



# Model ESFR-17 16.8 K-factor Pendent Sprinkler Early Suppression, Fast Response

## General Description

TYCO Model ESFR-17 Pendent Sprinklers are Early Suppression, Fast Response (ESFR) sprinklers having a nominal K-factor of 16.8 (See Figure 1). They are suppression mode sprinklers that are especially advantageous as a means of eliminating in-rack sprinklers when protecting high-piled storage.

The Model ESFR-17 Pendent Sprinklers are available in two temperature ratings and Listed or Approved accordingly; 155°F (68°C) is UL and C-UL Listed and FM Approval; and 200°F (93°C) is UL and C-UL Listing only.

Model ESFR-17 Pendent Sprinklers are primarily used for ceiling-only sprinkler protection of (but not limited to) the following storage applications:

- most encapsulated or non-encapsulated common materials including cartoned, unexpanded plastics
- cartoned, expanded plastics
- uncartoned, unexpanded plastics
- uncartoned, expanded plastics
- some storage arrangements of rubber tires, roll paper, and aerosols

For more specific criteria, refer to Table A in this technical data sheet as well as the applicable design standard.

The Model ESFR-17 Pendent Sprinklers provide the system designer with hydraulic and sprinkler place-

ment options not presently available to traditional ESFR Sprinklers having a nominal K-factor of 14.0. In particular, Model ESFR-17 Pendent Sprinklers are designed to operate at substantially lower-end head pressures, as compared to ESFR Sprinklers having a nominal K-factor of 14.0. This feature offers flexibility when sizing system piping, as well as possibly reducing or eliminating the need for a system fire pump.

Applications for the ESFR-17 Pendent Sprinklers are expanding beyond currently recognized installation standards. For information on research fire tests (with flammable liquids and aerosols, for example) that may be acceptable to an authority having jurisdiction, contact Technical Services.

### WARNING

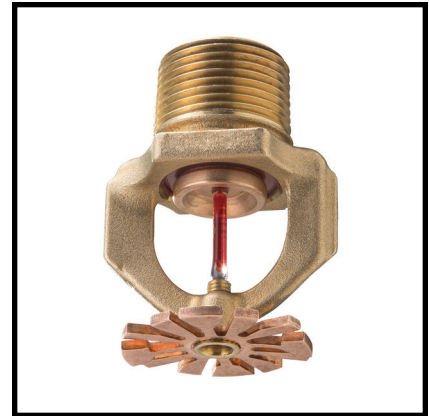
*Orange protector must NOT be removed until sprinkler is to be placed in service. The W-Type 35 Sprinkler Wrench MUST be used for proper installation of the sprinkler. Failure to do so may result in equipment damage or failure.*

### NOTICE

*The Model ESFR-17 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 (NFPA), in addition to the standards of any authorities having jurisdiction, such as FM Global. 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.*

*In all cases, the appropriate NFPA or FM Global installation standard, or other applicable standard, must be referenced to ensure applicability and to obtain complete installation guidelines. The general guidelines in this technical data sheet are not intended to provide complete installation criteria.*



## Sprinkler Identification Number (SIN)

TY7236

## Technical Data

### Approvals

UL and C-UL Listed  
FM Approved\*

\* 155°F (68°C) temperature rating only.

### Maximum Working Pressure

175 psi (12,1 bar)

### Pipe Thread Connections

3/4 in. NPT or ISO 7-R 3/4

### Discharge Coefficient

K=16.8 gpm/psi<sup>1/2</sup> (241,9 lpm/bar<sup>1/2</sup>)

### Temperature Ratings

155°F (68°C)<sup>1</sup>

200°F (93°C)<sup>2</sup>

1. UL/C-UL Listed and FM Approved.

2. UL/C-UL Listed only.

### Finish

Natural Brass

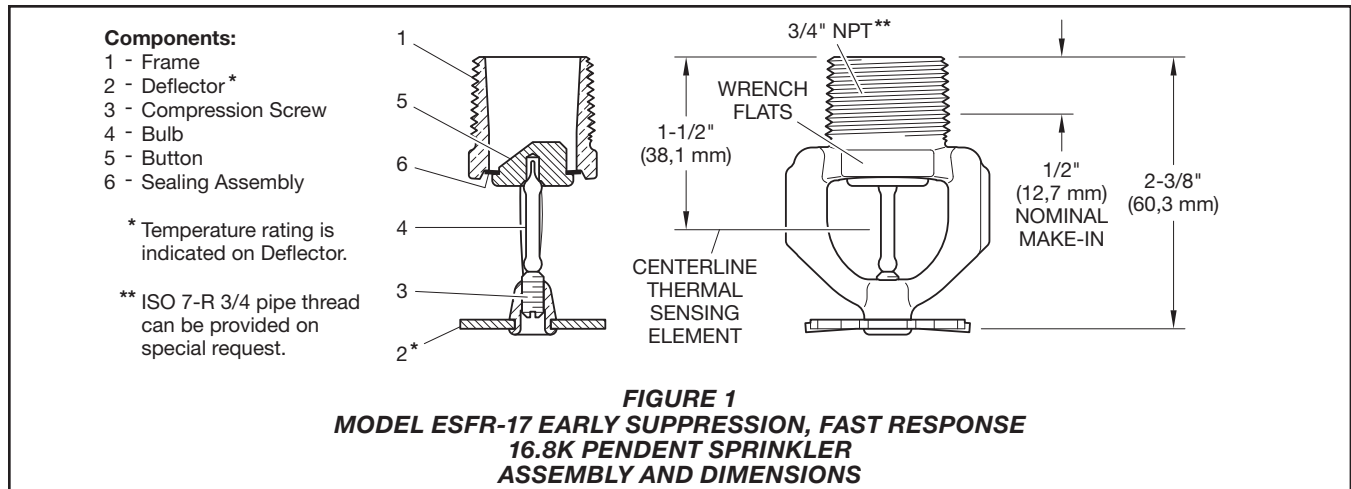
### Physical Characteristics

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

### 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.



## Design Criteria

The following general guidelines provided for the TYCO Model ESFR-17 Pendent Sprinklers can be used for a quick reference.

The National Fire Protection Association (NFPA) or FM Global provide installation standards that must be used to properly design an automatic sprinkler system utilizing Early Suppression, Fast Response (ESFR) Sprinklers. Consequently, the appropriate standard must be used for a given installation.

In all cases, the appropriate NFPA or FM Global installation standard must be referenced to ensure applicability and to obtain complete installation guidelines. The following general guidelines are not intended to provide complete installation criteria.

### System Type

Wet Pipe

### Roof Construction

Unobstructed or obstructed construction, such as smooth ceiling, bar joists, beam and girder.

Where the depths of the solid structural members, such as beams and stem, exceed 12 in. (302 mm), install ESFR Sprinklers in each channel formed by the structural members.

### Ceiling Slope

Maximum 2 in. rise for 12 in. run (16.7%)

### Maximum Coverage Area

100 ft<sup>2</sup> (9,3 m<sup>2</sup>)

In some cases, the installation standards permit a greater coverage area.

### Minimum Coverage Area

64 ft<sup>2</sup> (5,8 m<sup>2</sup>) per NFPA 13 and FM Global 2-0

### Maximum Spacing

12 ft (3,7 m) for building heights up to 30 ft (9,1 m)

10 ft (3,1 m) for building heights greater than 30 ft (9,1 m)

### Minimum Spacing

8 ft (2,4 m)

### Minimum Clearance to Commodity

36 in. (914 mm)

### NFPA 13

#### Deflector-to-Ceiling Distance

6 to 14 in. (152 to 356 mm)

#### Centerline of Thermal Sensing Element to Ceiling Distance

Refer to FM Global 2-0 for Storage Sprinklers

## Operation

The glass bulb contains a fluid which 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.

Storage Type	NFPA	FM Global
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 Chapters 16 and 17	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 Chapters 14 and 15	Refer to FM 2-0 and 8-9
Idle Pallet Storage	Refer to NFPA 13 Chapter 12	Refer to FM 2-0, 8-9, and 8-24
Rubber Tire Storage	Refer to NFPA 13 Chapter 18	Refer to FM 2-0 and 8-3
Roll Paper Storage (Refer to the Standard)	Refer to NFPA 13 Chapter 19	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)	N/A	N/A

N/A – Not Applicable

**TABLE A**  
**MODEL ESFR-17 PENDENT SPRINKLER**  
**COMMODITY SELECTION AND DESIGN CRITERIA OVERVIEW**

## Installation

TYCO Model ESFR-17 Early Suppression, Fast Response 16.8K Pendent Sprinklers must be installed in accordance with this section.

### General Instructions

Do not install any bulb type sprinklers 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 both 155°F (68°C) and 200°F (93°C) temperature ratings.

A leak-tight 3/4 inch NPT sprinkler joint should be obtained by applying a minimum-to-maximum torque of 10 to 20 ft.-lbs. (13,4 to 26,8 Nm), or by hand-tightening and applying an additional 1-1/4 to 1-1/2 revolutions of the wrench. Higher levels of torque can distort the sprinkler inlet with consequent leakage or impairment of the sprinkler.

### WARNING

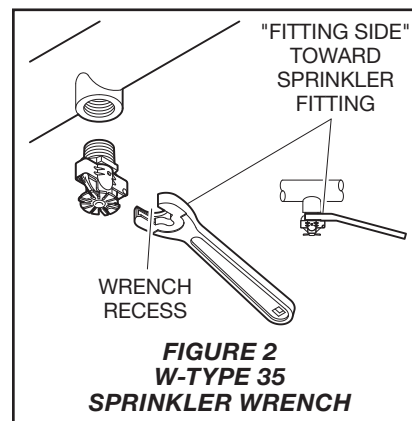
Orange protector must NOT be removed until sprinkler is to be placed in service. The W-Type 35 sprinkler wrench MUST be used for proper installation of the sprinkler. Failure to do so may result in equipment damage or failure.

**Note:** Install the Model ESFR-17 Pendent Sprinkler only in the pendent position (See Figure 2).

**Step 1.** With pipe-thread sealant applied, hand-tighten the sprinkler into the sprinkler fitting. Do not apply pressure to the bulb assembly, and handle the Model ESFR-17 Sprinkler only by the Frame arms.

**Step 2.** Wrench-tighten the Model ESFR-17 Sprinkler using only the W-Type 35 Sprinkler Wrench (See Figure 2), and by fully engaging (seating) the wrench on the sprinkler wrench flats (See Figure 1).

**Step 3.** After installation, inspect the bulb of each Model ESFR-17 Sprinkler for damage. In particular, verify that the bulb is not cracked. Replace damaged sprinklers.



## Care and Maintenance

TYCO Model ESFR-17 Early Suppression, Fast Response 16.8K Pendent Sprinklers must be maintained and serviced in accordance with this section.

Before closing a fire protection system main control valve for maintenance work on the fire protection system that it controls, obtain permission to shut down the affected fire protection system from the proper authorities and notify all personnel who may be affected by this action.

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 (See 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 authorities having jurisdiction. Contact the installing contractor or product manufacturer with any questions.

Automatic sprinkler systems are recommended to be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

## Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product name and part number (P/N).

### Sprinkler Assemblies with 3/4 NPT Thread Connection

Specify: Model ESFR-17 Early Suppression, Fast Response 16.8K Pendent Sprinklers (TY7236) with 3/4 NPT thread connection, (specify temperature rating), with Natural Brass finish, P/N (specify):

155°F (68°C)<sup>1</sup> . . . . . 58-462-1-155  
200°F (93°C)<sup>2</sup> . . . . . 58-462-1-200

- 1. UL/C-UL Listed and FM Approved.
- 2. UL/C-UL Listed only.

### Special Order Sprinkler Assemblies with ISO 7-R 3/4 Thread Connection

Specify: Model ESFR-17 Early Suppression, Fast Response 16.8K Pendent Sprinklers (TY7236) with ISO 7-R 3/4 thread connection, (specify temperature rating), with Natural Brass finish, P/N (specify):

155°F (68°C)<sup>1</sup> . . . . . 58-463-1-155  
200°F (93°C)<sup>2</sup> . . . . . 58-463-1-200

- 1. UL/C-UL Listed and FM Approved.
- 2. UL/C-UL Listed only.

### Sprinkler Wrench

Specify: W-Type 35 Sprinkler Wrench  
P/N 56-463-1-001