

3135 SW EVERGREEN LA DFS-01 RS09-139072

24X

JUN 11 2012

MICROFILMED

WEST / DTI

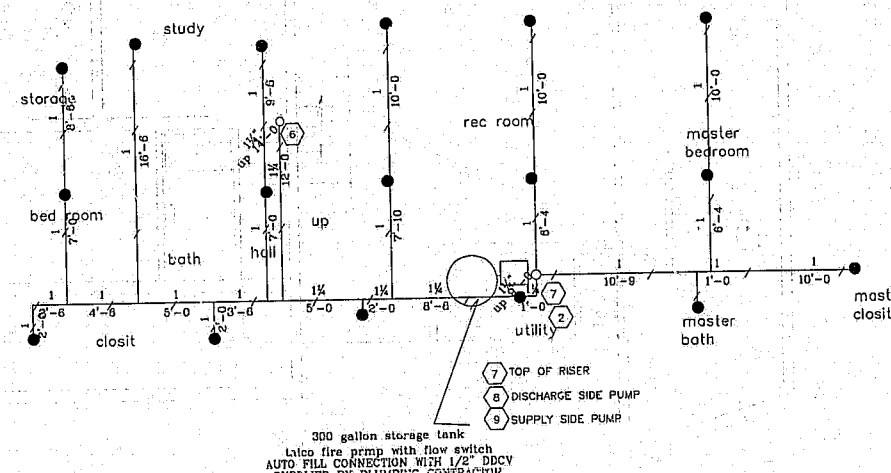
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DFS01RS09-139072

JUN 04 2012

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MAXIMUM DISTANCE BETWEEN HANGERS										
NOMINAL PIPE SIZE (in.)	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	3-1/2"	4"	5"
CPVC	5'-6"	6'-0"	7'-0"	7'-0"	8'-0"	9'-0"	12'-0"	N/A	N/A	N/A

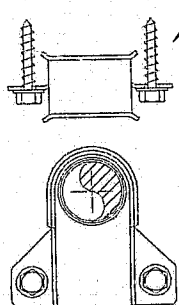


LOWER LEVEL FLOOR PLAN

1/8"=1'-0"

ALL MATERIALS ARE CPVC PIPE AND FITTINGS BY HARVEL CORPORATION
16"X16" MAX SPRINKLER HEAD SPACING

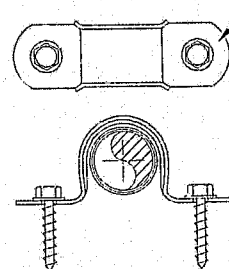
HARDENED HEX HEAD SELF THREADING SCREW
IS FURNISHED WITH THE HANGER AND IS THE
MINIMUM FASTENER SIZE ACCEPTABLE



CPVC DOUBLE FASTENER STRAP TYPE HANGER

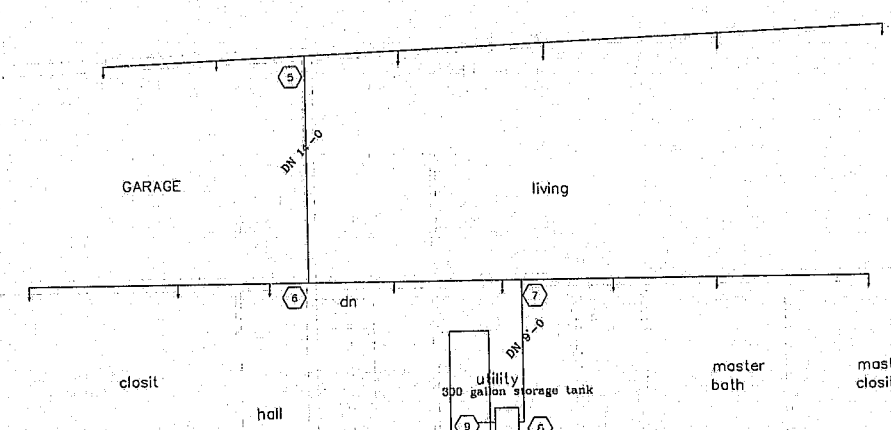
CPVC HANGER

HARDENED HEX HEAD SELF THREADING SCREW
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CPVC DOUBLE FASTENER STRAP TYPE HANGER

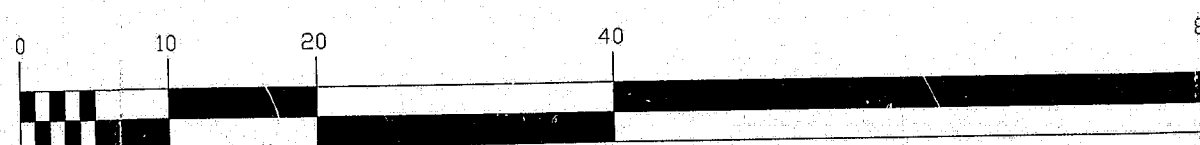
CPVC HANGER



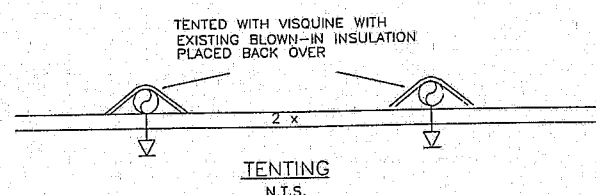
SCHMETIC SECTION

1/8"=1'-0"

GRAPHIC SCALE



(IN FEET)
1/8"=1'-0"



GENERAL NOTES

1. SPRINKLER SYSTEM DESIGN PER NFPA 13D 2010 EDITIONS
2. ALL MATERIALS SHALL BE NEW, UL LISTED OR FM APPROVED
3. FIRE SPRINKLER SYSTEM TO BE INSTALLED, BRANDED AND TESTED IN ACCORDANCE WITH NFPA 13D 2010 EDITION
4. IN LOCALITIES SUBJECT TO FREQUENT CONVICTIONS IT IS THE OWNERS RESPONSIBILITY TO PROVIDE NEAR THROUGHOUTS THE NEW PIPE SPRINKLER SYSTEM AND VALVE ENCLOSURES
5. FIRE PROTECTION CONTRACTOR SHALL NOT BE RESPONSIBLE FOR THE ABILITY OF THE STRUCTURE TO ADEQUATELY SUPPORT THE FIRE SPRINKLER SYSTEM OR ANY APPURTENANCES THEREOF
6. PIPE SIZING PER NFPA 13D RESIDENTIAL OCCUPANCIES
7. PIPING TO BE HYDROSTATICALLY TESTED AT 40 PSI MIN FOR TWO HOURS WITH TWENTY-FOUR HOUR NOTICE TO FIRE MARSHALL PRIOR TO TESTING
8. PIPING MEASUREMENTS ARE CENTER TO CENTER

SPRINKLER HEADS

SYMBOL	ORF	TEMP	QUAN
RELIABLE RFC43 K-FACTOR 4.3 CONCEALER	RA0612	1/2 155 30	
TOTAL SPRINKLERS THIS SHEET			
TOTAL 30			

SYMBOL LEGEND

GROOVED FITTING OR COUP.
2-WAY EARTHQUAKE BRACE
4-WAY EARTHQUAKE BRACE
HANGER LOCATION
DRAIN VALVE

ABBREVIATION TABLE

T.O.R. TOP OF RISER
B.O.R. BOTTOM OF RISER
H.G. HEAD GUARD
RN RISER NIPPLE

CONTRACT WITH
Rainer Pacific Development
1845 NW 23rd Pl
Portland, OR 97210

CONTACT Ed
JOB SITE SUPERVISOR
PHONE
JOB SITE PHONE
FAX
JOB SITE FAX

Parker
Fire Protection, Inc.
Oregon CCB 124300
30205 S.E. Kelso Rd. - Boring, OR 97009
Phone - (503) 663-8278 Fax - (503) 663-7297
Email - pk.fire@comcast.net METRO 6327

PROJECT NAME
TWIGG RESIDENCE

3115 SW Cascade Dr.

PORTLAND, OR 97205

DRAWN BY Robert Parker
SHEET 1 of 1
JOB NUMBER 08-001

SYSTEM DEMAND
1 HEAD CALC

PSI: 23.3
AVAILABLE PSI: 48.9
GPM: 13
AVAILABLE GPM: 30

SYSTEM DEMAND
2 HEAD CALC

PSI: 30.6
AVAILABLE PSI: 46.3
GPM: 25.5
AVAILABLE GPM: 30

1.5 HP Fire Pump MODEL ISF-TE
Residential Use Per NFPA 13D
30 Gallons per Min. @ 50PSI
storage tank sized per NFPA 13D
30 Gallons per Min. for 10 Min.
300 Gallons Total

Controller: NEMA IV Enclosure, min. run timer, power on light HOA switch, UL listed
3450 RPM Single Phase 230 Volt, 60 htz, open. Drip Proof enclosure

FIRE PUMP LOCATED IN LOWER LEVEL UTILITY ROOM

City of Portland
Bureau of Development Services
MAY 21 2012
Reviewed for Code Compliance with the
NFPA 13D Standard
for Residential Sprinkler Systems

09-139072-DFS-01-RS

Micro

DFS 01 RS 09-139702

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JUN 04 2012
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City of Portland, Oregon - Bureau of Development Services

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



Deferred Submittal Requirements and Application

Applicants will provide:

- ☒ A copy of this application
- ☒ Three (3) sets of plans
- ☒ One (1) set of calculations
- ☒ Two (2) sets of product information
- ☐ Drawings and calculations must be stamped and signed by an Engineer registered in Oregon and approved by the Architect/Engineer of record for the building.
- ☐ Permit fee (paid at time of submittal)
- ☐ If the DFS includes exterior elements, plan views and elevations identifying the location(s) as approved by the Architect/Engineer of Record must be submitted.
- ☐ One (1) copy of your main building permit approved plans (NOTE: Approved plans do not need to be submitted if your project has a development liaison assigned)

Contractor submittal information:

Contact name Robert Parker
 Address 30205 SE Kuna Rd.
 City Beaverton State OR Zip Code 97009
 Phone 503-663-6278 E-mail pk.fire@comcast.net
 Value of deferred submittal 45000 Issued main building permit # 09-139072-000-00-RS
 Description/Scope of work NFPA 13D Fire Sprinklers

Fees

Deferred submittal (DFS) fees are collected in addition to the standard building review fee paid on the main building permit. DFS fees cover the cost of the additional processing and review time associated with the design build element.

The DFS fee for processing and reviewing deferred plan submittals is 10 percent of the building permit fee calculated using the value of the particular deferred portion of the project.

Minimum fee: Residential, one and two family dwelling ... \$117 for DFS with valuation of less than or equal to \$222,000

Commercial and all other projects \$292 for DFS with valuation of less than or equal to \$680,000

The Bureau of Development Services (BDS) fee schedule is also available on the BDS web site at www.portlandoregon.gov/bds | select the Fees tab.

Helpful Information

Bureau of Development Services
 1900 SW 4th Avenue, Portland, OR 97201
Submit your plans to:
 Development Services Center (DSC), First Floor,
 Tuesday - Friday:
 8:00 am - 12:00 pm
 Closed Mondays

Important Telephone Numbers

BDS main number 503-823-7300
 DSC automated information line 503-823-7310
 Building code information 503-823-1456
 BDS 24 hour inspection request line 503-823-7000
 Residential information for
 one and two family dwellings 503-823-7388
 City of Portland TTY 503-823-6868

DEFERRED SUBMITTAL REQUIREMENTS AND APPLICATION

insp_dsc_app 1/22/11

City of Portland Oregon - Bureau of Development Services

PARKER FIRE PROTECTION, INC.
30205 SE KELSO ROAD
BORING, OR 97009
RESIDENTIAL SPRINKLER SYSTEM
HYDRAULICS CALCULATION REPORT

FOR
Twigg Residence
Portland, Oregon
3115 SW Cascade Dr.

Date: 5/9/2012
File No: TWIGG.rdf
Data File Name: TWIGG.rdf

SPRINKLER SPACING

256.0 sq. ft./spklr. (max) Max. Dist. Bet. Spklrs: 16.0 ft.
Min. Dist. Bet. Spklrs: 8.0 Max. Dist. Spklr. to Wall: 8.0 ft.

SPRINKLER SPECIFICATIONS

Mfr: Reliable Descr: RA0612 RFC43 Conc. (16x1) K=4.30
Calculated K Factor for Arm-Over & Drops:
1.0 ft. x 1.101 in. Drop: K=4.26 (1 el. 1 Tee)
0.0 ft. x 1.101 in. Arm-Over: K=4.25 (1 el. 1 Tee & 1 Ell)

PIPE SPECIFICATIONS

Type: CPVC HWC: 150

WATER SUPPLY

Source: Tank Test Date: By:
Static: 50.0 psi Resid: 45.0 psi Flow: 30.0 gpm
Public Main Size: 0 in
Domestic Demand: 0.0 gpm at node number 0

SPRINKLER DEMAND

No. Spklrs. Flowing	Min Spklr. Flow	Press. (psi)	Node No.	Total Flow	Avail. Press.
1	13.0	9.3	1	13.0	48.9
2	13.0	9.3	2	25.5	46.3

REVIEWING AUTHORITY

City of Portland

RESULTS OF ANALYSIS

PIPE & NODE DATA

FLOW ANALYSIS

* 1 sprinkler flowing * 2 sprinklers flowing															
P #	END	LEN	FIT.	FIXD	LOSS	EL	SP	*DISCH	FLOW	PF	PT	*DISCH	FLOW	PF	PT
HWC	NOD	DIA	EQV. LN	PUMP	(FT)	(F)		*(GPM)	EL/FT	PE	(PSI)	*(GPM)	EL/FT	PE	(PSI)
150	1	14.60	2L	----	23.0	4.26	13.0	-13.0	0.75	9.3	12.5	-12.5	0.70	8.6	
150	2	1.101	10.0	----	23.0	4.26	----	-0.03	0.00	10.1	12.0	-0.03	0.00	9.3	
2	2	23.60	2R	----	23.0	4.26	----	-13.0	0.78	10.1	12.0	-25.5	2.73	9.3	
150	3	1.101	2.0	----	23.0	----	----	-0.03	0.00	10.9	----	-0.11	0.00	12.1	
3	3	25.60	2L2B	----	23.0	----	----	-13.0	1.40	10.9	----	-25.5	4.86	12.1	
150	4	1.101	20.0	----	23.0	----	----	-0.03	0.00	12.3	----	-0.11	0.00	16.9	
4	4	4.60	L	----	23.0	----	----	-13.0	0.10	12.3	----	-25.5	0.36	16.9	
150	5	1.394	6.0	----	23.0	----	----	-0.01	0.00	12.4	----	-0.03	0.00	17.3	
5	5	14.00	L	----	23.0	----	----	-13.0	0.19	12.4	----	-25.5	0.68	17.3	
150	6	1.394	6.0	----	9.0	----	----	-0.01	6.07	18.6	----	-0.03	6.07	24.0	
6	6	30.00	2L2B	----	9.0	----	----	-13.0	0.52	18.6	----	-25.5	1.82	24.0	
150	7	1.394	24.0	----	9.0	----	----	-0.01	0.00	19.2	----	-0.03	0.00	25.8	
7	7	9.00	2L	----	9.0	----	----	-13.0	0.20	19.2	----	-25.5	0.71	25.8	
150	8	1.394	12.0	----	0.0	----	----	-0.01	3.90	23.3	----	-0.03	3.90	30.5	
8	8	2.00	----	----	0.0	----	----	-13.0	0.02	23.3	----	-25.5	0.07	30.5	
150	10	1.394	0.0	50.0	0.0	----	----	-0.01	0.00	0.0	----	-0.03	0.00	0.0	
Req. pump press: 23.3 Req. pump press: 30.6															
9	10	2.00	----	----	0.0	----	----	-13.0	0.01	0.0	----	-25.5	0.03	0.0	
150	9	1.598	0.0	----	0.0	SRCE	----	0.00	0.00	0.0	----	-0.02	0.00	0.0	

Node Notes

Pipe Notes

Legend:

P - Pipe #

DIA - Pipe Diameter

EQV. LN - Pipe Equivalent Length

PUMP - Pump Pressure

SP - K-Factor

FLOW - Flow Rate

PF - Pressure Loss due to Friction

PT - Total Pressure at Node

LEN - Pipe Length

FIT. - Pipe Fittings

FIXD LOSS - Fixed Loss Device

EL - Node Elevation

DISCH - Discharge in gpm

FL/FT - Friction Loss per Foot

PE - Pressure Loss due to Elevation

Fitting Code Letters:

E=45 Ell, L=90 Ell, B=TeeBch, R=TeeRun, C=Couplg, S=SwgWhk, G=GatVlv, X= X,

Y=

The maximum velocity of water flow occurs in pipe 2
at 4.38 ft/s with 1 sprinkler flowing.
The maximum velocity of water flow occurs in pipe 2
at 8.59 ft/s with 2 sprinklers flowing.

PIPE FITTINGS TABLE

Pipe Table Name: standard.rpt

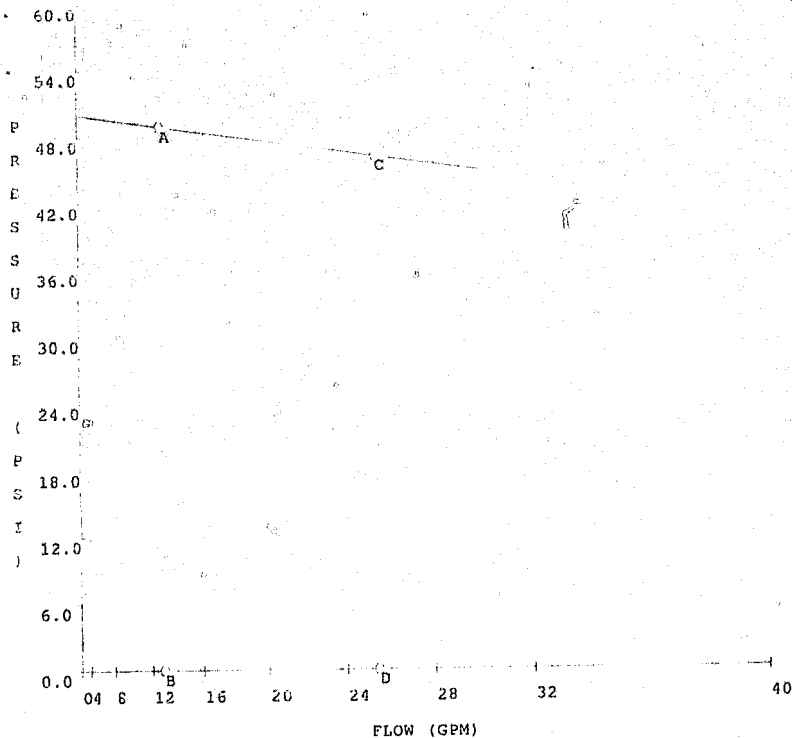
PAGE: C MATERIAL: CPVC HWC: 150

Diameter (in)	Equivalent Fitting Lengths in Feet										X X	Y Y	Z Z
	E	L	E	R	C	S	G	X	Y	Z			
1.101	45 Ell	90 Ell	TeeBch	TeeRun	Couplg	SwgChk	GatVlv						
1.394	1.00	5.00	5.00	1.00	1.00	8.00	2.00	0.00	0.00	0.00			
1.598	2.00	6.00	6.00	1.00	1.00	11.00	3.00	0.00	0.00	0.00			
	2.00	7.00	8.00	1.00	1.00	14.00	3.00	0.00	0.00	0.00			

Sprinkler system has been hydraulically calculated with the
HASS HOUSE 3.2 computer program (License No. 27100958
to provide an average imbalance of 0.032 gpm at each node and
a maximum imbalance of 0.16 gpm with one sprinkler
flowing, and 0.011 gpm at each node and maximum imbalance
of 0.05 gpm with 2 sprinklers flowing in accordance
with NFPA 13 and 13D or 13R.

HRS Systems, Inc.
208 South Public Square
Petersburg, TN 37144
(931) 659-9760

WATER SUPPLY CURVE



Static = 50.0 psi, Residual = 45.0 psi @ 30 gpm

(1 sprinkler flowing)

(2 sprinklers flowing)

A = Available Water Supply

C = Available Water Supply

48.9 psi @ 13.0 gpm

46.3 psi @ 25.0 gpm

Talco Fire Systems

Residential & Commercial Packaged Fire Pump Specialists

Portland, Oregon

LSF-150SP

Compact Residential Package
40GPM @ 50PSI

System Specifications

Motor

- 1.5 horsepower electric
- 230 Volt, 10.9 Amp
- Single Phase
- 3450 RPM

Pump

- High pressure cast-iron volute
- 1½" Suction
- 1¼" Discharge
- 75 PSI Max Working Pressure

Discharge Manifold

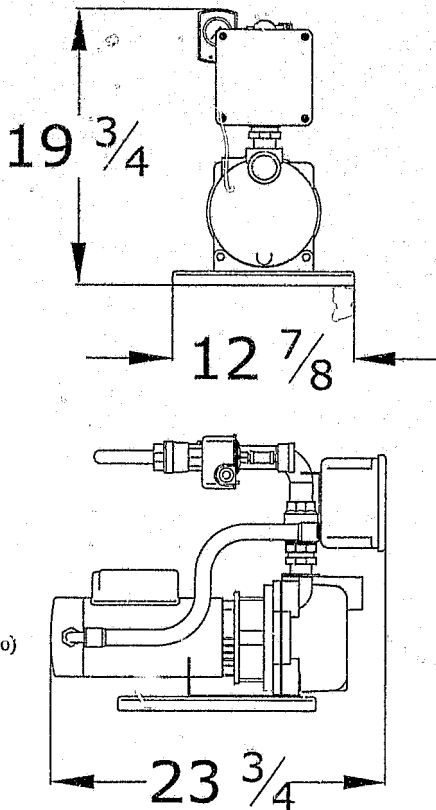
- Check Valve
- Zero to 100 PSI pressure gauge
- 40/60 pressure switch
- Isolation ball valve

Controls

- 230 Volt
- Minimum run timer
- Pressure switch operated contactor
- HOA toggle switch (Hand, Off, Auto)

Dimensions (approximate)

- 23¾" Length
- 19¾" Height
- 12⅞" Width
- 73 pounds



Performance

Performance values based on multiple pump tests. Not for certification purposes.

GPM	0	20	25	30	35	40	45	50
PSI	57	54	54	53	52	50	48	46

Phone: (800) 878-8055

www.talcofire.com

Fax: (503) 688-1234

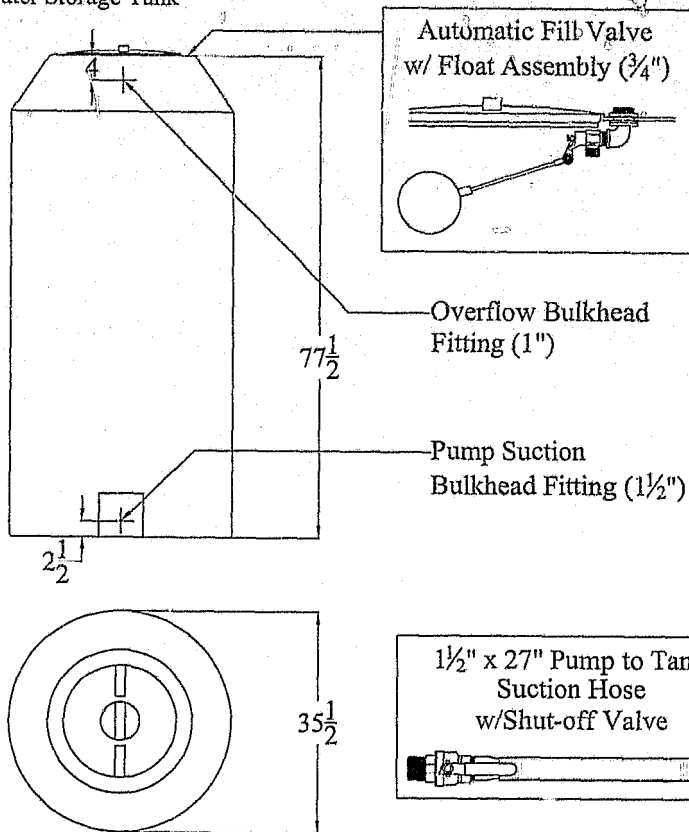
Talco Fire Systems

Residential & Commercial Packaged Fire Pump Specialists

Portland, Oregon

Talco 300V

300 Gallon Vertical
Poly Water Storage Tank



Tank Weight: 100#

Reliable®

Model RFC30 (SIN RA0611)
Model RFC43 (SIN RA0612)
Model RFC49 (SIN RA0616)
Residential Flat Concealed
Sprinklers

Bulletin C06 Rev. F

Bulletin C06 Rev. F

A Residential Flat Concealed Sprinkler engineered for a minimum design density of 0.05 gpm/ft² with low GPM requirements.

Features

1. Very low water flow requirements.
2. 1/2" (13mm) Total adjustment.
3. Thread-On/Thread-Off or Push-On/Thread Off cover attachment option.
4. Smooth aesthetic ceiling profile.
5. Available in brass, chrome and black plated or painted finishes.

Listings & Approval

1. Listed by Underwriters Laboratories, and certified by UL for Canada (cULus)
2. NYC MEA 258-93-E

UL Listing Categories

Residential Automatic Sprinklers

UL Guide Number

VKKW

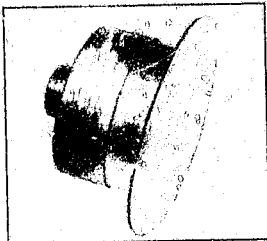
Product Description

Model RFC30, RFC43 and RFC49 Concealed Residential Sprinklers are fast response residential fusible solder link automatic sprinklers. Residential sprinklers differ from standard sprinklers primarily in their response time and water distribution patterns.

Model RFC30, RFC43 and RFC49 sprinklers discharge water in a hemispherical pattern below the sprinkler deflector. Residential distribution patterns are higher and generally contain a finer droplet size than standard sprinkler patterns.

The combination of speed of operation and high discharge pattern required for residential sprinklers has demonstrated, in fire testing, an ability for controlling residential fires, and thereby providing significant evacuation time for occupants.

The RFC30, RFC43 and RFC49 Sprinklers provide the best form of fire protection by combining an attractive appearance and 1/2" (13mm) of cover adjustment for ease of installation. The small diameter cover plate is easily and positively attached and blends into the ceiling, concealing



the most dependable fire protection available, an automatic sprinkler system.

The RFC30, RFC43 and RFC49 are UL Listed Residential Sprinklers to be installed in the residential portions of any occupancy in accordance with NFPA 13, 13R, & 13D.

The RFC30, RFC43 and RFC49 can reduce the need for precise cutting of drop nipples. The threaded cover plate assembly can be adjusted without tools to fit accurately against the ceiling. The fire protection system need not be shut down to adjust or remove the cover plate assembly.

Application and Installation

The RFC30, RFC43 and RFC49, for residential installations, use a 165°F (74°C) fusible solder link in a tuning fork style sprinkler frame with a drop-down deflector. This assembly is recessed into the ceiling and concealed by a flat cover plate. The cover plate is attached to the skirt, using 135°F (57°C) ordinary temperature classification solder. When the ceiling temperature rises, the solder holding the cover plate releases the cover allowing the deflector to drop into position and exposing the sprinkler inside to

The Reliable Automatic Sprinkler Co., Inc., 103 Fairview Park Drive, Elmsford, New York 10523

ceiling temperature. The subsequent operation of the solder link opens the waterway and causes the deflector to drop into position to distribute the discharging water in a hemispherical pattern below the sprinkler deflector. Any adjustment of thread engagement between the cover plate and cup will assure that the drop-down deflector is properly located below the ceiling. The residential distribution pattern contains a finer droplet size than a standard sprinkler, and the pattern produces significantly higher wall wetting.

After a 2 1/8 inch diameter hole is cut in the ceiling, the sprinkler is to be installed with the Model FC Wrench. When installing a sprinkler, the wrench is first positioned into the sprinkler/cup assembly and around the hexagonal body of the sprinkler frame. The Wrench must bottom out against the cup in order to ensure proper, safe installation. The sprinkler is then tightened into the pipe fitting. When inserting or removing the wrench from the sprinkler/cup assembly, care should be taken to prevent damage to the sprinkler. DO NOT WRENCH ON ANY OTHER PART

OF THE SPRINKLER/CUP ASSEMBLY. MODEL RFC30, RFC43 AND RFC49 CONCEALED SPRINKLERS MUST BE INSTALLED ONLY WITH 135°F RATED COVERS.

Note: A lock tight 1/2" NPT (#12) sprinkler joint can be obtained with a torque of 9-18 ft-lbs (10.8 - 24.4 N.m). Do not tighten sprinklers over maximum recommended torque. It may cause leakage or impairment of the sprinklers.

Cover assemblies provide up to 7/8" (12mm) of adjustment. Turn the cover clockwise until the flange is in contact with the ceiling. For the push-on/threaded option, the cover assembly is pushed onto the cup and final adjustment is made by turning the cover clockwise until the skirt flange makes full contact with the ceiling. Cover removal requires turning in the counter clockwise direction.

In ceilings that have a plenum space above the sprinkler, the plenum space may have neutral or may be pressurized but must not be positively pressurized. Connect all sprinklers after installation to ensure that the gap between the cover plate and ceiling and the 4 sides of the cup are all open and free from any air flow impediment.

Temperature Rating

Sprinkler	Cover Plate	Max. Ambient Temp.
165°F/74°C	135°F/57°C	100°F/38°C

Installation Data: RFC30 (SIN RA0611)

Thread Size Inch (mm)	K Factor	Sprinkler Spacing ft. (m)	Maximum Distance to Wall ft. (m)	Minimum Distance between sprinklers ft. (m)	Minimum Required Sprinkler Discharge	
					Flow gpm (Lpm)	Area sq. ft. (sq. m)
1/2" (15mm)	3.0	12 x 12 (3.6x3.6)	6 (1.83)	8 (2.43)	9 (34.1)	13 (1.2)
3/4" (19mm)	3.0	14 x 14 (4.3x4.3)	7 (2.13)	8 (2.43)	10 (37.8)	15 (1.4)

Note: 1 bar = 100 Kpa

Installation Data: RFC43 (SIN RA0612)

Thread Size Inch (mm)	K Factor	Sprinkler Spacing ft. (m)	Maximum Distance to Wall ft. (m)	Minimum Distance between sprinklers ft. (m)	Minimum Required Sprinkler Discharge	
					Flow gpm (Lpm)	Area sq. ft. (sq. m)
1/2" (15mm)	4.3	12 x 12 (3.6x3.6)	6 (1.83)	8 (2.43)	13 (49)	17 (1.6)
3/4" (19mm)	4.3	14 x 14 (4.3x4.3)	7 (2.13)	8 (2.43)	13 (49)	17 (1.6)
1/2" (15mm)	4.3	16 x 16 (4.9x4.9)	8 (2.43)	8 (2.43)	13 (49)	17 (1.6)
3/4" (19mm)	4.3	18 x 18 (5.5x5.5)	9 (2.74)	8 (2.43)	18 (68)	21 (1.9)
1/2" (15mm)	4.3	20 x 20 (6.0x6.0)	10 (3.05)	8 (2.43)	21 (79)	28 (2.6)

Note: 1 bar = 100 Kpa

Installation Data: RFC49 (RA0616)

Thread Size Inch (mm)	K Factor	Sprinkler Spacing ft. (m)	Maximum Distance to Wall ft. (m)	Minimum Distance between sprinklers ft. (m)	Minimum Required Sprinkler Discharge	
					Flow gpm (Lpm)	Area sq. ft. (sq. m)
1/2" (15mm)	4.9	12 x 12 (3.6x3.6)	6 (1.83)	8 (2.43)	13 (49)	17 (1.6)
3/4" (19mm)	4.9	14 x 14 (4.3x4.3)	7 (2.13)	8 (2.43)	13 (49)	17 (1.6)
1/2" (15mm)	4.9	16 x 16 (4.9x4.9)	8 (2.43)	8 (2.43)	13 (49)	17 (1.6)
3/4" (19mm)	4.9	18 x 18 (5.5x5.5)	9 (2.74)	8 (2.43)	17 (64)	21 (1.9)
1/2" (15mm)	4.9	20 x 20 (6.0x6.0)	10 (3.05)	8 (2.43)	20 (76)	28 (2.6)

Note: 1 bar = 100 Kpa

FOR SLOPED CEILING APPLICATIONS SEE RASCO BULLETIN 025.

Model RFC30, RFC43 and RFC49 Concealed Sprinklers should be inspected quarterly and the sprinkler system maintained in accordance with NFPA 25. Do not clean sprinklers with soap and water, ammonia or any other cleaning fluids. Remove dust by using a soft brush or gentle vacuuming. Remove any sprinkler cover plate assembly which has been painted (other than factory applied) or damaged in any way. A stock of spare sprinklers should be maintained to allow quick replacement of damaged or operated sprinklers. Prior to installation, sprinklers should be maintained in the original cartons and packaging until used to minimize the potential for damage to sprinklers that would cause improper operation or non-operation.

Sprinklers shall be cULus Listed low flow residential concealed sprinklers with drop-down deflector and adjustable flat cover plate engineered for a minimum design density of 0.05 gpm/ft². Sprinkler frame and deflector shall be of bronze frame construction having a 1/2" NPT thread. Thermal element shall consist of an approved black-painted beryllium-nickel fusible solder link with symmetric lever mechanism, maintaining a Teflon-coated Belleville spring washer and machined brass cap water seal assembly containing no plastic parts. Sprinkler K-factor shall be nominal 3.0 (44), 4.3 (62.4), and 4.91 (70) having a 1/16", 3/16" and 1/8" orifice. Temperature rating shall be Ordinary 165°F (74°C); cover plate temperature rating to be 135°F (57°C). Cover plate assembly shall

consist of a brass cover plate and top flange allowing a "cover plate adjustment screw" to engage between the cover plate and ceiling to assure that the drop-down collector is below the ceiling. A plastic protective cap provided and factory installed inside the cover plate to protect the drop-down sprinkler deflagration, which could occur during construction if the cover plate is installed. Standard Co. [White] (Specially specified for Resident sprinklers shall be Rolford Model RF-006) (Bulletin 006), SIN RARF or SIN RARF or Model RF-C49, SIN RARF (Bulletin

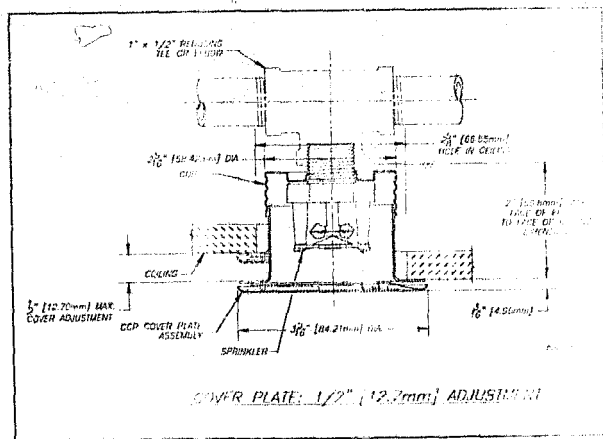
Specify:

1. Sprinkler Model
2. Cover Plate Finish
3. Thread-On or Push-On Feature

Stand:

Chrome	
White	
Spec	
Fins	
Bright	
Black	
Black	
Off Wt	
Satin C	

(*) Other available. Coatings applied void on illeg.





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Scope

This specification outlines minimum manufacturing requirements for Chlorinated Polyvinyl Chloride (CPVC) standard dimension ratio (SDR) 13.5 series iron pipe size (IPS) fire sprinkler pressure pipe. Pipe is intended for use in wet automatic fire sprinkler systems when installed in accordance with Georg Fischer Harvel LLC CPVC Fire Sprinkler Piping Products Installation Instructions. GF Harvel BlazeMaster pipe carries a maximum working pressure of 175 psi @ 150 F. Pipe meets or exceeds applicable industry standards and requirements as set forth by the American Society for Testing and Materials (ASTM), the National Sanitation Foundation (NSF), and Underwriters Laboratories (UL). GF Harvel BlazeMaster fire sprinkler pipe is approved by the Factory Mutual Corporation (FM) and the Loss Prevention Certification Board (LPCB). Refer to current approval guide and installation and design manual for installation limitations.

Application

Corrosion resistant fire sprinkler pipe, IPS sizes 3/4" through 3", for use in wet automatic fire sprinkler systems. When installed in accordance with GF Harvel's installation instructions, this pipe is Listed by Underwriters Laboratories (UL) for use in: Light Hazard Occupancies as defined in the Standard for Installation of Sprinkler systems (NFPA 13); Residential Occupancies up to and including four stories in height (NFPA 13R); and Residential Occupancies as defined in the Standard for Sprinkler Systems in One and Two Family Dwellings and Mobile Homes (NFPA 13D). GF Harvel BlazeMaster pipe is UL Listed for use in Return Air Plenums (NFPA 90A). System Risers per NFPA 13 Light Hazard, 13R and 13D, Exposed installations, Garages per NFPA 13R, and for use as Underground Fire Service Mains (NFPA 24) when installed in accordance with GF Harvel CPVC Fire Sprinkler Pipe Installation Instructions.

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Dimensions

GF Harvel BlazeMaster CPVC fire sprinkler pipe shall be manufactured to Standard Dimension Ratio (SDR) 13.5 dimensions in strict accordance to the requirements of ASTM F442 for physical dimensions and tolerances. Each production run of pipe manufactured in compliance to this standard, shall also meet the test requirements for materials, workmanship, burst pressure, flattening, and defusion quality defined in ASTM F442. Furthermore, this pipe shall consistently meet or exceed the physical performance test requirements of the appropriate approving agency(ies) follow-up procedures established for the product.

Nominal Pipe Size (in)	O.D.	Min. Wall	Average I.D.	Nominal Wt./ft.
3/4	1.050	.078	.874	.163
1	1.315	.097	1.101	.262
1-1/4	1.660	.123	1.394	.418
1-1/2	1.800	.141	1.599	.548
2	2.375	.176	2.003	.859
2-1/2	2.875	.213	2.423	1.257
3	3.500	.259	2.980	1.867

ASTM Standard D1784 Material Classification Equivalents:

Cell Classification 23547 = CPVC Type IV Grade I = CPVC 4120

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