
**Fasteners — Ends of parts with external
ISO metric thread**

*Éléments de fixation — Extrémités des éléments à filetage extérieur
métrique ISO*

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

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.

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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*

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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

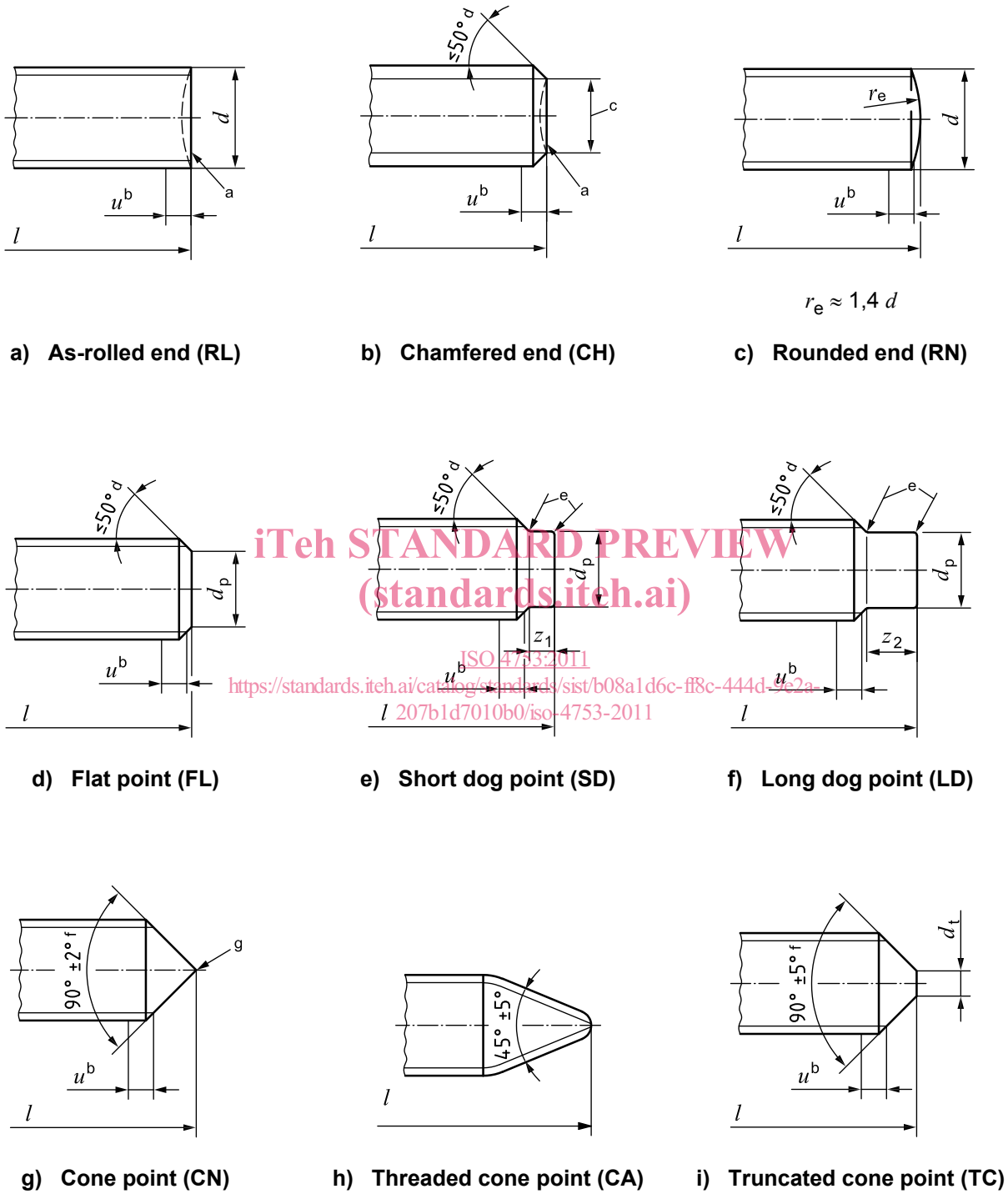
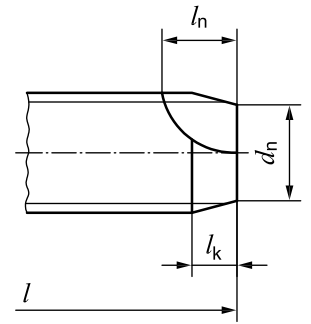
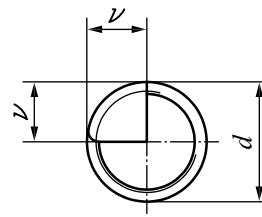
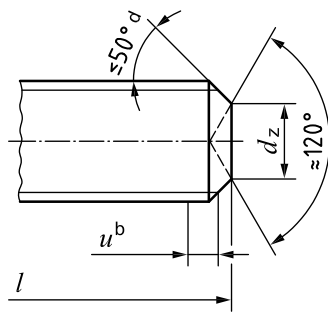


Figure 1



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

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

$$l_k \leq 3 P$$

$$l_n \leq 5 P$$

$$l_n - l_k \geq 2 P$$

j) Cup point (CP)

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.

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Figure 1 (continued)

Table 1 — Dimensions

Dimensions in millimetres

Thread diameter d^a	d_p h14 ^b	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

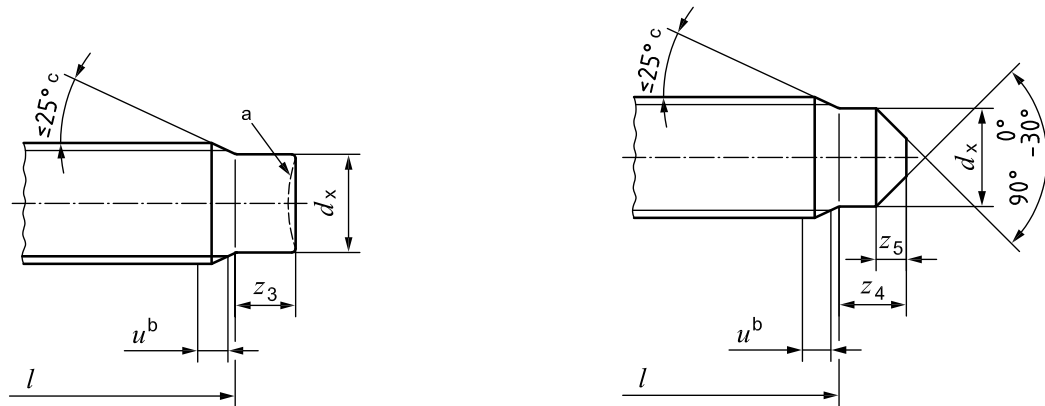
^a For threads < M1,6, dimensions and tolerances should be agreed as suitable.

^b For nominal dimensions ≤ 1 mm, tolerance field h13 applies.

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

^d 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) Pilot point, flat (PF)

b) Pilot point with truncated cone (PC)

- 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.

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 Figure 2
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Table 2 — Dimensions for flat pilot points — Coarse thread
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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

^a 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

^a If, in special cases, a smaller diameter is required this shall be agreed separately.