AMERICAN NATIONAL STANDARD

STANDARD FOR PROOF OF PRESSURE RATINGS FOR PRESSURE REGULATORS AND TEMPERATURE REGULATORS

ANSI/FCI 79-1-2021

Fluid Controls Institute, Inc.

Sponsor:

Fluid Controls Institute, Inc.
1300 Sumner Ave
Cleveland, Ohio 44115-2851

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Standard for Proof of Pressure Ratings for Pressure Regulators and Temperature Regulators

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Fluid Controls Institute, Inc.

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Suggestions for improvement of this standard will be welcome. They should be sent to the Fluid Controls Institute, Inc.

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Foreword (The foreword and history are included for information purposes).

This Fluid Controls Institute's (FCI) voluntary standard establishes guidelines for proof-of-design testing of pressure regulators and temperature regulators used in the fluid controls industry. It is not intended for use in the routine production testing of regulators shells, which is covered by ANSI / FCI 4-1.

This voluntary standard was developed as a cooperative effort of the manufacturers in the Regulator Section of the FCI to assist manufacturers, users and specifiers of pressure regulators and temperature regulators.

While the recommendations for proof testing of pressure and temperature regulators and components contained herein are technically sound, it is not intended that they be considered the only method for proof testing of pressure regulators. These recommendations should not be interpreted as superior to or a standard that would necessarily be preferred in lieu of an engineer's design for a particular system.

These recommendations for proof testing originate from the collective experience of leading personnel in the fluid control industry, but must, due to the nature of the responsibilities involved, be presented only as a guide for the use of a qualified designer or engineer. Thus, the Fluid Control Institute, Inc. expressly disclaims any responsibility for damages arising from the use, application or reliance on the recommendations and information contained herein by designers or by engineers.

This standard is not intended to supersede existing standards for regulators for specific applications such as those for gas appliance pressure regulators, for high pressure regulators for gas cylinders, or for fluid power regulators in machinery operations. See FCI 86-2 for definitions of regulator types.

FCI 79-1-2016 had been updated to include proof of pressure ratings for temperature regulators, previously covered in FCI 81-1.

FCI recognizes the need to periodically review and update this standard. Suggestions for improvement should be forwarded to the Fluid Controls Institute, Inc., 1300 Sumner Avenue, Cleveland, Ohio, 44115-2851. All constructive suggestions for expansion and revision of this standard are welcome.

The existence of a FCI standard does not in any respect preclude any member or non-member from manufacturing or selling products not conforming to this standard nor is the FCI responsible for its use.

Please go to the FCI web site for all of the latest technical articles and standards.

ANSI/FCI 79-1-2021

AMERICAN NATIONAL STANDARD

Standard for Proof of Pressure Rating of Pressure Regulators and Temperature Regulators

1. SCOPE

1.1 This standard describes the recommended proof testing of pressure regulators and temperature regulators for operation at or below the manufacturer's rated pressure.

1.2 The purpose of this standard is to create common guidelines for establishing pressure ratings for use by manufacturers, users, specifiers and approval bodies in order to provide consistent pressure containment integrity.

2. DEFINITIONS

2.1 A pressure regulator as covered by this standard is a self-contained, self-powered device that serves to automatically maintain a pressure at a controlled value.

2.2 A temperature regulator as covered by this standard is a self-contained and powered device which serves to automatically throttle the flow of fluid (controlled medium) to maintain a process temperature at a controlled value. Power to accomplish the throttling is derived from the controlled fluid.

2.3 Specified minimum tensile strength is that called for in the material specification or the user's order.

2.4 The test specimen is a sample taken from the same heat of a pressure retaining component.

2.5 The tensile ratio is the actual tensile strength of the specimen divided by the specified minimum tensile strength.

2.6 A rupture is the fracture of the pressure boundary, whether leading to a release of pressure in the chamber or not.

2.7 The wall thickness ratio is the actual wall thickness of the test specimen divided by the minimum allowable wall thickness of the test specimen in the area associated with measured displacement resulting from the hydraulic proof test.

2.8 Rated pressures as established by this standard are those which are specified by the manufacturer based on using the method of 4.5 or 4.10 and can safely be used in normal service without rupture of the pressure containing components, provided the regulators are installed as specified in 3.2.

3. GENERAL

3.1 This standard is limited to proof-of-design testing. It is not intended to cover the testing of duplicate components of the same materials, designs and construction once a representative single unit has been tested and a pressure rating established by the means specified herein. Some tests are potentially destructive and the regulator or component under test is not required to be functional after all tests are completed.

3.2 This standard includes pressure regulators which may have two static pressure ratings, one for the portion of the