

Series TY-FRL — 5.6 and 8.0 K-factor Extended Coverage Horizontal Sidewall Sprinklers Quick & Standard Response (Light Hazard)

General Description

The Series TY-FRL, 5.6, and 8.0 K-factor, Extended Coverage Horizontal Sidewall Sprinklers are solder type spray sprinklers designed for use in hydraulically calculated sprinkler systems in light hazard, commercial occupancies such as churches, restaurant seating areas, hotels, educational facilities, offices, etc. With their coverage up to 16 feet (4,9 m) wide by 24 feet (7,3 m) long, they are designed for installation along a wall or the side of a beam and just beneath a smooth, flat, horizontal ceiling. Horizontal sidewall sprinklers are commonly used instead of pendent or upright sprinklers due to aesthetics or building construction considerations where piping across the ceiling is not desirable.

The fast response thermal sensitivity rating of the Series TY-FRL provides for a quick response extended coverage (QREC) rating for many of the coverage areas detailed in Tables B and C.

WARNINGS

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, in addition to the

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.

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

TY3322 - EC HSW, 5.6K, 1/2"NPT
TY4322 - EC HSW, 8.0K, 3/4"NPT

TY3322 is a redesignation for S1888 and G8970.

TY4322 is a redesignation for S1868 and G8170.

Technical Data

Approvals

UL and C-UL Listed.
FM and NYC Approved.
(Refer to Table A for complete approval information, as well as the Design Criteria Section pertaining to special design considerations.)

Maximum Working Pressure
175 psi (12,1 bar)

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
Sprinkler: Refer to Table A



Physical Characteristics

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

† DuPont Registered Trademark

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 Extended Coverage Horizontal Sidewall Sprinklers must be installed and utilized in Light Hazard Occupancies, under smooth, flat, horizontal ceilings as outlined in the applicable installation standard recognized by the Approval Agency (e.g., UL recognizes NFPA 13, and FM recognizes the FM Loss Prevention Data Sheets). Installation of the Se-

ries TY-FRL Horizontal Sidewall Sprinklers in recessed escutcheons will void all manufacturer's warranties, as well as as possibly void the sprinkler's Approvals and/or Listings.

Installation

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

NOTES

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.

Do not attempt to make-up for insufficient adjustment in the escutcheon plate by under- or over-tightening the sprinkler. Readjust the position of the sprinkler fitting to suit.

The **Series TY-FRL Horizontal Sidewall Sprinklers** must be installed in accordance with the following instructions.

Step 1. The Series TY-FRL Horizontal Sidewall Sprinklers must be installed with their centerline of waterway parallel to the ceiling and perpendicular to the back wall surface. The word "TOP" on the deflector must face upwards toward the ceiling.

Step 2. After installing an escutcheon (as applicable) over the sprinkler pipe threads and 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 only the W-Type 9 Sprinkler Wrench (Ref. Figure 3). With reference to Figure 1 or 2, the W-Type 0 Sprinkler Wrench is to be applied to the wrench area.

K	TYPE	TEMP. RATING	FRAME COLOR CODE	SPRINKLER FINISH	
				NATURAL BRASS	CHROME PLATED
5.6 1/2" NPT	EC HSW (TY3322)	165°F/74°C	Unpainted	1, 2, 3, 4	
8.0 3/4" NPT	EC HSW (TY4322)	140°F/60°C	Unpainted	1, 2, 4	
		165°F/74°C	Unpainted	1, 2, 3, 4	

NOTES:

1. Listed by Underwriters Laboratories, Inc. (UL) per Table B.
2. Listed by Underwriters Laboratories, Inc. for use in Canada per Table B.
3. Approved by Factory Mutual Research Corporation (FM) per Table C.
4. Approved by the City of New York under MEA 112-04-E.

TABLE A
LABORATORY LISTINGS AND APPROVALS
(Refer to the Design Criteria Section)

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.

Absence of an escutcheon, which is used to cover a clearance hole, may delay the time to sprinkler operation in a fire situation.

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.

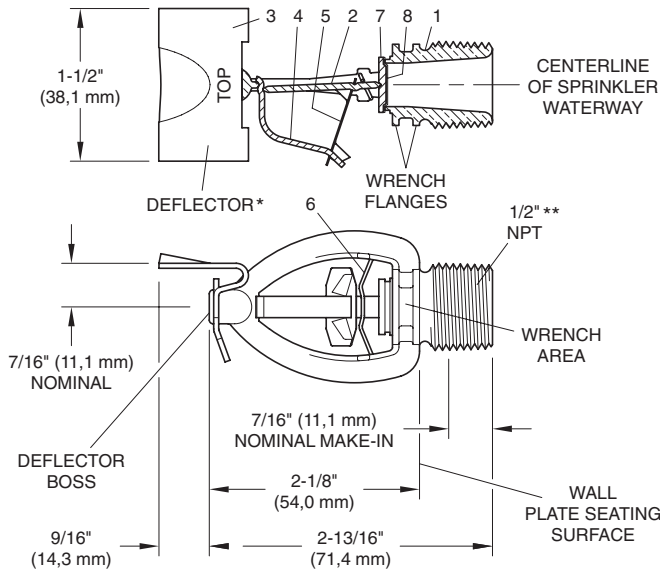
Care must be exercised to avoid damage to the sprinklers - before, during, and after installation. Sprinklers damaged by dropping, striking, wrench twist/slippage, or the like, must be replaced.

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.

- 1 - Frame
- 2 - Strut
- 3 - Deflector
- 4 - Hook
- 5 - Link Assembly
- 6 - Ejection Spring
- 7 - Button
- 8 - Seal



* Temperature rating is indicated on deflector.
 ** Pipe thread connections per ISO 7/1 can be provided on special request.

FIGURE 1
SERIES TY-FRL (TY3322) EXTENDED COVERAGE
HORIZONTAL SIDEWALL SPRINKLERS
5.6 K-FACTOR, 1/2 INCH NPT

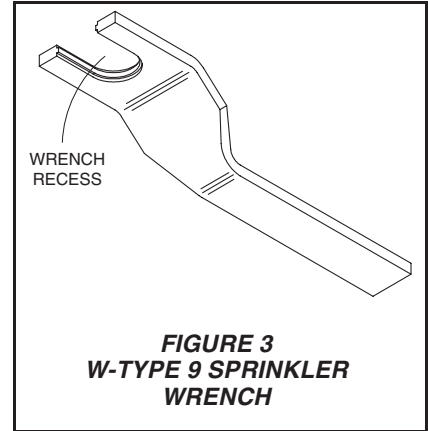
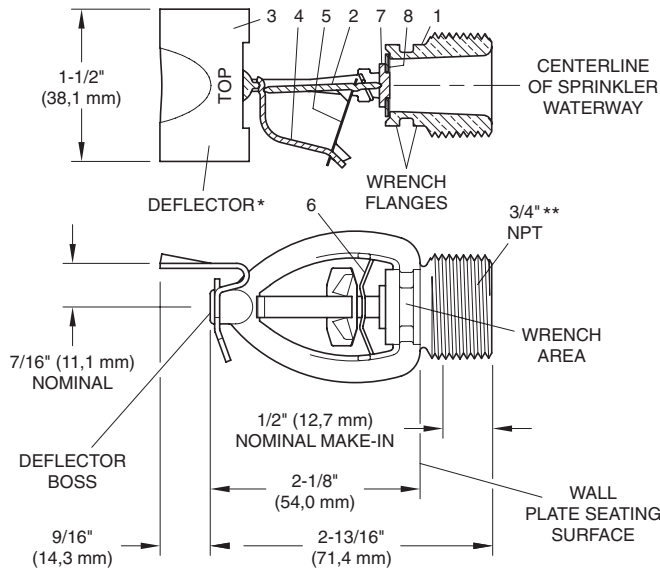


FIGURE 3
W-TYPE 9 SPRINKLER
WRENCH

- 1 - Frame
- 2 - Strut
- 3 - Deflector
- 4 - Hook
- 5 - Link Assembly
- 6 - Ejection Spring
- 7 - Button
- 8 - Seal



* Temperature rating is indicated on deflector.
 ** Pipe thread connections per ISO 7/1 can be provided on special request.

FIGURE 2
SERIES TY-FRL (TY4322) EXTENDED COVERAGE
HORIZONTAL SIDEWALL SPRINKLERS
8.0 K-FACTOR, 3/4 INCH NPT

5.6 K EXTENDED COVERAGE HORIZONTAL SIDEWALL SPRINKLER (TY3322)

Response Rating	Coverage Area ⁽¹⁾ , Ft. x Ft. (m x m)	Minimum Flow ⁽²⁾ , GPM (LPM)	Minimum Pressure ⁽²⁾ , PSI (BAR)	Deflector-To-Ceiling Distance ⁽³⁾ , In. (mm)	Sprinkler Temperature Rating, °F	Minimum Spacing ⁽⁴⁾ , Ft. (m)
Quick	16 x 18 (4,9 x 5,5)	29 (110)	26.8 (1,85)	4 to 12 (100 to 300)	165	8 (2,4)
Quick	16 x 20 (4,9 x 6,1)	33 (125)	34.7 (2,39)	4 to 12 (100 to 300)	165	8 (2,4)
Quick	18 x 16 (5,5 x 4,9)	29 (110)	26.8 (1,85)	4 to 12 (100 to 300)	165	8 (2,4)

8.0 K EXTENDED COVERAGE HORIZONTAL SIDEWALL SPRINKLER (TY4322)

Response Rating	Coverage Area ⁽¹⁾ , Ft. x Ft. (m x m)	Minimum Flow ⁽²⁾ , GPM (LPM)	Minimum Pressure ⁽²⁾ , PSI (BAR)	Deflector-To-Ceiling Distance ⁽³⁾ , In. (mm)	Sprinkler Temperature Rating, °F	Minimum Spacing ⁽⁴⁾ , Ft. (m)
Quick	16 x 16 (4,9 x 4,9)	26 (98)	10.6 (0,73)	4 to 6 (100 to 150)	140, 165	10 (3,1)
Quick	16 x 18 (4,9 x 5,5)	29 (110)	13.1 (0,90)	4 to 6 (100 to 150)	140, 165	10 (3,1)
Quick	16 x 18 (4,9 x 5,5)	38 (144)	22.6 (1,56)	4 to 18 (100 to 450)	140, 165	10 (3,1)
Quick	16 x 20 (4,9 x 6,1)	34 (129)	18.1 (1,25)	4 to 6 (100 to 150)	140, 165	10 (3,1)
Quick	16 x 20 (4,9 x 6,1)	45 (170)	31.6 (2,18)	4 to 18 (100 to 450)	140	10 (3,1)
Quick	16 x 22 (4,9 x 6,7)	37 (140)	21.4 (1,48)	4 to 6 (100 to 150)	140, 165	10 (3,1)
Quick	16 x 22 (4,9 x 6,7)	37 (140)	21.4 (1,48)	4 to 6 (100 to 150)	140	10 (3,1)
Quick	16 x 24 (4,9 x 7,3)	44 (167)	30.3 (2,09)	4 to 6 (100 to 150)	140	10 (3,1)
Quick	18 x 16 (5,5 x 4,9)	31 (117)	15.0 (1,03)	4 to 6 (100 to 150)	140, 165	10 (3,1)
Quick	18 x 18 (5,5 x 5,5)	33 (125)	17.0 (1,17)	4 to 6 (100 to 150)	140, 165	10 (3,1)
Quick	20 x 16 (6,1 x 4,9)	35 (133)	19.1 (1,32)	4 to 6 (100 to 150)	140, 165	10 (3,1)
Standard	16 x 20 (4,9 x 6,1)	45 (170)	31.6 (2,18)	4 to 18 (100 to 450)	165	10 (3,1)
Standard	16 x 22 (4,9 x 6,7)	37 (140)	21.4 (1,48)	4 to 6 (100 to 150)	165	10 (3,1)
Standard	16 x 24 (4,9 x 7,3)	44 (167)	30.3 (2,09)	4 to 6 (100 to 150)	165	10 (3,1)

NOTES

1. Backwall (where sprinkler is located) by sidewall (length of throw).
2. Requirement is based on minimum flow in GPM from each sprinkler. The indicated residual pressures are based on the nominal K-factor.
3. The centerline of the sprinkler waterway is located 7/16 inch (11,1 mm) below the deflector (Ref. Figures 1 and 2).
4. Minimum spacing is for lateral distance between sprinklers located along a single wall. Otherwise adjacent sprinklers (i.e., sidewall sprinklers on an adjacent wall, on an opposite wall, or pendent sprinklers) must be located outside of the maximum listed protection area of the extended coverage sidewall sprinkler being utilized.

**TABLE B
UL AND C-UL LISTING COVERAGE AND FLOW RATE CRITERIA**

5.6 K EXTENDED COVERAGE HORIZONTAL SIDEWALL SPRINKLER (TY3322)

Response Rating	Coverage Area ⁽¹⁾ , Ft. x Ft. (m x m)	Minimum Flow ⁽²⁾ , GPM (LPM)	Minimum Pressure ⁽²⁾ , PSI (BAR)	Deflector-To-Ceiling Distance ⁽³⁾ , In. (mm)	Sprinkler Temperature Rating, °F	Minimum Spacing ⁽⁴⁾ , Ft. (m)
Quick	16 x 16 (4,9 x 4,9)	26 (98)	22 (1,51)	4 to 12 (100 to 300)	165	8 (2,4)
Quick	16 x 18 (4,9 x 5,5)	30 (114)	29 (2,00)	4 to 12 (100 to 300)	165	8 (2,4)
Quick	16 x 20 (4,9 x 6,1)	33 (125)	35 (2,41)	4 to 12 (100 to 300)	65	8 (2,4)

8.0 K EXTENDED COVERAGE HORIZONTAL SIDEWALL SPRINKLER (TY4322)

Response Rating	Coverage Area ⁽¹⁾ , Ft. x Ft. (m x m)	Minimum Flow ⁽²⁾ , GPM (LPM)	Minimum Pressure ⁽²⁾ , PSI (BAR)	Deflector-To-Ceiling Distance ⁽³⁾ , In. (mm)	Sprinkler Temperature Rating, °F	Minimum Spacing ⁽⁴⁾ , Ft. (m)
Quick	16 x 16 (4,9 x 4,9)	32 (121)	16 (1,10)	4 to 12 (100 to 300)	165	10 (3,1)
Quick	16 x 18 (4,9 x 5,5)	36 (136)	20 (1,38)	4 to 12 (100 to 300)	165	10 (3,1)
Quick	16 x 20 (4,9 x 6,1)	40 (151)	25 (1,72)	4 to 12 (100 to 300)	165	10 (3,1)
Quick	16 x 22 (4,9 x 6,7)	44 (167)	30 (2,06)	4 to 12 (100 to 300)	165	10 (3,1)
Quick	16 x 24 (4,9 x 7,3)	48 (182)	36 (2,48)	4 to 12 (100 to 300)	165	10 (3,1)

NOTES

1. Backwall (where sprinkler is located) by sidewall (length of throw).
2. Requirement is based on maintaining both minimum flow and minimum residual pressure.
3. The centerline of the sprinkler waterway is located 7/16 inch (11,1 mm) below the deflector (Ref. Figures 1 and 2).
4. Minimum spacing is for lateral distance between sprinklers located along a single wall. Otherwise adjacent sprinklers (i.e., sidewall sprinklers on an adjacent wall, on an opposite wall, or pendent sprinklers) must be located outside of the maximum listed protection area of the extended coverage sidewall sprinkler being utilized.

TABLE C
FM COVERAGE AND FLOW RATE CRITERIA

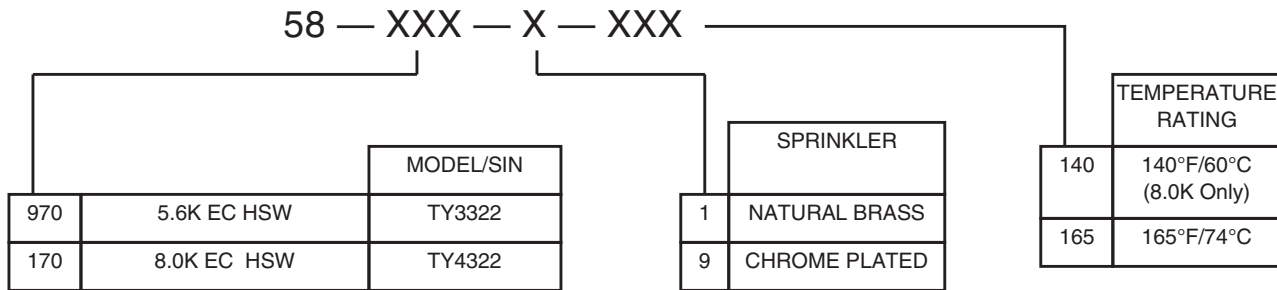


TABLE D
PART NUMBER SELECTION
SERIES TY-FRL EXTENDED COVERAGE HORIZONTAL SIDEWALL SPRINKLERS

Limited Warranty

Products manufactured by Tyco Fire 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 Products. No warranty is given for products or components manufactured by companies not affiliated by ownership with Tyco Fire 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 Products to be defective shall be either repaired or replaced, at Tyco Fire Products' sole option. Tyco Fire 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 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 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 PRODUCTS WAS INFORMED

ABOUT THE POSSIBILITY OF SUCH DAMAGES, AND IN NO EVENT SHALL TYCO FIRE 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.

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.

Sprinkler Assemblies with NPT Thread Connections:

Specify: (Specify Model/SIN), (specify K-factor), (specify temperature rating), Series TY-FRL Extended Coverage Horizontal Sidewall Sprinkler with (specify finish), P/N (specify from Table D).

Sprinkler Wrench:

Specify: W-Type 9 Sprinkler Wrench, P/N 56-000-1-849.