

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

### General Description

The 11.2 K-factor, Series ELO-231FRB, 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 11.2 K-factor, 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 11.2 K-factor, 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.

#### WARNINGS

*The 11.2 K-factor, Series ELO-231FRB Upright and Pendent 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. The installing contractor or manufacturer should be contacted 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.*

### Model/Sprinkler Identification Numbers

TY5131 - Upright 11.2K, 3/4" NPT  
TY5231 - Pendent 11.2K, 3/4" NPT

TY5131 is a redesignation for C5131.

TY5231 is a redesignation for C5231, G1870, and S2551.



#### 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.*

TYPE	TEMPERATURE	SPRINKLER FINISH		
		BULB LIQUID	NATURAL BRASS	CHROME PLATED
UPRIGHT (TY5131)	155°F/68°C	Red	1, 2, 3, 4	
	200°F/93°C	Green		
	286°F/141°C	Blue		
PENDENT (TY5231)	155°F/68°C	Red	1, 2, 3, 4	
	200°F/93°C	Green		
	286°F/141°C	Blue		

**NOTES:**

1. Listed by Underwriters Laboratories, Inc. (UL Listed).
2. Listed by Underwriters Laboratories, Inc. for use in Canada (C-UL Listed).
3. Approved by Factory Mutual Research Corporation (FM Approved).
4. Approved by the City of New York under MEA 291-04-E.

**TABLE A**  
**LABORATORY LISTINGS AND APPROVALS**  
**FOR 11.2 K-FACTOR SERIES ELO-231FRB UPRIGHT AND PENDENT SPRINKLERS**  
*(Refer to the Design Criteria Section)*

## Technical Data

**Approvals**

UL and C-UL Listed. FM and NYC Approved. (Refer to Table A for complete approval information including corrosion resistant status. The approvals apply to the service conditions indicated in the Design Criteria section.)

**Maximum Working Pressure**

175 psi (12,1 bar)

**Discharge Coefficient**

$K = 11.2 \text{ GPM/psi}^{1/2}$   
 (161,4 LPM/bar<sup>1/2</sup>)

**Temperature Ratings**

Refer to Table A

**Finishes**

Sprinkler: Refer to Table A

**Physical Characteristics**

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

† Registered trademark of DuPont.

## Design Criteria

**UL and C-UL Listing Requirements**

The 11.2 K-factor, Model ELO-231FRB (TY5131 & TY5231) Sprinklers are to be installed in accordance with NFPA 13 standard sprinkler position and area/density flow calculation requirements for light or ordinary hazard occupancies with a minimum residual (flowing) pressure of 7 psi (0,5 bar) in wet or dry pipe sprinkler systems, or they are to be installed in accordance with NFPA 13 standard sprinkler position and area/density flow calculation requirements for 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 10 psi (0,7 bar) for wet pipe systems only.

The following example is typical of the type of arrangement permitted by NFPA 13. For all combinations of lesser and greater building heights, lesser and greater storage heights, storage arrangements, commodity classifications, and lesser or greater required design densities, refer to NFPA 13 for specifics.

*Example: NFPA 13 provides ceiling only protection (i.e., no in-rack sprinklers) criteria using open frame (i.e. no solid shelves) single, double, multiple-row, or portable rack storage (without the need for in-rack sprinkler protection) of cartoned or uncartoned unexpanded Group A or B plastics, or, car-*

*toned expanded Group A or B plastics, with:*

- a storage height of up to 20 feet (6,1 m);
- a maximum ceiling height of 27 feet (8,2 m);
- a minimum deflector to top of storage clearance of 18 inches (457 mm);
- a minimum design density of 0.60 gpm/ft<sup>2</sup> (24,4 mm/min);
- a minimum residual (flowing) pressure of 10 psi (0,7 bar);
- a minimum design area of 2000 ft<sup>2</sup> (186 m<sup>2</sup>) for wet systems

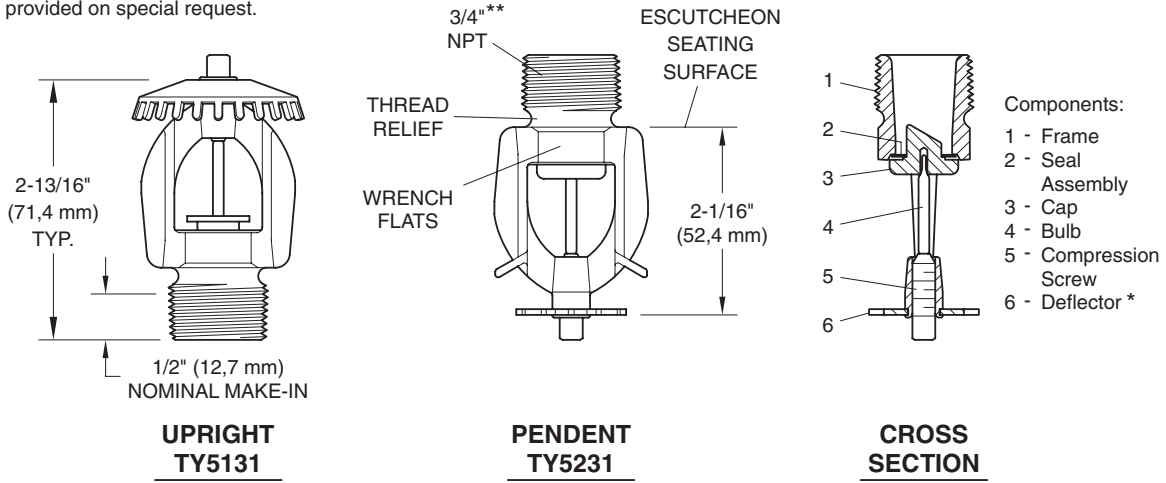
**FM Approval Requirements**

The 11.2 K-factor, Model ELO-231FRB (TY5131 & TY5231) Sprinklers are to be installed in accordance with the applicable “control mode density/area” guidelines provided by Factory Mutual for wet systems only. (FM guidelines may differ from UL and C-UL Listing criteria.)

## 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.

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



**FIGURE 1**  
**11.2 K-FACTOR SERIES ELO-231FRB**  
**UPRIGHT - 3/4" NPT (TY5131) AND PENDENT - 3/4" NPT (TY5231) SPRINKLERS**

## Installation

The Series ELO-231FRB Sprinklers must be installed in accordance with the following instructions:

### NOTES

*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 inch (1,6 mm) for the 155°F/68°C to 3/32 inch (2,4 mm) for the 286°F/141°C temperature ratings.*

*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 ELO-231FRB Upright and Pendent Sprinklers** must be installed in accordance with the following instructions.

**Step 1.** Pendent sprinklers are to be installed in the pendent position, and upright sprinklers are to be installed in the upright position.

**Step 2.** With pipe thread sealant ap-

plied 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

Series ELO-231FRB Sprinklers must be maintained and serviced in accordance with the following instructions:

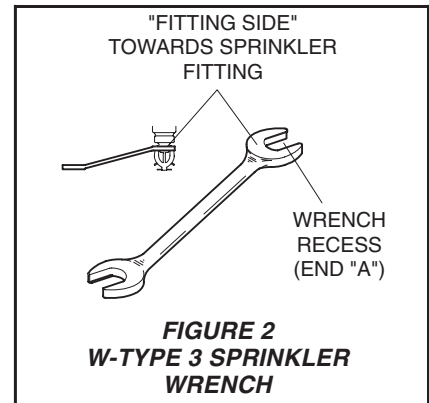
### NOTES

*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,



**FIGURE 2**  
**W-TYPE 3 SPRINKLER WRENCH**

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 (ref. Installation Section Note).

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.

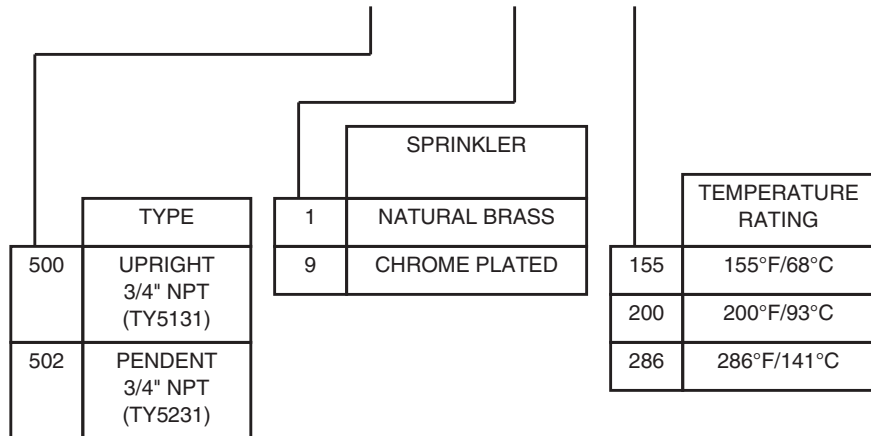
## Limited Warranty

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.**

P/N 50 — XXX — X — XXX



**TABLE B  
PRODUCT SYMBOL NUMBER SELECTION  
11.2 K-FACTOR SERIES ELO-231FRB  
QUICK RESPONSE UPRIGHT AND PENDENT SPRINKLERS**

## Ordering Procedure

A Product Symbol Number (P/N) is not specified when ordering sprinklers with thread connections per ISO 7/1.

Contact your local distributor for availability.

### Sprinkler Assemblies

#### with NPT Thread Connection:

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

#### Sprinkler Wrench:

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