216-6.5 Hydrostatic Testing of Hot Tap Fittings

216-6.5.1 Test Pressure

(a) The hydrostatic test pressure should be performed at a test pressure that is at least the test pressure required by the original construction code or the applicable post-construction code, but not greater than the lesser of following:

(1) The lesser of 1.5 times the design pressure of the line, or vessel, or tank, and 1.5 times the flange pressure-temperature rating listed in ASME B16.5 at the test temperature for hot tap fittings installed on a system which includes B16.5 flanges.

(2) The maximum permissible external pressure on the vessel or pipe (see para. 216-3.12) inside the hot tap fitting at the test temperature.

(b) The test medium shall be selected such that local boiling of the test medium does not occur when subjected to operating temperature of the vessel or pipe [see para. 216-6.4(a)].

216-6.6 Pneumatic Test of Hot Tap Fittings

(a) Pneumatic test should not be used because of the increased risk of stored energy.

(b) It is sometimes necessary to consider a pneumatic test if it is not practical to perform a hydrostatic test (e.g., for test temperatures above the boiling point of water or other liquids).

(c) A pneumatic test with air or other gases (e.g., nitrogen) should only be performed when agreed to by the owner.

(d) The pneumatic test pressure shall not exceed 1.1 times the pressure rating of the hot tap fitting at the operating temperature of the vessel or the pipe.

(e) See Article 501 for extensive guidance on performing pneumatic test.

216-7 REFERENCES

216-7.1 Referenced Codes and Standards

The following is a list of publications referenced in this Article. Unless otherwise specified, the latest edition shall apply.

ASME Boiler and Pressure Vessel Code, Section VIII, Division 1 Rules; for Construction of Pressure Vessels

ASME Boiler and Pressure Vessel Code, Section IX, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operations

ASME B16.5, Pipe Flanges and Flanged Fittings

Publisher: The American Society of Mechanical Engineers (ASME), Two Park Avenue, New York, NY 10016-5990 (www.asme.org)


Publisher: American National Standards Institute (ANSI), 25 West 43rd Street, New York, NY 10036 (www.ansi.org)

API Standard 510, Pressure Vessel Inspection Code: Maintenance Inspection, Rating, Repair, and Alteration

API Standard 570, Piping Inspection Code: Inspection, repair, Alteration, and Rerating of In-Service Piping Systems

API Standard 600, Steel Gate Valves — Flanged and Butt-Welded Ends, Bolted Bonnets

API RP 941, Steels for Hydrogen Service at Elevated Temperatures and Pressures in Petroleum Refineries and Petrochemical Plants


Publisher: American Petroleum Institute (API), 1220 L Street, NW, Washington, DC 20005 (www.api.org)

MSS SP-97-2006, Integrally Reinforced Branch Outlet Fittings- Socket Welding, Threaded, and Butt Welding Ends

Publisher: Manufacturer Standardization Society of the Valve and Fittings Industry, Inc. (MSS), 127 Park Street, NE, Vienna, VA 22180 (www.msshq.org)

216-7.2 Related Codes and Standards

The following is a list of publications referenced in this Article. Unless otherwise specified, the latest edition shall apply.

ASME Boiler and Pressure Vessel Code, Section V, Nondestructive Examination

ASME B31.1, Process Piping

ASME B31.3, Power Piping

ASME B31.4, Pipeline Transportation Systems for Liquid Hydrocarbons and Other Liquids

ASME B31.8, Gas Transmission and Distribution Piping Systems

Publisher: The American Society of Mechanical Engineers (ASME), Two Park Avenue, New York, NY 10016-5990 (www.asme.org)

ANSI Z49.1, Safety in Welding, Cutting and Allied Processes

Publisher: American National Standards Institute (ANSI), 25 West 43rd Street, New York, NY 10036 (www.ansi.org)

API RP 577, Recommended Practice, Welding Inspection and Metallurgy

API RP 582, Recommended Practice, Welding Guidelines for the Chemical, Oil, and Gas Industries

API Standard 620, Design and Construction of Large, Welded, Low-Pressure Storage Tanks

API Standard 650, Welded Steel Tanks for Oil Storage