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IS 7173 (1989): Slotted pan head tapping screws [PGD 31: Bolts, Nuts and Fasteners Accessories]



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Indian Standard
SLOTTED PAN HEAD TAPPING SCREWS
(*First Revision*)

भारतीय मानक
खांचेदार पैन हेड टैपिंग पेंच
(पहला पुनरीक्षण)

First Reprint DECEMBER 1995

UDC 621.993 : 621.882.215.2

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

Indian Standard

SLOTTED PAN HEAD TAPPING SCREWS

(First Revision)

NATIONAL FOREWORD

This Indian Standard (First Revision) which is identical with ISO 1481 : 1983 'Slotted pan head tapping screws', issued by the International Organization for Standardization (ISO), was adopted by the Bureau of Indian Standards on 3 March 1989 on the recommendation of the Bolts, Nuts and Fasteners Accessories Sectional Committee (EDC 27) and approval of the Mechanical Engineering Division Council.

The original version of this standard IS 7173 : 1974 'Specification for slotted pan head tapping screws' was based on ISO/R 1481 : 1970 'Slotted pan head tapping screws', issued by ISO. The revision has been made by adoption of the revised ISO standard—ISO 1481 : 1983. The following major changes have been made in this revision:

- a) Types AB and B have been re-designated as Types C and F, respectively;
- b) Screw size numbers have been dispensed with and screw sizes are re-designated by the nominal diameters prefixed with letters 'ST'. The following table gives old screw size numbers with the corresponding new size designations:

<i>Screw Size No. as Per IS 7173 : 1974</i>	<i>Corresponding Sizes in This Revision</i>	<i>Screw Size No. as Per IS 7173 : 1974</i>	<i>Corresponding Sizes in This Revision</i>
(0)	Not covered	(7)	Not covered
(1)	Not covered	8	ST 4.2
2	ST 2.2	10	ST 4.8
(3)	Not covered	(12)	ST 5.5
4	ST 2.9	14	ST 6.3
(5)	Not covered	(16)	ST 8
6	ST 3.5	Not covered	ST 9.5

- c) Dimensions have been rationalized.

Additional requirements supplementing specifications covered in ISO 1481 : 1983 have been given in the National Annex.

In the adopted standard, certain terminology and conventions are not identical with those used in Indian Standards; attention is specially drawn to the following:

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

CROSS REFERENCES

<i>International Standard</i>	<i>Indian Standard</i>	<i>Degree of Correspondence</i>
ISO 225 : 1983 Fasteners — Bolts, screws, studs and nuts — Symbols and designation of dimensions	IS 8536 : 1987 Fasteners — Bolts, screws, studs and nuts — Symbols and designation of dimensions (<i>first revision</i>)	Identical
ISO 1478 : 1983 Tapping screws thread	IS 5957 : 1989 Dimensions of screws for thread forming tapping screws (<i>first revision</i>)	Identical
ISO 2702 : 1974 Heat-treated steel tapping screws — Mechanical properties	IS 7178 : 1989‡ Technical supply conditions for tapping screws (<i>second revision</i>)	Related
ISO 3269 : 1988* Fasteners — Acceptance inspection	IS 2614 : 1969‡ Methods for sampling of fasteners (<i>first revision</i>)	Related
ISO 4042† Threaded components — Electroplated coatings components	IS 1367 (Part 11)† Technical supply conditions for threaded fasteners: Part 11 Electroplated coatings	Would be identical
ISO 4759/1 : 1978 Tolerances for fasteners, Part 1 Bolts, screws and nuts with thread diameters ≥ 1.6 and ≤ 150 mm and product grades A, B and C	IS 1367 (Part 2) : 1984 Technical supply conditions for threaded steel fasteners: Part 2 Product grades and tolerances (<i>second revision</i>)	Technically equivalent

ALTERATION

In *Clause 5*, the designation of slotted pan head tapping screw may be read as:

‘Tapping screw IS 7173 — ISO 1481 — ST 3.5 × 16-C’.

in place of

‘Tapping screw ISO 1481 — ST 3.5 × 16-C’.

*Was in draft stage in 1983, first edition published in 1984, and second edition in 1988.

†At present in draft stage.

‡Provisions of this Indian Standard are applicable.

1 Scope and field of application

This International Standard specifies the characteristics of slotted pan head tapping screws with thread sizes from ST 2,2 to ST 9,5 inclusive.

2 References

ISO 225, *Fasteners -- Bolts, screws, studs and nuts -- Symbols and designations of dimensions.*

ISO 1478, *Tapping screws thread.*

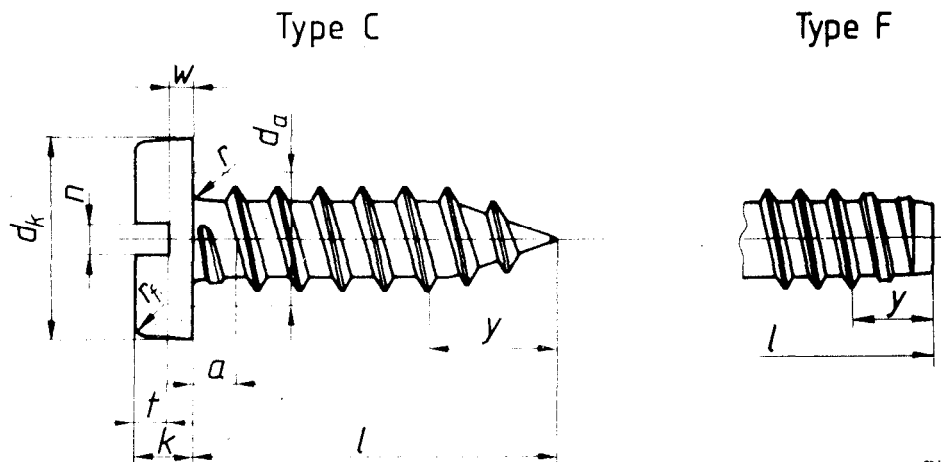
ISO 2702, *Heat-treated steel tapping screws -- Mechanical properties.*

ISO 3269, *Fasteners -- Acceptance inspection.*¹⁾

ISO 4042, *Threaded components -- Electroplated coatings components.*¹⁾

ISO 4759/1, *Tolerances for fasteners -- Part 1: Bolts, screws and nuts with thread diameters $\geq 1,6$ and < 150 mm and product grades A, B and C.*

¹⁾ At present at the stage of draft.



Dimensions in millimetres

Thread size		ST 2,2	ST 2,9	ST 3,5	ST 4,2	ST 4,8	ST 5,5	ST 6,3	ST 8	ST 9,5
$p^{1)}$		0,8	1,1	1,3	1,4	1,6	1,8	1,8	2,1	2,1
$a^{2)}$	max.	0,8	1,1	1,3	1,4	1,6	1,8	1,8	2,1	2,1
d_a	max.	2,8	3,5	4,1	4,9	5,5	6,3	7,1	9,2	10,7
d_k	max.	4	5,6	7	8	9,5	11	12	16	20
	min.	3,7	5,3	6,6	7,6	9,1	10,6	11,6	15,6	19,5
k	max.	1,3	1,8	2,1	2,4	3	3,2	3,6	4,8	6
	min.	1,1	1,6	1,9	2,2	2,7	2,9	3,3	4,5	5,7
n	nom.	0,5	0,8	1	1,2	1,2	1,6	1,6	2	2,5
	min.	0,56	0,86	1,06	1,26	1,26	1,66	1,66	2,06	2,56
	max.	0,7	1	1,2	1,51	1,51	1,91	1,91	2,31	2,81
r	min.	0,1	0,1	0,1	0,2	0,2	0,25	0,25	0,4	0,4
r_f	ref.	0,6	0,8	1	1,2	1,5	1,6	1,8	2,4	3
t	min.	0,5	0,7	0,8	1	1,2	1,3	1,4	1,9	2,4
w	min.	0,5	0,7	0,8	0,9	1,2	1,3	1,4	1,9	2,4
y ref. ³⁾	Type C	2	2,6	3,2	3,7	4,3	5	6	7,5	8
	Type F	1,6	2,1	2,5	2,8	3,2	3,6	3,6	4,2	4,2

(4)												
nom.	Type C		Type F									
	min.	max.	min.	max.								
4,5	3,7	5,3	3,7	4,5	—	—	—	—	—	—	—	—
6,5	5,7	7,3	5,7	6,5	—	—	—	—	—	—	—	—
9,5	8,7	10,3	8,7	9,5	—	—	—	—	—	—	—	—
13	12,2	13,8	12,2	13	—	—	—	—	—	—	—	—
16	15,2	16,8	15,2	16	Range of commercial lengths							
19	18,2	19,8	18,2	19								
22	21,2	22,8	20,7	22								
25	24,2	25,8	23,7	25								
32	30,7	33,3	30,7	32	—	—	—	—	—	—	—	—
38	36,7	39,3	36,7	38	—	—	—	—	—	—	—	—
45	43,7	46,3	43,5	45	—	—	—	—	—	—	—	—
50	48,7	51,3	48,5	50	—	—	—	—	—	—	—	—

1) P = pitch of the thread.
2) Distance from the underside of the head to the first major diameter of the thread within the specified limits.
3) Length of incomplete thread.
4) Sizes with lengths marked with a dash (—) in the table shall not be manufactured.

4 Specifications and reference International Standards

Material	Steel, according to ISO 2702
Thread	According to ISO 1478
Mechanical properties	According to ISO 2702
Tolerances	Product grade A
	International Standard ISO 4759/1
Finish	Plain Requirements for electroplating are covered in ISO 4042. If different electroplating requirements are desired or if requirements are needed for other finishes, they should be negotiated between customer and supplier.
Acceptability	For acceptance procedure see ISO 3269.

5 Designation

Example for the designation of a slotted pan head tapping screw with thread size ST 3,5, nominal length $l = 16$ mm and cone end type C:

Tapping screw ISO 1481 - ST 3,5 × 16 - C

NATIONAL ANNEX

In addition to the requirements covered in the standard, the self tapping screws manufactured to IS 7173 : 1989 shall also comply with the following.

GENERAL REQUIREMENTS

In respect of the other requirements not covered in this standard, the tapping screws shall conform to IS 7178 : 1989 'Technical supply conditions for tapping screws (*second revision*)'.

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This Indian Standard has been developed from Doc : No. EDC 27 (4122)

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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