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मानक

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IS 2556-2 (2004): Vitreous Sanitary Appliances (Vitreous China) - - Part 2: Specific Requirements of Washdown Water Closets [CED 3: Sanitary Appliances and Water Fittings]



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“Knowledge is such a treasure which cannot be stolen”

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भारतीय मानक
काँचाभ स्वच्छता साधित्र
(काँचाभ चीनी मिट्टी) - विशिष्टि
भाग 2 शौच कुंडों के लिए विशिष्ट अपेक्षाएँ
(पाँचवां पुनरीक्षण)

Indian Standard

VITREOUS SANITARY APPLIANCES
(VITREOUS CHINA) — SPECIFICATION

PART 2 SPECIFIC REQUIREMENTS OF WASHDOWN WATER CLOSETS

(Fifth Revision)

ICS 91.140.70

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NEW DELHI 110002

AMENDMENT NO. 1 OCTOBER 2008
TO
IS 2556 (PART 2) : 2004 VITREOUS SANITARY
APPLIANCES (VITREOUS CHINA) — SPECIFICATION
PART 2 SPECIFIC REQUIREMENTS OF WASHDOWN
WATER CLOSETS

(Fifth Revision)

(Page 2, Fig. 1B) — Substitute ' D_2 ' for ' $D_2/2$ '.

(Page 3, Fig. 2B) — Substitute ' D_2 ' for ' $D_2/2$ ' wherever appears in the figure.

[Page 4, Table 2, Sl No. (vi)] — Substitute ' D_2 ' for ' $D_2/2$ '.

(Page 5, Fig. 3B) — Substitute ' D_2 ' for ' $D_2/2$ ' wherever appears in the figure.

(CED 3)

AMENDMENT NO. 2 JULY 2010
TO
IS 2556 (PART 2) : 2004 VITREOUS SANITARY
APPLIANCES (VITREOUS CHINA) — SPECIFICATION F

PART 2 SPECIFIC REQUIREMENTS OF WASHDOWN
WATER CLOSETS

(Fifth Revision)

[Page 4, Table 2, Sl No. (vi), col 2] — Substitute 'Radius of free space (to be measured from the centre of the outlet, distance being 40 mm from the end of the outlet), *Min*' for the existing.

(CED 3)

Reprography Unit, BIS, New Delhi, India

FOREWORD

This Indian Standard (Part 2) (Fifth Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Sanitary Appliances and Water Fittings Sectional Committee had been approved by the Civil Engineering Division Council.

This standard was first published in 1963. The first, second, third and fourth revisions were issued in 1967, 1973, 1981 and 1994 respectively. In this revision, load bearing, saw dust and splash test have been included. Other changes keeping in view the current manufacturing practices in the country have also been made.

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 'Rules for rounding off numerical values (*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.

Indian Standard

VITREOUS SANITARY APPLIANCES (VITREOUS CHINA) — SPECIFICATION

PART 2 SPECIFIC REQUIREMENTS OF WASHDOWN WATER CLOSETS

(*Fifth Revision*)

1 SCOPE

This standard (Part 2) covers the requirements for patterns, construction, dimensions and tolerances, finish and marking for vitreous washdown water closets (henceforth referred as WC).

2 REFERENCES

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

<i>IS No.</i>	<i>Title</i>
774 : 1984	Specification for flushing cistern for water closets and urinals (other than plastic cistern) (<i>fourth revision</i>)
2556 (Part 1) : 1994	Vitreous sanitary appliances (vitreous china) — Specification : Part 1 General requirements (<i>third revision</i>)
7231 : 1994	Specification for plastic flushing cisterns for water closets and urinals (<i>second revision</i>)
9140 : 1996	Methods of sampling of vitreous and fire clay sanitary appliances (<i>second revision</i>)

3 GENERAL REQUIREMENTS

The general requirements relating to terminology materials, manufacture, glazing, defects, minimum thickness, tolerances, performance and methods of tests shall conform to IS 2556 (Part 1).

4 PATTERNS

4.1 Water closets shall be one of the following patterns:

- a) Pattern 1 — Pedestal WC with independent cistern (*see Fig. 1*)
Pattern 2
- b) Pattern 3 — Pedestal WC with independent cistern and horizontal outlet (*see Fig. 2*)

- c) Pattern 4 — Pedestal WC with independent cistern and concealed S-trap (*see Fig. 3*)

4.2 Water closets may be made in other patterns where so agreed to between the manufacturer and the purchaser. However, except for functional dimensions all other requirements as laid down in this standard shall be complied with.

5 DIMENSIONS AND TOLERANCES

The functional and connecting dimensions for the four patterns of water closets shall be as given in Table 1 and Table 2 respectively, read with the respective figures.

6 CONSTRUCTION

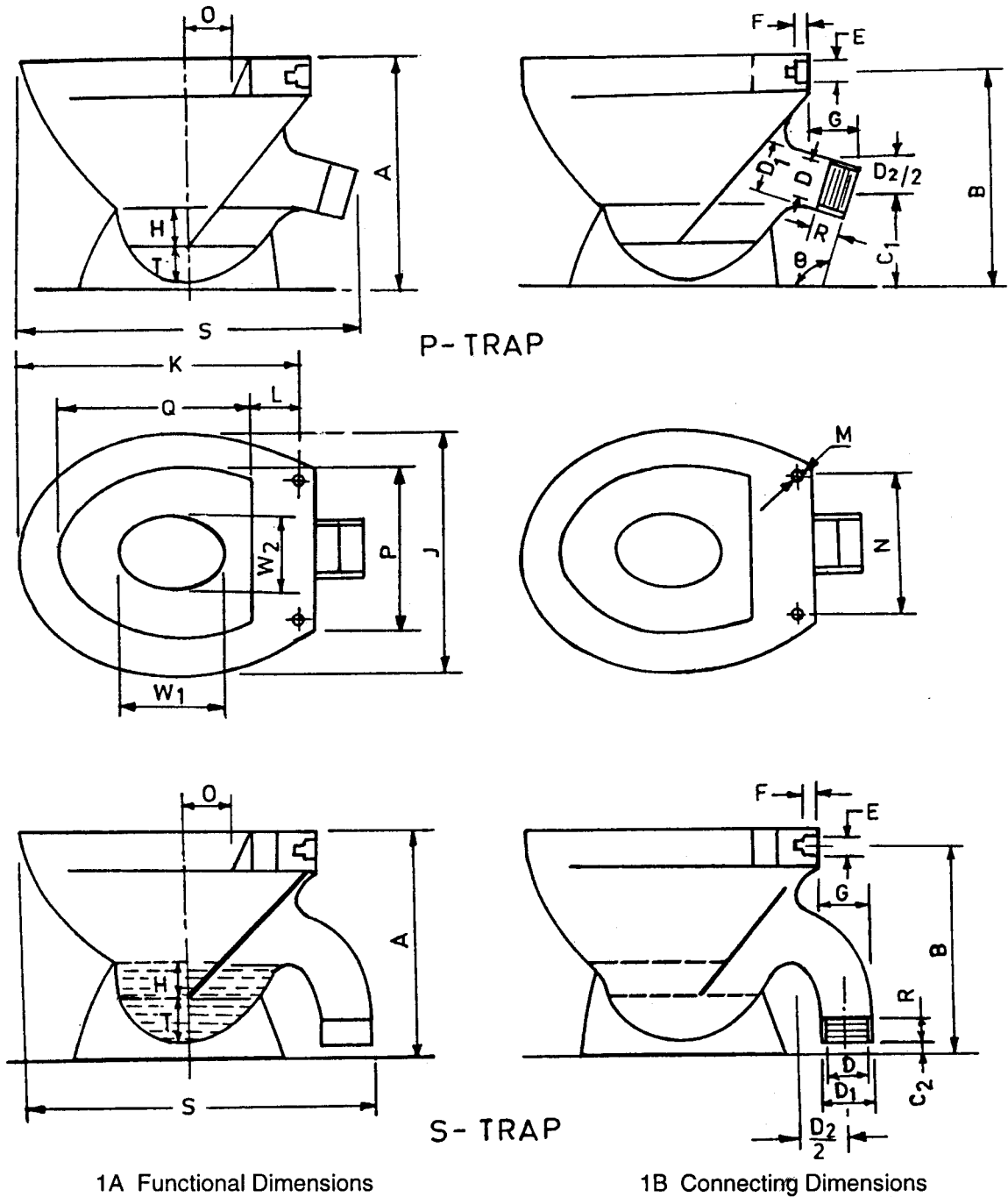
6.1 Water closet shall be of one piece construction. Each water closet shall be provided with not less than two floor fixing holes having a minimum diameter of 6.5 mm and shall have an integral flushing rim of suitable type. It shall also have an inlet or supply horn, for connecting the flushing pipe, of dimensions conforming to *E* in Table 2. The flushing rim may be box rim or open rim type. In case of box rim, adequate number of holes and slots shall be provided. The flushing rim and the inlet shall be of the self-draining type and a weep-hole shall be provided at the flushing inlet of the water closet.

6.2 Each WC shall have an integral tap with either *S* or *P* outlet conforming to Fig. 1, Fig. 2 and Fig. 3 as specified.

6.3 Where required by sanitation authority having jurisdiction over the area of installation, each water-closet shall have anti-siphonage vent horn on the outlet side of the trap, with dimension conforming to those given in Fig. 4 and on either right or left hand or centre as specified at an angle of 45° (*see Fig. 4*) and invert of vent hole not below the central line of the outlet.

6.4 Special connectors are required to connect, the horizontal outlet of Pattern 3 water closet to the drainage system. These shall be supplied by the manufacturers of water closets.

6.4.1 The anti-siphonage vent where required in a horizontal outlet (Pattern 3) water closet, shall be provided in the special connector.



All dimensions in millimetres.

FIG. 1 PATTERN 1 AND PATTERN 2 WATER CLOSETS

7 FINISH

Inside surface of water closet and trap shall be uniform and smooth in order to ensure an efficient flush. In case of Patterns 1 and 2, the serrated part of the outlet shall not be glazed externally. In case of Pattern 3, the outlet shall be without serration and shall be glazed. For Pattern 4, the outlet shall not be glazed.

8 TESTS

The water closet shall satisfy the requirements of

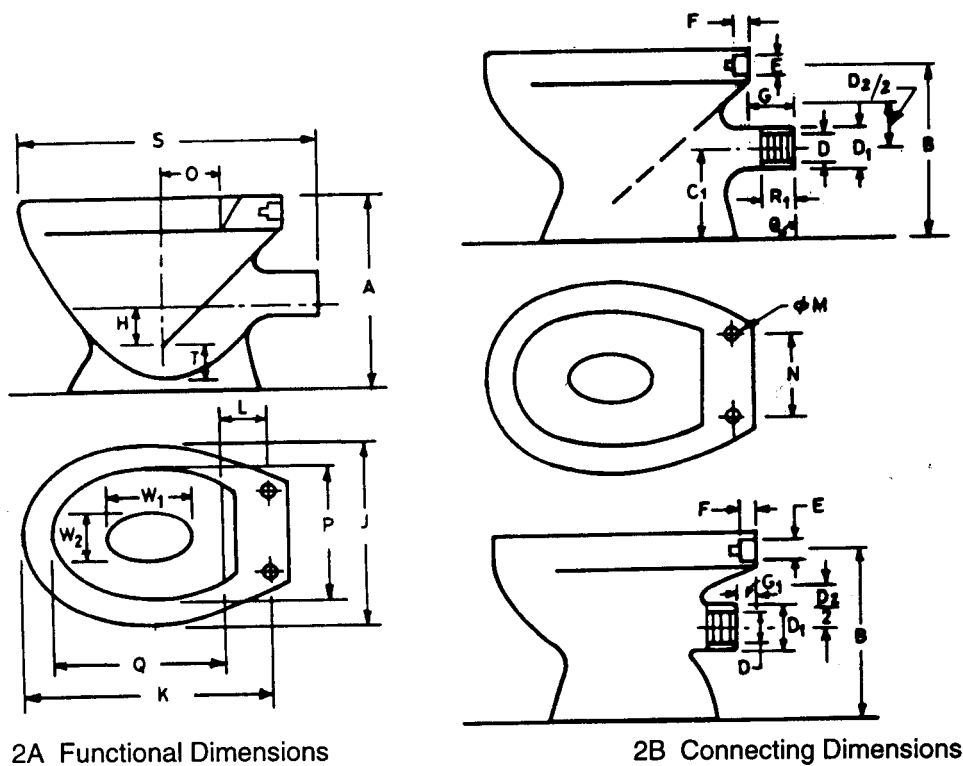
tests prescribed in 8.1, 8.2, 8.3, 8.4, 8.5, 8.6 and 8.7. These tests shall be conducted by connecting the water closet to a low level cistern conforming to IS 774 or IS 7231. A cistern shall be fixed such that the height between the top of the water closet and the bottom of the cistern shall not be more than 300 mm and the water closet shall be connected to the cistern by 40 mm normal diameter flushing pipe. These tests shall be carried out by using the flushing cistern of the capacity with which the appliance is to be used.

Table 1 Functional Dimensions
(Clause 5)

All dimensions in millimetres.

Sl No.	Description	Ref in Fig.	Pattern 1 (See Fig. 1A)	Pattern 2 (See Fig. 1A)	Pattern 3 (See Fig. 2A)	Pattern 4 (See Fig. 3A)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	Height	A	390 ± 10	390 ± 10	390 ± 10	390 ± 10
ii)	Depth of water seal, <i>Min</i>	H	50	50	50	50
iii)	Width of water closet	J	360 ± 10	360 ± 10	360 ± 10	360 ± 10
iv)	Distance from centre of seat bolt hole to front of water closet	K	415 to 445	415 to 445	415 to 445	415 to 445
v)	Distance from centre of seat bolt hole to inside face of flush rim at back, <i>Max</i>	L	80	80	80	80
vi)	Distance between a vertical line from tip of back plate to inside face of flush rim at back, <i>Max</i>	O	70	70	70	70
vii)	Width of opening, <i>Min</i>	P	240	240	240	240
viii)	Length of opening, <i>Min</i>	Q	290	290	290	290
ix)	Overall length	S	500-575	500-575	500 <i>Max</i>	600 <i>Max</i>
x)	Trap inlet depth, <i>Min</i>	T	75	75	75	75
xi)	Water surface back to front	W ₁	150 <i>Min</i>	100 <i>Min</i>	150 <i>Min</i>	150 <i>Min</i>
	Side to side	W ₂	110 <i>Min</i>	75 <i>Min</i>	100 <i>Min</i>	110 <i>Min</i>

NOTE — In case of centre vent in S trap, overall length should be taken as S + 75.



All dimensions in millimetres.

FIG. 2 PATTERN 3 WATER CLOSET WITH HORIZONTAL P-TRAP

Table 2 Connecting Dimensions

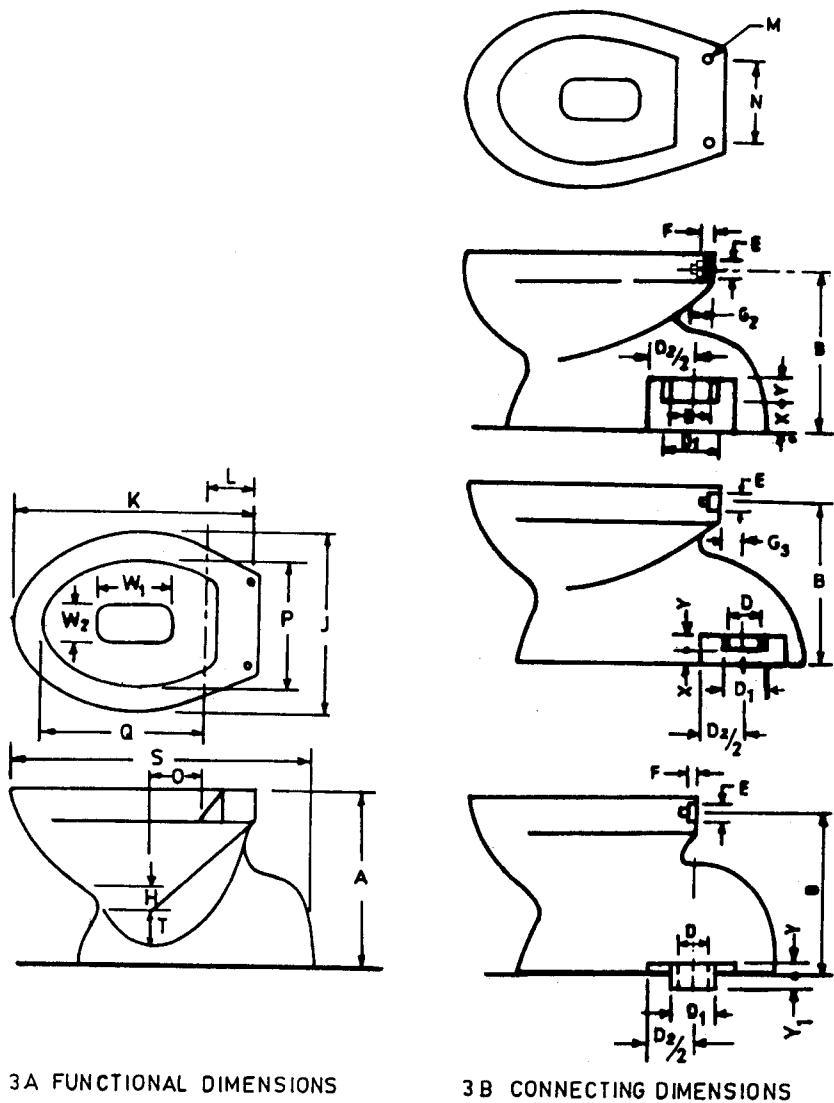
(Clause 5)

All dimensions in millimetres.

Sl No.	Description	Ref in Fig.	Pattern 1 (See Fig. 1B)	Pattern 2 (See Fig. 1B)	Pattern 3 (See Fig. 2B)	Pattern 4 (See Fig. 3B)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	Height of centre line of flush inlet floor level, (for <i>P</i> -trap only)	<i>B</i>	$345 \begin{smallmatrix} +15 \\ -25 \end{smallmatrix}$	$345 \begin{smallmatrix} +15 \\ -25 \end{smallmatrix}$	$345 \begin{smallmatrix} +15 \\ -25 \end{smallmatrix}$	$345 \begin{smallmatrix} +15 \\ -25 \end{smallmatrix}$
ii)	Height of centre line of outlet from floor level (for <i>P</i> -trap only)	<i>C</i> ₁	$180 \begin{smallmatrix} +15 \\ -10 \end{smallmatrix}$	$180 \begin{smallmatrix} +15 \\ -10 \end{smallmatrix}$	$180 \begin{smallmatrix} +15 \\ -10 \end{smallmatrix}$	—
iii)	Distance from end of trap to floor (<i>S</i> -trap only)	<i>C</i> ₂	20 ± 5	20 ± 5	—	—
iv)	Internal diameter of outlet, <i>Min</i>	<i>D</i> ¹⁾	80	80	80	80
v)	External diameter of outlet	<i>D</i> ₁ ¹⁾	102 ± 5	102 ± 5	102 ± 5	102 ± 5
vi)	Radius of free space (to be measured from the centre of the outlet, distance being 40 mm, <i>Min</i> from the end of the outlet)	$\frac{D_2^{1)}}{2}$	75	75	75	75
vii)	Internal diameter of inlet	<i>E</i> ²⁾	50 ± 3	50 ± 3	$55 \begin{smallmatrix} +3 \\ -1 \end{smallmatrix}$	$55 \begin{smallmatrix} +3 \\ -1 \end{smallmatrix}$
viii)	Depth of inlet <i>F</i> socket, <i>Min</i>	<i>F</i>	25	25	25	25
ix)	Distance between end of flush inlet socket and outside of the outlet	<i>G</i> <i>G</i> ₁	45 <i>Min</i> —	45 <i>Min</i> —	20 ± 20 40 ± 20	— —
x)	Distance between end of flush inlet socket and centre line of the outlet	<i>G</i> ₂ <i>G</i> ₃	— —	— —	— —	20 ± 20 20 ± 20
xi)	Diameter of seat bolt hole	<i>M</i>	15 ± 2	15 ± 2	15 ± 2	15 ± 2
xii)	Distance between centre of seat bolt holes	<i>N</i>	$165 \begin{smallmatrix} +10 \\ -5 \end{smallmatrix}$	$165 \begin{smallmatrix} +10 \\ -5 \end{smallmatrix}$	155 ± 10	155 ± 10
xiii)	Length of grooved part of outlet, <i>Min</i>	<i>R</i>	40	40	—	—
xiv)	Length of straight part of outlet glazed and without groove	<i>R</i> ₁	—	—	40 <i>Min.</i>	—
xv)	Angle of outlet (for <i>P</i> -trap only)	θ	104°	104°	90°	—
xvi)	Distance between end of outlet and floor	<i>X</i>	—	—	—	10 <i>Min</i>
xvii)	Length of outlet without grooves	<i>Y</i>	—	—	—	40 <i>Min</i>
xviii)	Length of outlet extending to the floor	<i>Y</i> ₁	—	—	—	32 ± 5

NOTE — Tolerance where not specified shall conform to Part 1 of the standard.

¹⁾ Ovality permissible within the dimensions for inlet and outlet diameters.²⁾ Ovality permissible within the variation allowed for the dimension.

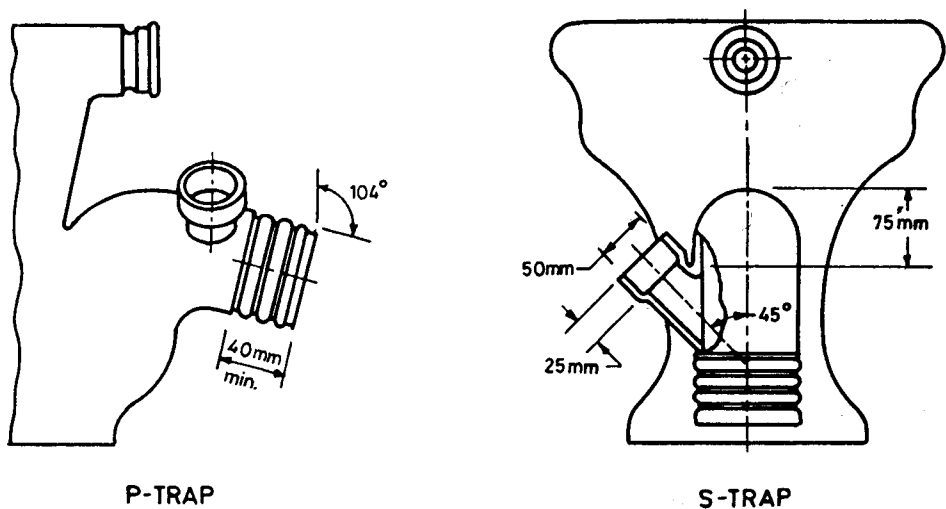


3A FUNCTIONAL DIMENSIONS

3B CONNECTING DIMENSIONS

All dimensions in millimetres.

FIG. 3 PATTERN 4 WATER CLOSET WITH CONCEALED S-TRAP



P-TRAP

S-TRAP

FIG. 4 ANTI-SIPHONAGE VENT HOLE DETAIL

8.1 Toilet Paper Test

The water closet shall be filled with water to its normal water seal level and charged with six pieces of usual toilet paper or polythene sheet of 0.05 mm thickness approximately 150 mm × 115 mm in size and loosely crumpled. It shall then be flushed. This test shall be repeated four times and the pan shall discharge the full charge of the paper at last three out of four times.

8.2 Smudge Test

The whole of the interior surface of water closet to 40 mm below the flushing rim shall be smudged with quartz powder of contrasting colour passing through 1.18 mm IS sieve and shall then be flushed observing carefully the surface of the water closet during the flushing. Immediately after the flushing, there shall be no smudge left on the bowl.

8.3 Holding Capacity Test

The water closet when sealed at the outlet and vent (if fitted) with water-tight seal shall be capable of holding not less than 10 l of water between the normal water level and the highest possible water level of the water closet as installed.

8.4 Ball Test

8.4.1 Single Ball Test

The ball shall be made of non-absorbent material. The relative density of the ball shall be between 1.075 and 1.080. The diameter of the ball shall be 43 ± 0.5 mm. Place the ball into the water closet to be tested and then flush the water closet. The ball shall be discharged in the normal manner.

8.4.2 Fifty Ball Test

Fifty balls of non-absorbent material, having a mass each of 3.7 ± 0.1 g, and a diameter of 20 ± 0.1 mm shall be dropped into the water closet bowl and flushed. Repeat the test five times. A minimum of 85 percent of all balls should be flushed out in the five tests.

8.5 Load Bearing Test

The WC shall be fixed in a stable arrangement on the floor with proper screw. A load of 400^{+5}_{-0} kg or a force of $4^{+0}_{-0} .05$ kN shall be applied for period of one hour by placing it on a wooden beam with a cross section of 100 mm × 100 mm positioned across the centre of the opening of the top surface of the WC.

There shall be no damage or defect which shall occur to the WC.

8.6 Saw Dust Test

8.6.1 Specification of the Saw Dust

20 g of dry saw dust test sifted through 2 mm sieve.

8.6.2 Procedure

Set up the WC, cistern or flush valve and flush pipe (if required) as specified by the manufacturer. Charge the WC with water to its designed water seal level. Fully wet the entire internal surface of the WC below the rim. Sprinkle 20 g of fine dry saw dust of above specification on the inside of the WC between the normal water level and the flushing rim as completely and evenly as possible. Then flush the WC.

The sprinkle saw dust should be cleaned below 40 mm of rim of WC.

8.7 Splash Test

8.7.1 Procedure

Set up the WC, cistern or flush valve and flush pipe (if required) as specified by the manufacturer. Charge the WC with coloured water to its design water seal level. Ensure that the floor area is cleaned and dry where the splash test to be carried out. Activate the flush valve or cistern to the discharge the WC. Observe and record whether flushing water splashed over rim onto the floor. Repeat the test 5 times. Record whether the flushing water splash over the rim onto the floor. Isolated droplets up to 10 Nos., shall not be the cause for rejection.

9 SAMPLING PROCESS, INSPECTION AND LOT INSPECTION

The recommended method of sampling, process inspection and lot inspection shall be as given in IS 9140.

10 MARKING

10.1 Each piece of water closet shall be clearly and indelibly marked at a suitable place with the following:

- a) Name or trade-mark of the manufacturer, and
- b) Batch/lot number.

10.2 BIS Certification Marking

The product may also be marked with Standard Mark.

10.2.1 The use of Standard Mark is governed by the provisions of the *Bureau of Indian Standard Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

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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 latest issue of 'BIS Catalogue' and 'Standards: Monthly Additions'.

This Indian Standard has been developed from Doc: No. CED 3 (6099).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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