

Model ESFR-1 Early Suppression Fast Response Pendent Sprinklers 14.0 K-factor

General Description

The Model ESFR-1 Sprinklers (Ref. Figure 1) are "Early Suppression Fast Response Sprinklers" having a nominal K-factor of 14.0. They are suppression mode sprinklers, and their use is especially advantageous as a means of eliminating the use of in-rack sprinklers, when protecting high-piled storage.

The Model ESFR-1 is primarily designed for use with storage of most encapsulated or non-encapsulated common materials including cartoned unexpanded plastics to 35 ft. (10,7 m) high. In addition, the protection of some storage arrangements of roll paper and rubber tires can be considered.

Applications for the Model ESFR-1 Sprinklers are expanding beyond the current recognized installation standards. For information regarding research fire tests that may be acceptable to an Authority Having Jurisdiction (e.g., flammable liquids, aerosols, etc.), please contact the Technical Services Department.

WARNINGS

The Model ESFR-1 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 (e.g., FM Global). 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 sprinkler manufacturer should be contacted relative to any questions.

Sprinkler Identification Numbers

SIN TY6226 - (Pendent K=14.0)

TY6226 is a redesignation for C6226, G8440, and S8000.

Technical Data

Approvals

UL and ULC Listed.
FM and LPC Approved.
(UL and ULC Listings, as well as FM Approvals, only apply to the service conditions indicated in the Design Criteria section.)

NYC under MEA 356-01-E.

VdS Approved; however, the use of the ESFR-1 is required to be agreed upon by the VdS for each application.

Maximum Working Pressure

175 psi (12,1 bar)

Pipe Thread Connection

3/4 inch NPT or ISO 7-R3/4

Discharge Coefficient

$K = 14.0 \text{ GPM/psi}^{1/2}$
(201,6 LPM/bar^{1/2})

Temperature Ratings

165°F/74°C or 214°F/101°C

Finish

Natural Brass

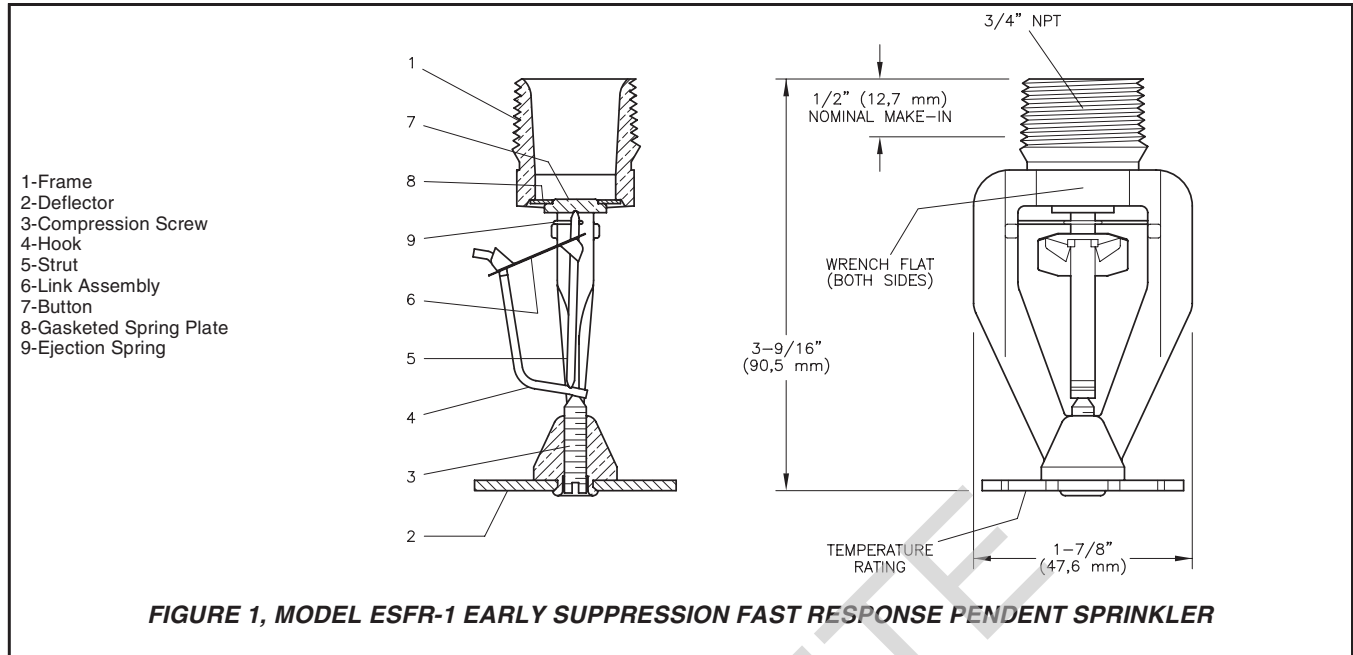
Physical Characteristics

Frame	Brass
Deflector	Bronze
Compression Screw	Stainless Steel
Hook	Monel
Strut	Monel
Link Assembly	Solder, Nickel
Button	Bronze
Sealing Assembly	Beryllium Nickel w/Teflon*
Ejection Spring	Inconel



Patents

U.S.A. Patent Numbers 4,580,729 and 4,893,679 may be applicable to the Model ESFR-1. Other patents are pending.



Operation

The fusible link assembly is comprised of two link halves that are joined together by a thin layer of solder. When the rated temperature is reached, the solder melts and the two link halves separate activating the sprinkler and flowing water.

Design Criteria

UL AND C-UL LISTING CRITERIA

The Model ESFR-1 (SIN TY6226) Sprinklers are UL and C-UL Listed as "Early Suppression Fast Response Sprinklers" for installation per NFPA 13 or other applicable NFPA standards up to a maximum ceiling height of 40 ft. (12,2 m).

FM APPROVAL CRITERIA

The Model ESFR-1 (SIN TY6226) Sprinklers are FM Approved as "Early Suppression Fast Response Sprinklers" for installation per the applicable FM Loss Prevention Data Sheets up to a maximum ceiling height of 45 ft. (13,7 m).

Installation

The Model ESFR-1 Pendent Sprinklers are to be installed in accordance with the following instructions:

NOTE

Damage to the fusible Link Assembly during installation can be avoided by handling the sprinkler by the frame arms only (i.e., do not apply pressure to the fusible Link Assembly), and by using the appropriate sprinkler wrench. Damaged sprinklers must be replaced.

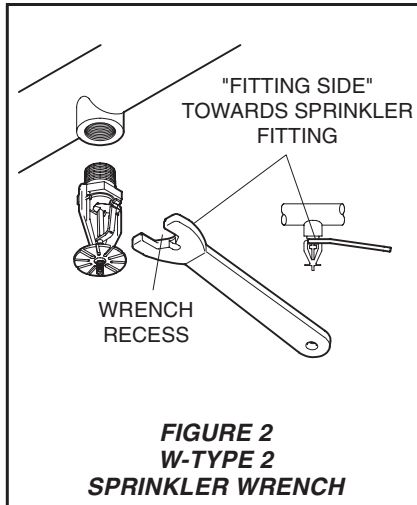
A leak tight 3/4 inch NPT sprinkler joint should be obtained with a torque of 10 to 20 ft.lbs. (13,4 to 26,8 Nm). Higher levels of torque may distort the sprinkler inlet with consequent leakage or impairment of the sprinkler.

Step 1. The ESFR-1 Sprinkler must be installed in the pendent position.

Step 2. With pipe thread sealant applied, hand tighten the sprinkler into the sprinkler fitting. Do not apply pressure to the Link Assembly, and handle the ESFR-1 Sprinkler by the Frame arms only.

Step 3. Wrench tighten the ESFR-1 Sprinkler using only the W-Type 2 Sprinkler Wrench (Ref. Figure 2) and by fully engaging (seating) the wrench on the sprinkler wrench flats.

Step 4. After installation, inspect the Link Assembly of each ESFR-1 Sprinkler for damage. In particular, verify that the Link Assembly and Hook are positioned as illustrated in Figure 1, and that the Link Assembly has not



been bent, creased, or forced out of its normal position in any way.

Damaged sprinklers must be replaced.

Care and Maintenance

The Model ESRF-1 must be maintained and serviced in accordance with the following instructions:

NOTE

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 systems 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 shipped or stored where their temperature will exceed 100°F/38°C and they must never be painted, plated, coated, or otherwise altered after leaving the factory. Modified or over-heated sprinklers must be replaced.

Care must be exercised to avoid damage - before, during, and after installation. Sprinklers damaged by dropping, striking, wrench twist/slippage, or the like, must be replaced.

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.

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.

Ordering Procedure

When placing an order, indicate the full product name. Please specify the Sprinkler Identification Number (SIN), quantity, and temperature rating. Refer to the Price List for complete listing of Part Numbers.

Contact your local distributor for availability.

Sprinkler Assemblies with NPT Thread Connections:

Specify: (specify temperature rating), natural brass, TY6226 Pendent Sprinkler, PSN (specify).

165°F/74°C..... P/N 58-440-1-165
214°F/101°C..... P/N 58-440-1-214

Sprinkler Wrench

Specify: W-Type 2 Sprinkler Wrench, P/N 56-872-1-001.

OBSOLETE