RAPID RESPONSE Series LFII Residential Sprinklers 5.8 K-factor Pendent and Recessed Pendent Wet Pipe Systems

General Description

The TYCO RAPID RESPONSE Series LFII Residential Pendent and Recessed Pendent Sprinklers (TY3934) are decorative, fast response, frangible bulb sprinklers designed for use in residential occupancies such as homes, apartments, dormitories, and hotels. When aesthetics and optimized flow characteristics are the major consideration, the Series LFII Residential Sprinklers (TY3934) should be the first choice.

The Series LFII Residential Sprinklers are intended for use in the following scenarios:

- wet pipe residential sprinkler systems for one- and two-family dwellings and mobile homes per NFPA 13D
- wet pipe residential sprinkler systems for residential occupancies up to and including four stories in height per NFPA 13R
- wet pipe sprinkler systems for the residential portions of any occupancy per NFPA 13

The recessed version of the Series LFII Residential Sprinklers is intended for use in areas with finished ceilings. It employs a two-piece Style 20 Recessed Escutcheon. The Recessed Escutcheon provides 1/4 in. (6,4 mm) of recessed adjustment or up to 1/2 in. (12,7 mm) of total adjustment from the flush ceiling position. The adjustment provided by the Recessed Escutcheon reduces the accuracy to which the pipe drops to the sprinklers must be cut.

The Series LFII Residential Sprinklers have been designed with heat sensitivity and water distribution characteristics proven to help in the control of residential fires and to improve the chance for occupants to escape or be evacuated.

Corrosion-resistant coatings, where applicable, are utilized to extend the life of copper alloy sprinklers beyond that which would otherwise be obtained when exposed to corrosive atmospheres. Although corrosion-resistant coated sprinklers have passed the standard corrosion tests of the applicable Approval agencies, the testing is not representative of all possible corrosive atmospheres. Consequently, it is recommended that the end user be consulted with respect to the suitability of these coatings for any given corrosive environment. The effects of ambient temperature, concentration of chemicals, and gas/chemical velocity should be considered, as a minimum, along with the corrosive nature of the chemical to which the sprinklers will be exposed.

NOTICE

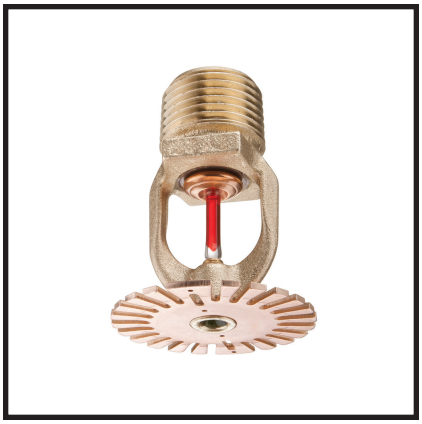
The Series LFII Residential Pendent and Recessed Pendent Sprinklers (TY3934) described herein must be installed and maintained in compliance with this document and the applicable standards of the NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), in addition to the standards of any authorities having jurisdiction. 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.

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.



Sprinkler Identification Number (SIN)

TY3934

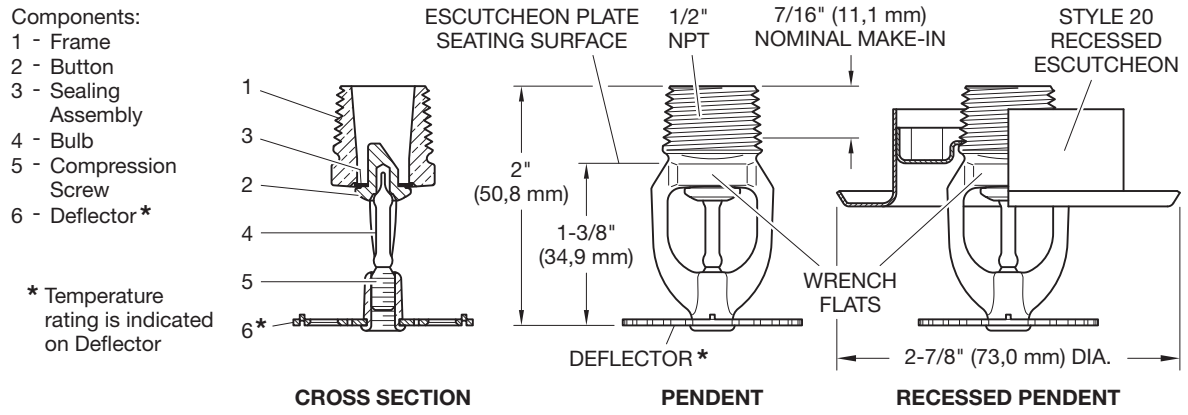


FIGURE 1
RAPID RESPONSE SERIES LFII RESIDENTIAL PENDENT AND RECESSED PENDENT SPRINKLERS (TY3934)

Technical Data

Approvals
UL and C-UL Listed

Certified to all requirements of NSF/ANSI 61

Note: *Sprinklers with a polyester finish are UL Listed as corrosion-resistant sprinklers.*

Discharge Coefficient
K = 5.8 GPM/psi½ (83,5 LPM/bar½)

Temperature Rating
155°F (68°C) or 175°F (79°C)

Finishes
Natural Brass, Pure White Polyester Coated, Signal White Polyester Coated, Jet Black Polyester Coated, or Chrome Plated

Physical Characteristics

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

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 flow water.

Design Criteria

The TYCO RAPID RESPONSE Series LFII Residential Pendent and Recessed Pendent Sprinklers (TY3934) are to be installed in accordance with this section.

Residential Sprinkler Design Guide
When conditions exist that are outside the scope of the provided criteria, refer to the Residential Sprinkler Design Guide TFP490 for the manufacturer's recommendations that may be acceptable to the local authority having jurisdiction.

Ceiling Types
Smooth flat horizontal, or beamed, or sloped, in accordance with the 2013 Edition of NFPA 13D, 13R, or 13 as applicable.

Hydraulic Design (NFPA 13D and 13R)
For systems designed to NFPA 13D or NFPA 13R, the minimum required sprinkler flow rates are given in Table A as a function of temperature rating and the maximum allowable coverage areas. The sprinkler flow rate is the minimum required discharge from each of the total number of design sprinklers as specified in NFPA 13D or NFPA 13R. The number of design sprinklers specified in NFPA 13D and 13R for wet pipe systems is to be applied when designing dry pipe systems.

Hydraulic Design (NFPA 13)
For systems designed to NFPA 13, the number of design sprinklers is to be the four most hydraulically demanding sprinklers. The minimum required discharge from each of the four sprinklers is to be the greater of the following:

- The flow rates given in Table A as a function of temperature rating and the maximum allowable coverage area.
- A minimum discharge of 0.1 gpm/ft^2 over the design area comprised of the four most hydraulically demanding sprinklers for actual coverage areas protected by the four sprinklers.

Obstruction to Water Distribution
Sprinklers are to be located in accordance with the obstruction rules of NFPA 13D, 13R, and 13 as applicable for residential sprinklers as well as with the obstruction criteria described within the Technical Data Sheet TFP490.

Operational Sensitivity
Sprinklers are to be installed with a deflector-to-ceiling distance of 1 in. to 4 in. below smooth ceilings.

For Beamed Ceiling conditions as allowed by NFPA, the maximum deflector distance below the bottom of a beam is 1-3/4 in. Refer to the NFPA Standards for allowed beam configurations.

Sprinkler Spacing
The minimum spacing between sprinklers is 8 ft (2,4 m). The maximum spacing between sprinklers cannot exceed the length of the coverage area (Table A) being hydraulically calculated (for example, maximum 12 ft for a 12 ft x 12 ft coverage area, or 20 ft for a 20 ft x 20 ft coverage area).

Max. Coverage Area [a] ft x ft (m x m)	WET PIPE SYSTEM Minimum Flow and Residual Pressure[b, c]				Deflector to Ceiling	Installation Type	Minimum Spacing ft (m)
	Ordinary Temp. Rating 155°F (68°C)		Intermediate Temp. Rating 175°F (79°C)				
	Flow gpm (lpm)	Pressure psi (bar)	Flow gpm (lpm)	Pressure psi (bar)			
12 x 12 (3,7 x 3,7)	16 (60,6)	7.6 (0,52)	16 (60,6)	7.6 (0,52)	Smooth Ceilings 1 in. to 4 in. Beamed Ceilings per NFPA 13D or 13R 1 in. to 1-3/4 in. below bottom of beam.	Recessed using Style 20 Escutcheon or non-recessed per NFPA 13D, 13R, or 13	8 (2,4)
14 x 14 (4,3 x 4,3)	16 (60,6)	7.6 (0,52)	16 (60,6)	7.6 (0,52)			
16 x 16 (4,9 x 4,9)	16 (60,6)	7.6 (0,52)	16 (60,6)	7.6 (0,52)			
18 x 18 (5,5 x 5,5)	18 (68,1)	9.6 (0,66)	18 (68,1)	9.6 (0,66)			
20 x 20 (6,1 x 6,1)	20 (75,7)	11.9 (0,82)	20 (75,7)	11.9 (0,82)			

Notes:

a. For coverage area dimensions less than or between those indicated, use the minimum required flow for the next highest coverage area for which hydraulic design criteria are stated.

b. Requirement is based on minimum flow in GPM (LPM) from each sprinkler. The associated residual pressures are calculated using the nominal K-factor. See Hydraulic Design under the Design Criteria section.

c. For NFPA 13 residential applications, the greater of 0.1 gpm/ft^2 over the design area or the flow in accordance with the criteria in this table must be used.

TABLE A
WET PIPE SYSTEM
SERIES LFII RESIDENTIAL PENDENT AND RECESSED PENDENT SPRINKLERS (TY3934)
NFPA 13D, 13R, AND 13 HYDRAULIC DESIGN CRITERIA

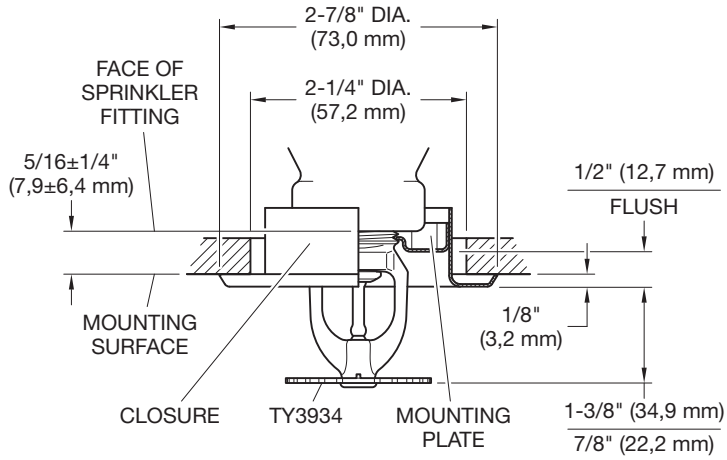


FIGURE 2
STYLE 20 RECESSED ESCUTCHEON FOR USE WITH THE RAPID RESPONSE SERIES LFII RESIDENTIAL PENDENT SPRINKLER (TY3934)

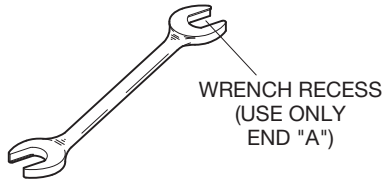


FIGURE 3
W-TYPE 6
SPRINKLER WRENCH

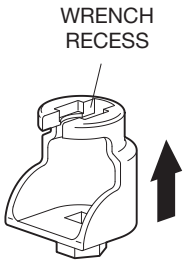


FIGURE 4
W-TYPE 7 RECESSED
SPRINKLER WRENCH

Installation

The TYCO RAPID RESPONSE Series LFII Residential Pendent and Recessed Pendent Sprinklers (TY3934) must be installed in accordance with this section.

General Instructions

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 in. (1,6 mm).

A leak-tight 1/2 in. NPT sprinkler joint should be obtained by applying a minimum-to-maximum torque of 7 to 14 lb-ft (9,5 to 19,0 N·m). Higher levels of torque can 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. Re-adjust the position of the sprinkler fitting to suit.

Series LFII Residential Pendent Sprinkler Installation
The Series LFII Residential Pendent Sprinklers must be installed in accordance with the following instructions.

Step 1. Install pendent sprinklers in the pendent position with the deflector parallel to the ceiling.

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 6 Sprinkler Wrench (Figure 3). With reference to Figure 1, apply the W-Type 6 Sprinkler Wrench to the wrench flats.

Series LFII Residential Recessed Pendent Sprinkler Installation
The Series LFII Residential Recessed Pendent Sprinklers must be installed in accordance with the following instructions.

Step A. Install recessed pendent sprinklers in the pendent position with the deflector parallel to the ceiling.

Step B. After installing the Style 20 Mounting Plate over the sprinkler threads and with pipe thread sealant applied to the pipe threads, hand-tighten the sprinkler into the sprinkler fitting.

Step C. Tighten the sprinkler into the sprinkler fitting using only the W-Type 7 Recessed Sprinkler Wrench (Figure 4). With reference to Figure 1, apply the W-Type 7 Recessed Sprinkler Wrench to the sprinkler wrench flats.

Step D. After the ceiling has been installed or the finish coat has been applied, slide on the Style 20 Closure over the Series LFII Residential Sprinkler and push the Closure over the Mounting Plate until its flange comes in contact with the ceiling.

Care and Maintenance

The TYCO RAPID RESPONSE Series LFII Residential Pendent and Recessed Pendent Sprinklers (TY3934) 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, permission to shut down the affected fire protection system must be obtained from the proper authorities and notify all personnel who may be affected by this action.

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

The owner must assure that the sprinklers are not used for hanging any objects and that the sprinklers are only cleaned by means of gently dusting with a feather duster; otherwise, non-operation in the event of a fire or inadvertent operation may result.

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 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, for example, NFPA 25, in addition to the standards of any authorities having jurisdiction. Contact the installing contractor or product manufacturer regarding 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.

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 Assembly
Specify: Series LFII (TY3934), K = 5.8, Residential Pendent Sprinkler, (specify) temperature rating, (specify) finish, P/N (specify):

155°F (68°C)
Natural Brass 51-058-1-155
Pure White (RAL 9010)
Polyester[1, 2] 51-058-3-155
Signal White (RAL 9003)
Polyester[1] 51-058-4-155
Jet Black (RAL 9005)
Polyester[1] 51-058-5-155
Chrome Plated 51-058-9-155

175°F (79°C)
Natural Brass 51-058-1-175
Pure White (RAL 9010)
Polyester[1, 2] 51-058-3-175
Signal White (RAL 9003)
Polyester[1] 51-058-4-175
Jet Black (RAL 9005)
Polyester[1] 51-058-5-175
Chrome Plated 51-058-9-175

1. UL Listed as corrosion-resistant.
2. Eastern Hemisphere sales only.

Recessed Escutcheon
Specify: Style 20 Recessed Escutcheon with (specify*) finish, P/N (specify*)

*Refer to Technical Data Sheet TFP770

Sprinkler Wrench
Specify: W-Type 6 Sprinkler Wrench, P/N 56-000-6-387

Specify: W-Type 7 Sprinkler Wrench, P/N 56-850-4-001

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Series DS-1 – 5.6 K-factor, Dry-type Sprinklers Pendent, Upright, and Horizontal Sidewall Standard Response, Standard Coverage

General Description

TYCO Series DS-1 5.6K Pendent, Upright, and Horizontal Sidewall, Standard Response (5 mm bulb), Standard Coverage Dry-type Sprinklers are decorative glass bulb automatic sprinklers typically used where:

- pendent sprinklers are required on dry pipe systems that are exposed to freezing temperatures (for example, sprinkler drops from unheated portions of buildings)
- sprinklers and/or a portion of the connecting piping may be exposed to freezing temperatures (for example, sprinkler drops from wet systems into freezers, or horizontal piping extensions through a wall to protect unheated areas of a building such as loading docks, overhangs, and building exteriors)
- sprinklers are used on systems that are seasonably drained to avoid freezing (for example, vacation resort areas)

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.

NOTICE

Series DS-1 Dry-type 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 other authorities having jurisdiction. 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.

Series DS-1 Dry-type Sprinklers must only be installed in fittings that meet the requirements of the Design Criteria section.

Sprinkler Identification Numbers (SINs)

TY3255 – Pendent
TY3155 – Upright
TY3355 – Horizontal Sidewall

Technical Data

Approvals
UL and C-UL Listed
FM Approved
NYC Approved
- under MEA 352-01-E

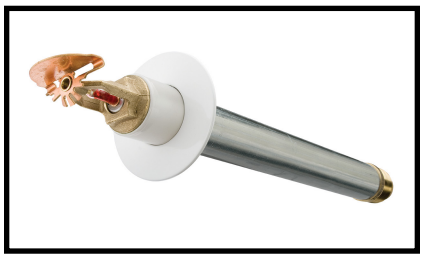
LPCB Approved
- Reference No. 094a/11

CE Certified
- Certificate of Conformity No.2831-CPR-S2015

See Tables A and B for details.

Maximum Working Pressure
175 psi (12,1 bar)

Inlet Thread Connections
1 in. NPT
ISO 7-R 1



Discharge Coefficient
K=5.6 gpm/psi$^{1/2}$ (80,6 lpm/bar$^{1/2}$)

Temperature Ratings
See Tables A and B.

Finishes
Sprinkler: See Table D.
Escutcheon: See Table D.

Physical Characteristics

Inlet	Copper
Plug	Copper
Yoke	Stainless Steel
Casing	Galvanized Carbon Steel
Insert	Bronze
Bulb Seat	Stainless Steel
Bulb (5 mm dia.)	Glass
Compression Screw	Bronze
Deflector	Bronze
Frame	Bronze
Guide Tube	Stainless Steel
Water Tube	Stainless Steel
Spring	Stainless Steel
Sealing Assembly	Beryllium Nickel w/TEFLON
Escutcheon	Carbon Steel or Stainless Steel

SPRINKLER TYPE	ESCUTCHEON TYPE	TEMPERATURE RATING	BULB COLOR CODE	SPRINKLER FINISH		
				NATURAL BRASS	CHROME PLATED	POLYESTER*
PENDENT (TY3255)	STANDARD	135°F (57°C)	Orange	1, 2, 3, 4, 5		1, 2, 4, 5
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
		286°F (141°C)	Blue			
		360°F (182°C)	Mauve	1, 2, 3		1, 2
	RECESSED	135°F (57°C)	Orange	1, 2, 3, 5		1, 2, 5
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
		286°F (141°C)	Blue	1, 2		
		360°F (182°C)	Mauve	N/A		
	DEEP	135°F (57°C)	Orange	1, 2, 3, 4, 5		1, 2, 4, 5
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
		286°F (141°C)	Blue			
		360°F (182°C)	Mauve			
	WITHOUT	135°F (57°C)	Orange			
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
		286°F (141°C)	Blue			
		360°F (182°C)	Mauve	1, 2, 3		1, 2
UPRIGHT (TY3155)	WITHOUT	135°F (57°C)	Orange	1, 2, 3, 4, 5		1, 2, 4, 5
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
		286°F (141°C)	Blue			
		360°F (182°C)	Mauve	1, 2, 3		1, 2

Notes:
1. Listed by Underwriters Laboratories, Inc. (UL), maximum order length of 48 in.
2. Listed by Underwriters Laboratories for use in Canada (C-UL), maximum order length of 48 in.
3. Approved by FM Global (FM Approvals), maximum order length of 48 in.
4. Loss Prevention Certification Board (LPCB) and CE conformity apply to these temperature ratings only
5. Approved by the City of New York under MEA 352-01-E

* Frame and deflector only

N/A – Not Applicable

TABLE A
SERIES DS-1 PENDENT & UPRIGHT DRY-TYPE SPRINKLERS, 5.6K, STANDARD RESPONSE
LABORATORY LISTINGS AND APPROVALS

SPRINKLER TYPE	ESCUTCHEON TYPE	TEMPERATURE RATING	BULB COLOR CODE	SPRINKLER FINISH		
				NATURAL BRASS	CHROME PLATED	POLYESTER***
HSW* (TY3355)	STANDARD	135°F (57°C)	Orange	1**, 2**, 3***, 4, 5		1**, 2**, 4, 5
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
		286°F (141°C)	Blue			
		360°F (182°C)	Mauve			
	DEEP	135°F (57°C)	Orange			
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
		286°F (141°C)	Blue			
		360°F (182°C)	Mauve			
	WITHOUT	135°F (57°C)	Orange			
		155°F (68°C)	Red			
		175°F (79°C)	Yellow			
		200°F (93°C)	Green			
		286°F (141°C)	Blue			
		360°F (182°C)	Mauve	1**, 2**, 5		1**, 2**

Notes:
1. Listed by Underwriters Laboratories, Inc. (UL), maximum order length of 48 in.
2. Listed by Underwriters Laboratories for use in Canada (C-UL), maximum order length of 48 in.
3. Approved by FM Global (FM Approvals), maximum order length of 48 in.
4. Loss Prevention Certification Board (LPCB) and CE conformity apply to these temperature ratings only
5. Approved by the City of New York under MEA 352-01-E

* Horizontal sidewall with top of deflector-to-ceiling distance of 4 to 12 in. (100 to 300 mm)
** Light and ordinary hazard occupancies only
*** Light hazard occupancies only
**** Frame and deflector only

TABLE B
SERIES DS-1 HORIZONTAL SIDEWALL (HSW) DRY-TYPE SPRINKLER, 5.6K, STANDARD RESPONSE LABORATORY LISTINGS AND APPROVALS

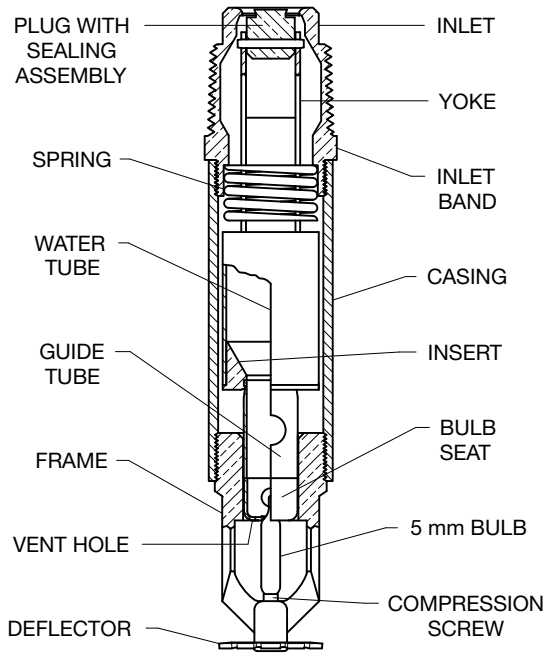


FIGURE 1
SERIES DS-1 DRY-TYPE SPRINKLER, 5.6K, STANDARD RESPONSE ASSEMBLY

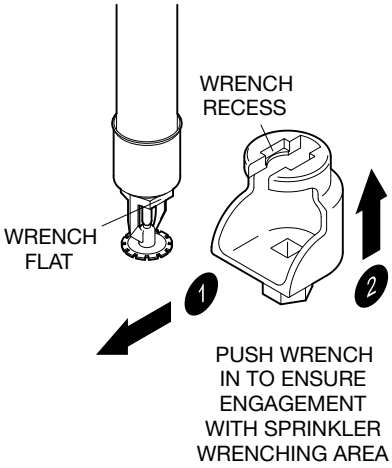


FIGURE 2
W-TYPE 7 WRENCH

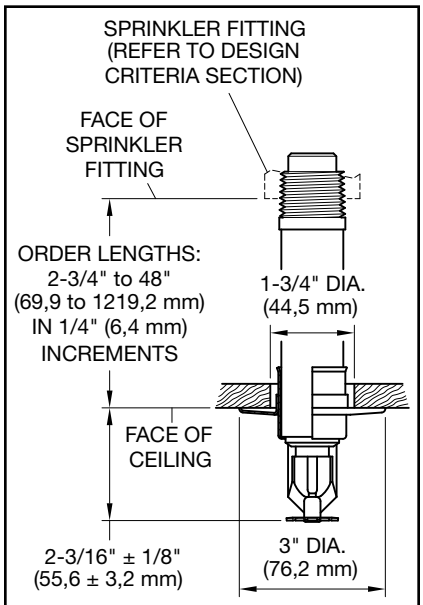


FIGURE 3
PENDENT (TY3255)
WITH STANDARD ESCUTCHEON

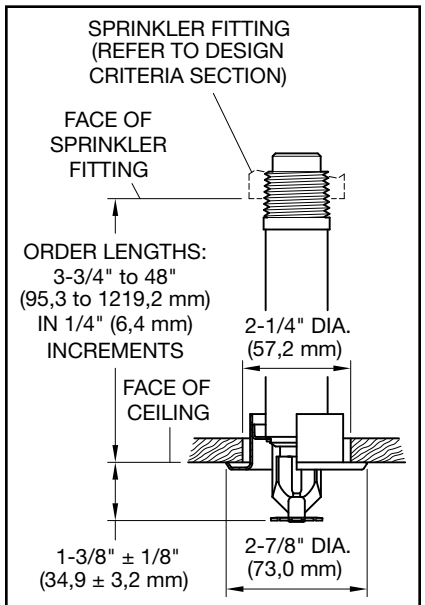


FIGURE 4
PENDENT (TY3255)
WITH STANDARD
RECESSED ESCUTCHEON

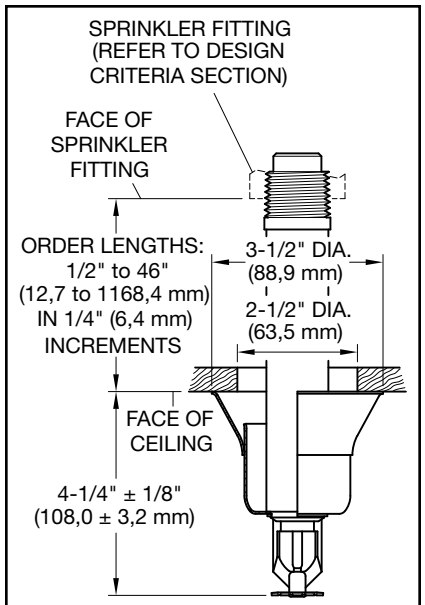


FIGURE 5
PENDENT (TY3255)
WITH DEEP ESCUTCHEON

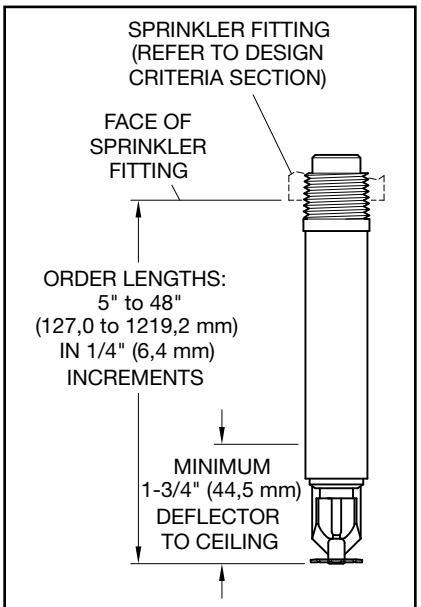


FIGURE 6
PENDENT (TY3255)
WITHOUT ESCUTCHEON

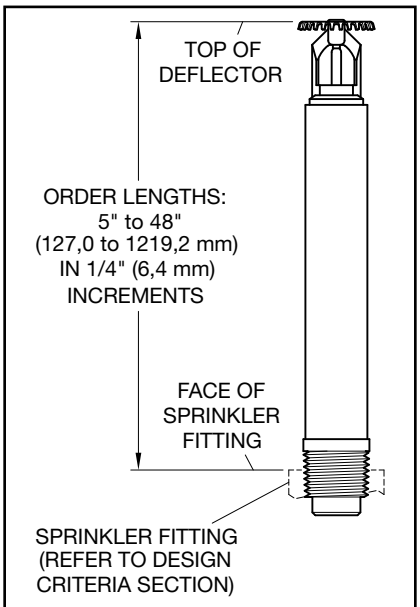


FIGURE 7
UPRIGHT (TY3155)
WITHOUT ESCUTCHEON

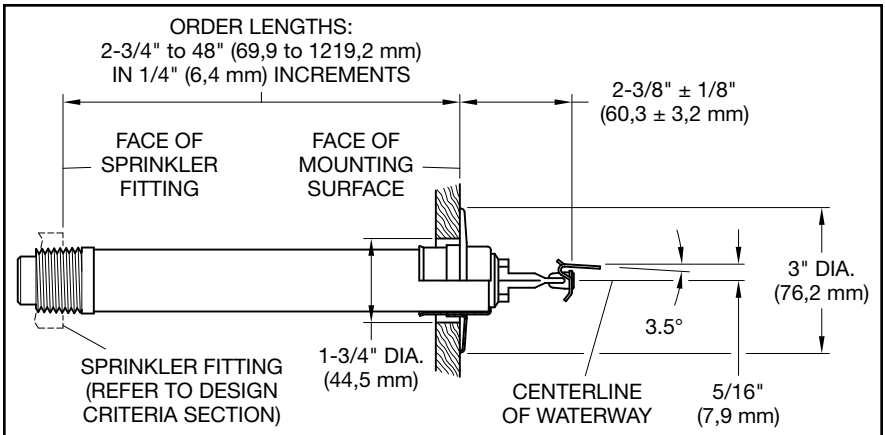


FIGURE 8
HORIZONTAL SIDEWALL (TY3355)
WITH STANDARD ESCUTCHEON

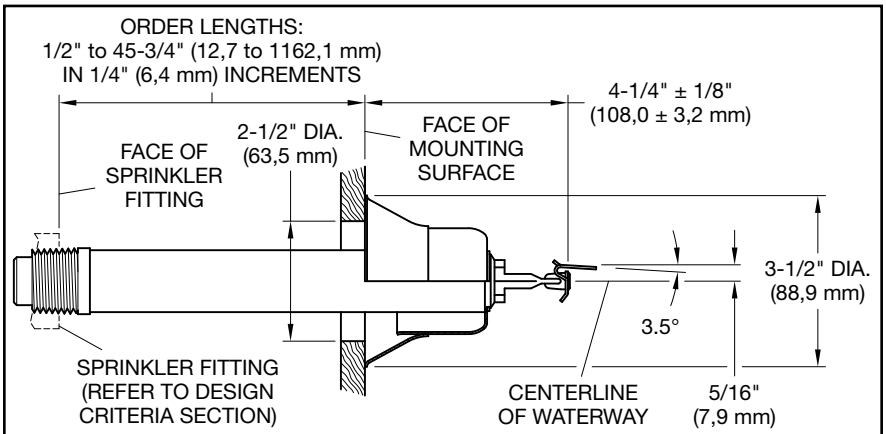


FIGURE 9
HORIZONTAL SIDEWALL (TY3355)
WITH DEEP ESCUTCHEON

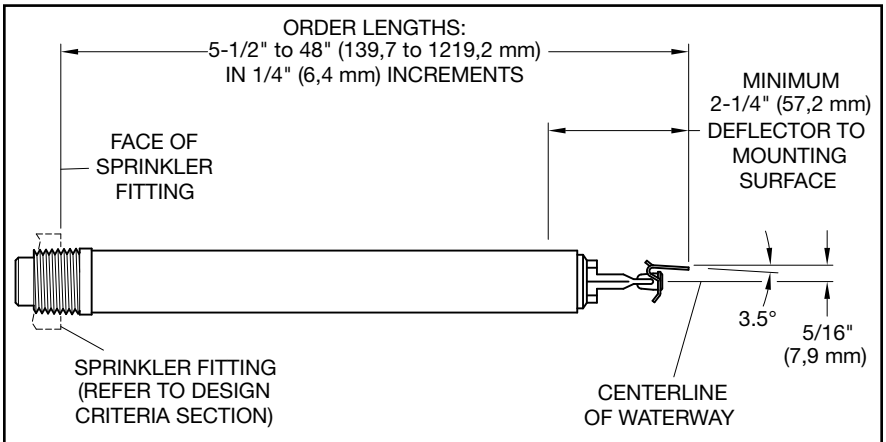


FIGURE 10
HORIZONTAL SIDEWALL (TY3355)
WITHOUT ESCUTCHEON

Operation

When TYCO Series DS-1 5.6K Pendent, Upright, and Horizontal Sidewall, Standard Response, Standard Coverage Dry-type Sprinklers are in service, water is prevented from entering the assembly by the Plug with Sealing Assembly (see Figure 1) in the Inlet of the sprinkler.

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, 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 with Sealing Assembly from the Inlet, allowing the sprinkler to activate and flow water.

Design Criteria

TYCO Series DS-1 5.6K Pendent, Upright, and Horizontal Sidewall, Standard Response, Standard Coverage Dry-type 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 (for example, UL Listing is based on NFPA 13 requirements). For more information on LPCB Approval, contact Johnson Controls at the following office:

Kopersteden 1
7547 TJ Enschede
The Netherlands
Tel: +31-(0)53-428-4444
Fax: +31-(0)53-428-3377

Sprinkler Fittings

Install 1 in. NPT Series DS-1 Dry-type Sprinklers in the 1 in. NPT outlet or run of the following fittings:

- malleable or ductile iron threaded tee fittings that meet the dimensional requirements of ANSI B16.3 (Class 150)
- cast iron threaded tee fittings that meet the dimensional requirements of ANSI B16.4 (Class 125)

Do not install Series DS-1 Dry-type Sprinklers into elbow fittings. The Inlet of the sprinkler can contact the interior of the elbow.

The unused outlet of the threaded tee is plugged as shown in Figure 12.

Ambient Temperature Exposed to Discharge End of Sprinkler	Temperatures for Heated Area[1]		
	40°F (4°C)	50°F (10°C)	60°F (16°C)
	Minimum Exposed Barrel Length[2], 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 (305)	3 (75)	0
-10°F (-23°C)	14 (355)	4 (100)	1 (25)
-20°F (-29°C)	14 (355)	6 (150)	3 (75)
-30°F (-34°C)	16 (405)	8 (200)	4 (100)
-40°F (-40°C)	18 (455)	8 (200)	4 (100)
-50°F (-46°C)	20 (510)	10 (255)	6 (150)
-60°F (-51°C)	20 (510)	10 (255)	6 (150)

Notes:
1. For protected area temperatures that occur between values listed above, use the next cooler temperature.
2. These lengths are inclusive of wind velocities up to 30 mph (18,6 kph).

TABLE C
EXPOSED SPRINKLER BARRELS IN WET PIPE SYSTEMS
MINIMUM RECOMMENDED LENGTHS

You can also install Series DS-1 Dry-type Sprinklers in the 1 in. NPT outlet of a GRINNELL Figure 730 Mechanical Tee and GRINNELL G-FIRE Figure 522; however, the use of the Figure 730 Tee and Figure 522 for this arrangement is limited to wet pipe systems.

The configuration shown in Figure 13 is only applicable for wet pipe systems where the sprinkler fitting and water-filled pipe above the sprinkler fitting are not subject to freezing and where the length of the dry-type sprinkler has the minimum exposure length depicted in Figure 11. See the Exposure Length section.

For wet pipe system installations of 1 in. NPT Series DS-1 Dry-Type Sprinklers connected to CPVC piping, use only the following TYCO CPVC fittings:

- 1 in. x 1 in. NPT Female Adapter (P/N 80145)
- 1 in. x 1 in. x 1 in. NPT Sprinkler Head Adapter Tee (P/N 80249)

For dry pipe system installations, use only the side outlet of maximum 2 1/2 in. reducing tee when locating Series DS-1 Dry-type Sprinklers directly below the branchline; otherwise, use the configuration shown in Figure 12 to assure complete water drainage from above Series DS-1 Dry-type Sprinklers and the branchline. Failure to do so may result in pipe freezing and water damage.

NOTICE

Do not install Series DS-1 Dry-type Sprinklers into any other type fitting. Failure to use the appropriate fitting may result in one of the following:

- *failure of the sprinkler to operate properly due to formation of ice over the Inlet Plug or binding of the Inlet Plug*
- *insufficient engagement of the Inlet pipe-threads with consequent leakage*

Drainage

In accordance with the minimum requirements of the NATIONAL FIRE PROTECTION ASSOCIATION for dry pipe sprinkler systems, branch, cross, and feed-main piping connected to Dry Sprinklers and subject to freezing temperatures must be pitched for proper drainage.

Exposure Length

When using Dry Sprinklers in wet pipe sprinkler systems to protect areas subject to freezing temperatures, use Table C to determine a sprinkler's appropriate exposed barrel length to prevent water from freezing in the connecting pipes due to conduction. The exposed barrel length measurement must be taken from the face of the sprinkler fitting to the surface of the structure or insulation that is exposed to the heated area. See Figure 11 for an example.

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.

Clearance Space

In accordance with NFPA 13, when connecting an area subject to freezing and an area containing a wet pipe sprinkler system, the clearance space around the sprinkler barrel of dry-type sprinklers must be sealed. Due to temperature differences between two areas, the potential for the formation of condensation in the sprinkler and subsequent ice build-up is increased. If this condensation is not controlled, ice build-up can occur that might damage the dry-type sprinkler and/or prevent proper operation in a fire situation.

Use of the Model DSB-2 Dry Sprinkler Boot, described in technical data sheet TFP591 and shown in Figures 14 and 15, can provide the recommended seal.

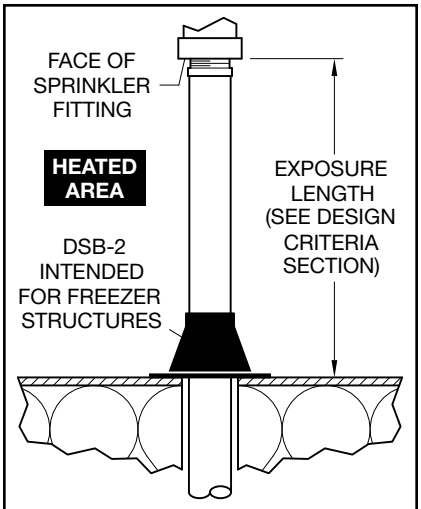


FIGURE 11
EXPOSURE LENGTH

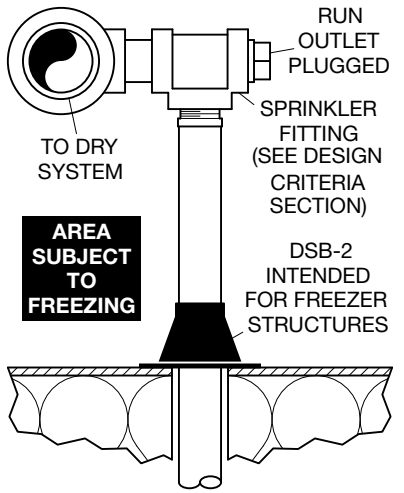


FIGURE 12
SPRINKLER FITTING
UNHEATED AREA

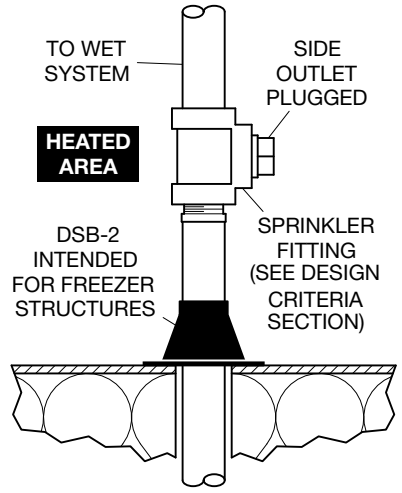


FIGURE 13
SPRINKLER FITTING
HEATED AREA

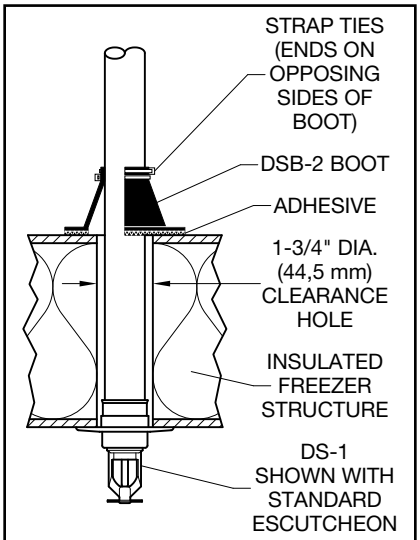


FIGURE 14
MODEL DSB-2 DRY SPRINKLER BOOT WITH PENDENT SERIES DS-1 DRY-TYPE SPRINKLER

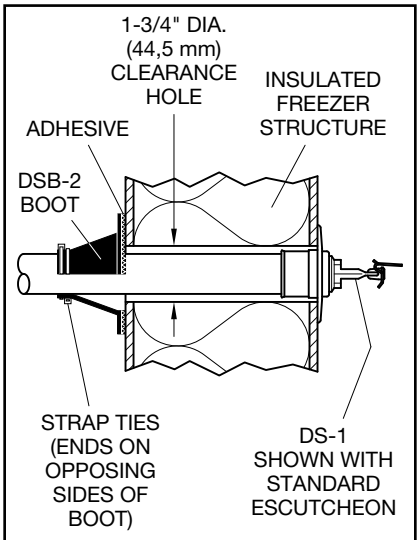


FIGURE 15
MODEL DSB-2 DRY SPRINKLER BOOT WITH SIDEWALL SERIES DS-1 DRY-TYPE SPRINKLER

Installation

TYCO Series DS-1 5.6K Pendent, Upright, and Horizontal Sidewall, Standard Response, Standard Coverage Dry-type Sprinklers must be installed in accordance with this section.

General Instructions
Series DS-1 Dry-type Sprinklers must only be installed in fittings that meet the requirements of the Design Criteria section. See the Design Criteria section for other important requirements regarding piping design and 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 in. (1,6 mm) for the 135°F (57°C) rating to 1/8 in. (3,2 mm) for the 360°F (182°C) rating.

Obtain a leak-tight 1 in. NPT sprinkler joint by applying a minimum-to-maximum torque of 20 to 30 lb-ft (26,8 to 40,2 N·m). 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. Re-adjust the position of the sprinkler fitting to suit.

Notes:
- *Install pendent sprinklers only in the pendent position; install upright sprinklers only in the upright position. The deflector of a pendent or upright sprinkler is to be parallel to the ceiling.*
- *Install horizontal sidewall sprinklers in the horizontal position with their centerline of waterway perpendicular to the back wall and parallel to the ceiling. Ensure the word "TOP" on the Deflector faces the ceiling.*

Step 1. With a non-hardening pipe-thread sealant such as TEFLON applied to the inlet threads, hand-tighten the sprinkler into the sprinkler fitting.

Step 2. Wrench-tighten the sprinkler using either:

- a pipe wrench on the Inlet Band or the Casing, see Figure 1
- the W-Type 7 Sprinkler Wrench on the Wrench Flat, see Figure 2

Apply the wrench recess of the W-Type 7 Sprinkler Wrench to the wrench flat.

Note: *If sprinkler removal becomes necessary, remove the sprinkler using the same wrenching method noted above. Sprinkler removal is easier when a non-hardening sealant was used and torque guidelines were followed. After removal, inspect the sprinkler for damage.*

Step 3. After installing the ceiling or wall and applying a ceiling finish, slide on the outer piece of the escutcheon until it comes in contact with the ceiling/wall. Do not lift the ceiling panel out of its normal position.

When using the Deep Escutcheon, hold the outer piece in contact with the mounting surface (ceiling or wall). Then rotate the inner piece approximately 1/4 turn with respect to the outer piece, to hold the Deep Escutcheon firmly together.

Care and Maintenance

TYCO Series DS-1 5.6K Pendent, Upright, and Horizontal Sidewall, Standard Response, Standard Coverage Dry-type 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 systems from the proper authorities and notify all personnel who may be affected by this action.

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.

A Vent Hole is provided in the Bulb Seat (see Figure 1) to indicate if the Dry Sprinkler is remaining dry. Evidence of leakage from the Vent Hole indicates potential leakage past the Inlet seal and the need to remove the sprinkler to determine the cause of leakage; for example, an improper installation or an ice plug. Close the fire protection system control valve and drain the system 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 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 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, such as NFPA 25, in addition to the standards of any other 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.

P/N* 60 – XXX – X – XXX

		SIN
96	Pendent with Standard Escutcheon (1 in. NPT)	TY3255 (Figure 3)
93	Pendent with Deep Escutcheon (1 in. NPT)	TY3255 (Figure 5)
97	Pendent with Recessed Escutcheon (1 in. NPT)	TY3255 (Figure 4)
92	Pendent without Escutcheon (1 in. NPT)	TY3255 (Figure 6)
94	Sidewall with Standard Escutcheon (1 in. NPT)	TY3355 (Figure 8)
53	Sidewall with Deep Escutcheon (1 in. NPT)	TY3355 (Figure 9)
54	Sidewall without Escutcheon (1 in. NPT)	TY3355 (Figure 10)
98	Upright without Escutcheon (1 in. NPT)	TY3155 (Figure 7)

Notes:
1. Escutcheon Finish applies to sprinklers provided with escutcheons.
2. 360°F (182°C) temperature rating applies to non-recessed sprinkler assemblies.
3. Dry-type Sprinklers are furnished based upon "Order Length" as measured per Figures 3 through 10, as applicable, and for each individual sprinkler where it is to be installed. After the measurement is taken, round it to the nearest 1/4 in. increment.

* Use Prefix "I" for ISO 7-R 1 Connection (for example, I-60-961-1-180).

	SPRINKLER FINISH	ESCUTCHEON FINISH(1)
0	CHROME PLATED	SIGNAL WHITE (RAL9003) POLYESTER
1	NATURAL BRASS	SIGNAL WHITE (RAL9003) POLYESTER
2	NATURAL BRASS	BRASS PLATED
4	SIGNAL WHITE (RAL9003) POLYESTER	SIGNAL WHITE (RAL9003) POLYESTER
8	CHROME PLATED	STAINLESS STEEL
9	CHROME PLATED	CHROME PLATED

	TEMPERATURE RATING(2)
0	135°F (57°C)
1	155°F (68°C)
2	175°F (79°C)
3	200°F (93°C)
4	286°F (141°C)
5	360°F (182°C)

	ORDER LENGTH(3)
055	5.50 in.
082	8.25 in.
180	18.00 in.
187	18.75 in.
372	37.25 in.
480	48.00 in.

TABLE D
SERIES DS-1 DRY-TYPE SPRINKLERS, 5.6K, STANDARD RESPONSE
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, including description and part number (P/N).

Dry-type Sprinklers
When ordering Series DS-1 5.6K Pendent, Upright, and Horizontal Sidewall, Standard Response, Standard Coverage Dry-type Sprinklers, specify the following information:

- SIN:
  TY3255 – Pendent
  TY3155 – Upright
  TY3355 – Horizontal Sidewall
- Order Length:
  Dry-type Sprinklers are furnished based upon Order Length as measured per Figures 3 through 10, as applicable. After the measurement is taken, round it to the nearest 1/4 in. increment.
- Inlet Connections:
  1 in. NPT
  (Standard)

  ISO 7-R 1
  (For information on ISO Inlet Thread Connections, contact your Johnson Controls Sales Representative.)
- Temperature Rating
- Sprinkler Finish
- Escutcheon Type and Finish, as applicable
- P/N from Table D
  Part numbers are for 1 in. NPT standard order sprinklers. Orders for all other sprinkler assemblies must be accompanied by a complete description.

Replacement Escutcheons
Order replacement escutcheons separately.

Note: *Style 10 Recessed Escutcheons are shipped as assemblies comprised of closure ring and mounting plate. The included mounting plate is not used for Dry Type Sprinkler applications, discard accordingly.*

Specify: (specify type), (specify) finish, P/N (specify):

Recessed (Style 10)
Brass Plated 56-701-2-010
Signal White (RAL9003) 56-701-4-010
Chrome Plated 56-701-9-010

Standard (Push-On)
White Color 91-106-0-007
Brass Plated 91-106-2-007
Chrome Plated 91-106-9-007

Deep
Brass Plated 91-107-2-010
White 91-107-4-007
Chrome Plated 91-107-9-007

Sprinkler Wrench
Specify W-Type 7 Sprinkler Wrench, P/N 56-850-4-001

Sprinkler Boot
Specify Model DSB-2 Dry Sprinkler Boot, P/N 63-000-0-002

This part number includes one (1) Boot, two (2) Strap Ties, and 1/3 oz of Adhesive (a sufficient quantity for installing one boot).

1400 Pennbrook Parkway, Lansdale, PA 19446 | Telephone +1-215-362-0700

tyco / Fire & Building Products

Technical Services: Tel: (800) 381-9312 / Fax: (800) 791-5500

rapid response™
HOME FIRE SPRINKLER SYSTEM

BlazeMaster ®
CPVC Fire Sprinkler Pipe & Fittings
Submittal Sheet

General Description

Tyco® CPVC Pipe and Fittings produced by Tyco Fire & Building Products (TFBP) are designed exclusively for use in wet pipe automatic fire sprinkler systems. The Tyco CPVC Pipe and Fittings are produced from BlazeMaster® CPVC compound that is a specially developed thermoplastic compound composed of post chlorinated polyvinyl chloride (CPVC) resin and state of the art additives. Tyco CPVC Pipe and Fittings are easier to install than traditional steel pipe systems, and at the same time, provide superior heat resistance and strength as compared to traditional CPVC and PVC piping materials used in the plumbing trade. Various adapters are available to connect CPVC pipe to metallic piping. All female pipe thread adapters have brass inserts for durability. Grooved adapters connect directly to grooved end valves and metallic pipe, with flexible grooved end couplings.

NOTICE

Tyco® CPVC Pipe and Fittings produced with BlazeMaster® CPVC compound described herein must be installed and maintained in compliance with this document and with the applicable standards of the National Fire Protection Association, in addition to the standards of any authorities having jurisdiction. 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. The installing contractor or sprinkler manufacturer should be contacted with any questions.

Technical Data

Sizes
3/4" to 3"

Maximum Working Pressure
175 psi

Approvals
UL, FM, C-UL, NSF, LPCB, MEA, and the City of Los Angeles. (Refer to Installation Handbook IH-1900 dated June 2008 for exact listing/approval information.)

Manufacture Source
U.S.A.

Material

- Pipe: ASTM F442, SDR 13.5
- Fittings: ASTM F438 (Sch. 40) and ASTM F439 (Sch. 80), ASTM F1970

Color
Orange

Installation

Tyco® CPVC Pipe and Fittings produced by Tyco Fire & Building Products (TFBP) are to be installed in accordance with Installation Handbook IH-1900 dated June 2008.

Care and Maintenance

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 authority having jurisdiction. The installing contractor or product manufacturer should be contacted relative to any questions.

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

NOTICE

Before closing a fire protection system control valve for inspection or maintenance work on the fire protection system that it controls, permission to shut down the affected fire protection system must first be obtained from the proper authorities and all personnel who may be affected by this action must be notified.

After placing a fire protection system in service, notify the proper authorities and advise those responsible for monitoring proprietary and/or central station alarms.

Limited Warranty

Products manufactured by Tyco Fire & Building Products (TFBP) 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 TFBP. No warranty is given for products or components manufactured by companies not affiliated by ownership with TFBP 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 TFBP to be defective shall be either repaired or replaced, at TFBP's sole option. TFBP neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of products or parts of products. TFBP 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 TFBP 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 TFBP was informed about the possibility of such damages, and in no event shall TFBP's 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.

This limited warranty sets forth the exclusive remedy for claims based on failure of or defect in products, materials or components, whether the claim is made in contract, tort, strict liability or any other legal theory.

This warranty will apply to the full extent permitted by law. The invalidity, in whole or part, of any portion of this warranty will not affect the remainder.

tyco / Fire & Building Products

Technical Services: Tel: (800) 381-9312 / Fax: (800) 791-5500

Model 513 (13) Riser Manifold 1-1/2 thru 6 Inch (DN40 thru DN150) For NFPA 13 Sprinkler Systems

General Description

The Figure 513 (13) Riser Manifolds described in this technical data sheet provide the necessary waterflow alarm, pressure gauge, alarm test orifice, drain, and sight glass equipment in a single assembly for use in NFPA 13 sprinkler systems as follows:

NFPA 13*

- 1-1/2 Inch (DN40)
  Male Thread x Female Thread
- 1-1/2 thru 6 Inch (DN40 thru DN150)
  Groove x Groove

*Although the Riser Manifold described in this data sheet is intended for NFPA 13 sprinkler systems, it may be used for NFPA 13D or 13R residential sprinkler systems, where a test orifice of 5.6K (80K) is acceptable.

The variety of sizes and grooved end connections allow cost effective and easy transition to check valves, control valves, and system piping. The Riser Manifolds may be installed in either the horizontal (flow switch on top) or vertical (flow going up) for both single sprinkler rises and floor control in high rises.

WARNING

The Riser Manifolds 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 performance 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 with any questions.

Technical Data

Approvals
The Figure 513 (13) Riser Manifolds with a cover tamper switch for the waterflow alarm switch are UL Listed, ULC Listed, and FM Approved.

The Figure 513 (13) Riser Manifolds without a cover tamper switch for the waterflow alarm switch are UL Listed and FM Approved.

Maximum Working Pressure
175 psi (12,1 bar)

Test Orifice
5.6K (80K)

Assembly
The manifold body of the Figure 513 is ductile iron, whereas the manifold body of the Figure 13 is cast iron. The two assemblies are completely interchangeable in function, application, and end-to-end laying length.

Finish
Red painted.

Installation

The Riser Manifolds may be installed in either the horizontal (flow switch on top) or vertical (flow going up). The inlet of the Riser Manifold may be directly connected to a shut-off control valve.

NOTES

Where applicable pipe thread sealant is to be applied sparingly. Use of a non-hardening pipe thread sealant is recommended.

Never remove any piping component nor correct or modify any piping deficiencies without first depressurizing and draining the system.

Step 1. Install the manifold body with the flow arrow pointing in the downstream position using threaded connections and/or listed mechanical grooved connections, as applicable

Step 2. Connect the drain line, and then close the drain valve.

Step 3. Refer to Figure 3 for wiring guidance. All wiring must be performed in accordance with the Authority Having Jurisdiction and/or the National Electrical Code.

Step 4. Refer to Figure 4 for optional relief valve.

Step 5. Place the system in service by filling the system with water. When filling the system, partially open the control valve to slowly fill the system. *Filling the system slowly will help avoid damaging the waterflow alarm switch.*

After the system is fully pressurized, completely open the control valve.

Step 6. Secure all supply valves open.

NO.	DESCRIPTION	QTY.	P/N
1	1-1/2" Manifold Body,		
	Male x Female NPT	1	N/A
	Groove x Groove	1	N/A
2	Waterflow Alarm Switch:		
	VSR-SF with Paddle, UL/FM	1	971-096-00
	VSR-SF with Paddle and Cover Tamper Switch, ULC/FM	1	976-519-02
3	300 psi/2000 kPa Water Pressure Gauge	1	2341

NOTES:
1. Approximate weight, 11.2 lbs. (5,1 kg).
2. ULC Listed Manifolds are equipped with Cover Tamper Switches installed internal to the Waterflow Alarm Switches.
3. CH: Common Hardware

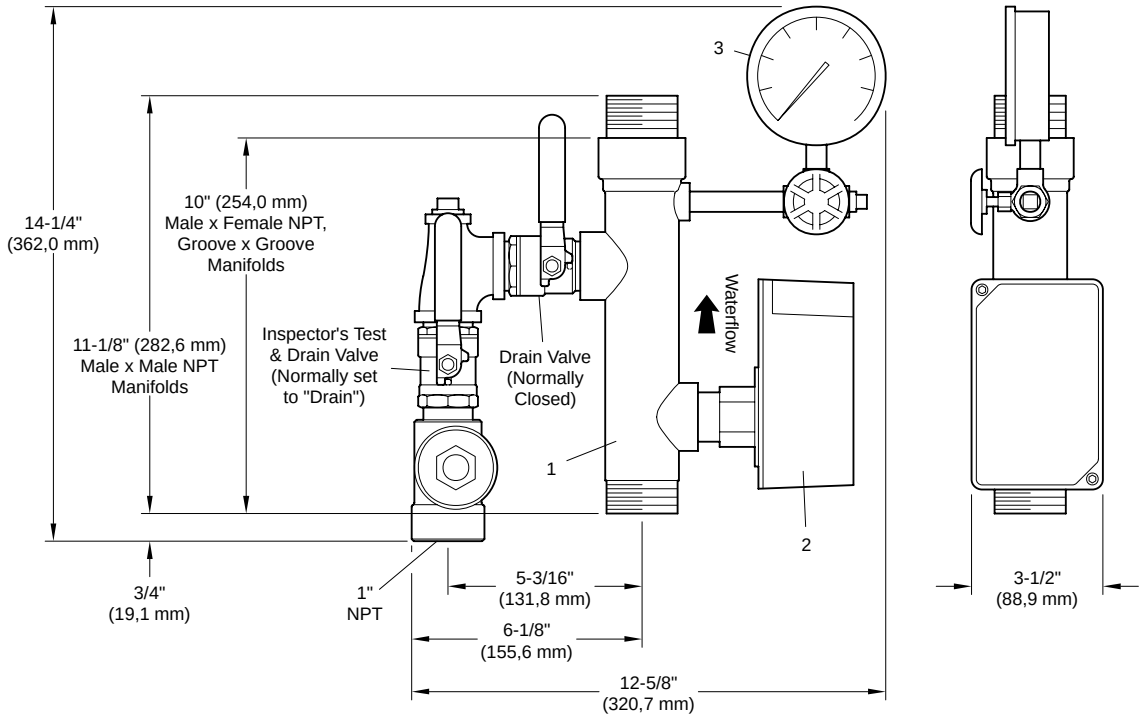


FIGURE 1
1-1/2 INCH (DN40) RISER MANIFOLD ASSEMBLY AND DIMENSIONS

2 INCH (DN50) MANIFOLD

NO.	DESCRIPTION	QTY.	P/N
1	2" Manifold Body, Groove x Groove	1	N/A
2	Waterflow Alarm Switch: VSC with Paddle, UL/FM	1	976-357-01
	VSC with Paddle and Cover Tamper Switch, ULC/FM	1	976-520-01
3	300 psi/2000 kPa Water Pressure Gauge	1	2341

4 INCH (DN100) MANIFOLD

NO.	DESCRIPTION	QTY.	P/N
1	4" Manifold Body, Groove x Groove	1	N/A
2	Waterflow Alarm Switch: VSC with Paddle, UL/FM	1	976-357-04
	VSC with Paddle and Cover Tamper Switch, ULC/FM	1	976-520-04
3	300 psi/2000 kPa Water Pressure Gauge	1	2341

6 INCH (DN150) MANIFOLD

NO.	DESCRIPTION	QTY.	P/N
1	6" Manifold Body, Groove x Groove	1	N/A
2	Waterflow Alarm Switch: VSC with Paddle, UL/FM	1	976-357-05
	VSC with Paddle and Cover Tamper Switch, ULC/FM	1	976-520-05
3	300 psi/2000 kPa Water Pressure Gauge	1	2341

2-1/2 INCH (DN65) MANIFOLD

NO.	DESCRIPTION	QTY.	P/N
1	2-1/2" Manifold Body, Groove x Groove	1	N/A
2	Waterflow Alarm Switch: VSC with Paddle, UL/FM	1	976-357-02
	VSC with Paddle and Cover Tamper Switch, ULC/FM	1	976-520-02
3	300 psi/2000 kPa Water Pressure Gauge	1	2341

Manifold Size	Nominal Installation Dimensions in Inches and (mm) A	B	C	D	E	F	G	Drain Size H	Weight lbs (kg)
2 Inch (DN50)	16-3/4 (425,5)	13 (330,2)	9/16 (14,3)	5-3/8 (136,5)	6-3/8 (161,9)	13-1/16 (331,8)	3-1/2 (88,9)	1" NPT	13.5 (6,1)
2-1/2 Inch (DN65)	17-3/16 (436,6)	13 (330,2)	1 (25,4)	5-3/4 (146,1)	6-7/8 (174,6)	13-3/4 (349,3)	3-1/2 (88,9)	1-1/4" NPT	16.8 (7,6)
3 Inch (DN80)	17-3/16 (436,6)	13 (330,2)	1 (25,4)	6 (152,4)	7-1/8 (181,0)	14-1/4 (362,0)	3-1/2 (88,9)	1-1/4" NPT	18.7 (8,5)
4 Inch (DN100)	20-1/2 (520,7)	13 (330,2)	4-5/16 (109,5)	7-9/16 (192,1)	9-1/16 (230,2)	16-5/8 (422,3)	4-1/2 (114,3)	2" NPT	32.7 (14,8)
6 Inch (DN150)	20-1/2 (520,7)	13 (330,2)	4-5/16 (109,5)	8-1/2 (215,9)	10 (254,0)	18-1/2 (469,9)	6-5/8 (168,3)	2" NPT	41.6 (18,9)

3 INCH (DN80) MANIFOLD

NO.	DESCRIPTION	QTY.	P/N
1	3" Manifold Body, Groove x Groove	1	N/A
2	Waterflow Alarm Switch: VSC with Paddle, UL/FM	1	976-357-03
	VSC with Paddle and Cover Tamper Switch, ULC/FM	1	976-520-03
3	300 psi/2000 kPa Water Pressure Gauge	1	2341

NOTES:

1. ULC Listed Manifolds are equipped with Cover Tamper Switches installed internal to the Waterflow Alarm Switches.
2. CH: Common Hardware

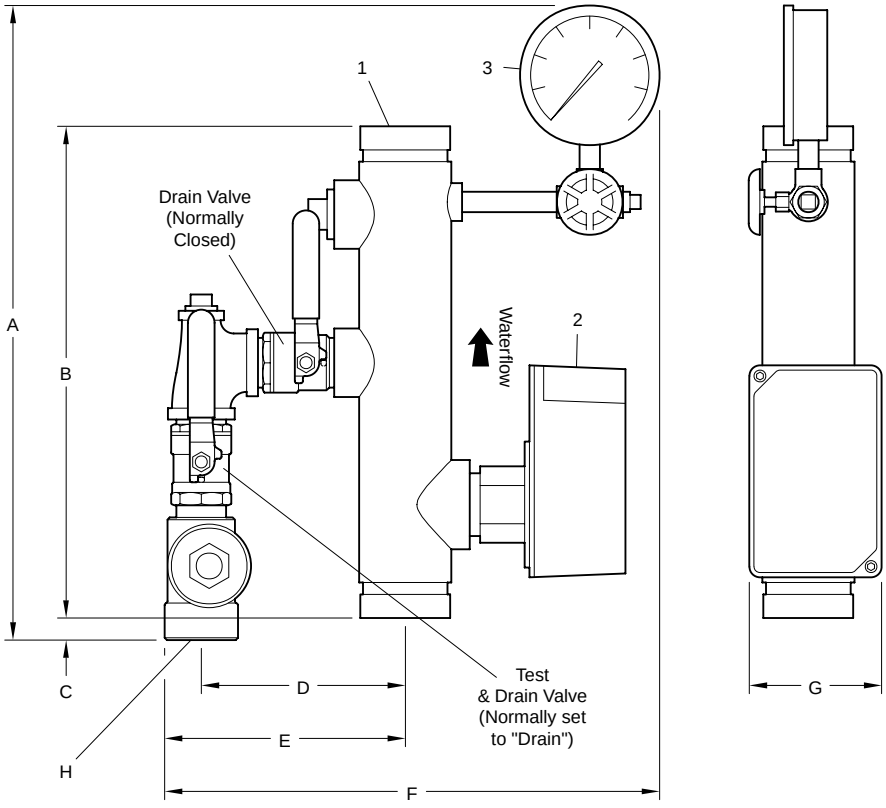
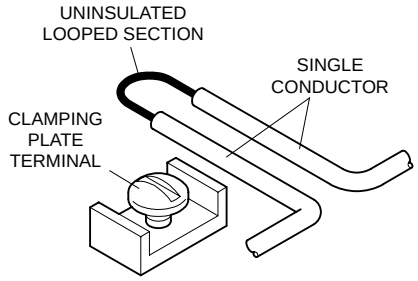


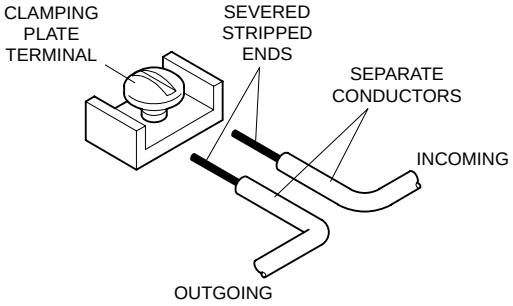
FIGURE 2
2 thru 6 INCH (DN50 thru DN150) RISER MANIFOLD ASSEMBLY AND DIMENSIONS

SWITCH TERMINAL CONNECTIONS



IMPROPER CONNECTION METHOD

CAUTION:
An uninsulated section of a single conductor is not permitted to be looped around the terminal and serve as two separate connections. The wire must be severed to serve as two separate connections, thereby providing supervision of the connection in the event that the wire becomes dislodged from the terminal.

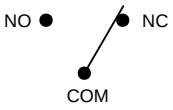


PROPER CONNECTION METHOD

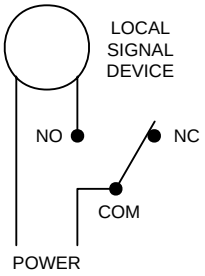
WATERFLOW SWITCH TYPICAL ELECTRICA CONNECTIONS

CONTACTS . . . . . SPDT (Form C)

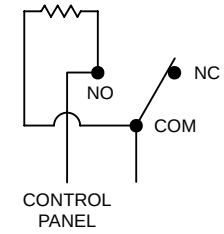
CONTACT RATING . . . . 5A @ 125 VAC
2.5A @ 30 VDC



NO FLOW
CONDITION



NON-SUPERVISED
CIRCUIT



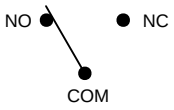
STYLE B/CLASS B
SUPERVISED CIRCUIT
(SEE NOTE)

NOTE:
For supervised circuits, see "Switch Terminal Connections" above. The Waterflow Alarm Switch has two switches, one can be used to operate a central station, proprietary or remove signaling unit, while the other contact is used to operate a local audible or visual annunciator.

COVER TAMPER SWITCH (ULC ASSEMBLIES ONLY)

CONTACTS . . . . . SPDT (Form C)

CONTACT RATING . . . . 3A @ 250 VAC
5A @ 125 VAC
1mA @ 5 VDC min.



CONTACTS SHOWN
WITH COVER IN PLACE

FIGURE 3
WIRING GUIDANCE

NO.	DESCRIPTION	QTY.	P/N
1	3/8" Copper Tubing, 2" (DN50) Manifolds	1	971-124-01
	2-1/2" (DN65) and 3" (DN80) Manifolds	1	971-124-02
	4" (DN100) and 6" (DN150) Manifolds	1	971-124-03

NO.	DESCRIPTION	QTY.	P/N
2	Pressure Relief Valve, 175 psi, Nonadjustable	1	198-066-00
3	90° Compression Fitting Fitting	2	CH
4	1" x 1/2" Reducing Hex Bushing	1	CH

CH: Common Hardware

1-1/2" (DN40) Manifold Only:
To install optional Pressure Relief Trim on a 1-1/2" (DN40) Manifold, a 1/2" NPT outlet must be provided by the installer on the system outlet piping, and a connection back to the manifold drain trim must be fabricated with installer supplied 3/8" copper tubing. Discard unused trim components.

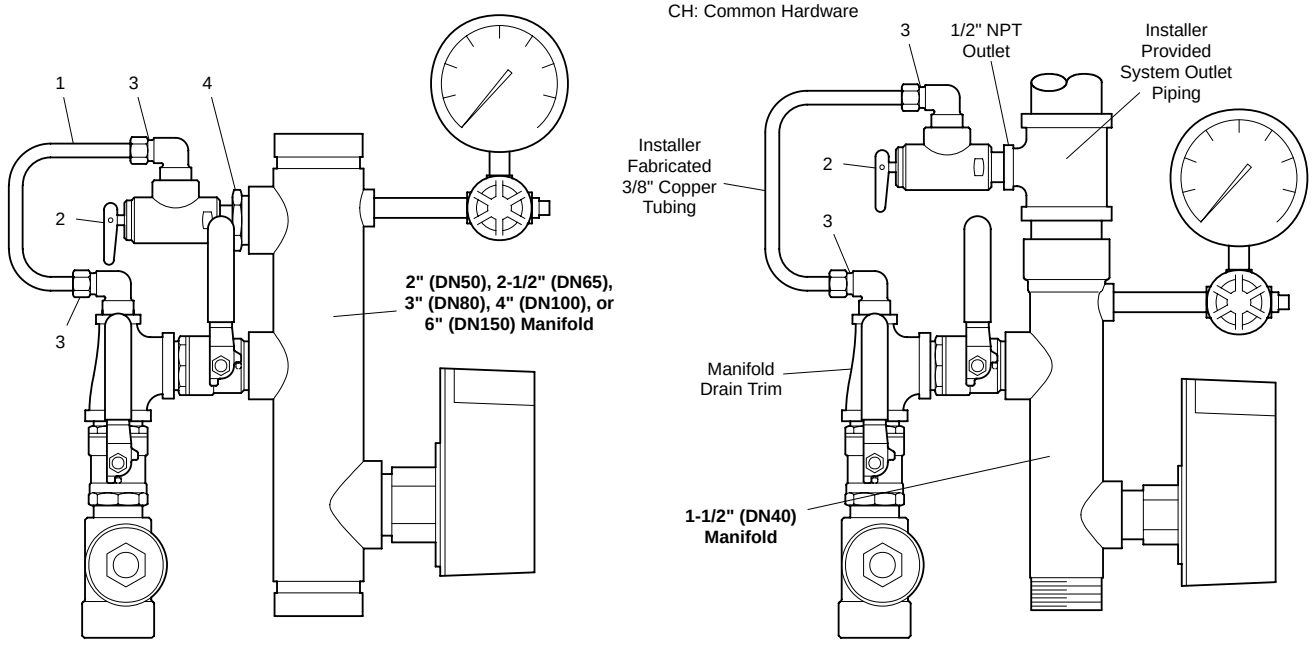


FIGURE 4
OPTIONAL PRESSURE RELIEF VALVE

Care and Maintenance

The following inspection procedure must be performed as indicated, in addition to any specific requirements of the NFPA, and any impairment must be immediately corrected.

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 authority having jurisdiction. The installing contractor or product 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 in accordance with local requirements and/or national codes.

NOTES

No attempt is to be made to repair any Riser Manifold component in the field. Only the pressure gauge, waterflow alarm switch, or relief valve can be replaced. If any other problems are encountered the entire riser manifold must be replaced.

The alarm/flow test procedure will result in operation of the associated alarms. Consequently, notification must be given to the owner and the fire department, central station, or other signal station to which the alarms are connected, and notification must be given to the building occupants.

Before closing a fire protection system control valve for inspection or maintenance work on the fire protection system that it controls, permission to shut down the effected fire protection system must first be obtained from the proper authorities and all personnel who may be affected by this action must be notified.

After placing a fire protection system in service, notify the proper authorities and advise those responsible for monitoring proprietary and/or central station alarms.

Alarm/Flow Test Procedure

Step 1. Place the test & drain Valve in the “test” position.

Step 2. Fully open the drain valve. Make certain that drainage water will not cause any damage or injury.

Step 3. Verify operation of associated alarms.

Step 4. Close the drain valve.

Step 5. Place the test & drain Valve in the “drain” position.

Step 6. Verify that the residual (flowing) pressure indicated by the pressure gauge is no less that originally recorded for the system when it was first installed.

Step 7. Close the drain valve.

Step 8. Verify that the static (not flowing) pressure indicated by the pressure gauge is no less that originally recorded for the system when it was first installed.

Limited Warranty

Products manufactured by Tyco Fire & Building Products (TFBP) 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 TFBP. No warranty is given for products or components manufactured by companies not affiliated by ownership with TFBP 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 TFBP to be defective shall be either repaired or replaced, at TFBP's sole option. TFBP neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of products or parts of products. TFBP 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 TFBP 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 TFBP was informed about the possibility of such damages, and in no event shall TFBP's 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.

This limited warranty sets forth the exclusive remedy for claims based on failure of or defect in products, materials or components, whether the claim is made in contract, tort, strict liability or any other legal theory.

This warranty will apply to the full extent permitted by law. The invalidity, in whole or part, of any portion of this warranty will not affect the remainder.

Ordering Information

Riser Manifold:
Specify; Size (specify), Figure 513, (specify connection type inlet x outlet) Riser Manifold (specify - without or with) a cover tamper switch for the waterflow alarm switch, P/N (specify).

NOTES

Orders for Figure 513 may be filled with a Figure 13. The two assemblies are completely interchangeable in function, application, and end-to-end laying length.

If a ULC Listing is required, the Riser Manifold must be ordered with a cover tamper switch for the waterflow alarm switch.

UL/ULC/FM Assemblies
With Cover Tamper Switch

1-1/2 Inch (DN40)	
MT x FT	P/N 4086
1-1/2 Inch (DN40)	
MT x MT	P/N 4087
2 Inch (DN50)	
G x G	P/N 4090
2-1/2 Inch (DN65)	
G x G	P/N 4091
3 Inch (DN80)	
G x G	P/N 4092
4 Inch (DN100)	
G x G	P/N 4095
6 Inch (DN150)	
G x G	P/N 4096

UL/FM Assemblies
Without Cover Tamper Switch

1-1/2 Inch (DN40)	
MT x FT	P/N 4055
1-1/2 Inch (DN40)	
MT x MT	P/N 4056
2 Inch (DN50)	
G x G	P/N 4060
2-1/2 Inch (DN65)	
G x G	P/N 4061
3 Inch (DN80)	
G x G	P/N 4062
4 Inch (DN100)	
G x G	P/N 4065
6 Inch (DN150)	
G x G	P/N 4066

Optional Pressure Relief Valve:
Specify: Operational Pressure Relief Valve and Trim for use with (specify size) Figure 513 or 13 Series Riser Manifold, P/N (specify).

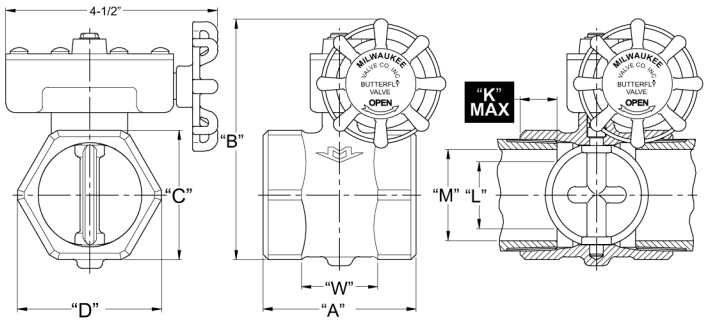
1-1/2" or 2"	P/N 4063
2-1/2" or 3"	P/N 4072
4" or 6"	P/N 4073

Replacement Parts:
Specify: (description) for use with Figure 513 or 13 Riser Manifold, P/N (Ref. Figure 1 or 2, as applicable).

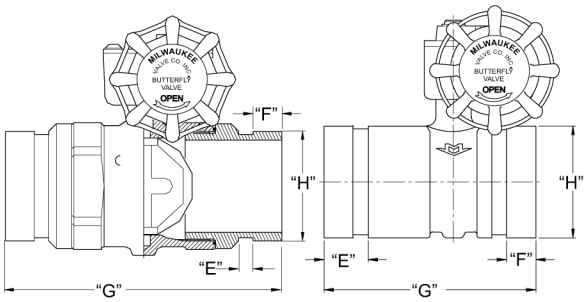
INDOOR/OUTDOOR

butterball® BUTTERFLY VALVES

VALVES LESS SUPERVISORY TAMPER SWITCH ASSEMBLY



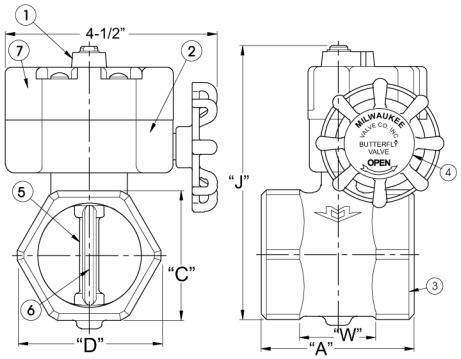
BB-SC100 (Threaded Ends)
Sizes 1", 1-1/4", 1-1/2", 2",2-1/2"



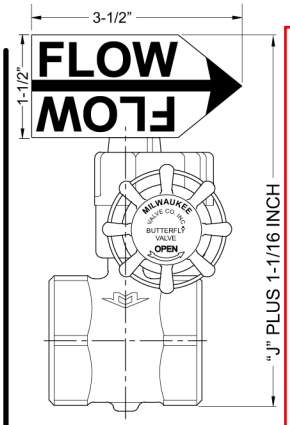
BBVSC100
3 piece with
Grooved Ends
Size 2"

BBVSC100
Uni-body with
Grooved Ends
Size 2-1/2"

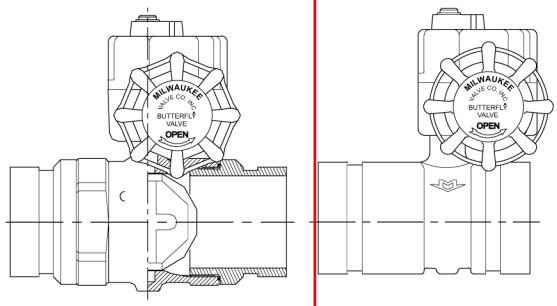
VALVES WITH SUPERVISORY TAMPER SWITCH ASSEMBLY



THREADED ENDS
BB-SCS02



NYC INDICATOR
(Available on both switched and non-switched models.)



BBVSCS02
3 piece with
Grooved Ends
Size 2"

BBVSCS02
Uni-body with
Grooved Ends
Size 2-1/2"

ALL DIMENSIONS-INCHES

Threaded				
SIZE	**1'**	**1-1/4"**	**1-1/2"**	**2"**
A	2-1/8	2-5/8	2-7/8	3-1/4
B	3-15/16	4-9/32	4-1/2	5
C	1-9/16	1-15/16	2-3/16	2-3/4
D	1-23/32	2-7/64	2-3/8	3-1/16
J	4-15/16	5-1/8	5-19/32	6-1/8
K	.66	.73	.73	.79
L	.83	.90	.99	1.41
M-40	1.05	1.38	1.61	2.07
M-80	.96	1.28	1.50	1.94
N-40	2.25	2	2.5	2.25
W	1-1/8	1-1/4	1-13/32	1-11/16

Grooved		
SIZE	**2"**	**2-1/2"**
A	-	4-1/8
B	5	5-13/32
C	2-3/4	3-3/16
D	3-1/16	3-1/2
E	5/8	15/16
F	5/16	5/8
G	6	4-1/2
H	2-3/8	2-7/8
J	6-1/8	6-1/4
K	.79	1.18
L	1.41	1.29
M-40	2.07	2.47
M-80	1.94	2.32
N-40	2.25	10
W	-	1-3/4

M-40 ARE DIMENSIONS USING SCHEDULE 40 PIPE
M-80 ARE DIMENSIONS USING SCHEDULE 80 PIPE
N-40 IS FLOW RESISTANCE EXPRESSEDIN EQUIVALENT LENGTH OF SCHEDULE 40 PIPE
W IS THE WRENCH MAKE-UP LENGTH

MATERIAL LIST

NO.	PART	MATERIAL	SPECIFICATION
1	Indicator	Sintered Iron	F0008P
2	Housing	Bronze	ASTM 584
3	Body	Bronze	ASTM 584
4	Handle	Brass	
5	Disc	Stainless Steel	Type 304
6	Disc Seal	EPDM Elastomer	
7	Switch Housing	Die Cast Aluminum	

TOLCO™ Fig. 22 - Hanger for CPVC Plastic Pipe & IPS Steel Pipe Single Fastener Strap

Size Range: 3/4" (20mm) thru 2" (50mm) CPVC pipe

Material: Pre-Galvanized Steel

Function: Intended to perform as a hanger to support CPVC piping used in automatic fire sprinkler systems. The product acts as a hanger when tab is upward and the fastener screw is in the horizontal position. Fig. 22 can be installed on the top of a beam, but in this situation acts as a guide to the piping which is supported by the beam itself. It is not intended to support CPVC pipe from under a flat horizontal surface, such as a ceiling.

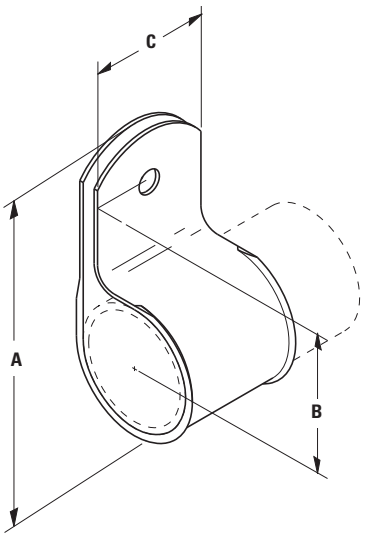
Approvals: Underwriters Laboratories Listed in the USA **(UL)** and Canada **(cUL)** to support fire sprinkler piping. May be installed in wood using fasteners supplied with product, or into minimum 20 gauge (0.9mm) steel using (1) 1/4" x 1" tek type screw. Meets and exceeds the requirements of NFPA 13, 13R and 13D.

Features: Fig. 22 incorporates features which protect the pipe and ease installation. The flared edge design protects CPVC pipe from any rough surface. It is easily attached to the building structure using the special UL Listed hex head self threading screw* furnished with the product. It is recommended that rechargeable electric drills fitted with a hex socket attachment to be used as installation tools. No impact tools (such as a hammer) are allowed. Damage has been known to result from installations using impact type tools. No pre-drilling of a pilot hole in wood is required.

Finish: Pre-Galvanized

Order By: Figure number and pipe size.

* Hardened hex head self threading screw is furnished with the product and is the minimum fastener size acceptable.



Part No.	CPVC Pipe Size in.	(mm)	A in.	(mm)	B in.	(mm)	C in.	(mm)	Max. Hanger Spacing Ft.	(m)	Fastener Hex Head Size in.	(mm)	Approx. Wt./100 Lbs.	(kg)
22-3/4	3/4"	(20)	2 7/16"	(61.9)	1 5/16"	(33.3)	1 3/16"	(30.2)	5'-6"	(1.67)	5/16"	(7.9)	9	(4.1)
22-1	1"	(25)	2 11/16"	(68.3)	1 7/16"	(36.5)	1 3/16"	(30.2)	6'-0"	(1,83)	5/16"	(7.9)	9	(4.1)
22-1 1/4	1 1/4"	(32)	3 1/16"	(77.8)	1 5/8"	(42.3)	1 3/16"	(30.2)	6'-6"	(1.98)	5/16"	(7.9)	11	(5.0)
22-1 1/2	1 1/2"	(40)	3 5/16"	(84.1)	1 3/4"	(44.4)	1 3/16"	(30.2)	7'-0"	(2.13)	5/16"	(7.9)	12	(5.4)
22-2	2"	(50)	3 3/4"	(95.2)	2 1/8"	(54.6)	1 3/16"	(30.2)	8'-0"	(2.44)	5/16"	(7.9)	15	(6.8)

Reduced Spacing For IPS Pipe

Part No.	IPS Pipe Size in.	(mm)	Max. Hanger Spacing Ft.	(m)
22-3/4	3/4"	(20)	1'-9"	(1.67)
22-1	1"	(25)	1'-10"	(1.83)
22-1 1/4	1 1/4"	(32)	2-4"	(1.98)
22-1 1/2	1 1/2"	(40)	2-9"	(2.13)
22-2	2"	(50)	3-6"	(2.44)

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

TOLCO™ Fig. 22L2 - One Hole Hanger/Restrainer for CPVC & Steel Pipe

Size Range: 3/4" (20mm) thru 2" (50mm) CPVC & steel pipe

Material: Pre-Galvanized Steel

Function: cULus Listed to perform as a hanger and restrainer for CPVC or IPS piping systems. The innovative design also allows for a preferred installation location close to a CPVC fitting without applying damaging compression forces on the pipe which could result in serious Mechanical ESC (Environmental Stress Cracking).

Approvals: Underwriters Laboratories Listed in the USA **(UL)** and Canada **(cUL)** to support fire sprinkler piping. Can be installed in wood or into minimum 20 gauge (0.9mm) steel using (1) 1/4" x 1" tek type screw. Meets and exceeds the requirements of NFPA 13, 13R and 13D.

Installation Note: Comes in open position for easier installation. Because of multi – structural installation possibilities, specific fastener not included; see notes below for various applications.

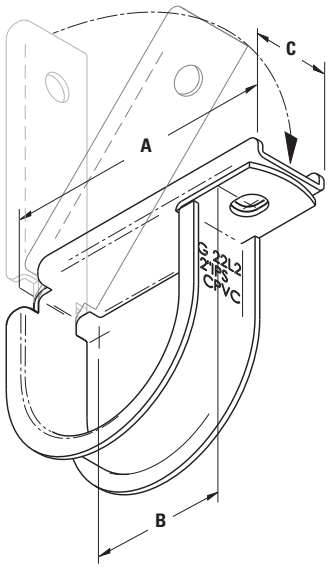
For Concrete Installation — UL requires a minimum test load of 340 lbs for CPVC hangers and 750 lbs for steel pipe hangers; verify anchors meet or exceed these requirements.

For Wood Installation — #14 x 1 1/2" wood screws will support the required load for **cULus**.

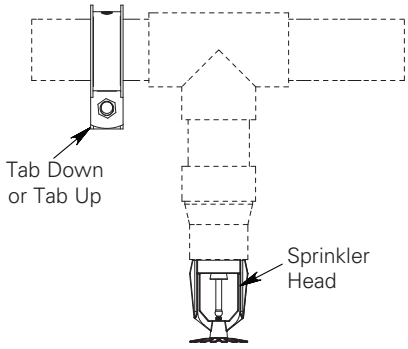
For Steel Installation — 1/4" x 1" (min. 20ga steel) Tek type screw will support required **UL** load.

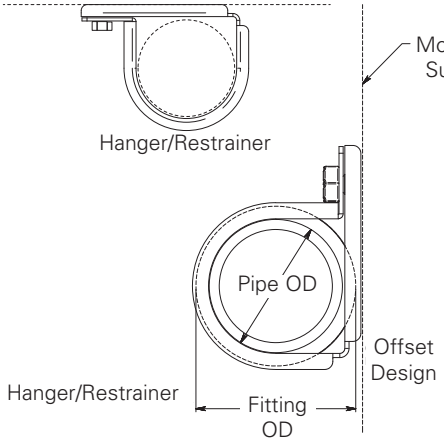
Finish: Pre-Galvanized

Order By: Part number



Patent Pending





Part No.	CPVC or Steel Pipe Size in. (mm)	A in. (mm)	B in. (mm)	C in. (mm)	Max. Hanger Spacing - CPVC Ft. (m)	Max. Hanger Spacing - Steel Ft. (m)	Approx. Wt./100 Lbs. (kg)
22L2-3/4	3/4" (20)	2 3/16" (55.6)	15/16" (23.8)	3/4" (19.0)	5 1/2 (1.67)	NA (NA)	9 (4.1)
22L2-1	1" (25)	2 1/2" (63.5)	1 1/8" (28.6)	3/4" (19.0)	6 (1,83)	12 (3.66)	9 (4.1)
22L2-1 1/4	1 1/4" (32)	2 13/16" (71.4)	1 1/4" (31.7)	3/4" (19.0)	6 1/2 (1.98)	12 (3.66)	11 (5.0)
22L2-1 1/2	1 1/2" (40)	3 1/8" (79.4)	1 7/16" (36.5)	3/4" (19.0)	7 (2.13)	15 (4.57)	12 (5.4)
22L2-2	2" (50)	3 9/16" (90.5)	1 5/8" (41.3)	3/4" (19.0)	8 (2.44)	15 (4.57)	15 (6.8)

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

TOLCO™ Fig. 23 - Hanger for CPVC Plastic Pipe & IPS Steel Pipe Double Fastener Strap (B-Line B3182)

Size Range: 3/4" (20mm) thru 3" (80mm) CPVC pipe

Material: Pre-Galvanized Steel

Function: Intended to perform as a hanger to support CPVC piping used in automatic fire sprinkler systems. Fig. 23 can be installed on the top, bottom or side of a beam.

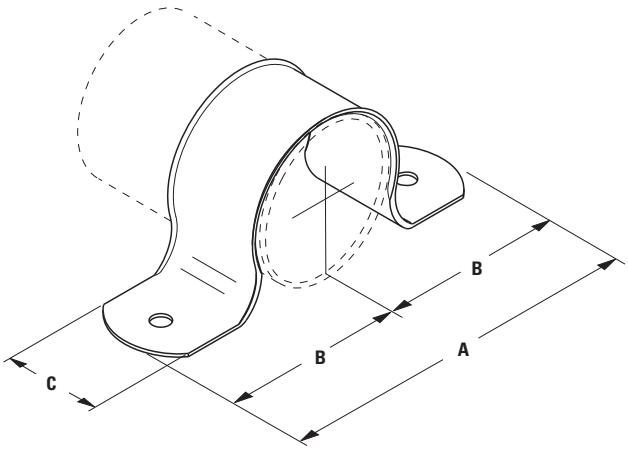
Approvals: Underwriters Laboratories Listed in the USA **(UL)** and Canada **(cUL)** sizes 3/4" (20mm) thru 2" (50mm) to support fire sprinkler piping. May be installed in wood using fasteners supplied with product, or into minimum 20 gauge (0.9mm) steel using (2) 1/4" x 1" tek type screw. Meets and exceeds the requirements of NFPA 13, 13R and 13D.

Features: Fig. 23 incorporates features which protect the pipe and ease installation. The flared edge design protects the CPVC pipe from any rough surface. It also incorporates snap restrainers allowing easier and faster installation. Easily attaches to the building structure using the two UL Listed hex head self threading screws* furnished with the product. It is recommended that rechargeable electric drills fitted with a hex socket attachment be used as installation tools. No impact tools (such as a hammer) are allowed. Damage has been known to result from installations using impact type tools. No pre-drilling of a pilot hole in wood is required.

Finish: Pre-Galvanized

Order By: Figure number and pipe size

* Hardened hex head self threading screw is furnished with the product and is the minimum fastener size acceptable.



Part No.	CPVC Pipe Size in.	(mm)	A in.	(mm)	B in.	(mm)	C in.	(mm)	Max. Hanger Spacing Ft.	(m)	Fastener Hex Head Size in.	(mm)	Approx. Wt./100 Lbs.	(kg)
23-3/4	3/4"	(20)	3 1/8"	(79.4)	1 9/16"	(39.7)	1 3/16"	(30.2)	5 1/2	(1.67)	5/16"	(7.9)	9	(4.1)
23-1	1"	(25)	3 3/8"	(85.7)	1 11/16"	(42.9)	1 3/16"	(30.2)	6	(1,83)	5/16"	(7.9)	9	(4.1)
23-1 1/4	1 1/4"	(32)	4 3/16"	(106.4)	2 3/32"	(53.1)	1 3/16"	(30.2)	6 1/2	(1.98)	5/16"	(7.9)	11	(5.0)
23-1 1/2	1 1/2"	(40)	4 7/16"	(112.7)	2 7/32"	(56.3)	1 3/16"	(30.2)	7	(2.13)	5/16"	(7.9)	12	(5.4)
23-2	2"	(50)	4 7/8"	(123.8)	2 7/16"	(61.9)	1 3/16"	(30.2)	8	(2.44)	5/16"	(7.9)	15	(6.8)
23-2 1/2	2 1/2"	(65)	5 3/8"	(136.5)	2 11/16"	(68.3)	1 3/16"	(30.2)	Consult Factory		5/16"	(7.9)	22	(10.0)
23-3	3"	(80)	6"	(152.4)	3"	(76.2)	1 3/16"	(30.2)	Consult Factory		5/16"	(7.9)	25	(11.3)

Reduced Spacing For IPS Pipe

Part No.	IPS Pipe Size in.	(mm)	Max. Hanger Spacing Ft.	(m)
23-3/4	3/4"	(20)	1'-9"	(1.67)
23-1	1"	(25)	1'-10"	(1.83)
23-1 1/4	1 1/4"	(32)	2-4"	(1.98)
23-1 1/2	1 1/2"	(40)	2-9"	(2.13)
23-2	2"	(50)	3-6"	(2.44)
23-2 1/2	2 1/2"	(65)	Consult Factory	
23-3	3"	(80)	Consult Factory	

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

TOLCO™ Fig. 24 - Hanger for CPVC Plastic Pipe & IPS Steel Pipe Double Fastener Strap Side Mounted (B-Line B3183)

Size Range: 3/4" (20mm) thru 2" (50mm) CPVC pipe

Material: Pre-Galvanized Steel

Function: Intended to perform as a hanger to support CPVC piping used in automatic fire sprinkler systems. Can be installed on the top or on the bottom of a beam.

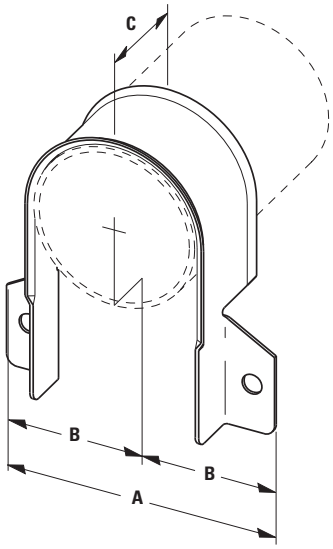
Approvals: Underwriters Laboratories Listed in the USA **(UL)** and Canada **(cUL)** to support fire sprinkler piping. May be installed in wood using fasteners supplied with product, or into minimum 20 gauge (0.912mm) steel using (2) 1/4" x 1" tek type screws. Meets and exceeds the requirements of NFPA 13, 13R and 13D.

Features: Fig. 24 incorporates features which protect the pipe and ease installation. The flared edge design protects the CPVC pipe from any rough surface. Easily attaches to the building structure using the two UL Listed hex head self threading screws* furnished with the product. It is recommended that rechargeable electric drills fitted with a hex socket attachment be used as installation tools. No impact tools (such as a hammer) are allowed. Damage has been known to result from installations using impact type tools. No pre-drilling of a pilot hole in wood is required.

Finish: Pre-Galvanized

Order By: Figure number and pipe size

* Hardened hex head self threading screw is furnished with the product and is the minimum fastener size acceptable.



Part No.	CPVC Pipe Size in.	(mm)	A in.	(mm)	B in.	(mm)	C in.	(mm)	Max. Hanger Spacing Ft.	(m)	Fastener Hex Head Size in.	(mm)	Approx. Wt./100 Lbs.	(kg)
24-3/4	3/4"	(20)	2 5/16"	(58.7)	1 5/32"	(27.8)	1 3/16"	(30.2)	5 1/2	(1.67)	5/16"	(7.9)	9	(4.1)
24-1	1"	(25)	2 5/8"	(66.7)	1 5/16"	(33.3)	1 3/16"	(30.2)	6	(1.83)	5/16"	(7.9)	9	(4.1)
24-1 1/4	1 1/4"	(32)	3"	(76.2)	1 1/2"	(38.1)	1 3/16"	(30.2)	6 1/2	(1.98)	5/16"	(7.9)	11	(5.0)
24-1 1/2	1 1/2"	(40)	3 1/4"	(82.5)	1 5/8"	(42.3)	1 3/16"	(30.2)	7	(2.13)	5/16"	(7.9)	12	(5.4)
24-2	2"	(50)	3 11/16"	(93.7)	1 27/32"	(43.6)	1 3/16"	(30.2)	8	(2.44)	5/16"	(7.9)	15	(6.8)

Reduced Spacing For IPS Pipe

Part No.	IPS Pipe Size in.	(mm)	Max. Hanger Spacing Ft.	(m)
24-3/4	3/4"	(20)	1'-9"	(1.67)
24-1	1"	(25)	1'-10"	(1.83)
24-1 1/4	1 1/4"	(32)	2-4"	(1.98)
24-1 1/2	1 1/2"	(40)	2-9"	(2.13)
24-2	2"	(50)	3-6"	(2.44)

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

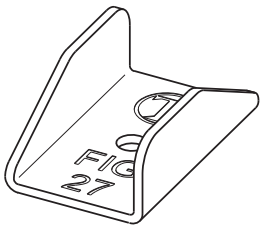
TOLCO™ Fig. 27B - Speed Nut

Size Range: — Fits screws supplied with all CPVC hangers.

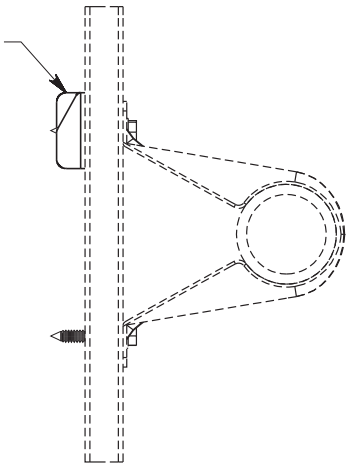
Material: — Steel

Finish: — Pre-Galvanized (Zinc)

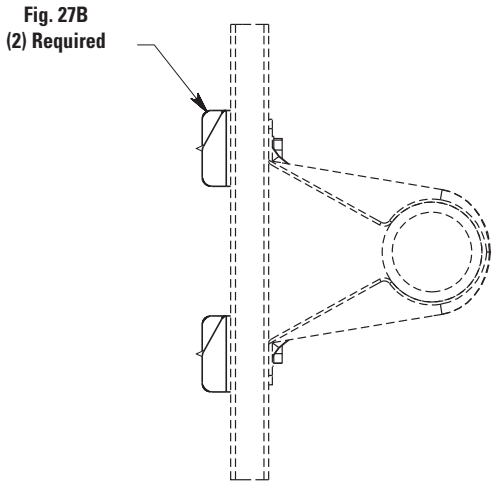
Function: — To be used anywhere a screw cannot achieve full embedment due to thickness of wood structural material when installed. Fig. 27B allows full pull out load capacity of screws when installed to the standard screws supplied with all CPVC hangers (Fig. 22, Fig. 22L2, Fig. 23, Fig. 24, Fig. 28, Fig. 28M, Fig. 29, and B3184).



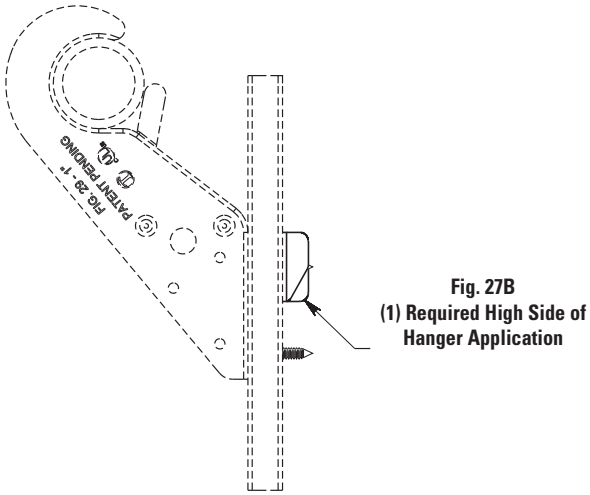
Part No.	Approx. Wt./100 lbs.	(kg)
27B	1.2	(0.5)



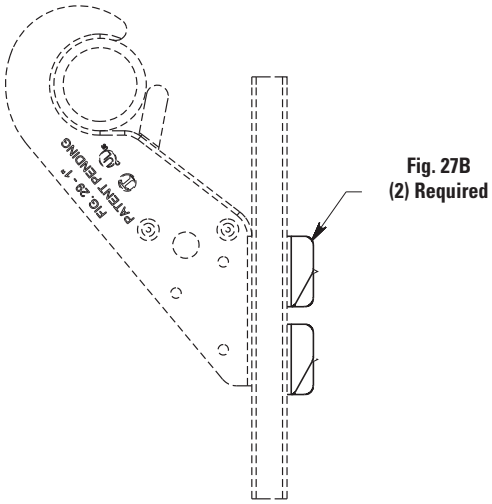
Hanger Application



Hanger and Restraint Application



Hanger Application



Hanger and Restraint Application

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

TOLCO™ Fig. 28 - "Stand-Off" Hanger & Restrainer for CPVC Plastic Pipe & IPS Steel Pipe

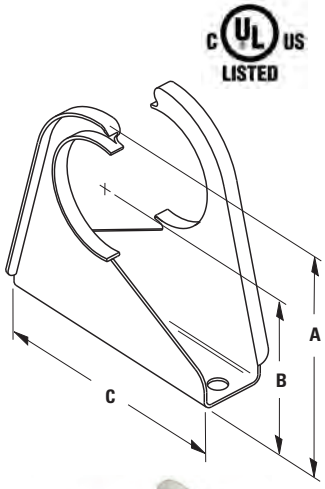
Size Range: — 3/4" (20mm) through 2" (50mm)

Material: — Steel, Pre-Galvanized

Function: — Designed to be used as a hanger and restrainer for CPVC piping where the "stand-off" design will ease installation by eliminating the need for wood blocking.

Features:

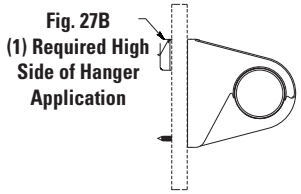
- Flared edge design protects CPVC pipe from any rough or abrasive surfaces.
- Unique twist and lock design holds pipe firmly in place and allows retrofit type of installation.
- The "Stand-Off" design eliminates the need for wood block extension.
- Can be installed on horizontal or vertical piping regardless of mounting surface orientation.
- Attaches easily to wood structure with two hex head self-threading screws furnished with product.
- Installs easily using rechargeable electrical driver with 5/16" (7.9mm) extension socket eliminating impact tool damage to pipe.
- Attaches easily to steel, minimum 18 gauge (1.024mm) with (2) 1/4" x 1" tek type self drilling tapping screws.
- UL Listed as a hanger and a restrainer for fire sprinkler piping.



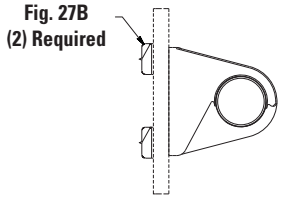
Approvals: — Underwriters Laboratory Listed in the USA **(UL)** and Canada **(cUL)** to support automatic fire sprinkler systems. May be installed into wood using fasteners supplied with product, or into minimum 18 gauge steel using (2) 1/4" x 1" tek type screws. Meets and exceeds the requirements of NFPA 13, 13R and 13D. Fig. 28 satisfies the UL vertical restraint requirement where needed. UL Listed as a hanger and vertical restraint when installed on 3/8" (9.5mm) composite wood material. Use two Fig. 27B (page 36) Speed Nuts when used as a hanger and restraint. Use one Fig. 27B Speed Nut on the upper installed screw when used as a hanger only.

Order by: — Figure number and pipe size.

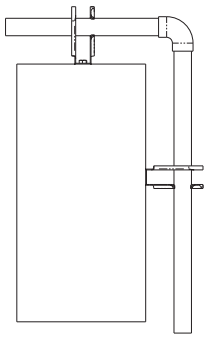
Pat. # 7,455,268, Pat. # 7,832,248

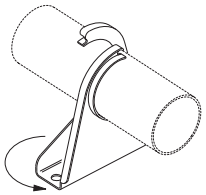


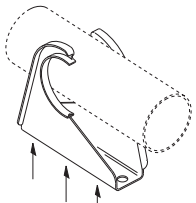
Hanger Application

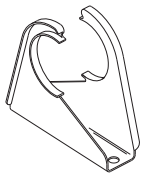


Hanger and Restraint Application





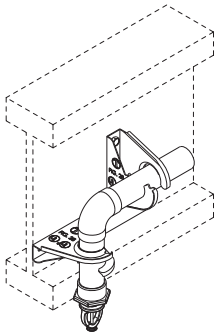




Part No.	CPVC Pipe Size in.	(mm)	A in.	(mm)	B in.	(mm)	C in.	(mm)	Max Hanger Spacing Ft.	(m)	Approx. Wt./100 lbs.	(kg)
28-3/4	3/4"	(20)	3 1/32"	(77.0)	2"	(50.8)	3 1/2"	(88.9)	5 1/2	(1.67)	18	(8.1)
28-1	1"	(25)	3 5/16"	(84.1)	2 3/16"	(55.6)	3 1/2"	(88.9)	6	(1.83)	21	(9.5)
28-1 1/4	1 1/4"	(32)	3 5/8"	(92.1)	2 3/8"	(60.3)	3 1/2"	(88.9)	6 1/2	(1.98)	23	(10.4)
28-1 1/2	1 1/2"	(40)	4"	(101.6)	2 1/2"	(63.5)	3 1/2"	(88.9)	7	(2.13)	31	(14.0)
28-2	2"	(50)	4 1/2"	(114.3)	2 11/16"	(68.3)	3 5/8"	(92.1)	8	(2.44)	34	(15.4)

Reduced Spacing For IPS Pipe

Part No.	IPS Pipe Size in.	(mm)	Max. Hanger Spacing Ft.	(m)
28-3/4	3/4"	(20)	1'-9"	(1.67)
28-1	1"	(25)	1'-10"	(1.83)
28-1 1/4	1 1/4"	(32)	2-4"	(1.98)
28-1 1/2	1 1/2"	(40)	2-9"	(2.13)
28-2	2"	(50)	3-6"	(2.44)



All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

TOLCO™ Fig. 28M - Offset Hanger & Restrainer for CPVC Plastic Pipe and IPS Steel Pipe

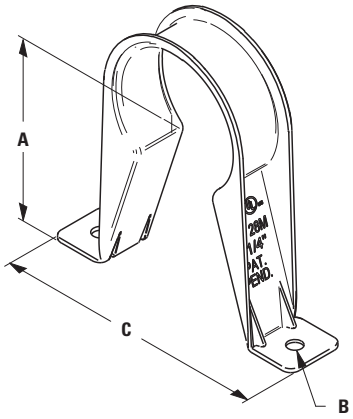
Size Range: 3/4" (20mm) thru 2" (32mm)

Material: Steel, Pre-Galvanized

Function: Designed to be used as a hanger and restrainer for CPVC piping or steel piping where the "stand-off" design will ease installation by eliminating the need for wood blocking.

Features:

- Flared edge design protects CPVC pipe from any rough or abrasive surfaces
- Unique snap-on design holds pipe firmly in place and allows retrofit type of installation
- The "Stand-Off" design eliminates the need for wood block extension
- Can be installed on horizontal or vertical piping regardless of mounting surface orientation
- Attaches easily to wood structure with two hex head self-threading screws furnished with product
- Installs easily using rechargeable electrical driver with 5/16" (7.9mm) extension socket eliminating impact tool damage to pipe
- Attaches easily to steel, minimum 18 gauge (1.024mm) with (2) 1/4" x 1" tek type self drilling tapping screws
- **(cULus)** Listed as a hanger and a restrainer for fire sprinkler piping

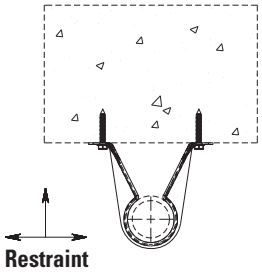


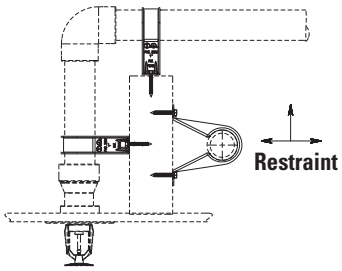
Installation Note: When installed in wood structural members and threads from the #10 x 1" screws are exposed, use Fig. 27B (page 36) speed nut to secure

Approvals: Underwriters Laboratory Listed in the USA **(UL)** and Canada **(cUL)** to support automatic fire sprinkler systems.
May be installed into wood using fasteners screws.
Meets and exceeds the requirements of NFPA 13, 13R and 13D. Fig. 28M satisfies the UL vertical restraint requirements where needed.

Order By: Figure number and pipe size

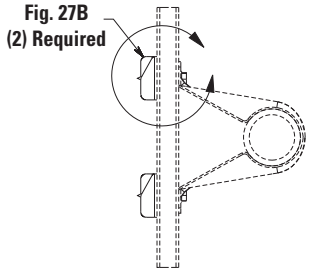
Patent #7,744,042





Part No.	CPVC Pipe Size in.	(mm)	A in.	(mm)	Hole Dia. B in.	(mm)	C in.	(mm)	Max Spacing* in.	(mm)	Approx. Wt./100 lbs.	(kg)
28M-3/4	3/4"	(20)	2"	(50.8)	3/16"	(4.8)	3 5/16"	(84.1)	5'-6"	(1676)	9	(4.1)
28M-1	1"	(25)	2 1/8"	(54.0)	3/16"	(4.8)	3 1/2"	(88.9)	6'-0"	(1829)	12	(5.4)
28M-1 1/4	1 1/4"	(32)	2 5/16"	(58.7)	3/16"	(4.8)	3 1/2"	(88.9)	6'-6"	(1981)	13	(5.9)
28M-1 1/2	1 1/2"	(49)	2 7/16"	(61.9)	3/16"	(4.8)	3 7/8"	(98.4)	7'-0"	(2133)	14	(6.3)
28M-2	2"	(50)	2 5/8"	(66.7)	3/16"	(4.8)	4 7/16"	(112.7)	8'-0"	(2438)	15	(6.8)

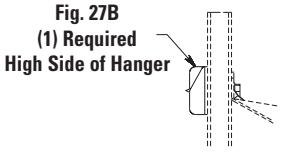
* Required per NFPA 13 for CPVC plastic pipe



Hanger and Restraint Application

Reduced Spacing For IPS Pipe

Part No.	IPS Pipe Size in.	(mm)	Max. Hanger Spacing Ft.	(m)
28-3/4	3/4"	(20)	1'-9"	(1.67)
28-1	1"	(25)	1'-10"	(1.83)
28-1 1/4	1 1/4"	(32)	2-4"	(1.98)
28-1 1/2	1 1/2"	(40)	2-9"	(2.13)
28-2	2"	(50)	3-6"	(2.44)



Detail A Hanger Application

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

TOLCO™ Fig. 29 - Double Offset Hanger & Restrainer for CPVC Plastic Pipe & IPS Steel Pipe

Size Range: Available in 3/4" (20mm) and 1" (25mm) pipe sizes

Material: Pre-Galvanized Steel

Function: Intended to perform as a hanger and restrainer for CPVC, plastic fire sprinkler pipe. Provides double offset 1 1/2" (20mm) x 1 1/2" (20mm) from mounting surface. This design will ease installation by eliminating the need for wood block extension and allow retro-fit attachment of hanger to sprinkler pipe.

Features:

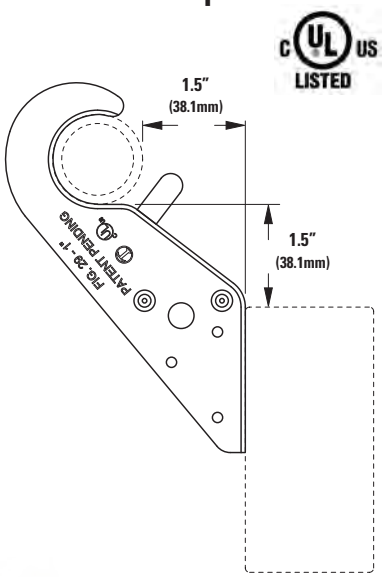
- Thumb tab provides protection to restrain pipe in rough job site conditions. Tab is not required to be bent for listed installation.
- Offset edge eliminates abrasion.
- Attaches easily to wood structure with two special #10 x 1" hex head self-threading screws furnished with product.
- Can be used as a single offset hanger by aligning "dimples" with top of mounting surface and utilizing two fasteners in two of the three holes provided.

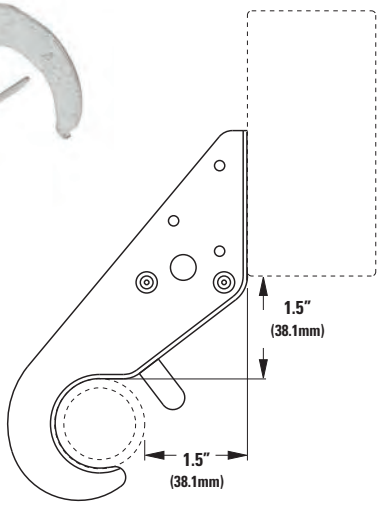
Approvals: Underwriters Laboratories Listed in the USA **(UL)** and Canada **(cUL)** as a hanger and restrainer to support fire sprinkler systems. Meets and exceeds requirements of NFPA 13, 13R and 13D.

Finish: Pre-Galvanized

Order By: Figure number and pipe size.

Patent # US2008/0129040A1

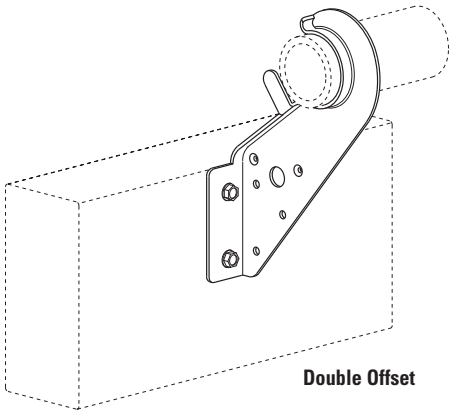




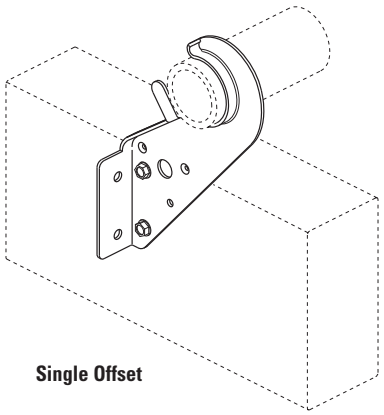
Part No.	CPVC Pipe size in.	(mm)	Max Hanger Spacing Ft.	(m)	Approx. Wt./100 lbs.	(kg)
29-3/4	3/4"	(20)	5'-6"	(1.67)	18	(8.1)
29-1	1"	(25)	6'-0"	(1.83)	19	(8.6)

Reduced Spacing For IPS Pipe

Part No.	IPS Pipe Size in.	(mm)	Max. Hanger Spacing Ft.	(m)
29-3/4	3/4"	(20)	1'-9"	(1.67)
29-1	1"	(25)	1'-10"	(1.83)



Double Offset

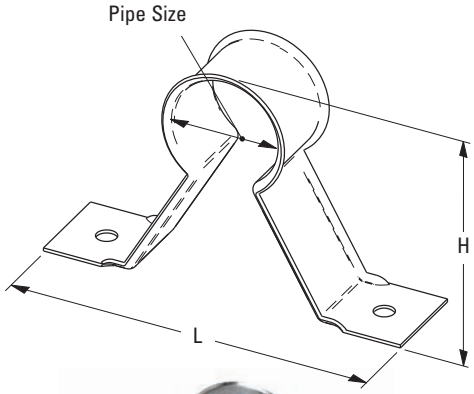


Single Offset

Install using a rechargeable electric drill fitted with a 5/16" (7.9mm) socket attachment with the special hex head self-tapping screws provided. Install screws until they bottom out. Pipe can be "snapped" into hanger before or after installation of the screws to the mounting surface. "Thumb tab" may be bent up to provide additional protection to the pipe, but is not required for performance of the hanger / restrainer function.

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

B3184 - Offset Hanger for CPVC Plastic Pipe and IPS Pipe



Size Range: 3/4" (20mm) thru 2" (32mm)

Material: Pre-Galvanized Steel

Function: Designed to be used as a hanger for CPVC piping or steel piping where the "stand-off" design will ease installation by eliminating the need for wood blocking.

Features:

- Flared edge design protects CPVC pipe from any rough or abrasive surfaces
- The "Stand-Off" design eliminates the need for wood block extension
- Can be installed on horizontal or vertical piping regardless of mounting surface orientation
- Attaches easily to wood structure with two hex head self-threading screws furnished with product

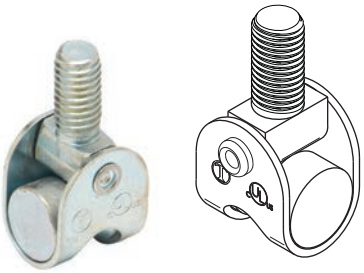
Installation Note: When installed in wood structural members and threads from the #10 x 1" screws are exposed, use Fig. 27B speed nut to secure

Order By: Part number and pipe size

Part No.	CPVC Pipe Size in.	(mm)	H Overall in.	(mm)	L Overall in.	(mm)	Max. Hanger Spacing ft.	(m)	Fastener Hex Head Size in.	(mm)	Approx. Wt./100 Lbs.	(kg)
B3184-3/4	3/4"	(20)	2 9/16"	(65.1)	4 1/4"	(107.9)	5 1/2	(1.67)	5/16"	(7.9)	9.0	(4.1)
B3184-1	1"	(25)	2 13/16"	(71.4)	4 1/2"	(114.3)	6	(1,83)	5/16"	(7.9)	10.0	(4.5)
B3184-1 1/4	1 1/4"	(32)	3 3/16"	(81.0)	4 5/8"	(117.5)	6 1/2	(1.98)	5/16"	(7.9)	12.0	(5.4)
B3184-1 1/2	1 1/2"	(40)	3 7/16"	(87.3)	5"	(127.0)	7	(2.13)	5/16"	(7.9)	12.0	(5.4)
B3184-2	2"	(50)	3 7/8"	(98.4)	5"	(127.0)	8	(2.44)	5/16"	(7.9)	15.0	(6.8)

TOLCO™ Fig. 75 - Swivel Attachment

c UL us LISTED



Size Range: — 3/8"-16 Rod Attachment

Material: Steel

Function: Three recommended applications for this product:

- May be used as a branch line restraint for structural attachment to anchor bolt, beam clamp, etc.
- May be used as an upper attachment with short hanger rod to omit seismic bracing.
- May be used in a pitched or sloped roof application, to meet requirements of NFPA 13 (2010) 9.1.2.6.

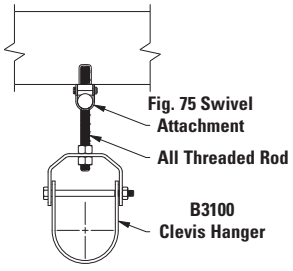
Approvals: Underwriters Laboratories Listed in the USA **(UL)** and Canada **(cUL)** to support up to 4" (100mm) pipe.

Finish: Electro-Galvanized

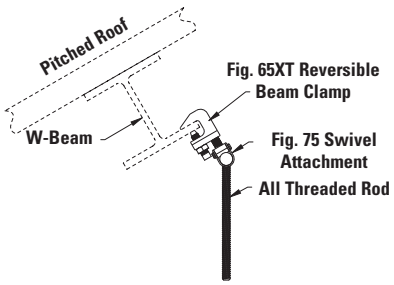
Weight: Approx. Wt./100 - 13.3 Lbs. (6.0kg)

Order By: Part number

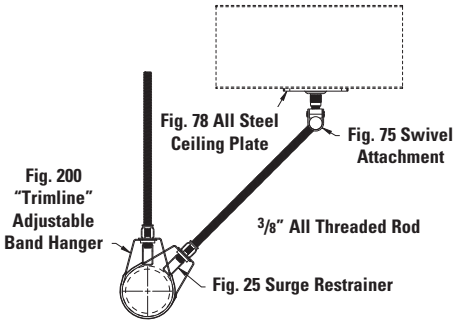
Patent: #7,887,248



May be used as a upper attachment with short hanger rod to omit seismic bracing



May be used with a pitched roof application, to meet requirements of NFPA 13 (2010-2016) Sec. 9.1.2.6.



May be used as a structural attachment component of a branch line restraint

All dimensions in charts and on drawings are in inches. Dimensions shown in parentheses are in millimeters unless otherwise specified.

tyco / Fire & Building Products

Technical Services: Tel: (800) 381-9312 / Fax: (800) 791-5500

Sprinkler Cabinets
3, 6, & 12 Sprinklers, 1/2 or 3/4 Inch NPT
6 ESFR Sprinklers, 3/4 or 1 Inch NPT

General Description

Tyco® Sprinkler Cabinets are constructed of metal enclosures with hinged covers designed to provide on-site storage of an emergency supply of sprinklers and a sprinkler wrench.

NFPA 13 requires a representative number of each type of sprinkler used in a sprinkler system to be stored in a cabinet on-site to allow for immediate removal and replacement of sprinklers that may have operated or become damaged.

Sprinkler Cabinets are manufactured of heavy gauge steel with knock-outs to accommodate NPT threaded sprinklers and are painted an attractive red enamel.

WARNINGS

The Sprinkler Cabinets 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 performance 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 with any questions.

Technical Data

Material
Carbon Steel

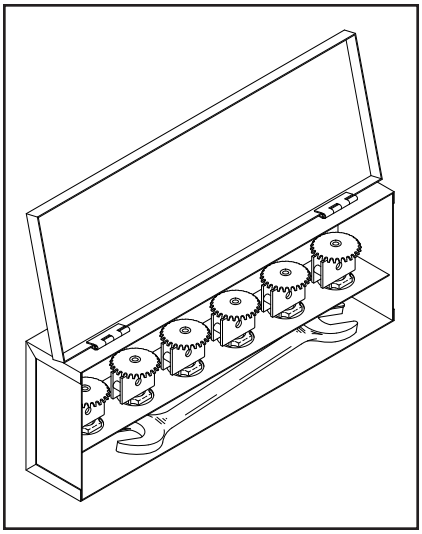
Weights

3 Sprinkler Cabinet . . . . . 1.5 Lbs. (0,68 kg)

6 Sprinkler Cabinet . . . . . 2.3 Lbs. (1,04 kg)

12 Sprinkler Cabinet . . . . . 4.0 Lbs. (1,81 kg)

6 ESFR Sprinkler Cabinet . . . . . 3.3 Lbs. (1,36 kg)



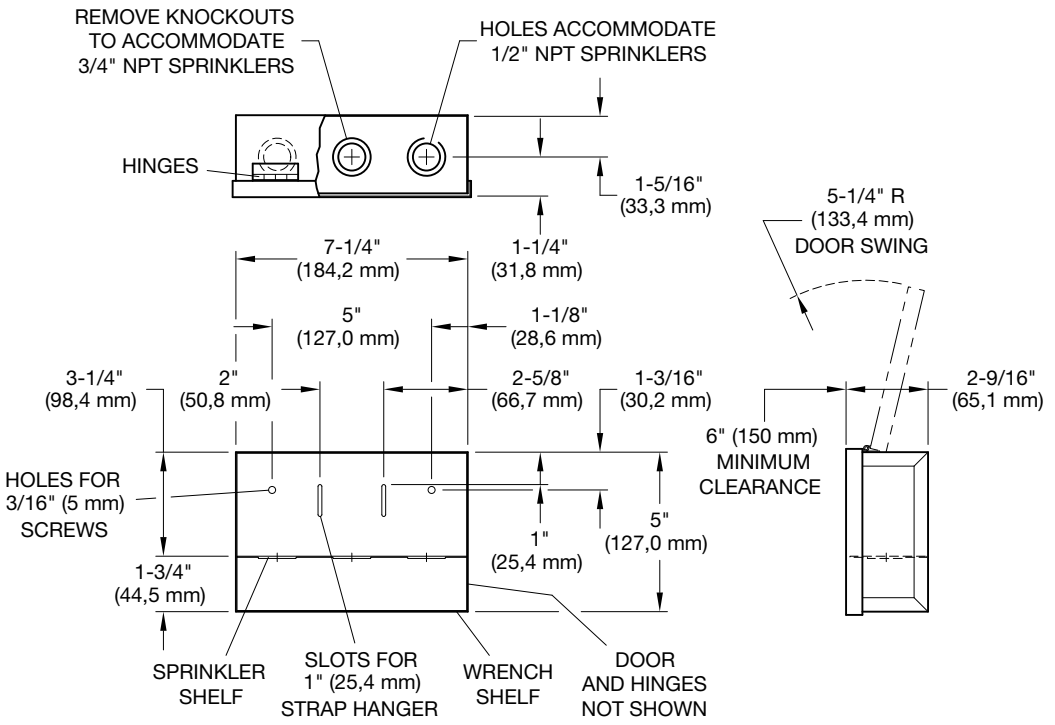


FIGURE 1
3 SPRINKLER CABINET

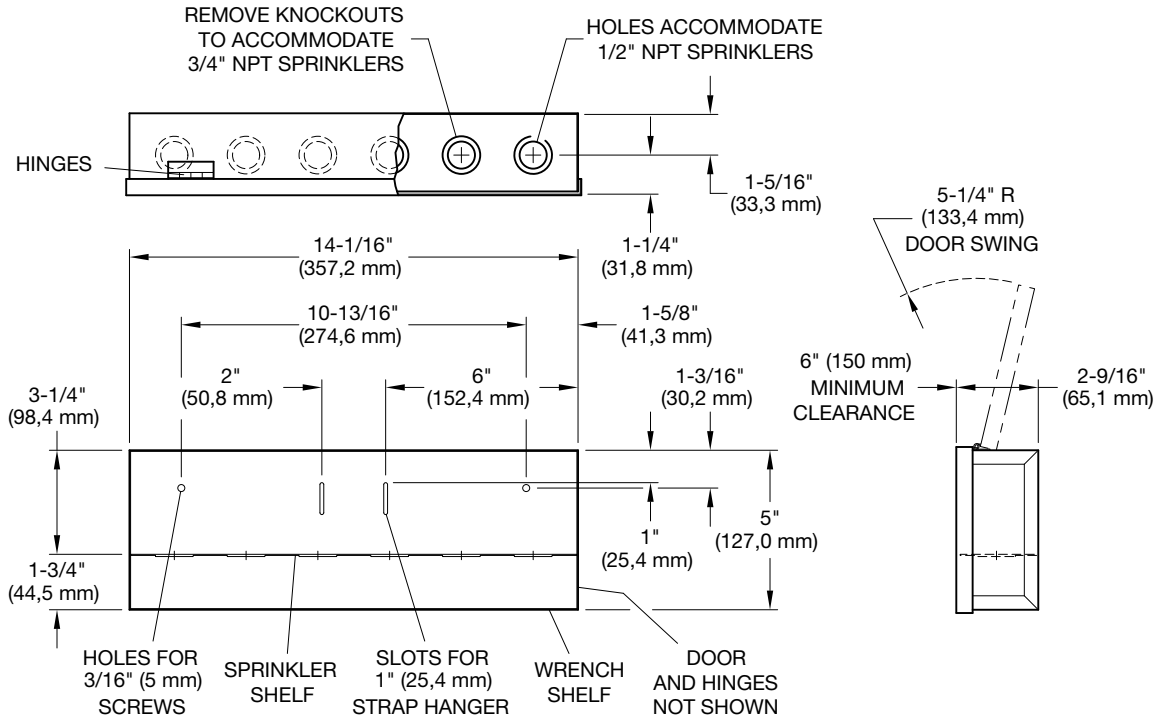


FIGURE 2
6 SPRINKLER CABINET

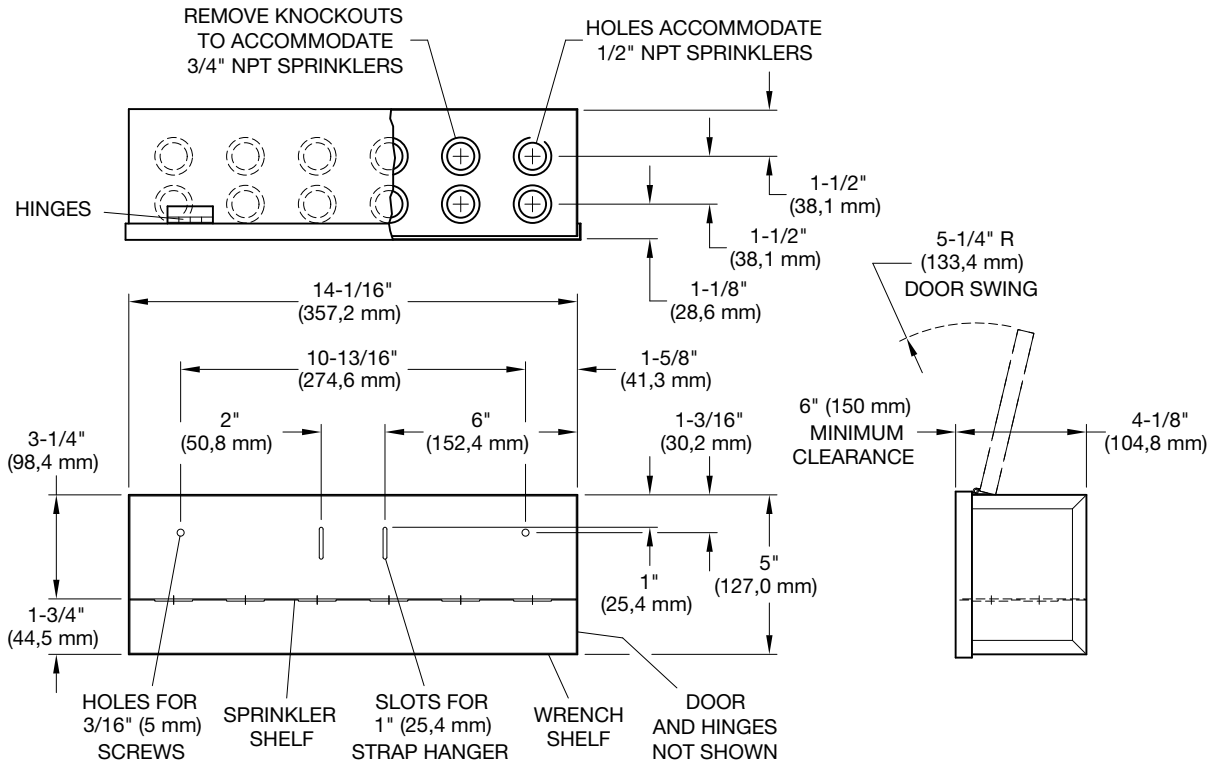


FIGURE 3
12 SPRINKLER CABINET

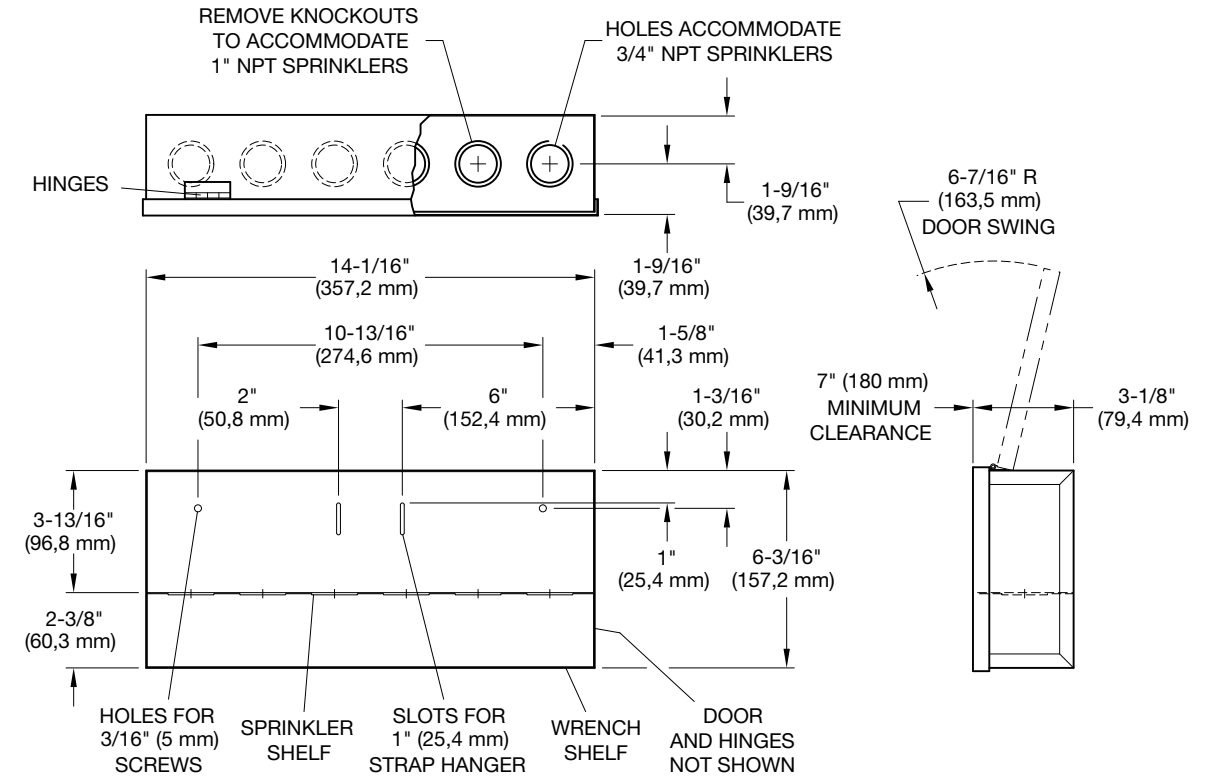


FIGURE 4
6 ESFR SPRINKLER CABINET

Installation

Sprinkler Cabinets are designed with two 3/16 Inch (4,7 mm) diameter holes for wall mounting or direct attachment to the system riser with a strap-type hanger. The Sprinkler Cabinet should be installed at or near the system control valve and must be stocked with an adequate supply of spare sprinklers and a sprinkler wrench.

The stock of spare sprinklers should include sprinklers of each type and temperature rating as are installed in the sprinkler system, in the following quantities:

Sprinklers In System	Spare Sprinklers Required
Under 300	6
300-1000	12
Over 1000	24

The 3, 6, and 12 Sprinkler Cabinets are designed to accept both 1/2 & 3/4 Inch NPT threaded sprinklers, whereas the 6 ESFR Sprinkler Cabinets are designed to accept both 3/4 & 1 Inch NPT threaded sprinklers. As necessary, insert a screwdriver blade from the front top of the shelf and under the near bottom part of the knockout annular ring. Press the screwdriver handle down to remove the knockout ring.

Care and Maintenance

The Sprinkler Cabinet, wrench, and stock of spare sprinklers should be inspected at least quarterly. The following items should be checked:

- The Sprinkler Cabinet should be readily accessible, and not exposed to a corrosive atmosphere or temperatures in excess of 100°F (38°C).
- The stock of spare sprinklers should include an adequate number of each type and temperature rating.
- The stock of sprinklers must be in good condition.
- A sprinkler wrench of the appropriate type must be included in the Sprinkler Cabinet.

Limited Warranty

Products manufactured by Tyco Fire & Building Products (TFBP) 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 TFBP. No warranty is given for products or components manufactured by companies not affiliated by ownership with TFBP 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 TFBP to be defective shall be either repaired or replaced, at TFBP's sole option. TFBP neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of products or parts of products. TFBP 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 TFBP 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 TFBP was informed about the possibility of such damages, and in no event shall TFBP's 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.

This limited warranty sets forth the exclusive remedy for claims based on failure of or defect in products, materials or components, whether the claim is made in contract, tort, strict liability or any other legal theory.

This warranty will apply to the full extent permitted by law. The invalidity, in whole or part, of any portion of this warranty will not affect the remainder.

Ordering Procedure

When placing an order, indicate the full product name. Contact your local distributor for availability.

Sprinkler Cabinet:
Specify: (Description), P/N (specify).

3 Sprinkler Cabinet. . . . . P/N 1177
6 Sprinkler Cabinet. . . . . P/N 1119
12 Sprinkler Cabinet. . . . . P/N 1124
6 ESFR Sprinkler Cabinet . . . . . P/N 1111

Engineering Specification

Job Name _____ Contractor _____

Job Location _____ Approval _____

Engineer _____ Contractor's P.O. No. _____

Approval _____ Representative _____

Series 009
Reduced Pressure Zone Assemblies

Sizes: ¼" – 2"

Series 009 Reduced Pressure Zone Assemblies are designed to protect potable water supplies in accordance with national plumbing codes and water authority requirements. This series is designed to protect drinking water supplies from dangerous cross-connections in accordance with national plumbing codes and water authority requirements for non-potable service applications such as irrigation, fireline, or industrial processing.

This series features two in-line, independent check valves, captured springs and replaceable check seats with an intermediate relief valve. Its compact modular design facilitates easy maintenance and assembly access. Sizes ¼" – 1" shutoffs have tee handles.

Features

- Single access cover and modular check construction for ease of maintenance
- Top entry - all internals immediately accessible
- Captured springs for safe maintenance
- Internal relief valve for reduced installation clearances
- Replaceable seats for economical repair
- Bronze body construction for durability ¼" – 2"
- Ball valve test cocks — screwdriver slotted ¼" – 2"
- Large body passages provides low pressure drop
- Compact, space saving design
- No special tools required for servicing

Specifications

A Reduced Pressure Zone Assembly shall be installed at each potential health hazard location to prevent backflow due to back-siphonage and/or backpressure. The assembly shall consist of an internal pressure differential relief valve located in a zone between two positive seating check modules with captured springs and silicone seat discs. Seats and seat discs shall be replaceable in both check modules and the relief valve. There shall be no threads or screws in the waterway exposed to line fluids. Service of all internal components shall be through a single access bronze cover secured with stainless steel bolts. The assembly shall also include two resilient seated isolation valves, four resilient seated test cocks and an air gap drain fitting. The assembly shall meet the requirements of: USC; ASSE Std. 1013; AWWA Std. C511-92; CSA B64.4. Shall be a Watts Series 009.

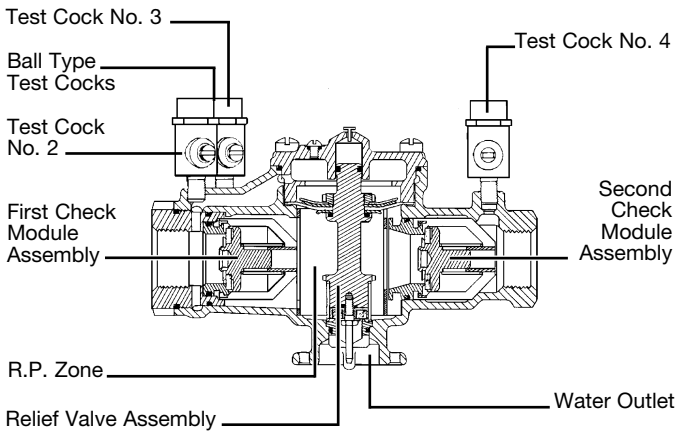
†Does not indicate approval status. Refer to Page 2 for approved sizes & models.

NOTICE

Inquire with governing authorities for local installation requirements

009QT-S

009M2QT



Now Available
WattsBox Insulated Enclosures.
For more information, send for literature ES-WB.

NOTICE

The information contained herein is not intended to replace the full product installation and safety information available or the experience of a trained product installer. You are required to thoroughly read all installation instructions and product safety information before beginning the installation of this product.

⚠ WARNING

It is illegal to use this product in any plumbing system providing water for human consumption, such as drinking or dishwashing, in the United States. Before installing standard material product, consult your local water authority, building and plumbing codes.

WATTS®

Available Models: ¼" – 2"

Suffix:

QT – quarter-turn ball valves

S – bronze strainer

LF – without shutoff valves

AQT – elbow fittings for 360° rotation ¾" – 2" only

PC – internal Polymer Coating

SH – stainless steel ball valve handles

HC – 2½" inlet/outlet fire hydrant fitting (2" valve)

Prefix:

C – clean and check strainer ¾" – 1" only

U – union connections (see ES-U009)

Materials: ¼" – 2"

Bronze body construction, silicone rubber disc material in the first and second check plus the relief valve. Replaceable polymer check seats for first and second checks. Removable Relief valve seats. Stainless steel cover bolts.

Standardly furnished with NPT body connections. For optional bronze union inlet and outlet connections, specify prefix U (½" – 2"). Series 009QT furnished with quarter turn, full port, resilient seated, bronze ball valve shutoffs.

Pressure / Temperature

Series 009 ¼" – 2" Suitable for supply pressure up to 175psi (12.1 bar). Water temperature: 33°F – 180°F (0.5°C – 75°C).

Standards

USC

ASSE No. 1013

AWWA C511-92

CSA B64.4

IAPMO File No. 1563.

†Does not indicate approval status. See below for approved models.

USC-FCCCHR

Approvals

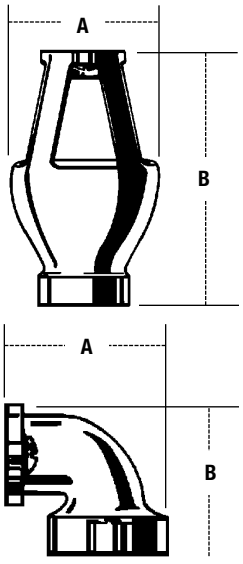
ASSE, AWWA, CSA, IAPMO

Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California.

UL Classified ¾" – 2"
(LF models only except 009M3LF)

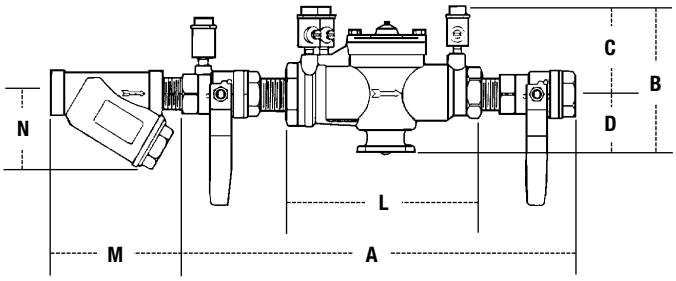
Air Gaps and Elbows

MODEL		DRAIN OUTLET		DIMENSIONS				WEIGHT	
	for 909, 009 and 993 sizes			A		B			
		in.	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*
909AGA	¼"–½" 009, ¾" 009M2/M3	½	13	2⅜	60	3⅛	79	0.625	0.28
909AGC	¾"–1" 009/909, 1"–1½" 009M2	1	25	3¼	83	4⅞	124	1.5	0.68
909AGF	1¼"–2" 009M1, 1¼"–3" 009/909, 2" 009M2, 4"–6" 993	2	51	4⅜	111	6¾	171	3.25	1.47
909AGK	4"–6" 909, 8"–10" 909M1	3	76	6⅜	162	9⅝	244	6.25	2.83
909AGM	8"–10" 909	4	102	7⅜	187	11¼	286	15.5	7.03
909ELA	¼"–½" 009, ¾" 009M2/M3	–	–	–	–	–	–	–	–
909ELC	¾"–1" 009/909	–	–	2⅜	60	2⅜	60	0.38	0.17
* 909ELF	1¼"-2" 009M1, 1¼"–2" 009/909, 2" 009M2, 4"–6" 993	–	–	3⅝	92	3⅝	92	2	0.91
* 909ELH Vertical	2½"–3" 009/909	–	–	–	–	–	–	–	–



* Epoxy coated

Dimensions and Weight: ¼" – 2" 009



009 ¼" – 2"

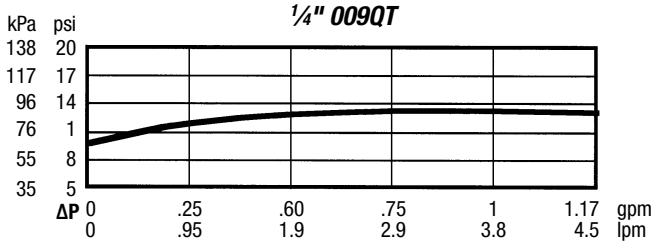
SIZE	DIMENSIONS (APPROX.)														STRAINER DIMENSIONS				WEIGHT	
	A		B		C		D		L		M		N							
in.	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*in.*	*mm*	*lbs.*	*kgs.*
¼	10	250	4 5/8	117	3 3/8	86	1 ¼	32	5 ½	140	2 3/8	60	2 ½	64	5	2
⅜	10	250	4 5/8	117	3 3/8	86	1 ¼	32	5 ½	140	2 3/8	60	2 ½	64	5	2
½	10	250	4 5/8	117	3 3/8	86	1 ¼	32	5 ½	140	2 ¾	70	2 ¼	57	5	2
¾	10 ¾	273	5	127	3 ½	89	1 ½	38	6 ¾	171	3 3/16	81	2 ¾	70	6	3
1	14 ½	368	5 ½	140	3	76	2 ½	64	9 ½	241	3 ¾	95	3	76	12	5
1 ¼	17 3/8	441	6	150	3 ½	89	2 ½	64	11 3/8	289	4 7/16	113	3 ½	89	15	6
1 ½	17 7/8	454	6	150	3 ½	89	2 ½	64	11 1/8	283	4 7/8	124	4	102	16	7
2	21 3/8	543	7 ¾	197	4 ½	114	3 ¼	83	13 ½	343	5 15/16	151	5	127	30	13

Suffix HC – Fire Hydrant Fittings dimension 'A' = 25"

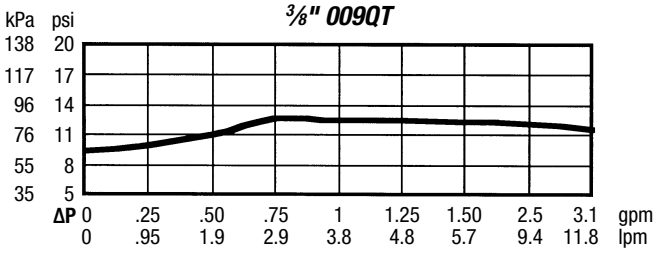
Capacity

Performance as established by an independent testing laboratory. *Typical maximum system flow rate (7.5 feet/sec., 2.3 meters/sec.)

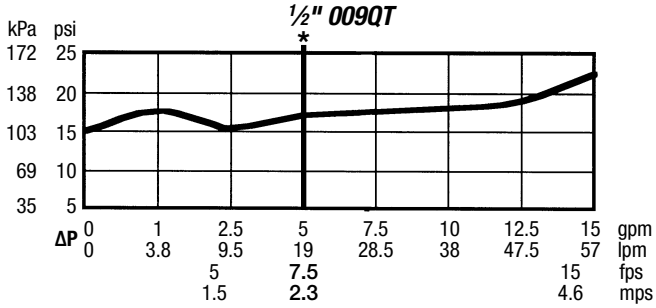
¼" 009QT



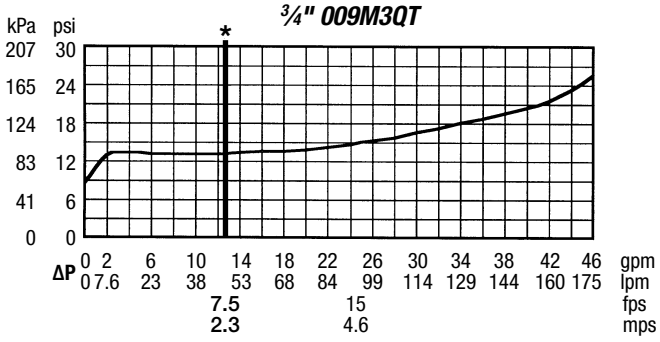
⅜" 009QT



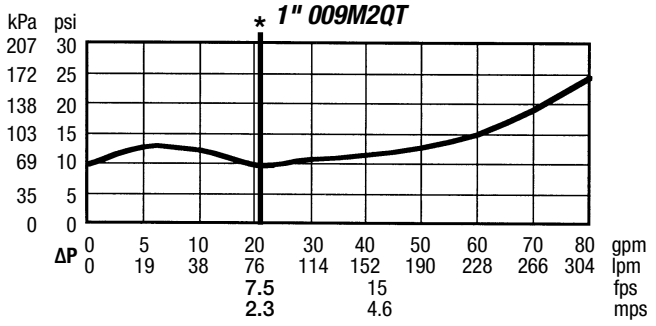
½" 009QT



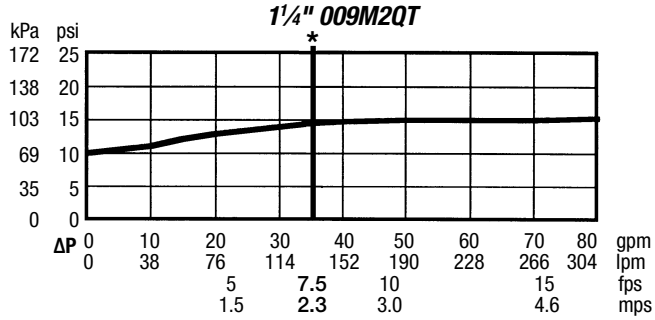
¾" 009M3QT



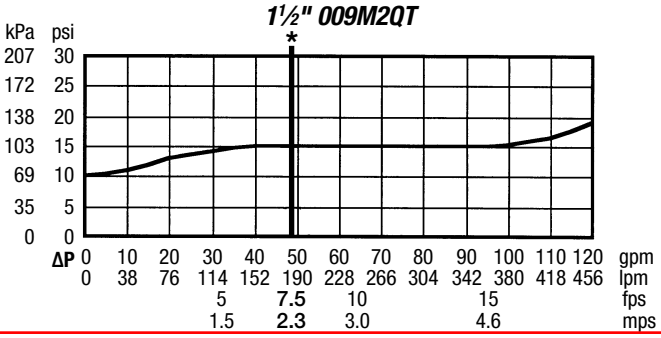
1" 009M2QT



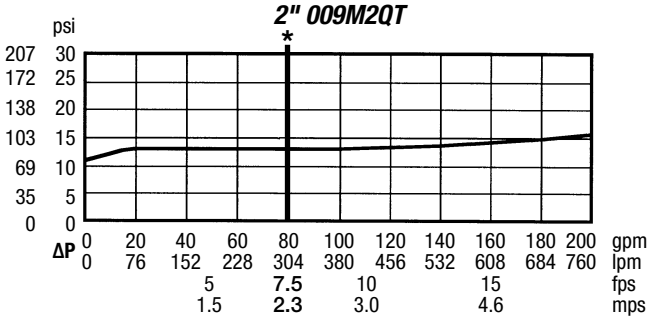
1¼" 009M2QT



1½" 009M2QT



2" 009M2QT



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