Designation: C 1563 – 08

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[1]

This standard is issued under the fixed designation C 1563; 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 reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 Several different types of compression gaskets are available for use in connection with hub and spigot cast iron soil pipe and fittings. The purpose of this test method is to establish material criteria and test procedures for compression gaskets used in joining hub and spigot cast iron soil pipe and fittings for sanitary drain, waste, vent, and storm drain piping applications in accordance with the general needs of producers, distributors, and users.

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:* [2]

A 74 Specification for Cast Iron Soil Pipe and Fittings

C 564 Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings

A 644 Terminology Relating to Iron Castings

3. Terminology

3.1 *Definitions*—For definitions of terms in this test method see Terminology C 717.

3.1.1 *adhesive lubricant*, *n*—liquid emulsion chemically cured polychloroprene.

3.1.2 *manufacturer*, *n*—the entity that molds the compression gaskets covered by this standard.

4. Summary of Test Method

4.1 *Restrained Hydrostatic Joint Test*— In the Restrained Hydrostatic Joint Test, two test pieces are prepared such that inside diameter of the hub and the outside diameter of the spigot conform to the maximum and minimum (respectively) dimensions permitted by Specification A 74. The compression gasket to be tested is used to join the test pieces as detailed in Fig. 1. This assembly is then restrained and subjected to hydrostatic pressure, and the performance of the joint assembly is evaluated.

5. Physical Properties, Material, and Marking

5.1 *Physical Properties*—The gaskets governed by this test method are of a compression type and are designed to fit the annular space between the spigot (plain) end of one pipe or fitting and the receptive hub of another, as shown in Fig. 2.

5.1.1 Each compression gasket shall consist of one or more sealing ring(s) that compress to provide an airtight and watertight seal. Compression gaskets shall have an integral flange to prevent the gasket from rolling into the hub during installation.

5.1.2 Each compression gasket shall be designed to permit expansion, contraction, and deflection of assembled piping common to sanitary drain, waste, vent, and storm piping applications.

5.2 *Material*—Compression gaskets governed by this test method shall be made of a compound containing a thermoset elastomer that complies with all of the requirements of Specification C 564.

5.3 *Marking*—Compression gaskets governed by this test method shall be marked with raised letters so as to be visible after installation (see Fig. 3). Each compression gasket shall be plainly marked with pipe size and class, "ASTM C 564," "ASTM C 1563," country of origin, year of manufacture, and

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[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

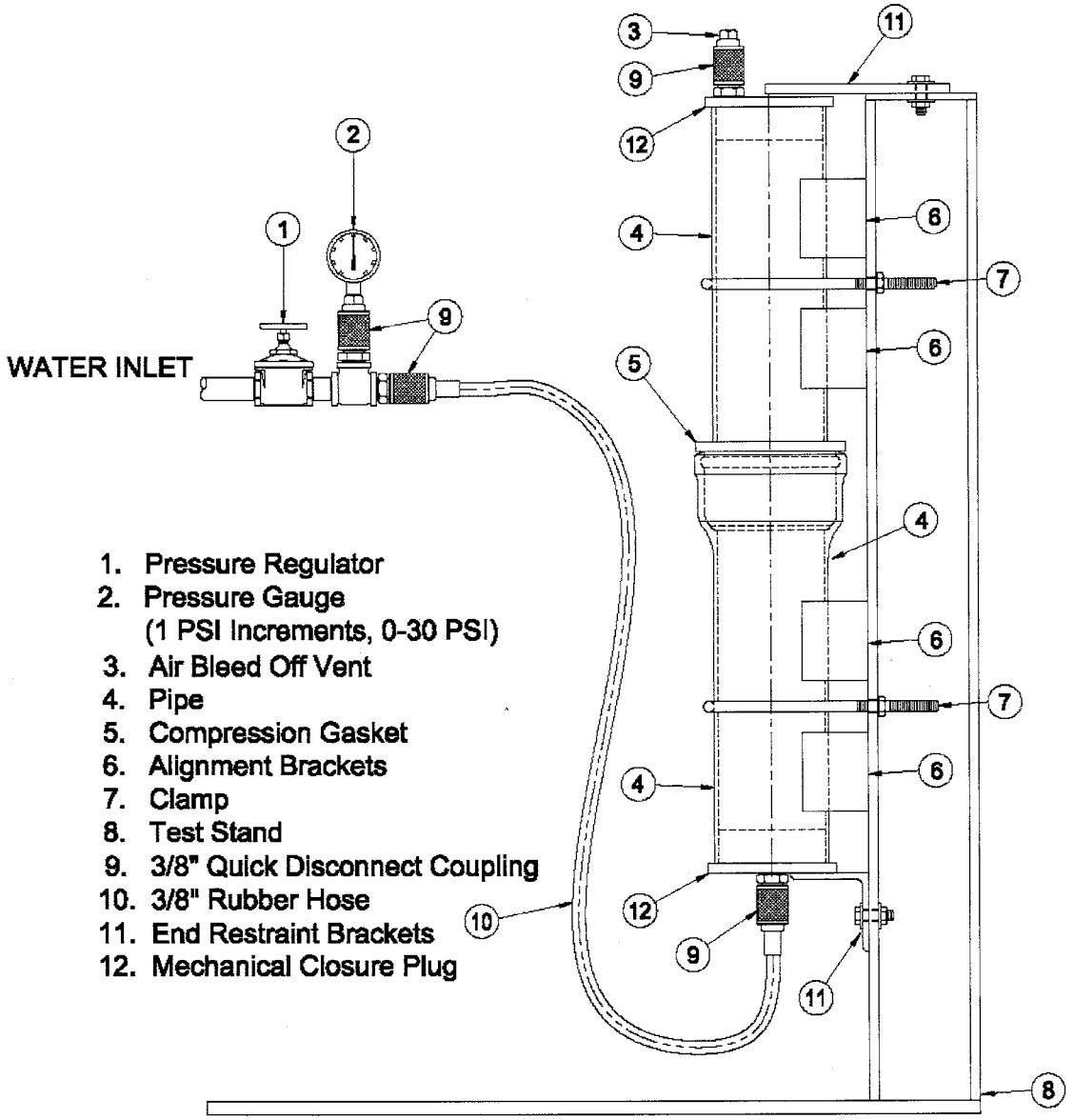

FIG. 1 Restrained Hydrostatic Joint Test Apparatus (Typical)

manufacturer's name or registered trademark that readily identifies the manufacturer after installation. The manufacturer shall also be permitted to include mold number and cavity number or other unique markings for use in quality control procedures.

5.3.1 *Pipe Class*—"XH" shall identify gaskets for use in joining extra heavy cast iron soil pipe and fittings. "SV" shall identify gaskets for use in joining service cast iron soil pipe and fittings.

6. Apparatus

6.1 *Restrained Hydrostatic Joint Testing Apparatus*—Assemble apparatus as detailed in Fig. 1.

6.1.1 *Water Pressure Gauge*—To ensure the accuracy of the test pressures, the test apparatus shall utilize a water pressure gauge graduated in increments no greater than 1 psi (7 kPa), and with a maximum gauge pressure no greater than 30 psi (207 kPa). Locate the water pressure gauge within 6 in. vertically of the joint being tested.

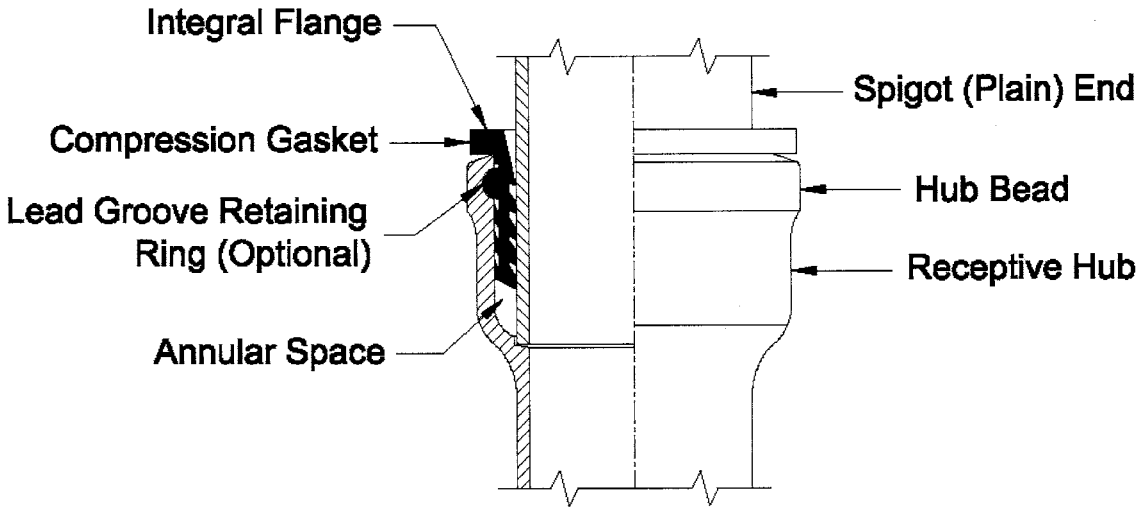

FIG. 2 Compression Gasket Joint

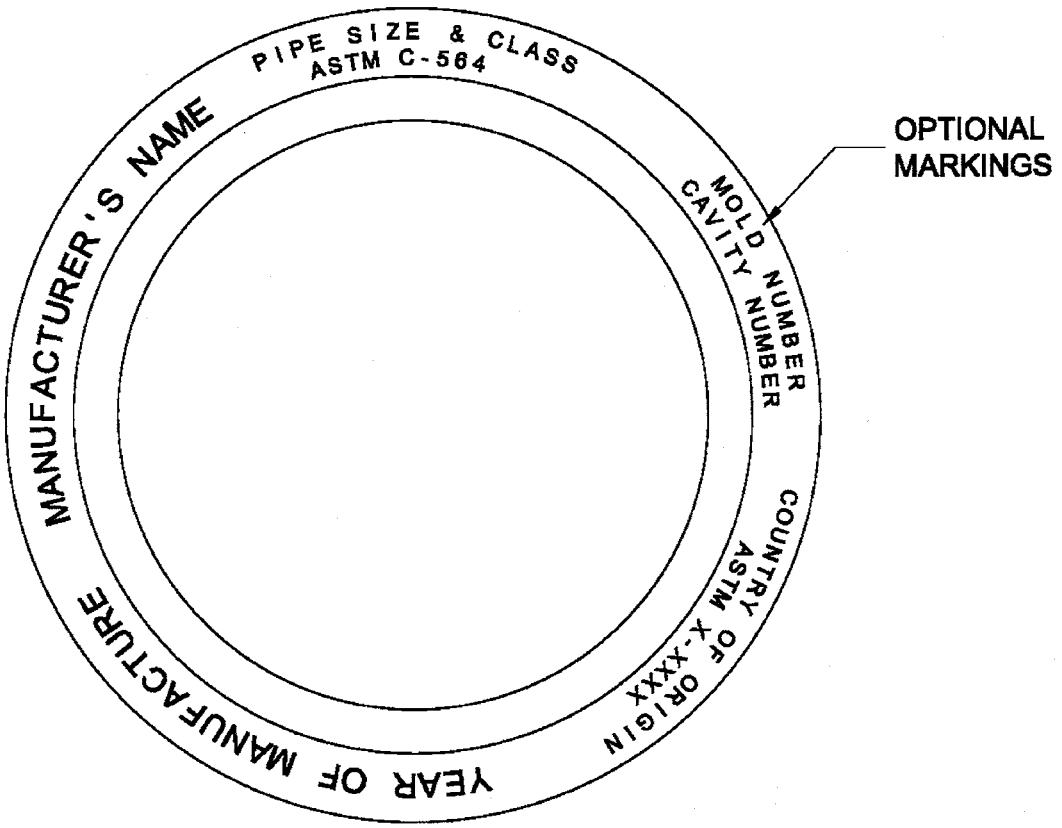

FIG. 3 Marking Location (Typical)

7. Hazards

7.1 This test method is for use in evaluating only those compression gaskets complying with Specification C 564 and Section 5, Physical Properties, Material, and Marking.

7.2 This test method is a pressurized hydrostatic (water) test. Under no circumstances should pressurized air be substituted for water. All air must be expelled from the testing assembly before the assembly is pressurized.

8. Sampling, Test Pieces, and Test Units

8.1 Gaskets of each size and classification under production shall be inspected and tested by the manufacturer to verify compliance with this test method.

8.2 Gaskets for inspection and testing shall be obtained by first article selection and at regular intervals during the course of production. Testing and inspection of samples shall be performed not less than once for each gasket size and lot of raw material.

8.3 The manufacturer shall maintain a record of all inspections and tests to enable the manufacturer to comply with Section 12, Certification.

9. Calibration and Standardization

9.1 *Spigot Test Piece*—A test piece of the same pipe size and class as the gasket to be tested, as indicated by the markings on the gasket.

9.1.1 The outside diameter of the spigot end of the test piece shall be the minimum outside diameter as detailed in Specification A 74, Table 1 and Table 2, column "J."

9.1.2 The spigot test piece shall not have a spigot bead and shall be left uncoated.

9.2 *Hub Test Piece*—A test piece of the same pipe size and class as the gasket to be tested, as indicated by the markings on the gasket.

9.2.1 The inside diameter of the hub of the test piece shall be the maximum inside diameter as detailed in Specification A 74, Table 1 and Table 2, column "A."

9.2.2 A lead groove shall be provided. The lead groove depth shall be the minimum dimension detailed in Specification A 74, Table 1, Column "G (min)" at the location indicated in Specification A 74, Table 1, column "P."

9.2.3 The hub test piece shall be left uncoated.

10. Conditioning

10.1 Perform all testing at room temperature.

10.2 The surfaces of the spigot test piece and the hub test piece are to remain uncoated and must be cleaned with acetone and thoroughly dried before each assembly for testing.

10.3 Where needed to facilitate the assembly of the joint, the use of a lubricant shall be permitted. Under no circumstances shall the use of adhesive lubricant be permitted.

11. Procedure

11.1 Prepare the spigot test piece and the hub test piece as detailed in Sections 9 and 10. Assemble testing apparatus as detailed in Section 6, and Fig. 1.

11.2 Install the compression gasket to be tested in the hub of the hub test piece. Insert the spigot (plain) end of the spigot test piece into the gasket to the full depth of the hub test piece. Support and restrain the hub test piece and the spigot test piece in a manner that restrains the joint from movement (see Fig. 1).

11.3 Fill the assembly with water, expel all air, and increase the hydrostatic pressure at a rate of 5 psi (34.5 kPa) for 1 min, 10 psi (69.0 kPa) for second minute until the target pressure of 13 psi (110 kPa) is reached.

11.4 When the target pressure is achieved, hold this pressure constant for a period of 20 min.

11.5 Joint failure occurs when the distance between the top of the hub test piece and the gasket flange exceeds 0.25 in. (6.35 mm) or when water is observed to leak from the joint.

11.5.1 Joint failure shall indicate failure of the test.

12. Certification

12.1 When specified in the purchase order or contract, the purchaser shall be furnished certification stating that samples representing each lot have been tested and inspected as indicated in this specification and that the requirements have been met. Upon request, a report of the test results shall be furnished.

12.1.1 Records of tests, test data, and test results shall be maintained by the manufacturer to enable the manufacturer to certify compliance of material in the field. Such records shall be maintained for a period of five years from the date of compression gasket manufacture as indicated by the "year of manufacture" marking on the compression gasket required by section 5.3, Marking.

13. Keywords

13.1 cast iron soil pipe joint; compression gasket(s); hub and spigot pipe joint