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

### General Description

TYCO Series TY-FRL 5.6K and 8.0K Quick Response Upright and Pendent Intermediate Level Sprinklers are automatic sprinklers of the quick response solder 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.

#### 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.

#### NOTICE

The Series TY-FRL 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)

TY3123 ..... Upright 5.6K, 1/2 in. NPT  
TY3221 ..... Pendent 5.6K, 1/2 in. NPT  
TY4123 ..... Upright 8.0K, 3/4 in. NPT  
TY4221 ..... Pendent 8.0K, 3/4 in. NPT

TY3123 is a redesignation for Star SIN S1991 and Gem SIN G8986

TY3221 is a redesignation for Star SIN S1865 and Gem SIN G8972

TY4123 is a redesignation for Star SIN S1993 and Gem SIN G8153

TY4221 is a redesignation for Star SIN S1867 and Gem SIN G8172



### Technical Data

#### Approvals

UL and C-UL Listed  
FM and NYC Approved

(Refer to Table A for complete approval information.)

#### 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

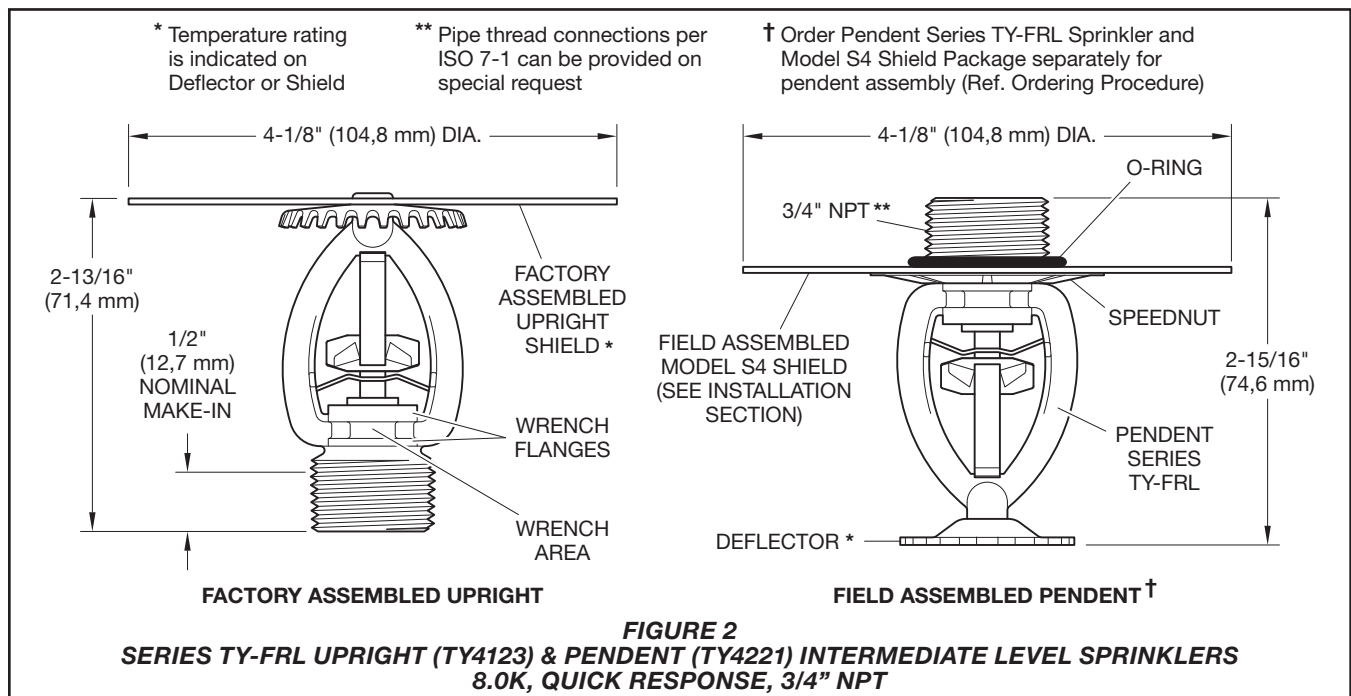
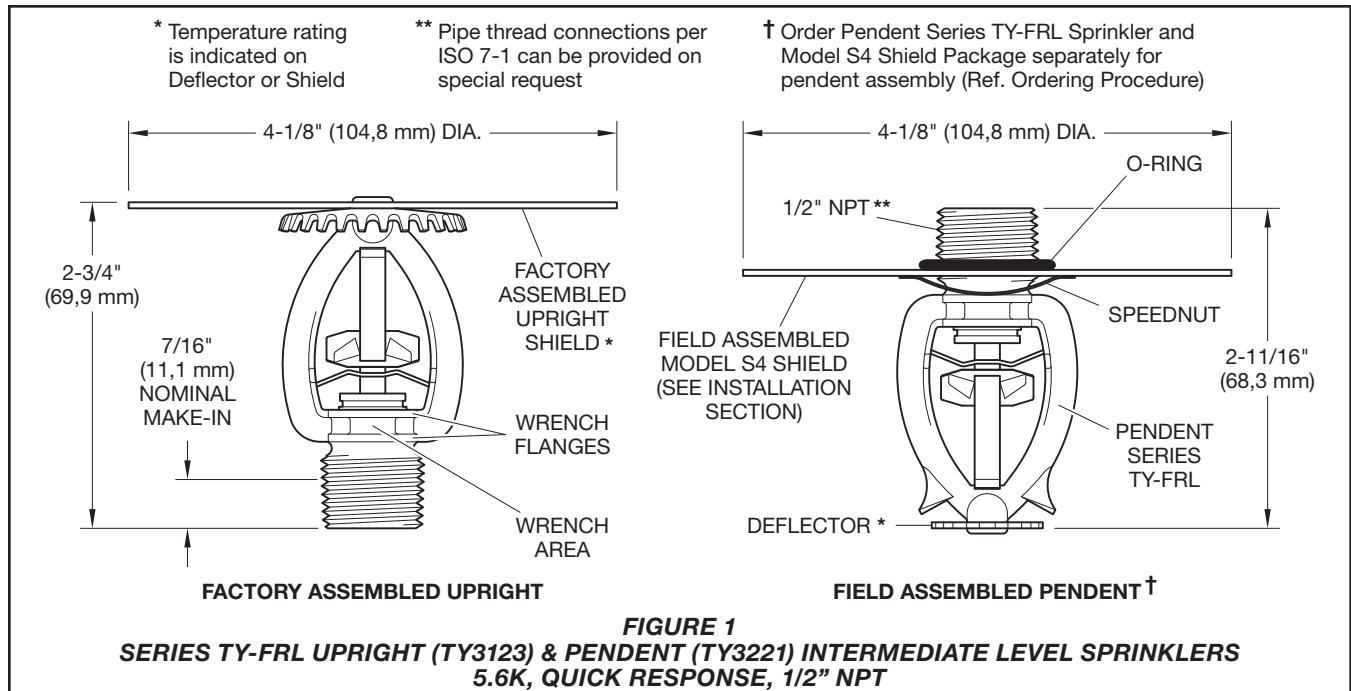
Refer to Table A

#### Finishes

Refer to Table A

#### Physical Characteristics

Frame	..... Bronze
Strut	..... MONEL
Deflector	..... Bronze
Hook	..... MONEL
Link Assembly	..... Nickel
Ejection Spring	..... INCONEL
Button	..... Bronze
Seal	..... TEFLON
Shield	..... Brass



## Design Criteria

TYCO Series TY-FRL 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 fusible link (heat collector) assembly is comprised of two halves that are joined together by a thin layer of solder. When the rated temperature is reached, the solder melts and the two link halves separate, allowing the sprinkler to operate.

K-FACTOR	SPRINKLER TYPE	TEMPERATURE RATING	FRAME COLOR CODE	SPRINKLER FINISH	
				NATURAL BRASS	CHROME PLATED
5.6 1/2 in. NPT	Upright (TY3123) & Pendent (TY3221)	165°F (74°C)	Unpainted	1, 2, 3, 4	
8.0 3/4 in. NPT	Upright (TY4123) & Pendent (TY4221)				

**Notes:**  
1. Listed by Underwriters Laboratories, Inc. (UL) as quick response sprinklers  
2. Listed by Underwriters Laboratories, Inc. for use in Canada (C-UL) as quick response sprinklers  
3. Approved by FM Global (FM Approvals) as quick response sprinklers  
4. Approved by the City of New York (NYC) under MEA 112-04-E

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

## Installation

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

### General Instructions

A leak-tight 1/2 in. NPT sprinkler joint should be obtained with a torque of 7 to 14 lb-ft (9,5 to 19,0 N·m). A maximum of 21 lb-ft (28,5 N·m) of torque may be used to install sprinklers with 1/2 in. NPT connections. A leak-tight 3/4 in. NPT sprinkler joint should be obtained with a torque of 10 to 20 lb-ft (13,4 to 26,8 N·m). A maximum of 30 lb-ft (40,7 N·m) of torque is to be used to install sprinklers with 3/4 in. NPT connections. Higher levels of torque may distort the sprinkler inlet and cause leakage or impairment of the sprinkler.

### Upright Sprinklers

The Series TY-FRL 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 9 Sprinkler Wrench (Ref. Figure 3). With reference to Figure 1 or 2, the W-Type 9 Sprinkler Wrench is to be applied to the wrenching area.

### Pendent Sprinklers

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

**Step 1.** Install the speed nut over the sprinkler threads until it seats against

the sprinkler wrenching area flange as shown in Figure 1 or 2, as applicable.

**Step 2.** Install the Model S4 Shield over the sprinkler threads, and then roll the O-ring over the sprinkler threads until it is seated firmly against the shield.

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

**Step 4.** Tighten the sprinkler into the sprinkler fitting using only the W-Type 9 Sprinkler Wrench (Ref. Figure 3). The wrench is to be applied to the sprinkler wrenching area shown in Figure 1 or 2, as applicable.

When installed correctly, the O-ring will be slightly compressed and the shield will be held firmly in place.

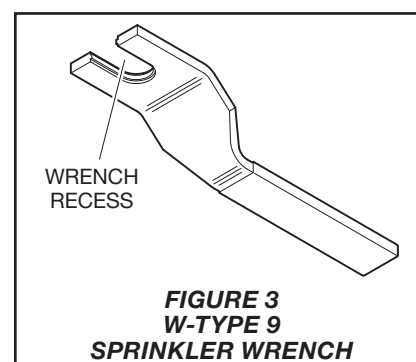
## Care and Maintenance

TYCO Series TY-FRL 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 (Ref. Installation Section).

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 58 – XXX – X – XXX					
		SIN	SPRINKLER FINISH		TEMPERATURE RATING
986	5.6K UPRIGHT (1/2 in. NPT)	TY3123	1	NATURAL BRASS	165 165°F (74°C)
153	8.0K UPRIGHT (3/4 in. NPT)	TY4123	9	CHROME PLATED	

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

P/N 58 – XXX – X – XXX					
		SIN	SPRINKLER FINISH		TEMPERATURE RATING
982	5.6K PENDENT (1/2 in. NPT)	TY3221	1	NATURAL BRASS	165 165°F (74°C)
172	8.0K PENDENT (3/4 in. NPT)	TY4221	9	CHROME PLATED	

**TABLE C**  
**SERIES TY-FRL PENDENT INTERMEDIATE LEVEL SPRINKLERS, QUICK RESPONSE**  
**PART NUMBER SELECTION**  
**(MODEL S4 PENDENT SHIELD, SPEED-NUT AND O-RING 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-FRL 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-FRL Pendent Sprinkler, (specify K-factor), Quick Response, (specify) temperature rating, (specify) finish, P/N (specify from Table C)

**Model S4 Sprinkler Shield**  
Includes S4 Shield, one O-Ring and one Speednut.

Specify: Model S4 Sprinkler Shield, (specify) finish, (specify) Thread Size, P/N (specify):

**Plain Brass**  
1/2 in. NPT ..... 56-952-1-001  
3/4 in. NPT ..... 56-152-1-001

**Chrome Plated**  
1/2 in. NPT ..... 56-951-9-001  
3/4 in. NPT ..... 56-152-9-001

**Sprinkler Wrench**  
Specify: W-Type 9 Sprinkler Wrench, P/N 56-000-1-8499