

इंटरनेट

मानक

### Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 2556-8 (2004): Vitreous Sanitary Appliances (Vitreous China) - , Part 8: Specific Requirements of Pedestal Close Coupled Washdown and Syphonic Water Closets [CED 3: Sanitary Appliances and Water Fittings]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



BLANK PAGE



भारतीय मानक  
काँचाभ स्वच्छता साधित्र  
(काँचाभ चीनी मिट्टी) — विशिष्टि

भाग 8 पिडस्टल क्लोज युग्मन वाशडाउन और साइफोनिक जल मूत्रालयों  
आधानों की विशिष्टि अपेक्षाएँ  
( पाँचवां पुनरीक्षण )

*Indian Standard*

VITREOUS SANITARY APPLIANCES  
(VITREOUS CHINA) — SPECIFICATION

PART 8 SPECIFIC REQUIREMENTS OF PEDESTAL CLOSE COUPLED  
WASHDOWN AND SYPHONIC WATER CLOSETS

*( Fifth Revision )*

ICS 91.140.70

© BIS 2004

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

## FOREWORD

This Indian Standard (Part 8) (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 on 1963. The first, second, third and fourth revisions were issued in 1967, 1973, 1981 and 1995 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 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 8 SPECIFIC REQUIREMENTS OF PEDESTAL CLOSE COUPLED WASHDOWN AND SYPHONIC WATER CLOSETS

(*Fifth Revision*)

#### 1 SCOPE

This standard (Part 8) lays down the requirements for patterns, construction, dimensions and tolerances, finish, inspection and marking of pedestal water closets with close-coupled cisterns, both syphonic and washdown type including water saving types made of vitreous china.

#### 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>fifth revision</i> )
2556	Vitreous sanitary appliances (vitreous china) — Specification
(Part 1) : 1994	General requirements ( <i>third revision</i> )
(Part 7) : 1995	Specification for sanitary appliances ( <i>third revision</i> )
7231 : 1994	Specification for plastic flushing cistern for water closets and urinals ( <i>second revision</i> )
9140 : 1996	Method 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, performance and methods of tests covered in IS 2556 (Part 1) shall be complied with.

#### 4 PATTERNS

4.1 The pedestal closet with close-coupled cisterns shall

be one of the following patterns:

- a) Pattern 1 — Double trap syphonic pattern with 'S' trap or 'P' trap (*see* Fig. 1A and Fig. 1B)
- b) Pattern 2 — Single trap syphonic pattern with 'S' trap or 'P' trap (*see* Fig. 1A and Fig. 1B)
- c) Pattern 3 — Washdown pattern with 'P' trap or 'S' trap (*see* Fig. 2A and Fig. 2B) or concealed 'S' trap (*see* Fig. 3A and Fig. 3B)
- d) Pattern 4 — Washdown pattern with horizontal outlet (*see* Fig. 4A and Fig. 4B)

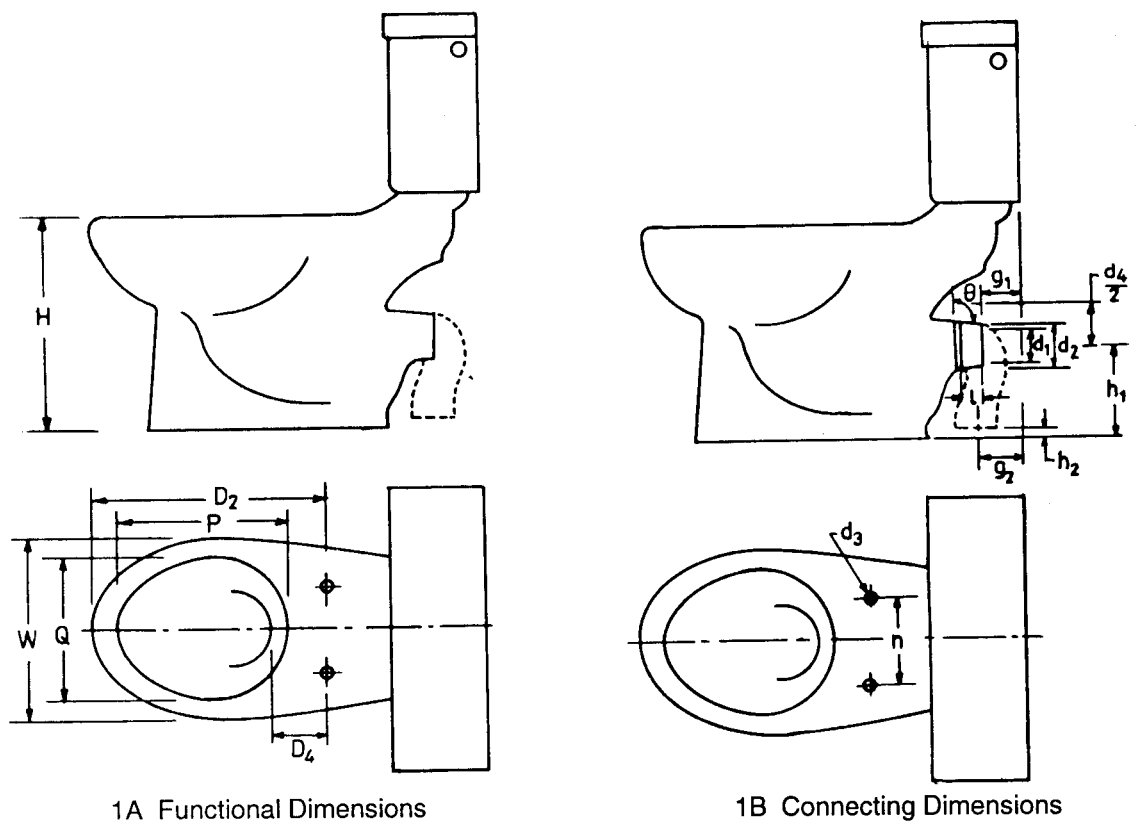
4.1.1 The closets may also be made in other patterns where so agreed to between the manufacturer and the purchaser. However, except for functional dimensions, all other requirements as laid down in this standard shall be complied with.

4.2 The outline of the appliances represented by the figures is given for a better comprehension of the designs. The water surface area and trap ways for syphonic type closets (*see* Fig. 1A) are not shown on the figure and it is left to the discretion of the manufacturer to design the water surface area and trap ways suitably so that the flushing requirements and the minimum 50 mm depth of water seal be maintained.

4.3 The closet for water saving system shall be of wash-down pattern with 'P' trap or 'S' trap or concealed 'S' trap as per Fig. 2 and Fig. 3. The water surface area shall not be less than 100 mm × 90 mm and trap ways shall be suitably designed to meet the flushing requirements and the minimum specified depth of water seal.

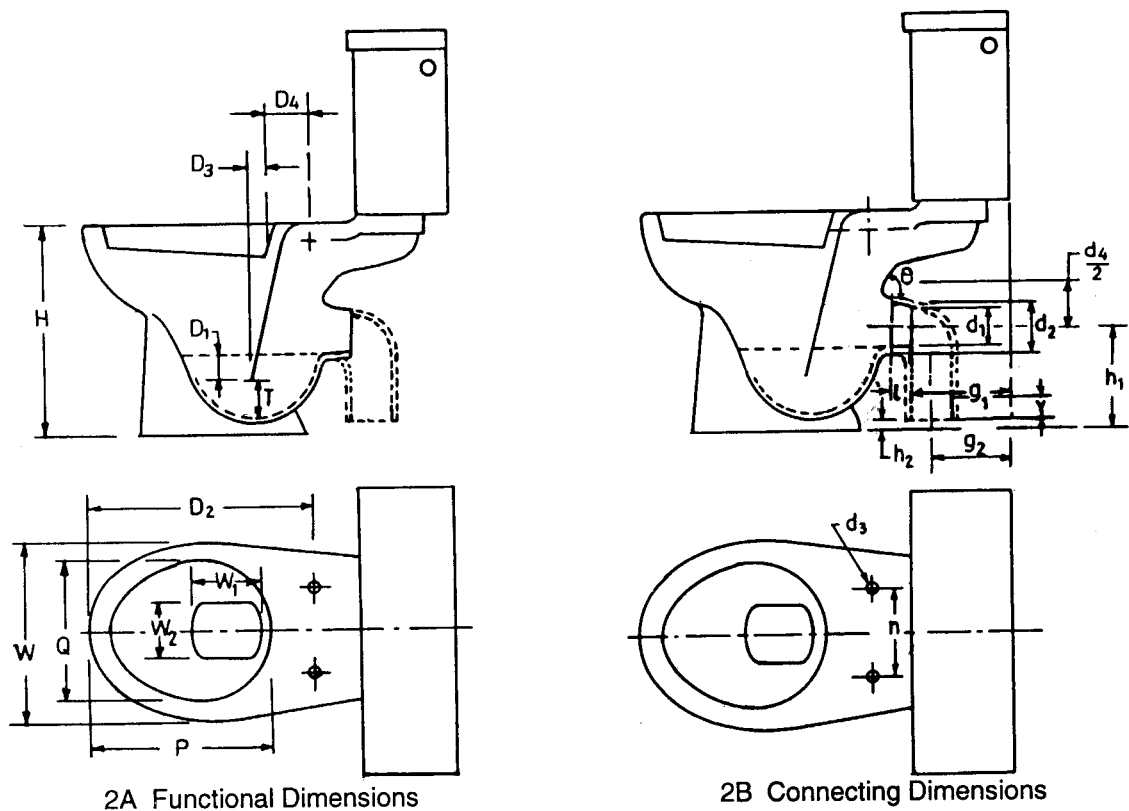
#### 5 CONSTRUCTION

5.1 Water closets, shall be of one piece construction. Each water closet shall be provided with not less than that two floor fixing holes having a minimum diameter of 6.5 mm. Alternatively, suitable provisions for fixing to the floor shall be made. Each water closet shall have an integral flushing rim of suitable type. The flushing rim and the inlet shall be of self-draining type and weep-



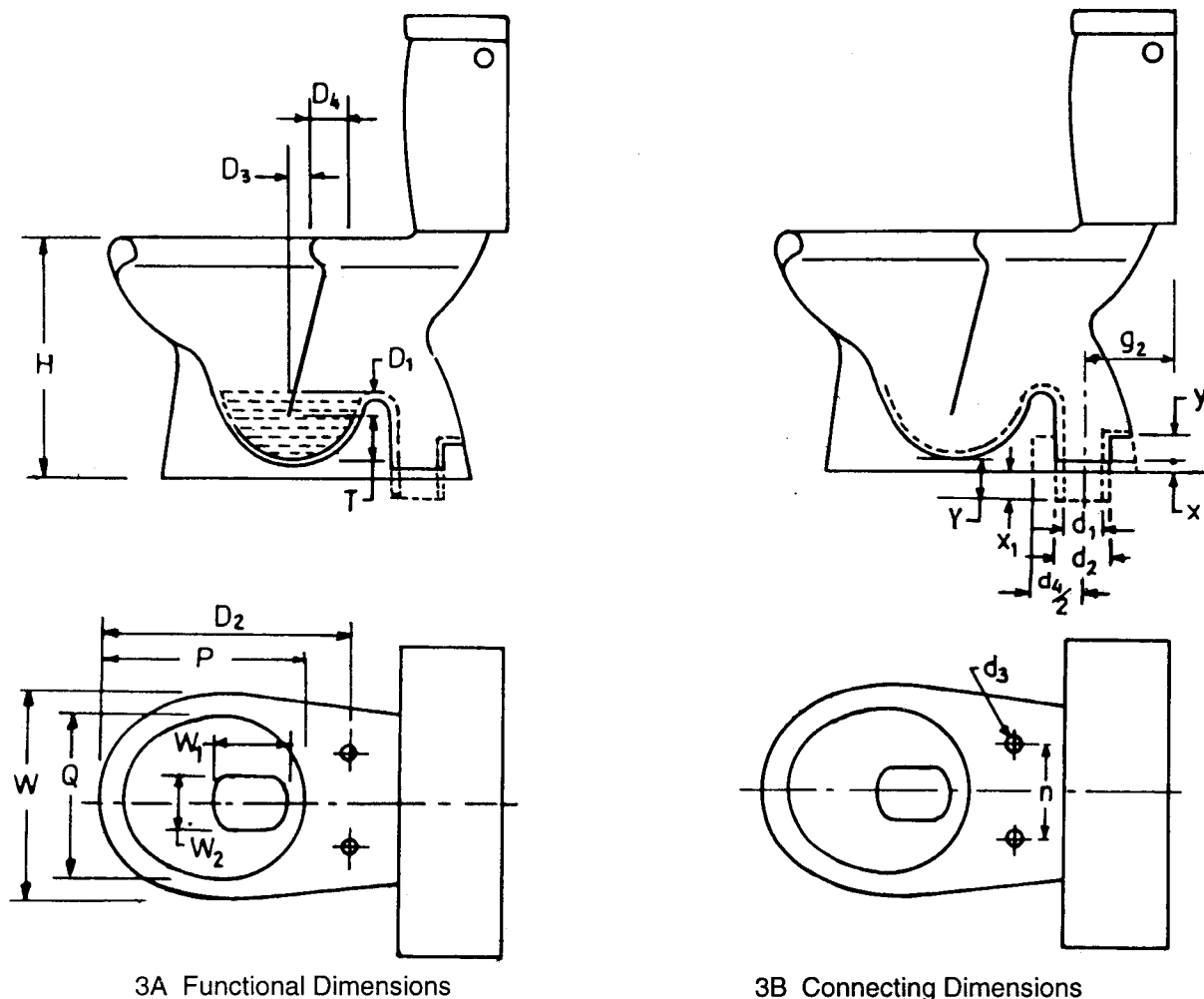
All dimensions in millimetres.

FIG. 1 SYPHONIC WATER CLOSET — SINGLE OR DOUBLE TRAP PATTERN



All dimensions in millimetres.

FIG. 2 WASHDOWN WATER CLOSET FOR CLOSE COUPLED SUITE, P OR S-TRAP



3A Functional Dimensions

3B Connecting Dimensions

All dimensions in millimetres.

FIG. 3 WASHDOWN WATER CLOSET FOR CLOSE COUPLED SUITE — CONCEALED S-TRAP

hole shall be provided at the flushing inlet of the water closet.

5.2 Each water closet shall have an integral trap with either 'S' or 'P' outlet conforming to Fig. 1 or Fig. 2 or concealed 'S' trap conforming to Fig. 3 or horizontal outlet conforming to Fig. 4 as specified.

5.3 Suitable provision shall be made for connecting a flushing cistern at the back of the closet and on top of the inlet using a suitable (resilient) gasket to make the system leak proof. To ensure the stability of the seat with its cover in the upright position, it is recommended that the cistern and its lid be entirely below plane  $aa'$  passing through the centre of the fixing holes of the seat and making an angle of not less than  $8^\circ$  with the vertical axes of the holes (see Fig. 5).

5.4 Special connectors are required to connect the horizontal outlet of Pattern 4 water closet, to the drainage system. These shall be supplied by the manufacturer of water closet. The straight part of the outlet for Pattern 4 water closet (see Fig. 4B) shall be without grooves.

## 6 DIMENSIONS AND TOLERANCES

6.1 The functional dimensions (dimensions other than connecting dimension) and connecting dimensions (critical for plumbing requirements), shall be as given in Table 1 and Table 2 respectively.

### 6.2 Tolerances

Where tolerances are not given for specific dimensions, these shall be as laid down in IS 2556 (Part 1).

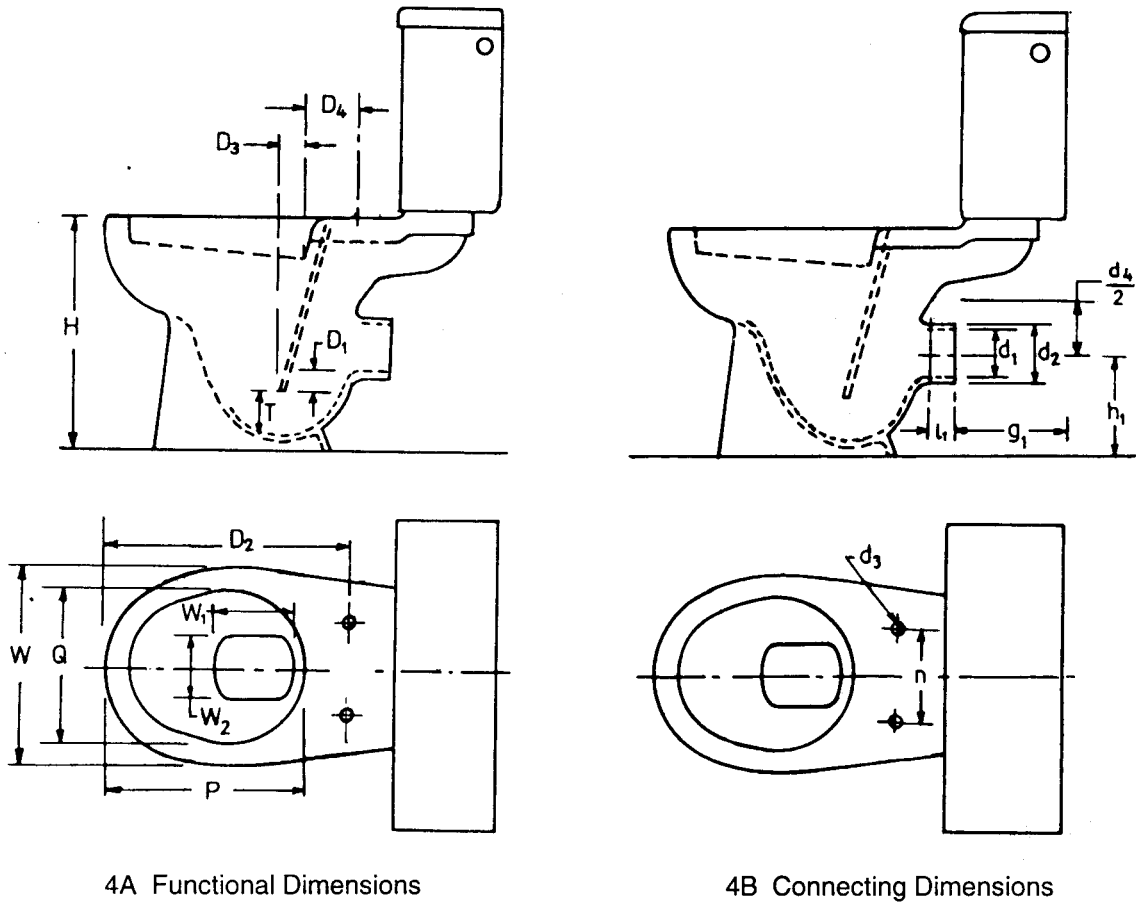
## 7 FINISH

Inside surface of water closet and trap shall be glazed uniform and smooth in order to ensure an efficient flush. In case of Pattern 4 the outlet shall not have any groove serration and outside of the outlet shall be glazed.

## 8 FLUSHING CISTERNS FOR WATER CLOSETS

The flushing cistern shall be of low level coupled type and shall conform to the requirements specified in IS 774 or IS 7231 except that it will be permissible to have the inlet and the overflow from the bottom of the





All dimensions in millimetres.

FIG. 4 HORIZONTAL OUTLET WC FOR CLOSE COUPLED SUITE

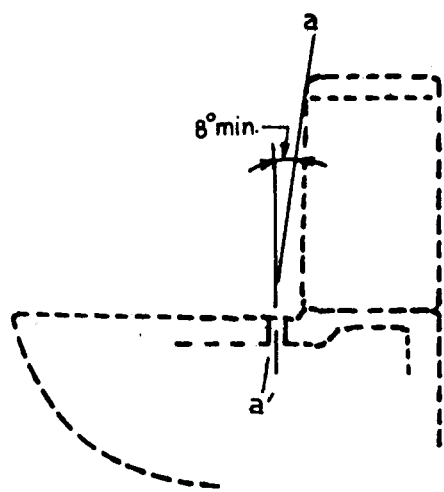


FIG. 5 SEAT FIXING ANGLE

Table 1 Functional Dimensions

(Clause 6.1)

All dimensions in millimetres.

Sl No.	Description	Ref in Figures	Syphonic <i>P</i> or <i>S</i> Outlet (Fig. 1A)	Washdown <i>P</i> or <i>S</i> Outlet (Fig. 2A and Fig. 3A)	Washdown Horizontal Outlet (Fig. 4A)
(1)	(2)	(3)	(4)	(5)	(6)
i)	Pattern No.	—	1 and 2	3	4
ii)	Height	<i>H</i>	390 ± 10	390 ± 10	390 ± 10
iii)	Width	<i>W</i>	360 ± 10	360 ± 10	360 ± 10
iv)	Depth of water seal	<i>D</i> <sub>1</sub>	50 <i>Min</i>	50 <i>Min</i>	50 <i>Min</i>
v)	Water surface dimension;				
	a) Back to front	<i>W</i> <sub>1</sub>	—	150 <i>Min</i>	150 <i>Min</i>
	b) Side to side	<i>W</i> <sub>2</sub>	—	110 <i>Min</i>	110 <i>Min</i>
vi)	Distance from centre line of seal bolt holes to front of WC	<i>D</i> <sub>2</sub>	415 to 445	415 to 445	415 to 445
vii)	Length of opening	<i>P</i>	290 <i>Min</i>	290 <i>Min</i>	290 <i>Min</i>
viii)	Width of opening	<i>Q</i>	240 <i>Min</i>	240 <i>Min</i>	240 <i>Min</i>
ix)	Distance between a vertical line from tip of back plate to inside face of flush rim at back	<i>D</i> <sub>3</sub>	—	70 <i>Max</i>	70 <i>Max</i>
x)	Distance from centre of seat bolt hole to inside face to flush ram at back	<i>D</i> <sub>4</sub>	80 <i>Max</i>	80 <i>Max</i>	80 <i>Max</i>
xi)	Trap inlet depth	<i>T</i>	—	75 <i>Min</i>	75 <i>Min</i>

cistern, where required and no separate flush pipe is necessary. Discharge rate test shall not be applicable for all patterns covered in this standard.

## 9 FLUSHING TEST

The water closet shall satisfy the requirements of tests give in 9.1, 9.2, 9.3, 9.4, 9.5 and 9.6 when fixed to flushing cistern in the normal working position. These tests shall be conducted by connecting the water closet to a low-level coupled cistern conforming to IS 774 or IS 7231. These tests shall be carried out by using the flushing cistern of the capacity for which the appliance is to be used.

### 9.1 Toilet Paper Test

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

### 9.2 Smudge Test

The whole of the interior surface of the 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, carefully observing the surface or the closet during the flushing. Immediately after the flushing, there shall be no smudge left on the bowl.

### 9.3 Holding Capacity Test

The closet when sealed at the bottom of the trap in line with the back plate, 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 closet as installed.

### 9.4 Ball Test

#### 9.4.1 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 closet to be tested and then flush the closet. The ball shall be discharged in the normal manner.

#### 9.4.2 Fifty Ball Test

Fifty balls of non-absorbent material, having a mass

Table 2 Connecting Dimensions

(Clause 6.1)

All dimensions in millimetres.

Sl No.	Description	Ref in Figures	Syphonic, <i>P</i> or <i>S</i> Outlet	Washdown <i>P</i> or <i>S</i> Outlet (Fig. 2B)	Washdown Concealed <i>S</i> -trap (Fig. 4B)	Washdown, Horizontal Outlet (Fig. 4B)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
i)	Internal diameter of outlet <sup>1)</sup>	$d_1$	80 Min	80 Min	80 Min	80 Min
ii)	External diameter of outlet <sup>1)</sup>	$d_2$	$102 \pm 5$	$102 \pm 5$	$102 \pm 5$	$102 \pm 5$
iii)	Height of centre line of outlet from floor level for <i>P</i> -trap only	$h_1$	$180 \pm 10$	$180 \pm 10$	$180 \pm 10$	$180 \pm 10$
iv)	Distance from end of trap to floor for <i>S</i> -trap only	$h_2$	$20 \pm 5$	$20 \pm 5$	—	—
v)	Length of grooved part of outlet	$l$	40 Min	40 Min	—	—
vi)	Distance between centre of seat bolt holes	$n$	160 to 175	160 to 175	160 to 175	160 to 175
vii)	Diameter of seat bolt holes	$d_3$	$15 \pm 2$	$15 \pm 2$	$15 \pm 2$	$15 \pm 2$
viii)	Distance between back of cistern and outside of the outlet for <i>P</i> -trap or centre line of outlet of <i>S</i> -trap	$g_1$	70 Min	70 Min	—	70 Min
		$g_2$	85 Min	85 Min	85 Min	—
ix)	Radius of free space (to be measured from the centre of the outlet, distance being 40 mm, Min from the end of the outlet)	$\frac{d_4}{2}$	75	75	75	75
x)	Angle of outlet	$\theta$	104°	104°	—	90°
xi)	Length of straight part of outlet glazed and without groove	$l_1$	—	—	—	40 Min
xii)	Distance between end of outlet and floor	$X$	—	—	10 Min	—
xiii)	Length of extended outlet into the floor	$X_1$	—	—	$32 \pm 5$	—
xiv)	Length of outlet with groove	$Y$	—	40 Min	40 Min	—

<sup>1)</sup> Ovality permissible within the dimensions allowed for the internal and external diameters.

each of  $3.7 \pm 0.1$  g, and a diameter of  $20 \pm 0.1$  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.

## 9.5 Saw Dust Test

### 9.5.1 Specification of the Saw Dust

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

### 9.5.2 Procedure

Set up the WC, cistern of flush valve and flush pipe (if required) as specified by the manufacturer. Charge the WC with coloured 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 sprinkled saw dust should be cleaned below 40 mm of rim of WC.

## 9.6 Splash Test

### 9.6.1 Procedure

Set up the WC, cistern of 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 tests to be carried out. Activate the flush valve

or cistern to discharge the WC. Observe and record whether flushing water splashed over rim onto the floor. Isolated droplets up to 10 Nos. shall not be the cause for rejection.

#### 10 LOAD BEARING TEST

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  $4^{+0.5}_{-0}$  kN shall be applied for a 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 that shall occur to the WC.

#### 11 SAMPLING, PROCESS INSPECTION AND LOT INSPECTION

The recommended method of sampling, process

inspection and lot inspection shall be as given in IS 9140.

#### 12 MARKING

12.1 Each 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.

#### 12.2 BIS Certification Marking

12.2.1 The product may also be marked with the Standard Mark.

12.2.2 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. 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.

## Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 1986 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

### Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in the course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Director (Publication), BIS.

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

This Indian Standard has been developed from Doc: No. CED 3 (7002).

#### Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

#### BUREAU OF INDIAN STANDARDS

##### Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002

Telephones: 2323 0131, 2323 3375, 2323 9402

website : [www.bis.org.in](http://www.bis.org.in)

##### Regional Offices:

	Telephones
Central : Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110002	{ 2323 7617 2323 3841
Eastern : 1/14 C.I.T. Scheme VII M, V.I.P. Road, Kankurgachi KOLKATA 700054	{ 2337 8499, 2337 8561 2337 8626, 2337 9120
Northern : SCO 335-336, Sector 34-A, CHANDIGARH 160022	{ 260 3843 260 9285
Southern : C.I.T. Campus, IV Cross Road, CHENNAI 600113	{ 2254 1216, 2254 1442 2254 2519, 2254 2315
Western : Manakalaya, E9 MIDC, Marol, Andheri (East) MUMBAI 400093	{ 2832 9295, 2832 7858 2832 7891, 2832 7892

**Branches** : AHMEDABAD. BANGALORE. BHOPAL. BHUBANESHWAR. COIMBATORE. FARIDABAD. GHAZIABAD. GUWAHATI. HYDERABAD. JAIPUR. KANPUR. LUCKNOW. NAGPUR. NALAGARH. PATNA. PUNE. RAJKOT. THIRUVANANTHAPURAM. VISAKHAPATNAM.