Indian Standard

SPECIFICATION FOR CAST COPPER ALLOY SCREW DOWN BIB TAPS AND STOP VALVES FOR WATER SERVICES

(Third Revision)

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BUREAU OF INDIAN STANDARDS MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG NEW DELHI 110002

Indian Standard

SPECIFICATION FOR CAST COPPER ALLOY SCREW DOWN BIR TAPS AND STOP VALVES FOR WATER SERVICES

(Third Revision)

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(Continued on page 13)

Indian Standard

SPECIFICATION FOR CAST COPPER ALLOY SCREW DOWN BIB TAPS AND STOP VALVES FOR WATER SERVICES

(Third Revision)

O. FOREWORD

- 0.1 This Indian Standard (Third Revision) was adopted by the Indian Standards Institution on 28 Septmber 1984, after the draft finalized by the Sanitary Appliances and Water Fittings Sectional Committee had been approved by the Civil Engineering Division Council.
- 0.2 This standard was first issued in 1959 and subsequently revised in 1967 and 1977. The third revision of this standard has been taken up to incorporate changes in the light of comments received from users and manufacturers. The scope of the standard has been enlarged to permit bib taps have internal and external ends. Similarly, stop valves shall have either or both ends, namely male or female or mixed ends.
- 0.3 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: 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard covers requirements of copper alloy screw down bib taps and stop valves suitable for cold non-shock working pressure up to 1.0 MPa. Bib taps shall have screwed male inlet. Stop valves shall have screwed female ends or male ends or mixed ends (mixed ends means one end screwed male and the other end screwed female).

Note — Cold service means a temperature not exceeding 45°C.

^{*}Rules for rounding off numerical values (revised).

2. TERMINOLOGY

- 2.0 For the purpose of this standard, the following definitions shall apply.
- 2.1 Bib Tap A draw-off tap with horizontal inlet and free outlet.
- 2.2 Stop Valve A valve with suitable means of connection for insertion in a pipe line for controlling or stopping flow.
- 2.3 Screw-Down Bib Tap or Stop Valve A bib tap or a stop valve closed by means of disc carrying a renewable non-metallic washer which shuts against the water pressure on a seating at right angles to the axis of the threaded spindle which operates it.

3. NOMINAL SIZES

- 3.1 The nominal sizes of bib taps shall be 8, 10, 15, 20 and 25 mm.
- 3.2 The nominal sizes of stop valves shall be 8, 10, 15, 20, 25, 32, 40 and 50 mm.
- 3.3 Nominal sizes of the bib tap and stop valves shall be designated by the nominal bore of the socket or pipe outlet to which the tap or valve is normally fitted.

4. MATERIAL

4.1 The material used for the manufacture of different components of bib taps and stop valves shall conform to the requirements given in Table 1.

5. DIMENSIONS AND TOLERANCES

- 5.1 Dimensions of bib taps and stop valves and their components shall be in accordance with Table 2.
- 5.2 The overall length of stop valves shall be as given below with a tolerance of ± 3 mm.

Nominal Size		Overall Length, m	m
	Internally Threaded	Externally Threaded	Mixed Ends
8	45	65	55
10	50	7 5	62
15	60	85	70
20	70	100	85
2 5	85	125	105
32	100	135	115
40	110	145	125
50	135	175	155

TABLE 1 MATERIALS FOR COMPONENTS OF BIB TAPS AND STOP VALVES

(Clause 4.1)

Sr. No.	Component	MATERIAL	Conforming to Indian Standard				
(1)	(2)	(3)	(4)				
i)	Body and bonnet	a) Cast brassb) Leaded in tin bronze	Grade 3 of IS: 292-1961* Grade DCB 2 of IS: 1264-1981† Grade LTB 2 of IS: 318-1981‡				
ii)	Spindle, nuts	Brass (extruded, rolled or forged)	Type I half hard of IS: 319-1974§ Grade CuZn 42 pb 2 of IS: 3488- 1980 Grade HT 1 of IS: 320-1980¶ Grade FHTB 1 of IS: 6912-**				
iii)	Gland, crutch (handle) washer plate, etc		Type I half hard of IS: 319-1974§ Grade DCB 2 of IS: 1264-1981† Grade CuZn 42 pb 2 of IS: 3488- 1980 Grade 3 of IS: 292-1961* Grade HT 1 of IS: 320-1980¶ Grade LTB 2 of IS: 318-1981‡				
iv)	Washer	As specified in IS: 4346-1982††	·				

*Specification for brass ingots and casting (first revision).

†Specification for brass ingots die castings, brass gravity die castings (including noval brass) (second revision).

†Specification for leaded tin bronze ingots and castings (second revision).

§Specification for free-cutting brass bars, rods and sections (third revision). ||Specification for brass bars, rods and sections suitable for forging (first revision).

"Specification for high tensile brass rods and sections (other than forging stock) (second revision).

**Specification for copper and copper alloys forgings (under preparation). ††Specification for washers for water taps for cold water services.

6. CONSTRUCTION AND WORKMANSHIP

- **6.1** All castings shall be sound and free from laps, blow holes and pitting, and both external and internal surfaces shall be clean, smooth and free from sand.
- 6.2 The bodies, bonnets, spindle and other parts shall be machined so that when assembled, the parts shall be axial, parallel and cylindrical with surfaces smoothly finished within the limits of dimensions specified for various components. Bonnet may be located with the body with the help of locking screw if desired by the purchaser.

- 6.3 The wall thickness at any point of the body shall not be less than the thickness D specified in Table 2. However, the minimum value of D may, in the case of open end outlet of bib taps, be reduced by 0.40 mm. Bib taps and stop-valves shall be designed and manufactured to tolerances set to allow for interchangeability between units of same size of the same manufacturer.
- **6.4** The seating of a bib tap or stop valve shall be solid with the body and shall have a smooth machined surface. The edges shall be rounded off to avoid cutting edges.
- 6.5 Bib taps shall be constructed as to ensure that the stream of water shall not unduly break or spread.

6.6 Screw Threads

- **6.6.1** The inlet and outlet connection threads shall have internal or external threads conforming to IS: 554-1975*. External parallel thread shall conform to IS: 2643 (Parts 1 to 3)-1975†.
- 6.6.2 Bonnet threads shall be adequate to withstand minimum cold working pressure. Minimum pitch of threads shall be 1.5 mm. The internal thread in the bonnet for spindle shall be so formed that when the spindle is screwed into the bonnet to its fully open position the ends of the spindle projects beyond the face of the bonnet by at least 0.7 mm in the taps or valves up to 25 mm size, and by at least 1.5 mm in large sizes.
- 6.6.3 The threads on spindles shall be of square, ACME or V-form. The length of spindle thread shall be such that when the washer plate is resting on the seating without any washer, a length of the thread equal to not less than three-fourths of the external diameter of the threaded portion of the spindle shall be in full engagement with the internal thread of the bonnet.

6.7 Body and Bonnet

6.7.1 The minimum bore of ends not threaded shall be according to dimension 'K' given in Table 2.

6.8 Washer Plate and Washer

6.8.1 The washer plate with its stem shall be either made in one piece from cast brass or in two pieces from extruded or forged brass rods and shall be machined all over.

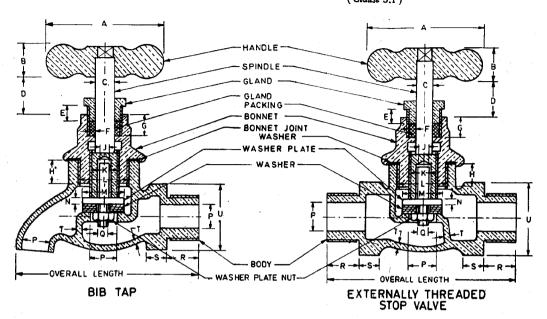
†Specification for dimensions for pipe threads for fastening purposes:

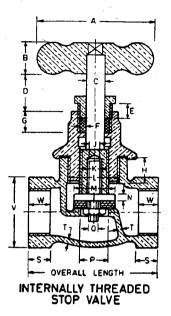
Part 1 Basic profile and dimensions (first revision).

Part 2 Tolerances (first revision). Part 3 Limits of sizes (first revision).

^{*}Specification for dimensions for pipe threads where pressure tight joints are required on the threads (second revision).

TABLE 2 DIMENSIONS AND TOLERANCES OF BIB TAPS AND STOP VALVES AND THEIR COMPONENTS (Clause 5.1)





All dimensions in millimetres.

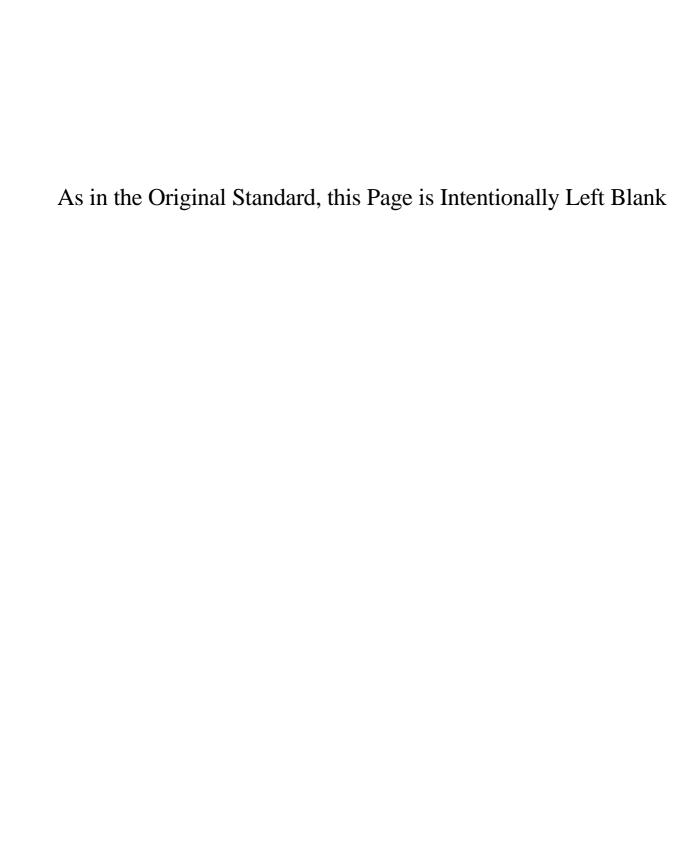
Dimensions →	A	В	С	· D	E	F	G	Н	ÿ	K	L	М	N	P	Q	Ŕ	s	т	U	V	W	LIST OF WASHER PLATE
Nominal Sizes	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	Min	+ 0:0 - 0:5	Min	Min	Min	Min	Min	Min	Min	WASHER IN POSITION, Min)
8	47 8	13.3	7-8	16.5	6.3	2.0	7:9	7-0	3.8	10.0	M 20 × 1·5	14.3	2.8	6.5	2.4	11.0	4.7	1.6	15.2	19.5	7	3.2
10	54.0	14.0	9.4	18.7	7.5	2.0	9•5	9.5	4.7	11.2	M 20 × 1·5	15.9	3.2	9.0	3.2	11.4	7:9	2.0	20.8	23.3	7	4
15	54.0	14.0	9.4	19.0	7.5	2.0	9-5	11.0	5.6	11.5	M 24 × 1.5	19.0	3.5	13.0	4.1	15.0	9.5	2.0	25.6	28.3	9	4.2
20	60.4	15.7	10.9	20.1	8.9	2.5	11.1	12-5	6.4	13.5	M 30 × 1·5	25.4	4.0	18.0	4.9	16.3	10.3	2.0	30.5	33.0	10.5	6
25	66.8	18.0	12.5	23 0	10-1	2.5	12.7	13.0	7.1	17.0	M 39 × 1·5	33.3	4.0	23.0	4.9	19-1	11.0	2.8	37.6	4 2·4	11.2	7
32	74.6	20.5	14.1	30.9	11.4	2.5	14.3	16. 0	7.8	19.0	M 48 × 1·5	40.1	4.3	30	5.9	21.4	12.7	3.2	47.2	52.1	13.2	9.5
40	82.2	22.0	15.7	33.3	12.7	2.5	15.9	17:5	8.6	20.5	M 56 × 1·5	47.7	5*5	36	6.6	21.4	14.3	3.2	56.4	58.5	13.5	11
50	95.0	25.3	17:3	35.9	14.0	2:5	17:4	17.5	12.5	26.0	M 72 × 1·5	63 ·5	6.3	46	8.3	25·1	15.9	4.0	- 70•1	71.5	16.2	14.5

Note 1 — Length of thread R includes cut back under hexagon, if any.

Note 2 — The values of K are for core diameter.

Note 3 — The diameter of U and V are for face to face.

Note 4 — The dimension F is packing face.



- 6.8.2 The washer plate with its stem in tap or valve shall be free to rotate and slide in the hole of spindle.
- 6.8.3 Washer plate shall have a stud for attaching the washer. The stud shall be threaded and provided with a nut.
- 6.9 There shall be sufficient distance between the underside of the handle and the top of the bonnet when the tap or valve is closed, so as to provide enough clearance for repacking the gland without removing the handle of the bib tap or stop valve.
- 6.10 The handle shall be close fit on the spindle and it shall be fixed by a screw, riveting or other equally effective device. The handle shall not be screwed on to the spindle.
- 6.11 Gland Packing The stuffing box of bib tap or stop valve shall be packed with a suitable asbestos gland packing conforming to IS: 4687-1980* or hemp/jute conforming to IS: 5414-1969† or other equally efficient packing material suitable for both cold and hot water. A suitable washer may also be fitted in the bottom of the gland or stuffing box.
- 6.12 A hexagonal shoulder shall be provided on the inlet end of taps and both ends of stop valves. Square or hexagonal shoulders shall also be provided on all bonnets. The dimensions across flats for both hexagonal and square shoulder shall comply with as given in Table 2.

7. MINIMUM MASS

7.1 The minimum finished mass of the bib taps and stop-valves shall be as given in Table 3.

8. FINISH

- 8.1 The bib taps shall be always polished bright.
- 8.2 The stop valves may be polished bright or they may have an unpolished as 'cast' finish.
- 8.3 The bib taps or stop valves may also be nickel-chromium plated, the thickness of plating shall not be less than service grade No. 2 of IS: 4827-1968‡. The plating shall be capable of taking high polish and shall not easily tarnish or scale.

^{*}Specification for gland packing asbestos (first revision). †Specification for gland packing jute and hemp.

[‡]Specification for electroplated coatings of nickel and chromium on copper and copper alloys.

TABLE 3 MINIMUM FINISHED MASS OF BIB TAPS AND STOP VALVES

(Clause 7.1)

S_{1ZE}		Minimum I	FINISHED MASS					
	Bib Taps	Stop Valves						
		Internally threaded	Externally threaded	Mixed end				
(1)	(2)	(3)	(4)	(5)				
mm	kg	kg	kg	kg				
8	0.250	0.220	0.250	0.235				
10	0.300	0.300	0.350	0.325				
15	0.400	0.330	0.400	0.365				
20	0.750	0.675	0.750	0.710				
25	1.250	1.180	1.300	1.250				
32		1.680	1.800	1.750				
40		2.090	2.250	2.170				
50		3.700	3.850	3.750				

9. TESTING

9.1 Every bib tap or stop valve complete with its components shall be tested under an internal hydraulic pressure of 2 MPa minimum maintained at that pressure for a period of at least 2 minutes during which it shall neither leak nor sweat.

10. SAMPLING

10.1 The scale of sampling and criteria for conformity shall be as given in Appendix A.

11. MARKING

- 11.1 Every bib tap or stop valve shall be legibly marked with the manufacturer's name or trade-mark and nominal size on the body.
- 11.2 A direction arrow pointing in the direction of flow shall be cast or stamped on the body of all stop valves.
- 11.3 The bib taps and stop valves may also be marked with the ISI Certification Mark.

Note — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions, under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

APPENDIX A

(Clause 10.1)

SAMPLING AND CRITERIA FOR CONFORMITY FOR ACCEPTANCE

A-1. SCALE OF SAMPLING

- A-1.1 Lot In any consignment, all the items (bib taps or stop valves) made of the same material, of the same nominal size and belonging to the same batch of manufacture shall be grouped together to constitute a lot.
- A-1.2 For ascertaining conformity of the material to the requirements of this specification, samples shall be tested from each lot separately.
- A-1.3 The number of items to be selected from a lot shall depend upon the size of the lot and shall be in accordance with col 1 and 2 of Table 4.

Number of Items in the Lot	Sample Size	Acceptance Number	Sub-sample Size		
(1)	(2)	(3)	(4)		
Up to 150	8	0	3		
151 to 300	13	0	5		
301 ,, 500	20	1	8		
501 ,, 1 000	32	2	13		
1 001 ,, 3 000	50	3	20		
3 001 and above	80	5	32		

A-1.3.1 The items from the lot shall be selected at random. In order to ensure the randomness of selection, procedures given in IS: 4905-1968*, may be followed.

A-2. NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

- A-2.1 All the items selected according to col 1 and 2 of Table 4 shall be examined for material, workmanship, construction, finish, dimensions and minimum mass. An item failing in one or more of these requirements shall be considered as defective.
- A-2.1.1 The lot shall be considered as conforming to these requirements if the number of defective items found in the sample is less than or equal to corresponding acceptance number given in col 3 of Table 4.

^{*}Methods for random sampling.

- A-2.2 The lot having satisfied the requirements given in A-2.1 shall be further tested for hydraulic pressure test as given in 9.1 of the specification.
- A-2.2.1 For this purpose, the number of items given in col 4 of Table 4 shall be selected from the lot. These may be selected from those which have been examined for other requirements according to A-2.1 and found satisfactory.
- A-2.2.2 The lot shall be considered to have satisfied the requirement for hydraulic test if none of the items in the sub-sample fails in hydraulic test according to 9.1.

(Continued from page 2)

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AMENDMENT NO. 1 OCTOBER 1988

TO

IS: 781-1984 SPECIFICATION FOR CAST COPPER ALLOY SCREW DOWN BIB TAPS AND STOP VALVES FOR WATER SERVICES

(Third Revision)

(Page 3, clause 0.2, third sentence) — Delete.

[Page 5, Table 1, Sl No. (i), col 3] — Substitute '(b) Leaded timbronze for '(b) Leaded in tin bronze'.

(Page 6, clause 6.3, line 2) - Substitute 'T' for 'D'.

(Page 6, clause 6.6.3, time 4) — Substitute 'two-thirds ' for 'three-fourths'.

(Page 6, clause 6.7.1, line 2) — Substitute 'P' for 'K'.

(Page 7, Table 2) — Delete the legend 'OVERALL LENGTH' from the figure for bib tap.

(Page 7, Table 2, Dimension L) - Delete 'Min'.

(Page 7, Table 2, last column heading) - Substitute 'LIFT' for 'LIBT'.

(Page 7, Table 2, Note 2) - Substitute 'K and Q' for 'K'.

(Page 7, Table 2, Note 4) -

- a) Substitute 'space' for 'face'.
- b) Add the following notes after Note 4:

' Note 5 - The dimension H is length of body thread.

Note 6 — The dimension J is diameter of stem of washer plate. '

(Page 9, clauses 7 and 7.1) — Delete and renumber the subsequent clauses.

(Page 10, Table 3) — Delete.

(Page 10, clause 9.1, line 2) - Substitute ' 1.5 MPa ' for ' 2 MPa '.

(Page 11, clause A-1.3, line 2 and Table 4) — Substitute 'Table 3' for 'Table 4'.

(BDC3)

AMENDMENT NO. 2 NOVEMBER 1994 TO

IS 781: 1984 SPECIFICATION FOR CAST COPPER ALLOY SCREW DOWN BIB TAPS AND STOP VALVES FOR WATER SERVICES

(Third Revision)

[Page 10, clause 9.1 (see also Amendment No. 1)] — Substitute the following for the existing:

'Every bib tap and stop valve complete with its components shall be tested in closed position under an hydraulic pressure of 1.5 MPa (minimum) maintained at that pressure for a period of at least 2 minutes during which it shall neither leak nor sweat.'

(CED 3)