



Member of the FM Global Group

Examination Standard for Suction Pressure Regulating Valves

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Foreword

This standard is intended to verify that the products and services described will meet stated conditions of performance, safety and quality useful to the ends of property conservation. The purpose of this standard is to present the criteria for examination of various types of products and services.

Examination in accordance with this standard shall demonstrate compliance and verify that quality control in manufacturing shall ensure a consistent and reliable product.

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1 INTRODUCTION

1.1. Purpose

- 1.1.1. This standard states testing and certification requirements for suction pressure regulating valves for use in fire protection systems when local law or the Authority Having Jurisdiction require that a minimum suction pressure be maintained.
- 1.1.2. Testing and certification criteria may include performance requirements, marking requirements, examination of manufacturing facility(ies), audit of quality assurance procedures, and a surveillance program.

1.2. Scope

- 1.2.1. This standard applies to any component intended to or for use in suction pressure regulating valves.
- 1.2.2. Suction pressure regulating valves are installed downstream of booster pumps in fire protection systems and maintain minimum required suction pressure by reducing the discharge flow through the valve.
- 1.2.3. Other types and sizes, including metric sizes, of suction pressure regulating valves not discussed in this standard may be certified if they meet the requirements and intent of this standard. Suction pressure regulating valves of unusual design may be subjected to special tests to determine their suitability.

1.3. Basis for Requirements

- 1.3.1. The requirements of this standard are based on experience, research, and testing, and/or the standards of other organizations. The advice of manufacturers, users, trade associations, jurisdictions and/or loss control specialists was also considered.
- 1.3.2. The requirements of this standard reflect tests and practices used to examine characteristics of suction pressure regulating valves for the purpose of obtaining certification.

1.4. Basis for Certification

Certification is based upon satisfactory evaluation of the product and the manufacturer in the following major areas:

- 1.4.1. Examination and tests on production samples shall be performed to evaluate:
 - the suitability of the product;
 - the performance of the product as specified by the manufacturer and required for certification,
 - the durability and reliability of the product.
- 1.4.2. An examination of the manufacturing facilities and audit of quality control procedures may be conducted to evaluate the manufacturer's ability to consistently produce the product which is examined and tested, and the marking procedures used to identify the product. Subsequent surveillance may be required by the certification agency in accordance with the certification scheme to ensure ongoing compliance.

1.5. Basis for Continued Certification

The basis for continual certification may include the following based upon the certification scheme and requirements of the certification agency:

- production or availability of the product as currently certified;
- the continued use of acceptable quality assurance procedures;
- compliance with the terms stipulated by the certification;
- satisfactory re-examination of production samples for continued conformity to requirements; and
- satisfactory surveillance audits conducted as part of the certification agency's product surveillance program.

1.6. Effective Date

The effective date of this examination standard mandates that all products tested for certification after the effective date shall satisfy the requirements of this standard.

The effective date of this standard is eighteen (18) months after the publication date of the standard for compliance with all requirements.

1.7. System of Units

Units of measurement used in this standard are United States (U.S.) customary units. These are followed by their arithmetic equivalents in International System (SI) units, enclosed in parentheses. The first value stated shall be regarded as the requirement. The converted equivalent value may be approximate. Conversion of U.S. customary units is in accordance with ANSI/IEEE/ASTM SI 10.

1.8. Normative References

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the cited edition applies.

ANSI/ASME B16.5, *Pipe Flanges and Flanged Fittings*

ANSI/ASME B1.20.1, *Pipe Threads, General Purpose, (Inch)*

ANSI/IEEE/ASTM SI 10, *American National Standard for Metric Practice*

ASTM D 471, *Standard Test Method for Rubber Property – Effect of Liquids.*

ASTM D 572, *Standard Test Method for Rubber – Deterioration by Heat and Oxygen.*

BS EN 10242, *Threaded Pipe Fittings in Malleable Cast Iron*

ISO 7-1, *Pipe Threads Where Pressure-Tight Joints are made on the Threads- Part 1: Dimensions, Tolerances and Designation*

1.9. Terms and Definitions

For purposes of this standard, the following terms apply:

Accepted – This term refers to installations acceptable to the authority enforcing the applicable installation rules. Acceptance is based upon an overall evaluation of the installation. Acceptance is not a characteristic of a product. It is installation specific. A product accepted for one installation may not be acceptable elsewhere.

End Connections – The term “End Connections” refers to the method of connecting components of a fire protection system. Typical end connections in fire protection service are flanged, grooved, threaded and welded end.

Rated Working Pressure – This is the maximum sustained pressure at or below which the device shall operate trouble free for its entire design life. This value sets the basis for the testing described in Section 4.

Suction Pressure Regulating Valve – A valve installed downstream of a fire pump which senses suction pressure to the pump. When the suction pressure to the pump drops below a pre-determined level the suction pressure regulating valve will begin to modulate towards the closed position thereby maintaining the pre-determined minimum suction pressure in the main supplying the fire pump, protecting it from possible damage. As the pump inlet pressure increases the suction pressure regulating valve will modulate open. When suction pressure to the pump is above a pre-determined level the suction pressure regulating valve remains fully open.

2 GENERAL INFORMATION

2.1. Product Information

- 2.1.1.** The products discussed in this standard are for use in a booster pump discharge line in fire protection systems when local law or Authority Having Jurisdiction require that a minimum suction pressure be maintained. Installations shall be in accordance with the manufacturer's installation instructions.
- 2.1.2.** In order to meet the intent of this standard, suction pressure regulating valves shall be examined on a model-by-model, type-by-type, manufacturer-by-manufacturer, and plant-by-plant basis. This is predicated on the basis that identical designs, fabricated using identical materials by different manufacturers, or, even by different plants of the same manufacturer, have sometimes been shown to perform differently in testing. Sample suction pressure regulating valves selected in conformance to this criterion shall satisfy all of the requirements of this standard.
- 2.1.3.** A suction pressure regulating valve assembly usually consists of a main line regulating valve, a pilot control valve and associated trim.

2.2. Certification Application Requirements

The manufacturer shall provide the following preliminary information with any request for certification consideration:

- A complete list of all models, types, sizes, and options for the products or services being submitted for certification consideration;
- General assembly drawings, one complete set of manufacturing drawings, materials list(s) (e.g., ASTM A 48, Class 40A, Gray Iron Casting), anticipated marking format, piping and electrical schematics, nameplate format, brochures, sales literature, specification sheets, installation, operation and maintenance procedures; and
- the number and location of manufacturing facilities.
- All documents shall identify the manufacturer's name, document number or other form of reference, title, date of last revision, and revision level. All documents shall be provided with English translation.

2.3. Requirements for Samples for Examination

- 2.3.1.** Following authorization of a certification examination, the manufacturer shall submit samples for examination and testing based on the following:
- Sample requirements to be determined by the certification agency.
- 2.3.2.** Requirements for samples may vary depending on design features, results of prior or similar testing, and results of any foregoing tests.
- 2.3.3.** The manufacturer shall submit samples representative of production. Any decision to use data generated using prototypes is at the discretion of the certification agency.
- 2.3.4.** It is the manufacturer's responsibility to provide any necessary test fixtures, such as those which may be required to evaluate the suction pressure regulating valves.