

Discharge and ventilating pipes and fittings, sand-cast or spun in cast iron —

Part 2: Specification for socketless systems

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Building Services Standards Policy Committee (SEB/-) to Technical Committee SEB/39, upon which the following bodies were represented:

- Aluminium Federation
- BCIRA
- British Foundry Association
- Builders Merchants' Federation
- Copper Development Association
- Department of the Environment (Property Services Agency)
- Ductile Iron Producers' Association
- Institute of British Foundrymen
- Institute of Plumbing
- Light Metal Founders' Association
- National Association of Plumbing, Heating and Mechanical Services Contractors
- National Metal Trades Federation

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Contents

	Page
Committees responsible	Inside front cover
Foreword	ii
1 Scope	1
2 Definitions	1
3 Materials	1
4 Dimensions and tolerances	2
5 Leakage test	2
6 Coatings	2
7 Marking	3
Appendix A Information to be exchanged at the time of enquiry and/or order	4
Appendix B Typical designs for pipes and fittings	4
Figure 1 — Right hand fitting	1
Figure 2 — Left hand fitting	2
Figure 3 — Body dimensions of pipes and fittings	4
Figure 4 — Short radius bends without access door	4
Figure 5 — Short radius bends with access door	5
Figure 6 — Long radius bends without access door	5
Figure 7 — Long radius bends with access door	6
Figure 8 — Offsets	6
Figure 9 — Equal branches with or without access door	7
Figure 10 — Unequal branches with or without access door	8
Figure 11 — Long tail bends and long branches	9
Figure 12 — Double equal branches with or without access door	10
Figure 13 — Double unequal branches with or without access door	11
Figure 14 — Parallel branches, single, equal and unequal	11
Figure 15 — Low invert traps with or without access door	12
Figure 16 — Tapers	13
Figure 17 — Roof outlet (square grating)	13
Figure 18 — Roof outlet (circular grating)	14
Figure 19 — 87½° bent roof outlet	14
Figure 20 — Roof outlet (balcony grating)	15
Figure 21 — Bellmouth gully inlet	15
Figure 22 — Gratings to suit bellmouth gully inlets	16
Figure 23 — Access pipes	16
Figure 24 — Blank ends	16
Figure 25 — Socket ferrule	17
Figure 26 — Fixing brackets	17
Figure 27 — Urinal connectors	18
Figure 28 — W.C. connectors for DN 100 pipe	18
Figure 29 — Connectors to sockets complying with BS 416-1	18
Figure 30 — 87½° radius bend with w.c. socket of nominal DN 100	19
Figure 31 — Roof connectors for asphalt	19
Figure 32 — 87½° corner branch for pipe of nominal size DN 100 × DN 100	20
Figure 33 — Boss angles for pipe of nominal size DN 100 × DN 100	21
Figure 34 — Bossed pipes	21

	Page
Table 1 — Body dimensions of pipes and fittings	4
Table 2 — Range of nominal bore size for short radius bends without access door	4
Table 3 — Range of nominal angle for short radius bends without access door	4
Table 4 — Range of nominal bore size for short radius bends with access door	5
Table 5 — Range of nominal angle for short radius bends with access door	5
Table 6 — Minimum access door dimensions	5
Table 7 — Range of nominal bore size for long radius bends without access door	5
Table 8 — Range of nominal angle for long radius bends without access door	5
Table 9 — Range of nominal bore size for long radius bends with access door	6
Table 10 — Range of nominal angle for long radius bends with access door	6
Table 11 — Range of nominal bore size for offsets	6
Table 12 — Range of nominal projection for offsets	6
Table 13 — Range of nominal bore size for equal branches with or without access door	7
Table 14 — Range of nominal angle for equal branches with or without access door	7
Table 15 — Range of nominal bore size combinations for unequal branches with or without access door	8
Table 16 — Range of nominal angle for unequal branches with or without access door	8
Table 17 — Range of nominal bore size combinations for double equal branches with or without access door	10
Table 18 — Range of nominal angle for double equal branches with or without access door	10
Table 19 — Range of nominal bore size combinations for double unequal branches with or without access door	11
Table 20 — Range of nominal angle for double unequal branches with or without access door	11
Table 21 — Range of nominal bore size combinations for parallel branches, single, equal and unequal	12
Table 22 — Range of nominal bore size for low invert traps with or without access door	13
Table 23 — Range of nominal bore size combinations for tapers	13
Table 24 — Range of nominal bore size for circular grating roof outlets	14
Table 25 — Range of nominal bore size for 87½ ° bent roof outlets	14
Table 26 — Range of nominal bore size for balcony grating roof outlets	15
Table 27 — Range of nominal bore size for bellmouth gully inlets	15
Table 28 — Range of nominal bore size for access pipes	16
Table 29 — Range of nominal bore size for blank ends	16
Table 30 — Range of nominal bore size for socket ferrules	17
Table 31 — Range of nominal bore size available to suit fixing brackets	17
Table 32 — Range of connector threads for urinal connectors	18
Table 33 — Range of nominal bore size for connectors to sockets complying with BS 416-1	18
Table 34 — Range of nominal bore size for roof connectors for asphalt	19
Table 35 — Range of nominal bore size for bossed pipes	19
Publications referred to	Inside back cover

Foreword

This Part of BS 416 has been prepared under the direction of the Building Services Standards Policy Committee. It is the second Part of a two-part revision of BS 416:1973, which is withdrawn. Part 1 specifies spigot and socket systems. To reflect their growing importance in the industry, Part 2 specifies socketless systems manufactured in both grey and ductile iron.

The main changes incorporated in the revision are as follows.

- a) The products are specified as being of either grey or ductile cast-iron.
- b) The range of sizes generally matches those specified in BS 416-1 to correspond to those commonly used, but in this context the DN 65 and DN 90 normal bore range of pipes and fittings have not been included.
- c) The dimensions given in the tables are such that the pipes covered by this Part of BS 416, manufactured by either process, are interchangeable and can be used with the fittings specified. The range is compatible with the requirements of BS 6087.
- d) It has been made clear that the systems are for use above ground (see 2.1), and internal diameters have been modified to obtain unobstructed flow when such systems are connected to below-ground systems complying with BS 437.
- e) Leak testing by both hydraulic and pneumatic methods is included.
- f) In accordance with the convention of defining bend angles by the angle through which the direction of flow is thereby changed, these are now described as acute angles, supplementary to the obtuse angles used in BS 416:1973. Bends in stock which were made to comply with BS 416:1973 will be marked with obtuse angles; those made to comply with BS 416:1990 will be marked with their acute angles.
- g) Some dimensional requirements have been added for access doors, roof outlets and bosses.
- h) As regards coating materials, in order not to prohibit materials which are suitable, but which are not yet covered by a British Standard, a reference to such materials, certified by their manufacturer as suitable, has been added in item d) of clause 3.

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 22, 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.

1 Scope

This Part of BS 416 specifies cast grey or ductile iron socketless pipes manufactured by either the sand-cast or the spun process. This Part of BS 416 also specifies sand-cast fittings.

These pipes and fittings are for use above ground (see 2.1) in discharge or ventilating pipe systems in buildings.

This Part of BS 416 specifies quality of material, critical dimensions and tolerances, coating and marking. A leakage test is included.

For the convenience of specifiers and purchasers, a list of options available to them within this Part of BS 416 is given in Appendix A.

NOTE 1 Plan views of fittings are given in Figure 1 and Figure 2. Typical designs for pipes and fittings are illustrated in Figure 3 to Figure 34 in Appendix B. Dimensions are illustrated on the figures (where appropriate) and are given in the tables accompanying those figures (see Table 1 to Table 35).

Specifications for coatings are included by reference (in item d) of clause 3) to existing British Standards and, for materials not covered by those standards, by a requirement for a manufacturer's certificate of suitability.

The pipes and fittings are for use with flexible coupling complying with BS 6087.

NOTE 2 The pipes specified may be used as rain-water pipes when a heavier grade of pipe than that specified in BS 460 is required.

NOTE 3 The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions

For the purposes of this British Standard the definitions given in BS 4118 apply, together with the following.

2.1

above ground

pipework within or external to a building, including any basements, but excluding any pipework which has entered the ground

2.2

right hand fitting

a branch so constructed that when viewed with the flow downwards and with the boss or access door facing the observer, the arm of the branch projects to the right

NOTE A right hand fitting is illustrated in Figure 1.

2.3

left hand fitting

a branch so constructed that when viewed with the flow downwards and with the boss or access door facing the observer, the arm of the branch projects to the left

NOTE A left hand fitting is illustrated in Figure 2.

2.4

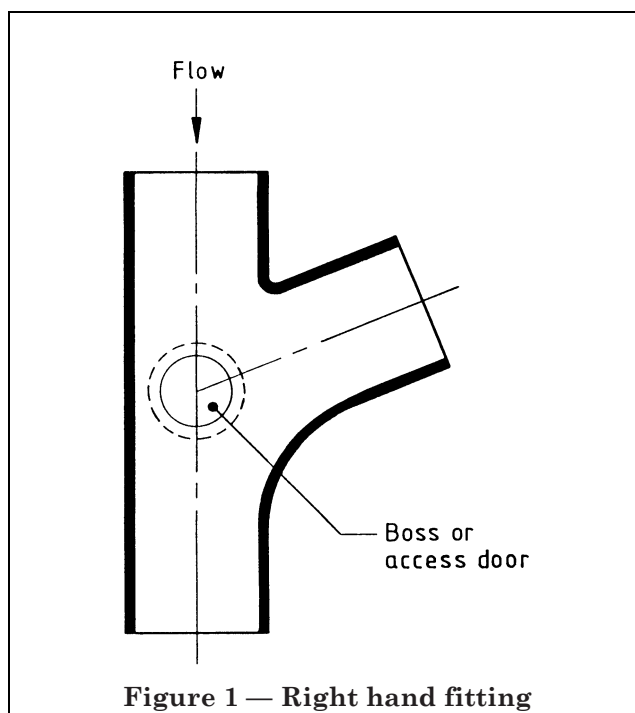
DN (nominal size)

a numerical designation of the size of a unit which is a convenient round number approximately equal to a manufacturing dimension

2.5

manufacturer's declared length/angle

the length/angle of bend which a manufacturer aims to produce



3 Materials

The materials used for the manufacture of products complying with this British Standard shall be as follows.

a) For pipes and fittings:

- 1) grey iron of tensile strength not less than grade 150 of BS 1452; or
- 2) ductile iron of tensile strength not less than that specified in BS 4772.

b) For screws, bolts and washers for access fittings:

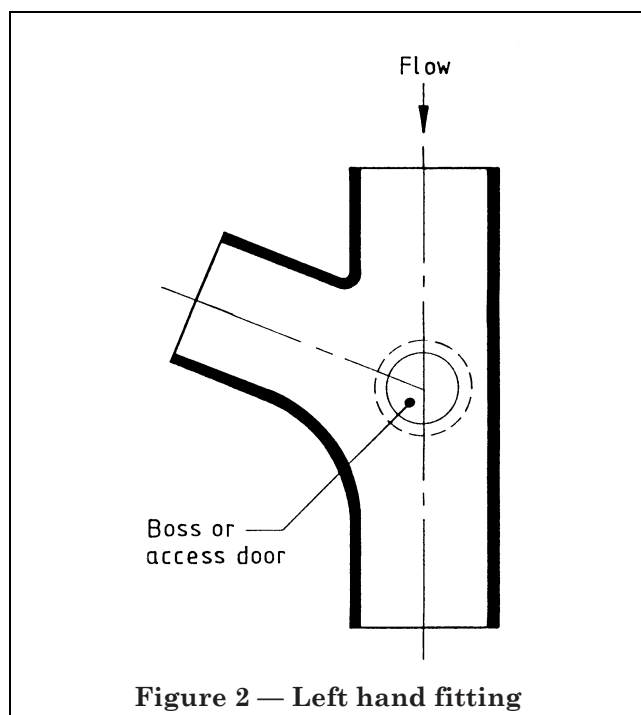
hot pressed brass, cadmium plated steel, stainless steel or sherardized steel.

c) For access door gaskets:

a material not less than 3 mm thick complying with BS 2494, Type D, e.g. rubber IRHD 46 to 55.

d) For coatings:

material complying with BS 3416, BS 4147 or BS 4164, or other material certified by the manufacturer as suitable for the purpose.



4 Dimensions and tolerances

4.1 Pipes

4.1.1 Nominal bore size. Ranges of nominal bores are quoted in the tables in Appendix B and shall be subject to the following minimum values:

- a) for DN 50 pipe: 48 mm;
- b) for DN 75 pipe: 74 mm;
- c) for DN 100 pipe: 99 mm;
- d) for DN 150 pipe: 150 mm.

4.1.2 Pipe lengths. Lengths are not specified in this British Standard, but the manufacturer shall provide information on available lengths, and the lengths supplied shall be within ± 20 mm of the measurement quoted.

4.1.3 Pipe walls. Pipe walls shall comply with the dimensions given in Table 1, subject to a tolerance

of $\begin{matrix} +0 \\ -1.5 \end{matrix}$ mm.

4.2 Fittings

4.2.1 Nominal bore size. Ranges of nominal bores are quoted in the tables in Appendix B and shall be subject to the minimum values given in 4.1.1.

4.2.2 Fitting lengths. Lengths are not specified in this British Standard, but the manufacturer shall provide information on available lengths and the lengths supplied shall be within ± 5 mm of the measurement quoted.

4.2.3 Fitting walls. Thickness of walls of fittings shall be no less than that of pipes with which they

are used, subject to a tolerance of $\begin{matrix} +0 \\ -1.5 \end{matrix}$ mm.

4.2.4 Angles of fittings. Angles of fittings shall be as indicated in the tables in Appendix B, subject to a tolerance of $\pm 1.5^\circ$.

4.3 Access doors

The minimum values of the shortest and longest dimensions of the access door shall be as indicated in the tables in Appendix B.

NOTE It is permissible for fittings to be provided with circular, oval or rectangular access doors. These may be of various designs and sizes (subject to the minimum values specified).

4.4 Depth of trap seal

The minimum depth of seal in all fittings incorporating a water seal shall be 50 mm unless otherwise shown in the relevant figure.

5 Leakage test

When tested by the method described in Appendix B of BS 4772:1988, pipes and fittings shall be capable of withstanding for at least 15 s an internal hydrostatic pressure of at least 0.5 bar¹⁾ without leakage.

NOTE Pressure testing may also be carried out pneumatically. In air testing, safety valves should be fitted to prevent any pressure developing in excess of 0.6 bar and the test should be carried out under water.

6 Coatings

Pipes and fittings shall be coated with materials complying with item d) of clause 3.

¹⁾ 1 bar = 10^5 N/m² = 100 kPa.

7 Marking

Every pipe or fitting shall be legibly and indelibly marked with the following:

- a) the number of this British Standard²⁾,
i.e. either BS 416-2, BS 416:Pt2 or BS 416/2;
- b) the nominal bore, e.g. 100;
- c) a mark identifying the manufacturer and the factory if there is more than one;
- d) “DUCTILE” or “SG” for products made from ductile cast iron.
- e) “DUCTILE” or “SG” for products made from ductile cast iron.

NOTE Products made from grey cast iron would not be so marked.

- f) in the case of fittings, with the angle (acute) where appropriate. (See item f) of the foreword.)

²⁾ Marking BS 416-2 on or in relation to a product represents a manufacturer's declaration of conformity, i.e. a claim by or on behalf of the manufacturer that the product meets the requirements of the standard. The accuracy of the claim is therefore solely the responsibility of the person making the claim. Such a declaration is not to be confused with third party certification of conformity, which may also be desirable.