**General Description**

The TYCO DV-5a Automatic Water Control Valve Deluge Electric Actuation are diaphragm type valves that can be used in deluge fire protection systems. When properly trimmed, the double seat design of the DV-5a Valve also provides actuation of fire alarms upon system operation.

The diaphragm style design of the DV-5a Valve allows external resetting, providing for easy resetting of a deluge system without having to open a valve handhole cover to manually reposition a clapper and/or latch mechanism. Simply re-pressurizing the diaphragm chamber resets the valve.

The DV-5a features internal and external coating of the valve to provide corrosion resistance. The external corrosion resistance of the epoxy coating permits the use of the DV-5a in corrosive atmospheres associated with many types of industrial processing plants and outdoor installations.

The DV-5a Deluge Electric Actuation Valve is offered with the DV-5a Valve and separately ordered semi-assembled trim as shown in Figure 5.

The DV-5a Deluge Electric Actuation Valve is offered with or without a System Main Control Valve.

**NOTICE**

The DV-5a Valves described herein must be installed and maintained in compliance with this document, as well as with the applicable standards of the NATIONAL FIRE PROTECTION ASSOCIATION (NFPA), in addition to the standards of any other authorities having jurisdiction. Failure to do so may impair the performance of these devices.

---

**Available End Connections and Weights — lb/(kg)**

<table>
<thead>
<tr>
<th>End Connection</th>
<th>Nominal Valve Size ANSI Inches (DN)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inlet/Outlet</td>
<td>1 1/2 (40) 2 (50) 3 (80) 4 (100) 6 (150) 8 (200)</td>
</tr>
<tr>
<td>Thread/Thread</td>
<td>26 (11,8) 25 (11,3) N/A N/A N/A N/A</td>
</tr>
<tr>
<td>Groove/Groove</td>
<td>25 (11,3) 25 (11,3) 60 (27,2) 95 (43,1) 177 (80,3) 327 (148,3)</td>
</tr>
<tr>
<td>Flange/Flange</td>
<td>N/A N/A 66 (30,0) 106 (48,1) 190 (86,2) 346 (157,0)</td>
</tr>
</tbody>
</table>

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. Contact the installing contractor or product manufacturer with any questions.

---

**IMPORTANT**

Refer to Technical Data Sheet TFP2300 for warnings pertaining to regulatory and health information.
### TABLE A

#### Flange Drilling Specifications

<table>
<thead>
<tr>
<th>Nominal Valve Size ANSI Inches (DN)</th>
<th>ANSI B16.1* (Class 125)</th>
<th>ISO 7005-2 (PN16)*</th>
<th>JIS B 2210 (10K)</th>
<th>AS 2129 (Table E)</th>
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<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>N</td>
<td>A</td>
</tr>
<tr>
<td>3 (80)</td>
<td>6.00 (152.4)</td>
<td>0.75 (19.0)</td>
<td>4</td>
<td>6.30 (160.0)</td>
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<tr>
<td>4 (100)</td>
<td>7.50 (190.5)</td>
<td>0.75 (19.0)</td>
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<td>7.09 (180.0)</td>
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<tr>
<td>6 (150)</td>
<td>9.50 (241.3)</td>
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<td>9.45 (240.0)</td>
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<tr>
<td>8 (200)</td>
<td>11.75 (298.9)</td>
<td>0.88 (22.2)</td>
<td>8</td>
<td>11.61 (295.0)</td>
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</table>

#### NOTES:

a. Same drilling as for ANSI B16.5 (Class 150) and ANSI B16.42 (Class 150)
b. Same drilling as for BS 4504 Section 3.2 (PN16) and DIN 2532 (PN16)
### Port Sizes, NPT Inch per ANSI B1.20.1

<table>
<thead>
<tr>
<th>Port</th>
<th>Port Description</th>
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<th>2 (DN50)</th>
<th>3 (DN80)</th>
<th>4 (DN100)</th>
<th>6 (DN150)</th>
<th>8 (DN200)</th>
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</thead>
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<tr>
<td>P1</td>
<td>Diaphragm Chamber Supply</td>
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<td>1/2</td>
<td>1/2</td>
<td>1/2</td>
<td>1/2</td>
<td>1/2</td>
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<tr>
<td>P2</td>
<td>Water Supply Pressure &amp; Alarm Test</td>
<td>1/2</td>
<td>1/2</td>
<td>1/2</td>
<td>1/2</td>
<td>1/2</td>
<td>1/2</td>
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<tr>
<td>P4</td>
<td>Automatic Drain Valve</td>
<td>1/2</td>
<td>1/2</td>
<td>1/2</td>
<td>1/2</td>
<td>1/2</td>
<td>1/2</td>
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<tr>
<td>P6</td>
<td>Main Drain</td>
<td>3/4</td>
<td>3/4</td>
<td>1-1/4</td>
<td>2</td>
<td>2</td>
<td>2</td>
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<tr>
<td>P7</td>
<td>System Air Supply Not Used for Deluge</td>
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<td>1/2</td>
<td>1/2</td>
<td>1/2</td>
<td>1/2</td>
<td>1/2</td>
</tr>
</tbody>
</table>

**FIGURE 2**

**DV-5a VALVE OPERATION, DELUGE SYSTEMS**
**Technical Data**

### Approvals
- UL and C-UL Listed
- FM Approved
- VdS Approved*
- LPCB Approved*

Listings and Approvals are based on DV-5a Deluge Electric Actuation Valve being trimmed as described in Figure 5.

For local EMEA regional approvals, consult with your local distributor.

* VdS and LPCB approval is additionally based on installing the VdS and LPCB required water column prevention drain components provided with assemblies in the Ordering Procedure section.

### DV-5a Valve
Components for the 1 1/2 in. to 8 in. (DN40 to DN200) DV-5a Valves are shown in Figure 1. The DV-5a Valves are for vertical installations. They are rated for use at a service pressures of 20 psi to 300 psi (1,4 bar to 20,7 bar).

The take-out dimensions are shown in Figure 3, and the flanged connections are available drilled per ANSI, ISO, AS, and JIS specifications (see Table A). Threaded inlet and port connections are available in NPT or ISO 7-1. Threaded port connections are NPT threaded.

Note: PN16 flanges are pressure rated to 16 bar.

### Valve Trim
The maximum pressure rating for the DV-5a Deluge Electric Actuation is dependent on separately ordered solenoid valve per Technical Data Sheet TFP2180.

When the system pressure is greater than 175 psi (12,1 bar), provision is to be made to replace the standard order 300 psi (20,7 bar) Water Pressure Gauges with separately ordered 600 psi (41,4 bar) Water Pressure Gauges.

If the addition of an Alarm Control Valve is desired or required by the local AHJ, the Alarm Control Valve noted as Item H in Figure 8 is to be a separately ordered electronically supervised normally open valve.

External trim connections are NPT threaded. EMEA trim is provided with NPT x ISO 7-1 thread adapters.

### Pressure Loss
See Graph A

### Detection System
See Electric Actuation subsections.

---

**Materials of Construction**

### Valve Body
Epoxy coated ductile iron per ASTM A536-77, Grade 65-45-12

### Diaphragm Cover
Epoxy coated ductile iron per ASTM A536-77, Grade 65-45-12

### Diaphragm
Polyester fabric reinforced, TEFLON coated, EPDM rubber per ASTM D2000

### Diaphragm Cover Fasteners
Aluminum zinc coated steel

### Common Hardware Trim
- Common hardware pipe fittings are galvanized or black as required and are malleable per ASME B16.3.
- Common hardware pipe nipples are galvanized or black as required and are Schedule 40 per ASTM A53 or A135.
- Common hardware compression fittings are brass per ASTM B16.
- Common hardware tubing is Type L copper per ASTM B88.

### Operation
The TYCO DV-5a Valve is a diaphragm style valve that depends upon water pressure in the Diaphragm Chamber (See Figure 2A) to hold the Diaphragm closed against the water supply pressure.

When the DV-5a Valve is set for service, the Diaphragm Chamber is pressurized through the trim connections from the inlet side of the system’s main control valve.

Opening the Electric Actuation trips the Model MRA-1 Manual Reset Actuator. Tripping the MRA-1 releases water from the DV-5a Diaphragm Chamber faster than it can be replenished through a 1/8 in. (3,2 mm) restriction located in the diaphragm chamber supply connection. Release of water through the MRA-1 results in a rapid pressure loss in the DV-5a Diaphragm Chamber. The force differential applied through the Diaphragm to hold the Diaphragm in the set position is then reduced below the valve trip point. The water supply pressure then forces the Diaphragm open permitting water to flow into the system piping, as well as through the Alarm Port to actuate the system alarms (See Figure 2B).

---

DIMENSIONS SHOWN ARE APPLICABLE TO ALL END CONNECTION CONFIGURATIONS AVAILABLE PER VALVE SIZE

1-1/2 Inch (DN40)

2 Inch (DN50)

3 Inch (DN80)

4 Inch (DN100)

6 Inch (DN150)

8 Inch (DN200)

*FIGURE 3 DV-5a VALVE TAKE-OUT DIMENSIONS*
Upon opening of the DV-5a Valve, the Model MRA-1 Manual Reset Actuator, which is described in Technical Data Sheet TFP1387, opens to constantly vent the DV-5a Diaphragm Chamber to hydraulically latch the DV-5a in the tripped position until manually reset.

See the Electric Actuation section for additional information.
**Electric Actuation**

The Electric Actuation Trim forms a part of the laboratory approval of the DV-5A Valves and is necessary for their proper operation.

The Electric Actuation Trim is required for electric operation of the DV-5A Valve by a detection system consisting of electrical devices such as heat sensitive thermostats, smoke detectors, and/or electric manual pull stations as shown in Figure 4.

Dimensions are provided in Figure 15.

**Note:** The normally closed, de-energized Solenoid Valve is separately ordered and selected based on the required laboratory approval acceptable to the authority having jurisdiction. Refer to Technical Data Sheet TFP2180 for specific laboratory approvals.

Consult with the applicable standards of the Approval agency regarding installation criteria pertaining to electric actuation circuitry.

Due to the functionality of the Model MRA-1 Manual Reset Actuator, the release circuit of the releasing panel need only provide the typical ten minutes of alarm condition intended to energize the Solenoid Valve to open. After the ten minute duration, at which point should the Solenoid Valve become de-energized and close (especially while operating under battery back-up), the MRA-1 will have already automatically opened, thereby preventing the DV-5A Diaphragm Chamber from becoming re-pressurized, and preventing an inadvertent closing of the DV-5A during a fire event.
Installation

The TYCO DV-5A Valve Electric Actuation is to be installed in accordance with this section.

**NOTICE**

DV-5A Automatic Water Control Valves are designed to be used in freshwater systems. When the supply is from an alternative source such as brackish water, saltwater, or contains additives such as foam, the limited warranty is reduced to one year from the time of installation. An increase in frequency of inspections is required when the valve is exposed to such supplies and other corrosive conditions or chemicals that could impact valve materials or the operation of the assembly. The system and all components must be designed accordingly for the increased demand.

Proper operation of the DV-5A Valves depends upon their trim being installed in accordance with the instructions given in this technical data sheet. Failure to follow the appropriate trim diagrams may prevent the DV-5A Valve from functioning properly, as well as void approvals and the manufacturer’s warranties.

The DV-5A Valve must be installed in a readily visible and accessible location.

The DV-5A Valve, associated trim, and wet pilot lines must be maintained at a minimum temperature of 40°F (4°C).

Heat tracing of the DV-5A Valve or its associated trim is not permitted. Heat tracing can result in the formation of hardened mineral deposits that are capable of preventing proper operation.

Always open the system control valves slowly to avoid a sudden rush of water entering the system.

The DV-5A Valve is to be installed in accordance with the following criteria:

**Step 1.** All nipples, fittings, and devices must be clean and free of scale and burrs before installation. Use pipe thread sealant sparingly on male pipe threads only.

**Step 2.** The DV-5A Valve must be trimmed in accordance with one of the trim illustrations shown in Figure 5.

*Note:* If the addition of an Alarm Control Valve is desired or required by the local AHJ, the Alarm Control Valve noted as Item H in Figure 8 is to be a separately ordered electronically supervised normally open valve.

**Step 3.** Care must be taken to ensure that check valves, strainers, globe valves, etc. are installed with the flow arrows in the proper direction.

**Step 4.** Drain tubing to the Drip Funnel must be installed with smooth bends that will not restrict flow.

**Step 5.** The Main Drain and Drip Funnel Drain may be interconnected provided a check valve is located at least 12 in. (300 mm) below the Drip Funnel.

**Step 6.** Suitable provision must be made for disposal of drain water. Drainage water must be directed such that it will not cause accidental damage to property or danger to persons.

**Step 7.** Connect the Diaphragm Supply Valve to the inlet side of the System Main Control Valve in order to facilitate setting of the DV-5A Valve. Refer to Figure 8 as applicable.

**Step 8.** Conduit and electrical connections are to be made in accordance with the applicable standards of the approval agency.

**Step 9.** Before a system hydrostatic test is performed, the DV-5A Diaphragm Chamber is to be depressurized, the Automatic Drain Valve is to be temporarily replaced with a plug, and the Diaphragm Cover Bolts must be uniformly and securely tightened using a cross-draw sequence. After tightening, double-check to make certain that all of the Diaphragm Cover Bolts are securely tightened. See Table C in the Care and Maintenance section for torque specifications.
**Valve Setting Procedure**

Perform Steps 1 through 13 when initially setting the TYCO DV-5a Valve, after an operational test of the fire protection system, or after system operation due to a fire. Refer to Figures 16, 17, or 18, as applicable.

**Step 1.** Close the System Main Control Valve (B).

**Step 2.** Close the Diaphragm Supply Valve (P).

**Step 3.** Open the Main Drain Valve (D), System Drain Valve (E), and all auxiliary drains in the system. Close the auxiliary drain valves and the System Drain Valve (E) after water ceases to discharge. Leave the Main Drain Valve (D) open.

At this time make certain that the Pressure Gauge Valves and the Alarm Control Valve (H), as applicable, are open.

**Step 4.** Depress the plunger of the Automatic Drain Valve (F) to verify that it is open.

**Step 5.** Clean the Diaphragm Supply Strainer (Q) by removing the clean-out plug and strainer basket. The Diaphragm Supply Strainer (Q) may be flushed out by momentarily opening the Diaphragm Supply Valve (P).

**Step 6.** Reset the automatic Electric Actuation by resetting the electric detection system in accordance with the manufacturer’s instructions to de-energize the solenoid valve.

**Step 7.** Operate (open) the Manual Control Station (M) and then open the Diaphragm Supply Valve (P). After unaerated water ceases to discharge from the Manual Control Station (M) drain tube, slowly close the operating lever by pushing it up. Do not close the hinged cover at this time.

**Step 8.** After allowing water to flow out of the Manual Reset Actuator (N) drain tube until aerated water ceases to discharge, reset the Manual Reset Actuator (N) by pressing the Reset Knob and hold until water stops flowing from its drain tube and the pressure builds and reaches approximately 15 psi (1.0 bar) on the Diaphragm Gauge (K). Pressure will then build up in the DV-5a Diaphragm Chamber.

**Note:** After relieving trapped air, check the Manual Reset Actuator (N) to make sure there is no water draining from its drain tube.

**Step 9.** Verify the ability for the DV-5a Diaphragm to hold pressure as follows:
- With the diaphragm chamber pressurized per Step 8, temporarily close the Diaphragm Supply Valve (P), and then observe the Diaphragm Gauge (K) for a drop in pressure.
- If a drop in pressure is noted, the DV-5a Diaphragm is to be replaced and/or any leaks must be corrected before proceeding to the next step.

**Step 10.** Partially open the System Main Control Valve (B), Slowly close the Main Drain Valve (D) as soon as water discharges from the Main Drain Valve (D). Observe the Automatic Drain Valve (F) for leaks. If there are leaks, determine/correct the cause of the leakage problem before proceeding.

**Step 11.** Close the hinged cover of the Manual Control Station (M), and insert a new break rod in the small hole through the top of the enclosing box.

**Step 12.** Fully open the System Main Control Valve (B).

**Step 13.** After setting a fire protection system, notify the proper authorities and advise those responsible for monitoring proprietary and/or central station alarms.
Notes:
1. Port Connections P1 through P7 are described in Figure 2.
2. External Trim Connections C1 through C5 are described in Figure 18.
3. When ordering pre-assembled "DV-5A Valve with Galvanized Trim and Butterfly Valve", Items A1 through A9 are provided, as applicably related to valve size, and Item A9 is provided as P/N 52-287-1-124 described in Technical Data Sheet TFP2180.
4. When ordering DV-5A Trim separately from the DV-5A Valve, Items A1 through A9 are separately ordered. Water Pressure Gauges for EMEA valve trim are also separately ordered.

FIGURE 5
DV-5A VALVE
DELUGE ELECTRIC ACTUATION TRIM
SEMI-ASSEMBLED
## Notes:
1. Port Connections P1 through P7 are described in Figure 2.
2. External Trim Connections C1 through C5 are described in Figure 8.
3. When ordering pre-assembled "DV-SA Valve with Galvanized Trim" or pre-assembled "DV-SA Valve with Galvanized Trim and Butterfly Valve", Items A1 through A9 are provided, as applicable to valve size, and Item A6 is provided as P/N S2-287-1-124 described in Technical Data Sheet TFP2180.
4. When ordering DV-SA Trim separately from the DV-SA Valve, Items A1 through A9 are separately ordered. Water Pressure Gauges for EMEA valve trim are also separately ordered.
5. V1 through V3 Water Column Prevention Drain Components are required for VdS and LPCB Approval.

### FIGURE 6 (1 OF 2)  
DV-5a VALVES – DELUGE ELECTRIC ACTUATION TRIM – EXPLODED VIEW

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QTY</th>
<th>DESCRIPTION</th>
<th>1 1/2 IN. (DN40)</th>
<th>2 IN. (DN50)</th>
<th>3 IN. (DN60)</th>
<th>4 IN. (DN100)</th>
<th>6 IN. (DN150)</th>
<th>8 IN. (DN200)</th>
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<td>DV-5A Valve</td>
<td>SEE ORDERING PROCEDURE, SEPARATE DV-5A VALVES WITHOUT TRIM, FOR PART NUMBERS.</td>
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<td>FIGURE 577 RIGID GROOVED COUPLING</td>
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**NOTE:**
- Not VDS Approved
- CH - Common Hardware - Refer to Materials of Construction section for specifications.
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<tr>
<th>Nominal Valve Size</th>
<th>Inches (mm)</th>
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<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>J</th>
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<td></td>
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<td>9.7 (246)</td>
<td>10.4 (264)</td>
<td>12.7 (323)</td>
<td>16.2 (412)</td>
<td>7.3 (185)</td>
<td>10.2 (259)</td>
<td>8.0 (203)</td>
<td>1.2 (31)</td>
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<td>9.7 (246)</td>
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<td>16.2 (412)</td>
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<td>5.8 (147)</td>
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<td>16.4 (417)</td>
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<td>3.4 (86)</td>
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<td>5.7 (145)</td>
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<td>16.3 (414)</td>
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<td>5.2 (132)</td>
<td>6.7 (170)</td>
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</table>

Notes:
1. Dimensions based on drain valves being open.
2. Dimensions do not provide installation clearance.
Care and Maintenance

The following procedures and inspections must be performed as indicated, in addition to any specific requirements of the NFPA and any applicable standards recognized by the Approval agency. Any impairment must be immediately corrected. See Figure 8.

NOTICE

If the water supply needs to be shut off to the DV-5a valve and trim and cannot be shut off upstream of the system, close the System Main Control Valve (B), the Diaphragm Supply Valve (P), and the Inverted Flare Shut-Off Valve (R). This will allow any trim above the System Main Control Valve (B) to be taken apart for service if necessary.

The frequency at which the following procedures and inspections are to be performed are to be in accordance with the NFPA and any applicable specific requirements of the standards recognized by the Approval agency.

Before closing a fire protection system main control valve for maintenance work on the fire protection system that it controls, permission to shut down the affected fire protection systems must first be obtained from the proper authorities and all personnel who may be affected by this action must be notified.

The owner is responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the NFPA and any applicable standards recognized by the Approval agency. Contact the installing contractor or product manufacturer with any questions.

Some procedures in this section result in the operation of the associated alarms. Notify the owner and the fire department, central station, or other signal station to which the alarms are connected before performing the tests.

It is recommended that automatic sprinkler systems be inspected, tested, and maintained by a qualified Inspection Service in accordance with the NFPA and any applicable standards recognized by the Approval agency.

Drop in Water Supply Pressure Below Normal Range

**NOTICE**

If the water supply pressure is significantly reduced below the normally expected static pressure range (as could occur in the case of a water main break or repair), and there is a subsequent drop in the diaphragm chamber water pressure below its normal range for example, due to a leak in a piping connection to or from the diaphragm chamber or, a leak in the diaphragm chamber check valve caused by dirt or debris in the check valve seal area), a deluge valve such as the DV-5a could inadvertently trip, if its water supply pressure is quickly restored.

A drop in the water supply pressure to below its normal range (as in the case of an interrupted water supply condition) constitutes an emergency impairment.

Should this condition occur, immediately close the System Main Control Valve (B) and use the following procedure to reset the system:

Step 1. Prior to the water supply pressure being restored to the closed System Main Control Valve (B), note the pressure indicated by the diaphragm gauge (K) and determine if the pressure is within the normally expected range.

Step 2. If the diaphragm chamber pressure is below the normal range, check for and correct any source of leakage from the diaphragm chamber prior to resetting the system.

Step 3. After the water supply pressure is restored to the System Main Control Valve (B), reset the DV-5a Valve in accordance with the Valve Setting Procedure section.

**NOTICE**

For fire protection systems subject to an emergency impairment caused by an interrupted water supply condition, it is recommended that consideration be given to installing a low water supply pressure switch with the appropriate alarm/indications to monitor the water supply pressure.

Waterflow Alarm Test Procedure

To test the waterflow alarm, open the Alarm Test Valve (G), which will allow a flow of water to the Waterflow Pressure Switch (C) and/or Water Motor Alarm. Upon satisfactory completion of the test, close the Alarm Test Valve (G).

To ensure drainage of the alarm line, depress the plunger on the Automatic Drain Valve (F).

Electric Actuation Operation Test Procedure

Proper operation of the DV-5a Valve, such as opening of the DV-5a Valve as during a fire condition, must be verified as follows:

**Step 1.** If water must be prevented from flowing beyond the riser, perform the following steps.

- Close System Main Control Valve (B).
- Open Main Drain Valve (D).
- Open System Main Control Valve (B) one turn beyond position at which water just begins to flow from Main Drain Valve (D).
- Slowly close the Main Drain Valve (D).

**Step 2.** Test the deluge releasing panel in accordance with the manufacturer’s instructions to energize the solenoid valve.

**Note:** Be prepared to quickly perform Steps 3, 4, and 5 if water must be prevented from flowing beyond the riser.

**Step 3.** Verify that the DV-5a Valve has tripped, as indicated by the flow of water into the system.

**Step 4.** Close the System Main Control Valve (B).

**Step 5.** Close the Diaphragm Supply Valve (P).

**Step 6.** Reset the DV-5a Valve in accordance with the Valve Setting Procedure.

Electric Actuation Solenoid Valve Test Procedure

Proper operation of the Solenoid Valve for electric actuation must be verified at as follows:

**Step 1.** Close the System Main Control Valve (B).

**Step 2.** Open the Main Drain Valve (D).

**Step 3.** Test the deluge releasing panel in accordance with the manufacturer’s instructions to energize the solenoid valve.

**Step 4.** Verify that there is a flow of water from the Solenoid Valve drain connection.

**Step 5.** Verify that the Diaphragm Chamber pressure has decreased to below 25% of the water supply pressure.
Note:
Port Connections P1 through P7 are described in Figure 2.

FIGURE 8
DV-5a VALVE
DELUGE ELECTRIC ACTUATION TRIM
(Refer To Figure 6 For Specific Bills Of Materials)
Table C: Diaphragm Cover Bolts Minimum Torque

<table>
<thead>
<tr>
<th>Nominal Valve Sizes ANSI Inches (DN)</th>
<th>Torque Nuts (lb-ft)</th>
<th>Short Hex Bolts (N-m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1/2 (40)</td>
<td>44 (59.7)</td>
<td>35 (47.5)</td>
</tr>
<tr>
<td>2 (50)</td>
<td>44 (59.7)</td>
<td>35 (47.5)</td>
</tr>
<tr>
<td>3 (80)</td>
<td>188 (254.9)</td>
<td>150 (203.4)</td>
</tr>
<tr>
<td>4 (100)</td>
<td>396 (536.9)</td>
<td>316 (428.4)</td>
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<tr>
<td>6 (150)</td>
<td>265 (359.3)</td>
<td>212 (287.4)</td>
</tr>
<tr>
<td>8 (200)</td>
<td>545 (738.9)</td>
<td>436 (591.1)</td>
</tr>
</tbody>
</table>

Step 6. Reset the electric detection system in accordance with the manufacturer’s instructions to de-energize the Solenoid Valve (S), and proceed as follows:

- Water should cease draining from the Solenoid Valve (S) but remain draining from the Manual Reset Actuator (N).
- Press the Reset Knob on the Manual Reset Actuator (N) and hold it a few seconds until water stops flowing from its drain tube.
- Pressure will then build up in the DV-5a Diaphragm Chamber.
- After system pressure is restored in the DV-5a Diaphragm Chamber, inspect the Solenoid Valve (S) and Manual Reset Actuator (N) for leaks at the drain tube. Any leaks must be corrected before proceeding to the next step.

Step 7. Partially open the System Main Control Valve (B). Slowly close the Main Drain Valve (D) as soon as water discharges from the Main Drain Valve (D). Observe the Automatic Drain Valve (F) for leaks. If there are leaks, determine/correct the cause of the leakage problem. If there are no leaks, the DV-5a Valve is ready to be placed in service and the System Main Control Valve (B) must then be fully opened.

**Internal Valve Inspection**

Once every five years during the annual operational test procedure, and prior to the DV-5a Valve being reset and the DV-5a Valve de-pressurized, the interior of the DV-5a Valve should be cleaned and inspected for wear and damage. Damaged or worn parts must be replaced. Replacement of the Diaphragm every ten years is recommended, or more frequently if inspections and/or wear and tear of the Diaphragm warrants more frequent replacement.

**NOTICE**

The Diaphragm Cover may be removed between Steps 4 and 5 of the Valve Setting Procedure instructions, since at that point the DV-5a Valve should be de-pressurized as evident by a zero gauge reading on the Diaphragm Gauge (K) and Water Supply Gauge (J), as well as no water discharging from the Automatic Drain Valve (F).

To perform internal valve inspection between Steps 4 and 5 of the Valve Setting Procedure, remove the Diaphragm cover as follows:

**Step 1.** Close the Inverted Flare Shut-Off Valve (R).

**Step 2.** Remove the Copper Tube Fitting between the Diaphragm Supply Valve (P) and the Inverted Flare Shut-Off Valve (R).

**Step 3.** Loosen the union securing the Electric Actuation Trim and remove the Actuation Trim.

**Step 4.** Loosen and remove the union between the Diaphragm Cover and the MRA-1 Manual Reset Actuator (N) and remove the MRA-1 Manual Reset Actuator (N) subassembly.

**Step 5.** Remove the Diaphragm Valve Cover hardware, then slowly remove the Diaphragm Cover and perform internal valve inspection. Clean the valve interior and replace parts as necessary.

After cleaning and inspecting valve interior, and replacing parts as necessary, reinstall the Diaphragm Cover by completing the following steps to assure the Diaphragm Cover Fasteners are uniformly and securely tightened.

**Step 1.** With reference to Figure 1, ensure that the Diaphragm is properly oriented and that the proper hardware arrangement is utilized when assembling the Diaphragm Covers. The hardware arrangements differ depending on the size of the DV-5a Valve.

**Step 2.** By first using the Long Hex Bolts, support of the Diaphragm Cover will be provided before installing the Short Hex Bolts. Align Diaphragm in proper orientation with Valve Body, and then align Diaphragm Cover with Valve Body. Hand-tighten all fasteners.

**Step 3.** Using crossdraw sequence to assure uniformity, wrench-tighten Long Hex Bolts and Short Hex Bolts to appropriate torque values. Repeat crossdraw sequence two to three times at incremental torque valves until reaching the torque values found in Table C.

**Step 4.** Inspect to assure all Hex Bolts are securely tightened.

**Step 5.** Using the union, secure the MRA-1 Manual Reset Actuator to the Diaphragm Cover.

**Step 6.** Using the union, secure the Electric Actuation Trim.

**Step 7.** Replace the Copper Tube Fitting between the Diaphragm Supply Valve (P) and the Inverted Flare Shut-Off Valve (R).

**Step 8.** Ensure that the unions and flare fittings are securely tightened.

**Step 9.** With the Diaphragm Supply Valve (P) closed, fully open the Inverted Flare Shut-Off Valve (R) stainless steel screw. The Diaphragm Valve cannot be properly set.

If the water supply contains chemicals which tend to attack a polyester fabric-reinforced, EPDM rubber or the five year inspection indicates a build-up of debris within the DV-5a Valve that could affect its proper operation, then the frequency of the internal valve inspection procedure must be appropriately increased.

With reference to Figure 1, make certain that the Diaphragm is correctly oriented; otherwise, the DV-5a Deluge Valve cannot be properly set.

Under-tightening the Diaphragm Cover Bolts can result in internal and external leakage.

Use only TYCO replacement fasteners as specified in Figure 1.

Do not apply adhesives, lubricants, or other substances to the Diaphragm or Valve Body.
Limited Warranty

For warranty terms and conditions, visit www.tyco-fire.com.

Ordering Procedure

The TYCO DV-5A Automatic Water Control Valve Electric Actuation may be ordered as follows:

Pre-Assembled Valves with Trim Ordering

DV-5A Valves with Galvanized Trim and Butterfly Valve

(See Figure 9)

Specify: Size (specify), DV-5A Automatic Water Control Valve, G x G connections with assembled galvanized Americas Electric Actuation Trim, complete with assembled Model BFV-300 Butterfly Valve, P/N (specify):

1 1/2 in. (DN40) 551010315
2 in. (DN50) 551010320
3 in. (DN80) 551010330
4 in. (DN100) 551010340
6 in. (DN150) 551010360
8 in. (DN200) 551010380

Notes:

Americas pressure switches, P/N 52-287-1-124 Solenoid Valve, and psi/kPa water pressure gauges are provided.

This arrangement is available for EMEA and APAC upon request. Contact your local distributor.

AMERICAS

DV-5A Valves with Galvanized Trim

(See Figure 5)

Specify: Size (specify), DV-5A Automatic Water Control Valve, (specify) end connection with assembled galvanized Americas, Electric Actuation Trim, P/N (specify):

Grooved x Grooved

1 1/2 in. (DN40) 550100315
2 in. (DN50) 550100320
3 in. (DN80) 550100330
4 in. (DN100) 550100340
6 in. (DN150) 550100360
8 in. (DN200) 550100380

Flange x Flange ANSI

3 in. (DN80) 550020330
4 in. (DN100) 550020340
6 in. (DN150) 550020360
8 in. (DN200) 550020380

Flange x Grooved ANSI

3 in. (DN80) 550030330
4 in. (DN100) 550030340
6 in. (DN150) 550030360
8 in. (DN200) 550030380

T x T NPT

1 1/2 in. (DN40) 550060315
2 in. (DN50) 550060320

Note: Pressure switches, P/N 52-287-1-124 solenoid valve, and psi/kPa water pressure gauges are provided.

Separate DV-5A Valves without Trim

See Table A for flange drilling specifications.

Specify: Size (specify), DV-5A Automatic Water Control Valve, (specify) end connection, P/N (specify):

Groove x Groove

1 1/2 in. (DN40) 530010015
2 in. (DN50) 530010020
3 in. (DN80) 530010030
4 in. (DN100) 530010040
6 in. (DN150) 530010060
8 in. (DN200) 530010080

Flange x Flange ANSI

3 in. (DN80) 530020030
4 in. (DN100) 530020040
6 in. (DN150) 530020060
8 in. (DN200) 530020080

T x T NPT

1 1/2 in. (DN40) 530600015
2 in. (DN50) 530600020

Notes:

Valves are typically provided with flange drilling per ANSI B16.1 (Class 125) or ISO (7005-2 PN16).

Upon request, valves can be provided with flange drilling per JIS B 2210 or AS 2129. In which case part numbers are not assigned.

DV-5A Valve Trim Semi-Assembled

(See Figure 6)

Specify: Size (specify), finish (specify), Electric Actuation Trim for DV-5A Automatic Water Control Valves used in Deluge Fire Protection System, P/N (specify):

Galvanized

1 1/2 in. (DN40) 5400000320
2 in. (DN50) 5400000320
3 in. (DN80) 5400000320
4 in. (DN100) 5400000320
6 in. (DN150) 5400000360
8 in. (DN200) 5400000380

Black

1 1/2 in. (DN40) 5420000320
2 in. (DN50) 5420000320
3 in. (DN80) 5420000320
4 in. (DN100) 5420000320
6 in. (DN150) 5420000360
8 in. (DN200) 5420000380

EMEA

DV-5A Valves with Galvanized Trim

Specify: Size (specify), DV-5A Automatic Water Control Valve, (specify) end connection with assembled galvanized EMEA, Electric Actuation Trim, P/N (specify):

Grooved x Grooved

1 1/2 in. (DN40) 550100315
2 in. (DN50) 550100320
3 in. (DN80) 550100330
4 in. (DN100) 550100340
6 in. (DN150) 550100360
8 in. (DN200) 550100380

Flange x Flange ANSI

3 in. (DN80) 550120330
4 in. (DN100) 550120340
6 in. (DN150) 550120360
8 in. (DN200) 550120380

Flange x Grooved ANSI

3 in. (DN80) 550130330
4 in. (DN100) 550130340
6 in. (DN150) 550130360
8 in. (DN200) 550130380

Flange x Flange ISO

3 in. (DN80) 550140330
4 in. (DN100) 550140340
6 in. (DN150) 550140360
8 in. (DN200) 550140380

Flange x Grooved ISO

3 in. (DN80) 550150330
4 in. (DN100) 550150340
6 in. (DN150) 550150360
8 in. (DN200) 550150380

T x T ISO

1 1/2 in. (DN40) 550170315
2 in. (DN50) 550170320

Note: Pressure switches, P/N 52-287-1-124 solenoid valve, bar/psi water pressure gauges, and NPT to ISO threaded trim adaptors for external connections are provided.

VdS and LPCB Approved DV-5A Valves with Galvanized Trim

Specify: VdS and LPCB Approved, Size (specify), DV-5A Automatic Water Control Valve, (specify) end connection with assembled galvanized Electric Actuation Trim, P/N (specify):

Grooved x Grooved

1 1/2 in. (DN40) 56010315
2 in. (DN50) 56010320
3 in. (DN80) 56010330
4 in. (DN100) 56010340
6 in. (DN150) 56010360
8 in. (DN200) 56010380

Flange x Flange ANSI

3 in. (DN80) 560120330
4 in. (DN100) 560120340
6 in. (DN150) 560120360
8 in. (DN200) 560120380

Flange x Grooved ANSI

3 in. (DN80) 560130330
4 in. (DN100) 560130340
6 in. (DN150) 560130360
8 in. (DN200) 560130380

Flange x Flange ISO

3 in. (DN80) 560140330
4 in. (DN100) 560140340
6 in. (DN150) 560140360
8 in. (DN200) 560140380

Flange x Grooved ISO

3 in. (DN80) 560150330
4 in. (DN100) 560150340
6 in. (DN150) 560150360
8 in. (DN200) 560150380

T x T ISO

1 1/2 in. (DN40) 560170315
2 in. (DN50) 560170320

Note: EMEA pressure switches, P/N 52-287-1-124 solenoid valve, bar/psi water pressure gauges, and NPT to ISO threaded trim adaptors for external connections, and VdS and LPCB required water column prevention drain components are provided.
Separate DV-5a Valves without Trim
See Table A for flange drilling specifications.

Specify: Size (specify), DV-5a Automatic Water Control Valve, (specify) end connection, P/N (specify):

**Groove x Groove**
- 1 1/2 in. (DN40) ........................ 530100015
- 2 in. (DN50) ........................ 530100020
- 3 in. (DN80) ........................ 530100030
- 4 in. (DN100) ........................ 530100040
- 6 in. (DN150) ........................ 530100060
- 8 in. (DN200) ........................ 530100080

**Flange x Flange ANSI**
- 3 in. (DN80) ........................ 530020030
- 4 in. (DN100) ........................ 530020040
- 6 in. (DN150) ........................ 530020060
- 8 in. (DN200) ........................ 530020080

**Flange x Groove ANSI**
- 3 in. (DN80) ........................ 530030030
- 4 in. (DN100) ........................ 530030040
- 6 in. (DN150) ........................ 530030060
- 8 in. (DN200) ........................ 530030080

**Flange x Flange ISO**
- 3 in. (DN80) ........................ 530040030
- 4 in. (DN100) ........................ 530040040
- 6 in. (DN150) ........................ 530040060
- 8 in. (DN200) ........................ 530040080

**Flange x Groove ISO**
- 3 in. (DN80) ........................ 530050030
- 4 in. (DN100) ........................ 530050040
- 6 in. (DN150) ........................ 530050060
- 8 in. (DN200) ........................ 530050080

**T x T NPT**
- 1 1/2 in. (DN40) ........................ 530060015
- 2 in. (DN50) ........................ 530060020

**Flange x Flange ISO**
- 3 in. (DN80) ........................ 530060030
- 4 in. (DN100) ........................ 530060040
- 6 in. (DN150) ........................ 530060060
- 8 in. (DN200) ........................ 530060080

**T x T ISO**
- 1 1/2 in. (DN40) ........................ 530070015
- 2 in. (DN50) ........................ 530070020

**Notes:**
Valves are typically provided with flange drilling per ANSI B16.1 (Class 125) or ISO (7005-2 PN16).

Upon request, valves can be provided with flange drilling per JIS B 2210 or AS 2129. In which case part numbers are not assigned.

**DV-5a Valve Trim**
Specify: Size (specify), finish (specify), Electric Actuation Trim for DV-5a Automatic Water Control Valves used in Deluge Fire Protection System, P/N (specify):

**Galvanized**
- 1 1/2 in. (DN40) ........................ 5401000320
- 2 in. (DN50) ........................ 5401000320
- 3 in. (DN80) ........................ 5401000330
- 4 in. (DN100) ........................ 5401000340
- 6 in. (DN150) ........................ 5401000360
- 8 in. (DN200) ........................ 5401000380

**Black**
- 1 1/2 in. (DN40) ........................ 5421000320
- 2 in. (DN50) ........................ 5421000320
- 3 in. (DN80) ........................ 5421000330
- 4 in. (DN100) ........................ 5421000340
- 6 in. (DN150) ........................ 5421000360
- 8 in. (DN200) ........................ 5421000380

**Notes:**
Pressure switches, solenoid valves for electric actuation, water pressure gauges, and BFV-300 Butterfly Valve are separately ordered. NPT to ISO threaded adaptors are provided for External Trim Connections (drains, pressure switches, water motor alarms, etc.).

**APAC**

**DV-5a Valves with Galvanized Trim**
Specify: Size (specify), DV-5a Automatic Water Control Valve, (specify) end connection, assembled galvanized APAC, Electric Actuation Trim, P/N (specify):

**Grooved x Grooved**
- 1 1/2 in. (DN40) ........................ 550100315
- 2 in. (DN50) ........................ 550100320
- 3 in. (DN80) ........................ 550100330
- 4 in. (DN100) ........................ 550100340
- 6 in. (DN150) ........................ 550100360
- 8 in. (DN200) ........................ 550100380

**Flange x Flange ANSI**
- 3 in. (DN80) ........................ 550200330
- 4 in. (DN100) ........................ 550200340
- 6 in. (DN150) ........................ 550200360
- 8 in. (DN200) ........................ 550200380

**Flange x Grooved ANSI**
- 3 in. (DN80) ........................ 550300330
- 4 in. (DN100) ........................ 550300340
- 6 in. (DN150) ........................ 550300360
- 8 in. (DN200) ........................ 550300380

**T x T NPT**
- 1 1/2 in. (DN40) ........................ 550600315
- 2 in. (DN50) ........................ 550600320

**Flange x Flange ISO**
- 3 in. (DN80) ........................ 550400330
- 4 in. (DN100) ........................ 550400340
- 6 in. (DN150) ........................ 550400360
- 8 in. (DN200) ........................ 550400380

**Flange x Groove ISO**
- 3 in. (DN80) ........................ 550500330
- 4 in. (DN100) ........................ 550500340
- 6 in. (DN150) ........................ 550500360
- 8 in. (DN200) ........................ 550500380

**T x T ISO**
- 1 1/2 in. (DN40) ........................ 55070015
- 2 in. (DN50) ........................ 55070020

**Notes:**
Valves are typically provided with flange drilling per ANSI B16.1 (Class 125) or ISO (7005-2 PN16).

Upon request, valves can be provided with flange drilling per JIS B 2210 or AS 2129. In which case part numbers are not assigned.

**DV-5a Valve Trim**
Specify: Size (specify), finish (specify), Electric Actuation Trim for DV-5a Automatic Water Control Valves used in Deluge Fire Protection System, P/N (specify):

**Galvanized**
- 1 1/2 in. (DN40) ........................ 540000320
- 2 in. (DN50) ........................ 540000320
- 3 in. (DN80) ........................ 540000330
- 4 in. (DN100) ........................ 540000340
- 6 in. (DN150) ........................ 540000360
- 8 in. (DN200) ........................ 540000380

**Black**
- 1 1/2 in. (DN40) ........................ 542000320
- 2 in. (DN50) ........................ 542000320
- 3 in. (DN80) ........................ 542000330
- 4 in. (DN100) ........................ 542000340
- 6 in. (DN150) ........................ 542000360
- 8 in. (DN200) ........................ 542000380

**Valve Trim Accessories**

**DV-5a Valve Trim Accessories (for separately ordered valve trim)**
Specify: (Specify Accessory Description), P/N (specify):
- Waterflow Pressure Alarm Switch, Potter PS10-2 (America/APAC) ........................ 527620
- Waterflow Pressure Alarm Switch PS10-1 (EMEA) ........................ 0260
- Model WMA-1 Water Motor Alarm (America/APAC) ........................ 526301001P
- Model WMA-1 Water Motor Alarm (EMEA) ........................ 526310102R
- Water Gauges with bar/psi Water Gauges with bar/psi (service pressure over 300 psi) ........................ 0255000013
- 600 psi Water Gauge psi/kPa (service pressure over 300 psi) ........................ 923431004
- Solenoid Valves for Releasing Service ........................ Refer to TFP2180

**DV-5a Valve Replacement Parts**
Specify: (Description) for use with (specify size) DV-5a Automatic Water Control Valve, P/N (See Figure 1)

**DV-5a Valve Trim Replacement Parts**
Specify: (Description) for use with DV-5a Valve Trim, P/N (See Figure 6)