BS ISO 3315:2011

BSI Standards Publication

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

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This British Standard is the UK implementation of ISO 3315:2011.

The UK participation in its preparation was entrusted to Technical Committee MTE/15, Hand tools.

A list of organizations represented on this committee can be obtained on request to its secretary.

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BS ISO 3315:2011

INTERNATIONAL STANDARD

ISO 3315

Fourth edition
2011-04-15

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

Outils de manœuvre 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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

ISO 3315 was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 10, *Assembly tools for screws and nuts, pliers and nippers*.

This fourth edition cancels and replaces the third edition (ISO 3315:1996), which has been technically revised.

INTERNATIONAL STANDARD ISO 3315:2011(E)

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

1 Scope

This International Standard is applicable to the driving parts of hand-operated square drive socket wrenches identified in ISO 1703 under designations 6 1 00 04 0, 6 1 00 06 0, 6 1 00 06 1, 6 1 00 09 0, 6 1 00 10 0, 6 1 00 10 1, 6 1 00 01 0, 6 1 00 01 1, 6 1 00 03 0, 6 1 00 05 0 and 6 1 00 05 1.

NOTE These designations correspond to the former (old) designation numbers 253, 255, 256, 257, 251, 252 and 254.

It specifies

a) the overall dimensions,

b) the minimum Rockwell hardness value for their squares,

c) the method of torque testing,

d) the minimum torsional strength values,

e) the method endurance of testing for ratchet handles,

f) designation, and

g) marking.

2 Normative references

The following referenced documents are indispensable for the application 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 Dimensions

The overall dimensions are given in Table 1.

Table 1 — Overall dimensions

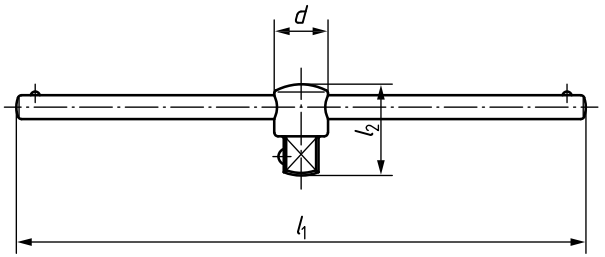
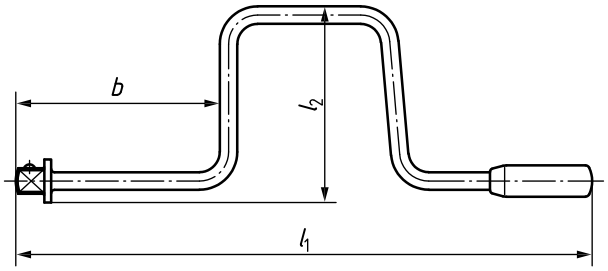
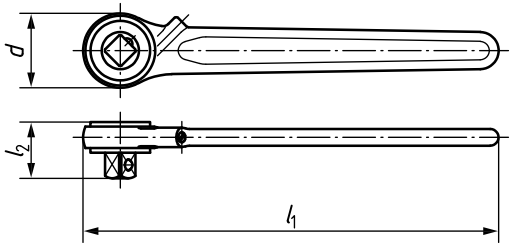
Tool	Description and designation according to ISO 1703[a]	Nominal dimension of square drive mm	Dimensions mm				Torque[b] M_{min} N·m
			d_{max}	$l_{1,min}$	$l_{1,max}$	$l_{2,max}$	
	**T-handle** (square drive) 6 1 00 04 0	6,3	14	100	160	24	55
		10	23	150	250	35	180
		12,5	27	220	320	50	455
		20	40	430	510	62	1 255
		25	52	500	760	80	2 236
	**Speeder** (brace type) 6 1 00 06 0 6 1 00 06 1		b_{min}	$l_{1,max}$	$l_{2,min}$	$l_{2,max}$	
		6,3	30	420	60	115	24
		10	40	470	70	125	79
		12,5	50	510	85	145	199
	**Ratchet handle** 6 1 00 09 0		d_{max}	$l_{1,min}$	$l_{1,max}$	$l_{2,max}$	
		6,3	25	110	150	27	62
		10	35	140	220	36	202
		12,5	50	230	300	45	512
		20	70	430	630	62	1 412

Table 1 (*continued*)

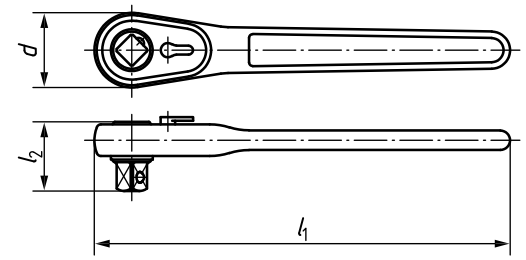
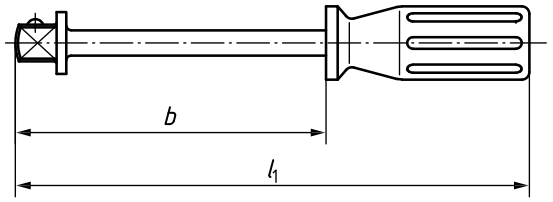
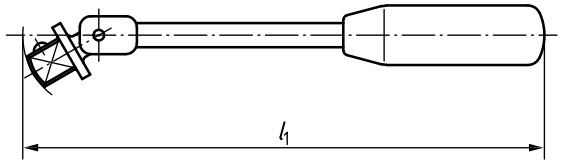
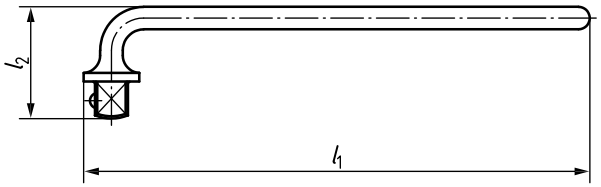
Tool	Description and designation according to ISO 1703[a]	Nominal dimension of square drive	Dimensions				Torque[b] M_{min}
		mm	mm				N·m
	**Ratchet handle** (reversible) 6 1 00 10 0 6 1 00 10 1		d_{max}	$l_{1,min}$	$l_{1,max}$	$l_{2,max}$	
		6,3	25	110	150	27	62
		10	35	140	220	36	202
		12,5	50	230	300	45	512
		20	70	430	630	62	1 412
		25	90	500	900	80	2 515
		mm	mm				N·m
	**Screwdriver** (external square) 6 1 00 01 0 6 1 00 01 1		b_{min}		$l_{1,max}$		
		6,3	30		165		10
		10	40		190		34
	**Nut spinner** (flex head) 6 1 00 03 0		$l_{1,max}$				
		6,3	165				62
		10	270				202
		12,5	490				512
		20	600				1 412
		25	850				2 515

Table 1 (*continued*)

Tool	Description and designation according to ISO 1703[a]	Nominal dimension of square drive mm	Dimensions mm		Torque[b] M_{min} N·m
			$l_{1,max}$	$l_{2,max}$	
	**Offset handle** (square drive) 6 1 00 05 0 6 1 00 05 1	6,3	110	35	62
		10	210	45	202
		12,5	250	60	512
		20	500	120	1 412

[a] The abbreviated description for use in the designation of a driving part is shown in bold-face type.

[b] Torque values, M, have been calculated using the maximum values from series E of ISO 1711-1 multiplied by the following coefficients:

— T-handle: 0,8;

— speeder: 0,35;

— ratchet handle, nut spinner, offset handle: 0,9;

— screwdriver: 0,15.

4 Driving squares

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

5 Torque testing

5.1 Method

Place the tool in a female 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 female test square shall be equal to the minimum dimension of the corresponding female square (see ISO 1174-1) with a tolerance of H8; the female test square shall be hardened to not less than 55 HRC.

A device in which the female test square can be rotated at a certain torque, determined to an accuracy of ±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.

5.2 Special requirements

5.2.1 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.

5.2.2 Test of speeder, brace type

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

5.2.3 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.

5.2.4 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.

5.2.5 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.

5.2.6 Test of offset handle, square drive

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

6 Endurance test for ratchet handles

Following the torque testing specified in Clause 5, 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

Driving square mm	**Number of cycles**	**Cycle test torque** N·m	**Frequency** max. 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 5.2.3.

7 Designation

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

a) the abbreviated description as shown in Table 1;

b) a reference to this International Standard, i.e. ISO 3315:2011;

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

8 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).

Bibliography

[1] ISO 1703, *Assembly tools for screws and nuts — Designation and nomenclature*

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

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