

# Reliable®

## Model DH80 Dry (SIN RA5532) K8.0 (115 metric) Extended Coverage Horizontal Sidewall Sprinkler

**Coverage up to 28 feet wide and 14 feet long<sup>(1)</sup>.**

### Features:

1. cULus Listed as Quick-response for Light Hazard applications only.
2. Available with a Standard, Model HB (extended), or Model FP (recessed) escutcheon, as well as the Model SWC (concealed) cover plate.
3. Sprinkler available in lengths up to 36" (900 mm) in 1/4" (6 mm) increments (see Fig. 4-7).
4. Listed deflector to ceiling distance of 4" (102 mm) min. to 12" (305 mm) max.
5. Minimum spacing between sprinklers of 14 feet (4.3 m).
6. Sprinkler available in white or black polyester, chrome, and bronze standard finishes as well as custom color polyester and Electroless Nickel PTFE (ENT) special application finishes.
7. White polyester, black polyester, and ENT finish sprinklers are cULus Listed as Corrosion Resistant (not applicable to concealed sprinklers).

<sup>(1)</sup> See Fig. 9.

### Approval Organizations

1. Listed by Underwriters Laboratories Inc. and UL certified for Canada (cULus) as a quick-response extended coverage sprinkler for Light Hazard occupancies.

### Patents

US Patent No. 7,841,418

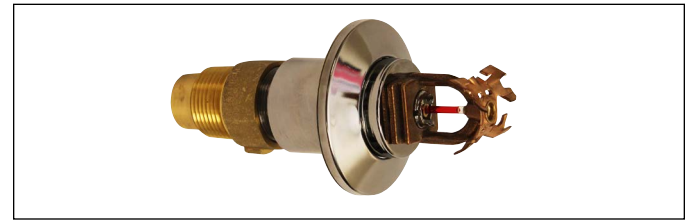
### Products Description

The Model DH80 Dry sprinkler is a quick-response extended coverage horizontal sidewall sprinkler for use in Light Hazard applications. The sprinkler has a nominal K-Factor of 8.0 (115 metric). The sprinkler is designed with a spray pattern that is cULus Listed to provide a coverage of 28 feet (8.5 m) along the wall where the sprinkler is installed and projecting 14 feet (4.3 m) from the wall where the sprinkler is installed, as shown in Fig. 9.

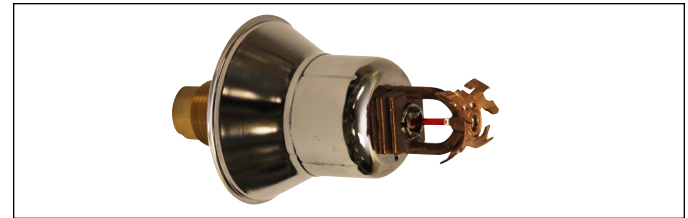
The Model DH80 Dry sprinkler is available with a standard escutcheon (Fig. 4), a Model HB extended escutcheon (Fig. 5), a Model FP recessed escutcheon (Fig. 6), or a Model SWC cover plate (Fig. 7). The can or cup, used to mount the escutcheon or cover plate, is factory installed. The Model FP escutcheon and Model SWC cover plate are the only recessed escutcheon and cover plate, respectively, listed for use with the Model DH80 Dry sprinkler.

Model DH80 Dry sprinklers are available in nominal lengths up to 36" (900 mm). Dimensional information for Model DH80 Dry sprinklers is provided in Figures 4 through 7, depending on the escutcheon or cover plate option selected.

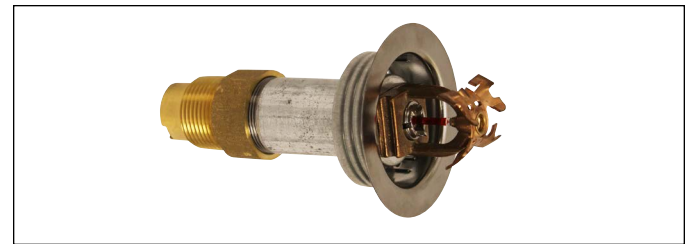
The sealing washer in the Model DH80 Dry sprinkler is located at the inlet end of the sprinkler assembly. The posi-



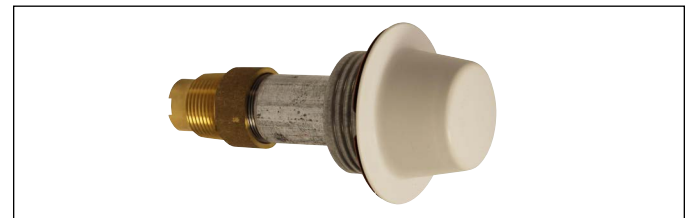
Model DH80 Dry sprinkler with Standard escutcheon



Model DH80 Dry sprinkler with Model HB escutcheon



Model DH80 Dry sprinkler with Model FP recessed escutcheon



Model DH80 Dry sprinkler with Model SWC cover plate

tion of the sealing washer is controlled by a fluid-filled glass bulb thermal element at the opposite end of the sprinkler assembly. When installed on a wet-pipe sprinkler system in accordance with Fig. 8, the Model DH80 sprinkler is installed with the thermal element in a protected space that may be subject to freezing temperatures and the inlet orifice located in a heated area that is separated from the protected space. Model DH80 sprinkler may also be installed on dry-pipe and preaction sprinkler systems. Operation of the sprinkler's thermal element allows the sealing washer to move out of the inlet orifice admitting water from the supply piping. Material Specifications for the Model DH80 Dry sprinkler are provided in Fig. 11.

The sprinkler uses a fast-response thermal element and is available with a temperature rating of 155°F (68°C), 175°F (79°C), or 200°F (93°C). Model SWC cover plates include a conical concealed cover plate that is attached to a skirt with temperature sensitive solder. Operation of the Model SWC cover plate occurs when the solder melts due to an increase in the surrounding temperature, allowing the cover plate to fall away and exposing the Model DH80 Dry sprinkler. Model SWC cover plates are available with a Temperature Rating of either 135°F (57°C) for use with Ordinary Temperature Classification [155°F (68°C)] sprinklers or 165°F for use with Intermediate Temperature Classification [175°F (79°C) and 200°F (93°C)] sprinklers.

Model DH80 dry sprinklers have a special wax fillet placed in the gap between the cup that supports the bulb and the wrenching boss. This wax will not interfere with the operation of the sprinkler, and it prevents contaminants from entering the internal portion of the drop nipple. The wax must not be removed.

## Application

The Model DH80 Dry sprinkler is a horizontal sidewall dry sprinkler intended for installation in light hazard occupancies in accordance with NFPA 13. These sprinklers are designed to provide fire protection in long and narrow spaces such as hallways, corridors, decks and portions of rooms up to 28 feet (8.5 m) wide and 14 feet (4.3 m) long. They are rated for 175 psi (12 bar) and can be mounted between 4 and 12 inches (102 and 305 mm) down from the ceiling. Model DH80 Dry sprinklers may be installed on wet-pipe sprinkler systems in accordance with Fig. 8, as well as dry-pipe and preaction sprinkler systems.

## Technical Data:

Nominal K-Factor		Thread Size	Temperature Rating		Maximum Ambient Temperature	Sprinkler Identification Number (SIN)
US	Metric		Sprinkler	SWC Cover		
8.0	115	1" NPT or ISO 7-1R1	155°F (68°C)	135°F (57°C)	100°F (38°C)	RA5532
			175°F (79°C)	165°F (74°C)	150°F (66°C)	
			200°F (93°C)	165°F (74°C)	150°F (66°C)	

Required Minimum Flow Rate and Pressure		
Maximum Coverage Area Width x Length ft x ft (m x m)	Flow Rate gpm (L/min)	Pressure psi (bar)
28 x 14 (8.5 x 4.3)	40 (151)	25 (1.7)

## Installation Instructions

Model DH80 Dry sprinklers must only be installed in the following fittings:

- (1.) the side outlet of an ANSI B 16.3 class 150 malleable iron pipe tee
- (2.) the side outlet of an ANSI B 16.4 class 125 cast iron pipe tee
- (3.) the side outlet of a Spears Manufacturing Company Model 4202-010 or Model 4202-010SR Listed CPVC sprinkler tee

- (4.) the side outlet of any Listed CPVC sprinkler tee only in accordance with Fig. 9 and upon verification that the CPVC sprinkler tee does not interfere with the sprinkler's inlet.

Model DH80 Dry sprinklers shall not be installed into elbows, welded outlets, or gasket sealed outlets. In all installations, including into CPVC piping, the dry sprinkler shall be installed with protrusion into the fitting in accordance with the installation diagrams in this Bulletin.

Installation of the Model DH80 Dry sprinkler is not recommended in copper pipe systems, as this may reduce the life expectancy of the sprinkler. Do not install Model DH80 Dry sprinklers with the standard (long) inlet fitting into CPVC fittings that have an internal obstruction (see Fig. 9); this will damage the sprinkler, the fitting, or both. Model DH80 Dry sprinklers are available with a short "PL" inlet fitting for installation on CPVC fittings of wet pipe sprinkler systems only. Model DH80 Dry sprinklers connected to wet-pipe systems must be installed with the Exposed Minimum Barrel Length required by Fig. 8 located in a Heated Area.

A clip is provided to protect the glass bulb thermal element from damage. The clip is factory installed on the sprinkler. The clip should remain in place during installation of the sprinkler and be removed when the sprinkler system is placed in service. Model DH80 Dry sprinklers with the Model FP recessed escutcheon or the Model SWC cover plate are also supplied with a cap that can be used to provide additional protection for the sprinkler during painting or finishing. The cap can be installed without removing the clip. Both the cap and the clip must be removed when the sprinkler system is placed in service.

Use the following steps for installation:

1. The centerline of the Model DH80 Dry sprinkler must be installed between 4-5/8" (118 mm) and 12-5/8" (321 mm) vertically below the finished ceiling so that the top of the deflector is not less than 4" (102 mm) or more than 12" (305 mm) from the finished ceiling. A hole must be cut in the wall directly in-line with the outlet of the tee. See the Installation Data table for the recommended hole diameter based on the escutcheon or cover plate option selected.
2. Apply pipe joint compound or Polytetrafluoroethylene (PTFE) tape to the threads of the sprinkler's inlet fitting.
3. Install the sprinkler in the tee using the installation wrench specified in the Installation Data table. The Model F3R wrench is designed to be inserted into the grooves in the sprinkler's wrench boss as shown in Fig. 3. The Model XLO2 wrench is designed to fit into the cup and engage the wrench boss as shown in Fig. 2. Do NOT wrench any part of the sprinkler assembly other than the wrench boss. When inserting or removing the wrench from the sprinkler, care should be taken to prevent damage to the sprinkler. The sprinkler is then tightened into the pipe fitting to achieve a leak free connection. The recommended minimum to maximum installation torque is 22-30 lb-ft (30 – 40 N-m).
- 3a. Alternatively, where access to the outer tube of the sprinkler is available, the Model DH80 Dry sprinkler may be installed using a pipe wrench. The pipe wrench shall only

be permitted to interface with the steel outer tube portion of the sprinkler (Item #8 in Fig. 10). Do NOT wrench any other portion of the sprinkler assembly. A pipe wrench can install the sprinkler into the fitting with a large amount of torque; consideration should be given to the need for future removal of the sprinkler because the installation torque will have to be matched or exceeded to remove the sprinkler. The recommended minimum to maximum installation torque is 22-30 lb-ft (30 – 40 N-m).

4. Standard and Model HB escutcheons can be installed by slipping the escutcheon over the can until the escutcheon is seated against the wall. The Model FP escutcheon is installed by pressing or threading the escutcheon into the cup by hand; the escutcheon can be tightened against the wall by turning the escutcheon in a clockwise direction and removed by turning the escutcheon in a counter-clockwise direction. To install the Model SWC cover plate, first remove the protective cap, if installed, and clip. Install the Model SWC cover plate on the sprinkler by pressing or threading the cover plate into the cup by hand; the cover plate can be tightened against the wall by turning the cover plate in a clockwise direction and removed by turning the cover plate in a counter-clockwise direction. The Model FP recessed escutcheon and Model SWC cover plate are the only recessed escutcheon and cover plate, respectively, listed for use with the Model DH80 Dry sprinkler; the use of any other recessed escutcheon or cover plate with the Model DH80 Dry sprinkler will void all guarantees, warranties, listings and approvals.
5. Remove the protective cap, if installed, and clip when placing the sprinkler system in service.

**Installation Data:**

Escutcheon or Cover Plate Option	Recommended Hole Diameter	Installation Wrench
Standard escutcheon	2-1/8" (54 mm)	F3R
HB extended escutcheon	2-1/2" (64 mm)	F3R
FP recessed escutcheon	2-5/8" (67 mm)	XLO2
SWC cover plate	2-1/8" (54 mm)	XLO2

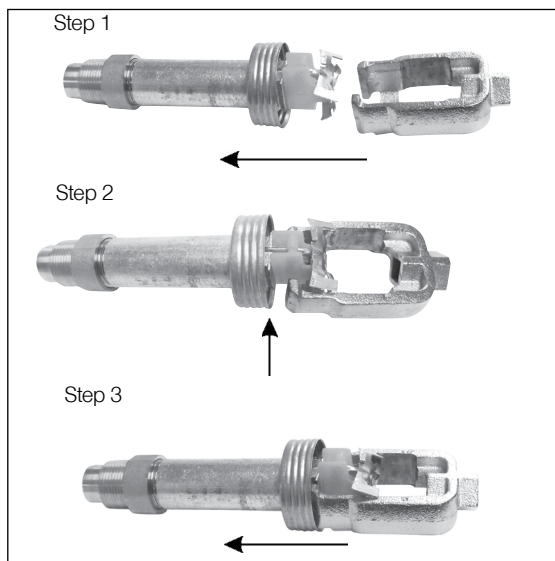


Fig. 2 - Model XLO2 Wrench



Fig. 3 - Model F3R wrench

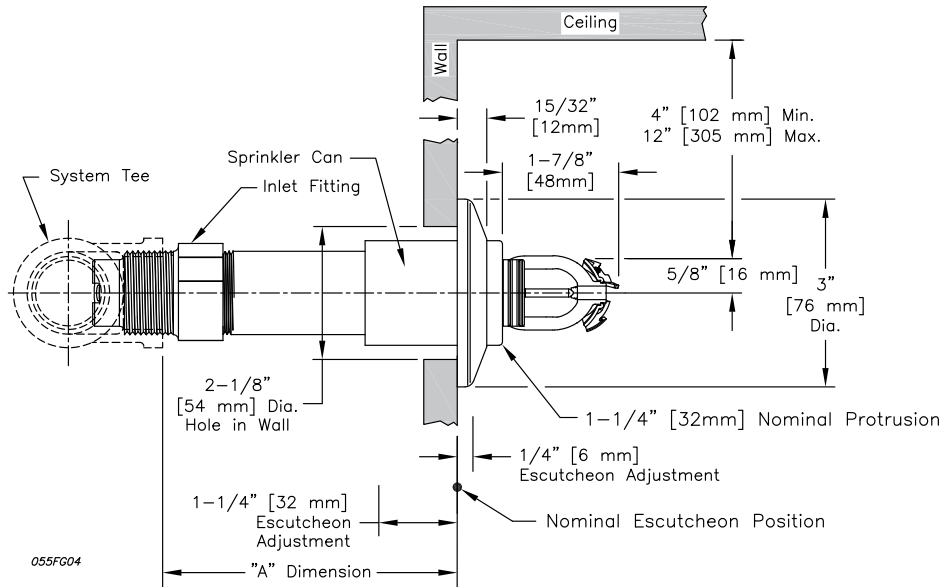
**Maintenance**

Model DH80 Quick-Response Dry Sprinklers should be inspected and the sprinkler system maintained in accordance with NFPA 25. Do not remove the factory applied thermally sensitive wax fillet between the bulb supporting cup and the wrenching boss. Do not replace this wax with a substitute substance. An alternate substance may interfere with proper operation of the sprinkler. Do not clean sprinklers with soap and water, ammonia or any other cleaning fluids. Remove dust by gentle vacuuming. Replace any sprinkler which has been painted (other than factory applied) or damaged in any way. A stock of spare sprinklers should be maintained to allow quick replacement of damaged or operated sprinklers. Prior to installation, sprinklers should be maintained in their original cartons and packaging until used to minimize the potential for damage to sprinklers that would cause improper operation or non-operation.

**Model DH80 Dry Quick-Response Extended Coverage Horizontal Sidewall Sprinkler Specification**

Sprinklers shall be cULus Listed quick-response extended coverage horizontal sidewall sprinklers for light hazard occupancies. Sprinklers to be of bronze frame construction with a special deflector capable of providing a discharge over a coverage area of 28 ft. (8.5 m) wide, and 14 ft. (4.3 m) long horizontal throw. Sprinklers shall have [standard escutcheons][extended escutcheons][recessed escutcheons][conical concealed cover plates] produced by the manufacturer of the sprinklers and cULus Listed for use with the sprinklers. Water seal assembly shall consist of a PTFE coated Belleville spring washer. Sprinklers should be cULus Listed to permit deflectors to be positioned 4" (102 mm) to 12" (305 mm) below the ceiling. Sprinklers shall have a nominal K-Factor of 8.0 (115 metric), and [1" NPT][ISO 7-1R1] threads. Sprinkler temperature rating shall be [155°F (68°C)][175°F (79°C)][200°F (93°C)]. Rated working pressure shall be 175 psi (12 bar). Sprinkler and escutcheon finish shall be [white polyester][black polyester][chrome][bronze/brass][Special Application - Note: Specify based on Finishes table]. [Conical concealed cover plate finish shall be [white paint][Special Application - Note: Specify based on Finishes table].] [Sprinklers shall be cULus Listed as Corrosion Resistant (Note: available with white polyester, black polyester, and ENT finishes only) (Note: not available with sprinklers using the Model SWC cover plate)]. Quick-response extended coverage horizontal sidewall dry sprinklers shall be Reliable Model DH80 Dry, SIN RA5532 (Bulletin 055).

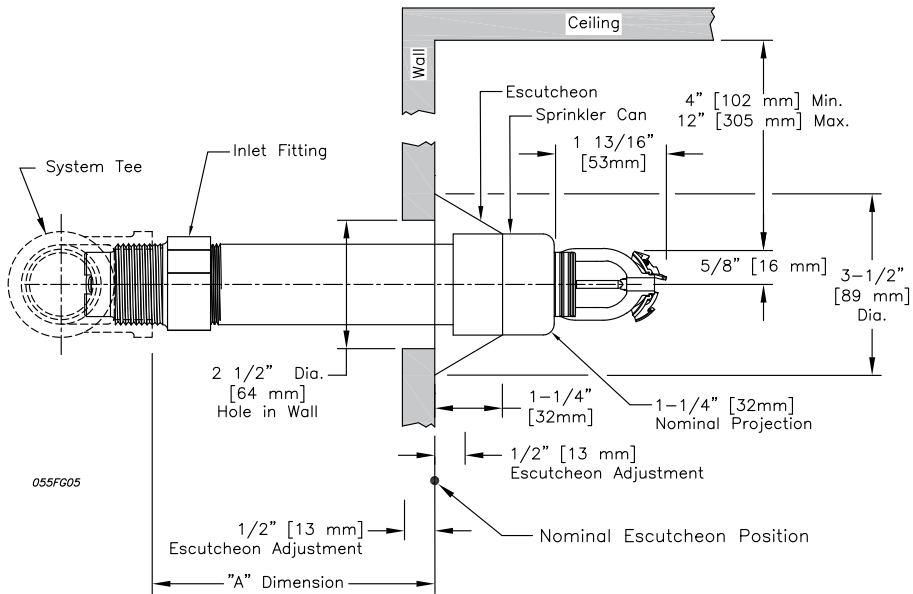
MODEL DH80 DRY SPRINKLER WITH STANDARD ESCUTCHEON



AVAILABLE "A" DIM. IS 2" TO 36" (50 MM TO 900 MM) IN 1/4" (6 MM) INCREMENTS

Fig. 4

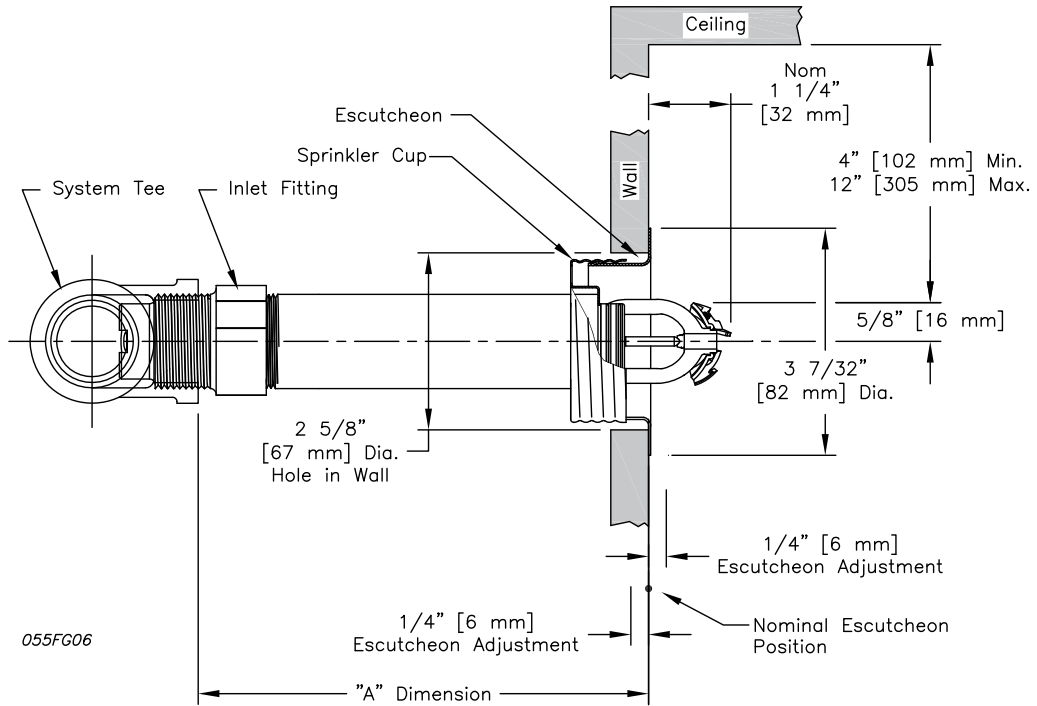
MODEL DH80 DRY SPRINKLER WITH MODEL HB ESCUTCHEON



AVAILABLE "A" DIM. IS 3-1/2" TO 36" (90 MM TO 900 MM) IN 1/4" (6MM) INCREMENTS

Fig. 5

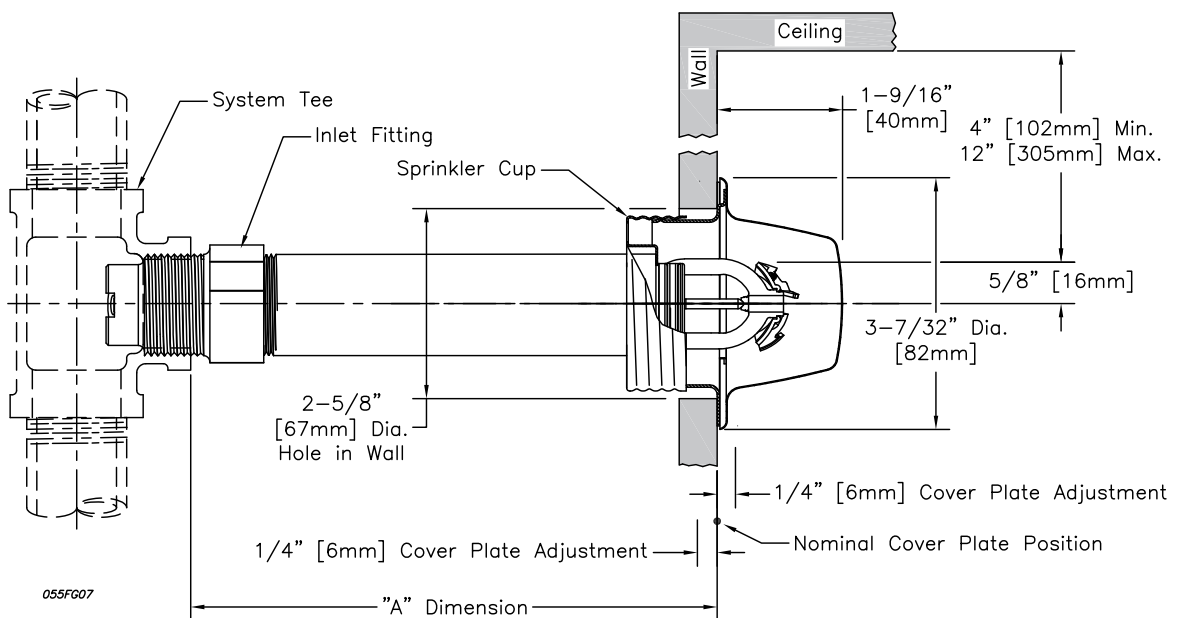
MODEL DH80 DRY SPRINKLER WITH MODEL FP RECESSED ESCUTCHEON



AVAILABLE "A" DIM. IS 3-1/2" TO 36" (89mm TO 914mm) IN 1/4" (6mm) INCREMENTS

Fig. 6

MODEL DH80 DRY SPRINKLER WITH MODEL SWC COVER PLATE



AVAILABLE "A" DIM. IS 3-1/2" TO 36" (89mm TO 914mm) IN 1/4" (6mm) INCREMENTS

Fig. 7

MINIMUM EXPOSED BARREL LENGTH WHEN CONNECTED TO WET PIPE SPRINKLER SYSTEM

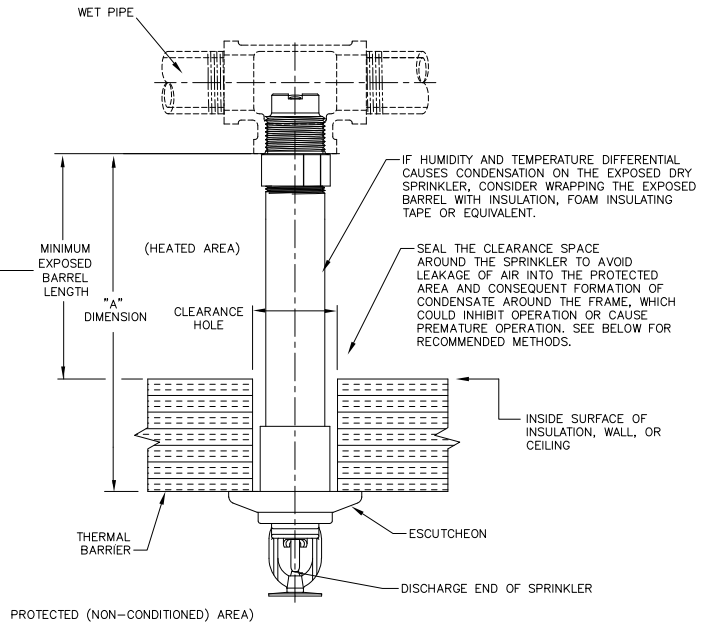
NOTE: STANDARD DRY PENDENT IS SHOWN, HOWEVER, MINIMUM EXPOSED BARREL LENGTH APPLIES TO ALL STYLES OF DRY SPRINKLERS CONNECTED TO A WET PIPE SYSTEM.

AMBIENT TEMPERATURE EXPOSED TO DISCHARGE END OF SPRINKLER* (F)	EXPOSED BARREL AMBIENT TEMPERATURE		
	40°F/4°C	50°F/10°C	60°F/16°C
	EXPOSED MINIMUM BARREL LENGTH** (FACE OF FITTING TO TOP OF CEILING)***		
	IN. (MM)	IN. (MM)	IN. (MM)
40°F (4°C)	0	0	0
30°F (-1°C)	0	0	0
20°F (-7°C)	4 (100)	0	0
10°F (-12°C)	8 (200)	1 (25)	0
0°F (-18°C)	12 (300)	3 (75)	0
-10°F (-23°C)	14 (350)	4 (100)	1 (25)
-20°F (-29°C)	14 (350)	6 (150)	3 (75)
-30°F (-34°C)	16 (400)	8 (200)	4 (100)
-40°F (-40°C)	18 (450)	8 (200)	4 (100)
-50°F (-46°C)	20 (500)	10 (250)	6 (150)
-60°F (-51°C)	20 (500)	10 (250)	6 (150)

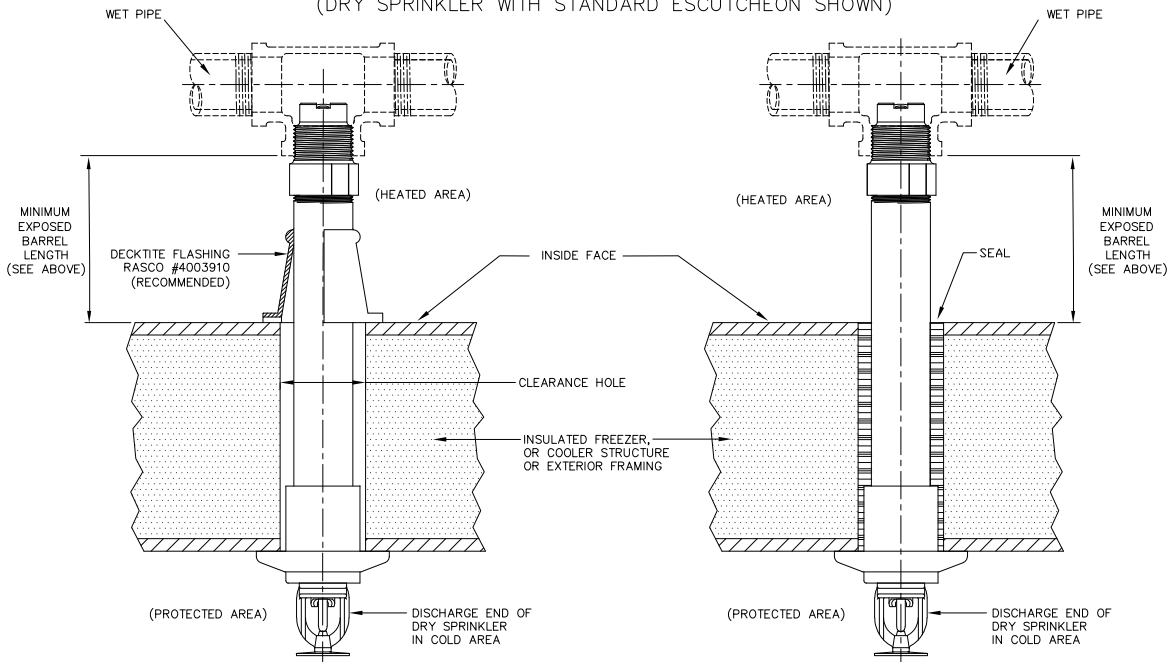
\* FOR AMBIENT TEMPERATURES EXPOSED TO THE DISCHARGE END OF THE SPRINKLER THAT OCCUR BETWEEN THE VALUES LISTED, USE THE NEXT COOLER TEMPERATURE.

\*\* THE MINIMUM EXPOSED BARREL LENGTH IS NOT THE SAME AS THE "A" DIMENSION. THE MINIMUM EXPOSED BARREL LENGTH IS BASED ON A PROPERLY SEALED PENETRATION WITH A MAXIMUM WIND VELOCITY ON THE EXPOSED SPRINKLER OF 30 MPH (48 KM/H). LONGER EXPOSED BARREL LENGTHS WILL HELP AVOID FREEZING OF THE WET PIPING WHERE HIGHER WIND VELOCITY IS EXPECTED.

\*\*\* THE MINIMUM EXPOSED BARREL LENGTH IS MEASURED FROM THE FACE OF THE FITTING TO THE INSIDE FACE OF THE INSULATION, WALL, OR CEILING LEADING TO THE COLD SPACE, WHICHEVER IS CLOSEST TO THE FITTING.



RECOMMENDED DRY SPRINKLER SEAL ARRANGEMENTS  
(DRY SPRINKLER WITH STANDARD ESCUTCHEON SHOWN)



COMDRYDET1

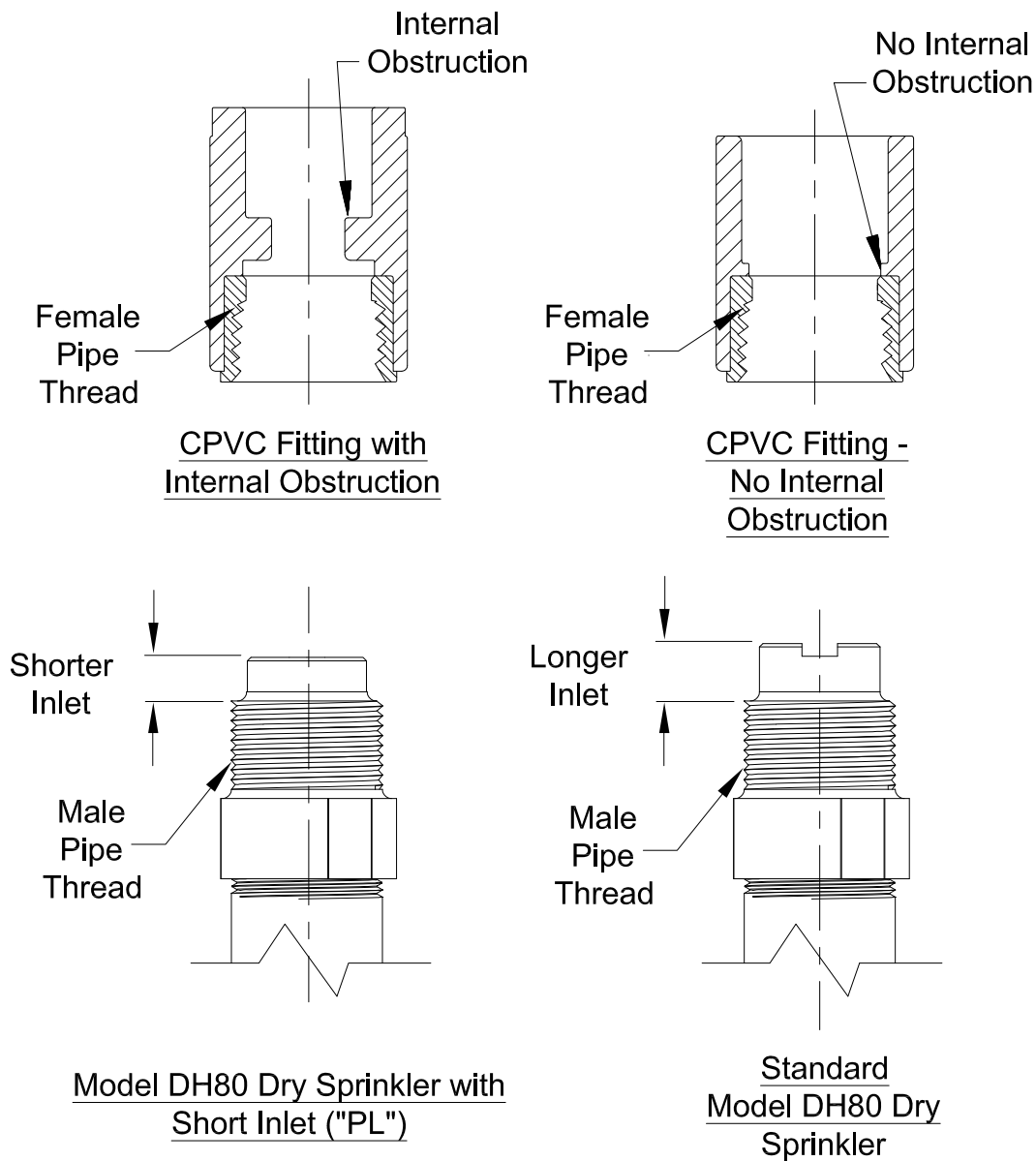
Fig. 8

# **\*CAUTION\***

THE MODEL DH80 DRY SPRINKLER MAY BE INSTALLED IN THE SIDE OUTLET OF A LISTED CPVC TEE, ONLY UPON VERIFICATION THAT THE FITTING DOES NOT INTERFERE WITH THE SPRINKLER'S INLET. Do not install Model DH80 Dry sprinklers with standard inlets into CPVC fittings that have an internal obstruction; this will damage the sprinkler, the fitting, or both.

A short inlet ("PL") version of the Model DH80 Dry sprinkler is available that may or may not be compatible with fittings having internal obstructions in existing installations. Sprinkler with the short inlet ("PL") should only be installed in CPVC fittings of wet-pipe systems.

In all cases, verify sprinkler and fitting dimensions prior to installation to avoid interference.



**BE SURE TO ORDER THE CORRECT SPRINKLERS FOR YOUR APPLICATION**

055FG10

Fig. 9

## Ordering Information

### Specify:

1. Sprinkler: Model DH80 Dry
2. Escutcheon/Cover Plate Model: [Standard escutcheon][Model HB extended escutcheon][Model FP recessed escutcheon][Model SWC cover plate]
3. Sprinkler Temperature Rating: [155°F (68°C)][175°F (79°C)][200°F (93°C)]
4. Sprinkler threads: [1" NPT][ISO7-1R1]
5. Sprinkler inlet: [Standard][Short "PL" - wet-pipe installation only]
6. Sprinkler/Escutcheon Finish: See Finishes table
7. Cover Plate Finish (where applicable): See Finishes table
8. Length: "A" Dimension (face of tee to finished face of wall in 1/4" (6 mm) increments up to a maximum of 36" (900 mm)- See Fig. 4-7)

**Note:** The "A" dimension is based on a nominally gauged pipe thread "make-up" of 0.600" (15 mm) per ANSI B2.1 (approx. 7-1/2 threads).

## Installation Wrench

Model XLO2 Sprinkler Wrench (Recessed & Concealed)

Model F3R Sprinkler Wrench

**Note:** A pipe wrench may also be used to install a dry sprinkler provided that it only engages the steel outer tube of the assembly (item #08 on fig 11). Keep in mind that a pipe wrench will incorporate a large amount of torque into the final assembly. This torque will have to be matched or exceeded upon the sprinkler removal at a later date.

## Finishes

Standard Finishes				
Sprinkler	Standard Escutcheon	HB Escutcheon	FP Recessed Escutcheon	Cover Plate
White Polyester*	White Polyester	White Paint	White Paint	White Paint
Chrome	Chrome	Chrome	Chrome	
Bronze	Brass	--	--	

Standard Finishes				
Sprinkler	Standard Escutcheon	HB Escutcheon	FP Recessed Escutcheon	Cover Plate
Black Polyester*	Black Polyester	Black Paint	Black Polyester	Custom Color Paint, Black Plated, Chrome, Brass, Bright Brass
Custom Color Polyester	Custom Color Polyester	Custom Color Paint	Customer Color Polyester	
Black Plated	Black Plated	--	Black Plated	
Electroless Nickel PTFE (ENT)*	Type 316 Stainless Steel	Type 316 Stainless Steel	--	
Chrome Dull	Chrome Dull	--	Chrome Dull	

**\*Note:** cULus Listed as a Corrosion Resistant Sprinkler, except for concealed version.

**Note:** Paint or any other coating applied over the factory finish will void all approvals and warranties.

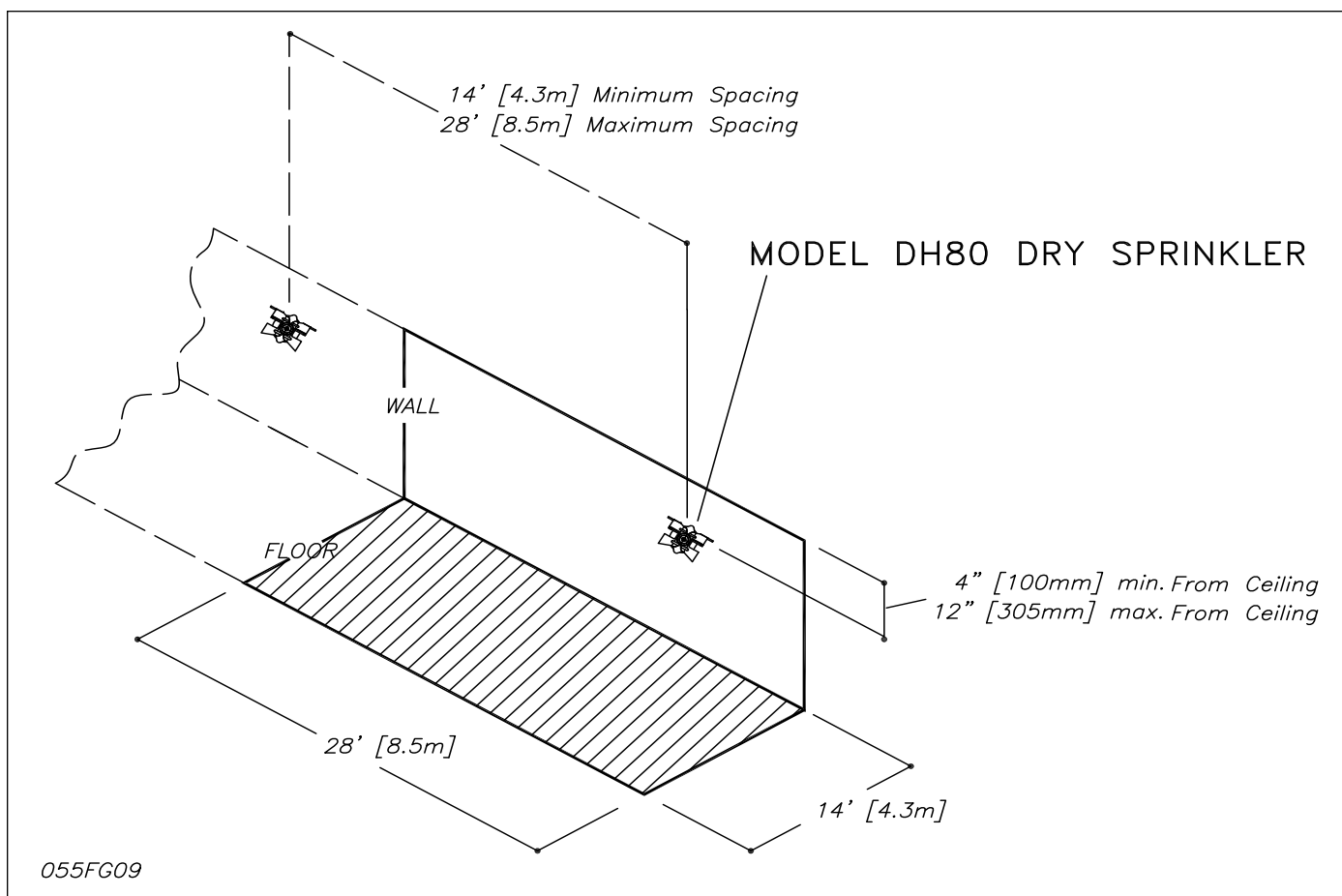
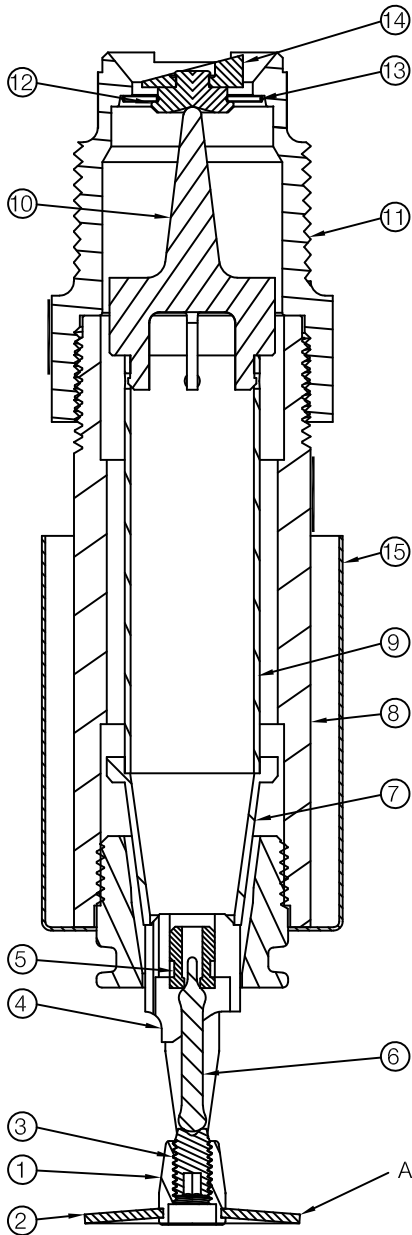


Fig. 10



# MATERIAL SPECIFICATIONS



ITEM #	DESCRIPTION	MATERIAL SPECIFICATION
1	FRAME	BRASS PER UNS C83600
2	DEFLECTOR	BRONZE PER UNS C51000
3	LOAD SCREW	BRASS PER UNS C22000
4	SEAT ADAPTOR	BRASS ALLOY PER UNS C36000
5	BULB INSERT	COPPER ALLOY PER UNS C31400
6	GLASS BULB	GLASS W/GLYCERIN SOLUTION
7	ORIFICE ADAPTOR	BRASS ALLOY PER UNS C36000
8	OUTER TUBE	GALVANIZED STEEL
9	INNER TUBE	BRASS ALLOY PER UNS C23000
10	YOKE	BRASS ALLOY PER UNS C38000
11	INLET	BRASS ALLOY PER UNS C35330
12	CAP	BRASS ALLOY PER UNS C54400
13	SPRING WASHER/SEAL	PTFE COATED BERYLLIUM NICKEL
14	FLIP DISK	BRASS ALLOY PER UNS C54400
15	CAN/ESCUTCHEON	PAINTED OR PLATED MILD STEEL, EXCEPT FOR TYPE 316 STAINLESS STEEL FOR SPRINKLERS WITH ENT FINISH (OTHER THAN FP RECESSED)

(PIPE WRENCH MAY ONLY BE USED ON OUTER STEEL PIPE OF SPRINKLER)

COMDRYDET13

Fig. 11

The equipment presented in this bulletin is to be installed in accordance with the latest published Standards of the National Fire Protection Association, Factory Mutual Research Corporation, or other similar organizations and also with the provisions of governmental codes or ordinances whenever applicable.

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