



UL 1091

# Underwriters Laboratories Inc. Standard for Safety

## Butterfly Valves for Fire- Protection Service



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UL Standard for Safety for Butterfly Valves for Fire-Protection Service, UL 1091

Sixth Edition, Dated June 3, 2004

### **Summary of Topics**

***The revisions to UL 1091 are being issued to:***

***Add Glossary, New Section 4A and Revise 5.1, 5.2, 6.1, 20.3, 21.2, 26.1, and Table 18.1 to Reference NPS or Nominal Pipe Size;***

***Add Guidelines for Conducting Operating Torque Value Calculations for Butterfly Valves to 20.6, and New Appendix A; and***

***Make Editorial Changes to Outside Standard References.***

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The revised requirements are substantially in accordance with Proposal(s) on this subject dated February 19, 2010.

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**Appendix A****Guidelines For Conducting Operating Torque Value Calculations For Butterfly Valves**

## INTRODUCTION

### 1 Scope

1.1 These requirements cover butterfly valves intended for use in piping systems supplying water for fire-protection service.

1.2 The valves covered by these requirements are intended for installation and use in accordance with the Standards for:

- a) Low, Medium and High Expansion Foam, NFPA 11;
- b) Installation of Sprinkler Systems, NFPA 13;
- c) Installation of Standpipe and Hose Systems, NFPA 14;
- d) Water Spray Fixed Systems for Fire Protection, NFPA 15;
- e) Foam-Water Sprinkler and Foam-Water Spray Systems, NFPA 16;
- f) Installation of Stationary Pumps for Fire Protection, NFPA 20;
- g) Water Tanks for Private Fire Protection, NFPA 22; and
- h) Installation of Private Fire Service Mains and Their Appurtenances, NFPA 24.

### 2 Components

2.1 Except as indicated in 2.2, a component of a product covered by this standard shall comply with the requirements for that component.

2.2 A component is not required to comply with a specific requirement that:

- a) Involves a feature or characteristic not required in the application of the component in the product covered by this standard, or
- b) Is superseded by a requirement in this standard.

2.3 A component shall be used in accordance with its rating established for the intended conditions of use.

2.4 Specific components are incomplete in construction features or restricted in performance capabilities. Such components are intended for use only under limited conditions, such as certain temperatures not exceeding specified limits, and shall be used only under those specific conditions.

### 3 Units of Measurement

3.1 Values stated without parentheses are the requirement. Values in parentheses are explanatory or approximate information.

### 4 Undated References

4.1 Any undated reference to a code or standard appearing in the requirements of this standard shall be interpreted as referring to the latest edition of that code or standard.

#### 4A Glossary

Section 4A added May 12, 2010

4.A1 For the purpose of this Standard, the following definitions apply.

4A.2 NPS (NOMINAL PIPE SIZE) – A dimensionless designator for pipe sizes defined in standards including ASTM A 53/A 53M, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; ASTM A 135/A 135M, Standard Specification for Electric-Resistance-Welded Steel Pipe and ASTM A 795/A 795M, Standard Specification for Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Fire Protection Use. Used to replace terms such as "Nominal Diameter" and "Nominal Size."

### CONSTRUCTION

#### 5 Sizes

5.1 A valve shall be constructed for use with standard pipe of 1 NPS or larger.

5.1 revised May 12, 2010

5.2 Valve sizes refer to the nominal pipe size, NPS, of the waterway through the inlet and outlet connections and to the nominal pipe size for which the connections are intended.

5.2 revised May 12, 2010

#### 6 Working Pressures

6.1 A valve shall be constructed for a minimum rated working pressure of:

- a) 175 psi (1206 kPa) for 12 NPS or smaller; and
- b) 150 psig (1034 kPa) for 14 NPS or larger.

6.1 revised May 12, 2010

## 7 Discs

7.1 A valve disc shall be either metallic or resilient covered and comply with the following:

- a) A metallic disc shall be cast or fabricated from materials having corrosion resistance at least equivalent to cast iron; and
- b) A disc shall be constructed to resist leakage and rupture. See Leakage Test, Section 17, and Hydrostatic Test, Section 18.

7.2 A resilient covered disc shall have the resilient material mechanically secured, bonded, or vulcanized to a metallic disc, and the material shall comply with the Nonmetallic Materials Test, Section 16.

## 8 Seats

8.1 The seating surfaces of a valve shall be constructed to resist leakage. See Leakage Test, Section 17.

8.2 A seating surface that is contacted by a resilient material shall:

- a) Be made of bronze, brass, ni-resist, or ductile iron having a nickel coating in accordance with Electroplated Engineering Nickel Coatings, ASTM B689 with at least 0.003 inch (0.08 mm) thickness, or other metal or coating (including other nickel coating processes with less thickness) that has at least equivalent corrosion resistance;
- b) Have a protective organic coating complying with Tests on Organic Coating Materials for Seating Surfaces, Section 15; or
- c) Be a nonmetallic part complying with the requirements specified in Nonmetallic Materials Test, Section 16.

8.3 A rubber seat shall be clamped, mechanically secured, bonded, or vulcanized to the valve body or disc.

## 9 Bodies

9.1 The body of a valve shall be made of a material having corrosion resistance at least equivalent to cast iron.

9.2 A casting shall be smooth and free from scale, lumps, cracks, blisters, sand holes, and defects of any nature that could make it unfit for use. A casting shall not be plugged or filled, but may be impregnated to remove porosity.

9.3 The dimensions of all flanges, flange pipe joints, and threaded body openings shall conform to the following standards, as applicable or to other national standards that apply where the valve is intended to be installed. The flange class shall be at least equal to the rated pressure of the valve.

- a) Pipe Threads, General Purpose (Inch), ANSI/ASME B1.20.1.
- b) Dryseal Pipe Threads (Inch), ANSI/ASME B1.20.3.
- c) Gray Iron Pipe Flanges and Flanged Fittings, (Classes 25, 125, and 250), ANSI/ASME B16.1 (Class 125 or higher).