

869E-3D On-Off Deluge Valve

HANG THESE INSTRUCTIONS ON THE INSTALLED VALVE FOR FUTURE REFERENCE



⚠ WARNING



- Read and understand all instructions before attempting to install, remove, adjust, or perform maintenance on any Victaulic piping products.
- Depressurize and drain piping systems before attempting to install, remove, adjust, or perform maintenance on any Victaulic piping products.
- Wear safety glasses, hardhat, and foot protection.
- Save this installation, maintenance, and testing manual for future reference.

Failure to follow instructions and warnings could cause system failure, resulting in death or serious personal injury and property damage.

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HAZARD IDENTIFICATION

Definitions for identifying the various hazard levels are provided below.



This safety alert symbol indicates important safety messages. When you see this symbol, be alert to the possibility of personal injury. Carefully read and fully understand the message that follows.

DANGER
<ul style="list-style-type: none"> • The use of the word “DANGER” identifies an immediate hazard with a likelihood of death or serious personal injury if instructions, including recommended precautions, are not followed.

WARNING
<ul style="list-style-type: none"> • The use of the word “WARNING” identifies the presence of hazards or unsafe practices that could result in death or serious personal injury if instructions, including recommended precautions, are not followed.

CAUTION
<ul style="list-style-type: none"> • The use of the word “CAUTION” identifies possible hazards or unsafe practices that could result in personal injury and product or property damage if instructions, including recommended precautions, are not followed.

NOTICE
<ul style="list-style-type: none"> • The use of the word “NOTICE” identifies special instructions that are important but not related to hazards.

SAFETY INSTRUCTIONS

WARNING	
	<ul style="list-style-type: none"> • An experienced, trained installer must install this product in accordance with all instructions. These instructions contain important information.
	<ul style="list-style-type: none"> • Depressurize and drain the piping system before attempting to install, remove, adjust, or maintain any Victaulic piping products. <p>Failure to follow these instructions can cause product failure, resulting in death or serious personal injury and property damage.</p>

1. Read and understand all instructions before proceeding with the installation, maintenance, and testing of this valve. For proper operation and approval, the 869E-3D deluge valve and accessories must be installed in accordance with the specific instructions included with the shipment.

2. Use only recommended accessories. Accessories and equipment that are not approved for use with this valve may cause improper system operation.

3. Wear safety glasses, hardhat, foot protection, and hearing protection. Wear hearing protection if you are exposed to long periods of noisy jobsite operations.

4. Prevent back injury. Large and pre-trimmed valves are heavy and require more than one person (or mechanical lifting equipment) to position and install the assembly. Always practice proper lifting techniques.

5. Avoid using electrically powered tools in dangerous environments. When using electrically powered tools for installation, ensure that the area is moisture-free. Keep the work area well lit, and allow enough space to accommodate proper installation of the valve, trim, and accessories.

6. Watch for pinch points. Do not place fingers under the valve body where they could be pinched by the weight of the valve. Use caution around spring-loaded components.

7. Keep work areas clean. Cluttered areas, benches, and slippery floors can create hazardous working conditions.

INTRODUCTION

NOTICE
<ul style="list-style-type: none"> • Drawings and/or pictures in this manual may be exaggerated for clarity. • The valve, along with this operating and maintenance instructions manual, contains trademarks, copyrights, and/or patented features that are the exclusive property of Victaulic.

The 869E-3D deluge valve operates by an electric three-way solenoid valve (Figure 1, call out 8), which actuates a hydraulic relay valve (Figure 1, call out 7) and requires a listed system control panel with a compatible electric detection system.

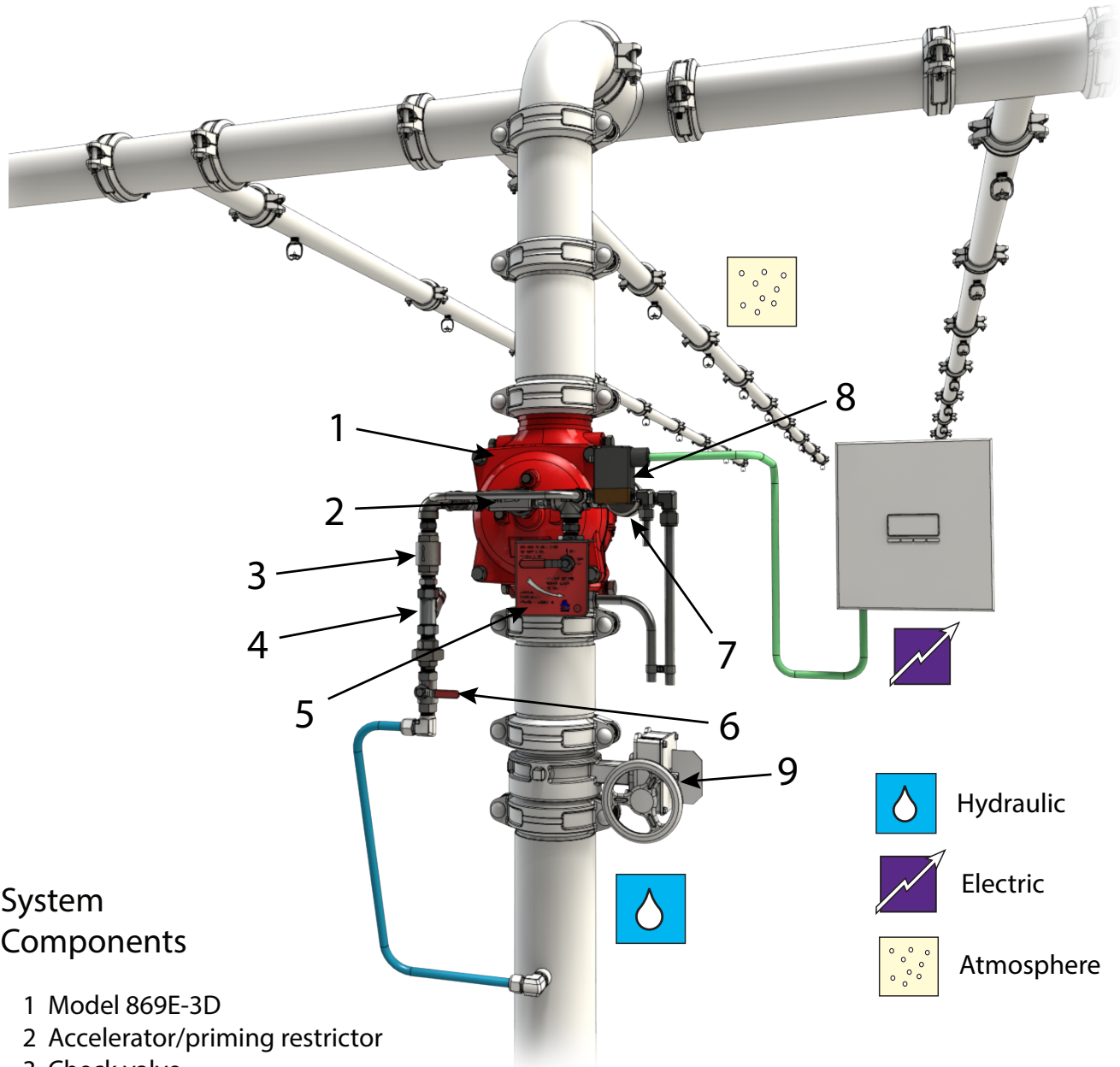
The specific trim for the 869E-3D deluge valve includes a hydraulic relay valve (HRV). The HRV is normally held closed by the actuating pressure maintained in the hydraulic supply system, and a manual emergency release (Figure 1, call out 5).

In fire conditions, the fire activates the detection system. The system's control panel reacts and opens the solenoid valve to atmosphere (Figure 1, call out 8), releasing pressure from the HRV and causing it to open. The open HRV releases the pressure from the upper chamber, allowing the deluge valve (Figure 1, call out 1) to open. Water enters the system piping and flows from any open sprinklers and/or spray nozzles.

Deluge systems are commonly used where it is desirable to simultaneously spray water from all open sprinklers and/or nozzles while the system is operating.

UL LISTING

The 869E-3D deluge valve is UL Listed when installed with specific components and accessories. Refer to the current UL Directory. Consult the manufacturer for the most up-to-date component approval in the UL fire protection equipment directory.



System Components

- 1 Model 869E-3D
- 2 Accelerator/priming restrictor
- 3 Check valve
- 4 Priming strainer
- 5 Manual emergency release
- 6 Priming line ball valve
- 7 Hydraulic relay valve (HRV)
- 8 Three-way solenoid
- 9 Main supply valve

Figure 1 Installation Drawing

INSTALLATION

Subject to all other instructions, drawings and technical specifications that describe the 869E-3D deluge valve, install in their proper positions the components comprising the deluge trim package, according to the drawing relevant to the specific type, hereby enclosed.

Install also the additional accessories, which appear in the drawing and which must be installed as shown in the drawing, although they are not packed together with the deluge valve itself.

Any deviation in trim size or arrangement may adversely affect the proper operation of the deluge valve.

Refer also to NFPA 13 or the applicable installation standards, codes and relevant authorities.

1. Allow enough room around the valve assembly for any adjustments and future maintenance/disassembly work.
2. Before the valve is installed, flush the pipeline to remove any dirt, scale, debris, etc. Failure to do this might render the valve inoperable.
3. Listed indicating valves should be installed upstream and downstream of the the 869E-3D deluge valve in order to allow for future maintenance.
4. Install the valve in the pipeline with the valve flow arrow on the body casting in the proper direction. Use the lifting eye provided on the main valve cover for lifting and lowering the valve.
5. The 869E-3D deluge valve is intended for horizontal or vertical installation. Ensure that the valve is positioned so that the actuator can be easily removed for future maintenance.
6. Install also the additional accessories that appear in the drawing, and which must be installed as shown in the schematic drawing.
7. Connect the electric wiring of the solenoid valve (Figure 1, call out 8) to the electric control system and the control panel according to the supplied electrical wiring diagram.
8. When using a pressure control switch, connect the pressure control switch to the electric control system and the control panel according to the supplied electrical wiring diagram
9. After installation, carefully inspect/correct any damaged accessories, piping, tubing, or fittings.
10. Any deviation in trim size or arrangement that is not authorized by a representative of Victaulic may adversely affect the proper operation of the deluge valve. Refer also to NFPA 13 or the applicable installation standards, codes, or relevant authorities.
11. The deluge valve and trim must be installed only in areas where they will not be subjected to freezing temperatures.
12. All initiating devices (detectors) and indicating appliances, as well as the system control panel, must be compatible for use with the particular deluge system.

EQUIVALENT LENGTH

Deluge valve equivalent length value (steel pipe), for use in hydraulically calculated systems.

Valve Size	Equivalent Length Value	
	Feet/Meters	
2"	30	9.1
2½"	40	12.1
3"	45	13.7
4"	46	14
6"	90	27.4
8"	150	45.7
10"	354	108

OPTIONAL EQUIPMENT

If required, provide an alarm pressure switch, to either activate an electric alarm, or shut down desired equipment. Connect it according to the manufacturer's instructions.

PLACING IN SERVICE/RESETTING THE SYSTEM

1. Place the control/panel detector circuit in service.
2. De-energize the solenoid valve (Figure 1, call out 8) by resetting the electric control panel.
3. Ensure that the emergency release valve (Figure 1, call out 5) is closed.
4. Ensure that the drain valve is in a closed position.
5. Open the priming line ball valve (Figure 2, call out 3), which charges the pressure supply to the HRV. No water should flow from solenoid valve (Figure 2, call out 6) or from the HRV venting tube. Allow pressurized water to fill the top chamber of the deluge valve.
6. Open the main supply valve (Figure 1, call out 9) slowly. The main valve will gradually close and seal. No water should flow to the system.
7. The system is now in service.

REMOVING THE SYSTEM FROM SERVICE

When taking deluge system out of service, a fire patrol should be established in the system area. If automatic fire-alarm signaling equipment is utilized, the proper authority should be notified that the system is being removed from service. The insuring body and owner representative should also be notified when the system is being taken out of service.

REMOVAL INSTRUCTIONS

1. Shut off the main supply valve (Figure 2, call out 9).
2. The priming line ball valve (Figure 2, call out 3) to the deluge valve should be closed.
3. Open the drain valve to drain all the water from the system.
4. Release the water pressure from the top chamber of the deluge valve by pulling the emergency release (Figure 2, call out 7), or by tripping the electrical circuit (energize the solenoid valve (Figure 2, call out 6).
5. If auxiliary power is used, disconnect all power supply and batteries.
6. Place "Fire Protection System Out of Service" signs in the area protected by the system.

OPERATION

The 869E-3D deluge valve is suitable for systems that include electric fire detection, a piping system, and a wide variety of open nozzles.

In the SET position, the line pressure, which is supplied to both the main valve control chamber (Figure 2, call out 1) and hydraulic relay valve (Figure 2, call out 2), through the priming line (Figure 2, call out 3), a check valve (Figure 2, call out 4), an accelerator/priming restriction (Figure 2, call out 5) and a three-way solenoid (Figure 2, call out 6), is trapped by the check valve, by the closed HRV, and by a closed manual emergency release (Figure 2, call out 7).

The trapped pressure holds the main valve's diaphragm and plug against the valve seat (Figure 2, call out 8), sealing it drip tight and keeping the system piping dry. The HRV is held closed by the line pressure through the solenoid.

In the OPERATING position, an electric detection system working through a control panel triggers the solenoid to release to atmosphere, which then opens the HRV. This causes water to exit through the accelerator/priming restriction faster than it can be supplied. Pressure is then released from the main valve control chamber by the opened HRV or the manual emergency release, allowing the main valve to open and water to flow into the system piping and to the alarm device (if mounted).

MANUAL OPERATION

Whenever the handle of the manual emergency release valve (Figure 2, call out 7) is pulled, pressure is released from the top chamber, the deluge valve will open, and water will flow into system piping and alarm devices.

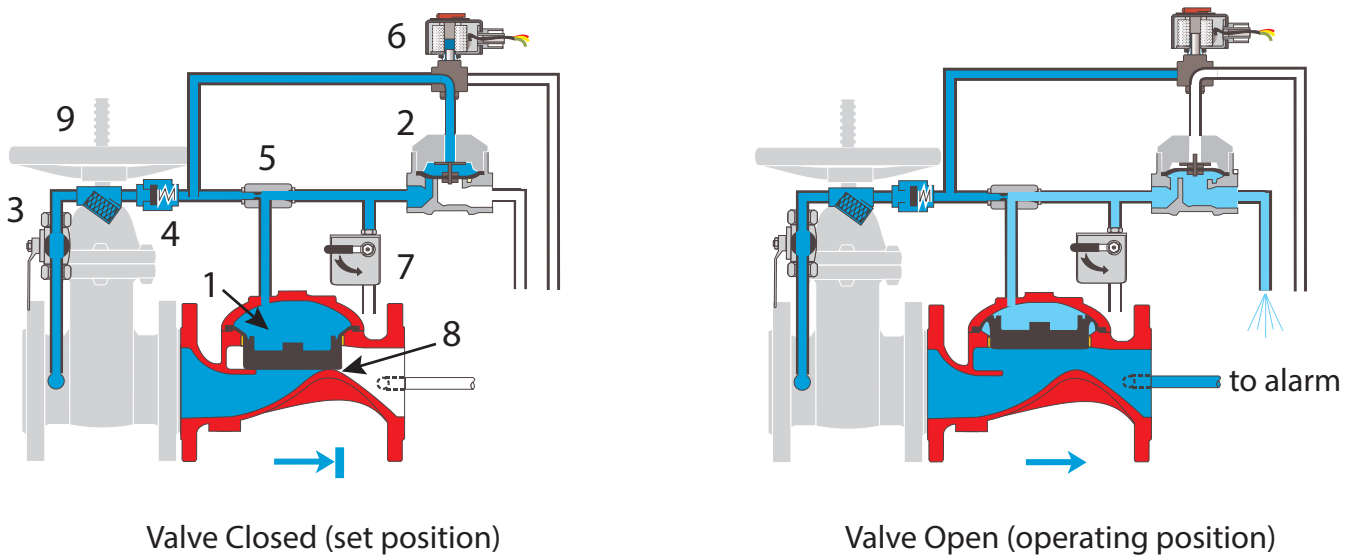


Figure 2 Operation Drawing

- 1 Main valve control chamber
- 2 Hydraulic relay valve
- 3 Priming line ball valve
- 4 Check valve
- 5 Accelerator/priming restriction
- 6 Three-way solenoid
- 7 Manual emergency release
- 8 Valve seat
- 9 Main supply valve

MAINTENANCE AND INSPECTION TESTS

NOTICE

- Any activities that require taking the valve out of service may eliminate the fire protection provided.
- Consideration of a fire patrol should be given for the affected areas.
- Before servicing or testing the system, notify the authority having jurisdiction.

1. Prior to turning off any valves or activating any alarms, notify local security guards and the central alarm station, if used, so that a false alarm will not be signaled.
2. In any of the following inspections or testing procedures, if an abnormal condition exists, see the "Abnormal Conditions" section for possible cause and corrective action.
3. See NFPA 25: Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems.

NORMAL CONDITIONS

1. All main isolating valves are OPEN.
2. All ball valves are in the OPEN position.
3. The upstream pressure gauge should reflect the upstream supply pressure to the deluge valve.
4. The downstream pressure gauge should reflect the downstream pressure on the system side of the deluge valve.
5. The control panel and detectors are in service and the solenoid valve (Figure 2, call out 6) is de-energized.

WEEKLY INSPECTION

1. The system should be checked for normal condition.
2. Observe the upstream pressure gauge. It should indicate that the normal supply of water pressure to the deluge valve is maintained.
3. Observe that there is no leaking from the deluge valve to the nozzles.

MONTHLY INSPECTION AND TEST

CAUTION

- The system will be flooded. Take all necessary precautions to drain water and prevent damage in the area protected by the deluge system.

1. Complete the weekly inspection.
2. Test the deluge valve's operation by energizing the supply current to the solenoid valve (Figure 2, call out 6).
3. The deluge valve, trim, auxiliary devices, and manual release must be activated at full flow.

ANNUAL INSPECTION AND TEST

CAUTION

- The system will be flooded. Take all necessary precautions to drain water and prevent damage in the area protected by the deluge system.

1. Complete the weekly and monthly inspections.
2. Place the system out of service.
3. Trip the release line system, then clean all strainers (Figure 1, call out 4) and priming line restriction (Figure 2, call out 5).
4. The interior of the deluge valve should be inspected and cleaned.
5. The interior of the HRV, including its diaphragm and seal, should be inspected and cleaned.
6. Place the system back in service, as detailed in the "Placing the System in Service" section.
7. The deluge valve, trim, auxiliary devices, and manual release must be activated at full flow.
8. Trip test the deluge system with an electric release control panel. The release may be tripped by the method suggested by the release control panel manufacturer. Reset the system.
9. The manual emergency valve release handle (Figure 2, call out 7) is to be pulled and tested. The deluge valve should open and discharge water.
10. Observe pressure on the upstream pressure gauge while full flow is on. Inspect all nozzles in the system. Take all additional measures as required by NFPA 25 "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems."

TROUBLESHOOTING

NOTICE

- Any activities that require taking the valve out of service may eliminate the fire protection provided.
- Consideration of a fire patrol should be given for the affected areas.
- Before servicing or testing the system, notify the authority having jurisdiction.

ALARM PRESSURE SWITCH FAILS TO SOUND

1. Clean the alarm line.
2. Test the electrical circuit to the pressure switch (if utilized).
3. Observe if the pressure switch cock valve is open.

FALSE TRIP

Check for any of the following possible causes:

1. Electrical malfunctioning of the control system or electrical panel.
2. HRV is out of order.
3. Solenoid valve (Figure 2, call out 6) is out of order.

LEAKAGE THROUGH DELUGE VALVE

Check for any of the following possible causes:

1. Partially plugged priming restriction (Figure 1, call out 3).
2. Plugged priming strainer (Figure 1, call out 4).
3. Leaking release system.
4. Damaged deluge valve seat, or a foreign object is caught inside the seat.
5. HRV out of order.
6. Solenoid valve (Figure 1, call out 8) out of order.

DELUGE VALVE WILL NOT RESET

Check for any of the following possible causes:

1. Closed priming line valve (Figure 2, call out 3).
2. Damaged deluge valve seat a foreign object is caught inside the seat.
3. Foreign object lodged between seal disc and valve seat.
4. HRV out of order.
5. Solenoid valve (Figure 2, call out 6) out of order.

ELECTRIC RELEASE SYSTEM WILL NOT RESET

1. Faulty detector circuit.
2. Faulty circuit to the solenoid valve (Figure 2, call out 6) or release control panel.
3. Observe if the pressure switch ball valve is open.

DIFFICULTY IN PERFORMANCE

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

I-869E-3D On-Off Deluge Valve
