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## Fasteners — Hexagon washer head tapping screws

*Fixations — Vis à tôle à tête hexagonale à embase plate*

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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 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](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 2, *Fasteners*, Subcommittee SC 13, *Fasteners with non-metric thread*.

This third edition cancels and replaces the second edition (ISO 7053:2011), which has been technically revised.

The main changes compared to the previous edition are as follows:

- radius  $r$  changed to  $r_1$  and values for  $r_1$  corrected in [Table 1](#).

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](http://www.iso.org/members.html).

# Fasteners — Hexagon washer head tapping screws

## 1 Scope

This document specifies the characteristics of hexagon washer head tapping screws, made of steel and stainless steel, with thread sizes ST2,2 to ST8, and with product grade A.

## 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 1478, *Tapping screws thread*

ISO 2702, *Heat-treated steel tapping screws — Mechanical properties*

ISO 3269, *Fasteners — Acceptance inspection*

ISO 3506-4, *Mechanical properties of corrosion-resistant stainless steel fasteners — Part 4: Tapping screws*

ISO 4042, *Fasteners — Electroplated coating systems*

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

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.

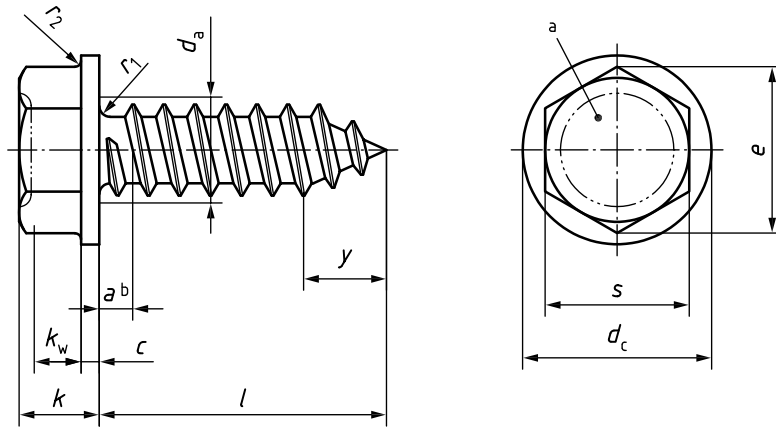
ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

## 4 Dimensions

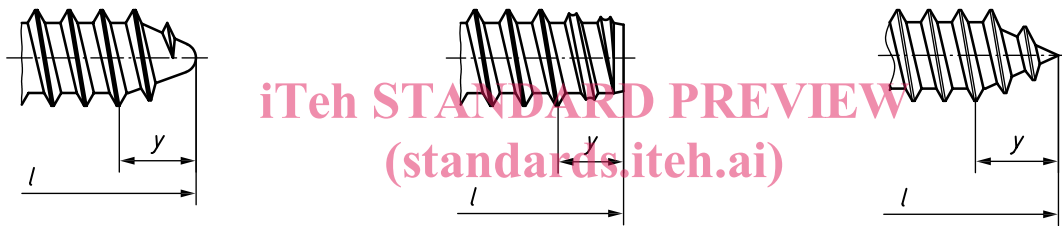
Dimensions shall be in accordance with [Figures 1](#) and [2](#) and [Table 1](#).

Symbols and descriptions of dimensions are defined in ISO 225.



- a Optional indentation.
- b Dimension *a* shall be measured at the core diameter of the first full thread.

**Figure 1 — Hexagon washer head tapping screws**



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- a) Type R (rounded end)
- b) Type F (flat end)
- c) Type C (cone end)

**Figure 2 — Ends of tapping screws**

**Table 1 — Dimensions**

Dimensions in millimetres

Thread		ST2,2	ST2,9	(ST3,5)	ST3,9	ST4,2	ST4,8	(ST5,5)	ST6,3	ST8				
$p_a$		0,8	1,1	1,3	1,3	1,4	1,6	1,8	1,8	2,1				
$a$	max.	0,8	1,1	1,3	1,3	1,4	1,6	1,8	1,8	2,1				
$c$	min.	0,25	0,4	0,6	0,6	0,8	0,9	1,0	1,0	1,2				
$d_a$	max.	2,8	3,5	4,1	4,6	4,9	5,6	6,3	7,3	9,2				
$d_c$	max.	4,2	6,3	8,3	8,3	8,8	10,5	11,0	13,5	18,0				
	min.	3,8	5,8	7,6	7,6	8,1	9,8	10,0	12,2	16,7				
$e$	min.	3,20	4,28	5,96	5,96	7,59	8,71	8,71	10,95	14,26				
$k$	nom. = max.	2,0	2,8	3,4	3,4	4,1	4,3	5,4	5,9	7,0				
	min.	1,7	2,5	3,0	3,0	3,6	3,8	4,8	5,3	6,4				
$k_w$	min.	0,9	1,3	1,5	1,5	1,8	2,2	2,7	3,1	3,3				
$r_1$	min.	0,1	0,1	0,1	0,2	0,2	0,2	0,25	0,25	0,4				
$r_2$	max.	0,15	0,2	0,25	0,25	0,3	0,3	0,4	0,5	0,6				
$s$	nom. = max.	3,00	4,00	5,50	5,50	7,00	8,00	8,00	10,00	13,00				
	min.	2,86	3,82	5,32	5,32	6,78	7,78	7,78	9,78	12,73				
$y$	ref.	Type C	2,0	2,6	3,2	3,5	3,7	4,3	5,0	6,0	7,5			
		Type F	1,6	2,1	2,5	2,7	2,8	3,2	3,6	3,6	4,2			
		Type R	—	—	2,7	3,0	3,2	3,6	4,3	5,0	6,3			
$l$		Approximate mass, in kilograms per 1 000 pieces ( $\rho = 7,85 \text{ kg/dm}^3$ ) (for information only)												
nom.	Types R and C		Type F											
	min.	max.	min.	max.										
<b>4,5</b>	3,7	5,3	3,7	4,5	0,17	Screws with too short lengths								
<b>6,5</b>	5,7	7,3	5,7	6,5	0,21	0,43	0,93							
<b>9,5</b>	8,7	10,3	8,7	9,5	0,27	0,54	1,10	1,14	1,84	2,48				
<b>13</b>	12,2	13,8	12,2	13,0	0,35	0,66	1,28	1,35	2,09	2,80	3,64	5,44		
<b>16</b>	15,2	16,8	15,2	16,0	0,41	0,77	1,44	1,54	2,31	3,10	4,01	5,96	10,90	
<b>19</b>	18,2	19,8	18,2	19,0	0,47	0,87	1,59	1,73	2,52	3,39	4,40	6,49	11,80	
<b>22</b>	21,2	22,8	20,7	22,0			1,74	1,93	2,74	3,68	4,78	7,01	12,70	
<b>25</b>	24,2	25,8	23,7	25,0					2,12	2,95	3,97	5,17	7,54	13,60
<b>32</b>	30,7	33,3	30,7	32,0							4,66	6,06	8,76	15,70
<b>38</b>	36,7	39,3	36,7	38,0							6,82	9,82	17,50	
<b>45</b>	43,7	46,3	43,5	45,0									11,10	19,60
<b>50</b>	48,7	51,3	48,5	50,0									12,00	21,10
Thread sizes shown in brackets are non-preferred diameters.														
NOTE Preferred lengths are those between the discontinuous, bold, stepped lines.														
a $P$ is the pitch of the thread.														

## 5 Requirements and reference International Standards

The requirements specified in the International Standards listed in [Table 2](#) shall apply.

Table 2 — Requirements and reference International Standards

Material		Steel	Stainless steel
<b>General requirements</b>	International Standard	ISO 8992	
<b>Thread</b>	International Standard	ISO 1478	
<b>Mechanical and functional properties</b>	Stainless steel grade and hardness class	—	A2-20H, A4-20H, A5-20H
	International Standard	ISO 2702	ISO 3506-4
<b>Tolerances</b>	Product grade	A	
	International Standard	ISO 4759-1	
<b>Finish — Coating</b>	As processed (no coating)	Clean and bright	
	Electroplated coatings as specified in ISO 4042	Passivated <sup>a</sup>	
	Non-electrolytically applied zinc flake coatings as specified in ISO 10683		
	Additional requirements or other finishes or coatings shall be agreed between the supplier and the purchaser.		
<b>Acceptability</b>		Acceptance inspection as specified in ISO 3269	

<sup>a</sup> A method for passivation is specified in ISO 16048.

## 6 Designation

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EXAMPLE 1 A hexagon washer head tapping screw with thread size ST3,9, nominal length  $l = 16$  mm, made of steel (St) in accordance with ISO 2702 and rounded end (Type R) is designated as follows:

**Hexagon tapping screw ISO 7053 – ST3,9 × 16 – St – R**

EXAMPLE 2 A hexagon washer head tapping screw with thread size ST3,9, nominal length  $l = 16$  mm, made of stainless steel of grade A4 and with hardness class 20H (A4-20H) in accordance with ISO 3506-4 and cone end (Type C) is designated as follows:

**Hexagon tapping screw ISO 7053 – ST3,9 × 16 – A4-20H – C**



## Bibliography

- [1] ISO 225, *Fasteners — Bolts, screws, studs and nuts — Symbols and descriptions of dimensions*
- [2] ISO 16048, *Passivation of corrosion-resistant stainless-steel fasteners*

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