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भारतीय मानक मसौदा

चैनलों के लिए टेपर वॉशर (आईएसएमसी) — विशिष्टि

(*दूसरा पुनरीक्षण*)

Draft Indian Standard

Taper Washers for Channels (ISMC) — Specification

(*Second Revision*)

ICS 21.060.30

Last date for receipt of comment is 11 January 2024

FOREWORD

This Indian Standard (Second Revision) will be adopted by the Bureau of Indian Standards after the draft finalized by the General Engineering and Fasteners Standards Sectional Committee had been approved by the Production and General Engineering Division Council.

This standard was first published in 1969 and subsequently revised in 1975. The second revision has been taken up to keep pace with the latest technological developments and international practices. In this revision following major changes have been made:

a) Scope has been revised;
b) Material requirements have been updated;
c) Table on dimensions has been revised;
d) Surface finish requirements have been added; and
e) References have been updated.

In the preparation of this standard, assistance has been derived from DIN 434 : 2000 ‘Square taper steel washers for use with channel sections’.

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 revised*). The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Draft Indian Standard

Taper Washers for Channels (ISMC) — Specification

(*Second Revision*)

1 SCOPE

This standard specifies the requirements of square taper washer for use in structural bolting of steel channel sections using bolts up to property class 5.6.

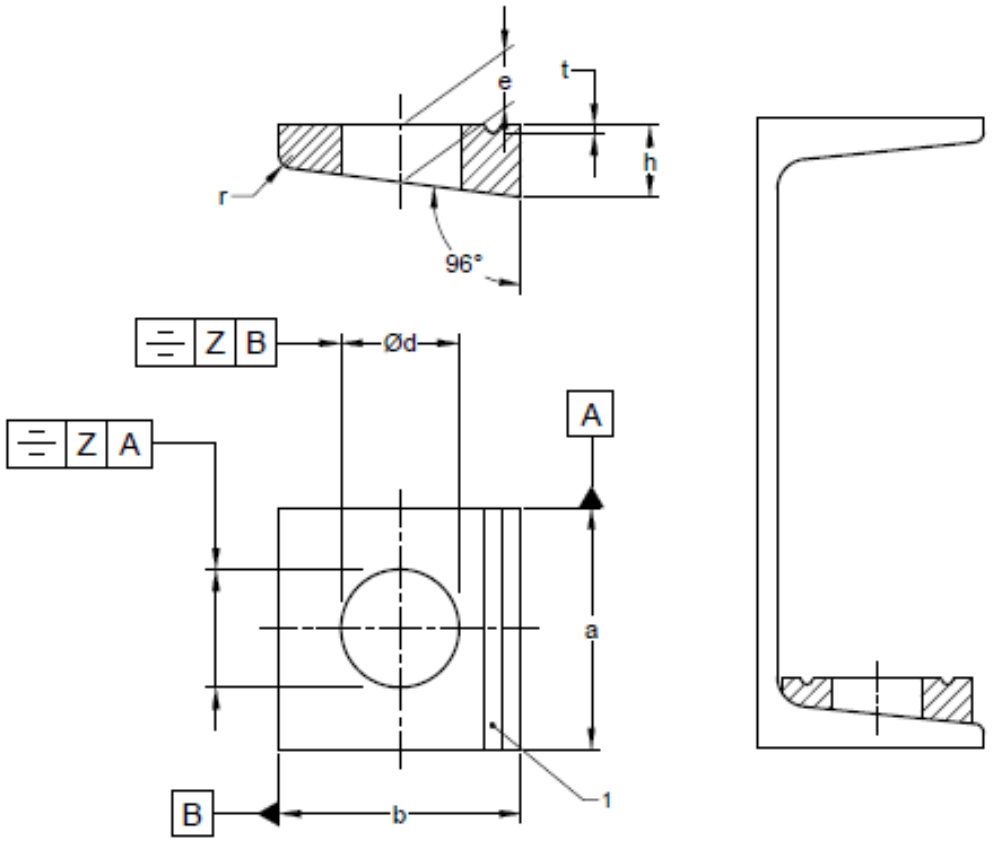
2 REFERENCES

The following Indian Standards contain provisions which through reference in this text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

IS No.	*Title*
IS 1367 (Part 11) : 2020/ ISO 4042 : 2018	Technical supply conditions for threaded steel fasteners: Part 11 Electroplated coating systems (*fourth revision*)
IS 1367 (Part 12) : 1981	Technical supply conditions for threaded steel fasteners: Part 12 Phosphate coatings on threaded fasteners (*second revision*)
IS 1367 (Part 13) : 2020/ ISO 10684 : 2004	Technical supply conditions for threaded steel fasteners: Part 13 Hot dip galvanized coatings on threaded fasteners (*third revision*)
IS 1367 (Part 17) : 2022/ ISO 3269 : 2019	Technical supply conditions for threaded steel fasteners: Part 17 Inspections, sampling and acceptance procedure (*fifth revision*)
IS 1501 (Part 1) : 2020/ ISO 6507-1 : 2018	Metallic materials — Vickers hardness test: Part 1 Test method (*fifth revision*)
IS 8000 (Part 1) : 2019/ ISO 1101 : 2017	Geometrical product specifications (GPS) — Geometrical tolerancing: Part 1 Tolerances of form, orientation, location and run-out (*second revision*)
IS/ISO 10683 : 2018	Fasteners — Non-electrolytically applied zinc flake coating systems

3 DIMENSIONS

The dimensions for square taper washers shall be as given in Fig. 1 and Table 1.



[1)]Rolled in groove for indication of taper on top side.

FIG.1 DIMENSIONS

Table 1 Washer Dimension

(*Clause* 3)

All dimensions in millimetres.

Sl No.	Nominal Size[1)]	For Thread Size	***d***		***a***			***b***			***e*** [2)]	***h***			***r***	***t***	***z***[3)]
			Min = nominal size	*Max*	Nominal size	*Min*	*Max*	Nominal size	*Min*	*Max*	(Auxiliary dimension)	Nominal size	*Min*	*Max*	≈	≈	Symmetricity
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
i)	9	M8	9	9.36	22	20	24	22	21.35	22.65	2.9	3.8	3.2	4.4	1.6	0.5	1.68
ii)	11	M10	11	11.43	22	20	24	22	21.35	22.65	2.9	3.8	3.2	4.4	1.6	0.5	1.68
iii)	13.5	M12	13.5	13.93	26	24	28	30	29.35	30.65	3.7	4.9	3.9	5.9	2	0.7	1.68
iv)	17.5	M16	17.5	17.93	32	29.5	34.5	36	35.2	36.8	4.45	5.9	4.9	6.9	2.4	0.8	2
v)	22	M20	22	22.52	40	37.5	42.5	44	43.2	44.8	5.25	7	6	8	2.8	0.9	2
vi)	24	M22	24	24.52	44	41.5	46.5	50	49.2	50.8	6	8	7	9	3.2	1	2
vii)	26	M24	26	26.52	56	53	59	56	55.05	56.95	6.26	8.5	7.3	9.7	3.2	1	3.8
viii)	30	M27	30	30.52	56	53	59	56	55.05	56.95	6.26	8.5	7.3	9.7	3.2	1	3.8

[1] Nominal size equal to d_{min}.
[2] $e = h$ (nominal size) – 0.04 b (nominal size).
[3] *see* IS 8000 (Part 1).

4 MATERIAL

4.1 Washer shall be made of steel. The specific grade of steel shall be in agreement between purchaser and manufacturer.

4.2 The hardness shall be 100 HV10 to 250 HV10. Vickers hardness testing shall be performed in accordance with IS 1501 (Part 1).

5 SURFACE FINISH

Washer shall have a bright surface finish, and be free from burr. At the request of the purchaser, washers may be phosphated [*see* IS 1367 (Part 12)], hot dip galvanized [*see* IS 1367 (Part 13)], electroplated [*see* IS 1367 (Part 11)] or zinc flake coated [(*see* IS/ISO 10683)].

6 DESIGNATION

A square taper washer confirming to this standard shall be designated by the IS No. of this standard and nominal size.

Example:

A washer of nominal size 13.5 for use with channel sections shall be designated as:

Washer IS 5372 — 13.5

7 ACCEPTANCE INSPECTION

Acceptance inspection shall be according to IS 1367 (Part 17). The acceptable quality level (AQL) for the major characteristics shall be as specified in Table 2.

Table 2 AQL Values
(*Clause* 7)

Sl No.	**Major Characteristic**	**AQL value**
(1)	(2)	(3)
i)	Hole diameter	1.5
ii)	Co-axiality	1.5
iii)	Taper angle	1.5

8 BIS CERFIFICATION 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 product(s) may be marked with the standard mark.