



TECHNICAL DATA

PNEUMATIC ACTUATOR

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

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-945-4495 Email: techsvcs@vikingcorp.com

1. DESCRIPTION

The Viking Pneumatic Actuator is a spring loaded to open, rolling diaphragm, piston operated valve. It is used wherever a separation is required between the detection and operating systems. The pneumatic actuator is a required component on systems using pneumatic detection to provide the separation between the air in the detection system and the water in the valve operating trim.

The Model H-1 Pneumatic Actuator is listed and Approved for use on Viking Pneumatic Release systems. The Model R-1 Pneumatic Actuator is similar to the H-1, except some components are specially plated for additional corrosion resistance.

Features

Models H-1 and R-1: Corrosion resistant construction with minimum moving parts. The differential design allows low detection pressures to control high operating pressures.

Model R-1: Some components are specially plated for additional corrosion resistance (see Figure 1).



2. LISTINGS AND APPROVALS:

U.L. Listed - VLTR

C-UL Listed

FM Approved - Deluge Sprinkler Systems, Preaction Sprinkler Systems

VdS Approved - G4920054

3. TECHNICAL DATA

Specifications:

Rated to: 250 PSI (17.2 bar) water pressure

Hydrostatically tested to: 500 PSI (34.5 bar)

K-Factor: 4.6 (66.2*) *Metric K-Factor shown is for use when pressure is measured in bar.

Shipping Weight: 2 lbs.

Material Standards:

Cast Brass: UNS-C84400

Brass Bar Stock: UNS-C36000

Stainless Steel: UNS-S30200

Piston: Polycarbonate

Diaphragm: Polyester Fabric and EPDM Elastomer

Ordering Information:

Model H-1: Viking Part Number 06459B

Model R-1 Corrosion Resistant: Viking Part Number 09733

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.

4. INSTALLATION

- A. Remove all thread protector inserts from the device.
- B. The Pneumatic Actuator requires three ½" (15 mm) NPT pipe connections. Refer to System Trim Charts for piping arrangement.
- C. When used with a Viking Deluge or Flow Control Valve, connect the inlet to the Pressure Operated Relief Valve or the Flow Control Valve priming chamber. Connect the outlet to an open drain or as indicated in the System Piping Diagrams. Connect the priming chamber to the pneumatic release system. A tee connection is desirable to allow the release line to be drained of condensation or purged.
- D. Set the release line air pressure at a minimum 30 PSI (2.1 bar) for system water pressures up to 175 PSI (12.1 bar), and at a minimum 50 PSI (3.45 bar) for system water pressures above 175 PSI (12.1 bar) up to a maximum of 250 PSI (17.2 bar).

WARNING: IF PRESSURE BACKS UP THROUGH THE OUTLET, THE PNEUMATIC ACTUATOR MAY OPERATE.

5. OPERATION

The Viking Pneumatic Actuator has an inlet, outlet and priming chamber. When pressure is applied to the priming chamber, the rolling diaphragm and piston assembly moves constricting the spring and sealing the inlet from the outlet. Pressure can then be applied to the inlet. Due to the differential design, a small amount of pressure in the priming chamber can control a higher inlet pressure. When the pressure in the priming chamber is released, the inlet pressure and spring forces the rolling diaphragm and piston assembly to move, allowing the inlet pressure to run through the angle outlet.

6. INSPECTION, TESTS AND MAINTENANCE

Where difficulty in performance is experienced, the valve manufacturer or his authorized representative shall be contacted if any field adjustment is to be made.

WARNING: ANY SYSTEM MAINTENANCE OR TESTING THAT INVOLVES PUTTING A CONTROL VALVE OR DETECTION SYSTEM OUT OF SERVICE MAY ELIMINATE THE FIRE PROTECTION OF THAT SYSTEM. PRIOR TO PROCEEDING,



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NOTIFY ALL AUTHORITIES HAVING JURISDICTION. CONSIDERATION SHOULD BE GIVEN TO EMPLOYMENT OF A FIRE PATROL IN THE AFFECTED AREA.

A. The Viking Pneumatic Actuator must be kept free of foreign matter and freezing conditions that could impair its operation. At regular intervals, at least annually, inspect and test the pneumatic actuator. The frequency of the inspections is dependent upon the condition of the water and release system.

NOTE: PRIOR TO PERFORMING ANY WORK ON THE PNEUMATIC ACTUATOR, REFER TO SYSTEM DESCRIPTION FOR INSTRUCTIONS AND WARNINGS REGARDING THE FIRE PROTECTION SYSTEM AND RELEASE SYSTEM.

B. Inspection

1. Place the fire protection system out of service.
2. Trip the Release System.
3. Drain any accumulated condensation from the release system.
4. Purge the Release System of any foreign matter.
5. Place the Release System back in service.
6. Establish pressure on the pneumatic actuator inlet.
7. Trip test the pneumatic actuator by activating a Pneumatic Release. The pneumatic actuator should release the inlet pressure through the outlet.
8. Reset the Release System, then reset the fire protection system and secure all main control valves open.
9. Should the Pneumatic Release fail to trip or reset, remove it from service and disassemble. Clean and/or replace any dirty or worn parts and then reinstall it. Repeat the inspection procedures.

C. Disassembly

(Refer to Figure 1)

1. Place the fire protection system out of service.
2. Trip the Release System.
3. Remove the Pneumatic Actuator from the trim.
4. Remove the three Cover Screws (6) from the Cover (4) using a 5/32" Allen Wrench.

CAUTION: THE ASSEMBLY IS UNDER SPRING TENSION.

5. Separate the Cover (4) from the lower assembly.
6. Remove the Upper Diaphragm (3), Piston (5), Spacer (2), Lower Diaphragm (7), Spring Pad (8), and Spring (9) from the Body (1).
7. Remove the Seat (10) using a Socket Wrench with a 1-1/2" Socket.

D. Installation of New Parts

1. Install the Seat (10) into the Body (1).
2. Install the Spring (9) into the Body (1).
3. Insert the Lower Diaphragm (3) into the Spacer (2).
4. Insert the Upper Diaphragm (3) onto the Cover (4).
5. Install the Piston (5) onto the Upper Diaphragm (3).
6. Install the Spacer (2) and Lower Diaphragm (7) onto the Piston (5).
7. Line up the holes of the Cover (4), Upper Diaphragm (3), Spacer (2), Lower Diaphragm (7), and install the Cover Screws (6).
8. Install the Spring Pad (8) onto the Lower Diaphragm (7), making sure that the burr side of the Spring Pad (8) is towards the Spring (9), away from the Lower Diaphragm (7).
9. Install the top assembly consisting of the Cover (4), Upper Diaphragm (3), Spacer (2), Lower Diaphragm (7), Cover Screws (6), and Spring Pad (8) onto the Body (1).
10. Tighten the Cover Screws (6), using a 5/32" Allen Wrench.

E. Reassembly

1. Reverse the Disassembly Procedure, making sure that the Burr side of the Spring Pad (8) is toward the Spring, away from the Lower Diaphragm (7).
2. Purge all Trim Piping of foreign matter.
3. Reinstall the Pneumatic Actuator and Trim piping.
4. Repeat inspection procedures.
5. Check and repair all leaks.
6. Reset the Release System, then reset the fire protection system and secure all main control valves open.

7. AVAILABILITY

The Viking Pneumatic Actuator 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.



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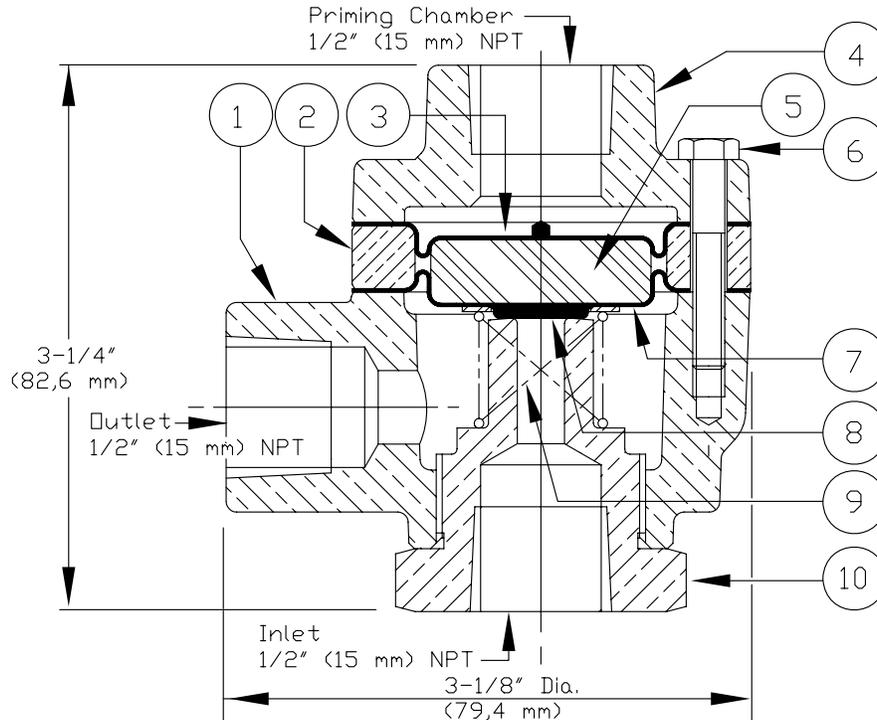


Figure 1 - Replacement Parts

| ITEM NO. | PART NUMBER | | DESCRIPTION | MATERIAL | | NO. REQ'D |
|--|-------------|---------|-------------------------------------|---|-------------------------------|-----------|
| | H-1 | R-1 | | H-1 | R-1 | |
| 1 | -- | -- | Body | Brass UNS-C84400 | Brass ¹ UNS-C84400 | 1 |
| 2 | -- | -- | Spacer | Brass UNS-C84400 | Brass ¹ UNS-C84400 | 1 |
| 3 | 04735A | 04735A | Upper Diaphragm | EPDM/Polyester Fabric | EPDM/Polyester Fabric | 1 |
| 4 | -- | -- | Cover | Brass UNS-C84400 | Brass ¹ UNS-C84400 | 1 |
| 5 | 04736A | 04736A | Piston | Polycarbonate | Polycarbonate | 1 |
| 6 | 12470 | 12471 | Hex Head Screw, #10-24 x 1-1/4" lg. | Steel Zinc Coated | #K - 500 Monel | 3 |
| 7 | 04861A | 04861A | Lower Diaphragm | EPDM/Polyester Fabric | EPDM/Polyester Fabric | 1 |
| 8 | 04739A | 06227A | Spring Pad | Stainless Steel UNS-S30200/ UNS-S30400 | Monel #400 | 1 |
| 9 | 04741A | 06224A | Spring | Stainless Steel UNS-S30200 | Inconel #600 | 1 |
| 10 | 06464B | 06464BJ | Seat | Brass UNS-C36000 | Brass ² UNS-C36000 | 1 |
| ¹ Electroless Nickel plated, Model R-1 only | | | | | | |
| ² Nickel and Tin plated, Model R-1 only | | | | | | |
| --Indicates replacement part not available. | | | | | | |
| SUB-ASSEMBLY | | | | | | |
| 3, 5-9 | 12609 | 12610 | Maintenance Kit | | | |

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