

Cast iron soil pipe, fittings, and means of joining



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Update No. 1

B70-06

January 2007

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Title: *Cast iron soil pipe fittings and means of joining* — originally published September 2006

The following revisions have been formally approved and are marked by the symbol delta (Δ) in the margin on the attached replacement pages:

Revised	Clause 8 and Annex A
New	None
Deleted	None

CSA B70-06 originally consisted of **25 pages** (vii preliminary and 18 text), each dated **September 2006**. It now consists of the following pages:

September 2006	iii–vii, 1–6, 9–14, 17, and 18
January 2007	7, 8, 15, and 16

- Update your copy by inserting these revised pages.
- Keep the pages you remove for reference.

7.2 Sealing elements

7.2.1

Moving parts used to effect sealing shall be hinged or otherwise secured in a manner that will prevent the possibility of misalignment of the parts in normal use.

7.2.2

Moving parts shall be installed using a means that will not loosen or allow the parts to become detached in normal use.

7.2.3

Moving parts shall not offer resistance exceeding that required for the valve to perform its intended function.

7.2.4

Moving parts that might cause a malfunction due to corrosive action, e.g., the hinge pin, shall be made of corrosion-resistant material.

7.2.5

Valve-seating elements or similar sealing devices that are intended to remain stationary shall be installed in proper alignment and shall be prevented from movement and detachment during normal handling and operation.

7.2.6

With the exception of seating members and stops, moving parts shall have adequate clearance from the internal valve body and any internal components.

7.3 Waterway

7.3.1

No protrusions into the waterway of a valve resulting in the formation of a dam (including protrusions of sealing materials into the waterway) shall be allowed.

7.3.2

The opening through the valve shall permit passage of a cylinder that is 300 mm (12 in) long and of a diameter specified in Table 5. Where the backwater valve body has an integral quarter bend on the outlet, the test cylinder shall pass through the valve to the point of interference with the quarter bend.

7.4 Watertightness testing

7.4.1 General

When tested in accordance with Clause 7.4.2, water leakage shall not exceed the applicable volume specified in Table 5.

7.4.2 Test methods

7.4.2.1 Swing-type backwater valves

The watertightness test for swing-type backwater valves shall be conducted as follows:

- (a) The valve shall be positioned in the normal operating position recommended by the manufacturer.

- (b) The water pressure on the exit side of the valve shall be increased to 30.0 kPa (4.3 psi) in four steps, as follows:
 - (i) 1.5 kPa (0.2 psi);
 - (ii) 3.0 kPa (0.4 psi);
 - (iii) 6.0 kPa (0.8 psi); and
 - (iv) 30.0 kPa (4.3 psi).
- (c) The pressure shall be maintained at each step for 10 min ± 15 s.
- (d) During the test period, any water that is emitted from the entrance side of the valve shall be collected, measured, and recorded.

7.4.2.2 Sluice-type or lift-type backwater valves

The watertightness test for sluice-type or lift-type backwater valves shall be conducted as follows:

- (a) The valve shall be positioned in the normal operating position recommended by the manufacturer.
- (b) The water pressure on the exit side of the valve shall be increased to simulate the minimum operational depth recommended by the manufacturer.
- (c) The water pressure on the exit side shall then be increased by an additional 30.0 kPa (4.3 psi) in four steps, as follows:
 - (i) 1.5 kPa (0.2 psi);
 - (ii) 3.0 kPa (0.4 psi);
 - (iii) 6.0 kPa (0.8 psi); and
 - (iv) 30.0 kPa (4.3 psi).
- (d) The pressure shall be maintained at each step for 10 min ± 15 s.
- (e) During the test period, any water that is emitted from the entrance side of the valve shall be collected, measured, and recorded.

Δ 8 Factory testing

The tests specified in Annex A shall be performed at intervals not exceeding 4 h. Records shall be kept for at least seven years.

9 Markings

9.1 General

Each length of pipe, fitting, backwater valve, and elastomeric gasket shall be marked with the manufacturer's name or registered trademark to enable ready identification of the manufacturer by the end-user after installation.

Note: *where required, markings include the country of origin.*

9.2 Pipe

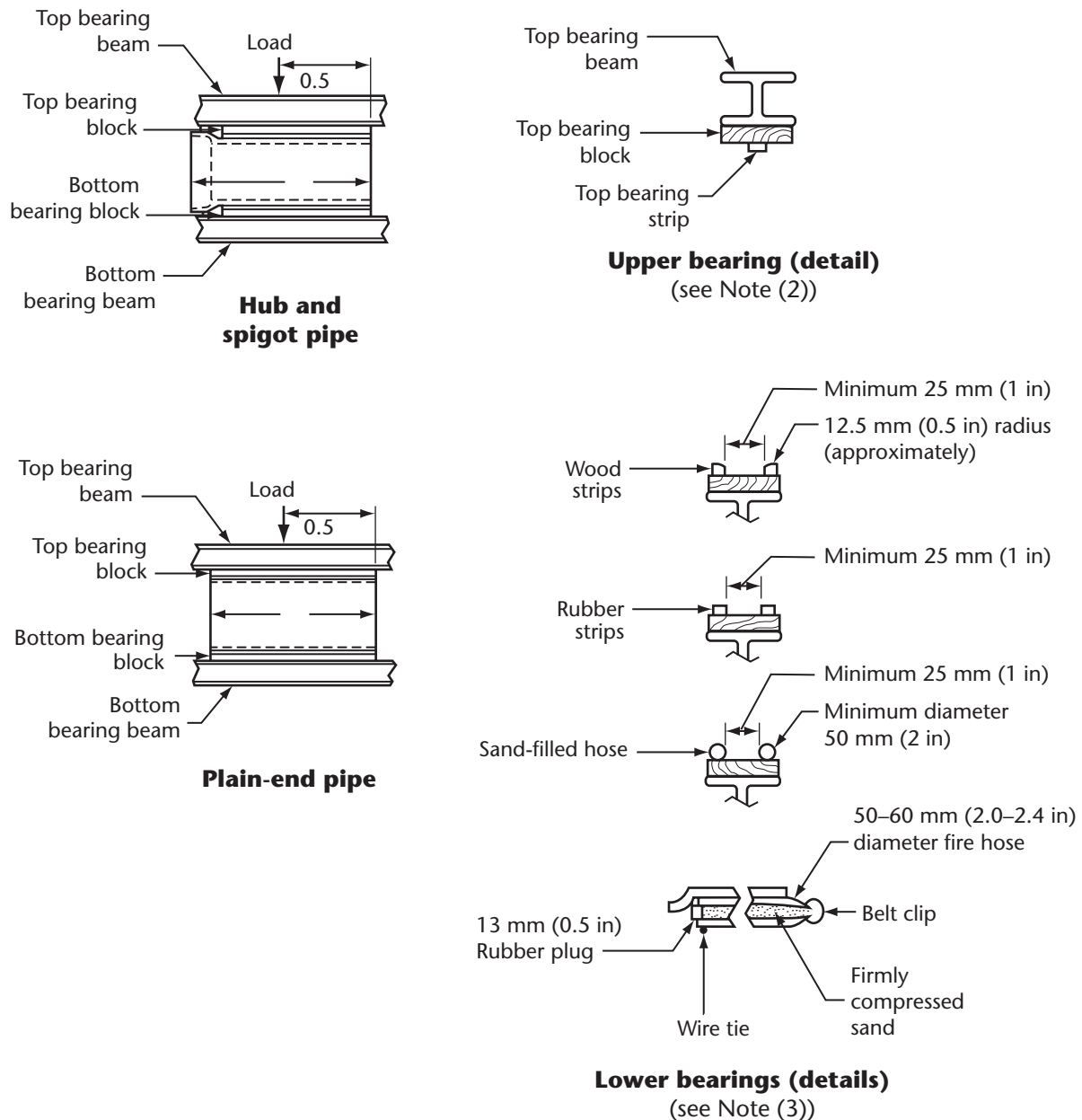
9.2.1

In addition to the markings specified in Clause 9.1, each length of pipe shall be marked with the following:

- (a) the date of manufacture (year-month-day);
- (b) the nominal pipe size; and
- (c) "B70".

9.2.2

Markings on pipe shall be continuous, indelible, and start within 76 mm (3 in) of either end of the pipe.



Notes:

- (1) pipe length.
- (2) the top bearing beam shall be made of steel and the top bearing block shall be made of wood. the top bearing strip shall be made of wood, rubber or sand filled hose. the wood strip shall be not less than 25 × 25 mm in width and shall be angled as shown. the rubber strip shall be 25 mm in thickness × 50 mm in width and shall have a hardness of 50 to Shore A durometer. the sand filled hose shall be at least 50 mm in diameter.
- (3) the bottom bearing block shall be made of wood. the bottom bearings shall have the features specified for top bearings in note (2) and be spaced 25 mm in apart for each 300 mm in of pipe nominal diameter but not less than 25 mm in . plaster of paris fillets shall be used for all wood strip bearings.

Figure 1
Crush test for pipe
(See Clauses 5.2 and 5.3.1.)

Δ Annex A (normative)

Quality control for cast iron soil pipe and fittings

Note: *his Anne is a mandatory part of this Standard.*

A.1 Place of manufacture

The following are minimum quality control requirements for the place of manufacture, which shall apply where the manufacturer is the original equipment manufacturer:

- (a) The material shall have a recorded chemical analysis.
- (b) A chill test shall be performed during production.
- (c) The final products shall be subjected to a total visual inspection with adequate dimensional checks.
- (d) Cast iron soil pipe and pipe fittings shall be subjected to the appropriate pressure tests.
- (e) A sample of the cast iron soil pipe shall be subjected to a crush test during production.
- (f) All tests shall be conducted in accordance with the requirements of this Standard, except the chill test, which is a normal internal foundry test for visually checking the composition of the iron and is not covered in this Standard.

A.2 Distributor's location

The following are minimum quality control requirements for a distributor's location, which shall apply in cases where the manufacturer applies the certification mark but is not the original equipment manufacturer:

- (a) The material shall have a chemical analysis report recorded for each type and batch received.
 - (b) A copy of chill tests for the products received shall be obtained from the original equipment manufacturer for each batch shipped.
 - (c) The final products shall be subjected to a total visual inspection with adequate dimensional checks.
 - (d) Cast iron soil pipe and pipe fittings shall be subjected to the appropriate pressure tests.
 - (e) Samples of the cast iron soil pipe shall be subjected to the crush test.
- All tests shall be conducted in accordance with the requirements of this Standard, except the chill test (see Clause A.1(f)).

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Preface

This is the tenth edition of CSA B70, *Cast iron soil pipe, fittings, and means of joining*. It supersedes the previous editions published in 2002, 1997, 1991, 1986, 1978, 1974, 1971, 1963, and 1941.

This edition includes the following significant changes:

- (a) addition of a requirement to screen for radioactivity;
- (b) deletion of the joint tightness test for hub and spigot joints; and
- (c) revised marking requirements for elastomeric gaskets, backwater valves, and pipe.

This Standard is considered suitable for use for conformity assessment within the stated scope of the Standard.

This Standard was prepared by the Technical Committee on Cast Iron Soil Pipe, under the jurisdiction of the Strategic Steering Committee on Plumbing Products and Materials, and has been formally approved by the Technical Committee. It will be submitted to the Standards Council of Canada for approval as a National Standard of Canada.

September 2006

Notes:

- (1) *Use of the singular does not exclude the plural (and vice versa) when the sense allows.*
- (2) *Although the intended primary application of this Standard is stated in its Scope, it is important to note that it remains the responsibility of the users of the Standard to judge its suitability for their particular purpose.*
- (3) *This publication was developed by consensus, which is defined by CSA Policy governing standardization — Code of good practice for standardization as “substantial agreement. Consensus implies much more than a simple majority, but not necessarily unanimity”. It is consistent with this definition that a member may be included in the Technical Committee list and yet not be in full agreement with all clauses of this publication.*
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 - (a) *define the problem, making reference to the specific clause, and, where appropriate, include an illustrative sketch;*
 - (b) *provide an explanation of circumstances surrounding the actual field condition; and*
 - (c) *be phrased where possible to permit a specific “yes” or “no” answer.*

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B70-06

Cast iron soil pipe, fittings, and means of joining

1 Scope

1.1

This Standard covers cast iron soil pipe, fittings, and means of joining for installation in gravity-flow plumbing systems inside and outside of buildings, above and below grade.

Note: *Pipe and fittings that comply with this Standard are not universally compatible with pipe and fittings manufactured in accordance with ASTM A 74 and ASTM A 888.*

1.2

In CSA Standards, “shall” is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the standard; “should” is used to express a recommendation or that which is advised but not required; “may” is used to express an option or that which is permissible within the limits of the standard; and “can” is used to express possibility or capability. Notes accompanying clauses do not include requirements or alternative requirements; the purpose of a note accompanying a clause is to separate from the text explanatory or informative material. Notes to tables and figures are considered part of the table or figure and may be written as requirements. Annexes are designated normative (mandatory) or informative (non-mandatory) to define their application.

1.3

The values given in SI (metric) units are the standard. The values given in parentheses are for information only. All references to gallons are to US gallons.

2 Reference publications

This Standard refers to the following publications, and where such reference is made, it shall be to the edition listed below, including all amendments published thereto.

CSA (Canadian Standards Association)

B602-05

Mechanical couplings for drain, waste, and vent pipe and sewer pipe

ASME International (American Society of Mechanical Engineers)

B1.20.1-1983 (R2001)

Pipe Threads, General Purpose, Inch

ASTM International (American Society for Testing and Materials)

A 74-05

Standard Specification for Cast Iron Soil Pipe and Fittings

A 888-05

Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications

C 1563-04

Standard Test Method for Gaskets for Use in Connection with Hub and Spigot Cast Iron Soil Pipe and Fittings for Sanitary Drain, Waste, Vent, and Storm Piping Applications

D 395-03

Standard Test Methods for Rubber Property — Compression Set

D 412-98a (2002) e1

Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers — Tension

D 471-98 e2

Standard Test Method for Rubber Property — Effect of Liquids

D 573-04

Standard Test Method for Rubber — Deterioration in an Air Oven

D 624-00 e1

Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers

D 1149-99

Standard Test Method for Rubber Deterioration — Surface Ozone Cracking in a Chamber

D 2240-05

Standard Test Method for Rubber Property — Durometer Hardness

National Research Council Canada

National Plumbing Code of Canada, 2005

3 Definitions

The following definitions and those of the *National Plumbing Code of Canada* apply in this Standard:

Grey cast iron — cast iron in which the carbon not contained in perlite is present in the form of graphitic carbon.

Manufacturer — the foundry that casts the pipes and fittings covered by this Standard.

NPS — nominal pipe size, expressed in inches (millimetres).

4 Pipe and fittings

4.1 Materials

4.1.1

The pipe and fittings shall be made of grey cast iron that permits drilling and cutting by ordinary methods (e.g., carbide bit and snap cutters). The cast iron shall be produced using an established commercial method that provides adequate control over chemical and physical properties.

Ferrous scrap, pig iron, and any recycled ferrous material shall be screened for radioactivity with appropriate detection devices operated in accordance with the equipment manufacturer's instructions. Written operating and maintenance procedures for the detection equipment shall be provided to the purchaser of the castings on request. Records of the testing on each load of material shall be maintained for seven years.

Material that is contaminated with radioactivity shall not be used to produce castings. Analysis of castings after the time of production shall not be used to determine compliance with this Standard.

4.1.2

The iron in the pipe and fittings shall not contain more than 0.75% phosphorus by mass. The sulphur content shall not exceed 0.12% by mass or one-quarter the percentage of manganese, whichever is greater. The carbon equivalent shall be not less than 4.1% by mass.

Note: Carbon equivalent for grey iron = % Total C + 0.3 (% Si + % P).

4.1.3

All pipe and fittings shall be sound castings and free from defects that could cause the pipe or fittings to leak or interfere with the flow or the making of joints.

4.1.4

The pipe and fittings shall be uniformly coated with a material that adheres to the pipe, is not brittle, and does not tend to scale. Except in threaded openings, the coating shall be evenly and smoothly applied to clean, dry surfaces.

4.2 Dimensions

4.2.1

The dimensions of all coated plain-end cast iron soil pipe and fittings shall be in accordance with [Table 1](#). The outside diameter of the pipe shall be measured not less than 25 mm (1 in) from the end of the barrel with a diameter tape calibrated in units not larger than 0.2 mm (0.008 in). The inside diameter and wall thickness of the pipe shall be measured not less than 25 mm (1 in) from the end of the barrel with calipers or using another suitable method.

4.2.2

The dimensions of coated hub and spigot pipe and fittings intended for compression joints shall be in accordance with [Table 2](#).

4.2.3

Pipe shall be straight, with an allowance for deflection in the barrel of not more than 16 mm (0.6 in) for a 3 m (118 in) length.

4.2.4

When a pipe incorporates a bead on the end, the maximum height of the bead shall be

- (a) 0.8 mm (0.03 in) above the outer surface of the pipe on NPS-1-1/2 (38) to NPS-4 (100); and
- (b) 1.6 mm (0.06 in) above the outer surface of the pipe on NPS-5 (125) and larger.

4.3 Fittings

4.3.1

Where fittings that are intended to be joined by mechanical joints have beads, the maximum height of such beads shall be

- (a) 0.8 mm (0.03 in) above the outer surface of the fitting on NPS-1-1/2 (38) to NPS-4 (100); and
- (b) 1.6 mm (0.06 in) above the outer surface of the fitting on NPS-5 (125) and larger.

4.3.2

Ends of fittings that are intended for use with mechanical joint couplings shall have sufficient straight portions to accommodate the couplings. Markings or lugs that indicate when a coupling is fully seated shall be optional.

Note: See [Annex B](#) for recommended sizes and locations of gasket-positioning lugs.

4.3.3

The minimum radius on centreline for quarter bends, sixth bends, eighth bends, and sixteenth bends shall be in accordance with [Table 3](#).

4.3.4

The minimum radius on centreline in the branch of sanitary T-fittings shall be in accordance with [Table 3](#). The branch shall be constructed so that its wall at the throat is tangent to the wall of the main body of the fitting (see point A in the figure in [Table 3](#)).

4.3.5

Screw plugs and tapped bosses in fittings shall be in accordance with [Table 4](#). Threads shall be American National Standard taper pipe threads in accordance with ASME B1.20.1.

4.4 Elastomeric gaskets for hub and spigot compression joints

4.4.1 Compounds

Elastomeric components shall be made of properly vulcanized or cured new (not reclaimed) elastomeric compound containing no scrap; however, clean reworked material generated by the manufacturer's own production of the same compound may be used, provided that the end product complies with the requirements of this Standard.

4.4.2 Dimensions

Elastomeric components shall comply with the dimensions specified by the manufacturer of the pipe with which they are to be used. All diametric dimensions shall have a tolerance of $\pm 1\%$ unless otherwise agreed upon by the pipe manufacturer and the elastomeric component supplier.

Note: *Elastomeric gaskets are suitable for use only with pipe and fittings for which they have been tested (see [Clause 9.5](#)).*

4.4.3 Quality of work

The surface of the elastomeric component shall be smooth and free from pitting, cracks, blisters, air marks, or any other imperfections that would affect its performance in service. The body of the elastomeric component shall be free from porosity and air pockets. Neither the flash thickness nor the flash extension shall exceed 1 mm (0.04 in) at any point on the elastomeric component where the presence of a flash could affect performance.

4.4.4 Elastomeric gaskets used in compression joints

4.4.4.1 Tensile strength

The minimum tensile strength of the unaged elastomer shall be 10.3 MPa (1500 psi) when tested in accordance with ASTM D 412.

4.4.4.2 Elongation

The minimum elongation of the unaged elastomer shall be 250% when tested in accordance with ASTM D 412.

4.4.4.3 Hardness

The hardness of the unaged elastomer shall be 60 ± 10 (Shore A durometer) when tested in accordance with ASTM D 2240.

4.4.4.4 Heat aging

When tested in accordance with ASTM D 573 using a standard Die C sample at 70 ± 2 °C (158 ± 4 °F) for 96 ± 0.5 h, the resistance to heat aging shall be as follows:

- (a) a maximum decrease in tensile strength of 15%;
- (b) a maximum decrease in elongation of 20%; and
- (c) a maximum increase in hardness of 10 units.

4.4.4.5 Compression set

The maximum compression set of the elastomer as a finished product shall be 25% when tested in accordance with ASTM D 395, Method B, at 70 ± 2 °C (158 ± 4 °F) for 22 ± 0.2 h.

4.4.4.6 Oil immersion

The volume increase and decrease of the elastomer specimen due to immersion in ASTM Oil IRM No. 903 shall be not more than 80% and 15%, respectively, when tested in accordance with ASTM D 471 at 40 ± 2 °C (104 ± 4 °F) for 70 ± 0.5 h.

4.4.4.7 Resistance to ozone

The elastomer (Specimen A) shall exhibit no cracking at 2x magnification when tested in accordance with ASTM D 1149. The test shall be performed at 40 ± 1 °C (104 ± 2 °F) for 100 ± 1 h in an ozone concentration of 0.5 mL/m³ (0.5 ppm).

4.4.4.8 Tear resistance

The tear resistance of the elastomer shall be not less than 26 kN/m when tested in accordance with ASTM D 624 using Die C samples.

4.4.4.9 Water absorption

The change in mass of an elastomer specimen measuring 25 × 50 × 2 mm (1 × 2 × 0.08 in) shall not exceed 20% when tested in accordance with ASTM D 471. The test shall be performed at 70 ± 2 °C (158 ± 4 °F) for 166 ± 1.5 h using distilled water as the standard test liquid.

4.4.4.10 Joint tightness

Gaskets shall be tested in accordance with ASTM C 1563.

4.5 Mechanical couplings

Mechanical couplings used to join cast iron soil pipe shall comply with CSA B602.

5 Crush test for pipe

5.1 General

One specimen of each pipe size shall be tested. The specimens shall be 150 to 300 mm (6 to 12 in) long.

5.2 Test equipment

The test set-up shall be in accordance with [Figure 1](#). The upper and lower bearings shall extend the full length of the pipe.

5.3 Test method

5.3.1

The specimen shall be placed symmetrically between the two bearings as shown in [Figure 1](#), and the centre of application of the load applied by the upper bearing shall be placed so that the vertical deformation at the two ends of the specimen is approximately equal.

5.3.2

The crushing load shall be applied gradually until the specimen breaks or the minimum load specified in [Clause 5.4](#) is reached, whichever comes first.

5.4 Performance criteria

Cast iron soil pipe shall withstand, without breaking, a minimum crushing load of 18 kN (4050 lbf) per linear 300 mm (12 in) when tested in accordance with [Clause 5.3](#).

6 Pressure test for pipe and fittings

Note: *This test is intended for laboratory qualification testing and not as a field inspection test.*

6.1

One specimen of each pipe and fitting size shall be tested. The test shall be performed at room temperature using components recommended by the manufacturer.

6.2

Cast iron soil pipe and fittings shall withstand, without leaking, one of the following pressures for at least 15 min:

- (a) an internal water pressure of 350 kPa (50 psi); or
- (b) an internal air pressure of 100 kPa (15 psi) when the specimen is submerged in water.

7 Backwater valves

7.1 General

7.1.1

Backwater valves shall have an access cover or means of entry that permits cleaning and servicing of the internal parts after installation.

7.1.2

The access cover shall be constructed so that repeated removal for servicing can be accomplished without affecting the ability of the cover to make a pressure-tight closure. The fastening nuts or other means of holding the cover in place shall be made of brass, stainless steel, or other corrosion-resistant material.

7.1.3

The cover, or some other part of the valve, shall be constructed so that it can be checked with a spirit level or other means to determine whether it is in a horizontal position.

7.2 Sealing elements

7.2.1

Moving parts used to effect sealing shall be hinged or otherwise secured in a manner that will prevent the possibility of misalignment of the parts in normal use.

7.2.2

Moving parts shall be installed using a means that will not loosen or allow the parts to become detached in normal use.

7.2.3

Moving parts shall not offer resistance exceeding that required for the valve to perform its intended function.

7.2.4

Moving parts that might cause a malfunction due to corrosive action, e.g., the hinge pin, shall be made of corrosion-resistant material.

7.2.5

Valve-seating elements or similar sealing devices that are intended to remain stationary shall be installed in proper alignment and shall be prevented from movement and detachment during normal handling and operation.

7.2.6

With the exception of seating members and stops, moving parts shall have adequate clearance from the internal valve body and any internal components.

7.3 Waterway

7.3.1

No protrusions into the waterway of a valve resulting in the formation of a dam (including protrusions of sealing materials into the waterway) shall be allowed.

7.3.2

The opening through the valve shall permit passage of a cylinder that is 300 mm (12 in) long and of a diameter specified in [Table 5](#). Where the backwater valve body has an integral quarter bend on the outlet, the test cylinder shall pass through the valve to the point of interference with the quarter bend.

7.4 Watertightness testing

7.4.1 General

When tested in accordance with [Clause 7.4.2](#), water leakage shall not exceed the applicable volume specified in [Table 5](#).

7.4.2 Test methods

7.4.2.1 Swing-type backwater valves

The watertightness test for swing-type backwater valves shall be conducted as follows:

- (a) The valve shall be positioned in the normal operating position recommended by the manufacturer.

- (b) The water pressure on the exit side of the valve shall be increased to 30.0 kPa (4.3 psi) in four steps, as follows:
 - (i) 1.5 kPa (0.2 psi);
 - (ii) 3.0 kPa (0.4 psi);
 - (iii) 6.0 kPa (0.8 psi); and
 - (iv) 30.0 kPa (4.3 psi).
- (c) The pressure shall be maintained at each step for 10 min \pm 15 s.
- (d) During the test period, any water that is emitted from the entrance side of the valve shall be collected, measured, and recorded.

7.4.2.2 Sluice-type or lift-type backwater valves

The watertightness test for sluice-type or lift-type backwater valves shall be conducted as follows:

- (a) The valve shall be positioned in the normal operating position recommended by the manufacturer.
- (b) The water pressure on the exit side of the valve shall be increased to simulate the minimum operational depth recommended by the manufacturer.
- (c) The water pressure on the exit side shall then be increased by an additional 30.0 kPa (4.3 psi) in four steps, as follows:
 - (i) 1.5 kPa (0.2 psi);
 - (ii) 3.0 kPa (0.4 psi);
 - (iii) 6.0 kPa (0.8 psi); and
 - (iv) 30.0 kPa (4.3 psi).
- (d) The pressure shall be maintained at each step for 10 min \pm 15 s.
- (e) During the test period, any water that is emitted from the entrance side of the valve shall be collected, measured, and recorded.

8 Factory testing

Tests shall be performed at intervals not exceeding 4 h. Records shall be kept for at least seven years.

9 Markings

9.1 General

Each length of pipe, fitting, backwater valve, and elastomeric gasket shall be marked with the manufacturer's name or registered trademark to enable ready identification of the manufacturer by the end-user after installation.

Note: Where required by law, markings include the country of origin.

9.2 Pipe

9.2.1

In addition to the markings specified in [Clause 9.1](#), each length of pipe shall be marked with the following:

- (a) the date of manufacture (year-month-day);
- (b) the nominal pipe size; and
- (c) "B70".

9.2.2

Markings on pipe shall be continuous, indelible, and start within 76 mm (3 in) of either end of the pipe.

9.3 Fittings

9.3.1

In addition to the markings specified in [Clause 9.1](#), fittings shall include the nominal pipe size.

9.3.2

Markings on fittings shall be indelible or cast with raised lettering.

9.4 Backwater valves

9.4.1

In addition to the markings specified in [Clause 9.1](#), backwater valves shall be marked with the following:

- (a) the direction of normal flow;
- (a) the minimum operational depth (as applicable); and
- (a) the nominal pipe size.

9.4.2

Markings on backwater valves shall be cast, stamped, or indelible.

9.5 Elastomeric gaskets

Note: *Some elastomeric gaskets are designed for use with a specific pipe-hub design and in such cases are not necessarily suitable for use with all pipe (see [Clause 4.4.2](#)).*

9.5.1

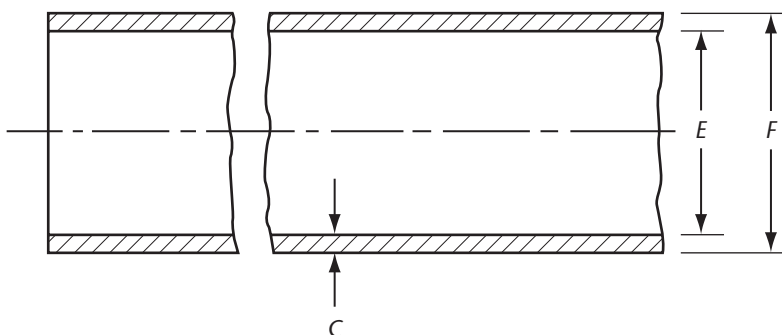
Elastomeric gaskets used in compression joints shall be marked with the following:

- (a) the manufacturer's name or registered trademark;
- (b) the date of manufacture (year-month-day);
- (c) the nominal pipe size; and
- (d) "B70".

9.5.2

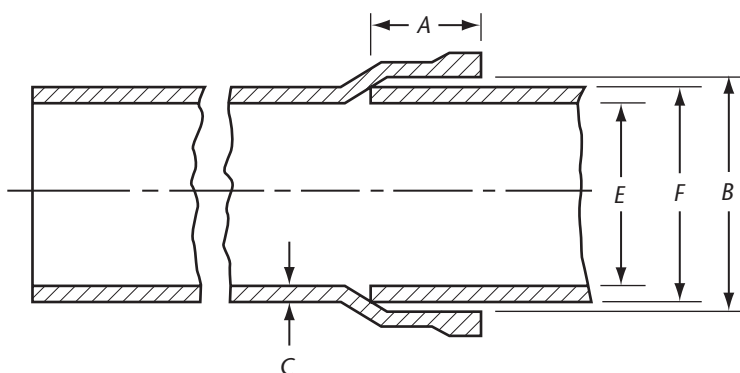
Markings on elastomeric gaskets shall be indelible or moulded with raised lettering.

Table 1
Dimensions of plain-end pipe and fittings
 (See Clause 4.2.1.)



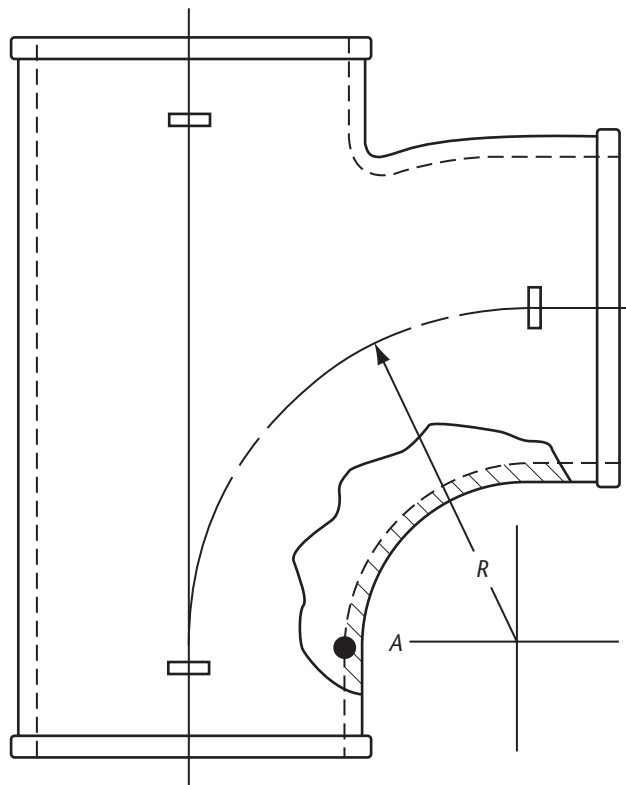
Nominal pipe size, in (mm)	C Minimum wall thickness, mm (in)	E Minimum inside diameter, mm (in)	F Outside diameter, mm (in)	
			Minimum	Maximum
1-1/2 (38)	3.0 (0.12)	35.5 (1.42)	46.0 (1.84)	50.0 (2.00)
2 (50)	3.0 (0.12)	47.8 (1.91)	57.0 (2.28)	62.0 (2.48)
3 (75)	3.3 (0.13)	73.0 (2.92)	83.0 (3.32)	87.5 (3.50)
4 (100)	3.8 (0.15)	98.6 (3.94)	109.0 (4.36)	114.0 (4.56)
5 (125)	3.8 (0.15)	123.0 (4.98)	135.0 (5.40)	139.0 (5.56)
6 (150)	3.8 (0.15)	148.0 (5.92)	160.0 (6.40)	166.0 (6.64)
8 (200)	4.3 (0.17)	197.0 (7.88)	213.0 (8.52)	219.0 (8.76)
10 (250)	5.6 (0.22)	246.0 (9.84)	267.0 (10.68)	271.0 (10.64)
12 (300)	5.6 (0.22)	297.0 (11.88)	318.0 (12.72)	322.0 (12.88)
15 (375)	7.6 (0.30)	370.0 (14.80)	397.0 (15.88)	402.0 (16.08)

Table 2
Dimensions of hub and spigot pipe and fittings
 (See Clause 4.2.2.)



Nominal pipe size, in (mm)	A	B		C	E	F	
	Hub minimum telescopic length, mm (in)	Hub inside diameter, mm (in)		Minimum wall thickness, mm (in)	Minimum inside diameter, mm (in)	Spigot outside diameter, mm (in)	
		Minimum	Maximum			Minimum	Maximum
2 (50)	57 (2.28)	72.6 (2.90)	79.0 (3.16)	3.0 (0.12)	47.8 (1.91)	57.0 (2.28)	62.7 (2.51)
3 (75)	57 (2.28)	105.0 (4.20)	108.0 (4.32)	3.3 (0.13)	73.0 (2.92)	83.0 (3.32)	91.2 (3.65)
4 (100)	57 (2.28)	131.5 (5.26)	134.0 (5.36)	3.8 (0.15)	98.6 (3.94)	109.0 (4.36)	117.0 (4.68)
5 (125)	63 (2.52)	152.0 (6.88)	158.0 (6.32)	3.8 (0.15)	123.0 (4.92)	135.0 (5.40)	142.0 (5.68)
6 (150)	63 (2.52)	180.0 (7.20)	184.0 (7.36)	3.8 (0.15)	148.0 (5.92)	160.0 (6.40)	167.0 (6.68)
8 (200)	70 (2.80)	239.0 (9.56)	243.0 (9.72)	4.3 (0.17)	197.0 (7.88)	213.0 (8.52)	221.0 (8.84)
10 (250)	70 (2.80)	292.0 (11.68)	297.0 (11.88)	5.6 (0.22)	246.0 (9.84)	267.0 (10.68)	275.0 (11.00)
12 (300)	76 (3.04)	349.0 (13.96)	353.0 (14.12)	5.6 (0.22)	297.0 (11.88)	318.0 (12.72)	326.0 (13.04)
15 (375)	82 (3.28)	431.0 (17.24)	435.0 (17.40)	7.6 (14.80)	370.0 (14.80)	397.0 (15.88)	407.0 (16.28)

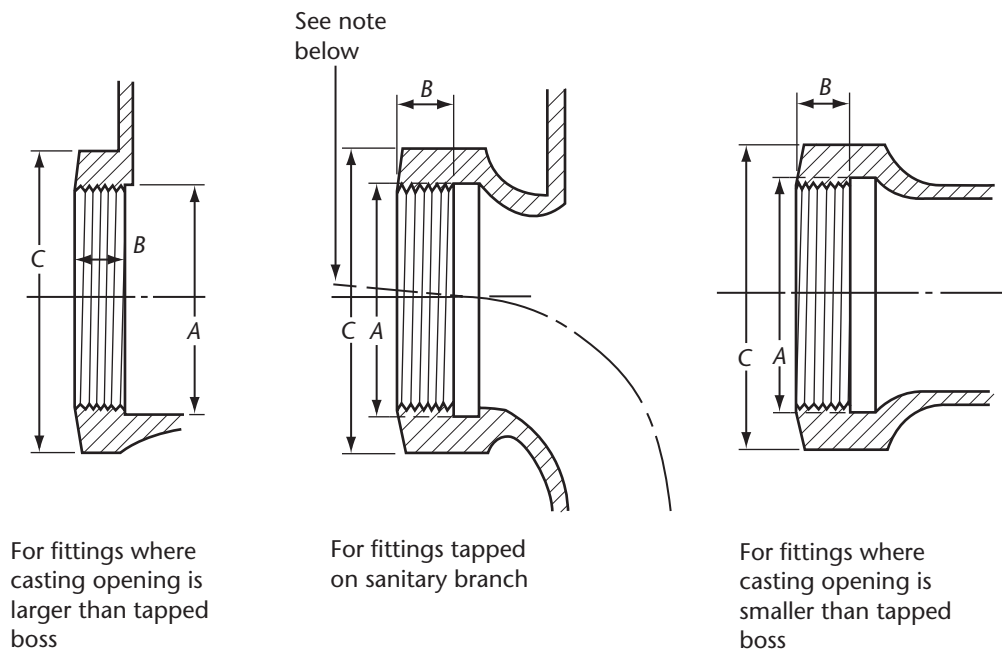
Table 3
Minimum fitting radius
 (See Clauses 4.3.3 and 4.3.4.)



Note: This diagram is an example only.

Nominal pipe size, in (mm)	Minimum radius, R , mm (in)
1-1/2 (38)	44 (1.8)
2 (50)	50 (2.0)
3 (75)	75 (3.0)
4 (100)	100 (4.0)
5 (125)	110 (4.4)
6 (150)	125 (5.0)
8 (200)	150 (6.0)
10 (250)	175 (7.0)
12 (300)	200 (8.0)
15 (375)	240 (9.6)

Table 4
Dimensions for tapped bosses
 (See Clause 4.3.5.)



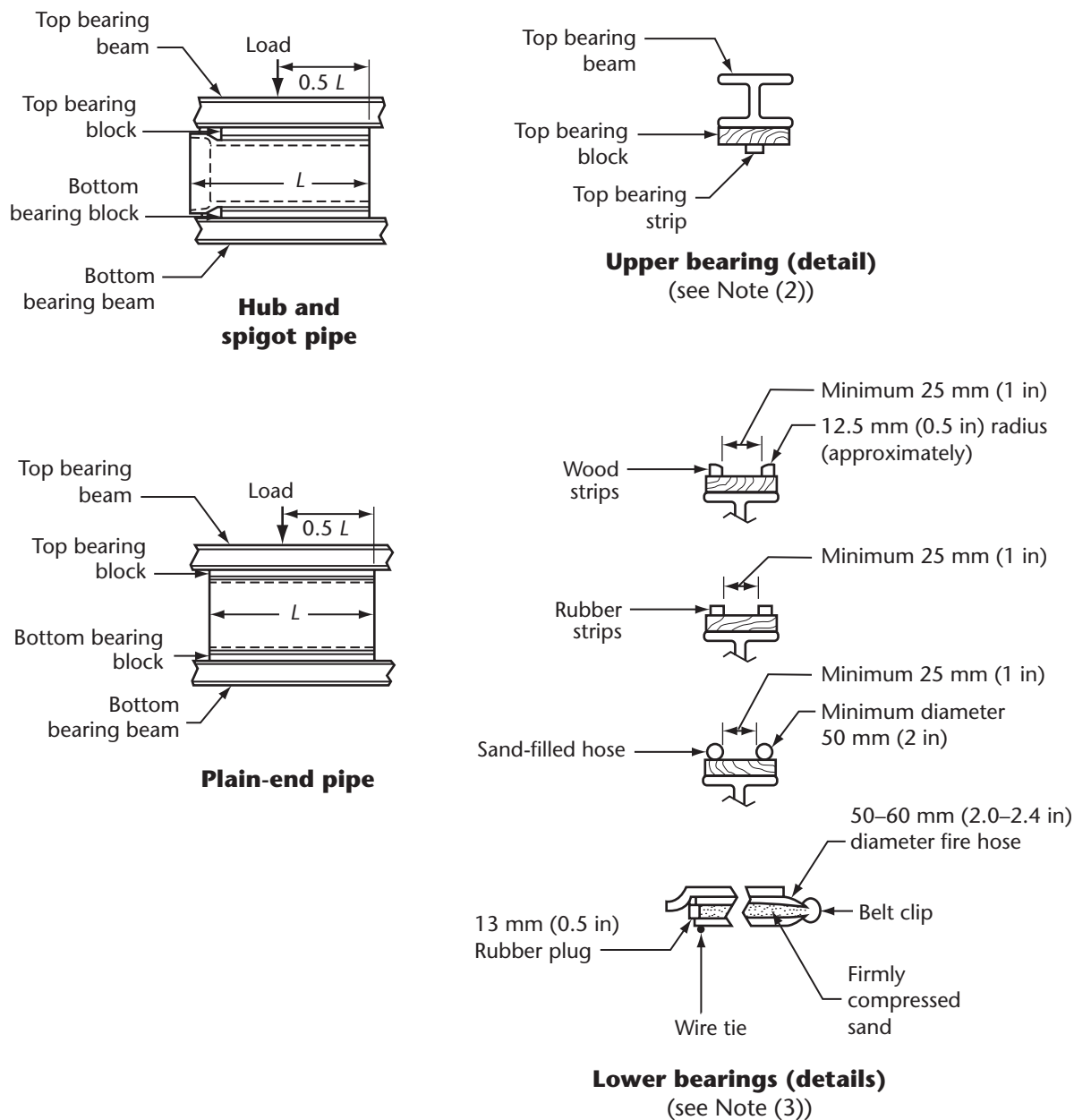
Nominal pipe size, in (mm)	A (minimum), mm (in)	B (minimum), mm (in)	C (minimum), mm (in)
1-1/4 (32)	49 (2.0)	11 (0.4)	68 (2.7)
1-1/2 (38)	49 (2.0)	11 (0.4)	68 (2.7)
2 (50)	62 (2.5)	11 (0.4)	82 (3.3)

Note: Horizontal-inlet waste bosses are tapped at an angle of 6 mm (0.2 in) per 300 mm (12 in) to provide flow.

Table 5
Backwater valve waterway and watertightness
 (See [Clauses 7.3.2](#) and [7.4.1.](#))

Nominal pipe size, in (mm)	Diameter of test cylinder, mm (in)	Maximum volume of water leakage, L (US gal)*
1-1/2 (38)	19 (0.8)	0.16 (0.04)
2 (50)	25 (1.0)	0.28 (0.07)
3 (75)	38 (1.5)	0.64 (0.17)
4 (100)	50 (2.0)	1.14 (0.30)
5 (125)	63 (2.5)	1.78 (0.47)
6 (150)	75 (3.0)	2.56 (0.68)
8 (200)	100 (4.0)	4.56 (1.20)
10 (250)	125 (5.0)	7.12 (1.88)
12 (300)	150 (6.0)	10.26 (2.71)
15 (375)	187 (7.5)	15.96 (4.22)

**Total water collected on the exit side during the four steps of incremental pressure.*



Notes:

- (1) L = pipe length.
- (2) The top bearing beam shall be made of steel and the top bearing block shall be made of wood. The top bearing strip shall be made of wood, rubber, or sand-filled hose. The wood strip shall be not less than 25 × 25 mm (1 × 1 in), angled as shown. The rubber strip shall be 25 mm (1 in) thick × 50 mm (2 in) wide and shall have a hardness of 45 to 60 Shore A durometer. The sand-filled hose shall be at least 50 mm (2 in) in diameter.
- (3) The bottom bearing block shall be made of wood. The bottom bearings shall have the features specified for top bearings in Note (2) and be spaced 25 mm (1 in) apart for each 300 mm (12 in) of pipe nominal diameter, but not less than 25 mm (1 in). Plaster of Paris fillets shall be used for all wood-strip bearings.

Figure 1
Crush test for pipe
 (See Clauses 5.2 and 5.3.1.)

Annex A (informative)

Quality control for cast iron soil pipe and fittings

Note: *This Annex is not a mandatory part of this Standard but is written in mandatory language to accommodate its adoption by anyone wishing to do so.*

A.1 Place of manufacture

The following are minimum quality control requirements for the place of manufacture, which shall apply where the manufacturer is the original equipment manufacturer:

- (a) The material shall have a recorded chemical analysis.
- (b) A chill test shall be performed during production.
- (c) The final products shall be subjected to a total visual inspection with adequate dimensional checks.
- (d) Cast iron soil pipe and pipe fittings shall be subjected to the appropriate pressure tests.
- (e) A sample of the cast iron soil pipe shall be subjected to a crush test during production.
- (f) All tests shall be conducted in accordance with the requirements of this Standard, except the chill test, which is a normal internal foundry test for visually checking the composition of the iron and is not covered in this Standard.

A.2 Distributor's location

The following are minimum quality control requirements for a distributor's location, which shall apply in cases where the manufacturer applies the certification mark but is not the original equipment manufacturer:

- (a) The material shall have a chemical analysis report recorded for each type and batch received.
- (b) A copy of chill tests for the products received shall be obtained from the original equipment manufacturer for each batch shipped.
- (c) The final products shall be subjected to a total visual inspection with adequate dimensional checks.
- (d) Cast iron soil pipe and pipe fittings shall be subjected to the appropriate pressure tests.
- (e) Samples of the cast iron soil pipe shall be subjected to the crush test.

All tests shall be conducted in accordance with the requirements of this Standard, except the chill test (see [Clause A.1\(f\)](#)).

Annex B (informative)

Recommended sizes and locations of gasket-positioning lugs

Note: This Annex is not a mandatory part of this Standard.

B.1 Sizes

See [Table B.1](#) for recommended sizes.

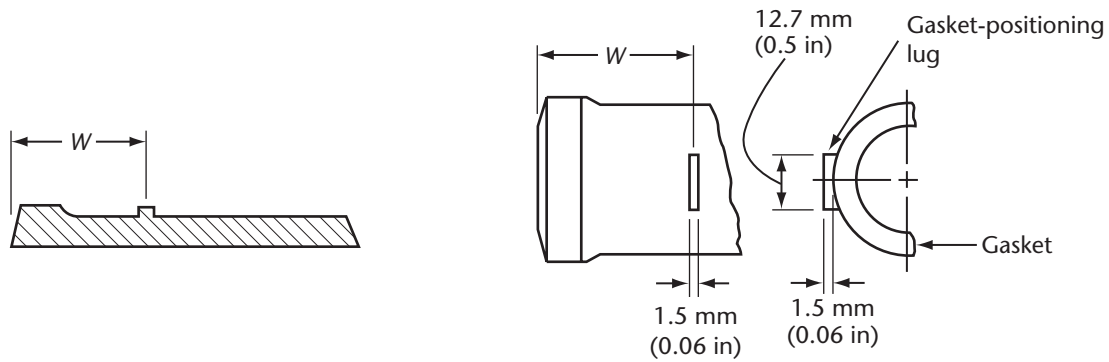
B.2 Locations

See [Figure B.1](#) for recommended locations.

Table B.1
Recommended sizes of gasket-positioning lugs
(See [Clause B.1](#).)

Nominal pipe size, in (mm)	W, mm (in)*
1-1/2 (38)	29 (1.2)
2 (50)	29 (1.2)
3 (75)	29 (1.2)
4 (100)	29 (1.2)
5 (125)	38 (1.5)
6 (150)	38 (1.5)
8 (200)	51 (2.0)
10 (250)	51 (2.0)

*W = the distance from the end of the pipe or fitting to the coupling positioning mark.



Hubless pipe and fittings

Hubbed pipe and fittings

Notes:

- (1) Pipe may be cast with or without the gasket-positioning lugs. The lugs may be continuous around the entire circumference.
- (2) Gasket-positioning lugs may be cast on all fittings. The lugs may be continuous around the entire circumference.

Figure B.1
Recommended locations of gasket-positioning lugs
 (See [Clause B.2.](#))

Proposition de modification

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