



Designation: A1128 – 24

Standard Specification for Stainless Steel Shielded, Rubber Gasketed Couplings Having an Integral Restraint Feature for Joining Hubless Cast Iron Soil Pipes and Fittings Where External Restraint Is Required¹

This standard is issued under the fixed designation A1128; 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 This specification covers the materials and testing of stainless steel shielded, rubber gasketed couplings having an integral restraint feature for joining hubless cast iron soil pipes and fittings manufactured in accordance with Specification [A888](#), latest revision, and CISPI 301, latest revision used in drain, waste, and storm water applications where external restraint is needed or required by the pipe and fittings manufacturer's installation instructions or specified by project requirements. These couplings have an integral restraint feature which enables the couplings to be used in locations where external joint restraint cannot easily be installed at vertical changes of direction and locations subject to extended periods of maximum flow.

1.2 These couplings shall be suitable for joining hubless cast iron pipes and fittings where gasket positioning lugs and spigot beads are cast on the pipe or fittings or both.

1.3 Cast iron soil pipe fittings manufactured to comply with Specification [A888](#) or CISPI 301 are permitted to be cast with or without positioning lugs and required to have spigot beads. The dimensions and tolerances for these are found in Figures 1 and 2 of Specification [A888](#) and CISPI 301. The fittings manufactured to CISPI 301 and [A888](#) are marked using as cast raised markings. The coupling manufacturers producing couplings to this standard shall include information in their installation instructions regarding their requirements when raised markings are found in the sealing area of the coupling during installation of the couplings covered by this standard. It is not the intent of this standard to conflict with the pipe and fittings manufacturer's installation instructions.

1.4 The subcommittee with jurisdiction over this standard is aware of other coupling standards published by the Cast iron Soil Pipe Institute, CISPI 310, FM 1680 published by Factory

Mutual; Specifications [C1540](#), [C1277](#), [A1056](#), and [F1476](#) published by ASTM; CSA B602 published by the Canadian Standards Association; and BS EN 877. It is not the intent of this standard to duplicate or contradict the requirements of these standards.

1.5 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 to be considered as a part of the standard.

1.6 The following precautionary caveat pertains only to the test method portion, Section 7, of this specification. *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.7 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:²

[A240/A240M](#) Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications

[A276/A276M](#) Specification for Stainless Steel Bars and Shapes

[A543/A543M](#) Specification for Pressure Vessel Plates, Alloy Steel, Quenched and Tempered Nickel-Chromium-Molybdenum

[A574](#) Specification for Alloy Steel Socket-Head Cap Screws

¹ This specification is under the jurisdiction of ASTM Committee [A04](#) on Iron Castings and is the direct responsibility of Subcommittee [A04.75](#) on Gaskets and Coupling for Plumbing and Sewer Piping.

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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.

- A644** Terminology Relating to Iron Castings
A888 Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications
A1056 Specification for Cast Iron Couplings Used for Joining Hubless Cast Iron Soil Pipe and Fittings
B117 Practice for Operating Salt Spray (Fog) Apparatus
C564 Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings
C1277 Specification for Shielded Couplings Joining Hubless Cast Iron Soil Pipe and Fittings
C1540 Specification for Heavy-Duty Shielded Couplings Joining Hubless Cast Iron Soil Pipe and Fittings
D3677 Test Methods for Rubber—Identification by Infrared Spectrophotometry
F837 Specification for Stainless Steel Socket Head Cap Screws
F1476 Specification for Performance of Gasketed Mechanical Couplings for Use in Piping Applications

2.2 CISPI Standards:³

- CISPI 301** Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste and Vent Piping Applications
CISPI 310 Specification for Coupling for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste and Vent Piping Applications

2.3 ISO Standards:⁴

- ISO 898-1** Mechanical Properties of Fasteners Made of Carbon Steel and Alloy Steel—Part 1: Bolts, Screws and Studs with Specified Property Classes
ISO 3506-6 Mechanical Properties of Corrosion-Resistant Stainless Steel Fasteners—Part 6: General Rules for the Selection of Stainless Steels and Nickel Alloys for Fasteners

ISO 4762 Hexagon Socket Head Cap Screws

ISO 23429 Gauging of Hexagon Socket

2.4 CSA Standards:⁵

- B602** Mechanical Couplings for Drain, Waste, and Vent Pipe and Sewer Pipe

3. Terminology

3.1 Definitions of the following terms used in this specification are found in Terminology **A644**: *elastomeric* and *durometer*.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *center stop*, *n*—an integral part of the gasket centered on the axial length of the gasket, intended to limit the insertion depth of the pipe, or fitting to be coupled.

3.2.2 *clamp assembly*, *n*—that portion of the coupling excluding the gasket and shield.

3.2.3 *coupling*, *n*—the complete assembly.

3.2.4 *fitting*, *n*—parts of a pipeline other than straight pipes, valves, or couplings.

3.2.5 *gasket*, *n*—the elastomeric portion of the coupling.

3.2.6 *gasket positioning lug*, *n*—a raised as-cast mark found on the ends of hubless fittings which enables the installer and inspector to verify that the coupling has been seated against the gasket center stop.

3.2.7 *integral restraint ring*, *n*—internal metallic restraint with gripping teeth that is intended to provide axial restraint.

3.2.8 *joint*, *n*—the point of assembly consisting of the coupling and the joined pipes or fittings, or both.

3.2.9 *manufacturer clamp assembly and shield*, *n*—the entity that attaches the clamp assembly to the shield for the couplings covered by this standard specification.

3.2.10 *manufacturer gaskets*, *n*—the entity that produces the gaskets covered by this standard specification.

3.2.11 *shield*, *n*—an external metallic protective device designed to provide restraint and protect the sealing gasket from external elements that could cause failure of the sealing gasket.

4. Materials and Manufacture

4.1 The physical and chemical performance properties of gaskets shall comply with Specification **C564**. The dimensional, material specifications, and performance properties are as shown in **Tables 1 and 2** and **Figs. 1 and 2** of this standard.

4.2 Clamp assembly screws shall have recessed socket-head hexagonal heads conforming to Specification **A574** or ISO 4762 and shall not have screwdriver slots.

4.3 All stainless steel shields shall meet the physical requirements of Type 304 (L) AISI or Type 316 (L) AISI stainless steel.

4.4 Hexagonal socket headed cap screws shall meet the physical requirements of Specification **A574** or ISO 898-1, ISO 4762 for alloy steel or Specification **F837** Type 316 AISI or ISO 4762. The physical dimensions of all fasteners shall be in accordance with either **A543/A543M**, **A574**, **F837**, ISO 4762, and/or ISO 23429.

NOTE 1—Screws are not required to be stainless steel unless specified by the coupling purchaser.

4.5 Integral restraint rings shall be of stainless steel meeting the physical requirements of Type 301 AISI. Design and production shall be to the manufacturer's details and specifications and test performance requirements of this standard.

4.6 Lock part assembly bar shall be made from either low carbon, free cutting steel not intended for heat treatment or

³ Available from Cast Iron Soil Pipe Institute (CISPI), 2401 Fieldcrest Dr., Mundelein, IL, 60060, <http://www.cispi.org>.

⁴ Available from International Organization for Standardization (ISO), ISO Central Secretariat, Chemin de Blandinnet 8, CP 401, 1214 Vernier, Geneva, Switzerland, <https://www.iso.org>.

⁵ Available from Canadian Standards Association (CSA), 178 Rexdale Blvd., Toronto, ON M9W 1R3, Canada, <http://www.csagroup.org>.

TABLE 1 Coupling Width

Nominal Pipe Size	Nominal Coupling Width
1½ to 5 in. (38 to 127 mm)	3 in. (76 mm)
6 to 10 in. (154 to 254 mm)	4.0 in. (102 mm)
12 to 15 in. (305 to 381 mm)	4.7 in. (119 mm)



TABLE 2 Dimension and Tolerances for Hubless Pipe and Fittings^A

Barrel ID	OD	Tolerance	W1	D1
1½ in.	1.90 in. (48.7 mm)	±0.06 in. (±1.524 mm)	3 in. (76.2 mm)	1.9 in. (48.3 mm)
2 in.	2.35 in. (59.7 mm)	±0.09 in. (±2.29 mm)	3 in. (76.2 mm)	2.35 in. (59.7 mm)
3 in.	3.35 in. (85.1 mm)	±0.09 in. (±2.29 mm)	3 in. (76.2 mm)	3.35 in. (85.1 mm)
4 in.	4.38 in. (111.2 mm)	+0.09 / -0.05 in. (+2.29 / -1.27 mm)	3 in. (76.2 mm)	4.38 in. (111.2 mm)
5 in.	5.30 in. (134.6 mm)	+0.09 / -0.05 in. (+2.29 / -1.27 mm)	3 in. (76.2 mm)	5.30 in. (134.6 mm)
6 in.	6.30 in. (160.0 mm)	+0.09 / -0.05 in. (+2.29 / -1.27 mm)	4.0 in. (102.0 mm)	6.30 in. (160.0 mm)
8 in.	8.38 in. (212.8 mm)	±0.09 in. (±2.29 mm)	4.0 in. (102.0 mm)	8.38 in. (212.8 mm)
10 in.	10.56 in. (268.0 mm)	±0.09 in. (±2.29 mm)	4.72 in. (119.9 mm)	10.55 in. (268.0 mm)
12 in.	12.50 in. (317.5 mm)	±0.13 in. (±3.3 mm)	4.72 in. (119.9 mm)	12.50 in. (317.5 mm)
15 in.	15.83 in. (402.1 mm)	±0.13 in. (±3.3 mm)	4.72 in. (119.9 mm)	15.58 in. (402.1 mm)

^A Metric conversions are for information only and are not considered standard.

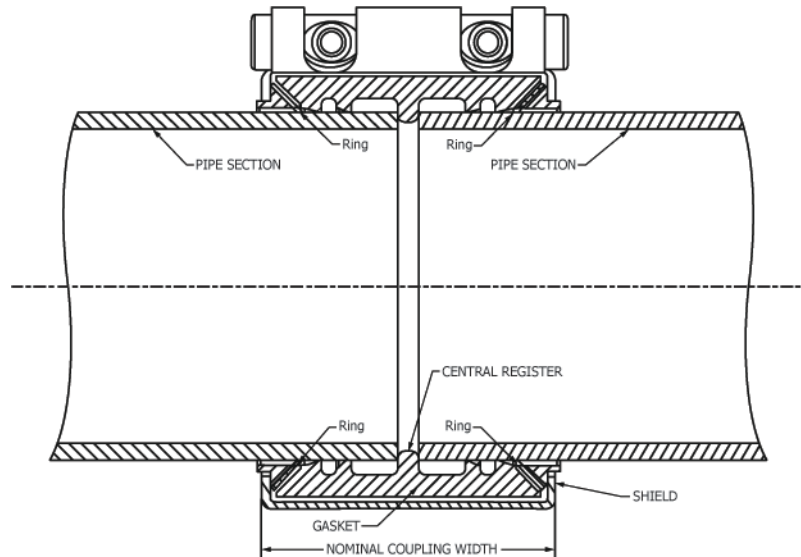


FIG. 1 Typical Gasket Design

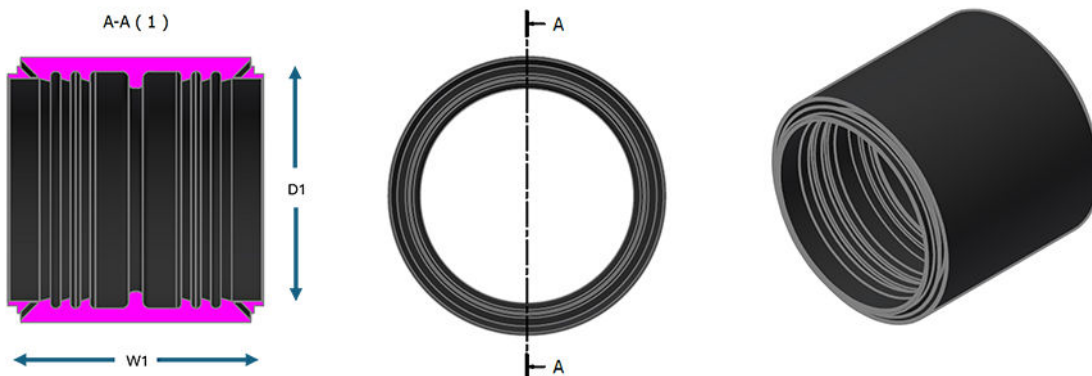


FIG. 2 Typical Gasket Design

stainless steel to Specification **A276/A276M** AISI 316 L – AISI 316 H9. The bars shall be free from defects, burrs, and sharp edges.

5. Gasket Requirements

5.1 The gaskets shall be tested in accordance with Test Methods **D3677** and be manufactured from a properly vulcanized virgin compound where the primary elastomer is poly-chloroprene (neoprene).

5.2 The gasket shall consist of one piece conforming to the physical requirements of Specification **C564**. The gaskets shall be tested by the gasket manufacturer for compliance to Specification **C564** during each day of production, not to exceed 24 h for each size of gasket being produced. These tests shall be performed at the manufacturer's location during the time of production, but not longer than 72 h after the time of production. These tests shall include hardness, elongation and tensile strength, tear strength, and compression set.