
फास्टनर्स — टैपिंग स्क्रू थ्रेड के साथ
षट्कोणीय वॉशर शीर्ष वाले ड्रिलिंग स्क्रू

Fasteners — Hexagon Washer Head
Drilling Screws with Tapping Screw
Thread

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NATIONAL FOREWORD

This Indian Standard which is identical to ISO 15480 : 2019 'Fasteners — Hexagon washer head drilling screws with tapping screw thread' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendation of the General Engineering and Fasteners Sectional Committee and approval of the Production and General Engineering Division Council.

Drilling screws play a pivotal role in seamlessly joining materials and structures. These versatile screws feature sharp points and finely crafted threads that enable them to effortlessly penetrate a variety of substrates, creating secure and reliable connections. Drilling screws are engineered to provide efficiency and convenience by eliminating the need for pre-drilled holes or separate tapping processes. Their ability to create threads as they are driven into materials like metal, wood, or plastic translates into time and cost savings across industries ranging from construction, where they secure metal roofing and wall panels, to manufacturing, where they streamline assembly lines and attach components.

The text of ISO standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

- a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'; and
- b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards, which are to be substituted in their respective places, are listed below along with their degree of equivalence for the editions indicated:

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
ISO 1478 Tapping screws thread	IS 5957 : 2003/ISO 1478 : 1999 Screw threads for thread forming tapping screws dimensions (<i>second revision</i>)	Identical
ISO 3269 Fasteners — Acceptance inspection	IS 1367 (Part 17) : 2023/ISO 3269 : 2019 Technical supply conditions for threaded steel fasteners: Part 17 Inspections, sampling and acceptance procedure (<i>fourth revision</i>)	Identical
ISO 4042 Fasteners — Electroplated coatings	IS 1367 (Part 11) : 2020/ISO 4042 : 2018 Technical supply conditions for threaded steel fasteners: Part 11 Electroplated coating systems (<i>fourth revision</i>)	Identical
ISO 4759-1 Tolerances for fasteners — Part 1: Bolts, screws, studs and nuts — Product grades A, B and C	IS 1367 (Part 2) : 2002/ISO 4759-1 : 2000 Technical supply conditions for threaded steel fasteners: Part 2 Tolerances for fasteners — Bolts, screws, studs and nuts — Product grades A, B and C (<i>third revision</i>)	Identical

(Continued on third cover)

Contents

Page

1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Dimensions	1
5	Requirements and reference International Standards	3
6	Designation	4
	Bibliography	5
	National Annex	6

Indian Standard

FASTENERS — HEXAGON WASHER HEAD DRILLING SCREWS WITH TAPPING SCREW THREAD

1 Scope

This document specifies the characteristics of hexagon washer head drilling screws with tapping screw threads, made of steel, with thread sizes ST2,9 to ST6,3, 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 3269, *Fasteners — Acceptance inspection*

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 10666, *Drilling screws with tapping screw thread — Mechanical and functional properties*

3 Terms and definitions

No terms and definitions are listed in this document.

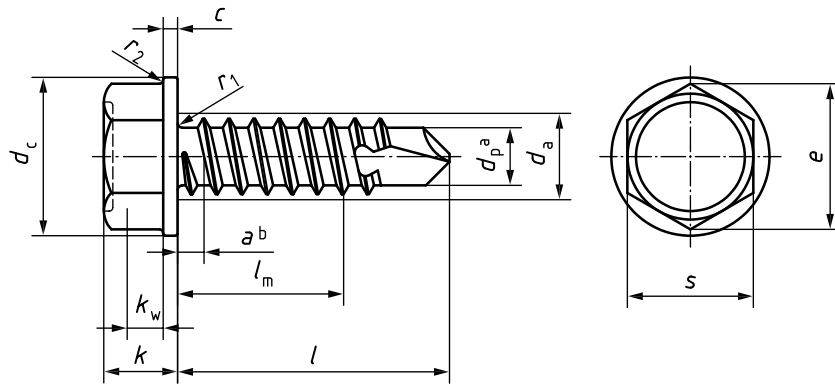
ISO and IEC maintain terminological databases for use in standardization at the following addresses:

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

4 Dimensions

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

Symbols and descriptions of dimensions are defined in ISO 225.



- a The function of the drilling point (diameter d_p) is specified in ISO 10666.
- b Dimension a shall be measured at the core diameter of the first full thread.

Figure 1 — Hexagon washer head drilling screw with tapping thread

Table 1 — Dimensions

Dimensions in millimetres

Thread			ST2,9	ST3,5	ST4,2	ST4,8	ST5,5	ST6,3
P_a			1,1	1,3	1,4	1,6	1,8	1,8
a	max.		1,1	1,3	1,4	1,6	1,8	1,8
c	min.		0,4	0,6	0,8	0,9	1,0	1,0
d_a	max.		3,5	4,1	4,9	5,6	6,3	7,3
d_c	max.		6,3	8,3	8,8	10,5	11,0	13,5
	min.		5,8	7,6	8,1	9,8	10,0	12,2
e	min.		4,28	5,96	7,59	8,71	8,71	10,95
k	nom. = max		2,8	3,4	4,1	4,3	5,4	5,9
	min.		2,5	3,0	3,6	3,8	4,8	5,3
k_w^b	min.		1,3	1,5	1,8	2,2	2,7	3,1
r_1	min.		0,1	0,1	0,2	0,2	0,25	0,25
r_2	max.		0,2	0,25	0,3	0,3	0,4	0,5
s	nom. = max		4,00 ^c	5,50	7,00	8,00	8,00	10,00
	min.		3,82	5,32	6,78	7,78	7,78	9,78
Drilling range (sheet or plate thickness) ^d	from		0,7	0,7	1,75	1,75	1,75	2,0
	to		1,9	2,25	3,0	4,4	5,25	6,0
l			l_m^e					
8,75			3,25			Screws with too short lengths		
10,25			2,85					
12,1			6,6			4,3		
13,9			6,2			3,7		
15,1			9,6			7,3		
16,9			9,2			5,8		
18,0			12,5			10,3		
20,0			12,1			8,7		
21,0			15,1			11,7		
23,0			18,1			14,7		
24,0			23,0			21,5		
26,0			29,0			27,5		
30,75			34,5			34,0		
33,25			39,5			39,0		
36,75			46,25			38,0		
39,25								
43,75								
46,25								
48,75								
51,25								

^a P is the pitch of the thread.

^b k_w is the wrenching height.

^c Divergence from the width across flats for hexagon tapping screws in accordance with ISO 1479 (5 mm). In the case of hexagon washer head tapping screws (see ISO 7053), the width across flats of 4 mm has been introduced worldwide and also applies in this case.

^d In order to determine the nominal length l needed for the application, it can be necessary to add an air gap (if present) to the individual sheet or plate thickness(es).

^e l_m is the distance from the bearing face to the last major diameter 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
	International Standard	ISO 10666
General requirements	International Standard	ISO 8992
Thread	International Standard	ISO 1478
Mechanical and functional properties	International Standard	ISO 10666
Tolerances	Product grade	A
	International Standard	ISO 4759-1
Finish — Coating		As processed (no coating) Electroplated coatings as specified in ISO 4042 Additional requirements or other finishes or coatings shall be agreed between the supplier and the purchaser.
Acceptability		Acceptance inspection as specified in ISO 3269

6 Designation

EXAMPLE A hexagon washer head drilling screw with tapping screw thread, with thread size ST3,5 and nominal length $l = 16$ mm, is designated as follows:

Hexagon head drilling screw ISO 15480 – ST3,5 × 16

Bibliography

- [1] ISO 225, *Fasteners — Bolts, screws, studs and nuts — Symbols and descriptions of dimensions*
- [2] ISO 1479, *Hexagon head tapping screws*
- [3] ISO 7053, *Hexagon washer head tapping screws*

IS 18476 : 2023
ISO 15480 : 201

NATIONAL ANNEX A

(National Foreword)

A-1 BIS CERTIFICATION MARKING

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

(Continued from second cover)

<i>International Standard</i>	<i>Corresponding Indian Standard</i>	<i>Degree of Equivalence</i>
ISO 8992 Fasteners — General requirements for bolts, screws, studs and nuts	IS 1367 (Part 1) : 2014/ISO 8992 : 2005 Technical supply conditions for threaded steel fasteners: Part 1 General requirements for bolts, screws, studs and nuts (<i>fourth revision</i>)	Identical

The technical Committee has reviewed the provisions of the following International Standard referred in this adopted standard and has decided that it is acceptable for use in conjunction with this standard:

<i>International Standard</i>	<i>Title</i>
ISO 10666	Drilling screws with tapping screw thread — Mechanical and functional properties

The standard also makes a reference to the BIS Certification Marking of the product, details of which are given in National Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*).' The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Bureau of Indian Standards

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Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the website- www.bis.gov.in or www.standardsbis.in.

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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