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Mazdoor Kisan Shakti Sangathan

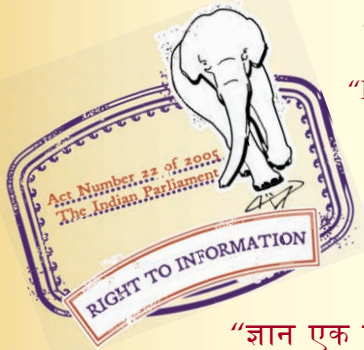
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IS 2556-16 (2002): Vitreous Sanitary Appliances (Vitreous China) - , Part 16: Specific Requirements of Wash Down Wall Mounted Water Closets [CED 3: Sanitary Appliances and Water Fittings]



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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) — विशिष्ट

भाग 16 दीवार पर लगने वाले शौचकुंड के लिए विशिष्ट अपेक्षाएँ

Indian Standard

**VITREOUS SANITARY APPLIANCES
(VITREOUS CHINA) — SPECIFICATION**

**PART 16 SPECIFIC REQUIREMENTS OF WASH DOWN WALL
MOUNTED WATER CLOSETS**

ICS 91.140.70

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

FOREWORD

This standard (Part 16) 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.

Wall mounted water closets are manufactured similar to the conventional water closets. There is no much difference in the manufacturing process. Wall mounted water closets give better aesthetic and hygienic effects in the toilets.

This standard is based on indigenous manufacturers data, prevalent field practices and also based on EN 38 : 1998 Wall hung water closet pans with independent water supply – Connecting dimensions.

The composition of the Committee responsible for the formulation of this standard is given in Annex A.

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 16 SPECIFIC REQUIREMENTS OF WASH DOWN WALL MOUNTED WATER CLOSETS

1 SCOPE

This standard (Part 16) lays down the requirements for patterns construction, dimensions and tolerances, finish and marking for vitreous wash down wall mounted water closet (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 agreements based on this standards are encouraged to investigate the possibility of applying the most recent editions of the standards given below:

<i>IS No.</i>	<i>Title</i>
2556 (Part 1): 1994	Specification for vitreous sanitary appliances (vitreous

IS No.

9140: 1996

Title

china): Part 1 General requirements (third revision)

Method for sampling of vitreous and fire clay sanitary appliances (second revision)

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 Wall mounted water closets shall be of one of the following patterns:

- a) Pattern 1 — WC with frame rag bolts fixing and concealed outlet (see Fig. 1).
- b) Pattern 2 — WC with fixing arrangement on top of bracket (see Fig. 2).

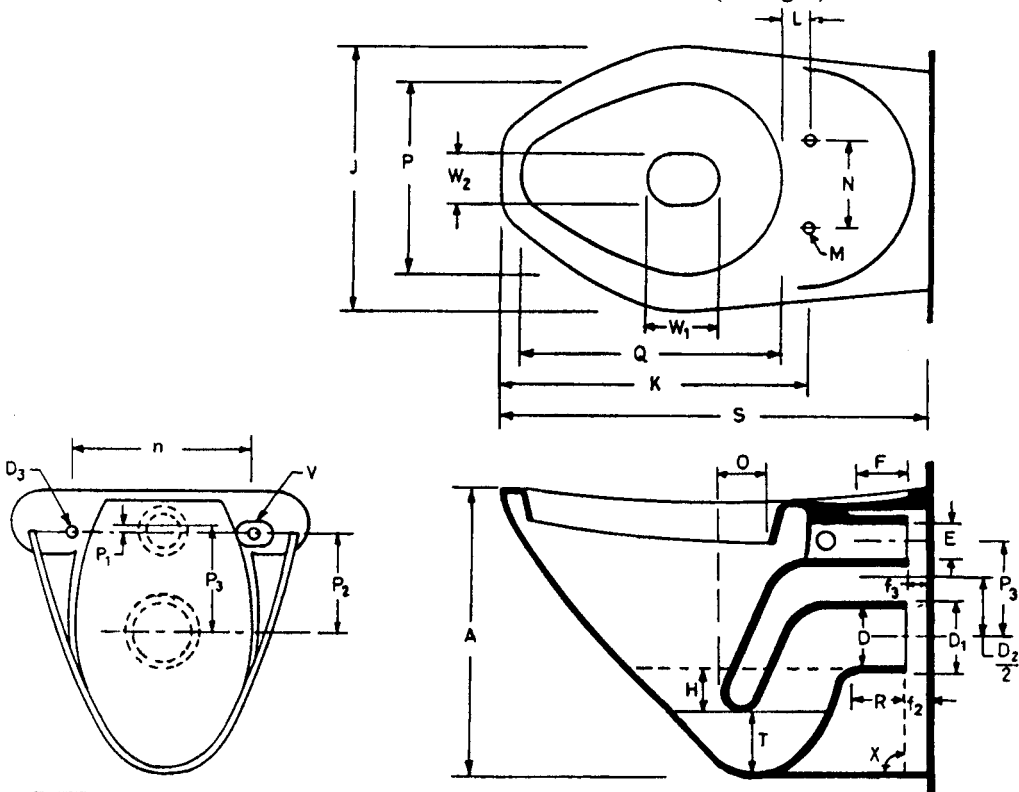


FIG. 1 TYPICAL ILLUSTRATION OF WALL MOUNTED WATER CLOSET WITH CONCEALED OUTLET (PATTERN 1)

4.2 Wall mounted water closets may also be made in other patterns and/or sizes 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 two patterns of wall mounted water closets shall be as given in Table 1 and Table 2 respectively read with the respective figures.

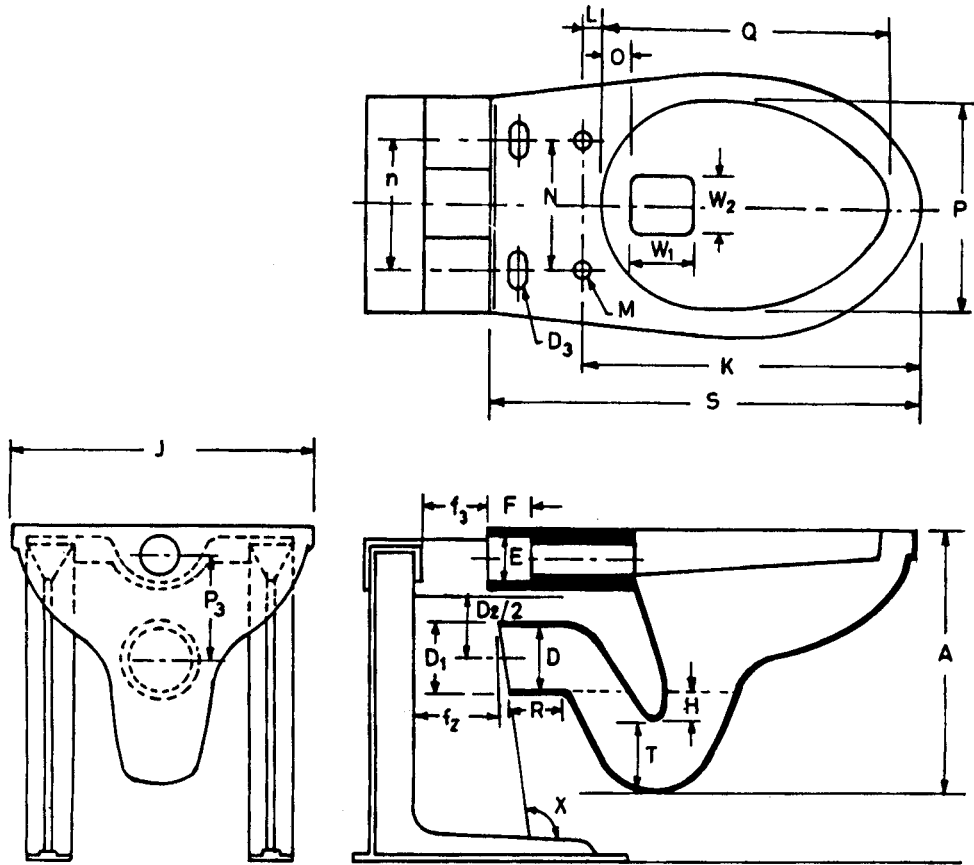


FIG. 2 TYPICAL ILLUSTRATION OF WATER CLOSET WITH FIXING ARRANGEMENT ON TOP OF BRACKET (PATTERN 2)

Table 1 Functional Dimensions
(Clause 5)

All dimensions in millimetres.

S1 No.	Description	Reference to Fig. 1 and 2	Pattern 1	Pattern 2
(1)	(2)	(3)	(4)	(5)
i)	Height	A	350	350
ii)	Depth of water seal, <i>Min</i>	H	50	50
iii)	Width of water closet	J	360 ± 10	360 ± 10
iv)	Distance from centre of seat bolt hole to front of water closet	K	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
vi)	Distance between a vertical line from tip of back plate to rim at back, <i>Max</i>	O	70	70
vii)	Width of opening, <i>Min</i>	P	240	240
viii)	Length of opening, <i>Min</i>	Q	290	290
ix)	Over all length	S	500 to 575	500 to 575
x)	Trap inlet depth, <i>Min</i>	T	75	75
xi)	Water surface:			
	Back to front	W ₁	150 min	150 min
	Side to side	W ₂	110 min	110 min

Table 2 Connecting Dimensions

(Clauses 5 and 6.1)

All dimensions in millimetres.

Sl No.	Description	Reference to Fig. 1 and 2	Pattern 1	Pattern 2
(1)	(2)	(3)	(4)	(5)
i)	Internal dia of inlet	E	$55 + 3$ $- 1$	50 ± 3
ii)	Depth of socket, <i>Min</i>	F	25	25
iii)	Internal dia of outlet, <i>Min</i>	D	80	80
iv)	External dia of outlet	D_1	102 ± 5	102 ± 5
v)	Free space around the outlet from the centre, up to a distance of 40 mm, <i>Min</i>	$D_2/2$	75	75
vi)	Distance from supporting plane to face of supply opening, <i>Min</i>	f_3	15	15
vii)	Horizontal distance from supporting plane to face of outlet, <i>Min</i>	f_2	15	15
viii)	External cylindrical part of the outlet with or without grooves, <i>Min</i>	R	40	40
ix)	Distance between centre line of fixing hole	n	230 ± 5	180 ± 5
x)	Distance between centre of inlet to centre of fixing holes	P_1	35 ± 5	N A
xi)	Distance between centre of outlet to centre of fixing hole	P_2	100 ± 10	N A
xii)	Distance between centre of inlet to centre of outlet	P_3	135 ± 5	135 ± 5
xiii)	Size of fixing hole	D_3	$(30 \times 25) \pm 3$	$(20 \times 12) \pm 2$
xiv)	Thickness of appliances around fixing hole, <i>Max</i>	V	75	N A
xv)	Dia of seat bolt hole	M	15 ± 2	15 ± 2
xvi)	Angle of outlet	X	$90^\circ \pm 3^\circ$	$104^\circ \pm 3^\circ$
xvii)	Distance between centre of seat bolt holes	N	155 ± 10	165^{+10}_{-5}

NOTES

- Circular fixing hole is also permitted. Fixing hole diameter shall be 20 ± 2 mm for Pattern 1 and 15 ± 2 mm for Pattern 2.
- Ovality is permissible within the dimensions for inlet and outlet diameters and within the variation allowed for the dimension.
- Tolerance where not specified shall conform to IS 2556 (Part 1).
- For Pattern 1, recommended diameter of fixing bolts is 14 ± 2 mm and same should be of a suitable material which passes the load test as specified in 9. For Pattern 2, recommended diameter of fixing bolts is 10 ± 1 mm and same should be of a material which passes the load test as specified in 9.
- Wall mounted WC shall be installed with a minimum gap of 40 mm from the lowest portion of the WC to the finished floor.

6 CONSTRUCTION

6.1 Wall mounted water closet shall be of one piece construction.

Each wall mounted water closet shall be provided with fixing arrangement and shall have an integral flushing rim of suitable type. It shall have an inlet for connecting the flushing pipe, of dimension conforming to E in Table 2. The flushing rim may be box or open rim type or a combination of both. 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 weep-hole shall be provided at the flushing inlet of the wall mounted water closet.

The WC shall be provided with no less than two fixing holes to enable the WC to be securely installed to the wall using metallic corrosion resistant bolts and nuts and an independent concealed support frame. The support frame (metal hanger or carrier), depending on the design, shall be securely attached to the building structural members so that no strain is transmitted to the WC connector or any other part of the plumbing system.

6.2 Each wall mounted water closet shall have an integral trap with P type outlet conforming to Fig. 1 and Fig. 2 as specified.

6.3 Special connectors are required to connect, the horizontal outlet of pattern 1 wall mounted water closet to the drainage system. These shall be supplied by the manufacturers of wall mounted water closets.

7 FINISH

Inside surface of water closet and trap shall be uniform and smooth in order to ensure an efficient flush. The outlet if without serration, shall be glazed and if same is with serration, may not be glazed.

8 FLUSHING TEST

The water closet shall satisfy the requirements of test prescribed in 8.1, 8.2, 8.3 and 8.4. These tests shall be conducted by connecting the water closet with concealed water storage arrangements with a capacity of 10 litres discharge.

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 polyethene sheet of 0.05 mm thickness approximately 150×115 mm in size and loosely crumpled. It shall then be flushed. The test shall be repeated four times and the WC shall discharge the full charge of the paper at least 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 with water tight seal shall be capable of holding not less than 10 litres of water between the normal water level and the highest possible water level of the water closet as installed.

8.4 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.

The ball is placed into the water closet to be tested and then water closet is flushed. The ball shall be discharged in the normal manner.

9 LOAD TEST

9.1 Wall mounted water closet, when tested as per the procedure given in 9.2, shall cause no damage or defect shall occur, to the closet and the fastening.

9.2 Wall mounted WC shall be fixed in a stable arrangement as shown in Fig. 3 and Fig. 4 with the fastening supplied and in accordance with the manufacturer's instructions on a smooth surface with a layer of mortar or other facing material used for pointing between the back of the WC and the smooth surface. A load of 400^{+5}_{-0} kg or a force of 4^{+5}_{-0} 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. The water closet shall be examined thereafter.

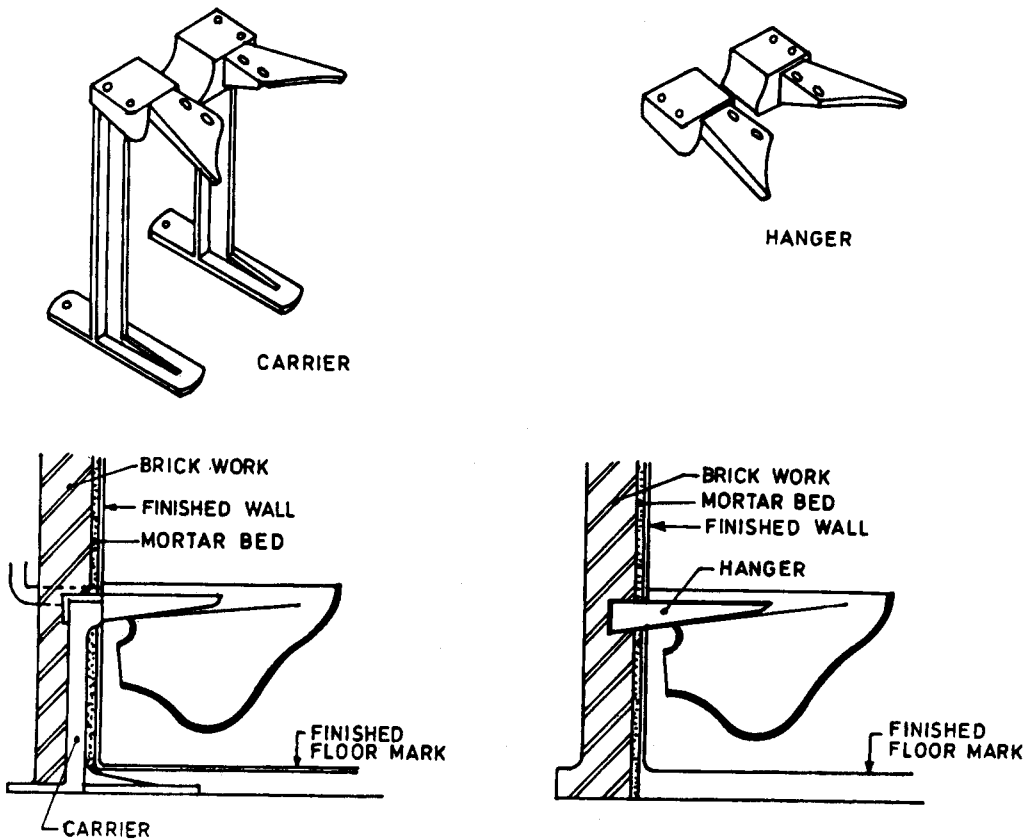


FIG. 3 SUPPORT FRAME CARRIER (PATTERN 2)

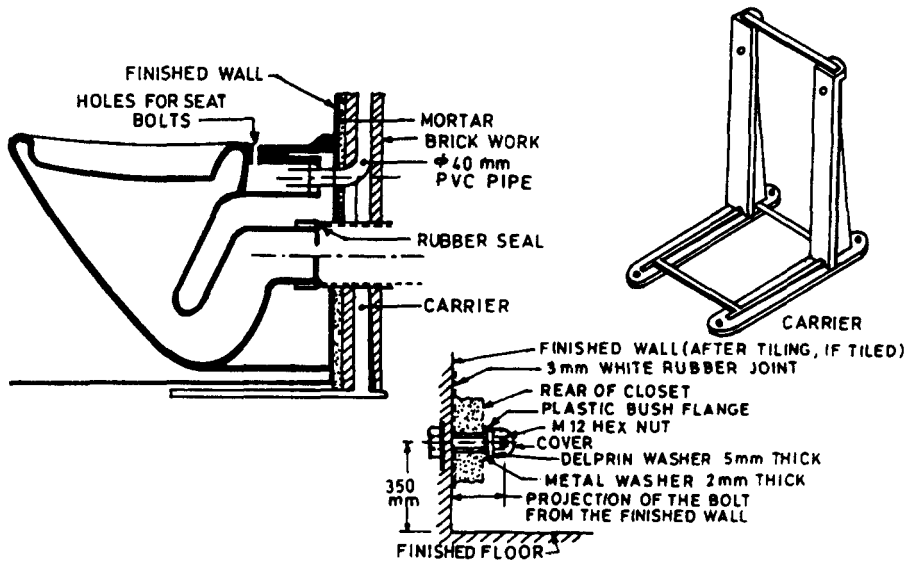


FIG. 4 SUPPORT FRAME CARRIER (PATTERN 1)

10 SAMPLING, PROCESS INSPECTION AND LOT INSPECTION

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

11 MARKING

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

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

11.2 BIS Certification Marking

Wall mounted water closets may also be marked with the Standard Mark.

11.2.1 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. 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.

ANNEX A

(Foreword)

COMMITTEE COMPOSITION

Sanitary Appliances and Water Fittings Sectional Committee, CED 3

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Delhi Jal Board, New Delhi	SHRI S. K. CHHABRA (<i>Chairman</i>)
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Central Glass and Ceramic Research Institute (CSIR), Kolkata	DR A. K. GUPTA
Central Institute of Plastic Engineering And Technology, Chennai	DR S. K. NAYAK DR S. C. SHIT (<i>Alternate</i>)
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Directorate General of Supplies and Disposals, New Delhi	SHRI M. GANGARAJU SHRI R. P. SINGH (<i>Alternate</i>)
Delhi Jal Board, New Delhi	SHRI L. N. KAPOOR
EID-Parry (India) Ltd, Ranipet	SHRI G. RABINDRANATH RAO SHRI S. SIVAKUMAR (<i>Alternate</i>)
Engineer-in-Chief's Branch, New Delhi	SHRI L. D. SHARMA SHRI S. K. KALIA (<i>Alternate</i>)
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Indian Valve Pvt Ltd, Nashik	SHRI K. K. BHATTACHARYYA SHRI S. SAHA (<i>Alternate</i>)
Indian Water Works Association, New Delhi	SHRI V. M. AGGARWAL
Institution of Public Health Engineers India, Kolkata	SHRI S. K. NEOGI SHRI A. K. SENGUPTA (<i>Alternate</i>)
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Leader Engineering Works, Jalandhar	SHRI HEMANT BERI SHRI H. K. ARORA (<i>Alternate</i>)
Maharashtra Water Supply and Sewerage Board, Mumbai	CHIEF ENGINEER (Rural) SUPERINTENDING ENGINEER (<i>Alternate</i>)
Metro Sanitation Pvt Ltd, New Delhi	SHRI J. P. S. JASS
National Environmental Engineering Research Institute, Kolkata	SHRI ARUN KANTI BISWAS
National Test House, Kolkata	SHRI D. K. KANUNGO SHRI R. KAPOOR (<i>Alternate</i>)

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	SHRI W. U. KHAN (<i>Alternate</i>)
Uttar Pradesh Jal Nigam, Lucknow	SUPERINTENDING Engineer [TAC (Q/C)]
	EXECUTIVE ENGINEER (TAC) (<i>Alternate</i>)
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BIS Directorate General	SHRI S. K. JAIN
	Director and Head (Civ Engg)
	[Representing Director General (<i>Ex-officio</i>)]
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SHRI D. K. AGRAWAL	
Joint Director (Civ Engg), BIS	

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Hindustan Sanitaryware and Industries Ltd, Bahadurgarh	SHRI R. K. SOMANY (<i>Convener</i>)
Building Materials and Technology Promotion Council, New Delhi	DEPUTY CHIEF (STANDARDIZATION)
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	SHRI P. S. GUPTA (<i>Alternate</i>)
Tamilnadu Water Supply and Drainage Board, Chennai	SUPERINTENDING ENGINEER (MM)
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