भारतीय मानक

Indian Standard

IS 18477 (Part 3) : 2023
ISO 15483 : 1999

फास्टनर्स — टैपिंग स्क्रू थ्रेड के साथ क्रॉस रिसेस्ड ड्रिलिंग स्क्रू

भाग 3 उठे हुए काउंटरसंक हैड

Fasteners — Cross Recessed Drilling Screws with Tapping Screw Thread

Part 3 Screw Thread

ICS 21.060.10

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October 2023 **Price Group 5**

General Engineering and Fasteners Sectional Committee, PGD 37

NATIONAL FOREWORD

This Indian Standard (Part 3) which is identical with ISO 15483 : 1999 'Cross recessed raised countersunk 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 the 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. Cross recessed drilling screws feature a unique cross-shaped indentation on their head, which corresponds to a specialized screwdriver or bit. This design allows for easy and secure driving of the screw into the material.

This standard is published in 3 parts. Other parts in this series are:

Part 1 Pan head
Part 2 Countersunk head

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:

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 1478 : 1999 Tapping screw thread	IS 5957 : 2003/ISO 1478 : 1999 Screw threads for thread forming tapping screws dimensions (*second revision*)	Identical
ISO 3269 : 1988 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 (*fifth revision*)	Identical
ISO 4042 : 1999 Fasteners — Electroplated coatings	IS 1367 (Part 11) : 2020/ISO 4042 : 2018 Technical supply conditions for threaded steel fasteners: Part 11 Electroplated coating systems (*fourth revision*)	Identical

(*Continued on third cover*)

Indian Standard

FASTENERS — CROSS RECESSED DRILLING SCREWS WITH TAPPING SCREW THREAD

PART 3 RAISED COUNTERSUNK HEAD

1 Scope

This International Standard specifies the characteristics of cross recessed raised countersunk head drilling screws with tapping screw threads from ST2,9 up to and including ST6,3.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard 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 1478:1999, *Tapping screws thread.*

ISO 3269:—[1)], *Fasteners — Acceptance inspection.*

ISO 4042:1999, *Fasteners — Electroplated coatings.*

ISO 4757:1983, *Cross recesses for screws*.

ISO 4759-1:—[2)], *Tolerances for fasteners — Part 1: Bolts, screws, studs and nuts — Product grades A, B and C.*

ISO 7721:1983, *Countersunk head screws — Head configuration and gauging.*

ISO 10666:1999, *Drilling screws with tapping screw thread — Mechanical and functional properties.*

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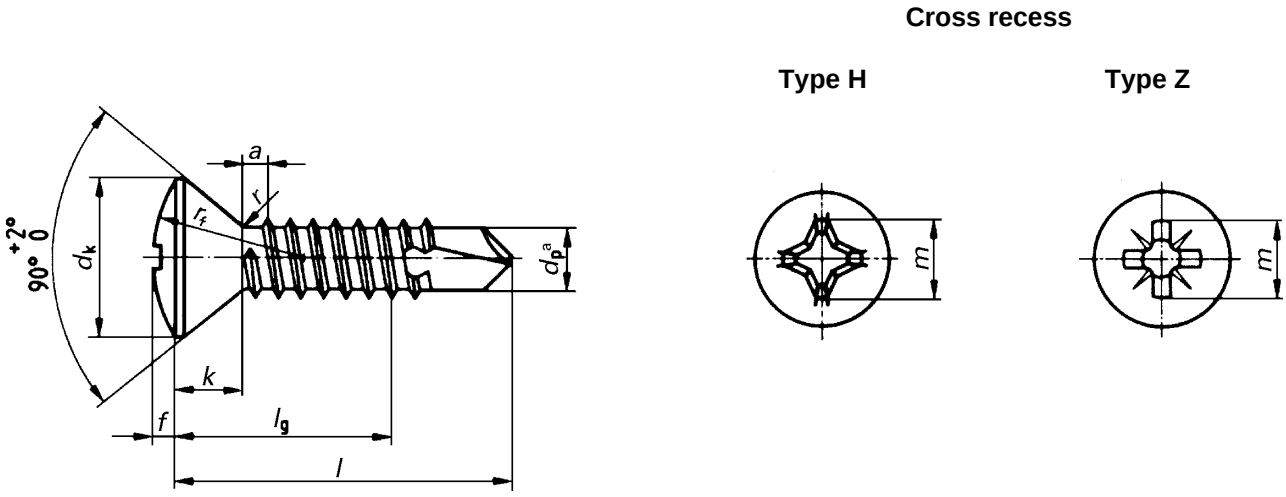
1) To be published. (Revision of ISO 3269:1988)

2) To be published. (Revision of ISO 4759-1:1978)

3 Dimensions

See Figure 1 and Table 1.



[a] The function of the drilling point (diameter d_p) is specified in ISO 10666.

Figure 1

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[b]			max.	1,1	1,3	1,4	1,6	1,8	1,8
d_k	theoretical [c]		max.	6,3	8,2	9,4	10,4	11,5	12,6
	actual		max.	5,5	7,3	8,4	9,3	10,3	11,3
			min.	5,2	6,9	8,0	8,9	9,9	10,9
f			≈	0,7	0,8	1	1,2	1,3	1,4
k			max.	1,7	2,35	2,6	2,8	3	3,15
r			max.	1,2	1,4	1,6	2	2,2	2,4
r_f			≈	6	8,5	9,5	9,5	11	12
Cross recess		Recess No.		1	2			3	
	Type H		m ref.	3,4	4,8	5,2	5,4	6,7	7,3
		Penetration	max.	2,2	2,75	3,2	3,4	3,45	4,0
			min.	1,8	2,25	2,7	2,9	2,95	3,5
	Type Z		m ref.	3,3	4,8	5,2	5,6	6,6	7,2
		Penetration	max.	2,1	2,70	3,10	3,35	3,40	3,85
			min.	1,8	2,25	2,65	2,90	2,95	3,40
Drilling range (sheet or plate thickness)[d]			from	0,7	0,7	1,75	1,75	1,75	2
			to	1,9	2,25	3	4,4	5,25	6

l			l_g[e]					
nom.	min.	max.	min.					
13	12,1	13,9	6,6	6,2	4,3	3,7		
16	15,1	16,9	9,6	9,2	7,3	5,8	5	
19	18	20	12,5	12,1	10,3	8,7	8	7
22	21	23		15,1	13,3	11,7	11	10
25	24	26		18,1	16,3	14,7	14	13
32	30,75	33,25			23	21,5	21	20
38	36,75	39,25			29	27,5	27	26
45	43,75	46,25				34,5	34	33
50	48,75	51,25				39,5	39	38

a P is the pitch of the thread.

b a is the distance from the underside of the head to the first major diameter of the thread.

c See ISO 7721.

d In order to determine the nominal length l it may be necessary to add an air gap (if present) to the individual sheet or plate thicknesses.

e l_g is the distance from the underside of the head to the last major diameter of the thread.

4 Specifications and reference International Standards

See Table 2.

Table 2 — Specifications and reference International Standards

Material		Steel
	International Standard	ISO 10666
Thread	International Standard	ISO 1478
Cross recesses	International Standard	ISO 4757
Mechanical and functional properties	International Standard	ISO 10666
Tolerances	Product grade	A
	International Standard	ISO 4759-1
Finish		Plain Requirements for electroplating are covered in ISO 4042.
Acceptability		Acceptance procedure is covered in ISO 3269.

5 Designation

EXAMPLE A cross recessed raised countersunk head drilling screw with thread ST3,5, nominal length *l* = 16 mm and recess type Z is designated as follows:

Drilling screw ISO 15483 - ST3,5 × 16 - Z

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*)

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 4757 : 1983 Cross recesses for screws	IS 7478 : 2011/ISO 4757 : 1983 Cross recesses for screws (*second revision*)	Identical
ISO 4759-1 : 1978 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 (*third revision*)	Identical
ISO 7721 : 1983 Countersunk head screws — Head configuration and gauging	IS 11362 : 1985/ISO 7721 : 1983 Head configuration and gauging of countersunk head screws	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:

International Standard	*Title*
ISO 10666 : 1999	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

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 2016 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

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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.

This Indian Standard has been developed from Doc No.: PGD 37 (23028).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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