



Series ELO-231FRB – 11.2 K-factor Upright and Pendent Sprinklers Quick Response, Standard Coverage

General Description

TYCO Series ELO-231FRB 11.2K Quick Response, Standard Coverage, Upright and Pendent Sprinklers (Ref. 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.

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.

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.

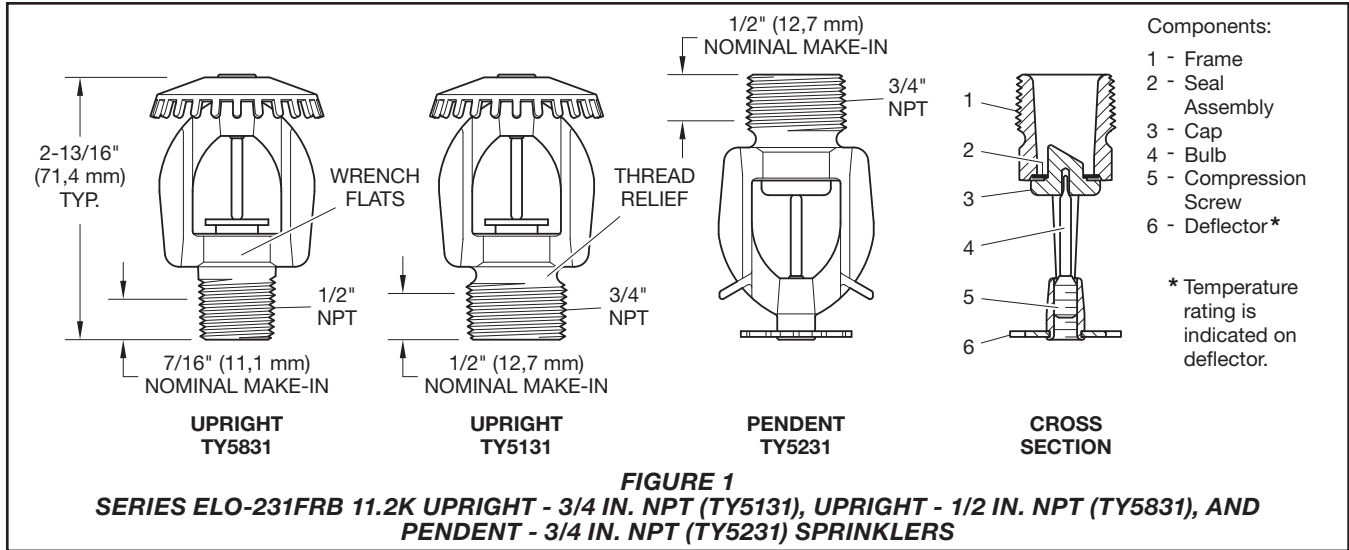
Installation of Series ELO-231FRB Pendent Sprinklers in recessed escutcheons will void all sprinkler warranties, as well as possibly void the sprinkler's Approvals and/or Listings.

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)

Refer to Table A for sprinkler identification numbers.





Technical Data

Approvals

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

Refer to Table A for complete approval information.

UL and C-UL Listings and FM Approval apply to the service conditions described in the Design Criteria section.

Finishes

Sprinkler: Refer to Table C

Physical Characteristics

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

Additional Technical Data

Refer to Table A for additional technical data.

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 – Pendent 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. Refer to Table C for laboratory listings and approvals.	

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. Refer to Table B for additional information

FM Approval Requirements

The 11.2K Model ELO-231FRB (TY5131 & 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

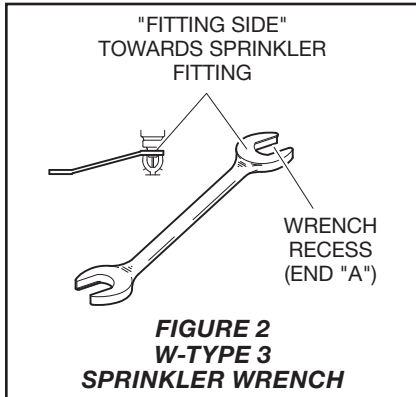
Notes:
1. Refer to Table C for laboratory listings and approvals.
N/A – Not Applicable

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	1, 2, 3, 4, 5, 6
	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:
1. UL Listed
2. C-UL Listed
3. FM Approved
4. NYC Approved under MEA 291-04-E
5. VdS Approved, TY5131 Ref. No. G410022 and TY5231 Ref. No. G410023
6. LPCB Approved, TY5131 Ref. No. 094c/01 and TY5231 Ref. No. 094c/02
N/A - Not Available

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



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 to 14 lb-ft (9,5 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 to 20 lb-ft (13,4 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 (Ref. Figure 2). With reference to Figure 1, the W-Type 3 Sprinkler Wrench is to be applied to the wrench flats.

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 (e.g., 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.

P/N 50 — XXX — X — XXX

		SIN			SPRINKLER FINISH			TEMPERATURE RATING	
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 ^a		200	200°F (93°C)	
503	11.2K UPRIGHT (1/2 in. NPT)	TY5831 ^b					286	286°F (141°C) ^a	

^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

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

