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Series ELO-231FRB – 11.2 K-factor Upright and Pendent 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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docs.jci.com/tycofire/TFP344

General Description

TYCO Series ELO-231FRB 11.2K Quick Response, Standard Coverage, Upright and Pendent Sprinklers (see Figure 1) are automatic sprinklers of the frangible bulb type. They are quick response spray sprinklers that produce a hemispherical water distribution pattern below the deflector.

The 11.2K ELO-231FRB Upright and Pendent Sprinklers were subjected to full scale, high-piled storage fire tests to qualify their use in lieu of 5.6 or 8.0 K-factor standard spray sprinklers for the protection of high-piled storage.

Higher flow rates can be achieved at much lower pressures with the 11.2K ELO-231FRB Sprinklers, making their use highly advantageous in high density applications, such as the protection of high-piled storage.

For in-rack applications, an upright intermediate level version of the Series ELO-231FRB Sprinklers can be obtained by utilizing the Series ELO-231FRB Upright Sprinkler with the WSG-2 Guard & Shield, and a pendent intermediate level version of the Series ELO-231FRB Sprinklers can be obtained by utilizing the Series ELO-231FRB Pendent Sprinkler with the WS-2 Shield. If there is a possibility of the pendent intermediate level version being exposed to mechanical damage, a G-2 Guard can be added.

NOTICE

The Series ELO-231FRB 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.

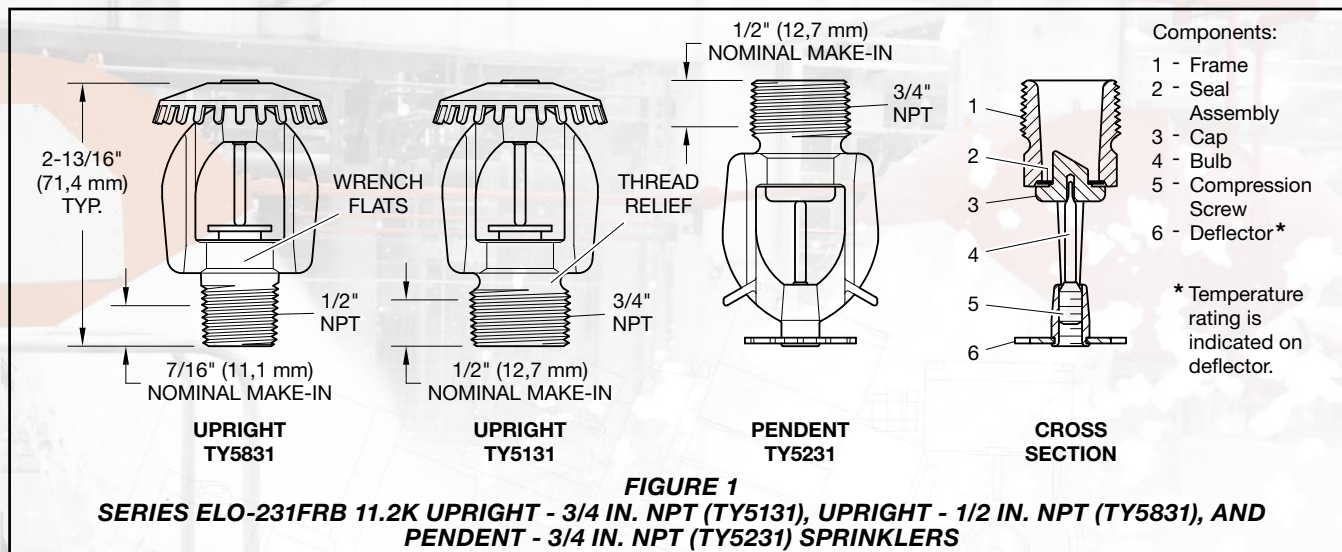
Installation of Series ELO-231FRB Pendent Sprinklers in recessed escutcheons will void all sprinkler warranties, as well as possibly void the sprinkler's Approvals and/or Listings.

NFPA 13 prohibits the installation of 1/2 in. NPT sprinklers with a K-factor greater than 5.6K in new installations. They are intended for use in retrofit applications only.



Sprinkler Identification Numbers (SINs)

See Table A



Technical Data

Approvals

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

Note: For complete approval information, see Table C. UL and C-UL Listings and FM Approval apply to the service conditions described in the Design Criteria section.

Finishes

Sprinkler: See Table C

Physical Characteristics

FrameBronze
 CapBronze
 Sealing Assembly...Beryllium Nickel w/TEFLON
 Bulb (3mm dia.)...Glass
 Compression Screw...Bronze
 Deflector.....Bronze

Additional Technical Data

See Table A

Operation

The glass bulb contains a fluid that 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.

Item	Description
Sprinkler Identification Number (SIN)	TY5131 – Upright 3/4 in. NPT TY5231 – Pendant 3/4 in. NPT TY5831 – Upright 1/2 in. NPT TY5131 is a re-designation for Central SIN C5131. TY5231 is a re-designation for Central SIN C5231, G1870, and S2551.
K-factor, (gpm/psi) (lpm/bar)	K=11.2 GPM/psi ^{1/2} (161,4 LPM/bar ^{1/2})
Temperature Rating °F (°C) ¹	155°F (68°C) ¹ 200°F (93°C) 286°F (141°C)
Thread Size	3/4 in. NPT or 1/2 in. NPT
Sprinkler Orientation	Upright/Pendent
Maximum Working Pressure, psi (bar)	175 psi (12,1 bar)
Notes: 1. For laboratory listings and approvals, see Table C.	

TABLE A
SERIES ELO-231FRB 11.2K UPRIGHT AND PENDENT SPRINKLERS
TECHNICAL DATA

Design Criteria

UL and C-UL Listings Requirements

The 11.2K Model ELO-231FRB (TY5131, TY5231, and TY5831) Sprinklers are to be installed in accordance with NFPA 13 standard sprinkler position and area/density flow calculation requirements for light or ordinary occupancies, as well as high-piled storage occupancies (solid-piled, palletized, rack storage, bin box, and shelf storage including but not limited to Class I-IV

and Group A plastics) with a minimum residual (flowing) pressure of 7 psi (0,5 bar) for wet pipe systems only. For additional information, see Table B.

FM Approval Requirements

The 11.2K Model ELO-231FRB (TY5131 and TY5231) Sprinklers are to be installed in accordance with the applicable control mode density/area guidelines provided by FM Approvals for wet systems only.

Note: FM Approvals guidelines may differ from UL and C-UL Listings criteria.

Storage Type	NFPA	FM Global
Sprinkler Type	Standard Coverage	Storage
Response Type	QR	QR
System Type	Wet	Wet
Temperature Rating °F (°C) ¹	155°F (68°C) ¹ 200°F (93°C) 286°F (141°C)	155°F (68°C) ¹ 200°F (93°C) 286°F (141°C)
Open Frame (i.e., no solid shelves) Single, Double, Multiple-Row, or Portable Rack Storage of Class I-IV and Group A or B Plastics	Refer to NFPA 13	Refer to FM 2-0 and 8-9
Solid Pile or Palletized Storage of Class I-IV and Group A or B Plastics	Refer to NFPA 13	Refer to FM 2-0 and 8-9
Idle Pallet Storage	Refer to NFPA 13	Refer to FM 2-0, 8-9, and 8-24
Rubber Tire Storage	Refer to NFPA 13	Refer to FM 2-0 and 8-3
Roll Paper Storage (Refer to the Standard)	Refer to NFPA 13	Refer to FM 8-21
Flammable/Ignitable Liquid Storage (Refer to the Standard)	Refer to NFPA 30	Refer to FM 7-29
Aerosol Storage (Refer to the Standard)	Refer to NFPA 30B	Refer to FM 7-31
Automotive Components in Portable Racks (Control mode only; refer to the Standard)	Refer to NFPA 13	N/A

Notes:

- For laboratory listings and approvals, see Table C.
- N/A – Not Applicable

TABLE B
SERIES ELO-231FRB 11.2K UPRIGHT AND PENDENT SPRINKLERS
COMMODITY SELECTION AND DESIGN CRITERIA OVERVIEW

Sprinkler Type	Temperature Rating	Bulb Liquid Color	Sprinkler Finish	
			Natural Brass	Chrome Plated
Upright (TY5131) & Pendent (TY5231)	155°F (68°C)	Red	1, 2, 3, 4, 5, 6, 7	1, 2, 3, 4, 5, 6, 7
	200°F (93°C)	Green		
	286°F (141°C)	Blue		
Upright (TY5831)	155°F (68°C)	Red	1	N/A
	200°F (93°C)	Green		

Notes:

- UL Listed
- C-UL Listed
- FM Approved
- NYC Approved under MEA 291-04-E

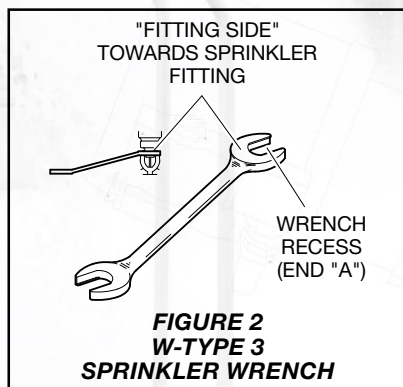
- VdS Approved, TY5131 Ref. No. G410022 and TY5231 Ref. No. G410023
- LPCB Approved, TY5131 Ref. No. 094c/01 and TY5231 Ref. No. 094c/02
- EAC Approved
- N/A - Not Available

TABLE C
SERIES ELO-231FRB UPRIGHT AND PENDENT 11.2K SPRINKLERS, QUICK RESPONSE
LABORATORY LISTINGS AND APPROVALS
 (See the Design Criteria Section)

P/N 50 — XXX — X — XXX			SPRINKLER FINISH		TEMPERATURE RATING	
		SIN				
500	11.2K UPRIGHT (3/4 in. NPT)	TY5131	1	NATURAL BRASS	155	155°F (68°C)
502	11.2K PENDENT (3/4 in. NPT)	TY5231	9	CHROME PLATED	200	200°F (93°C)
503	11.2K UPRIGHT (1/2 in. NPT)	TY5831			286	286°F (141°C)

a. For TY5131 and TY5231 sprinklers only.
b. For retrofit applications only.

TABLE D
SERIES ELO-231FRB UPRIGHT & PENDENT 11.2K SPRINKLERS, QUICK RESPONSE PART NUMBER SELECTION



Installation

TYCO Series ELO-231FRB 11.2K Quick Response, Standard Coverage, Upright and Pendent Sprinklers must be installed in accordance with this section.

General Instructions

NOTICE

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 155°F (68°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 by applying a minimum-to-maximum torque of 7 ft-lb to 14 ft-lb (9,5 N-m to 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 can distort the sprinkler inlet with consequent 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 ELO-231FRB Upright and Pendent Sprinklers must be installed in accordance with the following instructions:

Step 1. Upright sprinklers are to be installed in the upright position; pendent sprinklers are to be installed in the pendent position.

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 3 Sprinkler Wrench shown in Figure 2. Apply the sprinkler wrench to the wrench flats shown in Figure 1.

Care and Maintenance

TYCO Series ELO-231FRB 11.2K Quick Response, Standard Coverage, Upright and Pendent 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. For additional information, refer to the 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 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.

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

Specify: Series ELO-231FRB 11.2K Quick Response (specify Pendent or Upright) Sprinkler, (specify SIN), (specify) temperature rating, (specify) finish, P/N (specify from Table D)

Sprinkler Wrench

Specify: W-Type 3 Sprinkler Wrench, P/N 56-895-1-001

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TFP344 **Change History Appendix**

ISSUE DATE	NOTES
08-22	Page 1, updated QR code and URL; Page 4, 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.
04-22	Page 1, added QR code and URL to allow convenient access to electronic version from printed document; Page 2, Approvals sub-section, and Page 3, Table C, added EAC Approved; Reduced to 4 pages, formerly 6.
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.
05-18	Organized technical information into tables as required by UL.
06-17	Added 1/2 in. NPT variant TY5831 for retrofit applications.
10-16	Removed extra hazard occupancy from UL and C-UL Listing requirement design criteria.
07-16	Added LPCB Certification and VdS Approved; Removed option for sprinklers featuring ISO 7-1 pipe threads.
05-15	Corrected pipe thread size in Technical Data section to 3/4 in. NPT, formerly shown as 1/2 in. NPT.
02-15	Removed reference to corrosion resistant finish.
03-07	Changed UL and C-UL Listed minimum residual (flowing) pressure for high piled storage to 7 psi (0,5 bar), formerly shown as 10 psi (0,7 bar).
01-05	Added reference to Installer Warning data sheet TFP700; Added NYC Approved.
08-03	Added Design Criteria section; Removed all references to specific application listings in response to changes included in NFPA 13 2002.
01-03	Added new Tyco Fire & Building Products masthead; Corrected metric conversion for 0.60 gpm/ft ² to (24,4 mm/min), formerly (34 mm/min).
11-02	New Technical Data Sheet TFP344 describes Series ELO-231FRB Upright and Pendent Sprinklers.

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