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Designation: C 1053 – 00

Standard Specification for Borosilicate Glass Pipe and Fittings for Drain, Waste, and Vent (DWV) Applications¹

This standard is issued under the fixed designation C 1053; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reappraisal. A superscript epsilon (ε) indicates an editorial change since the last revision or reappraisal.

This standard has been approved for use by agencies of the Department of Defense.

^{ε1} ~~Note – Section 12 was added editorially in April 1995.~~

¹ This specification is under the jurisdiction of ASTM Committee C-14 on Glass and Glass Products and is the direct responsibility of Subcommittee C14.05 on Glass Pipe.

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1. Scope

1.1 This specification covers chemically resistant, low expansion, Type I, borosilicate glass, Class A (see Specification E 438), used to manufacture corrosion-resistant pipe and fittings for drain, waste, and vent service.

1.2 The pipe and fittings covered by the specification are intended for chemical resistant service above and below grade under gravity flow or vacuum conditions.

1.3 The pipe and fittings shall have beaded or plain ends.

2. Referenced Documents

2.1 *ASTM Standards:*

~~C-162 Terminology 600 Method of Thermal Shock Test on Glass and Glass Products Pipe²~~

~~C-599 Specification for Conical Process Glass Pipe and Fittings²~~

~~C-600 Method of Thermal Shock Test on Glass Pipe²~~

~~C-623 Test 623 Test Method for Young's Modulus, Shear Modulus, and Poisson's Ratio for Glass and Glass-Ceramics by Resonance²~~

C 693 Test Method for Density of Glass by Buoyancy²

E 438 Specification for Glasses in Laboratory Apparatus³

3. Ordering Information

3.1 The minimum ordering information for material under this specification shall include the following information:

3.1.1 ASTM designation and date of issue,

3.1.2 Manufacturer's catalog number or parts identification,

3.1.3 Quantity ordered,

3.1.4 Special test or certification requirements,

3.1.5 Special packaging or marking, if required, and

3.1.6 Accessory items such as couplings, drains, adapters, and cutters.

4. Materials and Manufacture

~~4.1 The glass components shall be reasonably free of surface defects, such as open blisters or airlines and scratches, and shall be completely free of chips and checks. This is applicable to both the inside and outside surfaces. It shall represent good workmanship as consistent with standard glass process capabilities. For definitions of these glass terms, refer to Terminology C-162 capabilities.~~

5. Chemical Requirements

5.1 The chemical requirements shall be as described in Specification E 438.

² Annual Book of ASTM Standards, Vol 15.02.

³ Annual Book of ASTM Standards, Vol 14.024.

6. Physical Requirements

- 6.1 The physical requirements shall be as described in Specification E 438.
 6.2 Refer also to Annex A1 for additional physical requirements.

7. Operating Temperatures

7.1 *Minimum Operating Temperature*—The minimum rated operating temperature for all sizes shall be -40°F (-40°C) provided that the temperature of the material being conveyed is ~~above the freezing point.~~ fluid.

7.2 *Maximum Operating Temperature*—The maximum rated continuous operating temperature shall be 212°F (~~100°C~~) continuous. (100°C).

7.3 *Thermal Endurance Shock Resistance*—The maximum allowable temperature differential for the properly installed systems shall be in accordance with Table 1 for the various pipe sizes:

7.3.1 *Maximum sizes.* Maximum temperature differential refers to an almost instantaneous temperature change, such as low-pressure steam followed directly by a flush of ice cold water, or the reverse. Maximum temperature differential pertains to either inside or outside pipe surfaces.

~~7.3.2 The test method for thermal~~

7.3.1 Thermal shock resistance is not ordinarily performed, but in those cases where tested. If thermal shock resistance may be questioned, it may ~~shall~~ be performed tested in accordance with Method C 600. ~~Acceptance of this test shall be that~~ If all pieces tested pass the allowable temperature differential, the lot shall pass. be accepted. If one or more failures ~~do~~ occur, a second sampling retest shall be made using a sample size twice the percentage that of the first one shall be made, and the ware tested. test. If there are any failures, occur on the retest, the entire shipment shall be retested.

8. Pressure Rating

~~8.1 The maximum rated working pressure for DWV~~

8.1 DWV piping systems shall be designed for gravity flow when the pipe is installed in accordance with manufacturer's recommendations and when operated within the maximum temperature differential and temperature limits. only.

8.2 All pipe sizes are suitable for vacuum service.

9. Dimensions and Permissible Variations

9.1 *Beaded Flanges:*

9.1.1 *Flange Face Flatness*—Maximum permissible deviation from a flat plane across the face of a flange on all sizes shall be $\frac{1}{16}$ in. (1.6 mm).

9.1.2 *Flange Face Squareness*—Flange faces of both pipe and fittings shall be square to the pipe centerline within the limits prescribed in Table 2.

9.1.2.1 Squareness of straight pipe lengths shall be measured by placing the pipe on rollers, located approximately 2 in. (51 mm) from each end, and butting one end against a flat plate perpendicular to the axis of the rollers. The pipe shall be rotated and length variation read with a suitable mechanism, such as a dial indicator. The maximum reading shall not exceed that shown in Table 2 for the respective pipe size.

9.1.2.2 Pipe fittings shall be measured for flange squareness by a gage having flat plates constructed at the angle required by that fitting. One flange shall be firmly placed on one plate, and ~~the~~ any difference between the remaining flange face and the other surface plate shall be measured with Feller gages. Differences shall not exceed the amount shown ~~above~~ in Table 2 for the respective fitting size.

9.1.3 *Flange Dimensions and Specifications*—Beaded flange dimensions shall be as required by the manufacturer for the system.

9.2 *Bow:*

9.2.1 *Bow for All Pipe Diameters*—Bow shall be measured by supporting the ~~tubing pipe~~ in “V” blocks approximately 2 in. from each end with a dial gage ~~in the center of the length, at midlength,~~ rotating ~~full 360° and dividing the pipe full 360°.~~ The total dial deflection divided by 2. Bow two is the measure of bow, which shall not exceed 0.25 % of the total length of the pipe. pipe length.

9.3 *Dimensions of All Pipe and Fittings:*

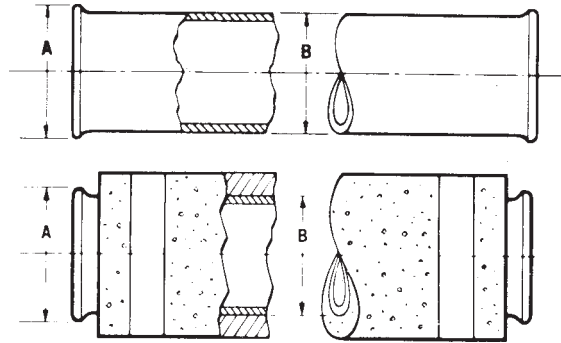
9.3.1 Dimensional specifications for pipe and common fittings shall be as shown in the manufacturer's literature. Typical configurations are as illustrated in Figs. 1-24-45.

**TABLE 1 Maximum Temperature Differential for Thermal Enduran
Shocek**

Pipe Size, in. (mm)	Sudden Temperature Difference, Max °F (°C)
1½ –3 (38–76)	200 (93)
4 (102)	175 (78)
6 (152)	160 (71)

TABLE 2 Flange Face Squareness

Nominal Pipe Size, in.	Squareness Measurement, m_{Max} , in.
1½ to 2	1/32
3	3/64
4	1/16
6	9/64



Size, in.	A (OD)	B (OD)	Wall Thickness, in.	Length, ft ^A
	Diameter, in.	Diameter, in.		
1½	2.06	1.84	0.17	5 and 10
2	2.58	2.34	0.17	5 and 10
3	3.69	3.41	0.20	5 and 10
4	4.84	4.53	0.27	5 and 10
6	7.12	6.66	0.33	5 and 10

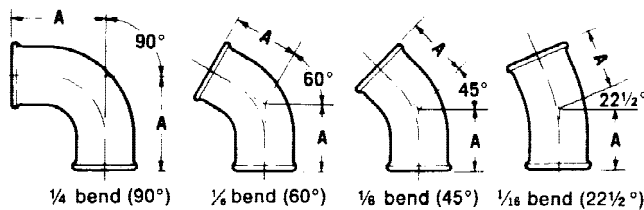
^ALength includes coupling allowance.

Nominal OD Over EPS^A

1½ in.	2 ¹³ / ₁₆
2 in.	3 ⁹ / ₁₆
3 in.	5
4 in.	6 ¹ / ₄
6 in.	8 ⁹ / ₁₆

^APipe with EPS (Expanded Polystyrene) covering for underground service; lengths of 5 ft only.

FIG. 1 Standard Specifications for Straight Lengths of Pipe



Size	A Dimension ^A , in.			
	90°	60°	45°	22½°
1½	3	2½	2	—
2	3¼	2¾	2¼	2¼
3	5	3½	2¾	2¾
4	7	4½	3¼	3¼
6	—	—	7	—

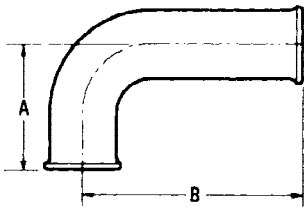
^ADimensions to beaded flanges include coupling allowance.

FIG. 2 Elbows

10. Inspection

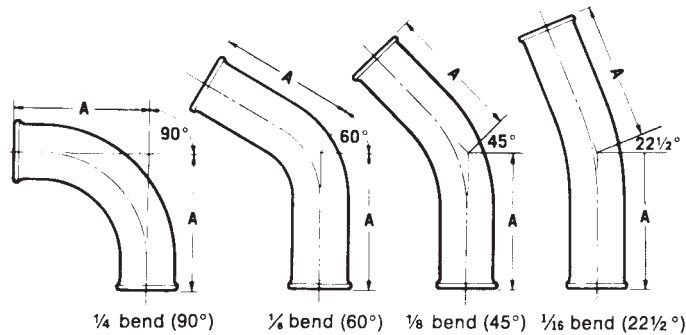
10.1 Inspection of the material shall be made at the point of delivery unless otherwise agreed upon by the purchaser and the seller.

LONG 90°



Size	A	B
1½-90°	3¾	6
2-90°	3¾	7½

FIG. 3 Elbow



¼ bend (90°) ⅛ bend (60°) ⅛ bend (45°) ⅛ bend (22½°)
A Dimensions^A, in.

Size	A ^{90°}	B
2 by 1½	4	3½
2 by 1½ 60°	4½	22½°
3 by 1½	5	4½ by 2½
1½	4½	4½
4 by 1½	7	4½
2	5	4½
4 by 2	7	5
4 by 25	5	5
4 by 3	7	5½
3	6½	6½
6 by 1½	9	5½
6 by 1½	6½	6½
6 by 2	9	6
4	9	6
6 by 3	9	6½
6 by 39	9	9
6 by 4	9	8½
6	12	12

^ADimensions to beaded flanges include coupling allowance.

FIG. 4 Quarter Bend Reducer Elbows

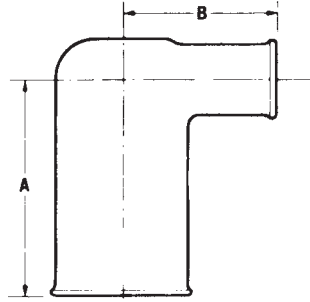
11. Packaging

11.1 Pipe, fittings, and hardware shall be so packaged as to prevent injury to them damage during transportation and handling. Those items packed in containers conforming to all construction requirements of consolidated freight classification as to bursting tests, size limit, and gross mass shall be considered as being properly packed.

11.2 All hardware items shall be packed in such a way as to prevent contact with glass articles; components. Some typical hardware items are shown in Appendix X1.

12. Keywords

12.1 borosilicate; components; fittings; glass; pipe

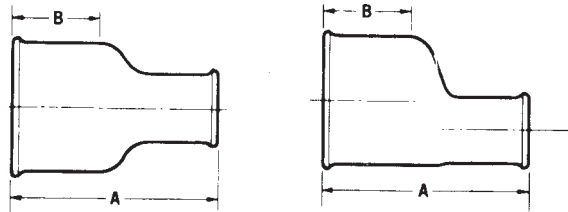


Dimensions^A, in.

Size	A	B (min)
2 by 1½	4	1¾
2 by 1½	4	3½
3 by 1½	5	2¾
3 by 1½	5	4
3 by 2	5	2¾
3 by 2	5	4½
4 by 1½	7	3
4 by 1½	7	4½
4 by 2	7	3
4 by 2	7	5
4 by 3	7	3
4 by 3	7	5½
6 by 1½	9	4
6 by 1½	9	5½
6 by 2	9	4
6 by 2	9	6
6 by 3	9	4
6 by 3	9	6½
6 by 4	9	4
6 by 4	9	8

^ADimensions to beaded flanges include coupling allowance.

FIG. 5 Straight Reducers and Eccentric Reducers

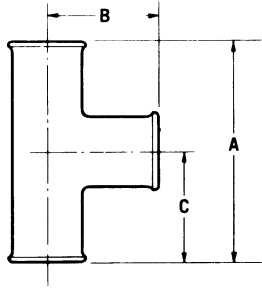


Dimensions^A, in.

Size	A	BG (min)	
1½ by 1½	6	3	3
2 by 1½	4	3	3¼
2 by 1½	8	3¼	4
3 by 1½	5	2¼	4
2 by 2	8	4	4
2 by 2	8	5	2¼
3 by 1½	12	4½	6
4 by 1½	7	4½	63
3 by 2	12	4½	6
4 by 2	7	4½	63
3 by 3	12	6	6
4 by 3	7	6	63
4 by 1½	14	5	7
6 by 1½	9	5	74
4 by 2	14	5	7
4 by 3	14-6½	7	
4 by 39	4-6½	7	
4 by 4	14	8	7
6 by 3	20	7¾	10
6 by 39	20	7¾	104
6 by 4	20	9	10
6 by 6	20	10	10
6 by 69	20	10	104

^ADimensions to beaded flanges include coupling allowance.

FIG. 6 Straight-T Reducers and Eccentric Reducers

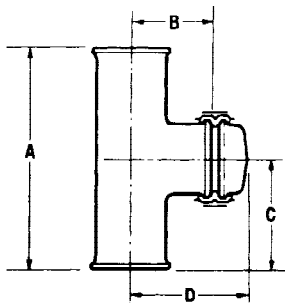


Dimensions^A, in.

Size	A	B	C
1½ by 1½	6	3½	3¾
2 by 1½	8	3¾	5
2 by 2	8	4½	5
3 by 1½	12	4½	7⅞
3 by 1½	12	4½	7⅞
3 by 2	12	5½	7⅞
3 by 3	12	6¾	7⅞
4 by 1½	14	4¾	8¾
4 by 2	14	5¾	8¾
4 by 3	14	7½	8¾
4 by 4	14	8¼	8¾
6 by 2	20	6¾	12¾
6 by 3	20	6¾	10
6 by 3	20	8	12¾
6 by 4	20	8	10
6 by 4	20	9⅞	12¾
6 by 6	20	12	12¾
6 by 6	20	10	10

^ADimensions to beaded flanges include coupling allowance.

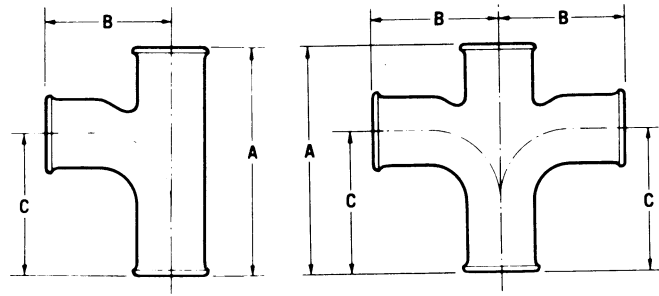
FIG. 7 Straight T



Size	A	B	C	D
1½ x 1½	6	2¾	3	3⅛
2 x 2	8	2⅞	4	3⅞
3 x 3	12	3⅞	6	4⅞
4 x 4	14	4⅞	7	5⅞

Test Tee and cleanout comes as complete assembly including cap and coupling.

FIG. 8 Test T with Clean-Out



Dimensions^A, in.

Size	A	B	C
1½ x 1½	4	5 - 3/2	3¾
1½ by 1½	6	3½	3¾
2	4½	3¾	5
2 by 1½	8	3¾	5
3	5-8	4½	6-5
2 by 2	8	4½	5
3 by 1½	12	4¼	7/16
4	6½	5	7/16
3 by 2	12	5	7/16
3 by 3	12	6¾	7/16
4 by 1½	14	4¾	8¾
4 by 2	14	5¼	8¾
4 by 3	14	7	8¾
4 by 4	14	8¼	8¾
6 by 2	20	6¾	12¾
6 by 3	20	8	12¾
6 by 4	20	9½/16	12¾
6 by 6	20	12	12¾

^ADimensions to beaded flanges include coupling allowance.

FIG. 9 U Be Sanitary T

Size	A	B	C	D
1½ x 1½ x 2	6	3¾	2½	7

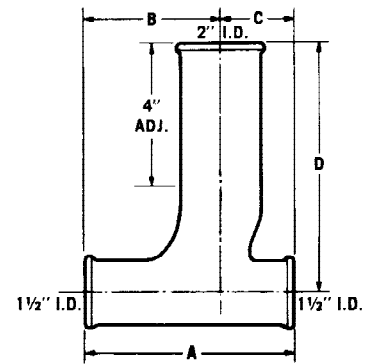


FIG. 10 Adjustable Sanitary T

Size	A	B	C
1½ x 1½ x 1½	8¾	3½	3½

*Can be field cut.

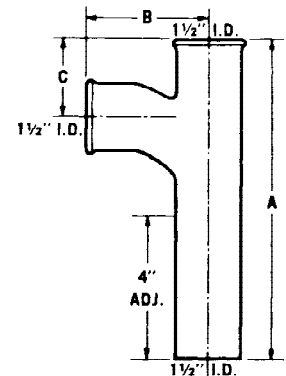


FIG. 11 Adjustable Sanitary T (Plain End Outlet)

Size	A	B	C
1½ x 1½	4½	2⅞	2¼
2 x 1½	4¾	2¾	2¾
2 x 2	5¾	2¾	2¾
3 x 2	9	4⅞	5⅞
3 x 3	9	4⅞	5⅞
4 x 1½	10	4¾	6¾
4 x 2	10	4¾	6¾
4 x 3	10	5¾	6¾
4 x 4	10	6¼	6¾
6 x 2	16	5¾	9½
6 x 3	16	6¾	9½
6 x 4	16	7¾	9½
6 x 6	16	9¾	9¼

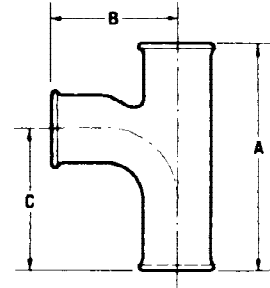
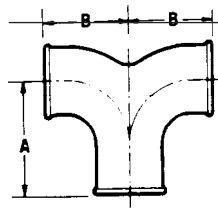


FIG. 12 Compact Single Sanitary T



Dimensions^A, in.

Size	A	B
1½	3	2⅞
2 by 2 by 1½	3¼	2¼
2	3½	2¼
3	5	4½
4	6½	5¾
6	8½	7

^ADimensions to beaded flanges include coupling allowance.

FIG. 13 Double Quarter Bend

Size	A	B
1½	10	2⅞
**2 x 2 x 1½	10	2¼
2	10	2¼
3		
4		
6		

*Can be field cut.
**Branch is 1½" I.D.

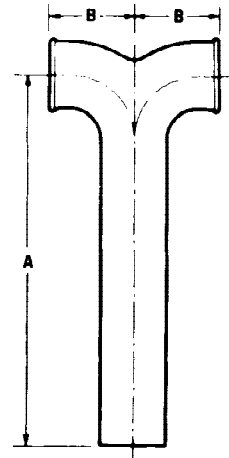
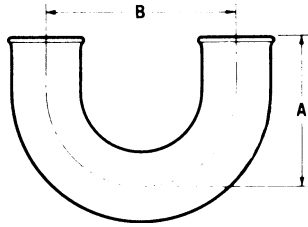


FIG. 14 Double Quarter Bend (Plain End Outlet)

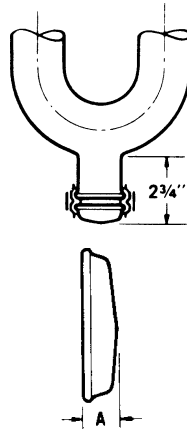


Dimensions^A, in.

Size-Inlet by Outlet	A	B ^G	D	E
1½ by 1½	41	-6	-53	3
1½	4	-6	-53	3
2 by 2	42	-6¼ ^{re}	-5½	3¼ 3½
2 by 2	42	-6¼ ^{re}	-54½	3¼ 35½
3 by 3	44½	-8¾	-6½	4 4
3 by 3	5½	-8¾	-6½	4 4
4 by 4	47½	-9¾	-7½	5 5
4 by 4	6½	-9¾	-7½	5 5
6 by 6	38	147/8	24	77½
6 by 6	38	147/8	24	7½

^ADimensions to beaded flanges include coupling allowance.

FIG. 15-Ru U Benning Trap^d

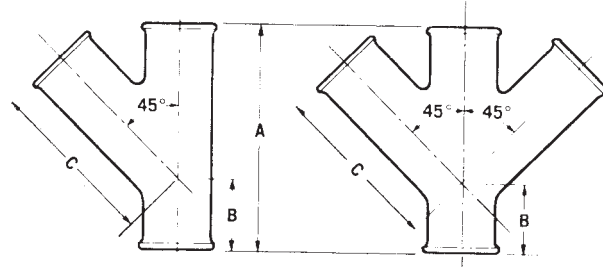


Dimensions^A, in.

Size	A
1½	1
2	1
3	1⅛
4	1¼
6	1½

^ADimensions to beaded flanges include coupling allowance. Note 1—Standard DWV trap cleanout consists of a standard glass cap of 1½ in. (see Fig. 8) and a standard coupling of 1 in.

Note 2—No e6 Cleanouts are available on 6 in. traps^g



Dimensions^A, in.

Size	A	B	C
Size	A	B	C
1½ by 1½	6	1⅞	4½
2 by 1½	8	2½	4¾
2 by 1½	8	2½	4¾
2 by 2	8	2½	6
3 by 1½	12	3¾	5½
3 by 1½	12	3¾	5½
3 by 2	12	3¾	6¾
3 by 3	12	3¾	8
4 by 1½	14	4½	6⅝
4 by 2	14	4½	7½
4 by 3	14	4½	8¾
4 by 4	14	4½	10
6 by 2	20	5¾	9
6 by 3	20	5¾	10⅝
6 by 4	20	5¾	11½
6 by 6	20	5¾	14

^ADimensions to beaded flanges include coupling allowance.

FIG. 17 Cup S Drainline Y

Size	A	B	C
1½ x 1½	5⅞	1⅞	4
2 x 2	5⅞	1¼	4⅝
3 x 2	9	2 ⁹ / ₁₆	6 ⁵ / ₁₆
3 x 3	9	2 ⁹ / ₁₆	7 ¹ / ₁₆
4 x 1½	10	3⅞	6¼
4 x 2	10	2⅞	7¾
4 x 3	10	2	8⅞
4 x 4	10	2	8⅞
6 x 2	16	4⅞	9⅞
6 x 3	16	5⅞	10⅞
6 x 4	16	4½	11⅞
6 x 6	16	4⅝	12⅞

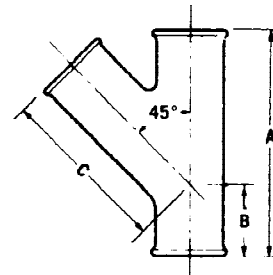
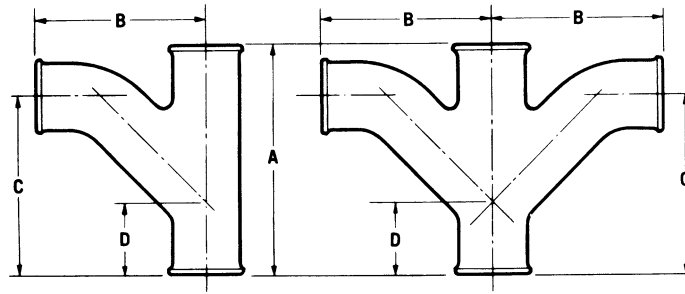


FIG. 18 Compact Single Drainline Y



Dimensions^A, in.

Size-Inlet by Outlet	A	B	C	D
1½ by 1½	8¾	8½	5/8	4⅞
1½ by 1½	6	8½	4⅞	1⅞
2 by 1½	5	4¾	5½	2½
2 by 1	8	6	6¼	2½
3 by 1½	8½	5⅞	7¼	3¾
3 by 1½	12	5⅞	7¼	3¾
3 by 2	8	8½	8	3¾
3 by 2	12	8½	8	3¾
3 by 3	12	8½	5	3¾
2 by 2½	9½	8	8½	4½
2 by 2½	14	8	8½	4½
4 by 2	14	7	9¼	4½
4 by 3	14	9	10¼	4½
4 by 4	14	11	11	4½
6 by 2	20	8¼	11⅞	5¾
6 by 3	20	10	12½	5¾
6 by 3	20	10	12½	5¾
5	20	12	13½	5¾
6 by 6	20	15	14½	5¾

^ADimensions to beaded flanges include coupling allowance.

FIG. 19 Sw Combivel Trap—P Stylium Y and 1/8 Bend

Size	A	B	C	D
2 x 1½	5½	3¾	3¾	1⅝
2 x 2	6	4¾	4¾	1½
3 x 2	9	6⅞	6⅞	2¾
3 x 3	9	6⅞	6⅞	2¾
4 x 1½	10	5¾	6¾	2⅞
4 x 2	10	5¾	6¾	2⅞
4 x 3	10	6¾	7¾	3⅞
4 x 4	10	6¾	7¾	2⅞
6 x 2	16	7¾	9¾	4¾
6 x 3	16	8¾	9¾	4¾
6 x 4	16	9¾	10¾	4¾
6 x 6	16	11¼	10¾	3½

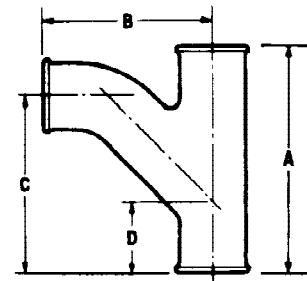


FIG. 20 Compact Combination Y and 1/8 Bend

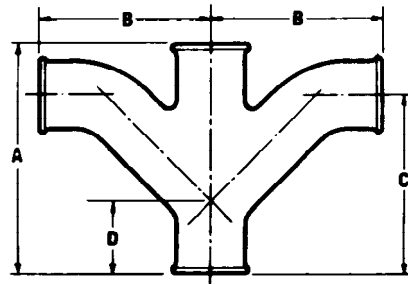
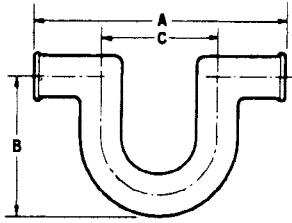


FIG. 21 Compact Double Combination Y and 1/8 Bend

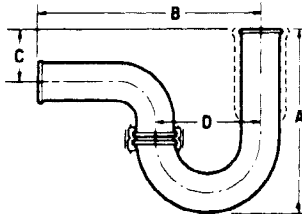


Dimensions^A, in.

Size Inlet by Outlet	A	B	C	D	E
1½ by 1½	11	6	5	3	3
2 by 2	12	6 ¹¹ / ₁₆	5½	3¼	3½
3 by 3	14½	8¼	6½	4	4
4 by 4	17½	9¾	7½	5	5
6 by 6	38	14 ⁷ / ₈	24	7	7

^A Dimensions to beaded flanges include coupling allowance.

FIG. 22 Running Trap



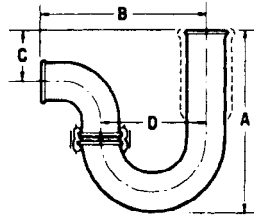
NOTE—Swivel traps include standard 1½ in. coupling.

Dimensions^A, in.

Size Inlet by Outlet	A	B	C	D
1½ by 1½	9 ¹¹ / ₁₆	11	1 ⁵ / ₈	5
2 by 1½	8¾	11	1 ⁵ / ₈	5
2 by 2	8¾	13	1¼	5½

^A Dimensions to beaded flanges include coupling allowance.

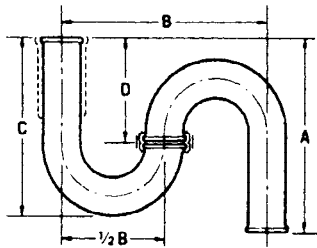
FIG. 23 Swivel Trap—P Style, Long Outlet



Dimensions, in.

Size Inlet by Outlet	A	B	C	D
1½ by 1½	8¾	8	2	5
2 by 1½	8¾	8	2	5
2 by 2	9 ¹¹ / ₁₆	8¾	1 ⁵ / ₈	5½

FIG. 24 Swivel Trap—P Style, Short Outlet



NOTE—Swivel traps include standard 1½ in. coupling.

Dimensions^A, in.

Size Inlet by Outlet	A	B	C	D
1½ by 1½	10	10	8¾	5
2 by 1½	10	10	8¾	5
2 by 2	9¾	11	9 ¹¹ / ₁₆	4 ⁷ / ₈

^A Dimensions to beaded flanges include coupling allowance.

FIG. 25 Swivel Trap—S Style

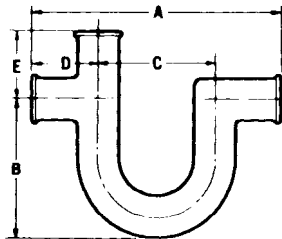
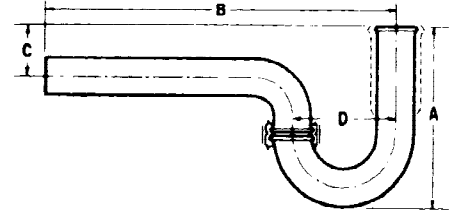


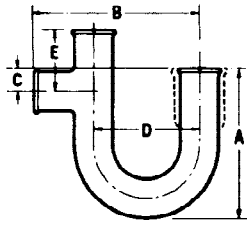
FIG. 26 Running Trap (Vented)

Size Inlet x Outlet	A	B	C	D
1½ x 1½	8¾	17	1½	5
2 x 1½	8¾	17	1½	5
2 x 2	9 ¹¹ / ₁₆	17½	1¼	5½



*Plain end outlet, can be field cut.

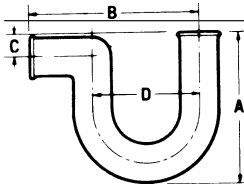
FIG. 27 Swivel Trap—P Style (Plain End Outlet)



Size Inlet x Outlet	Vent Size	A	B	C	D	E
1½ x 1½	1½	7	8	1	5	3
*2 x 1½	1½	7½	8	1½	5	3
2 x 2	2	8 ³ / ₁₆	8¾	1½	5½	3½
3 x 3	3	10¼	10½	2	6½	4
4 x 4	4	12¼	12½	2½	7½	5
6 x 6	4	16¾	31	2½	24	7

*Has expanded inlet.

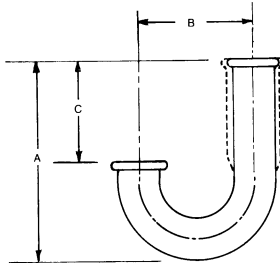
FIG. 28 Trap—P Style (Vented)



Dimensions, in.

Size Inlet by Outlet	A	B	C	D
1½ by 1½	7	8	1	5
2 by 1½	7½	8	1½	5
2 by 2	8 ³ / ₁₆	8¾	1½	5½
3 by 3	10¼	10½	2	6½
4 by 4	12¼	12½	2½	7½
6 by 6	18½	31	3¾	24

FIG. 29 Trap—P Style



NOTE 1—J Bend can be used in combination with quarter bend and return bend to make a variety of custom swivel traps.

Size	Dimensions, in.		
	A	B	C
1½ by 1½	7 ³ / ₁₆	5	3½
2 by 1½	8 ¹ / ₁₆	5	4½
2 by 2	8 ⁷ / ₁₆	5½	4½

FIG. 30 J Bend

Size Inlet x Outlet	A	B	C	D	Body I.D.
1½ x 1½	11¼	9½	10¼	4¾	3
2 x 1½	11¼	9½	10¼	4¾	3
2 x 2	11¼	11	11	5½	4

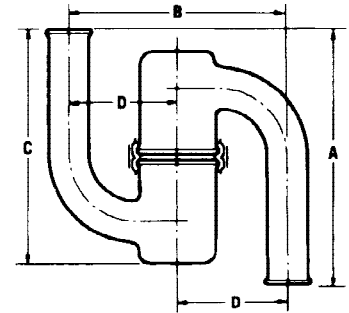
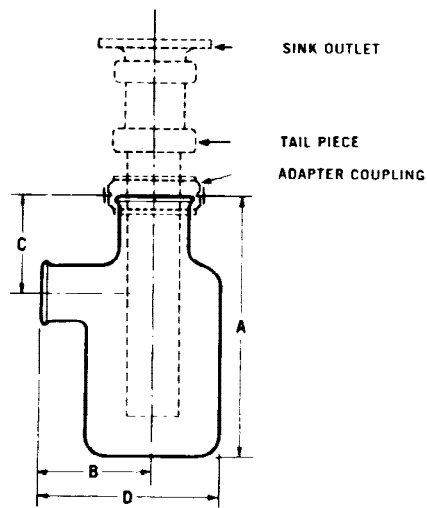
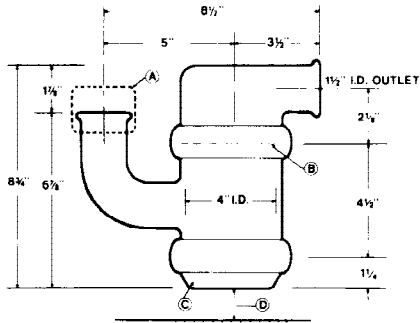


FIG. 31 Swivel Drum Trap—S Style



Size Inlet x Outlet	A	B	C	D
2 x 1½	8½	3¾	3¾	6
2 x 2	8½	3¾	4¼	6

FIG. 32 Partition Trap



Size	Description
1 1/2" x 1 1/2"	Interceptor Trap
1 1/4" O.D. Inlet	Adapter Coupling
1 1/2" O.D. Inlet	Adapter Coupling

A. Adapter Coupling

B. Perforated S.S. Screen 1/16" dia. holes 6 sq. in. free area opening.

C. Removable coupling/end cap for cleanout.

D. Min. 3" clearance required under trap for removal of end cap.

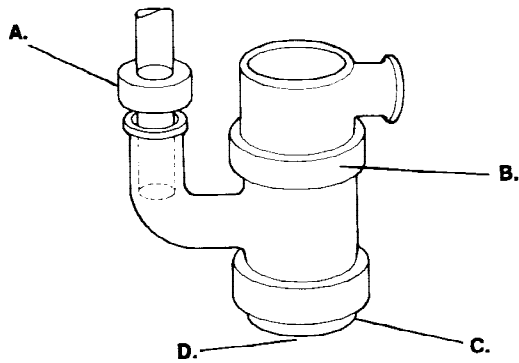


FIG. 33 Interceptor Trap

Traps available with B type cleanout.

Size Inlet x Outlet	A	B	C	D	Body I.D.
1 1/2 x 1 1/2	9	8	1	4 3/4	3
2 x 1 1/2	9	8	1 1/2	4 3/4	3
2 x 2	9 3/4	9 1/4	2	5 1/2	4

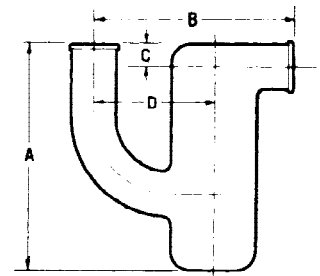
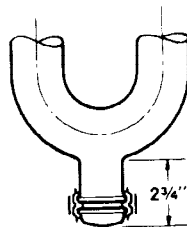


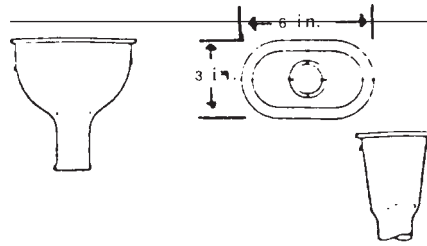
FIG. 34 Drum Trap



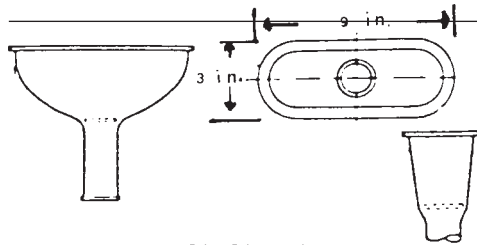
NOTE 1—Standard DWV trap cleanout consists of a standard glass cap of 1/2 in. (see Fig. 8) and a standard coupling of 1/2 in.

NOTE 2—No cleanouts are available on 6 in. traps

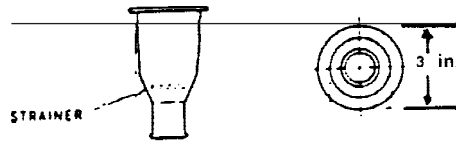
FIG. 35 Standard Cleanout



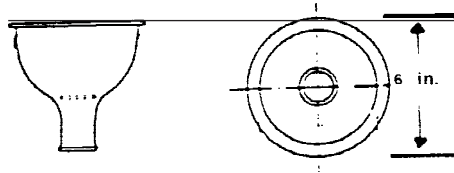
(a) 3 by 6 in. oval



(b) 3 by 9 in. oval



(a) 3 in. hemispherical



(a) 6 in. hemispherical

FIG. 36 Cup Sinks

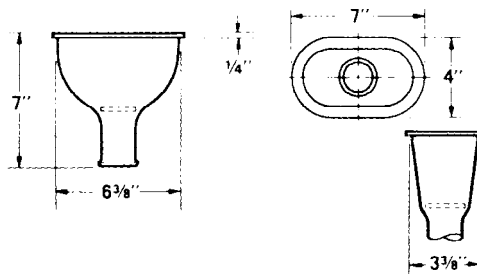


FIG. 37 Beaded Outlet 3-by 6-in. Oval

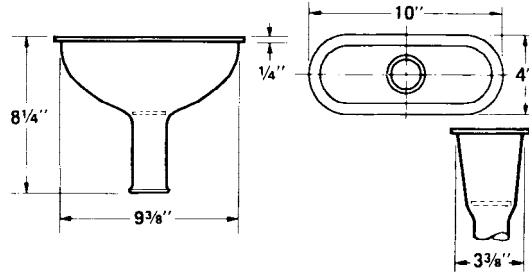


FIG. 38 Beaded Outlet 3- by 9-in. Oval

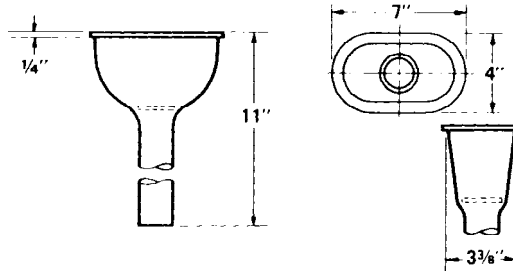


FIG. 39 Plain End Outlet 3- by 6-in. Oval

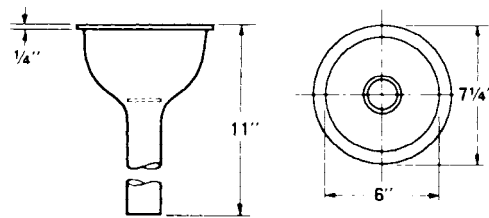


FIG. 40 Plain End Outlet 6-in. Hemispherical

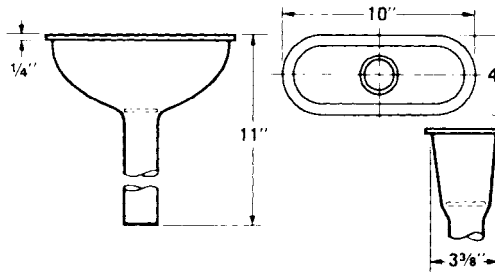


FIG. 41 Plain End Outlet 3- by 9-in. Oval

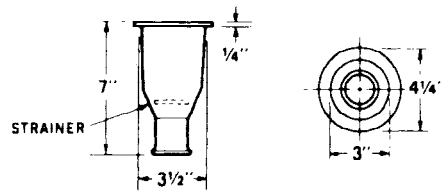


FIG. 42 Beaded Outlet 3-in. Hemispherical

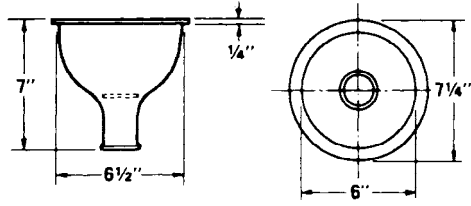


FIG. 43 Bead Outlet 6-in. Hemispherical

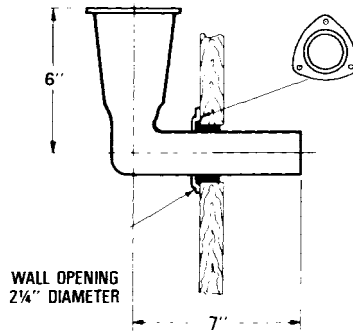


FIG. 44 3- by 6-in. Oval Horizontal Wall-Mounted Cup Sink 1 1/2-in. Plain End Outlet

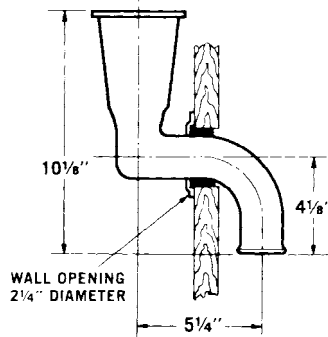


FIG. 45 3- by 6-in. Oval Vertical 1 1/2-in. Outlet Wall-Mounted Cup Sink

ANNEX

(Mandatory Information)

A1. GENERAL REFERENCE DATA FOR LOW-EXPANSION BOROSILICATE GLASS

A1.1 *Density*—2.24 g/cm³, measured at room temperature by Test Method C 693.

A1.2 *Thermal Conductivity*—0.73 Btu·ft/h·ft²·°F (0.0035 cal·cm/s·cm²·°C), measured at room temperature.

A1.3 *Specific Heat*—0.20 Btu/lb·°F (0.20 cal/g·°C), measured at 75°C.

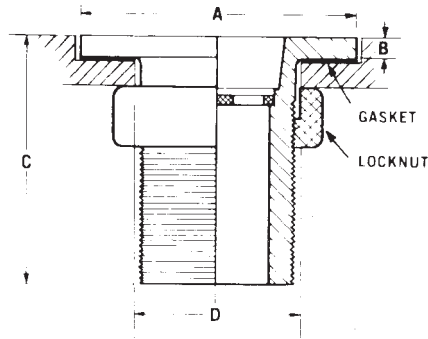
A1.4 *Young's Modulus*—9 000 000 to 10 000 000 psi (62 to 69 GPa) when measured at room temperature in accordance with Test Method C 623.

A1.5 *Tensile Strength*—~~Due to~~ Because of effect of surface conditions on ultimate strength, nominal design shall be 1000 psi (6.9 MPa).

APPENDIX

(Nonmandatory Information)

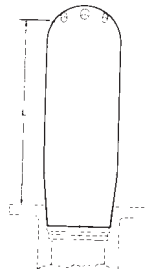
X1. TYPICAL HARDWARE



NOTE 1—Assembly consists of the following sink strainer fluorocarbon plastic 1½-in. or 2-in. sink outlet fluorocarbon plastic; rubber gasket; and locknut.

Dimensions, in.				
Size	A	B	C	D
1½	3¾	¼	2¾	2
2	3 ¹⁵ / ₁₆	¼	3	2 ⁵ / ₈
2	3¾	¼	3	2 ⁵ / ₈

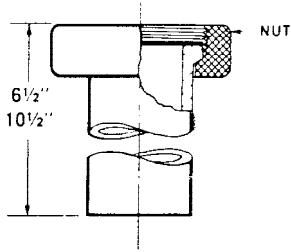
FIG. X1.1 Sink Outlet Assembly



NOTE 1—Sink overflow is made of fluorocarbon plastic. Beehive type can be modified to open type by cutting off top beehive section.

Dimensions, in.	
Sink Outlet Size	Size
1½	1½ by 4
1½	1½ by 6
1½	1½ by 8

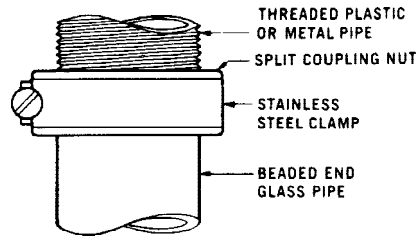
FIG. X1.2 Sink Overflow



NOTE 1—Tailpiece is available in 6½ - and 10½-in. lengths. Specify length when ordering. Glass can be field cut to exact length. Assembly consists of a plastic nut and a tailpiece.

NOTE 2—This assembly can be used on other 1½-in. plastic or metal sink outlets having straight pipe threads.

FIG. X1.3 1½-in. Tailpiece Assembly

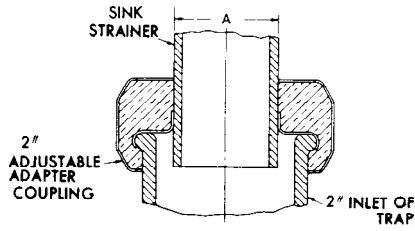


NOTE 1—Split coupling of 1½ in. is used to join 1½-in. beaded glass pipe to threaded 1½-in. I.P.S. pipe.

NOTE 2—The assembly consists of a split coupling nut and a stainless steel clamp.

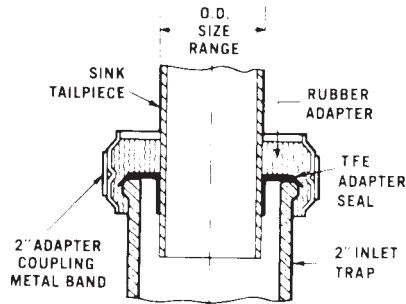
FIG. X1.4 1½-in. Split Coupling (Threaded to Beaded Pipe)

ASTM C 1053 – 00



Dimensions, in.

Size	O.D. Range A
2 by 1 $\frac{3}{4}$	1.70–1.78
2 by 1 $\frac{1}{2}$	1.48–1.53
2 by 1 $\frac{1}{8}$	1.82–1.90

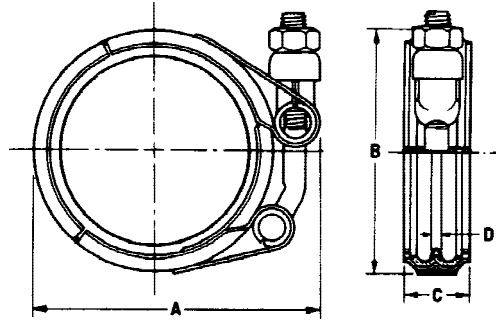


NOTE 1—Adapter assembly is used to join glass DWV pipe or fittings, or both, to plain end sink tailpieces. The assembly consists of a stainless steel outer band with bolt and rubber adapter with TFE adapter seal.

Dimensions, in.

Size	Tailpiece Style	O.D. Size Range
2 by 1 $\frac{1}{2}$	Glass tail pipe extension, metal tubing, and lead tailpiece extensions	1.48 to 1.53
2 by 1 $\frac{3}{4}$	Lead, glass, and cup sink	1.70 to 1.78
2 by 1 $\frac{1}{8}$	1 $\frac{1}{2}$ DWV glass pipe and fittings	1.82 to 1.90

FIG. X1.5 Adapter Coupling

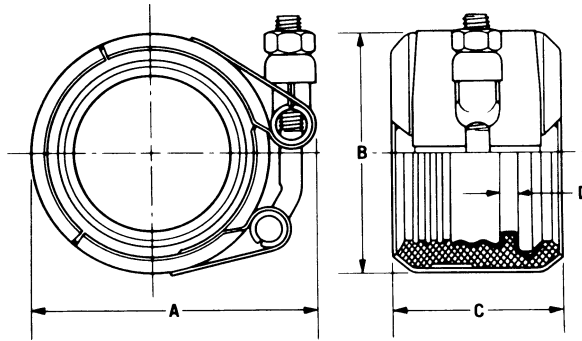


NOTE 1—Coupling is used for joining all sizes of glass DWV pipe and fittings. The assembly consists of stainless steel outer band with bolt and rubber compression liner with TFE seal ring.

Dimensions, in.

Size	A	B	C	D
1½	3	2 ⁵ / ₈	1 ⁵ / ₁₆	¾ ₁₆
2	3½	3 ¹ / ₈	1 ⁵ / ₁₆	¾ ₁₆
3	4¾	4 ¹ / ₄	1 ⁷ / ₁₆	¾ ₁₆
4	6	5½	1½	¾ ₁₆
6	8-¼	7¾	4 ⁷ / ₈	¾
6	8¼	7¾	1 ⁷ / ₈	¼

FIG. X1.6 Coupling (Bead to Bead)



NOTE 1—Coupling is used for joining all sizes of beaded glass to plain end (cut) glass pipe, lead, IPS metal, or plastic pipe. The assembly consists of a stainless steel band and rubber compression liner with TFE seal ring.

Dimensions, in.

Size	A	B	C	D
1½	3	2¾	1¾	¾ ₁₆
2	3¾	3¼	1¾	¾ ₁₆
3	4 ¹¹ / ₁₆	4¼	2 ¹ / ₁₆	¾ ₁₆
4	6	5 ⁵ / ₈	2 ⁹ / ₁₆	¾ ₁₆
6	8 ⁵ / ₈	7 ⁷ / ₈	4	¼

FIG. X1.7 B/P Coupling (Bead to Plain End)

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