DISPLAY THIS CARD ON PRINCIPAL FRONTAGE OF WORK

CITY OF PORTLAND

BUILDING PERMIT

This is to certify that
LEHMANN, ALEXANDER W
PO BOX 1195
SCARBOROUGH, ME 04070

For installation at
29 RANDALL ST

Job ID: 2011-10-2535-SF

CBL: 166- B-012-001

has permission to install NFPA 13D sprinkler system
provided that the person or persons, firm or corporation accepting this permit shall comply with all of the provisions of the Statues of Maine and of the Ordinances of the City of Portland regulating the construction, maintenance and use of the buildings and structures, and of the application on file in the department.

Notification of inspection and written permission procured before this building or part thereof is lathed or otherwise closed-in. 48 HOUR NOTICE IS REQUIRED.	A final inspection must be completed by owner before this building or part thereof is occupied. If a certificate of occupancy is required, it must be

58

Fire Prevention Officer **Code Enforcement Officer / Plan Reviewer**

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

BUILDING PERMIT INSPECTION PROCEDURES

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

or email: buildinginspections@portlandmaine.gov

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

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

Final Fire

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

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

PORTLAND MAINE

Strengthening a Remarkable City, Building a Community for Life • www.portlandmaine.gov

Director of Planning and Urban Development
Jeff Levine

Job ID: 2011-10-2535-SF
install NFPA 13D sprinkler system

For installation at:
29 RANDALL ST

CBL: 166- B-012-001

Conditions of Approval:

Fire

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

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

If installation deviates from the approved permit submittal as-builds shall be provided.

Application requires State Fire Marshal approval.

City of Portland, Maine - Building or Use Permit Application
389 Congress Street, 04101 Tel: (207) 874-8703, FAX: (207) 8716

Job No:	Date Applied:	CBL:	
2011-10-2535-SF #2012-48344 FAFS	**09/18/2012**	**166- B-012-001**	
Location of Construction: **31 RANDALL STREET**	Owner Name: **HOLMAN DEVELOPMENT CORP**	Owner address: **152 MILTON STREET, PORTLAND, MAINE 04103**	Phone:
Business Name:	Contractor Name: **Alex Lehman**	Contractor Address: **132 Beech Street, Saco, ME 04072**	Phone: **615-1451**
Lessee/Buyer's Name:	Phone:	Permit Type: **FIRE SUPPRESSION**	Zone: **R-5**
Past Use: **Single Family Dwelling**	Proposed Use: **Same: Single family Dwelling – to install fire suppression system**	Cost of Work: **$7,000.00**	CEO District:
		Fire Dept: 9/20/12 ✓ Approved w/ conditions ___ Denied ___ N/A Signature: BJ a Walsh. (50)	Inspection: Use Group: Type: Signature:
Proposed Project Description: **Sprinkler system**		Pedestrian Activities District (P.A.D.)	
Permit Taken By: Lannie		**Zoning Approval**	

1. This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules.
2. Building Permits do not include plumbing, septic or electrial work.
3. Building permits are void if work is not started within six (6) months of the date of issuance. False informatin may invalidate a building permit and stop all work.

Special Zone or Reviews	Zoning Appeal	Historic Preservation
___ Shoreland	___ Variance	✓ Not in Dist or Landmark
___ Wetlands	___ Miscellaneous	___ Does not Require Review
___ Flood Zone	___ Conditional Use	___ Requires Review
___ Subdivision	___ Interpretation	___ Approved
___ Site Plan	___ Approved	___ Approved w/Conditions
___ Maj ___ Min ___ MM	___ Denied	___ Denied
Date: OK 9/18/12	Date:	Date:

CERTIFICATION

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

SIGNATURE OF APPLICANT ADDRESS DATE PHONE

RESPONSIBLE PERSON IN CHARGE OF WORK, TITLE DATE PHONE

2011-10-2535 2012-48344 FAFS

One- or Two-family Fire Sprinkler Permit

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

Installation address: 31 Rowlett St 166-B-12

Building owner: Pete Peters Holman Dev 152 Intervale Phone: 207-653-8800 04103

Installer: Alex Lehman Phone: 207-615-1457

Total sq/ft of building floor space per unit: 1,400 ☐ Single-family home

or

Sq/ft of sprinklered floor space per unit: _____ ☐ Two-family home

Is this a multipurpose piping system? Y / (N) Sprinkler piping uses Pex? Y / N

Water supply: ☒ Municipal Water ☐ Well pump ☐ Stored water ☐ Other

Include electronic copy of approved State Sprinkler Permit plans: ☐

Additional cost to the owner for the home fire sprinkler system for each dwelling unit minus costs necessary for domestic needs (See below): **A=** _____

Attach cost breakdown: ☐ A City plumbing permit has been pulled: ☐

This System was designed with holding tank. But the water main of street has enough pressure to have it fed by water main instead of tank.

137 Beech St
Saco, ME 04072

COST OF WORK: 4,200.
(A times number of units)

NO FEE REQUIRED

RECEIVED
SEP 18 2012
Dept. of Building Inspections
City of Portland Maine

Additional information and Frequently asked questions about home fire sprinkler systems may be found at www.portlandmaine.gov/fireprevention.

Sprinkler system cost must deduct costs that would have been incurred if the system did not provide sprinkler service. If a well pump system it would include the difference between the well pump to be installed and the one that would have been installed if there were no sprinkler demand on the system. Includes additional piping and valves that are required only because of NFPA Standard 13D, and not already required for domestic needs. Includes cost of sprinkler heads and additional installation costs.

State of Maine
Department of Public Safety
Fire Sprinkler System Permit

10224

31 Randall St

Located at: 31Randall Street
In the Town of: Portland
Occupancy/Use: House
Type of System: NFPA 13D

Permission is hereby given to:

Alexander W Lehmann
132 Beach Street
Saco, ME 04072
Contractor License # **815**

to begin installation according to plans submittal approved by the Office of State Fire Marshal.
The submittal is filed under log # **2121425** , and no departure from the application submittal shall be made without prior approval in writing. This permit is issued under the provisions of Title 32, Chapter 20, Section 12004-I. Nothing herein shall excuse the holder of this permit from failure to comply with local ordinances, zoning laws, o other pertinent legal restrictions. This permit shall be displayed at the construction site or be made readily available.

This permit was issued on **9/12/2012** for a fee paid of **$25.00**

This permit will expire at midnight on ***Monday, March 11, 2013***

The expiration date applies only if the installation has not begun by that date and no permission has been granted to extend the date. Once installation begins, then the permit is valid for however long it takes to complete the installation, assuming that the work is fairly continuous.

John E Morris

John E. Morris
Commissioner

The type of Fire Department Connection and its location is to be according to the Local Fire Department

Within 30 days of the completion of a new fire sprinkler system or an addition to an existing fire sprinkler system, a fire sprinkler system contractor shall provide to the Office of State Fire Marshal a copy of this permit signed and dated by the certified Responsible Managing Supervisor representing that the fire sprinkler system has been installed according to specifications of the approved plan to the best of the supervisor's knowledge, information, and belief. This requirement is part of the sprinkler law, and neglect of this duty is grounds to not renew the contractor's license to do work in the State of Maine. All renewed sprinkler licenses are good for two years and expire on a June 30th.

Job completed, tested and verified by date of _____

RMS for this job: Killeen* Thomas J.

RMS Signature: _____

Atlantic Design Resources, Ltd.
Fire Protection Design Services

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

HYDRAULIC CALCULATION
PRODUCT SPECIFICATIONS
&
INFORMATION

For

PROJECT LOCATION

31 Randall Street
Portland Maine

CONTRACTOR

Alex Lehman Plumbing and Heating
132 Beach Street
Saco Maine

212064
Rev. --

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

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

C O V E R S H E E T

18 Randall St Portland ME Test # 1

W A T E R S U P P L Y

STATIC PRESSURE	(psi)	50
RESIDUAL PRESSURE	(psi)	49
RESIDUAL FLOW	(gpm)	50

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

NUMBER OF BOOSTER PUMPS 0

S P R I N K L E R S

MINIMUM FLOW PER SPRINKLER (gpm) 13.5

MINIMUM PRESSURE PER SPRINKLER (psi) 11.39

THIS SYSTEM OPERATES AT A FLOW OF 27.35 gpm AT A PRESSURE OF 28.74 psi
AT THE BASE OF THE RISER (REF. PT. 2)

PIPES USED FOR THIS SYSTEM
==========
018 COPPER TYPE 'L'
016 POLYBUTYLENE

HYDRAULIC CALCULATIONS AT SPECIFIED FLOW

THE FOLLOWING SPRINKLERS ARE OPERATING IN:

[ ] TEST AREA 1 [ ] TEST AREA 2 [ ] TEST AREA 3 [ ] REMOTE AREA

Elevation of sprinklers = Elevation above water test.

REF. PT.	K	ELEV. ft	FLOW gpm	PRESSURE (psi) Total	Velocity	Normal
101	4.00	27.00	13.50	11.39	0.00	11.39
102	4.00	27.00	13.85	11.99	0.00	11.99

THE SPRINKLER SYSTEM FLOW IS 27.35 gpm

THE OUTSIDE HOSE FLOW AT REFERENCE POINT N0. 1 IS 0.00 gpm

[ ] THE INSIDE HOSE [ ] RACK SPKLR'S.

[ ] YARD HYDT. FLOW IS 0.00 gpm

THE FOLLOWING PRESSURES & FLOWS OCCUR

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

STATIC PRESSURE	50.00 psi		
RESIDUAL PRESSURE	49.00 psi	AT	50.00 gpm
TOTAL SYSTEM FLOW	27.35 gpm		
AVAILABLE PRESSURE	49.67 psi	AT	27.35 gpm
OPERATING PRESSURE	35.94 psi	AT	27.35 gpm
PRESSURE REMAINING	13.74 psi		

FITTING Equivalent Length per NFPA 13 1994, 6-4.3
'-' Indicates Equivalent Length. 'T' Indicates Threaded Fitting
1=45 Elbow, 2=90 Elbow, 3='T'/Cross, 4=Butterfly Valve, 5=Gate Valve, 6=Swing Check Valve

FROM	TO	FLOW (gpm)	PIPE (ft)	FITS	EQV. (ft)	H-W C	PIPE TYPE	DIA. (in)	FRIC. (psi)	ELEV. (psi)	PRESSURE (psi) Pt Pv Pn	Pt Pv Pn	DIFF
1	2	27.35	12.00	2256	12.29	150	18	1.025	0.172	3.033	35.94	28.74	4.17
2	3	27.35	2.00	3	6.00	150	16	1.051	0.152	0.000	28.74	27.52	1.22
3	4	11.04	51.00	2223	15.03	150	16	1.051	0.028	0.000	27.52	25.65	1.87
4	3	-16.32	20.00	223	12.02	150	16	1.051	0.058	0.000	25.65	27.52	-1.87
4	5	27.35	2.00	0	0.00	150	16	1.051	0.152	0.000	25.65	25.35	0.30
5	6	27.35	10.00	2	3.01	150	16	1.051	0.152	4.333	25.35	19.04	1.98
6	7	27.35	2.00	3	6.00	150	16	1.051	0.152	0.000	19.04	17.82	1.22
7	8	17.12	5.00	3	6.00	150	16	1.051	0.064	0.000	17.82	17.12	0.70
8	9	13.50	9.00	223	12.02	150	16	1.051	0.041	0.000	17.12	16.26	0.86
9	101	13.50	10.00	2	3.01	150	16	1.051	0.041	4.333	16.26	11.39	0.53
8	10	3.62	42.00	223	12.02	150	16	1.051	0.004	0.000	17.12	16.92	0.20
10	11	3.62	2.00	23	9.01	150	16	1.051	0.004	0.000	16.92	16.89	0.04
11	102	13.85	10.00	2	3.01	150	16	1.051	0.043	4.333	16.89	11.99	0.56

FITTING Equivalent Length per NFPA 13 1994, 6-4.3
'-' Indicates Equivalent Length. 'T' Indicates Threaded Fitting
1=45 Elbow, 2=90 Elbow, 3='T'/Cross, 4=Butterfly Valve, 5=Gate Valve, 6=Swing Check Valve

FROM	TO	FLOW (gpm)	PIPE (ft)	FITS	EQV. (ft)	H-W C	PIPE TYPE	DIA. (in)	FRIC. (psi)	ELEV. (psi)	PRESSURE (psi) Pt / Pv / Pn	Pt / Pv / Pn	DIFF
11	7	-10.23	26.00	223	12.02	150	16	1.051	0.025	0.000	16.89	17.82	-0.93

A MAX. VELOCITY OF 10.63 ft./sec. OCCURS BETWEEN REF. PT. 1 AND 2

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

VIKING®

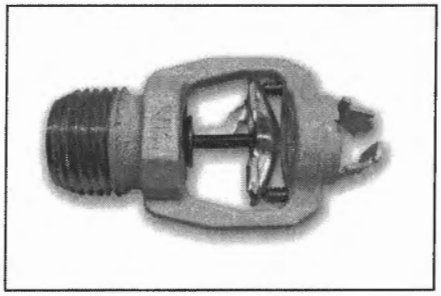
TECHNICAL DATA

FREEDOM® RESIDENTIAL HORIZONTAL SIDEWALL SPRINKLER VK486 (K4.0)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

1. DESCRIPTION

Viking Freedom® Residential Horizontal Sidewall Sprinkler VK486 is a small, thermosensitive, glass-bulb residential sprinkler available in several different finishes and temperature ratings to meet varying design requirements. The sprinkler orifice design, with a K-Factor of 4.0 (57.7 metric†), allows efficient use of available water supplies for the hydraulically designed fire-protection system. The glass bulb operating element and special deflector characteristics meet the challenges of residential sprinkler standards.



2. LISTINGS AND APPROVALS

c UL us **cULus Listed:** Category VKKW

Refer to the Approval Chart on pages 156w and Design Criteria on page 156x for cULus Listing requirements that must be followed.

3. TECHNICAL DATA

Specifications:

Available since 2011.
Minimum Operating Pressure: Refer to the Approval Chart.
Maximum Working Pressure: 175 psi (12 bar). Factory tested hydrostatically to 500 psi (34.5 bar).
Thread size: 1/2" (15 mm) NPT
Nominal K-Factor: 4.0 U.S. (57.7 metric†)
† Metric K-factor measurement shown is in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.
Glass-bulb fluid temperature rated to -65 °F (-55 °C)
Overall Length: 2-7/16" (62 mm)

Viking Technical Data may be found on The Viking Corporation's Web site at http://www.vikinggroupinc.com. The Web site may include a more recent edition of this Technical Data Page.

Material Standards:

Frame Casting: QM Brass and Brass UNS-C84400
Deflector: Phosphor Bronze UNS-C51000
Bulb: Glass, nominal 3 mm diameter
Belleville Spring Sealing Assembly: Nickel Alloy, coated on both sides with Teflon Tape
Pip Cap and Insert Assembly: Copper UNS-C11000 and Stainless Steel UNS-S30400
Compression Screws: 18-8 Stainless Steel
Yoke: Phosphor Bronze UNS-C51000

Ordering Information: (Also refer to the current Viking price list.)

Sprinkler: Base Part No. 17315
Order Sprinkler VK486 by first adding the appropriate suffix for the sprinkler finish and then the appropriate suffix for the temperature rating to the sprinkler base part number.
Finish Suffix: Brass = A, Chrome-Enloy® = F, and White Polyester = M-/W
Temperature Suffix: 155 °F (68 °C) = B, 175 °F (79 °C) = D
For example, sprinkler VK486 with a Brass finish and a 155 °F (68 °C) temperature rating = Part No. 17315AB.

Available Finishes And Temperature Ratings:

Refer to Table 1.

Accessories: (Also refer to the "Sprinkler Accessories" section of the Viking data book.)

Sprinkler Wrenches:

A. Standard Wrench: Part No. 10896W/B (available since 2000)
B. Wrench for recessed sprinklers: Part No. 13655W/B* (available since 2006)
*A ½" ratchet is required (not available from Viking).

Sprinkler Cabinets:

A. Six-head capacity: Part No. 01724A (available since 1971)
B. Twelve-head capacity: Part No. 01725A (available since 1971)

Replaces page 156u-z, issued September 19, 2011.
(Added QM Brass to Material Standards and updated Image)

VIKING®

TECHNICAL DATA

FREEDOM® RESIDENTIAL HORIZONTAL SIDEWALL SPRINKLER VK486 (K4.0)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

4. INSTALLATION

Refer to appropriate NFPA Installation Standards. For NFPA 13D horizontal ceiling criteria and slopes, refer to TIA 1028R for slope ceiling criteria exceptions.

5. OPERATION

During fire conditions, the heat-sensitive liquid in the glass bulb expands, causing the glass to shatter, releasing the yoke, pip cap, and sealing spring assembly. Water flowing through the sprinkler orifice strikes the sprinkler deflector, forming a uniform spray pattern to extinguish or control the fire.

6. INSPECTIONS, TESTS AND MAINTENANCE

Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

7. AVAILABILITY

Viking Sprinkler VK486 is available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE

For details of warranty, refer to Viking's current list price schedule or contact Viking directly.

TABLE 1: AVAILABLE SPRINKLER TEMPERATURE RATINGS AND FINISHES

Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating[1]	Maximum Ambient Ceiling Temperature[2]	Bulb Color
Ordinary	155 °F (68 °C)	100 °F (38 °C)	Red
Intermediate	175 °F (79 °C)	150 °F (65 °C)	Yellow

Sprinkler Finishes: Brass, Chrome-Enloy® (patents pending), White Polyester, and Black Polyester.

Footnotes

[1] The sprinkler temperature rating is stamped on the deflector.

[2] Based on NFPA-13. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.

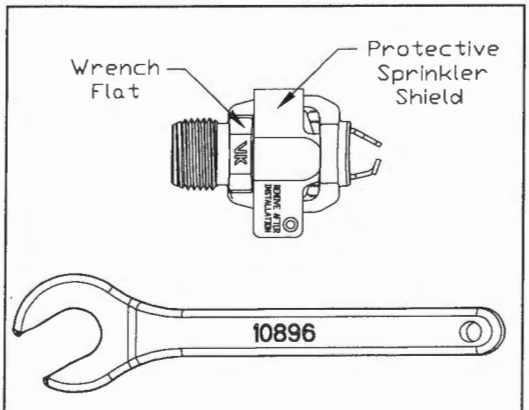


Figure 1:
Standard Sprinkler Wrench 10896W/B

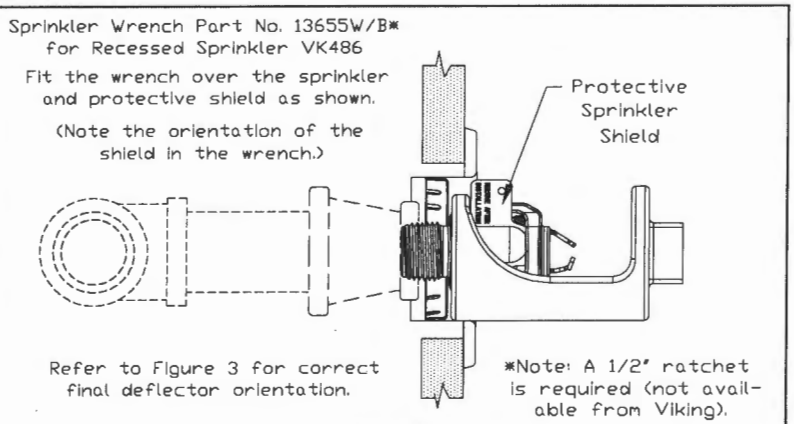


Figure 2:
Wrench 13655W/B for Recessed Sprinkler VK486

VIKING®

TECHNICAL DATA

FREEDOM® RESIDENTIAL HORIZONTAL SIDEWALL SPRINKLER VK486 (K4.0)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Sprinkler Base Part Number[1]	NPT Thread Size		Nominal K-Factor		Maximum Water Working Pressure	Overall Length	
	Inches	mm	U.S.	metric[2]		Inches	mm
17315	1/2	15	4.0	57.7	175 psi (12 Bar)	2-7/16	62

Approval Chart

Residential Horizontal Sidewall Sprinkler VK486
For Systems designed to NFPA 13D or NFPA 13R
For systems designed to NFPA 13, refer to the design criteria on page 156x.

KEY
Temperature
Finish
A1X[7] Escutcheon (if applicable)

Installed below smooth, flat, horizontal ceilings, including ceilings with slopes up to and including 2/12 (9.5°).
With the deflector located between 4" and 6" (102 mm and 152 mm) below the ceiling.

Maximum Areas of Coverage[3] (Width x Length)	Minimum Water Supply Requirements[3]	Listings and Approvals[4] (Refer also to Design Criteria on page 156x.)		
		cULus[5,6]	NYC	NSF
12' x 12' (3.7 m x 3.7 m)	11 gpm @ 7.6 psi (41.7 L/min @ 0.52 Bar)	A1X	See Footnote 8.	--
14' x 14' (4.3 m x 4.3 m)	12 gpm @ 9 psi (45.5 L/min @ 0.62 Bar)	A1X	See Footnote 8.	--
16' x 16' (4.9 m x 4.9 m)	13 gpm @ 10.6 psi (49.3 L/min @ 0.73 Bar)	A1X	See Footnote 8.	--
16' x 18' (4.9 m x 5.5 m)	16 gpm @ 16 psi (60.6 L/min @ 1.1 Bar)	A1X	See Footnote 8.	--
16' x 20' (4.9 m x 6.1 m)	22 gpm @ 30.3 psi (83.3 L/min @ 2.09 Bar)	A1X	See Footnote 8.	--
16' x 22' (4.9 m x 6.7 m)	24 gpm @ 36 psi (90.8 L/min @ 2.48 Bar)	A1X	See Footnote 8.	--
18' x 18' (5.5 m x 5.5 m)	18 gpm @ 20.3 psi (68.1 L/min @ 1.4 Bar)	B1X	See Footnote 8.	--
18' x 18' (5.5 m x 5.5 m)	19 gpm @ 22.6 psi (71.9 L/min @ 1.6 Bar)	C1X	See Footnote 8.	--
18' x 20' (5.5 m x 6.1 m)	22 gpm @ 30.3 psi (83.3 L/min @ 2.09 Bar)	A1X	See Footnote 8.	--
20' x 20' (6.1 m x 6.1 m)	22 gpm @ 30.3 psi (83.3 L/min @ 2.09 Bar)	A1X	See Footnote 8.	--
Installed below smooth, flat, horizontal ceilings, including ceilings with slopes up to and including 2/12 (9.5°). **With the deflector located between 6" and 12" (152 mm and 305 mm) below the ceiling.**				
12' x 12' (3.7 m x 3.7 m)	12 gpm @ 9 psi (45.5 L/min @ 0.62 Bar)	A1X	See Footnote 8.	--
14' x 14' (4.3 m x 4.3 m)	12 gpm @ 9 psi (45.5 L/min @ 0.62 Bar)	B1X	See Footnote 8.	--
14' x 14' (4.3 m x 4.3 m)	13 gpm @ 10.6 psi (49.3 L/min @ 0.73 Bar)	C1X	See Footnote 8.	--
16' x 16' (4.9 m x 4.9 m)	14 gpm @ 12.3 psi (53 L/min @ 0.84 Bar)	A1X	See Footnote 8.	--
16' x 18' (4.9 m x 5.5 m)	16 gpm @ 16 psi (60.6 L/min @ 1.1 Bar)	A1X	See Footnote 8.	--
16' x 20' (4.9 m x 6.1 m)	23 gpm @ 33.1 psi (87.1 L/min @ 2.28 Bar)	A1X	See Footnote 8.	--
16' x 22' (4.9 m x 6.7 m)	26 gpm @ 42.3 psi (98.4 L/min @ 2.91 Bar)	A1X	See Footnote 8.	--
18' x 18' (5.5 m x 5.5 m)	18 gpm @ 20.3 psi (68.1 L/min @ 1.4 Bar)	B1X	See Footnote 8.	--
18' x 18' (5.5 m x 5.5 m)	19 gpm @ 22.6 psi (71.9 L/min @ 1.6 Bar)	C1X	See Footnote 8.	--
18' x 20' (5.5 m x 6.1 m)	23 gpm @ 33.1 psi (87.1 L/min @ 2.28 Bar)	A1X	See Footnote 8.	--
20' x 20' (6.1 m x 6.1 m)	24 gpm @ 36 psi (90.8 L/min @ 2.48 Bar)	A1X	See Footnote 8.	--

Approved Temperature Ratings
A - 155 °F (68 °C) and 175 °F (79 °C)
B - 155 °F (68 °C)
C - 175 °F (79 °C)

Approved Finishes
1 - Brass, Chrome-Enloy®, White Polyester, and Black Polyester[9]

Approved Escutcheons
X - Standard surface-mounted escutcheons or the Viking Microfast® Model F-1 Adjustable Escutcheon or recessed with the Viking Micromatic® Model E-1 or E-2 Recessed Escutcheon, or the Model G-1 Adjustable Escutcheon.

Footnotes

[1] Base part number shown. For complete part number, refer to Viking's current price list.
[2] Metric K-Factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-Factor shown by 10.0.
[3] For areas of coverage smaller than shown, use the "Minimum Water Supply Requirement" for the next larger area listed. Flows and pressures listed are per sprinkler. The distance from sprinklers to walls shall not exceed one-half the sprinkler spacing indicated for the minimum Water Supply Requirement" used.
[4] This chart shows the listings and approvals available at the time of printing. Other approvals may be in process. Check with the manufacturer for any additional approvals.
[5] Listed by Underwriter's Laboratories, Inc. for use in the U.S. and Canada.
[6] Listing is for residential occupancies with smooth, flat, horizontal ceilings, including ceilings with slopes up to and including 2/12 (9.5°).
[7] Refer to TIA 1028R slope ceiling criteria exceptions.
[8] Meets New York City requirements, effective July 1, 2008.
[9] Other paint colors are available on request with the same cULus Listings as the standard finish colors.

FREEDOM® RESIDENTIAL HORIZONTAL SIDEWALL SPRINKLER VK486 (K4.0)

TECHNICAL DATA

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

DESIGN CRITERIA

(Also refer to the Approval Chart on page 156w.)

cULus Listing Requirements:

When using Viking Residential Horizontal Sidewall Sprinkler VK486 for systems designed to NFPA 13D or NFPA 13R, apply the listed areas of coverage and minimum water supply requirements shown in the Approval Chart on page 156w.

For systems designed to NFPA 13: The number of design sprinklers is to be the four contiguous 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 the Approval Chart on data page 156w for NFPA 13D and NFPA 13R applications for each listed area of coverage, **or**
- Calculated based on a minimum discharge of 0.1 gpm/sq. ft. over the "design area" in accordance with sections 8.5.2.1 or 8.6.2.1.2 of NFPA 13.
- Minimum distance between residential sprinklers: 8 ft. (2.4 m).
- The VK486 horizontal sidewall sprinkler deflector shall be located a minimum of 1-1/4" (31.8 mm) and a maximum of 6" (152 mm) from the wall on which it is installed.

DEFLECTOR POSITION: Install sprinkler VK486 with the leading edge of the deflector oriented parallel to the ceiling and the sprinkler frame arms oriented perpendicular to the ceiling (see Figure 4). **THE TOP SURFACE OF THE DEFLECTOR IS MARKED "TOP".** The sprinkler must be oriented as shown in Figure 3 below.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to pages RES1-17 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA and any other similar Authorities Having Jurisdiction, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable. Final approval and acceptance of all residential sprinkler installations must be obtained from the Authorities Having Jurisdiction.

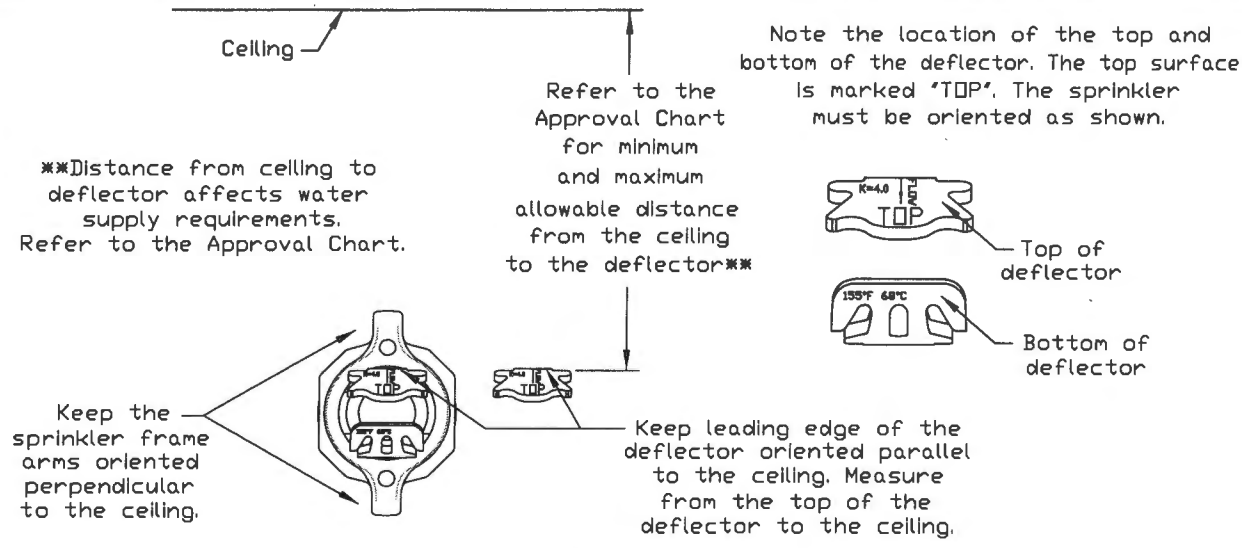


Figure 3:
Correct Orientation of the Deflector

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FREEDOM® RESIDENTIAL HORIZONTAL SIDEWALL SPRINKLER VK486 (K4.0)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

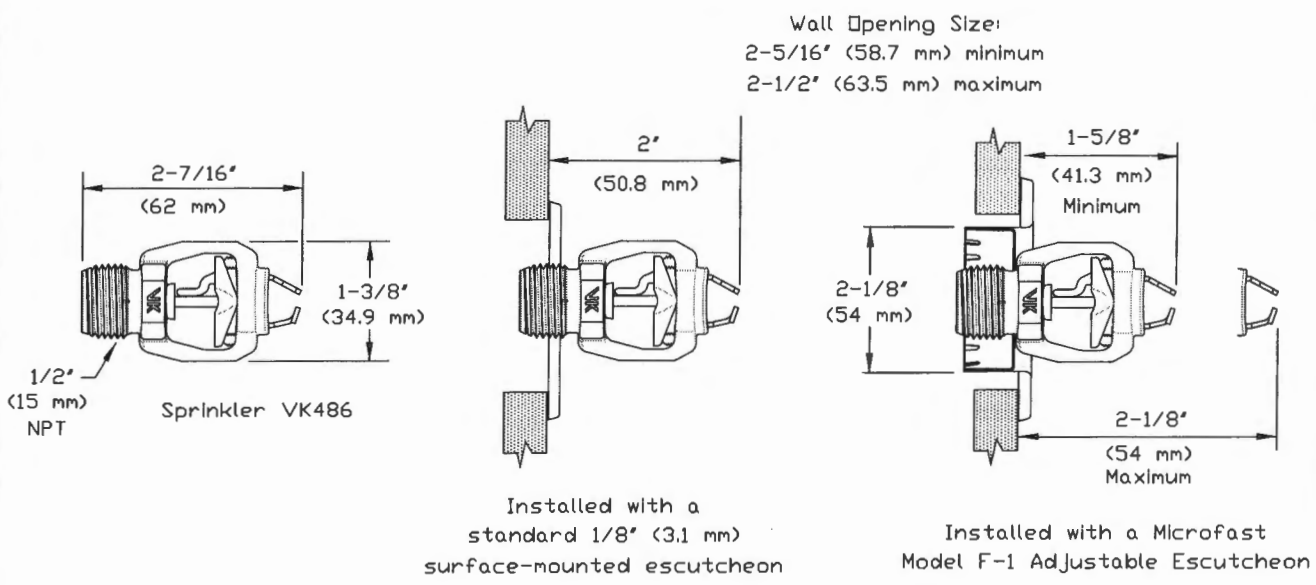

Figure 4:
Sprinkler VK486 Dimensions with a Standard Escutcheon and the Model F-1 Adjustable Escutcheon

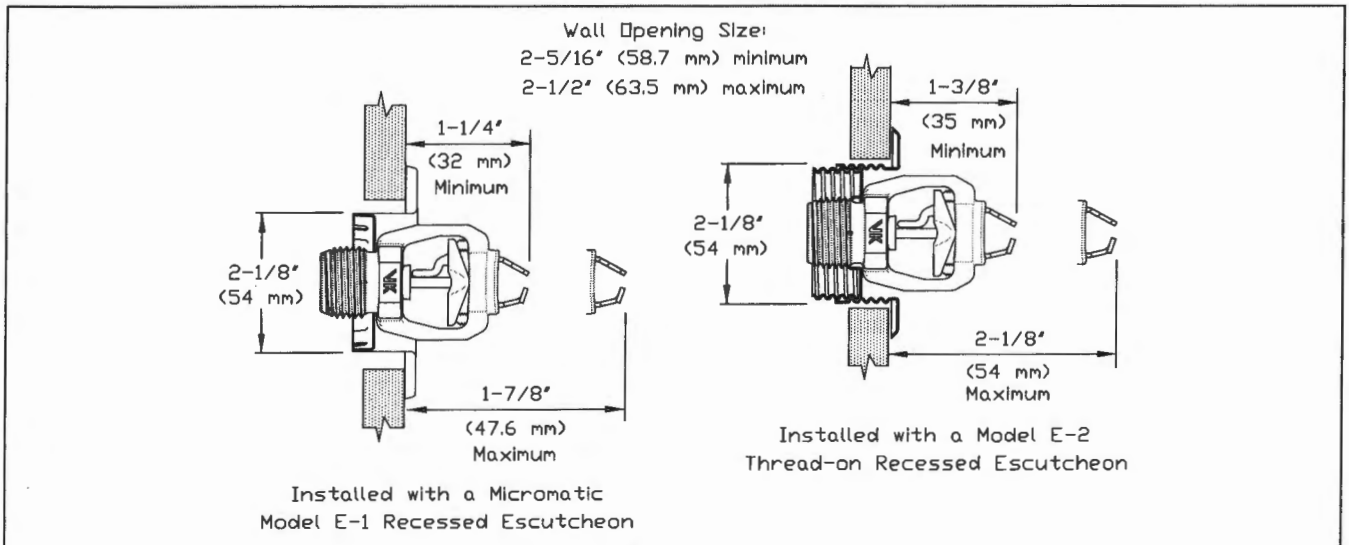

Figure 5:
Sprinkler VK486 Dimensions with the Model E-1 and E-2 Recessed Escutcheons

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TECHNICAL DATA

FREEDOM® RESIDENTIAL HORIZONTAL SIDEWALL SPRINKLER VK486 (K4.0)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

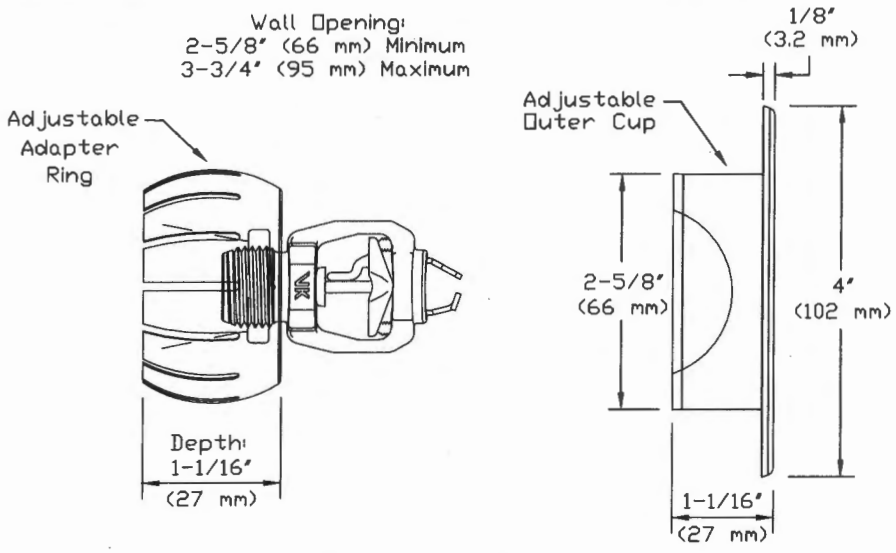

Figure 6: Sprinkler VK486 Dimensions with the Model G-1 Escutcheon

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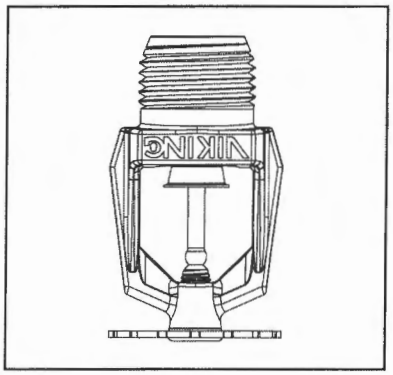
TECHNICAL DATA

FREEDOM® RESIDENTIAL PENDENT SPRINKLER VK430 (K4.3)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

1. DESCRIPTION

Viking Freedom® Residential Pendent Sprinkler VK430 is a thermosensitive, glass-bulb residential sprinkler available in several different finishes and temperature ratings to meet varying design requirements. The orifice design, with a K-Factor of 4.3 (62 metric*), allows efficient use of available water supplies for the hydraulically designed fire-protection system. The fast response type glass bulb and special deflector combine speed of operation and area of coverage to meet residential sprinkler standards while being aesthetically pleasing.



2. LISTINGS AND APPROVALS

c UL us **cULus Listed:** Category VKKW

NYC Approved: MEA 89-92-E, Volume 24

Refer to the Approval Chart on page 141q and Design Criteria on page 141s for cULus Listing requirements that must be followed.

3. TECHNICAL DATA

Specifications:

Minimum Operating Pressure: Refer to the Approval Chart.
Maximum Working Pressure: 175 psi (12 bar). Factory tested hydrostatically to 500 psi (34.5 bar).
Thread size: 1/2" (15 mm) NPT
Nominal K-Factor: 4.3 U.S. (62 metric*)

* Metric K-factor measurement shown is for when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

Glass-bulb fluid temperature rated to -65 °F (-55 °C)
Overall Length: 2-1/4" (58 mm)

Material Standards:

Frame Casting: Brass UNS-C84400 or QM Brass
Deflector: Brass UNS-C26000
Bulb: Glass, nominal 3 mm diameter
Belleville Spring Sealing Assembly: Nickel Alloy, coated on both sides with Teflon Tape
Compression Screw: Brass UNS-C36000
Pip Cap and Insert Assembly: Copper UNS-C11000 and Stainless Steel UNS-S30400
Pip Cap Attachment (for QM Brass sprinklers only): Brass UNS-C36000

Viking Technical Data may be found on The Viking Corporation's Web site at http://www.vikinggroupinc.com. The Web site may include a more recent edition of this Technical Data Page.

Ordering Information: (Also refer to the current Viking price list.)

Sprinkler: Base Part No. 09530

Order Sprinkler VK430 by first adding the appropriate suffix for the sprinkler finish and then the appropriate suffix for the temperature rating to the sprinkler base part number.

Finish Suffix: Brass = A, Chrome-Enloy® = F, White Polyester = M-/W, and Black Polyester = M-/B
Temperature Suffix: 155 °F (68 °C) = B, 175 °F (79 °C) = D
For example, sprinkler VK430 with a Brass finish and a 155 °F (68 °C) temperature rating = Part No. 09530AB.

Available Finishes And Temperature Ratings:

Refer to Table 1.

Accessories: (Also refer to the "Sprinkler Accessories" section of the Viking data book.)

Sprinkler Wrenches:

A. Standard Wrench: Part No. 10896W/B (available since 2000)
B. Wrench for Recessed Pendent Sprinklers: Part No. 16036W/B** (available since 2011)
**A ½" ratchet is required (not available from Viking).

Sprinkler Cabinets:

A. Six-head capacity: Part No. 01724A (available since 1971)
B. Twelve-head capacity: Part No. 01725A (available since 1971)

Replaces page 141o-t dated Sept. 30, 2011. (Revised sprinkler materials and images and added reference to TIA 1028R.)

VIKING | TECHNICAL DATA | FREEDOM® RESIDENTIAL PENDENT SPRINKLER VK430 (K4.3)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

4. INSTALLATION

Refer to appropriate NFPA Installation Standards. For NFPA 13D horizontal ceiling criteria and slopes, refer to TIA 1028R for slope ceiling criteria exceptions.

5. OPERATION

During fire conditions, the heat-sensitive liquid in the glass bulb expands, causing the glass to shatter, releasing the pip cap and sealing spring assembly. Water flowing through the sprinkler orifice strikes the sprinkler deflector, forming a uniform spray pattern to extinguish or control the fire.

6. INSPECTIONS, TESTS AND MAINTENANCE

Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

7. AVAILABILITY

The Viking Model VK430 Sprinkler is available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE

For details of warranty, refer to Viking's current list price schedule or contact Viking directly.

TABLE 1: AVAILABLE SPRINKLER TEMPERATURE RATINGS AND FINISHES

Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating[1]	Maximum Ambient Ceiling Temperature[2]	Bulb Color
Ordinary	155 °F (68 °C)	100 °F (38 °C)	Red
Intermediate	175 °F (79 °C)	150 °F (65 °C)	Yellow

Sprinkler Finishes: Brass, Chrome-Enloy® (patents pending), White Polyester, and Black Polyester

Footnotes

[1] The sprinkler temperature rating is stamped on the deflector.

[2] Based on NFPA-13. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.

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TECHNICAL DATA

FREEDOM® RESIDENTIAL PENDENT SPRINKLER VK430 (K4.3)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Approval Chart

Residential Pendent Sprinkler VK430
For systems designed to NFPA 13D or NFPA 13R
For systems designed to NFPA 13, refer to the design criteria on page 141s.

KEY: Temperature Rating / Finish / Escutcheon (if applicable) — A1X[4]

Sprinkler Base Part Number[1]	SIN	NPT Thread Size		Nominal K-Factor		Maximum Water Working Pressure	Overall Length	
		Inches	mm	U.S.	metric[2]		Inches	mm
09530	VK430	1/2	15	4.3	62	175 psi (12 bar)	2-1/4	58

Maximum Areas of Coverage[4]	Minimum Water Supply Requirements[4]	Listings and Approvals[3] (Refer also to Design Criteria on page 141s.)		
		cULus[5,6]	NYC[9]	NSF[10]
Installed below smooth, flat, horizontal ceilings, including ceilings with slopes up to and including 2/12 (9.5°).				
12 ft. x 12 ft. (3.7 m x 3.7 m)	12 gpm @ 7.8 psi (45.4 L/min @ 0.54 bar)	A1X	A1X	A1X
14 ft. x 14 ft. (4.3 m x 4.3 m)	13 gpm @ 9.1 psi (49.2 L/min @ 0.63 bar)	A1X	A1X	A1X
16 ft. x 16 ft. (4.9 m x 4.9 m)	13 gpm @ 9.1 psi (49.2 L/min @ 0.63 bar)	A1X	A1X	A1X
18 ft. x 18 ft. (5.5 m x 5.5 m)	17 gpm @ 15.6 psi (64.4 L/min @ 1.08 bar)	A1X	A1X	A1X
20 ft. x 20 ft. (6.1 m x 6.1 m)	21 gpm @ 23.9 psi (79.5 L/min @ 1.64 bar)	A1X	A1X	A1X

Maximum Areas of Coverage[4]	Minimum Water Supply Requirements[4]	Listings and Approvals[3] (Refer also to Design Criteria on page 141s.)		
		UL	NYC[9]	NSF[10]
Installed below smooth, flat ceilings, with slopes up to and including 8/12 (33.7°)[8]. Refer to Figure 5.				
16 ft. x 16 ft. (4.9 m x 4.9 m)	18 gpm @ 17.5 psi (68.1 L/min @ 1.21 bar)	A1X	A1X	A1X

Approved Temperature Ratings	Approved Finishes	Approved Escutcheons
A - 155 °F (68 °C) and 175 °F (79 °C)	1 - Brass, Chrome-Enloy®, White Polyester, and Black Polyester[11]	X - Standard surface-mounted escutcheons, the Microfast® Model F-1 Adjustable Escutcheon, **or** recessed with the Micromatic® Model E-1 or E-2 Recessed Escutcheon

Footnotes

[1] Part number shown is the base part number. For complete part number, refer to current Viking price list schedule.

[2] Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

[3] This chart shows the listings and approvals available at the time of printing. Other approvals may be in process. Check with the manufacturer for any additional approvals.

[4] For areas of coverage smaller than shown, use the "Minimum Water Supply Requirement" for the next larger area listed. Flows and pressures listed are per sprinkler.

[5] Listed by Underwriter's Laboratories for use in the U.S. and Canada.

[6] Listings are for residential occupancies with smooth, flat, horizontal ceilings. Includes ceilings with slopes up to and including a 2/12 (9.5°) pitch.

[7] Refer to TIA 1028R slope ceiling criteria exceptions.

[8] Listed area of coverage measured along ceiling. Consult Figure 5 and "Residential Installation Guide" paragraphs that pertain to sprinklers with listings for both smooth, flat, horizontal, and sloped ceilings for installation details.

[9] Accepted for use, City of New York Department of Buildings, MEA Number 89-92-E, Vol. 24.

[10] Tested and Certified by NSF to NSF/ANSI Standard 61, Drinking Water System Components.

[11] Other paint colors are available on request with the same cULus Listings as the standard finish colors.

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TECHNICAL DATA

FREEDOM® RESIDENTIAL PENDENT SPRINKLER VK430 (K4.3)

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Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

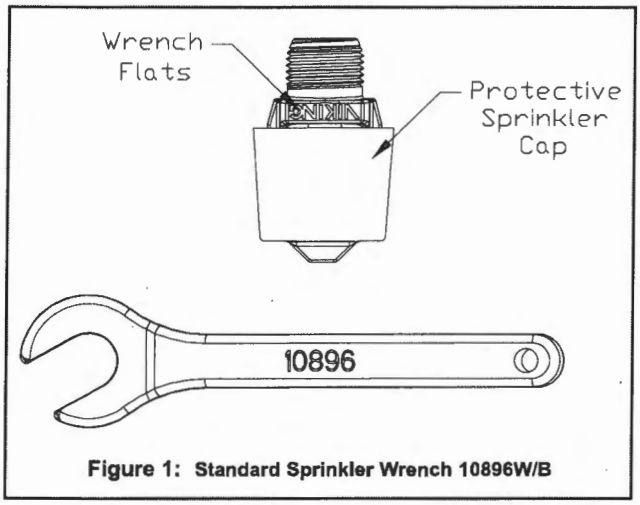

Figure 1: Standard Sprinkler Wrench 10896W/B

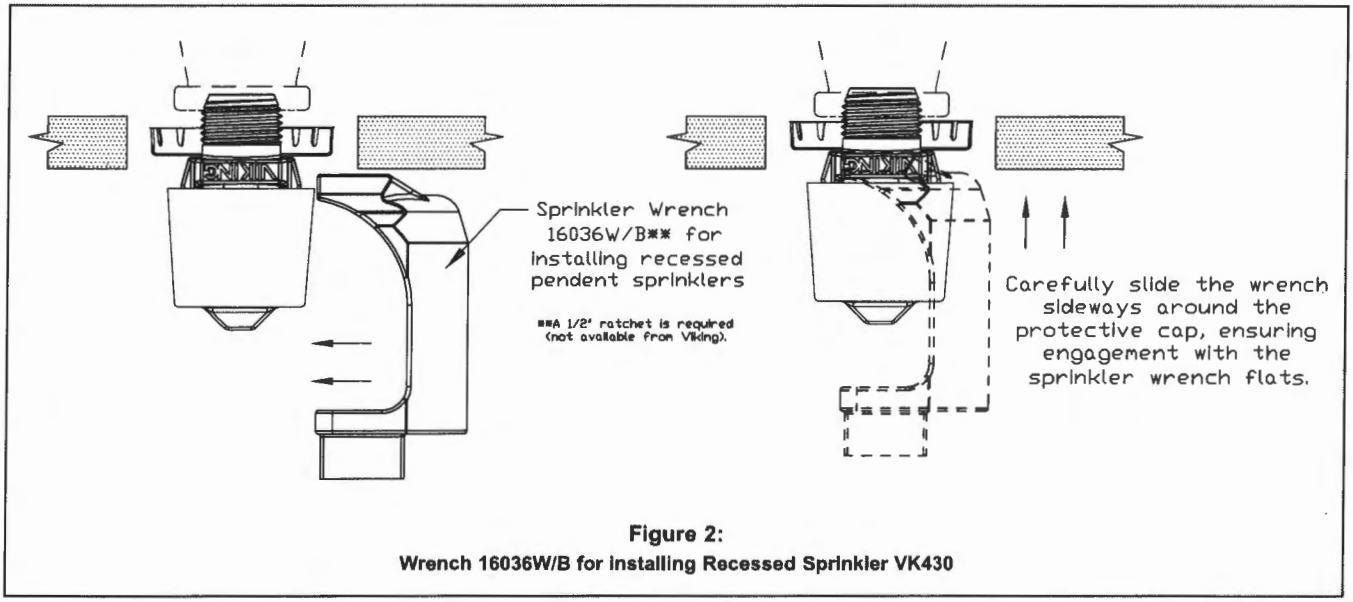

Figure 2:
Wrench 16036W/B for Installing Recessed Sprinkler VK430

FREEDOM® RESIDENTIAL PENDENT SPRINKLER VK430 (K4.3)

TECHNICAL DATA

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

DESIGN CRITERIA

(Also refer to the Approval Chart on page 141q.)

cULus Listing Requirements:

When using Viking Residential Pendent Sprinkler VK430 for systems designed to NFPA 13D or NFPA 13R, apply the listed areas of coverage and minimum water supply requirements shown in the Approval Chart on page 141q.

For systems designed to NFPA 13: The number of design sprinklers is to be the four contiguous 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 the Approval Chart on data page 141q for NFPA 13D and NFPA13R applications for each listed area of coverage, **or**
- Calculated based on a minimum discharge of 0.1 gpm/sq. ft. over the "design area" in accordance with sections 8.5.2.1 or 8.6.2.1.2 of NFPA 13.
- Minimum distance between residential sprinklers: 8 ft. (2.4 m).

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to pages RES1-17 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA and any other similar Authorities Having Jurisdiction, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable. Final approval and acceptance of all residential sprinkler installations must be obtained from the Authorities Having Jurisdiction.

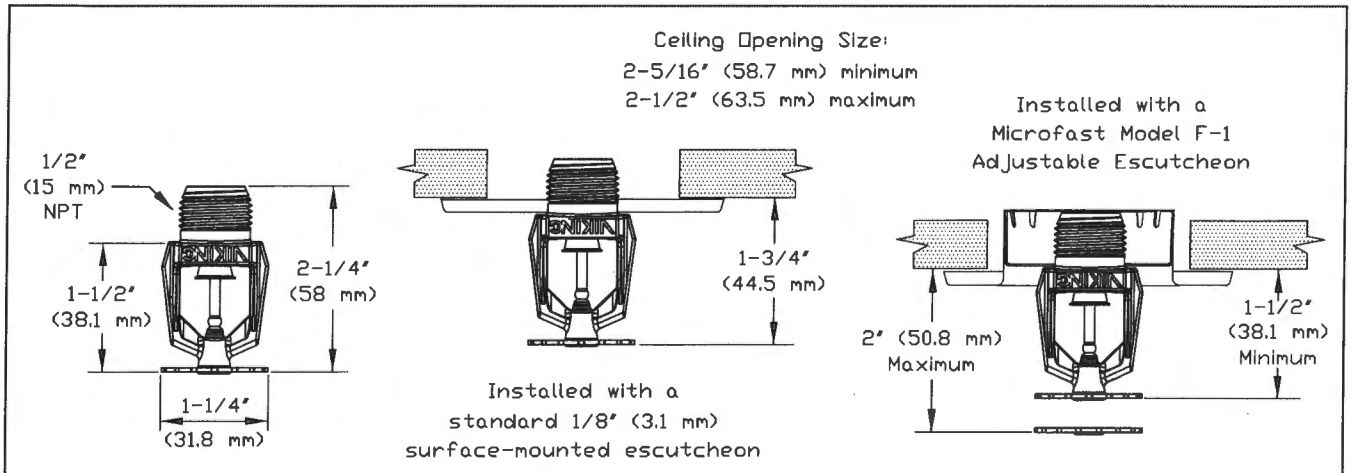

Figure 3:

Sprinkler VK430 Dimensions with a Standard Escutcheon and the Model F-1 Adjustable Escutcheon

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TECHNICAL DATA

FREEDOM® RESIDENTIAL PENDENT SPRINKLER VK430 (K4.3)

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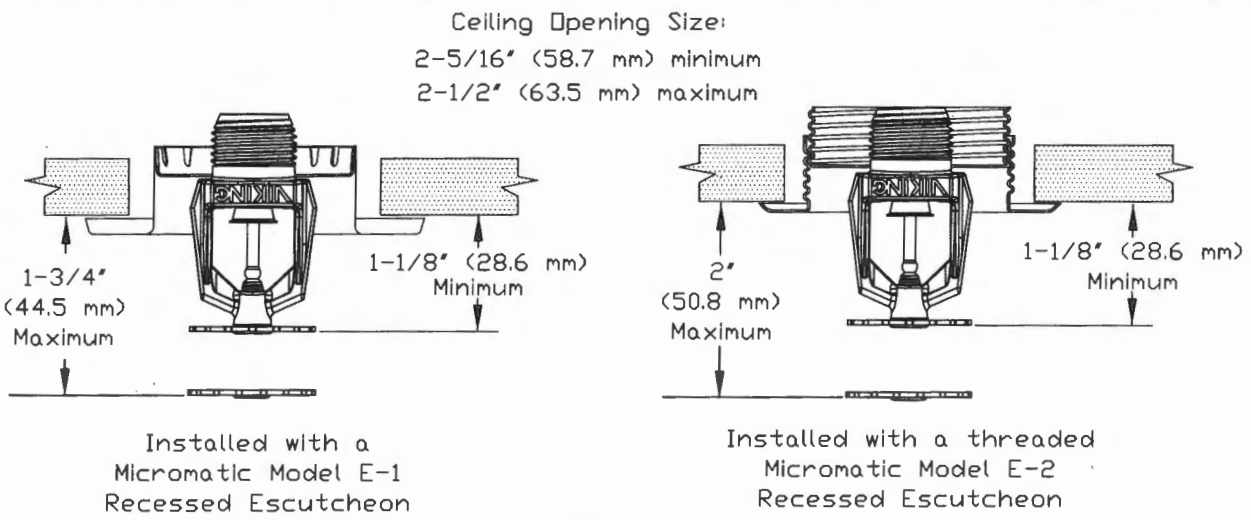
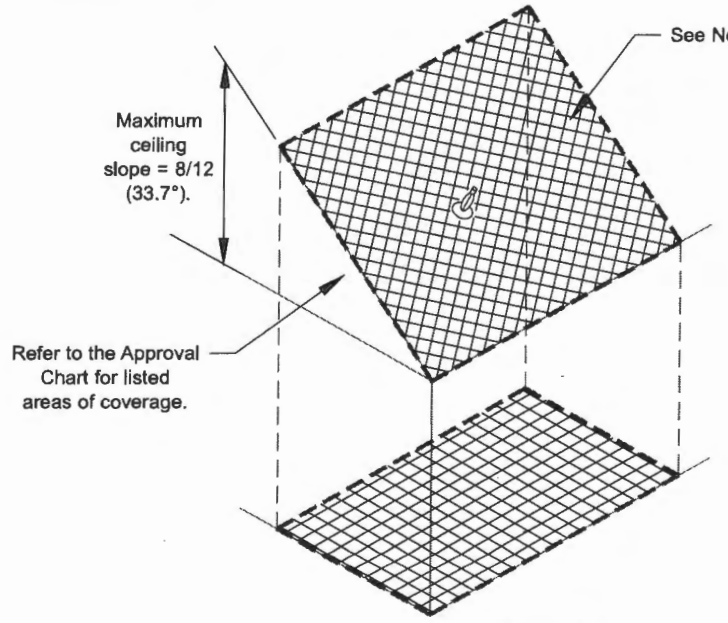


Figure 4:
Sprinkler VK430 Dimensions with the Model E-1 and E-2 Recessed Escutcheons



Notes:

1. Listed areas of coverage correspond to areas measured along the ceiling slope. (For sloped ceiling installations, actual floor coverage in the horizontal plane under sloped ceilings will be less than the listed area.)
2. Actual installations may require multiple sprinklers. A single sprinkler installation has been shown for clarity.
3. For "cathedral" ceiling applications, install sprinklers in a symmetrical mirror-image of Figure 5.

Figure 5:
Installation Instructions - Sloped Ceilings

Replaces page 141o-t dated Sept. 30, 2011. (Revised sprinkler materials and images and added reference to TIA 1028R.)

There's logic, and there's Uponor Logic

Uponor Logic is a unique approach to fire safety systems that focuses on providing peace of mind, saving lives and protecting property. But what it really means is a better way of doing business:

- Intuitive, intelligent products designed to be clean, quiet and healthy
- Confidence and peace of mind for you and comfort, safety and convenience for homeowners
- Proven performance and reliability
- Innovation that never, ever stops

Simply put, Uponor Logic assures you that you're installing the best fire safety solutions the industry has to offer.

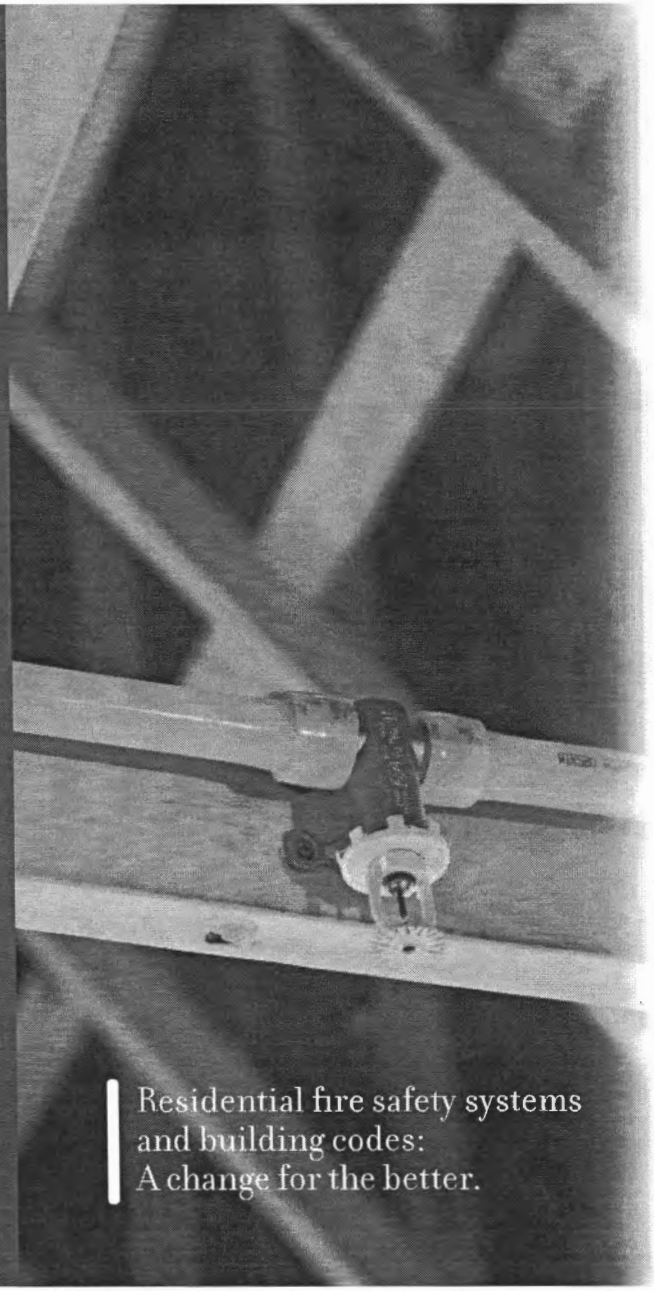
Sustainable resources, environmental responsibility

Our commitment to sustainable building includes the ongoing development of new materials and methods that reduce negative environmental impact. We sell systems that conserve water and use less energy. We're creating technologies that use cleaner installation methods. Look to Uponor for greater efficiencies and smaller demands on the earth's resources.

Uponor, Inc.
5925 148th Street West
Apple Valley, MN 55124 USA
Tel: (800) 321-4739
Fax: (952) 891-2008
Web: www.uponor-usa.com

Uponor Ltd.
455 Park Street
Regina, SK S4N 5N1 CANADA
Tel: (888) 994-7726
Fax: (800) 638-9517
Web: www.uponor.ca

uponor



Residential fire safety systems and building codes:
A change for the better.

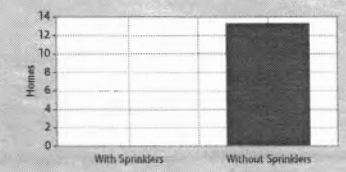
uponor

RESIDENTIAL FIRE SAFETY SYSTEMS

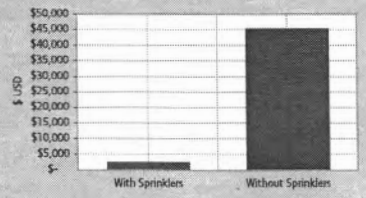
COMMUNITY SAFETY

True-life fire sprinkler study from a community like yours: 15-year Fire Sprinkler Study in Scottsdale, Arizona.

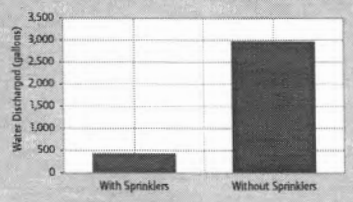
Residential Fire Deaths



Average Loss Per House Fire



Fire Sprinkler Water Discharge versus Fire Hose Discharge



As a result of fire sprinkler installations, Scottsdale reported a savings of $7.5 million in future infrastructure costs.

Ford, Jim. "15 Years of Built-in Automatic Fire Sprinklers: The Scottsdale Experience." Scottsdale — Rural/Metro Fire Department, Scottsdale, AZ. 2001

The new standard in residential fire protection — simple, reliable, affordable:

A growing number of progressive communities across the country are rapidly changing their building codes to mandate the use of residential fire sprinklers. In fact, more than 370 jurisdictions across the country have already implemented fire sprinkler ordinances.[1]

Why are these communities changing their codes? Because residential fire sprinkler systems:

- protect the lives of homeowners and firefighters
- prevent property damage
- reduce the cost of providing community services
- make it possible to use land more effectively and efficiently
- offer a solution for remote, difficult-to-access developments

Such measures enjoy widespread support among public safety officials and groups such as:

- International Association of Fire Chiefs (IAFC)
- National Fire Protection Association (NFPA)
- Residential Fire Safety Institute (RFSI)

Aren't smoke alarms enough?

According to 2004 U.S. Fire Administration data, smoke alarms sound in only half of reported fires. Tragically, 65% of all reported fire deaths occurred in a home with no functioning smoke alarm. When functional, smoke alarms can only warn of a fire. Fire sprinkler systems, on the other hand, can control a fire.[2]

[1]Residential Fire Safety Institute. 2007. "Jurisdictions With Sprinkler Ordinances: Ordinances That Cover 1&2-Family Homes." Maple Grove, MN; 2007.

[2]Ahrens, Marty. "U.S. Experience with Smoke Alarms and Other Fire Detection Equipment." In NFPA Journal Buyer's Guide 2008. (2007); 22.

The life-saving solution homeowners and fire safety professionals are looking for:

Whether or not your community currently mandates their use, interest in residential fire sprinklers is already running high: In a Harris Interactive national poll, 45% of homeowners said that a home with fire sprinklers was more desirable than one without, and 38% said that they would be more likely to purchase a home with fire sprinklers.[3]

An Uponor Residential Fire Safety System isn't just the most effective form of fire protection available — it's also the simplest, most reliable and cost-effective system on the market.

- **Simple:** An Uponor Residential Fire Safety System is an extension of a home's plumbing system, so it can be installed quickly and affordably by a single licensed contractor — in most cases, a plumber. This benefits both the builder and the homeowner.
- **Reliable:** Uponor systems use PEX-a tubing and ProPEX® fittings, which require fewer connections, resist corrosion and have no soldered joints — reducing leaks and liability.
- **Affordable:** Installing an Uponor Fire Safety System costs less than 2% of the total price of the home — roughly the same as an upgrade like stainless steel appliances or granite countertops. And a sprinkler system is the only upgrade that's designed to save lives and property.
- **The industry's best training and support:** More than 100,000 professionals have been certified through our highly regarded factory training courses and on-the-jobsite instruction. Uponor also staffs an in-house design team to create customized sprinkler installation plans that ensure proper sprinkler placement.

Find out more about fire sprinkler systems online:

To learn more about residential fire sprinklers and other fire safety measures, visit the Residential Fire Safety Institute (RFSI) website at **www.firesafehome.org**

To learn more about Uponor's Residential Fire Safety Systems, visit us online or call us toll-free. In the U.S., visit **www.uponor-usa.com** or call 1-800-321-4739. In Canada, visit **www.uponor.ca** or call 1-888-994-7726.

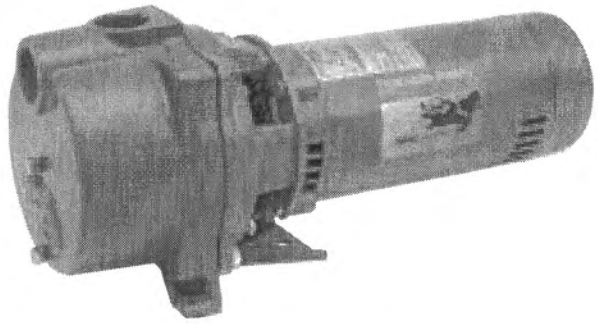
[3]Shapiro, Jeffrey M. "One Sentence to Change the Course of Fire Safety in America." PM Engineer. March 2007.

Why fire marshals support residential fire sprinklers:

Here are a few facts about home fires that demonstrate the need for and value of a fire safety system. Collectively, they provide a compelling argument to mandate such systems in residential building codes.

- Home fires are reported every 90 seconds in the United States. According to the National Fire Protection Association (NFPA), eight out of 10 fire fatalities occur in homes.
- Industry research indicates that installing smoke alarms alone improves survival rates for residential fires by 50%, but installing smoke alarms and a residential fire safety system improves survival rates by 97%.
- It takes only five minutes for a fire to engulf a typical home. Without sprinklers, a fire can burn up to an additional 15 minutes before firefighters arrive. A single sprinkler can control, and in many cases, extinguish a fire in just seconds.
- According to the Residential Fire Safety Institute (RFSI), hoses used by firefighters discharge up to 200 gallons (946 liters) of water a minute into a home. A fire sprinkler sprays just 10-15 gallons (38-57 liters) a minute.

GOULDS PUMPS



60 Hz

IRRI-GATOR™ Self-Priming Centrifugal

MODEL

GT

APPLICATIONS

Specifically designed for the following uses:

- Lawn sprinkling
- Irrigation
- Air conditioning systems
- Heat pumps
- Water transfer
- Dewatering

SPECIFICATIONS

Pump:

- Pipe connections: 1½" NPT suction 1½" NPT discharge
- Capacities: to 110 GPM at 5 foot suction lift.
- Heads: to 128 feet.
- Reprime capabilities: to 25 feet suction lift.
- Maximum working pressure: 125 PSIG.
- Maximum water temperature: 140°F (60°C).
- Rotation: clockwise when viewed from motor end.

Motor:

- NEMA standard open drip proof.
- 60 Hz, 3500 RPM.
- Stainless steel shaft.
- Single phase: ¾–1½ HP, 115/230 V; 2 and 3 HP, 230 V only. Built-in overload with automatic reset.
- Three phase: 230/460 V. Overload protection must be provided in starter unit. Starter and heaters (3) must be ordered separately.
- Optional TEFC motors are available. See price book for order numbers.

FEATURES

■ **Self-Priming Design:** Once pump is primed it never needs priming again even if water level drops below the end of the suction pipe. Pumping resumes once the water level rises above the end of the suction pipe.

■ **Serviceable:**

- Back pullout design allows disassembly of pump for service without disturbing piping.
- Two compartment motor for easy access to motor wiring and replaceable components.

■ **Diffuser (Guidevane):** Bolt down diffuser provides positive alignment with impeller. Diffuser also has stainless wear ring for extended performance in abrasive conditions. F.D.A. compliant, injection molded, food grade, glass filled Lexan® for durability and abrasion resistance.

■ **Impeller:** F.D.A. compliant, glass filled Noryl®. Corrosion and abrasion resistant.

■ **Corrosion Resistant:** Electro-coated paint process is applied inside and out, then baked on.

■ **Casing:** Cast iron construction. 4 bolt, back pull-out design. Tapped openings provided for vacuum gauge and casing drain.

■ **Powered for Continuous Operation:** Pump ratings are within the motor manufacturer's recommended working limits. Can be operated continuously without damage.

■ **Mechanical Seal:** Carbon/ceramic faces, BUNA elastomers. 300 series stainless steel metal parts. Exclusive design prevents the seal from running dry.

STANDARD ODP MODELS

Model	HP	Phase
GT07	¾	1
GT10	1	
GT15	1½	
GT20	2	
GT30	3	
GT073	¾	3
GT103	1	
GT153	1½	
GT203	2	
GT303	3	

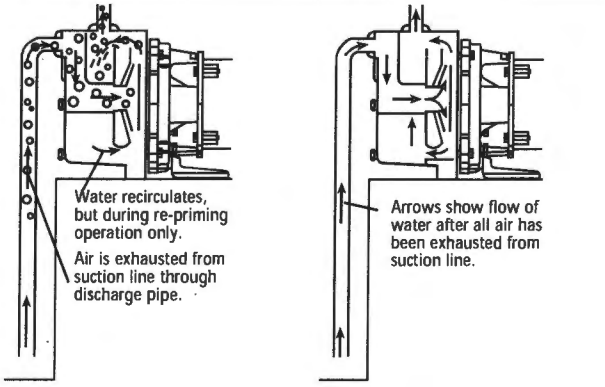
AGENCY LISTINGS

Canadian Standards Association

Underwriters Laboratories

Goulds Pumps is ISO 9001 Registered.

SELF-PRIMING



Effective October, 2001
BGT

www.goulds.com

Goulds Pumps

ITT Industries

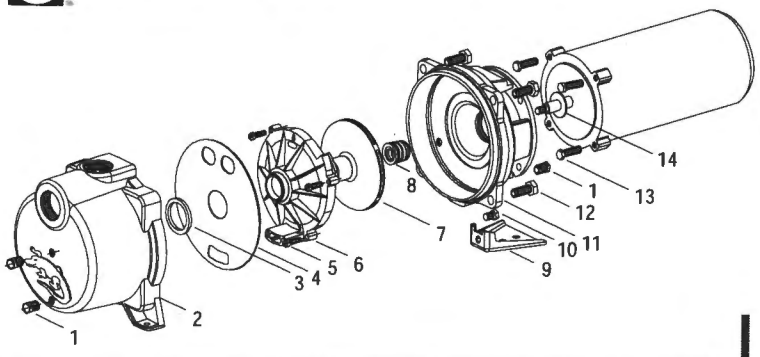
GOULDS PUMPS

60 Hz

IRRI-GATOR™ Self-Priming Centrifugal

MODEL

GT



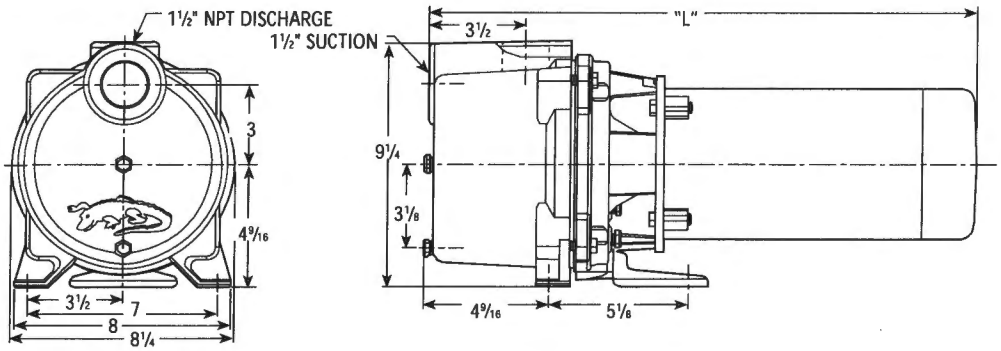
COMPONENTS

Item No.	Description
1	Plug – ¼" NPT
2	Casing
3	Seal ring – diffuser
4	Diaphragm
5	Machine screw
6	Diffuser
7	Impeller
8	Mechanical seal
9	Foot
10	Bolt – foot to adapter
11	Motor adapter
12	Bolt – casing to adapter
13	Bolt – adapter to motor
14	Deflector

DIMENSIONS AND WEIGHTS

Model	GT07	GT10	GT15	GT20	GT30	GT073	GT103	GT153	GT203	GT303
HP	¾	1	1½	2	3	¾	1	1½	2	3
Length "L"	19 3/16	19 7/8	21 3/16	20 9/16	21 11/32	19	19¾	20 1/16	20 13/16	21 3/16
Width	8¼									
Height	9¼									
Wt. (lbs.)	48	52	60	65	76	49	52	55	69	71
Phase	Single					Three				

(All dimensions are in inches and weights in lbs. Do not use for construction purposes.)

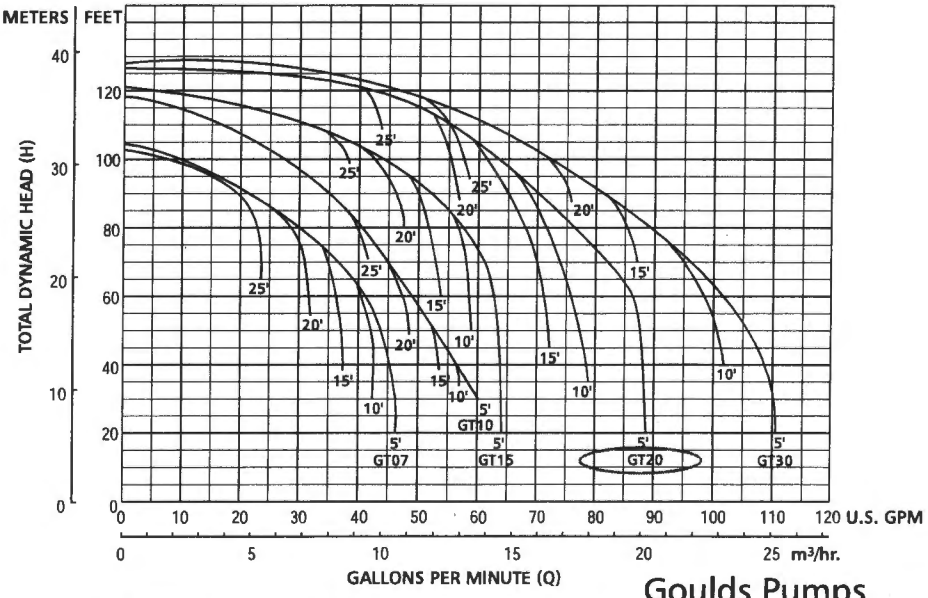


PERFORMANCE RATINGS

Model	PSI Disch. Pressure	Suction Lift in Feet 5	10	15	20	25
GT07/ GT073	20	44	41	36	31	24
	30	34	31	26	22	14
	40	10	4	0	0	0
GT10/ GT103	20	53	51	49	46	41
	30	43	41	38	36	32
	40	29	22	16	8	0
GT15/ GT153	20	63	59	54	49	39
	30	60	55	51	46	37
	40	45	38	33	20	14
GT20/ GT203	20	86	77	70	59	46
	30	80	72	67	57	44
	40	65	60	57	50	43
GT30/ GT303	20	105	100	88	76	60
	30	92	90	84	75	57
	40	73	67	62	55	50

Performance ratings are in GPM.

PERFORMANCE CURVE



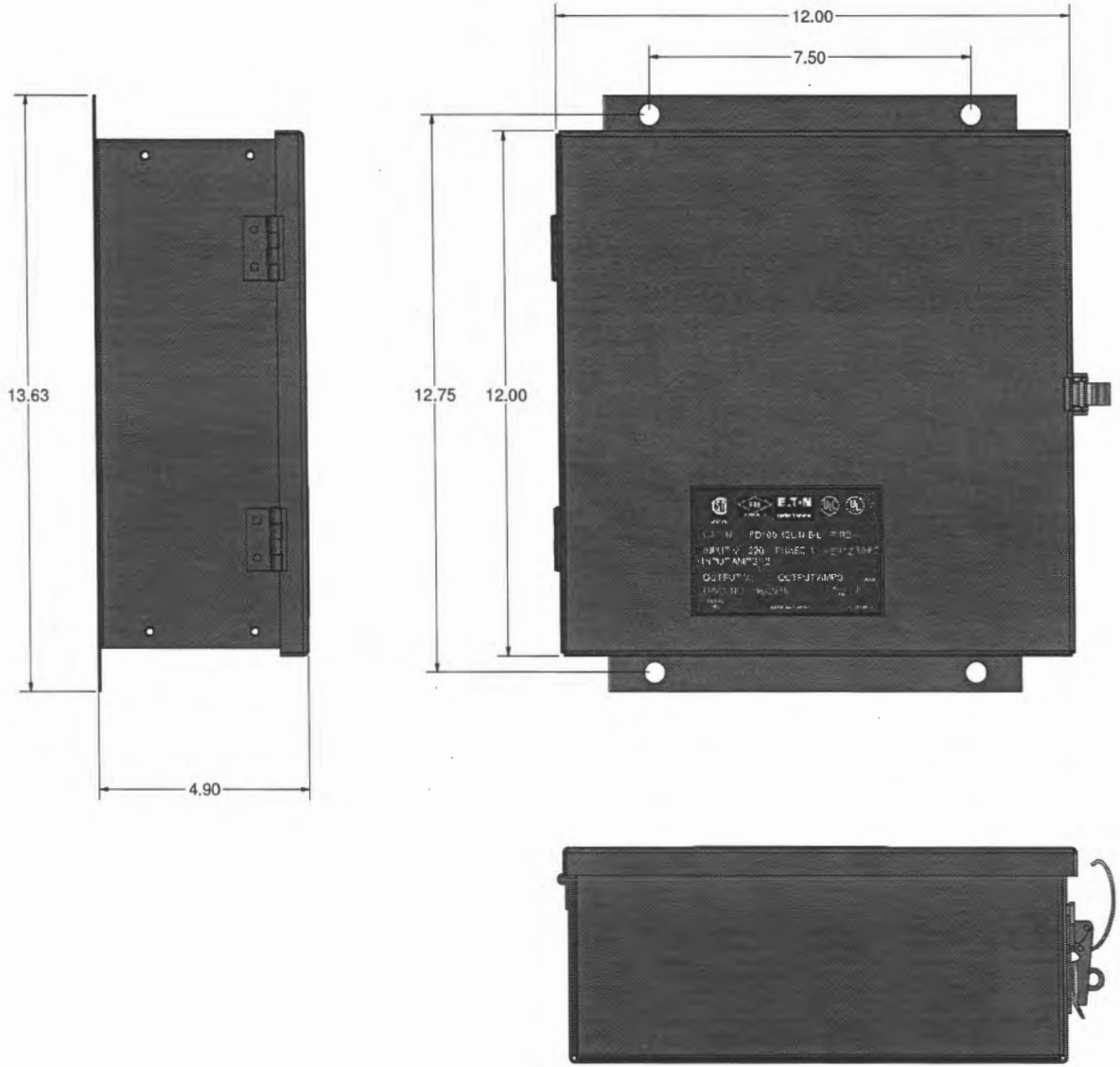
Single and three phase have same performance.

Goulds Pumps

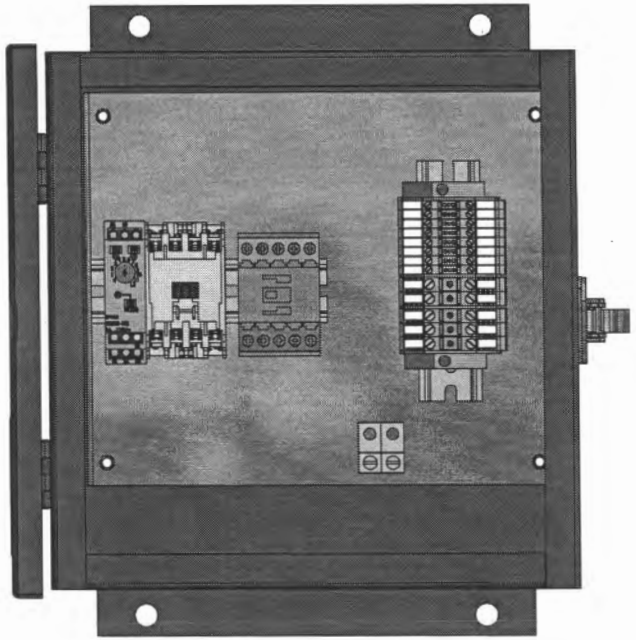
ITT Industries

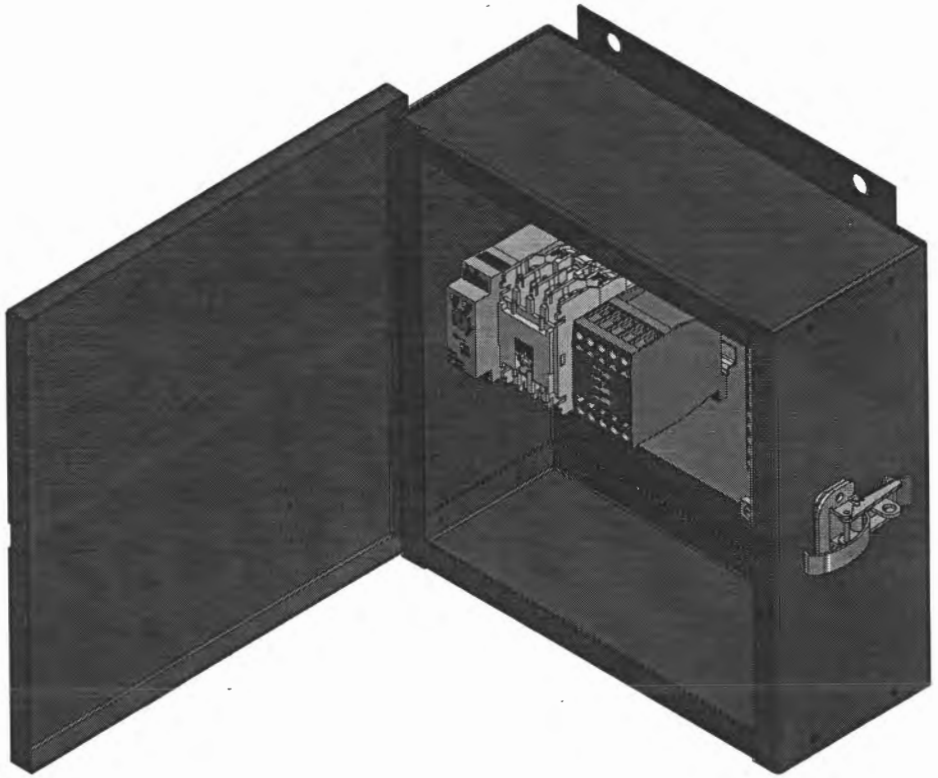
PRINTED IN U.S.A.

SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.



DRAFTER: T.KOLLECKER	DATE: 08/22/07	EATON | Electrical	
ENGINEER: T.KOLLECKER	DATE: 08/22/07	THE INFORMATION ON THIS DRAWING IS THE PROPERTY OF EATON CORPORATION, IS DISCLOSED IN CONFIDENCE AND IS NOT TO BE REPRODUCED, USED OR DISCLOSED EXCEPT FOR THE PURPOSE FOR WHICH FURNISHED.	
MFG.ENG.	DATE	PRODUCT: 160	UNLESS SPECIFIED TOLERANCES PER
REFERENCE		MODEL FILENAME	MODEL REV
NEXT ASSY.		A	TITLE: LMR PLUS RT Stearns Life Safety Panel
TOOL REF.: BENDS 0.6 RADIUS			THIRD ANGLE PROJECTION
MATERIAL: 0.067 STEEL		SHOP/GENERAL ORDER NO	PROJECT NO / DWG NO: GW082207-1
FINISH: RED		SCALE: N.T.S.	ENGINEERING CHANGE NOTICE NO / PARTS LIST / SHEET 1 OF 2 / REV





REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED
1	INITIAL RELEASE	08/21/07	Tim Kollecker

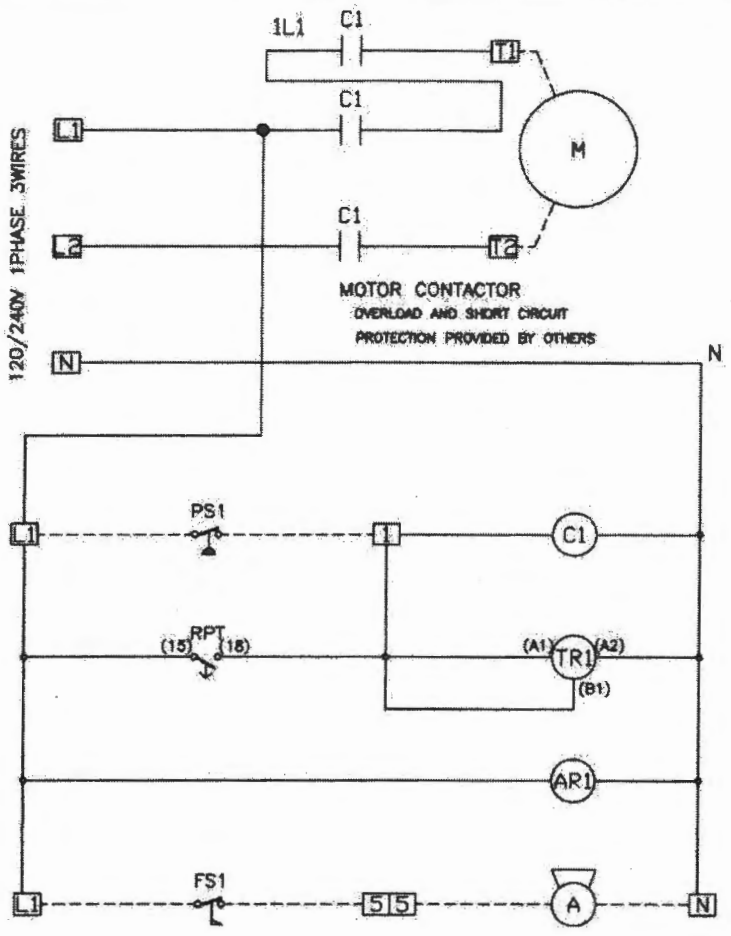
DRAFTER / DATE	T.KOLLECKER 08/22/07
ENGINEER / DATE	T.KOLLECKER 08/22/07
MFG ENG. / DATE	
REFERENCE	
NEXT ASSY.	
TOOL REF.	BENDS 0.6 RADIUS
MATERIAL	0.067 STEEL
FINISH	RED

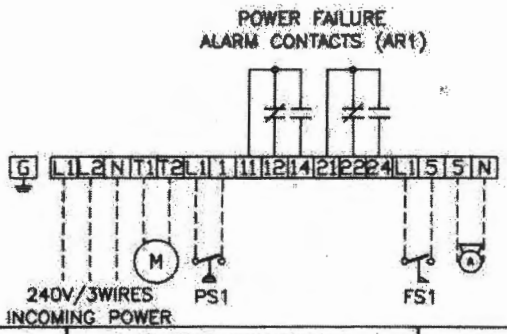
EATON | Electrical

PRODUCT	UNLESS SPECIFIED TOLERANCES PER	MODEL FILENAME	MODEL REV
160			

A | TITLE: LMR PLUS RT Stearns Life Safety Panel | THIRD ANGLE PROJECTION

SHOP/GENERAL ORDER NO	PROJECT NO	DWG NO	GW082207-1
SCALE N.T.S.	ENGINEERING CHANGE NOTICE NO	PARTS LIST	SHEET 2 OF 2 / REV





2 HP
230/1/60

MASTER REV.
PROVISION 2 ADDED FOR FLOW SW. AND AUDIBLE ALRM 08/23/07 GW

CUST REV. 1

OPTIONS

SYSTEM INFORMATION
CAT NO: LSP
230 V 2 HP 1 PH 60 HZ
CONTROL VOLTAGE: 120 V
TC N/A KA SYM AT N/A V MAX
ENCLOSURE TYPE: NEMA 1

CUSTOMER INFORMATION
PROJECT:
CUSTOMER: R.T. STEARNS INC.
CUSTOMER #:

ROUTING
1 -- JOB FILE
2 -- PRODUCTION

	DRN	DESS.	DATE
	GW		08/22/07
APPD	APPR.		DATE
	GW		08/22/07
APPD	APPR.		DATE

Cutler-Hammer LVCA AIRDRIE, AB

TITLE / TITRE: 1 PHASE JOCKEY PUMP CONTROLLER

TYPE: JOCKEY PUMP CONT. WIRING DIAGRAM

PRODUCT CODE / CODE PRODUIT

REVISION: 1 DWG SIZE: A

G.O. / C.G.

DWG: STEARNS PAGE: 1 OF 1

Commercial Pressure Switches

Electromechanical Square D Brand 9013
Conforming to UL508 and CSA

Applications	Type of Installation	Power Circuit	Power Circuit	Power Circuit
	Controls	Fresh or sea water	Fresh or sea water	Fresh or sea water
	Type of Operation	Regulation between 2 thresholds (adjustable differential). Suitable for all pumps.	Detection of a single threshold (non-adjustable differential)	Regulation between 2 thresholds (adjustable differential). For higher HP and pressure requirements.

Family		PUMPTROL 9013FSG	PUMPTROL 9013FTG	PUMPTROL 9013FYG
Size / Range	PSI	20 - 65	20 - 65	25 - 80
	BAR	1.38 - 4.48	1.38 - 4.48	1.72 - 5.52
Conforming to standards		NEMA A600 UL508	UL508	NEMA A600 UL508
Product certifications		UL File: E12158 CCN NKPZ CSA File: LR 25490 Class 3211 06	UL Listed, CSA Certified	UL File: E12158 CCN NKPZ CSA File: LR 25490 Class 3211 06
Dimensions (l x h x w) in inches (mm)		3.76 x 2.8 x 2.78 (95.5 x 71.12 x 70.6)	3.76 x 2.8 x 2.78 (95.5 x 71.12 x 70.6)	3.76 x 2.8 x 2.78 (95.5 x 71.12 x 70.6)
Contact blocks	Snap action contacts	2 N.C.	2 N.C.	2 N.C.
Degree of protection		NEMA Type 1, NEMA Type 3R, and IP20	NEMA Type 1, NEMA Type 3R, and IP20	NEMA Type 1, NEMA Type 3R, and IP20
Connections	Electrical	Screw terminals	Screw terminals	Screw terminals
	Fluid	Multiple	Multiple	Multiple
Cable Entries		2	2	2
Type reference		**9013FSG●●●**	**9013FTG●●●**	**9013FYG●●●**
Characteristics		Page 8	Page 8	Page 8
Interpretation of Reference Numbers		Page 10 and 11	Page 12 and 13	Page 14 and 15
Other versions:	Form B7, one grommet, CE	—	—	—
	Form B8, two grommets, CE	—	—	—

Commercial Pressure Switches

Electromechanical Square D Brand 9013

For power circuits, FSG, FTG, FYG, FRG, FHG, and G

Presentation

The PUMPTROL® 9013 Type F Commercial Pressure Switches are UL Listed and CSA Certified as commercial control equipment. Type G pressure switches are UL Listed and CSA Certified as commercial / light industrial control equipment.

The Type FHG - PUMPTROL® Compressor Pressure Switch is used to control electrically driven air compressors and is diaphragm actuated and has contacts that open on rising pressure.

The Type FSG, FYG, FRG - PUMPTROL® Water Pump Pressure Switches are used to control electrically driven water pumps and have the following features:
The Type FSG-1S the standard water pump switch, suitable for all types of pumps: jets, submersible, reciprocating, etc.

The Type FYG is designed to meet higher horsepower and pressure requirements.
The Type FRG is reverse acting: the contacts open on falling pressure.
All are diaphragm actuated.

The Type G Commercial/Light Industrial Pressure Switch is used to control electrically driven water pumps and air compressors. It has higher electrical ratings for direct control of motors in pump and compressor applications. The Type G switch is diaphragm actuated and has contacts that open on rising pressure.

Operating Points

Every pressure switch has two operating points; one on rising pressure and one of falling pressure. The operating point on rising pressure is referred to as the TRIP POINT or cut out for pumps and compressors and the operating point on falling pressure is referred to as the RESET POINT or cut in for pumps and compressors. These operating points are called the SETTINGS of the switch.

Differential

The differential is the difference in pressure between the trip point (cut-out) and the reset point (cut-in). It can be adjustable or non-adjustable.
Example: Cut-in (30 psi) / Cut-out (50 psi) Differential equals 20 psi

Range

The range indicates the pressure limits within which the operating points (settings) can be adjusted. The range is referenced to the operating point on rising pressure (trip point). The differential subtracts from the trip point setting.

During the normal operating cycle, system pressure should never exceed the upper limit of the range when using a diaphragm actuated switch. This will greatly reduce the life of the diaphragm.

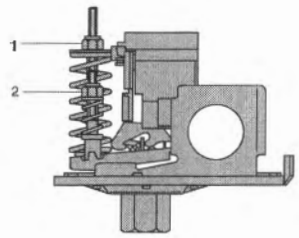
Maximum Allowable Pressure

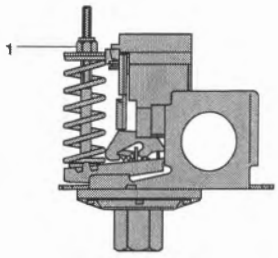
Maximum allowable pressure is the pressure to which a switch can be subjected without causing a change in operating characteristics, shift in settings, or damage to the device.

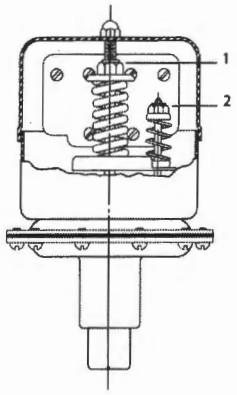
Pressure surges may occur in a system during the start up of a machine or from valve operation. Surges are not normally detrimental to the life of a switch if the surge is within the maximum allowable pressure rating of the switch. Diaphragm actuated switches should not be subjected to more than 10 surges per day. More frequent surges will greatly reduce the life of the diaphragm.

Commercial Pressure Switches

Electromechanical Square D Brand 9013
For power circuits, FSG, FTG, FYG, FRG, FHG, and G







Settings

Pressure switches with adjustable differential (Types FSG, FYG and FRG)

When setting the pressure switch, adjust the switching point on rising pressure first and then the switching point on falling pressure.

Switching point on falling pressure
The switching point on falling pressure is set by adjusting screw-nut 1.

Switching point on rising pressure
The switching point on rising pressure is set by adjusting screw-nut 2.

Pressure switches with non-adjustable differential (Types FTG, and FHG)

Only the switching point on rising pressure is adjustable.

Switching point on rising pressure
The switching point on rising pressure is set by adjusting screw-nut 1.

Switching point on falling pressure
The switching point on falling pressure is not adjustable.
The difference between the tripping and resetting points of the contact is the differential of the switch (contact differential, friction, etc.).

Pressure switches with adjustable differential (Type G)

When setting the pressure switch, adjust the switching point on rising pressure first and then the switching point on falling pressure.

Switching point on falling pressure
The switching point on falling pressure is set by adjusting screw-nut 1.

Switching point on rising pressure
The switching point on rising pressure is set by adjusting screw-nut 2.

Commercial Pressure Switches
Electromechanical Square D Brand 9013
For power circuits, FSG, FTG, FYG

Environmental characteristics Pressure switch type		FSG	FTG	FYG
Conformity to standards		UL 508, NEC Article 430-84, ANSI /NSF Standard 61, FDA 21CFR.2600		
Product Certifications		UL File E12158 CCN NKPZ , CSA File LR 25490 Class 321106		
Protective treatment		N/A		
Ambient air temperature	°C	For operation, 0 °C (32 °F) min to 125 °C (257 °F) max For storage, -30 °C (-22 °F) min to 70 °C (158 °F) max		
Fluids controlled		Fresh water, or sea water (with Form Q)		
Materials		Cover: polypropylene, Noryl® thermoplastic resin or equivalent for Type 3R, Component material in contact with fluid: flange, zinc plated or equivalent (fluid entry), diaphragm, nitrile or equivalent rubber		
Operating position		NEMA Type 1, and Type IP20 in any position, NEMA Type 3R in the vertical position only		
Vibration		—		
Shock		—		
Electric shock		—		
Degree of protection		NEMA Type 1, IP20 and NEMA Type 3R (some references) must be mounted in vertical position to maintain enclosure rating		
Operating rate	cycles/m	10		
Repeat accuracy		+/- 3 % of the range		
Fluid connection		1/8" NPSF internal, 1/4" NPSF internal, 1/2" NPT External, 1/4" Bayonet (barbed), 90 deg. Elbow 1/4" Bayonet, Four Way Flange, 3/8" NPSF (Internal), 1/4" Flare, other specials		
Electrical connection		2 open side entries, 3/4" diameter, with two flats		

Contact block characteristics		
Type of contacts		One 2 pole, 2 N/C (4 terminal) contacts, snap action
Resistance across terminals	m Ω	< 25
Terminal referencing		N/A
Short-circuit protection	A	5,000
Connection		Screw clamp terminals. Clamping capacity up to #10 AWG (5.261 mm^2)
Electrical durability	cycles	100,000
Mechanical durability	cycles	300,000

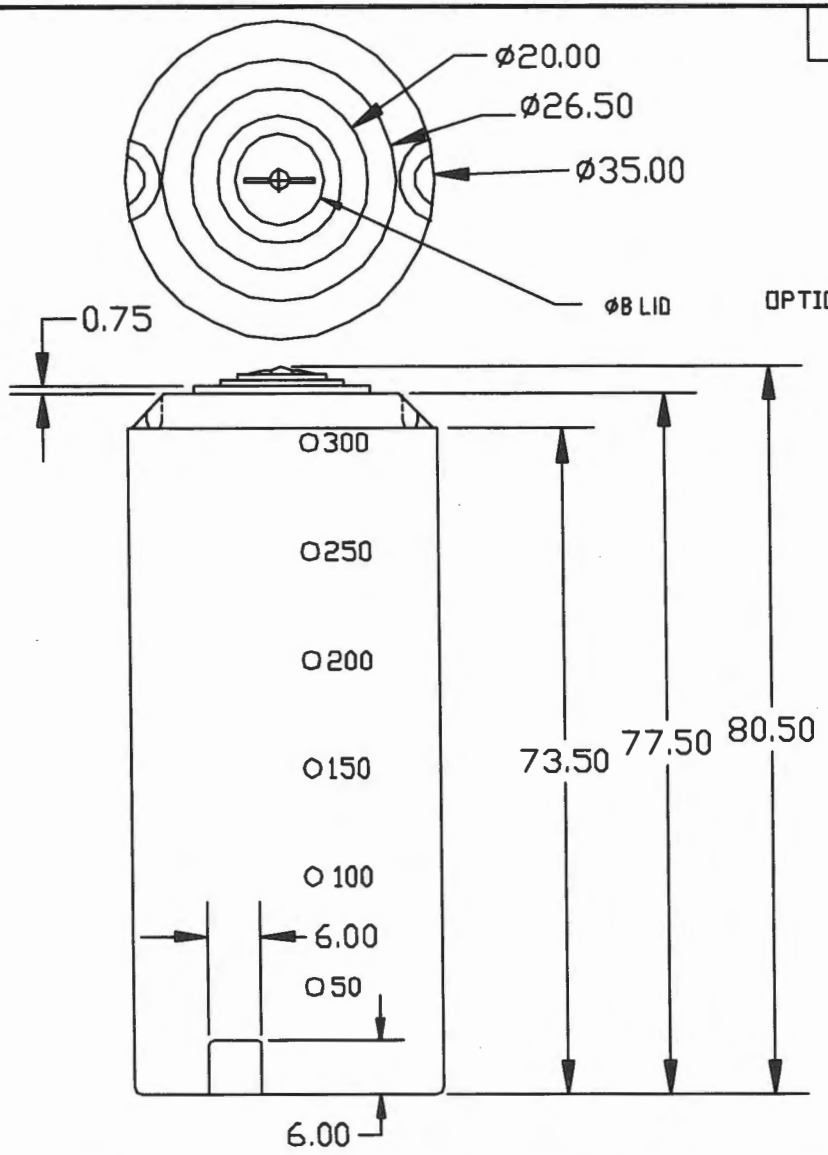
Electrical Ratings 2 Pole			FSG / FSW			FTG			FYG		
Power ratings of controlled motors	Voltage		~ 1-phase	~ 3-phase	⎓	~ 1-phase	~ 3-phase	⎓	~ 1-phase	~ 3-phase	⎓
	115 V		1.1 kW (1.5 HP)	1.5 kW (2 HP)	0.18 kW (.25 HP)	0.75 kW (1 HP)	—	—	1.5 kW (2 HP)	2.2 kW (3 HP)	0.37 kW (.50 HP)
	230 V		1.5 kW (2 HP)	2.2 kW (3 HP)	0.18 kW (.25 HP)	0.75 kW (1 HP)	—	—	2.2 kW (3 HP)	3.7 kW 5 HP)	0.37 kW (.50 HP)
	460 / 575 V		—	0.75 kW (1 HP)	—	—	—	—	—	0.75 kW (1 HP)	—

VT0300-35

A

PROPRIETARY DATA

1. 1 PIECE ROTATIONALLY MOLDED
2. SPECIFIC GRAVITY 1.75
3. TRANSLUCENT
4. UV STABILIZED
5. FDA APPROVED RESIN
6. CALIBRATED IN GAL.
7. 3 YEAR WARRANTY
8. LARGER LID AVAILABLE



REV	DESCRIPTION	DATE	APPRD
A	ADD TIE DOWNS	3-5-03	

DRAWN / DATE: OHJ 12/18/93

APPRD. / DATE:

MATERIAL: HDPE OR EQUIVALENT. REFERENCE MATERIAL DATA SHEET FOR SPECIFIC PROPERTIES.

ALL DIMENSIONS ARE IN DECIMAL INCHES
TOLERANCES UNLESS OTHERWISE SPECIFIED
± 1% @ 68° F

THIRD ANGLE PROJECTION ANSI Y14.5M

NOTES:
1. BLUE, GREEN, WHITE YELLOW, GREY, OR BLACK COLOR
2. SHOT WEIGHT 86 LBS.
3. .248 NOM. WALL

Ace Roto-Mold
A DIVISION OF DON HARTOG INDUSTRIES, INC.
401B HWY. 60 BLVD., BOX 421, HOSPERS, IOWA 51238

CLIENT / DESCRIPTION: 300 GALLON VERTICAL TANK

SCALE: N.S.

PART NO.: VT0300-35