Model K11-231FRB
11.2 K-Factor Upright Sprinkler
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.

Scan the QR code or enter the URL in a web browser to access the most up-to-date electronic version of this document. Data rates may apply.

docs.jci.com/tycofire/tfp345

General Description

The Tyco Model K11-231FRB 11.2K-Factor, Quick Response, Standard Coverage, Upright Sprinklers 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 Model K11-231FRB Upright 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 K11-231FRB 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 Model K11-231FRB Sprinklers can be obtained by installing with the Model G6/S3 guard with shield.

For all other applications where the K11-231FRB sprinkler potentially will be at risk of mechanical damage, install with the Model G6 sprinkler guard.

For more information regarding sprinkler guards, shields, and intermediate level accessories, refer to Technical Data Sheet TFP780.

NOTICE

The Model K11-231FRB *Upright Sprinkler 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 integrity 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 relative to any questions.



Sprinkler Identification Number (SIN)

TY5130

Technical Data

Approvals

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

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

See Table C for details.

Finishes

Natural Brass, Chrome Plated (See Table C)

Physical Characteristics

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

Additional Technical Data

See Table A

Item	Description
Sprinkler Identification Number (SIN)	TY5130
K-factor, gpm/psi (lpm/bar)	K=11.2 gpm/psi½ (161,4 lpm/bar½)
Temperature Rating ºF (ºC)	155°F (68°C) 175°F (79°C) 200°F (93°C) 286°F (141°C)
Thread Size	3/4 in. NPT
Sprinkler Orientation	Upright
Maximum Working Pressure, psi (bar)	175 psi (12,1 bar)

TABLE A
MODEL K11-231FRB 11.2K UPRIGHT SPRINKLER
TECHNICAL DATA

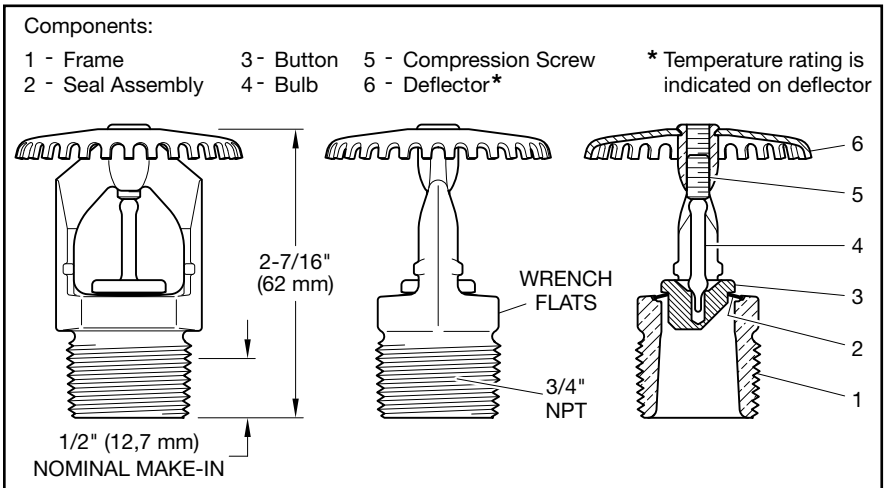


FIGURE 1
K11-231FRB TY5130 ASSEMBLY

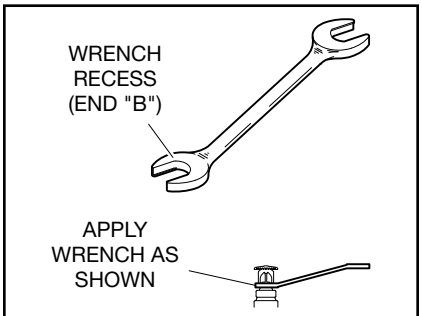


FIGURE 2
W-TYPE 3
SPRINKLER WRENCH

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.

Design Criteria

UL and C-UL Listing Requirements
The Model K11-231FRB Upright Sprinkler is 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.

FM Approval Requirements
The Model K11-231FRB Upright Sprinkler is to be installed in accordance with the applicable control mode density/area guidelines provided by FM Global.

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

Installation

TYCO Model K11-231FRB 11.2K Quick Response, Standard Coverage, Upright Sprinklers must be installed in accordance with this section.

Note: *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 horizontal, 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) rating.*

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 may distort the sprinkler inlet and cause leakage or impairment of the sprinkler.

The Model K11-231FRB Upright Sprinkler must be installed in accordance with the following instructions:

Step 1. Install upright sprinkler in the upright 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, see Figure 2. With reference to Figure 1, apply the W-Type 3 to the sprinkler wrench flats.

Storage Type	NFPA	FM Global
Sprinkler Type	Standard Coverage	Storage
Response Type	QR	QR
System Type	Wet	Wet
Temperature Rating °F (°C)	155°F (68°C) 200°F (93°C) 286°F (141°C)	155°F (68°C) 175°F (79°C) 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

TABLE B
MODEL K11-231FRB 11.2K UPRIGHT SPRINKLERS
COMMODITY SELECTION AND DESIGN CRITERIA OVERVIEW

SPRINKLER TYPE	TEMPERATURE RATING	BULB LIQUID COLOR	SPRINKLER FINISH	
			NATURAL BRASS	CHROME PLATED
UPRIGHT	155°F (68°C)	Red	1, 2, 3, 4, 5	
	175°F (79°C)	Yellow	N/A	6
	286°F (141°C)	Blue	1, 2, 3, 4, 5	
	200°F (93°C)	Green		

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 as follows:
   - Installed in accordance with the applicable “control mode specific area/density” guidelines provided by Factory Mutual. (FM guidelines may differ from UL, C-UL, and ULC Listing criteria.)
4. VdS Approved
5. LPCB Approved
6. FM Approved, Asia sales only

TABLE C
MODEL K11-231FRB 11.2 K-FACTOR UPRIGHT SPRINKLERS
LABORATORY LISTINGS AND APPROVALS

Care and Maintenance

The Model K11-231FRB Upright Sprinkler must be maintained and serviced in accordance with the following instructions:

Before closing a fire protection system control valve for maintenance work on the fire protection system which 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 which 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 52 892 X XXX

	SPRINKLER FINISH
1	NATURAL BRASS
9	CHROME PLATED

	TEMPERATURE RATING
155	155°F (68°C)
175	175°F (79°C)[a]
200	200°F (93°C)
286	286°F (141°C)

Notes:
a. Available in Chrome Plated finish and for Asia sales only.

TABLE D
MODEL K11-231FRB 11.2 K-FACTOR UPRIGHT QUICK RESPONSE SPRINKLERS PART NUMBER SELECTION

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
Specify: Model K11-231FRB Upright 11.2K Quick Response, Standard Coverage Sprinkler, SIN TY5130, (specify) Sprinkler Finish, (specify) Temperature Rating, P/N (specify from Table D)

175°F (79°C) sprinkler rating available only in chrome and for Asia sales only.

Sprinkler Wrench
Specify: W-Type 3 Sprinkler Wrench, P/N 568951001

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