

Model S176

Standard or Quick Response Standard Coverage Dry Hor. Sidewall Sprinklers

Tyco Fire Products — www.centralsprinkler.com
451 North Cannon Avenue, Lansdale, Pennsylvania 19446
Customer Services/Sales: Tel: (215) 362-0700 / Fax: (215) 362-5385
Technical Services: Tel. (800) 381-9312 / Fax: (800) 791-5500



General Description

The Central Model S176, 5.6 K-Factor (1/2 inch orifice), Standard or Quick Response, Standard Coverage, Dry Horizontal Sidewall Sprinklers are decorative glass bulb automatic sprinklers designed for use in applications where the sprinklers and/or a portion of the connecting piping may be exposed to freezing temperatures (e.g., horizontal piping extensions from a wet pipe sprinkler system through a wall to protect a freezer or unheated area of a building).

The Model S176 Dry Horizontal Sidewall Sprinklers are available in standard response (5 mm bulb) or quick response (3 mm bulb) and in a wide range of operating temperatures and order lengths. The Model S176 Sprinklers are intended for use in fire sprinkler systems designed in accordance with the standard installation rules recognized by the applicable Listing or Approval agency (e.g., UL Listing is based on NFPA 13 requirements).

They are designed for installation along a wall and just beneath a smooth ceiling. Installed with their centerline of waterway horizontal, these sprinklers produce a quarter-spherical water distribution pattern that is predominately directed downward and outward from the sprinkler with a portion of the spray being directed towards the backwall.

The Standard Escutcheon for the Model S176 is a separable two-piece design which allow installation of the sprinklers and pressure testing of the fire protection system prior to wall construction and/or application of a finish coat to the wall. It also permits refinishing of a wall surface without having to first shut down the fire protection system and remove the sprinklers.

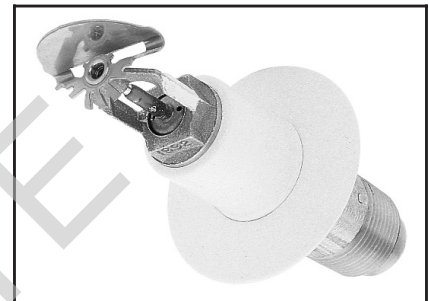
Operation: When the Model S176 is in service, water is prevented from entering the assembly by the Plug & O-ring (Ref. Figure 2) in the Inlet of the Sprinkler. The glass Bulb contains a fluid which expands when exposed to heat. When the rated temperature is reached, the fluid expands sufficiently to shatter the glass Bulb, and the Bulb Seat is released. The compressed Spring is then able to expand and push the Water Tube as well as the Guide Tube outward. This action simultaneously pulls inward on the Yoke, withdrawing the Plug & O-ring from the Inlet, which then allows the sprinkler to activate and flow water.

WARNINGS

The Model S176 Dry Horizontal Sidewall 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 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.

The Model S176 Dry Horizontal Sidewall Sprinklers must only be installed in fittings that meet the requirements of the Design Criteria section.



Standard Escutcheon



Technical Data

Sprinkler Identification Number
SIN C3355 (Standard Response)
SIN C3335 (Quick Response)

Approvals

UL and ULC Listed. FM Approved.
(Refer to Table A)

Maximum Working Pressure

175 psi (12,1 bar)

Pipe Thread Connection

1 inch NPT or ISO 7-R1

Discharge Coefficient

$K = 5.6 \text{ GPM/psi}^{1/2}$
(80,6 LPM/bar^{1/2})

Temperature Ratings

Refer to Table A

Finishes

Sprinkler: Natural Brass, Chrome Plated, White Polyester
Escutcheon: White Coated or Chrome Plated
(Colors other than white are available on request.)

Physical Characteristics

The Plug and Inlet are brass, and the O-ring is silicone rubber. The Casing is galvanized carbon steel.

SPRINKLER FINISH

"A" Order Length:
2-1/2 to 48 inches
(63.5 to 1219.2 mm)

**Deflector-to-Ceiling
Distance:**
4 to 12 inches
(100 to 300 mm)
See Note 4

Temperature Rating	Bulb Color Code	Natural Brass	Chrome Plated	Polyester (All Colors)
135°F/57°C	Orange	1, 2, 3		1, 2
155°F/68°C	Red	1, 2, 3		1, 2
175°F/79°C	Yellow	1, 2, 3		1, 2
200°F/93°C	Green	1, 2, 3		1, 2
286°F/141°C	Blue	1, 2, 3		1, 2
360°F/182°C*	Mauve	1, 2		1, 2

Notes:

1. Listed by Underwriters Laboratories, Inc. for use in Light or Ordinary Hazards.
 2. Listed by Underwriters' Laboratories of Canada for use in Light or Ordinary Hazards.
 3. Approved by Factory Mutual Research Corporation for use in Light or Ordinary Hazards. (FM limits Quick Response Sprinklers to wet pipe systems.)
 4. To meet the requirement of a deflector-to-ceiling distance of 4 to 12 inches, the centerline of the sprinkler waterway shown in Figure 1 must be 4-5/16 to 12-5/16 inches below the ceiling.
- * Available in Standard Response Only.

Table A
Model S176 Standard and Quick Response
Dry Horizontal Sidewall Sprinkler
Laboratory Listings and Approvals

The Frame is bronze, the Deflector is brass, and the Compression Screw is bronze. The Water Tube is brass, and the Bulb Seat, Spring, and Yoke are stainless steel. The Guide Tube sub-assembly is constructed of stainless steel and brass. The two pieces of the three available Escutcheons are low carbon steel.



The Model S176 Dry Sprinklers are to be installed in the 1 inch NPT outlet of a malleable iron threaded tee fitting per ANSI B16.3 or cast iron threaded tee fitting per ANSI B16.4 with the end sprinkler fitting on a branch line to be plugged as shown in Figure 1.

NOTE

Do not install the Model S176 into any other type fitting without first consulting the Technical Services Department. Failure to use the appropriate fitting may result in: failure of the sprinkler to properly operate due to binding of the inlet Plug; or, insufficient engagement of the inlet pipe threads with consequent leakage.

When Dry Sprinklers are to be used in wet pipe sprinkler systems protecting areas subject to freezing temperatures (e.g., coolers or freezers), consideration must be given to the appropriate length of the sprinkler that will prevent freezing of the water in the connecting pipes, due to conduction. When the temperature surrounding the wet pipe sprinkler system is maintained at a minimum

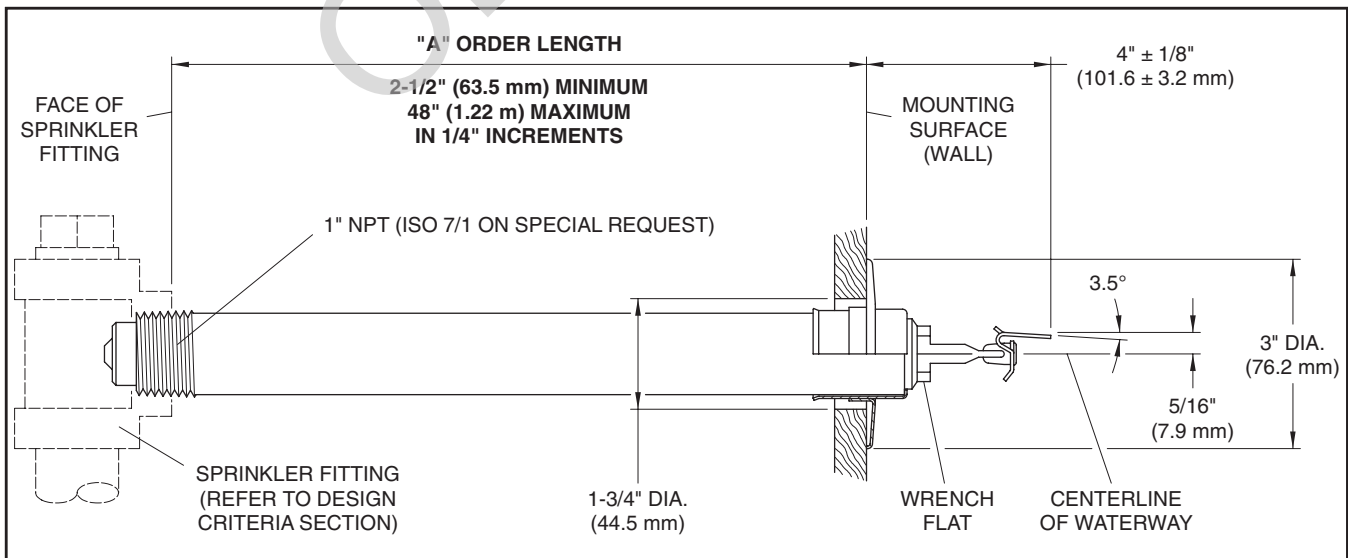


Figure 1
Model S176 Dry Horizontal Sidewall Sprinkler Installation Dimensions

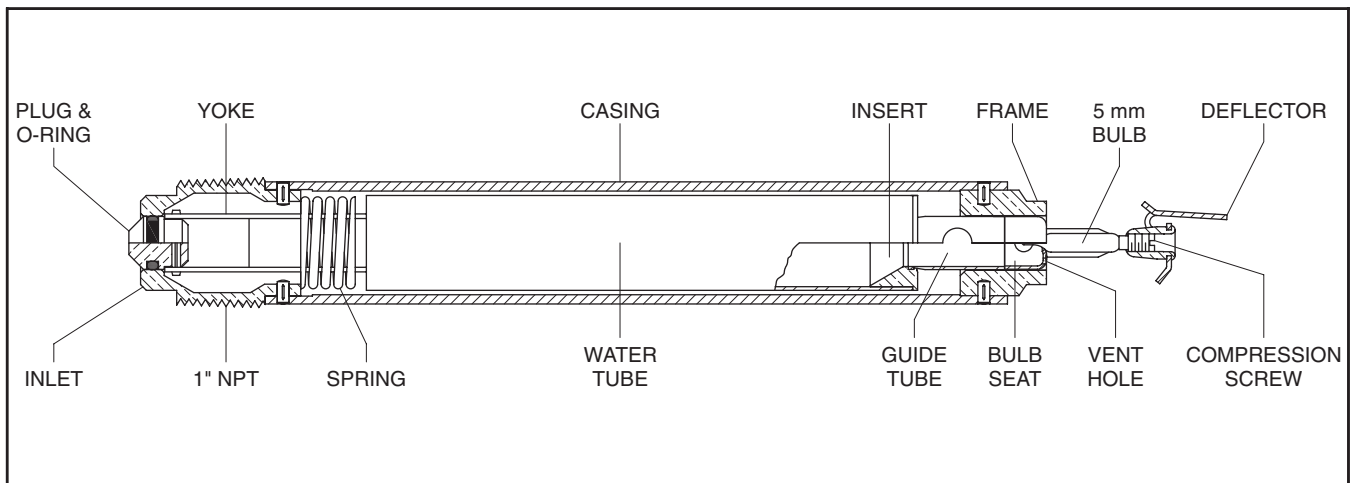


Figure 2
Model S176 Dry Horizontal Sidewall Sprinkler Assembly

temperature of 40°F/4°C, the following are the minimum recommended lengths between the face of the sprinkler fitting and the outside surface of the protected area (i.e., length exposed to minimum ambient of 40°F/4°C):

- 12 inches (300 mm) when the temperature within the protected area is -20°F/-29°C
- 18 inches (450 mm) when the temperature within the protected area is -40°F/-40°C
- 24 inches (600 mm) when the temperature within the protected area is -60°F/-51°C

For protected area temperatures between those given above, the minimum recommended length from the face of the fitting to the outside of the protected area may be determined by interpolating between the indicated values.

NOTE

When Dry Sprinklers penetrate a wall into an area subject to freezing, the clearance space around the Sprinkler Casing must be completely sealed in order to prevent the leakage of moist air into the freezing area which might result in the formation of condensate around the Frame, Deflector, Bulb Seat, or Bulb. Failure to prevent the formation of condensate could result in the build-up of ice around the releasing components and, consequently, either an inadvertent operation of the sprinkler or impaired operation due to reduced thermal sensitivity.

Installation

The Model S176 must be installed in accordance with the following instructions:

NOTES

The Model S176 must only be installed in fittings that meet the requirements of the Design Criteria section.

Refer to the Design Criteria section for other important requirements regarding sealing of the clearance space around the Sprinkler Casing.

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 135°F/57°C rating to 1/8 inch (3,2 mm) for the 360°F/182°C rating.

A leak tight 1 inch NPT sprinkler joint should be obtained with a torque of 20 to 30 ft.lbs. (26,8 to 40,2 Nm). Higher levels of torque may distort the sprinkler inlet with consequent leakage or impairment of the sprinkler.

Do not attempt to compensate for insufficient adjustment in an Escutcheon Plate by under- or over-tightening the Sprinkler. Readjust the position of the sprinkler fitting to suit.

Step 1. The sprinkler must be installed only in the horizontal position, and the word "TOP" on the deflector must face upwards toward the ceiling.

Step 2. With pipe thread sealant applied to the pipe threads, hand

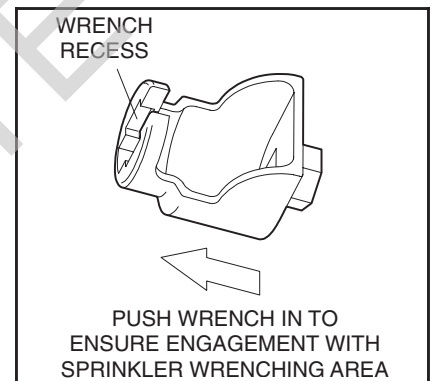


Figure 3
W-Type 7 Sprinkler Wrench

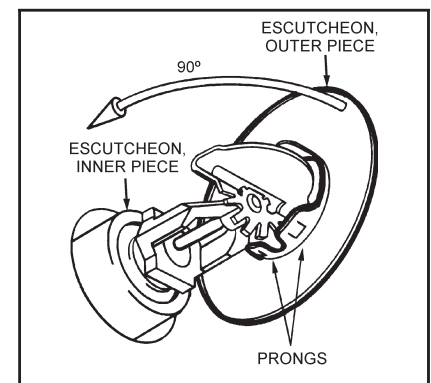


Figure 4
Escutcheon Installation

tighten the sprinkler into the sprinkler fitting.

Step 3. Wrench tighten the sprinkler by wrenching on the Casing with a pipe wrench whenever the casing is readily accessible. Otherwise, use a W-Type 7 Sprinkler Wrench (Ref. Figure 3). The wrench recess of the W-Type 7 is to be applied to the sprinkler wrench flats (Ref. Figure 1).

Step 4. After the wall construction is completed or the finish coat has been applied to the wall (as applicable), slide on the outer piece of the Escutcheon until it comes in contact with the wall (Ref Figure 4)



Care & Maintenance

The Model S176 must be maintained and serviced in accordance with the following instructions:

NOTES

Absence of the outer piece of an escutcheon, which is used to cover a clearance hole, may delay the time to sprinkler operation in a fire situation.

Before closing a fire protection system main control valve for maintenance work on the fire protection system which 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.

A Vent Hole is provided in the Bulb Seat (Ref. Figure 2) to indicate if the Dry Sprinkler is remaining dry. Evidence of leakage from the Vent Hole is an indication that there may be weepage past the O-ring seal and, therefore, it is an indication that the sprinkler needs to be removed for determining the cause of leakage (e.g. an improper installation or an ice plug). The fire protection system control valve must be closed and the system drained before removing the sprinkler.

Sprinklers which 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 sprinklers must be replaced. Sprinklers that have been exposed to corrosive products of combustion, but have not operated, should 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 - 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 (Ref. 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. 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 CON-

TRACT, 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 Information

Ordering Information:

1. When placing an order, indicate the full product name. Please include the quantity, model, response characteristic, temperature rating, finish, and order length.

Dry Sprinklers are furnished based upon Order Length as measured from the face of the wall to the face of the sprinkler fitting in which the individual sprinkler is to be installed. After the measurement is taken, round it to the nearest 1/4 inch increment.

2. W-Type 7 Sprinkler Wrench.

Patents:

U.S.A. Patent Number 5,188,185 is applicable to the Model S176 Dry Horizontal Sidewall Sprinklers.