.

## 4 SYMBOLS AND ABBREVIATIONS

REG = Regular

FH = Full Hole

IF = Internal Flush

LH = Left-Hand

RH = Right-Hand

Opt = Optional

Std = Standard

## 5 CLASSIFICATION

The kellys are manufactured with

- square drive section;
- hexagonal drive section.

## 6 MANUFACTURE

### 6.1 Material

The kellys shall be made of alloy steel having, after heat treatment, the characteristics specified in section 7.

### 6.2 Workmanship

The outside surface of the kellys shall be sound, free from cracks, slivers, laminations, inclusions or other visible defects liable to affect the quality and the strength of the kellys.

### 6.3 Heat treatment

**6.3.1** The full length of the kelly shall be heat treated.

**6.3.2** On agreement between the manufacturer and the purchaser, the heat treatment can be limited to the two ends, on lengths of roughly 1 500 mm (60 in).

### 6.4 Dimensions

**6.4.1** The dimensions of square kellys are specified in Table 1.

**6.4.2** The dimensions of hexagonal kellys are specified in Table 2.

**6.4.3** For tolerances on dimensions see Table 3.

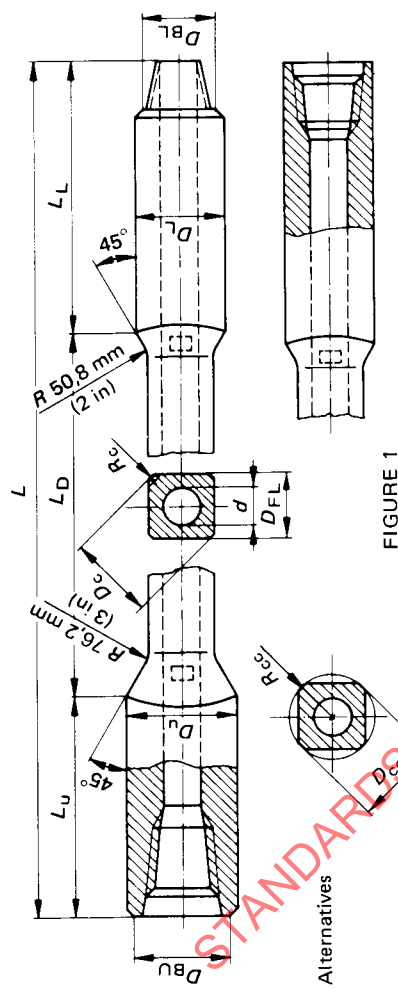


TABLE 1 — Square kellys

a) Dimensions in millimetres

| (1)        | (2)   | (3)                     | (4)    | (5)            | (6)    | (7)                  | (8)              | (9)    | (10)           | (11)           | (12)           | (13)                 | (14)     | (15)           | (16)           | (17)           | (18)         | (19)   | (20)   | (21)  | (22)               | (23) | (24)  |
|------------|-------|-------------------------|--------|----------------|--------|----------------------|------------------|--------|----------------|----------------|----------------|----------------------|----------|----------------|----------------|----------------|--------------|--------|--------|-------|--------------------|------|-------|
| Kelly size | mm    | Length of drive section |        | Length overall |        | Upper box connection |                  |        |                |                |                | Lower pin connection |          |                |                | Drive section  |              |        |        |       | Mass <sup>1)</sup> |      |       |
|            |       | Std                     | Opt    | L <sub>D</sub> | LH     | Size and Style       | Outside diameter | Length | Bevel diameter | Bevel diameter | Size and Style | Outside diameter     | Length   | Bevel diameter | Across corners | Across corners | Across flats | Radius | Radius |       |                    |      |       |
|            |       |                         |        |                |        |                      |                  |        |                |                |                |                      |          |                |                |                |              |        |        |       |                    |      |       |
|            |       |                         |        |                |        |                      |                  |        |                |                |                |                      |          |                |                |                |              |        |        |       |                    |      |       |
| mm         | in    | Std                     | Opt    | mm             | mm     | mm                   | mm               | mm     | mm             | mm             | mm             | mm                   | mm       | mm             | mm             | mm             | mm           | mm     | mm     | mm    | mm                 | kg   |       |
| 63.5       | 2 1/2 | 11 250                  | —      | 12 190         | —      | 6 3/4 REG            | 4 1/2 REG        | 196.8  | 146.0          | 420            | 186.1          | 134.5                | 2 3/4 IF | 85.7           | 520            | 82.6           | 31.8         | 83.3   | 82.6   | 63.5  | 7.9                | 41.3 | 402   |
| 76.2       | 3     | 11 250                  | —      | 12 190         | —      | 6 3/4 REG            | 4 1/2 REG        | 196.8  | 146.0          | 420            | 186.1          | 134.5                | 2 3/4 IF | 104.8          | 520            | 100.4          | 44.4         | 100.0  | 98.4   | 76.2  | 9.5                | 49.2 | 500   |
| 88.9       | 3 1/2 | 11 250                  | —      | 12 190         | —      | 6 3/4 REG            | 4 1/2 REG        | 196.8  | 146.0          | 420            | 186.1          | 134.5                | 3 1/2 IF | 120.6          | 520            | 116.3          | 57.2         | 115.1  | 112.7  | 88.9  | 12.7               | 56.4 | 597   |
| 108.0      | 4 1/4 | 11 250                  | 15 500 | 12 190         | 16 460 | 6 3/4 REG            | 4 1/2 REG        | 196.8  | 146.0          | 420            | 186.1          | 134.5                | 4 IF     | 152.4          | 520            | 140.5          | 71.4         | 141.3  | 139.7  | 108.0 | 12.7               | 69.8 | 829   |
| 133.4      | 5 1/4 | 11 250                  | 15 500 | 12 190         | 16 460 | 6 3/4 REG            | —                | 196.8  | —              | 420            | 186.1          | —                    | 5 1/2 FH | 177.8          | 520            | 170.7          | 82.6         | 175.4  | 171.4  | 133.4 | 15.9               | 85.7 | 1 255 |
| 140.0      | 5 1/2 | 11 250                  | 15 500 | 12 190         | 16 460 | 6 3/4 REG            | —                | 196.8  | —              | 420            | 186.1          | —                    | 5 1/2 FH | 177.8          | 520            | 170.7          | 82.6         | 181.0  | 177.8  | 140.0 | 15.9               | 88.9 | 1 490 |
| 152.4      | 6     | 11 250                  | 15 500 | 12 190         | 16 460 | 6 3/4 REG            | —                | 196.8  | —              | 420            | 186.1          | —                    | 6 3/4 FH | 203.2          | 520            | 200.0          | 88.9         | 200.0  | 196.8  | 152.4 | 19.0               | 98.8 | 1 694 |

b) Dimensions in inches

| (1)   | (2)   | (3) | (4) | (5) | (6) | (7)       | (8)       | (9)   | (10)  | (11) | (12)    | (13)    | (14)     | (15)  | (16) | (17)    | (18)    | (19)    | (20)  | (21)  | (22) | (23)    | (24)     |
|-------|-------|-----|-----|-----|-----|-----------|-----------|-------|-------|------|---------|---------|----------|-------|------|---------|---------|---------|-------|-------|------|---------|----------|
| mm    | in    | ft  | ft  | ft  | ft  | in        | in        | in    | in    | in   | in      | in      | in       | in    | in   | in      | in      | in      | in    | in    | in   | in      | lb       |
| 63.5  | 2 1/2 | 37  | —   | 40  | —   | 6 5/8 REG | 4 1/2 REG | 7 3/4 | 5 3/4 | 16   | 7 21/64 | 5 19/64 | 2 3/4 IF | 3 1/4 | 20   | 3 1/4   | 1 1/2   | 3 1/2   | 3 250 | 2 1/2 | 5/16 | 1 5/16  | 886.26   |
| 76.2  | 3     | 37  | —   | 40  | —   | 6 5/8 REG | 4 1/2 REG | 7 3/4 | 5 3/4 | 16   | 7 21/64 | 5 19/64 | 2 3/4 IF | 4 1/8 | 20   | 3 3/4   | 1 5/16  | 3 3/8   | 3 875 | 3     | 3/8  | 1 1/2   | 1 102.31 |
| 88.9  | 3 1/2 | 37  | —   | 40  | —   | 6 5/8 REG | 4 1/2 REG | 7 3/4 | 5 3/4 | 16   | 7 21/64 | 5 19/64 | 3 1/2 IF | 4 3/4 | 20   | 4 3/4   | 2 1/2   | 4 1/2   | 4 437 | 3 1/2 | 1/2  | 2 3/32  | 1 316.16 |
| 108.0 | 4 1/4 | 37  | 51  | 40  | 54  | 6 5/8 REG | 4 1/2 REG | 7 3/4 | 5 3/4 | 16   | 7 21/64 | 5 19/64 | 4 IF     | 6     | 20   | 5 11/16 | 2 11/16 | 5 9/16  | 5 500 | 4 1/4 | 1/2  | 2 3/4   | 1 827.63 |
| 133.4 | 5 1/4 | 37  | 51  | 40  | 54  | 6 5/8 REG | —         | 7 3/4 | —     | 16   | 7 21/64 | —       | 5 1/2 FH | 7     | 20   | 6 21/32 | 3 1/4   | 6 29/32 | 6 750 | 5 1/4 | 5/8  | 3 1/4   | 2 776.80 |
| 140.0 | 5 1/2 | 37  | 51  | 40  | 54  | 6 5/8 REG | —         | 7 3/4 | —     | 16   | 7 21/64 | —       | 5 1/2 FH | 7     | 20   | 6 21/32 | 3 1/4   | 7 1/8   | 7 000 | 5 1/2 | 5/8  | 3 1/2   | 3 284.88 |
| 152.4 | 6     | 37  | 51  | 40  | 54  | 6 5/8 REG | —         | 7 3/4 | —     | 16   | 7 21/64 | —       | 6 5/8 FH | 8     | 20   | 6 7/8   | 3 1/2   | 7 7/8   | 7 750 | 6     | 3/4  | 3 57/64 | 3 734.43 |

1) The mass is calculated for the standard nominal dimensions.

a) Dimensions in millimetres

a) Dimensions in millimetres

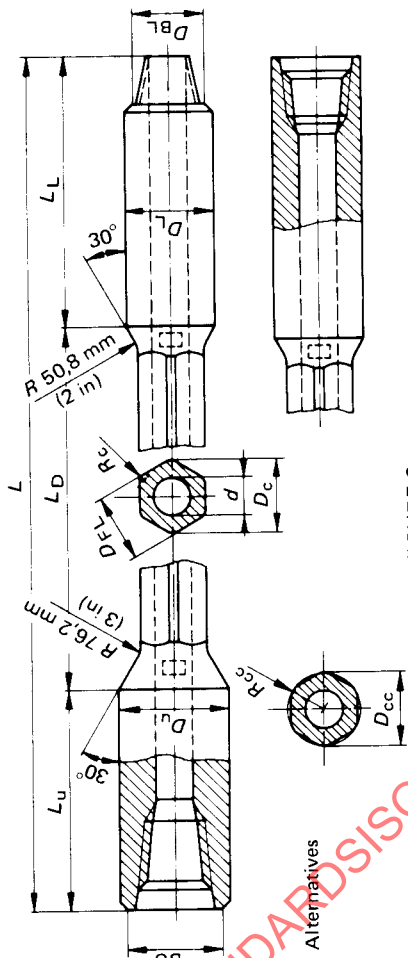


FIGURE 2

| a) Dimensions in millimetres |                               |                         |        |        |                |                                    |                                   |                      |       |                  |           |        |                                  |                |                  |        |                |                 |                |              |        |        |       |
|------------------------------|-------------------------------|-------------------------|--------|--------|----------------|------------------------------------|-----------------------------------|----------------------|-------|------------------|-----------|--------|----------------------------------|----------------|------------------|--------|----------------|-----------------|----------------|--------------|--------|--------|-------|
| (1)                          | (2)                           | (3)                     | (4)    | (5)    | (6)            | (7)                                | (8)                               | (9)                  | (10)  | (11)             | (12)-(13) | (14)   | (15)                             | (16)           | (17)             | (18)   | (19)           | (20)            | (21)           | (22)         | (23)   | (24)   |       |
| Kelly size                   |                               | Length of drive section |        |        | Length overall |                                    |                                   | Upper box connection |       |                  |           |        | Lower pin connection             |                |                  |        |                | Drive section   |                |              |        |        |       |
|                              |                               |                         |        |        |                |                                    |                                   | Size and Style       |       | Outside diameter |           | Length | Bevel diameter                   | Size and Style | Outside diameter | Length | Bevel diameter | Inside diameter | Across corners | Across flats | Radius | Radius |       |
|                              |                               | $L_D$                   | LH     | Std    | Opt            | in                                 | mm                                |                      |       |                  |           |        |                                  |                |                  |        |                |                 |                |              |        |        | Std   |
|                              |                               |                         |        |        |                |                                    |                                   | mm                   | in    | mm               | mm        | mm     | mm                               | mm             | mm               | mm     | mm             | mm              | mm             | mm           | mm     | mm     |       |
| 76.2                         | 3                             | 11 250                  | —      | 12 190 | —              | 6 <sup>5</sup> / <sub>16</sub> REG | 4 <sup>1</sup> / <sub>2</sub> REG | 196.8                | 146.0 | 420              | 186.1     | 134.5  | 2 <sup>1</sup> / <sub>8</sub> IF | 85.7           | 520              | 82.6   | 38.1           | 85.7            | 85.7           | 76.2         | 6.4    | 42.9   | 475   |
| 88.9                         | 3 <sup>1</sup> / <sub>2</sub> | 11 250                  | —      | 12 190 | —              | 6 <sup>5</sup> / <sub>16</sub> REG | 4 <sup>1</sup> / <sub>2</sub> REG | 196.8                | 146.0 | 420              | 186.1     | 134.5  | 2 <sup>1</sup> / <sub>8</sub> IF | 104.8          | 520              | 100.4  | 44.4           | 100.8           | 100.0          | 88.9         | 6.4    | 50.0   | 560   |
| 108.0                        | 4 <sup>1</sup> / <sub>2</sub> | 11 250                  | 15 500 | 12 190 | 16 460         | 6 <sup>3</sup> / <sub>4</sub> REG  | 4 <sup>1</sup> / <sub>2</sub> REG | 196.8                | 146.0 | 420              | 186.1     | 134.5  | 3 <sup>1</sup> / <sub>2</sub> IF | 120.6          | 520              | 116.3  | 57.2           | 122.2           | 121.4          | 108.0        | 7.9    | 60.7   | 792   |
| 133.4                        | 5 <sup>1</sup> / <sub>2</sub> | 11 250                  | 15 500 | 12 190 | 16 460         | 6 <sup>7</sup> / <sub>8</sub> REG  | 4 <sup>1</sup> / <sub>2</sub> REG | 196.8                | 146.0 | 420              | 186.1     | 134.5  | 4 IF                             | 152.4          | 520              | 140.5  | 76.2           | 151.6           | 149.9          | 133.4        | 9.5    | 75.0   | 1 024 |
| 152.4                        | 6                             | 11 250                  | 15 500 | 12 190 | 16 460         | 6 <sup>3</sup> / <sub>4</sub> REG  | 4 <sup>1</sup> / <sub>2</sub> REG | 196.8                | 146.0 | 420              | 186.1     | 134.5  | 5 <sup>1</sup> / <sub>2</sub> FH | 177.8          | 520              | 170.7  | 88.9           | 173.0           | 173.0          | 152.4        | 9.5    | 86.5   | 1 207 |

b) Dimensions in inches

| b) Dimensions in inches |       |     |     |     |     |           |           |       |       |      |         |         |          |       |      |         |       |         |       |       |      |         |          |
|-------------------------|-------|-----|-----|-----|-----|-----------|-----------|-------|-------|------|---------|---------|----------|-------|------|---------|-------|---------|-------|-------|------|---------|----------|
| (1)                     | (2)   | (3) | (4) | (5) | (6) | (7)       | (8)       | (9)   | (10)  | (11) | (12)    | (13)    | (14)     | (15)  | (16) | (17)    | (18)  | (19)    | (20)  | (21)  | (22) | (23)    | (24)     |
| mm                      | in    | ft  | ft  | ft  | ft  | in        | in        | in    | in    | in   | in      | in      | in       | in    | in   | in      | in    | in      | in    | in    | in   | in      | lb       |
| 76.2                    | 3     | 37  | —   | 40  | —   | 6 5/8 REG | 4 1/2 REG | 7 3/4 | 5 3/4 | 16   | 7 21/64 | 5 19/64 | 2 3/8 IF | 3 3/8 | 20   | 3 1/4   | 1 1/2 | 3 3/8   | 3.375 | 3     | 1/4  | 1 11/16 | 1 047.19 |
| 88.9                    | 3 1/2 | 37  | —   | 40  | —   | 6 5/8 REG | 4 1/2 REG | 7 1/4 | 5 3/4 | 16   | 7 21/64 | 5 19/64 | 2 7/8 IF | 4 1/8 | 20   | 3 1/64  | 1 7/8 | 3 31/32 | 3.937 | 3 1/2 | 1/4  | 1 31/32 | 1 234.59 |
| 108.0                   | 4 1/4 | 37  | 51  | 40  | 54  | 6 5/8 REG | 4 1/2 REG | 7 1/4 | 5 3/4 | 16   | 7 21/64 | 5 19/64 | 3 1/2 IF | 4 3/4 | 20   | 4 3/64  | 2 1/8 | 4 13/16 | 4.781 | 4 1/4 | 5/16 | 2 25/64 | 1 746.06 |
| 133.4                   | 5 1/4 | 37  | 51  | 40  | 54  | 6 5/8 REG | —         | 7 3/4 | —     | 16   | 7 21/64 | —       | 4 IF     | 6     | 20   | 5 17/32 | 3     | 5 1/32  | 5.900 | 5 1/4 | 3/8  | 2 61/64 | 2 257.53 |
| 152.4                   | 6     | 37  | 51  | 40  | 54  | 6 5/8 REG | —         | 7 1/4 | —     | 16   | 7 21/64 | —       | 5 1/2 FH | 7     | 20   | 6 23/32 | 3 1/2 | 6 13/16 | 6.812 | 6     | 3/8  | 3 13/32 | 2 660.98 |

1) The mass is calculated for the standard nominal dimensions:

1) The mass is calculated for the standard nominal dimensions.

2) If ordered with either 4 IF or 4  $\frac{1}{2}$  IF lower connection, an optional bore of 71.4 mm shall be furnished, if so specified on the purchase order.

3) If ordered with either 4 IF or 4  $\frac{1}{2}$  IF lower connection, an optional bore of 2  $\frac{3}{16}$  in shall be furnished, if so specified on the purchase order.

TABLE 3 — Tolerances

| Dimension                                  |                   |          | Units | Kelly sizes                                                                         |              |       |       |       |       |       | Remarks          |
|--------------------------------------------|-------------------|----------|-------|-------------------------------------------------------------------------------------|--------------|-------|-------|-------|-------|-------|------------------|
|                                            |                   |          | mm    | 63,5                                                                                | 76,2         | 88,9  | 108,0 | 133,4 | 140,0 | 152,4 |                  |
|                                            |                   |          | in    | 2 1/2                                                                               | 3            | 3 1/2 | 4 1/4 | 5 1/4 | 5 1/2 | 6     |                  |
| Total length $L$                           |                   |          | mm    | + 152<br>0                                                                          |              |       |       |       |       |       |                  |
|                                            |                   |          | in    | + 6<br>0                                                                            |              |       |       |       |       |       |                  |
| Drive length $L_D$                         |                   |          | mm    | + 152<br>- 127                                                                      |              |       |       |       |       |       |                  |
|                                            |                   |          | in    | + 6<br>- 5                                                                          |              |       |       |       |       |       |                  |
| Length of upsets $L_U$ and $L_L$           |                   |          | mm    | + 64<br>0                                                                           |              |       |       |       |       |       |                  |
|                                            |                   |          | in    | + 2 1/2<br>0                                                                        |              |       |       |       |       |       |                  |
| Outside diameter of upsets $D_U$ and $D_L$ |                   |          | mm    | $\pm 0,8$                                                                           |              |       |       |       |       |       |                  |
|                                            |                   |          | in    | $\pm 1/32$                                                                          |              |       |       |       |       |       |                  |
| Bore diameter $d$                          |                   |          | mm    | + 1,6<br>0                                                                          |              |       |       |       |       |       | See clause 6.4.7 |
|                                            |                   |          | in    | + 1/16<br>0                                                                         |              |       |       |       |       |       |                  |
| Bevel diameter $D_{BU}$ and $D_{BL}$       |                   |          | mm    | $\pm 0,4$                                                                           |              |       |       |       |       |       |                  |
|                                            |                   |          | in    | $\pm 1/64$                                                                          |              |       |       |       |       |       |                  |
| Across corners,<br>$D_C$ and $D_{CC}$      | Square section    | $D_C$    | mm    | + 3,2<br>0                                                                          | + 4,0<br>0   |       |       |       |       |       |                  |
|                                            |                   |          | in    | + 1/8<br>0                                                                          | + 5/32<br>0  |       |       |       |       |       |                  |
|                                            |                   | $D_{CC}$ | mm    | 0<br>- 0,4                                                                          |              |       |       |       |       |       |                  |
|                                            |                   |          | in    | 0<br>- 0,015                                                                        |              |       |       |       |       |       |                  |
|                                            | Hexagonal section | $D_C$    | mm    |  | $\pm 0,8$    |       |       |       |       |       |                  |
|                                            |                   |          | in    |                                                                                     | $\pm 1/32$   |       |       |       |       |       |                  |
|                                            |                   | $D_{CC}$ | mm    |  | 0<br>- 0,4   |       |       |       |       |       |                  |
|                                            |                   |          | in    |                                                                                     | 0<br>- 0,015 |       |       |       |       |       |                  |
| Across flats<br>$D_{FL}$                   | Square section    |          | mm    | + 2,0<br>0                                                                          | + 2,4<br>0   |       |       |       |       |       | See clause 6.4.6 |
|                                            |                   |          | in    | + 5/64<br>0                                                                         | + 3/32<br>0  |       |       |       |       |       |                  |
|                                            | Hexagonal section |          | mm    |  | + 0,8<br>0   |       |       |       |       |       |                  |
|                                            |                   |          | in    |                                                                                     | + 1/32<br>0  |       |       |       |       |       |                  |
| Radius $R_C$                               | Square section    |          | mm    | $\pm 1,6$                                                                           |              |       |       |       |       |       | See clause 6.4.6 |
|                                            |                   |          | in    | $\pm 1/16$                                                                          |              |       |       |       |       |       |                  |
|                                            | Hexagonal section |          | mm    |  | $\pm 0,8$    |       |       |       |       |       |                  |
|                                            |                   |          | in    |                                                                                     | $\pm 1/32$   |       |       |       |       |       |                  |
| Straightness<br>(maximum deflection)       | For total length  |          | mm    | 0,000 5 mm per millimetre                                                           |              |       |       |       |       |       |                  |
|                                            |                   |          | in    | 0.000 5 in per inch                                                                 |              |       |       |       |       |       |                  |
|                                            | Local             |          | mm    | 1 mm per 2 000 mm                                                                   |              |       |       |       |       |       |                  |
|                                            |                   |          | in    | 0.04 in per 79 in                                                                   |              |       |       |       |       |       |                  |