INTERNATIONAL STANDARD

ISO 2380-1

Third edition
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Assembly tools for screws and nuts — Screwdrivers for slotted-head screws —

Part 1: Tips for hand- and machine-operated screwdrivers

Outils de manœuvre pour vis et écrous — Tournevis pour vis à tête fendue —

Partie 1: Extrémités de tournevis à main et à machine

Reference number
ISO 2380-1:2004(E)

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Foreword

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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.

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.

ISO 2380-1 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 2380-1:1997), which has been technically revised.

ISO 2380 consists of the following parts, under the general title *Assembly tools for screws and nuts — Screwdrivers for slotted-head screws*:

— *Part 1: Tips for hand- and machine-operated screwdrivers*

— *Part 2: General requirements, lengths of blades and marking of hand-operated screwdrivers*

Assembly tools for screws and nuts — Screwdrivers for slotted-head screws —

Part 1: Tips for hand- and machine-operated screwdrivers

1 Scope

This part of ISO 2380 specifies the shape/form, dimensions and designation of the tips of hand- and machine-operated screwdrivers for slotted-head screws. It also gives the technical specifications and test conditions for the screw-drivers and, in the case of hand-operated screwdrivers, specifies the test torque which the blade-to-handle connection shall withstand.

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 2380-2:2004, *Assembly tools for screws and nuts — Screwdrivers for slotted-head screws — Part 2: General requirements, lengths of blades and marking of hand-operated screwdrivers*

3 Shape and dimensions of the tips

3.1 Shape

The shape of screwdriver tips is left to the choice of the manufacturer.

3.2 Dimensions

Only the dimensions shown in Figures 1 and 2 and specified in Tables 1 and 2 shall be observed.

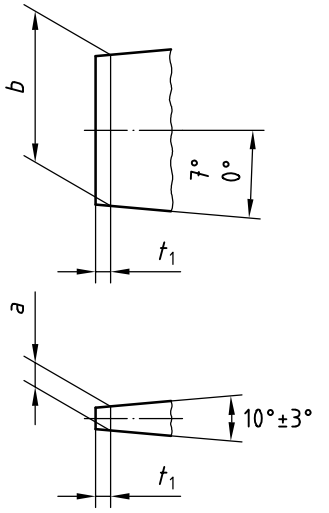

Figure 1 — Form A, for hand-operated screwdrivers only

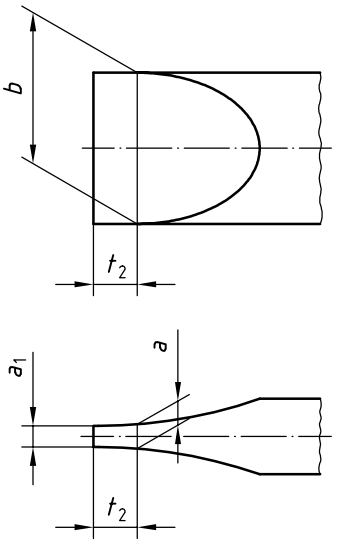

Figure 2 — Form B for hand-operated screwdrivers and form C for machine-operated screwdrivers

Table 1 — Hand-operated screwdriver tips, forms A and B

Dimensions in millimetres

Nominal thickness	Nominal width	Tolerances on			t_1[a]	a_1[b]	t_2[a]	Test torque
a	b	a	b					M_{min}
		Forms A and B	Form A	Form B		min.		N·m
0,4	2	$^{+0,06}_{-0,02}$	$^{0}_{-0,25}$	$^{0}_{-0,14}$	0,2	0,32	0,7	0,3
	2,5							0,4
0,5	3				0,3	0,4	0,9	0,7
0,6	3				0,4	0,48	1,1	1,1
⋮	3,5		$^{0}_{-0,3}$	$^{0}_{-0,18}$				1,3
0,8	4	$^{+0,06}_{-0,04}$			0,5	0,64	1,4	2,6
1	4,5				0,6	0,8	1,8	4,5
⋮	5,5							5,5
1,2	6,5		$^{0}_{-0,36}$	$^{0}_{-0,22}$	0,7	0,96	2,2	9,4
	8							11,5
1,6	8	± 0,06			1	1,28	2,9	20,5
	10							25,6
2	12		$^{0}_{-0,43}$	$^{0}_{-0,27}$	1,2	1,6	3,6	48
2,5	14				1,5	2	4,5	87,5

[a] t_1, t_2 are the reference distances without tolerances.

$t_1 = 0{,}6 \times a$

$t_2 = 1{,}8 \times a$

[b] $a_1 \leqslant a$ $\quad a_{1,\,min} = 0{,}8 \times a$

The profile of dimensions a_1 to a within the reference distances t_2 shall be at least equal (parallel) or continuously ascending.

Table 2 — Machine-operated screwdriver tips, Form C

Dimensions in millimetres

Nominal thickness a	Nominal width b	Tolerances on a	Tolerances on b	a_1 [a] min.	t_2 [b]	Test torque $M_{1,\,min}$ N·m
0,4	2	$^{+0,04}_{0}$	$^{0}_{-0,06}$	0,32	0,7	0,35
	2,5					0,45
0,5	3			0,4	0,9	0,8
	4		$^{0}_{-0,075}$			1,1
0,6	3		$^{0}_{-0,06}$	0,48	1,1	1,2
	3,5		$^{0}_{-0,075}$			1,4
	4,5					1,8
0,8	4			0,64	1,4	2,9
	5,5					3,9
1	4,5			0,8	1,8	5
	5,5					6,2
	6,0					6,7
1,2	6,5	± 0,03	$^{0}_{-0,15}$	0,96	2,2	10,5
	8					12,9
1,6	8			1,28	2,9	22,9
	10					28,7
2	12		$^{0}_{-0,18}$	1,6	3,6	53,8
2,5	14			2	4,5	98

[a] $a_1 \leqslant a$ $\quad a_{1,\,min} = 0{,}8 \times a$

The profile of dimensions a_1 to a within the reference distances t_2 shall be at least equal (parallel) or continuously ascending.

[b] t_2 is the reference distance without tolerance.
$t_2 = 1{,}8 \times a$

4 Designation of the tips

The designation of the tips shall include, in the following order:

a) “Tip”;

b) reference to this part of ISO 2380, i.e. “ISO 2380-1”;

c) form;

d) nominal thickness, a, in millimetres;

e) nominal width, b, in millimetres.

EXAMPLE A tip, form A, of nominal thickness a = 1,2 mm and of nominal width b = 8 mm is designated as follows:

Tip ISO 2380-1 A 1,2 × 8

5 Technical specifications and test conditions for the screwdrivers

5.1 Hardness

Hand-operated screwdrivers shall have a minimum hardness of 50 HRC over at least the length 3 x b from the tip of the blade, while machine-operated screwdrivers shall have a minimum hardness of 56 HRC along their full length.

5.2 Test conditions for the blades or bits

When tested with the minimum test torques M and M_1, expressed in newton metres, in accordance with Tables 1 and 2, the screwdriver blades or bits shall not show any cracks or breaks or any permanent deformations which could influence their usability.

NOTE The minimum test torques have been calculated using the following formulae:

$$M = ba^2$$

and

$$M_1 = 1{,}12\ ba^2$$

where

a is the nominal thickness of the tip, expressed in millimetres;

b is the nominal width of the tip, expressed in millimetres.

A torque testing device shall be used which sustains the test specimen against ejecting forces and prevents the occurrence of bending moments, and the test disc used shall be according to Figure 3 or Figure 4, have a hardness of at least 64 HRC and be of such strength that no deformation can occur during testing.

The test disc values a, t_1 and t_2 are according to Table 3.

Dimensions in millimetres

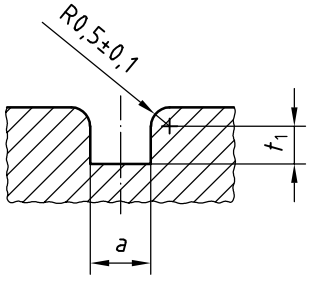

Figure 3 — Test disc for form A

Dimensions in millimetres

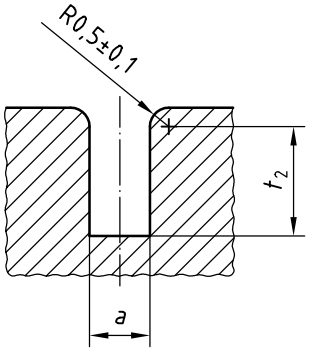

Figure 4 — Test disc for forms B and C

Table 3 — Test disc values

Dimensions in millimetres

a $^{+0,085}_{+0,060}$	t_1 $^{+0,040}_{0}$	t_2 $^{+0,140}_{0}$
0,4	0,2	0,7
0,5	0,3	0,9
0,6	0,4	1,1
0,8	0,5	1,4
1	0,6	1,8
1,2	0,7	2,2
1,6	1	2,9
2	1,2	3,6
2,5	1,5	4,5

5.3 Test torque of the blade-to-handle connection (hand-operated screwdrivers)

The test torque which the blade-to-handle connection shall withstand is related to the test torque of the blade as given in Table 4.

Table 4 — Test torque

Test torque of blade M N·m	**Test torque of blade-to-handle connection** M' N·m
$M \leqslant 26$	$M' > M$
$M > 26$	$M' > 30$
The application of the test equipment to the handle should not modify the characteristics of the connection to be tested.	

When there is a hexagonal drive, as shown in ISO 2380-2:2004, Figure 2, the connection hexagon to screwdriver blade shall withstand a test torque of $M \times 1{,}5$.

For a screwdriver with a handle, the blade-to-handle connection shall be such that no relative torsion of blade to handle occurs when subjected to a test torque M limited to 30 N·m.

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