



Member of the FM Global Group

Approval Standard for Fire Service Water Control Valves (OS&Y and NRS Type Gate Valves)

Class Number 1120 and 1130

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Foreword

The FM Approvals certification mark is intended to verify that the products and services described will meet FM Approvals' 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 FM Approval criteria for manually operated fire service water control valves which control the water supply to a fire protection system.
- 1.1.2 FM 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 is used to evaluate resilient-seated and metal-seated gate valves for their intended application of long term water flow control, above or below ground, indoors or outdoors.
- 1.2.2 This standard includes Outside Screw and Yoke (OS&Y) and Inside Screw type (NRS) gate valves.
Note: Non-rising Stem (NRS) type gate valves are a common substitution for Inside Screw type gate valves.
- 1.2.3 This standard is used to evaluate valves up to and including 14 inches nominal pipe size (NPS). Other sizes shall be evaluated on a case-by-case basis.
- 1.2.4 This standard is used to evaluate valves having the following types of end connections. Other types of end connections shall be evaluated on a case-by-case basis.
- Screwed
 - Flanged
 - Hub
 - Mechanical Joint
 - Grooved

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 gate valves for the purpose of obtaining FM Approval. Gate valves having characteristics not anticipated by this Standard may be approved if performance equal, or superior, to that required by this Standard is demonstrated, or if the intent of the Standard is met. Alternatively, gate valves which meet all of the requirements identified in this Standard may not be approved if other conditions which adversely affect performance exist or if the intent of this Standard is not met.

1.4 Basis for FM Approval

FM 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 produce the product which is examined and tested, and the marking procedures used to identify the product. These examinations are 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 Approved;
- the continued use of acceptable quality assurance procedures;
- satisfactory field experience;
- compliance with the terms stipulated in the Approval Agreement;
- satisfactory re-examination of production samples for continued conformity to requirements; and
- satisfactory Facilities and Procedures Audits (F&PAs) 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 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 April 1997 for full 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. Appendix A lists the selected units and conversions to SI units for measures appearing in this standard. Conversion of U.S. customary units is in accordance with the ASTM E 380, "Standard Practice for Use of the International System of Units (SI)." Two units (liter and bar), outside of but recognized by SI, are commonly used in international fire protection and are used in this Standard.

1.8 Applicable Documents

The latest versions of the following standards, test methods, and practices are referenced in this standard:

ASTM D 471 — “Standard Test Method for Rubber Property — Effect of Liquids.”

ASTM D 572 — “Test Method for Rubber Deterioration by Heat and Oxygen.”

2. GENERAL INFORMATION

2.1 Product Information

2.1.1 OS&Y gate valves are used indoors or in outdoor pits and NRS valves are used with wall indicator posts or underground with tee-handle wrenches or indicator posts attached or as roadway box valves (curb box installation).

2.1.2 NRS gate valves are available either with or without a base flange. Valves with base flanges are used to support upright indicator posts. Valves without base flanges are used with wall indicator posts or tee-handle wrenches in buried service.

2.2 Approval Application Requirements

To apply for an Approval examination the manufacturer, or its authorized representative, shall submit a letter of request to the Hydraulics Group Manager at the FM Approvals Hydraulics Laboratory, 743A Reynolds Road, West Glocester, Rhode Island (RI) 02814, U.S.A.

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

- A complete list of all models, types, sizes, and options for the valves being submitted for Approval consideration.
- General assembly drawings, a complete set of manufacturing drawings, materials list, anticipated marking format, sales literature, specification sheets, installation, operation and maintenance procedures.
- Number and location of manufacturing facilities.

Note: 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 Sample Requirements for an Approval Examination

2.3.1 Following set-up and authorization of an Approval examination, the manufacturer shall submit samples for examination and testing as follows:

- One sample of each size and type of gate valve
- Six test specimens of valve rubber facings approximately 1 × 3 inches (25 × 76 mm) by 1/8 in. (3 mm) thick.
- Corrosion test coupons per Section 4.8.2.

Note: NRS type gate valves submitted for Approval with indicator posts shall include representative samples of the indicator post assembly when requested.