

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

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.

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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 ft (4,9 m) wide by 24 ft (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 Table B and Table C.

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, 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 Number

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

Note:

- 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.

Note: For complete approval information, see Table A; and for information about special design configurations, see the Design Criteria Section.

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

See Table A

Finishes

Sprinkler: See Table A

Physical Characteristics

Frame	.....	Bronze
Strut	.....	Monel
Deflector	.....	Bronze
Hook	.....	Monel
Link Assembly	.....	Nickel
Ejection Spring	.....	Inconel
Button	.....	Bronze
Seal	.....	TEFLON

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 – for example, UL recognizes NFPA 13, and

FM recognizes the FM Loss Prevention data sheets. Installing the sprinklers in recessed escutcheons voids all manufacturer's warranties, as well as possibly voiding the sprinkler's approvals and/or listings.

Installation

The Series TY-FRL Sprinklers must be installed in accordance with this section.

NOTICE

A leak tight 1/2 in. NPT sprinkler joint should be obtained by applying a minimum-to-maximum torque of 7 ft-lb to 14 ft-lb (9,5 to N·m 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 ft-lb to 20 ft-lb (13,4 N·m to 26,8 N·m). 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.

Step 1. The 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.

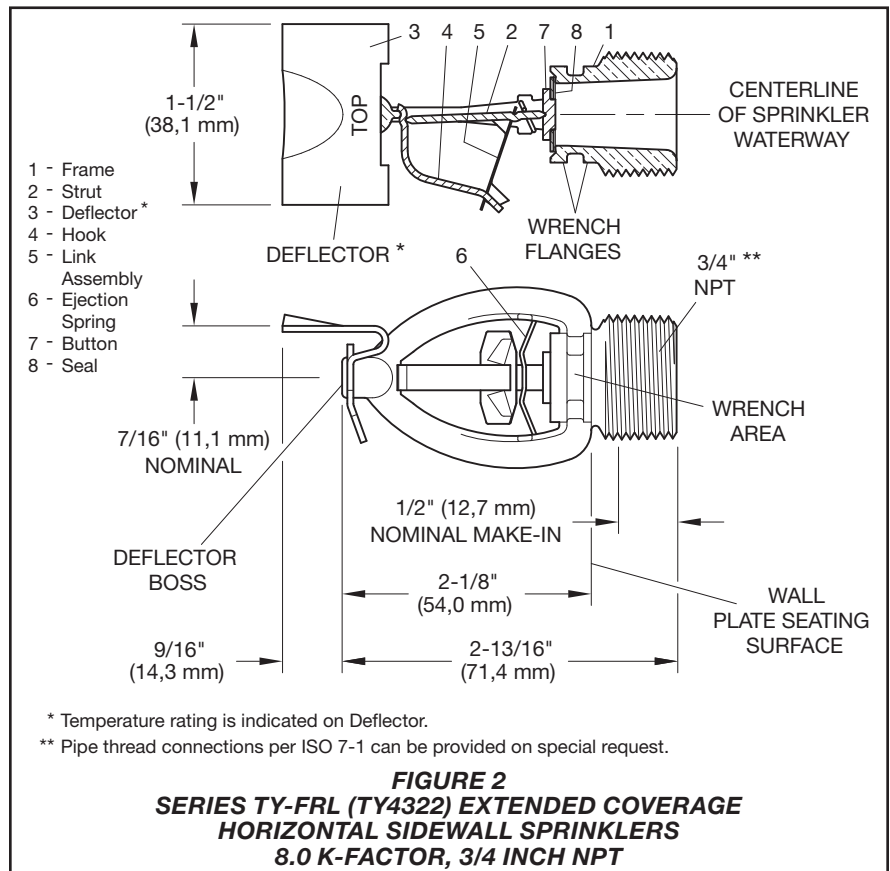
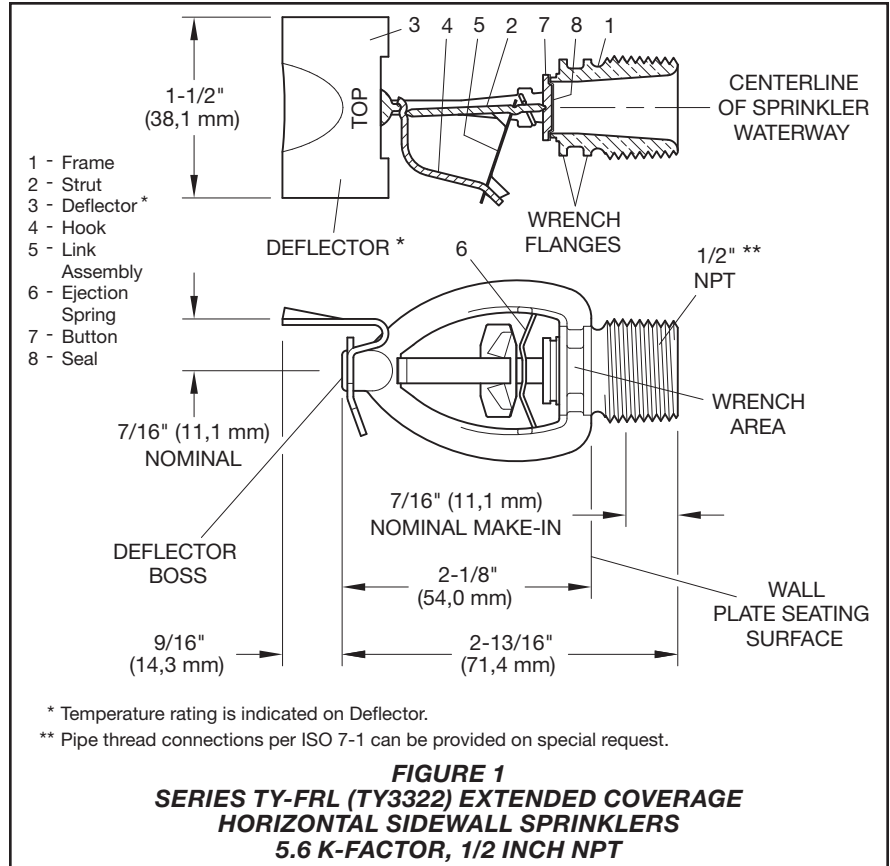
Step 3. Tighten the sprinkler into the sprinkler fitting using only the W-Type 9 Sprinkler Wrench as shown in Figure 3. Apply the wrench to the wrench area as shown in Figure 1 or 2.

Care and Maintenance

The Series TY-FRL Sprinklers must be maintained and serviced in accordance with this section.

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.



K-factor	Type	Temperature Rating	Frame Color Code	Sprinkler Finish	
				Natural Brass	Chrome Plated
5.6 1/2 in. NPT	EC HSW (TY3322)	165°F/74°C	Unpainted	1, 2, 3, 4	
8.0 3/4 in. NPT	EC HSW (TY4322)	165°F/74°C	Unpainted	1, 2, 3, 4	

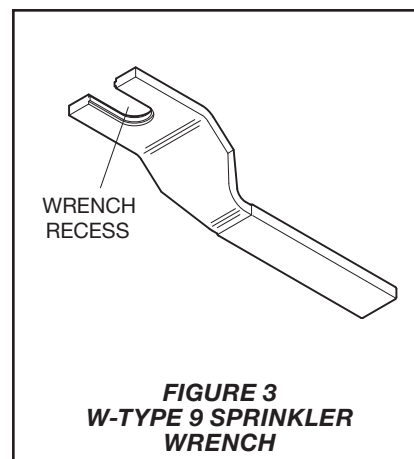


FIGURE 3
W-TYPE 9 SPRINKLER
WRENCH

- 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)

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)	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)	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)	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)	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)	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)	165	10 (3,1)
Quick	18 x 16 (5,5 x 4,9)	31 (117)	15.0 (1,03)	4 to 6 (100 to 150)	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)	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)	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)	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)	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

58—XXX—X—165

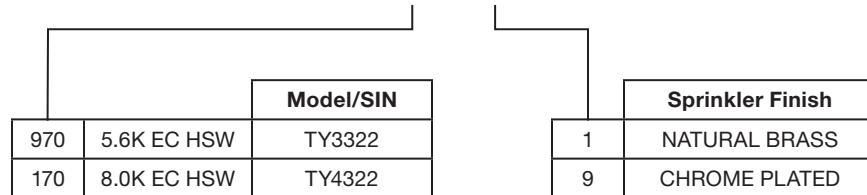


TABLE D
PART NUMBER SELECTION
SERIES TY-FRL EXTENDED COVERAGE HORIZONTAL SIDEWALL SPRINKLERS

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 such as NFPA 25, in addition to the standards of any other authorities having jurisdiction. Contact the installing contractor or product 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 code.

Limited Warranty

For warranty terms and conditions, visit www.tyco-fire.com.

Ordering Procedure

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

Sprinkler Assemblies with NPT Thread Connections

Specify: (Specify Model/SIN), (specify K-factor), 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



Worldwide
Contacts | www.tyco-fire.com

TFP280

Change History Appendix

ISSUE DATE	NOTES
08-22	Reduced document to 4 pages, formerly 6 pageS; Page 1, added QR code and URL to allow convenient access to electronic version from printed document; Page 4, changed corporate address and telephone number to 1467 Elmwood Avenue, Cranston, RI 02910 | Telephone +1-401-781-8220, formerly 1400 Penbrook Parkway, Lansdale, PA 19446 | Telephone +1-215-362-0700.
08-18	Updated Tyco® branding and document format; Added Johnson Controls copyright; Added disclaimer stating specifications and information subject to change without notice; Added reference to Regulatory and Health Warning Technical Data Sheet TFP2300.
02-17	Updated limited warranty information.
03-09	Removed 140°F (60°C) temperatutre rating.
01-05	Added reference to Installer Warning data sheet TFP700; Added NYC Approved.
12-02	Table B, 18x16, 18x18, and 20x16 coverage areas; corrected typographical errors.
11-02	New Technical Data Sheet TFP280 describes Series TY-FRL Extended Coverage Horizonatal Sidewall Sprinklers.