
**Assembly tools for screws and nuts —
Machine-operated screwdriver bits —
Part 3:
Screwdriver bits for hexagon socket screws**

*Outils de manœuvre 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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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.

Attention is drawn to the possibility that some of the elements of this part of ISO 2351 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 2351-3 was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 10, *Assembly tools for screws and nuts, pliers and nippers*.

This first edition of ISO 2351-3 cancels and replaces ISO 3109:1984, of which it constitutes a technical revision.

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. 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 normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 2351. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 2351 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

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.

4 Technical requirements

The bits must have a complete heat treatment.

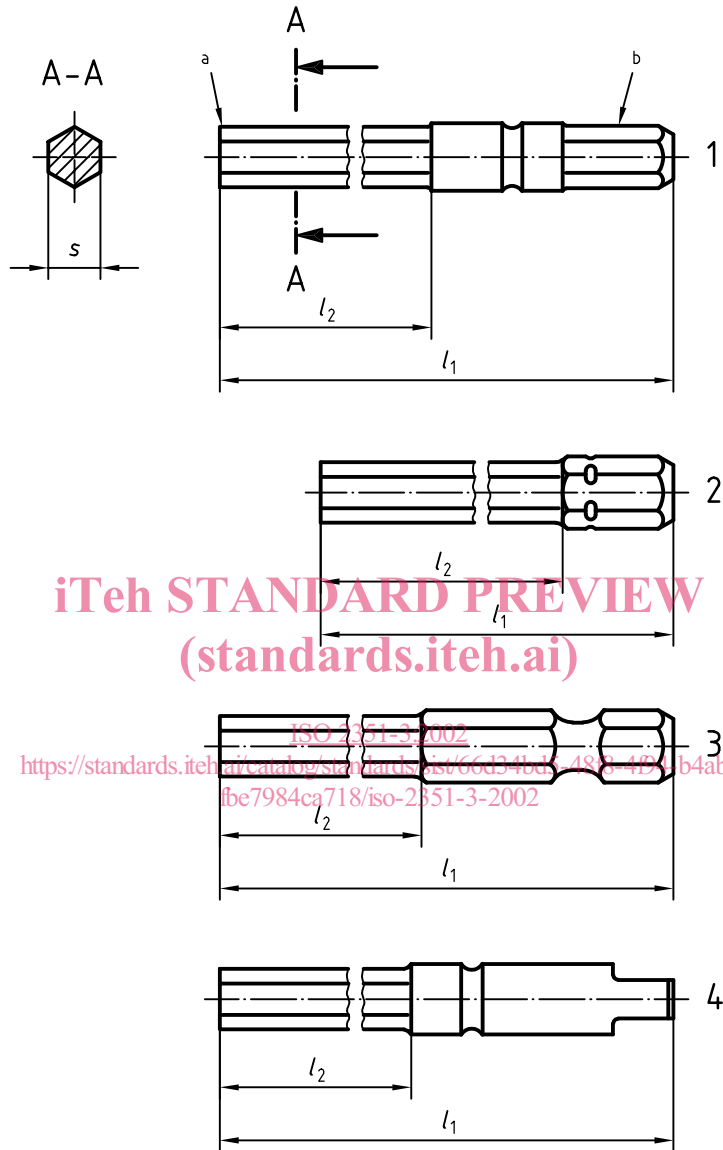
The technical specifications of bits are the same as those for screwdrivers in accordance with ISO 2936.

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.



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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

Dimensions in millimetres

Width across flat <i>s</i> (in accordance with ISO 2936)	<i>l</i> ₂ min.	Male hexagon or cylindrical flat end of form and dimensions (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
		<i>l</i> ₁ ± 2									
		45	50	28	25	30	50	50	50	55	63
0,7	1,7	×		×							
0,9	1,9	×		×							
1,3	2,3	×		×							
1,5	2,3	×		×	×			×			
2	3	×		×	×			×			×
2,5	3,8	×	×	×	×			×			×
3	4,5	×	×	×	×	×	×	×	×		×
4	6		×		×	×	×	×	×		×
5	7,5		×		×	×	×	×	×	×	
6	9				×	×	×	×	×	×	
7	10,5					×	×		×	×	
8	12					×	×		×	×	
10	16						×			×	
12	18										×

Table 2 — Torque test

Width across flats <i>s</i> mm	Minimum Rockwell hardness of bits	Minimum torque proof ^a <i>M</i> _d N·m
0,7	56 HRC	0,09
0,9		0,2
1,3		0,6
1,5		0,95
2		2,3
2,5		4,4
3		7,6
4		18
5		35
6		61
7		97
8		140
10		255
12	480	

^a Minimum proof torque ≈ 1,16 *M*_dISO 2936

6 Designation

A screwdriver bit according to this standard is designated by:

- a) "Bit";
- b) reference to this part of ISO 2351, i.e. ISO 2351-3;
- c) the form and nominal dimensions of the drive end (in accordance with ISO 1173);
- d) the width across the flats of the tip, s , in millimetres (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 width across the flats of the tip, s (in accordance with ISO 2936), 6 mm 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:

- a) the name of the manufacturer or suppliers;
- b) the 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.

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Bibliography

- [1] ISO 1703, *Assembly tools for screws and nuts — Nomenclature*
- [2] ISO 2351-1, *Assembly tools for screws and nuts — Machine-operated screwdriver bits — Part 1: Screwdriver bits for slotted head screws*
- [3] ISO 2351-2, *Assembly tools for screws and nuts — Machine-operated screwdriver bits — Part 2: Screwdriver bits for cross-recessed head screws*

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