Designation: F1122 – 22

An American National Standard

Standard Specification for Quick Disconnect Couplings (6 in. NPS and Smaller)[1]

This standard is issued under the fixed designation F1122; 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 manufacturing data required to produce a variety of styles and sizes of quick disconnect couplings up to and including NPS 6 for marine use that ensure interchangeability and safety of operation.

1.2 In general, quick disconnect couplings are hose and pipe end fittings that permit quick mechanical attachment by means other than bolted or threaded fittings. The method of attachment is a male coupling half (adapter, tank unit) that fits into a female coupling half (coupler, hose unit) of the same size.

1.2.1 By closing attached cam handles on cam and groove couplings, the coupling halves seal, permitting fluids to be transported under pressure through the quick disconnect coupling.

1.2.2 By aligning the rollers on the hose unit coupler with the notches on the tank unit adapter on the dry disconnect coupling (DDC), push the coupler onto the adapter and rotate past 100°. This will lock the couplings together, create a seal and open the internal valves for full flow with low pressure drop. The dual poppet design shut-off mechanism seals liquids and gases behind the valve, eliminating fugitive emissions and the danger of a spill upon disconnection.

1.3 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.

1.4 The following safety hazards caveat pertains only to the test method described in 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.*

1.5 *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 *MSS Standards:*[2]

MSS-SP-6 Standard Finish for Contact Faces of Pipe Flanges and Connecting End Flanges of Valves and Fittings

MSS-SP-25 Standard Marking System for Valves, Fittings, Flanges, and Unions

MSS-SP-55 Quality Standard for Steel Castings for Valves, Flanges, and Fittings and Other Piping Components (Visual Method)

2.2 *ASME Standards:*[3]

ASME Boiler and Pressure Vessel Code Section VIII, Division 1

ASME Boiler and Pressure Vessel Code Section IX

ASME/ANSI B2.1 Pipe Threads (Except Dryseal)

B16.5 Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24 Metric/Inch Standard

B16.24 Cast Copper Alloy Pipe Flanges, Flanged Fittings, and Valves: Classes 150, 300, 600, 900, 1500, and 2500

B16.42 Ductile Iron Pipe Flanges and Flanged Fittings: Classes 150 and 300

B31.1 Power Piping

2.3 *Other Standards:*

STANAG 3756 Facilities and Equipment for Receipt and Delivery of Aviation Kerosene and Diesel Fuels[4]

ISO 3601 Fluid power systems — O-rings[5]

ISO 2230 Rubber products — Guidelines for storage[5]

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

[1] This specification is under the jurisdiction of ASTM Committee F25 on Ships and Marine Technology and is the direct responsibility of Subcommittee F25.11 on Machinery and Piping Systems.

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[2] Available from Manufacturers Standardization Society of the Valve and Fittings Industry (MSS), 127 Park St., NE, Vienna, VA 22180-4602, http://www.mss-hq.org.

[3] Available from American Society of Mechanical Engineers (ASME), ASME International Headquarters, Two Park Ave., New York, NY 10016-5990, http://www.asme.org.

[4] Available from SAI Global, 205 West Wacker Dr., Suite 1800, Chicago, IL 60606, https://infostore.saiglobal.com.

[5] Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, http://www.ansi.org.

3.1.1 *adapter, n*—one half of a quick disconnect coupling that fits into the coupler and seals against an elastomer gasket or seal.

3.1.2 *cam handles, n*—handles that are assembled to the coupler half which by closing engages the adapter sealing the coupling.

3.1.3 *coupler, n*—one half of a quick disconnect coupling that receives the adapter; this half contains the sealing gasket and cam handles on the cam and groove type coupling (see Fig. 1).

3.1.3.1 *Discussion*—See Fig. 2 for a description of typical coupler pipe fittings—cam and groove type.

3.1.4 *units:*

3.1.4.1 *tank unit, n*—the male half of the coupling (DDC). It contains a valve that closes before the hose unit is disconnected. Attachment of this tank unit may be by a flanged or threaded connection.

3.1.4.2 *hose unit, n*—the hose unit (DDC) is designed to couple with the adapter of the tank unit in any of the three lug positions and shall be interlocked in such a way that product cannot flow until a seal is achieved. The interlock must also ensure that flow will cease before the seal between the adapter and hose is broken. Attachment of the hose unit may be by a threaded or flanged connection.

3.1.4.3 *Discussion*—The design of the interface between the hose unit and tank unit shall ensure that the residue on disconnection is minimized and all cases will be less than that specified below. Based on average loss over 10 couplings and uncoupling at 1 bar to the maximum working pressure. See Fig. 3.

$$\text{The permitted loss} = \frac{\text{Coupling size (mm)}}{20}\ \text{(mL)}$$

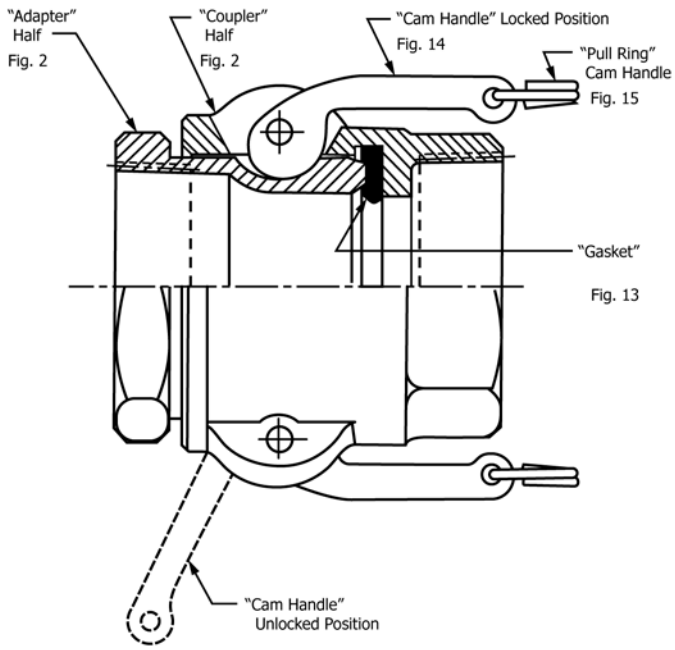

FIG. 1 Typical Coupler Assembly

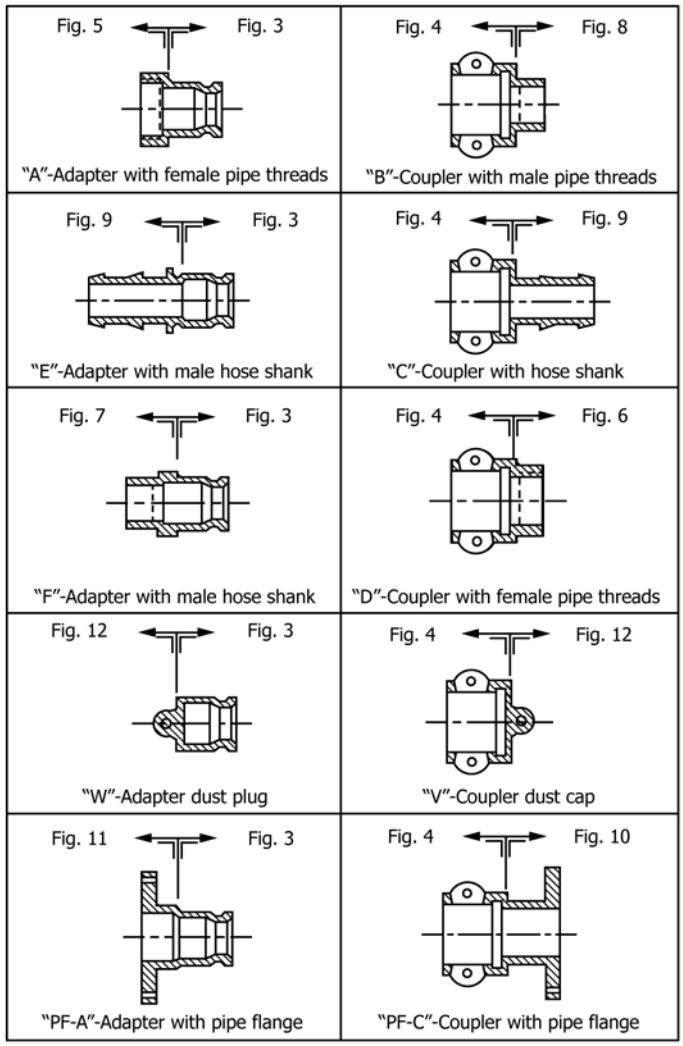

FIG. 2 Adapter/Coupler Types (End Dimensional Data Located in Tables Indicated by Arrows)

4. Classification

4.1 Quick disconnect couplings shall consist of the following types:

4.1.1 *Standard Class*—This type is to be designed for a 4:1 burst factor of safety.

4.1.2 *Class I*—This type is to be designed for a 5:1 burst factor of safety.

4.2 Both Standard Class and Class I will be called quick disconnect couplings in the body of this specification unless otherwise specified.

5. Ordering Information

5.1 Purchase orders for quick disconnect couplings under this specification shall include the following applicable information:

5.1.1 Class.

5.1.2 Size and type of each coupling half-end connection. (Example: 2- by 1½-in. NPT.)

5.1.3 ASTM material designation and date including alloy specifications for the following: