

BS EN ISO 4753:2011



BSI Standards Publication

# Fasteners — Ends of parts with external ISO metric thread (ISO 4753:2011)

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The UK participation in its preparation was entrusted to Technical Committee FME/9/2, Fasteners - Reference Standards.

A list of organizations represented on this committee can be obtained on request to its secretary.

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EUROPEAN STANDARD

**EN ISO 4753**

NORME EUROPÉENNE

EUROPÄISCHE NORM

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ICS 21.060.01

Supersedes EN ISO 4753:1999

English Version

## Fasteners - Ends of parts with external ISO metric thread (ISO 4753:2011)

Éléments de fixation - Extrémités des éléments à filetage  
extérieur métrique ISO (ISO 4753:2011)

Mechanische Verbindungselemente - Enden von Teilen mit  
metrischem ISO-Außengewinde (ISO 4753:2011)

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## Foreword

This document (EN ISO 4753:2011) has been prepared by Technical Committee ISO/TC 2 "Fasteners" in collaboration with Technical Committee CEN/TC 185 "Fasteners" the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2012, and conflicting national standards shall be withdrawn at the latest by May 2012.

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## Foreword

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ISO 4753 was prepared by Technical Committee ISO/TC 2, *Fasteners*, Subcommittee SC 7, *Reference standards*.

This third edition cancels and replaces the second edition (ISO 4753:1999), which has been technically revised.



# Fasteners — Ends of parts with external ISO metric thread

## 1 Scope

This International Standard specifies the form and dimensions of ends of parts with external ISO metric screw thread (e.g. bolt, screw and stud ends) recommended for use. They apply to standardized or non-standardized threaded parts.

For each end type, a symbol is specified and it is intended that these symbols be used when specifying one of the ends for threaded fasteners.

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 225, *Fasteners — Bolts, screws, studs and nuts — Symbols and descriptions of dimensions*

ISO 4027, *Hexagon socket set screws with cone point*

## 3 Dimensions

### 3.1 General

See Figures 1 and 2 and Tables 1 to 4.

Symbols and descriptions of dimensions are specified in ISO 225.

3.2 Ends which are included in the nominal length of the fastener

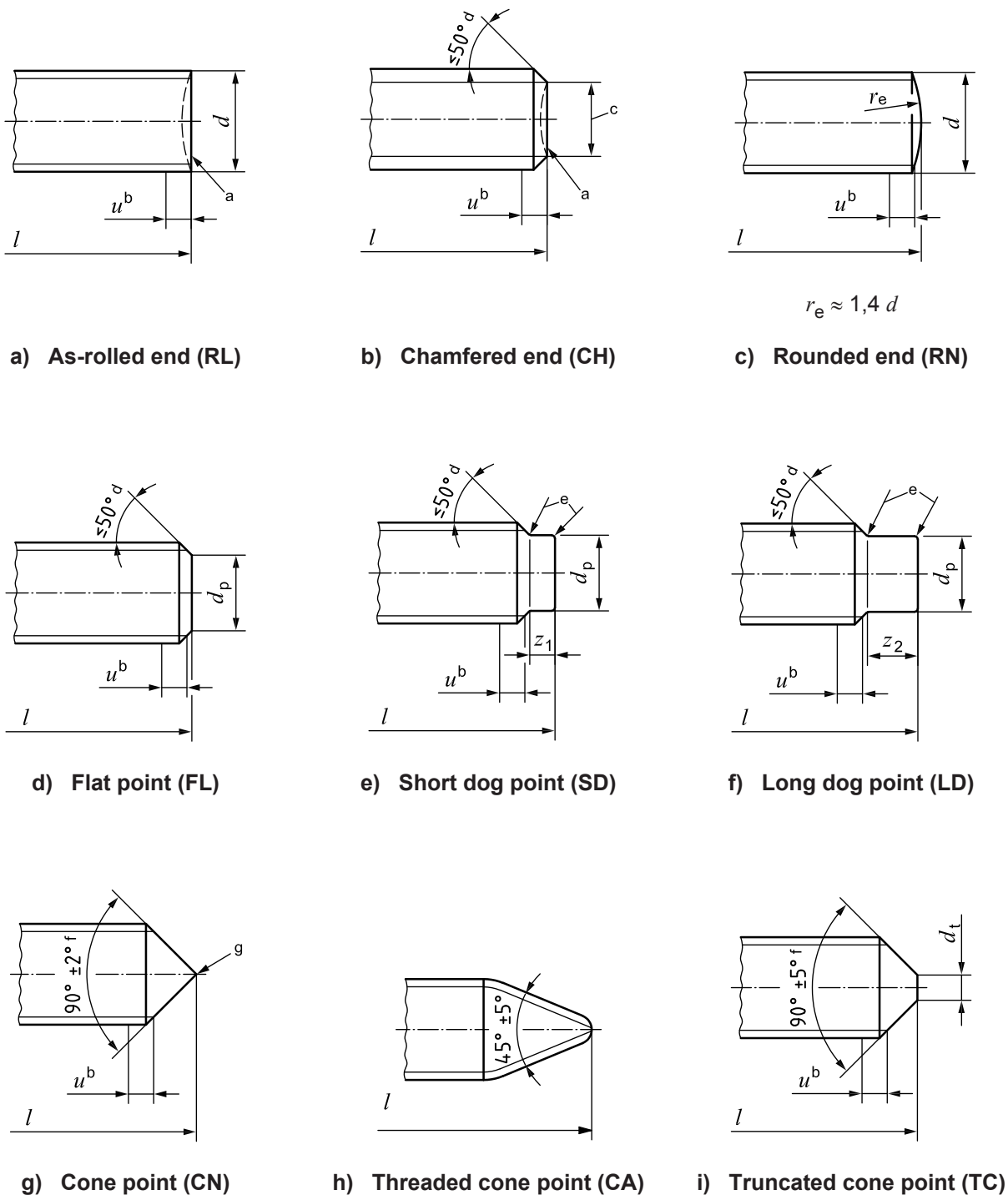
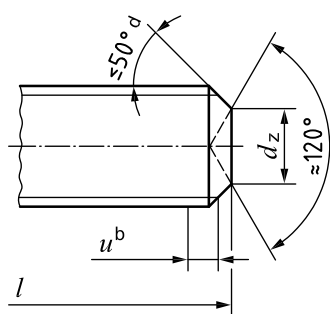
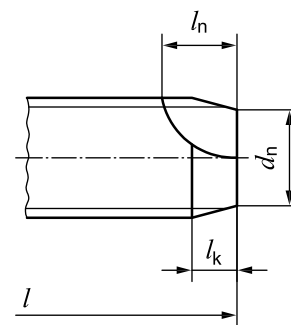
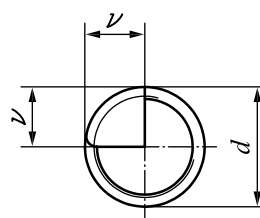


Figure 1





**j) Cup point (CP)**



$$d_n = d - 1,6 P$$

$$v = 0,5 d \pm 0,5 \text{ mm}$$

$$l_k \leq 3 P$$

$$l_n \leq 5 P$$

$$l_n - l_k \geq 2 P$$

**k) Scrape point (SC)**

**Key**

$P$  pitch of the thread

- a End may be dimpled.
- b Incomplete thread  $u \leq 2 P$ .
- c Maximum diameter at the minor thread diameter.
- d The angle applies only to the portion of the point below the root diameter of the thread.
- e Slight radius.
- f  $120^\circ \pm 2^\circ$  for short length screws; specified in product standard, e.g. ISO 4027.
- g The end shall not be sharp to the touch.

**Figure 1 (continued)**

Table 1 — Dimensions

Dimensions in millimetres

Thread diameter $d^a$	$d_p$ h14 <sup>b</sup>	$d_t^c$ h16	$d_z$ h14	$z_1$ $\begin{matrix} +IT14 d \\ 0 \end{matrix}$	$z_2$ $\begin{matrix} +IT14 d \\ 0 \end{matrix}$
1,6	0,8	—	0,8	0,40	0,80
1,8	0,9	—	0,9	0,45	0,90
2	1,0	—	1,0	0,50	1,00
2,2	1,2	—	1,1	0,55	1,10
2,5	1,5	—	1,2	0,63	1,25
3	2,0	—	1,4	0,75	1,50
3,5	2,2	—	1,7	0,88	1,75
4	2,5	—	2,0	1,00	2,00
4,5	3,0	—	2,2	1,12	2,25
5	3,5	—	2,5	1,25	2,50
6	4,0	1,5	3,0	1,50	3,00
7	5,0	2,0	4,0	1,75	3,50
8	5,5	2,0	5,0	2,00	4,00
10	7,0	2,5	6,0	2,50	5,00
12	8,5	3,0	8,0	3,00	6,00
14	10,0	4,0	8,5	3,50	7,00
16	12,0	4,0	10,0	4,00	8,00
18	13,0	5,0	11,0	4,50	9,00
20	15,0	5,0	14,0	5,00	10,00
22	17,0	6,0	15,0	5,50	11,00
24	18,0	6,0	16,0	6,00	12,00
27	21,0	8,0	—	6,70	13,50
30	23,0	8,0	—	7,50	15,00
33	26,0	10,0	—	8,20	16,50
36	28,0	10,0	—	9,00	18,00
39	30,0	12,0	—	9,70	19,50
42	32,0	12,0	—	10,50	21,00
45	35,0	14,0	—	11,20	22,50
48	38,0	14,0	—	12,00	24,00
52	42,0	16,0	—	13,00	26,00

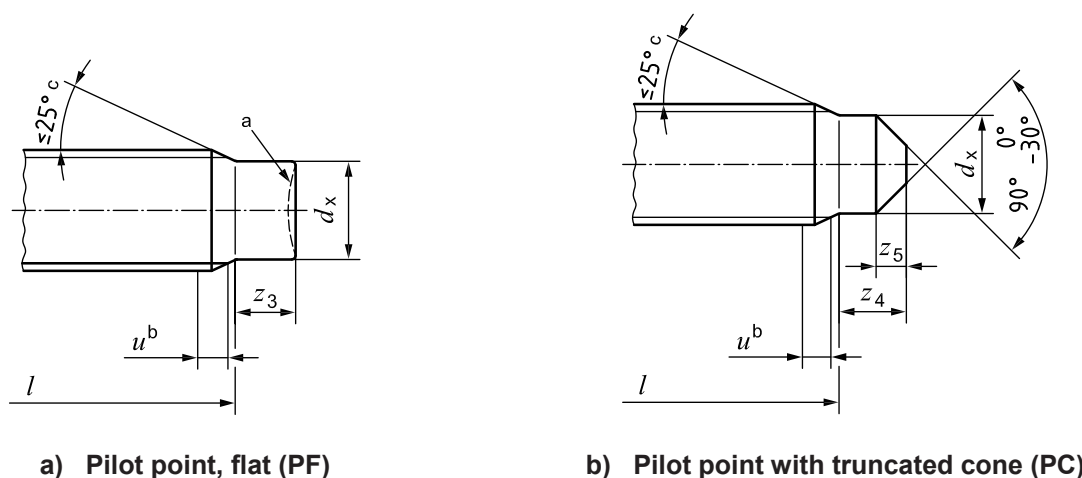
<sup>a</sup> For threads < M1,6, dimensions and tolerances should be agreed as suitable.

<sup>b</sup> For nominal dimensions ≤ 1 mm, tolerance field h13 applies.

<sup>c</sup> For threads ≤ M5 no flat part on the cone is required; the point may be slightly rounded.

<sup>d</sup> For nominal dimensions ≤ 1 mm, tolerance field  $\begin{matrix} +IT13 \\ 0 \end{matrix}$  applies.

### 3.3 Ends which are added to the specified nominal length of the fastener



- a End may be dimpled.
- b Incomplete thread  $u \leq 2 P$ .
- c The angle applies only to the portion of the point below the root diameter of the thread.

Figure 2

Table 2 — Dimensions for flat pilot points — Coarse thread

Dimensions in millimetres

Thread size		M4	M5	M6	M8	M10	M12	M14	M16	M20	M24
$d_x^a$	max.	2,9	3,8	4,5	6,1	7,8	9,4	11,1	13,1	16,3	19,6
	min.	2,7	3,6	4,3	5,9	7,6	9,1	10,8	12,8	15,9	19,2
$z_3$	$^{+IT17}_0$	2,0	2,5	3,0	4,0	5,0	6,0	7,0	8,0	10,0	12,0

<sup>a</sup> If, in special cases, a smaller diameter is required this shall be agreed separately.

Table 3 — Dimensions for pilot points with truncated cone — Coarse thread

Dimensions in millimetres

Thread size		M4	M5	M6	M8	M10	M12	M14	M16	M20	M24
$d_x^a$	max.	2,9	3,8	4,5	6,1	7,8	9,4	11,1	13,1	16,3	19,6
	min.	2,7	3,6	4,3	5,9	7,6	9,1	10,8	12,8	15,9	19,2
$z_4$	$^{+IT17}_0$	2,0	2,5	3,0	4,0	5,0	6,0	7,0	8,0	10,0	12,0
$z_5$	max.	1,00	1,50	2,00	2,50	3,00	3,50	4,00	4,50	5,00	6,00
	min.	0,50	0,75	1,00	1,50	1,50	2,00	2,00	2,50	3,00	4,00

<sup>a</sup> If, in special cases, a smaller diameter is required this shall be agreed separately.

**Table 4 — Dimensions for pilot points with truncated cone — Fine pitch thread**

Dimensions in millimetres

Thread size		M8 × 1	M10 × 1	M12 × 1,5	M14 × 1,5	M16 × 1,5
$d_x$	max.	6,30	8,00	9,60	11,40	13,50
	min.	6,08	7,78	9,38	11,13	13,23
$z_4$	$\begin{matrix} +IT17 \\ 0 \end{matrix}$	4	5	6	7	8
$z_5$	max.	2,5	3,0	3,5	4,0	4,5
	min.	1,5	1,5	2,0	2,0	2,5







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