
**Assembly tools for screws and nuts —
Four-way socket wrenches — Dimensions
and torque test**

*Outils de manœuvre pour vis et écrous — Clés en croix — Dimensions et essai
de torsion*

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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.

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.

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International Standard ISO 6788 was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 10, *Assembly tools for screws and nuts, pliers and nippers*.

[ISO 6788:1997](#)

This second edition cancels and replaces the first edition (ISO 6788:1982), which has been technically revised.

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Annex A of this International Standard is for information only.

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Assembly tools for screws and nuts — Four-way socket wrenches — Dimensions and torque test

1 Scope

This International Standard specifies the dimensions of socket heads, in millimetres, of four-way socket wrenches types 1, 2, 3 and 4 and also lays down test conditions to check the suitability of tool performance.

This International Standard applies to four-way socket wrenches for assembling screws and nuts with widths across flats of metric dimensions for trucks and cars.

The wrenches are listed under number 21 in ISO 1703.

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

ISO 691:1997, *Assembly tools for screws and nuts — Wrench and socket openings — Tolerances for general use.*

ISO 1174-1:1996, *Assembly tools for screws and nuts — Driving squares – Part 1: Driving squares for hand socket tools.*

ISO 1711-1:1996, *Assembly tools for screws and nuts — Technical specifications — Part 1: Hand operated wrenches and sockets.*

ISO 2236:1991, *Assembly tools for screws and nuts — Forged and tubular socket wrenches — Maximum outside head dimensions.*

ISO 3316:1996, *Assembly tools for screws and nuts — Attachments for hand-operated square drive socket wrenches — Dimensions and tests.*

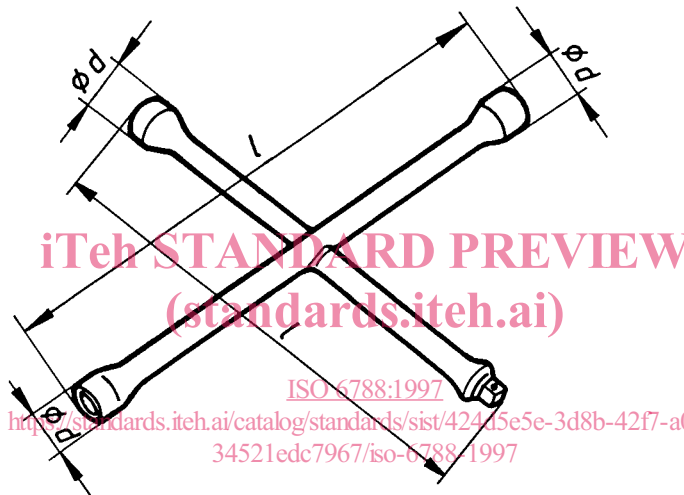
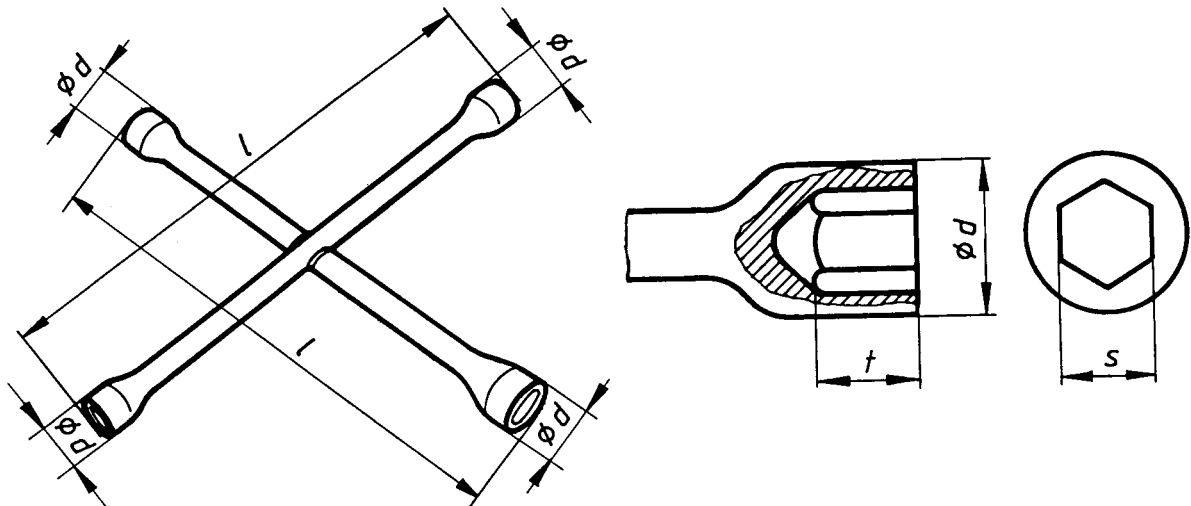
3 Dimensions

The dimensions are given in figure 1 and table 1.

The tolerances on wrench openings are those specified in ISO 691 in the "unmachined closed" series.

Driving squares are those specified in ISO 1174-1.

The maximum outside dimensions of socket heads d are 10 % greater than those given in ISO 2236.



Type	Maximum width across flats of socket ¹⁾ <i>s</i>	Driving square nominal dimension ¹⁾	Maximum outside dimension <i>d</i> max.	<i>l</i> min.	<i>t</i> min.
1	24	12,5	38	355	0,8 <i>s</i>
2	27	12,5	42,5	450	
3	32	20	49,5	630	
4	41	20	63	700	

1) Four-way socket wrenches shall have four sockets, of which one can be a male driving square in accordance with ISO 1174-1. Width across flats and the layout are not specified. Tolerances of *s* shall be as specified in ISO 691 for "unmachined closed".

Figure 1 — Four-way socket wrenches

The half-arms shall all be of the same length with a tolerance of $\pm 3\%$ of l . The angle formed by both arms shall be $90^\circ \pm 2^\circ$.

The sockets shall have a minimum hardness as specified in ISO 1711-1; the male driving square shall have a minimum hardness as specified in ISO 3316.

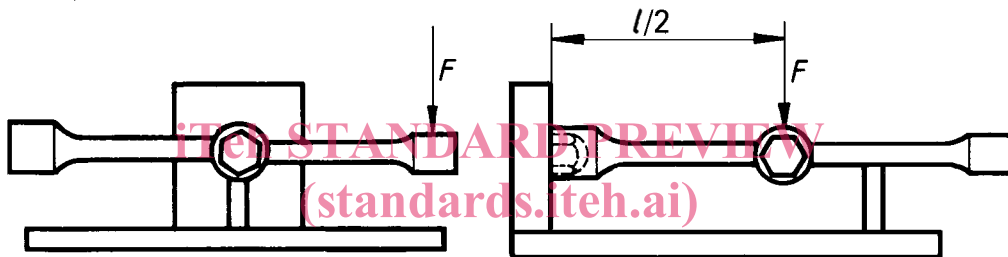
4 Torque testing

Place the socket or the square drive over a male hexagonal test mandrel or a female square test mandrel and apply the corresponding torque.

The minimum test torques shall be those given in ISO 1711-1 – Series A – for hexagonal sockets, and for square drive, those given in ISO 3316.

It is necessary to use a support to avoid the bending moment that would occur as a consequence of the distance, $l/2$, between the application point of the load, F , and the base of the mandrel. (See figure 2.)

After the minimum torque test application, the wrench shall present no permanent deformation or any other defect that may influence its correct use.



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Figure 2 — Torque testing

5 Designation

A four-way socket wrench with width across flats $s = 18$ mm, 21 mm, 22 mm and 24 mm shall be designated as follows:

(Four-way socket) **Wrench ISO 6788 – 18 × 21 × 22 × 24**

A four-way socket wrench with width across flats $s = 18$ mm, 21 mm and 22 mm and male driving square A 12,5 in accordance with ISO 1174-1 shall be designated as follows:

(Four-way socket) **Wrench ISO 6788 – 18 × 21 × 22 × A 12,5**

6 Marking

Four way socket wrenches shall be marked, permanently and legibly, with at least the following information:

- the width across flats of the sockets;
- the name or trademark of the manufacturer (or distributor).

Annex A
(informative)
Bibliography

ISO 1703:—¹⁾, *Assembly tools for screws and nuts — Nomenclature.*

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1) To be published. (Revision of ISO 1703:1983)

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