

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

General Description

The Series TY-FRL, 5.6 and 8.0 K-factor Upright and Pendent Intermediate Level Sprinklers described in this data sheet 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.

WARNINGS

The Series TY-FRL Sprinklers described herein must be installed and maintained in compliance with this document, as well as with the applica-

ble 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.

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.

Model/Sprinkler Identification Numbers

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

TY3123 is a redesignation for S1991 and G8986.

TY3221 is a redesignation for S1865 and G8972.

TY4123 is a redesignation for S1993 and G8153.

TY4221 is a redesignation for S1867 and G8172.



Discharge Coefficient

K = 5.6 GPM/psi^{1/2} (80,6 LPM/bar^{1/2})
K = 8.0 GPM/psi^{1/2} (115,2 LPM/bar^{1/2})

Temperature Ratings

Refer to Table A

Finishes

Natural Brass, Chrome Plated

Physical Characteristics

| | | |
|-----------------|-------|---------|
| Frame | | Bronze |
| Strut | | Monel |
| Deflector | | Bronze |
| Hook | | Monel |
| Link Assembly | | Nickel |
| Ejection Spring | | Inconel |
| Button | | Bronze |
| Seal | | Teflon† |
| Shield | | Brass |

† DuPont Registered Trademark

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.

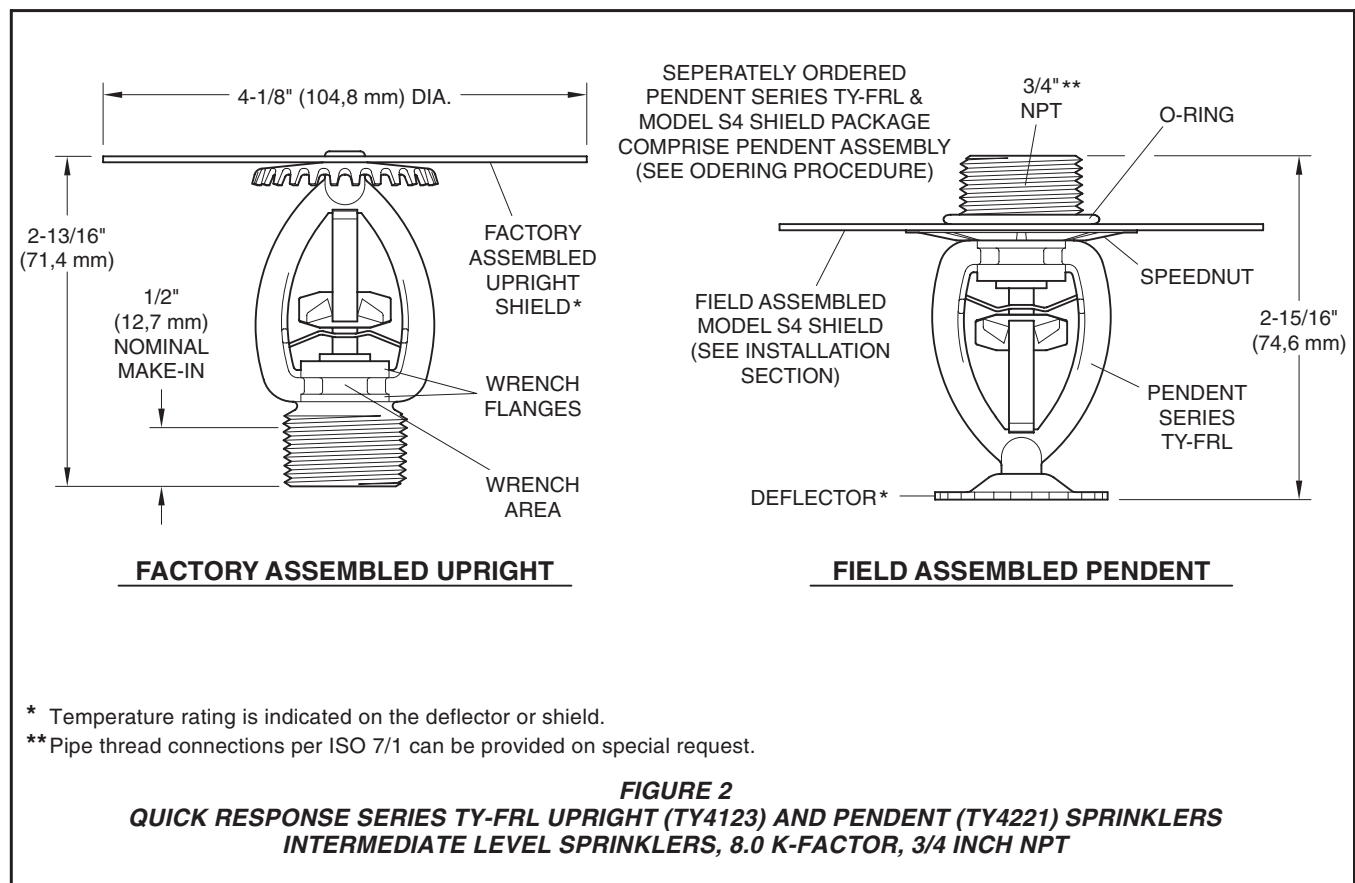
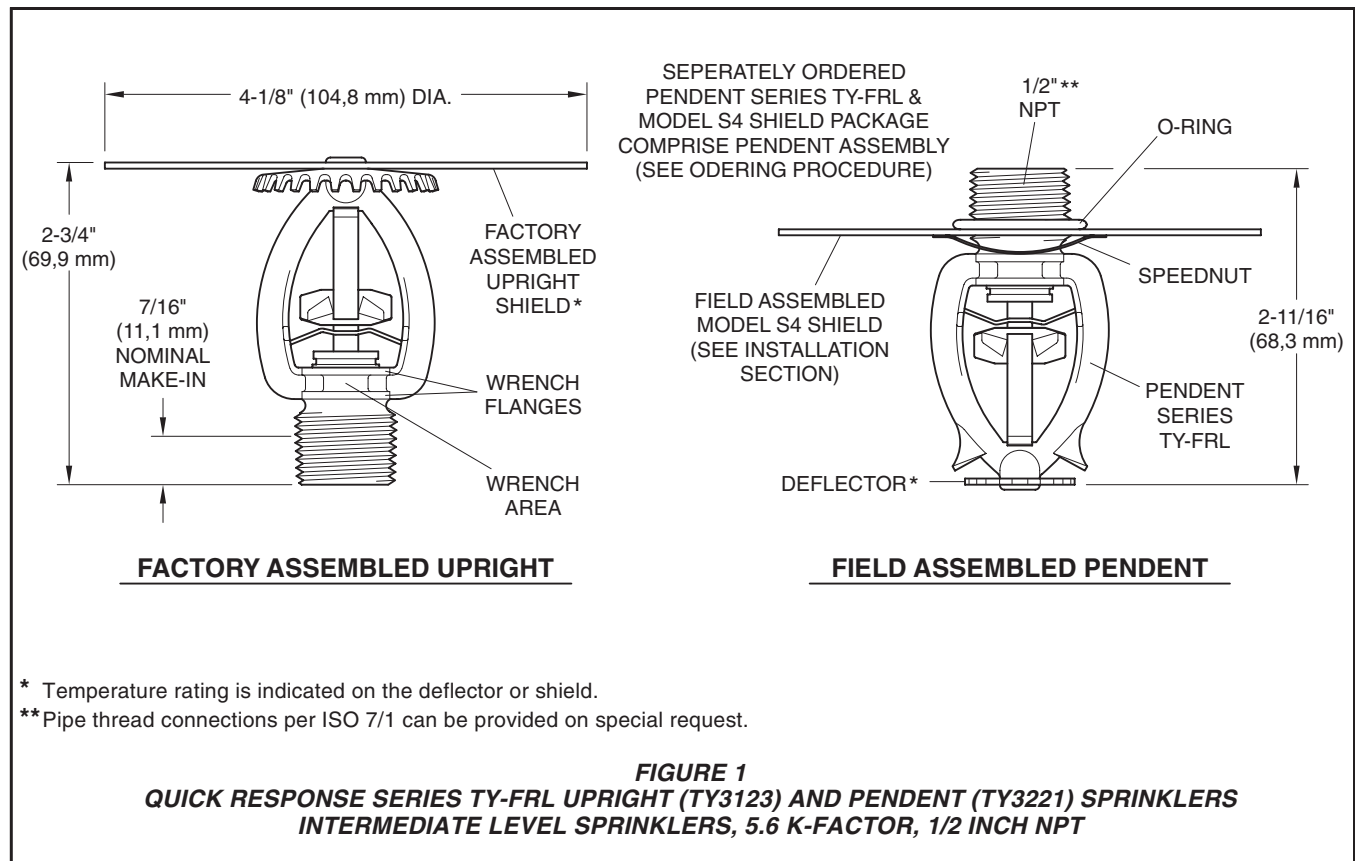
Technical Data

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)



| | | SPRINKLER FINISH | | | |
|-----------------|------------------------|--|------------------|--|------------------|
| | | K = 5.6, UPRIGHT TY3123 K = 5.6, PENDENT TY3221 | | K = 8.0, UPRIGHT TY4123 K = 8.0, PENDENT TY4221 | |
| TEMP. RATING | FRAME COLOR CODE | NATURAL BRASS | CHROME PLATED | NATURAL BRASS | CHROME PLATED |
| 165°F/74°C | Unpainted | 1, 2, 3, 4 | | | |

- 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 Factory Mutual Research Corporation (FM) as Quick Response Sprinklers.
 - 4. Approved by the City of New York under MEA 112-04-E.

TABLE A
LABORATORY LISTINGS AND APPROVALS

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.

**Design
Criteria**

The Series TY-FRL Pendent and Upright 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's Loss Prevention Data Sheets).

Installation

The Series TY-FRL 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. A leak tight 3/4 inch NPT sprinkler joint should be obtained with a torque of 10 to 20 ft.lbs. (13,4 to 26,8 Nm). A maximum of 30 ft.lbs. (40,7 Nm) of torque is to be used to install sprinklers with 3/4 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.

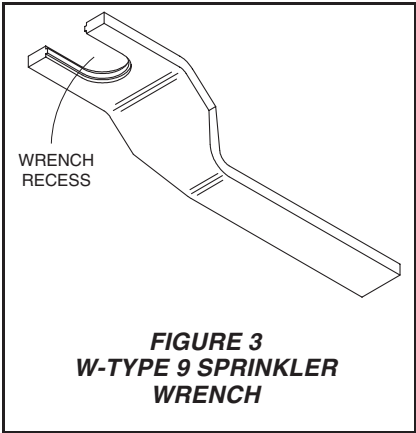
Step 1. With pipe thread sealant applied to the pipe threads, hand tighten the sprinkler into the sprinkler fitting.

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 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

The Series TY-FRL Sprinklers must be maintained and serviced in accordance with the following instructions:

NOTES

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.

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 or over-heated sprinklers must be replaced.

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.

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 automatic sprinkler systems be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national code.

Limited Warranty

Products manufactured by Tyco Fire & Building Products 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 Tyco Fire & Building Products. No warranty is given for products or components manufactured by companies not affiliated by ownership with Tyco Fire & Building Products 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 Tyco Fire & Building Products to be defective shall be either repaired or replaced, at Tyco Fire & Building Products' sole option. Tyco Fire & Building Products neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of products or parts of products. Tyco Fire & Building Products 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 TYCO FIRE & BUILDING PRODUCTS 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 TYCO FIRE & BUILDING PRODUCTS WAS INFORMED ABOUT THE POSSIBILITY OF SUCH DAMAGES, AND IN NO EVENT SHALL TYCO FIRE & BUILDING PRODUCTS' 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.

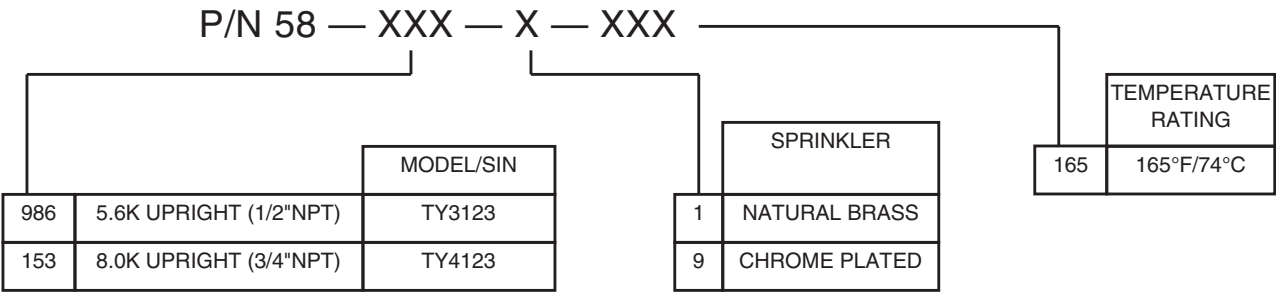


TABLE B
PART NUMBER SELECTION
SERIES TY-FRL UPRIGHT INTERMEDIATE LEVEL SPRINKLERS
(UPRIGHT SHIELD INCLUDED WITH SPRINKLER)

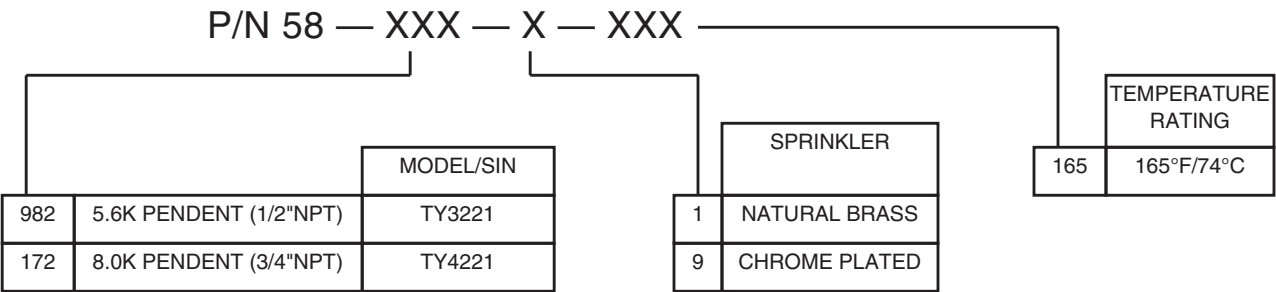


TABLE C
PART NUMBER SELECTION
SERIES TY-FRL PENDENT SPRINKLERS
(MODEL S4 PENDENT SHIELD, SPEED-NUT & O-RING MUST BE SEPARATELY ORDERED)

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 Sprinkler Assemblies with Shield and NPT Thread Connections:**
Specify: (Specify Model/SIN), Quick Response, (specify K-factor), (specify temperature rating), Series TY-FRL Upright Intermediate Level Sprinkler with (specify finish), P/N (specify from Table B).
- Pendent Sprinkler Assemblies with (Shield Ordered Separately) and NPT Thread Connections:**
Specify: (Specify Model/SIN), Quick Response, (specify K-factor), (specify

- temperature rating), Series TY-FRL Pendent Sprinkler with (specify finish), P/N (specify from Table C)
- Sprinkler Wrench:**
Specify: W-Type 9 Sprinkler Wrench, P/N 56-000-1-849.
- Model S4 Pendent Shield Package:**
Specify: S4 Pendent Shield Package (one shield / one o-ring/ one speed-nut) with (specify finish) for use with (specify 1/2" NPT or 3/4" NPT) Series TY-FRL Pendent Sprinklers, P/N (specify).
- 1/2" NPT S4
Plain Brass
Pendent Shield
Package P/N 56-952-1-001
 - 1/2" NPT S4
Chrome Plated
Pendent Shield
Package P/N 56-951-9-001
 - 3/4" NPT S4
Plain Brass
Pendent Shield
Package P/N 56-152-1-001
 - 3/4" NPT S4
Chrome Plated
Pendent Shield
Package P/N 56-152-9-001

