



Examination Standard for Fire Service Meters

Class Number 1044

May 2024

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 fire service meters for use in automatic fire protection systems. Meters addressed in this standard are used in aboveground installations as well as pits and vaults which may be below grade.
- 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 encompasses the design and performance requirements for fire service meters intended for use where full registration metering devices on public water connections are required.
- 1.2.2 Other types and sizes, including metric sizes, of fire service meters may be certified if they meet the requirements and intent of this standard. Fire service meters 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 fire service meters 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.

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 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:

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

AWWA C703, *Cold-Water Meters -- Fire Service Type*

FM 1045, *Waterflow Detector Check Valves*

FM 5551, *Strainers for use with Water Spray Systems*

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

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

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. 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.

Accuracy

The extent to which a given measurement agrees with the actual value for that measurement.

Electromagnetic (Mag Meters) Flowmeters

A volumetric flow meter with no moving parts, based on Faraday's Law of electromagnetic induction, which states that the voltage induced across any conductor as it moves at right angles through a magnetic field is proportional to the velocity of that conductor.

End Connections

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

Flange Fittings

The term flanged fittings has been taken to refer to any style of pipe fitting covered in the scope of this Approval Standard with integral flanged end connections.

Grooved Coupling, Flexible

A grooved coupling is an assembly that is used to join two similar sized grooved ends together. The flexible grooved coupling is characterized by its ability to allow for angular or rotational differences between the components being joined after assembly. These products may provide greater system reliability in situations involving excessive vibration, difficult alignment, or seismic activity. They may also provide greater system flexibility than historic use of rigid systems of flanged pipe and fittings.

Grooved Coupling, Rigid

A rigid grooved coupling is an assembly that is used to join two different sized grooved ends together. The rigid grooved coupling is characterized by its prevention of rotation of the joined ends, and reduced tolerances for angular variations after assembly.

Plain End Fittings

Pipe couplings designed to work with pipe ends that have been cut perpendicular to its axis and incorporating no grooves or threads. The fitting is typically fastened to the pipe by mechanical means, such as a fastener.

Rangeability

The ratio of the maximum flow to the minimum flow of the meter.

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.

Safe Maximum Operating Capacity

A specified maximum flow at which the meter is required to function safely.