INTERNATIONAL STANDARD

ISO 3316

Third edition
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Assembly tools for screws and nuts — Attachments for hand-operated square drive socket wrenches — Dimensions and tests

Outils de manœuvre pour vis et écrous — Adaptateurs pour douilles à main à carré conducteur — Dimensions et essais

Reference number
ISO 3316:1996(E)

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.

International Standard ISO 3316 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 3316:1988), which has been technically revised.

Annex A of this International Standard is for information only.

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

1 Scope

This International Standard applies to attachments for hand-operated square drive socket wrenches listed under numbers 203, 204, 205 and 206 in ISO 1703. 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) designation;

f) marking.

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

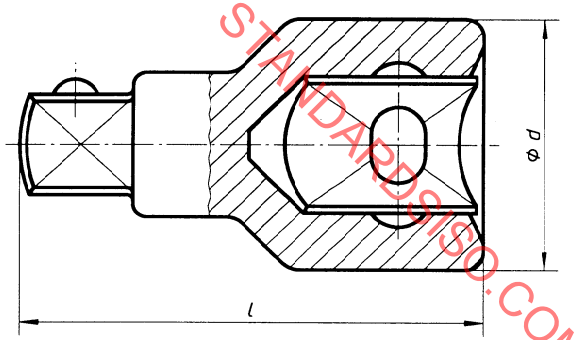
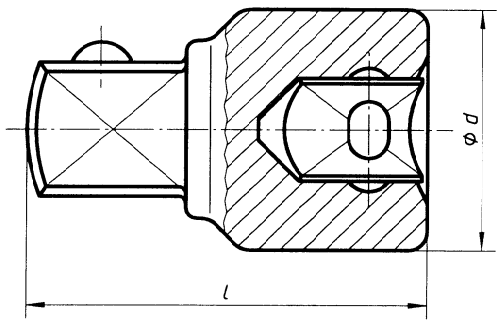
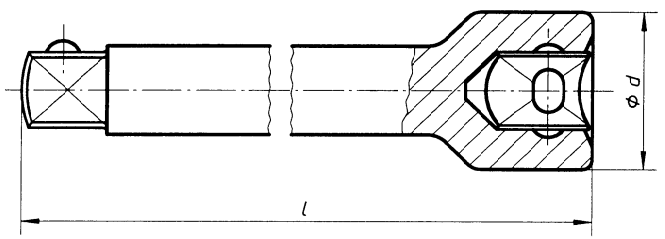
ISO 1711-1:1996, *Assembly tools for screws and nuts — Technical specifications — Part 1: Hand-operated wrenches and sockets.*

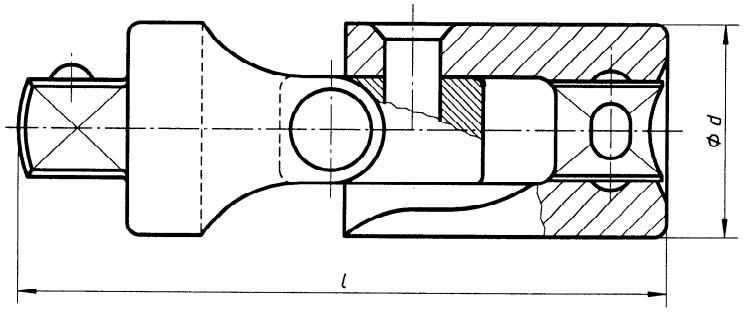
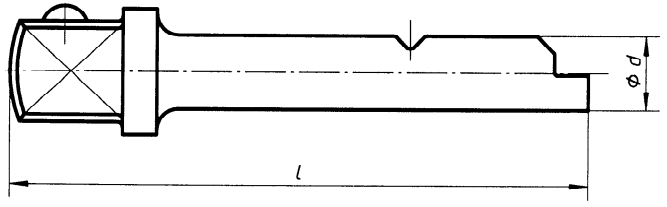
ISO 2352:1982, *Spiral ratchet screwdriver ends.*

3 Dimensions

The overall dimensions are given in table 1.

Table 1 — Overall dimensions

No.	Tool	Description [1]	Nominal dimension of square drive mm		Dimensions mm		Torque [2] M_{min} N·m
			female	male	l_{max}	d_{max}	
203		**Adapter** socket wrench	10	6,3	32	20	62
			12,5	10	44	25	202
			20	12,5	58	38	512
			25	20	85	52	1 412
			6,3	10	27	16	62
			10	12,5	38	23	202
			12,5	20	50	30	512
			20	25	68	40	1 412
204		**Extension bar**	male and female		l	d_{max}	
			6,3		55 ± 3	12,5	62
					100 ± 5		
					150 ± 8		
			10		75 ± 4	20	202
					125 ± 6		
					250 ± 12		
			12,5		75 ± 4	25	512
					125 ± 6		
					250 ± 12		
			20		200 ± 10	38	1 412
					400 ± 20		
			25		200 ± 10	52	2 515
					400 ± 20		

205		Square drive **universal joint**	male and female	l_{max}	d_{max}	
			6,3	45	14	34
			10	68	23	112
			12,5	80	28	284
			20	110	42	784
206		**Square drive bit** for use with spiral ratchet drivers	male	l_{max}	d [3]	
			6,3	50	5,5 7 8	12
			10	55	7 8	40

1) The abbreviated description for use in the designation of an attachment is shown in bold-face.

2) Torques M have been calculated using the maximum values from series E of ISO 1711-1 multiplied by the following coefficients:
   - Nos. 203 and 204: 0,9
   - No. 205: 0,5
   - No. 206: 0,18

3) Nominal value in accordance with ISO 2352.

4 Driving squares

Driving squares shall be in accordance with ISO 1174-1, and 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.

Smoothly apply an increasing load 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 hardness 55 HRC.

A device in which the female test square can be rotated at a certain torque, determined with 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 adaptor socket wrench, extension bar and square drive universal joint

The torque shall be achieved by applying a load using a driving part the square drive of which has been treated for a minimum hardness of 55 HRC and the across-flats dimension of which is equal to the maximum dimension of the corresponding male square (see ISO 1174-1) with a tolerance of h8.

The universal joint shall be tested in the position in which the two squares are on the same axis.

5.2.2 Test of square drive bit for use with spiral ratchet drivers

The end opposite to the square shall be fixed and the load shall be applied to the square.

6 Designation

An attachment for hand-operated square drive socket wrenches in accordance with this International Standard shall be designated by

a) abbreviated description as shown in table 1;

b) reference to this International Standard;

c) dimension of the female square drive and of the male square drive, in millimetres, for adaptor No. 203, or

dimension of the male-female square drive, in millimetres, and the overall length l, in millimetres, for extension bar No. 204, or

dimension of the male-female square drive, in millimetres, for universal joint No. 205, or

dimension of the male square drive, in millimetres, and of the diameter d, in millimetres, for square drive bit No. 206.

EXAMPLES

Extension bar (No. 204) with nominal dimension 10 mm of square drive and with an overall length l = 125 mm is designated as follows:

Extension bar No. 204 ISO 3316 - 10 × 125

Adaptor socket wrench (No. 203) with nominal dimension 10 mm female square drive and 6,3 mm male square drive is designated as follows:

Adaptor No. 203 ISO 3316 - 10 × 6,3

7 Marking

Attachments for hand-operated square drive socket wrenches shall be marked, permanently and legibly, with at least the following information:

— the name or trademark of the manufacturer (or distributor).

Annex A
(informative)

Bibliography

[1] ISO 1703:1983, *Assembly tools for screws and nuts — Nomenclature.*

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