



Member of the FM Global Group

Examination Standard for Water Flow Detector Testers 1 in. Through 8 in. Nominal Size

Class Number 1043

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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.

Table of Contents

1. INTRODUCTION	1
1.1 Purpose.....	1
1.2 Scope.....	1
1.3 Basis for Requirements	1
1.4 Basis for Certification	1
1.5 Basis for Continued Certification	1
1.6 Effective Date.....	2
1.7 System of Units	2
1.8 Normative References	2
1.9 Terms and Definitions.....	2
2. GENERAL INFORMATION	4
2.1 Product Information	4
2.2 Certification Application Requirements	4
2.3 Requirements for Samples for Examination.....	4
3. GENERAL REQUIREMENTS.....	5
3.1 Review of Documentation.....	5
3.2 Physical or Structural Features – Mechanical Style	5
3.3 Physical or Structural Features – Electrical Style.....	5
3.4 Materials	6
3.5 Markings	6
3.6 Manufacturer’s Installation and Operation Instructions	6
3.7 Calibration.....	7
3.8 Tolerances	7
4. PERFORMANCE REQUIREMENTS	8
4.1 Examination.....	8
4.2 Leakage	8
4.3 Hydrostatic Integrity	8
4.4 Operational Test.....	8
4.5 Electrical Test – Voltage Variation.....	9
4.6 Electrical Test - Environmental	9
4.7 Electrical Test – Dielectric.....	9
4.8 Electrical Test – Bonding Resistance.....	10
5. MANUFACTURER’S REQUIREMENTS	11
5.1 Demonstrated Quality Control Program	11
5.2 Surveillance Audit Program.....	12
5.3 Product Modification	12
5.4 Manufacturing and Production Tests.....	12
6. BIBLIOGRAPHY.....	12
APPENDIX A: Tolerances	13
APPENDIX B: Sample Listings.....	14

1. INTRODUCTION

1.1 Purpose

- 1.1.1 This standard states testing and certification requirements for water flow detector testers for use in wet pipe sprinkler systems, for both new installations, and for retro-fit applications.
- 1.1.2 Testing and certification criteria may include performance requirements, marking requirements, examination of manufacturing facility(ies), audit assurance procedures, and a surveillance program.

1.2 Scope

- 1.2.1 This standard encompasses the design and performance requirements for 1 inch through 8 inch nominal size water flow detector testers. In cases where metric sized products are to be examined for certification, test criteria comparable to the equivalent or nearest nominal size shall be used.
- 1.2.2 This standard encompasses both traditional mechanical type water flow detector testers (where the water flow detectors are tested by the passage of water past the vane), and electrical style (where the water flow past the water flow detector is electrically simulated).

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 loss control specialists may also be considered.
- 1.3.2 The requirements of this standard reflect tests and practices used to examine characteristics of water flow detector testers 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:

ANSI / AWWA C606 – *Grooved and Shouldered Joints*

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

ASME B16.5, *Pipe Flanges and Flanged Fittings: NPS 1/2 through 24 - Metric/Inch Standard*

BS EN 10226-2, *Pipe threads where pressure tight joints are made on the threads - Part 2. Taper, external threads and taper internal threads - Dimensions, tolerances and designation*

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 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. 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 pipe system to one another. Typical end connections in a fire protection service are cut groove, rolled groove, cast groove, threaded, flanged, plain end, and welded end.

Flanged End

This term refers to piping components having mating flanged ends per the dimensional values shown in ASME B16.5, *Pipe Flanges and Flanged Fittings: NPS 1/2 through 24 - Metric/Inch Standard*. Flanges meeting other national or international standards may be evaluated on a case-by-case basis.

Grooved End

This term refers to a style of end connection that is characterized by having a groove located near the free end of the piping component allowing joining to other grooved end products via the use of grooved end couplings. Dimensions for these connections may vary slightly due to the method used to impart the groove to the product (i.e. cut groove where the groove is machined, roll groove where the groove is mechanically formed using a grooving machine, or cast groove where the groove is simply cast on the part during casting process) but in all cases tend to follow the dimensions of ANSI / American Water Works Association (AWWA) C606 – *Grooved and Shouldered Joints*.

Mechanical Tee

A mechanical tee is a fitting that provides a connection to a pipe line in the place of a tee. The pipe is pre-drilled per the manufacturer’s instructed hole size, and the “saddle” is placed over the hole so that the mechanical tee gasket encircles the hole. The fitting has a second piece that loops around the pipe and allows for the “saddle” to be drawn tight against the pipe surface. Approval of these fittings is limited to fittings having a minimum of one pipe size reduction as the branch outlet. Equal size outlets are not permitted. Typical end connections for these fittings are threaded and grooved end.

Rated Working Pressure

This is the maximum sustained pressure at or below which the water flow detector tester shall operate trouble free. This also sets the basis for the testing described in Section 4, Performance Requirements. The minimum pressure rating considered for FM Approval is 175 psi (1205 kPa).

Threaded End

Water flow detector testers which have been furnished with its ends threaded with internal or external pipe threads conforming to national or international standards for pipe threads for the nation of intended use (e.g., ASME B1.20.1, EN 10226-2, ISO 7-1).

Water Flow Detector

This term refers to a device that incorporates a switch that is activated when prolonged water flow interacts with a paddle that is inserted into the pipeline. The device is fastened to the pipe by means of a U-Bolt wrapping around the pipe outside diameter and through a saddle housing. The saddle housing also has a gasket that prevents the water supply pressure from escaping, and atmospheric pressure from entering the sprinkler piping.