
**Assembly tools for screws and nuts —
Driving parts for hand-operated
square drive socket wrenches —
Dimensions and tests**

*Outils de manoeuvre pour vis et écrous — Pièces de commande pour
douilles à main à carré conducteur — Dimensions et essais*

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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).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 fifth edition cancels and replaces the fourth edition (ISO 3315:2011), of which it constitutes a minor revision. The changes compared to the previous edition are as follows:

- correction of footnotes in [Table 1](#);
- change of the gender related terms “male” to “external” and “female” to “internal”;
- deletion of the unit “mm” for the nominal dimensions;
- addition of the mandatory [Clause 3](#) "Terms and definitions".

Assembly tools for screws and nuts — Driving parts for hand-operated square drive socket wrenches — Dimensions and tests

1 Scope

This document is applicable to driving parts of hand-operated square drive socket wrenches.

NOTE The driving parts covered by this document are the ones identified in ISO 1703:2018 under reference No. 6 1 00 01 0 and 6 1 00 01 1, 6 1 00 03 0, 6 1 00 04 0, 6 1 00 05 0 and 6 1 00 05 1, 6 1 00 06 0 and 6 1 00 06 1, 6 1 00 09 0 as well as 6 1 00 10 0 and 6 1 00 10 1.

It specifies:

- a) the overall dimensions;
- b) the minimum Rockwell hardness value for their driving squares;
- c) the method of torque testing;
- d) the minimum torsional strength values;
- e) the designation;
- f) the marking.

2 Normative references

ISO 3315:2018
<https://standards.iteh.ai/catalog/standards/sist/1995591a-5edb-4fee-a84f-c29a2feb5615/iso-3315-2018>

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

3 Terms and definitions

No terms and definitions are listed in this document.

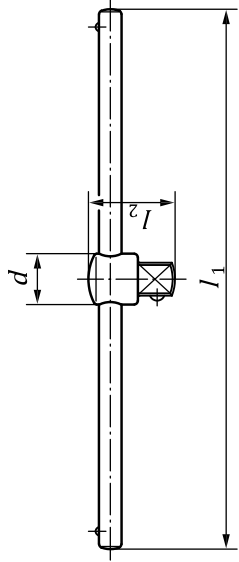
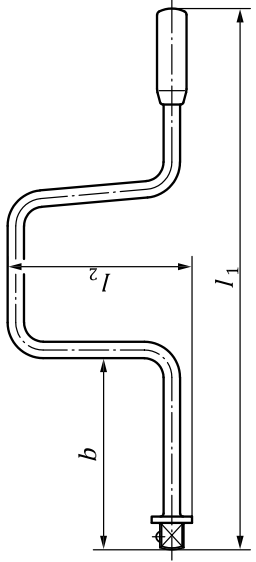
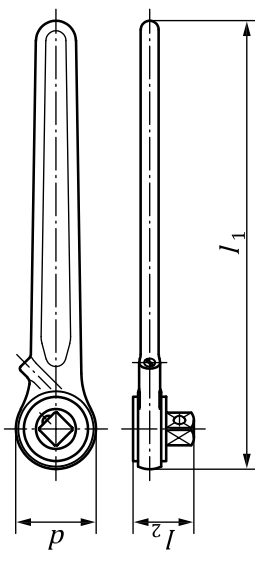
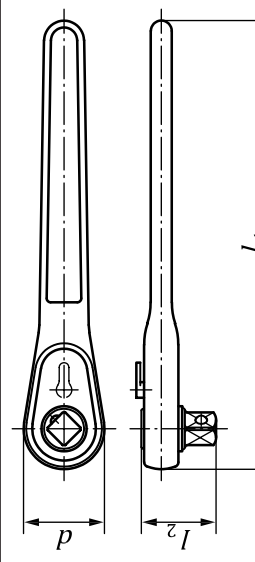
ISO and IEC maintain terminological databases for use in standardization at the following addresses:

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

4 Dimensions

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

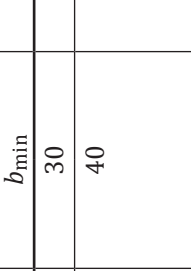

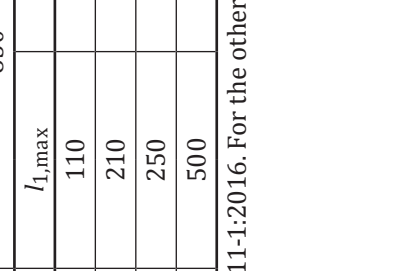
Table 1 — Overall dimensions

Tool	Description and designation according to ISO 1703	Nominal dimension of square drive	Dimensions mm				Torque ^a M_{min} N · m
			d_{max}	$l_{1,min}$	$l_{1,max}$	$l_{2,max}$	
	T-handle, square drive 6 1 00 04 0		d_{max}	$l_{1,min}$	$l_{1,max}$	$l_{2,max}$	55
			14	100	160	24	180
			23	150	250	35	455
			27	220	320	50	1 255
			40	430	510	62	2 236
	Speeder, brace type 6 1 00 06 0 6 1 00 06 1		b_{min}	$l_{1,max}$	$l_{2,min}$	$l_{2,max}$	24
			30	420	60	115	79
			40	470	70	125	199
			50	510	85	145	
	Ratchet handle 6 1 00 09 0		d_{max}	$l_{1,min}$	$l_{1,max}$	$l_{2,max}$	62
			25	110	150	27	202
			35	140	220	36	512
			50	230	300	45	1 412
			70	430	630	62	
	Ratchet handle, reversible 6 1 00 10 0 6 1 00 10 1		d_{max}	$l_{1,min}$	$l_{1,max}$	$l_{2,max}$	62
			25	110	150	27	202
			35	140	220	36	512
			50	230	300	45	1 412
			70	430	630	62	2 515

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Table 1 (continued)

Tool	Description and designation according to ISO 1703	Nominal dimension of square drive	Dimensions mm		Torque ^a M_{min} N · m
	Screwdriver, external square 6 1 00 01 0 6 1 00 01 1	6,3 10	b_{min}	$l_{1,max}$	10 34
	Nut spinner, flex head 6 1 00 03 0	6,3 10 12,5 20 25	$l_{1,max}$		62 202 512 1 412 2 515
	Offset handle, square drive 6 1 00 05 0 6 1 00 05 1	6,3 10 12,5 20	$l_{1,max}$	$l_{2,max}$	62 202 512 1 412

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^a Torque values, M , for ratchet handle, nut spinner, offset handle are the maximum values from series E of ISO 1711-1:2016. For the other tools, the values have been calculated using those maximum values multiplied by the following coefficients:

- T-handle: approx. 0,89;
- speeder: approx. 0,39;
- screwdriver: approx. 0,16.

5 Driving squares

Driving squares shall be in accordance with ISO 1174-1 and shall have a minimum hardness of 39 HRC.

6 Torque testing

6.1 Method

Place the tool in an internal test square and apply the corresponding torque.

Do not jerk or strike the tool when testing and apply the load gradually until the minimum testing torque (see [Table 1](#)) is reached.

The across-flats dimension of the internal test square shall be equal to the minimum dimension of the corresponding internal square (see ISO 1174-1) with a tolerance of H8; the internal test square shall be hardened to not less than 55 HRC.

A device in which the internal test square can be rotated at a certain torque, determined to an accuracy of $\pm 2,5\%$, may also be used for this test.

Following the application of the minimum test torsion torque, any possible damage or deformation shall not affect the usability of the tool.

6.2 Special requirements

6.2.1 Test of T-handle, square drive

Draw out the handle completely at one end and apply the load to the end furthest from the test square.

6.2.2 Test of speeder, brace type

Apply the load in the middle of the part on which the operator's hand normally rests.

6.2.3 Test of ratchet handle and ratchet handle, reversible

Apply the load as close as possible to the end of the handle.

For tools having a reversible ratchet, the test shall be carried out in both directions.

6.2.4 Test of screwdriver, external square

An appropriate appliance shall allow the load to be applied to the screwdriver without clamping the screwdriver on the rod, which can alter the test result.

6.2.5 Test of nut spinner, flex head

Apply the load as close as possible to the end of the handle, which is placed at right angles to the axis of the square.

6.2.6 Test of offset handle, square drive

Apply the load as close as possible to the end of the handle.

7 Endurance test for ratchet handles

Following the torque testing specified in [Clause 6](#), an endurance test shall be carried out for ratchet handles and reversible ratchet handles. The test conditions are given in [Table 2](#).

Table 2 — Values for endurance test

Nominal dimension of square drive	Number of cycles	Cycle test torque	Frequency max.
		N·m	cycles per minute
6,3	50 000	15	30
10	50 000	50	30
12,5	50 000	128	30

The test shall be carried out for one direction of rotation, by smoothly applying the specified torque.

During the test, all the teeth shall be involved.

No intervention of maintenance is allowed during the test.

Following the test, the tool shall not show any physical damage and shall still withstand the torque testing specified in 6.2.3.

8 Designation

A driving part for hand-operated square drive socket wrenches in accordance with this document shall be designated by:

- a) the abbreviated description as shown in Table 1;
- b) a reference to this document, i.e. ISO 3315;
- c) a hyphen;
- d) the dimension of the square drive, in millimetres.

EXAMPLE A T-handle, square drive 6.1 00 04 0 with nominal dimension of the square drive of 12,5 mm is designated as follows:

T-handle ISO 3315 — 12,5

9 Marking

Driving parts for hand-operated square drive socket wrenches shall be marked, permanently and legibly, with at least the name or trademark of the manufacturer (or distributor).