AMERICAN NATIONAL STANDARD

STANDARD FOR REGULATOR SEAT LEAKAGE TESTING

Fluid Controls Institute, Inc.

Sponsor:

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

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The following Institute members contributed substantively to the development of this standard:

ASCO Valve, Inc.
Florham Park, N.J.

Badger Meter
Milwaukee, Wis.

Circor / Leslie Controls
Tampa, Fla.

Emerson
Marshalltown, IA

Richards Industrials
Cincinnati, Ohio

TLV CORPORATION
Charlotte, N.C.

Watson McDaniel Co.
Pottstown, Pa

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Foreword (This foreword is included for information only and is not part of ANSI/FCI 70-3-2021, Standard for *Regulator Seat Leakage Testing.)*

This voluntary standard has been compiled and issued in the public interest. It is intended to eliminate present misunderstandings and to assist and guide those people involved in the specification, use or manufacture of regulators.

The standard was developed by the FCI Regulator Section in 2001 and approved in 2004. The Section revised the standard in 2015 and in 2020.

The existence of a Fluid Controls Institute (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.

This standard is similar to ANSI/FCI 70-2 but eliminates the Class V test as regulators normally do not require this intermediate leakage class between Class IV and VI; however, in order to harmonize the classes between regulators and control valves, we kept the same leakage requirements within each class.

In 2015, the Regulator Section agreed to add a Class VIII to the standard. This class establishes a "no permissible leakage" standard generally associated with resilient seating regulators either balanced or unbalanced with O-rings or other gapless seals.

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.

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

ANSI/FCI 70-3-2021

AMERICAN NATIONAL STANDARD

Standard for Regulator Seat Leakage Testing

1. PURPOSE

1.1 This standard establishes a series of seat leakage classes for regulators and defines the production test procedures.

2. SCOPE & LIMITATIONS

2.1 This standard applies to pilot operated and direct acting pressure reducing, pressure relieving (back pressure), differential pressure and temperature regulators.

2.2 Selection of a leakage class is not restricted as to regulator design, but acceptable values for various commercially available designs are suggested for each class under Section 4.

2.3 The standard cannot be used as a basis for predicting leakage at conditions other than those specified.

2.4 This standard is similar to ANSI/FCI 70-2, Standard for *Control Valve Seat Leakage Testing*.

3. DEFINITIONS

3.1 Regulator. A self-contained valve operated by the flowing fluid or by the process energy from a directly connected sensing device.

3.2 C_v. An experimentally determined valve sizing coefficient. (Ref. ISA S75.01.01, ISA S75.02.01 and FCI Standard 84-1).

3.3 Lockup (Dead End Shutoff). The deviation of the controlled variable from set point obtained at a no flow position.

3.4 Maximum Capacity. The flow rate at maximum travel generally used for safety or relief valve sizing.

3.5 Maximum C_v. Maximum C_v is C_v at maximum capacity calculated per ISA S75.01.01 generally used for safety relief valve sizing. For pilot-operated regulators maximum C_v includes the C_v of the pilot.

3.6 Maximum Travel. The regulator travel in the fully open position at the maximum design travel corresponding to maximum capacity.

3.7 Production Testing. Testing carried out by the manufacturer upon conclusion of assembly to confirm product meets quality expectations.