
**Assembly tools for screws and nuts —
Double-headed box wrenches, deep
offset and modified offset — Outside
dimensions**

*Outils de manoeuvre pour vis et écrous — Clés polygonales doubles
contre-coudées et contre-coudées profondes — Dimensions
extérieures*

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html (standards.iteh.ai)

This document was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 10, *Assembly tools for screws and nuts, pliers and nippers*.

This third edition cancels and replaces the second edition (ISO 10104:2001), which has been technically revised with the following changes:

- Table 2 has been merged into [Table 1](#);
- the size of pairing 25 × 28 has been deleted;
- the title has been changed.

Assembly tools for screws and nuts — Double-headed box wrenches, deep offset and modified offset — Outside dimensions

1 Scope

This document specifies the overall length and the maximum head thickness for double-headed box wrenches, deep offset (Form B) and modified offset (Form A).

NOTE The wrenches covered by this document are the ones identified in ISO 1703:2005 under reference numbers 1 1 02 06 0 and 1 1 02 05 0.

This document does not cover technical specifications for these products. Technical specifications are given in ISO 1711-1:2016, series A.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 691, *Assembly tools for screws and nuts — Wrench and socket openings — Tolerances for general use*

ISO 3318, *Assembly tools for screws and nuts — Open-ended wrenches, box wrenches and combination wrenches — Maximum widths of heads*

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3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

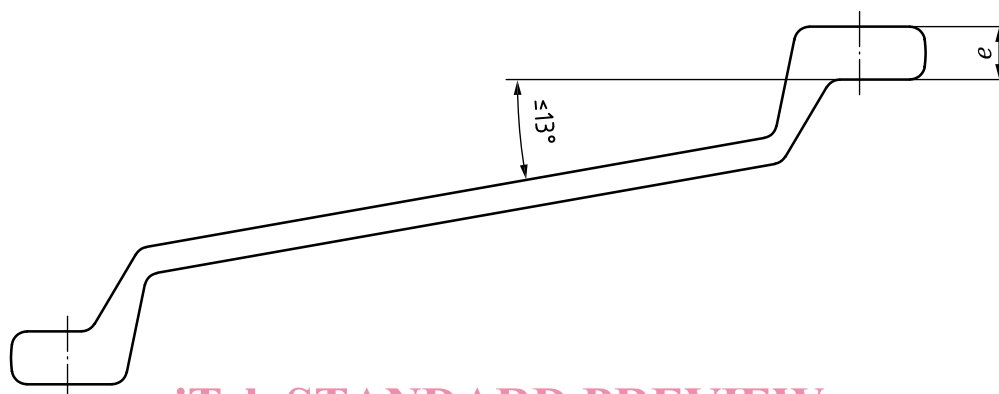
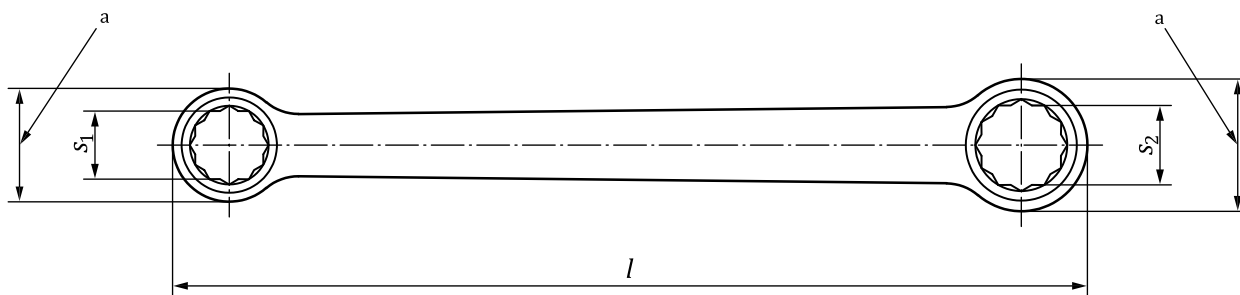
4 Dimensions

The length, l , and thickness, e , are given in [Table 1](#), which is based on the following formulae:

- $l_{\min} = s_1 \times 9 + 80$ mm (from pairing 6 × 7 to 27 × 32)
- $l_{\min} = s_1 \times 9 + 60$ mm (from pairing 30 × 32 to 55 × 60)
- $e_{\max} = 2 \times s_2^{0,65}$
- $l_{\max} = l_{\min} \times 1,4$

The maximum outside head dimensions are given in ISO 3318.

[Figure 1](#) only shows an example and should not influence the design of the wrench.



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Form B: Deep offset
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Form A: Modified offset

Key

- e* thickness
- l* length of the wrench
- s₁, s₂* nominal width across flats
- a* Maximum outside head dimensions according to ISO 3318.

Figure 1 — Double-headed, box wrench, deep offset and modified offset

Table 1 — Lengths of wrenches and thickness of the heads

Pairing ^a Nominal sizes $s_1 \times s_2$	<i>l</i> mm		<i>e</i> mm maximum
	minimum	maximum	
6 × 7 ^b	134	188	7
7 × 8	143	200	7,5
8 × 9 ^b	152	213	8,5
8 × 10	152	213	9
10 × 11	170	238	9,5
10 × 12 ^b	170	238	10
10 × 13	170	238	11
11 × 13	179	251	11
12 × 13 ^b	188	263	11
12 × 14 ^b	188	263	11
13 × 14 ^b	197	276	11
13 × 15	197	276	12
13 × 16	197	276	12
13 × 17 ^b	197	276	13
14 × 15 ^b	206	288	12
14 × 16 ^b	206	288	12
14 × 17 ^b	206	288	13
15 × 16 ^b	215	301	12
15 × 17 ^b	215	301	13
15 × 18	215	301	13
16 × 17 ^b	224	314	13
16 × 18	224	314	13
17 × 19 ^b	233	326	14
18 × 19 ^b	242	339	14
18 × 21	242	339	14
19 × 22 ^b	251	351	15
19 × 24 ^b	251	351	16
20 × 22 ^b	260	364	15
21 × 22 ^b	269	377	15
21 × 23 ^b	269	377	15
21 × 24	269	377	16
22 × 24 ^b	278	389	16
24 × 26 ^{b, c}	296	414	16,5
24 × 27	296	414	17
24 × 30 ^b	296	414	18
27 × 29 ^{b, c}	323	452	18
27 × 30	323	452	18

^a The tolerances on openings s_1 and s_2 shall comply with ISO 691.

^b The pairing contains at least one value of s not covered by ISO 272:1982.

^c This pairing is not covered by ISO 1085.

Table 1 (continued)

Pairing ^a Nominal sizes $s_1 \times s_2$	<i>l</i> mm		<i>e</i> mm maximum
	minimum	maximum	
27 × 32 ^b	323	452	19
30 × 32 ^b	330	462	19
30 × 34	330	462	20
30 × 36	330	462	21
32 × 34 ^b	348	487	20
32 × 36 ^b	348	487	21
34 × 36	366	512	21
36 × 41	384	538	22
41 × 46	429	601	24
46 × 50	474	664	25
50 × 55	510	714	27
55 × 60	555	777	28,5

^a The tolerances on openings s_1 and s_2 shall comply with ISO 691.

^b The pairing contains at least one value of s not covered by ISO 272:1982.

^c This pairing is not covered by ISO 1085.

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5 Designation

A double-headed box wrench in accordance with this document shall be designated by:

- a) "wrench"; <https://standards.iteh.ai/catalog/standards/sist/7c12b280-bf95-432f-a926-0f6c5e7f4ddd/iso-10104-2018>
- b) a reference to this document, i.e. ISO 10104;
- c) Form, i.e. A or B;
- d) pairing according to [Table 1](#).

EXAMPLE A double-headed, deep offset (Form B) box wrench with the pairing $s_1 \times s_2 = 13 \times 15$ is designated as follows:

Wrench ISO 10104, B 13 × 15

6 Marking

Double-headed box wrenches, deep offset and modified offset, shall be marked, permanently and legibly, with at least the following:

- a) nominal widths across flats;
- b) name or trademark of the manufacturer (or the responsible supplier).

Bibliography

- [1] ISO 1085, *Assembly tools for screws and nuts — Double-ended wrenches — Size pairing*
- [2] ISO 1703:2005, *Assembly tools for screws and nuts — Designation and nomenclature*
- [3] ISO 1711-1:2016, *Assembly tools for screws and nuts — Technical specifications — Part 1: Hand-operated wrenches and sockets*

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