DELUGE VALVE

BRAND	:	VIKING
MANUFACTURER	:	VIKING CORPORATION
COUNTRY	:	U.S.A.
MODEL	:	FSX-A
APPROVED	:	UL/FM
SIZE	:	2”, 3”, 4”, 6”, 8”
CONNECTION	:	FLANGED ENDS
PRESSURE	:	250 PSI. WKP.
DELUGE SYSTEM	:	HYDRAULIC ACTIVATION
		ELECTRIC ACTIVATION
PRE ACTION SYSTEM	:	DOUBLE INTERLOCK
		ELECTRIC / PNEU-LECTRIC RELEASE

MATERIAL LIST

BODY / COVER	:	DUCTILE IRON
SEAT	:	BRASS
DIAPHRAGM	:	NBR FIRE REINFORCED

Model FSX-A Deluge Valve

For Deluge & Preaction Systems

Product

Preaction valve sets are used for water/foam systems with open nozzles. The are design to open only after the operation of the detection device only.

They can be activated by hydraulic, electrical, pneumatic or manual means.

After activation, an acoustic alarm is set off by hydraulically operated water alarm gong or an electric alarm is transmitted by pressure switch.

An additional alarm can be transferred to a permanently manned local.

Application

- Protection of machinery
- Industrial presses
- Transformer stations
- Tank system cooling
- Cable ducts
- Recycling systems
- Painting systems
- Theatre stages
- Petrochemical facilities
- Power plants
- Gas storage tanks
- Flammable materials storage
- Computer / server rooms
- Museums
- Archives
- Libraries
- Refrigerated spaces

Features & Benefits

- Light weight
- Compact space saving design
- Corrosion resistant internal parts
- Max operating pressure 17.2bar / 250psi
- Low pressure loss
- No water hammer
- Ideal for high flow rates
- Field replaceable diaphragm and seal
- Factory functional and pressured tested
- Approvals

c UL us LISTED FM APPROVED

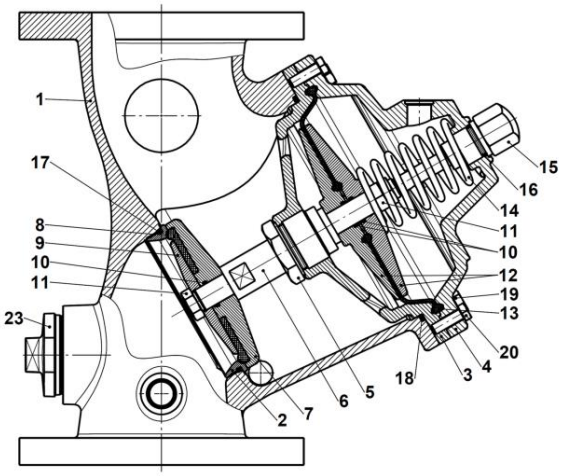
FSX-A Technical Specifications

Valve Type	Hydraulically operated quick opening differential type
Nominal Diameter	2" / DN50 , 3" / DN80 , 4" / DN100 , 6" / DN150 , 8" / DN200
Flange Connection	ANSI B16.5 Class 150 / DIN ISO in accordance with DIN EN 1092
Grooved Connction	Metric, AWWA C606 Standard
Installation Position	Vertical
Medium	Fresh Water / Foam Water Mixture
Operating Temperature	4°C / 39°F - 60°C / 140°F
Alarm	Alarm pressure switch with changeover contact 1 normally open contact, 1 normally closed contact; see chapter 4.8.1 & 4.8.2
Automatic Drain Valve	K2 - K20
Actuating	Electric 24 VDC 2/2-way solenoid valve / hydraulic (sprinkler) activation / manually operated
Approvals	FM, cULus Listed, CCCf

Valve Parts

1. Housing
2. Valve seat
3. Guide bearing
4. Cover
5. Guide bush
6. Valve rod
7. Valve disc
8. Gasket
9. Holding disc
10. O-ring
11. Hexagon Nut
12. Supporting Disc
13. Diaphragm
14. Pressure spring
15. Guide plug
16. O-ring
17. O-ring
18. O-ring
19. Hexagon bolt
20. Hexagon bolt
21. Nameplate*
22. Grooved drive stud*
23. Threaded plug

* Not visible on illustration



Material Specifications

Valve Body	Dustile Iron
Valve Seat	Brass
Piston Rod	Stainless Steel
Valve Disc	Brass
Diaphragm	NBR fire reinforced
Gaskets NBR	4°C / 39°F - 60°C / 140°F
Finish	RAL 300 Primer & Clear Coat

FSX-A Technical Specifications – Deluge Systems

Electric Activation
The electric activation of the deluge valve set is accomplished by means of a detection system, which triggers the solenoid valve in an event of a fire. The solenoid valve opens and the pressure in the deluge valve control chamber drops which opens the valve and floods the deluge pipework.

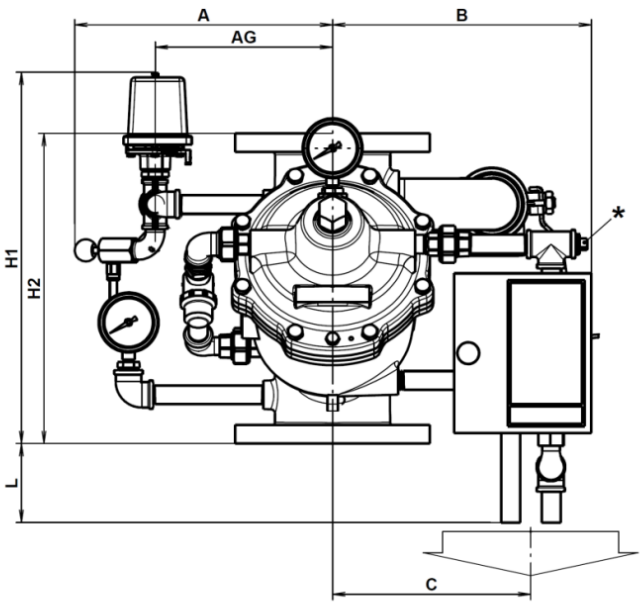
Electric Activation with PORV
In case of a power failure, the Pilot Operated Relief Valve ensures that the system continues to operate

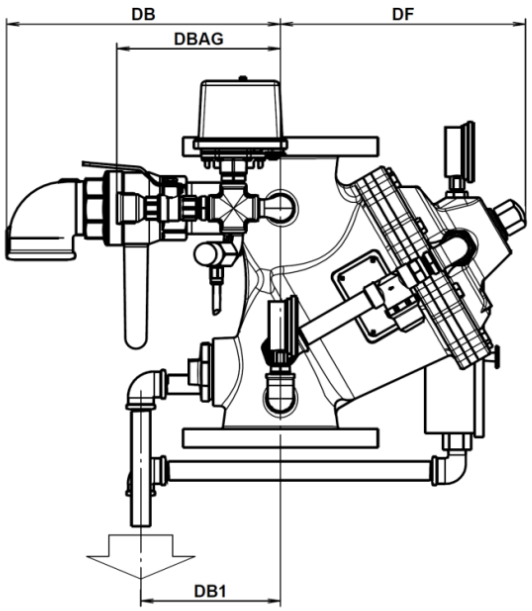
Hydraulic Activation
A pilot line is directly connected to the control chamber of the deluge valve.

The system pressure of the water supply is permanently applied to the pilot line. When a pilot sprinkler is activated, the pilot line pressure and deluge control chamber pressure drops which opens the valve.

Manual Activation
The manual activation is a ball valve in an emergency release box which is equipped on all release methods.

Dimensions

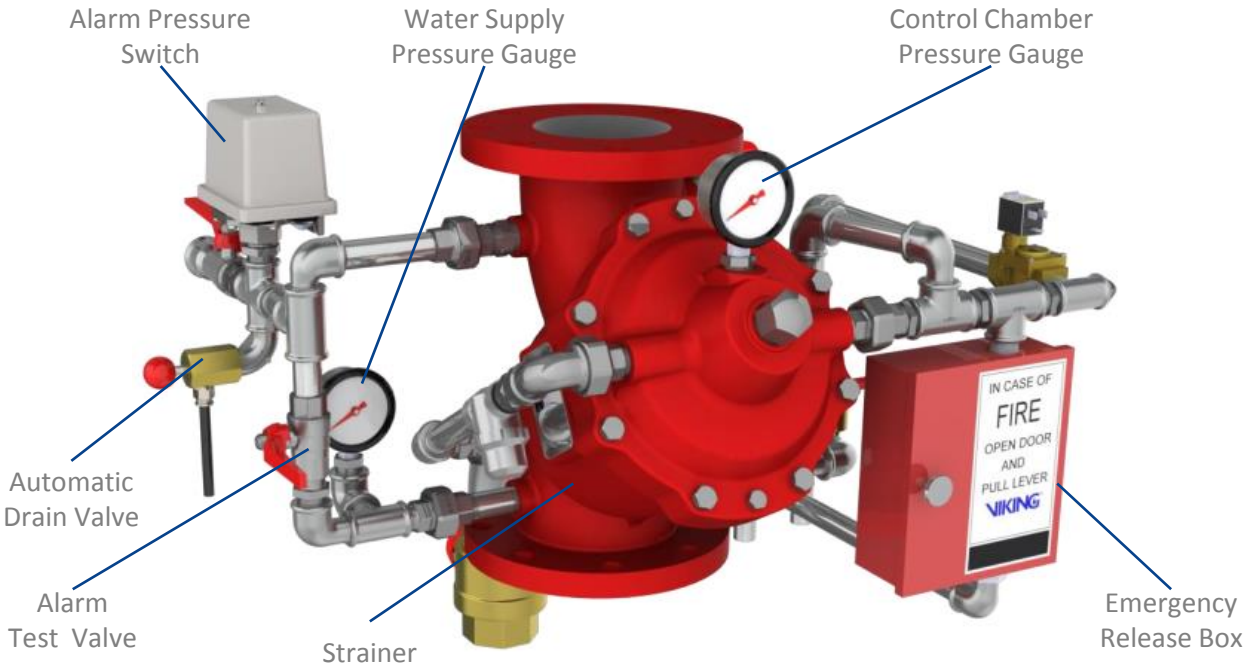


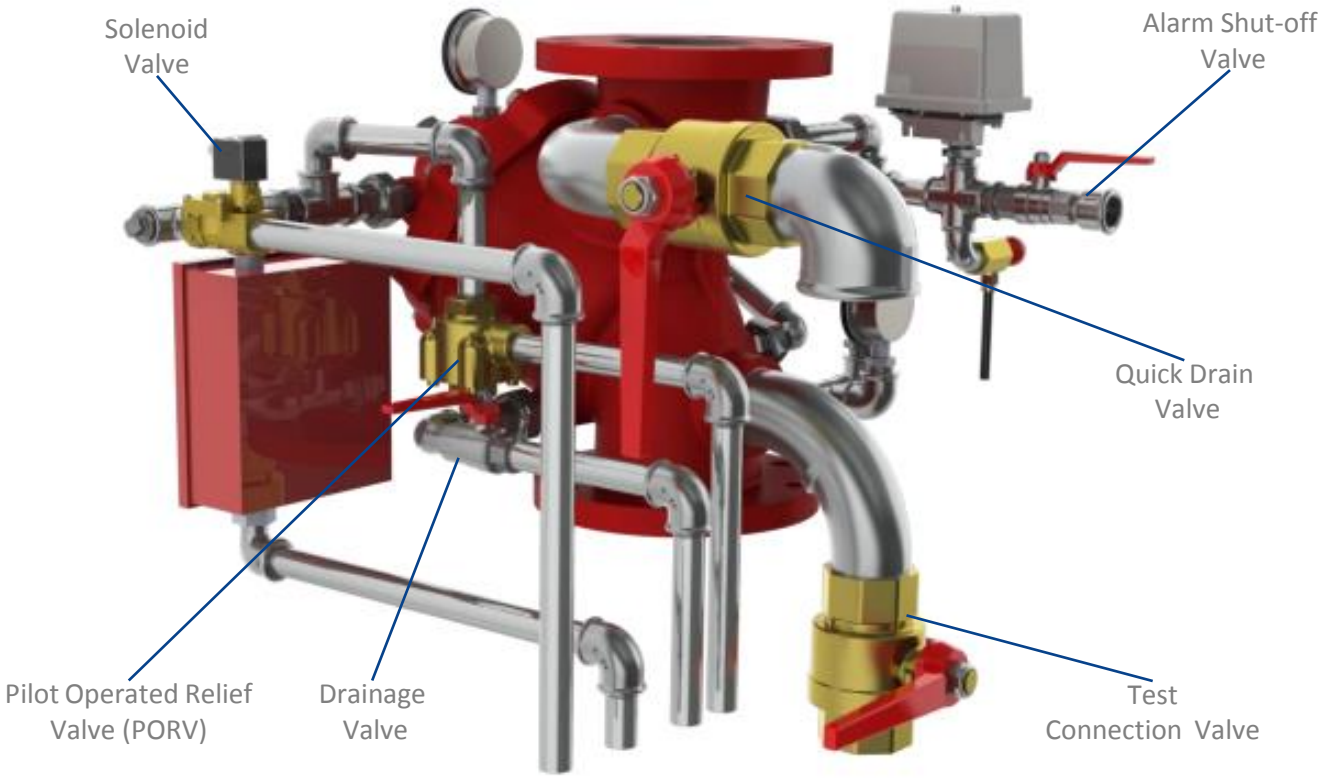


Valve Size		Dimensions (mm)										
Inch	DN	A	AG	B	C	L	H1	H2	DF	DB	DBAG	DB1
2	50	310	220	220	20	150	400	280	210	210	190	140
3	80	320	22	270	225	120	410	310	250	245	190	150
4	100	290	200	280	235	90	420	350	280	330	190	160
6	150	320	22	315	260	15	500	480	335	325	190	170
8	200	355	250	415	305	10	<H2	600	450	325	190	180

Dimensions (approximate) provided are based on hydraulic actuation assembly

Valve Assembly Components - Deluge





Double Interlock Preaction System with Electric / Pneu-lectric Release

Description

Viking Electric/Pneu-Lectric Double Interlocked Preaction Systems utilize a Viking deluge valve, pneumatic supervision of the automatic sprinkler system, and an electric detection system. The deluge valve release trim utilizes a normally closed electric solenoid valve controlled by an approved release control panel with two initiating circuits configured for “cross-zoned” operation. One initiating circuit is connected to the electric detection system; the other to a “low-air” supervisory switch.

BOTH the electric detection system must activate AND supervisory air pressure must be relieved from the sprinkler system before the deluge valve will open to fill the sprinkler system with water. If the electric detection system (alone) operates, an alarm will activate but the deluge valve will NOT open. If the sprinkler piping is damaged or a sprinkler is broken or fused, but the detection system has not

activated, an alarm will activate, but the deluge valve will NOT open.

In fire conditions, after both the detection system and a sprinkler operate, the deluge valve opens, allowing water to enter the system. Electric/pneu-lectric double interlocked preaction systems are commonly used as refrigerated area systems. They are also commonly

used where flooding of the sprinkler system piping can have serious consequences and where it is important to control accidental water discharge due to damaged sprinkler piping

System Operation

A. In the Set Condition

System water supply pressure enters the priming chamber of the deluge valve through the priming line, which includes a strainer, restricted orifice, and check valve. In the SET condition, water supply pressure is trapped in the priming chamber by the check valve and normally closed solenoid valve. The water supply pressure trapped in the priming chamber holds the deluge valve clapper closed, keeping the outlet chamber and system piping dry.

B. In Fire Conditions

In a fire condition, operation of the detection system activates the first initiating circuit in the system control panel, causing an alarm to activate. When a sprinkler operates, air pressure escapes from the sprinkler piping. The air supervisory switch activates the second initiating circuit in system control panel. When BOTH initiating circuits have been activated, the system control panel energizes the solenoid valve open. Pressure is released from the priming chamber to the open drain cup faster than it is supplied through the restricted orifice. The deluge valve clapper opens to allow water to flow into the system piping and alarm opens to allow water to flow into the system piping and alarm devices, causing the water motor alarm and water flow alarms connected to the alarm pressure switch to activate.

An optional accelerator may be installed to provide earlier alarms and/or allow the system to fill with water faster. An accelerator may be necessary to meet system water delivery time requirements.

When the deluge valve operates, the sensing end of the PORV is pressurized, causing the PORV to operate.

When the PORV operates, it continually vents the priming chamber to prevent the deluge valve from resetting even it continually vents the priming chamber to prevent the deluge valve from resetting even if the solenoid valve closes. The deluge valve can only be reset after the system is taken out of service, and the outlet can only be reset after the system is taken out of service, and the outlet chamber of the deluge valve and associated trim piping are depressurized and drained.

C. Trouble Conditions

If a sprinkler opens prior to operation of the detection system, or any time supervisory pressure in the sprinkler piping is lost, alarms connected to air supervisory switch will signal a low-air pressure condition, but the deluge valve will NOT open. If the electric detection system (alone) operates due to damage or malfunction, alarms connected to the system control panel will activate, but the deluge valve will NOT open.

D. Manual Operation

Any time the handle inside the emergency release is pulled, pressure is released from the priming chamber; the deluge valve will open. Water will flow into the system piping and alarm devices. If a sprinkler head opens, water will flow from the system. open. Water will flow into the system piping and alarm devices. If a sprinkler head opens, water will flow from the system.

Double Interlock Preaction System with Electric / Pneu-lectric Release

Important Settings

TABLE 1: IMPORTANT SETTINGS		
Device	Recommended Pneumatic Supervisory Pressures and Settings	
	For Supervisory Pressure of 30 PSI (2 bar) Set to Maintain	For Supervisory Pressure of 10 PSI (0.7 bar) Set to Maintain
Tank Mounted Air Compressor On/Off Switch	40 PSI (2.8 bar)	12.5 PSI (0.9 bar) Minimum
Air Maintenance Device	30 PSI (2.1 bar)	10 PSI (0.7 bar)
Low-Air Alarm Contact Setting on Release System Pressure Supervisory Switch	25 PSI (1.7 bar) On Pressure Drop (use Viking Switch Part Number 09473 or equal)	7.5 PSI (0.52 bar) On Pressure Drop (use Viking Switch Part Number 09471 or equal)
Setting for Contacts on Release System Pressure Supervisory Switch to activate Release Control Panel Initiating Circuit	20 PSI (1.4 bar) on Pressure Drop (use Viking Switch Part Number 09473 or equal)	5 PSI (0.34 bar) on Pressure Drop (use Viking Switch Part Number 09471 or equal)

1. Recommended pneumatic supervisory pressure in the closed sprinkler piping is 30 PSI (2.1 bar). The air supervisory switch should be equipped with two sets of independently adjustable contacts. Use Potter PS40 Supervisory Switch as the air supervisory switch.
   For 30 psi (2.1 bar) supervisory pressure:
   - Adjust one set of contacts of air supervisory switch to activate at 25 PSI (1.7 bar) on pressure drop. These contacts should be wired to activate a “Low-Air” supervisory alarm.
   - The other set of contacts in the air supervisory switch should activate at 20 PSI (1.4 bar) on pressure drop. Wire these contacts to activate the remaining initiating circuit of the system control panel configured for “cross-zoned” operation. For the VFR-400 Release Control Panel, refer to the appropriate wiring diagram packed with the panel. Activation of an alarm to signal a high-pressure condition may be required. Refer to applicable installation standards and the Authority Having Jurisdiction

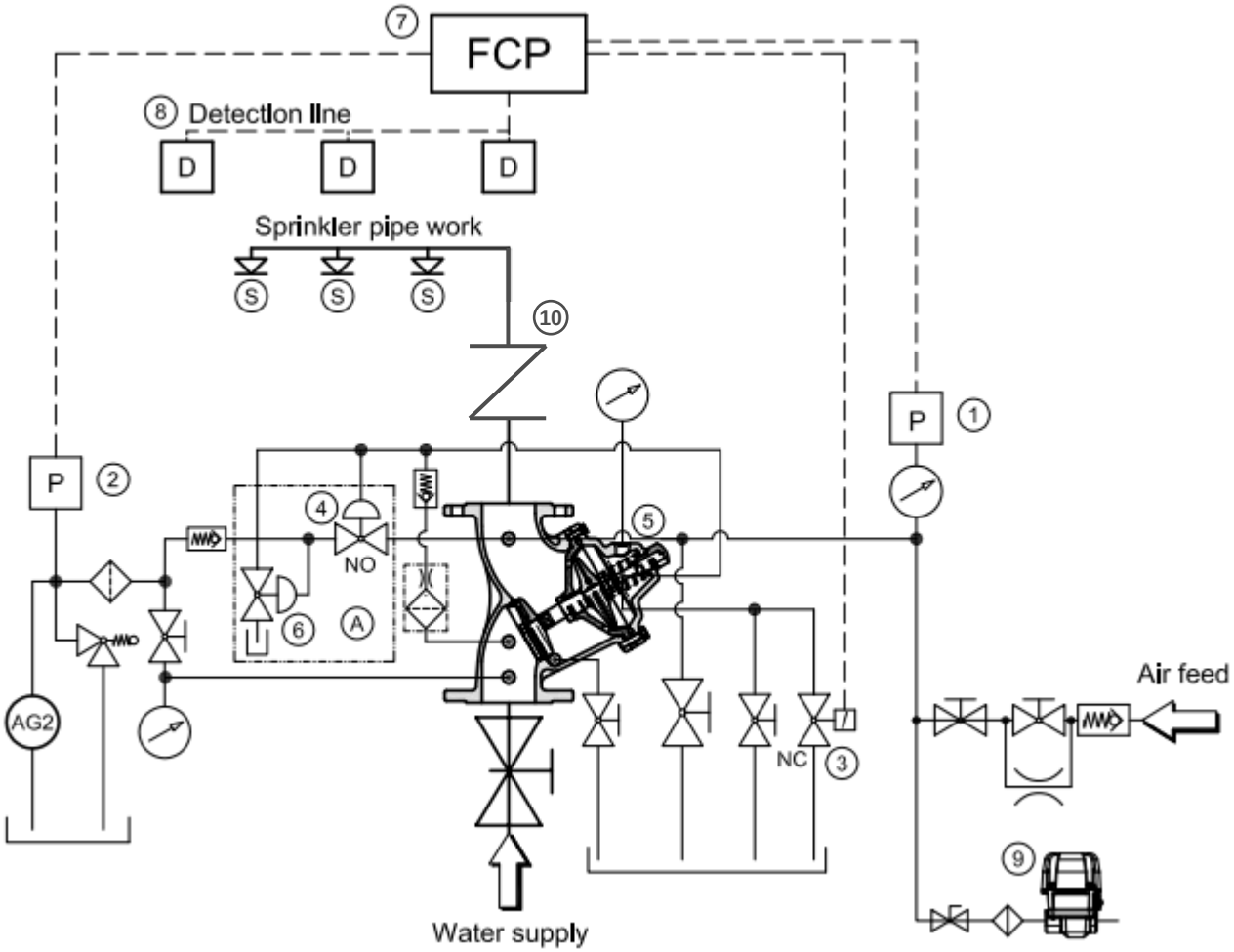
2. Installation Standards may allow supervisory pressures lower than those recommended above. For pneumatic supervisory pressure of 10 PSI (0.7 bar), use Potter PS40 Supervisory Switch as the air supervisory switch.
   For 10 psi (0.7 bar) supervisory pressure:
   - Adjust one set of contacts of air supervisory switch to activate at 7.5 PSI (0.52 bar) on pressure drop. These contacts should be wired to activate a “Low-Air” supervisory alarm.
   - The other set of contacts in the air supervisory switch should activate at 5 PSI (0.34 bar) on pressure drop. Wire these contacts to activate the remaining initiating circuit of the system control panel configured for “cross-zoned” operation. Refer to the appropriate wiring diagram packed with the panel. Activation of an alarm to signal a high-pressure condition may be required. Refer to applicable installation standards and the Authority Having Jurisdiction

Note: when using supervisory pressures, settings, or equipment other than those recommended above, verify that the air regulation equipment and air supervisory switches used are compatible with the supervisory pressure setting used. supervisory pressures other than the recommended settings noted above may affect operation of the system.

3. The alarm pressure switch should activate when pressurized to 4 to 8 PSI (0.3 to 0.6 bar) on pressure rise and should be wired to activate the water flow alarm.

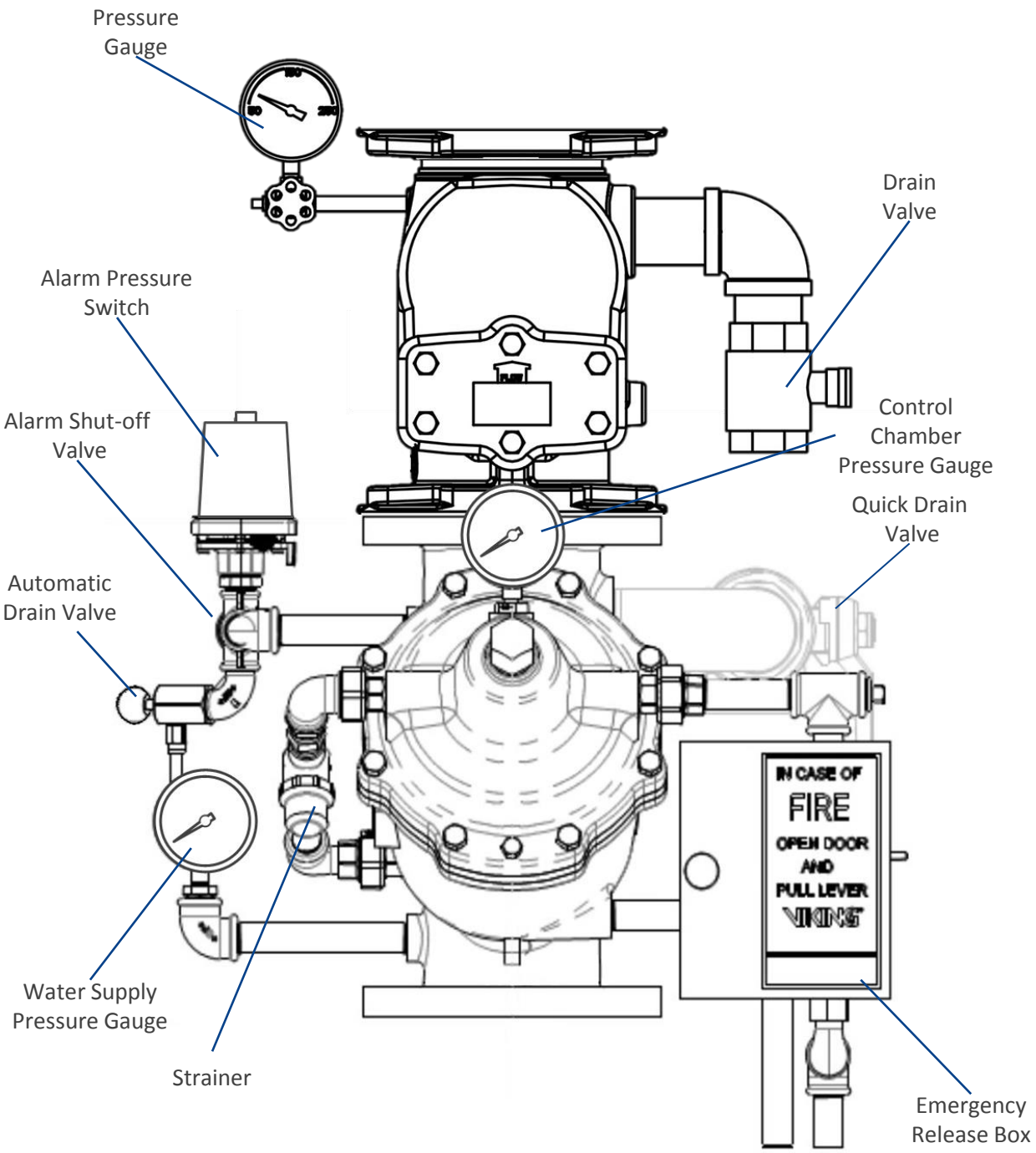
Double Interlock Preaction System with Electric / Pneu-lectric Release

Schematic

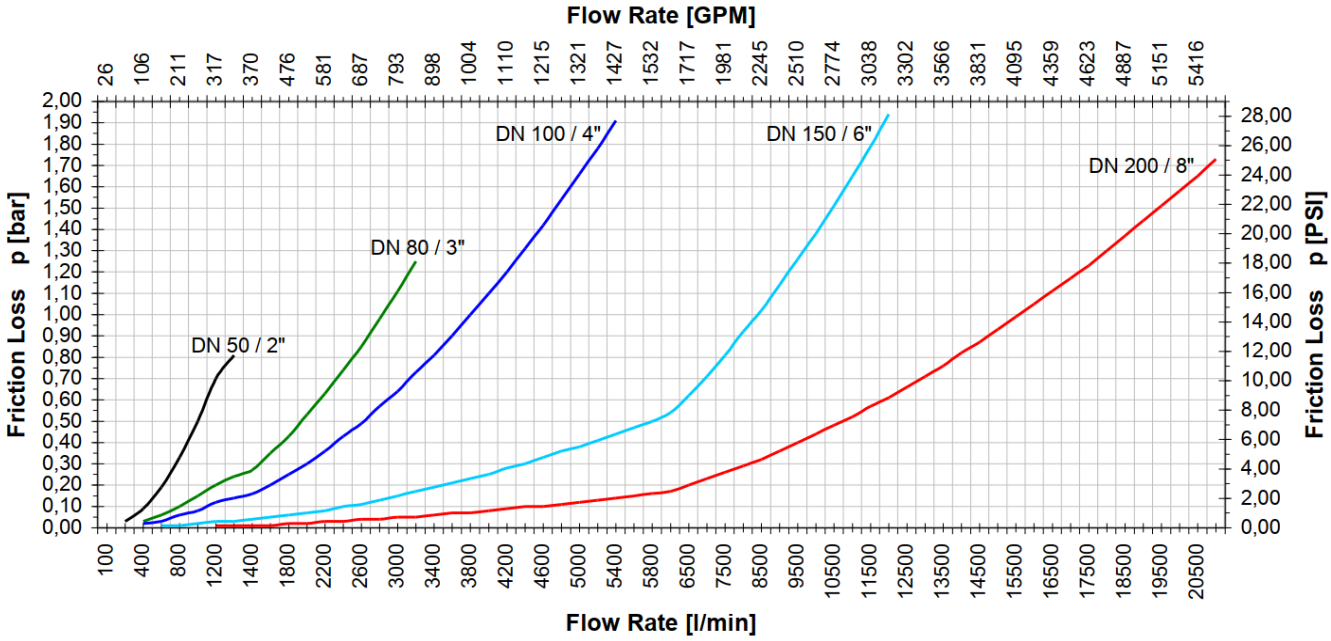


1. Air Pressure Supervisory Switch
2. Alarm Pressure Switch
3. Solenoid Valve (NC)
4. Diaphragm Valve (NO)
5. Control Chamber
6. PORV or Diaphragm Valve (NC) (Option)
7. Fire Control Panel
8. Detector Line (Heat, Smoke Detector…)
9. Accelerator (Optional)
10. Riser Check Valve

Valve Assembly Components - Preaction



Friction Loss Chart



Friction Loss Chart

Valve Size		DIN EN 10220	Equivalent Length		Δp		Q	
Inch	DN	mm	m	ft	bar	psi	ltr/min	gpm
2	50	60.3 x 2.6	4.65	15.26	0.18	2.63	594	157
3	80	88.9 x 2.9	10.63	34.87	0.24	3.54	1,310	346
4	100	114.3 x 3.2	21.96	72.05	0.38	5.44	2,256	596
6	150	168.3 x 4.0	34.96	114.70	0.40	5.85	5,114	1,351
8	200	219.1 x 4.5	41.38	135.76	0.35	4.99	8,854	2,339

Valve Size		Schedule 40	Equivalent Length		Δp		Q	
Inch	DN	mm	m	ft	bar	psi	ltr/min	gpm
2	50	60.3 x 3.91	3.67	12.04	0.18	2.63	594	157
3	80	88.9 x 5.49	7.77	25.49	0.24	3.54	1,310	346
4	100	114.3 x 6.02	16.91	55.48	0.38	5.44	2,256	596
6	150	168.3 x 7.11	28.83	94.59	0.40	5.85	5,114	1,351
8	200	219.1 x 8.18	34.78	114.11	0.35	4.99	8,854	2,339

Flowrate / Flow Velocity

Valve Size		DIN EN 10220	V		Q	
Inch	DN	mm	m/s	ft/s	ltr/min	gpm
2	50	60.3 x 2.6	10	32.8	1,340	354
3	80	88.9 x 2.9	10	32.8	3,195	844
4	100	114.3 x 3.2	10	32.8	5,427	1,434
6	150	168.3 x 4.0	10	32.80	12,050	3,184
8	200	219.1 x 4.5	10	32.8	20,742	5,480

Valve Size		Schedule 40	Equivalent Length		Q	
Inch	DN	mm	m/s	ft/s	ltr/min	gpm
2	50	60.3 x 3.91	10	32.8	1,240	328
3	80	88.9 x 5.49	10	32.8	2,802	740
4	100	114.3 x 6.02	10	32.8	4,869	1,286
6	150	168.3 x 7.11	10	32.80	11,128	2,940
8	200	219.1 x 8.18	10	32.8	19,340	5,110

Water Supply Pressures

Pressure		Flow Velocity	
Bar	PSI	m/sec	ft/sec
2.0	29.0	5	16.4
2.5	36.0	7	23.0
3.0	43.5	8	26.2
3.8	55.0	10	32.8

RISER CHECK VALVE

BRAND	:	VIKING
MANUFACTURER	:	VIKING CORPORATION
COUNTRY	:	U.S.A.
MODEL	:	F-1
TYPE	:	SWING CHECK VALVE
APPROVED	:	UL/FM
SIZE	:	3", 4", 6" , 8"
CONNECTION	:	FLANGED ENDS
PRESSURE	:	300 PSI. WKP.

MATERIAL LIST

BODY / COVER	:	DUCTILE IRON
CLAPPER	:	PTFE COATED HR STEEL
CLAPPER RUBBER	:	EPDM

TECHNICAL DATA

EASY RISER® SWING CHECK VALVE MODELS E-1 & F-1

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

The Viking Easy Riser® Swing Check Valve is a general purpose rubber-faced check valve approved for use in fire service systems. The valve is for use in wet system risers, preaction system risers and wherever a check valve with a drain connection and gauge connections can be utilized. When used with a flow switch on wet pipe systems not requiring a mechanical alarm, the Easy Riser® Swing Check Valve may replace an alarm check valve.

1-A Features

1. Ductile iron body for less weight and extra strength.
2. Rated to 300 psi (20.7 bar) water working pressure.
3. Rubber-faced clapper hinged to access cover for quick removal and easy servicing. All moving parts can be serviced without removing the valve from the installed position.
4. With the cover/clapper assembly removed, clapper rubber replacement requires removal of only one screw.
5. Valve housing tapped for inlet and outlet pressure gauges, and system main drain.

1-B Accessories

1. 300 PSI (20.7 bar) Trim Packages
   Trim Packages include:
   A. All necessary nipples and fittings
   B. Main Drain Ball Valve
   C. Necessary gauges
2. 175 psi (12 bar) ESFR Preprimed Preaction System Trim for use when the F-1 Easy Riser Check Valve is installed with the ESFR Cold Storage System.
3. 175 psi (12 bar) ESFR Bypass and Drain Trim for use when the F-1 Easy Riser Check Valve is installed with the ESFR Cold Storage System.

2. LISTINGS AND APPROVALS:

For Cold Storage application, use Easy Riser Preprimed Preaction Trim and Bypass and Drain Trim, see page 48a-d.
cULus Listed: HMER
FM Approved: Single Check Valves
NYC Department of Buildings: MEA 89-92-E, Vol. XI
VNIIPO (250 psi (17.2 bar) MWP)
CE: Pressure Equipment Directive 97/23/EC (250 psi (17.2 bar) MWP)

3. TECHNICAL DATA

Specifications:

Standard Flanged Connections: ANSI B16.42 Class 150 (mates with ANSI Class 125 and Class 150 flanges).
Standard Grooved Connections: ANSI/AWWA C606
Drain outlet: 2-1/2” and 3” valves - one 1-1/4” (32 mm) NPT; 4”, 6” & 8” valves - 2” (50 mm) NPT
Gauge Outlets: two 1/4” (8 mm) NPT
Other Outlets: two ½” (15 mm) NPT

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.

Systems with water working pressures above 175 psi (12 bar) may require extra-heavy pattern fittings. Viking Easy Riser® Swing Check Valve flanges are Ductile Iron ANSI B16.42, Class 150, with a maximum water working pressure of 300 psi (20.7 bar). ANSI B16.42, Class 150 flanges are NOT compatible with ANSI Class 250 or Class 300 flanges. To mate the Easy Riser® Swing Check Valve with ANSI Class 250 or Class 300 flanges, use the grooved-inlet/grooved-outlet style installed with listed grooved/flanged adapters of the appropriate pressure rating. For piping with grooved connections, the grooved-inlet and/or grooved-outlet style Easy Riser® Swing Check Valve may be installed with listed grooved couplings of the appropriate pressure rating.

FOR THE VIKING ESFR COLD STORAGE SYSTEM:

- Uses only 4”, 6”, or 8” size Model F-1 Easy Riser Check Valve
- Uses Easy Riser Preprimed Preaction Trim and Bypass and Drain Trim (refer to data page 48a-d for trim sets used in this application).
- Uses the Viking Automatic Pressure Control System

Replaces page 815a-g, dated May 31, 2012.
(Added Table 3, Trim Package Part Numbers.)

VIKING®

TECHNICAL DATA

EASY RISER® SWING CHECK VALVE MODELS E-1 & F-1

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

- System is designed so maximum operating pressures of the system does not exceed 175 PSI (12 bar).
- Refer to technical data page 47a-c: Automatic Pressure Control System

Material Standards:

Refer to Figure 1.

Ordering Information:

See Table 1 for part numbers and shipping weights.

4. INSTALLATION

FOR THE VIKING ESFR COLD STORAGE SYSTEM, REFER TO DATA PAGE 45a-j FOR INSTRUCTIONS ON PLACING THE SYSTEM IN SERVICE.

The Easy Riser® Swing Check Valve must be installed in an area not subject to freezing temperatures or physical damage. When corrosive atmospheres and/or contaminated water supplies are present, it is the owner's responsibility to verify compatibility with the Easy Riser® Swing Check Valve, trim, and associated equipment.

Prior to installing the valve, thoroughly flush the water supply piping to verify that no foreign matter is present.

The Easy Riser® Swing Check Valve may be installed in the vertical position with direction of flow up, or in the horizontal position with the access cover up.

1. Remove all plastic thread protectors from the openings of the Easy Riser® Swing Check Valve.
2. Apply a small amount of pipe-joint compound or tape to the external threads of all pipe connections required. Take care not to allow any compound, tape, or other foreign matter inside any of the nipples or openings of the valve or trim components.
3. Easy Riser® Swing Check Valve Trim Charts are provided with Trim Packages and in the *Viking Engineering and Design Data* book.
4. Verify that all system components are rated for the water working pressure of the system.

Hydrostatic Test:

The Easy Riser® Swing Check Valve is manufactured and listed for use at a maximum water working pressure of 300 psi (20.7 bar). The valve is factory tested at 600 psi (41.4 bar). Easy Riser® Swing Check Valves may be hydrostatically tested at 350 psi (24.1 bar) and/or 50 psi (3.5 bar) above the normal water working pressure for limited periods of time (two hours) for the purpose of acceptance by the Authority Having Jurisdiction. If air testing is required, DO NOT exceed 40 psi (2.8 bar) air pressure.

5. OPERATION (Refer to Figure 1.)

Water flowing through the Viking Easy Riser® Swing Check Valve lifts the rubber-gasketed clapper (8 and 9) off the seat (12) and flows into the sprinkler piping. When flow through the valve stops, the clapper (8) closes quickly. The rubber gasket (9) forms a tight seal against the brass water seat (12), trapping pressurized water above the clapper and preventing reverse flow from the sprinkler piping.

6. INSPECTIONS, TESTS, AND MAINTENANCE

FOR THE VIKING ESFR COLD STORAGE SYSTEM, REFER TO DATA PAGE 45 a-j FOR INSPECTIONS AND TESTS

NOTICE: THE OWNER IS RESPONSIBLE FOR MAINTAINING THE FIRE-PROTECTION SYSTEM AND DEVICES IN PROPER OPERATING CONDITION.

The Viking Easy Riser® Swing Check Valve and trim must be kept free of foreign matter, freezing conditions, corrosive atmospheres, contaminated water supplies, and any condition that could impair its operation or damage the device.

It is imperative that the system be inspected and tested on a regular basis. The frequency of the inspections may vary due to contaminated water supplies, corrosive water supplies, and corrosive atmospheres. For minimum maintenance and inspection requirements, refer to NFPA 25. In addition, the Authority Having Jurisdiction may have additional maintenance, testing, and inspection requirements that must be followed.

WARNING: ANY SYSTEM MAINTENANCE WHICH INVOLVES PLACING A CONTROL VALVE OR DETECTION SYSTEM OUT OF SERVICE MAY ELIMINATE THE FIRE-PROTECTION CAPABILITIES OF THAT SYSTEM. PRIOR TO PROCEEDING, NOTIFY ALL THE AUTHORITY HAVING JURISDICTION. CONSIDERATION SHOULD BE GIVEN TO EMPLOYMENT OF A FIRE PATROL IN THE AFFECTED AREAS.

6-A. Five-Year Internal Inspection

Internal inspection of check valves is recommended every five years unless inspections and tests indicate more frequent inspections are required. (Refer to Figure 1.)

1. Notify the Authority Having Jurisdiction, remote station alarm monitors, and those in the area affected that the system will be taken out of service. Consideration should be given to employment of a fire patrol in the affected areas.
2. Close the water supply main control valve, placing the system out of service.
3. Open the main drain. If necessary, open the system test valve to vent and completely drain the system.

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. Use the appropriate wrench to loosen and remove cover screws (14), and remove cover and clapper assembly (2-11).
5. Inspect water seat (12). Wipe away all contaminants, dirt, and mineral deposits. DO NOT use solvents or abrasives.
6. Inspect cover and clapper assembly (2-11) and cover gasket (13). Test the hinged clapper (8) for freedom of movement. Renew or replace damaged or worn parts as required.

CAUTION: NEVER APPLY ANY LUBRICANT TO SEATS, GASKETS, OR ANY INTERNAL OPERATING PARTS OF THE VALVE. PETROLEUM-BASED GREASE OR OIL WILL DAMAGE RUBBER COMPONENTS AND MAY PREVENT PROPER OPERATION.

7. When internal inspection of the Easy Riser® Swing Check Valve is complete, perform step 6 of paragraph 11. MAINTENANCE to re-install cover and clapper assembly (2-11).

6-B. Maintenance (Refer to Figure 1.)

FOR THE VIKING ESFR COLD STORAGE SYSTEM, REFER TO DATA PAGE 45a-j FOR MAINTENANCE INSTRUCTIONS.

1. Perform steps 1 through 5 of paragraph 6-A, FIVE-YEAR INTERNAL INSPECTION.
2. To replace clapper assembly (3, 6-11):
   a. Remove the cover screws (14) from the cover (2) using a Socket Wrench with a 9/16” socket.
   b. Remove the cover and clapper assembly (2-11) from the valve.
   c. Remove the cover gasket (13) by sliding it over the clapper assembly.
   d. Remove the existing clapper assembly (3, 6-11) from the cover assembly (2):
      i. Remove one of the retaining rings (5) from the clapper hinge pin (4) using a flat head screwdriver.
      ii. Remove the clapper hinge pin (4) from the cover and clapper assembly. This will allow the clapper assembly (3, 6-11) to be removed from the cover assembly (2).
   e. Install the new clapper assembly (3, 6-11) onto the cover assembly (2):
      i. Make sure the clapper rubber (9) is facing opposite the direction of the flow arrow on the inside of the cover (2).
      ii. Line up the holes of the cover assembly (2) and the clapper assembly (3, 6-11) and insert the hinge pin (4).
      iii. Install the retaining ring (5) onto the hinge pin (4).
      iv. Install the cover gasket (13) onto the new cover and clapper assembly (2-11) by sliding the cover gasket (13) over the clapper assembly (3, 6-11) and lining up the holes with the cover (2).
      v. To install the new cover and clapper assembly (2-11) into the valve, slide the clapper assembly into the valve with the clapper rubber (9) lined up with the water seat (12). Ensure the rubber retainer (10) fits inside the seat of the valve (pull back slightly and there should be some resistance).
      vi. Line up the holes of the cover (2) and cover gasket (13) with the valve body (1) and replace the cover screws (14) using a Socket Wrench with a 9/16” socket.
3. To replace the clapper rubber (9):
   i. Remove the cover screws (14) from the cover (2) using a Socket Wrench with a 9/16” socket.
   ii. Remove the cover and clapper assembly (2-11) from the valve.
   iii. Remove the cover gasket (13) by sliding it over the clapper assembly (3, 6-11).
   iv. Use a 7/32” Allen wrench to hold the button head socket screw (11) in place and remove the jam nut (6) from the clapper rubber (9) using a Socket Wrench with a 9/16” socket.
   v. Remove the button head socket screw (11) and sealing washer (7) from the clapper assembly (3, 6-11).
   vi. Remove the clapper rubber retainer (10) from the clapper (8) to free the clapper rubber (9).
   vii. To install the new clapper rubber (9), position the clapper rubber (9) on the clapper assembly so the grooved edge is facing down. This will allow the clapper rubber retainer (10) to fit up into the grooved edge of the clapper rubber (9).
   viii. Install the button head socket screw (11) and sealing washer assembly (7) and the jam nut (6) using a 7/32” Allen wrench and a Socket Wrench with a 9/16” socket.
   ix. Install the cover gasket (13) onto the cover (2) by sliding it over the clapper assembly (3, 6-11).
   x. Re-install the cover and clapper assembly (2-11) back into the valve, with the clapper rubber (9) lined up with the water seat (12). Ensure the clapper rubber retainer (10) fits inside the seat of the valve (pull back slightly and there should be some resistance).
   xi. Line up the holes of the cover (2) and cover gasket (13) with the valve body (1) and replace the cover screws (14) using a Socket Wrench with a 9/16” socket.
4. To replace the cover gasket (13):
   i. Remove the cover screws (14) from the cover (2) using a Socket Wrench with a 9/16” socket.
   ii. Remove the cover and clapper assembly (2-11) from the valve.
   iii. Remove the cover gasket (13) by sliding it over the clapper assembly (3, 6-11).
   iv. Install the new cover gasket (13) by sliding it over the clapper assembly (3, 6-11), onto the cover (2).

VIKING®

TECHNICAL DATA

EASY RISER® SWING CHECK VALVE MODELS E-1 & F-1

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

5. Reinstall the cover and clapper assembly (2-11) into the valve:
   i. Line up the clapper rubber (9) with the water seat (12). Ensure the clapper rubber retainer (10) fits inside the seat of the valve (pull back slightly and there should be some resistance).
   ii. Line up the holes of the cover (2) and cover gasket (13) with the valve body (1) and replace the cover screws (14) using a Socket Wrench with a 9/16" socket.

7. AVAILABILITY

The Viking Easy Riser® Swing Check Valve is available through a network of domestic and international distributors. See the Viking Corp. Web site for closest distributor or contact The Viking Corporation.

8. GUARANTEES

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

Table 1 - Valve Part Numbers and Specifications

Description	Nominal Size	Part Number	Friction Loss*	Shipping Weight
Flange/Flange				
Flange Drilling	**Model F-1**			
ANSI	3"	08505	10 ft. (3.1m)	35 lbs. (16 kg)
ANSI	4"	08508	13 ft. (4.0 m)	27 lbs. (12 kg)
ANSI	6"	08511	20 ft. (6.0 m)	75 lbs. (34 kg)
ANSI/Japan	DN100	09039	13 ft. (4.0 m)	27 lbs. (12 kg)
ANSI/Japan	DN150	09385	20 ft. (6.0 m)	75 lbs. (34 kg)
ANSI/Japan	DN200	14023	23 ft. (7.0 m)	119 lbs. (54 kg)
PN10/16	DN80	08796	10 ft. (3.1m)	35 lbs. (16 kg)
PN10/16	DN100	08797	13 ft. (4.0 m)	27 lbs. (12 kg)
PN10/16	DN150	08835	20 ft. (6.0 m)	75 lbs. (34 kg)
PN10	DN200	08836	23 ft. (7.0 m)	119 lbs. (54 kg)
PN16	DN200	12355	23 ft. (7.0 m)	119 lbs. (54 kg)
Flange/Groove				
Flange Drilling / Pipe O.D.	**Model F-1**			
ANSI / 89mm	3"	08506	10 ft. (3.1m)	27 lbs. (12 kg)
ANSI / 114mm	4"	08509	13 ft. (4.0 m)	37 lbs. (17 kg)
ANSI / 168mm	6"	08512	20 ft. (6.0 m)	64 lbs. (29 kg)
ANSI / 219mm	8"	08515	23 ft. (7.0 m)	119 lbs. (54 kg)
PN10/16 / 89mm	DN80	12648	10 ft. (3.1m)	27 lbs. (12 kg)
PN10/16 / 114mm	DN100	12649	13 ft. (4.0 m)	37 lbs. (17 kg)
PN10/16 / 165mm	DN150	12652	20 ft. (6.0 m)	64 lbs. (29 kg)
PN10/16 / 168mm	DN150	08512	20 ft. (6.0 m)	64 lbs. (29 kg)
PN10 / 219mm	DN200	12651	23 ft. (7.0 m)	119 lbs. (54 kg)
PN16 / 219mm	DN200	12650	23 ft. (7.0 m)	119 lbs. (54 kg)
Groove/Groove				
Pipe O.D.	**Model E-1**			
73mm	2½" / DN65	07929	6 ft. (1.8m)	16 lbs. (7kg)
	Model F-1			
89mm	3" / DN80	08507	10 ft. (3.1m)	20 lbs. (9 kg)
114mm	4" / DN100	08510	13 ft. (4.0 m)	27 lbs. (12 kg)
165mm	DN150	12356	20 ft. (6.0 m)	51 lbs. (23 kg)
168mm	6" / DN150	08513	20 ft. (6.0 m)	51 lbs. (23 kg)
219mm	8" / DN200	08516	23 ft. (7.0 m)	106 lbs. (48 kg)

*Expressed in equivalent length of Schedule 40 pipe based on Hazen & Williams formula: C = 120.

Table 2 - Torque Values for Easy Riser Swing Check Valve Cover Screws

Valve Size	Screw Size	Torque Value
2-1/2" (DN65)	3/8"-16 H.H.C.	19 ft-lb (2.63 kg-m)
3" (DN80)	3/8"-16 H.H.C.	19 ft-lb (2.63 kg-m)
4" (DN100)	3/8"-16 H.H.C.	19 ft-lb (2.63 kg-m)
6" (DN150)	½"-13 H.H.C.	45 ft-lb (6.23 kg-m)
8" (DN200)	5/8"-11 H.H.C.	93 ft-lb (12.9 kg-m)

Table 3 - Trim Package Part Numbers

Valve Size	Part Number
Wet System Trim Packages	
2-1/2", 3" (DN65), (DN80)	07236
4", 6", 8", (DN100), (DN150), (DN200)	07237
Preaction System Trim Packages	
2-1/2", 3" (DN65)	13776
4", 6", 8", (DN80), (DN100), (DN150), (DN200)	13777

TECHNICAL DATA

EASY RISER® SWING CHECK VALVE MODELS E-1 & F-1

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
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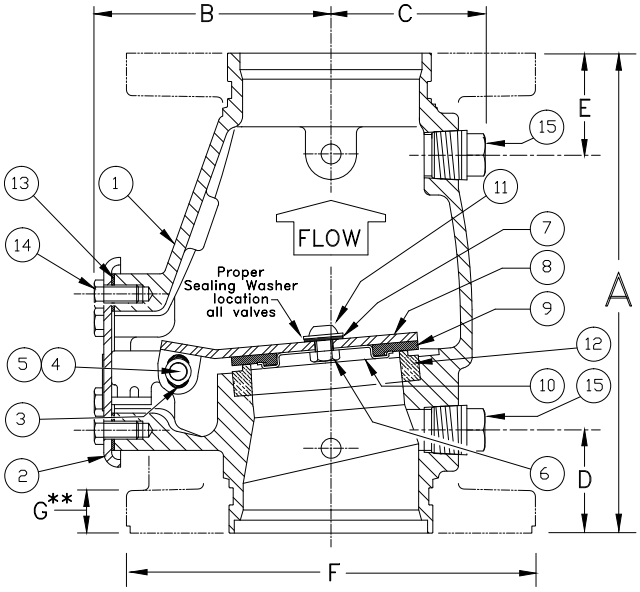

SIZE	A	B	C	D	E	F	G**
2-1/2" (65mm)	9" (228,6)	4-1/2" (114,3)	2-5/8" (66,7)	2" (50,8)	2" (50,8)	Flg-Flg Not Available	
3" (80mm)	10-1/8" (257)	4-13/16" (122,2)	2-11/16" (68,3)	2-9/32" (58.1)	2-9/32" (58.1)	7-7/8" (200)	25/32" (20)
4" (100mm)	10-5/8" (269,9)	5-3/16" (131,8)	3-1/8" (79.4)	2-1/4" (57.2)	2-1/4" (57,2)	9" (228,6)	15/16" (23,81)
6" (150mm)	13-3/8" (340)	6-13/16" (173,3)	4-1/16" (103.2)	2-1/4" (57,2)	2-1/4" (57,2)	11" (279,4)	1" (25,4)
8" (200mm)	17" (431,8)	8-13/16" (223,4)	5" (127)	2-1/2" (63,4)	2-7/8" (73,0)	13-1/2" (342,9)	1-1/8" (28,58)

Dimensions shown in parentheses are millimeter.

* For availability of Flg X Flg, Flg X Grv, or Grv X Grv options refer to Table 1.

** 4", 6", and 8" valves are manufactured with sculptured flanges. Dimension indicates thickness of flange at bolt holes.

Figure 1 - Replacement Parts

ITEM NO.	PART NUMBER E-1 2-1/2" (DN65)	F-1 3" (DN80)	F-1 4" (DN100)	F-1 6" (DN150)	F-1 8" (DN200)	DESCRIPTION	MATERIAL	NO. REQ'D 2-1/2"	3"	4"	6"	8"
1	--	--	--	--	--	Body	Ductile Iron, ASTM A536 (65-45-12)	1	1	1	1	1
2	--	--	--	--	--	Cover Assembly	E-Coated HSLA Steel, A715 and Stainless Steel, UNS-S30400	1	1	1	1	1
3	07576	07576	07576	07576	None	Bushing	Lubricomp 189 Ryton	2	2	2	2	0
4	05355A	05355A	04900A	04991A	05334A	Clapper Hinge Pin	Stainless Steel, UNS-S30400	1	1	1	1	1
5	05445A	05445A	05445A	05445A	05369A	Hinge Pin Retaining Ring	Stainless Steel, UNS-S15700	2	2	2	2	2
6	01755A					Clapper Hex Jam Nut #10-24 UNC	Stainless Steel, UNS-S30400	1	0	0	0	0
		08159	08159			Clapper Hex Jam Nut 3/8"-24 UNF	Stainless Steel, UNS-S30400	0	1	1	0	0
				08144	08144	Clapper Hex Jam Nut ½"-20 UNF	Stainless Steel, UNS-S30400	0	0	0	1	1
7	--	08158	08158	08143	08143	Sealing Washer	EPDM and Stainless Steel	1	1	1	1	1
8	*	*	*	*	*	Clapper	PTFE Coated HR Steel UNS-G10180	1	1	1	1	1
9	*	*	*	*	*	Clapper Rubber	EPDM, ASTM D2000	1	1	1	1	1
10	*	*	*	*	*	Clapper Rubber Retainer	Stainless Steel, UNS-S30400	1	1	1	1	1
11	06595A					H.H.C. Screw, #10-24 UNC x 1/2" (12.7 mm) lg.	Stainless Steel, UNS-S30400	1	0	0	0	0
		10194	10194			Screw, Button Head, Socket, 3/8" - 24 UNF x 1/2 (12.7 mm) lg.	Stainless Steel, UNS-S30400	0	1	1	0	0
				10308		Screw, Button Head, Socket, 1/2" - 20 UNF x 3/4 (19.1 mm) lg.	Stainless Steel, UNS-S30400	0	0	0	1	0
					10686	Screw, Button Head, Socket, 1/2" - 20 UNF x 7/8 (22.2 mm) lg.	Stainless Steel, UNS-S30400	0	0	0	0	1
12	--	--	--	--	--	Seat	Brass, UNS-C84400	1	1	1	1	1
13	05354B	05354B	04649B	04992B	05339C	Cover Gasket	EPDM, ASTM D2000	1	1	1	1	1
14	01517A	01517A	01517A			Screw, Hex Head Cap, 3/8" - 16 UNC x 3/4 (19.1 mm) lg.	Steel, Zinc Plated	4	4	6	0	0
				04993A		Screw, Hex Head Cap, 1/2" - 13 x 7/8 (22.2 mm) lg.	Steel, Zinc Plated	0	0	0	6	0
					01922A	Screw, Hex Head Cap, 5/8" - 11 UNC x 1-1/4" (31.8 mm) lg.	Steel, Zinc Plated	0	0	0	0	6
15	--	--	--	--	--	1/2" (15 mm) NPT Pipe Plug	Steel	2	2	2	2	2

-- Indicates replacement part is not available

* Indicates replacement part only available in a Sub-Assembly listed below.

Sub-Assemblies

3, 6-11	05499B	08518	08519	08520	08521	Clapper Assembly	
6, 7, 9-11,13	06343A	08522	08523	08524	08525	Replacement Rubber Kit	

TECHNICAL DATA

EASY RISER® SWING CHECK VALVE MODELS E-1 & F-1

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
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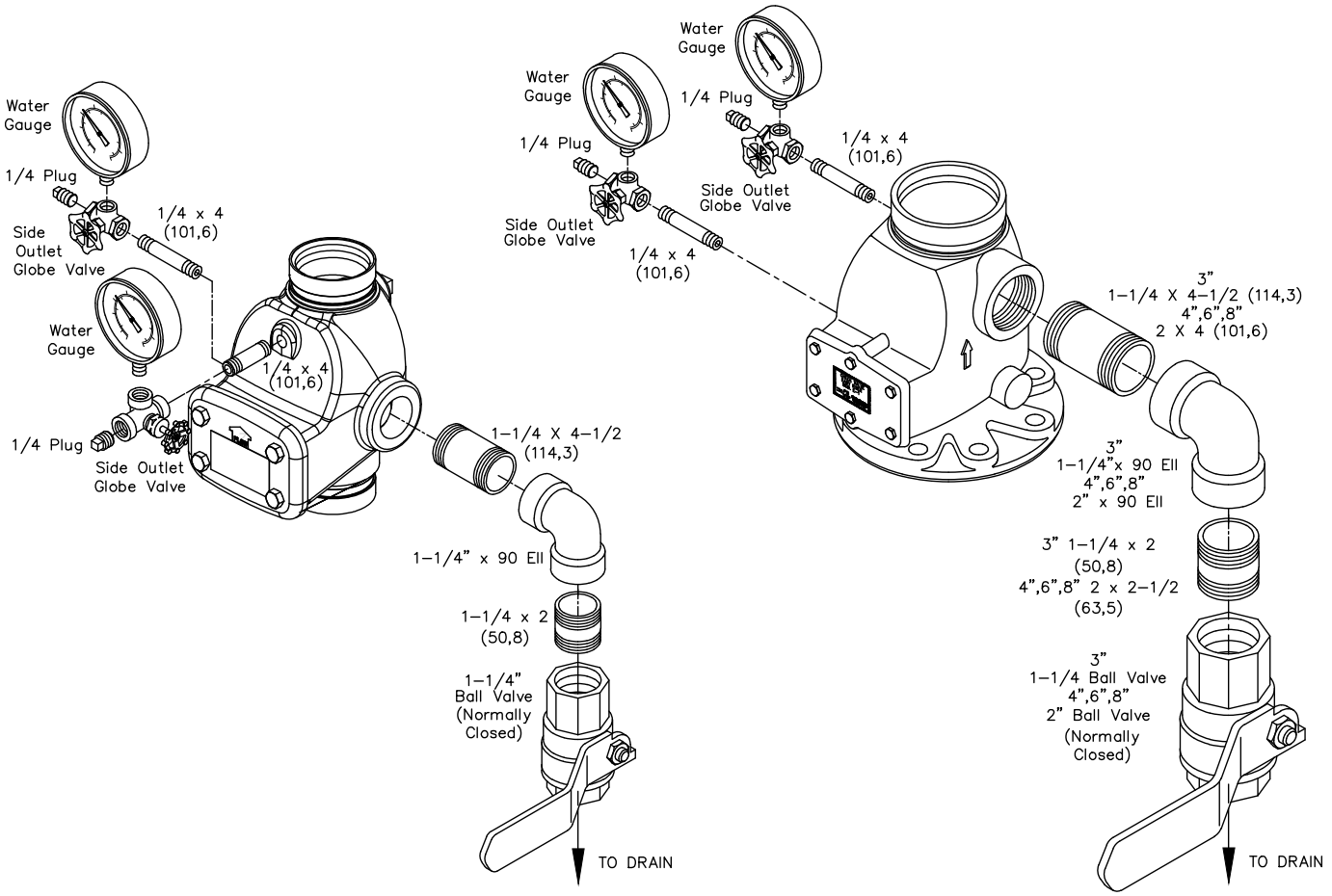
For ESFR Cold Storage Systems, use Preprimed Preaction Trim and Bypass and Drain Trim. See page 48a-d for trim arrangements.



2–1/2" MODEL E–1
EASY RISER CHECK VALVE
TRIM CHART

3",4",6", & 8" MODEL F–1
EASY RISER CHECK VALVE
TRIM CHART

Figure 2

Note 1: 300 psi (20.7 bar) water pressure gauges are provided with trim. 600 psi (41.4 bar) water pressure gauges are available. Order separately when needed*. Refer to Viking's current price schedule.

* NFPA 13 requires gauges to have a minimum limit not less than twice the normal water working pressure at the point where the gauges are installed. When normal water working pressure exceeds 150 psi (10.3 bar), order 600 psi (41.4 bar) water pressure gauges separately.

Note 2: System Drain Ball Valve is UL Listed and FM Approved for 300 psi (20.7 bar) water working pressure.

TECHNICAL DATA

EASY RISER® SWING CHECK VALVE MODELS E-1 & F-1

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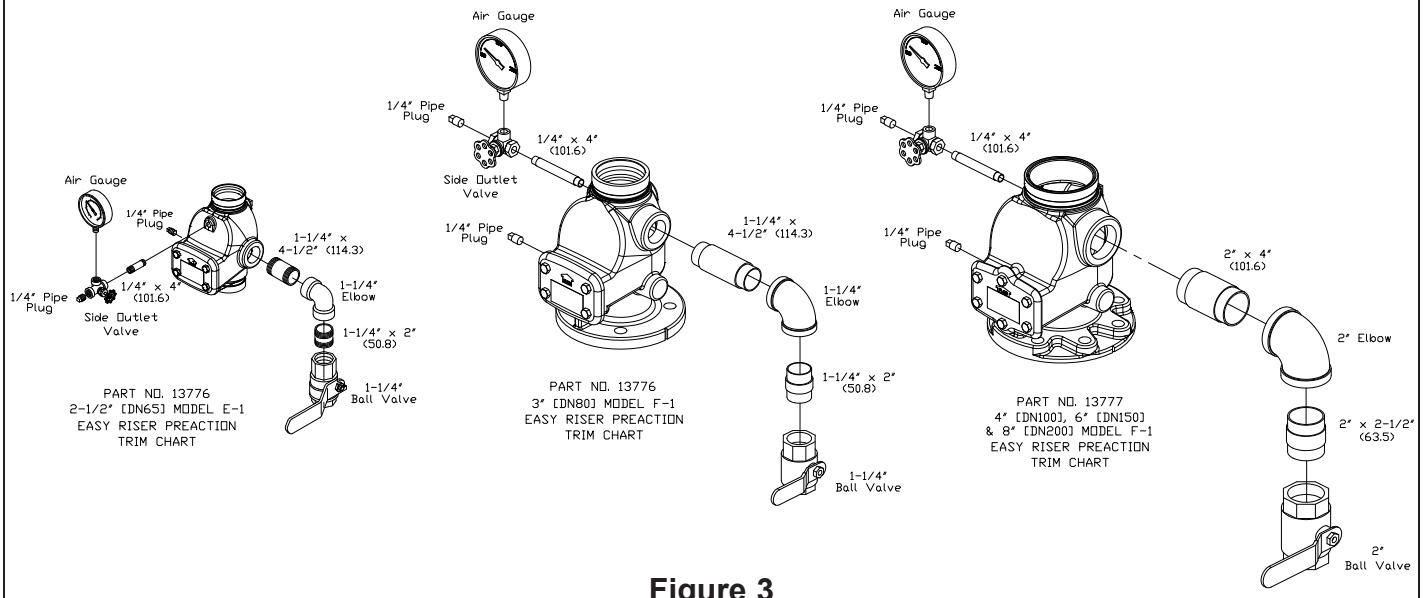
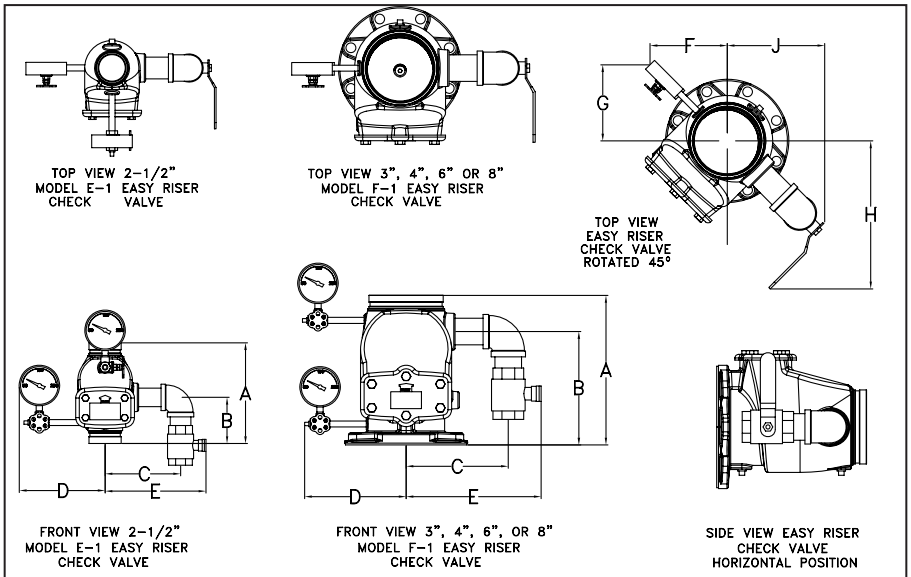


Figure 3
For use on Preaction Systems



SIZE	A	B	C	D	E	F	G	H	J
2-1/2" (65mm)	9" (228,6)	4-1/8" (105)	6-3/4" (171)	7-5/8" (194)	9" (229)	5-1/2" (139)	5-3/8" (137)	10-7/16" (265)	6-5/8" (169)
3" (80mm)	10-1/8" (257)	7-1/4" (184)	6-3/4" (171)	7-7/8" (200)	8-7/8" (226)	5-15/16" (150)	5-7/8" (149)	9-7/8" (251)	6-7/16" (163)
4" (100mm)	10-5/8" (270)	7-3/8" (187)	8-3/8" (213)	8-7/16" (214)	11-5/16" (287)	6-3/16"" (157)	6-1/8" (155)	12-11/16" (322)	8-1/16" (205)
6" (150mm)	13-3/8" (340)	10-1/8" (257)	9-1/8" (232)	9-1/2" (241)	12-1/16" (306)	6-7/8" (175)	6-13/16" (173)	13-3/16" (336)	8-5/8" (219)
8" (200mm)	17" (432)	13-1/8" (333)	9-15/16" (253)	10-3/4" (273)	13-1/16" (332)	7-5/8" (193)	7-1/2" (191)	13-15/16" (354)	9-5/16" (237)

Figure 4

Dimensions in parentheses are millimeter.
Dimensions are approximate.

WATER MOTOR ALARM

BRAND	:	VIKING
MANUFACTURER	:	VIKING CORPORATION
COUNTRY	:	USA.
MODEL	:	F-2
TYPE	:	HYDRAULICALLY OPERATED
APPROVED	:	UL/FM
WORKING PRESSURE RANGE	:	175 PSI.

MATERIAL LIST

GONG	:	ALUMINUM
TRIM	:	GALVANIZED STEEL NIPPLES AND STAINLESS STEEL

VIKING® TECHNICAL DATA WATER MOTOR ALARMS

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

The Viking water motor alarms are mechanical devices actuated by a flow of water. They are designed to sound a continuous alarm while a sprinkler system operates. An alarm is a required component of every sprinkler system having more than 20 sprinklers.

A. Features

1. The water motor alarms are tapped 3/4" NPT on the inlet and 1" NPT on the drain outlet.
2. The water motor alarm package includes a drive shaft 16-3/4" (425 mm) long for walls 14" (356 mm) thick or less. A special extension shaft is available for walls up to 30-1/4" (768 mm) thick.
3. The package also includes the required 3/4" (20 mm) NPT strainer for installation on the alarm line.
4. Rated water working pressure of Model F-2 is 250 PSI (17.2 bar).

B. Accessories: (order separately)

1. Extension Mounting Cup: Viking Part Number 05957B, Material: 14-Gauge Cold Rolled Steel, UNS-G10080, coated with black E-coat. The extension mounting cup is required when the wall thickness is less than 3" (76.2 mm). Refer to "INSTALLATION" instructions. See Figure 2.
2. Closure Plate: For use with Model F-2 only, Viking Part Number 05820B, Material: 16-Gauge Galvanized Steel, UNS-G10080. The closure plate is required when the Model F-2 Water Motor Alarm gong is mounted on an irregularly surfaced wall. It serves to prevent birds from entering the inside of the gong. The closure plate also serves as a mounting plate for sheet metal walls. Refer to "INSTALLATION" instructions. See Figure 2.
3. Special Extension Shaft: Viking Part Number 03312B, Material: Stainless Steel, UNS-S30400. The extension shaft is required when the F-2 or G-2 Water Motor Alarm is installed on walls from 14" (356 mm) to 30-1/4" (768 mm) thick.

2. LISTINGS AND APPROVALS

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.

Model F-2:

cULus Listed - VPLX

FM Approved - Water Motor Gongs

LPCB Approved

CE - Standard EN 12259-4, EC-certificate of conformity **1725-CPD-H0001**

New York City Board of Standards and Appeals - Calendar No. 219-76-SA

Model G-2:

VdS

CE - Standard EN 12259-4, EC-certificate of conformity 1725-CPD-H0001
The 07862 and 07868 Water Motor Alarms Model F-2 and Model G-2 conform to the provision of EN12259-4 standard.
EN12259-4 approvals are provided by:FM Approvals Ltd. 1 Windsor Dials Windsor, Berkshire, UK. SL4 1 RS
Approval Certificate No. issued February 15, 2010.

3. TECHNICAL DATA

Specifications

Available since 1991
Shipping Weight: Model F-2: 11 lbs. (5.0 kg); Model G-2: 13 lbs. (5.9 kg)
Water working pressure: Rated to 175 PSI (12 bar)

Material Standards (See Figure 3)

Viking E-coat Spec: SPF02 W01

Ordering Information

Model F-2, Viking Part No. 07862
Model G-2, Viking Part No. 07868

4. INSTALLATION

Locate the water motor on an exterior wall as close as practical to the valve being monitored for water flow. A 3/4" (20 mm) strainer (included) is required on the alarm line as close as possible to the alarm outlet of the valve being monitored for water flow (or outlet of the retard chamber, if used). The location must be easily accessible for cleaning.

Revised page replaces page 711a-d dated February 26, 2010.
(Replaced the UL logo with cULus and added the LPCB logo.)

TECHNICAL DATA

WATER MOTOR ALARMS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
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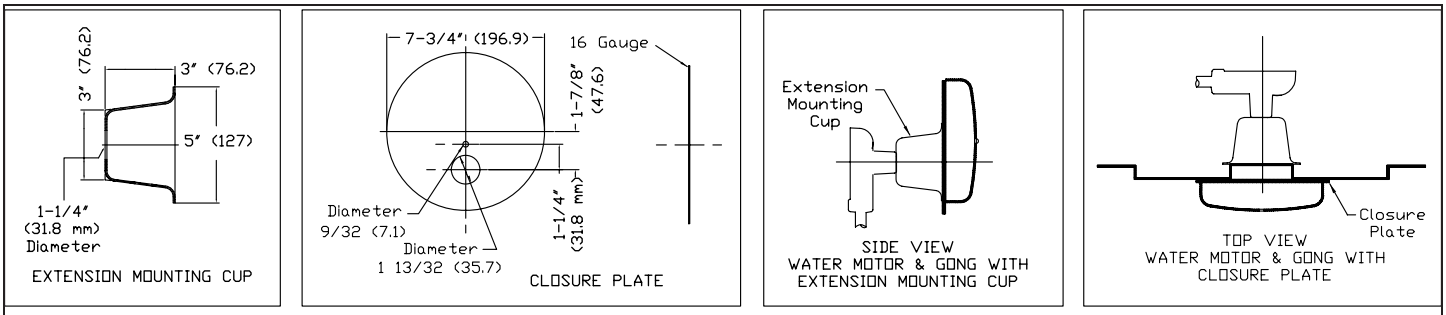


Figure 1: Accessories

A. Cut a 1-7/16" (36.5 mm) minimum to 1-5/8" (41.3 mm) maximum diameter hole in the building wall to accommodate the 3/4" (20 mm) galvanized spacer pipe. (Note: Spacer pipe is NOT included in Water Motor Alarm Package). The hole through the wall must be level or pitched slightly downward toward the water motor.
B. Measure the wall thickness.
C. Cut and thread the spacer pipe to a length equal to: The wall thickness minus 1" (25.4 mm). If the extension mounting cup is used, add an additional 3" (76 mm) to the spacer pipe.
D. Cut the drive shaft (10) to a length equal to: The total wall thickness plus 2-3/4" (70 mm). If extension mounting cup is used, add an additional 3" (76 mm).
E. File the drive shaft to provide a 3/32" (2.4 mm) x 450 chamfer on both corners of both ends. File off all burrs and insert the drive shaft into the hole of the striker arm shaft.
F. Slide the spacer pipe over the shaft and thread the end of the spacer pipe into the gong support assembly coupling (12).
G. Slide the closure plate (if used) over the free end of the spacer pipe, up to the back of the gong. If desired, the closure plate may be fastened to the gong support by using the 9/32" (7.14 mm) diameter hole in the gong support. Use only a flat or round headed fastener that will not interfere with striker arm movement.
H. Position the support assembly on the exterior wall surface by sliding the free threaded end of the spacer pipe into the hole from outside the building.
I. On the inside surface of the wall: Slide the wall plate provided (9), over the free threaded end of the spacer pipe. (If an extension mounting cup is used, place it over the end of the spacer pipe with the flared end toward the wall before sliding the wall plate into position).

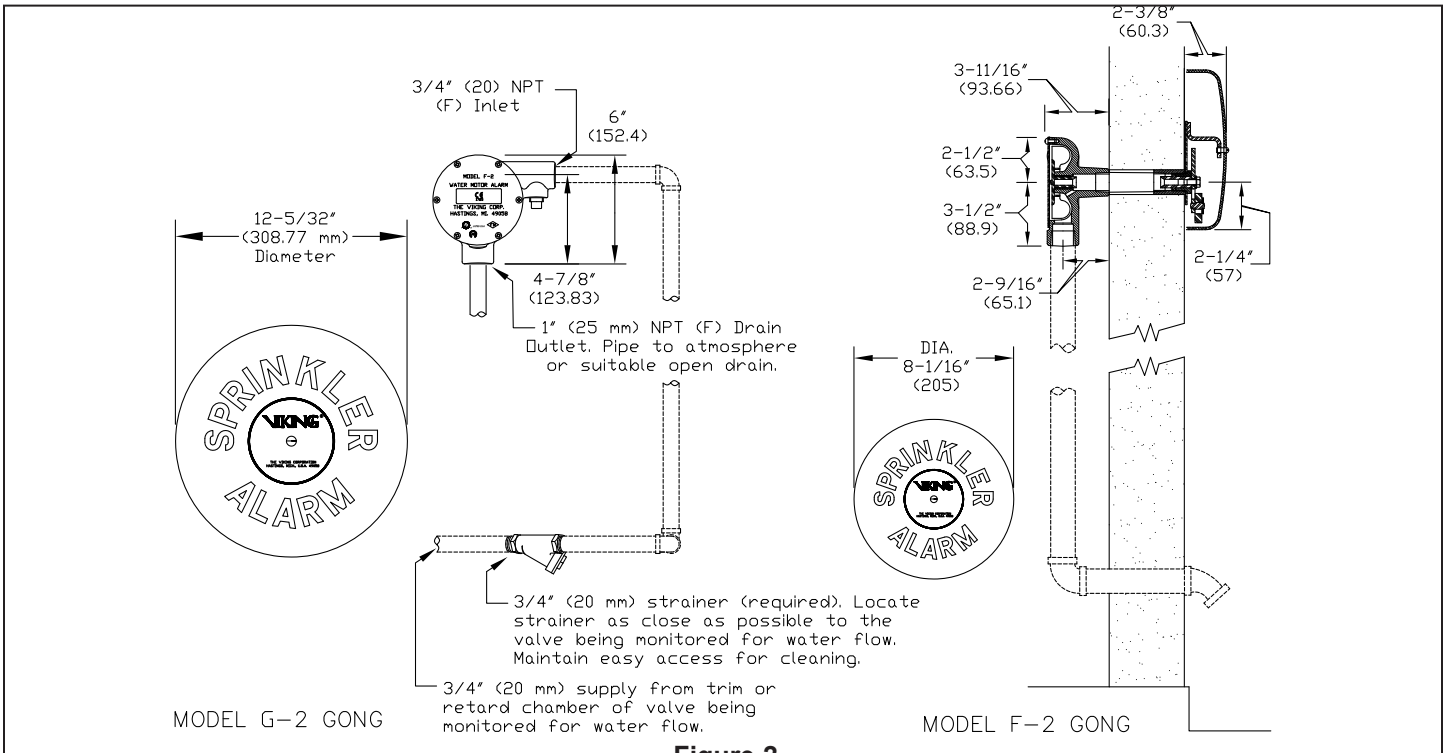


Figure 2

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

J. Remove the plastic thread protectors from the threaded openings in the body of the water motor.
K. Attach the water motor assembly by threading the body (3) onto the free threaded end of the spacer pipe. The chamfered ends of the drive shaft allow it to slide into position as the water motor body is threaded onto the spacer pipe. When the assembly is properly tightened, the water motor should be positioned with the 1" (25 mm) NPT drain outlet facing downward and the 3/4" (20 mm) NPT alarm line inlet horizontal. See Figures 1 and 3.
L. Attach the gong, the flat washer, and the gong label (16, 17, and 18) to the gong support installed on the exterior surface of the wall, with the 5/16-18 x 12" (13 mm) screw (19). Note: The flat washer must be installed between the gong and the gong support (17).
M. With galvanized, brass, or other approved corrosion-resistant piping, not less than 3/4" (20 mm) diameter, connect the water motor inlet to the alarm outlet of the waterflow detecting device. A 3/4" (20 mm) strainer (included) is required on the alarm line as close as possible to the alarm outlet of the waterflow detecting device (or outlet of the retard chamber if used). The location must be easily accessible for cleaning.
N. The drain outlet of the impeller housing must discharge to an open drain. Care shall be taken to keep the drain line clean at all times.
O. Note: A water motor drain line that:
   1. Has too many fittings, and/or
   2. Has a very short length of pipe between the 1" (25 mm) outlet and the first elbow in the water motor drain pipe, and/or
   3. Is very long may result in slow drainage and reduced water motor speed. This condition can be remedied by increasing the drain pipe diameter, increasing the length of pipe to the first elbow, and/or pitching the pipe toward the discharge location.

5. OPERATION (See Figure 3)

When a sprinkler system is activated, water flows from the alarm outlet of the valve, through the 3/4" (20 mm) strainer and alarm line piping, into the inlet of the water motor. From the 1/8" inlet orifice, the water flows through a nozzle (4), which restricts the flow into a pressurized stream directed onto the impeller (7). Force from the water stream turns the impeller and drive shaft (10), causing the striker arm (20) to rotate. The striker (25) impacts against the gong (16), producing a continuous alarm. A minimum of 5 PSI (.34 bar) is required at the nozzle to cause a continuous alarm. When properly installed, the Model F-2 Water Motor Alarm produces the required 90 decibel output and the Model G-2 produces 100 decibels. After passing through the water motor, the water is discharged through a 1" (25 mm) drain outlet in the bottom of the impeller housing. The discharged water must be piped through the wall to atmosphere or to a suitable open drain.

6. INSPECTIONS, TESTS AND MAINTENANCE

Weather-resistant materials are used in the construction of the water motor alarm. At regular intervals, examine and test the water motor to ensure that the nozzle and drain line are clean and free of obstruction, and that the alarm functions properly. Also, at regular intervals and before disassembly of the water motor, clean and inspect the alarm line strainer located at the alarm outlet of the waterflow detecting device, or the outlet of the retard chamber, if used. (Note: Some retard chambers may be equipped with a strainer built in). For minimum maintenance and inspection requirements, refer to NFPA 25. In addition, the Authority Having Jurisdiction may have additional maintenance, testing, and inspection requirements that must be followed. Before proceeding with disassembly of the water motor alarm, notify the Authority Having Jurisdiction and occupants of the area covered by the system affected. Take all appropriate precautions. The water motor alarm will be disabled during disassembly.

A. Water Motor Disassembly (See Figure 3)

1. Isolate the water motor alarm by closing the alarm line valve in the trim of the waterflow detecting device. (Refer to appropriate technical data for the system used.)
2. Remove pipe plug (5).
3. Remove all round head machine screws (1) from the water motor cover.
4. Separate the cover (2) and the gasket (6) from the housing (3).
5. Remove the impeller (7).
6. Inspect and, if necessary, carefully clean the nozzle (4) with a wire or pipe cleaner brush.
7. Flush the nozzle way and drain line with water or compressed air.

B. Water Motor Re-Assembly

1. Re-install the pipe plug (5).
2. Re-install the impeller (7).
3. Replace cover gasket (6) and attach cover (2) by using round head machine screws (1).
4. Open the alarm line valve.
5. Test the water motor alarm.
6. When test is complete and water motor alarm operation is satisfactory, place the alarm line valve in the proper "alarm" position. Reset and return the affected systems to service.

7. AVAILABILITY

Viking Water Motor Alarms are available through a network of domestic and international distributors. See the Viking Corp. Web site for closest distributor or contact The Viking Corporation.

8. GUARANTEES

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

TECHNICAL DATA

WATER MOTOR ALARMS

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

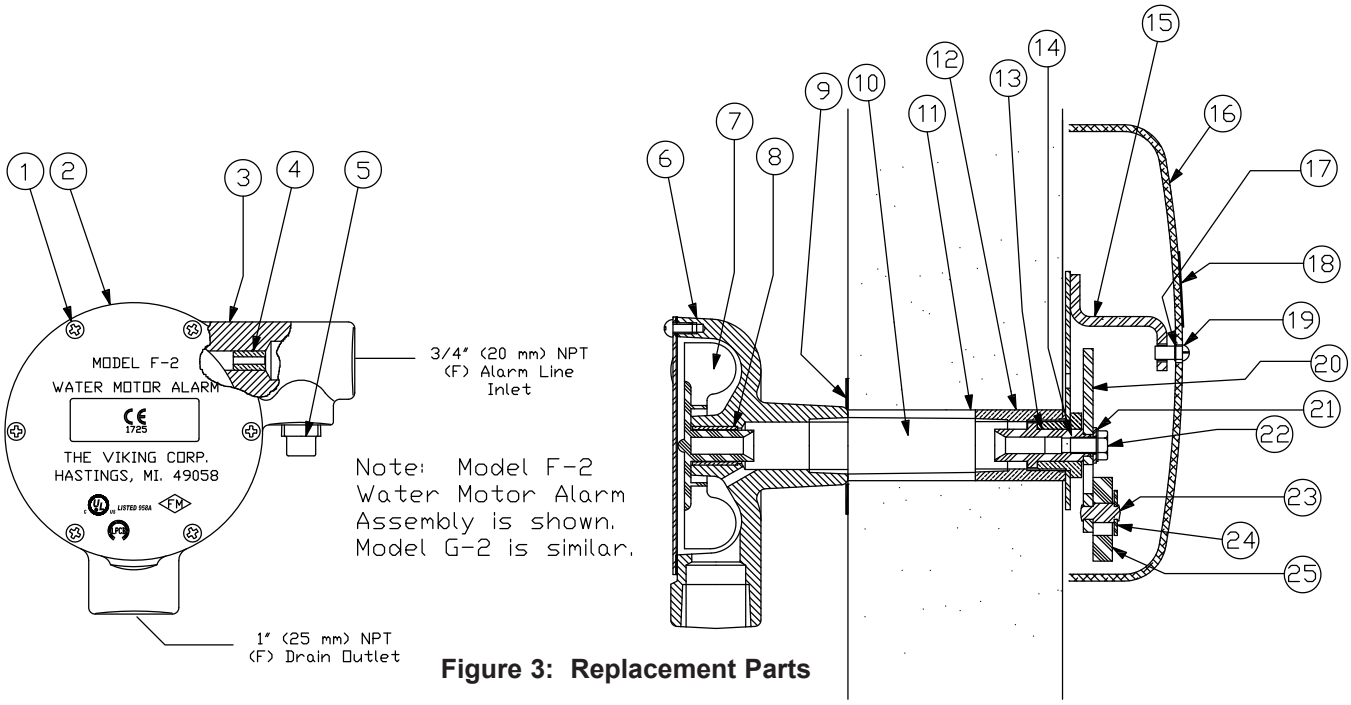


Figure 3: Replacement Parts

ITEM NO.	PART NUMBER		DESCRIPTION	MATERIAL	NO. REQ'D
	F-2	G-2			
1	*	*	Screw, R. H. Self-tap #10-24 x 3/8" lg.	Zinc Plated Steel	6
2	07867	07870	Cover	Steel	1
3	*	*	Housing	Cast Iron	1
4	*	*	Nozzle	Brass	1
5	01925S	01925S	1/2" Pipe Plug	Cast Iron	1
6	02550B	02550B	Cover Gasket	Cellulose/Nitrile/Glass Blend	1
7	02547C	02547C	Impeller	Delrin	1
8	*	*	Bearing	Brass: Sintered Bronze	1
9	05603A	05603A	Wall Plate	Galvanized Steel	1
10	05604B	05604B	Drive Shaft	Stainless Steel	1
11	--	--	3/4" Pipe (C.O.J.) not furnished	Galvanized Steel	1
12	*	*	Coupling	Brass	1
13	02556B	02556B	Striker Arm Shaft	Celcon Glass Filled	1
14	*	*	Bearing	Brass	1
15	*	*	Gong Support	Stainless Steel	1
16	05821C	06508C	Gong	Aluminum	1
17	02766A	02766A	Flat Washer, 11/32" ID x 11/16" ID x 1/16"	Stainless Steel	1
18	05768A	06505C	Gong Label	Aluminum (F-2), Vinyl (G-2)	1
19	--	--	Screw, B.H. Slotted, 5/16-18 x 1/2" lg.	Stainless Steel	1
20	*	*	Striker Arm	Stainless Steel	1
21	--	--	Flat Washer, 11/32" ID x 11/16" OD x 1/16"	Stainless Steel	1
22	--	--	Screw, H.H. Self-tap 5/16-18 x 1/2" lg.	Zinc Plated Steel	1
23	*	*	Striker Pin	Stainless Steel	1
24	*	*	Striker Arm Washer	Stainless Steel	1
25	*	*	Striker	Canvas Phenolic	1
--Indicates replacement part not available					
*Indicates replacement part only available in a Sub-Assembly listed below					
SUB-ASSEMBLIES					
1-8	07863	07869	Motor Assembly		
20, 23-25	02558B	02558B	Striker Arm Assembly		
12-15, 20-25	05606C	06506C	Support Assembly		

ALARM PRESSURE SWITCH

BRAND	:	POTTER ELECTRIC
MANUFACTURER	:	POTTER ELECTRIC SIGNAL.
COUNTRY	:	U.S.A.
MODEL	:	PS40-1 (ONE SPDT SWITCH)
APPROVED	:	UL/FM
CONNECTION	:	SCREWED ENDS
PRESSURE RANGE	:	10 – 60 PSI
MAXIMUM SYSTEM PRESSURE	:	300 PSI.

MATERIAL LIST

BODY	:	CAST ALUMINIUM
FINISHED	:	RED ENAMEL
BASE	:	DIE CAST ZINC

ACCESSORIES

SWITCH CONTACT	:	SPDT (FROM C)
		10.1 AMP @125/250VAC
		2.0 AMP @30 VDC

PS40 SERIES
PRESSURE SWITCH

(UL, cUL, and CSFM Listed, FM and LPC Approved, NYMEA Accepted, CE Marked Pending)

Dimensions: 3.78" (9,6cm)W x 3.20" (8,1cm)D x 4.22" (10,7cm)H

Conduit Entrance: Two knockouts provided for 1/2" conduit. Individual switch compartments and ground screw suitable for dissimilar voltages

Enclosure: Cover- Die-cast with textured red powdercoat finish, single cover screw and rain lip.
Base- Die-cast

Pressure Connection: Nylon 1/2" NPT male

Factory Adjustment: PS40-1 operates on decrease at 30 PSI (2,1 BAR)
PS40-2 operates in increase at 50 PSI (3,5 BAR) and on decrease at 30 PSI (2,1 BAR)

Pressure Range: 10-60 PSI (,7 - 4,1 BAR)

Differential: Typical 1 lb. at 10 PSI (,07 at ,7 BAR)
4 lbs at 60 PSI (,28 at 4,1 BAR)

Maximum System Pressure: 300 PSI (20,68 BAR)

Switch Contacts: SPDT (Form C)
10.1 Amps at 125/250VAC, 2.0 Amps at 30VDC
One SPDT in PS40-1, Two SPDT in PS40-2

Environmental Specifications:
NEMA 4/IP55 Rated Enclosure - indoor or outdoor when used with NEMA 4 conduit fittings.
Temperature range: -40°F to 140°F (-40°C to 60°C)

Tamper: Cover incorporates tamper resistant fastener that requires a special key for removal. One key is supplied with each device. For optional cover tamper switch kit, order Stock No. 0090200. See bulletin #5401200 PSCTSK.

Service Use:

Automatic Sprinkler	NFPA-13
One or two family dwelling	NFPA-13D
Residential Occupancy up to four stories	NFPA-13R
National Fire Alarm Code	NFPA-72

Ordering Information

Model	Description	Stock No.
PS40-1	Pressure switch with one set SPDT contacts	1340403
PS40-2	Pressure switch with two sets SPDT contacts	1340404
	Hex Key	5250062
	Cover Tamper Switch Kit	0090200
BVL	Bleeder valve	1000018

Installation

The Potter PS40 Series Pressure Actuated Switches are designed primarily to detect an increase and/or decrease from normal system pressure in automatic fire sprinkler systems. Typical applications are: Dry pipe system, pre-action air/nitrogen supervision, pressure tanks, air supplies, and water supplies. The PS40 switch is factory set for 40 PSI (2,8 BAR) normal system pressure. The switch marked with the word LOW is set to operate at a pressure decrease of 10 PSI (,7 BAR) at 30 PSI (2,1 BAR). The switch marked with the word HIGH is set to operate at a pressure increase of 10 PSI (,7 BAR) at 50 PSI (3,5 BAR). See section heading **Adjustments and Testing** if other than factory set point is required.

1. Connect the PS40 to the system side of any shutoff or check valve.
2. Apply Teflon tape to the threaded male connection on the device. (Do not use pipe dope)
3. Device should be mounted in the upright position. (Threaded connection down)
4. Tighten the device using a wrench on the flats on the device.

Wiring Instructions

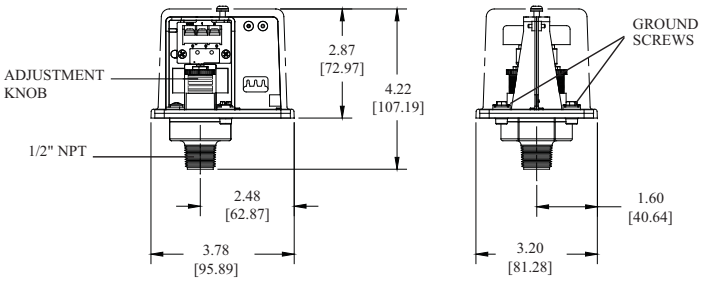
1. Remove the tamper resistant screw with the special key provided.
2. Carefully place a screwdriver on the edge of the knockout and sharply apply a force sufficient to dislodge the knockout plug. See Fig. 9
3. Run wires through an approved conduit connector and affix the connector to the device. A NEMA-4 rated conduit fitting is required for outdoor use.
4. Connect the wires to the appropriate terminal connections for the service intended. See Figures 2,4,5,6, and 8

Adjustment And Testing

The operation of the pressure supervisory switch should be tested upon completion of installation and periodically thereafter in accordance with the applicable NFPA codes and standards and/or the authority having jurisdiction (manufacturer recommends quarterly or more frequently).
Note: Testing the PS40 may activate other system connected devices.
The use of a Potter BVL (see product bulletin 8900067 for details) is recommended to facilitate setting and testing of the PS40 pressure switch. When a BVL (bleeder valve) is used, the pressure to the switch can be isolated and bled from the exhaust port on the BVL without effecting the supervisory pressure of the entire system. See Fig. 3
The operation point of the PS40 Pressure Switch can be adjusted to any point between 10 and 60 PSI (0,7 - 4,11 BAR) by turning the adjustment knob(s) clockwise to raise the actuation point and counter clockwise to lower the actuation point. In the case of the PS40-2, both switches operate independent of each other. Each switch may be independently adjusted to actuate at any point acrosss the switch adjustment range. Initial adjustment can be made with a visual reference from the top of the adjustment knob across to the printed scale on the switch bracket. Final adjustments should be verified with a pressure gauge.

Dimensions

Fig. 1

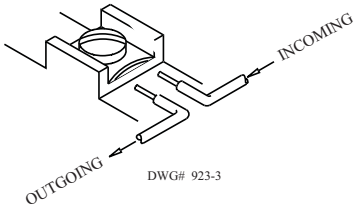


NOTE: To prevent leakage, apply Teflon tape sealant to male threads only.

DWG# 930-1

Switch Clamping Plate Terminal

Fig. 2



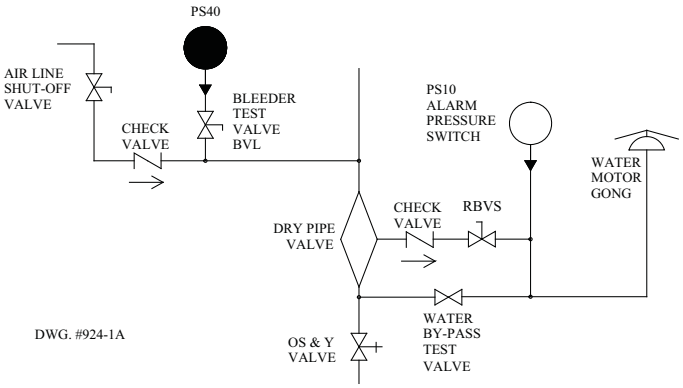
DWG# 923-3

⚠ WARNING

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

Typical Sprinkler Applications

Fig. 3



DWG. #924-1A

⚠ CAUTION

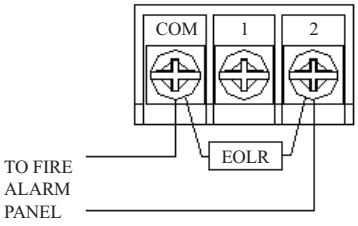
Closing of any shutoff valves between the alarm check valve and the PS10 will render the PS10 inoperative. To comply with NFPA-72 any such valve shall be electrically supervised with a supervisory switch such as Potter Model RBVS.

Typical Connections

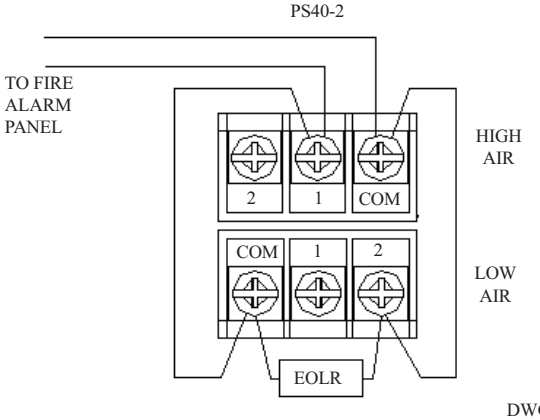
Fig. 4

WITH NORMAL SYSTEM PRESSURE APPLIED LOW -TERMINAL 2 CLOSES ON PRESSURE DROP.

PS40-1



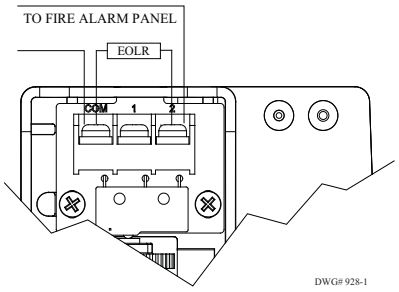
PS40-2



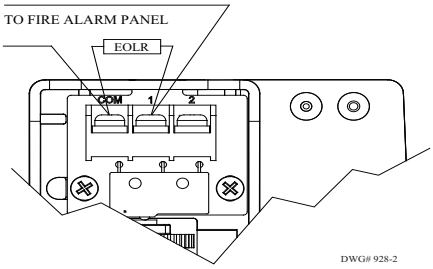
WITH NORMAL SYSTEM PRESSURE APPLIED HIGH - TERMINAL 1 WILL CLOSE ON PRESSURE INCREASE.

DWG# 930-2

Low Pressure Signal Connection
Fig. 5

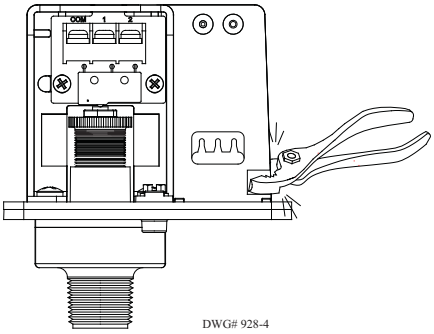


High Pressure Signal Connection
Fig. 6



One Conduit Wiring
Fig. 7

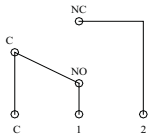
Break out thin section of divider to provide path for wires when wiring both switches from one conduit entrance.



Changing Pressure
(With normal system pressure)
Fig. 8

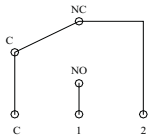
Terminal
C: Common
1: Closed when installed under normal system pressure.
2: Open when installed under normal system pressure. Closes on pressure drop. Use for low air signal.

LOW PRESSURE SWITCH



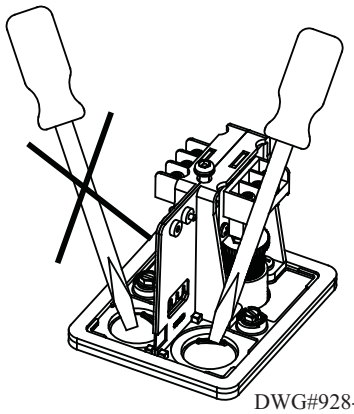
Terminal
1: Open when installed under normal system pressure. Closes on increase in pressure. Use for high air signal.
2: Closed under normal system pressure.

HIGH PRESSURE SWITCH



DWG# 930-3

Removing Knockouts
Fig. 9



DWG#928-5

Engineer/Architect Specifications Pressure Type Waterflow Switch

Pressure type supervisory switches; shall be a Model PS40 as manufactured by Potter Electric Signal Company, St. Louis, MO., and shall be installed on the fire sprinkler system as shown and or specified herein.

Switches shall be provided with a 1/2" NPT male pressure connection to be connected into the air supply line on the system side of any shut-off valve. A Model BVL bleeder valve as supplied by Potter Electric Signal Company of St. Louis, MO., or equivalent shall be connected in line with the PS40 to provide a means of testing the operation of the supervisory switch. (See Fig. 3)

The switch unit shall contain SPDT (Form C) switch(es). One switch shall be set to operate at a pressure decrease of 10 PSI (0,7 BAR) from normal. If two switches are provided, the second switch shall be set to operate at a pressure increase of 10 PSI (0,7 BAR) from normal.

Switch contacts shall be rated at 10.1 Amps at 125/250VAC and 2.0 Amps at 30VDC. The units shall have a maximum pressure rating of 300 PSI (20,68 BAR) and shall be adjustable from 10 to 60 PSI (0,7 to 4,1 BAR).

Pressure switches shall have two conduit entrances, one for each individual switch compartment to facilitate the use of dissimilar voltages for each individual switch.

The cover of the pressure switch shall be zinc die-cast with rain lip and shall attach with one tamper resistant screw. The pressure switch shall be suitable for indoor or outdoor service with a NEMA-4/IP55 rating.

The pressure switch shall be UL, ULC, and CSFM listed, FM and LPC approved and NYMEA accepted.

⚠ WARNING

- Installation must be performed by qualified personnel and in accordance with all national and local codes and ordinances.
- Shock hazard. Disconnect power source before servicing. Serious injury or death could result.
- Read all instructions carefully and understand them before starting installation. Save instructions for future use. Failure to read and understand instructions could result in improper operation of device resulting in serious injury or death.
- Risk of explosion. Not for use is hazardous locations. Serious injury or death could result.

⚠ CAUTION

- Do not tighten by grasping the switch enclosure. Use wrenching flats on the bushing only. Failure to install properly could damage the switch and cause improper operation resulting in damage to equipment and property.
- To seal threads, apply Teflon tape to male threads only. Using joint compounds or cement can obstruct the pressure port inlet and result in improper device operation and damage to equipment.
- Do not over tighten the device, standard piping practices apply.

ALARM PRESSURE SWITCH

BRAND	:	POTTER ELECTRIC
MANUFACTURER	:	POTTER ELECTRIC SIGNAL.
COUNTRY	:	U.S.A.
MODEL	:	PS10-1A (ONE SPDT SWITCH)
APPROVED	:	UL/FM
CONNECTION	:	SCREWED ENDS
MAXIMUM DIFFERENTIAL	:	1 PSI.
MAXIMUM SYSTEM PRESSURE	:	250 PSI.

MATERIAL LIST

BODY	:	CAST ALUMINIUM
FINISHED	:	RED ENAMEL
BASE	:	DIE CAST ZINC

ACCESSORIES

SWITCH CONTACT	:	SPDT (FROM C)
		15.0 AMP @125/250VAC
		2.5 AMP @30 VDC

POTTER®

SPRINKLER DIVISION

WATERFLOW SWITCHES

PRESSURE SWITCHES

SUPERVISORY DEVICES

EXPLOSION-PROOF DEVICES

MODEL PS10A
PRESSURE SWITCH

PS10-1A Single Switch - Stock No. 1340101
PS10-2A Double Switch - Stock No. 1340102

UL, cUL and CSFM Listed, FM and LPC Approved, NYMEA Accepted, CE Marked

Dimensions: 4 3/4" (12,1cm)W x 2 1/4" (5,7cm)D x 4 3/8" (11,1cm)H

Enclosure: Cover - Die-cast with textured red powdercoat finish
Base - Plated Steel

Pressure Connection: 1/2" NPT Male

Factory Adjustment:
Operates on Pressure increase at 6 ±1 PSI (0,41±0,07 BAR)
Operates on Pressure decrease at 5 ±1 PSI (0,35±0,07 BAR)

Maximum Differential: 1 PSI (0,06 BAR)

Maximum System Pressure: 250 PSI (17,2 BAR)

Switch Contacts: SPDT (Form C)
15.0 Amps at 125/250VAC, 2.5 Amps at 30VDC
One set in PS10-1A, Two sets in PS10-2A

Environmental Specifications: Indoor or outdoor use
NEMA 4/IP55 Rated Enclosure - when used with proper conduit fittings
Temperature range: -40°F to 140°F (-40°C to 60°C)
(Not for use in hazardous locations)

Service Use:

Automatic Sprinkler	NFPA-13
One or two family dwelling	NFPA-13D
Residential Occupancy up to four stories	NFPA-13R
National Fire Alarm Code	NFPA-72

Tamper: Cover incorporates tamper resistant fasteners that require a special key for removal. One key is supplied with each device. For optional cover tamper switch kit, order Stock No. 0090134.

INSTALLATION AND TEST PROCEDURES

The Potter PS10A Series Pressure Actuated Switches are designed for the detection of a waterflow condition in automatic fire sprinkler systems of particular designs such as wet systems with alarm check valves or dry pipe systems. They may also be used to provide a low pressure supervisory signal. They may be adjusted to operate on pressure between 4 and 20 PSI (0,27 and 0,4 BAR).

MOUNTING: Device should be mounted in upright position (threaded connection down). Requires NEMA type 4 conduit hub for outdoor installations.

TESTING: The operation of the pressure alarm switch should be tested upon completion of installation and periodically thereafter in accordance with the applicable NFPA codes and standards and/or the authority having jurisdiction (manufacturer recommends quarterly or more frequently).

WET SYSTEM:

METHOD 1: When using PS10A and control unit with retard - connect PS10A into alarm port piping on the input side of retard chamber and electrically connect PS10A to control unit that provides a retard to compensate for surges. Insure that no unsupervised shut-off valves are present between the alarm check valve and PS10A.

METHOD 2: When using the PS10A for local bell application or with a control that does not provide a retard feature - the PS10A must be installed on the alarm outlet side of the retard chamber of the sprinkler system.

TESTING: Accomplished by opening the inspector's end-of-line test valve. Allow time to compensate for system or control retard.

CAUTION: Method 2 is not applicable for remote station service use, if there is an unsupervised shut-off valve between the alarm check valve and the PS10A.

WET SYSTEM WITH EXCESS PRESSURE:

Connect PS10A into alarm port piping extending from alarm check valve. Retard provisions are not required. Insure that no unsupervised shut-off valves are present between the alarm check valve and the PS10A.

TESTING: Accomplished by opening the water by-pass test valve or the inspector's end-of-line test valve. When using end-of-line test, allow time for excess pressure to bleed off.

DRY SYSTEM:

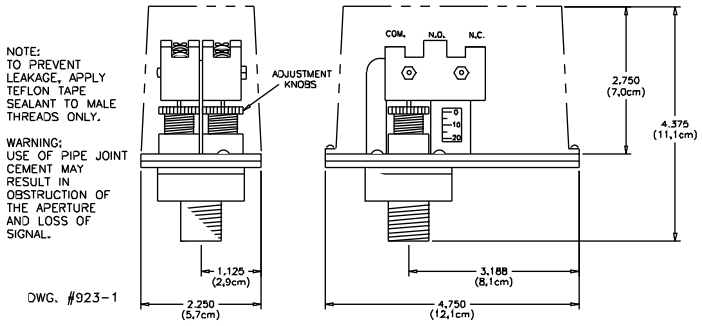
Connect PS10A into alarm port piping that extends from the intermediate chamber of the alarm check valve. Install on the outlet side of the in-line check valve of the alarm port piping. Insure that no unsupervised shut-off valves are present between the alarm check valve and the PS10A.

TESTING: Accomplished by opening the water by-pass test valve.

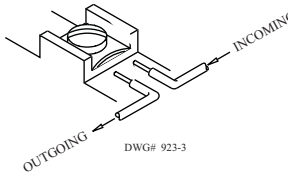
CAUTION: The above tests may also activate any other circuit closer or water motor gongs that are present on the system.

MODEL PS10A
PRESSURE SWITCH

DIMENSIONS

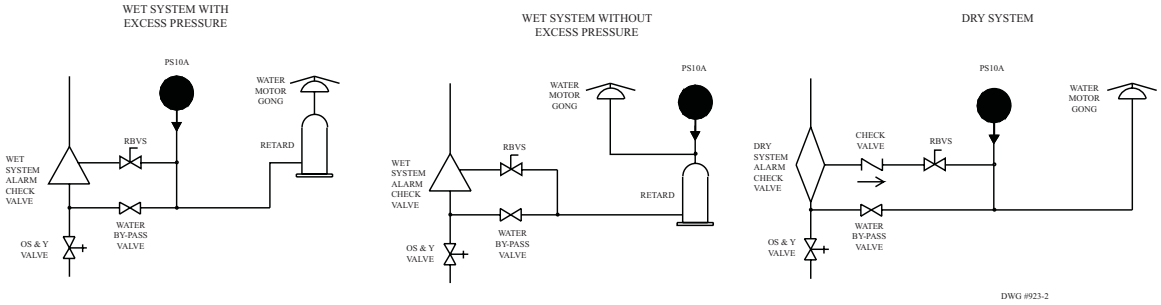


SWITCH TERMINAL CONNECTIONS
CLAMPING PLATE TERMINAL



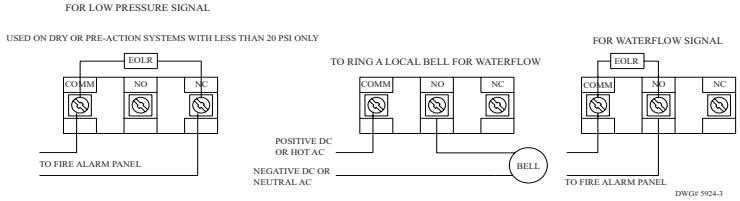
CAUTION:
An uninsulated section of a single conductor should not be looped around the terminal and serve as two separate connections. The wire must be severed, thereby providing supervision of the connection in the event that the wire becomes dislodged from under the terminal.

TYPICAL SPRINKLER APPLICATIONS

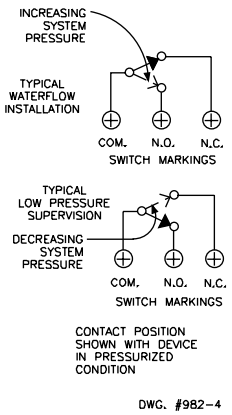


CAUTION: Closing of any shutoff valves between the alarm check valve and the PS10A will render the PS10A inoperative. To comply with NFPA-72 any such valve shall be electrically supervised with a supervisory switch such as Potter Model BVS.

TYPICAL ELECTRICAL CONNECTIONS



PRESSURE SWITCH TERMINATION



ORDERING INFORMATION

Model	Description	Stock No.
PS10-1A	Pressure switch with one set SPDT contacts	1340101
PS10-2A	Pressure switch with two sets SPDT contacts	1340102
	Hex Key	5250062
	Cover Tamper Switch Kit	0090134
RBVS	Ball Valve tamper switch	1000040

APPLICATION WARNING!

Due to the possibility of unintended discharges caused by pressure surges, trapped air, or short retard times, waterflow switches that are monitoring wet pipe sprinkler systems should not be used as the sole initiating device to discharge AFFF, deluge, or chemical suppression systems.

ENGINEER/ARCHITECT SPECIFICATIONS

Pressure type waterflow switches shall be a Model PS10A as manufactured by Potter Electric Signal Co. of St. Louis, Mo. and shall be installed on the sprinkler systems as shown on the drawings and/or specified herein.

Switches shall be provided with a 1/2" NPT male pressure connection to be connected into the alarm check valve of a “wet” sprinkler system or into the intermediate chamber of a “dry” pipe system and shall be actuated by any flow of water to or in excess of the discharge from one sprinkler head.

Switches shall have a maximum service pressure rating of 250 PSI (17,2 BAR) and shall be factory adjusted to operate on pressure increase at 6 ±1 PSI (0,4 ±0,06 BAR). There shall be one (1) or two (2) SPDT contacts rated at 15.0 Amps at 125/250VAC and 2.5 Amps at 30VDC.

The switch housing shall be weather proof and oil resistant. The cover shall incorporate tamper resistant screws.

The unit shall be UL and CSFM Listed, FM and LPC Approved, and NYMEA Accepted.

VIKING®

TECHNICAL DATA

AIR PRESSURE MAINTENANCE DEVICE MODEL D-2

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

A. RESETTING (Refer to Figure 2.)

On installation or after repair, adjustment may be necessary.

1. Turn the air supply on and check the downstream pressure for desired reading.
2. If adjustment of the downstream pressure is necessary:
   a. Turn off the air supply. Relieve air pressure on the system side of the air pressure maintenance device.
   b. Loosen the lock nut (3).
   c. Turn the adjusting screw (1) clockwise to increase pressure or counter-clockwise to decrease pressure.
   d. Tighten the lock nut (3).

B. DISASSEMBLY (Refer to Figure 2.)

WARNING: DO NOT DISCONNECT OR DISASSEMBLE THE AIR PRESSURE MAINTENANCE DEVICE WITHOUT CLOSING THE INLET AND OUTLET ISOLATION VALVES. (REFER TO FIGURE 1.)

CAUTION: SYSTEM AIR PRESSURE WILL BE TRAPPED BETWEEN THE OUTLET OF THE AIR PRESSURE MAINTENANCE DEVICE AND THE DOWNSTREAM CONTROL VALVE. RELIEVE PRESSURE BEFORE PROCEEDING WITH DISASSEMBLY.

1. Carefully loosen the union between the outlet of the air pressure maintenance device (AMD) and the downstream control valve to relieve pressure.
2. To prevent accidental tripping of the system, manually maintain system air pressure at a constant level while the AMD is out of service.
3. Place the AMD in the upright position and remove the six cover screws (6) using a Phillips head screwdriver.
4. Separate the cover (4) from the body (9).
5. Remove the spring (11), the spring retainer (5), and diaphragm assembly (7) from the body (9).
6. The Schrader valve assembly (8) is now visible inside the body (9).

C. INSTALLATION OF NEW PARTS AND REASSEMBLY (Refer to Figure 2.)

To Replace the Schrader Valve Assembly (8) only:

1. Use a socket wrench with a 7/16” socket to unthread it from the body (9). Install the new Schrader valve assembly (8) and tighten with a 7/16” socket. If this is the only part to be replaced, the AMD can now be reassembled.
   a. Install the diaphragm assembly (7).
   b. Place the spring retainer (5) in the center of the diaphragm assembly (7).
   c. Remove the adjustment screw (1) from the cover (4).
   d. Place the cover (4) onto the body (9).
   e. Install the six cover screws (6) using a Phillips head screwdriver.
   f. Place the spring (11) in the center of the cover (4).
   g. Reinstall the adjustment screw (1).

The AMD is now ready to be tested and installed into the valve trim. Note: When placing system in operation, open the INLET globe valve first!

To Replace the Parts Included in the Repair Kit:

1. Remove the six cover screws (6) from the cover (4) of the AMD using a Phillips head screwdriver.
2. Separate the cover (4) from the body (9).
3. Remove the spring (2), the spring retainer (5), and the diaphragm assembly (7).
4. Rotate the AMD upside down to access the filter cap (18). Remove the filter cap (18) from the valve housing (10) using a socket wrench with a 1-1/4” socket.
5. With the filter (17) exposed, remove the filter seal (16) using a small flathead screwdriver. The filter (17) should now fall easily out of the filter cap (18).
6. Remove the valve housing (10) from the body (9) using a socket wrench with a 1-1/4” socket.
7. Install the new valve housing (10) into the body (9).
8. While holding the filter cap (18), insert the new filter (17) and new filter cap (18) onto the body (9) and tighten with the 1-1/4” socket.
9. Rotate the AMD back into the upright position. Place the new diaphragm assembly (7) into the body (9).
10. Set the spring retainer (5) in the center of the diaphragm assembly (7).
11. Unthread the adjustment screw (1) from the cover (4) by hand.
12. Place the cover (4) onto the body (9).
13. Install the six cover screws (6) using a Phillips head screwdriver.
14. Place the spring (11) in the center of the cover (4).
15. Reinstall the adjustment screw (1).

The AMD is now ready to be tested and installed into the valve trim. Note: When placing system in operation, open the INLET globe valve first!

TECHNICAL DATA

AIR PRESSURE MAINTENANCE DEVICE MODEL D-2

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

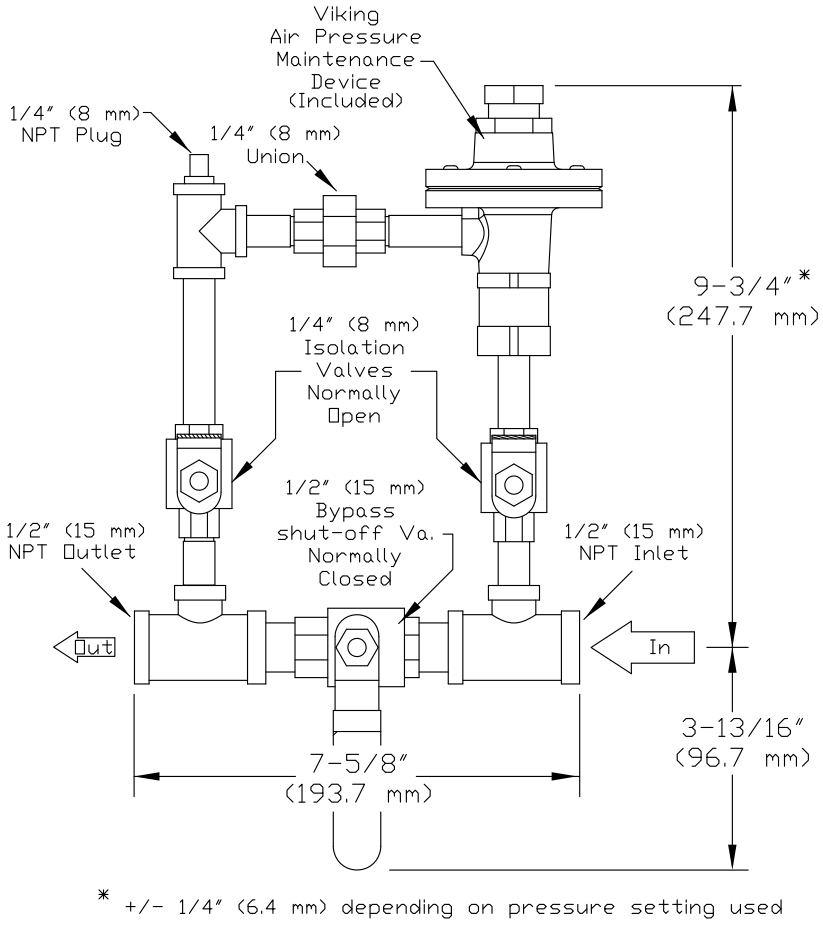
7. AVAILABILITY

The Viking Air Pressure Maintenance Device is available through a network of domestic and international distributors. See the Viking Corp. Web site for closest distributor or contact The Viking Corporation.

8. GUARANTEES

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

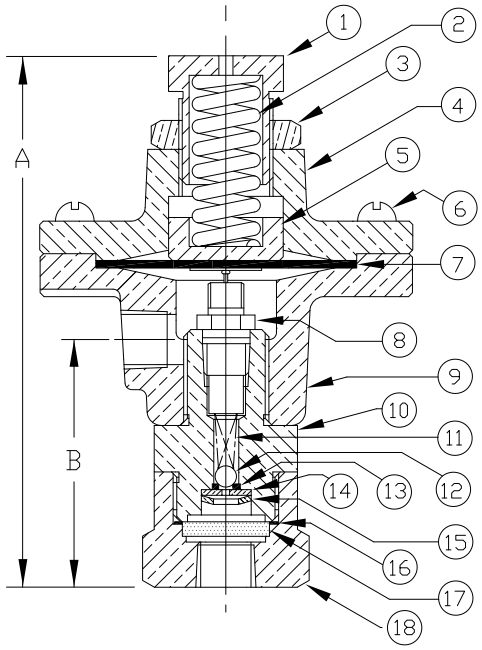
Figure 1
Air Maintenance Device and Preassembled Trim with Bypass (Viking Part Number 07459)



TECHNICAL DATA

AIR PRESSURE MAINTENANCE DEVICE MODEL D-2

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



A = 4-13/16” (122 mm) ± 1/4” (6.4 mm) depending on pressure setting
B = 2-5/32” (54.8 mm)

Figure 2
Air Maintenance Device
(Viking Part Number 02280C)

ITEM NO.	PART NUMBER	DESCRIPTION	MATERIAL	NO. REQ’D
1	02273A	Adjustment Screw	Brass UNS-C36000	1
2	01791A	Spring	Stainless Steel UNS-S30200	1
3	02275A	Lock Nut	Brass UNS-C36000	1
4	--	Cover	Brass UNS-C83600	1
5	02276A	Spring Retainer	Brass UNS-C36000	1
6	04505A	Screw, R.H.P.D. #10-24 x 5/8 Lg.	Stainless Steel UNS-S30200	6
7	01792A	Diaphragm Assembly	Neoprene ASTM D2000	1
8	06418A	Schrader Valve Assembly	Brass UNS-C26000, Brass UNS-C36000, Stainless Steel UNS-30200	1
9	--	Body	Brass UNS-C83600	1
10	06425B	Valve Housing	Brass UNS-C36000	1
11	02509A	Spring	Stainless Steel UNS-S30200	1
12	01803A	Ball	Stainless Steel UNS-S30200	1
13	01802A	O-Ring	Nitrile (Buna-N)	1
14	01801A	Retainer Plate	Brass UNS-C26000	1
15	01307A	Retainer, Orifice Plate	Brass UNS-C26000	1
16	02181A	Filter Seal	Copper UNS-C11000	1
17	02257A	Filter	Sintered Bronze	1
18	02271B	Filter Cap	Brass UNS-C36000	1
-- Indicates replacement part is not available.				
SUB-ASSEMBLY				
6-8, 10-17	12504	Repair Kit		

DELUGE-PREACTION CONTROL PANEL

BRAND	:	NOTIFIER
COUNTRY	:	USA.
MODEL	:	RP-2001 (E)
APPROVED	:	UL LIST
ELECTRICAL	:	240 VAC, 50 HZ, 2.085 AMPS
WIRE SIZE	:	MINIMUM 14 AWG (2.0 mm^2) WITH 600 V INSULATION, SUPERVISED, NONPOWER-LIMITED

RP-2001(E)

Deluge - Preaction Control Panel

NOTIFIER® by Honeywell

Conventional Releasing Panels

General

The RP-2001 is a six-zone FACP for single and dual hazard deluge and preaction applications. The RP-2001 provides reliable fire detection, signaling and protection for commercial, industrial and institutional buildings requiring water-based releasing. The RP-2001 is compatible with System Sensor's i^3 detectors which are conventional smoke detectors that can transmit a maintenance trouble signal to the FACP indicating the need for cleaning and a supervisory 'freeze' signal when the ambient temperature falls below the detector rating of approximately 45°F (7.22°C). In addition, the control panel is compatible with conventional input devices such as two-wire smoke detectors, four-wire smoke detectors, pull stations, waterflow devices, tamper switches and other normally-open contact devices. Refer to the Notifier Device Compatibility Document for a complete listing of compatible devices.

Four outputs are programmable as NACs (Notification Appliance Circuits) or releasing circuits. Three programmable Form-C relays (factory programmed for Alarm, Trouble and Supervisory) and 24 VDC special application resettable and non-resettable power outputs are also included on the main circuit board. The RP-2001 supervises all wiring, AC voltage, battery charger and battery level.

Activation of a compatible smoke detector or any normally-open fire alarm initiating device will activate audible and visual signaling devices, illuminate an indicator, display alarm information on the panel's LCD, sound the piezo sounder at the FACP, activate the FACP alarm relay and operate an optional module used to notify a remote station or initiate an auxiliary control function.

The RP-2001E offers the same features as the RP-2001 but allows connection to 240 VAC. Unless otherwise specified, the information in this data sheet applies to both the 120 VAC and 240 VAC versions of the panels.

Features

- Listed to UL Standard 864, 9th edition.
- FM Approved.
- Designed for sprinkler standards NFPA 13, 15 and 16.
- Dual hazard operation.
- Adjustable waterflow discharge timer and two soak timers.
- Cross-zone (double-interlock) capability.
- Six programmable Style B (Class B) IDCs (Initiating Device Circuit).
- System Sensor i^3 series detectors compatible.
- Four programmable Style Y (Class B) output circuits - (special application power).
- Strobe Synchronization:
  - System Sensor
  - Wheelock
  - Gentex
  - Faraday
  - Amseco
- Three programmable Form-C relays.
- 7.0 amps total 24 VDC output current.
- Resettable and non-resettable output power.

- Built-in Programmer.
- ANN-BUS for connection to optional devices (up to 8 total of any of the following):
  - N-ANN-80 Remote LCD Annunciator
  - N-ANN-I/O LED Driver
  - N-ANN-S/PG Printer Module
  - N-ANN-RLY Relay Module
  - N-ANN-LED Annunciator Module
- 80-character LCD display (backlit).
- Real-time clock/calendar with daylight savings time control.
- History log with 256 event storage.
- Piezo sounder for alarm, trouble and supervisory.
- 24 volt DC operation.
- Low AC voltage sense.
- Outputs Programmable for:
  - Releasing circuits or NACS
- NACs programmable for:
  - Silence Inhibit
  - Auto-Silence
  - Strobe Synchronization
  - Selective Silence (horn-strobe mute)
  - Temporal or Steady Signal
  - Silenceable or Non-silenceable
  - Release Stage Sounder
- Disable/Enable control per input zone and output zone.
- Extensive transient protection.
- Automatic battery charger with charger supervision.
- Optional Dress Panel DP-51050 (red).
- Optional Trim Ring TR-CE (red) for semi-flush mounting the cabinet.
- Optional N-CAC-5X Class A Converter Module for Outputs and IDCs.
- Optional 4XTM Municipal Box Transmitter Module.

- Optional Digital Alarm Communicators (411, 411UD, 411UDAC).

PROGRAMMING AND SOFTWARE:

- Custom English labels (per point) may be manually entered or selected from an internal library file.
- Three programmable Form-C relay outputs.
- Pre-programmed and custom application templates.
- Continuous fire protection during online programming at the front panel.
- Program Check automatically catches common errors not linked to any zone or input point.

USER INTERFACE:

- Integral 80-character LCD display with backlighting.
- Real-time clock/calendar with automatic daylight savings adjustments.
- ANN-Bus for connection to remote annunciators.
- Audible or silent walk test capabilities.
- Piezo sounder for alarm, trouble, and supervisory.

Controls and Indicators

LED INDICATORS

- FIRE ALARM (red)
- SUPERVISORY (yellow)
- TROUBLE (yellow)
- AC POWER (green)
- ALARM SILENCED (yellow)
- DISCHARGE (red)

CONTROL BUTTONS

- ACKNOWLEDGE
- ALARM SILENCE
- SYSTEM RESET (lamp test)
- DRILL

AC Power – TB1

- **RP-2001:** 120 VAC, 60 Hz, 3.66 amps.
- **RP-2001E:** 240 VAC, 50 Hz, 2.085 amps.
- Wire size: minimum #14 AWG (2.0 mm^2) with 600V insulation.
- Supervised, nonpower-limited.

Battery (sealed lead acid only) – J12:

- **Maximum Charging Circuit - Normal Flat Charge:** 27.6 VDC @ 1.4 amp. Supervised, nonpower-limited.
- **Maximum Charger Capacity:** 26 Amp Hour battery (two 18 Amp Hour batteries can be housed in the FACP cabinet. Larger batteries require separate battery box such as the BB-26 or NFS-LBBR).
- **Minimum Battery Size:** 7 Amp Hour.

Initiating Device Circuits - TB4 and TB6

- Alarm Zones 1 - 5 on TB4.
- Alarm Zone 6 on TB6.
- Supervised and power-limited circuitry.
- Style B (Class B) wiring with Style D (Class A) option.
- **Normal Operating Voltage:** Nominal 20 VDC.
- **Alarm Current:** 15 mA minimum.
- **Short Circuit Current:** 40 mA max.
- **Maximum Loop Resistance:** 100 Ohms.
- **End-of-Line Resistor:** 4.7K Ohms, 1/2 watt (PN 71252).
- **Standby Current:** 4 mA.

Refer to the Notifier Device Compatibility Document for listed compatible devices.

Notification Appliance and Releasing Circuit(s) - TB5 and TB7

- Four Output Circuits.
- Style Y (Class B) or Style Z (Class A) with optional converter module.
- Special Application power.
- Supervised and power-limited circuitry.
- **Normal Operating Voltage:** Nominal 24 VDC.
- **Maximum Signaling Current:** 7.0 amps (3.0 amps maximum per NAC).
- **End-of-Line Resistor:** 4.7K Ohms, 1/2 watt (PN 71252).
- **Max. Wiring Voltage Drop:** 2 VDC.

Refer to the Notifier Device Compatibility Document for compatible listed devices.

Form-C Relays - Programmable - TB8

- Relay 1 (factory default programmed as Alarm Relay).
- Relay 2 (factory default programmed as fail-safe Trouble Relay).
- Relay 3 (factory default programmed as Supervisory Relay).
- Relay Contact Ratings:
  - 2 amps @ 30 VDC (resistive)
  - 0.5 amps @ 30 VAC (resistive)

Auxiliary Trouble Input – J6

The Auxiliary Trouble Input is an open collector circuit which can be used to monitor external devices for trouble conditions. It can be connected to the trouble bus of a peripheral, such as a power supply, which is compatible with open collector circuits.

Special Application Resettable Power - TB9

- **Operating Voltage:** Nominal 24 VDC.
- **Maximum Available Current:** 500 mA - appropriate for powering 4-wire smoke detectors (see note 1).
- Power-limited Circuitry.

Refer to the Notifier Device Compatibility Document for compatible listed devices.

NOTE: *1. Total current for resettable power, nonresettable power and Output Circuits must not exceed 7.0 amps.*

Special Application Resettable or Nonresettable Power - TB9

- **Operating Voltage:** Nominal 24 VDC.
- **Maximum Available Current:** 500 mA (see note 1).
- Power-limited Circuitry.
- Jumper selectable by JP31 for resettable or nonresettable power.

Refer to the Notifier Device Compatibility Document for compatible listed devices.

Product Line Information

RP-2001: Six-zone, 24 volt Deluge-Preaction Control Panel (includes backbox, power supply, technical manual, and a frame & post operating instruction sheet) for single and dual hazard deluge and preaction applications.

RP-2001E: Same as above but allows connection to 240 VAC.

NOTE: *For ULC-listed model, see DN-60442.*

N-CAC-5X: Class A Converter Module can be used to convert the Style B (Class B) Initiating Device Circuits to Style D (Class A) and Style Y (Class B) Output Circuits to Style Z (Class A).

NOTE: *Two Class A Converter modules are required to convert all four Output Circuits and six Initiating Device Circuits.*

4XTM: Transmitter Module provides a supervised output for local energy municipal box transmitter and alarm and trouble reverse polarity. It includes a disable switch and disable trouble LED.

N-ANN-80(-W): LCD Annunciator is a remote LCD annunciator that mimics the information displayed on the FACP LCD display. Recommended wire type is unshielded. (Basic model is black; order -W version for white; s*ee DN-7114.)*

N-ANN-LED: Annunciator Module provides three LEDs for each zone: Alarm, Trouble and Supervisory. Ships with red or black enclosure (see DN-60242).

N-ANN-RLED: Provides alarm (red) indicators for up to 30 input zones or addressable points. (See DN-60242).

N-ANN-RLY: Relay Module, which can be mounted inside or outside the cabinet, provides 10 programmable Form-C relays. *(See DN-7107.)*

N-ANN-S/PG: Serial/Parallel Printer Gateway module provides a connection for a serial or parallel printer. *(See DN-7103.)*

N-ANN-I/O: LED Driver Module provides connections to a user supplied graphic annunciator. *(See DN-7105.)*

DP-51050: Dress panel (red) is available as an option. The dress panel restricts access to the system wiring while allowing access to the membrane switch panel.

TR-CE: Trim-ring (red) is available as an option. The trim-ring allows semi-flushing mounting of the cabinet.

BB-26: Battery box, holds up to two 26 Amp Hour batteries and CHG-75.

NFS-LBBR: Battery box, houses two 55 Amp Hour batteries, red.

BAT Series Batteries: Refer to DN-6933.

PRN-6: UL-listed compatible event printer. Dot-matrix, tractor-fed paper, 120 VAC.

PRT-PK CABLE: Programming cable. Used to update the FACPs Flash firmware. (Also requires an RS485 to RS232 converter).

SYSTEM SPECIFICATIONS

System Capacity

- Annunciators 8

Electrical Specifications

- **RP-2001 (FLPS-7 Power Supply):** 120 VAC, 60 Hz, 3.66 amps.
- **RP-2001E (FLPS-7 Power Supply):** 240 VAC, 50 Hz, 2.085 amps.
- **Wire size:** minimum 14 AWG (2.0 mm²) with 600 V insulation, supervised, nonpower-limited.

Cabinet Specifications

Door: 19.26" (48.92 cm.) high x 16.82" (42.73 cm.) wide x 0.72" (1.82 cm.) deep. **Backbox:** 19.00" (48.26 cm.) high x 16.65" (42.29 cm.) wide x 5.25" (13.34 cm.) deep. **Trim Ring (TR- CE):** 22.00" (55.88 cm.) high x 19.65" (49.91 cm.) wide.

Shipping Specifications

Dimensions:

- Height 20.00" (50.80cm)
- Width 22.50" (57.15cm)
- Depth 8.50" (21.59cm)

Temperature and Humidity Ranges

This system meets NFPA requirements for operation at 0 – 49°C/32 – 120°F and at a relative humidity 93% ± 2% RH (noncondensing) at 32°C ± 2°C (90°F ± 3°F). However, the useful life of the system's standby batteries and the electronic components may be adversely affected by extreme temperature ranges and humidity. Therefore, it is recommended that this system and its peripherals be installed in an environment with a normal room temperature of 15 – 27°C/60 – 80°F.

NFPA Standards

The RP-2001(E) complies with the following NFPA 72 Fire Alarm Systems requirements:

- **NFPA 13** Installation of Sprinkler Systems
- **NFPA 15** Water Spray Fixed Systems
- **NFPA 16** Deluge Foam-Water Sprinkler and Foam-Water Spray Systems
- **NFPA 72** National Fire Alarm Code for Local Fire Alarm Systems and Remote Station Fire Alarm Systems (requires an optional Remote Station Output Module)

Agency Listings and Approvals

The listings and approvals below apply to the basic RP-2001(E) and RP-2001(E)E fire alarm control panels. In some cases, certain modules may not be listed by certain approval agencies, or listing may be in process. Consult factory for latest listing status.

- **UL:** S635
- **FM approved**
- **CSFM:** 7165-0028:0245
- **MEA:** 333-07-E

NOTE: *For ULC-listed model, see DN-60442.*

ISO 9001 CERTIFIED
ENGINEERING & MANUFACTURING
QUALITY SYSTEMS

This document is not intended to be used for installation purposes.
We try to keep our product information up-to-date and accurate.
We cannot cover all specific applications or anticipate all requirements.
All specifications are subject to change without notice.

Made in the U.S. A.

For more information, contact Notifier. Phone: (203) 484-7161, FAX: (203) 484-7118.
www.notifier.com

Indoor Selectable-Output Horns, Strobes, and Horn Strobes for Wall Applications

System Sensor L-Series audible visible notification products are rich with features guaranteed to cut installation times and maximize profits with lower current draw and modern aesthetics.

Features

- Updated Modern Aesthetics
- Small profile devices for Horns and Horn Strobes
- Plug-in design with minimal intrusion into the back box
- Tamper-resistant construction
- Automatic selection of 12- or 24-volt operation at 15 and 30 candela
- Field-selectable candela settings on wall units: 15, 30, 75, 95, 110, 135, and 185
- Horn rated at 88+ dBA at 16 volts
- Rotary switch for horn tone and two volume selections
- Mounting plate for all standard and all compact wall units
- Mounting plate shorting spring checks wiring continuity before device installation
- Electrically Compatible with legacy SpectrAlert and SpectAlert Advance devices
- Compatible with MDL3 sync module
- Listed for wall mounting only

Agency Listings

SIGNALING UL LISTED
S5512
S4011

FM APPROVED
FM approved except for ALERT models 3057383, 3057072

7125-1653:0504
7135-1653:0503

The System Sensor L-Series offers the most versatile and easy-to-use line of horns, strobes, and horn strobes in the industry with lower current draws and modern aesthetics. With white and red plastic housings, standard and compact devices, and plain, FIRE, and FUEGO-printed devices, System Sensor L-Series can meet virtually any application requirement.

The L-Series line of wall-mount horns, strobes, and horn strobes include a variety of features that increase their application versatility while simplifying installation. All devices feature plug-in designs with minimal intrusion into the back box, making installations fast and foolproof while virtually eliminating costly and time-consuming ground faults.

To further simplify installation and protect devices from construction damage, the L-Series utilizes a universal mounting plate for all models with an onboard shorting spring, so installers can test wiring continuity before the device is installed.

Installers can also easily adapt devices to a suit a wide range of application requirements using field-selectable candela settings, automatic selection of 12- or 24-volt operation, and a rotary switch for horn tones with two volume selections.

L-Series Specifications

Architect/Engineer Specifications

General

L-Series standard horns, strobes, and horn strobes shall mount to a standard 2 x 4 x 1 7/8-inch back box, 4 × 4 × 1½-inch back box, 4-inch octagon back box, or double-gang back box. L-Series compact products shall mount to a single-gang 2 × 4 × 1⅞-inch back box. A universal mounting plate shall be used for mounting ceiling and wall products for all standard models and a separate universal mounting plate shall be used for mounting wall compact models. The notification appliance circuit wiring shall terminate at the universal mounting plate. Also, L-Series products, when used with the Sync•Circuit™ Module accessory, shall be powered from a non-coded notification appliance circuit output and shall operate on a nominal 12 or 24 volts. When used with the Sync•Circuit Module, 12-volt-rated notification appliance circuit outputs shall operate between 8.5 and 17.5 volts; 24-volt-rated notification appliance circuit outputs shall operate between 16.5 and 33 volts. Indoor L-Series products shall operate between 32 and 120 degrees Fahrenheit from a regulated DC or full-wave rectified unfiltered power supply. Strobes and horn strobes shall have field-selectable candela settings including 15, 30, 75, 95, 110, 135, and 185.

Strobe

The strobe shall be a System Sensor L-Series Model _____ listed to UL 1971 and shall be approved for fire protective service. The strobe shall be wired as a primary-signaling notification appliance and comply with the Americans with Disabilities Act requirements for visible signaling appliances, flashing at 1 Hz over the strobe's entire operating voltage range. The strobe light shall consist of a xenon flash tube and associated lens/reflector system.

Horn Strobe Combination

The horn strobe shall be a System Sensor L-Series Model _____ listed to UL 1971 and UL 464 and shall be approved for fire protective service. The horn strobe shall be wired as a primary-signaling notification appliance and comply with the Americans with Disabilities Act requirements for visible signaling appliances, flashing at 1 Hz over the strobe's entire operating voltage range. The strobe light shall consist of a xenon flash tube and associated lens/reflector system. The horn shall have two audibility options and an option to switch between a temporal three pattern and a non-temporal (continuous) pattern. These options are set by a multiple position switch. The horn on horn strobe models shall operate on a coded or non-coded power supply.

Synchronization Module

The module shall be a System Sensor Sync•Circuit model MDL3 listed to UL 464 and shall be approved for fire protective service. The module shall synchronize SpectrAlert strobes at 1 Hz and horns at temporal three. Also, while operating the strobes, the module shall silence the horns on horn strobe models over a single pair of wires. The module shall mount to a 411⁄16 × 411⁄16 × 21⁄8-inch back box. The module shall also control two Style Y (class B) circuits or one Style Z (class A) circuit. The module shall synchronize multiple zones. Daisy chaining two or more synchronization modules together will synchronize all the zones they control. The module shall not operate on a coded power supply.

Physical/Electrical Specifications

Standard Operating Temperature	32°F to 120°F (0°C to 49°C)
Humidity Range	10 to 93% non-condensing
Strobe Flash Rate	1 flash per second
Nominal Voltage	Regulated 12 DC or regulated 24 DC/FWR[1,2]
Operating Voltage Range	8 to 17.5 V (12 V nominal) or 16 to 33 V (24 V nominal)
Operating Voltage Range MDL3 Sync Module	8.5 to 17.5 V (12 V nominal) or 16.5 to 33 V (24 V nominal)
Input Terminal Wire Gauge	12 to 18 AWG
Wall-Mount Dimensions (including lens)	5.6˝L × 4.7˝W × 1.91˝D (143 mm L × 119 mm W × 49 mm D)
Compact Wall-Mount Dimensions (including lens)	5.26" L x 3.46" W x 1.91" D (133 mm L x 88 mm W x 49 mm D)
Horn Dimensions	5.6˝L × 4.7˝W × 1.25˝D (143 mm L × 119 mm W × 32 mm D)
Compact Horn Dimensions	5.25" L x 3.45" W x 1.25" D (133mm L x 88mm W x 32mm D)

1. Full Wave Rectified (FWR) voltage is a non-regulated, time-varying power source that is used on some power supply and panel outputs.
2. Strobe products will operate at 12 V nominal only for 15 cd and 30 cd.

UL Current Draw Data

UL Max. Strobe Current Draw (mA RMS)

		8–17.5 Volts	16–33 Volts	
	Candela	DC	DC	FWR
Candela Range	15	88	43	60
	30	143	63	83
	75	N/A	107	136
	95	N/A	121	155
	110	N/A	148	179
	135	N/A	172	209
	185	N/A	222	257

UL Max. Horn Current Draw (mA RMS)

		8–17.5 Volts	16–33 Volts	
Sound Pattern	dB	DC	DC	FWR
Temporal	High	39	44	54
Temporal	Low	28	32	54
Non-Temporal	High	43	47	54
Non-Temporal	Low	29	32	54
3.1 KHz Temporal	High	39	41	54
3.1 KHz Temporal	Low	29	32	54
3.1 KHz Non-Temporal	High	42	43	54
3.1 KHz Non-Temporal	Low	28	29	54
Coded	High	43	47	54
3.1 KHz Coded	High	42	43	54

UL Max. Current Draw (mA RMS), 2-Wire Horn Strobe, Candela Range (15–115 cd)

	8-17.5 Volts		16-33 Volts						
DC Input	15cd	30cd	15cd	30cd	75cd	95cd	110cd	135cd	185cd
Temporal High	98	158	54	74	121	142	162	196	245
Temporal Low	93	154	44	65	111	133	157	184	235
Non-Temporal High	106	166	73	94	139	160	182	211	262
Non-Temportal Low	93	156	51	71	119	139	162	190	239
3.1K Temporal High	93	156	53	73	119	140	164	190	242
3.1K Temporal Low	91	154	45	66	112	133	160	185	235
3.1K Non-Temporal High	99	162	69	90	135	157	175	208	261
3.1K Non-Temporal Low	93	156	52	72	119	138	162	192	242
	16-33 Volts								
FWR Input	15cd	30cd	75cd	95cd	110cd	135cd	185cd		
Temporal High	83	107	156	177	198	234	287		
Temporal Low	68	91	145	165	185	223	271		
Non-Temporal High	111	135	185	207	230	264	316		
Non-Temportal Low	79	104	157	175	197	235	283		
3.1K Temporal High	81	105	155	177	196	234	284		
3.1K Temporal Low	68	90	145	166	186	222	276		
3.1K Non-Temporal High	104	131	177	204	230	264	326		
3.1K Non-Temporal Low	77	102	156	177	199	234	291		

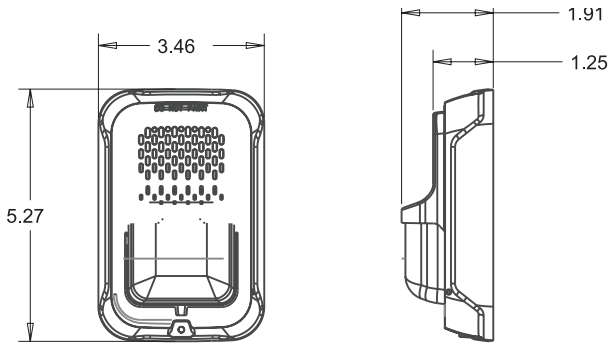
Horn Tones and Sound Output Data

Horn and Horn Strobe Output (dBA)

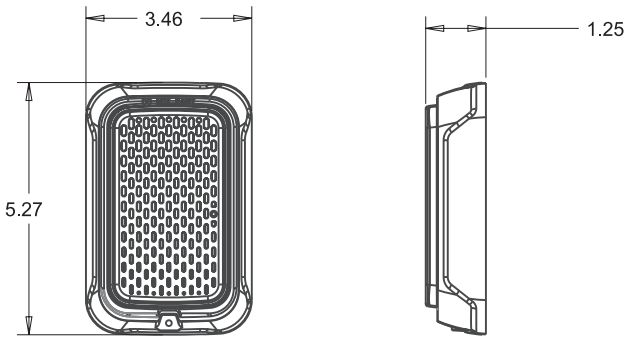
			8–17.5 Volts	16–33 Volts	
Switch Position	Sound Pattern	dB	DC	DC	FWR
1	Temporal	High	84	89	89
2	Temporal	Low	75	83	83
3	Non-Temporal	High	85	90	90
4	Non-Temporal	Low	76	84	84
5	3.1 KHz Temporal	High	83	88	88
6	3.1 KHz Temporal	Low	76	82	82
7	3.1 KHz Non-Temporal	High	84	89	89
8	3.1 KHz Non-Temporal	Low	77	83	83
9*	Coded	High	85	90	90
10*	3.1 KHz Coded	High	84	89	89

* Settings 9 and 10 are not available on the 2-wire horn strobes.

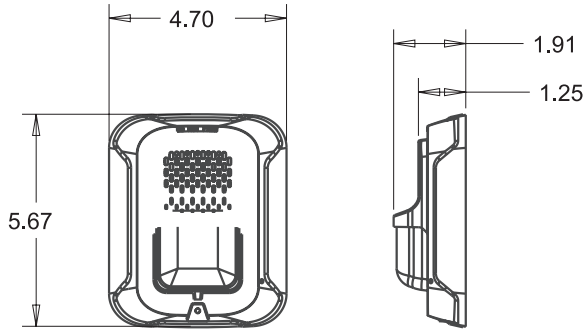
L-Series Dimensions



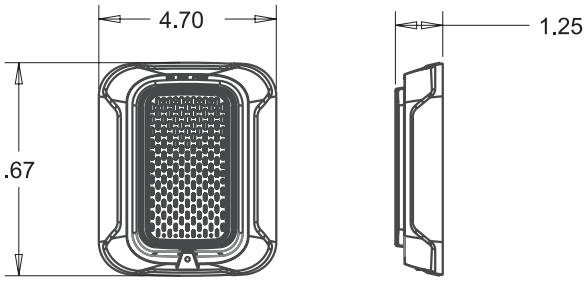
Compact Strobe / Horn Strobe



Compact Horn



Strobe / Horn Strobe



Horn

L-Series Ordering Information

Model	Description
Wall Horn Strobes	
P2RL	2-Wire, Horn Strobe, Red
P2WL	2-Wire, Horn Strobe, White
P2GRL	2-Wire, Compact Horn Strobe, Red
P2GWL	2-Wire, Compact Horn Strobe, White
P2RL-P	2-Wire, Horn Strobe, Red, Plain
P2WL-P	2-Wire, Horn Strobe, White, Plain
P2RL-SP	2-Wire, Horn Strobe, Red, FUEGO
P2WL-SP	2-Wire, Horn Strobe, White, FUEGO
Wall Strobes	
SRL	Strobe, Red
SWL	Strobe, White
SGRL	Compact Strobe, Red
SGWL	Compact Strobe, White
SRL-P	Strobe, Red, Plain
SWL-P	Strobe, White, Plain
SRL-SP	Strobe, Red, FUEGO
SWL-CLR-ALERT	Strobe, White, ALERT

Model	Description
Horns	
HRL	Horn, Red
HWL	Horn, White
HGRL	Compact Horn, Red
HGWL	Compact Horn, White
Accessories	
TR-2	Universal Wall Trim Ring Red
TR-2W	Universal Wall Trim Ring White
SBBRL	Wall Surface Mount Back Box, Red
SBBWL	Wall Surface Mount Back Box, White
SBBGRL	Compact Wall Surface Mount Back Box, Red
SBBGWL	Compact Wall Surface Mount Back Box, White

Notes:
All -P models have a plain housing (no “FIRE” marking on cover)
All -SP models have “FUEGO” marking on cover
All -ALERT models have “ALERT” marking on cover

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AVDS86503 • 03/17

FIRE ALARM PULL STATION

BRAND	:	NOTIFIER
MODEL	:	NBG-12
CONTACT RATING	:	0.25A @30VAC or VDC
COLOR	:	RED

NBG-12 Series

Non-Coded Conventional Manual Fire Alarm Pull Stations

NOTIFIER® by Honeywell

Conventional Initiating Devices

General

The NOTIFIER **NBG-12 Series** is a cost-effective, feature-packed series of non-coded manual fire alarm pull stations. It was designed to meet multiple applications with the installer and end-user in mind. The NBG-12 Series features a variety of models including single- and dual-action versions.

The NBG-12 Series provides an alarm initiating input signal to conventional fire alarm control panels (FACPs) such as the SFP Series, and to XP Transponders. Its innovative design, durable construction, and multiple mounting options make the NBG-12 Series simple to install, maintain, and operate.

Features

- Aesthetically pleasing, highly visible design and color.
- Attractive contoured shape and light textured finish.
- Meets ADA 5 lb. maximum pull-force.
- Meets UL 38, Standard for Manually Actuated Signaling Boxes.
- Easily operated (single- or dual-action, model dependent), yet designed to prevent false alarms when bumped, shaken, or jarred.
- PUSH IN/PULL DOWN handle latches in the down position to clearly indicate the station has been operated.
- The word “ACTIVATED” appears on top of the handle in bright yellow, further indicating operation of the station.
- Operation handle features white arrows showing basic operation direction for non-English-speaking persons.
- Braille text included on finger-hold area of operation handle and across top of handle.
- Multiple hex- and key-lock models available.
- U.S. patented hex-lock needs only a quarter-turn to lock/unlock.
- Station can be opened for inspection and maintenance without initiating an alarm.
- Product ID label viewable by simply opening the cover; label is made of a durable long-life material.
- The words “NORMAL” and “ACTIVATED” are molded into the plastic adjacent to the alarm switch (located inside).
- Four-position terminal strip molded into backplate.
- Terminal strip includes Phillips combination-head captive 8/32 screws for easy connection to Initiating Device Circuit (IDC).
- Terminal screws backed-out at factory and shipped ready to accept field wiring (up to 12 AWG/3.1 mm²).
- Terminal numbers are molded into the backplate, eliminating the need for labels.
- Switch contacts are normally open.
- Can be surface-mounted (with **SB-10** or **SB-I/O**) or semi-flush mounted. Semi-flush mount to a standard single-gang, double-gang, or 4" (10.16 cm) square electrical box.
- Backplate is large enough to overlap a single-gang backbox cutout by 1/2" (1.27 cm).
- Optional trim ring (**BG12TR**).
- Spanish versions *(FUEGO)* available (**NBG-12LSP**, **NBG-12LPSP**).
- Designed to replace the legacy **NBG-10** Series.
- Models packaged in attractive, clear plastic (PVC), clam-shell-style, Point-of-Purchase packages. Packaging includes a cutaway dust/paint cover in shape of pull station.

6643cov.jpg

Construction

- Cover, backplate and operation handle are all molded of durable polycarbonate material.
- Cover features white lettering and trim.
- Red color matches System Sensor’s popular SpectrAlert® Advance horn/strobe series.

Operation

The NBG-12 manual pull stations provide a textured finger-hold area that includes Braille text. In addition to PUSH IN and PULL DOWN text, there are arrows indicating how to operate the station, provided for non-English-speaking people.

Pushing in and then pulling down on the handle activates the normally-open alarm switch. Once latched in the down position, the word “ACTIVATED” appears at the top in bright yellow, with a portion of the handle protruding at the bottom as a visible flag. Resetting the station is simple: insert the key or hex (model dependent), twist one quarter-turn, then open the station’s front cover, causing the spring-loaded operation handle to return to its original position. The alarm switch can then be reset to its normal (non-alarm) position manually (by hand) or by closing the station’s front cover, which automatically resets the switch.

Specifications

PHYSICAL SPECIFICATIONS:

pull station		SB-10	SB-I/O	WBB	WP-10
H	5.500 in. (13.97 cm)	5.500 in. (13.97 cm)	5.601 in. (14.23 cm)	4.25 in. (10.79 cm)	6.000 in. (15.24 cm)
W	4.121 in. (10.467 cm)	4.125 in. (10.478 cm)	4.222 in. (10.72 cm)	4.25 in. (10.79 cm)	4.690 in. (11.913 cm)
D	1.390 in. (3.531 cm)	1.375 in. (3.493 cm)	1.439 in. (3.66 cm)	1.75 in. (4.445 cm)	2.000 in. (5.08 cm)

6643dim2.tbl

ELECTRICAL SPECIFICATIONS:

Switch contact ratings: gold-plated; rating 0.25 A @ 30 VAC or VDC. **Auxiliary contact circuit** (Terminals 3 & 4, NBG-12LA): rated to 3.0 A @ 30 VAC or VDC.

ENGINEERING/ARCHITECTURAL SPECIFICATIONS

Manual Fire Alarm Stations shall be non-code, with a key- or hex-operated reset lock in order that they may be tested, and so designed that after actual Emergency Operation, they cannot be restored to normal except by use of a key or hex. An operated station shall automatically condition itself so as to be visually detected as activated. Manual stations shall be constructed of red colored LEXAN (or polycarbonate equivalent) with clearly visible operating instructions provided on the cover. The word **FIRE** shall appear on the front of the stations in white letters, 1.00 inches (2.54 cm) or larger.* Stations shall be suitable for surface mounting on matching backbox SB-10 or SB-I/O; or semi-flush mounting on a standard single-gang, double-gang, or 4" (10.16 cm) square electrical box, and shall be installed within the limits defined by the Americans with Disabilities Act (ADA) or per national/local requirements. Manual Stations shall be Underwriters Laboratories listed.

NOTE: **The words "FIRE/FUEGO" on the NBG-12LSP and NBG-12LPSP shall appear on the front of the station in white letters, approximately 3/4" (1.905 cm) high.*

Pre-Signal Models

The **NBG-12LPS** and **NBG-12LPSP** pull stations are non-coded manual pull stations which provide a FACP with two normally open alarm initiating input signals. "Pre-signal" input is activated by pushing in, then pulling down, the dual-action handle. A "general" alarm input signal can be manually activated via a momentary rocker switch mounted inside the unit. This general alarm switch can only be accessed by opening the cover with the supplied key/lock. *See diagram at right.*

Agency Listings and Approvals

The listings and approvals below apply to the NBG-12 Series pull stations. In some cases, certain modules may not be listed by certain approval agencies, or listing may be in process. Consult factory for latest listing status.

- **C(UL)US** Listed: file S692.
- **CSFM** approved: file 7150-0028:199.
- **FM** approved *(except NBG-12LPS, NBG-12LPSP).*
- **MEA** approved: file 67-02-E *(NBG-12, NBG-12L, NBG-12LOB, NBG-12LA).*
- **Lloyd's Register** type approved: file 93/60141 (E3) *(NBG-12, NBG-12L, NBG-12LA, NBG-12LOB, NBG-12S).*
- **U.S. Coast Guard** approved: files 161.002/23/3 *(AFP-200 with NBG-12, NBG-12L, NBG-12S)*; 161.002/42/1 *(NFS-640 with NBG-12, NBG-12L, NBG-12S)*; 161.002/27/3 *(AFP1010/AM2020 with NBG-12, NBG-12L, NBG-12S).*
- **Patented:** U.S. Patent No. D428,351; 6,380,846; 6,314,772; 6,632,108.

Product Line Information

NBG-12S: Single-action pull station with pigtail connections, hex lock.

NBG-12: Dual-action pull station with SPST N/O switch, screw terminal connections, ***hex lock***.

NBG-12L: Dual-action pull station with SPST N/O switch, screw terminal connections, ***key lock***.

NBG-12LSP: Same as NBG-12L with English/Spanish *(FIRE/FUEGO)* labeling.

NBG-12LPS: Dual-action pull station with pre-signal option.

NBG-12LPSP: Same as NBG-12LPS with English/Spanish *(FIRE/FUEGO)* labeling.

NBG-12LOB: Dual-action pull station with key lock, outdoor applications listings (**NBG-12LO**), and backbox. Includes **SB-I/O** indoor/outdoor backbox, and sealing gasket. Model will also mount to **WP-10** weatherproof backbox in retrofit applications.

NOTE: *NBG-12LO not available separately;*
NBG-12LO + approved backbox = NBG-12LOB.
Outdoor applications listings apply to NBG-12LOB combination.

NBG-12LA: Dual-action pull station with key lock and annunciator contacts.

SB-10: Surface-mount backbox, metal.

SB-I/O: Surface-mount backbox, plastic. *(Included with NBG-12LOB.)*

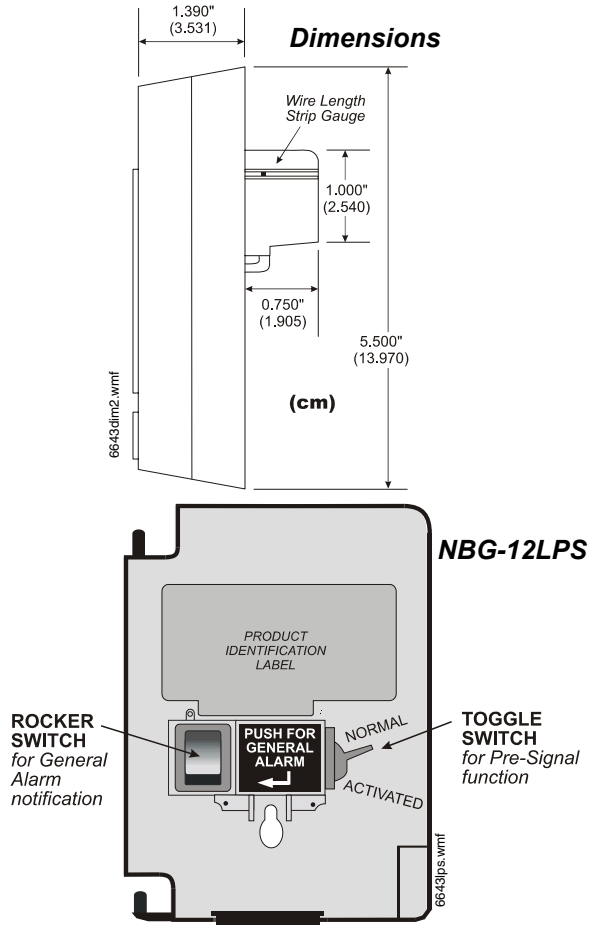
BG12TR: Optional trim ring for semi-flush mounting.

WP-10: Outdoor use backbox.

17021: Keys, set of two. (Included with key-lock pull stations.)

17007: Hex key, 9/64". (Included with hex-lock pull stations.)

NOTE: *For addressable NBG-12LX models, see data sheet DN-6726.*



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We try to keep our product information up-to-date and accurate.
We cannot cover all specific applications or anticipate all requirements.
All specifications are subject to change without notice.

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FIRE ALARM BELL

BRAND	:	SYSTEM SENSOR
MODEL	:	SSM24-6
SIZE	:	6” (150 mm)
VOLTAGE	:	24 VDC
SOUND OUTPUT	:	82dBA
GONG	:	STEEL
APPROVED	:	UL/FM

SSM/SSV Series Alarm Bells

System Sensor's SSM and SSV series alarm bells are low current, high decibel notification appliances for use in fire and burglary systems or other signaling applications.

Features

- Approved for indoor and outdoor use
- Low current draw
- High dB output
- Available in six-inch, eight-inch, and ten-inch sizes
- AC and DC models
- DC models polarized for use with supervision circuitry
- Mount directly to standard four-inch square electrical box indoors
- SSM and SSV series come pre-wired

Reliable Performance. The SSM and SSV series provide loud resonant tones. The SSM series operates on 24VDC and are motor driven, while the SSV series operates on 120VAC utilizing a vibrating mechanism.

Simplified Installation. For indoor use, the SSM and SSV series mount to a standard four-inch square electrical box. For outdoor applications, weatherproof back box, model number WBB, is used.

The SSM and SSV series come pre-wired, to reduce installation time. The SSM series incorporates a polarized electrical design for use with supervision circuitry.

Agency Listings

UL LISTED S4011

ULC CS549

FM APPROVED 3005255

7135-1653:0217

MEA approved 331-01-E

SSM/SSV Specifications

Architectural/Engineering Specifications

Model shall be a SSM or SSV Series alarm bell. Bells shall have underdome strikers and operating mechanisms. Gongs on said bells shall be no smaller than nominal 6″/8″/10″ (specify size) with an operating voltage of 24VDC or 120VAC (specify by part number). Bells shall be suitable for surface or semi-flush mounting. Outdoor surface mounted installations shall be weatherproof (using optional WBB weatherproof electrical box). Otherwise bells shall mount to a standard 4″ square electrical box having a maximum projection of 2½″. Bells shall be located as shown on the drawings or as determined by the Authority Having Jurisdiction. Bells shall be listed for indoor/outdoor use by Underwriters Laboratories and the California State Fire Marshal, and approved by Factory Mutual and MEA.

Physical/Operating Specifications

Operating Temperature Range	–31°F to 140°F
Operating Voltage	SSM series: 24 VDC SSV series: 120 VAC
Termination	Provided with 2 sets of leads for in/out wiring
Service Use	Fire Alarm, General Signaling, Burglar Alarm
Warranty	3 years

Electrical Specifications

Model	Gong Diameter (inches)	Nominal Voltage	Operating Voltage Limit	Maximum Current	Sound Output (dBA)
SSM24-6	6	Regulated 24VDC	16 to 33VDC	DC-31.1mA/ FWR-53.5mA	82
SSM24-8	8	Regulated 24VDC	16 to 33VDC	DC-31.1mA/ FWR-53.5mA	80
SSM24-10	10	Regulated 24VDC	16 to 33VDC	DC-31.1mA/ FWR-53.5mA	81
SSV120-6	6	Regulated 120VAC	96 to 132VAC	53mA	85
SSV120-8	8	Regulated 120VAC	96 to 132VAC	53mA	82
SSV120-10	10	Regulated 120VAC	96 to 132VAC	53mA	82

* Sound output measured at Underwriter Laboratories, as specified in UL464

Ordering Information

UL/FM Model No.	ULC/Canadian Model No.	Description
SSM24-6	SSM24-6A	Bell, 6″, 24VDC, Polarized, 82dBA
SSM24-8	SSM24-8A	Bell, 8″, 24VDC, Polarized, 80dBA
SSM24-10	SSM24-10A	Bell, 10″, 24VDC, Polarized, 81dBA
SSV120-6	SSV120-6A	Bell, 6″, 120VAC, 85dBA
SSV120-8	SSV120-8A	Bell, 8″, 120VAC, 82dBA
SSV120-10	SSV120-10A	Bell, 10″, 120VAC, 82dBA
WBB		Weatherproof back box for SSM and SSV series, when installed outdoors

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BUTTERFLY VALVE

BRAND	:	FIVALCO
MANUFACTURER	:	FIVALCO INC.
COUNTRY	:	U.S.A.
MODEL	:	FPB-300W
TYPE	:	WAFER
ACCESSORIES	:	SUPERVISORY SWITCHT
APPROVED	:	UL/FM
SIZE	:	2 ½", 3", 4", 6", 8", 10", 12"
CONNECTION	:	FLANGED ENDS
PRESSURE	:	300 PSI. WKP.

MATERIAL LIST

BODY	:	DUCTILE IRON
DISC	:	DUCTILE IRON W / EPDM
SHAFT SEAL	:	EPDM
SIGNAL GEARBOX	:	DUCTILE IRON

Fivalco®

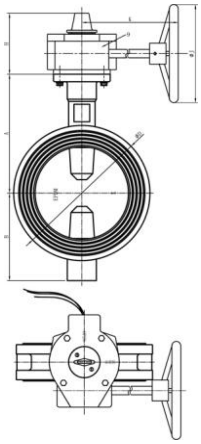
Fireriser® Wafer Type Butterfly Valve

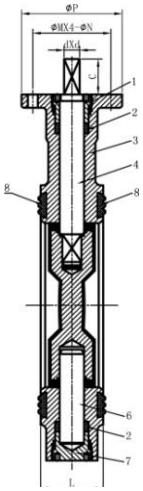
Wafer Type Butterfly Valve-300PSI-21Bars

Fig No.FPB-300W

Specifications

Working Pressure: 300 PSI (21 Bars) -Non Shock Coldwater
Temperature: from -20 ° C to 110 ° C
Max.Test Pressure: 600 PSI (42.8 Bars)
Universal wafer Type Butterfly Valve Suitable for Connecting to ANSI B 16 Class 125, ISO 2084/Din 2501 PN 16 & BS 4504 PN 16 Flanges
Factory installed UL, listed double Tamper Switches
Valve Approved For Indoor and Outdoor Use
Conforms To MISS SP67 /BS EN593:2009





Materials List:

Component	Material
Signal Gearbox	DI
End Face Seal	EPDM
Lower Shaft Sealing Nut	WCB
Lower Shaft	SS416
Disc	DI+EPDM
Upper Shaft	SS416
Body	DI
Shaft Seal	EPDM
Upper Shaft Sealing Nut	WCB

Dimensions (In):

Size	A	B	C	D	H	K	J	P	M	N	d	L
2.5”	125	95	32	112	111	218	152	90	70	9	10	44.2
3”	140	100	32	120	111	218	152	90	70	9	11	45.3
4”	160	100	32	165	111	218	152	90	70	9	14	52
5”	170	125	32	182	111	218	152	90	70	9	14	54.4
6”	190	140	32	216	111	218	200	90	70	9	16	55.8
8”	230	175	32	260	126	232	290	125	102	12	19	60.5
10”	260	200	45	320	126	232	290	125	102	12	22	66.5
12”	300	240	45	375	161	252	350	150	125	14	24	76.9

Notes:

We Reserve The Right To Change Specifications Without Notice.

UL Listed All Sizes 2-1/2" to 6" FM Approved and 8" to 12" Pending