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Specification for

Underground stopvalves for water services

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The Sanitary Appliances Standards Committee, under whose supervision this British Standard was prepared, consists of representatives from the following Government departments and scientific and industrial organizations:

British Bath Manufacturers' Association*	Institution of Public Health Engineers
British Plastics Federation*	Metal Sink Manufacturers' Association
Council of British Ceramic Sanitaryware Manufacturers*	Ministry of Defence
Department of the Environment*	National Brassfoundry Association*
Environmental Health Officers' Association	National Federation of Builders' and Plumbers' Merchants*
Greater London Council*	National Water Council*
Institute of Plumbing*	Royal Institute of British Architects
Institution of Heating and Ventilating Engineers*	Royal Institute of Public Health and Hygiene
Institution of Municipal Engineers*	Royal Society of Health*
	Water Companies' Association*

The Government department and scientific and industrial organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this British Standard:

Association of Manufacturers of Domestic Electrical Appliances	Heating and Ventilating Contractors' Association
British Gas Corporation	Institute of British Foundrymen
British Non-ferrous Metals Technology Centre	Institution of Gas Engineers
British Valve Manufacturers' Association	Institution of Water Engineers and Scientists
Copper Ball Manufacturers' Association	National Association of Plumbing, Heating and Mechanical Services Contractors
Copper Development Association	Society of British Gas Industries
Copper Tube Fittings Manufacturers' Association	South London Consortium
Department of the Environment, Building Research Establishment	Thames Water Authority — Metropolitan Water Division
Department of Prices and Consumer Protection	Individual experts

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Foreword

This British Standard has been prepared under the authority of the Sanitary Appliances Standards Committee. The original idea for a British Standard for special stopvalves arose from a proposal by the then British Waterworks Association (now National Water Council) who had carried out an investigation among their members into the use and behaviour of valves based on BS 1010:1959 when used underground. Experience of the exacting conditions and lack of accessibility in situations where they were installed led to the recommendation for a stronger valve with special design features to match the operating conditions.

The dimensions given are those considered necessary to ensure the production of valves of nominal size $\frac{1}{2}$ to 2 suitable for underground water services.

It is recommended that the body of the valve and the metal components be based on gunmetals and bronzes for strength and that attention be given to resistance against dezincification.

There is provision for alternative methods of operation by means of either a crutch-type handle or a square top. Provision is made for minimum opening torque so as to prevent the possibility of the head screwing out of the body when the stopvalve is being opened or turned with a key.

BS 1010:1959 has been retained and retitled "Part 1: *Imperial units*".

Above-ground stopvalves are now included in the metric version BS 1010-2:1973.

In this standard, dimensions are expressed in metric terms except that pipe thread designations accord with BS 2779.

Requirements for methods of testing suitability of materials for use in contact with water for domestic purposes will form the subject of a separate standard to be prepared under the direction of the Environment and Pollution Standards Committee (EPC/-).

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 18, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Section 1. General

1 Scope

This British Standard applies to copper alloy screwdown stopvalves of nominal sizes from $\frac{1}{2}$ to 2 for installation on underground water service pipes. The nominal size is that corresponding to the pipe size of the thread at the end connection. It includes stopvalves with ends screwed internally or externally or arranged in accordance with clause 25, and fitted with a crutch or with a square head.

2 References

The titles of the publications referred to in this standard are listed on the inside back cover.

3 Definition

For the purpose of this British Standard the following definition applies, together with any which are relevant in BS 2591-1.

screwdown stopvalves

any valve in which a disc carrying a renewable non-metallic washer is lifted from and lowered onto the body seat by a spindle whose axis is perpendicular to the face of the body seat and having suitable means of connection for insertion in a pipeline. The use of the word valve or stopvalve herein shall be taken to mean an underground stopvalve

4 Illustrations

Illustrations of typical stopvalves showing the component parts are given in Figure 1 to Figure 6. These illustrations are not intended to indicate design.

5 Nominal size

Stopvalves shall be designated by their nominal sizes; their dimensions shall be as specified in Table 3 to Table 12.

6 Marking

Stopvalves shall be legibly and permanently marked with the following information.

On the headwork and body:

- a) manufacturer's name or mark;
- b) the number of this British Standard, i.e. BS 5433.

On the body:

- c) nominal size;

d) direction of flow.

Section 2. Dimensions, testing and materials

7 Dimensions

Dimensions for screw threads shall comply with those specified in Table 6 to Table 11. Other dimensions for valve bodies and components shall be as specified in Table 3, Table 4 and Table 5. Dimensions for parallel spigot and cone end tail pipes shall be as specified in Table 12.

8 Testing

Every stopvalve shall be tested in the assembled condition both in the fully closed position (seat test) and in the fully open position (body test).

In both cases the test shall consist of either a hydraulic test at not less than 21 bar¹⁾ or a pneumatic test at not less than 5 bar while the stopvalve is completely immersed in water. Alternatively, the body test may be carried out with the valve reversed and in the closed position. The valve being tested shall neither leak nor sweat during tests.

9 Materials

9.1 Composition. The preferred metallic materials for the component parts of underground stopvalves are those listed in Table 1.

9.2 Alternative materials. Other metallic materials may be used provided that they are not less suitable than those listed in Table 1, not more susceptible to corrosion, completely immune to dezincification and are not of lower mechanical strength.

9.3 Materials in contact with supply water. The materials which are in contact with supply water, including "O"-rings, gland packings, seat washers and lubricants used in the construction, shall not constitute a toxic hazard and shall not foster microbiological growth or give rise to taste, odour, cloudiness or discoloration of the water. Attention is drawn to National Water Council requirements in this respect.

¹⁾ 1 bar = 10^5 N/m² = 100 kPa.

Table 1 — Materials

1	2		3	4	5	6	7	8	9
2	Basic material form		Sand castings			Non-forging stock		Forging stock	
3	Stopvalve component parts		Material specification						
			BS 1452 grade 12 Cast iron	BS 1400 LG1 Gunmetal	BS 1400 LG2 Gunmetal	BS 1400 LG4 Gunmetal	BS 1400 LG2 Continuous cast gunmetal	BS 2874 PB 102 Phosphor bronze	BS 2872 CA 104 Aluminium bronze
4	Body			X	X	X			
5	Head			X	X	X	X	X	X
6	Gland	nominal size ½ and ¾ only					X	X	X
7		nominal size 1 and over		X	X	X	X	X	X
8	Spindle	nominal size ½ and ¾ only				X	X	X	X
9		nominal size 1 and over			X	X	X	X	X
10	Crutch				X	X	X	X	X
11	Washer plate			X	X	X	X	X	X
12	Nut						X	X	X
13	Square head		X	X	X	X	X	X	X
14	Union nuts, compression nuts and tail pipes			X	X	X	X	X	X
15	Seating washer			Vulcanized synthetic rubber complying with the requirements of clause 6 of BS 3457:1973					
16	Head seal “O”-ring			Rubber complying with the requirements of BS 2494					
17	Gland packing			See clause 24					
18	Pinning wire for square head			BS 2874, CZ 121 or CZ 122					