



Approval Standard for Pressure Reducing Valves

Class Number 1362

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Foreword

The FM Approvals certification mark 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 Approval Standards is to present the criteria for FM Approval of various types of products and services, as guidance for FM Approvals personnel, manufacturers, users and authorities having jurisdiction.

Products submitted for certification by FM Approvals shall demonstrate that they meet the intent of the Approval Standard, and that quality control in manufacturing shall ensure a consistently uniform and reliable product. Approval Standards strive to be performance-oriented. They are intended to facilitate technological development.

For examining equipment, materials and services, Approval Standards:

- a) must be useful to the ends of property conservation by preventing, limiting or not causing damage under the conditions stated by the Approval listing; and
- b) must be readily identifiable.

Continuance of Approval and listing depends on compliance with the Approval Agreement, satisfactory performance in the field, on successful re-examinations of equipment, materials, and services as appropriate, and on periodic follow-up audits of the manufacturing facility.

FM Approvals LLC reserves the right in its sole judgment to change or revise its standards, criteria, methods, or procedures.

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1 INTRODUCTION

1.1 Purpose

- 1.1.1 This standard states Approval requirements for pressure reducing valves.
- 1.1.2 Approval criteria may include, but are not limited to, performance requirements, marking requirements, examination of manufacturing facility(ies), audit of quality assurance procedures, and a follow-up program.

1.2 Scope

- 1.2.1 This standard sets performance requirements for pressure reducing valves used in fire protection sprinkler systems. Pressure reducing valves are typically installed on a fire pump discharge line or as zone control valves within a sprinkler system.
- 1.2.2 Pressure reducing valves are used to control the water pressure in a fire protection system to downstream devices. They may be either direct-acting or pilot-operated type valves.
- 1.2.3 This standard covers the examination and Approval of pressure reducing functionality in deluge and preaction valves that are equipped with a pressure control option. To be considered for FM Approval, those valves must meet the requirements of this standard as well as all applicable requirements of Approval Standards 1020 and 1011/1012/1013.
- 1.2.4 Examination and Approval of pressure reducing valves includes the entire valve assembly (main control valve, valve trim components and/or associated devices) necessary for the satisfactory and reliable operation of the pressure reducing valve.
- 1.2.5 Valves without automatic operation are not covered in the scope of this Approval.
- 1.2.6 The requirements of this standard shall be used to measure and describe the performance of pressure reducing valves in response to exposure from flow, pressure, etc., under controlled laboratory conditions. The results of these controlled exposures shall not be used to describe or appraise actual exposure conditions since such conditions will vary widely.

1.3 Basis for Requirements

- 1.3.1 The requirements of this standard are based on experience, research and testing, and 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 pressure reducing valves for the purpose of obtaining Approval. Pressure reducing valves having characteristics not anticipated by this standard may be FM Approved if performance equal, or superior, to that required by this standard is demonstrated, or if the intent of the standard is met. Alternatively, pressure reducing valves which meet all of the requirements identified in this Standard may not be FM Approved if other conditions which adversely affect performance exist or if the intent of this standard is not met.

1.4 Basis for Approval

Approval 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 by FM Approvals; and as far as practical,
- the durability and reliability of the product.

1.4.2 An examination of the manufacturing facilities and audit of quality control procedures is made 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. These examinations may be repeated as part of FM Approvals' product follow-up program.

1.5 Basis for Continued Approval

Continued Approval is based upon:

- production or availability of the product as currently FM Approved;
- the continued use of acceptable quality assurance procedures;
- satisfactory field experience;
- compliance with the terms stipulated in the Approval report;
- satisfactory re-examination of production samples for continued conformity to requirements; and
- satisfactory Surveillance Audits conducted as part of FM Approvals' product follow-up program.

Also, as a condition of retaining Approval, manufacturers may not change a product or service without prior authorization by FM Approvals.

1.6 Effective Date

The effective date of an Approval standard mandates that all products tested for Approval after the effective date shall satisfy the requirements of that standard. Products FM Approved under a previous edition shall comply with the new version by the effective date or forfeit Approval.

The effective date of this standard is January 31, 2021 for compliance with all requirements.

1.7 System of Units

Units of measurement used in this Standard are United States (U.S.) customary units (with the exception of heat flux). 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 the American National Standards Institute (ANSI)/Institute of Electrical and Electronics Engineers (IEEE)/American Society for Testing Materials (ASTM) SI 10, *American National Standard for Metric Practice*.

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. For undated references, the latest edition of the referenced document (including any amendments) applies:

FM Approvals, Approval Standard Class 1011/1012/1013, *Deluge and Preaction Sprinkler Systems*
FM Approvals, Approval Standard Class 1020, *Automatic Water Control Valves*
ANSI/IEEE/ASTM SI 10, *American National Standard for Metric Practice*
International Organization for Standardization, ISO 17025, *General Requirements for the Competence of Testing and Calibration Laboratories*.
ASTM D471, *Standard Test Method for Rubber Property – Effect of Liquids*
ASTM D572, *Standard Test Method for Rubber – Deterioration by Heat and Oxygen*

1.9 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. When the authority is FM Global, such locations are termed “FM Global Accepted.” Acceptance is based upon an overall evaluation of the installation. Factors other than the use of FM Approved equipment impact upon the decision to accept, or not to accept. Acceptance is not a characteristic of a product. It is installation specific. A product accepted for one installation may not be acceptable elsewhere. (Contrast with FM Approved.)

End Connections

Refers to the method of connecting components to a piping system. Typical end connections are flanged, grooved and threaded.

FM Approvals Certification Marks

Product markings, applied by the manufacturer, that identify a product as FM Approved. Their use is mandatory on all units of FM Approved products. These registered marks cannot be used except as authorized by FM Approvals via the granting of Approval to a specific product.

FM Approved

This term refers to products FM Approved by FM Approvals. Such products are listed in the Approval Guide, an on-line resource of FM Approvals. All products so listed have been successfully examined by FM Approvals, and their manufacturers have signed and returned a Master Agreement to FM Approvals. This form obligates the manufacturer to allow re-examination of the product and surveillance audits at FM Approvals discretion. It further requires the manufacturer not to deviate from the as-FM Approved configuration of the product without review by and agreement of FM Approvals. Approval is product specific. See Appendix A for a sample Approval Guide listing.

Rated Working Pressure

Also referred to as the Maximum Allowable Working Pressure, it is the specified maximum internal pressure at which the weakest point of the pressure reducing valve can operate trouble free within the operating temperature range when the valve is in normal operation.

Specified

The value of a design parameter set by the manufacturer.