

## Model B-1 — 3.0 K-factor Upright and Pendent Foam-Water Sprinklers

### General Description

The Model B-1 Upright and Pendent Foam-Water Sprinklers are air-aspirating foam discharge outlets designed for use in foam-water deluge systems. They are designed for flammable liquid risks where it is desired to apply foam from overhead sprinklers (either upright or pendent) and where follow-up with plain water in a standard spray sprinkler pattern is necessary as in the case of NFPA 16, "Standard for the Installation of Foam-Water Sprinkler and Foam-Water Spray Systems".

It is recommended that the end user be consulted with respect to the suitability of the materials of construction for any given corrosive environment. The effects of ambient temperature, concentration of chemicals, and gas/chemical velocity, should be considered, at a minimum, along with the corrosive nature to which the sprinklers may be exposed.

The Model B-1 Foam-Water Sprinkler is a redesignation for the Gem Issue B-1 and Star Model B-1.

#### WARNINGS

The Model B-1 Foam-Water Sprinklers described herein must be installed and maintained in compliance with this document, as well as with the applicable standards of the National Fire Protection Association, in addition to the standards of any other authorities having jurisdiction. **Failure to do so may impair the performance of these devices.**

#### IMPORTANT

Always refer to Technical Data Sheet TFP700 for the "INSTALLER WARNING" that provides cautions with respect to handling and installation of sprinkler systems and components. Improper handling and installation can permanently damage a sprinkler system or its components and cause the sprinkler to fail to operate in a fire situation or cause it to operate prematurely.

tection Association, in addition to the standards of any other authorities having jurisdiction. **Failure to do so may impair the performance of these devices.**

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. The installing contractor or sprinkler manufacturer should be contacted with any questions.

### Technical Data

#### Approvals

The Model B-1 Upright and Pendent Foam-Water Sprinklers are UL and ULC Listed. (Discharge outlets and foam concentrates are Listed for use together. Refer to the individual foam concentrate Listing for operating limitations and compatibility with the B-1 Foam-Water Sprinklers as provided in the UL Fire Protection Equipment Directory.)

The Model B-1 Upright and Pendent Foam-Water Sprinklers meet the requirements of MIL-S-901C for light-weight Grade A shock proof equipment.

The Model B-1 Pendent Foam-Water Sprinklers meet the requirements of MIL-H-24146.

#### Maximum Working Pressure

175 psi (12,1 bar)

#### Discharge Coefficient

K = 3.0 GPM/psi<sup>1/2</sup> (43,2 LPG/bar<sup>1/2</sup>)

#### Thread Connection

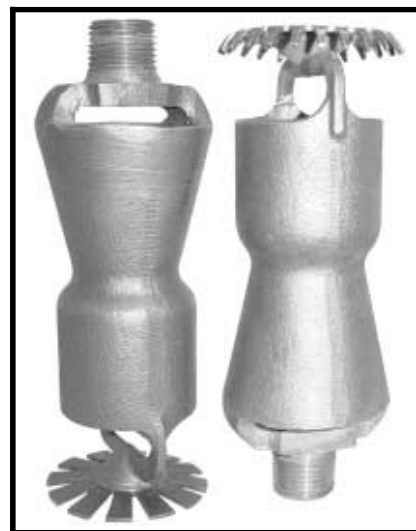
1/2 inch NPT

#### Finishes

Natural Bronze

#### Physical Characteristics

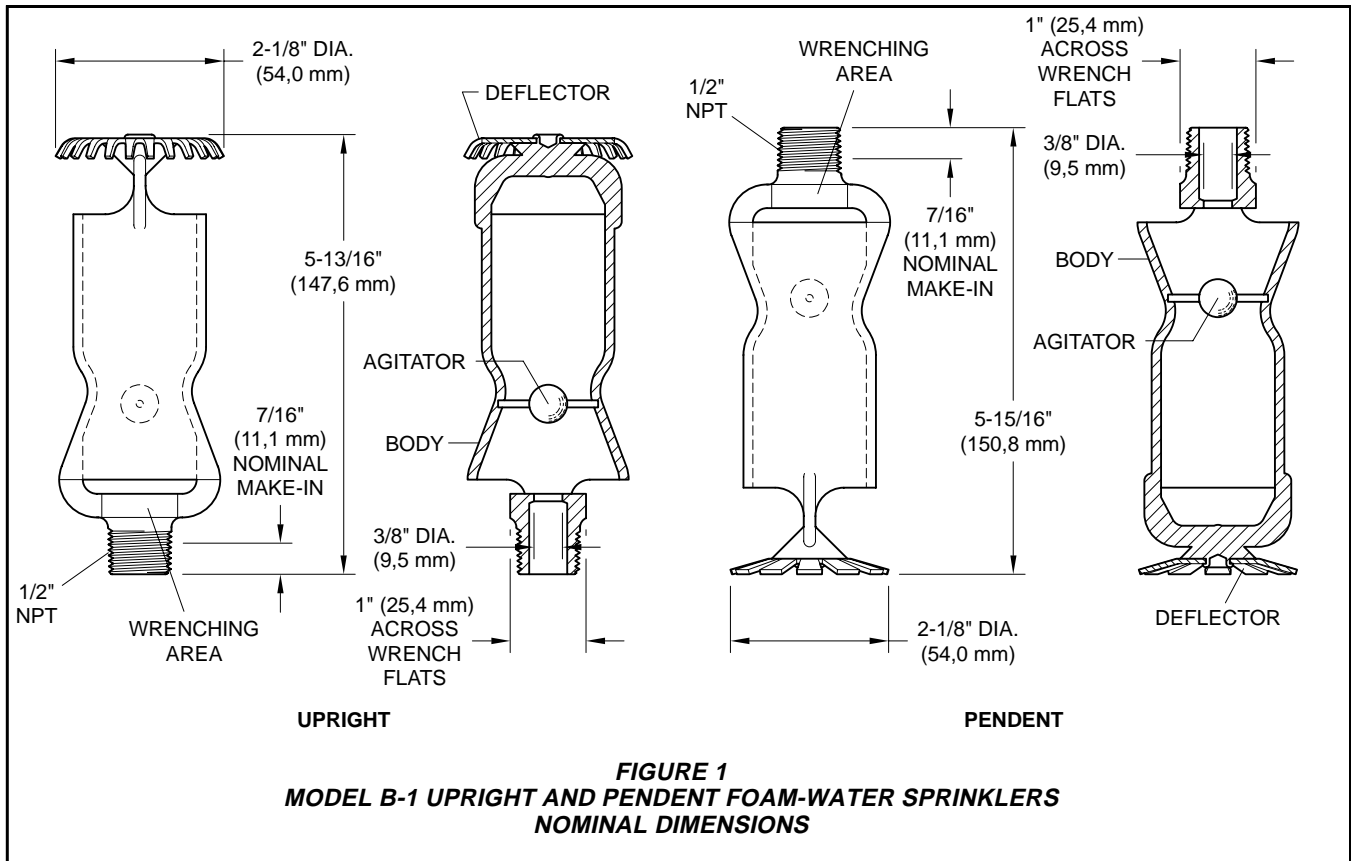
Body . . . . .	Bronze
Deflector . . . . .	Brass
Agitator . . . . .	Brass



### Operation

The Model B-1 Foam-Water Sprinklers are designed with a unique venturi style body. As foam solution (water and foam concentrate mixture) flows through the inlet of the body, air is drawn into the body through the openings adjacent to the wrenching area. The foam solution and air mix is then agitated to create an air-aspirated foam.

The B-1 Foam-Water Sprinklers are designed to discharge foam in a pre-determined discharge pattern, as well as to discharge water similar to standard spray sprinklers. To meet the intent of NFPA 16, foam-water sprinklers must be able to sufficiently distribute water after depletion of the foam concentrate.



## Design Criteria

The Model B-1 Upright and Pendent Foam-Water Sprinklers are intended for fire protection systems designed in accordance with the standard installation rules for foam-water sprinklers systems recognized by the applicable Listing agency (e.g., UL Listing is based on the requirements of NFPA 13 and 16).

Figure 2 provides the nominal discharge patterns for reference use.

### NOTE

The discharge patterns shown in Figure 2 are not to be used for design purposes or to disregard standard installation rules.

Not less than two foam-water sprinklers are to be installed in any area, regardless of size, in order to obtain pattern overlap.

The applied density (flow per unit of area) of foam solution must meet the requirements of the Authority Having Jurisdiction for the type flammable liquid and occupancy. Per NFPA 16, coverage density must not be less than 0.16 GPM/ft<sup>2</sup> (6.52 mm/min) of floor

area with a resulting minimum discharge pressure of not less than 30 psi (2.1 bar).

Foam-water sprinkler spacing must not exceed the requirements of NFPA 13 for extra hazard occupancies and the system must be hydraulically calculated to obtain the required density and discharge pressure.

### NOTE

Discharge outlets and foam concentrates are Listed for use together. Refer to the individual foam concentrate Listing for operating limitations and compatibility with the B-1 Foam-Water Sprinklers as provided in the UL Fire Protection Equipment Directory.

## Installation

The Model B-1 Foam-Water Sprinklers must be installed in accordance with the following instructions:

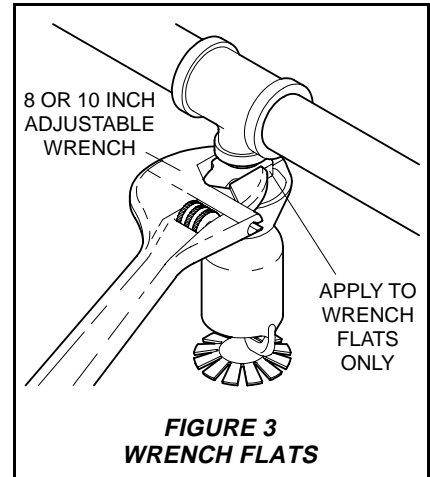
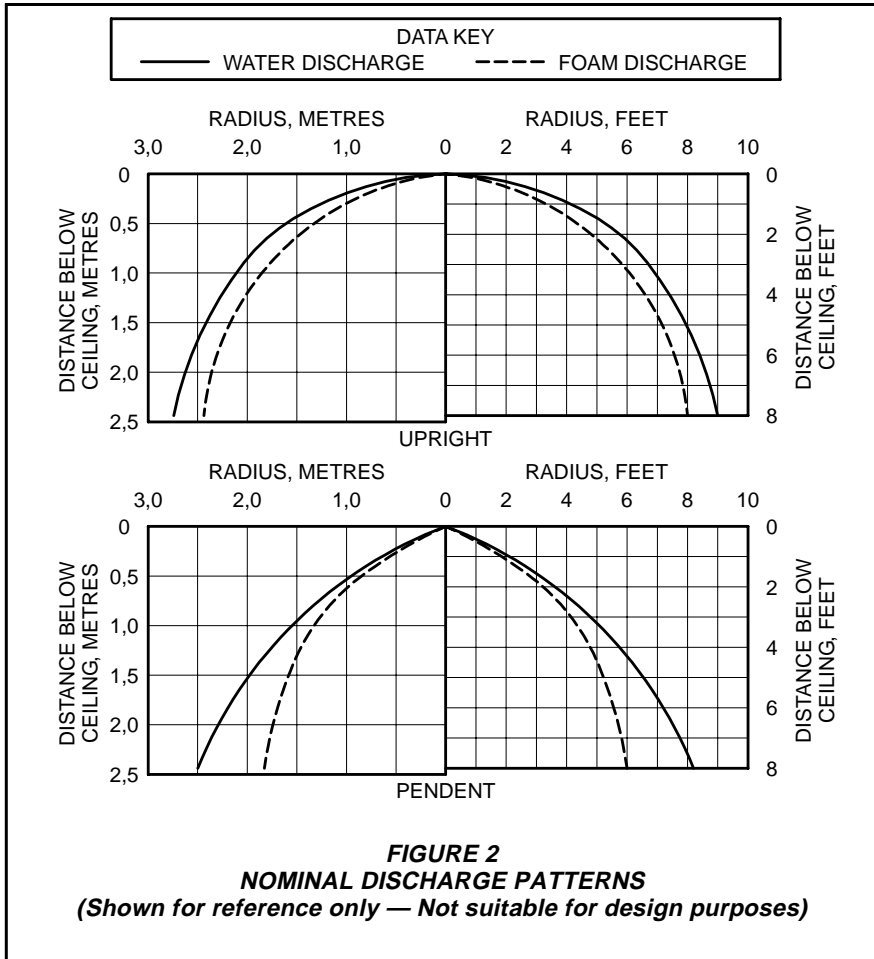
### NOTE

A leak tight 1/2 inch NPT sprinkler joint should be obtained with a torque of 7 to 14 ft. lbs. (9.5 to 19.0 Nm). A maximum of 21 ft. lbs. (28.5 Nm) of torque may be used to install sprinklers with 1/2 NPT connections. Higher levels of torque may distort the sprinkler inlet and cause impairment of the sprinkler.

**Step 1.** Pendent sprinklers are to be installed in the pendent position, and upright sprinklers are to be installed in the upright position.

**Step 2.** With pipe thread sealant applied to the pipe threads, hand tighten the sprinkler into the sprinkler fitting.

**Step 3.** Tighten the sprinkler into the sprinkler fitting using an 8 or 10 inch adjustable Crescent wrench. With reference to Figures 1 and 3, the adjustable Crescent wrench is only to be applied to the wrench flats of the wrenching area.



## Care and Maintenance

The Model B-1 Foam-Water Sprinklers must be maintained and serviced in accordance with the following instructions:

**NOTE**

*Before closing a fire protection system main control valve for maintenance work on the fire protection system that it controls, permission to shut down the affected fire protection system must be obtained from the proper authorities and all personnel who may be affected by this action must be notified.*

Model B-1 Foam-Water Sprinklers must never be painted, plated, coated or altered in any way after leaving the factory; otherwise, the spray performance may be impaired.

Care must be exercised to avoid damage to the sprinklers - before, during, and after installation. Sprinklers damaged by dropping, striking, wrench twist/slippage, or the like, must be replaced.

Frequent visual inspections are recommended to be initially performed for sprinklers installed in potentially corrosive atmospheres to verify the integrity of the materials of construction as they may be affected by the corrosive conditions present for a given installation. Thereafter, annual inspections per NFPA 25 are required.

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association (e.g., NFPA 25), in addition to the standards of any other authorities having jurisdiction. The installing contractor or sprinkler manufacturer should be contacted relative to any questions.

It is recommended that foam-water sprinkler systems be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

## Limited Warranty

Products manufactured by Tyco Fire & Building Products (TFBP) are warranted solely to the original Buyer for ten (10) years against defects in material and workmanship when paid for and properly installed and maintained under normal use and service. This warranty will expire ten (10) years from date of shipment by TFBP. No warranty is given for products or components manufactured by companies not affiliated by ownership with TFBP or for products and components which have been subject to misuse, improper installation, corrosion, or which have not been installed, maintained, modified or repaired in accordance with applicable Standards of the National Fire Protection Association, and/or the standards of any other Authorities Having Jurisdiction. Materials found by TFBP to be defective shall be either repaired or replaced, at TFBP's sole option. TFBP neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of products or parts of products. TFBP shall not be responsible for sprinkler system design errors or inaccurate or incomplete information supplied by Buyer or Buyer's representatives.

In no event shall TFBP be liable, in contract, tort, strict liability or under any other legal theory, for incidental, indirect, special or consequential damages, including but not limited to labor charges, regardless of whether TFBP was informed about the possibility of such damages, and in no event shall TFBP's liability exceed an amount equal to the sales price.

The foregoing warranty is made in lieu of any and all other warranties, express or implied, including warranties of merchantability and fitness for a particular purpose.

This limited warranty sets forth the exclusive remedy for claims based on failure of or defect in products, materials or components, whether the claim is made in contract, tort, strict liability or any other legal theory.

This warranty will apply to the full extent permitted by law. The invalidity, in whole or part, of any portion of this warranty will not affect the remainder.

## Ordering Procedure

When placing an order, indicate the full product name. Refer to the Price List for complete listing of Part Numbers.

Contact your local distributor for availability.

### **Upright Foam-Water Sprinklers:**

Specify: Model B-1 Upright Foam-Water Sprinkler, P/N 49-210-1-001.

### **Pendent Foam-Water Sprinklers:**

Specify: Model B-1 Pendent Foam-Water Sprinkler, P/N 49-211-1-001.