



**DAVEY**



TREE & LAWN CARE EXPERTS SINCE 1880

Dec. 12, 2012

Olsen Homes  
Brian Schmidt  
15450 SW Boones Ferry Rd.  
Lake Oswego, Oregon 97035

Re: Arborist Report, Arnold Place Lot 4

Dear Mr. Schmidt,

This letter is to respond to the City of Portland's questions regarding existing trees on Lot 4 of the Arnold Place subdivision and to specify tree protection measures to be observed during construction. I visited the site on December 10.

There are two large Douglas-fir trees located behind the proposed house. The original subdivision review set a root protection zone of 26 feet. Due to the house being approximately 12 feet from the trees the protection zone must be placed 10 feet from the easterly of the two trees. Although reducing the root protection zone to this extent encroaches into the original protection zone, the total percentage of roots lost due to construction activities will not have a noticeable negative effect on the trees.

The tree protection zone should be at 10 feet from the trees on the east side and be expanded to the 26 foot mark on the remainder of their circumference. The protection fencing must be 6 foot chain link fence and must not be encroached without prior approval of myself, the Site Arborist.

Thank your for contacting The Davey Tree Expert Company for your Arboricultural needs. Please call again if you need further assistance.

Sincerely,

Clay Erway  
I.S.A. Certified Arborist #PN1170A  
I.S.A. Certified Tree Risk Assessor #643

RECEIVED  
DEC 14 2012  
BDS  
DOCUMENT SERVICES

PO Box 56030 • Portland, OR 97238-6030  
[www.davey.com](http://www.davey.com)

12-205937-PS

**ARNOLD  
PLACE  
LOT 4**

LU 05-10305 LDS  
CITY OF PORTLAND, OREGON

CONTRACTOR:



SURVEY:



9600 SW Oak, Suite 230  
Portland, OR 97223  
71.93.40.000 71.93.40.004  
www.alphacommunity.com

STRUCTURAL ENGINEER:  
P&J ENGINEERING, INC.  
804 NE BEAUFORT BLVD.  
SUITE 12-1270, PORTLAND, OR  
(503) 410-8328

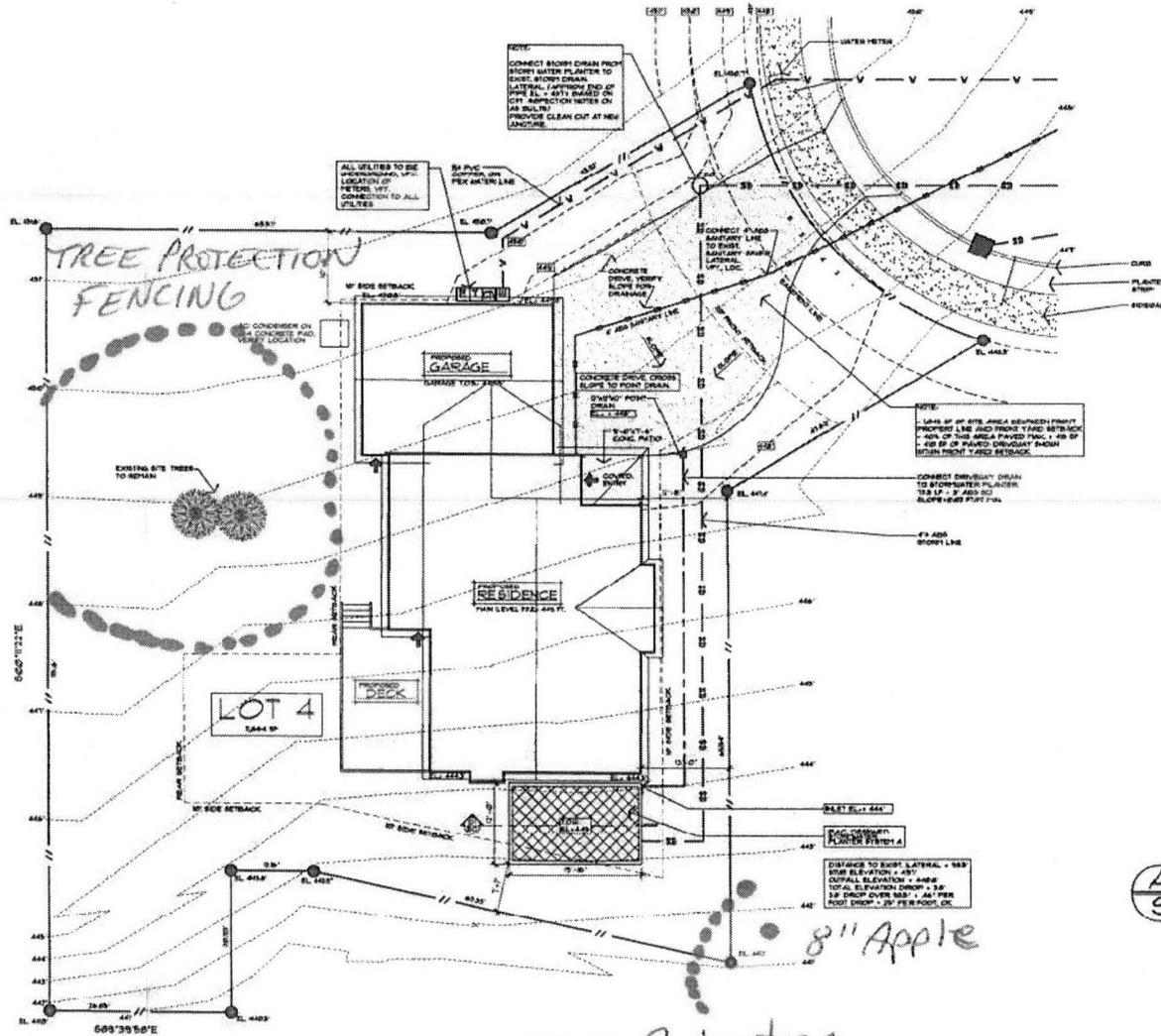
REVISED

DATED 10/23/12

DRAWN BTM

CHECKED

SITE PLAN



**SITE INFORMATION**

ZONE: R-10  
SITE AREA: 1264 SQ. FT.  
MINIMUM REQUIRED SETBACKS: FRONT TO BLDG: 20 FT.  
FRONT TO GAR: 10 FT.  
REAR: 10 FT.  
SIDE: 10 FT.  
HEIGHT: 30 FT. MAX.  
1429 FT. PROPOSED

**LOT COVERAGE**

2250 SQ. FT. - 18% OF AREA OVER 9000 SQ. FT.  
ALLOWED: 3349 SQ. FT.  
ACTUAL: 1264 SQ. FT.

**S SITE PLAN**  
SCALE: 1" = 8'-0"

LEGAL DESCRIPTION:  
LOT 4 ARNOLD PLACE  
ARNOLD PLACE SUBDIVISION  
LU 05-10305 LDS (40-405-018)  
CITY OF PORTLAND  
MULTNOMAH COUNTY, OREGON

**NOTE:**

- \* FOOTING TO BEAR ON FIRM UNDISTURBED NATIVE SOIL OR PROPERLY COMPACTED ENGINEERED FILL (SEA PROCTOR)
- \* VERIFY LOCATION OF EXISTING WATER PIPES, PROVIDE 1" SERVICE TO RESIDENCE, PROVIDE 1" OVER 60' P-11
- \* VERIFY LOCATION OF EXISTING SANITARY SEWER STUB OUT, PROVIDE 1" A.S.A. SERVICE TO RESIDENCE.
- \* VERIFY LOCATION OF ELECTRIC CABLE TV, TELEPHONE, AND NATURAL GAS SERVICE MAIN TO HOUSE. ALL SERVICE TO BE UNDISTURBED.

*Tree Protection Fencing*

*8" Apple*



## Radon Control Methods

### 2011 Oregon Residential Specialty Code, Appendix F

New habitable residential structures shall have radon gas mitigation. Indicate the method(s) of radon gas mitigation to be installed in the structure:

**Crawl space construction:**

- Mechanically ventilated (detailed on plans); or
- Passive sub-membrane depressurization; or
- Permanently open foundation ventilation per R408.1 and a blower-door building tightness test. Test results to be provided to the building inspector prior to final inspection approval.

**Slab-on-grade or basement construction:**

- Passive depressurization system, with 4" thick layer of gas-permeable aggregate below slab.



# CITY OF PORTLAND, OREGON - BUREAU OF DEVELOPMENT SERVICES

1900 SW Fourth Avenue • Portland, Oregon 97201 • 503-823-7300 • www.portlandoregon.gov/bds



## Application for New Single Family Residential Construction (One or Two Units) *SETUP 11/15 12/3 @ 12:15*

What type of home(s) are you building?

- Single family residence
- Duplex
- 2-unit rowhouse
- 2-unit townhouse
- Floating home
- Manufactured home on its own lot
- Detached accessory dwelling unit (ADU)
- Other: \_\_\_\_\_

If your project includes 3 or more structures built to the Oregon Residential Speciality Code or International Residential Code and are either located on a single tax lot or attached to each other, you will apply through the Batch Submittal and Review Process. Please contact Permitting Services at 503-823-7357 for more information.

### Applicant Information

Company Name FASTER PERMITS

Contact Person MIKE COTLE

Mailing Address 14334 NW EAGLERIDGE LN

City PORTLAND State OR Zip Code 97229

Office Phone \_\_\_\_\_ Cell Phone 503 680-5497 FAX 503 296-2630

Email MIKE@FASTERPERMITS.COM

Lot Owner Name DUSEN HOMES INC

Mailing Address 15450 BOONES FERRY RD.

City LAKE OSWEGO State OR Zip Code 97035

Contractor Name DUSEN HOMES CCB# 49451

### Project Information

Tax account number: R <u>589744</u>		If you do not know the tax account number, call Multnomah County at 503-988-3326	
Cross streets: <u>SW 30th Pl &amp; SW COMUS ST.</u>		Tax lot number:	
Plat name/number <u>ARNOLD R</u>	Block/lot: <u>14</u>	Qtr section #:	
Living area: <u>3285</u> sq.ft.	Basement: _____ sq.ft.	Garage/carport: <u>580.5</u> sq.ft.	
Is there a detached garage/carport or other accessory structure being built? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no			
Is there an existing house on the lot that will be demolished? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no			
Land Use Review case numbers: <u>DS - 110305 LDS</u>			
Plan designer/architect name: <u>DUSEN GROUP ARCH.</u>		Plan # <u>CUSTOM</u>	
Has BDS permitted this design previously? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no Permit # _____			
Do you plan on building the same house plan again? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no <input type="checkbox"/> not sure			
Is this Master House Plan? <input type="checkbox"/> yes <input checked="" type="checkbox"/> no MHP # _____			

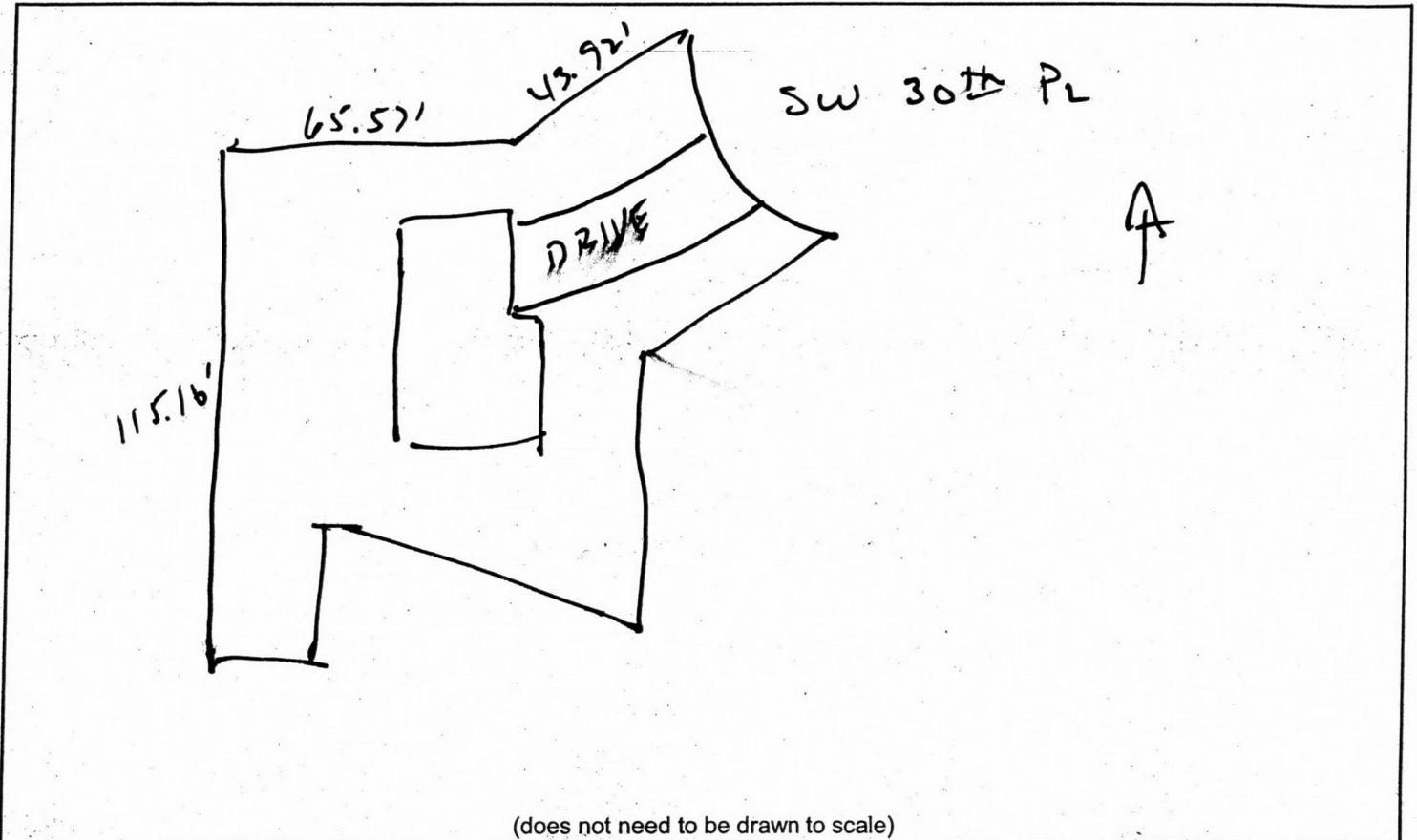
*12-205937-RS*

# Application for New Single Family Residential Construction (One or Two Units)

**21:51 0 2/01**  
 In the box below draw a diagram of your lot and all existing and proposed structures (including detached garages). This will be used to assign the street address for your project.

**Indicate each of the following**

- Lot dimensions
- Street locations and names for all streets adjoining your lot
- Front door entrance
- North arrow



**Full legal description**

If lot division is in progress, please provide the LUR or partition plat number and the parcel number

R 589744  
 ARNOLD PL LOT 4

*[Faint handwritten scribbles]*



**CITY OF PORTLAND, OREGON - BUREAU OF DEVELOPMENT SERVICES**

1900 SW Fourth Avenue • Portland, Oregon 97201 • 503-823-7300 • www.portlandoregon.gov/bds



**Residential Fixtures Worksheet**

12-205937-RS

Please list the mechanical, electrical and plumbing fixtures you are planning to install for your new single family residential construction project.

Mechanical Fixture	Quantity
<b>Heating and Cooling</b>	
Air conditioner (site plan required)	
Furnace/burner including ductwork/vent/liner	1
Heat pump (site plan required)	
Air handling unit	
Hydronic hot water system	
Residential boiler (radiator or hydronic)	
Unit heaters (fuel type, not electric): in-wall, in-duct, suspended, etc.	
Vent for appliance other than furnace	
Gas fireplace	1
Flue vent for water heater or gas fireplace	2
Wood/pellet stove	
Chimney/liner/flue/vent	
Range hood/other kitchen equipment	1
Clothes dryer exhaust	1
Single duct exhaust fans (bathrooms, toilet compartments, utility rooms)	4
Attic/crawl space fans	
Other:	
<b>Gas Fuel Piping: indicate number of outlets</b>	
Furnace	1
Wall/suspended/unit heater	
Water heater/boiler	1
Fireplace	1
Range	1
Barbecue	
Clothes dryer	1
Other:	

Plumbing Fixture	Quantity
Bathrooms (full or partial)	3
Kitchens*	1
Laundry/utility sinks*	1
Bar sinks	
Water heaters/boilers*	1
Clothes washers*	1
Rain drain: # of feet around perimeter of house	199
Sanitary sewer: # of feet from house to property line	99
Storm sewer: # of feet from house to property line or disposal system	99
Water line: # of feet from house to property line	99
Fire sprinklers: # of sq. ft. of house to be sprinklered (include basement, exclude garage)	
Other:	
* The first kitchen, water heater, clothes washer and laundry/utility sink are included in the basic plumbing package	
Electrical Fixture	Quantity
Area of house in sq. ft. to be wired (including basement and attached garage)	3865.5
Additional circuits for detached garage	-
Limited energy electrical wiring (check yes if you are installing any of the following: telephone, cable TV, security systems, doorbell, computer network cables, thermostat, vacuum system)	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Temporary electrical service	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no
Other:	

## Conservation Measure (Select One)

- A High efficiency HVAC system:** 12-205937-RS
- Gas-fired furnace or boiler with 90% minimum AFUE (sealed combustion air ducted directly from outdoors if furnace or boiler is within conditioned space), or
  - Air-source heat pump 8.5 minimum HSPF, or
  - Closed-loop ground source heat pump with 3.0 minimum COP
- B Ducted HVAC systems within conditioned space:**
- All ducts and air handlers are within heated building envelope
- C Ductless heat pump:**
- Replace electric resistance heating in at least the primary zone with at least one ductless mini-split heat pump with 8.5 minimum HSPF
- D High efficiency water heating and lighting:**
- Natural gas/propane, on-demand water heating with 0.80 minimum EF, and
  - Minimum 75% of permanently installed lighting fixtures as CFL or linear fluorescent or minimum 40 lumens per watt
- E Energy management device & duct sealing:**
- Whole building energy management device capable of monitoring or controlling energy consumption, and
  - Performance tested duct systems (ODOE documentation to be submitted to building inspector prior to final inspection), and
  - 75% of permanently installed lighting fixtures as high-efficacy lamps
- F Solar voltaic:**
- Minimum 1 watt per square foot of conditioned floor space with Total Solar Resource Fraction  $\leq$  75%
- G Solar water heating:**
- 40 square feet minimum gross collector area with Total Solar Resource Fraction  $\leq$  75%



12-205937-RS

## 2011 Energy Efficiency Additional Measures Requirements

New dwellings shall meet the envelope requirements of ORSC Table N1101.1(1) and a minimum of 50% of permanently installed lighting fixtures shall have high efficacy lamps. Additionally, new heated buildings and additions of more than 600 SF or more than 40% of the original heated floor area shall have at least two of the Additional Measures from ORSC Table N1101.1(2), one from Envelope Enhancement and one from Conservation (see below). All Energy Efficiency components must be reflected on the plans.

### Envelope Enhancement Measure (Select One)

1 High efficiency walls & windows:

- Exterior walls – R-19+5 (insulation sheathing)/SIPS, and one of the following options:
- Windows – Max 15% of conditioned area, or
- Windows – U-0.30

2 High efficiency envelope:

- Exterior walls – R-21 Intermediate framing, and
- Vaulted ceilings – R-30 Advanced framing, and
- Flat ceilings – R-49, and
- Framed floors – R-38, and
- Windows – U-0.30, and
- Doors – All doors U-0.20, or
- Additional 15% of permanently installed lighting fixtures as high-efficacy lamps or Conservation Measure D and E

3 High efficiency ceiling, windows and duct sealing:

(Cannot be used with Conservation Measure E)

- Vaulted ceilings – R-30 Advanced framing (not more than 50% of the heated floor area), and
- Flat ceilings – R-49, and
- Windows – U-0.30, and
- Performance tested duct systems (ODOE documentation to be submitted to building inspector prior to final inspection)

4 High efficiency thermal envelope UA:

- Proposed UA is 15% lower than the Code UA when calculated in Table N1104.1(1)

5 Building tightness testing, ventilation and duct sealing:

- Mechanical system providing whole-building ventilation per Table N1101.1(3), or ASHRAE 62.2, and
- Performance tested duct systems (ODOE documentation to be submitted to building inspector prior to final inspection), and
- Blower door test report submitted to building inspector prior to final inspection showing  $\leq 6.0$  air changes per hour, or  $\leq 5.0$  air changes per hour when used with Conservation Measure E

6 Ducted HVAC systems within conditioned space:

(Cannot be used with Conservation Measure B or C)

- All ducts and air handler are contained within heated building envelope

(Continued on back)

## Series LFII Residential Horizontal Sidewall Sprinklers 4.2 K-factor

### General Description

The Series LFII (TY1334) Residential Horizontal Sidewall Sprinklers 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 (TY1334) should be the first choice.

The Series LFII are to be used in 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; or, wet pipe sprinkler systems for the residential portions of any occupancy per NFPA 13.

The Series LFII (TY1334) has a 4.2 (60,5) K-factor that provides the required residential flow rates at reduced pressures, enabling smaller pipe sizes and water supply requirements.

The recessed version of the Series LFII (TY1334) is intended for use in areas with finished walls. It employs a two-piece Style 20 Recessed Escutcheon. The Recessed Escutcheon provides 1/4 inch (6,4 mm) of recessed

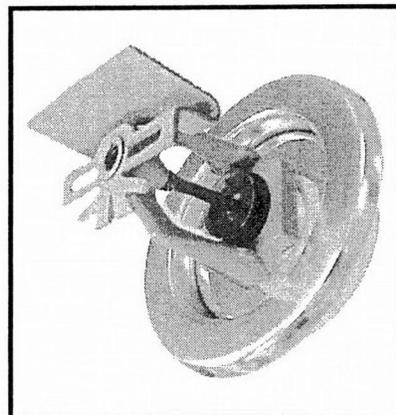
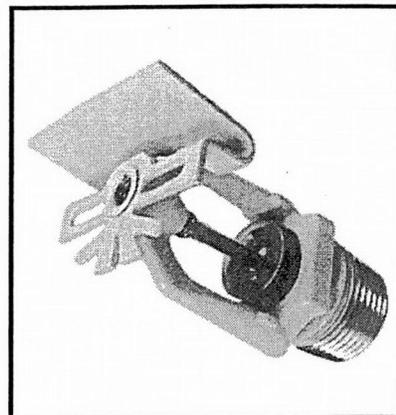
adjustment or up to 1/2 inch (12,7 mm) of total adjustment from the flush mounting surface position. The adjustment provided by the Recessed Escutcheon reduces the accuracy to which the pipe nipples to the sprinklers must be cut.

The Series LFII (TY1334) has 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.

#### WARNINGS

*The Series LFII (TY1334) Residential Horizontal Sidewall Sprinklers described herein must be installed and maintained in compliance with this document, as well as with the applicable standards of the National Fire Protection Association, in addition to the standards of any other authorities having jurisdiction. Failure to do so may impair the 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.*

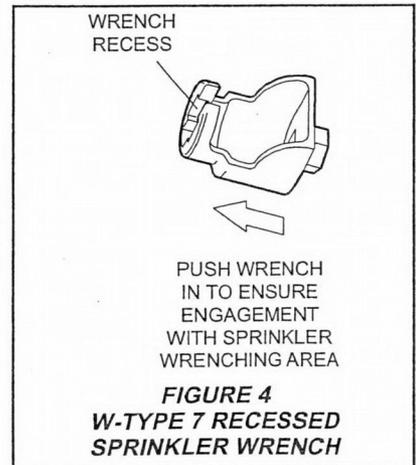
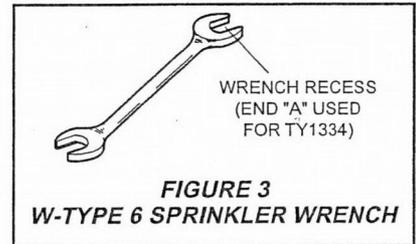
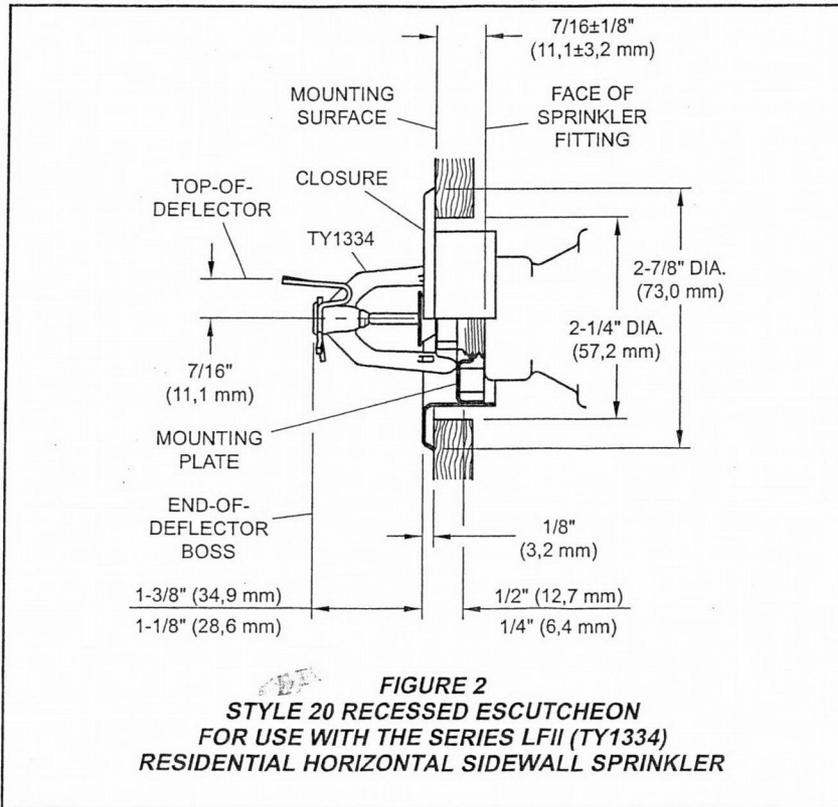
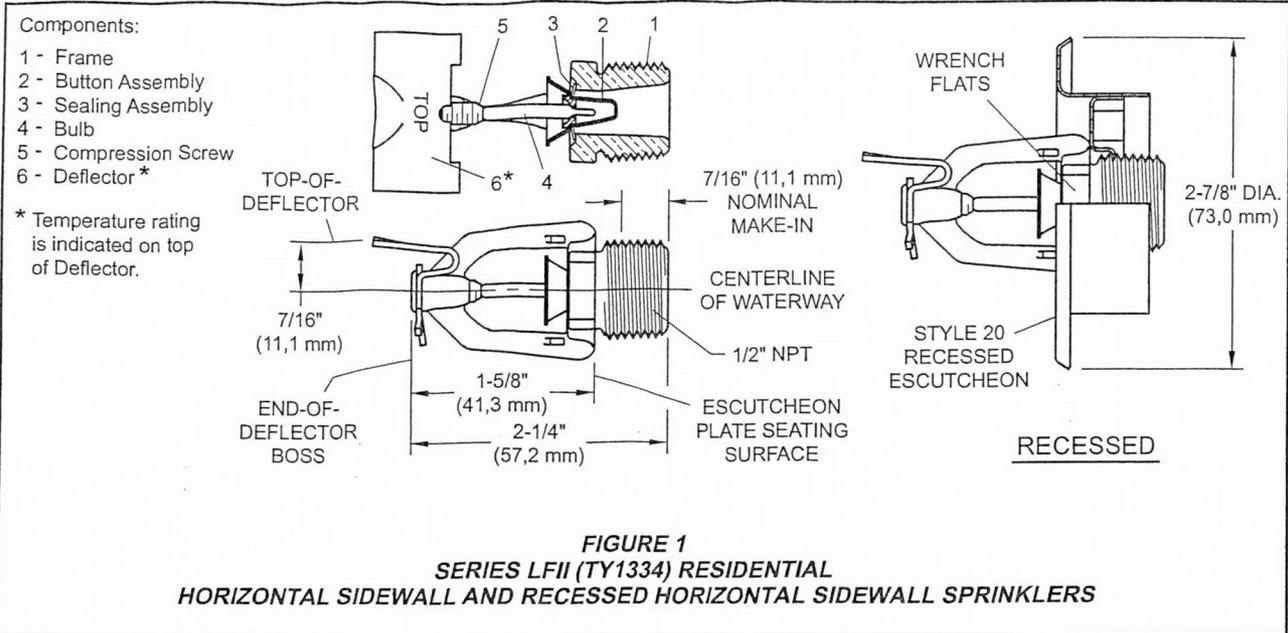


### Sprinkler/Model Identification Number

SIN TY1334

#### IMPORTANT

*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.*



## Technical Data

### Approvals:

UL and C-UL Listed. NYC Approved under MEA 44-03-E.

### Maximum Working Pressure:

175 psi (12,1 bar)

### Discharge Coefficient:

$K = 4.2 \text{ GPM/psi}^{1/2}$  (60,5 LPM/bar<sup>1/2</sup>)

### Temperature Rating:

155°F/68°C or 175°F/79°C

### Finishes:

White Polyester Coated, Chrome Plated, or Natural Brass

### Physical Characteristics:

Frame . . . . .	Brass
Button . . . . .	Bronze
Sealing Assembly . . . . .	Beryllium Nickel w/Teflon†
Bulb . . . . .	3 mm dia. Glass
Compression Screw . . . . .	Bronze
Deflector . . . . .	Copper

†Dupont Registered Trademark

## 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 Series LFII (TY1334) Residential Horizontal Sidewall Sprinklers are UL and C-UL Listed for installation in accordance with the following criteria.

### NOTE

*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.*

**System Type.** Only wet pipe systems may be utilized.

**Hydraulic Design.** The minimum required sprinkler flow rate for systems designed to NFPA 13D or NFPA 13R are given in Table A, B, C, and D 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.

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 Tables A, B, C, and D for NFPA 13D and 13R as a function of temperature rating and the maximum allowable coverage area.
- A minimum discharge of 0.1 gpm/sq. ft. over the "design area" comprised of the four most hydraulically demanding sprinklers for the actual coverage areas being protected by the four sprinklers.

### Obstruction To Water Distribution.

Locations of sprinklers are to be in accordance with the obstruction rules of NFPA 13 for residential sprinklers.

**Operational Sensitivity.** The sprinklers are to be installed with an end-of-deflector-boss to wall distance of 1-3/8 to 6 inches or in the recessed position using only the Style 20 Recessed Escutcheon as shown in Figure 2.

In addition the top-of-deflector-to-ceiling distance is to be within the range (Ref. Table A, B, C, or D) being hydraulically calculated.

**Sprinkler Spacing.** The minimum spacing between sprinklers is 8 feet (2,4 m). The maximum spacing between sprinklers cannot exceed the width of the coverage area (Ref. Table A) being hydraulically calculated (e.g., maximum 12 feet for a 12 ft. x 12 ft. coverage area, or 16 feet for a 16 ft. x 20 ft. coverage area).

## Installation

The Series LFII (TY1334) must be installed in accordance with the following instructions:

### NOTES

*Do not install any bulb type sprinkler if the bulb is cracked or there is a loss of liquid from the bulb. With the sprinkler held horizontally, a small air bubble should be present. The diameter of the air bubble is approximately 1/16 inch (1,6 mm).*

*A leak tight 1/2 inch NPT sprinkler joint should be obtained with a torque of 7 to 14 ft.lbs. (9,5 to 19,0 Nm). A maximum of 21 ft.lbs. (28,5 Nm) of torque is to be used to install sprinklers. Higher levels of torque may distort the sprinkler inlet with consequent leakage or impairment of the sprinkler.*

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

**The Series LFII Horizontal Sidewall Sprinklers** must be installed in accordance with the following instructions.

**Step 1.** Horizontal sidewall sprinklers are to be installed in the horizontal position with their centerline of waterway perpendicular to the back wall and parallel to the ceiling. The word "TOP" on the Deflector is to face towards the ceiling with the front edge of 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 (Ref. Figure 3). With reference to Figure 1, the W-Type 6 Sprinkler Wrench is to be applied to the wrench flats.

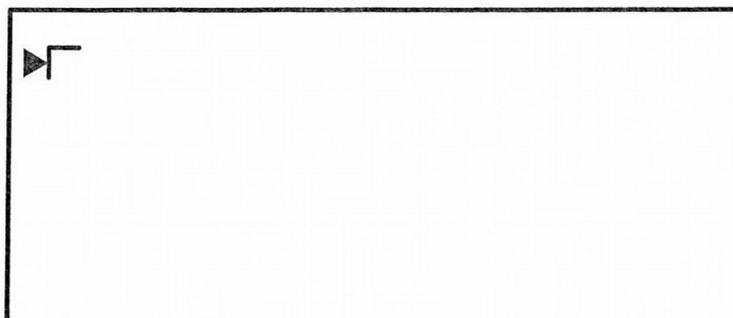
**The Series LFII Recessed Horizontal Sidewall Sprinklers** must be installed in accordance with the following instructions.

**Step A.** Recessed horizontal sidewall sprinklers are to be installed in the horizontal position with their centerline of waterway perpendicular to the back wall and parallel to the ceiling. The word "TOP" on the Deflector is to face towards 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 (Ref. Figure 4). With reference to Figure 1, the W-Type 7 Recessed Sprinkler Wrench is to be applied to the sprinkler wrench flats.

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



ELEVATION

Maximum Coverage Area <sup>(a)</sup> Width x Length <sup>(b)</sup> Ft. x Ft. (m x m)	Maximum Spacing Ft. (m)	Minimum Flow <sup>(c)</sup> and Residual Pressure			
		Top-Of-Deflector- To- Ceiling: 4 to 6 Inches (100 to 150 mm)		Top-Of-Deflector- To- Ceiling: 6 to 12 Inches (150 to 300 mm)	
		155°F/68°C	175°F/79°C	155°F/68°C	175°F/79°C
12 x 12 (3,7 x 3,7)	12 (3,7)	12 GPM (45,4 LPM) 8.2 psi (0,57 bar)	12 GPM (45,4 LPM) 8.2 psi (0,57 bar)	13 GPM (49,2 LPM) 9.6 psi (0,66 bar)	13 GPM (49,2 LPM) 9.6 psi (0,66 bar)
14 x 14 (4,3 x 4,3)	14 (4,3)	14 GPM (53,0 LPM) 11.1 psi (0,77 bar)	16 GPM (60,6 LPM) 14.5 psi (1,00 bar)	17 GPM (64,3 LPM) 16.4 psi (1,13 bar)	18 GPM (68,1 LPM) 18.4 psi (1,27 bar)
16 x 16 (4,9 x 4,9)	16 (4,9)	16 GPM (60,6 LPM) 14.5 psi (1,00 bar)	16 GPM (60,6 LPM) 14.5 psi (1,00 bar)	18 GPM (68,1 LPM) 18.4 psi (1,27 bar)	18 GPM (68,1 LPM) 18.4 psi (1,27 bar)
16 x 18 (4,9 x 5,5)	16 (4,9)	19 GPM (71,9 LPM) 20.5 psi (1,41 bar)	19 GPM (71,9 LPM) 20.5 psi (1,41 bar)	21 GPM (79,5 LPM) 25.0 psi (1,72 bar)	21 GPM (79,5 LPM) 25.0 psi (1,72 bar)
16 x 20 (4,9 x 6,1)	16 (4,9)	23 GPM (87,1 LPM) 30.0 psi (2,07 bar)	23 GPM (87,1 LPM) 30.0 psi (2,07 bar)	26 GPM (98,4 LPM) 38.3 psi (2,64 bar)	26 GPM (98,4 LPM) 38.3 psi (2,64 bar)

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

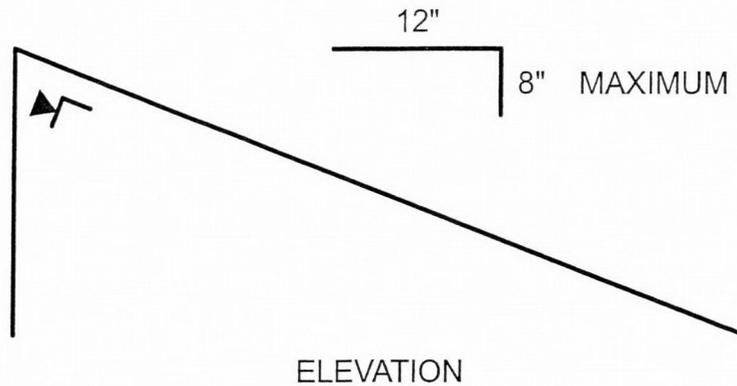
(b) Width (backwall where sprinkler is located) x Length (horizontal throw of sprinkler).

(c) Requirement is based on minimum flow in GPM (LPM) from each sprinkler. The associated residual pressures are calculated using the nominal K-factor. Refer to Hydraulic Design Criteria Section for details.

(d) Sidewall sprinklers, where installed under a ceiling with a slope greater than 0 inch rise for a 12 inch run to a slope up to 2 inch rise for 12 inch run, must be located per one of the following:

- Locate the sprinklers at the high point of the slope and positioned to discharge down the slope.
- Locate the sprinklers along the slope and positioned to discharge across the slope.

**TABLE A**  
**NFPA 13D AND NFPA 13R WET PIPE HYDRAULIC DESIGN CRITERIA**  
**FOR THE SERIES LFII (TY1334)**  
**RESIDENTIAL HORIZONTAL SIDEWALL AND RECESSED HORIZONTAL SIDEWALL SPRINKLERS**  
**FOR HORIZONTAL CEILING (Maximum 2 Inch Rise for 12 Inch Run)**



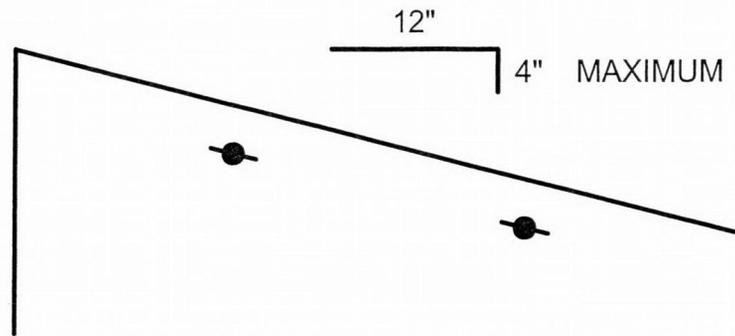
Maximum Coverage Area <sup>(a)</sup> Width x Length <sup>(b)</sup> Ft. x Ft. (m x m)	Maximum Spacing Ft. (m)	Minimum Flow <sup>(c)</sup> and Residual Pressure (I) Two sprinkler design with the sprinklers at the high point of the slope and positioned to discharge down the slope.			
		Top-Of-Deflector- To- Ceiling: 4 to 6 Inches (100 to 150 mm)		Top-Of-Deflector- To- Ceiling: 6 to 12 Inches (150 to 300 mm)	
		155°F/68°C	175°F/79°C	155°F/68°C	175°F/79°C
12 x 12 (3,7 x 3,7)	12 (3,7)	I 12 GPM (45,4 LPM) 8.2 psi (0,57 bar)	I 12 GPM (45,4 LPM) 8.2 psi (0,57 bar)	I 13 GPM (49,2 LPM) 9.6 psi (0,66 bar)	I 13 GPM (49,2 LPM) 9.6 psi (0,66 bar)
14 x 14 (4,3 x 4,3)	14 (4,3)	I 14 GPM (53,0 LPM) 11.1 psi (0,77 bar)	I 14 GPM (53,0 LPM) 11.1 psi (0,77 bar)	I 17 GPM (64.3 LPM) 16.4 psi (1,13 bar)	I 17 GPM (64.3 LPM) 16.4 psi (1,13 bar)
16 x 16 (4,9 x 4,9)	16 (4,9)	I 16 GPM (60,6 LPM) 14.5 psi (1,00 bar)	I 16 GPM (60,6 LPM) 14.5 psi (1,00 bar)	I 18 GPM (68,1 LPM) 18.4 psi (1,27 bar)	I 18 GPM (68,1 LPM) 18.4 psi (1,27 bar)
16 x 18 (4,9 x 5,5)	16 (4,9)	I 19 GPM (71,9 LPM) 20.5 psi (1,41 bar)	I 19 GPM (71,9 LPM) 20.5 psi (1,41 bar)	I 21 GPM (79,5 LPM) 25.0 psi (1,72 bar)	I 21 GPM (79,5 LPM) 25.0 psi (1,72 bar)
16 x 20 (4,9 x 6,1)	16 (4,9)	I 24 GPM (90,8 LPM) 32.7 psi (2,25 bar)	I 24 GPM (90,8 LPM) 32.7 psi (2,25 bar)	I 26 GPM (98,4 LPM) 38.3 psi (2,64 bar)	I 26 GPM (98,4 LPM) 38.3 psi (2,64 bar)

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

(b) Width (backwall where sprinkler is located) x Length (horizontal throw of sprinkler).

(c) Requirement is based on minimum flow in GPM (LPM) from each sprinkler. The associated residual pressures are calculated using the nominal K-factor. Refer to Hydraulic Design Criteria Section for details..

**TABLE B**  
**NFPA 13D AND NFPA 13R WET PIPE HYDRAULIC DESIGN CRITERIA**  
**FOR THE SERIES LFII (TY1334)**  
**RESIDENTIAL HORIZONTAL SIDEWALL AND RECESSED HORIZONTAL SIDEWALL SPRINKLERS**  
**FOR SPRINKLERS AT THE HIGH POINT OF THE SLOPE AND DISCHARGING DOWN THE SLOPE**  
**(Greater Than 2 Inch Rise for 12 Inch Run Up To 8 Inch Rise for 12 Inch Run)**

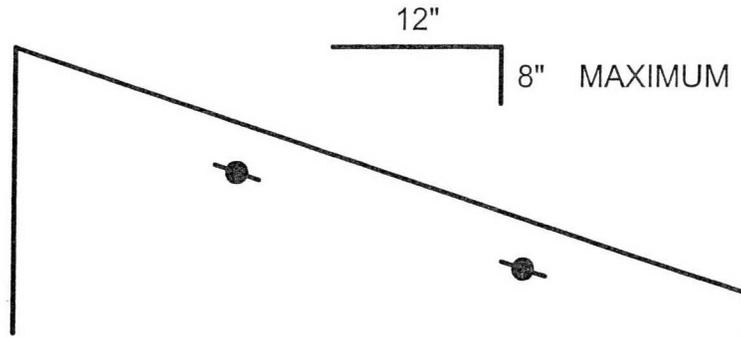


ELEVATION

Maximum Coverage Area <sup>(a)</sup> Width x Length <sup>(b)</sup> Ft. x Ft. (m x m)	Maximum Spacing Ft. (m)	Minimum Flow <sup>(c)</sup> and Residual Pressure							
		(II) Two sprinkler design with the sprinklers located along the slope and positioned to discharge across the slope. (III) Three sprinkler design when there are more than two sprinklers in a compartment and with the sprinklers located along the slope and positioned to discharge across the slope.							
		Top-Of-Deflector- To- Ceiling: 4 to 6 Inches (100 to 150 mm)				Top-Of-Deflector- To- Ceiling: 6 to 12 Inches (150 to 300 mm)			
		155°F/68°C		175°F/79°C		155°F/68°C		175°F/79°C	
12 x 12 (3,7 x 3,7)	12 (3,7)	II	16 GPM (60,6 LPM) 14.5 psi (1,00 bar)	II	16 GPM (60,6 LPM) 14.5 psi (1,00 bar)	II	18 GPM (68,1 LPM) 18.4 psi (1,27 bar)	II	18 GPM (68,1 LPM) 18.4 psi (1,27 bar)
14 x 14 (4,3 x 4,3)	14 (4,3)	II	16 GPM (60,6 LPM) 14.5 psi (1,00 bar)	II	16 GPM (60,6 LPM) 14.5 psi (1,00 bar)	II	18 GPM (68,1 LPM) 18.4 psi (1,27 bar)	II	18 GPM (68,1 LPM) 18.4 psi (1,27 bar)
16 x 16 (4,9 x 4,9)	16 (4,9)	II	16 GPM (60,6 LPM) 14.5 psi (1,00 bar)	II	16 GPM (60,6 LPM) 14.5 psi (1,00 bar)	II	18 GPM (68,1 LPM) 18.4 psi (1,27 bar)	II	18 GPM (68,1 LPM) 18.4 psi (1,27 bar)
16 x 18 (4,9 x 5,5)	16 (4,9)	II	22 GPM (83,3 LPM) 27.4 psi (1,89 bar)	II	22 GPM (83,3 LPM) 27.4 psi (1,89 bar)	II	22 GPM (83,3 LPM) 27.4 psi (1,89 bar)	II	22 GPM (83,3 LPM) 27.4 psi (1,89 bar)
16 x 20 (4,9 x 6,1)	16 (4,9)	III	23 GPM (87,1 LPM) 30.0 psi (2,07 bar)	III	23 GPM (87,1 LPM) 30.0 psi (2,07 bar)	III	26 GPM (98,4 LPM) 38.3 psi (2,64 bar)	III	26 GPM (98,4 LPM) 38.3 psi (2,64 bar)

- (a) For coverage area dimensions less than or between those indicated, it is necessary to use the minimum required flow for the next highest coverage area for which hydraulic design criteria are stated.
- (b) Width (backwall where sprinkler is located) x Length (horizontal throw of sprinkler).
- (c) Requirement is based on minimum flow in GPM (LPM) from each sprinkler. The associated residual pressures are calculated using the nominal K-factor. Refer to Hydraulic Design Criteria Section for details..

**TABLE C**  
**NFPA 13D AND NFPA 13R WET PIPE HYDRAULIC DESIGN CRITERIA**  
**FOR THE SERIES LFII (TY1334)**  
**RESIDENTIAL HORIZONTAL SIDEWALL AND RECESSED HORIZONTAL SIDEWALL SPRINKLERS**  
**FOR SPRINKLERS LOCATED ALONG A SLOPE AND DISCHARGING ACROSS THE SLOPE**  
**(Greater Than 2 Inch Rise for 12 Inch Run Up To 4 Inch Rise for 12 Inch Run)**



ELEVATION

Maximum Coverage Area <sup>(a)</sup> Width x Length <sup>(b)</sup> Ft. x Ft. (m x m)	Maximum Spacing Ft. (m)	Minimum Flow <sup>(c)</sup> and Residual Pressure <b>(III)</b> Three sprinkler design when there are more than two sprinklers in a compartment and with the sprinklers located along the slope and positioned to discharge across the slope.			
		Top-Of-Deflector- To- Ceiling: 4 to 6 Inches (100 to 150 mm)			
		155°F/68°C		175°F/79°C	
12 x 12 (3,7 x 3,7)	12 (3,7)	III	16 GPM (60,6 LPM) 14.5 psi (1,00 bar)	III	16 GPM (60,6 LPM) 14.5 psi (1,00 bar)
14 x 14 (4,3 x 4,3)	14 (4,3)	III	16 GPM (60,6 LPM) 14.5 psi (1,00 bar)	III	16 GPM (60,6 LPM) 14.5 psi (1,00 bar)
16 x 16 (4,9 x 4,9)	16 (4,9)	III	16 GPM (60,6 LPM) 14.5 psi (1,00 bar)	III	16 GPM (60,6 LPM) 14.5 psi (1,00 bar)
16 x 18 (4,9 x 5,5)	16 (4,9)		N/A		N/A
16 x 20 (4,9 x 6,1)	16 (4,9)		N/A		N/A

- (a) For coverage area dimensions less than or between those indicated, it is necessary to use the minimum required flow for the next highest coverage area for which hydraulic design criteria are stated.
- (b) Width (backwall where sprinkler is located) x Length (horizontal throw of sprinkler).
- (c) Requirement is based on minimum flow in GPM (LPM) from each sprinkler. The associated residual pressures are calculated using the nominal K-factor. Refer to Hydraulic Design Criteria Section for details..

**TABLE D**  
**NFPA 13D AND NFPA 13R WET PIPE HYDRAULIC DESIGN CRITERIA**  
**FOR THE SERIES LFII (TY1334)**  
**RESIDENTIAL HORIZONTAL SIDEWALL AND RECESSED HORIZONTAL SIDEWALL SPRINKLERS**  
**FOR SPRINKLERS LOCATED ALONG A SLOPE AND DISCHARGING ACROSS THE SLOPE**  
*(Greater Than 4 Inch Rise for 12 Inch Run Up To 8 Inch Rise for 12 Inch Run)*

## Care and Maintenance

The Series LFII (TY1334) must be maintained and serviced in accordance with the following instructions:

### NOTES

*Absence of an Escutcheon Plate may delay the sprinkler operation in a fire situation.*

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

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. (Ref. Installation Section).

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association (e.g., NFPA 25), in addition to the standards of any other authorities having jurisdiction. The installing contractor or sprinkler manufacturer should be contacted relative to any questions.

### NOTE

*The owner must assure that the sprinklers are not used for hanging of 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.*

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.

## 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 Assembly:

Series LFII (TY1334), K=4.2, Residential Horizontal Sidewall Sprinkler with (specify) temperature rating and (specify) finish, P/N (specify).

155°F/68°C or Chrome Plated .....	P/N 51-211-9-155
155°F/68°C White Polyester .....	P/N 51-211-4-155
155°F/68°C White (RAL9010)* .....	P/N 51-211-3-155
155°F/68°C Natural Brass .....	P/N 51-211-1-155
175°F/79°C or Chrome Plated .....	P/N 51-211-9-175
175°F/79°C White Polyester .....	P/N 51-211-4-175
175°F/79°C White (RAL9010)* .....	P/N 51-211-3-175
175°F/79°C Natural Brass .....	P/N 51-211-1-175

\*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.

## Series LFII Residential Sprinklers Flat-Plate Concealed Pendent 4.9 K-Factor

### General Description

The TYCO RAPID RESPONSE Series LFII Residential Flat-Plate Concealed Pendent Sprinklers (TY2524) are decorative, fast response, fusible solder sprinklers designed for use in residential occupancies such as homes, apartments, dormitories, and hotels.

The Cover Plate/Retainer Assembly conceals the sprinkler operating components above the ceiling. The flat profile of the Cover Plate provides the optimum aesthetically appealing sprinkler design. Additionally, the concealed design of the Series LFII Residential Flat-Plate Concealed Pendent Sprinklers provides 1/2 inch (12,8 mm) vertical adjustment. This adjustment provides a measure of flexibility when cutting fixed pipe drops.

The Series LFII Residential Flat-Plate Concealed Pendent Sprinklers are intended for use in the following systems:

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

#### IMPORTANT

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.

The Series LFII Residential Flat-Plate Concealed Pendent Sprinkler has a 4.9 (60,5) K-factor that provides the required residential flow rates at reduced pressures, enabling smaller pipe sizes and water supply requirements.

This sprinkler has 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.

The Series LFII Residential Flat-Plate Concealed Pendent Sprinklers are shipped with a Disposable Protective Cap. The Protective Cap protects the sprinkler during ceiling installation or finish. After ceiling installation is complete, the Protective Cap is removed and the Cover Plate/Retainer Assembly is installed. Removing the Protective Cap is required for proper sprinkler performance.

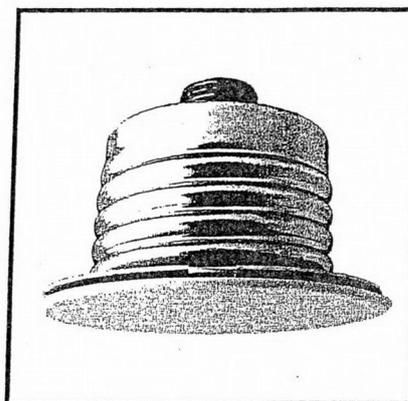
#### NOTICE

*The Series LFII Residential Flat-Plate Concealed Pendent Sprinklers (TY2524) 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.*

*Owners are 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.*

### Model/Sprinkler Identification Number (SIN)

TY2524



### Technical Data

#### Approvals

UL and C-UL Listed  
NSF-61 Certified

The Series LFII Residential Flat-Plate Concealed Pendent Sprinklers are only listed with the Series LFII Concealed Cover Plates having a factory-applied finish.

#### Maximum Working Pressure

175 psi (12,1 bar)

#### Discharge Coefficient

K=4.9 GPM/psi<sup>1/2</sup> (70,6 LPM/bar<sup>1/2</sup>)

#### Temperature Rating

Sprinkler: 160°F (71°C)  
Cover Plate: 139°F (59°C)

#### Vertical Adjustment

1/2 inch (12,7 mm)

#### Finishes

Refer to the Ordering Procedure section.

#### Physical Characteristics

- Cover Plate/Retainer Assembly:  
Cover Plate ..... Copper  
Ejection Spring .... Stainless Steel  
Retainer ..... Brass

Maximum Coverage Area <sup>(a)</sup>	Maximum Spacing	Horizontal Ceiling Minimum Flow <sup>(b)</sup> and Residual Pressure (Maximum 2-inch rise for 12-inch run)	Sloped Ceiling Minimum Flow <sup>(b)</sup> and Residual Pressure (Greater than 2-inch rise up to maximum 4-inch rise for 12-inch run)	Sloped Ceiling Minimum Flow <sup>(b)</sup> and Residual Pressure (Greater than 4-inch rise up to maximum 8-inch rise for 12-inch run)
		160°F (71°C) Sprinkler	160°F (71°C) Sprinkler	160°F (71°C) Sprinkler
12' x 12' (3,7 m x 3,7 m)	12' (3,7 m)	13 GPM (49,2 LPM) 7.0 psi (0,48 bar)	17 GPM (64,3 LPM) 12.0 psi (0,83 bar)	17 GPM (64,3 LPM) 12.0 psi (0,83 bar)
14' x 14' (4,3 m x 4,3 m)	14' (4,3 m)	13 GPM (49,2 LPM) 7.0 psi (0,48 bar)	17 GPM (64,3 LPM) 12.0 psi (0,83 bar)	17 GPM (64,3 LPM) 12.0 psi (0,83 bar)
16' x 16' (4,9 m x 4,9 m)	16' (4,9 m)	13 GPM (49,2 LPM) 7.0 psi (0,48 bar)	17 GPM (64,3 LPM) 12.0 psi (0,83 bar)	17 GPM (64,3 LPM) 12.0 psi (0,83 bar)
18' x 18' (5,5 m x 5,5 m)	18' (5,5 m)	17 GPM (64,3 LPM) 12.0 psi (0,83 bar)	22 GPM (83,3 LPM) 20.2 psi (1,39 bar)	22 GPM (83,3 LPM) 20.2 psi (1,39 bar)
20' x 20' (6,1 m x 6,1 m)	20' (6,1 m)	20 GPM (75,7 LPM) 16.7 psi (1,15 bar)	24 GPM (90,8 LPM) 24.0 psi (1,65 bar)	24 GPM (90,8 LPM) 24.0 psi (1,65 bar)

(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 section under the Design Criteria are stated.

(b) The Minimum Flow requirement is based on minimum flow in GPM (LPM) from each sprinkler. The associated residual pressures are calculated using the nominal K-factor. Refer to "Hydraulic Design" in the Design Criteria section for details.

**TABLE A**  
**SERIES LFII RESIDENTIAL FLAT-PLATE CONCEALED PENDENT SPRINKLER (TY2524)**  
**NFPA 13D AND NFPA 13R HYDRAULIC DESIGN CRITERIA**  
**WET PIPE SYSTEMS**

- Sprinkler/Support Cup Assembly:
  - Body ..... Brass
  - Cap ..... Bronze
  - Saddle ..... Brass
  - Sealing Assembly ..... Beryllium  
Nickel w/ Teflon<sup>1</sup>
  - Soldered Link Halves ..... Nickel
  - Lever ..... Bronze
  - Compression Screw ..... Brass
  - Deflector ..... Bronze
  - Guide Pin Housing ..... Bronze
  - Guide Pins ..... Bronze
  - Support Cup ..... Steel

## Operation

When exposed to heat from a fire, the Cover Plate, which is normally soldered to the Retainer at three points, falls away to expose the Sprinkler/Support Cup Assembly. At this point, the Deflector, supported by the Guide Pins, drops down to its operated position.

The Solder Link Element of the Sprinkler/Support Cup Assembly is comprised of two link halves that are soldered together with a thin layer of solder. When the rated temperature is reached, the solder melts and the two link halves separate, allowing the sprinkler to activate and flow water.

## Design Criteria

The TYCO RAPID RESPONSE Series LFII Residential Flat-Plate Concealed Pendent Sprinklers (TY2524) are UL and C-UL Listed for installation in accordance with the following criteria.

### NOTICE

*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 Authority Having Jurisdiction.*

*The Series LFII Residential Flat-Plate Concealed Pendent Sprinklers must not be used in applications where the air pressure above the ceiling is greater than that below. Down drafts through the Support Cup can delay sprinkler operation in a fire situation.*

### System Type

Only wet pipe systems may be utilized.

### Hydraulic Design

Table A provides the minimum required sprinkler flow rate for systems designed to NFPA 13D or NFPA 13R 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.

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:

- flow rates given in Table A for NFPA 13D and 13R as a function of temperature rating and the maximum allowable coverage area
- minimum discharge of 0.1 GPM/sq. ft. 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

Locate sprinklers in accordance with the obstruction rules of NFPA for residential sprinklers as well as obstruction criteria described within TYCO technical data sheet TFP490.

### Operational Sensitivity

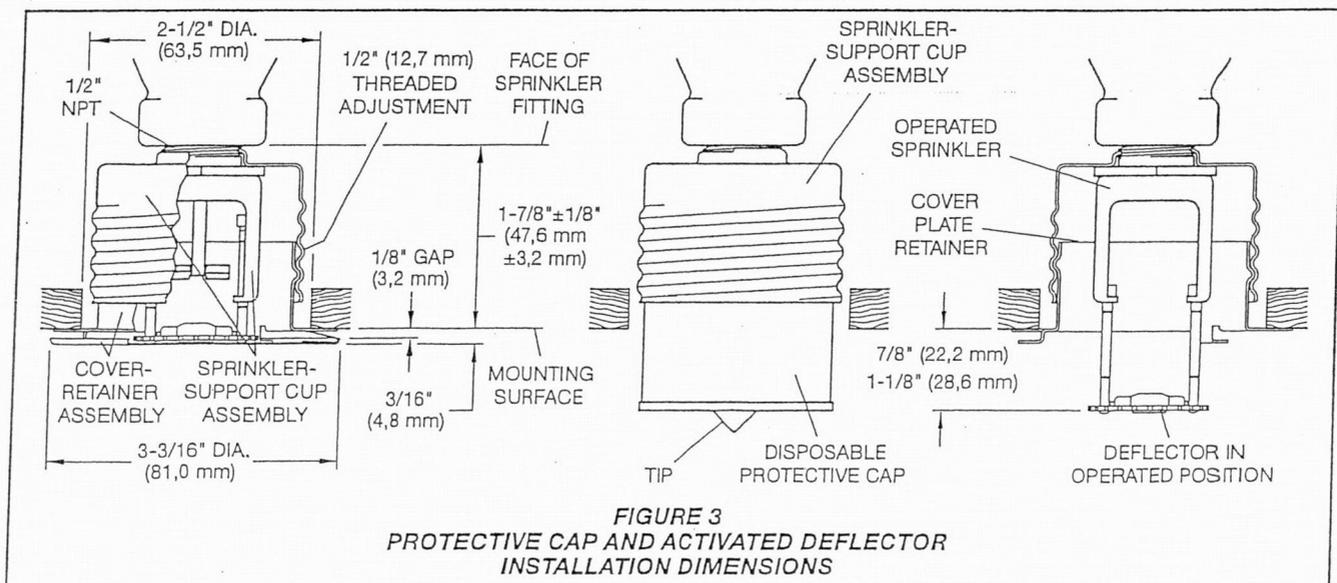
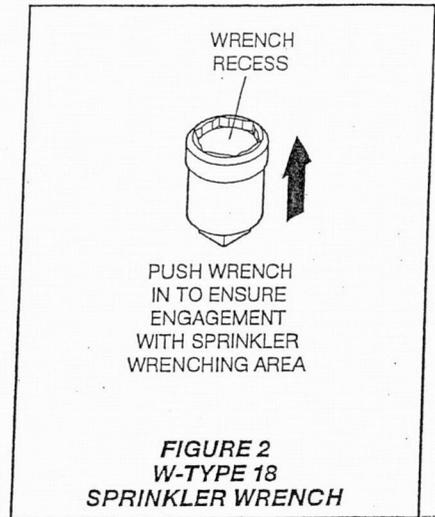
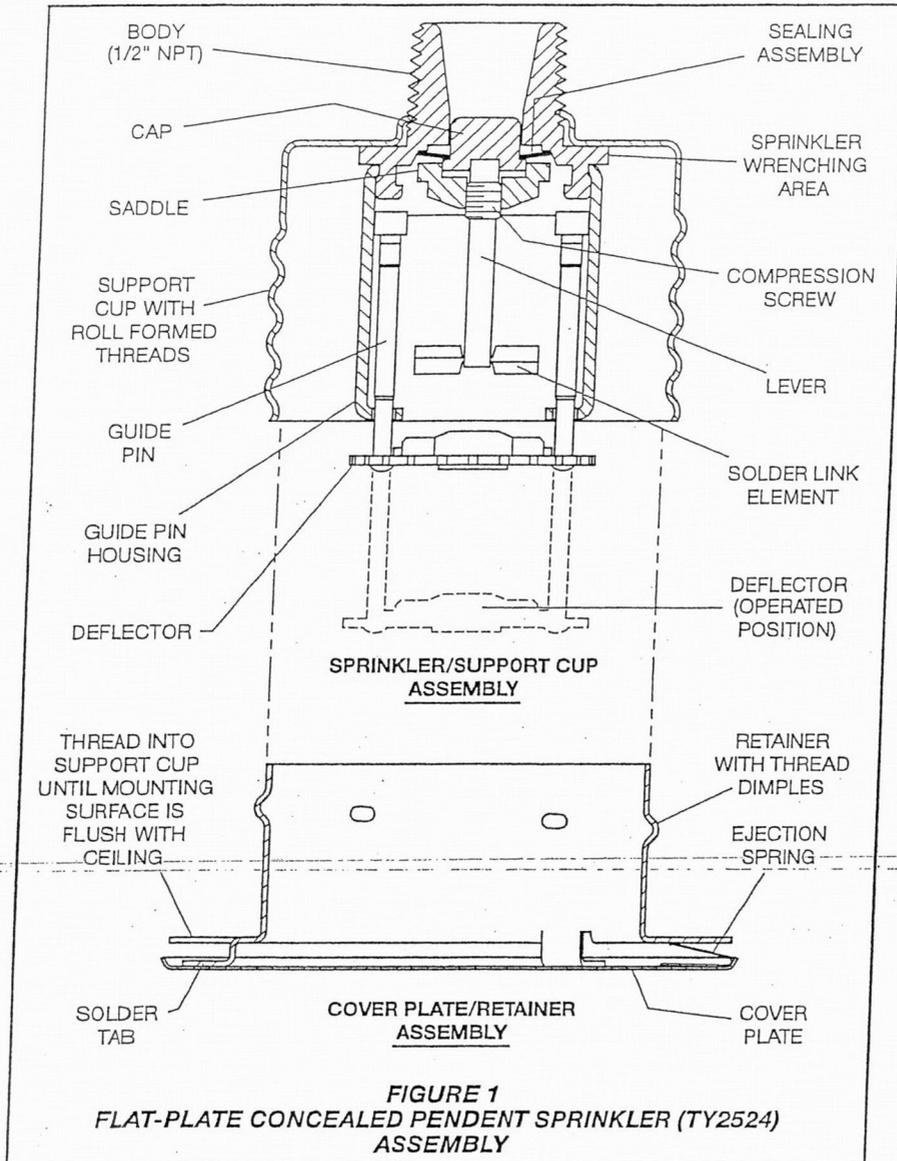
Install sprinklers relative to the ceiling mounting surface as shown in Figure 3.

### Sprinkler Spacing

The minimum spacing between sprinklers is 8 feet (2,4 m).

The maximum spacing between sprinklers cannot exceed the length of the coverage area (Table A) being hydraulically calculated; for example, a maximum of 12 feet for a 12 ft. x 12 ft. coverage area or 20 feet for a 20 ft. x 20 ft. coverage area.

<sup>1</sup> Registered trademark of Dupont



## Installation

The TYCO RAPID RESPONSE Series LFII Residential Flat-Plate Concealed Pendent Sprinklers must be installed in accordance with the following instructions.

### NOTICE

*Damage to the Solder Link Element during installation can be avoided by handling the sprinkler by the Support Cup only; that is, do not apply pressure to the Solder Link Element (Figure 1).*

*Obtain a leak-tight 1/2 inch NPT sprinkler joint by applying a minimum-to-maximum torque of 7 to 14 ft.-lbs. (9,5 to 19,0 Nm). 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 the Cover Plate/Retainer Assembly by under- or over-tightening the sprinkler. Re-adjust the position of the sprinkler fitting to suit.*

1. Install pendent sprinklers in the pendent position, with the centerline of the sprinkler perpendicular to the mounting surface.
2. Remove the Protective Cap.
3. With pipe-thread sealant applied to the pipe threads, and using the W-Type 18 Wrench shown in Figure 2, install and tighten the Sprinkler/Support Cup Assembly into the fitting. The W-Type 18 Wrench accepts a 1/2 inch ratchet drive.
4. Replace the Protective Cap by pushing it upwards until it bottoms out against the Support Cup. The Protective Cap helps prevent damage to the Deflector and Guide Pins during ceiling installation and/or during application of the finish coating of the ceiling.

### NOTICE

*As long as the protective Cap remains in place, the system is considered "Out Of Service".*

5. After the ceiling has been completed with the 2-1/2 inch (63 mm) diameter clearance hole and in preparation for installing the Cover Plate/Retainer Assembly, remove and discard the Protective Cap, and verify that the Deflector moves up and down freely.

If the Sprinkler has been damaged and the Deflector does not move up and down freely, replace the entire Sprinkler assembly. Do not attempt to modify or repair a damaged sprinkler.

6. Screw on the Cover Plate/Retainer Assembly until its flange contacts the ceiling.

Do not continue to screw on the Cover Plate/Retainer Assembly such that it lifts a ceiling panel out of its normal position.

If the Cover Plate/Retainer Assembly cannot be engaged with the Mounting Cup or the Cover Plate/Retainer Assembly cannot be engaged sufficiently to contact the ceiling, the Sprinkler Fitting must be repositioned.

## Care and Maintenance

The TYCO RAPID RESPONSE Series LFII Residential Flat-Plate Concealed Pendent Sprinkler (TY2524) must be maintained and serviced in accordance with the following instructions.

### NOTICE

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

When properly installed, there is a nominal 1/8 inch (3,2 mm) air gap between the lip of the Cover Plate and the ceiling, as shown in Figure 3. This air gap is necessary for proper operation of the sprinkler by allowing heat flow from a fire to pass below and above the Cover Plate to help assure appropriate release of the Cover Plate in a fire situation. If the ceiling needs repainting after sprinkler installation, exercise care to ensure that the new paint does NOT seal off any of the air gap. Failure to do so may impair sprinkler operation.

Absence of a Cover Plate can delay the sprinkler operation in a fire situation.

Do not pull the Cover Plate relative to the Enclosure. Separation may result.

Exercise care to avoid damage to sprinklers before, during, and after installation. Never paint, plate, coat, or otherwise alter automatic sprinklers after they leave the factory.

Never repaint factory-painted Cover Plates. When necessary, replace cover plates with factory-painted units. Non-factory applied paint can adversely delay or prevent sprinkler operation in the event of a fire.

Replace sprinklers that:

- were damaged by dropping, striking, wrench twisting, wrench slippage, or the like.
- were modified or over-heated.
- are leaking or exhibiting visible signs of corrosion.

Responsibility lies with owners 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 other authorities having jurisdiction. Contact the installing contractor or sprinkler 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

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

Contact your local distributor for availability. When placing an order, indicate the full product description and Part Number (P/N).

**Sprinkler/Support Cup Assembly**  
Specify: Series LFII Residential Flat-Plate Concealed Pendent Sprinkler (TY2524), K=4.9, without Cover Plate/Retainer Assembly, P/N 51-114-1-160.

**Cover Plate/Retainer Assembly**  
Specify: Cover Plate/Retainer Assembly with finish (below) for the Series LFII Residential Flat-Plate Concealed Pendent Sprinkler (TY2524), K=4.9, P/N (below):

Chrome..... P/N 56-201-9-135  
Custom.....P/N 56-201-X-135  
Off White..... P/N 56-201-0-135  
Pure White\*  
(RAL 9010)..... P/N 56-201-3-135  
Signal White\*\*  
(RAL 9003)..... P/N 56-201-4-135  
Standard White (Grey White)  
(RAL9002)..... P/N 56-201-5-135

\* Eastern Hemisphere sales only.

\*\* Previously known as Bright White.

**Note:** All Custom Cover Plates are painted using Sherwin Williams Interior Latex Paint. Contact TYCO Customer Service with any questions related to custom orders.

**Sprinkler Wrench**  
Specify W-Type 18 Sprinkler Wrench, P/N 56-000-1-265.

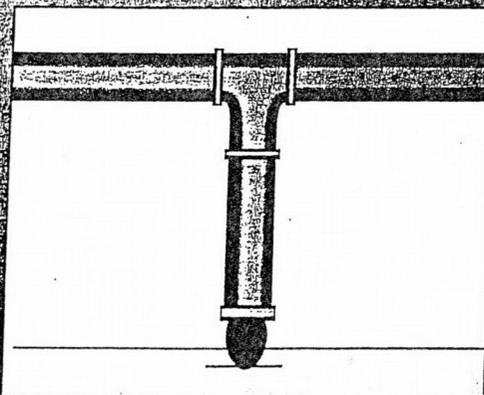
**tyco** / Flow Control / **Tyco Fire Products**

**BlazeMaster<sup>®</sup>**

**FIRE SPRINKLER PIPE & FITTINGS SUBMITTAL SHEET**

**TYCO FIRE PRODUCTS**  
451 North Cannon Avenue  
Lansdale, Pennsylvania 19446  
[www.tyco-fire.com](http://www.tyco-fire.com)

**TECHNICAL SERVICES**  
TEL: (800) 381-9312 • FAX: (800) 791-5500  
E-MAIL: [techserv@tycofp.com](mailto:techserv@tycofp.com)



No. 19-1.5  
TD915  
4-1.1.20  
9/2001



# Introduction

Tyco Fire Products (TFP) BlazeMaster® CPVC pipe and fittings are designed exclusively for use in wet pipe automatic fire sprinkler systems. They are made from a specially developed thermoplastic compound composed of post chlorinated polyvinyl chloride (CPVC) resin and state of the art additives. TFP BlazeMaster® CPVC products are easier to install than traditional steel pipe systems, and at

the same time, they 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.

## Technical Data

**Sizes:** 3/4" - 3"

**Maximum Working Pressure:** 175 psi

**Approvals:** UL, FM, CUL, NSF, Dade County, LPCB, MEA, and the City of Los Angeles

**Note:** See current TFP BlazeMaster Installation Instructions and Technical Manual, for exact listing/approval information

**Manufacture Source:** U.S.A.

**Material:**

**Pipe:** ASTM F442, SDR 13.5

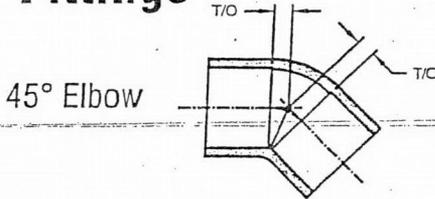
**Fittings:** ASTM F438 (Sch. 40) and ASTM F439 (Sch. 80)

**Color:** Orange

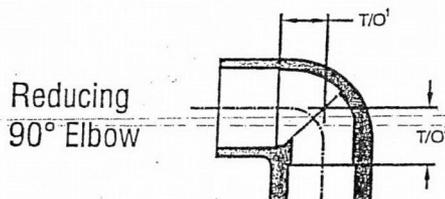
## Pipe

Nom. Pipe Size	Avg. O.D. Inches	Avg. I.D. Inches	Wt. Lbs./Ft.	Wt. H <sub>2</sub> O filled Pipe Lbs./Ft.	Ft. of Pipe per Lift	Wt. per Lift Lbs.
3/4"	1.050	0.874	0.17	0.43	7875	1413
1"	1.315	1.101	0.26	0.67	5040	1320
1 1/4"	1.660	1.394	0.42	1.07	2835	1191
1 1/2"	1.900	1.598	0.55	1.40	2205	1136
2"	2.375	2.003	0.86	2.20	1260	1063
2 1/2"	2.875	2.423	1.26	3.22	1215	1531
3"	3.500	2.952	1.87	4.79	720	1344

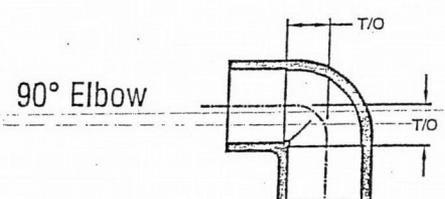
## Fittings



45° Elbow



Reducing 90° Elbow

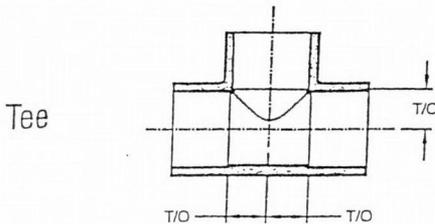


90° Elbow

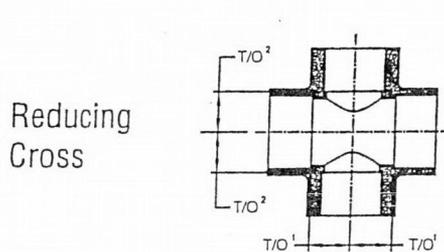
Part No.	Size	Sch.	T/O	Wt.
80050	3/4"	40	5/8"	0.08 lb.
80051	1"	40	3/8"	0.11 lb.
80052	1 1/4"	40	3/4"	0.20 lb.
80053	1 1/2"	80	7/16"	0.31 lb.
80054	2"	80	3/4"	0.56 lb.
80055	2 1/2"	80	3/4"	0.89 lb.
80056	3"	80	1"	1.19 lb.

Part No.	Size	Sch.	T/O		Wt. lb.
			1	2	
80032	1" x 3/4"	40	1 1/16"	1 3/16"	0.16

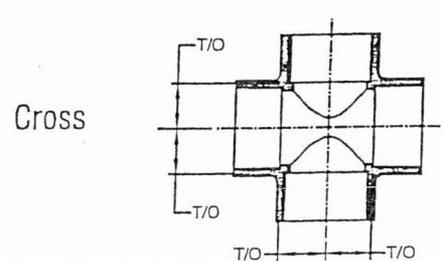
Part No.	Size	Sch.	T/O	Wt.
80025	3/4"	40	9/16"	0.09 lb.
80026	1"	40	3/4"	0.14 lb.
80027	1 1/4"	40	7/8"	0.21 lb.
80028	1 1/2"	80	1 1/16"	0.40 lb.
80029	2"	80	1 1/4"	0.79 lb.
80030	2 1/2"	80	1 1/2"	1.14 lb.
80031	3"	80	1 13/16"	1.82 lb.



Tee



Reducing Cross



Cross

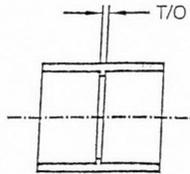
Part No.	Size	Sch.	T/O	Wt.
80000	3/4"	40	5/8"	0.11 lb.
80001	1"	40	3/4"	0.19 lb.
80002	1 1/4"	40	7/8"	0.26 lb.
80003	1 1/2"	80	1"	0.51 lb.
80004	2"	80	1 3/8"	0.90 lb.
80005	2 1/2"	80	1 9/16"	1.59 lb.
80006	3"	80	1 11/16"	2.41 lb.

Part No.	Size	Sch.	T/O		Wt. lb.
			1	2	
80015	1" x 3/4"	40	1 1/16"	1 1/16"	0.28

Part No.	Size	Sch.	T/O	Wt.
80009	3/4"	40	9/16"	0.13 lb.
80010	1"	40	15/16"	0.23 lb.
80011	1 1/4"	40	15/16"	0.34 lb.
80012	1 1/2"	80	1 1/16"	0.67 lb.
80013	2"	80	1 3/8"	1.00 lb.
80014	2 1/2"	80	1 9/16"	1.91 lb.
80008	3"	80	1 13/16"	2.89 lb.

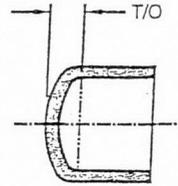


Coupling



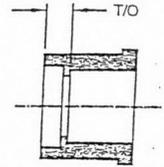
Part No.	Size	Sch.	T/O	Wt.
80075	3/4"	40	1/8"	0.07 lb.
80076	1"	40	1/8"	0.11 lb.
80077	1 1/4"	40	3/16"	0.12 lb.
80078	1 1/2"	80	3/16"	0.25 lb.
80079	2"	80	3/16"	0.38 lb.
80080	2 1/2"	80	3/16"	0.67 lb.
80081	3"	80	3/16"	0.91 lb.

Cap



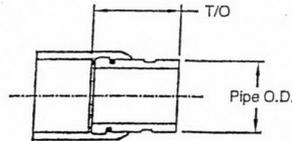
Part No.	Size	Sch.	T/O	Wt.
80100	3/4"	40	5/16"	0.04 lb.
80101	1"	40	3/8"	0.06 lb.
80102	1 1/4"	40	1/2"	0.10 lb.
80103	1 1/2"	80	5/8"	0.20 lb.
80104	2"	80	5/8"	0.31 lb.
80105	2 1/2"	80	7/8"	0.58 lb.
80106	3"	80	1"	0.88 lb.

Reducer Bushing



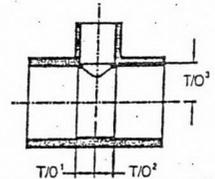
Part No.	Size	Sch.	T/O	Wt.
80200	1" x 3/4"	40	7/16"	0.04 lb.
80201	1 1/4" x 3/4"	40	7/16"	0.11 lb.
80202	1 1/2" x 1"	40	5/16"	0.12 lb.
80203	1 1/2" x 3/4"	80	5/8"	0.16 lb.
80204	1 1/2" x 1"	80	1/2"	0.14 lb.
80205	1 1/2" x 1 1/4"	80	3/8"	0.17 lb.
80206	2" x 3/4"	80	3/4"	0.27 lb.
80207	2" x 1"	80	11/16"	0.26 lb.
80208	2" x 1 1/4"	80	9/16"	0.24 lb.
80209	2" x 1 1/2"	80	7/16"	0.19 lb.
80215	2 1/2" x 1"	80	1 5/16"	0.42 lb.
80214	2 1/2" x 1 1/4"	80	1 3/4"	0.45 lb.
80213	2 1/2" x 1 1/2"	80	1 5/8"	0.46 lb.
80211	2 1/2" x 2"	80	1 9/16"	0.29 lb.
80210	3" x 2"	80	2 3/16"	0.72 lb.
80212	3" x 2 1/2"	80	1 15/16"	0.47 lb.

Grooved Coupling Adapter



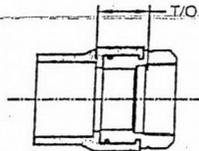
Part No.	Size	Sch.	T/O	Wt.	Pipe OD
80160	1 1/4" x 1 1/4" Grooved	40	2 5/16"	0.78 lb.	1 1/4" (1.660")
80161	1 1/2" x 1 1/2" Grooved	80	2 5/16"	0.95 lb.	1 1/2" (1.900")
80162	2" x 2" Grooved	80	2 5/16"	1.42 lb.	2" (2.375")
80163	2 1/2" x 2 1/2" Grooved	80	2 5/16"	2.28 lb.	2 1/2" (2.875")
80164	3" x 3" Grooved	80	2 1/4"	3.00 lb.	3" (3.500")
80168	3" x 76.1mm Grooved	80	2 1/4"	2.72 lb.	76.1mm (3.000")

Reducing Tee



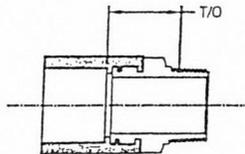
Part No.	Size	Sch.	T/O			Wt. lb.
			1	2	3	
80132	3/4" x 3/4" x 1"	40	3/4"	3/4"	5/8"	0.14
80133	1" x 3/4" x 3/4"	40	1/2"	11/16"	3/4"	0.14
80134	1" x 3/4" x 1"	40	5/8"	3/4"	3/4"	0.17
80260	1" x 1" x 3/4"	40	3/4"	3/4"	11/16"	0.16
80135	1 1/4" x 1" x 3/4"	40	7/16"	3/4"	15/16"	0.21
80136	1 1/4" x 1" x 1"	40	11/16"	3/4"	15/16"	0.22
80137	1 1/4" x 1" x 1 1/4"	40	13/16"	15/16"	13/16"	0.26
80261	1 1/4" x 1 1/4" x 3/4"	40	5/8"	5/8"	7/8"	0.23
80262	1 1/4" x 1 1/4" x 1"	40	3/4"	3/4"	7/8"	0.26
80138	1 1/4" x 1 1/4" x 1 1/2"	80	1"	1"	1"	0.43
80140	1 1/2" x 1 1/4" x 3/4"	80	1/2"	5/8"	1"	0.36
80141	1 1/2" x 1 1/4" x 1"	80	1/2"	5/8"	1 1/8"	0.38
80263	1 1/2" x 1 1/2" x 3/4"	80	9/16"	9/16"	1"	0.36
80264	1 1/2" x 1 1/2" x 1"	80	9/16"	9/16"	1"	0.38
80275	1 1/2" x 1 1/2" x 1 1/4"	80	7/8"	7/8"	1"	0.45
80265	2" x 2" x 3/4"	80	3/4"	3/4"	1 3/8"	0.61
80266	2" x 2" x 1"	80	7/8"	7/8"	1 3/8"	0.66
80274	2" x 2" x 1 1/4"	80	1"	1"	1 3/8"	0.74
80267	2" x 2" x 1 1/2"	80	1 1/8"	1 1/8"	1 3/8"	0.78
80271	2 1/2" x 2 1/2" x 1"	80	1 11/16"	1 11/16"	1 9/16"	1.43
80272	2 1/2" x 2 1/2" x 1 1/4"	80	1 11/16"	1 11/16"	1 9/16"	1.46
80273	2 1/2" x 2 1/2" x 1 1/2"	80	1 11/16"	1 11/16"	1 9/16"	1.48
80276	2 1/2" x 2 1/2" x 2"	80	1 11/16"	1 11/16"	1 9/16"	1.50
80270	3" x 3" x 1 1/2"	80	1 3/4"	1 3/4"	1 13/16"	2.28
80268	3" x 3" x 2"	80	1 3/4"	1 3/4"	1 3/4"	2.25
80269	3" x 3" x 2 1/2"	80	1 3/4"	1 3/4"	1 15/16"	2.44

Female Adapter



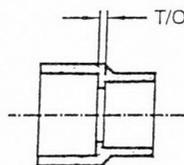
Part No.	Size	Sch.	T/O	Wt.
80142	3/4" x 3/4" NPT	40	5/8"	0.41 lb.
80145	1" x 1" NPT	40	3/4"	0.63 lb.
80146	1 1/4" x 1 1/4" NPT	40	7/8"	1.03 lb.
80147	1 1/2" x 1 1/2" NPT	80	1"	1.42 lb.
80148	2" x 2" NPT	80	1 3/8"	2.66 lb.

Male Adapter



Part No.	Size	Sch.	T/O	Wt.
80157	3/4" x 3/4" NPT	40	1 5/16"	0.33 lb.
80158	1" x 1" NPT	40	1 3/8"	0.56 lb.

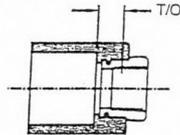
Reducing Coupling



Part No.	Size	Sch.	T/O	Wt.
80220	1" x 3/4"	40	1/8"	0.08 lb.

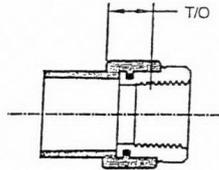


Sprinkler Head Adapter  
with Brass Threaded Insert



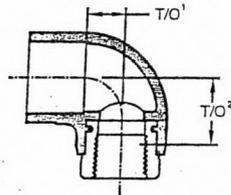
Part No.	Size	Sch.	T/O	Wt.
80175E	3/4" x 1/2" NPT	80	7/16"	0.20 lb.
80176E	1" x 1/2" NPT	80	7/16"	0.22 lb.
80177WL	3/4" x 1/2" NPT	40	9/16"	0.16 lb.
80179	1 x 3/4" NPT	40	3/4"	0.43 lb.

Sprinkler Head Adapter  
(Spigot)  
with Brass Threaded Insert



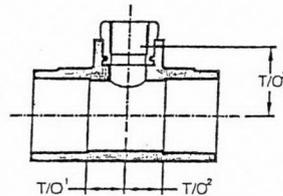
Part No.	Size	Sch.	T/O	Wt.
80177L	3/4" x 1/2" NPT	40	1/2"	0.16 lb.
80178	1" x 1/2" NPT	40	1/2"	0.20 lb.

Sprinkler Head Adapter  
90° Elbow  
with Brass Threaded Insert

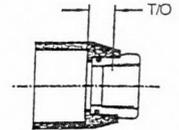


Part No.	Size	Sch.	T/O		Wt. lb.
			1	2	
80199	3/4" x 1/2" NPT	40	5/8"	15/16"	0.20
80189	1" x 1/2" NPT	40	13/16"	1 3/16"	0.26

Sprinkler Head Adapter  
Tee  
with Brass Threaded Insert

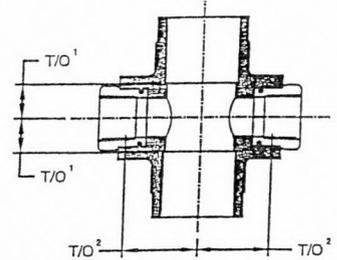


Sprinkler Head Adapter  
with Brass Threaded Insert



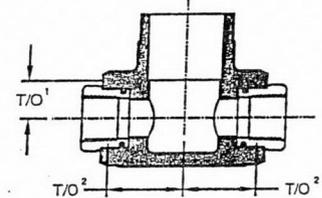
Part No.	Size	Sch.	T/O	Wt.
80175W	3/4" x 1/2" NPT	40	7/16"	0.19 lb.
80176W	1" x 1/2" NPT	40	7/16"	0.18 lb.

Back-to-Back Cross  
with Brass Threaded Insert



Part No.	Size	Sch.	T/O		Wt. lb.
			1	2	
80462	1" x 1" x 1/2" NPT x 1/2" NPT	40	5/8"	1 1/8"	0.46
80463	1" x 1" x 1/2" NPT x 1/2" NPT	40	5/8"	1 5/16"	0.47

Back-to-Back Tee  
with Brass Threaded Insert



Part No.	Size	Sch.	T/O		Wt. lb.
			1	2	
80459	1" x 1/2" NPT x 1/2" NPT	40	1 1/16"	1 5/16"	0.48
80460	1" x 1/2" NPT x 1/2" NPT	40	1 1/16"	1 1/8"	0.46

Part No.	Size	Sch.	T/O			Wt. lb.
			1	2	3	
80250	3/4" x 3/4" x 1/2" NPT	40	5/8"	5/8"	1"	0.22
80251	1" x 1" x 1/2" NPT	40	1 1/16"	1 1/16"	1 3/16"	0.29
80249	1" x 1" x 1" NPT	40	1 5/16"	1 5/16"	1 7/16"	0.73
80256	1 1/4" x 1" x 1/2" NPT	40	7/16"	9/16"	1 1/8"	0.30
80252	1 1/4" x 1 1/4" x 1/2" NPT	40	7/16"	7/16"	1 1/8"	0.31
80257	1 1/2" x 1 1/4" x 1/2" NPT	80	9/16"	5/8"	1 7/16"	0.43
80254	1 1/2" x 1 1/2" x 1/2" NPT	80	9/16"	9/16"	1 7/16"	0.46
80258	2" x 1 1/2" x 1/2" NPT	80	1/2"	5/8"	1 5/8"	0.56
80253	2" x 2" x 1/2" NPT	80	1/2"	1/2"	1 5/8"	0.62

### Limited Warranty

Products manufactured by Tyco Fire Products are warranted solely to the original Buyer for ten (10) years against defects in material and workmanship when paid for and properly installed and maintained under normal use and service. This warranty will expire ten (10) years from date of shipment by Tyco Fire Products. No warranty is given for products or components manufactured by companies not affiliated by ownership with Tyco Fire Products or for products and components which have been subject to misuse, improper installation, corrosion, or which have not been installed, maintained, modified or repaired in accordance with applicable Standards of the National Fire Protection Association (NFPA), and/or the standards of any other Authorities Having Jurisdiction. Materials found by Tyco Fire Products to be defective shall be either repaired or replaced, at Tyco Fire Products sole option. Tyco Fire Products neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of products or parts of products. Tyco Fire Products shall not be responsible for sprinkler system design errors or inaccurate or incomplete information supplied by Buyer or Buyer's representatives.

IN NO EVENT SHALL TYCO FIRE PRODUCTS BE LIABLE, IN 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 TYCO FIRE PRODUCTS WAS INFORMED ABOUT THE POSSIBILITY OF SUCH DAMAGES, AND IN NO EVENT SHALL TYCO FIRE PRODUCT'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.

# Dyna-Thread®

## Full Line Sch-40 Replacement

Dyna-Thread® offers the life expectancy of Sch-40 with superior hydraulics and greater value.

Dyna-Thread sprinkler pipe represents an engineering advancement for the sprinkler pipe industry. It combines the safety and longevity of traditional Sch-40 pipe with quality and superior hydraulic advantages.

### Comparison to Schedule 40

- Dyna-Thread's inside diameter is up to 3.6% larger than Sch-40 giving it superior hydraulics. And, when used in combination with Dyna-Flow pipe, down sizing often occurs.
  - Dyna-Thread is fully listed and approved by UL, ULC, and FM for fire sprinkler applications.
  - The life expectancy of Dyna-Thread and Sch-40 are equal based on the calculated wall thicknesses per UL.
  - The consistent quality of steel used to make Dyna-Thread facilitates smooth threading and lower maintenance costs.
  - The exterior of Dyna-Thread is protected by a clean, durable mill coating for extended shelf life and easy paint application.
- With its increased strength and lighter weight, Dyna-Thread reduces installation fatigue and is ideal for retro-fit applications.

Corrosion Resistance Ratio (CRR) is a UL (Underwriters Laboratory) term for the estimated life expectancy of a pipe joint. This is based on the calculated wall thickness at the base of the first exposed thread, assumed to be the weakest point of the pipe length. Dyna-Thread and Sch-40 have the same calculated wall thicknesses at this point and are both assigned the same CRR of 1.00.

The internal surface of all black Allied Tube & Conduit Fire Sprinkler pipe products up to 4.5000" in diameter is coated with our new Antibacterial Formula, "ABF". In scientific laboratory test, ABS proved to have superior resistance to microbial colonization of pipe walls, thereby delaying or possibly preventing the onset of Microbiologically Influenced corrosion (MIC) when the First Sprinkler System is first installed.

### Comparison to L.W.T. Pipes

- More wall thickness at the thread (CRR=1.00) gives Dyna-Thread better life expectancy than lightwall threadable pipe joints.
- Unlike lightwall threadable pipe, Dyna-Thread has no thread gauge warning.
- Dyna-Thread is approved for standard hanger spacing (15 ft. O.C.), can be used as earthquake sway bracing, and is safe to use as drops.
- Dyna-Thread is safer to weld on.
- Dyna-Thread is more widely accepted than lightwall threadable where Sch-40 is specified.



Listed



Approved



Listed

### Specifications & Approvals

Super 40/Dyna-Thread pipe is manufactured to meet: ASTM A-135, Grade A and is in compliance with NFPA-13. All sizes of Super 40/Dyna-Thread are rated at 300 psi working pressure. Super 40/Dyna-Thread is UL and ULC Listed for wet, dry deluge and pre-action sprinkler systems and FM Approved for use in wet systems. Super 40/Dyna-Thread can be "hot-dip" galvanized to meet FM requirement for dry systems. Super 40/Dyna-Thread is approved for all threaded couplings and welded outlets and is suitable for all roll-grooved, and plain-end fittings. (See listing information).

### Specifications

NPS	Nominal I.D.	Wt.	Wt. (H2O Filled)	Pcs/	Wt/Lft (21')	Wt/Lft (24')	Wt/Lft (25')
In; mm	In; mm	Lbs/Ft; Kg/m	Lbs/Ft; Kg/m	Lft	Lbs; Kg	Lbs; Kg	Lbs; Kg
1"	1.080	1.330	1.75	70	1855	2234	2327
25	27.4	2.0	2.60	70	887	1013	1056
1 1/4"	1.408	1.870	2.54	51	2002	2288	2384
32	35.8	2.8	3.78	51	908	1038	1081
1 1/2"	1.639	2.290	3.22	44	2115	2418	2519
40	41.8	3.4	4.79	44	959	1097	1143
2"	2.104	3.050	4.57	30	1921	2195	2287
50	53.4	4.5	6.80	30	871	996	1037

tyco / Flow Control

allied  
TUBE & CONDUIT

16100 S. Lathrop • Harvey, IL 60428  
11350 Norcom Rd. • Philadelphia, PA 19154  
2525 N. 27th Ave. • Phoenix, AZ 85009

Customer Service:  
(800) 882-5543  
Fax 708-339-1806

# Submittal Data Sheet Dyna-Thread®

## Full Line Sch-40 Replacement

Dyna-Thread sprinkler pipe represents an engineering advancement for the sprinkler pipe industry. It combines the safety and longevity of traditional Sch-40 pipe with quality and superior hydraulic advantages.

Comparison to Schedule 40 Dyna-Threads inside diameter is up to 3.6% larger than Sch-40 giving it superior hydraulics. Also, when used in combination with Dyna-Flow pipe, down sizing often occurs. Dyna-Thread is fully listed and approved UL, ULC, and FM for fire sprinkler applications. The life expectancy of Dyna-Thread and Sch-40 are equal based on the calculated wall thicknesses per UL. The consistent quality of steel used to make Dyna-Thread facilitates smooth threading and lower maintenance costs. The exterior of Dyna-Thread is protected by a clean, durable mill coating for extended shelf life and easy paint application. With its increased strength and lighter weight, Dyna-Thread reduces installation fatigue and is ideal for retro-fit applications. Corrosion Resistance Ratio (CRR) is a UL (Underwriters Laboratory) term for the estimated life expectancy of a pipe joint. This is based on the calculated wall thickness at the base of the first exposed thread, assumed to be the weakest point of the pipe length. Dyna-Thread and Sch-40 have the same calculated wall thicknesses at this point and are both assigned the same CRR of 1.00.

Comparison to L.W.T. Pipe More wall thickness at the thread (CRR=1.00) gives Dyna-Thread better life expectancy than lightwall threadable pipe joints. Unlike lightwall threadable pipe Dyna-Thread has no thread gauge warning. Dyna-Thread is approved for standard hanger spacing (15 ft. O.C.), can be used as earthquake sway bracing, and is safe to use as drops. Dyna-Thread is safer to weld on than many zinc-coated lightwall threadable pipe products. Dyna-Thread is more widely accepted than lightwall threadable where Sch-40 is specified.

**Specifications & Approvals** Super 40/ Dyna-Thread pipe is manufactured to meet: ASTM A 135, Grade A and is in compliance with NFPA-13. All sizes of Super 40/Dyna-Thread are rated at 300 psi working pressure. Super 40/ Dyna-Thread is UL and ULC Listed for wet, dry and pre-action sprinkler systems and FM Approved for use in wet systems. Super 40/Dyna-Thread can be "hot-dip" galvanized to meet FM requirement for dry systems. Super 40/Dyna-Thread is approved for all threaded couplings and welded outlets and is suitable for all roll-grooved, and plain-end fittings. (See listing information).

The internal surface of all black Fire Sprinkler pipe up to 4.5000" in diameter shall be coated with Allied Tube & Conduit Antibacterial Formula "ABF".

Stamp Here



Specifications							
NPS	Nominal I.D.	WT.	WT. (H2O Filled)	Pcs/	WVLIH (21')	WVLIH (24')	WVLIH (25')
In: mm	In: mm	Lbs/Ft; Kg/m	Lbs/Ft; Kg/m	Lin	Lbs; Kg	Lbs; Kg	Lbs; Kg
1'	1.080	1.330	1.75	70	1955	2234	2327
25	27.4	2.0	2.60	70	887	1013	1058
1 1/4'	1.408	1.870	2.54	51	2002	2288	2384
32	35.8	2.8	3.78	51	908	1038	1087
1 1/2'	1.639	2.290	3.22	44	2115	2418	2519
40	41.6	3.4	4.79	44	959	1097	1143
2'	2.104	3.050	4.67	30	1921	2196	2287
50	53.4	4.5	6.80	30	871	998	1037

American Tube and Pipe was acquired by Allied Tube and Conduit on February 1, 1997. The engineered lightwall and standard wall family of products although they have different names are the same in all respects with regard to strength, weight, bundle count, listings and approvals. For example, Dyna-Flow and Super Flo are the same product as are Dyna-Thread and Super 40. XL is manufactured with Exterior galvanized coating. BLT is manufactured with Black lacquer coating.



Project: \_\_\_\_\_ Sprinkler Contractor: \_\_\_\_\_ Date: \_\_\_\_\_

Engineer: \_\_\_\_\_ Specification Reference: \_\_\_\_\_ System Type: \_\_\_\_\_

Locations: \_\_\_\_\_ Comments: \_\_\_\_\_



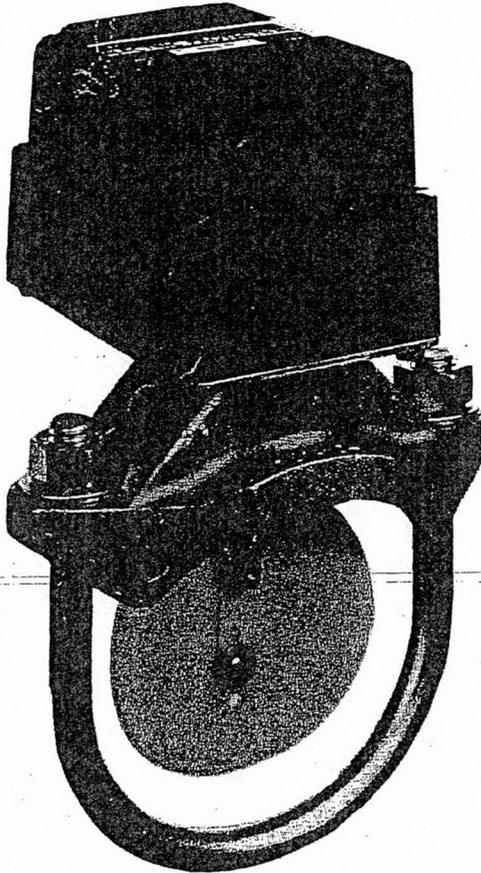
# VSR-D

VANE TYPE WATERFLOW SWITCH WITH RETARD

Potter Electric Signal Company

2081 Craig Rd., / St. Louis, MO 63146 / (800) 325-3936 / (314) 878-432

**SERVICE PRESSURE UP TO 450 PSI  
FOR 2" TO 8" PIPE SIZES  
250 PSI FOR 10" PIPE SIZE  
MINIMUM FLOW RATE FOR ALARM-10 GPM**



U.S. Pat. Nos.  
3,921,989  
3,912,247  
4,062,377

### CHARACTERISTICS

U.L. LISTED AND F.M. APPROVED

DIMENSIONS & WEIGHTS: See Fig. 2

ENCLOSURE: Cast Aluminum  
Finished: Red Enamel

CONTACT RATINGS: Two sets of S.P.D.T. (Form C)  
15.00 Amp. @ 125/250V. AC  
0.50 Amp. @ 125V. DC  
0.25 Amp. @ 250V. DC  
2.50 Amp. @ 0-30V. DC  
Resistive

ENVIRONMENTAL LIMITATIONS: 40°F/120°F  
4.5°C/49°C

General Purpose for Indoor Use

**CAUTION:** This device is not intended for applications outdoors or in explosive environments.

### SIZES AVAILABLE:

U.L. - For Schedule 40 Pipe: 2" thru 10"  
For Schedule 30 Pipe: 8"  
F.M. - For Schedule 40 Pipe: 2" thru 6"  
For Schedule 30 Pipe: 8" and 10"

### SERVICE USE:

Automatic Sprinkler	NFPA-13
One or Two Family Dwelling	NFPA-13D
Central Station	NFPA-71
Local	NFPA-72A
Auxiliary	NFPA-72B
Remote Station	NFPA-72C
Proprietary	NFPA-72D

OPTIONAL: Cover Tamper Switch  
Order Stk. No. 5420220

The Model VSR-D is a vane type waterflow switch for use on wet sprinkler systems. It is UL Listed for use on steel pipe; schedule 40 sizes 2" thru 10" and schedule 30 size 8" and has FM approvals for schedule 40 steel pipe in sizes 2" thru 6" and schedule 30 pipe in sizes 8" and 10".

The unit may also be used as a sectional waterflow detector on large systems.

The unit contains two single pole, double throw, snap action switches and an adjustable pneumatic retard. The switches are actuated when a flow of 10 gallons per minute 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 unit is enclosed in a general purpose, indoor use, cast aluminum 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 751 for installation instructions of this switch.

**RETARD ADJUSTMENT:** The unit has an adjustable pneumatic retard to prevent false alarms due to water surges. The retard is adjustable from 0 to approximately 75 seconds.

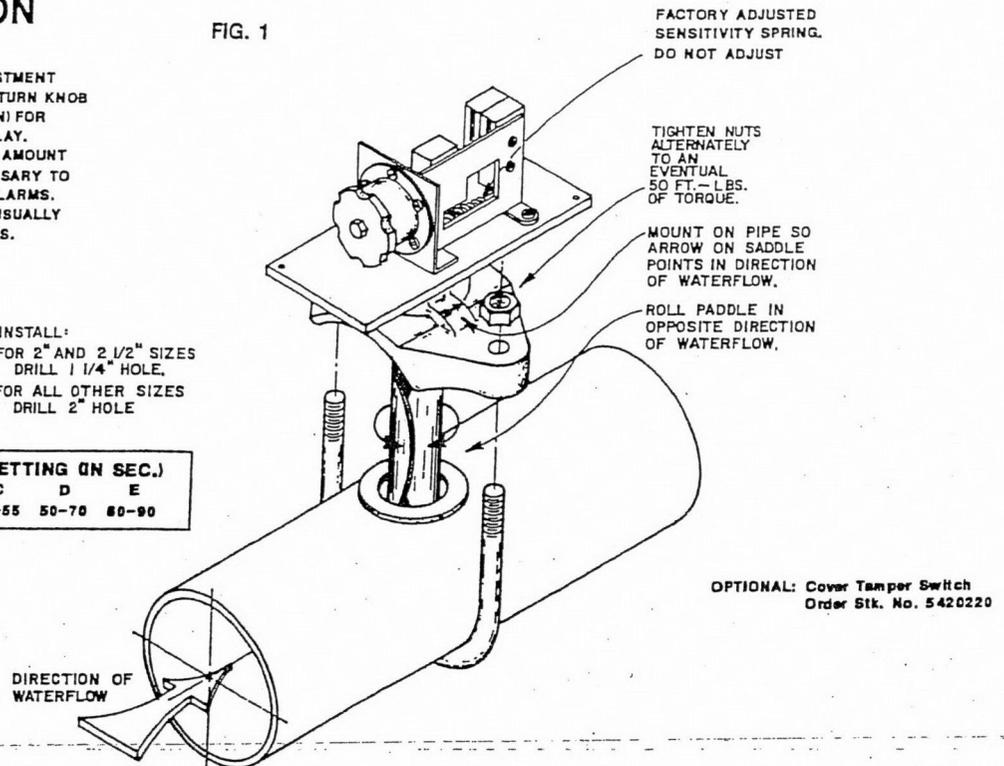
## VSR-D INSTALLATION

FIG. 1

RETARD ADJUSTMENT TO CHANGE TIME TURN KNOB (EITHER DIRECTION) FOR DESIRED TIME DELAY. USE THE MINIMUM AMOUNT OF RETARD NECESSARY TO PREVENT FALSE ALARMS. A "B" SETTING IS USUALLY ADEQUATE FOR THIS.

TO INSTALL:  
FOR 2" AND 2 1/2" SIZES  
DRILL 1/4" HOLE,  
FOR ALL OTHER SIZES  
DRILL 2" HOLE

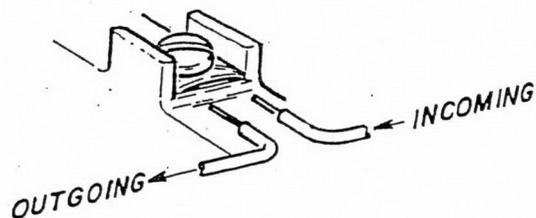
APPROX. RETARD SETTING (IN SEC.)					
0	A	B	C	D	E
0	10-25	20-40	35-55	50-70	60-90



DWG. 5400710-30B

## SWITCH TERMINAL CONNECTIONS

### CLAMPING PLATE TERMINAL



### 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 UNDER TERMINAL.

DWG. 5400710-31

**INSTALLATION INSTRUCTIONS:** These devices may be mounted in a horizontal or vertical pipe. On horizontal pipe they should be installed on the top side of the pipe where they will be accessible. The units should not be installed within 6 inches of a fitting which changes the direction of the waterflow or within 24 inches of a valve or drain.

Drain the system and drill a hole in the pipe using a circular saw in a slow speed drill. The 2" and 2 1/2" devices require a 1/4" hole; all other sizes require a 2" hole.

Clean the inside of the 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. Install the saddle strap and tighten nuts alternately to an eventual 50 FT.-LBS. of torque. See Fig. 1 above.

The vane must not rub the inside of the pipe or bind in any way.

### TESTING

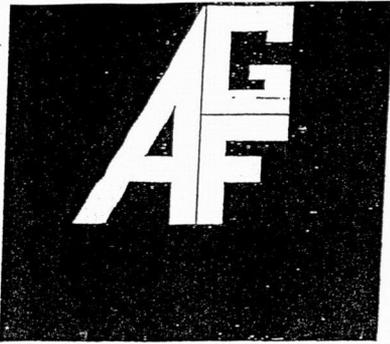
The frequency of testing for the model VSR-D and its associated protective monitoring system should be in accordance with applicable NFPA Standards and/or the authority having jurisdiction, but under no circumstances less than bi-monthly.

# AG AF

# TESTANDRAIN



- The AGF Manufacturing Co., Inc. **Model 1000** has been designed to provide **both the Test Function and the Express Drain Function** in a multi story installation.
- Complies with all requirements of NFPA-13, and NFPA-13R
- Complies with all requirements of NFPA-13D (HOUSING)
- Positive Shut Off
- Single Locking Handle
- Tapped 1/2" for Pressure Gauge
- Tamper Resistant Orifice permanently installed
- Available with all required Orifices
- Orifice size noted on Indicator Plate
- Lightweight and compact (1 1/4" weighs 5 lbs.)
- 300 PSI Rating
- Fused, tempered, tamper resistant Sight Glasses



MODEL 1000

300 PSI

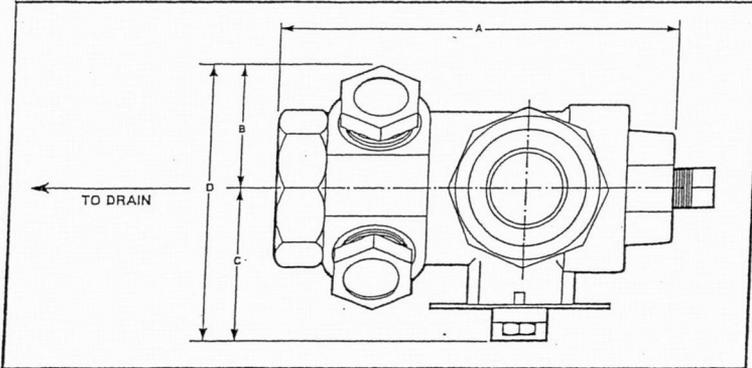


# TEST AND DRAIN

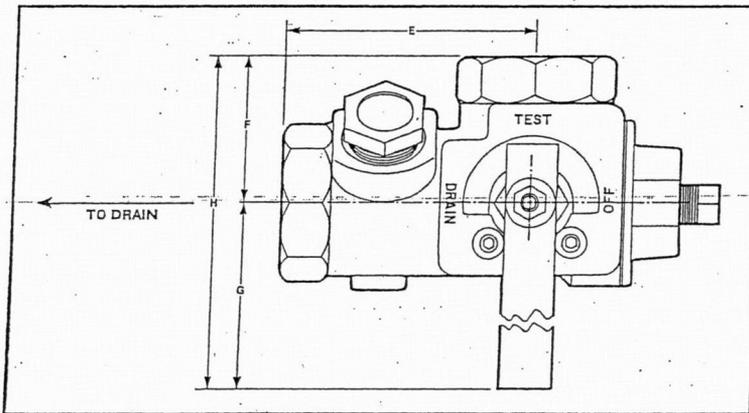
3/4" • 1" • 1 1/4" • 1 1/2" • 2"

\* 3/4" NOT FM APPROVED

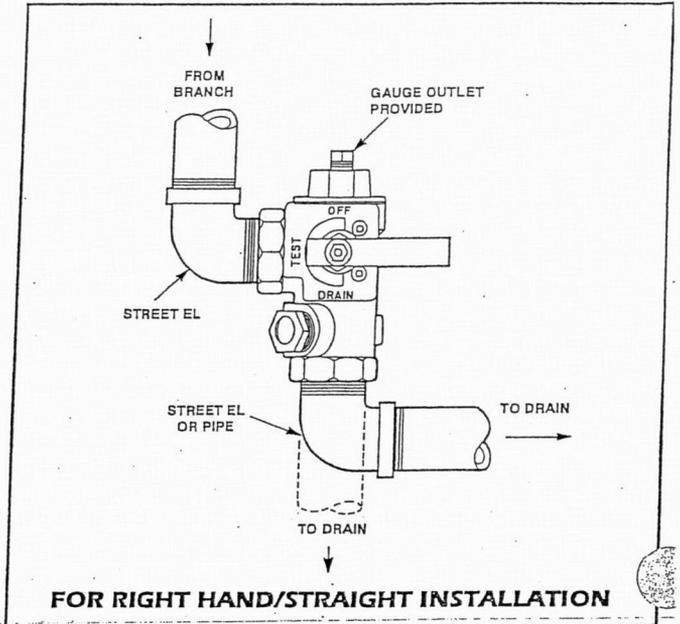
PLAN VIEW



FRONT VIEW/HORIZONTAL INSTALLATION



FRONT VIEW



**APPROVALS**

- UL and ULC Listed
- FM Approved except 3/4"
- NYC BD. of S&A CAL. NO. 720-87-SM
- CA. State Fire Marshall

**ORIFICE SIZE**

PROVIDED—3/8 - 7/16 - 1/2 - 17/32 - 5/8 \*\* - 3/4 \*\*

DIMENSIONS—INCHES

SIZE	A	B	C	D	E	F	G	H
3/4	5 1/16	1 3/4	2 3/8	4 1/8	3 3/8	1 3/4	4 9/16	6 5/16
1	5 1/16	1 3/4	2 3/8	4 1/8	3 3/8	1 3/4	4 9/16	6 5/16
1 1/4	5 7/16	1 3/4	2 7/8	4 5/8	3 5/16	1 15/16	5 1/2	7 1/16
1 1/2	6 7/16	1 3/4	3 11/16	5 7/16	3 1/2	2 3/8	8 1/16	10 7/16
2	6 7/16	1 3/4	3 11/16	5 7/16	3 1/2	2 3/8	8 1/16	10 7/16

\*\* Available on 1 1/4" to 2" size units only.

**MATERIAL LIST**

PART	MATERIAL
HANDLE	STEEL
STEM	ROD BRASS
BALL	C.P. BRONZE
BODY	BRONZE
VALVE SEAT	GLASS IMPREGNATED TEFLON
INDICATOR PLATE	STEEL
HANDLE LOCK	SPRING STEEL
SIGHT GLASS (2)	FUSED TEMPERED GLASS

AGF MFG. CO.  
 Box 4437, 150 Mt. Bethel Rd.  
 Warren, N.J. 07059-0437  
 Telephone (908) 604-6471  
 Fax (908) 604-6501



JOB NAME: \_\_\_\_\_  
 ARCHITECT: \_\_\_\_\_  
 ENGINEER: \_\_\_\_\_  
 CONTRACTOR: \_\_\_\_\_



INCORPORATED  
CORONA, CA (909)737-5599



## Fig. 27 & 27A "Stand-Off" Hanger / Restrainer for CPVC Plastic Pipe

**Size Range** – 3/4" & 1" CPVC Plastic Pipe\*.

**Material** – Carbon Steel, Pre-Galvanized.

**Function** – Designed to be used as a hanger/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 from any rough or abrasive surfaces.
- Snap-in retainers hold pipe firmly in place during 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 2 hex head self-threading screws furnished with product.
- Installs easily using rechargeable electrical driver with 5/16" sockets, eliminating impact tool damage to pipe.

**Approvals** - Underwriters Laboratories Listed in the U.S. (UL) and Canada (cUL) to support automatic fire sprinkler systems. Meets and exceeds the requirements of NFPA 13, 13R, and 13D.

**\*\*Important Note** – When installed in slot opening on Fig. 27, Fig. 27A provides additional stability and satisfies the UL vertical restraint requirement where needed.

**Order By** – Fig. 27: By figure number and CPVC pipe size.

Fig. 27A: By figure number and CPVC pipe size.

**U.S. and International Patent application in process.**

\*for other sizes consult factory.

Fig. 27 and Fig. 27/27A have also been tested by U.L. mounted on 3/8" composite wood web material (such as TJI Series/Trus Joist MacMillan) without the use of back up wood blocking. When using Fig. 27 & 27A in combination on 3/8" web to satisfy the UL requirement for vertical restraint, install 2 reinforcing speed nuts (Fig. 27B). Fig. 27B is UL Listed only when used with Tolco products.

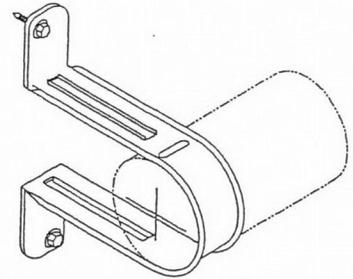


Fig. 27

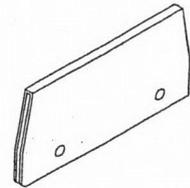


Fig. 27A

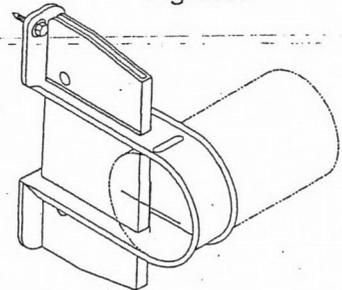


Fig. 27 / Fig. 27A  
Combination

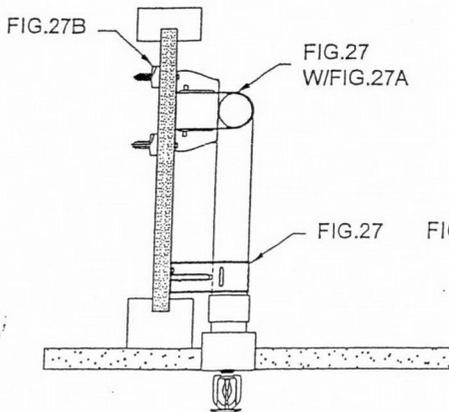
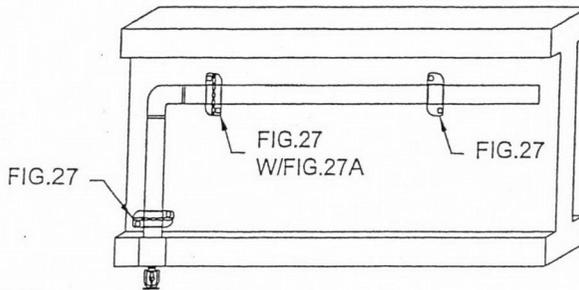


FIG. 27  
W/FIG. 27A



Typical Applications

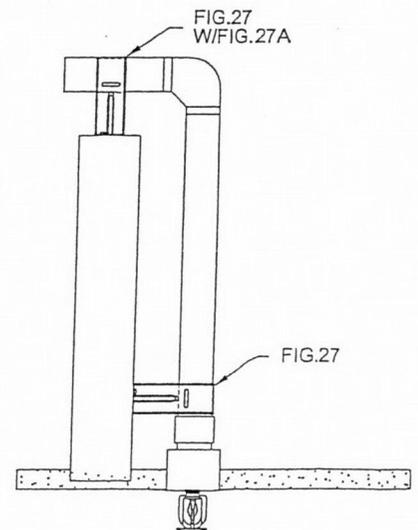


FIG. 27  
W/FIG. 27A



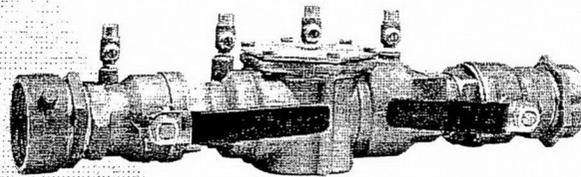
# Series 2000B

## Double Check Valve Assemblies

Sizes: 1/2" - 2" (15 - 60mm)

### Features

- Ease of maintenance with only one cover
- Top entry
- Replaceable seats and seat discs
- Modular construction
- Compact design
- 1/2" - 2" (15 - 50mm) Cast bronze body construction
- Top mounted ball valve test cocks
- Low pressure drop
- No special tools required
- 1/2" - 1" (15 - 25 mm) have tee handles



2" 2000B HC  
(50mm)



3/4" 2000B  
(20mm)

Series 2000B Double Check Valve Assemblies shall be installed at referenced cross-connections to prevent the backflow of polluted water into the potable water supply. Only those cross-connections identified by local inspection authorities as non-health hazard shall be allowed the use of an approved double check valve assembly.

Check with local authority having jurisdiction regarding vertical orientation, frequency of testing or other installation requirements.

These valves meet the requirements of ASSE Std. 1015 and AWWA Std. C510 and are approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California.

### Available Models

Suffix:

- B - Quarter turn ball valves
- LBV - less ball valves
- LH - locking handle ball valves (open position)
- SH - stainless steel ball valve handles
- HC - 2 1/2" inlet/outlet fire hydrant fitting (2" valve)

Prefix:

- U - union connections

### Specifications

A Double Check Valve Assembly shall be installed at each noted location. The assembly shall consist of two positive seating check modules with captured springs and rubber seat discs. The check module seats and seat discs shall be replaceable. Service of all internal components shall be through a single access cover secured with stainless steel bolts. The assembly shall also include two resilient seated isolation valves and four top mounted, resilient seated test cocks. The assembly shall meet the requirements of ASSE Std. 1015 and AWWA Std. C510. Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California. Assembly shall be an Ames Company Series 2000B

### Pressure — Temperature

Temperature Range: 33°F - 140°F  
(5°C - 60°C)

Maximum Working Pressure: 175psi  
(12 bars)

### Approvals

- † ASSE, IAPMO, CSA, UPC
- ▲ Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California.
- Model LBV is not listed.
- u UL Classified (LBV models only) 3/4" - 2" (19 - 50mm)
- \* Horizontal and vertical "flow up" approval on all sizes.



### Standards

ASSE Std. 1015, AWWA Std. C510  
IAPMO PS31, CSA B64.5

Job Name \_\_\_\_\_ Contractor \_\_\_\_\_

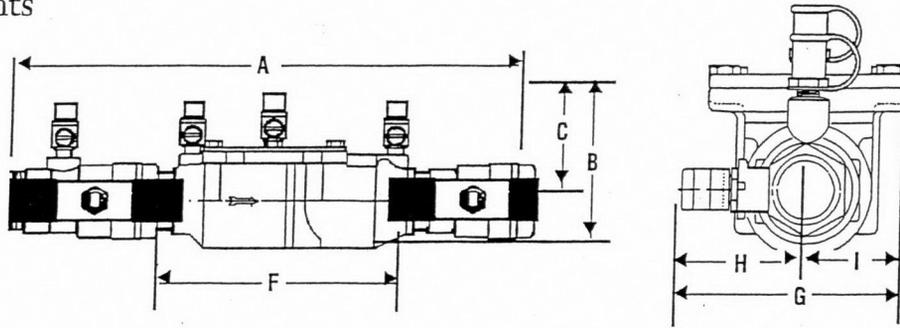
Job Location \_\_\_\_\_ Approval \_\_\_\_\_

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 - Weights



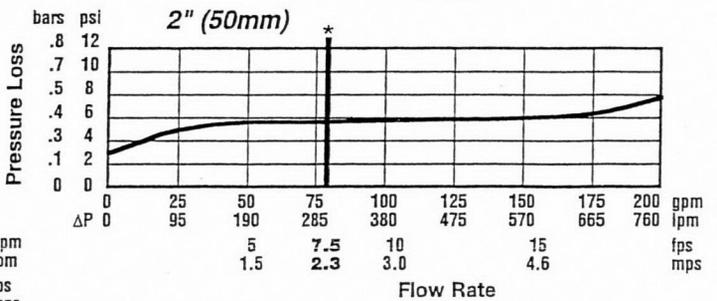
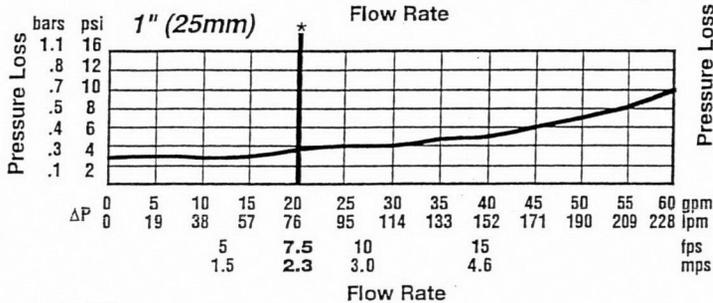
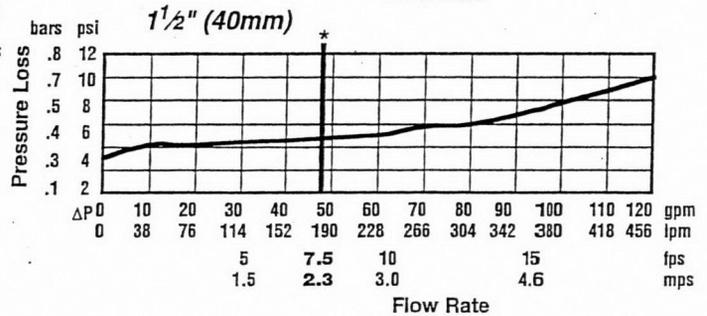
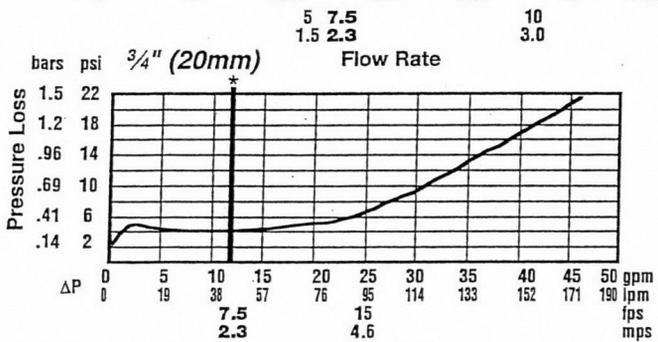
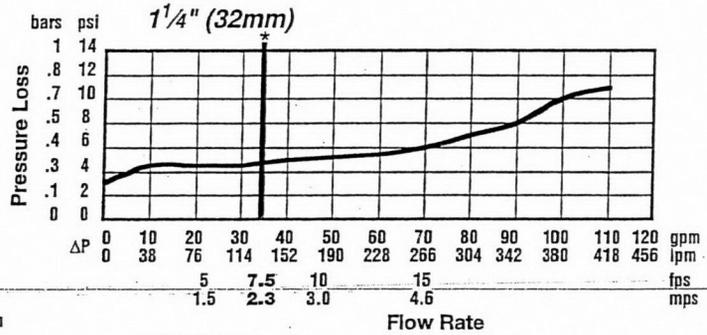
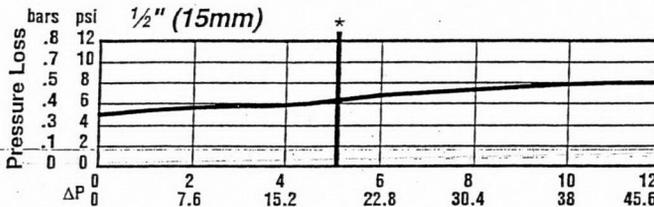
Suffix HC — Fire Hydrant Fittings dimension "A" = 23½" (594mm)

Model	Size (DN)		Dimensions												Weight			
	in.	mm	A in.	A mm	B in.	B mm	C in.	C mm	F in.	F mm	G in.	G mm	H in.	H mm	I in.	I mm	lbs.	kgs.
2000B	½	15	10	254	4½	117	2⅞	62	5	127	3⅞	85	2⅞	59	2⅞	52	4.5	2
2000B M3	¾	20	11½	282	4	102	3⅞	79	6⅞	157	3⅞	87	2⅞	54	1⅞	33	5	2.3
2000B	1	25	13¼	337	5½	130	4	102	7½	191	3⅞	85	1⅞	43	1⅞	43	12	5.4
2000B	1¼	32	16¾	416	5	127	3⅞	84	9½	241	5	127	3	76	2	50	15	6.8
2000B	1½	40	16¾	425	4¾	124	3½	89	9¾	248	5⅞	148	3⅞	79	2⅞	68	15.86	7.2
2000B	2	50	19½	495	6¼	159	4	102	13¾	340	6⅞	156	3⅞	87	2⅞	68	25.75	11.7

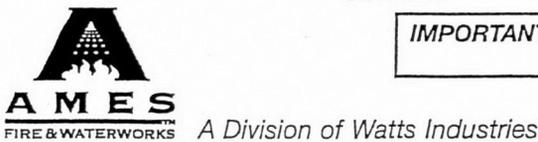
Strainer sold separately

## Capacities

As compiled from documented Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California lab tests.  
\*Typical maximum system flow rate (7.5 feet/sec., 2.3 meters/sec.)



**IMPORTANT: Inquire with governing authorities for local installation requirements.**



www.amesfirewater.com



875 National Drive • Suite #107 • Sacramento, CA 95834 • Phone: 916-928-0123 • Fax: 916-928-9333