

INTERNATIONAL STANDARD

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Assembly tools for screws and nuts — Double-headed, flat and offset, box wrenches

*Outils de manœuvre pour vis et écrous — Clés polygonales doubles,
droites et inclinées*



Reference number
ISO 10103:1990(E)

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.

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.

International Standard ISO 10103 was prepared by Technical Committee ISO/TC 29, *Small tools*.

Annex A of this International Standard is for information only.

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Assembly tools for screws and nuts — Double-headed, flat and offset, box wrenches

1 Scope

This International Standard specifies the minimal overall length and the maximum head thickness for double-headed, flat and offset, box wrenches complying with the test torque given by the formula $M_1^{1)} = 1,25 M$, where M is the test torque, series C, of ISO 1711:1975/Amd. 1:1982.

Double-headed, flat and offset, box wrenches are listed under numbers 8 and 9 in ISO 1703.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of ap-

plying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 691:1983, *Wrench and socket openings — Metric series — Tolerances for general use*.

ISO 1711:1975, *Hand operated wrenches and sockets — Technical specifications*.

ISO 3318:1990, *Assembly tools for screws and nuts — Double-headed open-ended wrenches, double-headed ring wrenches and combination wrenches — Maximum widths of heads*.

3 Dimensions

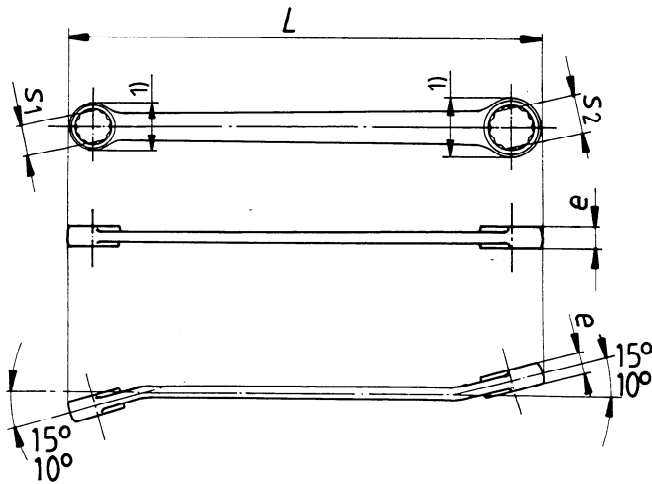
See figure 1 and table 1.

NOTE 1 Figure 1 of this International Standard is only an example and should not influence the design of the wrench.

1) The torque value has been voluntarily limited and shall be calculated according to the value of series A of ISO 1711:1975/Amd. 1:1982 (the document is referred to in clause 2 as ISO 1711:1975).

Table 1

Dimensions in millimetres



1) Overall dimensions of heads in accordance with ISO 3318, with the exception of the width across flats 20 mm, 23 mm, 25 mm and 28 mm.

Figure 1

Pairing ^{1) 2)} $s_1 \times s_2$	L ³⁾ min.	e ⁴⁾ max.
(6 × 7)	73	6,5
7 × 8	81	7
(8 × 9)	89	7,5
8 × 10	89	8
(9 × 11)	97	8,5
10 × 11	105	8,5
10 × 13	105	9,5
11 × 13	113	9,5
(12 × 13)	121	9,5
(13 × 14)	129	9,5
13 × 15	129	10
(13 × 16)	129	10,5
(13 × 17)	129	11
(14 × 15)	137	10
15 × 16	145	10,5
(15 × 18)	145	11,5
(16 × 17)	153	11
16 × 18	153	11,5
(17 × 19)	166	11,5
(18 × 19)	174	11,5
18 × 21	174	12,5
(19 × 22)	182	13
(20 × 22)	190	13
(21 × 22)	198	13
(21 × 23)	198	13
21 × 24	198	13,5
(22 × 24)	206	13,5
24 × 27	222	14,5
(24 × 30)	222	15,5
(25 × 28)	230	15
27 × 30	246	15,5
(27 × 32)	246	16
(30 × 32)	275	16
30 × 34	275	16,5
(32 × 34)	291	16,5
(32 × 36)	291	17
34 × 36	307	17
36 × 41	323	18,5
41 × 46	363	20
46 × 50	403	21
50 × 55	435	22
55 × 60	475	23,5

1) The pairings are those "recommended" and "less recommended" (in parentheses) by ISO 1085.

2) The tolerances on openings s_1 and s_2 shall comply with ISO 691.

3) $L_{\min} = s_1 \times 8 + 25$, for (6 × 7) to 16 × 18
 $= s_1 \times 8 + 30$, for (17 × 19) to (27 × 32)
 $= s_1 \times 8 + 35$, for (30 × 32) to 55 × 60

where s_1 is the smaller opening.

4) $e_{\max} = 2 \times s_2^{0,6}$

where s_2 is the bigger opening.

Annex A
(informative)

Bibliography

- [1] ISO 1085:1986, *Assembly tools for screws and nuts — Double-ended wrenches — Size pairing*.
- [2] ISO 1703:1983, *Assembly tools for screws and nuts — Nomenclature*.

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