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**Assembly tools for screws and nuts —  
Machine-operated screwdriver bits —**

**Part 3:  
Screwdriver bits for hexagon socket  
screws**

*Outils de manoeuvre pour vis et écrous — Embouts tournevis à machine —*

*Partie 3: Embouts tournevis pour vis à six pans creux*



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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)).

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 meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

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 second edition cancels and replaces the first edition (ISO 2351-3:2002), of which it constitutes a minor revision with the following changes:

- designation according to ISO 1703 has been included;
- references have been updated;
- minimum proof torque values in [Table 2](#) have been corrected;
- relation of minimum proof torque and  $M_d$  ISO 2936 in [Table 2](#) has been defined exactly.

ISO 2351 consists of the following parts, under the general title *Assembly tools for screws and nuts — Machine-operated screwdriver bits*:

- *Part 1: Screwdriver bits for slotted head screws*
- *Part 2: Screwdriver bits for cross-recessed head screws*
- *Part 3: Screwdriver bits for hexagon socket screws*

# Assembly tools for screws and nuts — Machine-operated screwdriver bits —

## Part 3: Screwdriver bits for hexagon socket screws

### 1 Scope

This part of ISO 2351 prescribes the technical specifications for machine-operated screwdriver bits for hexagon socket screws, listed in ISO 1703 under reference number 3 2 03 01 0. It applies to bits with male hexagon drive or with cylindrical flat-end drive as defined in ISO 1173 and to tips for screwdrivers as defined in ISO 2936. It also gives recommended combinations between tips and bits.

### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

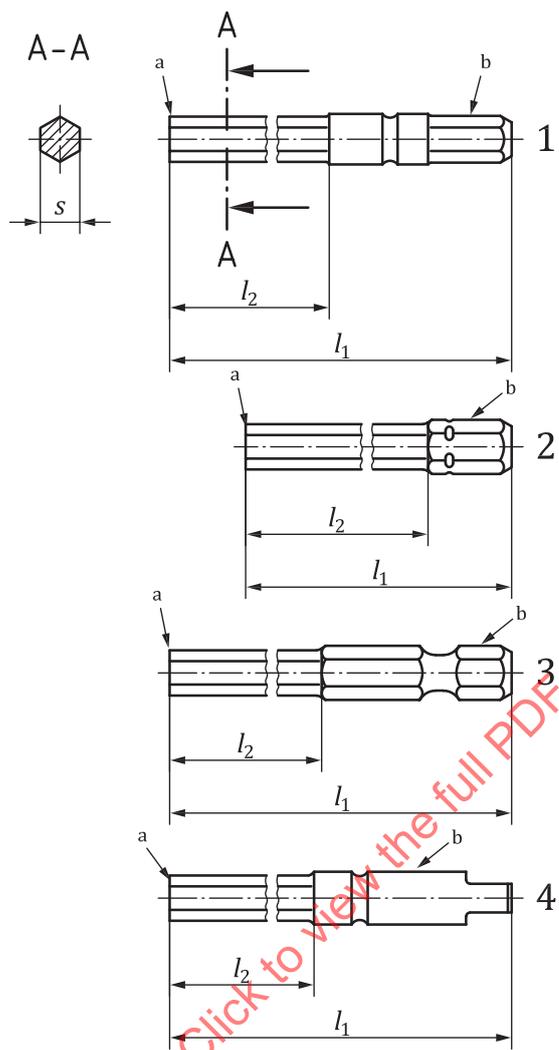
ISO 1173, *Assembly tools for screws and nuts — Drive ends for hand- and machine-operated screwdriver bits and connecting parts — Dimensions, torque testing*

ISO 2936, *Assembly tools for screws and nuts — Hexagon socket screw keys*

### 3 Dimensions

[Figure 1](#) and [Table 1](#) show the recommended combinations of screwdriver bits for hexagon socket screws.

The shape of the liaison between the tip and the driver end is at the discretion of the manufacturer.



**Key**

- 1 Form A
- 2 Form C
- 3 Form E
- 4 Form G
- a Part in contact with the screw (in accordance with ISO 2936).
- b Driver end (in accordance with ISO 1173).

**Figure 1 — Screwdriver bits**

Table 1 — Recommended combinations between tip and driver end

Nominal width across flats (in accordance with ISO 2936)	$l_2$ min mm	Nominal male hexagon or cylindrical flat end of form (in accordance with ISO 1173)									
		A 3	A 5,5	C 4	C 6,3	C 8	C 12,5	E 6,3	E 8	E 11,2	G 7
		$l_1 \pm 2$ mm									
		45	50	28	25	30	50	50	50	55	63
0,7	1,7	X		X							
0,9	1,9	X		X							
1,3	2,3	X		X							
1,5	2,3	X		X	X			X			
2	3	X		X	X			X			X
2,5	3,8	X	X	X	X			X			X
3	4,5	X	X	X	X	X	X	X	X		X
4	6		X		X	X	X	X	X		X
5	7,5		X		X	X	X	X	X	X	
6	9				X	X	X	X	X	X	
7	10,5					X	X		X	X	
8	12					X	X		X	X	
10	16						X			X	
12	18						X				

#### 4 Technical requirements

The bits must have a complete heat treatment.

The technical specifications of bits are the same as those for screwdrivers in accordance with ISO 2936.

#### 5 Torque test

The drive end shall be fully engaged in a female holder in accordance with ISO 1173. The drive end shall be inserted in a test socket adapter with a minimum hardness of 62 HRC as used for hexagon socket screw keys in accordance with ISO 2936.

The test force shall be applied smoothly until the minimum torque value given in [Table 2](#) is reached or until the tool fractures or deforms before this torque value is reached.

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

Table 2 — Torque test

Nominal width across flats $s$	Minimum Rockwell hardness of bits	Minimum proof torque <sup>a</sup> $M_d$ N · m
0,7	56 HRC	0,1
0,9		0,2
1,3		0,6
1,5		1,0
2		2,2
2,5		4,4
3		7,7
4		19
5		35
6		60
7		93
8		139
10		255
12		429

<sup>a</sup> Minimum proof torque = 1,16  $M_d$  ISO 2936.

## 6 Designation

A screwdriver bit according to this part of ISO 2351 is designated by the following:

- “Bit”;
- a reference to this part of ISO 2351 (i.e. ISO 2351-3);
- the form and nominal dimensions of the drive end (in accordance with ISO 1173);
- the nominal width across the flats of the tip,  $s$  (in accordance with ISO 2936).

EXAMPLE A screwdriver bit for hexagon socket screws with a drive end E 11,2 (in accordance with ISO 1173) and a nominal width across the flats of the tip,  $s$ , (in accordance with ISO 2936) of 6 is designated as follows:

**Bit ISO 2351-3 E 11,2 - 6**

## 7 Marking

Screwdriver bits in accordance with this part of ISO 2351 shall be marked permanently and legibly with

- the name of the manufacturer or suppliers, and
- the nominal width across flat,  $s$ .

For male hexagons A 3 and C 4, the marking shall be given only on the smallest commonly used packaging unit.