



**International
Standard**

ISO 4766

**Fasteners — Slotted set screws with
flat point**

Fixations — Vis sans tête fendues à bout plat

**Third edition
2024-06**

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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 document 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).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 2, *Fasteners*, Subcommittee SC 11, *Fasteners with metric external thread*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 185, *Fasteners*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 4766:2011), which has been technically revised.

The main changes are as follows:

- for M2, $l = 2$ mm has been classified as too short length; M8 ($l = 8$ mm), M10 ($l = 10$ mm) and M12 ($l = 12$ mm) have been classified separately as short standard lengths with l_{nom} calculated in order to get at least 2,5 full pitches; for regular standard lengths l_{nom} have been calculated in order to get at least 4 full pitches;
- for stainless steel screws, grades A2 and A4 with hardness classes 12H and 21H have been added;
- non-ferrous metal screws have been deleted (as a consequence of the withdrawal of ISO 8839);
- mechanical properties of steel and stainless steel screws have been added for $d < 1,6$ mm ("As agreed") in [Table 3](#);
- for stainless steel fasteners, "As processed" has been changed to "Clean and bright", and "Passivated" has been added in [Table 3](#);
- specifications for marking and labelling have been added as [Clause 6](#).

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Fasteners — Slotted set screws with flat point

1 Scope

This document specifies the characteristics of slotted set screws with flat point, in steel and stainless steel, with metric coarse pitch threads M1,2 to M12, and with product grade A.

If in certain cases other specifications are requested, hardness classes and stainless steel grades can be selected from ISO 898-5 or ISO 3506-3, and dimensional options from ISO 888, ISO 965-1 or ISO 4753.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 225, *Fasteners — Bolts, screws, studs and nuts — Symbols and descriptions of dimensions*

ISO 724, *ISO general purpose metric screw threads — Basic dimensions*

ISO 888, *Fasteners — Bolts, screws and studs — Nominal lengths and thread lengths*

ISO 898-5, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 5: Set screws and similar threaded fasteners with specified hardness classes — Coarse thread and fine pitch thread*

ISO 965-1, *ISO general purpose metric screw threads — Tolerances — Part 1: Principles and basic data*

ISO 1891-4, *Fasteners — Vocabulary — Part 4: Control, inspection, delivery, acceptance and quality*

ISO 3269, *Fasteners — Acceptance inspection*

ISO 3506-3, *Mechanical properties of corrosion-resistant stainless steel fasteners — Part 3: Set screws and similar fasteners not under tensile stress*

ISO 4042, *Fasteners — Electroplated coating systems*

ISO 4753, *Fasteners — Ends of parts with external ISO metric thread*

ISO 4759-1, *Tolerances for fasteners — Part 1: Bolts, screws, studs and nuts — Product grades A, B and C*

ISO 6157-1, *Fasteners — Surface discontinuities — Part 1: Bolts, screws and studs for general requirements*

ISO 8991, *Designation system for fasteners*

ISO 8992, *Fasteners — General requirements for bolts, screws, studs and nuts*

ISO 10683, *Fasteners — Non-electrolytically applied zinc flake coating systems*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

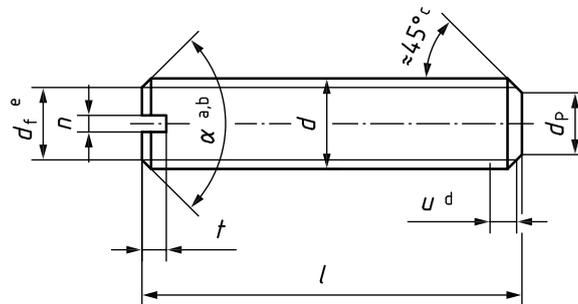
— ISO Online browsing platform: available at <https://www.iso.org/obp>

— IEC Electropedia: available at <https://www.electropedia.org/>

4 Dimensions

Dimensions shall be in accordance with [Figure 1](#) and with [Tables 1](#) and [2](#).

Symbols and descriptions of dimensions are specified in ISO 225.



- a For regular standard lengths, α_{ref} shall be 90° or 120° at the choice of the manufacturer.
- b For short standard lengths (see Footnote a in [Table 2](#)), α_{ref} shall be 120° .
- c The 45° angle applies only to the portion of the point below the minor diameter of the thread.
- d Incomplete thread $u \leq 2P$.
- e d_f is the diameter of the chamfer at the end on the slotted side.

Figure 1 — Slotted set screw with flat point

Table 1 — Dimensions

Dimensions in millimetres

Thread, d	M1,2	M1,6	M2	M2,5	M3	(M3,5)	M4	M5	M6	M8	M10	M12
P^a	0,25	0,35	0,4	0,45	0,5	0,6	0,7	0,8	1	1,25	1,5	1,75
d_f min.	\approx Minor thread diameter d_3^b											
d_p max.	0,60	0,80	1,00	1,50	2,00	2,20	2,50	3,50	4,00	5,50	7,00	8,50
d_p min.	0,46	0,66	0,86	1,25	1,75	1,95	2,25	3,20	3,70	5,20	6,64	8,14
n nom.	0,2	0,25	0,25	0,4	0,4	0,5	0,6	0,8	1	1,2	1,6	2
n max.	0,40	0,45	0,45	0,60	0,60	0,70	0,80	1,00	1,20	1,51	1,91	2,31
n min.	0,26	0,31	0,31	0,46	0,46	0,56	0,66	0,86	1,06	1,26	1,66	2,06
t max.	0,52	0,74	0,84	0,95	1,05	1,21	1,42	1,63	2,00	2,50	3,00	3,60
t min.	0,40	0,56	0,64	0,72	0,80	0,96	1,12	1,28	1,60	2,00	2,40	2,80

NOTE The size shown in brackets is non-preferred.

^a P is the pitch of the thread.

^b The minor thread diameter d_3 is specified in ISO 724.

Table 2 — Lengths

Dimensions in millimetres

Thread, <i>d</i>			M1,2	M1,6	M2	M2,5	M3	(M3,5)	M4	M5	M6	M8	M10	M12									
<i>l</i>			Range of standard lengths between the stepped bold lines (white area)																				
nom.	min.	max.																					
2	1,8	2,2		a	Screws with too short lengths																		
2,5	2,3	2,7													a	a							
3	2,8	3,2														a	a						
4	3,76	4,24															a	a					
5	4,76	5,24																a					
6	5,76	6,24																	a				
8	7,71	8,29																		a			
10	9,71	10,29																			a		
12	11,65	12,35																				a	
(14)	13,65	14,35																					
16	15,65	16,35																					
20	19,58	20,42																					
25	24,58	25,42																					
30	29,58	30,42																					
35	34,5	35,5	Lengths by agreement in accordance with ISO 888																				
40	39,5	40,5																					
45	44,5	45,5																					
50	49,5	50,5																					
55	54,4	55,6																					
60	59,4	60,6																					

NOTE The size shown in brackets is non-preferred.

^a For short standard lengths, α_{ref} shall be 120°.

5 Requirements and reference International Standards

The requirements specified in the International Standards referenced in [Table 3](#) shall apply.

Table 3 — Requirements and reference International Standards

Material		Steel		Stainless steel	
General requirements	International Standard	ISO 8992			
	Tolerance class	6g ^a			
Thread	International Standard	ISO 965-1			
	Hardness class	$M1,6 \leq d \leq M12$	14H, 22H	—	
$d < M1,6$		As agreed			
Mechanical properties	Grade and hardness class	—	$M1,6 \leq d \leq M12$	A1-12H, A2-12H, A2-21H, A4-12H, A4-21H	
			$d < M1,6$	As agreed	
	International Standard	ISO 898-5	ISO 3506-3		
Tolerances	Product grade	A			
	International Standard	ISO 4759-1			
Surface condition	As processed (no coating) Electroplated coatings as specified in ISO 4042 Non-electrolytically applied zinc flake coatings as specified in ISO 10683 Other finishes, coatings and/or additional requirements shall be agreed between the purchaser and the supplier			Clean and bright and/or Passivated ^b	
Surface integrity	Limits for surface discontinuities as specified in ISO 6157-1		As agreed ^c		
Acceptability	Acceptance inspection as specified in ISO 3269				

^a Depending on the type of coating to be applied, another tolerance position of the thread may be specified for the uncoated fastener in accordance with the relevant coating standard.

^b See e.g. ISO 16048.

^c See e.g. ISO 6157-1.

6 Marking and labelling

6.1 Marking on product

Marking is not required for set screws, unless specifically agreed between the purchaser and the supplier at the time of the order (see ISO 898-5 or ISO 3506-3).

6.2 Labelling on package

Labelling on the package shall include at least:

- the reference to this document, i.e. ISO 4766;
- the thread size d and nominal length l ;
- the hardness class for steel fasteners;
- the grade and hardness class for stainless steel fasteners;
- the type of surface condition (finish and/or coating);
- the manufacturer's and/or distributor's identification and/or name;
- the manufacturing lot number as specified in ISO 1891-4;

- the quantity of pieces in the package.

7 Designation

The designation requirements as specified in ISO 8991 shall apply for all sizes, with:

- the hardness class for steel fasteners, as specified in ISO 898-5,
- the grade and hardness class for stainless steel fasteners, as specified in ISO 3506-3.

When no specific surface condition (finish and/or coating) is specified in the designation, steel fasteners are delivered in the as processed condition, and stainless steel fasteners in the clean and bright condition.

EXAMPLE 1 A slotted set screw with flat point, with thread size M5, nominal length $l = 12$ mm, product grade A, in steel and hardness class 14H, as processed, is designated as follows:

Set screw ISO 4766 – M5 × 12 – 14H

EXAMPLE 2 A slotted set screw with flat point, with thread size M5, nominal length $l = 12$ mm, product grade A, in stainless steel of grade A2 and hardness class 12H, clean and bright, is designated as follows:

Set screw ISO 4766 – M5 × 12 – A2-12H

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