ANSI/FCI 99-2-2021

AMERICAN NATIONAL STANDARD

PRESSURE REDUCING REGULATOR CAPACITY

Fluid Controls Institute, Inc.

Sponsor:

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

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Pressure Reducing Regulator Capacity

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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 (This foreword is included for information only and is not part of ANSI/FCI 99-2-2021, *Pressure Reducing Regulator Capacity)*

This voluntary standard has been compiled by the Regulator Section of the Fluid Controls Institute, Inc. It has been developed to provide a test methodology for measuring and reporting the capacity of pilot operated and direct acting pressure reducing regulators.

The standard was originally approved in 2004. The standard was revised in 2020 with editorial changes and a change to Figure 1 adding two locations acceptable to measure inlet temperature.

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.

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AMERICAN NATIONAL STANDARD

Pressure Reducing Regulator Capacity

1. PURPOSE

This standard creates a guideline for establishing and reporting regulator capacities for use by manufacturers, users, specifiers and approval bodies in order to promote a consistent methodology for the presentation of regulator capacities.

2. SCOPE

To provide a test methodology for measuring and reporting the capacity of pilot operated and direct acting pressure reducing regulators.

3. DEFINITIONS

3.1 Accuracy of Regulation. The deviation from the set point, expressed as a percentage or as a fixed unit, taken at the test conditions.

3.2 Choked Flow: The point at which the fluid reaches sonic velocity. This is also known as terminal velocity or critical flow.

3.3 Controlled Variable. The variable which shall be monitored by the controlling process. This variable is either the outlet pressure or the differential pressure.

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

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

3.6 Maximum C_v. Maximum C_v is C_v at maximum capacity calculated per ANSI/ISA 75.01.01, generally used for safety relief valve sizing.

3.7 Minimum Controllable Flow. The lowest flow rate, at a given set point and temperature, at which a steady regulated condition of the controlled variable can be maintained. The minimum controllable flow is essentially zero for some regulators. Minimum controllable flow is used to determine turndown or rangeability. If operating below the minimum controllable flow condition, a regulator may hunt or cycle creating a fluctuating outlet pressure.

3.8 Offset. The deviation of the controlled variable measured as the flow varies from the minimum controllable flow to the rated capacity. Offset is sometimes referred to as droop for pressure reducing valves.