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Assembly tools for screws and nuts — Technical specifications —

Part 1: Hand-operated wrenches and sockets

Outils de manoeuvre pour vis et écrous — Spécifications techniques —

Partie 1: Clés de serrage et douilles à main

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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 of 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 www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/TC 29, *Small tools*, Subcommittee SC 10, *Assembly tools for screws and nuts, pliers and nippers*.

This fifth edition cancels and replaces the fourth edition (ISO 1711-1:2016), which has been technically revised.

The main changes compared to the previous edition are as follows:

— general tolerances on opening have been added;

— additional sizes 26 and 29 for width across flats have been added to Table 3;

— the structure of the document has been revised.

A list of all parts in the ISO 1711 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Assembly tools for screws and nuts — Technical specifications —

Part 1: Hand-operated wrenches and sockets

1 Scope

This document specifies minimum values for Rockwell hardness and torsional strength for hand-operated wrenches and sockets.

It covers the following three series of torsion torques:

— Series A: usual box wrenches and socket wrenches;

EXAMPLE 1 Reference nos. 1 1 02 01 0; 1 1 02 02 0 and 1 1 02 02 1; 1 1 02 03 0; 1 1 02 04 0; 1 1 02 05 0; 1 1 02 06 0; 1 1 02 09 0; 1 1 02 10 0; 1 1 02 11 0; 1 1 02 12 0; 1 1 02 13 0 and 1 1 02 13 1; 1 1 02 14 0; 1 1 02 15 0; 1 1 08 01 0; 1 1 08 02 0.

— Series C: open end wrenches;

EXAMPLE 2 Reference nos. 1 1 01 01 0; 1 1 01 01 1; 1 1 01 02 0; 1 1 01 03 0; 1 1 01 04 0.

— Series E: hand-operated square drive sockets.

EXAMPLE Reference nos. 2 1 02 01 0 and 2 1 02 01 1.

NOTE The wrenches and sockets mentioned above are listed under their respective reference numbers in ISO 1703.

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 6508-1, *Metallic materials — Rockwell hardness test — Part 1: Test method*

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 Requirements

4.1 General

The tolerances on opening *s* shall comply with ISO 691.

4.2 Test torsion torques

The empiric formulae giving minimum test torsion torques, *M*, in newton metres, as a function of width across flats, *s*, in millimetres, are given for information in Table 1.

The minimum test torsion torques to be applied, are given in Table 3.

Table 1 — Formulae giving minimum test torsion torques

Series			Minimum test torsion torque *M* N · m
A			$0{,}265\ 7 \cdot s^{2{,}34}$
C	Nominal width across flats, *s*	≤36	$0{,}039\ 2 \cdot s^{2{,}8}$
		>36	$0{,}686\ 5 \cdot s^{2}$
E	Nominal dimension for driving square	6,3	$0{,}980\ 7 \cdot s^{1{,}7}$
		10	$0{,}350\ 7 \cdot s^{2{,}34}$[a]
		12,5	$1{,}471 \cdot s^{2}$
		20	$2{,}451\ 7 \cdot s^{1{,}76}$
		25	$46{,}581\ 6 \cdot s$

[a] Test torque *M* applicable to Series A multiplied by the coefficient 1,32.

4.3 Hardness testing

The hardness test shall be carried out in accordance with ISO 6508-1.

Minimum Rockwell hardness values are given in Table 2.

Table 2 — Minimum Rockwell hardness values for wrenches and sockets

Nominal width across flats *s* mm	Minimum hardness	
	Alloy steel open end and double head wrenches[a] HRC	All other wrenches or sockets HRC
$s \leq 34$	42	39
$34 < s \leq 70$	39	35

[a] For carbon steel open end wrenches, the hardness value shall be 36 HRC.

5 Torque testing

5.1 General

For combined wrenches (for example, reference nos. 1 1 01 05 0 and 1 1 01 06 0), the box wrench side shall be tested in accordance with Table 3, Series A and the open-end wrench side shall to be tested in accordance with Table 3, Series C.