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## Assembly tools for screws and nuts — Adjustable wrenches

*Outils de manoeuvre pour vis et écrous — Clés à molette*

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Published in Switzerland

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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](http://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](http://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](http://www.iso.org/iso/foreword.html).

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 6787:2001), which has been technically revised. The main changes compared to the previous edition are as follows:

- the reference number from ISO 1703:2005 has been updated;
- the values for test mandrel width across flats and torque values in [Table 2](#) have been updated;
- a footnote in [Table 2](#) with reference to ISO 1711-1:2016 has been added (moved from [Clause 6](#)).

# Assembly tools for screws and nuts — Adjustable wrenches

## 1 Scope

This document specifies the dimensions of adjustable wrenches and the admissible clearance of the adjustable jaw. It also specifies test conditions to test the suitability of tool performance.

NOTE The wrenches covered by this document are the ones identified in ISO 1703:2005 under reference number 1 1 01 04 0.

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

## 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 <https://www.electropedia.org/>

## 4 Dimensions

The dimensions are given in [Table 1](#).

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

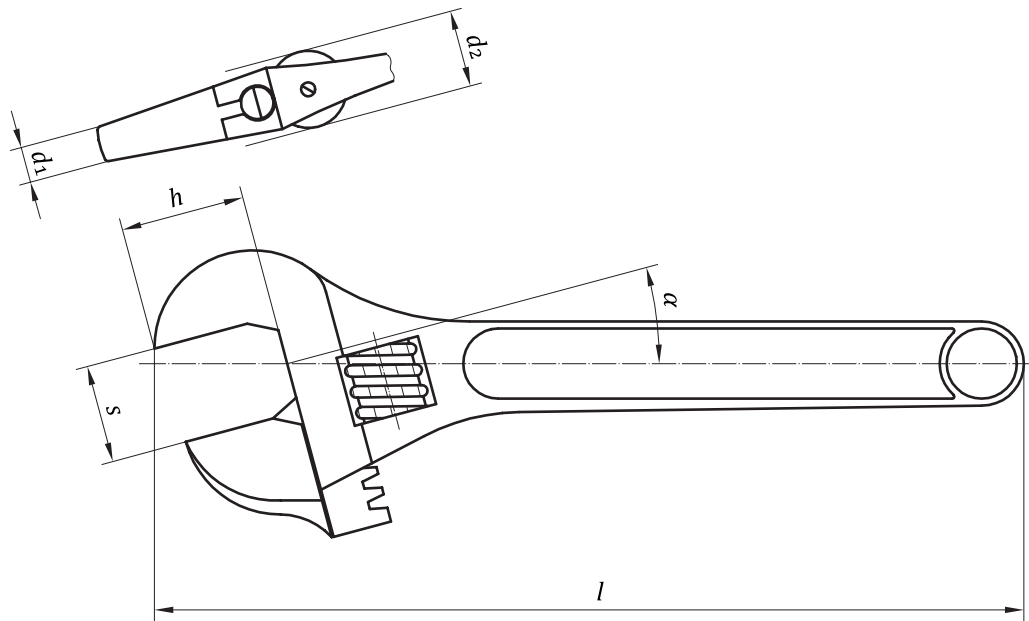
## 5 Technical specifications

### 5.1 Clearance of adjustable jaw

The clearance,  $c$ , between the adjustable jaw and the fixed jaw shall be measured in accordance with [Figure 2](#) by application of a low force at the jaw.

The clearance shall not exceed the maximum values for the specified sizes given in [Table 1](#), irrespective of which side is to be checked.

The adjustable jaw shall be manufactured to permit free travel throughout the range of opening without binding or wedging.

**Key**

- $d_1$  thickness of the jaw tip  
 $d_2$  thickness of the head  
 $h$  depth of the jaw  
 $l$  length of the wrench  
 $s$  opening of the jaw  
 $\alpha$  angle

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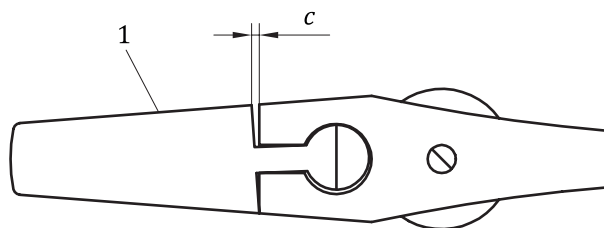
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**Figure 1 — Adjustable wrench**

**Table 1 — Dimensions of adjustable wrench**

Dimensions in millimetres

Length		Maximum opening of the jaw	Depth of the jaw	Jaw tip thickness	Thickness of the head	Angle		Clearance
$l$		$s_{max}$	$h$	$d_1$	$d_2$	$\alpha$		$c$
nom.	tol.		min.	max.	max.	Form A	Form B	max.
100	+ 15 0	$\geq 13$	12	6	10	15°	22,5°	0,25
150		$\geq 19$	17,5	7	13			0,25
200		$\geq 24$	22	8,5	15			0,28
250		$\geq 27$	26	11	17			0,28
300	+ 30 0	$\geq 34$	31	13,5	20			0,30
375		$\geq 41$	40	16	26			0,30
450	+ 45 0	$\geq 50$	48	19	32			0,36
600		$\geq 60$	57	28	36			0,50

**Key**

c clearance

1 jaw

**Figure 2 — Clearance of adjustable jaw****5.2 Hardness**

The hardness of the wrenches shall be at least 40 HRC. The hardness value shall be tested over the whole of the head.

**5.3 Torque test**

Testing shall be carried out on a hexagon test mandrel treated to a minimum hardness of 55 HRC.

The test procedure shall be as specified in ISO 1711-1.

The torque shall be applied successively in the two opposite directions.

The test torque values are given in Table 2.

After testing, the wrench shall present neither permanent deformation nor any other defect that may influence its correct use.

**Table 2 — Torsion test**

Length of the wrench mm	Test mandrel width across flats mm	Test torque min. N · m
100	13	41
150	19	119
200	24	230
250	27	319
300	34	609
375	41	923
450	50	1 373
600	60	1 977

NOTE The values in column "Test torque" are equal to those of ISO 1711-1:2016, Table 3, Series C, multiplied by factor 0,8.

## 6 Designation

An adjustable wrench in accordance with this document shall be designated by:

- a) “wrench”;
- b) a reference to this document, i.e. ISO 6787;
- c) the form, i.e. A or B;
- d) the angle,  $\alpha$ ; and
- e) the length,  $l$ , in millimetres.

EXAMPLE 1 An adjustable wrench of form A with  $\alpha = 15^\circ$  and  $l = 250$  mm is designated as follows:

Wrench ISO 6787– A 15 × 250

EXAMPLE 2 An adjustable wrench of Form B with  $\alpha = 22,5^\circ$  and  $l = 300$  mm is designated as follows:

Wrench ISO 6787 – B 22,5 × 300

## 7 Marking

Adjustable wrenches shall be marked, permanently and legibly, with at least the following:

- a) the nominal length,  $l$ , in millimetres;
- b) the name or trademark of the manufacturer (or the responsible supplier).

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- [1] ISO 1703, *Assembly tools for screws and nuts — Designation and nomenclature*
- [2] ISO 6508-1, *Metallic materials — Rockwell hardness test — Part 1: Test method*

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