

BRITISH STANDARD

Specification for underground fire hydrants and surface box frames and covers

ICS 13.220.10



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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 25 and a back cover.

Foreword

This British Standard was published by BSI and came into effect on 29 September 2006. It was prepared by Subcommittee FSH/17/1, *Hydrants, hydrant systems, couplings and indicator plates*, under the authority of Technical Committee FSH/17, *Fire brigade equipment*. A list of organizations represented on this committee can be obtained on request to its secretary.

Supersession

This British Standard supersedes BS 750:1984, which is withdrawn.

Information about this document

This British Standard has been revised as a result of the publication of BS EN 14339 and BS EN 1074-6 and includes specific national requirements that are not specified in BS EN 14339 and BS EN 1074-6.

Additionally, as a result of a number of safety events involving hydrants with outlets manufactured from nylon/plastics that were introduced in the 1984 version, such materials have been removed from this standard until such time as appropriate tests may be developed that reflect the in-service performance of these materials.

It has been assumed in the drafting of this British Standard that the execution of its provisions is entrusted to appropriately qualified and experienced people, for whose guidance it has been prepared.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is “shall”.

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

The start and finish of text introduced or altered by Amendment No. 1 is indicated in the text by tags **A1** **A1**. Minor editorial changes are not tagged.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

Section 1: General

1 Scope

This British Standard specifies the national operational and health and safety requirements for underground fire hydrants conforming to BS EN 14339 and BS EN 1074-6. It also includes specific national requirements not included in BS EN 14339 and BS EN 1074-6.

This British Standard is applicable to underground fire hydrants:

- a) to be installed in a water distribution system;
- b) in size DN 80;
- c) suitable for a maximum allowable operating pressure (PFA) of 1.6 MPa or 2.5 MPa (16 bar or 25 bar);
- d) with valves of the wedge-gate type or the screw-down type; and
- e) with one outlet.

It also specifies requirements for their surface box frames and covers.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 336:1989, *Specification for fire hose couplings and ancillary equipment*

BS 1610, *Methods for the load verification of testing machine*

BS 3416, *Specification for bitumen-based coatings for cold application, suitable for use in contact with potable water*

BS 4147, *Specification for bitumen-based hot-applied coating materials for protecting iron and steel, including suitable primers where required*

BS 4164, *Specification for coal-tar-based hot-applied coating materials for protecting iron and steel, including a suitable primer*

BS 5163-1, *Valves for waterworks purposes – Part 1: Predominantly key-operated cast iron gate valves – Code of practice*

BS 5163-2, *Valves for waterworks purposes – Part 2: Stem caps for use on isolating valves and associated water control apparatus – Specification*

BS 6001 (all parts), *Sampling procedures for inspection by attributes*

BS 6920-1, *Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water – Part 1: Specification*

BS EN 1074-1, *Valves for water supply – Fitness for purpose requirements and appropriate verification tests – Part 1: General requirements*

BS EN 1074-2, *Valves for water supply – Fitness for purpose requirements and appropriate verification tests – Part 2: Isolating valves*

BS EN 1074-6:2004, *Valves for water supply – Fitness for purpose requirements and appropriate verification tests – Part 6: Hydrants*

BS EN 1092-2, *Flanges and their joints – Circular flanges for pipes, valves, fittings and accessories, PN designated – Part 2: Cast iron flanges*

BS EN 1092-3, *Flanges and their joints – Circular flanges for pipes, valves, fittings and accessories, PN designated – Part 3: Copper alloy flanges*

BS EN 1561, *Founding – Grey cast irons*

BS EN 1563, *Founding – Spheroidal graphite cast iron*

BS EN 1982, *Copper and copper alloys – Ingots and castings*

BS EN 10088-1, *Stainless steels – Part 1: List of stainless steels*

BS EN 12163, *Copper and copper alloys – Rod for general purposes*

BS EN 12164, *Copper and copper alloys – Rod for free machining purposes*

BS EN 12165, *Copper and copper alloys – Wrought and unwrought forging stock*

BS EN 12167, *Copper and copper alloys – Profiles and rectangular bar for general purposes*

BS EN 12168, *Copper and copper alloys – Hollow rod for free machining purposes*

BS EN 14339:2005, *Underground fire hydrants*

WIS 04-52-01, *Specification for polymeric anti-corrosion (barrier) coatings* (as amended) (ISBN 0267-0305)¹⁾

WIS 04-52-02, *The use of polymeric anti-corrosion (barrier) coatings* (ISBN 0267-0305)¹⁾

WIS 04-52-03, *Specification for anti-corrosion coatings on threaded fasteners* (as amended)¹⁾

¹⁾ WRc plc, Swindon. <http://www.webookshop.com/>

Section 2: Fire hydrants

3 General requirements

3.1 As a minimum, hydrants conforming to this British Standard shall conform to BS EN 14339.

3.2 Hydrants shall have a design life of a minimum of 50 years. This shall be determined by reference to:

- a) the materials used in the construction and their properties;
- b) the engineering design of the hydrant;
- c) the normal situation of installation; and
- d) the conditions of use.

3.3 Where materials have time-dependent properties, these shall be selected with reference to the manufacturer's data on such properties to determine their suitability for the function and life span.

3.4 Where elements of the hydrant are designed to be serviceable, this shall not be regarded as reason to design for a shorter operating life.

3.5 Serviceable components shall include those having potential for accidental damage and wear from abnormal use.

3.6 The manufacturer shall ensure that parts that are considered to be subject to wear shall be available for the lifetime of the valve.

3.7 Hydrants shall be one of the following two types:

- a) a) type 1 wedge-gate (see Clause 4 and Figure 1);
- b) b) type 2 screw-down (see Clause 5 and Figure 2).

4 Wedge-gate (type 1)

4.1 Hydrants of the wedge-gate type shall conform to the dimensions shown in Figure 1.

4.2 The wedge-gate valve shall conform to the recommendations and requirements of BS EN 1074-1, BS EN 1074-2, BS 5163-1 and BS 5163-2 for PN 16 or PN 25 valves.

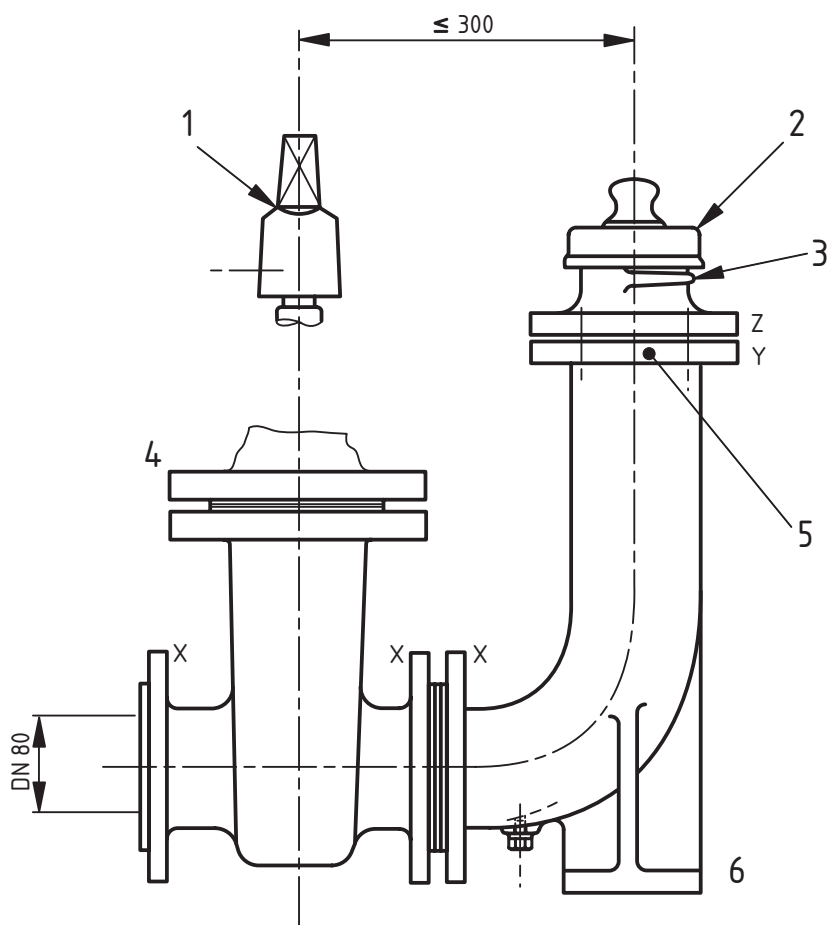
4.3 Materials for duck-foot bends shall conform to BS EN 1561 or BS EN 1563.

4.4 Y and Z flanges DN 50, PN 16 or PN 25 shall be compatible with the mating dimensions given in BS EN 1092-2 and BS EN 1092-3 as appropriate, and use the bolts, studs or set screws specified. They need not be circular and are not required to have raised faces.

NOTE Y or Z flanges may have a groove in the face to accommodate an "O" ring. The bolt holes may be slotted and the slots may extend to the periphery of the flange.

Figure 1 Example of wedge-gate (type 1) fire hydrant showing required dimensions

All dimensions are in millimetres



Key

- | | |
|-------------------------------------|--------------------|
| 1 Stem cap | 4 Wedge-gate valve |
| 2 Outlet cap | 5 65 nominal bore |
| 3 Outlet (for details see Figure 3) | 6 Duck-foot bend |
| X, Y, Z flange | |

5 Screw-down (type 2)

5.1 Classification

Screw-down hydrants of type 2 shall conform to one of the following patterns.

- a) Type 2a: The bonnets and/or outlets of this pattern shall be secured in such a manner that they cannot be removed when installed in a pipeline. With the exception of stem sealings, it shall be made clear in the manufacturer's literature that the hydrant cannot be maintained whilst in situ.
- b) Type 2b: Designed to facilitate maintenance of obturator, stem, outlet and their seals, in situ, whilst mounted in a chamber having a surface box frame and cover conforming to Section 3. They shall have:
 - i) Y and Z flanges DN 50, PN 16 or PN 25, compatible with the mating dimensions given in BS EN 1092-2 and BS EN 1092-3 as appropriate, and using bolts, studs or set screws specified. They need not be circular and are not required to have raised faces.

NOTE Y or Z flanges may have a groove in the face to accommodate an "O" ring. The bolt holes may be slotted and the slots may extend to the periphery of the flange.

- ii) A bolted connection at the body/bonnet joint with a minimum of three bolts.
- c) Type 2c: Designed to facilitate maintenance as type 2b. They shall have bolted connections between both the outlet and body and the bonnet and body. These connections shall each have a minimum of three bolts.
- d) Type 2d: Designed to facilitate maintenance as type 2b, but having means of connection of the outlet and/or bonnet to the hydrant body other than type 2c (see **6.3**, **6.4**, and **5.5**).

Type 2b, type 2c and type 2d hydrants shall be capable of being dismantled in situ using standard, readily available tools.

5.2 Dimensions

5.2.1 Hydrants of the screw-down type shall conform to the dimensions shown in Figure 2.

5.2.2 The clearance between the back of flange X (where used) and the body shall be not less than 17 mm at the position of any bolt hole.

5.2.3 The mating dimensions of flange X (where used) shown in Figure 2 shall be in accordance with BS EN 1092-2, DN 80 and PN 16 or PN 25.

NOTE It need not be circular or full form and may be provided with additional holes, which may be slotted, to suit other flange designs.