

DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK



# CITY OF PORTLAND BUILDING PERMIT

This is to certify that  
**DAVIS, TIMOTHY R**  
**P.O. Box 255 AVE**  
**LYMAN, ME 04002-0255**

For installation at  
**18 CASTINE AVE**  
**NEW SINGLE-FAMILY HOME**

Job ID: **2012-07-4413-SF**

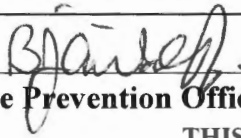
CBL: **309- E-010-001**

has permission to **install NFPA 13D sprinkler system**

provided that the person or persons, firm or corporation accepting this permit shall comply with all of the provisions of the Statutes of Maine and of the Ordinances of the City of Portland regulating the construction, maintenance and use of the buildings and structures, and of the application on file in the department.

Notification of inspection and written permission procured before this building or part thereof is lathed or otherwise closed-in. 48 HOUR NOTICE IS REQUIRED.

A final inspection must be completed by owner before this building or part thereof is occupied. If a certificate of occupancy is required, it must be

  
Fire Prevention Officer

  
Code Enforcement Officer / Plan Reviewer

THIS CARD MUST BE POSTED ON THE STREET SIDE OF THE PROPERTY  
PENALTY FOR REMOVING THIS CARD

## BUILDING PERMIT INSPECTION PROCEDURES

Please call 874-8703 or 874-8693 (ONLY)

or email: [buildinginspections@portlandmaine.gov](mailto:buildinginspections@portlandmaine.gov)

With the issuance of this permit, the owner, builder or their designee is required to provide adequate notice to the city of Portland Inspections Services for the following inspections. Appointments must be requested 48 to 72 hours in advance of the required inspection. The inspection date will need to be confirmed by this office.

- **Please read the conditions of approval that is attached to this permit!! Contact this office if you have any questions.**
- **Permits expire in 6 months. If the project is not started or ceases for 6 months.**
- **If the inspection requirements are not followed as stated below additional fees may be incurred due to the issuance of a "Stop Work Order" and subsequent release to continue.**

### **Final Fire**

The project cannot move to the next phase prior to the required inspection and approval to continue, REGARDLESS OF THE NOTICE OF CIRCUMSTANCES.

IF THE PERMIT REQUIRES A CERTIFICATE OF OCCUPANCY, IT MUST BE PAID FOR AND ISSUED TO THE OWNER OR DESIGNEE BEFORE THE SPACE MAY BE OCCUPIED.



# PORTLAND MAINE

*Strengthening a Remarkable City, Building a Community for Life • [www.portlandmaine.gov](http://www.portlandmaine.gov)*

Director of Planning and Urban Development  
Jeff Levine

**Job ID: 2012-07-4413-SF**  
**install NFPA 13D sprinkler system**

**For installation at:**  
**18 CASTINE AVE**  
**NEW SINGLE-FAMILY HOME**

**CBL: 309- E-010-001**

## **Conditions of Approval:**

### **Fire**

The sprinkler system shall be installed in accordance with NFPA 13D. A compliance letter is required.

All control valves shall be supervised in accordance with NFPA 13D. Pad locks shall only be installed on valves designed to be secured in the open position by pad lock.

Application requires State Fire Marshal approval.

**City of Portland, Maine - Building or Use Permit Application**

389 Congress Street, 04101 Tel: (207) 874-8703, FAX: (207) 8716

Job No: 2012-07-4413-SF 2012-48495 FAFS	Date Applied: 9/20/2012	CBL: 309- E-010-001	
Location of Construction: 18 CASTINE AVE	Owner Name: BRIGHTON AVENUE PROPERTIES INC	Owner Address: PO BOX 10127 PORTLAND, ME 04104	Phone:
Business Name:	Contractor Name: Tim Davis Plumbing & Heating Inc.	Contractor Address: PO BOX 255, LYMAN, ME 04002	Phone: (207) 324-5237
Lessee/Buyer's Name:	Phone:	Permit Type: FAFS	Zone: R-3
Past Use: Single Family Dwelling (under construction)	Proposed Use: Same: Single Family Dwelling - to install fire suppression system	Cost of Work: \$6,000.00	CEO District:
		Fire Dept: 10/9/12 <input checked="" type="checkbox"/> Approved w/ conditions <input type="checkbox"/> Denied <input type="checkbox"/> N/A	Inspection: Use Group: Type:
		Signature: <i>[Signature]</i> (58)	Signature:
Proposed Project Description: install fire suppression system		Pedestrian Activities District (P.A.D.)	
Permit Taken By: Brad		<b>Zoning Approval</b>	

<p>1. This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules.</p> <p>2. Building Permits do not include plumbing, septic or electrical work.</p> <p>3. Building permits are void if work is not started within six (6) months of the date of issuance. False informatin may invalidate a building permit and stop all work.</p>	<p><b>Special Zone or Reviews</b></p> <p><input type="checkbox"/> Shoreland</p> <p><input type="checkbox"/> Wetlands</p> <p><input type="checkbox"/> Flood Zone</p> <p><input type="checkbox"/> Subdivision</p> <p><input type="checkbox"/> Site Plan</p> <p><input type="checkbox"/> Maj <input type="checkbox"/> Min <input type="checkbox"/> MM</p> <p>Date: <i>9/25/12</i></p>	<p><b>Zoning Appeal</b></p> <p><input type="checkbox"/> Variance</p> <p><input type="checkbox"/> Miscellaneous</p> <p><input type="checkbox"/> Conditional Use</p> <p><input type="checkbox"/> Interpretation</p> <p><input type="checkbox"/> Approved</p> <p><input type="checkbox"/> Denied</p> <p>Date:</p>	<p><b>Historic Preservation</b></p> <p><input checked="" type="checkbox"/> Not in Dist or Landmark</p> <p><input type="checkbox"/> Does not Require Review</p> <p><input type="checkbox"/> Requires Review</p> <p><input type="checkbox"/> Approved</p> <p><input type="checkbox"/> Approved w/Conditions</p> <p><input type="checkbox"/> Denied</p> <p>Date: <i>[Signature]</i></p>
	<b>CERTIFICATION</b>		

I hereby certify that I am the owner of record of the named property, or that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as his authorized agent and I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in the appication is issued, I certify that the code official's authorized representative shall have the authority to enter all areas covered by such permit at any reasonable hour to enforce the provision of the code(s) applicable to such permit.

SIGNATURE OF APPLICANT	ADDRESS	DATE	PHONE
RESPONSIBLE PERSON IN CHARGE OF WORK, TITLE		DATE	PHONE



# Water-Based Fire Suppression System Permit

Entire 9/21/12 (B)

If you or the property owner owes real estate or property taxes or user charges on any property within the city, payment arrangements must be made before permits of any kind are accepted.

# 2012-07-4413-SF / 2012-48495 FAFS

Installation address: 18 Castine Ave CBL: 309 E010 P-3

Exact location: (within structure) 2nd Flr 1st Flr Basement

Type of occupancy(s) (NFPA & ICC): NFPA 13-0

Building owner: Brighton Ave Properties

Managing Supervisor (RMS): Thomas Killen License No: # 351

Supervisor phone: 207-752-4102 E-mail: \_\_\_\_\_

Installing contractor: Tim Davis Plumbing & Heating Inc License No: # 831

Contractor phone: 207-324-5237 E-mail: \_\_\_\_\_

The suppression work to be done will be: New:  Renovation:  Addition to existing system:

This is an amendment to an existing permit: Yes:  No:  Permit no: \_\_\_\_\_

NFPA Standard this system is designed to: 13-0 Edition: 2010

\*Non-NFPA systems are not approved for use within the City of Portland.

Download a new copy of this document from [www.portlandmaine.gov/fire](http://www.portlandmaine.gov/fire) for every submittal. Attach all working documents and complete approved submittals as may be required by the State Fire Marshal's Office on electronic PDF's in addition to full sized plans.

Contractor shall verify location and type of all FDCs shall be approved in writing by the Fire Prevention Bureau.

COST OF WORK: <u>\$6,000.00</u>
PERMIT FEE: <u>80.00</u>
(\$10 PER \$1,000 + \$30 FOR THE FIRST \$1,000)
RECEIVED
SEP 20 2012
Dept. of Building Inspections City of Portland Maine

Submit all information to the Building Inspections Department, 389 Congress Street, Room 315, Portland, Maine 04101.

Prior to acceptance of any fire protection system, a complete commissioning and acceptance test must be coordinated with all fire system contractors and the Fire Department, and proper documentation of such test(s) provided.

All installation(s) must comply with NFPA and the Fire Department Technical Standard(s).

New Sun glider

Applicant signature: [Signature] Date: 9/17/12



# PORTLAND MAINE

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Receipts Details:

**Tender Information:** Check , Check Number: 4829

**Tender Amount:** 80.00

Receipt Header:

**Cashier Id:** bsaucier

**Receipt Date:** 9/21/2012

**Receipt Number:** 48496

Receipt Details:

Referance ID:	8098	Fee Type:	BP-FIRE
Receipt Number:	0	Payment Date:	
Transaction Amount:	80.00	Charge Amount:	80.00
Job ID: Job ID: 2012-07-4413-SF - new 24' x 32' single family cape w/ full dormer			
Additional Comments: 18 Castine			

Thank You for your Payment!



Fire Protection Design Services

Atlantic Design Resources, Ltd.

P.O. Box 496, Greenland, NH 03840  
Phone 603-418-0764  
Fax 603-418-6375  
asdrnh@gmail.com

## **HYDRAULIC CALCULATION PRODUCT SPECIFICATIONS**

**&**

## **INFORMATION**

For

### **PROJECT LOCATION**

18 Castine Street  
Portland Maine

### **CONTRACTOR**

Tim Davis Plumbing and Heating Inc.  
P.O. Box 255

Lyman Maine 04002

212066  
Rev. --

THE ENCLOSED INFORMATION WAS USED IN PREPARING THE DRAWINGS FOR THE REFERENCED PROJECT, WHICH ARE A PART OF THIS SUBMITTAL. THE PRODUCT INFORMATION PRESENTED WAS USED AS THE BASIS FOR DESIGN. ALTERNATE PRODUCTS OR MATERIALS OF EQUAL OR BETTER QUALITY OR OPERATIONAL CHARACTERISTICS, WHICH ARE LISTED FOR USE UNDER THE DESIGN CONDITIONS, MAY BE SUBSTITUTED AT THE INSTALLER'S DISCRETION WITH THE APPROVAL OF THE AUTHORITY HAVING JURISDICTION.

H Y D R A U L I C C A L C U L A T I O N S

C O V E R S H E E T

18 Castine Rd Portland Maine Test # 1

W A T E R S U P P L Y

STATIC PRESSURE (psi) 75  
RESIDUAL PRESSURE (psi) 35  
RESIDUAL FLOW (gpm) 1113

B O O S T E R P U M P S

NUMBER OF BOOSTER PUMPS 0

S P R I N K L E R S

MINIMUM FLOW PER SPRINKLER (gpm) 13  
MINIMUM PRESSURE PER SPRINKLER (psi) 7.23

THIS SYSTEM OPERATES AT A FLOW OF 26.17 gpm AT A PRESSURE OF 46.95 psi  
AT THE BASE OF THE RISER (REF. PT. 2)

PIPES USED FOR THIS SYSTEM

=====

016 POLYBUTYLENE  
009 BLAZEMASTER CPVC



HYDRAULIC CALCULATIONS AT SPECIFIED FLOW

THE FOLLOWING SPRINKLERS ARE OPERATING IN:

TEST AREA 1       TEST AREA 2       TEST AREA 3       REMOTE AREA

Elevation of sprinklers = Elevation above water test.

REF. PT.	K	ELEV. ft	FLOW gpm	---- PRESSURE (psi)----		
				Total	Velocity	Normal
101	4.90	34.00	13.00	7.55	0.51	7.04
102	4.90	34.00	13.17	7.23	0.00	7.23

THE SPRINKLER SYSTEM FLOW IS 26.17 gpm

THE OUTSIDE HOSE FLOW AT REFERENCE POINT NO. 1 IS 0.00 gpm

THE INSIDE HOSE       RACK SPKLR'S.

YARD HYDT. FLOW IS 0.00 gpm

THE FOLLOWING PRESSURES & FLOWS OCCUR

---> AT REF. PT. 1 <---

STATIC PRESSURE	75.00 psi		
RESIDUAL PRESSURE	35.00 psi	AT	1113.00 gpm
TOTAL SYSTEM FLOW	26.17 gpm		
AVAILABLE PRESSURE	74.96 psi	AT	26.17 gpm
OPERATING PRESSURE	63.58 psi	AT	26.17 gpm
PRESSURE REMAINING	11.38 psi		

THE ABOVE RESULTS INCLUDE 14.00 psi FRICTION LOSS AT REF. PT. # 2 FOR A

BACKFLOW PREVENTER  
 DETECTOR CHECK VALVE

METER  
 OTHER DEVICE

## FITTING Equivalent Length per NFPA 13 1994, 6-4.3

'-' Indicates Equivalent Length. 'T' Indicates Threaded Fitting

1=45 Elbow, 2=90 Elbow, 3='T'/Cross, 4=Butterfly Valve, 5=Gate Valve, 6=Swing Check Valve

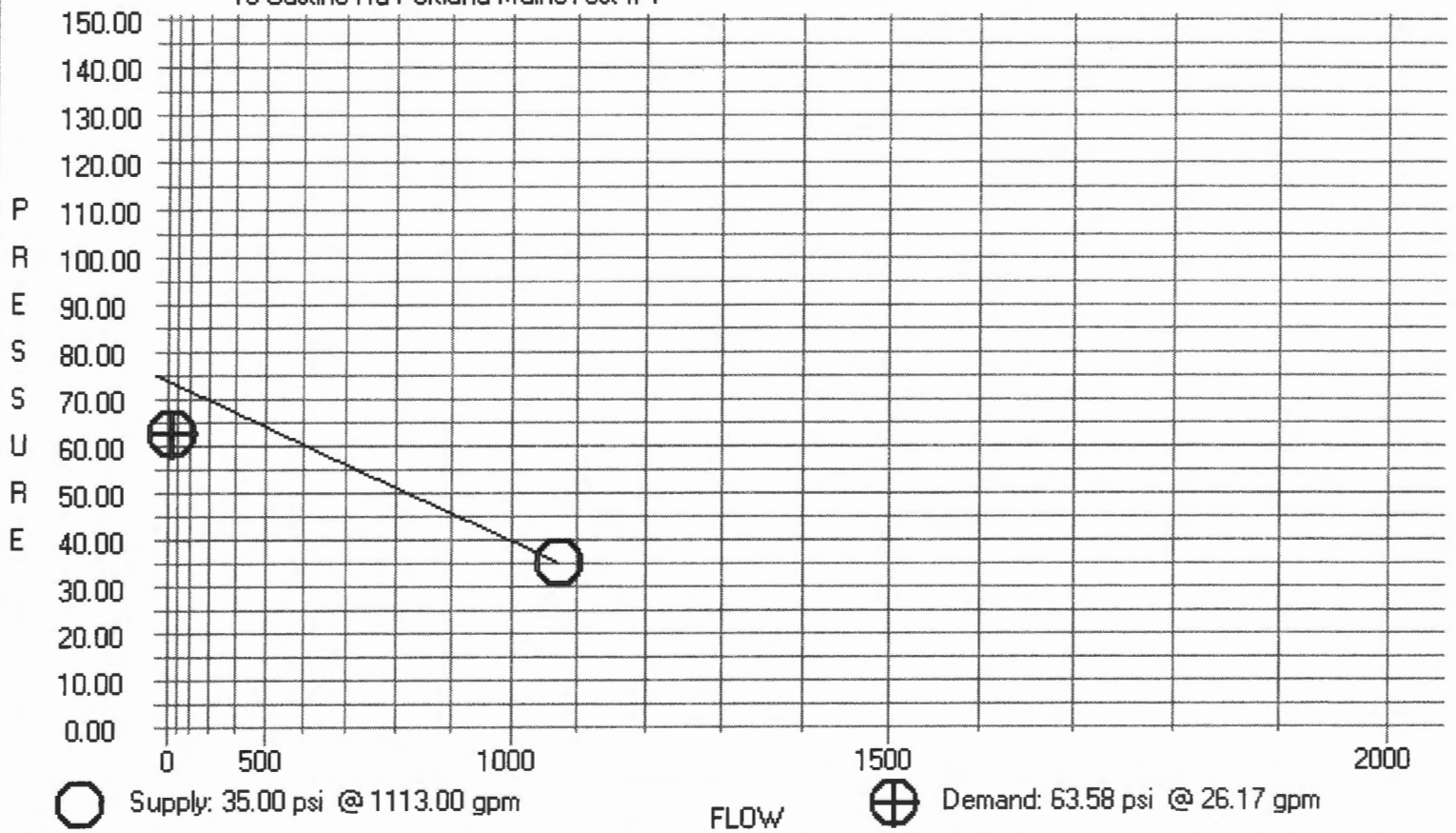
FROM	TO	FLOW (gpm)	PIPE (ft)	FITS	EQV. (ft)	H-W C	PIPE TYPE	DIA. (in)	FRIC. (psi)	ELEV. (psi)	Pt Pv Pn	PRESSURE (psi) Pt Pv Pn	DIFF
1	2	26.17	85.00	23	9.01	150	16	1.051	0.140	3.467	63.58	46.95	13.16
2	3	26.17	14.00	2246	22.45	150	9	1.109	0.108	3.467	46.95	25.56	17.93
3	4	26.17	6.00	3	5.01	150	9	1.109	0.108	0.000	25.56	24.37	1.19
4	5	26.17	5.00	2256	22.45	150	9	1.109	0.108	0.000	24.37	21.39	2.98
5	6	26.17	22.00	232	19.04	150	9	1.109	0.108	7.800	21.39	9.17	4.42
6	101	26.17	3.00	32	12.02	150	9	1.109	0.108	0.000	9.17	7.55	1.62
101	102	13.17	11.00	0	0.00	150	9	1.109	0.030	0.000	7.55	7.23	0.32

A MAX. VELOCITY OF 9.67 ft./sec. OCCURS BETWEEN REF. PT. 1 AND 2

Sprinkler-CALC Release 7.2 Win  
 By Walsh Engineering Inc.  
 North Kingstown R.I. U.S.A.

# WATER SUPPLY/DEMAND GRAPH

18 Castine Rd Portland Maine Test # 1



Sprinkler-CALC 7.2 Win



**V27, K4.9**

**Models V2730 and V2732  
Residential Pendant, Recessed Pendant  
and Specific Application  
(Flat, Sloped & Beamed Ceilings)  
Quick Response**

**PRODUCT DESCRIPTION**



V2730  
or  
V2732

Pendant



Recessed  
Pendant

These Model V27 residential sprinklers are designed to meet the requirements of NFPA 13, 13D and 13R for residential use in a variety of room sizes, depending upon available operating pressure and room configuration. Models V2730 and V2732 are UL Listed for use under smooth flat horizontal ceilings, sloped ceilings up to and including 8/12 (33.7°) pitch, and beamed ceilings. The design incorporates state-of-the-art, heat responsive, frangible glass bulb design (quick response) for prompt, precise operation. The die cast frame is more streamlined and attractive

than traditional sand cast frames. It is cast with a hex-shaped wrench boss to allow easy tightening from many angles, reducing assembly effort. This sprinkler is available in various finishes to meet many design requirements.

**Sprinkler Operation**

The operating mechanism is a frangible glass bulb which contains a heat responsive liquid. During a fire, the ambient temperature rises causing the liquid in the bulb to expand. When the ambient temperature reaches the rated temperature of the sprinkler, the bulb shatters. As a result, the waterway is

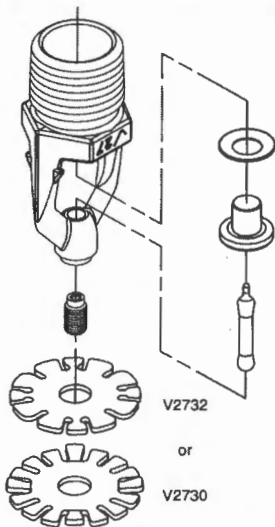
cleared of all sealing parts and water is discharged towards the deflector. The deflector is designed to distribute the water in a pattern that is most effective in controlling the fire.

**Coverage**

Residential spray coverage up to 20 feet X 20 feet (6,1 m X 6,1 m) room sizes per NFPA.

**These sprinklers meet the requirements of UL 1626 that become effective September 25, 2004.**

**TECHNICAL SPECIFICATIONS**



Exaggerated for Clarity

**Models:** V2730, V2732

**Style:** Pendant and Recessed Pendant

**Nominal Orifice Size:** 7/16" (12 mm)

**K-Factor:**

V2730 – 4.9 Imp. (7,1 S.I.∧) for room sizes up to 16' (4,9 m).

V2732 – 4.9 Imp. (7,1 S.I.∧) for room sizes 18' to 20' (5,5 and 6,1 m).

**Nominal Thread Size:** 1/2" NPT (15 mm)

**Max. Working Pressure:** 175 psi (1200 kPa)

**Factory Hydrostatic Test:** 100% @ 500 psi (3450 kPa)

**Min. Operating Pressure:** 7 psi (48 kPa)

**Temperature Rating:** See chart on page 2.

**MATERIAL SPECIFICATIONS**

**Pendant Deflector:**

Bronze per UNS C51000

**Bulb:** Glass with glycerin solution.

**Bulb Nominal Diameter:** Quick Response: 3,0 mm

**Load Screw:** Bronze per UNS C65100

**Pip Cap:** Bronze per UNS C65100

**Seal:** Teflon\* tape

**Frame:** Die cast brass 65-30

**ACCESSORIES**

**Installation Wrench:**

- Open End: V27
- Recessed: V38-3

**Sprinkler Finishes:**

- Plain brass
- Chrome plated
- White painted\*\*
- Custom painted\*\*

For escutcheons, cabinets and other accessories refer to separate sheet.

∧ For K-Factor when pressure is measured in Bar, multiply S.I. units by 10.0.

\*Teflon is a registered trademark of Dupont Co.

\*\*UL Listed for corrosion resistance in all configurations.

NOTE: Weather resistant recessed escutcheon available upon request.

**VICTAULIC® IS AN ISO 9001 CERTIFIED COMPANY**

<p><b>Victaulic Company of America</b> Phone: 1-800-PICK-VIC (1-800-742-5842) Fax: 610-250-8817 e-mail: pickvic@victaulic.com</p>	<p><b>Victaulic Company of Canada</b> Phone: 905-884-7444 Fax: 905-884-9774 e-mail: viccanada@victaulic.com</p>	<p><b>Victaulic Europe</b> Phone: 32-9-381-1500 Fax: 32-9-380-4438 e-mail: viceuro@victaulic.be</p>	<p><b>Victaulic America Latina</b> Phone: 610-559-3300 Fax: 610-559-3608 e-mail: vical@victaulic.com</p>	<p><b>Victaulic Asia Pacific</b> Phone: 65-6235-3035 Fax: 65-6235-0535 e-mail: vicap@victaulic.com</p>
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## APPROVALS/LISTINGS

Model	Nominal Orifice Size Inches/mm	Nominal K-Factor Imperial S.I. <sup>^</sup>	Response	Deflector Type	Approved Temperature Ratings °F/°C ‡			
					UL	ULC	NYC/MEA†	CSFM §
V2730	7/16 12	4.9 7,1	Quick	Pendent	155, 175 68,79	155, 175 68,79	155, 175 68,79	155, 175 68,79
V2730	7/16 12	4.9 7,1	Quick	Recessed Pendent Up to 1/2" Adjustment	155, 175 68,79	155, 175 68,79	155, 175 68,79	155, 175 68,79
V2732	7/16 12	4.9 7,1	Quick	Pendent	155, 175 68,79	155, 175 68,79	155, 175 68,79	155, 175 68,79
V2732	7/16 12	4.9 7,1	Quick	Recessed Pendent Up to 1/2" Adjustment	155, 175 68,79	155, 175 68,79	155, 175 68,79	155, 175 68,79

‡ Listings and approval as of printing.

<sup>^</sup> For K-Factor when pressure is measured in Bar, multiply S.I. units by 10.0.

† MEA #62-99-E.

§ CSFM #7690-0531:112

## RATINGS

All glass bulbs are rated for temperatures from -67°F (-55°C) up to those shown in adjacent table.

Sprinkler Temperature Classification	Victaulic Part Identification	Temperature – °F/°C		Glass Bulb Color
		Nominal Temperature Rating	Maximum Ambient Ceiling Temp.	
Ordinary	C	155 68	100 38	Red
Intermediate	E	175 79	150 68	Yellow

## ORDERING INFORMATION

Please specify the following when ordering:

Sprinkler Model Number

Style

Temperature Rating

K-Factor

Thread Size

Quantity

Sprinkler Finish

Escutcheon Finish

Wrench Model Number

## ⚠ WARNING



- Always read and understand installation, care, and maintenance instructions, supplied with each box of sprinklers, before proceeding with installation of any sprinklers.
  - Always wear safety glasses and foot protection.
  - Depressurize and drain the piping system before attempting to install, remove, or adjust any Victaulic piping products.
  - Installation rules, especially those governing obstruction, must be strictly followed.
  - Painting, plating, or any re-coating of sprinklers (other than that supplied by Victaulic) is not allowed.
- Failure to follow these instructions could result in serious personal injury and/or property damage.

The owner is responsible for maintaining the fire protection system and devices in proper operating condition. For minimum maintenance and inspection requirements, refer to the current National Fire Protection Association pamphlet that describes care and maintenance of sprinkler systems. In addition, the authority having jurisdiction may have additional maintenance, testing, and inspection requirements that must be followed.

If you need additional copies of this publication, or if you have any questions about the safe installation of this product, contact Victaulic World Headquarters, P.O. Box 31, Easton, Pennsylvania 18044-0031, 610-559-3300.

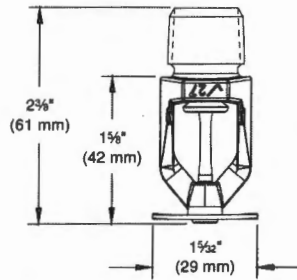
## WARRANTY

Refer to the Warranty section of the current Price List or contact Victaulic for details.

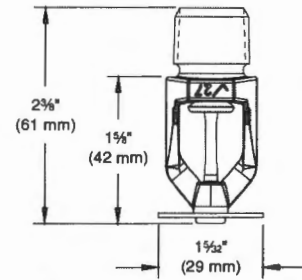
## AVAILABLE WRENCHES

	Open End	Recessed
V2730, V2732 – Pendent	V27	V38-3
V2730, V2732 – Recessed Pendent	–	V38-3

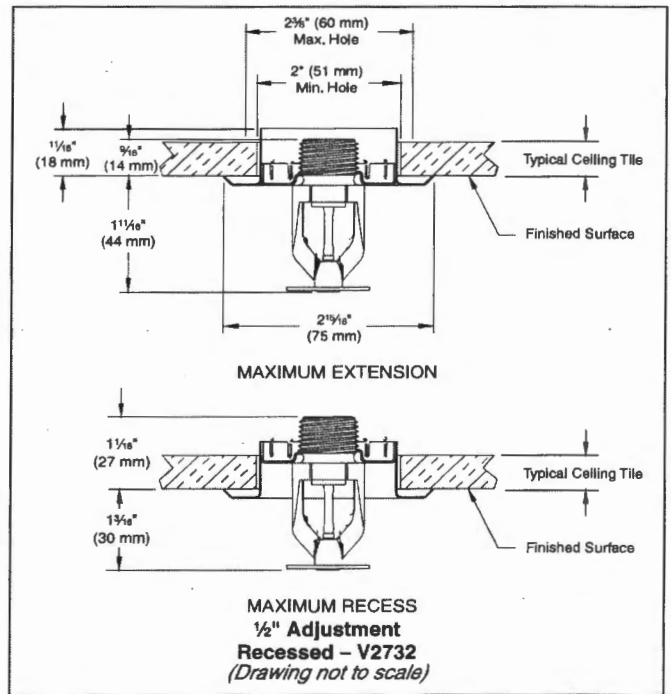
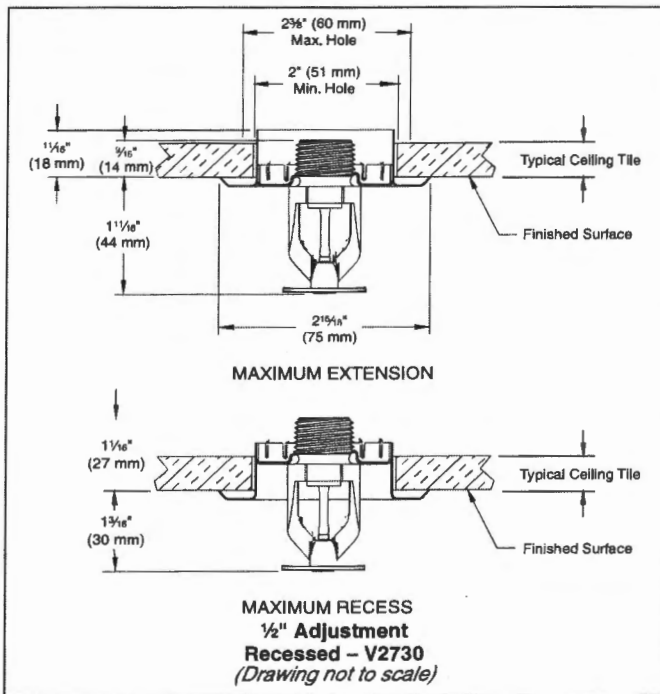
# DIMENSIONS



**Standard Pendant - V2730**



**Standard Pendant - V2732**



# ROOM SIZE

## Installed Under Smooth Flat Horizontal and Beamed Ceilings up to 2/12 (9.5°) Pitch

Model	Room Size Feet/meters	Min. Installation Spacing Feet/meters	Nominal K-Factor Imperial S.I. <sup>^</sup>	Minimum Flow per Sprinkler for Smooth Flat Horizontal and Beamed Ceilings Max. 2/12 (9.5°) Pitch for NFPA 13R or 13D* GPM/LPM @ PSI/kPa	
				155°F/68°C	175°F/79°C
				V2730	12 X 12 3,7 X 3,7
V2730	14 X 14 4,3 X 4,3	8.0 2.4	4.9 7,1	13 GPM @ 7.0 PSI 49,2 LPM @ 48,5 kPa	15 GPM @ 9.4 PSI 56,8 LPM @ 64,6 kPa
V2730	16 X 16 4,9 X 4,9	8.0 2.4	4.9 7,1	13 GPM @ 7.0 PSI 49,2 LPM @ 48,5 kPa	15 GPM @ 9.4 PSI 56,8 LPM @ 64,6 kPa
V2732	12 X 12 3,7 X 3,7	8.0 2.4	4.9 7,1	13 GPM @ 7.0 PSI 49,2 LPM @ 48,5 kPa	13 GPM @ 7.0 PSI 49,2 LPM @ 48,5 kPa
V2732	14 X 14 4,3 X 4,3	8.0 2.4	4.9 7,1	17 GPM @ 12.0 PSI 64,3 LPM @ 83,0 kPa	17 GPM @ 12.0 PSI 64,3 LPM @ 83,0 kPa
V2732	16 X 16 4,9 X 4,9	8.0 2.4	4.9 7,1	17 GPM @ 12.0 PSI 64,3 LPM @ 83,0 kPa	17 GPM @ 12.0 PSI 64,3 LPM @ 83,0 kPa
V2732	18 X 18 5,5 X 5,5	8.0 2.4	4.9 7,1	17 GPM @ 12.0 PSI 64,3 LPM @ 83,0 kPa	17 GPM @ 12.0 PSI 64,3 LPM @ 83,0 kPa
V2732	20 X 20 6,1 X 6,1	8.0 2.4	4.9 7,1	20 GPM @ 16.7 PSI 75,7 LPM @ 114,9 kPa	20 GPM @ 16.7 PSI 75,7 LPM @ 114,9 kPa

## Installed Under Sloped Ceilings up to 4/12 (18.4°) Pitch

Model	Room Size Feet/meters	Min. Installation Spacing Feet/meters	Nominal K-Factor Imperial S.I. <sup>^</sup>	Minimum Flow per Sprinkler for Sloped Ceilings Max. 4/12 (18.4°) Pitch for NFPA 13R or 13D* GPM/LPM @ PSI/kPa	
				155°F/68°C	175°F/79°C
				V2730	12 X 12 3,7 X 3,7
V2730	14 X 14 4,3 X 4,3	8.0 2.4	4.9 7,1	13 GPM @ 7.0 PSI 49,2 LPM @ 48,5 kPa	15 GPM @ 9.4 PSI 56,8 LPM @ 64,6 kPa
V2730	16 X 16 4,9 X 4,9	8.0 2.4	4.9 7,1	13 GPM @ 7.0 PSI 49,2 LPM @ 48,5 kPa	15 GPM @ 9.4 PSI 56,8 LPM @ 64,6 kPa
V2732	12 X 12 3,7 X 3,7	8.0 2.4	4.9 7,1	17 GPM @ 12.0 PSI 64,3 LPM @ 83,0 kPa	19 GPM @ 15.0 PSI 71,9 LPM @ 103,0 kPa
V2732	14 X 14 4,3 X 4,3	8.0 2.4	4.9 7,1	17 GPM @ 12.0 PSI 64,3 LPM @ 83,0 kPa	19 GPM @ 15.0 PSI 71,9 LPM @ 103,0 kPa
V2732	16 X 16 4,9 X 4,9	8.0 2.4	4.9 7,1	17 GPM @ 12.0 PSI 64,3 LPM @ 83,0 kPa	19 GPM @ 15.0 PSI 71,9 LPM @ 103,0 kPa
V2732	18 X 18 5,5 X 5,5	8.0 2.4	4.9 7,1	17 GPM @ 12.0 PSI 64,3 LPM @ 83,0 kPa	19 GPM @ 15.0 PSI 71,9 LPM @ 103,0 kPa
V2732	20 X 20 6,1 X 6,1	8.0 2.4	4.9 7,1	20 GPM @ 16.7 PSI 75,7 LPM @ 114,9 kPa	21 GPM @ 18.4 PSI 79,5 LPM @ 127,0 kPa

## Installed Under Sloped Ceilings up to 8/12 (33.7°) Pitch

Model	Room Size Feet/meters	Min. Installation Spacing Feet/meters	Nominal K-Factor Imperial S.I. <sup>^</sup>	Minimum Flow per Sprinkler for Sloped Ceilings Max. 8/12 (33.7°) Pitch for NFPA 13R or 13D* GPM/LPM @ PSI/kPa	
				155°F/68°C	175°F/79°C
				V2730	12 X 12 3,7 X 3,7
V2730	14 X 14 4,3 X 4,3	8.0 2.4	4.9 7,1	15 GPM @ 9.4 PSI 56,8 LPM @ 65,0 kPa	20 GPM @ 16.7 PSI 75,7 LPM @ 114,9 kPa
V2730	16 X 16 4,9 X 4,9	8.0 2.4	4.9 7,1	15 GPM @ 9.4 PSI 56,8 LPM @ 65,0 kPa	20 GPM @ 16.7 PSI 75,7 LPM @ 114,9 kPa
V2732	12 X 12 3,7 X 3,7	8.0 2.4	4.9 7,1	17 GPM @ 12.0 PSI 64,3 LPM @ 83,0 kPa	23 GPM @ 22.0 PSI 87,1 LPM @ 152,0 kPa
V2732	14 X 14 4,3 X 4,3	8.0 2.4	4.9 7,1	17 GPM @ 12.0 PSI 64,3 LPM @ 83,0 kPa	23 GPM @ 22.0 PSI 87,1 LPM @ 152,0 kPa
V2732	16 X 16 4,9 X 4,9	8.0 2.4	4.9 7,1	17 GPM @ 12.0 PSI 64,3 LPM @ 83,0 kPa	23 GPM @ 22.0 PSI 87,1 LPM @ 152,0 kPa
V2732	18 X 18 5,5 X 5,5	8.0 2.4	4.9 7,1	17 GPM @ 12.0 PSI 64,3 LPM @ 83,0 kPa	23 GPM @ 22.0 PSI 87,1 LPM @ 152,0 kPa
V2732	20 X 20 6,1 X 6,1	8.0 2.4	4.9 7,1	26 GPM @ 28.2 PSI 98,4 LPM @ 194,0 kPa	- -

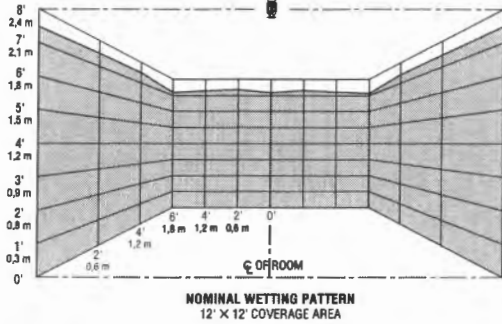
### NOTES:

<sup>^</sup> For K-Factor when pressure is measured in Bar, multiply S.I. units by 10.0.

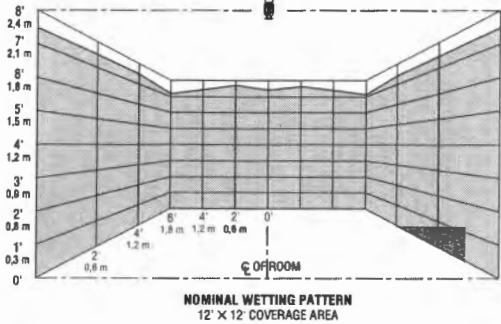
\* For systems designed to NFPA 13, the number of design sprinklers is to be the four most demanding sprinklers. The minimum required discharge from each of the four sprinklers is to be the greater of the flow rates provided in the table for NFPA 13D and 13R systems and the maximum allowable coverage area or a minimum discharge of 0.1 gpm/ft.<sup>2</sup> over the design area of the four most demanding sprinklers for the actual coverage areas being protected by four sprinklers.

# NOMINAL WETTING PATTERNS

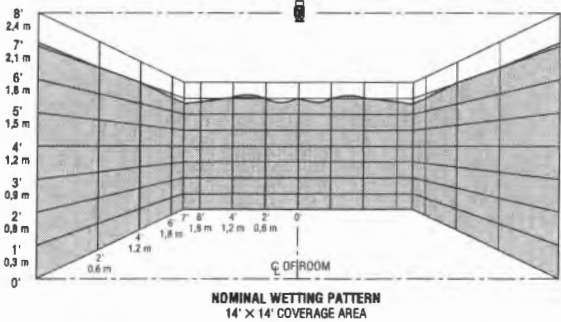
**MODEL V2730**  
**K4.9 RESIDENTIAL PENDENT AND RECESSED PENDENT**  
 13 GPM (49,2 LPM)



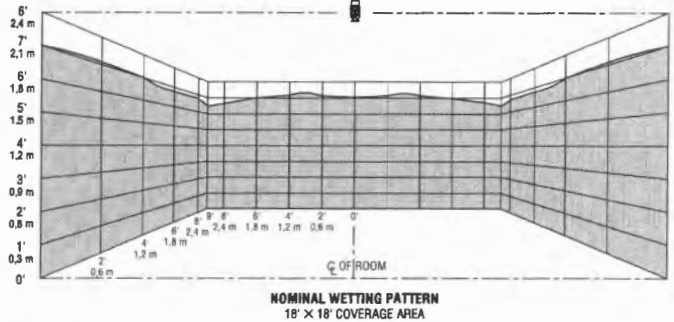
**MODEL V2732**  
**K4.9 RESIDENTIAL PENDENT AND RECESSED PENDENT**  
 13 GPM (49,2 LPM)



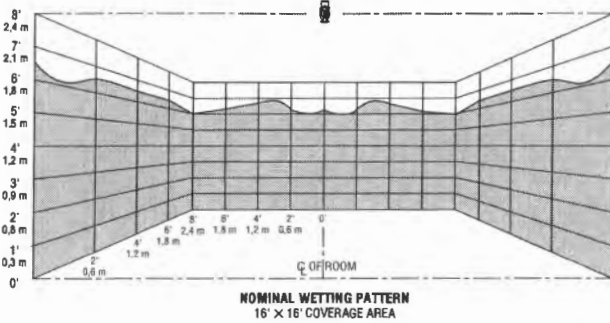
**MODEL V2730**  
**K4.9 RESIDENTIAL PENDENT AND RECESSED PENDENT**  
 13 GPM (49,2 LPM)



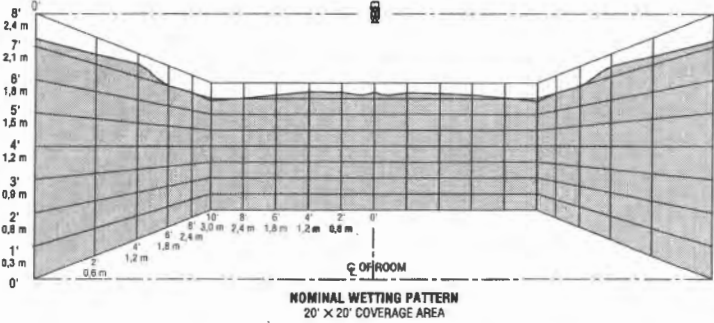
**MODEL V2732**  
**K4.9 RESIDENTIAL PENDENT AND RECESSED PENDENT**  
 17 GPM (64,3 LPM)



**MODEL V2730**  
**K4.9 RESIDENTIAL PENDENT AND RECESSED PENDENT**  
 13 GPM (49,2 LPM)



**MODEL V2732**  
**K4.9 RESIDENTIAL PENDENT AND RECESSED PENDENT**  
 20 GPM (75,7 LPM)



**NOTES:**

1. Data shown is approximate and can vary due to differences in installation.
2. These graphs illustrate approximate wall-wetting patterns for these specific Victaulic FireLock Automatic Sprinklers. They are provided as information for guidance and should not be used as minimum sprinkler spacing rules for installation. Sprinkler location shall be in accordance with the obstruction rules for residential sprinklers in NFPA 13 (2002 or later revision). Failure to follow these guidelines could adversely affect the performance of the sprinkler and will void all Listings, Approvals and Warranties.
3. All patterns are symmetric to waterway.



# BEAMED CEILINGS

## Installation Guidelines

The Victaulic Model V2730 and V2732 Residential Pendent Sprinklers are UL Listed for use in beamed ceilings in residential occupancies. These sprinklers can be installed in or adjacent to non-combustible, combustible, solid or hollow-core beams with solid surfaces per the following guidelines. See the Room Size section on page 4 for specific flow/pressure requirements for hydraulic design.

**Primary Beams:** The main longitudinal beams attached directly to a smooth flat horizontal ceiling of any height.

**Secondary Beams:** The beams running perpendicular to the primary beams, attached directly to a smooth flat horizontal ceiling of any height.

**Beam Cross Section:** The maximum allowable beam depth is 14". The secondary beam depth cannot be greater than the primary beam depth. The width is unlimited. The cross section can vary between rectangular and circular.

### Beam Spacing:

- **Primary Beams:** The distance from the wall to the center of the nearest primary beam must be at least 3'4" and not more than 1/2 the Listed sprinkler spacing.
- **Secondary Beams:** The beam pockets created by the primary beams cannot exceed 20 ft. in length. If the primary beams exceed 20 ft., then a secondary beam must be placed such that the pocket created does not exceed 20 ft. When a secondary beam is placed for this reason, then the secondary beam must be of a depth equal to the primary beams. When the primary beams are less than 20 ft., secondary beams are not required, but may be placed at any distance from the wall and at any center to center distance between beams.

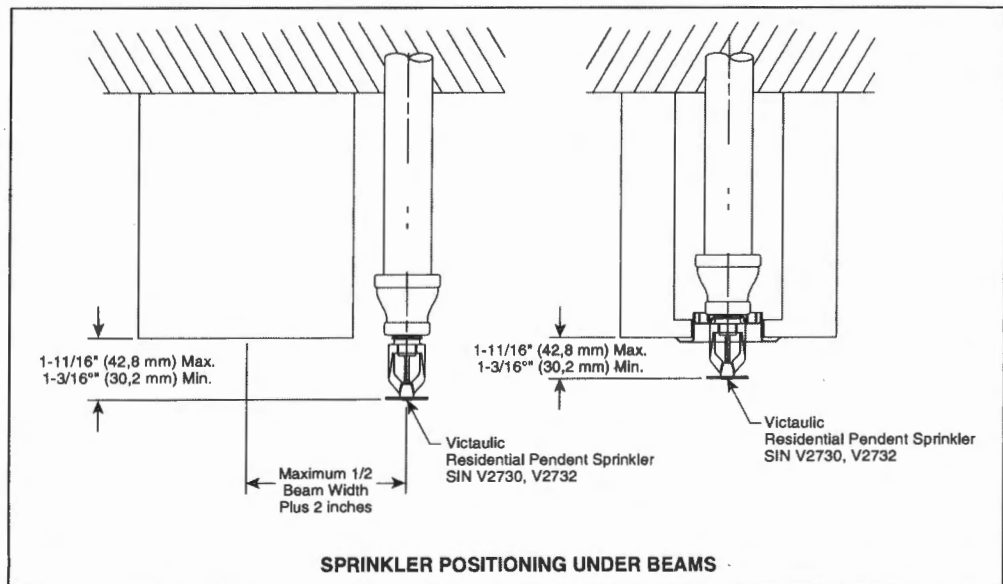
**Lintels:** Are required over doorways exiting the compartment. The minimum lintel height is 8 inches or at least the depth of the primary beams, whichever is greater.

**Soffit and Beam combinations:** Soffits may be installed around the room perimeter. The beams would then be placed within the soffit area. There is no limitation for the size of the soffit as long as the water distribution is not impaired per the obstruction rules in NFPA 13 for Residential sprinklers. Beam pockets would then be measured from the face of the soffit. The sprinkler coverage area shall be spaced off the walls.

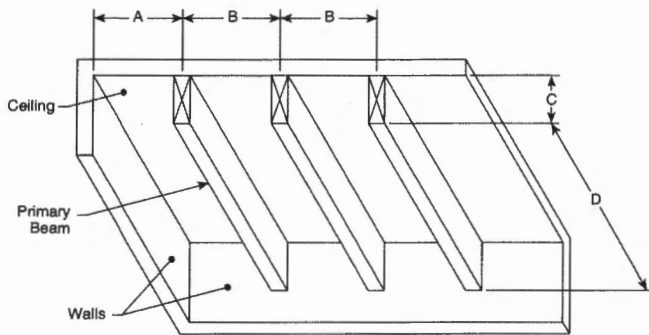
**Sprinkler Location:** The sprinklers must be located below the underside of the beams, not in the beam pockets. The deflector shall be within 1<sup>3</sup>/<sub>16</sub>" and 1<sup>11</sup>/<sub>16</sub>" off the bottom of the primary beam. The horizontal distance between the centerline of the sprinkler and the edge of the primary beam cannot be more than 2".

**⚠ CAUTION**

A structural engineer must be consulted before drilling into beams to install drops. If drilling into the beam is not allowed, then the drop may be installed adjacent to the primary beam per the dimensions above.



# BEAMED CEILING ARRANGEMENTS



**PRIMARY BEAM SPANS UP TO 20'-0" (6,1 m)**

**Figure 3A**

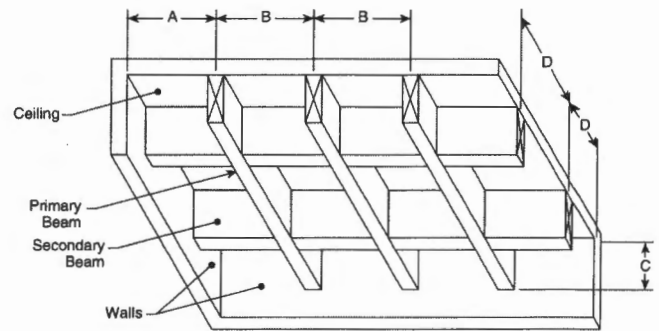
All dimensions are measured to wall faces and to centerlines of beams.

**A = Distance from wall to nearest primary beam:** Minimum: 3'-4" (1,0 m); Maximum: No more than 1/2 listed sprinkler spacing.

**B = Spacing between primary beams:** 20'-0" (6,1 m) maximum

**C = Beam depth:** 14" (356 mm) maximum.

**D = Beam span:** 20'-0" (6,1 m) maximum.



**PRIMARY BEAM SPANS GREATER THAN 20'-0" (6,1 m)**

**Figure 3B**

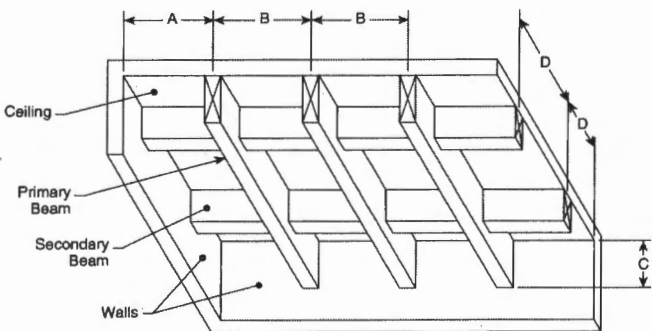
All dimensions are measured to wall faces and to centerlines of beams.

**A = Distance from wall to nearest primary beam:** Minimum: 3'-4" (1,0 m); Maximum: No more than 1/2 listed sprinkler spacing.

**B = Spacing between primary beams:** 20'-0" (6,1 m) maximum

**C = Beam depth:** 14" (356 mm) maximum.

**D = Secondary Beam Spacing:** 20'-0" (6,1 m) maximum spacing. Secondary beams are to be equal in depth to primary beams and are required so that the primary beam pockets do not exceed 20'-0" (6,1 m).



**COMBINATIONS OF PRIMARY AND SECONDARY BEAMS**

**Figure 3C**

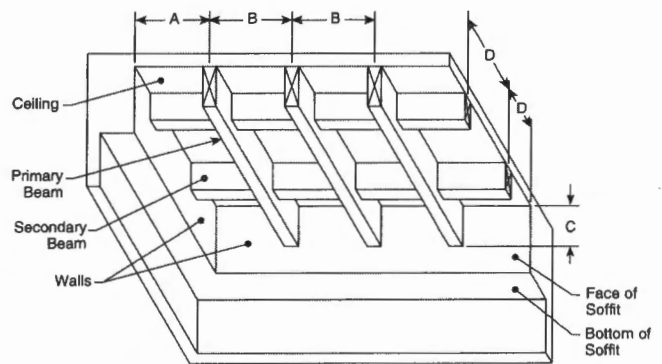
All dimensions are measured to wall faces and to centerlines of beams.

**A = Distance from wall to nearest primary beam:** Minimum: 3'-4" (1,0 m); Maximum: No more than 1/2 listed sprinkler spacing.

**B = Spacing between primary beams:** 20'-0" (6,1 m) maximum

**C = Beam depth:** 14" (356 mm) maximum. Note: Secondary beam depth cannot be greater than the primary beam.

**D = Secondary Beam Spacing:** Secondary beams may be spaced at any distance, unless primary beam spans exceed 20'-0" (6,1 m).



**BEAM AND SOFFIT ARRANGEMENTS**

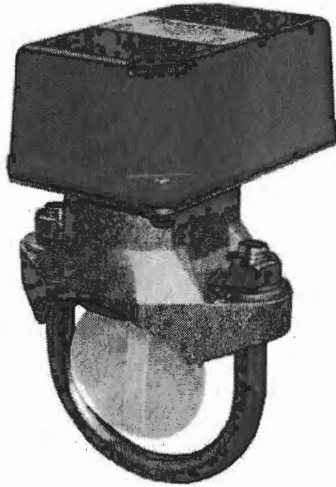
**Figure 3D**

**D =** Use the dimensions shown in Figures 3A, 3B, and 3C, except that measurements are taken from the face of the soffit instead of from the wall surface.

**NOTE:** The sprinkler area of coverage is to be measured from the wall.

This product shall be manufactured by Victaulic Company. All products to be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligations.

**VSR**  
**VANE TYPE WATERFLOW**  
**ALARM SWITCH WITH RETARD**



Specifications subject to change without notice.

Ordering Information			
Nominal Pipe Size		Model	Part Number
2"	DN50	VSR-2	1144402
2 1/2"	DN65	VSR-2 1/2	1144425
3"	DN80	VSR-3	1144403
3 1/2"	-	VSR-3 1/2	1144435
4"	DN100	VSR-4	1144404
5"	-	VSR-5	1144405
6"	DN150	VSR-6	1144406
8"	DN200	VSR-8	1144408

**Optional:** Cover Tamper Switch Kit, stock no. 0090148

**Replaceable Components:** Retard/Switch Assembly, stock no. 1029030

**UL, CUL and CSFM Listed, FM Approved, LPCB Approved, For CE Marked (EN12259-5) / VdS Approved model use VSR-EU**

**Service Pressure:** 450 PSI (31 BAR) - UL

**Flow Sensitivity Range for Signal:**

4-10 GPM (15-38 LPM) - UL

**Maximum Surge:** 18 FPS (5.5 m/s)

**Contact Ratings:** Two sets of SPDT (Form C)

10.0 Amps at 125/250VAC

2.0 Amps at 30VDC Resistive

10 mAmps min. at 24VDC

**Conduit Entrances:** Two knockouts provided for 1/2" conduit.

Individual switch compartments suitable for dissimilar voltages.

**Environmental Specifications:**

- NEMA 4/IP54 Rated Enclosure suitable for indoor or outdoor use with factory installed gasket and die-cast housing when used with appropriate conduit fitting.
- Temperature Range: 40°F - 120°F, (4.5°C - 49°C) - UL
- Non-corrosive sleeve factory installed in saddle.

**Service Use:**

Automatic Sprinkler

NFPA-13

One or two family dwelling

NFPA-13D

Residential occupancy up to four stories

NFPA-13R

National Fire Alarm Code

NFPA-72

**WARNING**

- Installation must be performed by qualified personnel and in accordance with all national and local codes and ordinances.
- Shock hazard. Disconnect power source before servicing. Serious injury or death could result.
- Risk of explosion. Not for use in hazardous locations. Serious injury or death could result.

**CAUTION**

Waterflow switches that are monitoring wet pipe sprinkler systems shall not be used as the sole initiating device to discharge AFFF, deluge, or chemical suppression systems. Waterflow switches used for this application may result in unintended discharges caused by surges, trapped air, or short retard times.

**General Information**

The Model VSR is a vane type waterflow switch for use on wet sprinkler systems. It is UL Listed and FM Approved for use on steel pipe; schedules 10 through 40, sizes 2" thru 8" (50 mm thru 200 mm). LPC approved sizes are 2" thru 8" (50 mm thru 200 mm). See Ordering Information chart.

The VSR may also be used as a sectional waterflow detector on large systems. The VSR contains two single pole, double throw, snap action switches and an adjustable, instantly recycling pneumatic retard. The switches are actuated when a flow of 10 GPM (38 LPM) or more occurs downstream of the device. The flow condition must exist for a period of time necessary to overcome the selected retard period.

**Enclosure**

The VSR switches and retard device are enclosed in a general purpose, die-cast housing. The cover is held in place with two tamper resistant screws which require a special key for removal. A field installable cover tamper switch is available as an option which may be used to indicate unauthorized removal of the cover. See bulletin number 5401103 for installation instructions of this switch.

### Installation (see Fig. 1)

These devices may be mounted on horizontal or vertical pipe. On horizontal pipe they shall be installed on the top side of the pipe where they will be accessible. The device should not be installed within 6" (15 cm) of a fitting which changes the direction of the waterflow or within 24" (60 cm) of a valve or drain.

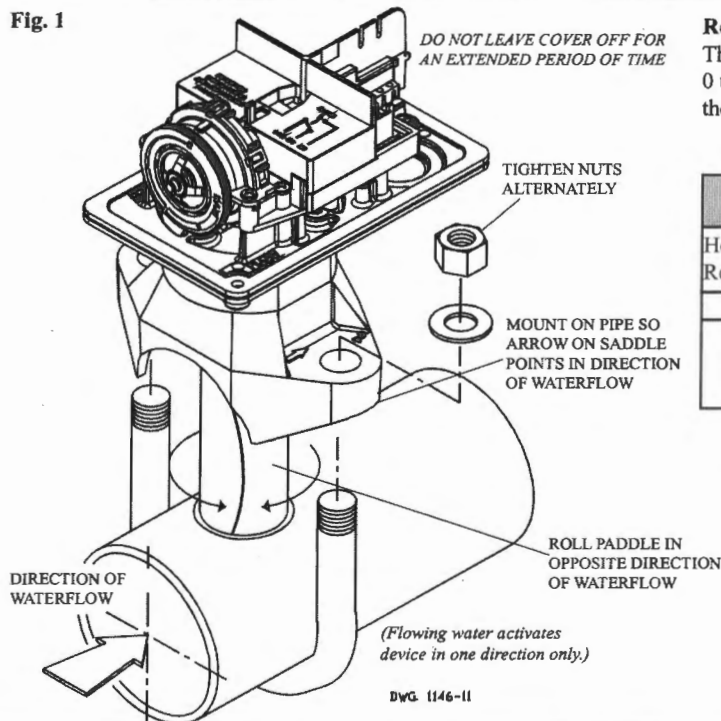
**NOTE:** Do not leave cover off for an extended period of time.

Drain the system and drill a hole in the pipe using a hole saw in a slow speed drill (see Fig. 1). Clean the inside pipe of all growth or other material for a distance equal to the pipe diameter on either side of the hole. Roll the vane so that it may be inserted into the hole; do not bend or crease it. Insert the vane so that the arrow on the saddle points in the direction of the waterflow. Take care not to damage the non-corrosive bushing in the saddle. The bushing should fit inside the hole in the pipe. Install the saddle strap and tighten nuts alternately to required torque (see the chart in Fig. 1). The vane must not rub the inside of the pipe or bind in any way.

### CAUTION

Do not trim the paddle. Failure to follow these instructions may prevent the device from operating and will void the warranty.

Fig. 1

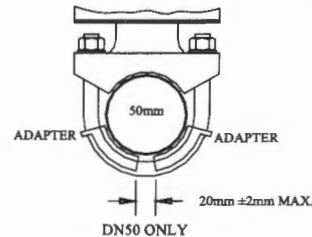
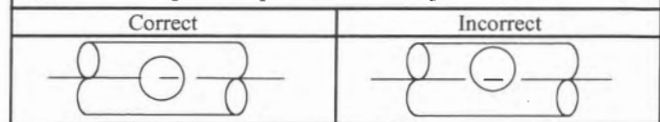


### Retard Adjustment

The delay can be adjusted by rotating the retard adjustment knob from 0 to the max setting (60-90 seconds). The time delay should be set at the minimum required to prevent false alarms

### CAUTION

Hole must be drilled perpendicular to the pipe and vertically centered. Refer to the Compatible Pipe/Installation Requirements chart for size.



DWG# 1146-1F

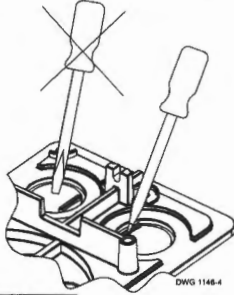
### Compatible Pipe/ Installation Requirements

Model	Nominal Pipe Size		Nominal Pipe O.D.		Pipe Wall Thickness								Hole Size		U-Bolt Nuts Torque	
					Schedule 10 (UL)		Schedule 40 (UL)		BS-1387 (LPC)		DN (VDS)					
					inch	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch	mm
VSR-2	2	DN50	2.375	60.3	0.109	2.77	0.154	3.91	0.142	3.6	0.091	2.3	1.25 + .125/-0.062	33.0 ± 2.0	20	27
VSR-2 1/2	2.5	-	2.875	73.0	0.120	3.05	0.203	5.16	-	-	-	-				
VSR-2 1/2	-	DN65	3.000	76.1	-	-	-	-	0.142	3.6	0.102	2.6				
VSR-3	3	DN80	3.500	88.9	0.120	3.05	0.216	5.49	0.157	4.0	0.114	2.9	2.00 ± .125	50.8 ± 2.0		
VSR-3 1/2	3.5	-	4.000	101.6	0.120	3.05	0.226	5.74	-	-	-	-				
VSR-4	4	DN100	4.500	114.3	0.120	3.05	0.237	6.02	0.177	4.5	0.126	3.2				
VSR-5	5	-	5.563	141.3	0.134	3.40	0.258	6.55	-	-	-	-				
VSR-6	6	DN150	6.625	168.3	0.134	3.40	0.280	7.11	0.197	5.0	0.157	4.0				
VSR-8	8	DN200	8.625	219.1	0.148	3.76	0.322	8.18	0.248	6.3	0.177	4.5				

**NOTE:** For copper or plastic pipe use Model VSR-CF.

**Fig. 2**

To remove knockouts: Place screwdriver at inside edge of knockouts, not in the center.

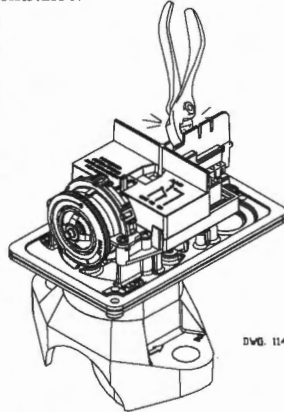


**NOTICE**

Do not drill into the base as this creates metal shavings which can create electrical hazards and damage the device. Drilling voids the warranty.

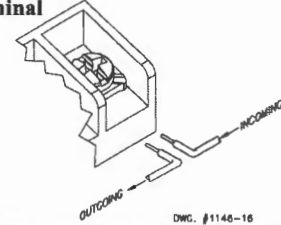
**Fig. 3**

Break out thin section of cover when wiring both switches from one conduit entrance.



**Fig. 4**

**Switch Terminal Connections Clamping Plate Terminal**



**WARNING**

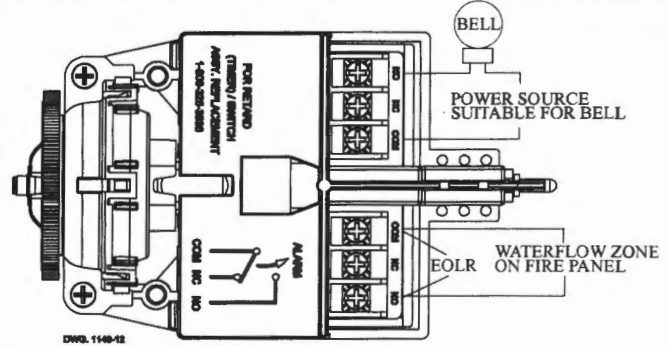
An uninsulated section of a single conductor should not be looped around the terminal and serve as two separate connections. The wire must be severed, thereby providing supervision of the connection in the event that the wire become dislodged from under the terminal. Failure to sever the wire may render the device inoperable risking severe property damage and loss of life.

Do not strip wire beyond 3/8" of length or expose an uninsulated conductor beyond the edge of the terminal block. When using stranded wire, capture all strands under the clamping plate.

**Fig. 5 Typical Electrical Connections**

**Notes:**

1. The Model VSR has two switches, one can be used to operate a central station, proprietary or remote signaling unit, while the other contact is used to operate a local audible or visual annunciator.
2. A condition of LPC Approval of this product is that the electrical entry must be sealed to exclude moisture.
3. For supervised circuits, see "Switch Terminal Connections" drawing and warning note (Fig. 4).



**Testing**

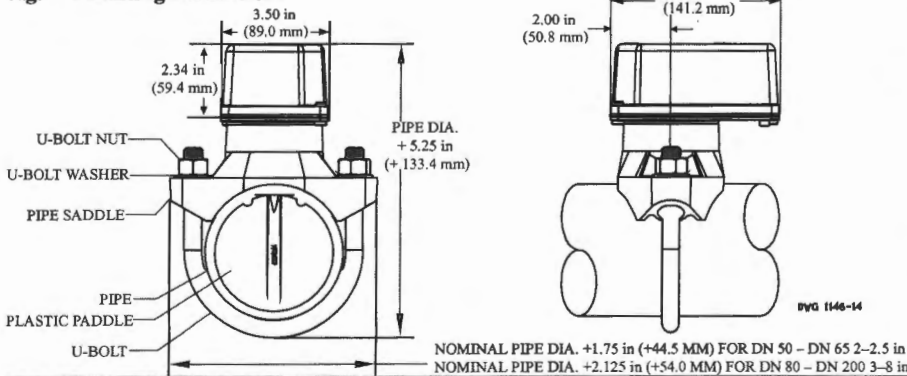
The frequency of inspection and testing for the Model VSR and its associated protective monitoring system shall be in accordance with applicable NFPA Codes and Standards and/or the authority having jurisdiction (manufacturer recommends quarterly or more frequently).

If provided, the inspector's test valve shall always be used for test purposes. If there are no provisions for testing the operation of the flow detection device on the system, application of the VSR is not recommended or advisable.

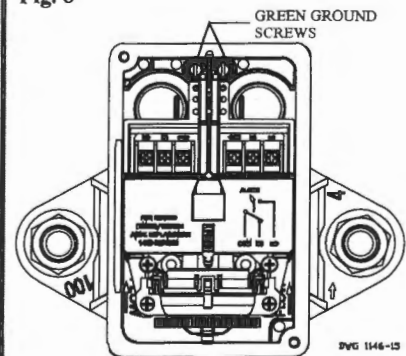
A minimum flow of 10 GPM (38 LPM) is required to activate this device.

**NOTICE** Advise the person responsible for testing of the fire protection system that this system must be tested in accordance with the testing instructions.

**Fig. 7 Mounting Dimensions**



**Fig. 8**



**Maintenance**

Inspect detectors monthly. If leaks are found, replace the detector. The VSR waterflow switch should provide years of trouble-free service. The retard and switch assembly are easily field replaceable. In the unlikely event that either component does not perform properly, please order replacement retard switch assembly stock #1029030 (see Fig. 6). There is no maintenance required, only periodic testing and inspection.

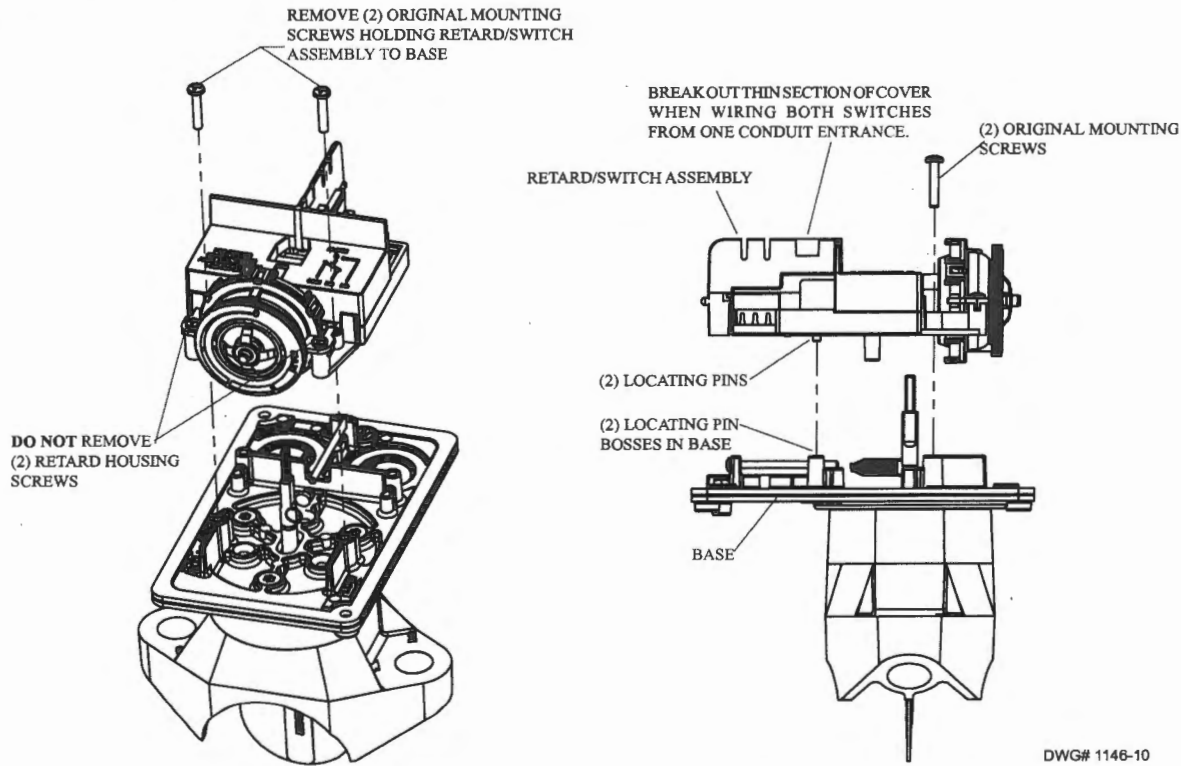
**Retard/Switch Assembly Replacement (See Fig. 6)**

**NOTICE**

The Retard/Switch Assembly is field-replaceable without draining the system or removing the waterflow switch from the pipe

1. Make sure the fire alarm zone or circuit connected to the waterflow switch is bypassed or otherwise taken out of service.
2. Disconnect the power source for local bell (if applicable).
3. Identify and remove all wires from the waterflow switch.
4. Remove the (2) mounting screws holding retard/switch assembly to the base. **Do not** remove the (2) retard housing screws.
5. Remove the retard assembly by lifting it straight up over the tripstem.
6. Install the new retard assembly. Make sure the locating pins on the retard/switch assembly fit into the locating pin bosses on the base.
7. Re-install the (2) original mounting screws.
8. Reconnect all wires. Perform a flow test and place the system back in service.

**Fig. 6**



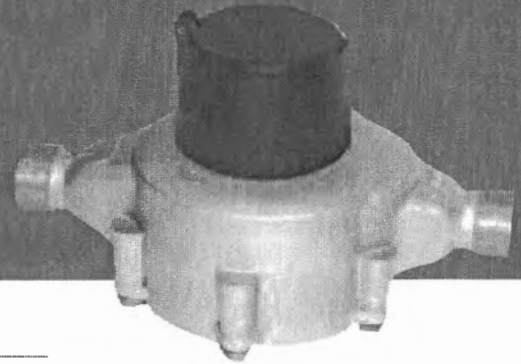
**Removal of Waterflow Switch**

- To prevent accidental water damage, all control valves should be shut tight and the system completely drained before waterflow detectors are removed or replaced.
- Turn off electrical power to the detector, then disconnect wiring.
- Loosen nuts and remove U-bolts.
- Gently lift the saddle far enough to get your fingers under it. With your fingers, roll the vane so it will fit through the hole while continuing to lift the waterflow detector saddle.
- Lift detector clear of pipe.

# C700 Positive Displacement Meter

*Waterworks or Low-Lead Bronze, Magnetic Drive, External Threaded Spuds*

**Size: 1"**



<u>Size:</u>	<b>1"</b>
95%-101% Accuracy GPM	3/4
98.5% -101.5% Accuracy GPM	3-50
Continuous Flow GPM	2.5
Maximum Flow GPM	50
Operating Pressure psi	150
Operating Temperature °F	120

Sweep Hand Registers:

US Gallons	10
Cubic Feet	1
Cubic Meters (Canada)	1/10
Cubic Meters (Intl.)	1/10

Capacity of Register (millions):

US Gallons (millions)	10
Cubic Feet (millions)	10
Cubic Meters (Canada)	1/10
Cubic Meters (Intl.)	1

Register Type:

Permanently sealed direct reading

Materials:

Main Case	Standard waterworks or optional low-lead Bronze
Bottom Plate Options	Waterworks or low-lead Bronze or Cast Iron
Bottom Gasket-Liner	Nitrile
Body Bolts	Stainless Steel
Measuring Chamber	Compounded Polymer
Division Plate	Loaded Nylon
Piston	High Impact Polymer
Thrust Bearing Insert	Loaded Nylon
Driving Bar	Loaded Nylon
Strainer	Polypropylene
Register Can	90% Copper Alloy
Register Lens	Tempered Glass
Register Housing and Lid	Polymer or Bronze

**Operation.** The C700 is an oscillating piston style, positive displacement water meter. The product utilizes a piston that water use rotates in a measuring chamber, each piston revolution being equivalent to a known volume of water. The piston movement is transferred by a magnetic drive to a straight reading sealed register which contains the appropriate reduction gearing.

**Compliance to Standards.** The C700 fully complies with American Water Works Association Standard C700, latest revision, and is California Department of Weights and Measures approved. C700 low-lead bronze models are NSF-61 certified and comply with California Proposition 65.

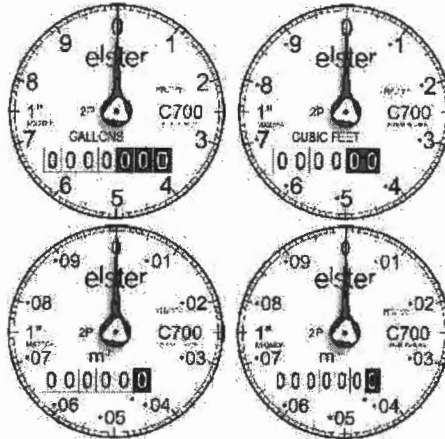
**Installation.** The meter must be installed in a clean pipeline, free from any foreign materials. Install the meter with direction of flow as indicated by the arrow cast in the meter case. The meter may be installed in horizontal, vertical or inclined lines.

**Application.** The meter is for use only with POTABLE COLD WATER up to 120°F (50°C) and

working pressures up to 150 psi. The meter will register accurately to  $100\% \pm 1\ 1/2\%$  within the normal flows. Accuracy tests are made before shipment, so no adjustments need to be made before installation.

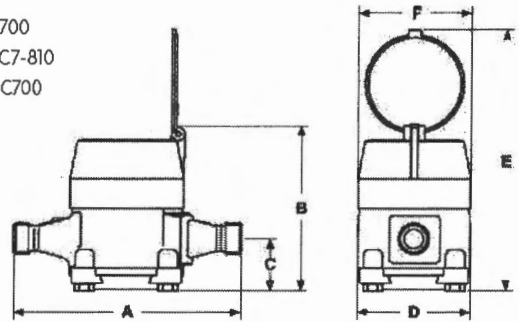
**Construction.** The meter consists of a straight through-flow main case, dual inlet measuring chamber, vertically grooved oscillating piston, high capacity strainer, removable bottom plate, full rubber liner, body bolts with integral washers and a magnetically driven register. The main case is cast in waterworks or low-lead bronze with raised characters designating model, size and direction of flow. Maincase bottom plates are available in a choice of waterworks or low-lead bronze or, if frost protection is desired, in cast iron. The 2-piece snap-fit measuring chamber is of a top and bottom inlet, side output design and features a unique self-flushing sediment well. Other features include a removable, contoured division plate, captive drive bar and high torque magnet complete with a nylon bushing. The flow-stream balanced piston has a unique thrust bearing insert and features a Turbulence Seal™ system which passes debris while sustaining the most linear accuracy curve in the industry. Each register is secured to the main case with a tamperproof plug to eliminate tampering.

**Register.** The register is contained within a 90% copper seamless can which is oven-cured at 150°F for 90 minutes to eliminate condensation. The 5 mm true tempered glass lens is secured with an "L" shaped gasket, then roll sealed to produce a permanently sealed design. To assure easy reading, the totalizer wheels are large and color coded. The applicable size, model, registration, part number and date code are printed on the calibrated dial face. Moving clockwise during operation, the extra-thin center sweep hand does not interfere with meter reading, and the 1:1 piston ratio low-flow indicator gives visual indication of plumbing leaks. For accurate meter testing, 100 clear graduations appear at the register's circumference.



**Register Reading Options.** C700 meters are available with Absolute Encoder, Generator and Digital register options to provide water usage output to the entire spectrum of meter reading systems, giving flexibility to utilities implementing or upgrading reading technologies. Refer to the following documents for more information:

- Absolute Encoder Register EC-700
- Generator Register RR-C7-810
- Digital Register DR-C700



Dimensions and Net Weights

Meter Size	Dimensions (Inches)				E	Weight (lbs.)	
	A	B	C	D			
1"	10 3/4	6 5/8	2 1/8	6 15/16	9 3/4	3 3/4	10 1/5

**Magnetic Drive.** The magnetic drive design facilitates coupling between the measuring chamber and the external register. The coupling is absolute at all rated flows.

**Connections.** Meter casing spuds have external straight threads conforming to ANSI B.1.20.1. Bronze coupling nuts and tailpieces are available. Tailpieces have external taper pipe threads conforming to ANSI B.1.20.1. Their lengths and thread sizes are as specified by AWWA Standards.

**Maintenance.** The measuring chamber assembly can be removed, repaired or replaced. Prestested measuring chamber assemblies are available for exchange or purchase, and spare parts are available from our central warehouse or designated regional locations. Elster AMCO Water staffs and operates a repair facility at its U.S. manufacturing plant in Ocala, Florida.

Elster AMCO Water, Inc.  
PO Box 1852  
Ocala, FL 34478-1852  
United States

T +1 800 874 0890  
F +1 352 368 1950

watermeters@us.elster.com  
www.elster.com

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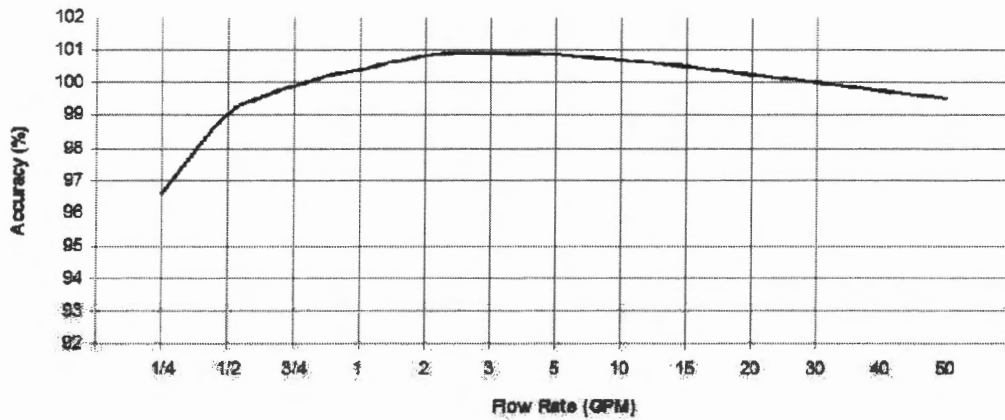
The company's policy is one of continuous product improvement and the right is reserved to modify the specifications contained herein without notice. These products have been manufactured with current technology and in accordance with applicable AWWA Standards.

C700-WW-LL-V06-07

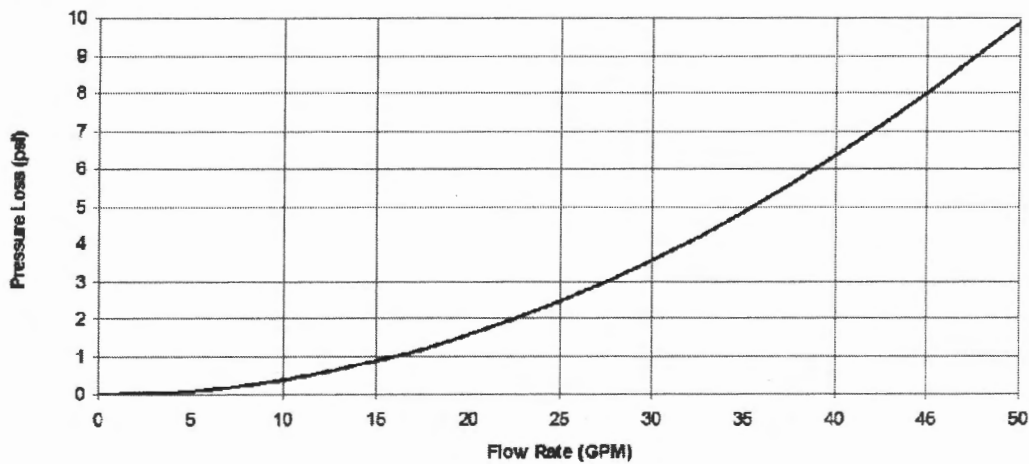


# C700 Positive Displacement Meters 1"

## ACCURACY



## PRESSURE LOSS



Elster AMCO Water, Inc  
PO Box 1852  
Ocala, FL 34478-1852  
United States

T +1 800 874 0890  
F +1 352 368 1950

watermeters@us.elster.com  
www.elster.com

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The company's policy is one of continuous product improvement and the right is reserved to modify the specifications contained herein without notice. These products have been manufactured with current technology and in accordance with applicable AWWA Standards.

C7-A-P-V06-07





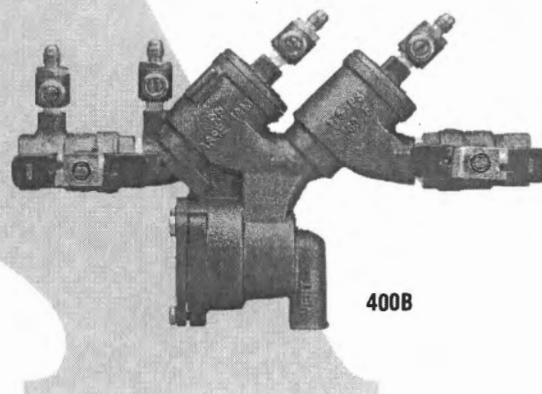
## Series 400B

### Reduced Pressure Zone Assemblies

Sizes: 3/4" – 2" (20 – 50mm)

#### Features

- Separate access covers for the check valves and relief valve for ease of maintenance
- Top entry-all check internals easily accessible
- All rubber elastomers of chloramine resistant material
- Check valve poppet assemblies are fully guided by innovative plastic seat guide
- Replaceable push-in check valve and relief valve seat eliminates threads from the water way
- EZ twist relief valve cover-quarter turn locking joint captures the spring load during repair to facilitate disassembly
- Innovative check valve plastic cover bushing provides trouble free guiding of the check valve poppet
- Bottom mounted relief valve provides reduced installation clearances
- Compact, space saving design
- No special tools required for servicing
- Top mounted test cocks for ease in testing and reduced installation clearances
- Standardly furnished with NPT body connections



400B

Series 400B Reduced Pressure Zone Assemblies are designed to protect potable water supplies in accordance with national plumbing codes and water authority requirements. This series can be used in a variety of installations, including the prevention of health hazard cross-connections or for containment at the service line entrance.

This series features two poppet style check valves, replaceable check seats, with an intermediate relief valve. Its compact modular design facilitates easy maintenance and assembly access. Sizes 3/4" – 1" (20 – 25mm) shutoffs have tee handles.

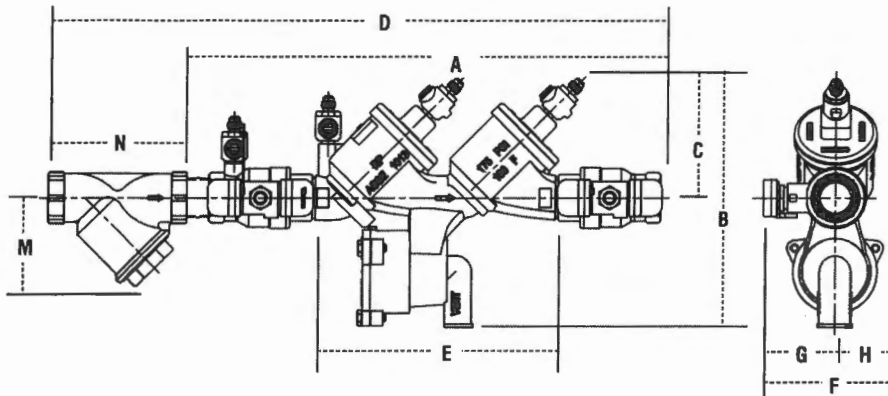
#### Specifications

A Reduced Pressure Zone Assembly shall be installed at each potential health hazard location to prevent backflow due to backsiphonage and/or backpressure. The assembly shall consist of a pressure differential relief valve located in a zone between two positive seating check valves. Seats and seat discs shall be replaceable in both check valves and the relief valve without the use of special tools. Service of all internal check valve components shall be through top mounted access covers threaded to the main valve body. The check valve poppet assembly shall be guided via the use of a corrosion resistant plastic guide. The check valve and relief valve seats shall be push-in type. The relief valve cover shall be secured with stainless steel bolts and shall utilize a quarter-turn locking joint to capture the spring load of the relief valve. The relief valve shall have an internal sensing line to sense the inlet water supply. All rubber elastomers shall be of chloramine resistant material. The assembly shall also include two resilient seated isolation valves, four top-mounted resilient seated test cocks and an air gap drain fitting. The assembly shall be an Ames Company Series 400B.

Job Name \_\_\_\_\_ Contractor \_\_\_\_\_  
 Job Location \_\_\_\_\_ Approval \_\_\_\_\_  
 Engineer \_\_\_\_\_ Contractor's P.O. No. \_\_\_\_\_  
 Approval \_\_\_\_\_ Representative \_\_\_\_\_

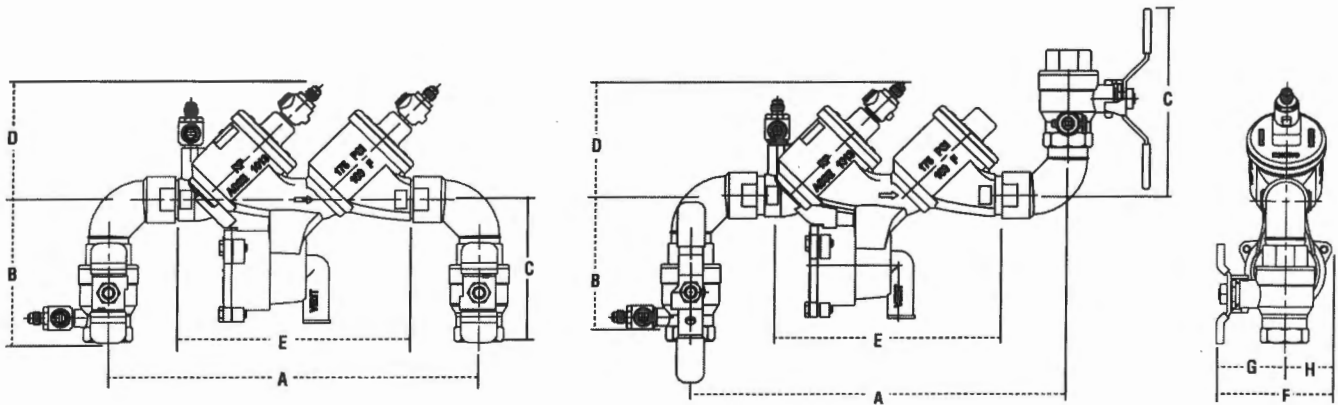
Ames product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact Ames Technical Service. Ames reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on Ames products previously or subsequently sold.

## Dimensions and Weights



### U400B, U400B-S

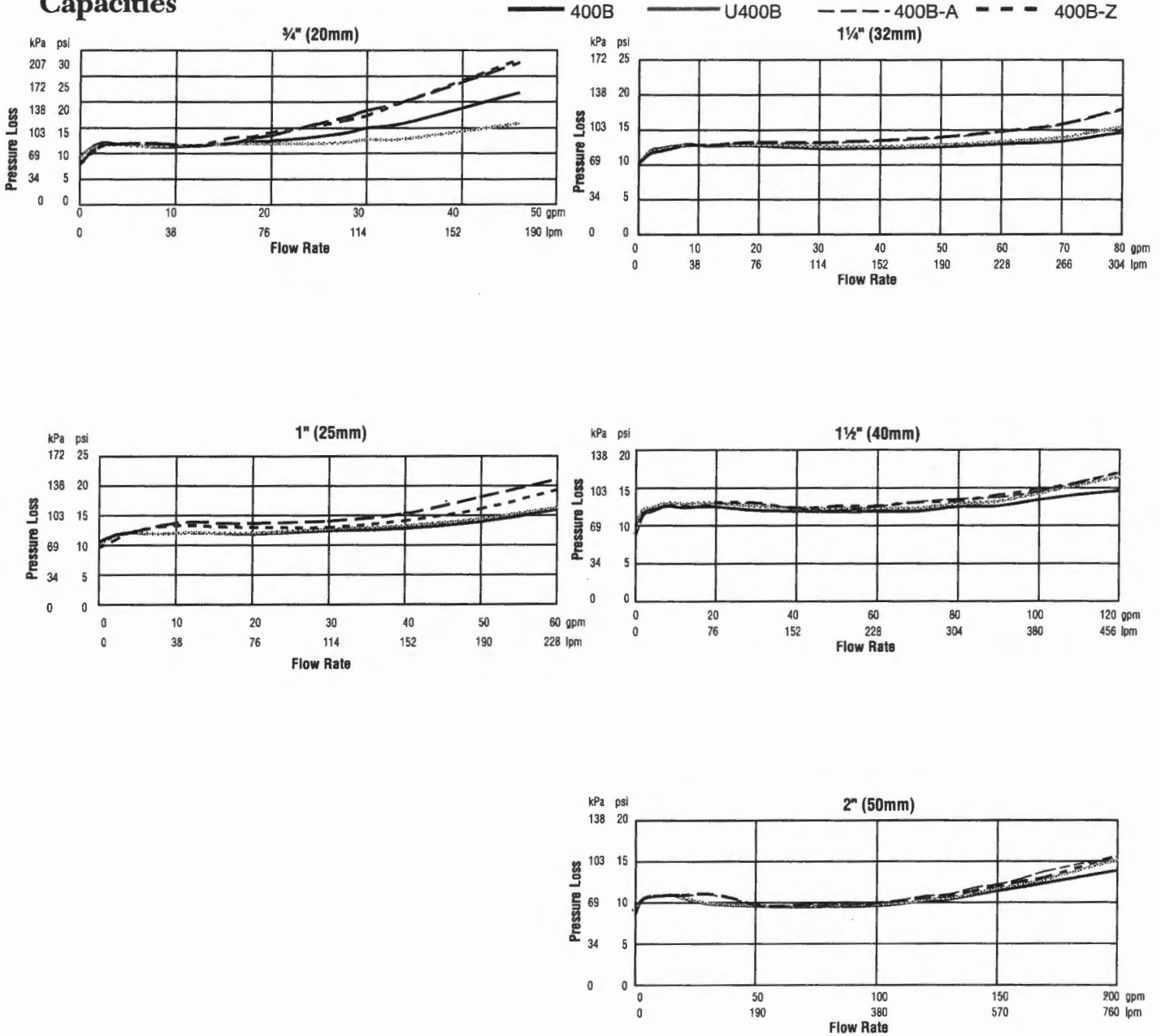
SIZE (DN)		DIMENSIONS							STRAINER DIMENSIONS				WEIGHT												
in.	mm	A	B	C	D	E (LF)	F	G	H	M	N	U400B	U400B-S												
		in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kgs.												
3/4	20	16 <sup>15</sup> / <sub>16</sub>	430	8 <sup>1</sup> / <sub>16</sub>	204	3 <sup>7</sup> / <sub>8</sub>	98	20 <sup>5</sup> / <sub>16</sub>	515	11 <sup>1</sup> / <sub>2</sub>	292	3 <sup>5</sup> / <sub>8</sub>	92	2 <sup>1</sup> / <sub>16</sub>	52	1 <sup>9</sup> / <sub>16</sub>	40	1 <sup>5</sup> / <sub>8</sub>	41	3 <sup>3</sup> / <sub>16</sub>	81	13.4	6.1	15.1	6.9
1	25	17 <sup>1</sup> / <sub>8</sub>	435	8 <sup>1</sup> / <sub>16</sub>	204	3 <sup>7</sup> / <sub>8</sub>	98	21 <sup>13</sup> / <sub>16</sub>	554	11 <sup>3</sup> / <sub>4</sub>	297	4	102	2 <sup>7</sup> / <sub>16</sub>	62	1 <sup>9</sup> / <sub>16</sub>	40	2 <sup>1</sup> / <sub>8</sub>	54	3 <sup>3</sup> / <sub>4</sub>	95	13.3	6.0	15.3	6.9
1 <sup>1</sup> / <sub>4</sub>	32	20 <sup>15</sup> / <sub>16</sub>	532	11 <sup>7</sup> / <sub>16</sub>	290	5 <sup>1</sup> / <sub>8</sub>	129	26 <sup>1</sup> / <sub>16</sub>	662	15 <sup>3</sup> / <sub>8</sub>	390	5 <sup>1</sup> / <sub>8</sub>	130	2 <sup>5</sup> / <sub>8</sub>	67	2 <sup>1</sup> / <sub>2</sub>	64	2 <sup>1</sup> / <sub>2</sub>	64	4 <sup>7</sup> / <sub>16</sub>	113	25.9	11.8	29.9	13.6
1 <sup>1</sup> / <sub>2</sub>	40	21 <sup>9</sup> / <sub>16</sub>	547	11 <sup>7</sup> / <sub>16</sub>	290	5 <sup>1</sup> / <sub>8</sub>	129	27 <sup>7</sup> / <sub>8</sub>	708	15 <sup>3</sup> / <sub>8</sub>	390	5 <sup>5</sup> / <sub>8</sub>	143	3 <sup>1</sup> / <sub>8</sub>	79	2 <sup>1</sup> / <sub>2</sub>	64	3	76	4 <sup>7</sup> / <sub>8</sub>	124	31.9	14.5	35.6	16.2
2	50	24 <sup>15</sup> / <sub>16</sub>	633	12 <sup>1</sup> / <sub>16</sub>	307	5 <sup>5</sup> / <sub>8</sub>	142	32 <sup>11</sup> / <sub>16</sub>	830	16 <sup>3</sup> / <sub>4</sub>	425	5 <sup>15</sup> / <sub>16</sub>	151	3 <sup>7</sup> / <sub>16</sub>	87	2 <sup>1</sup> / <sub>2</sub>	64	3 <sup>9</sup> / <sub>16</sub>	90	5 <sup>15</sup> / <sub>16</sub>	151	41.6	18.9	49.3	22.4



### 400B-A, 400B-Z

SIZE (DN)		DIMENSIONS								WEIGHT									
in.	mm	A	B	C	D	E (LF)	F	G	H	lbs.	kgs.								
		in.	mm	in.	mm	in.	mm	in.	mm										
3/4	20	10 <sup>3</sup> / <sub>8</sub>	263	3 <sup>15</sup> / <sub>16</sub>	100	3 <sup>15</sup> / <sub>16</sub>	100	3 <sup>1</sup> / <sub>2</sub>	88	7 <sup>11</sup> / <sub>16</sub>	195	3 <sup>5</sup> / <sub>8</sub>	92	2 <sup>1</sup> / <sub>16</sub>	52	1 <sup>9</sup> / <sub>16</sub>	40	9.3	4.2
1	25	12 <sup>1</sup> / <sub>4</sub>	311	4 <sup>13</sup> / <sub>16</sub>	122	4 <sup>13</sup> / <sub>16</sub>	122	3 <sup>7</sup> / <sub>8</sub>	98	9 <sup>3</sup> / <sub>16</sub>	233	4	102	2 <sup>7</sup> / <sub>16</sub>	62	1 <sup>9</sup> / <sub>16</sub>	40	13.3	6.0
1 <sup>1</sup> / <sub>4</sub>	32	16 <sup>1</sup> / <sub>16</sub>	407	5 <sup>7</sup> / <sub>8</sub>	149	5 <sup>7</sup> / <sub>8</sub>	149	5 <sup>1</sup> / <sub>8</sub>	129	11 <sup>11</sup> / <sub>16</sub>	297	5 <sup>1</sup> / <sub>8</sub>	130	2 <sup>5</sup> / <sub>8</sub>	67	2 <sup>1</sup> / <sub>2</sub>	64	24.0	10.9
1 <sup>1</sup> / <sub>2</sub>	40	16 <sup>5</sup> / <sub>8</sub>	421	6 <sup>1</sup> / <sub>2</sub>	164	6 <sup>1</sup> / <sub>2</sub>	164	5 <sup>1</sup> / <sub>8</sub>	129	11 <sup>11</sup> / <sub>16</sub>	297	5 <sup>5</sup> / <sub>8</sub>	143	3 <sup>1</sup> / <sub>8</sub>	79	2 <sup>1</sup> / <sub>2</sub>	64	30.5	13.8
2	50	17 <sup>5</sup> / <sub>16</sub>	440	6 <sup>5</sup> / <sub>8</sub>	168	6 <sup>9</sup> / <sub>16</sub>	166	5 <sup>5</sup> / <sub>8</sub>	142	13 <sup>3</sup> / <sub>8</sub>	340	5 <sup>15</sup> / <sub>16</sub>	151	3 <sup>7</sup> / <sub>16</sub>	87	2 <sup>1</sup> / <sub>2</sub>	64	40.6	18.4

# Capacities



A Watts Water Technologies Company

[www.amesfirewater.com](http://www.amesfirewater.com)



ISO 9001-2000  
CERTIFIED

USA: Backflow- 1427 N. Market Blvd • Suite #9 • Sacramento, CA 95834 • T: 916-928-0123 • F: 916-928-9333  
 Control Valves- 18550 Hansen Road • Houston, TX 77075 • T: 713-943-0688 • F: 713-944-9445  
 Canada: 5435 North Service Rd. • Burlington, ONT. L7L 5H7 • T: 905-332-4090 • F: 905-332-7068



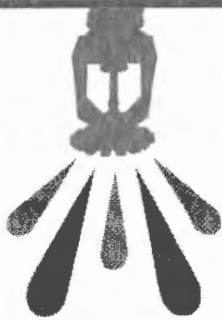
# FireFighter<sup>®</sup> GL48

Pre-mixed Antifreeze for Wet Fire Sprinkler Systems

- **Accurate Factory Pre-Mix**
  - Complies with NFPA guidelines
- **System Compatible**
  - Certified by NSF for use with BlazeMaster<sup>™</sup> CPVC
- **Non-Toxic\***
  - FDA Classification of Generally Regarded as Safe (G.R.A.S.) to humans and animals



**FBC**  
SYSTEM COMPATIBLE



## Sizes:

- 5-gallon pails
- 30-gallon drums
- 55-gallon drums
- 275- or 330-gallon totes
- 5000-gallon tank truck

## Product Description

FireFighter GL48 is a non-toxic, glycerine-based antifreeze for use in all types of wet fire sprinkler systems, including CPVC. FireFighter GL48 is factory pre-mixed to NFPA guidelines of a 48% glycerine solution. All fire sprinkler systems utilizing FireFighter GL48 should conform to local, state, and NFPA requirements. The use of antifreeze within these systems should also conform to NFPA requirements.

## Applications:

FireFighter GL48 antifreeze is used in any environment where the potential exists for freezing conditions. When used undiluted, FireFighter GL48 protects against freeze damage failure and ensures flow in wet fire sprinkler systems, including CPVC.

Noble **N** Company

# FireFighter® GL48

Pre-mixed Antifreeze for Wet Fire Sprinkler Systems

## Installation:

- Evacuate all water from system and drain drops according to NFPA requirements.
- FireFighter GL48 should be tested prior to introduction into the system.
- Do not dilute or add concentrate to FireFighter GL48
- After filling the system, follow NFPA guidelines for testing the antifreeze. Fluid samples should be tested from a minimum of a high point and low point, and should be comparable to both each other and to the sample of the fluid tested prior to introduction into the system.
- NFPA requires a tag to be affixed to the riser indicating the date tested or replaced, the type and concentration by volume of fluid used, system capacity (in volume), contractor name and license number, and a statement indicating if the entire system was drained and replaced with antifreeze. Tags are available free of charge from Noble Company or your local FireFighter distributor.

## System Protection:

**FireFighter GL48**  
Factory Pre-Mix

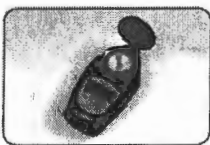
**FBC**  
SYSTEM COMPATIBLE

% of FireFighter GL48	Freeze Point	Flow Point	Burst Point	Specific Gravity @77°F / 25°C
100	-15°F	-25°F	-50°F	1.137

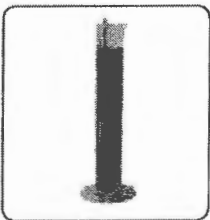
Freeze Point is the temperature where the first ice crystal forms in the fluid.

Burst Point is the temperature where the fluid is solid, expanding and bursting the vessel.

## FireFighter Accessories:



The Palm Abbe refractometer is fast, convenient, and easy to use. Simply place a drop or two of fluid in the titanium well and press a button. The custom-designed microprocessor is temperature compensating and delivers readings for glycerine and propylene glycol for both percentage by volume and freeze point. Accuracy of +/- .10 %.



The Hydrometer measures the specific gravity of propylene glycol and glycerine. Conversion tables allow the user to interpolate readings for percentage of concentration by volume and freeze point. Includes graduated cylinder.

## System Requirements, Limitations & Cautions:

All fire protection sprinkler systems that use FireFighter GL48 should conform to local, state and NFPA requirements. The use of antifreeze within these systems should also conform to NFPA requirements.

Use of antifreeze solutions should also be in conformance with any state or local health codes. Please contact your local health authorities if you have any questions concerning the codes in your area.

Chemicals which compose FireFighter GL48 can break down over time. NFPA 25 requires that the freezing point of the system should be tested at least once a year. Periodic testing of systems is critical to maintaining the proper concentration and freeze point of the fluid. Leaks, pressure surges, and temperature changes to the system can cause antifreeze to flow out of the system or water to flow into the system changing the freeze temperature.

### \*FDA Reference:

FireFighter GL48 is considered "Generally Recognized as Safe" by the Federal Food & Drug Administration.

Non-Toxic is used to describe extremely low chronic and acute toxicity. No maximum safe intake for humans has been established.

### \*Toxicological, Environmental, & Health Information:

FireFighter GL48 is virtually harmless to animals or plants; however, the disposal of these materials should be in conformance with national, state, and local health codes.

FF GL PD 03/11  
Supersedes 08/10

## Fig. 22 - Hanger for CPVC Plastic Pipe Single Fastener Strap Type



**Size Range** — 3/4" thru 2" 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. Figure 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. For this type of installation, use the TOLCO® Fig. 23, Double Fastener Strap for CPVC Piping. Fig. 22, when inverted, with the hanger tab downward, can function as a restrainer to prevent the upward movement of the sprinkler head during activation.

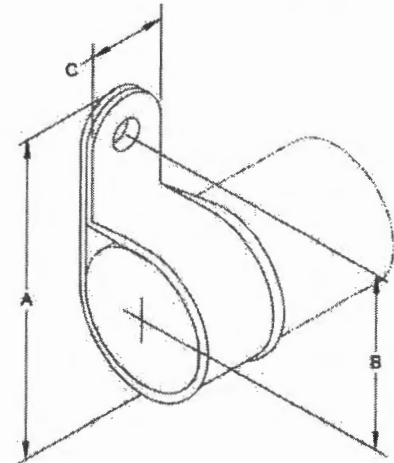
**Approvals** — Underwriters' Laboratories Listed in the USA (UL) and Canada (cUL) to support fire sprinkler piping. May be installed in wood using fasteners supplied with product, or into minimum 20 gauge steel using (1) 1/4" x 1" tek type screw. Meets and exceeds the requirements of NFPA 13, 13R and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

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



### Dimensions • Weights

CPVC Pipe Size	A	B	C	Max. Hanger Spacing (Ft.)	Fastener Hex Head Size	Approx. Wt./100
3/4	27/16	15/16	13/16	5½	5/16	9
1	21¼/16	17/16	13/16	6	5/16	9
1¼	31/16	15/8	13/16	6½	5/16	11
1½	35/16	1¾	13/16	7	5/16	12
2	3¾	21/8	13/16	8	5/16	15

## Fig. 24 - Hanger for CPVC Plastic Pipe Double Fastener Strap Type - Side Mount



**Size Range** — 3/4" thru 2" CPVC pipe

**Material** — Pre-Galvanized Steel

**Function** — Intended to perform as a hanger/restrainer to support CPVC piping used in automatic fire sprinkler systems. Can be installed on the top or on the bottom of a beam. The Fig. 24 can also function as a restrainer to prevent the upward movement of the sprinkler head during activation.

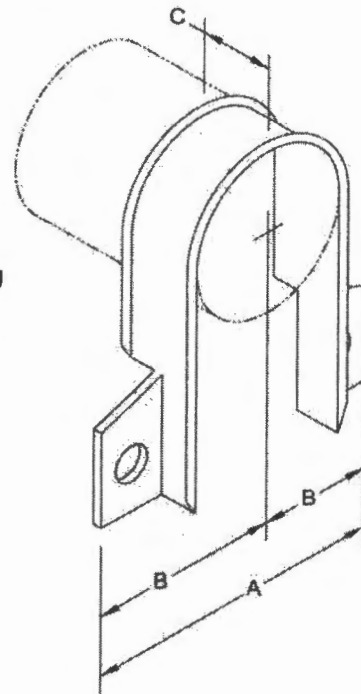
**Approvals** — Underwriters' Laboratories Listed in the USA (UL) and Canada (cUL) to support fire sprinkler piping. May be installed in wood using fasteners supplied with product, or into minimum 20 gauge steel using (2) 1/4" x 1" tek type screws. Meets and exceeds the requirements of NFPA 13, 13R and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



### Dimensions • Weights

CPVC Pipe Size	A	B	C	Max. Hanger Spacing (Ft.)	Fastener Hex Head Size	Approx. Wt./100
3/4	2 <sup>5</sup> / <sub>16</sub>	1 <sup>5</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>2</sub>	5/16	9
1	2 <sup>5</sup> / <sub>16</sub>	1 <sup>5</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>16</sub>	6	5/16	9
1 <sup>1</sup> / <sub>4</sub>	3	1 <sup>1</sup> / <sub>2</sub>	1 <sup>3</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>2</sub>	5/16	11
1 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>4</sub>	1 <sup>5</sup> / <sub>8</sub>	1 <sup>3</sup> / <sub>16</sub>	7	5/16	12
2	3 <sup>1</sup> / <sub>16</sub>	1 <sup>27</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>16</sub>	8	5/16	15



## CPVC Hangers Head Set™ Model SHB1

### General Description

The Tyco® Model SHB1 Head Set™ Hanger offers a time saving installation method for proper placement of an automatic sprinkler before the ceiling is installed.

The Tyco Fire Products Model SHB1 Head Set Hanger is a redesignation for the Central Model SHB1 Head Set Hanger.

The Head Set Hanger in a side-mount position (Ref. Figure 2) provides accurate vertical positioning of the sprinkler thereby assuring a desirable uniform sprinkler deflector to ceiling positioning of the sprinklers. Due to the unique design of the Head Set Hanger, "blocking" is not required to offset the centerline of piping to accommodate the sprinkler escutcheon from the side of the joist. With the fasteners provided, the Head Set Hanger is intended to be attached directly to the side of a solid wood framing member or the side of a structural composite wood joist of minimum 3/8 inch thickness OSB (Oriented Strand Board) web member or equivalent.

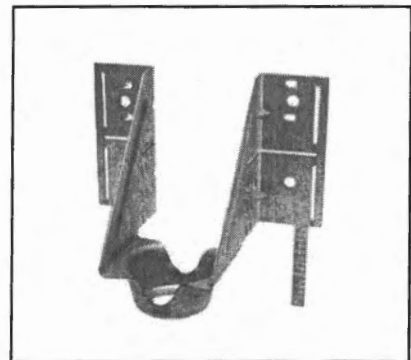
**Note:** The Head Set Hanger is designed for use with TFP "West Coast" style Sprinkler Head Adapters:

- P/N 80175W (3/4" x 1/2" NPT)
- P/N 80176W (1" x 1/2" NPT)

#### NOTICE

*The Head Set Hanger described herein must be installed and maintained in compliance with this document and 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

#### Approvals

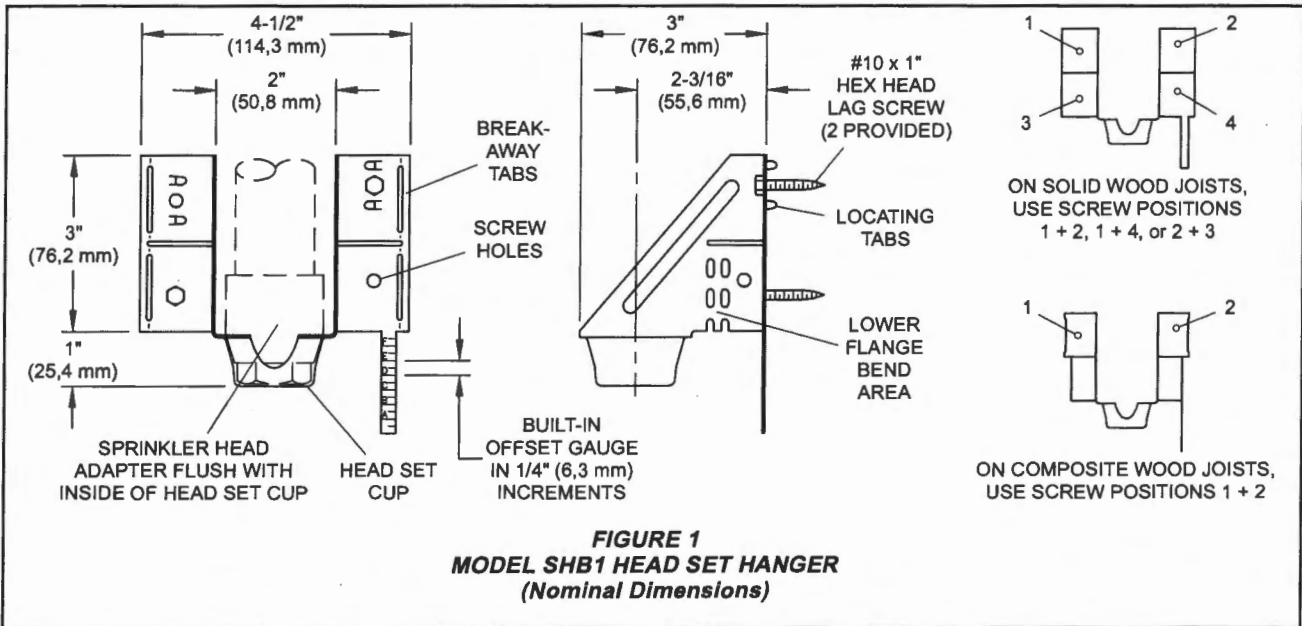
UL Listed for use with CPVC pipe as follows: Side-mount Head Set Hanger (Ref. Figure 2) to provide accurate vertical positioning of a sprinkler.

#### Material

Galvanized aluminum, 20 gauge.

#### Weight

0.2627 lb. (0.119 kg)



**FIGURE 1**  
**MODEL SHB1 HEAD SET HANGER**  
**(Nominal Dimensions)**

## Installation

The following instructions for the Tyco® Model SHB1 Head Set™ Hanger are broken down as follows: "Head Set Hanger — Solid Wood Joist" and "Head Set Hanger — Composite Wood Joist".

### NOTICE

The Head Set Hanger does not meet the UL requirement for providing vertical restraint that may result from a sprinkler activation. A number of hanger techniques (not inclusive of the use of a Head Set Hanger) as described in Installation Handbook IH-1900 can be used to provide vertical restraint. Failure to provide vertical restraint may result in vertical lift upon sprinkler activation and the inability of a sprinkler to spray effectively in the event of a fire.

Installing sprinklers into the sprinkler adapter fittings prior to solvent cementing the adapters to the drop is unacceptable. Failure to allow sprinkler fitting joint to cure before installing sprinklers may result in cement in sprinkler waterway and inability of the sprinkler to properly operate in the event of a fire.

The Head Set Hanger should not be installed other than side-mount or attached to anything other than the side of a solid wood framing member or structural composite wood joist, with the fasteners provided, without prior

review and approval of the Authority Having Jurisdiction. Any other method of installation may not comply with NFPA or local requirements. If the installer attaches the Head Set Hanger to another type of structural member or orients the Head Set Hanger in a position other than side-mount, fasteners and fastener methods shall comply with applicable NFPA and local code requirements.

### HEAD SET HANGER — SOLID WOOD JOIST

**Step 1.** Position the Head Set Hanger against vertical solid wood joist surface (side-mount).

**Step 2.** Set depth using graduated markings on "offset gauge" (Ref. Figure 2).

**Step 3.** Secure Head Set Hanger to wood surface using two #10 x 1" hex head lag screws provided. (Ref. Figure 1).

**Step 4.** Cut and install CPVC sprinkler drop making sure the face of the sprinkler head adapter is flush with the inside of the "head set cup".

**Step 5.** Insert sprinkler inlet pipe threads through the "head set cup" and thread into CPVC adapters using the instructions provided in the technical data sheet for the sprinkler, as well as Technical Data Sheet TFP700 for the "INSTALLER WARNING".

### HEAD SET HANGER — COMPOSITE WOOD JOIST

**Step 1.** Use pliers to break off tab (Ref. Figure 4).

**Step 2.** Using pliers to bend lower tabs in 90 degree angle (Ref. Figure 4).

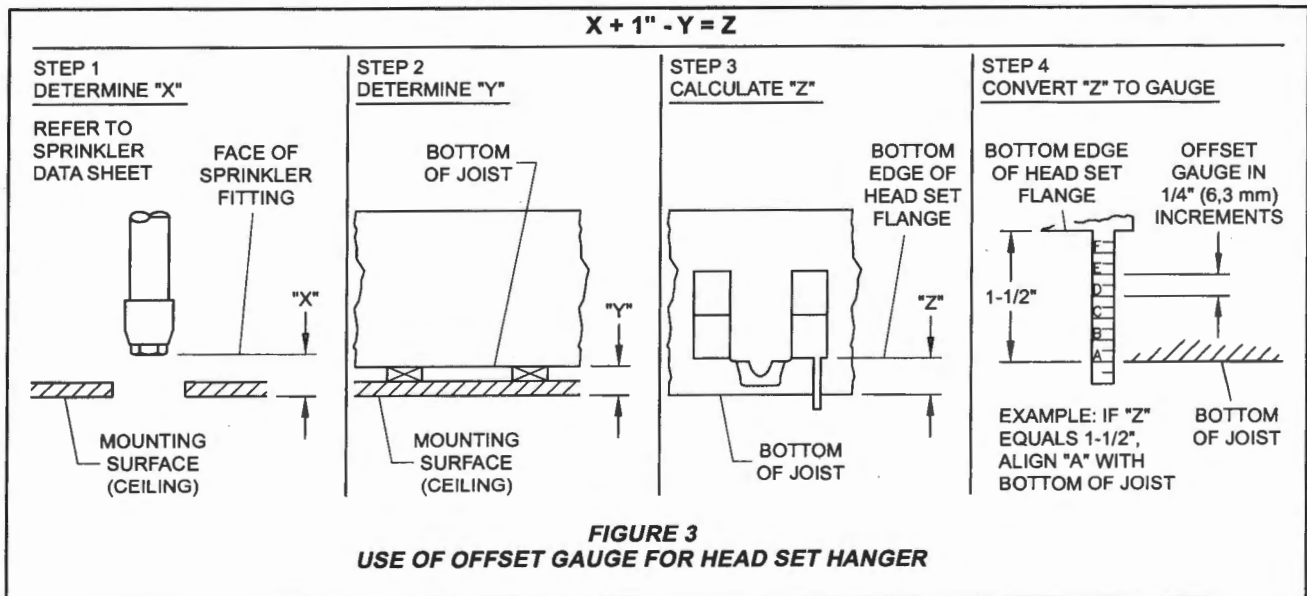
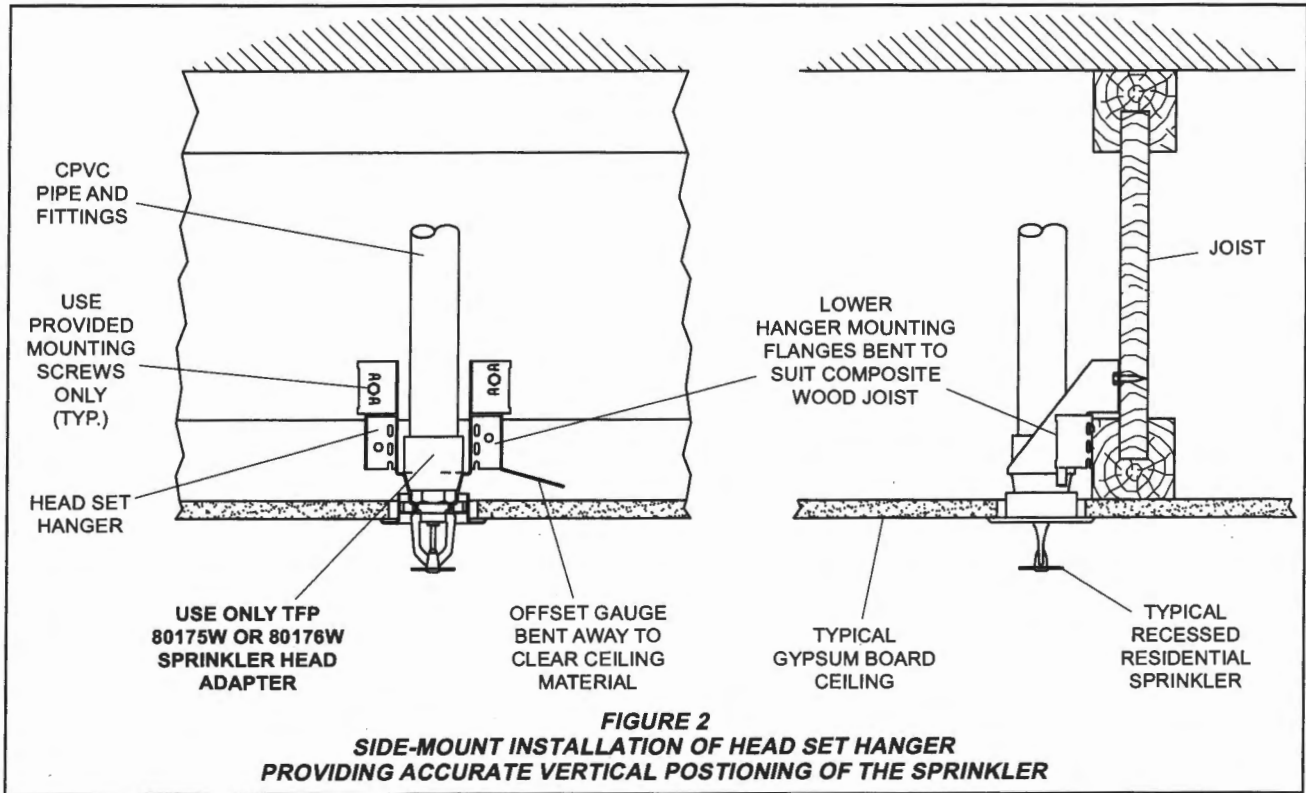
**Step 3.** Position the Head Set hanger against composite wood joist web member (side-mount).

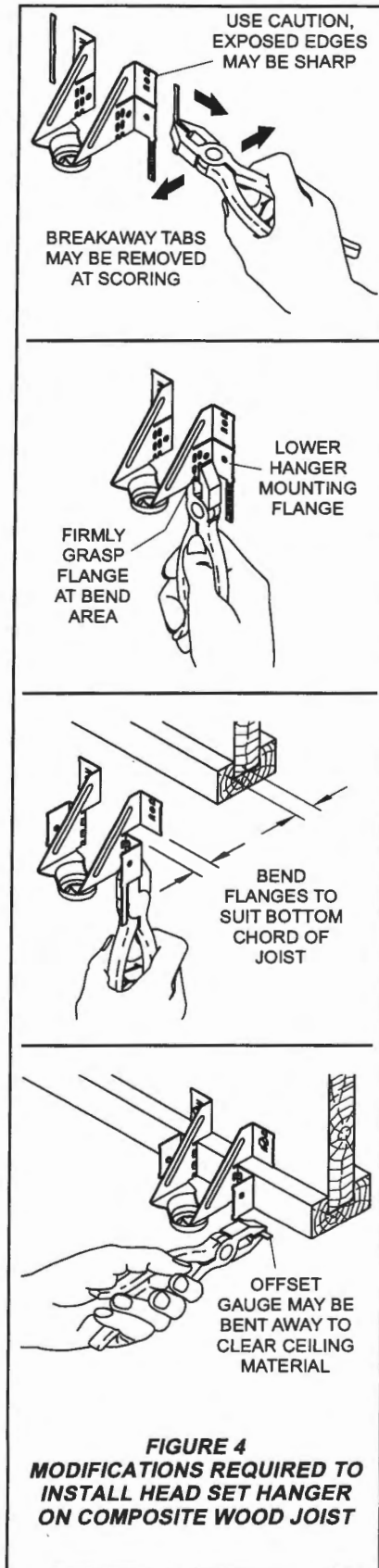
**Step 4.** Set depth using graduated markings on "offset gauge" (Ref. Figure 3).

**Step 5.** Secure Head Set Hanger to wood surface using two #10 x 1" hex head lag screws provided (Ref. Figure 1).

**Step 6.** Cut and install CPVC sprinkler drop making sure the face of the sprinkler head adapter is flush with the inside of the "head set cup".

**Step 7.** Insert sprinkler inlet pipe threads through the "head set cup" and thread into CPVC adapters using the instructions provided in the technical data sheet for the sprinkler, as well as Technical Data Sheet TFP700 for the "INSTALLER WARNING".





## 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.

## 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

Head Set Hangers are provided in box quantities of 100. Orders placed should be for full box quantities.

**Head Set Hanger:**  
Specify: Model SHB1 Head Set Hanger, P/N HS1

## **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

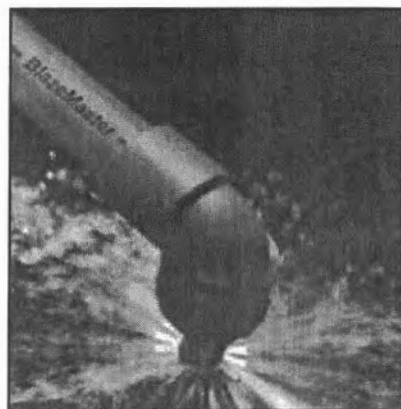
**Approvals**  
UL, FM, C-UL, NSF, LPCB, MEA, and the City of Los Angeles. (Refer to Installation Handbook IH-1900 dated June 2008 for exact listing/approval information.)

**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.

# NOTICE

**This building contains a CPVC fire sprinkler system. This CPVC fire sprinkler system is a Life Safety Assembly and must be treated carefully. Please read the following before any activity which could contact this system:**

**CPVC piping components may be damaged by certain substances and construction practices.**

- DO NOT stack, support, hang equipment, or hang flexible wire/cable, especially communications cable, or other material on the fire sprinkler system.
- ONLY system compatible materials including, but not limited to solvent cements, caulks, sealants, cutting oils and thread pastes as noted by the CPVC fire sprinkler piping system manufacturer's installation instructions should be used in contact with this system.
- DO NOT expose CPVC products to incompatible substances, such as cutting oils, non-water based paints, packing oils, traditional pipe thread paste and dope, fungicides, termiticides, insecticides, detergents, building caulks, adhesive tape, solder flux, flexible wire/cable (with special consideration for communications cabling), and non-approved spray foam insulation materials.
- DO NOT expose CPVC products to edible oils, solvents, or glycol-based anti-freeze fluids.
- DO NOT expose CPVC products to open flame, solder, and soldering flux.
- DO NOT drop, distort, or impact CPVC products or allow objects to be dropped on them.
- DO NOT handle CPVC products with gloves contaminated with oils (hydrocarbons) or other incompatible materials.

**Failure to follow this notice may cause cracks or fractures to develop in CPVC products resulting in property damage due to leaks or flooding. The presence of any visible cracks may require partial or full system replacement. For additional information contact the general contractor or the fire sprinkler system installer.**



**FOR ADDITIONAL INFORMATION CONTACT  
SPEARS® MANUFACTURING COMPANY AT 1-800-862-1499**