

Series TY-FRB — 5.6 K-factor Horizontal and Vertical Sidewall Sprinklers Quick Response, Standard Coverage

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-FRB, 5.6 K-factor, Horizontal and Vertical Sidewall Sprinklers described in this data sheet are quick response -standard coverage, decorative 3 mm glass bulb type spray sprinklers designed for use in light and ordinary hazard, commercial occupancies such as banks, hotels, shopping malls, etc. They are designed for installation along a wall or the side of

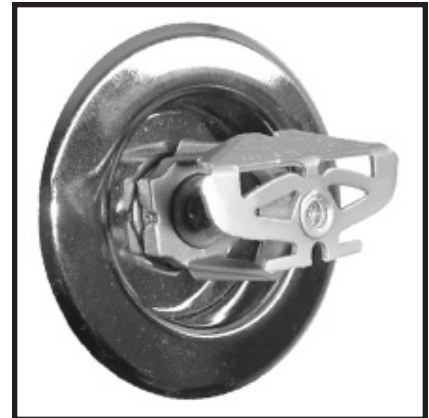
a beam and just beneath a smooth ceiling. Sidewall sprinklers are commonly used instead of pendent or upright sprinklers due to aesthetics or building construction considerations, where piping across the ceiling is not desirable.

The recessed version of the Series TY-FRB Horizontal Sidewall Sprinkler is intended for use in areas with a finished wall. It uses a two-piece Style 10 Recessed Escutcheon with 1/2 in. (12,7 mm) of recessed adjustment or up to 3/4 in. (19,1 mm) of total adjustment from the flush sidewall position, or a two-piece Style 20 Recessed Escutcheon with 1/4 in. (6,4 mm) of recessed adjustment or up to 1/2 in. (12,7 mm) of total adjustment from the flush sidewall position. The adjustment provided by the recessed escutcheon reduces the accuracy to which the fixed pipe nipples to the sprinklers must be cut.

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 corrosive 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

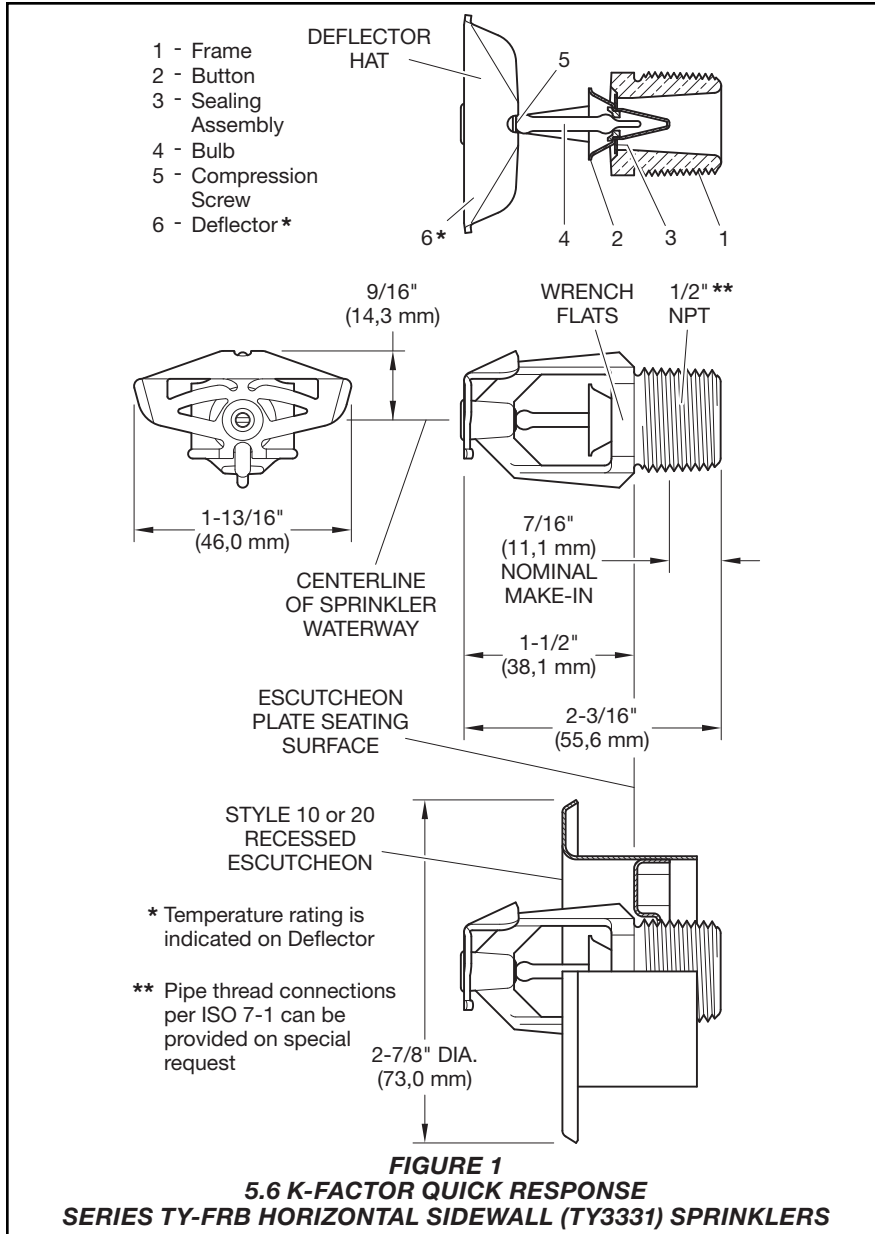


to the standards of any other authorities having jurisdiction. Failure to do so may impair the performance of these devices.

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

TY3331..... Horizontal
TY3431..... Vertical



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.

Design Criteria

The Series TY-FRB, 5.6 K-factor, Horizontal and Vertical Sidewall Sprinklers are intended for fire protection systems designed in accordance with the standard installation rules recognized by the applicable Listing or Approval agency, for example, the 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. Only the style 10 or 20 recessed escutcheon, as applicable, is to be used for recessed horizontal installations.

Installation

The Series TY-FRB, 5.6 K-factor, Horizontal and Vertical Sidewall Sprinklers must be installed in accordance with this section.

General Instructions

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.

A leak tight 1/2 in. NPT sprinkler joint should be obtained with a torque of 7 ft-lb to 14 ft-lb (9,5 N-m to 19,0 N-m). Higher levels of torque may distort the sprinkler 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.

Technical Data

Approvals

UL and C-UL Listed
 FM Approved
 LPCB Approved
 NYC Approved
 EAC Approved

Note: For complete approval information, including corrosion resistant status, see Table A.

Maximum Working Pressure

See Table B

Discharge Coefficient

K=5.6 gpm/psi^{1/2} (80,6 Lpm/bar^{1/2})

Temperature Ratings

See Table A

Finishes

Sprinkler: See Table C

Recessed Escutcheon: Signal or Pure White, Jet Black, Grey Aluminum, Chrome Plated, or Brass Plated

Physical Characteristics

Frame	.....	Bronze
Button	.....	Brass/Copper
Sealing Assembly	.....	Beryllium Nickel w/TEFLON
Bulb	.....	Glass
Compression Screw	.....	Bronze
HSW Deflector	.....	Bronze
VSW Deflector	.....	Copper

Series TY-FRB Horizontal and Vertical Sidewall Sprinkler Installation

The Series TY-FRB Horizontal and Vertical Sidewall Sprinklers must be installed in accordance with the following instructions.

Step 1. Horizontal sidewall sprinklers are to be installed in the horizontal position with their centerline of waterway perpendicular to the back wall and parallel to the ceiling. The word "TOP" on the Deflector is to face towards the ceiling.

Vertical sidewall sprinklers are to be installed in the pendent or upright position with the arrow on the Deflector pointing away from the wall.

Step 2. 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 6 Sprinkler Wrench as shown in Figure 5. Apply the sprinkler wrench to the wrench flats as shown in Figure 1 and Figure 2.

Series TY-FRB Recessed Horizontal Sidewall Sprinkler Installation

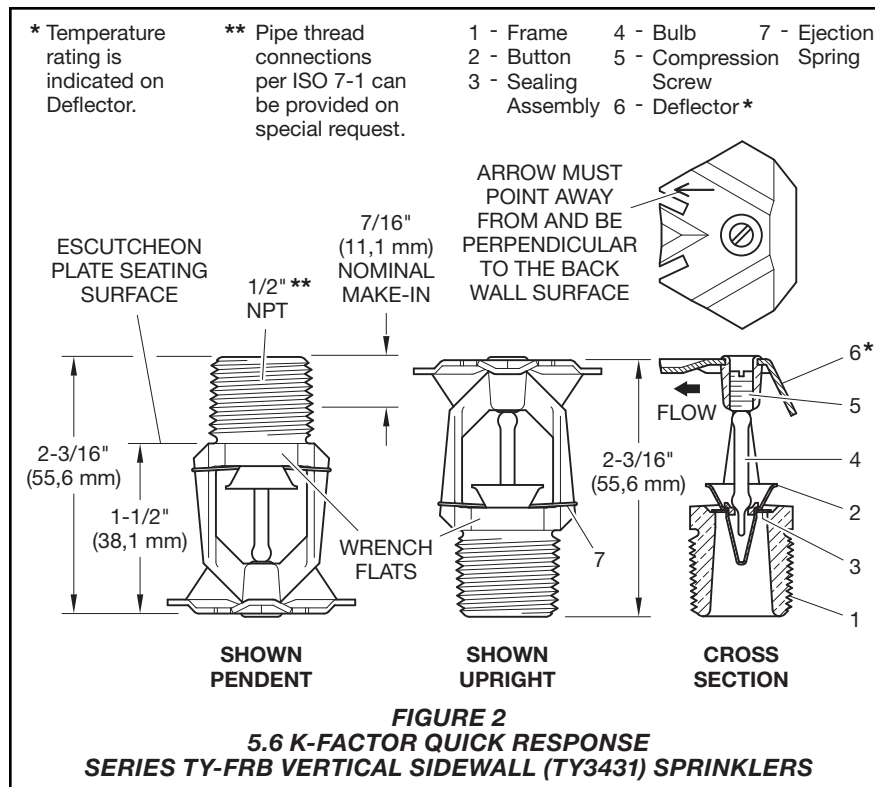
The Series TY-FRB Recessed Horizontal Sidewall Sprinklers must be installed in accordance with this section.

Step A. Recessed horizontal sidewall sprinklers are to be installed in the horizontal position with their centerline of waterway perpendicular to the back wall and parallel to the ceiling. The word "TOP" on the Deflector is to face towards the ceiling.

Step B. After installing the style 10 or 20 mounting plate over the sprinkler threads, hand tighten the sprinkler into the sprinkler fitting.

Step C. Tighten the sprinkler into the sprinkler fitting using only the W-Type 7 Recessed Sprinkler Wrench, as shown in Figure 6. Apply the sprinkler wrench to the wrench flats as shown in Figure 1.

Step D. After the ceiling has been installed or the finish coat has been applied, slide on the Style 10 or 20 Closure over the Series TY-FRB Sprinkler and push the closure over the mounting plate until its flange comes in contact with the ceiling.



Care and Maintenance

The Series TY-FRB, 5.6 K-factor, Horizontal and Vertical Sidewall 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.

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

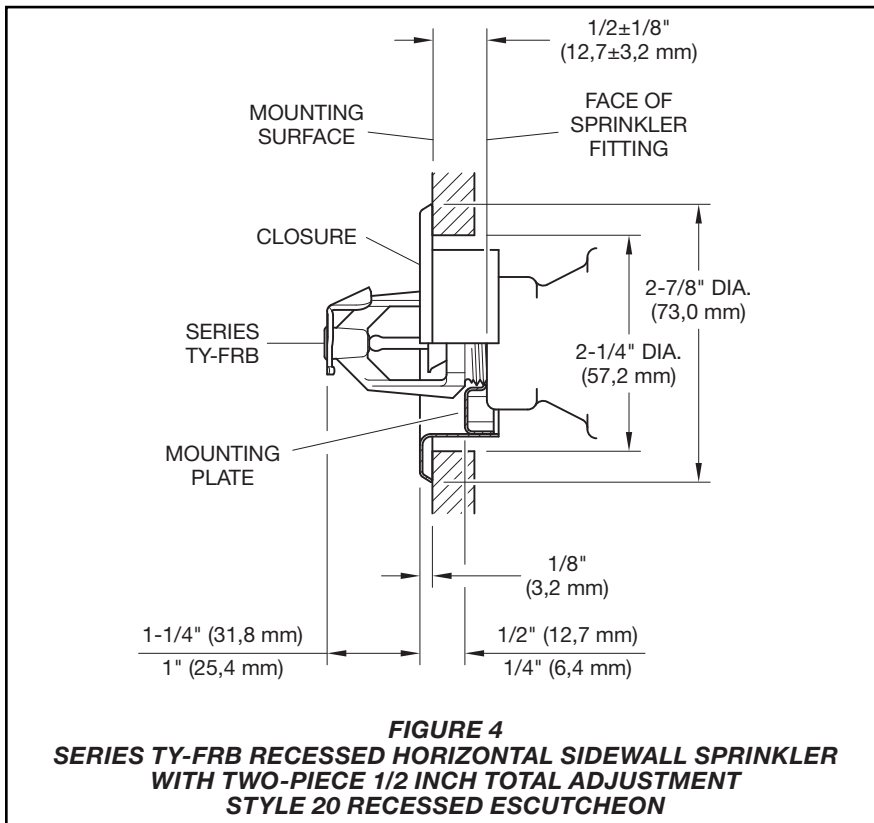
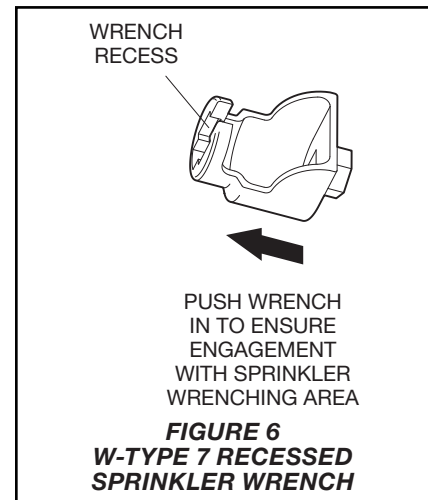
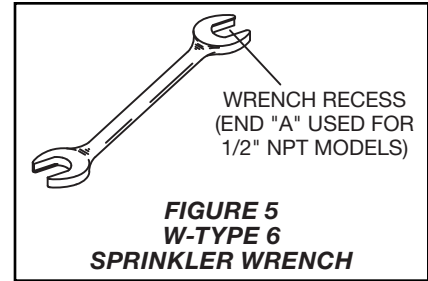
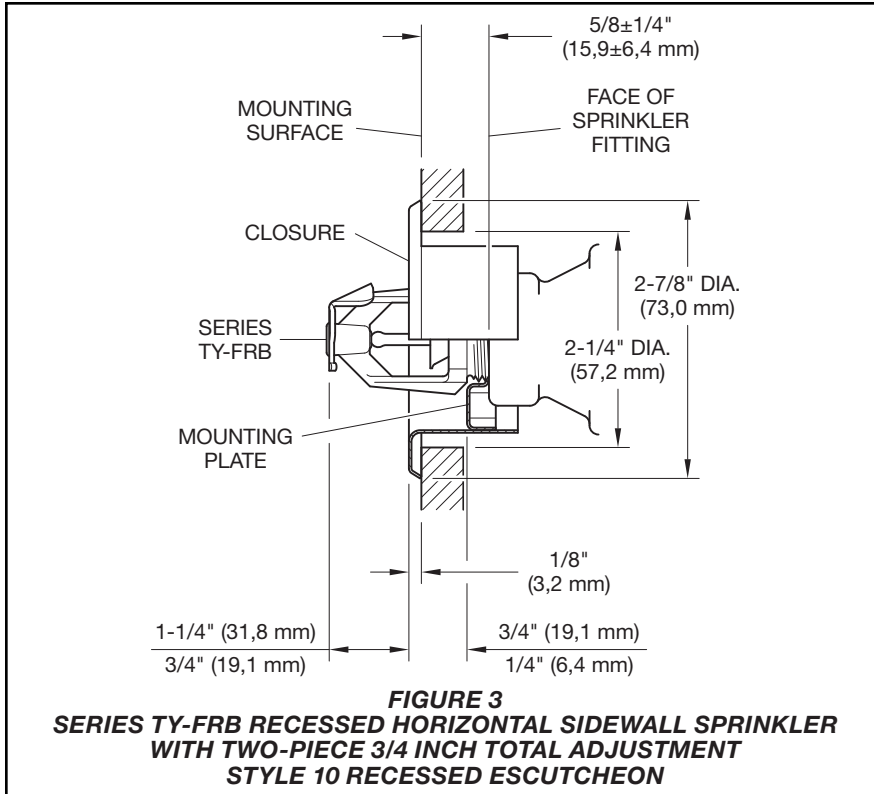
Automatic sprinklers must never be painted, plated, coated or otherwise altered after leaving the factory. Modified sprinklers must be replaced. Sprinklers that have been exposed to corrosive products of combustion, but have not operated, should be replaced if they cannot be completely cleaned by wiping 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. For information about replacing a sprinkler, see the Installation section.

The owner must assure that the sprinklers are not used for hanging any objects and that the sprinklers are only cleaned by means of gently dusting with a feather duster; otherwise, non-operation in the event of a fire or inadvertent operation may result.

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 according to 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 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 codes.

K-factor	Type	Temperature	Bulb Liquid	Sprinkler Finish ¹²			
				Natural Brass	Chrome Plated	Polyester ^c	Lead Coated
5.6 1/2 in. NPT	Horizontal Sidewall (TY3331)	135°F (57°C)	Orange	1, 2, 3, 4, 9, 10, 11		1, 2, 3, 9, 11	1, 2, 3, 9, 11
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				
	Recessed Horizontal Sidewall (TY3331)^a See Figure 3	135°F (57°C)	Orange	1, 2, 4, 9, 10, 11		1, 2, 9, 11	N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
	Recessed Horizontal Sidewall (TY3331)^b See Figure 4	135°F (57°C)	Orange	1, 2, 3, 4, 9, 11			N/A
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
200°F (93°C)		Green					
5.6 1/2 in. NPT	Vertical Sidewall (TY3431) Installed Pendent or Upright	135°F (57°C)	Orange	5, 6, 7, 8, 9		5, 6, 7, 9	
		155°F (68°C)	Red				
		175°F (79°C)	Yellow				
		200°F (93°C)	Green				
		286°F (141°C)	Blue				

NOTES:

1. Listed by Underwriters Laboratories, Inc. (UL) as Quick Response Sprinklers for use in Light and Ordinary Hazard Occupancies at a 4 to 12 in. (100 to 300 mm) top of deflector to ceiling distance.
 2. Listed by Underwriters Laboratories Inc. for use in Canada (C-UL) as Quick Response Sprinklers for use in Light and Ordinary Hazard Occupancies at a 4 to 12 in. (100 to 300 mm) top of deflector to ceiling distance.
 3. Approved by Factory Mutual Research Corporation (FM) as Quick Response Sprinklers for use in Light Hazard Occupancies at a 4 to 12 in. (100 to 300 mm) top of deflector to ceiling distance.
 4. Approved by the Loss Prevention Certification Board (LPCB Ref. No. 007a/04) at a 4 to 6 in. (100 to 150 mm) top of deflector to ceiling distance. The LPC does not rate the thermal sensitivity of horizontal sidewall sprinklers.
 5. Listed by Underwriters Laboratories, Inc. as Quick Response Sprinklers for use in Light and Ordinary Hazard Occupancies.
 6. Listed by Underwriters Laboratories for use in Canada (C-UL) as Quick Response Sprinklers for use in Light and Ordinary Hazard Occupancies.
 7. Approved by Factory Mutual Research Corporation (FM) as Quick Response Sprinklers for use in Light Hazard Occupancies.
 8. Approved by the Loss Prevention Certification Board (LPCB) as Quick Response Sprinklers.
 9. Approved by the City of New York under MEA 354-01-E.
 10. Approved by the Loss Prevention Certification Board (LPCB Ref. No. 094a/06) at a 4 to 6 in. (100 to 150 mm) top of deflector to ceiling distance. The LPC does not rate the thermal sensitivity of horizontal sidewall sprinklers.
 11. EAC Approved.
 12. Where Polyester Coated and Lead Coated Sprinklers are noted to be UL and C-UL Listed, the sprinklers are UL and C-UL Listed as Corrosion Resistant Sprinklers. Where Lead Coated Sprinklers are noted to be FM Approved, the sprinklers are FM Approved as Corrosion Resistant Sprinklers.
- a. Installed with Style 10 (1/2 in. NPT) 3/4 in. Total Adjustment Recessed Escutcheon.
b. Installed with Style 20 (1/2 in. NPT) 1/2 in. Total Adjustment Recessed Escutcheon.
c. Frame and deflector only.

TABLE A
LABORATORY LISTINGS AND APPROVALS

K-Factor	Type	Sprinkler Finish			
		Natural Brass	Chrome Plated	Polyester	Lead Coated
5.6 1/2 in. NPT	Horizontal Sidewall (TY3331)	250 psi (17,2 bar) or 175 psi (12,1 bar) (See Note 1)			
	Recessed Horizontal Sidewall (TY3331)				
	Vertical Sidewall (TY3431)	175 psi (12,1 bar)			

NOTES:

1. The maximum working pressure of 250 psi (17,2 bar) only applies to the Listing by Underwriters Laboratories, Inc. (UL); the Listing by Underwriters Laboratories, Inc. for use in Canada (C-UL); and, the Approval by the City of New York.

TABLE B
MAXIMUM WORKING PRESSURE

P/N 57 - XXX - X - XXX

SIN			SPRINKLER FINISH		TEMPERATURE RATINGS	
378	HORIZONTAL SIDEWALL	TY3331	1	NATURAL BRASS	135	135°F (57°C)
375	VERTICAL SIDEWALL	TY3431	3	PURE WHITE (RAL9010) ¹ POLYESTER	155	155°F (68°C)
			4	SIGNAL WHITE (RAL9003) POLYESTER	175	175°F (79°C)
			5	JET BLACK (RAL9005) ² POLYESTER	200	200°F (93°C)
			7	LEAD COATED	286	286°F (141°C)
			9	CHROME PLATED		

NOTES:
1. Eastern Hemisphere sales only.
2. Available in 155°F (68°C) or 200°F (93°C) temperature rating only.

TABLE C
PART NUMBER SELECTION
SERIES TY-FRB HORIZONTAL AND VERTICAL SIDEWALL SPRINKLERS

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: Series TY-FRB (specify SIN), (specify K-factor), (specify) Horizontal Sidewall or Vertical Sidewall Sprinkler, Standard Response, Standard Coverage, (specify) temperature rating, (specify) finish or coating, P/N (specify from Table C)

Recessed Escutcheon

Specify: Style (10 or 20) Recessed Escutcheon with (specify*) finish, P/N (specify*)

* Refer to technical data sheet TFP770

Sprinkler Wrench

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

Specify: W-Type 7 Sprinkler Wrench, P/N 56-850-4-001



TFP176

Change History Appendix

ISSUE DATE	NOTES
12-22	Page 5, Table A, footnote 8, removed LPCB Ref. No. 094a/06 and 007a/04.
09-22	Page 1, added QR code and URL to allow convenient access to electronic version from printed document; Page 5, Table A, TY3331 sprinkler only, added EAC Approved; Page 6, changed corporate address and telephone number to 1467 Elmwood Avenue, Cranston, RI 02910 | Telephone +1-401-781-8220, formerly 1400 Pennbrook Parkway, Lansdale, PA 19446 | Telephone +1-215-362-0700.
07-18	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; Added Poly-Stainless Grey Aluminum finish, formerly described in Technical Data Sheet TFP682.
12-16	Updated limited warranty information.
02-14	Changed Maximum Working Pressure to 250 psi (17,2 bar).
03-13	Updated and standardized RAL color finishes.
04-06	Updated to indicate TY3331 is UL and C-UL Listed for maximum working pressure of 250 psi (17,2 bar).
07-04	Added reference to Installer Warning data sheet TFP700; Added LPCB Reference Numbers; Added option for White RAL9010 for Eastern Hemisphere sales.
01-03	Added new Tyco Fire & Building Products masthead.
09-02	New Technical Data Sheet TFP176 describes Series TY-FRB Horizontal and Vertical Sidewall Sprinklers