

## Series TY-FRB – 5.6 and 8.0 K-factor Upright and Pendent Intermediate Level Sprinklers Quick Response

### General Description

TYCO Series TY-FRB 5.6K and 8.0K Quick Response Upright and Pendent Intermediate Level Sprinklers are automatic sprinklers of the quick response 3 mm frangible bulb type. They are standard spray sprinklers intended for use in fire sprinkler systems designed in accordance with the standard installation rules recognized by the applicable listing or approval agency (e.g., UL Listing is based on NFPA requirements). Both the pendent and upright sprinklers produce a hemispherical water distribution pattern below the deflector.

Intermediate level sprinklers are primarily designed for use in rack storage sprinkler systems where their thermally sensitive elements must be shielded from the water spray of higher elevation sprinklers that could operate earlier during a fire. Intermediate level sprinklers are also used in other applications such as beneath open gridded catwalks.

Corrosion-resistant coatings, where applicable, are utilized to extend the life of copper alloy sprinklers beyond that which would otherwise be obtained when exposed to corrosive atmospheres. Although corrosion-resistant coated sprinklers have passed the standard corrosion tests of the applicable approval agencies, the testing is not representative of all possible cor-

rosive atmospheres. Consequently, it is recommended that the end user be consulted with respect to the suitability of these coatings for any given corrosive environment. The effects of ambient temperature, concentration of chemicals, and gas/chemical velocity, should be considered, as a minimum, along with the corrosive nature of the chemical to which the sprinklers will be exposed.

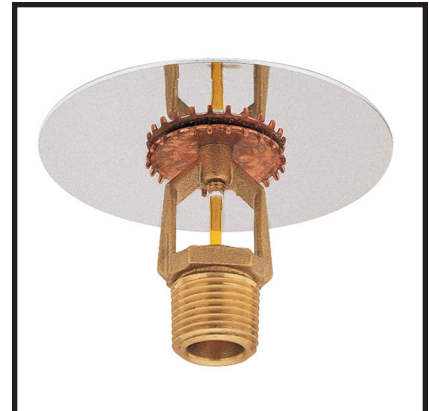
#### NOTICE

*The Series TY-FRB 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 (NFPA), 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. Contact the installing contractor or product manufacturer with any questions.*

### Sprinkler Identification Numbers (SINs)

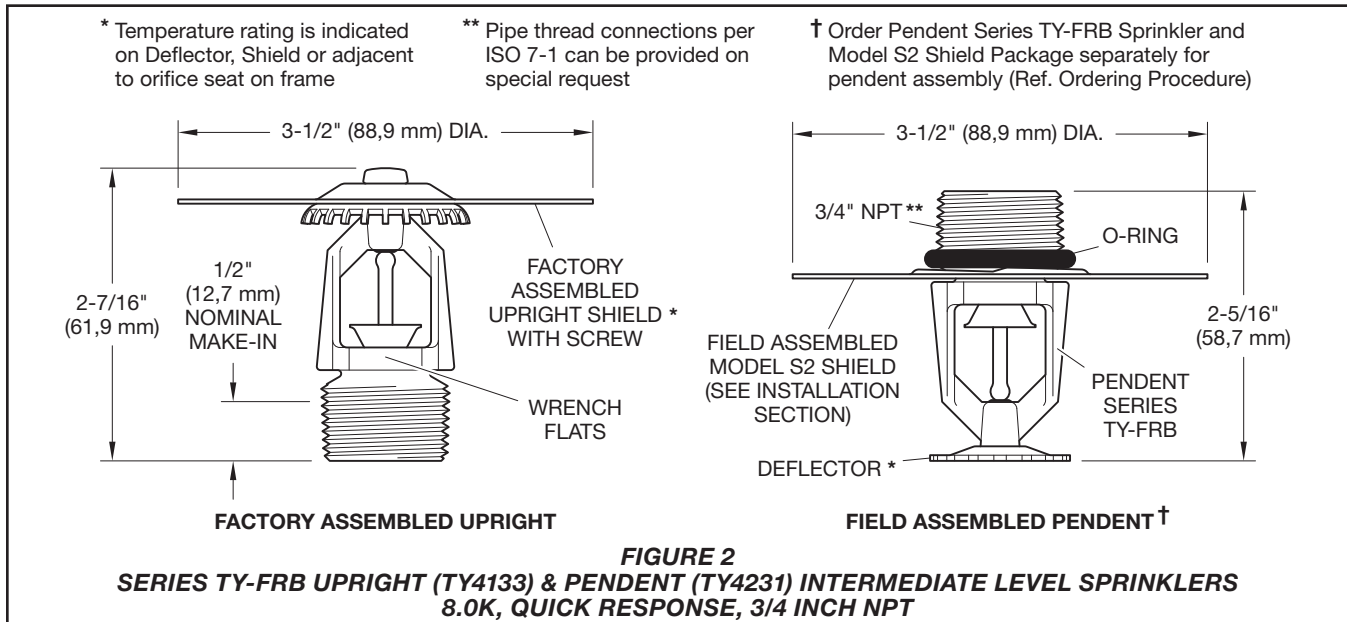
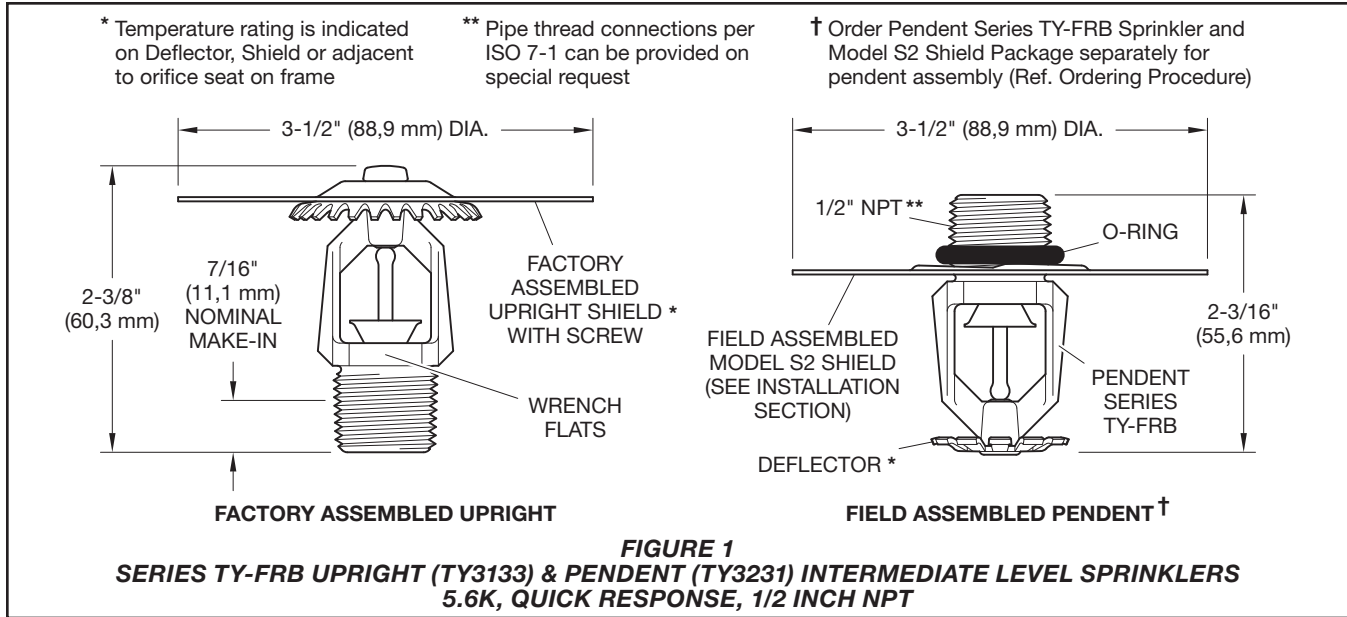
TY3133 – Upright, 5.6K, 1/2 in. NPT  
TY3231 – Pendent, 5.6K, 1/2 in. NPT  
TY4133 – Upright, 8.0K, 3/4 in. NPT  
TY4231 – Pendent, 8.0K, 3/4 in. NPT



#### IMPORTANT

*Refer to Technical Data Sheet TFP2300 for warnings pertaining to regulatory and health information.*

*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.*



## Technical Data

### Approvals

UL and C-UL Listed  
 FM and NYC Approved

(Refer to Table A for complete approval information, including corrosion-resistant status.)

**Maximum Working Pressure**  
 175 psi (12,1 bar)

**Discharge Coefficients**  
 K=5.6 GPM/psi<sup>1/2</sup> (80,6 LPM/bar<sup>1/2</sup>)  
 K=8.0 GPM/psi<sup>1/2</sup> (115,2 LPM/bar<sup>1/2</sup>)

**Temperature Ratings**  
 Refer to Table A

**Finishes**  
 Sprinklers: Refer to Table A

### Physical Characteristics

|                   |       |                           |
|-------------------|-------|---------------------------|
| Frame             | ..... | Bronze                    |
| Button            | ..... | Brass/Copper              |
| Sealing Assembly  | ..    | Beryllium Nickel w/TEFLON |
| Bulb              | ..... | Glass                     |
| Compression Screw | ..... | Bronze                    |
| Deflector         | ..... | Copper                    |
| Shield            | ..... | Plated Steel              |

| K-FACTOR           | SPRINKLER TYPE      | TEMPERATURE RATING | BULB LIQUID COLOR | SPRINKLER FINISH |               |            |
|--------------------|---------------------|--------------------|-------------------|------------------|---------------|------------|
|                    |                     |                    |                   | NATURAL BRASS*   | LEAD COATED** |            |
| 5.6<br>1/2 in. NPT | UPRIGHT<br>(TY3133) | 135 °F (57 °C)     | Orange            | 1, 2, 3, 4       | 1, 2, 3, 4    |            |
|                    |                     | 155 °F (68 °C)     | Red               |                  |               |            |
|                    |                     | 175 °F (79 °C)     | Yellow            |                  |               |            |
|                    |                     | 200 °F (93 °C)     | Green             |                  |               |            |
|                    |                     | 286 °F (141 °C)    | Blue              |                  |               |            |
|                    | UPRIGHT<br>(TY3231) | 135 °F (57 °C)     | Orange            |                  | 1, 2, 3, 4    | N/A        |
|                    |                     | 155 °F (68 °C)     | Red               |                  |               |            |
|                    |                     | 175 °F (79 °C)     | Yellow            |                  |               |            |
|                    |                     | 200 °F (93 °C)     | Green             |                  |               |            |
|                    |                     | 286 °F (141 °C)    | Blue              |                  |               |            |
| 8.0<br>3/4 in. NPT | PENDENT<br>(TY4133) | 135 °F (57 °C)     | Orange            | 1, 2, 3, 4       |               | 1, 2, 3, 4 |
|                    |                     | 155 °F (68 °C)     | Red               |                  |               |            |
|                    |                     | 175 °F (79 °C)     | Yellow            |                  |               |            |
|                    |                     | 200 °F (93 °C)     | Green             |                  |               |            |
|                    |                     | 286 °F (141 °C)    | Blue              |                  |               |            |
|                    | PENDENT<br>(TY4231) | 135 °F (57 °C)     | Orange            |                  | 1, 2, 3, 4    | N/A        |
|                    |                     | 155 °F (68 °C)     | Red               |                  |               |            |
|                    |                     | 175 °F (79 °C)     | Yellow            |                  |               |            |
|                    |                     | 200 °F (93 °C)     | Green             |                  |               |            |
|                    |                     | 286 °F (141 °C)    | Blue              |                  |               |            |

**Notes:**

1. UL Listed as quick response sprinklers
  2. C-UL Listed as quick response sprinklers
  3. FM Approved as quick response sprinklers
  4. Approved by the City of New York (NYC) under MEA 354-01-E
- \* With zinc plated shield  
 \*\* Where Lead Coated sprinklers are noted to be UL and C-UL Listed, the sprinklers are Listed as corrosion-resistant sprinklers; where Lead Coated sprinklers are noted to be FM Approved, the sprinklers are Approved as corrosion-resistant sprinklers.  
 N/A – Not Applicable

**TABLE A**  
**5.6K & 8.0K SERIES TY-FRB UPRIGHT & PENDENT INTERMEDIATE LEVEL SPRINKLERS, QUICK RESPONSE LABORATORY LISTINGS AND APPROVALS**

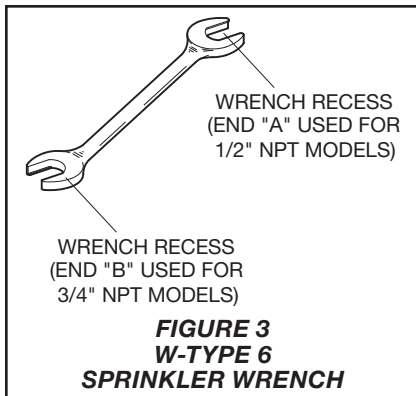
## Design Criteria

TYCO Series TY-FRB 5.6K and 8.0K Quick Response Upright and Pendent Intermediate Level Sprinklers are intended for fire protection systems

designed in accordance with the standard installation rules recognized by the applicable listing or approval agency (e.g., UL Listing is based on the requirements of NFPA 13, and FM Approval is based on the requirements of FM Approvals' Loss Prevention Data Sheets).

## Operation

The glass bulb contains a fluid which expands when exposed to heat. When the rated temperature is reached, the fluid expands sufficiently to shatter the glass bulb, allowing the sprinkler to activate and water to flow.



## Installation

TYCO Series TY-FRB 5.6K and 8.0K Quick Response Upright and Pendent Intermediate Level Sprinklers must be installed in accordance with this section.

### NOTICE

*Do not install any bulb-type sprinkler if the bulb is cracked or there is a loss of liquid from the bulb. With the sprinkler held horizontally, a small air bubble should be present. The diameter of the air bubble is approximately 1/16 in. (1,6 mm) for the 135°F (57°C) to 3/32 in. (2,4 mm) for the 286°F (141°C) temperature ratings.*

### General Instructions

A leak-tight 1/2 in. NPT sprinkler joint should be obtained by applying a minimum-to-maximum torque of 7 to 14 lb-ft (9,5 to 19,0 N·m). A leak-tight 3/4 in. NPT sprinkler joint should be obtained by applying a minimum-to-maximum torque of 10 to 20 lb-ft (13,4 to 26,8 N·m). Higher levels of torque may distort the sprinkler inlet and cause leakage or impairment of the sprinkler.

### Upright Sprinklers

The Series TY-FRB Intermediate Level Upright Sprinklers must be installed in accordance with the following instructions:

**Step 1.** With pipe thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.

**Step 2.** Tighten the sprinkler into the sprinkler fitting using only the W-Type 6 Sprinkler Wrench (Ref. Figure 3). With reference to Figure 1 or 2, the W-Type 6 Sprinkler Wrench is to be applied to the wrench flats.

### Pendent Sprinklers

The Series TY-FRB Intermediate Level Pendent Sprinklers must be installed in accordance with the following instructions:

**Step 1.** Thread the Model S2 Shield onto the sprinkler threads with the stamped markings toward the deflector and just to the end of the threads. The final assembly step is easier to accomplish if the shield is not disengaged by continuing to turn the shield past the threads.

**Step 2.** Roll the O-ring over the sprinkler threads until it seats against the shield.

**Step 3.** With pipe thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.

**Step 4.** Tighten the sprinkler into the sprinkler fitting using only the W-Type 6 Sprinkler Wrench (Ref. Figure 3). With reference to Figure 1 or 2, the W-Type 6 Sprinkler Wrench is to be applied to the wrench flats.

**Step 5.** Rotate the Model S2 Shield clockwise (looking up) so that it slightly compresses the O-ring between the shield and sprinkler fitting.

## Care and Maintenance

TYCO Series TY-FRB 5.6K and 8.0K Quick Response Upright and Pendent Intermediate Level Sprinklers must be maintained and serviced in accordance with this section.

Before closing a fire protection system 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.

Sprinklers that are found to be leaking or exhibiting visible signs of corrosion must be replaced.

Automatic sprinklers must never be painted, plated, coated or otherwise altered after leaving the factory. Modified sprinklers must be replaced. Sprinklers that have been exposed to corrosive products of combustion, but have not operated, should be replaced if they cannot be completely cleaned by wiping the sprinkler with a cloth or by brushing it with a soft bristle brush.

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. Also, replace any sprinkler that has a cracked bulb or that has lost liquid from its bulb. Refer to the installation section for additional information.

Frequent visual inspections are recommended to be initially performed for corrosion resistant coated sprinklers, after the installation has been completed, to verify the integrity of the corrosion-resistant coating. Thereafter, annual inspections per NFPA 25 should suffice; however, instead of inspecting from the floor level, a random sampling of close-up visual inspections should be made, so as to better determine the exact sprinkler condition and the long term integrity of the corrosion resistant coating, as it may be affected by the corrosive conditions present.

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. Contact the installing contractor or sprinkler manufacturer with any questions.

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

P/N 57 — XXX — X — XXX

|     |                            | SIN    | SPRINKLER FINISH |               | TEMPERATURE RATING |               |
|-----|----------------------------|--------|------------------|---------------|--------------------|---------------|
| 333 | 5.6K UPRIGHT (1/2 in. NPT) | TY3133 | 1                | NATURAL BRASS | 135                | 13 °F (57°C)  |
| 343 | 8.0K UPRIGHT (3/4 in. NPT) | TY4133 | 7                | LEAD COATED   | 155                | 155°F (68°C)  |
|     |                            |        |                  |               | 175                | 175°F (79°C)  |
|     |                            |        |                  |               | 200                | 200°F (93°C)  |
|     |                            |        |                  |               | 286                | 286°F (141°C) |

**TABLE B**  
**SERIES TY-FRB UPRIGHT INTERMEDIATE LEVEL SPRINKLERS, QUICK RESPONSE**  
**PART NUMBER SELECTION**

P/N 57 — XXX — X — XXX

|     |                            | SIN    | SPRINKLER FINISH |               | TEMPERATURE RATING |               |
|-----|----------------------------|--------|------------------|---------------|--------------------|---------------|
| 371 | 5.6K PENDENT (1/2 in. NPT) | TY3231 | 1                | NATURAL BRASS | 135                | 135°F (57°C)  |
| 391 | 8.0K PENDENT (3/4 in. NPT) | TY4231 | 7                | LEAD COATED   | 155                | 155°F (68°C)  |
|     |                            |        |                  |               | 175                | 175°F (79°C)  |
|     |                            |        |                  |               | 200                | 200°F (93°C)  |
|     |                            |        |                  |               | 286                | 286°F (141°C) |

**TABLE C**  
**SERIES TY-FRB PENDENT INTERMEDIATE LEVEL SPRINKLERS, QUICK RESPONSE**  
**PART NUMBER SELECTION**  
**(MODEL S2 PENDENT SHIELD MUST BE SEPARATELY ORDERED)**

## Limited Warranty

For warranty terms and conditions, visit [www.tyco-fire.com](http://www.tyco-fire.com).

## Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name, including description and part number (P/N).

### Upright Sprinkler Assemblies with NPT Thread Connections (with Shield)

Specify: Series TY-FRB Upright Intermediate Level Sprinkler, (specify K-factor), Quick Response, (specify) temperature rating, (specify) finish, P/N (specify from Table B)

### Pendent Sprinkler Assemblies with NPT Thread Connections (Shield ordered separately)

Specify: Series TY-FRB Pendent Sprinkler, (specify K-factor), Quick Response, (specify) temperature rating, (specify) finish, P/N (specify from Table C)

### Model S2 Sprinkler Shield

Includes S2 Shield and one O-Ring.

Specify: Model S2 Sprinkler Shield, (specify) Thread Size, P/N (specify):

1/2 in. NPT ..... 56-070-9-332  
3/4 in. NPT ..... 56-070-9-342

### Sprinkler Wrench

Specify: W-Type 6 Sprinkler Wrench, P/N 56-000-6-387

