DV-5A Automatic Water Control Valve Deluge Fire Protection Systems 1-1/2 Inch to 8 Inch (DN40 to DN200)

General Description

The TYCO DV-5A Automatic Water Control Valves 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 Valves are offered with the DV-5A Valve and separately ordered semi-assembled trim shown in Figures 7, 8, and 9, or, for ease of installation, with the DV-5A Valve completely trimmed 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, in addition to the standards of any other authorities having jurisdiction. Failure to do so may impair the performance of these devices.

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.

Available End Connections and Weights — lb/(kg)

End Connection		Nominal Valve Size ANSI Inches (DN)					
Inlet	Outlet	1-1/2 (40)	2 (50)	3 (80)	4 (100)	6 (150)	8 (200)
Thread	Thread	26 (11,8)	25 (11,3)	N/A	N/A	N/A	N/A
Groove	Groove	25 (11,3)	25 (11,3)	60 (27,2)	95 (43,1)	177 (80,3)	327 (148,3)
Flange	Groove	N/A	N/A	66 (30,0)	106 (48,1)	190 (86,2)	346 (157,0)
Flange	Flange	N/A	N/A	72 (32,7)	116 (52,6)	204 (92,5)	365 (165,6)

Item	Description	Qty.	Nominal Valve Size ANSI Inch (DN)					
			1-1/2 (DN40)	2 (DN50)	3 (DN80)	4 (DN100)	6 (DN150)	8 (DN200)
			P/N	P/N	P/N	P/N	P/N	P/N
1	Valve Body	1	N/R	N/R	N/R	N/R	N/R	N/R
2	Diaphragm	1	545000020	545000020	545000030	545000040	545000060	545000080
3	Diaphragm Cover	1	N/R	N/R	N/R	N/R	N/R	N/R
4	Hex Bolt, Short	2[a]	545100001	545100001	545100002	545100003	545100004	545100003
5	Hex Bolt, Long	2	545100011	545100011	545100012	545100013	545100014	545100015
6	Lift Washer	2[b]	N/A	N/A	545100021	545100022	545100023	545100022
7	Hex Nut	2	545100031	545100031	545100032	545100033	545100034	545100033
8	Hoist Ring	2	545100041	545100041	545100041	545100041	545100041	545100041
9	Flat Washer	2	N/A	N/A	545100024	545100025	545100026	545100025

NOTES:
a. Hex Bolt, Short, Qty. 6 in 6 and 8 inch (DN150 and DN200) assemblies
b. Lift Washer not used in 1-1/2 and 2 inch (DN40 and DN50) assemblies
c. N/R = Not Replaceable
d. Order replacements parts only via Part Numbers given, do not replace Hex Bolt, Hex Nut, Lift Washer or Hoist Ring with common hardware parts

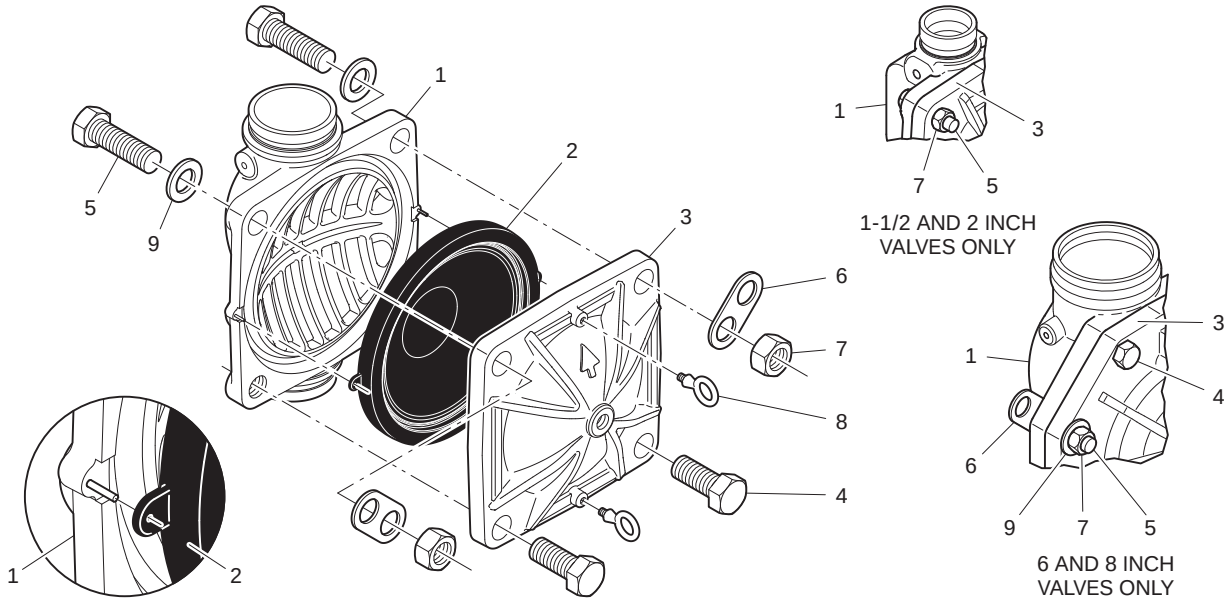
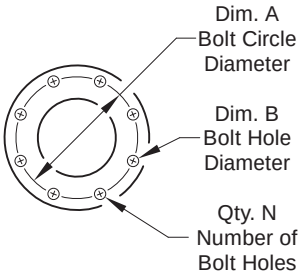


FIGURE 1
DV-5A VALVE ASSEMBLY AND REPLACEMENT PARTS

Nominal Valve Size ANSI Inches (DN)	Flange Drilling Specification											
	Nominal Dimensions in Inches and (mm)											
	ANSI B16.1[a] (Class 125)			ISO 7005-2 (PN16)[b]			JIS B 2210 (10K)			AS 2129 (Table E)		
	A	B	N	A	B	N	A	B	N	A	B	N
3 (80)	6.00 (152,4)	0.75 (19,0)	4	6.30 (160,0)	0.75 (19,0)	8	5.90 (150,0)	0.59 (15,0)	8	5.75 (146,0)	0.71 (18,0)	4
4 (100)	7.50 (190,5)	0.75 (19,0)	8	7.09 (180,0)	0.75 (19,0)	8	6.89 (175,0)	0.60 (15,0)	8	7.00 178,0)	0.71 (18,0)	8
6 (150)	9.50 (241,3)	0.88 (22,2)	8	9.45 (240,0)	0.91 (23,0)	8	9.45 (240,0)	0.75 (19,0)	8	9.25 (235,0)	0.87 (22,0)	8
8 (200)	11.75 (298,5)	0.88 (22,2)	8	11.61 (295,0)	0.91 (23,0)	12	11.42 (290,0)	0.75 (19,0)	12	11.50 (292,0)	0.87 (22,0)	8



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)

TABLE A
FLANGE DRILLING SPECIFICATIONS

Port	Port Description	Port Sizes, NPT Inch per ANSI B1.20.1					
		1-1/2 (DN40)	2 (DN50)	3 (DN80)	4 (DN100)	6 (DN150)	8 (DN200)
P1	Diaphragm Chamber Supply	1/2	1/2	1/2	1/2	1/2	1/2
P2	Water Supply Pressure & Alarm Test	1/2	1/2	1/2	1/2	1/2	1/2
P3	Alarm Actuation	3/4	3/4	3/4	3/4	3/4	3/4
P4	Automatic Drain Valve	1/2	1/2	1/2	1/2	1/2	1/2
P5	System Drain	3/4	3/4	3/4	3/4	3/4	3/4
P6	Main Drain	3/4	3/4	1-1/4	2	2	2
P7	System Air Supply Not Used for Deluge	1/2	1/2	1/2	1/2	1/2	1/2

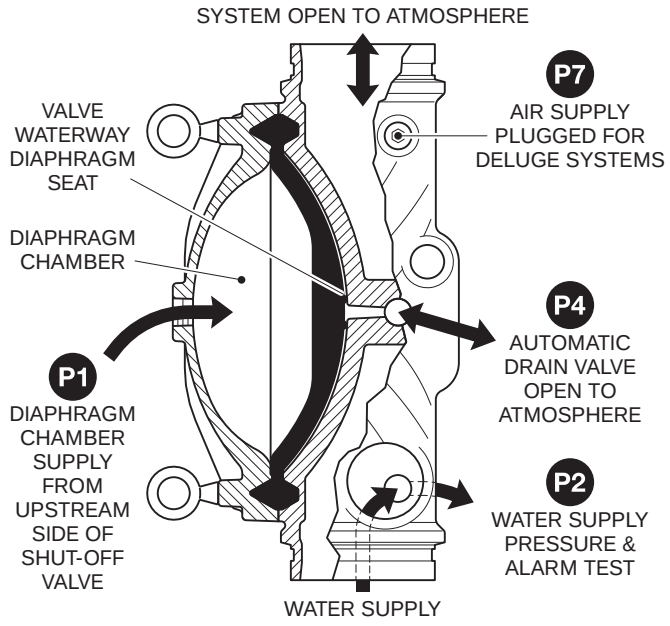


FIGURE 2A
SET CONDITION

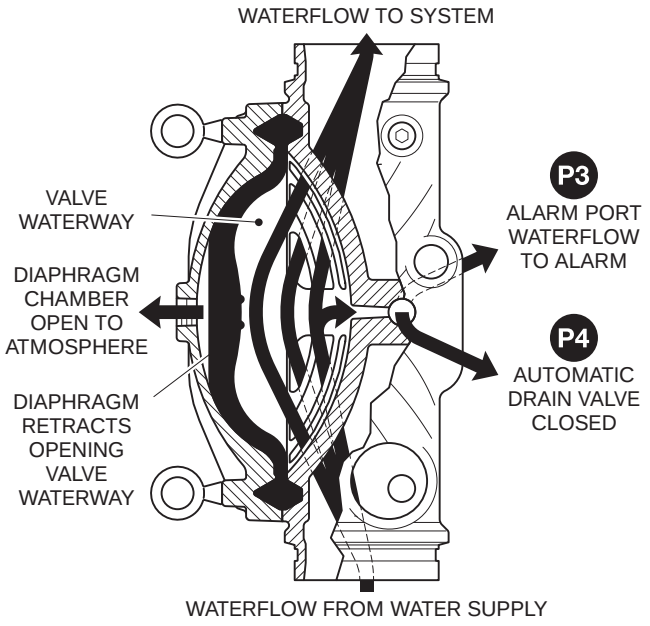


FIGURE 2B
OPERATED CONDITION

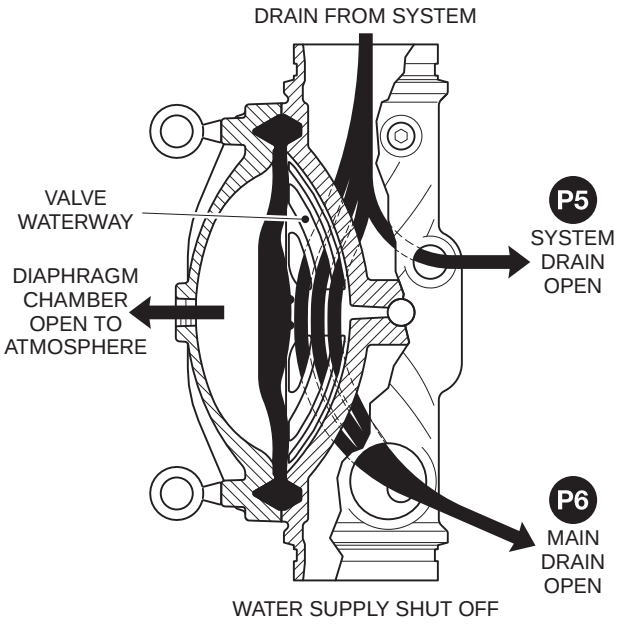


FIGURE 2C
SYSTEM DRAIN CONDITION

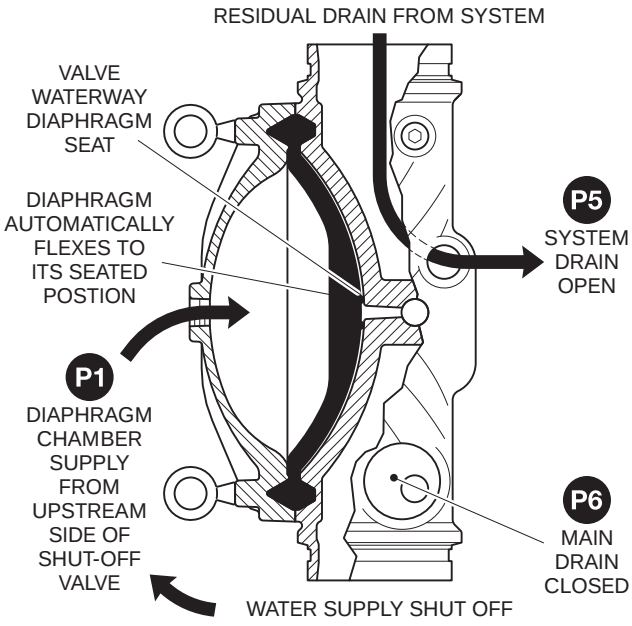


FIGURE 2D
RESIDUAL DRAIN CONDITION

FIGURE 2
DV-5A VALVE OPERATION, DELUGE SYSTEMS

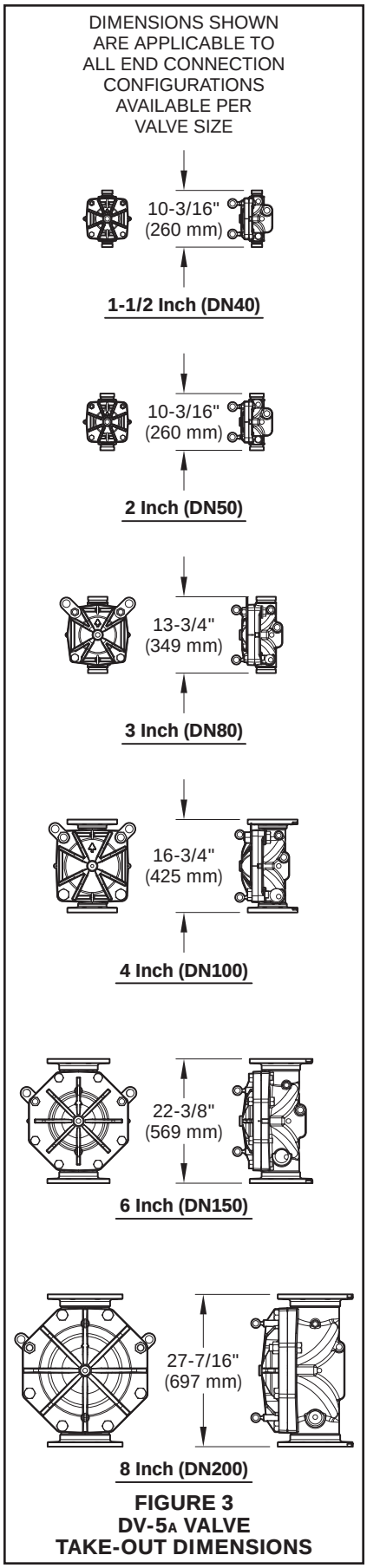


FIGURE 3
DV-5A VALVE
TAKE-OUT DIMENSIONS

Technical Data

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

Listings and Approvals are based on DV-5A Valve being trimmed as described in Figures 7, 8, and 9 (i.e., Wet Pilot, Dry Pilot, and Electric Actuation).

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

* VdS approval is additionally based on installing the VdS required column prevention drain components provided with assemblies per Table J 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 (Ref. Table A). Threaded inlet and port connections are available in NPT or ISO 7/1. Threaded port connections are NPT threaded.

Valve Trim
The maximum pressure rating is as follows:

- Wet Pilot Actuation Trim is 300 psi (20,7 bar)
- Dry Pilot Actuation Trim is 250 psi (17,2 bar)
- Electric Actuation Trim 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 Figures 16, 17, and 18 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
Refer to Graph A

Detection System
Refer to subsections Wet Pilot Actuation, Dry Pilot Actuation, or Electric Actuation, as necessary.

Materials of Construction

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

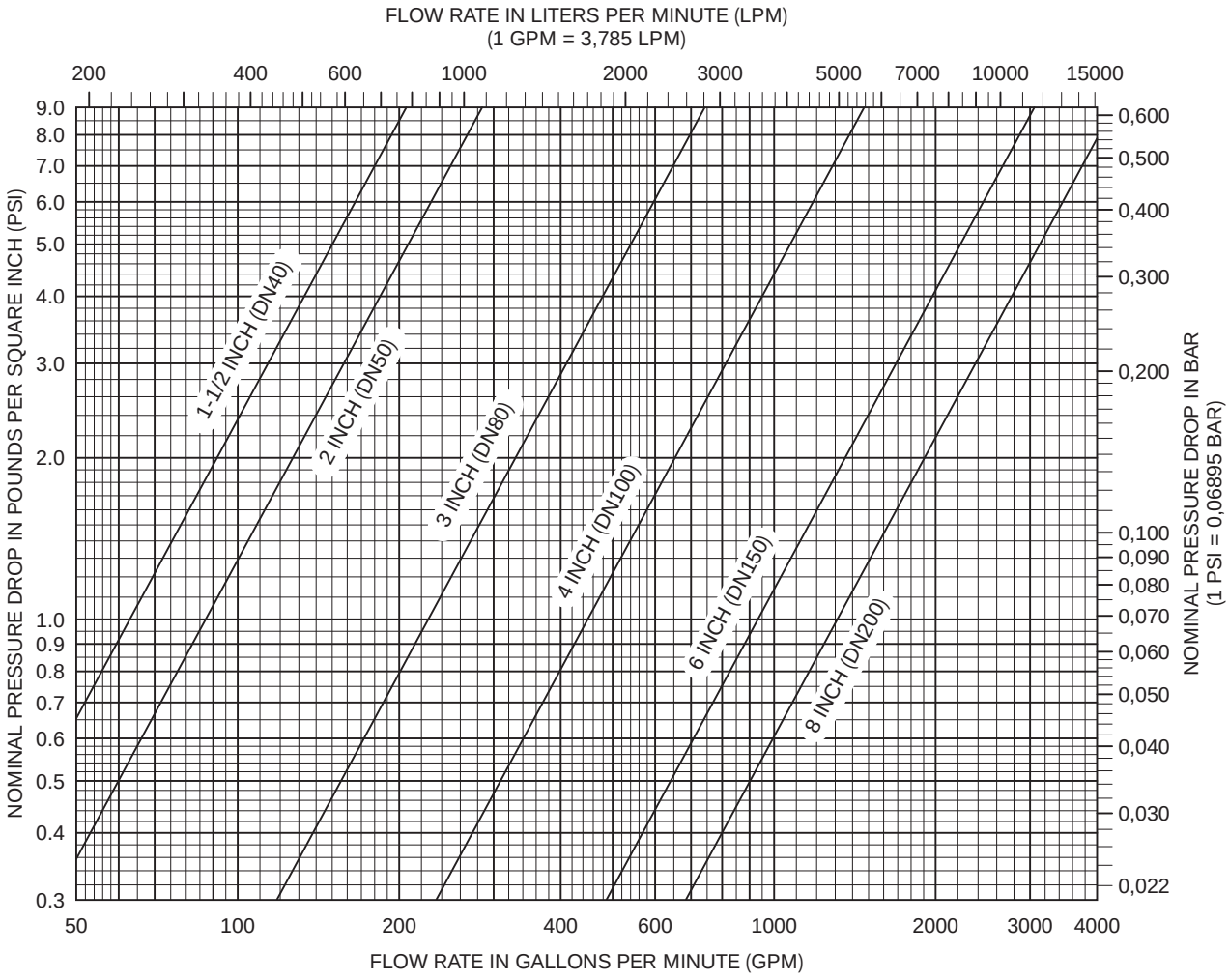
Common Hardware Trim
- Common hardware pipe fittings are galvanized or black as required and are malleable per ASME B16.3.
- Common hardware pipe nipples are galvanized or black as required and are Schedule 40 per ASTM A53 or A135.
- Common hardware compression fittings are brass per ASTM B16.
- Common 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 (Ref. 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 an actuation device, for example the solenoid valve in the Electric Actuation Trim (Ref. Figure 6), 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



GRAPH A
DV-5A VALVE
NOMINAL PRESSURE LOSS VERSUS FLOW

flow into the system piping, as well as through the Alarm Port to actuate the system alarms (Ref. Figure 2B).

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.

Refer to the following three sections for additional information regarding actuation options:

- Wet Pilot Actuation
- Dry Pilot Actuation
- Electric Actuation

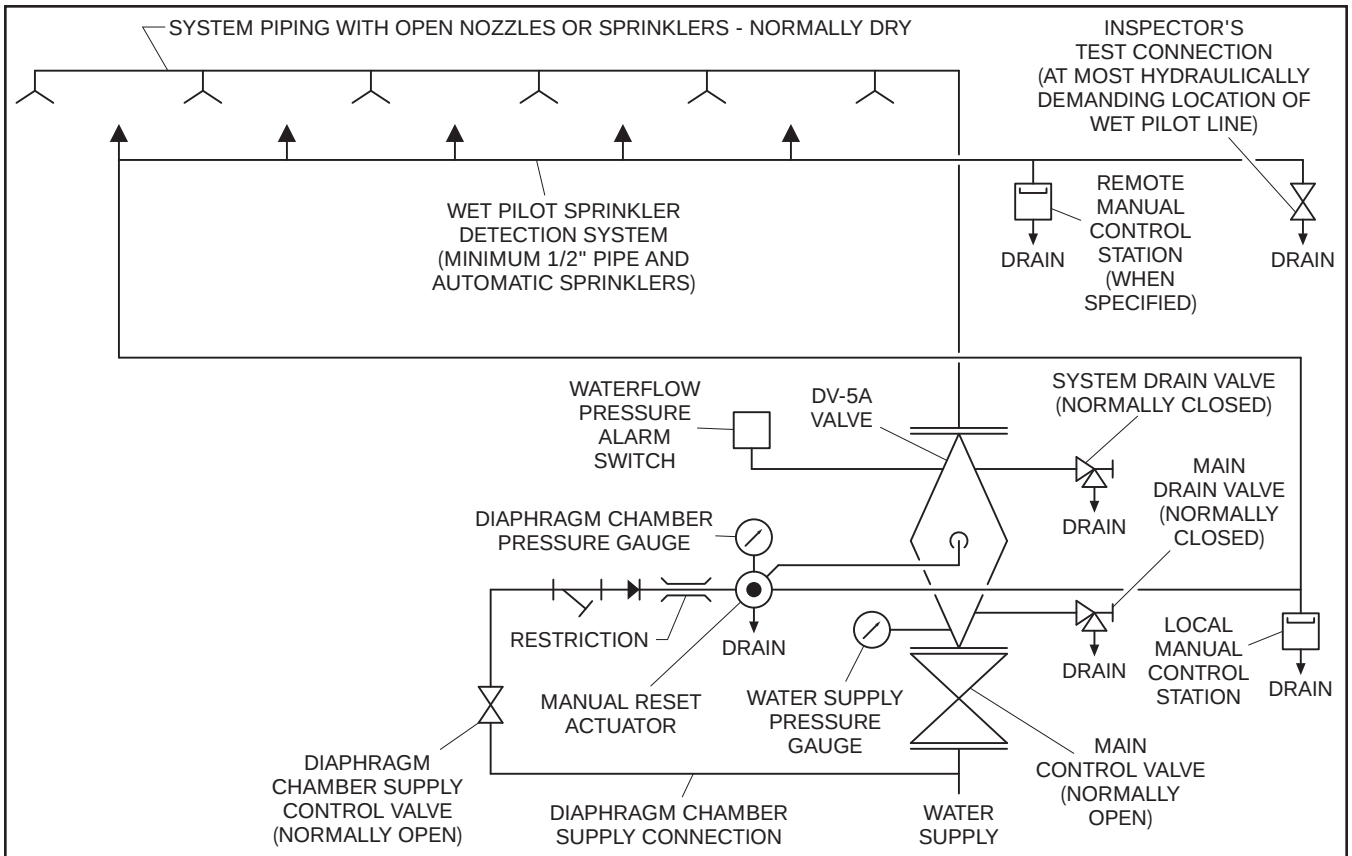


FIGURE 4
DV-5A VALVE
DELUGE WET PILOT ACTUATION SCHEMATIC DIAGRAM

Wet Pilot Actuation

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

With Reference to Figure 4, the Wet Pilot Actuation Trim provides for connection of a detection system consisting of wet pilot line sprinklers (heat detectors) and manual control stations interconnected with minimum 1/2 in. (DN15) steel pipe. The pilot line is connected to the Wet Pilot Line Connection.

Dimensions are provided in Figure 13.

Pilot sprinklers are to be minimum 5.6 K-factor (80 K-factor) orifice approved automatic sprinklers. Manual Control Stations are to be the Model MC-1 described in Technical Data Sheet TFP1382.

The maximum height of a wet pilot line above the DV-5A Valve must not exceed the limitations shown in Table B as a function of the minimum water supply pressure to the DV-5A Valve for an equivalent length (pipe plus fittings) of the pilot line up to 500 ft (150 meters) to the most remote pilot sprinkler.

Provision must be made for installing a 5.6 K-factor (80 K-factor) orifice, Inspector's Test Connection at the most hydraulically demanding location of a wet pilot line (usually adjacent to the highest and most remote wet pilot sprinkler or manual control station).

NOTES: Wet Pilot Lines must be maintained at a minimum temperature of 40°F (4°C).

At a minimum, it is recommended that internally galvanized pipe and fittings be used for wet pilot lines.

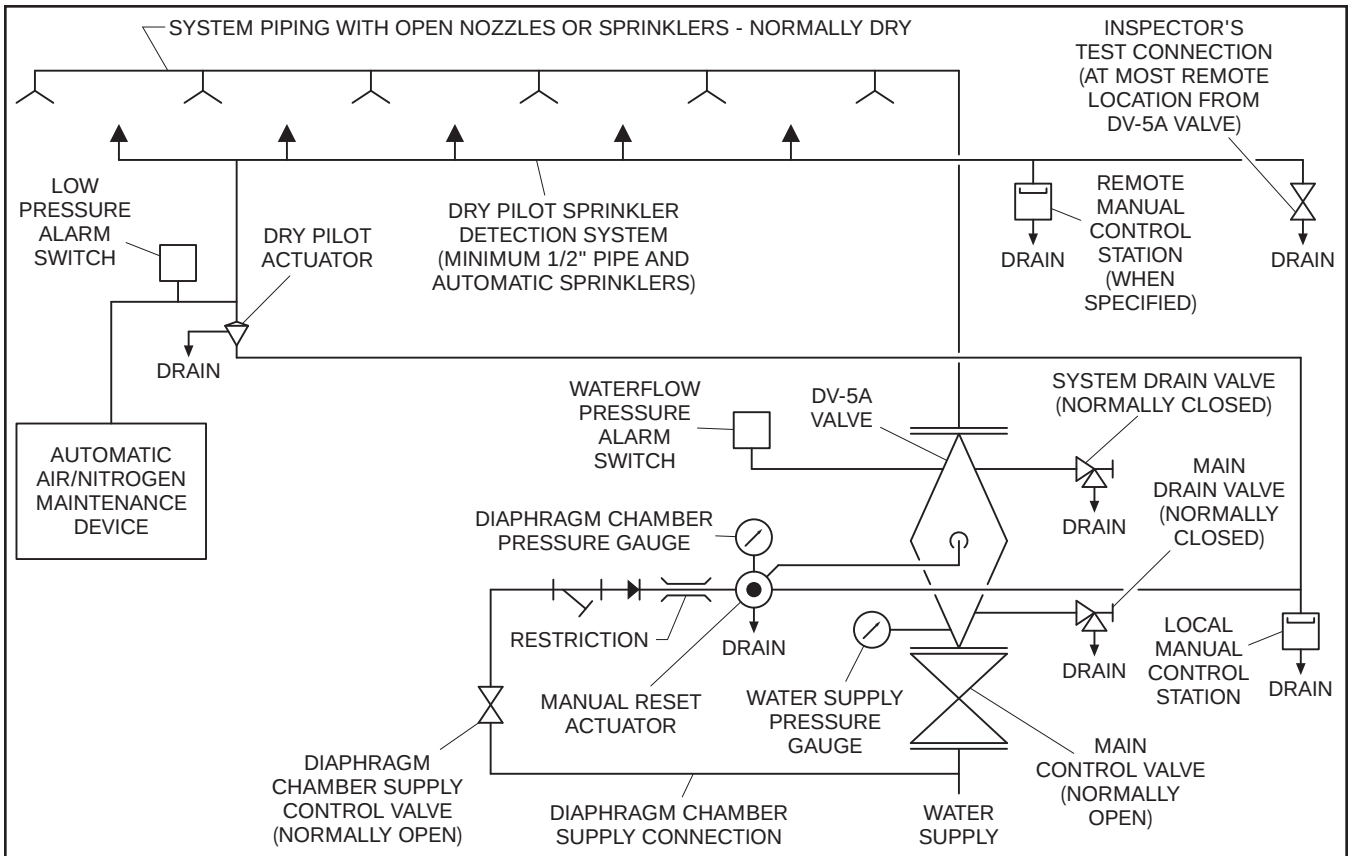


FIGURE 5
DV-5A VALVE
DELUGE DRY PILOT ACTUATION SCHEMATIC DIAGRAM

Dry Pilot Actuation

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

With reference to Figure 5, the Dry Pilot Actuation Trim provides for installation of a detection system consisting of pilot sprinklers (heat detectors) and manual control stations interconnected with a minimum length of 56 ft (17,1 m) of 1/2 in. (DN15) steel pipe equivalent to 207 $in.^3$ (3400 cm^3). The dry pilot line, which is to be pressurized with air or nitrogen, is connected to the Dry Pilot Line Connection.

Dimensions are provided in Figure 14.

Pilot sprinklers are to be minimum 5.6 K-factor (80 K-factor) orifice approved automatic sprinklers. Manual Control Stations are to be the Model MC-1 described in Technical Data Sheet TFP1382.

Provision must be made for installing a 5.6 K-factor (80 K-factor) Inspector's Test Connection at the most remote location on the dry pilot line.

The Dry Pilot Actuation Trim is provided with a Model DP-1 Dry Pilot Actuator, which is described in Technical Data Sheet TFP1380. The Actuator is rated for use at a maximum pilot service pressure of 50 psi (3,4 bar) and a maximum water supply service pressure of 250 psi (17,2 bar).

Graph B shows the minimum pilot line service pressure as a function of the water supply pressure. The pressure in the dry pilot actuation system must be automatically maintained using one of the following maintenance devices, as appropriate:

- Model AMD-1 Air Maintenance Device (pressure reducing type), refer to Technical Data Sheet TFP1221
- Model AMD-2 Air Maintenance Device (compressor control type), refer to Technical Data Sheet TFP1231
- Model AMD-3 Nitrogen Maintenance Device (high pressure reducing type), refer to Technical Data Sheet TFP1241

Supervision of the pressure in the dry pilot actuation system and an alarm that separately indicates operation of the detection system is provided by a low pressure alarm switch set as follows:

- Low pressure alarm setting at approximately 6 psi (0,4 bar) below the minimum pilot line service pressure requirement shown in Graph B
- Fire alarm setting at approximately 15 psi (1,0 bar) below the minimum pilot line service pressure requirement shown in Graph B

The Pressure Relief Valve provided in the trim is factory set to relieve at a pressure of approximately 45 psi (3,1 bar); however, it may be field adjusted to a lower pressure, if required.

The dry pilot line is to be provided with low point drains to enable draining of condensate.

NOTE: At a minimum, it is recommended that internally galvanized pipe and cast iron fittings be used for dry pilot lines.

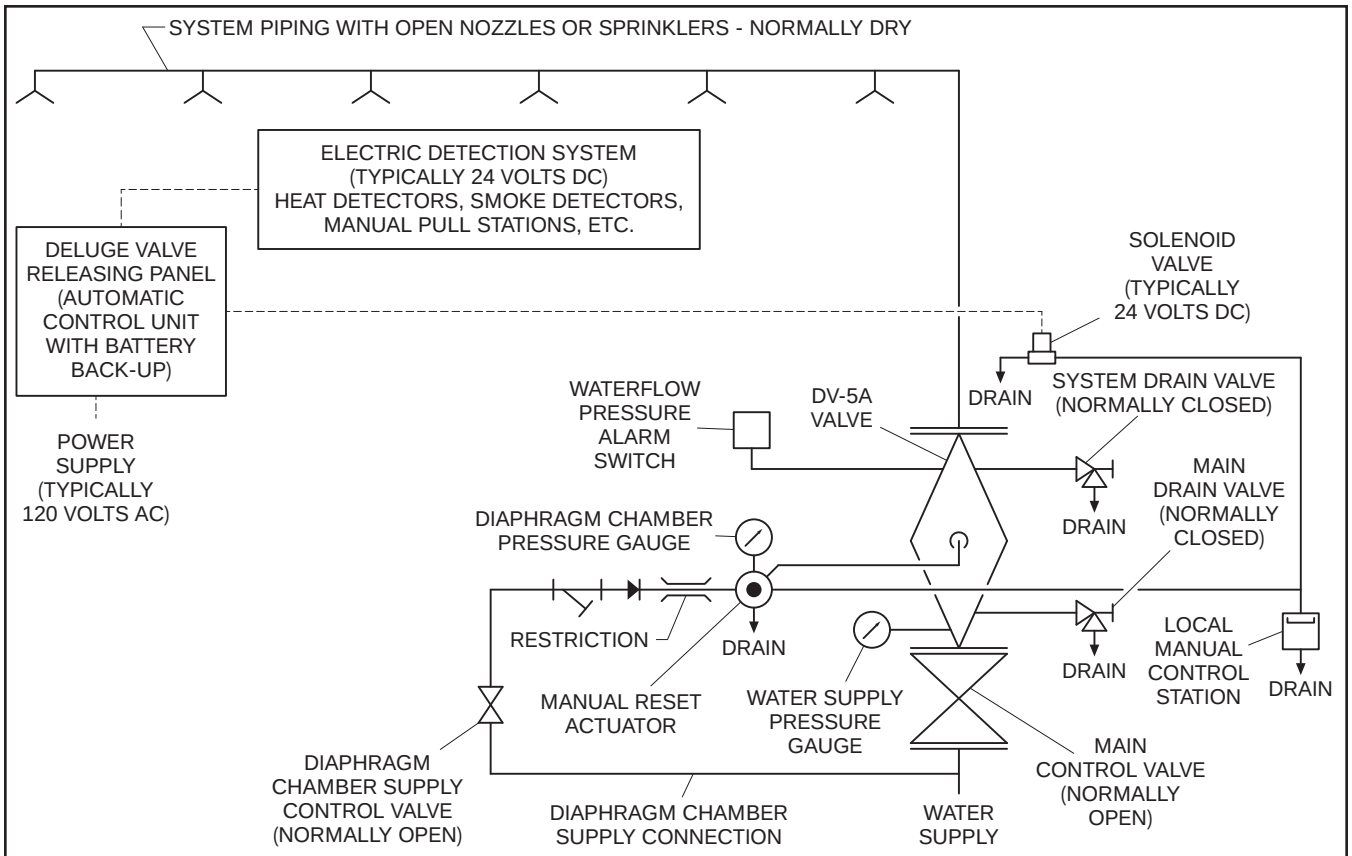


FIGURE 6
DV-5A VALVE
DELUGE ELECTRIC ACTUATION SCHEMATIC DIAGRAM

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.

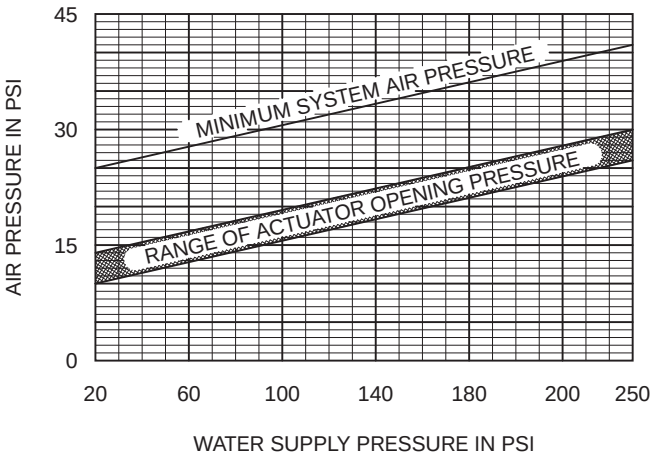
The Electric Actuation Trim is required for electric operation of the DV-5A Valve by a detection system consisting of electrical devices such as heat sensitive thermostats, smoke detectors, and/or electric manual pull stations as shown in Figure 6.

Dimensions are provided in Figure 15.

NOTES: 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.



NOTES:

The dew point of the pilot line air pressure must be maintained below the lowest ambient temperature to which the dry pilot actuation system will be exposed. Accumulation of water in the pilot line connection to the Actuator will lower the air pressure at which the actuator will open and possibly prevent proper operation. Also, introduction of moisture into the pilot lines exposed to freezing temperatures can create an ice buildup that could prevent proper operation of the Actuator.

An air dryer must be installed where the moisture content of the air supply is not properly controlled at less than the required value.

It is recommended that an AMD-3 Nitrogen Maintenance Device be utilized in dry pilot actuation system applications where the dew point must be maintained below -20°F (-29°C). Refer to Technical Data Sheet TFP1241.

GRAPH B
DV-5A VALVE
DRY PILOT LINE AIR PRESSURE REQUIREMENTS

Supply Pressure psi (bar)[1]	Maximum Pilot Height[2] Feet (Meters)					
	1-1/2 (DN40)	2 (DN50)	3 (DN80)	4 (DN100)	6 (DN150)	80 (DN200)
20 (1,4)	13 (4)	13 (4)	4 (1)	9 (3)	12 (4)	15 (5)
40 (2,8)	34 (10)	34 (10)	29 (9)	33 (10)	27 (8)	23 (7)
60 (4,1)	55 (17)	55 (17)	54 (16)	57 (17)	42 (13)	31 (9)
80 (5,5)	76 (23)	76 (23)	79 (24)	81 (25)	57 (17)	39 (12)
100 (6,9)	97 (30)	97 (30)	103 (31)	105 (32)	73 (22)	46 (14)
120 (8,3)	118 (36)	118 (36)	128 (39)	129 (39)	88 (27)	54 (16)
140 (9,7)	139 (42)	139 (42)	153 (47)	153 (47)	103 (31)	62 (19)
160 (11,0)	160 (49)	160 (49)	178 (54)	177 (54)	118 (36)	70 (21)
175 (12,1)	172 (52)	172 (52)	188 (57)	195 (59)	131 (40)	75 (23)
200 (13,8)	201 (61)	201 (61)	203 (62)	224 (68)	152 (48)	84 (26)
225 (15,5)	226 (69)	226 (69)	219 (67)	254 (77)	173 (53)	92 (28)
250 (17,2)	252 (77)	252 (77)	235 (72)	284 (87)	195 (59)	100 (30)
275 (19,0)	277 (84)	277 (84)	247 (75)	308 (94)	212 (65)	107 (33)
300 (20,7)	303 (92)	303 (92)	266 (81)	347 (106)	237 (72)	124 (38)

Notes:
1. If supply pressure is variable, assume minimum expected value.
2. Maximum pilot height for up to 500 ft (150 m) of equivalent length of pilot line (pipe plus □ttings).
3. Interpolation between data points is permitted.

TABLE B
DV-5A VALVE
WET PILOT DESIGN CRITERIA FOR UP TO
500 FEET (150 METERS) OF EQUIVALENT LENGTH OF 1/2 INCH (DN15) PILOT LINE
(PIPE PLUS FITTINGS)

Installation

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

NOTICE

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 diagram 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.

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 Figures 7, 8, and 9, as applicable.

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 Figures 16, 17, and 18 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 Figures 16, 17, and 18 as applicable.

Step 8. An Inspector's Test Connection, as described in the Wet Pilot Actuation and Dry Pilot Actuation sections, must be provided for Wet or Dry Pilot Actuation systems.

Step 9. An Air Maintenance Device, as described in the Dry Pilot Actuation section, must be provided for Dry Pilot Actuation.

Step 10. A desiccant dryer, when specified for Dry Pilot Actuation, is to be installed between a drip leg and the Air Maintenance Device.

Step 11. The Low Pressure Alarm Switch for Dry Pilot Actuation is to be adjusted as follows:

- Low pressure alarm setting at approximately 6 psi (0,4 bar) below the minimum pilot line service pressure requirement shown in Graph B
- Fire alarm setting at approximately 15 psi (1,0 bar) below the minimum pilot line service pressure requirement shown in Graph B

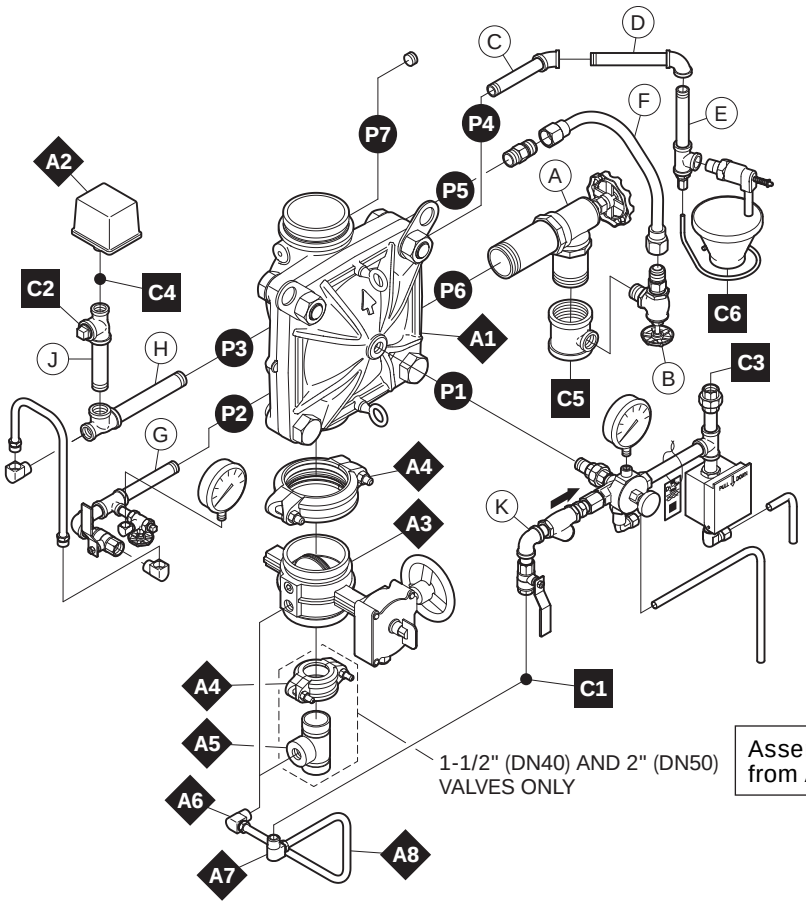
Step 12. Unused Pressure Alarm Switch connections must be plugged.

Step 13. The Pressure Relief Valve provided with the Dry Pilot Actuation Trim is factory set to relieve at a pressure of approximately 45 psi (3,1 bar), which can typically be used for a maximum dry pilot actuation system pressure of 40 psi (2,8 bar). The Pressure Relief Valve may be reset; however, it must be reset to relieve at a pressure which is in accordance with the requirements of the authority having jurisdiction.

To reset the Pressure Relief Valve, first loosen the jam nut and then adjust the cap accordingly, clockwise for a higher pressure setting or counter clockwise for a lower pressure setting. After verifying the desired pressure setting, tighten the jam nut.

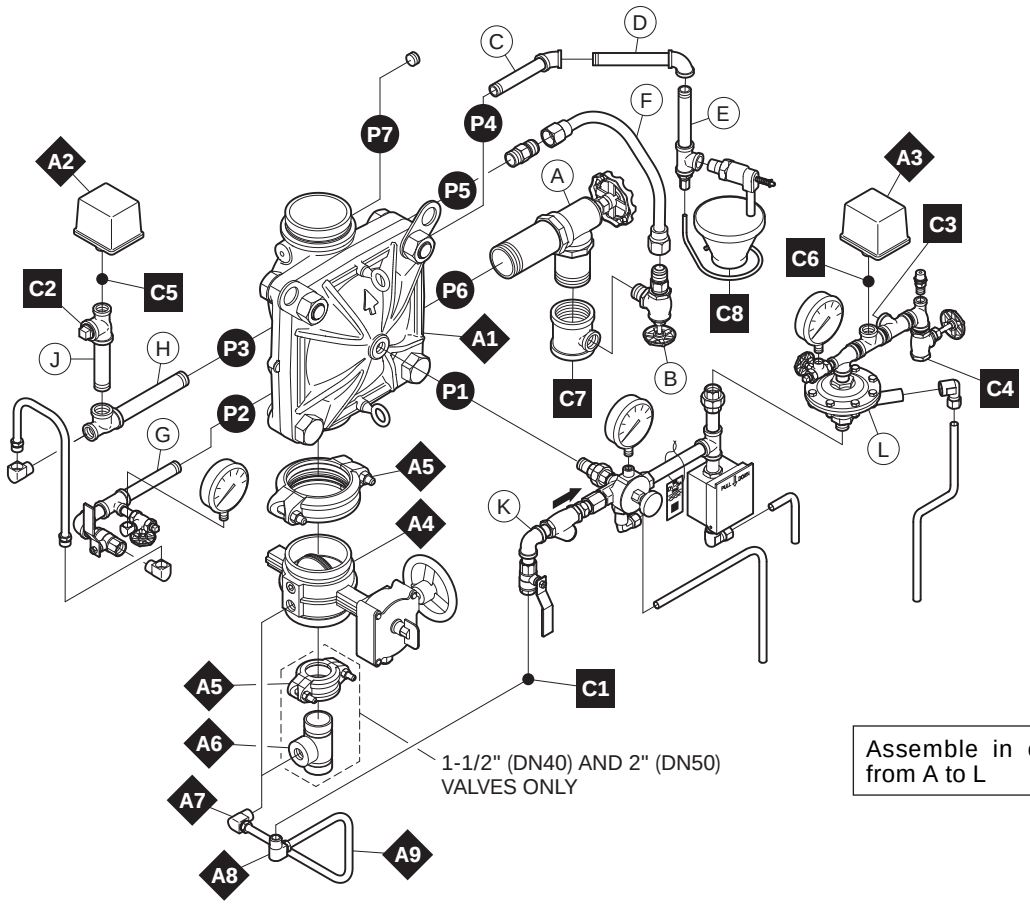
Step 14. Conduit and electrical connections are to be made in accordance with the applicable standards of the approval agency.

Step 15. 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. Refer to Table C in the Care and Maintenance section for torque specifications.



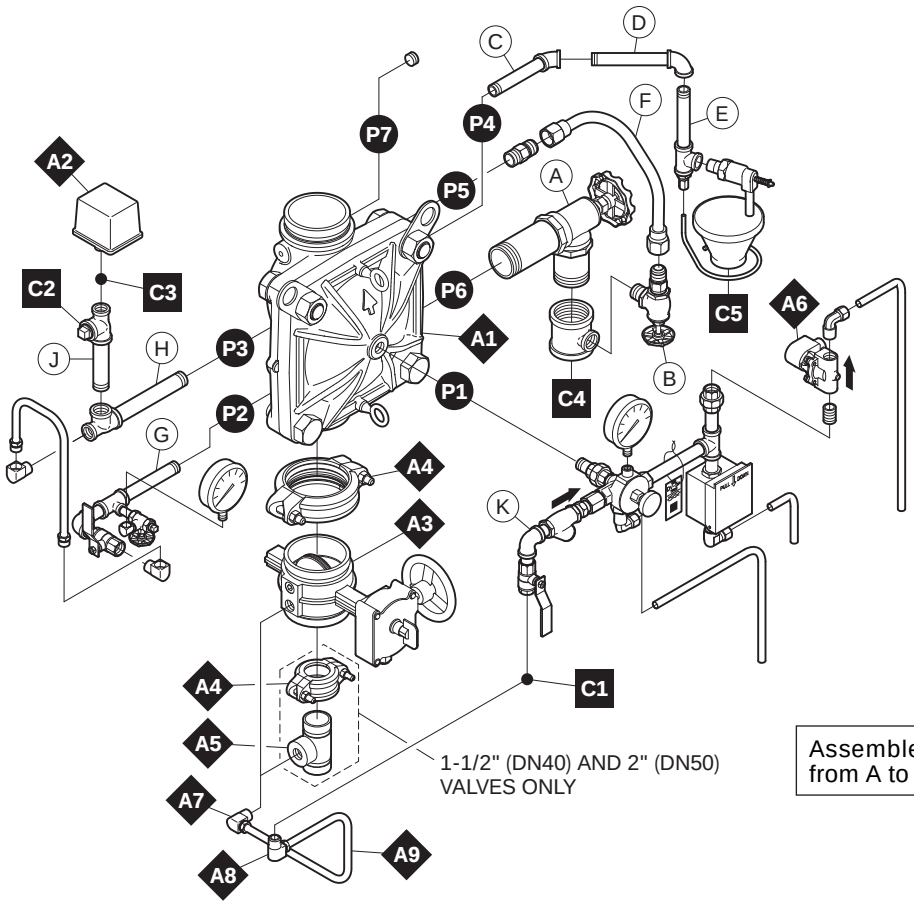
Notes:
1. Port Connections P1 through P7 are described in Figure 2.
2. External Trim Connections C1 through C6 are described in Figure 16.
3. When ordering pre-assembled "DV-5A Valve with Galvanized Valve Trim" or pre-assembled "DV-5A Valve with Galvanized Valve Trim and Butterfly Valve", Items A1 through A8 are provided, as applicably related to valve size.
4. When ordering DV-5A Trim separately from the DV-5A Valve, Items A1 through A8 are separately ordered, as applicably related to valve size. Water Pressure Gauges for EMEA valve trim are also separately ordered.

FIGURE 7
DV-5A VALVE
DELUGE WET PILOT ACTUATION TRIM
SEMI-ASSEMBLED



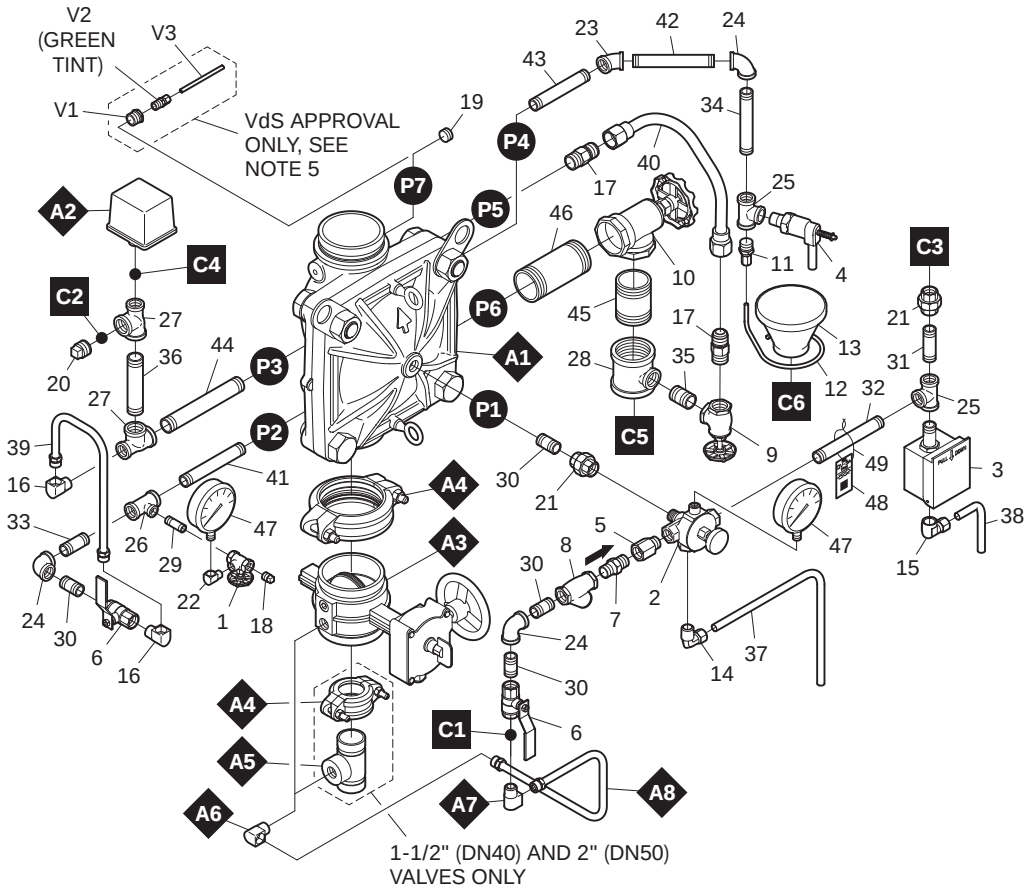
Notes:
1. Port Connections P1 through P7 are described in Figure 2.
2. External Trim Connections C1 through C8 are described in Figure 17.
3. When ordering pre-assembled "DV-5A Valve with Galvanized Valve Trim" or pre-assembled "DV-5A Valve with Galvanized Valve Trim and Butterfly Valve", Items A1 through A9 are provided, as applicably related to valve size.
4. When ordering DV-5A Trim separately from the DV-5A Valve, Items A1 through A9 are separately ordered, as applicably related to valve size. Water Pressure Gauges for EMEA valve trim are also separately ordered.

FIGURE 8
DV-5A VALVE
DELUGE DRY PILOT 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 18.
3. When ordering pre-assembled "DV-5A Valve with Galvanized Valve Trim" or pre-assembled "DV-5A Valve with Galvanized Valve 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 9
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 C6 are described in Figure 16.
3. When ordering pre-assembled "DV-5A Valve with Galvanized Valve Trim" or pre-assembled "DV-5A Valve with Galvanized Valve Trim and Butterfly Valve", Items A1 through A8 are provided, as applicably related to valve size.
4. When ordering DV-5A Trim separately from the DV-5A Valve, Items A1 through A8 are separately ordered, as applicably related to valve size. Water Pressure Gauges for EMEA valve trim are also separately ordered.
5. V1 through V3 Water Column Prevention Drain Components are required for VdS Approval.

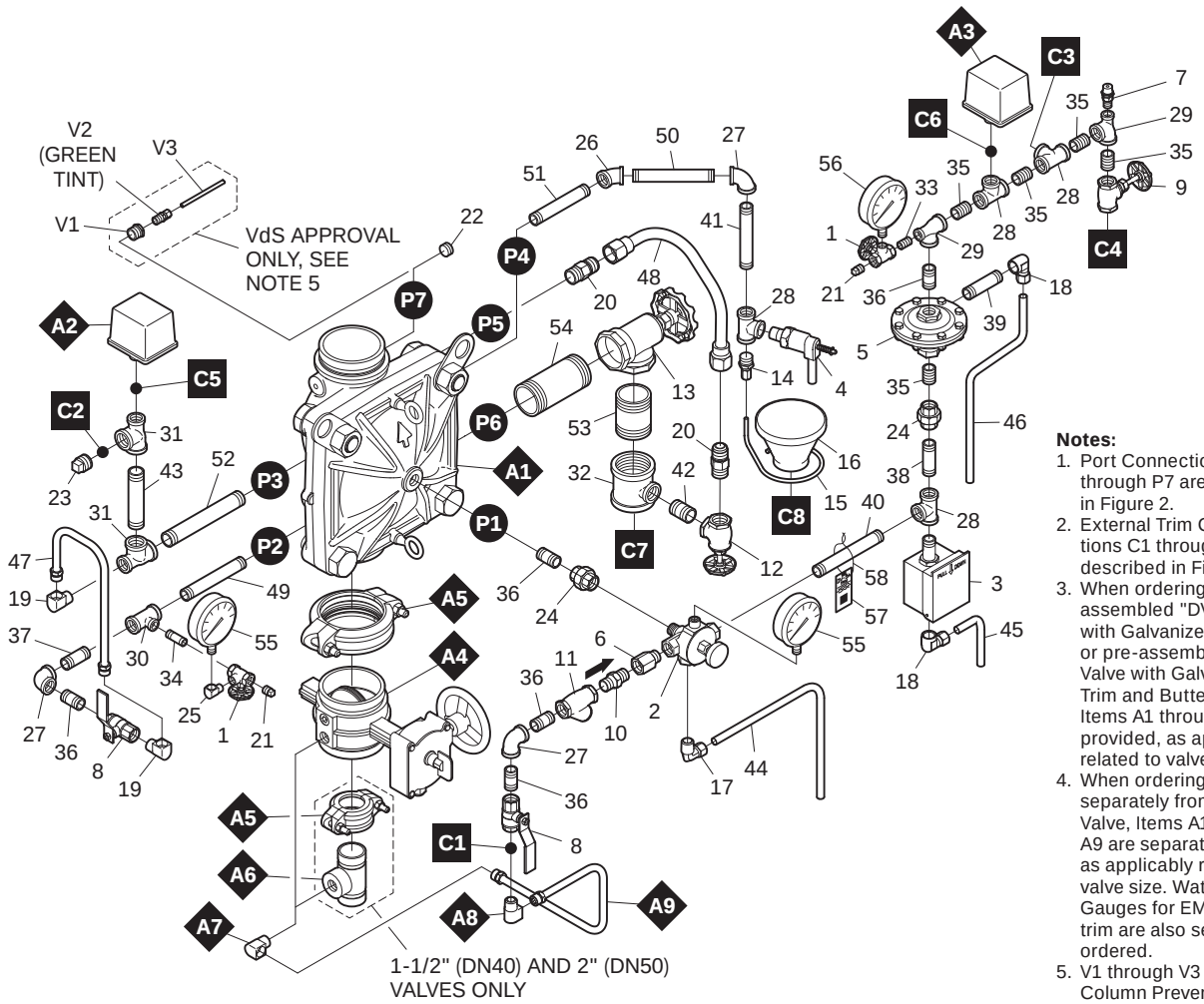
ITEM	QTY.	DESCRIPTION	CH	1-1/2 IN. (DN40)	2 IN. (DN50)	3 IN. (DN80)	4 IN. (DN100)	6 IN. (DN150)	8 IN. (DN200)
1	1	1/4" GAUGE TEST VALVE		460051003	460051003	460051003	460051003	460051003	460051003
2	1	MRA-1 MANUAL RESET ACTUATOR		545001000	545001000	545001000	545001000	545001000	545001000
3	1	MC-2 MANUAL CONTROL STATION		545002000	545002000	545002000	545002000	545002000	545002000
4	1	AD-3 AUTOMATIC DRAIN VALVE		547932004	547932004	547932004	547932004	547932004	547932004
5	1	PRIMING SUPPLY RESTRICTION		545100051	545100051	545100051	545100051	545100051	545100051
6	2	1/2" BALL VALVE		460501004	460501004	460501004	460501004	460501004	460501004
7	1	1/2" SPRING LOADED CHECK VALVE		923221003	923221003	923221003	923221003	923221003	923221003
8	1	1/2" Y-STRAINER		523531006	523531006	523531006	523531006	523531006	523531006
9	1	3/4" ANGLE VALVE		460481010	460481010	460481010	460481010	460481010	460481010
10	1	ANGLE VALVE		460481010	460481010	460481011	460481012	460481012	460481012
11	1	DRIP FUNNEL BRACKET CONNECTOR		922111005	922111005	922111005	922111005	922111005	922111005
12	1	DRIP FUNNEL BRACKET		922111003	922111003	922111003	922111003	922111003	922111003
13	1	DRIP FUNNEL		923431007	923431007	923431007	923431007	923431007	923431007
14	1	COMP. FITTING 90° 1/2" MNPT x 1/2" OD TUBE	□	—	—	—	—	—	—
15	1	COMP. FITTING 90° 1/2" FNPT x 1/2" OD TUBE	□	—	—	—	—	—	—
16	2	FLARE FITTING 90° 1/2" NPT x 1/2" TUBE		545100062	545100062	545100062	545100062	545100062	545100062
17	2	FLARE FITTING 3/4" NPT x 3/4" TUBE		545100063	545100063	545100063	545100063	545100063	545100063
18	1	PIPE PLUG	□	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"
19	1	PIPE PLUG, SOCKET HEAD	□	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
20	1	PIPE PLUG	□	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
21	2	UNION	□	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
22	1	STREET ELBOW	□	1/4" x 90°	1/4" x 90°	1/4" x 90°	1/4" x 90°	1/4" x 90°	1/4" x 90°
23	1	ELBOW	□	1/2" x 45°	1/2" x 45°	1/2" x 45°	1/2" x 45°	1/2" x 45°	1/2" x 45°
24	3	ELBOW	□	1/2" x 90°	1/2" x 90°	1/2" x 90°	1/2" x 90°	1/2" x 90°	1/2" x 90°
25	2	TEE	□	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
26	1	REDUCING TEE	□	1/2" x 1/2" x 1/4"	1/2" x 1/2" x 1/4"	1/2" x 1/2" x 1/4"	1/2" x 1/2" x 1/4"	1/2" x 1/2" x 1/4"	1/2" x 1/2" x 1/4"
27	2	REDUCING TEE	□	3/4" x 1/2" x 3/4"	3/4" x 1/2" x 3/4"	3/4" x 1/2" x 3/4"	3/4" x 1/2" x 3/4"	3/4" x 1/2" x 3/4"	3/4" x 1/2" x 3/4"
28	1	REDUCING TEE	□	3/4" x 3/4" x 3/4"	3/4" x 3/4" x 3/4"	1-1/4" x 1-1/4" x 3/4"	2" x 2" x 3/4"	2" x 2" x 3/4"	2" x 2" x 3/4"
29	1	PIPE NIPPLE	□	1/4" x 1-1/2"	1/4" x 1-1/2"	1/4" x 1-1/2"	1/4" x 1-1/2"	1/4" x 1-1/2"	1/4" x 1-1/2"
30	4	PIPE NIPPLE	□	1/2" x 1-1/2"	1/2" x 1-1/2"	1/2" x 1-1/2"	1/2" x 1-1/2"	1/2" x 1-1/2"	1/2" x 1-1/2"
31	1	PIPE NIPPLE	□	1/2" x 2-1/2"	1/2" x 2-1/2"	1/2" x 2-1/2"	1/2" x 2-1/2"	1/2" x 2-1/2"	1/2" x 2-1/2"

FIGURE 10 (1 OF 2)
DV-5A VALVES — DELUGE WET PILOT ACTUATION TRIM — EXPLODED VIEW

ITEM	QTY.	DESCRIPTION	CH	1-1/2 IN. (DN40)	2 IN. (DN50)	3 IN. (DN80)	4 IN. (DN100)	6 IN. (DN150)	8 IN. (DN200)
32	1	PIPE NIPPLE	□	1/2" x 4-1/2"	1/2" x 4-1/2"	1/2" x 4-1/2"	1/2" x 4-1/2"	1/2" x 4-1/2"	1/2" x 4-1/2"
33	1	PIPE NIPPLE	□	1/2" x 2"	1/2" x 2"	1/2" x 2"	1/2" x 2"	1/2" x 2"	1/2" x 2"
34	1	PIPE NIPPLE	□	1/2" x 5"	1/2" x 5"	1/2" x 5"	1/2" x 5"	1/2" x 5"	1/2" x 5"
35	1	PIPE NIPPLE	□	3/4" x 1-1/2"	3/4" x 1-1/2"	3/4" x 1-1/2"	3/4" x 1-1/2"	3/4" x 1-1/2"	3/4" x 1-1/2"
36	1	PIPE NIPPLE	□	3/4" x 4-1/2"	3/4" x 4-1/2"	3/4" x 4-1/2"	3/4" x 4-1/2"	3/4" x 4-1/2"	3/4" x 4-1/2"
37	1	TUBING, MRA-1 DRAIN		545100065	545100065	545100066	535002140	535002160	535002180
38	1	TUBING, MC-2 DRAIN		535000220	535000220	535000230	535000240	535000260	535000280
39	1	TUBING ASSY, ALARM TEST INTERCONNECT		535000320	535000320	535000330	535000340	535000360	535000380
40	1	TUBING ASSY, SYSTEM DRAIN		535000420	535000420	535000430	535000440	535000460	535000480
41	1	PIPE NIPPLE	□	1/2" x 3-1/2"	1/2" x 3-1/2"	1/2" x 4-1/2"	1/2" x 5-1/2"	1/2" x 5-1/2"	1/2" x 6-3/4"
42	1	PIPE NIPPLE	□	1/2" x 5"	1/2" x 5"	1/2" x 5-1/2"	1/2" x 5-1/2"	1/2" x 5-1/2"	1/2" x 6-1/2"
43	1	PIPE NIPPLE	□	1/2" x 5"	1/2" x 5"	1/2" x 4-1/2"	1/2" x 5"	1/2" x 7-1/2"	1/2" x 9-1/2"
44	1	PIPE NIPPLE	□	3/4" x 5"	3/4" x 5"	3/4" x 6"	3/4" x 7"	3/4" x 9"	3/4" x 11-1/2"
45	1	PIPE NIPPLE	□	3/4" x 4-1/2"	3/4" x 4-1/2"	1-1/4" x 3-1/4"	2" x 3"	2" x 3"	2" x 3"
46	1	PIPE NIPPLE	□	3/4" x 6-1/2"	3/4" x 6-1/2"	1-1/4" x 5-1/2"	2" x 5"	2" x 6"	2" x 8"
47	2	WATER PRESSURE GAUGE, 300 PSI / 2000 kPa (AMER/APAC)		923431005	923431005	923431005	923431005	923431005	923431005
	2	WATER PRESSURE GAUGE, 20 bar / 2000 kPa (EMEA)		025500013	025500013	025500013	025500013	025500013	025500013
48	1	LABEL		545003001	545003001	545003001	545003001	545003001	545003001
49	1	LABEL WIRE		—	—	—	—	—	—
A1	1	DV-5A Valve		REFER TO TABLE F FOR DV-5A VALVE PART NUMBERS.					
A2	1	WATERFLOW PRESSURE ALARM SWITCH, PS10-2 (AMER/APAC)		25710	25710	25710	25710	25710	25710
	1	WATERFLOW PRESSURE ALARM SWITCH, PS10-1 (EMEA)		0260	0260	0260	0260	0260	0260
A3	1	BUTTERFLY VALVE, 1-1/2" G x G		51024A	51021A	—	—	—	—
	1	BFV-300 BUTTERFLY VALVE, G x G		—	—	59300G030WS	59300G040WS	59300G060WS	59300G080WS
A4	2	FIGURE 577 RIGID GROOVED COUPLING		57715ACP	57720ACP	—	—	—	—
	1	FIGURE 577 RIGID GROOVED COUPLING		—	—	57730ACP	57740ACP	57760ACP	57780ACP
A5	1	GROOVE x THREADED OUTLET WELDED TEE		545004000	545004001	—	—	—	—
A6	1	FLARE FITTING 90°		545100062	545100062	545100064	545100062	545100062	545100062
A7	1	FLARE FITTING 90° 1/2" NPT x 1/2" TUBE		545100062	545100062	545100062	545100062	545100062	545100062
A8	1	TUBING ASSY, DIAPHRAGM CHAMBER SUPPLY		540000015	540000020	540000030	540000040	540000060	540000080
V1	1	REDUCING BUSHING	□	1/2" x 1/4"	1/2" x 1/4"	1/2" x 1/4"	1/2" x 1/4"	1/2" x 1/4"	1/2" x 1/4"
V2	1	3/32" VENT FITTING		920321002	920321002	920321002	920321002	920321002	920321002
V3	1	TUBING, VENT TRIM DRAIN		923041035	923041035	923041035	923041035	923041035	923041035

NOTE:
CH - Common Hardware - Refer to Materials of Construction section for speci□cations.

FIGURE 10 (2 OF 2)
DV-5A VALVES — DELUGE WET PILOT ACTUATION TRIM — EXPLODED VIEW



Notes:

1. Port Connections P1 through P7 are described in Figure 2.
2. External Trim Connections C1 through C8 are described in Figure 17.
3. When ordering pre-assembled "DV-5A Valve with Galvanized Valve Trim" or pre-assembled "DV-5A Valve with Galvanized Valve Trim and Butterfly Valve", Items A1 through A9 are provided, as applicably related to valve size.
4. When ordering DV-5A Trim separately from the DV-5A Valve, Items A1 through A9 are separately ordered, as applicably related to valve size. Water Pressure Gauges for EMEA valve trim are also separately ordered.
5. V1 through V3 Water Column Prevention Drain Components are required for VdS Approval.

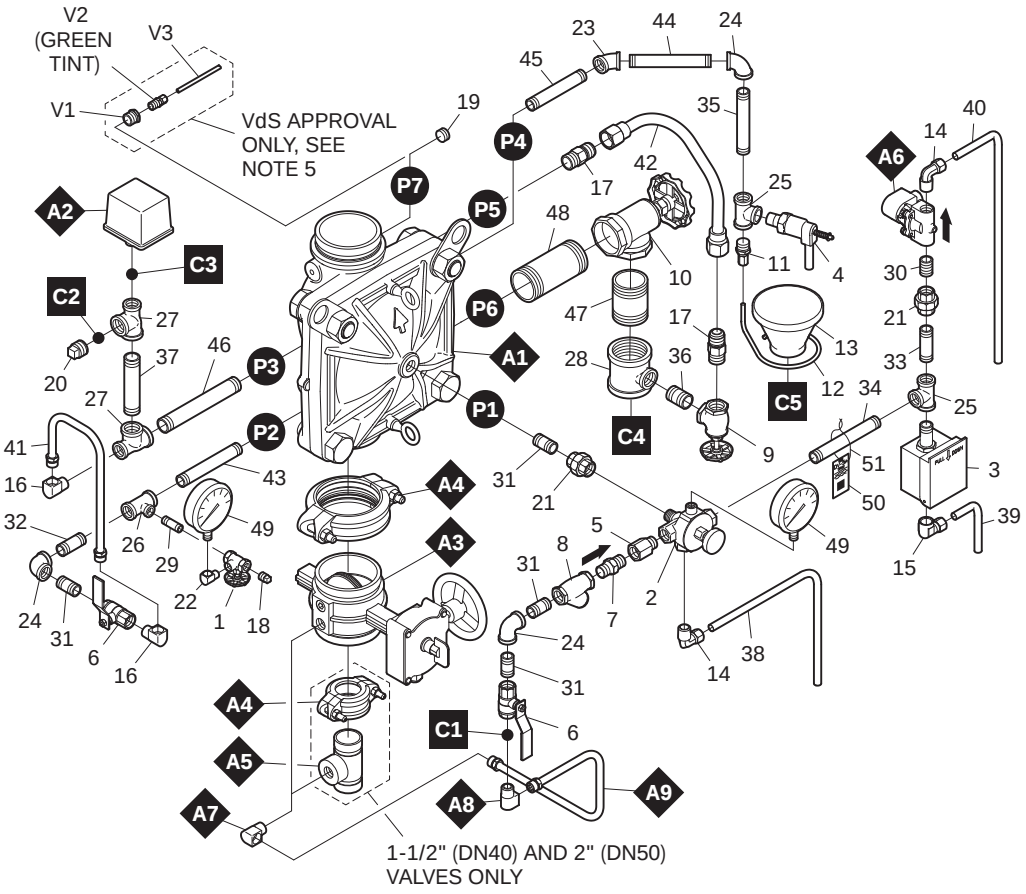
ITEM	QTY.	DESCRIPTION	CH	1-1/2 IN. (DN40)	2 IN. (DN50)	3 IN. (DN80)	4 IN. (DN100)	6 IN. (DN150)	8 IN. (DN200)
1	2	1/4" GAUGE TEST VALVE		460051003	460051003	460051003	460051003	460051003	460051003
2	1	MRA-1 MANUAL RESET ACTUATOR		545001000	545001000	545001000	545001000	545001000	545001000
3	1	MC-2 MANUAL CONTROL STATION		545002000	545002000	545002000	545002000	545002000	545002000
4	1	AD-3 AUTOMATIC DRAIN VALVE		547932004	547932004	547932004	547932004	547932004	547932004
5	1	DP-1 DRY PILOT ACTUATOR		522801001	522801001	522801001	522801001	522801001	522801001
6	1	PRIMING SUPPLY RESTRICTION		545100051	545100051	545100051	545100051	545100051	545100051
7	1	1/4" PRESSURE RELIEF VALVE		923431020	923431020	923431020	923431020	923431020	923431020
8	2	1/2" BALL VALVE		460501004	460501004	460501004	460501004	460501004	460501004
9	1	1/2" GLOBE VALVE		460471005	460471005	460471005	460471005	460471005	460471005
10	1	1/2" SPRING LOADED CHECK VALVE		923221003	923221003	923221003	923221003	923221003	923221003
11	1	1/2" Y-STRAINER		523531006	523531006	523531006	523531006	523531006	523531006
12	1	3/4" ANGLE VALVE		460481010	460481010	460481010	460481010	460481010	460481010
13	1	ANGLE VALVE		460481010	460481010	460481011	460481012	460481012	460481012
14	1	DRIP FUNNEL BRACKET CONNECTOR		922111005	922111005	922111005	922111005	922111005	922111005
15	1	DRIP FUNNEL BRACKET		922111003	922111003	922111003	922111003	922111003	922111003
16	1	DRIP FUNNEL		923431007	923431007	923431007	923431007	923431007	923431007
17	1	COMP. FITTING 90° 1/2" MNPT x 1/2" OD TUBE	□	—	—	—	—	—	—
18	2	COMP. FITTING 90° 1/2" FNPT x 1/2" OD TUBE	□	—	—	—	—	—	—
19	2	FLARE FITTING 90° 1/2" NPT x 1/2" TUBE		545100062	545100062	545100062	545100062	545100062	545100062
20	2	FLARE FITTING 3/4" NPT x 3/4" TUBE		545100063	545100063	545100063	545100063	545100063	545100063
21	2	PIPE PLUG	□	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"
22	1	PIPE PLUG, SOCKET HEAD	□	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
23	1	PIPE PLUG	□	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
24	2	UNION	□	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
25	1	STREET ELBOW	□	1/4" x 90°	1/4" x 90°	1/4" x 90°	1/4" x 90°	1/4" x 90°	1/4" x 90°

FIGURE 11 (1 OF 2)
DV-5A VALVES — DELUGE DRY PILOT ACTUATION TRIM — EXPLODED VIEW

ITEM	QTY.	DESCRIPTION	CH	1-1/2 IN. (DN40)	2 IN. (DN50)	3 IN. (DN80)	4 IN. (DN100)	6 IN. (DN150)	8 IN. (DN200)
26	1	ELBOW	□	1/2" x 45°	1/2" x 45°	1/2" x 45°	1/2" x 45°	1/2" x 45°	1/2" x 45°
27	3	ELBOW	□	1/2" x 90°	1/2" x 90°	1/2" x 90°	1/2" x 90°	1/2" x 90°	1/2" x 90°
28	4	TEE	□	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
29	2	REDUCING TEE	□	1/2" x 1/4" x 1/2"	1/2" x 1/4" x 1/2"	1/2" x 1/4" x 1/2"	1/2" x 1/4" x 1/2"	1/2" x 1/4" x 1/2"	1/2" x 1/4" x 1/2"
30	1	REDUCING TEE	□	1/2" x 1/2" x 1/4"	1/2" x 1/2" x 1/4"	1/2" x 1/2" x 1/4"	1/2" x 1/2" x 1/4"	1/2" x 1/2" x 1/4"	1/2" x 1/2" x 1/4"
31	2	REDUCING TEE	□	3/4" x 1/2" x 3/4"	3/4" x 1/2" x 3/4"	3/4" x 1/2" x 3/4"	3/4" x 1/2" x 3/4"	3/4" x 1/2" x 3/4"	3/4" x 1/2" x 3/4"
32	1	REDUCING TEE	□	3/4" x 3/4" x 3/4"	3/4" x 3/4" x 3/4"	1-1/4" x 1-1/4" x 3/4"	2" x 2" x 3/4"	2" x 2" x 3/4"	2" x 2" x 3/4"
33	1	PIPE NIPPLE	□	1/4" x CLOSE	1/4" x CLOSE	1/4" x CLOSE	1/4" x CLOSE	1/4" x CLOSE	1/4" x CLOSE
34	1	PIPE NIPPLE	□	1/4" x 1-1/2"	1/4" x 1-1/2"	1/4" x 1-1/2"	1/4" x 1-1/2"	1/4" x 1-1/2"	1/4" x 1-1/2"
35	5	PIPE NIPPLE	□	1/2" x CLOSE	1/2" x CLOSE	1/2" x CLOSE	1/2" x CLOSE	1/2" x CLOSE	1/2" x CLOSE
36	5	PIPE NIPPLE	□	1/2" x 1-1/2"	1/2" x 1-1/2"	1/2" x 1-1/2"	1/2" x 1-1/2"	1/2" x 1-1/2"	1/2" x 1-1/2"
37	1	PIPE NIPPLE	□	1/2" x 2"	1/2" x 2"	1/2" x 2"	1/2" x 2"	1/2" x 2"	1/2" x 2"
38	1	PIPE NIPPLE	□	1/2" x 2-1/2"	1/2" x 2-1/2"	1/2" x 2-1/2"	1/2" x 2-1/2"	1/2" x 2-1/2"	1/2" x 2-1/2"
39	1	PIPE NIPPLE	□	1/2" x 3"	1/2" x 3"	1/2" x 3"	1/2" x 3"	1/2" x 3"	1/2" x 3"
40	1	PIPE NIPPLE	□	1/2" x 4-1/2"	1/2" x 4-1/2"	1/2" x 4-1/2"	1/2" x 4-1/2"	1/2" x 4-1/2"	1/2" x 4-1/2"
41	1	PIPE NIPPLE	□	1/2" x 5"	1/2" x 5"	1/2" x 5"	1/2" x 5"	1/2" x 5"	1/2" x 5"
42	1	PIPE NIPPLE	□	3/4" x 1-1/2"	3/4" x 1-1/2"	3/4" x 1-1/2"	3/4" x 1-1/2"	3/4" x 1-1/2"	3/4" x 1-1/2"
43	1	PIPE NIPPLE	□	3/4" x 4-1/2"	3/4" x 4-1/2"	3/4" x 4-1/2"	3/4" x 4-1/2"	3/4" x 4-1/2"	3/4" x 4-1/2"
44	1	TUBING, MRA-1 DRAIN		545100065	545100065	545100066	535002140	535002160	535002180
45	1	TUBING, MC-2 DRAIN		535000220	535000220	535000230	535000240	535000260	535000280
46	1	TUBING, DP-1 DRAIN		535000520	535000520	535000530	535000540	535000560	535000580
47	1	TUBING ASSY, ALARM TEST INTERCONNECT		535000320	535000320	535000330	535000340	535000360	535000380
48	1	TUBING ASSY, SYSTEM DRAIN		535000420	535000420	535000430	535000440	535000460	535000480
49	1	PIPE NIPPLE	□	1/2" x 3-1/2"	1/2" x 3-1/2"	1/2" x 4-1/2"	1/2" x 5-1/2"	1/2" x 5-1/2"	1/2" x 6-3/4"
50	1	PIPE NIPPLE	□	1/2" x 5"	1/2" x 5"	1/2" x 5-1/2"	1/2" x 5-1/2"	1/2" x 5-1/2"	1/2" x 6-1/2"
51	1	PIPE NIPPLE	□	1/2" x 5"	1/2" x 5"	1/2" x 4-1/2"	1/2" x 5"	1/2" x 7-1/2"	1/2" x 9-1/2"
52	1	PIPE NIPPLE	□	3/4" x 5"	3/4" x 5"	3/4" x 6"	3/4" x 7"	3/4" x 9"	3/4" x 11-1/2"
53	1	PIPE NIPPLE	□	3/4" x 4-1/2"	3/4" x 4-1/2"	1-1/4" x 3-1/4"	2" x 3"	2" x 3"	2" x 3"
54	1	PIPE NIPPLE	□	3/4" x 6-1/2"	3/4" x 6-1/2"	1-1/4" x 5-1/2"	2" x 5"	2" x 6"	2" x 8"
55	2	WATER PRESSURE GAUGE, 300 PSI / 2000 kPa (AMER/APAC)		923431005	923431005	923431005	923431005	923431005	923431005
	2	WATER PRESSURE GAUGE, 20 bar / 2000 kPa (EMEA)		025500013	025500013	025500013	025500013	025500013	025500013
56	1	AIR PRESSURE GAUGE, 80 PSI / 550 kPa RETARDED TO 250PSI / 1750 kPa		923431012	923431012	923431012	923431012	923431012	923431012
57	1	LABEL		545003001	545003001	545003001	545003001	545003001	545003001
58	1	LABEL WIRE		—	—	—	—	—	—
A1	1	DV-5A Valve		REFER TO TABLE F FOR DV-5A VALVE PART NUMBERS.					
A2	1	WATERFLOW PRESSURE ALARM SWITCH, PS10-2 (AMER/APAC)		25710	25710	25710	25710	25710	25710
	1	WATERFLOW PRESSURE ALARM SWITCH, PS10-1 (EMEA)		0260	0260	0260	0260	0260	0260
A3	1	LOW AIR PRESSURE ALARM SWITCH, PS40-2 (AMER/APAC)		25730	25730	25730	25730	25730	25730
	1	LOW AIR PRESSURE ALARM SWITCH, PS40-1 (EMEA)		0262	0262	0262	0262	0262	0262
A4	1	BUTTERFLY VALVE, G x G		51024A	51021A	—	—	—	—
	1	BFV-300 BUTTERFLY VALVE, G x G		—	—	59300G030WS	59300G040WS	59300G060WS	59300G080WS
A5	2	FIGURE 577 RIGID GROOVED COUPLING		57715ACP	57720ACP	—	—	—	—
	1	FIGURE 577 RIGID GROOVED COUPLING		—	—	57730ACP	57740ACP	57760ACP	57780ACP
A6	1	GROOVE x THREADED OUTLET WELDED TEE		545004000	545004001	—	—	—	—
A7	1	FLARE FITTING 90°		545100062	545100062	545100054	545100062	545100062	545100062
A8	1	FLARE FITTING 90° 1/2" NPT x 1/2" TUBE		545100062	545100062	545100062	545100062	545100062	545100062
A9	1	TUBING ASSY, DIAPHRAGM CHAMBER SUPPLY		540000015	540000020	540000030	540000040	540000060	540000080
V1	1	REDUCING BUSHING	□	1/2" x 1/4"	1/2" x 1/4"	1/2" x 1/4"	1/2" x 1/4"	1/2" x 1/4"	1/2" x 1/4"
V2	1	3/32" VENT FITTING		920321002	920321002	920321002	920321002	920321002	920321002
V3	1	TUBING, VENT TRIM DRAIN		923041035	923041035	923041035	923041035	923041035	923041035

NOTE:
CH - Common Hardware - Refer to Materials of Construction section for speci□cations.

FIGURE 11 (2 OF 2)
DV-5A VALVES — DELUGE DRY PILOT ACTUATION TRIM — EXPLODED VIEW



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 Valve Trim" or pre-assembled "DV-5A Valve with Galvanized Valve Trim and Butter□y Valve", Items A1 through A9 are provided, as applicably related to valve size, and Item A6 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.
5. V1 through V3 Water Column Prevention Drain Components are required for VdS Approval.

ITEM	QTY	DESCRIPTION	CH	1-1/2 IN. (DN40)	2 IN. (DN50)	3 IN. (DN80)	4 IN. (DN100)	6 IN. (DN150)	8 IN. (DN200)
1	1	1/4" GAUGE TEST VALVE		460051003	460051003	460051003	460051003	460051003	460051003
2	1	MRA-1 MANUAL RESET ACTUATOR		545001000	545001000	545001000	545001000	545001000	545001000
3	1	MC-2 MANUAL CONTROL STATION		545002000	545002000	545002000	545002000	545002000	545002000
4	1	AD-3 AUTOMATIC DRAIN VALVE		547932004	547932004	547932004	547932004	547932004	547932004
5	1	PRIMING SUPPLY RESTRICTION		545100051	545100051	545100051	545100051	545100051	545100051
6	2	1/2" BALL VALVE		460501004	460501004	460501004	460501004	460501004	460501004
7	1	1/2" SPRING LOADED CHECK VALVE		923221003	923221003	923221003	923221003	923221003	923221003
8	1	1/2" Y-STRAINER		523531006	523531006	523531006	523531006	523531006	523531006
9	1	3/4" ANGLE VALVE		460481010	460481010	460481010	460481010	460481010	460481010
10	1	ANGLE VALVE		460481010	460481010	460481011	460481012	460481012	460481012
11	1	DRIP FUNNEL BRACKET CONNECTOR		922111005	922111005	922111005	922111005	922111005	922111005
12	1	DRIP FUNNEL BRACKET		922111003	922111003	922111003	922111003	922111003	922111003
13	1	DRIP FUNNEL		923431007	923431007	923431007	923431007	923431007	923431007
14	2	COMP. FITTING 90° 1/2" MNPT x 1/2" OD TUBE	□	—	—	—	—	—	—
15	1	COMP. FITTING 90° 1/2" FNPT x 1/2" OD TUBE	□	—	—	—	—	—	—
16	2	FLARE FITTING 90° 1/2" NPT x 1/2" TUBE		545100062	545100062	545100062	545100062	545100062	545100062
17	2	FLARE FITTING 3/4" NPT x 3/4" TUBE		545100063	545100063	545100063	545100063	545100063	545100063
18	1	PIPE PLUG	□	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"
19	1	PIPE PLUG, SOCKET HEAD	□	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
20	1	PIPE PLUG	□	3/4"	3/4"	3/4"	3/4"	3/4"	3/4"
21	2	UNION	□	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
22	1	STREET ELBOW	□	1/4" x 90°	1/4" x 90°	1/4" x 90°	1/4" x 90°	1/4" x 90°	1/4" x 90°
23	1	ELBOW	□	1/2" x 45°	1/2" x 45°	1/2" x 45°	1/2" x 45°	1/2" x 45°	1/2" x 45°
24	3	ELBOW	□	1/2" x 90°	1/2" x 90°	1/2" x 90°	1/2" x 90°	1/2" x 90°	1/2" x 90°
25	2	TEE	□	1/2"	1/2"	1/2"	1/2"	1/2"	1/2"
26	1	REDUCING TEE	□	1/2" x 1/2" x 1/4"	1/2" x 1/2" x 1/4"	1/2" x 1/2" x 1/4"	1/2" x 1/2" x 1/4"	1/2" x 1/2" x 1/4"	1/2" x 1/2" x 1/4"
27	2	REDUCING TEE	□	3/4" x 1/2" x 3/4"	3/4" x 1/2" x 3/4"	3/4" x 1/2" x 3/4"	3/4" x 1/2" x 3/4"	3/4" x 1/2" x 3/4"	3/4" x 1/2" x 3/4"
28	1	REDUCING TEE	□	3/4" x 3/4" x 3/4"	3/4" x 3/4" x 3/4"	1-1/4" x 1-1/4" x 3/4"	2" x 2" x 3/4"	2" x 2" x 3/4"	2" x 2" x 3/4"
29	1	PIPE NIPPLE	□	1/4" x 1-1/2"	1/4" x 1-1/2"	1/4" x 1-1/2"	1/4" x 1-1/2"	1/4" x 1-1/2"	1/4" x 1-1/2"
30	1	PIPE NIPPLE	□	1/2" x CLOSE	1/2" x CLOSE	1/2" x CLOSE	1/2" x CLOSE	1/2" x CLOSE	1/2" x CLOSE
31	4	PIPE NIPPLE	□	1/2" x 1-1/2"	1/2" x 1-1/2"	1/2" x 1-1/2"	1/2" x 1-1/2"	1/2" x 1-1/2"	1/2" x 1-1/2"

FIGURE 12 (1 OF 2)
DV-5A VALVES — DELUGE ELECTRIC ACTUATION TRIM — EXPLODED VIEW

ITEM	QTY	DESCRIPTION	CH	1-1/2 IN. (DN40)	2 IN. (DN50)	3 IN. (DN80)	4 IN. (DN100)	6 IN. (DN150)	8 IN. (DN200)
32	1	PIPE NIPPLE	□	1/2" x 2"	1/2" x 2"	1/2" x 2"	1/2" x 2"	1/2" x 2"	1/2" x 2"
33	1	PIPE NIPPLE	□	1/2" x 2-1/2"	1/2" x 2-1/2"	1/2" x 2-1/2"	1/2" x 2-1/2"	1/2" x 2-1/2"	1/2" x 2-1/2"
34	1	PIPE NIPPLE	□	1/2" x 4-1/2"	1/2" x 4-1/2"	1/2" x 4-1/2"	1/2" x 4-1/2"	1/2" x 4-1/2"	1/2" x 4-1/2"
35	1	PIPE NIPPLE	□	1/2" x 5"	1/2" x 5"	1/2" x 5"	1/2" x 5"	1/2" x 5"	1/2" x 5"
36	1	PIPE NIPPLE	□	3/4" x 1-1/2"	3/4" x 1-1/2"	3/4" x 1-1/2"	3/4" x 1-1/2"	3/4" x 1-1/2"	3/4" x 1-1/2"
37	1	PIPE NIPPLE	□	3/4" x 4-1/2"	3/4" x 4-1/2"	3/4" x 4-1/2"	3/4" x 4-1/2"	3/4" x 4-1/2"	3/4" x 4-1/2"
38	1	TUBING, MRA-1 DRAIN		545100065	545100065	545100066	535002140	535002160	535002180
39	1	TUBING, MC-2 DRAIN		535000220	535000220	535000230	535000240	535000260	535000280
40	1	TUBING, SOLENOID DRAIN		535001020	535001020	535000630	535000640	535000660	535000680
41	1	TUBING ASSY, ALARM TEST INTERCONNECT		535000320	535000320	535000330	535000340	535000360	535000380
42	1	TUBING ASSY, SYSTEM DRAIN		535000420	535000420	535000430	535000440	535000460	535000480
43	1	PIPE NIPPLE	□	1/2" x 3-1/2"	1/2" x 3-1/2"	1/2" x 4-1/2"	1/2" x 5-1/2"	1/2" x 5-1/2"	1/2" x 6-3/4"
44	1	PIPE NIPPLE	□	1/2" x 5"	1/2" x 5"	1/2" x 5-1/2"	1/2" x 5-1/2"	1/2" x 5-1/2"	1/2" x 6-1/2"
45	1	PIPE NIPPLE	□	1/2" x 5"	1/2" x 5"	1/2" x 4-1/2"	1/2" x 5"	1/2" x 7-1/2"	1/2" x 9-1/2"
46	1	PIPE NIPPLE	□	3/4" x 5"	3/4" x 5"	3/4" x 6"	3/4" x 7"	3/4" x 9"	3/4" x 11-1/2"
47	1	PIPE NIPPLE	□	3/4" x 4-1/2"	3/4" x 4-1/2"	1-1/4" x 3-1/4"	2" x 3"	2" x 3"	2" x 3"
48	1	PIPE NIPPLE	□	3/4" x 6-1/2"	3/4" x 6-1/2"	1-1/4" x 5-1/2"	2" x 5"	2" x 6"	2" x 8"
49	2	WATER PRESSURE GAUGE, 300 PSI / 2000 kPa (AMER/APAC)		923431005	923431005	923431005	923431005	923431005	923431005
	2	WATER PRESSURE GAUGE, 20 bar / 2000 kPa (EMEA)		025500013	025500013	025500013	025500013	025500013	025500013
50	1	LABEL		545003001	545003001	545003001	545003001	545003001	545003001
51	1	LABEL WIRE		—	—	—	—	—	—
A1	1	DV-5A Valve		REFER TO TABLE F FOR DV-5A VALVE PART NUMBERS.					
A2	1	WATERFLOW PRESSURE ALARM SWITCH, PS10-2 (AMER/APAC)		25710	25710	25710	25710	25710	25710
A2	1	WATERFLOW PRESSURE ALARM SWITCH, PS10-1 (EMEA)		0260	0260	0260	0260	0260	0260
A3	1	BUTTERFLY VALVE, G x G		51024A	51021A	—	—	—	—
A3	1	BFV-300 BUTTERFLY VALVE, G x G		—	—	59300G030WS	59300G040WS	59300G060WS	59300G080WS
A4	2	FIGURE 577 RIGID GROOVED COUPLING		57715ACP	57720ACP	—	—	—	—
A4	1	FIGURE 577 RIGID GROOVED COUPLING		—	—	57730ACP	57740ACP	57760ACP	57780ACP
A5	1	GROOVE x THREADED OUTLET WELDED TEE		545004000	545004001	—	—	—	—
A6	1	SOLENOID VALVE, NORMALLY CLOSED		SEE TFP2180	SEE TFP2180	SEE TFP2180	SEE TFP2180	SEE TFP2180	SEE TFP2180
A7	1	FLARE FITTING 90°		545100062	545100062	545100054	545100062	545100062	545100062
A8	1	FLARE FITTING 90° 1/2" NPT x 1/2" TUBE		545100062	545100062	545100062	545100062	545100062	545100062
A9	1	TUBING ASSY, DIAPHRAGM CHAMBER SUPPLY		540000015	540000020	540000030	540000040	540000060	540000080
V1	1	REDUCING BUSHING	□	1/2" x 1/4"	1/2" x 1/4"	1/2" x 1/4"	1/2" x 1/4"	1/2" x 1/4"	1/2" x 1/4"
V2	1	3/32" VENT FITTING		920321002	920321002	920321002	920321002	920321002	920321002
V3	1	TUBING, VENT TRIM DRAIN		923041035	923041035	923041035	923041035	923041035	923041035

NOTE:
CH - Common Hardware - Refer to Materials of Construction section for speci□cations.

FIGURE 12 (2 OF 2)
DV-5A VALVES — DELUGE ELECTRIC ACTUATION TRIM — EXPLODED VIEW

Nominal Valve Size ANSI Inches (DN)	Inches (mm)								
	A	B	C	D	E	F	G	H	J
1-1/2 (40)	2.8 (71)	9.7 (246)	10.4 (264)	12.7 (323)	16.2 (411)	7.3 (185)	10.2 (259)	8.0 (203)	1.2 (31)
2 (50)	2.8 (71)	9.7 (246)	10.4 (264)	12.7 (323)	16.2 (411)	7.3 (185)	10.2 (259)	3.8 (97)	2.9 (74)
3 (80)	3.0 (76)	10.9 (277)	12.0 (305)	12.6 (320)	17.9 (455)	5.8 (147)	13.8 (351)	3.9 (99)	3.6 (91)
4 (100)	3.0 (76)	12.2 (310)	13.1 (333)	14.1 (358)	19.6 (498)	5.1 (130)	16.8 (427)	4.5 (114)	4.3 (109)
6 (150)	4.5 (114)	13.6 (345)	15.0 (381)	16.4 (417)	22.3 (566)	3.4 (86)	22.4 (569)	5.9 (150)	5.7 (145)
8 (200)	5.3 (135)	16.3 (414)	17.2 (437)	19.5 (495)	27.5 (699)	2.9 (74)	27.5 (699)	5.2 (132)	6.7 (170)

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

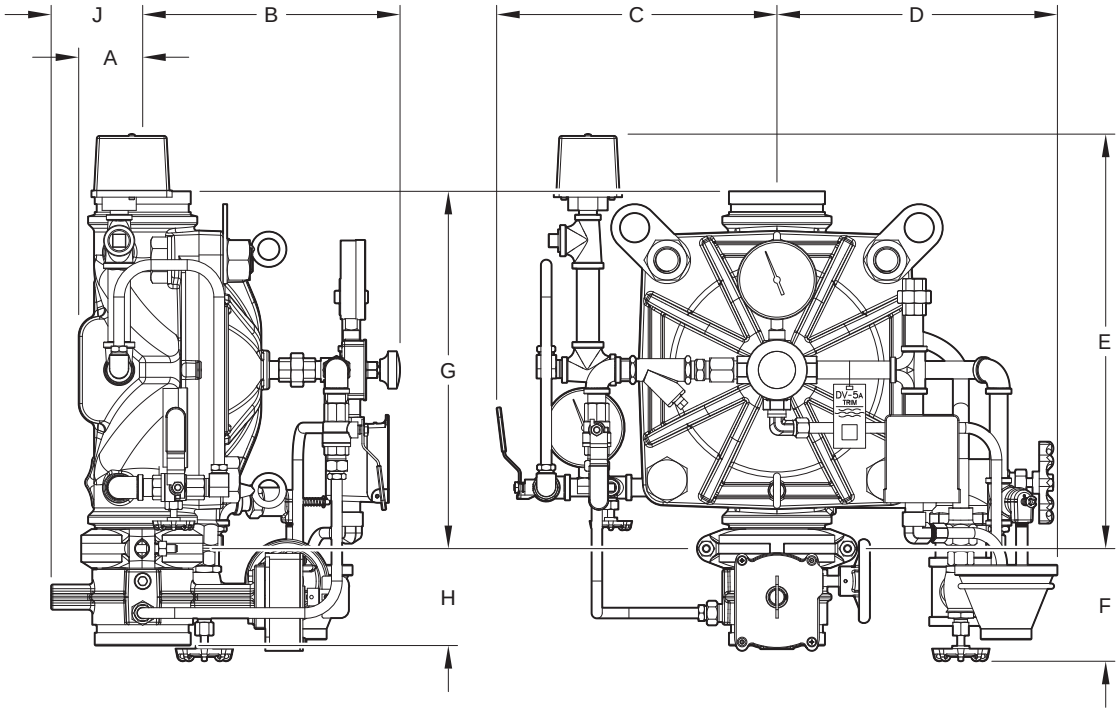


FIGURE 13
DV-5A VALVE
DELUGE WET PILOT ACTUATION TRIM ASSEMBLY
NOMINAL DIMENSIONS

Nominal Valve Size ANSI Inches (DN)	Inches (mm)								
	A	B	C	D	E	F	G	H	J
1-1/2 (40)	2.8 (71)	9.7 (246)	10.4 (264)	16.5 (419)	19.3 (490)	7.3 (185)	10.2 (259)	8.0 (203)	1.2 (31)
2 (50)	2.8 (71)	9.7 (246)	10.4 (264)	16.5 (419)	19.3 (490)	7.3 (185)	10.2 (259)	3.8 (97)	2.9 (74)
3 (80)	3.0 (76)	11.4 (290)	12.0 (305)	16.5 (419)	21.2 (539)	5.8 (147)	13.8 (350)	3.9 (99)	3.6 (91)
4 (100)	3.0 (76)	12.7 (323)	13.1 (333)	16.5 (419)	22.7 (577)	5.1 (130)	16.8 (427)	4.5 (114)	4.3 (109)
6 (150)	4.5 (114)	14.0 (356)	15.0 (381)	16.5 (419)	25.4 (645)	3.4 (86)	22.4 (568,96)	5.9 (150)	5.7 (145)
8 (200)	5.3 (135)	16.8 (427)	17.2 (437)	19.5 (495)	28.0 (711)	2.9 (74)	27.5 (699)	5.2 (132)	6.7 (170)

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

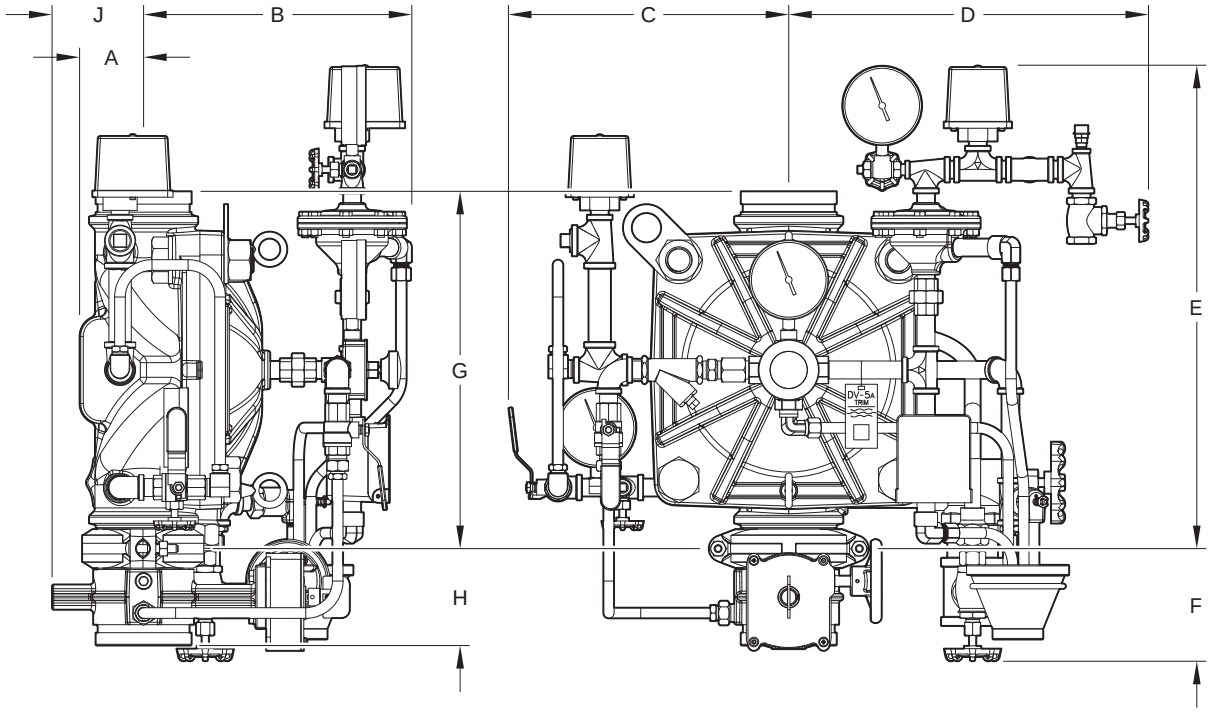


FIGURE 14
DV-5A VALVE
DELUGE DRY PILOT ACTUATION TRIM ASSEMBLY
NOMINAL DIMENSIONS

Nominal Valve Size ANSI Inches (DN)	Inches (mm)								
	A	B	C	D	E	F	G	H	J
1-1/2 (40)	2.8 (71)	9.7 (246)	10.4 (264)	12.7 (323)	16.2 (412)	7.3 (185)	10.2 (259)	8.0 (203)	1.2 (31)
2 (50)	2.8 (71)	9.7 (246)	10.4 (264)	12.7 (323)	16.2 (412)	7.3 (185)	10.2 (259)	3.8 (97)	2.9 (74)
3 (80)	3.0 (76)	10.9 (277)	12.0 (305)	12.6 (320)	17.9 (455)	5.8 (147)	13.8 (351)	3.9 (99)	3.6 (91)
4 (100)	3.0 (76)	12.2 (310)	13.1 (333)	14.1 (358)	19.6 (498)	5.1 (129)	16.8 (427)	4.5 (114)	4.3 (109)
6 (150)	4.5 (114)	13.6 (345)	15.0 (381)	16.4 (417)	22.3 (566)	3.4 (86)	22.4 (569)	5.9 (150)	5.7 (145)
8 (200)	5.3 (135)	16.3 (414)	17.2 (437)	19.5 (495)	27.5 (699)	2.9 (74)	27.5 (699)	5.2 (132)	6.7 (170)

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

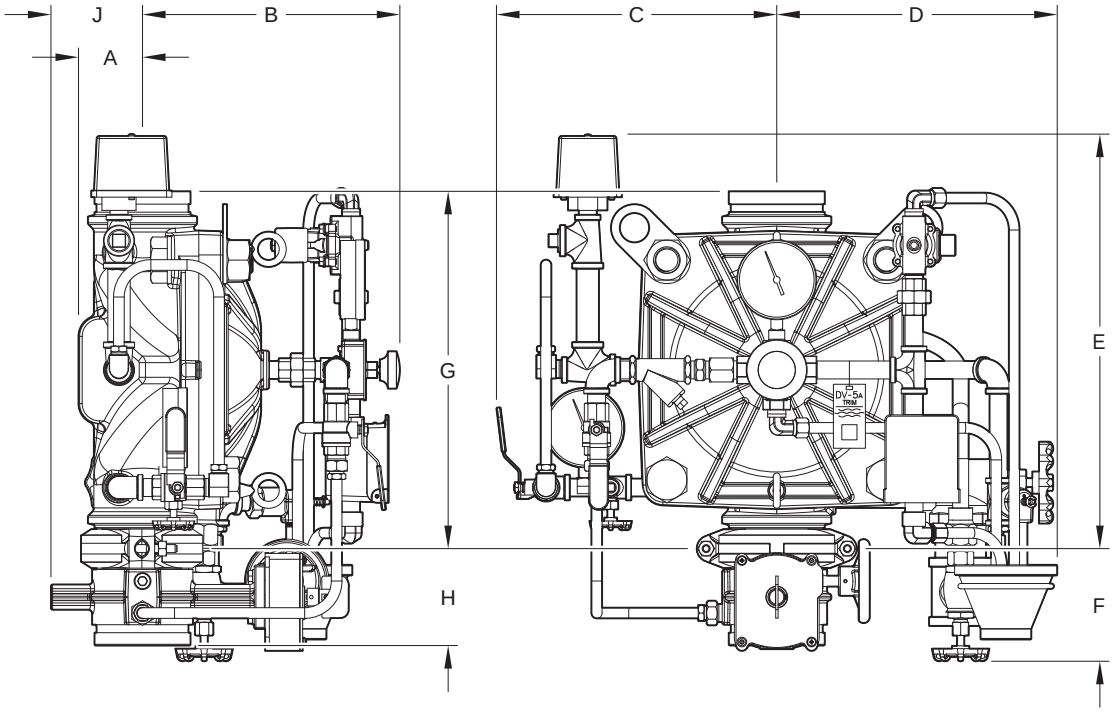


FIGURE 15
DV-5A VALVE
DELUGE ELECTRIC ACTUATION TRIM ASSEMBLY
NOMINAL DIMENSIONS

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). For Dry Pilot Actuation, close the Dry Pilot Air Supply Valve (T).

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 cleanout 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 actuation system.

- Wet Pilot Actuation — Replace operated pilot sprinklers and/or reset the remote manual control stations.
- Dry Pilot Actuation — Replace operated pilot sprinklers and/or reset the remote manual control stations. Re-establish dry pilot pneumatic pressure.
- Electric Actuation — Reset the electric detection system in accordance with the manufacturer's instructions to de-energize the solenoid valve.

NOTICE

In order to prevent the possibility of a subsequent operation of an overheated solder type pilot sprinkler, any solder type pilot sprinklers that were possibly exposed to a temperature greater than their maximum rated ambient must be replaced.

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 the pressure builds and reaches approximately 15 psi (1,0 bar) on the Diaphragm Gauge (K) and water stops flowing from its drain tube. Pressure will then build up in the DV-5A Diaphragm Chamber.

For Wet Pilot Actuation, crack open the Inspector's Test Connection and any other vent valves on the wet pilot line to relieve trapped air. After the discharge of air has stopped, close the vent valves and the Inspector's Test Connection.

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

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.
- If the Diaphragm Gauge (K) indicates no drop in pressure, re-open the Diaphragm Supply Valve (P) and proceed 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.

NOTICE

When the System Main Control Valve (B) is partially opened, the pressure on the DV-5A Diaphragm Chamber may increase. This increase in pressure is normal, and if the pressure is greater than the valve trim maximum pressure rating provided in the Technical Data section, the pressure is to be relieved to at least the valve trim pressure rating by partially and temporarily opening the Manual Control Station (M); however, do not allow the pressure as indicated on the Diaphragm Gauge (K) to drop below the supply pressure shown on the Water Supply Gauge (J), since this action may result in tripping of the DV-5A Valve.

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.

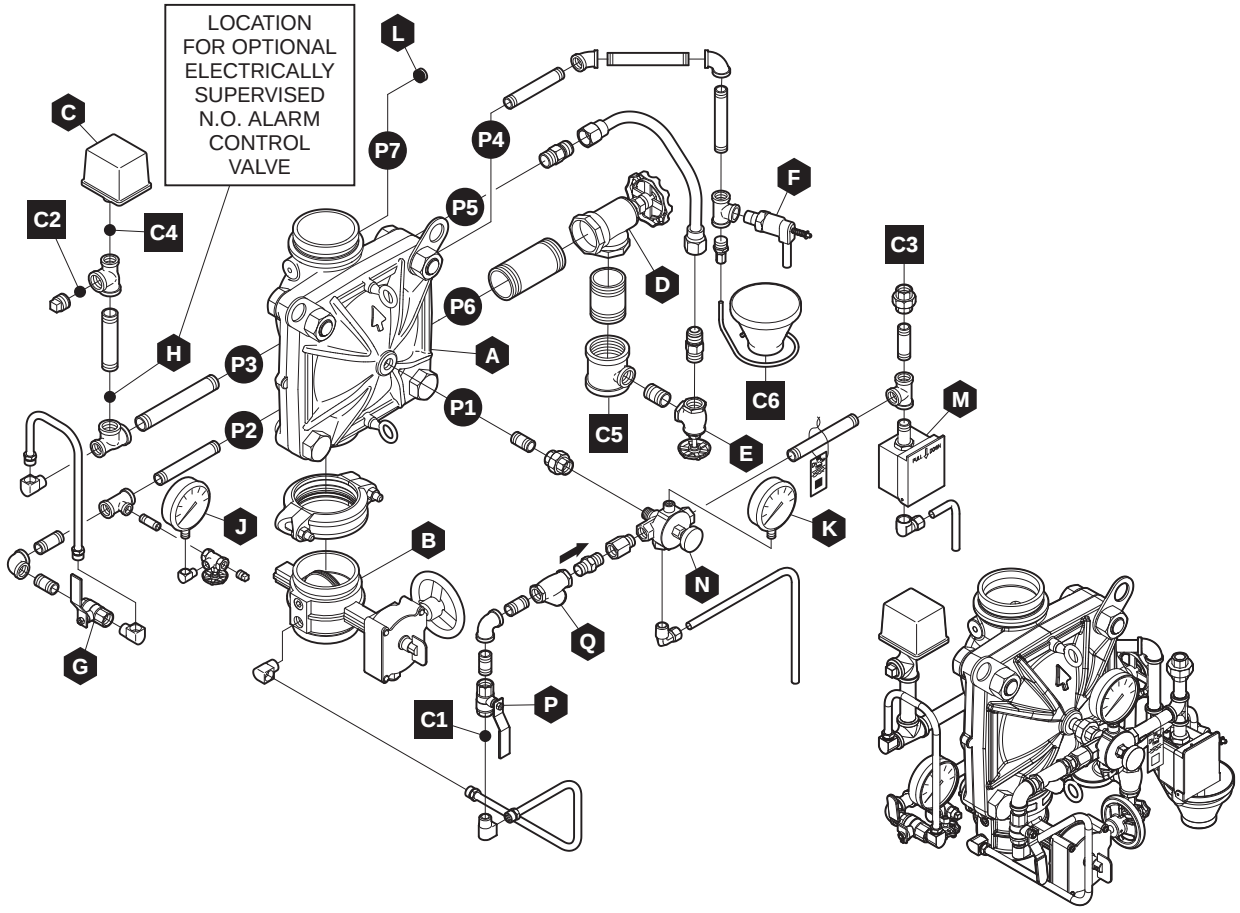
Step 12. Fully open the System Main Control Valve (B).

Step 13. After setting a fire protection system, notify the proper authorities and advise those responsible for monitoring proprietary and/or central station alarms.

Item	Description
A	DV-5A Valve
B	System Main Control Valve
C	Water□ow Pressure Switch
D	Main Drain Valve
E	System Drain Valve
F	Automatic Drain Valve
G	Alarm Test Valve
H	Alarm Control Valve (Optional)

Item	Description
J	Water Supply Gauge
K	Diaphragm Gauge
L	System Gauge (Optional)
M	Manual Control Station
N	Manual Reset Actuator
P	Diaphragm Supply Valve
Q	Diaphragm Supply Strainer

External Trim Connections	
C1	Diaphragm Supply Connection
C2	Water Motor Alarm Connection
C3	Wet Pilot Line Connection
C4	Water□ow Pressure Alarm Switch Connection
C5	Main Drain Connection
C6	Drip Funnel Drain Connection



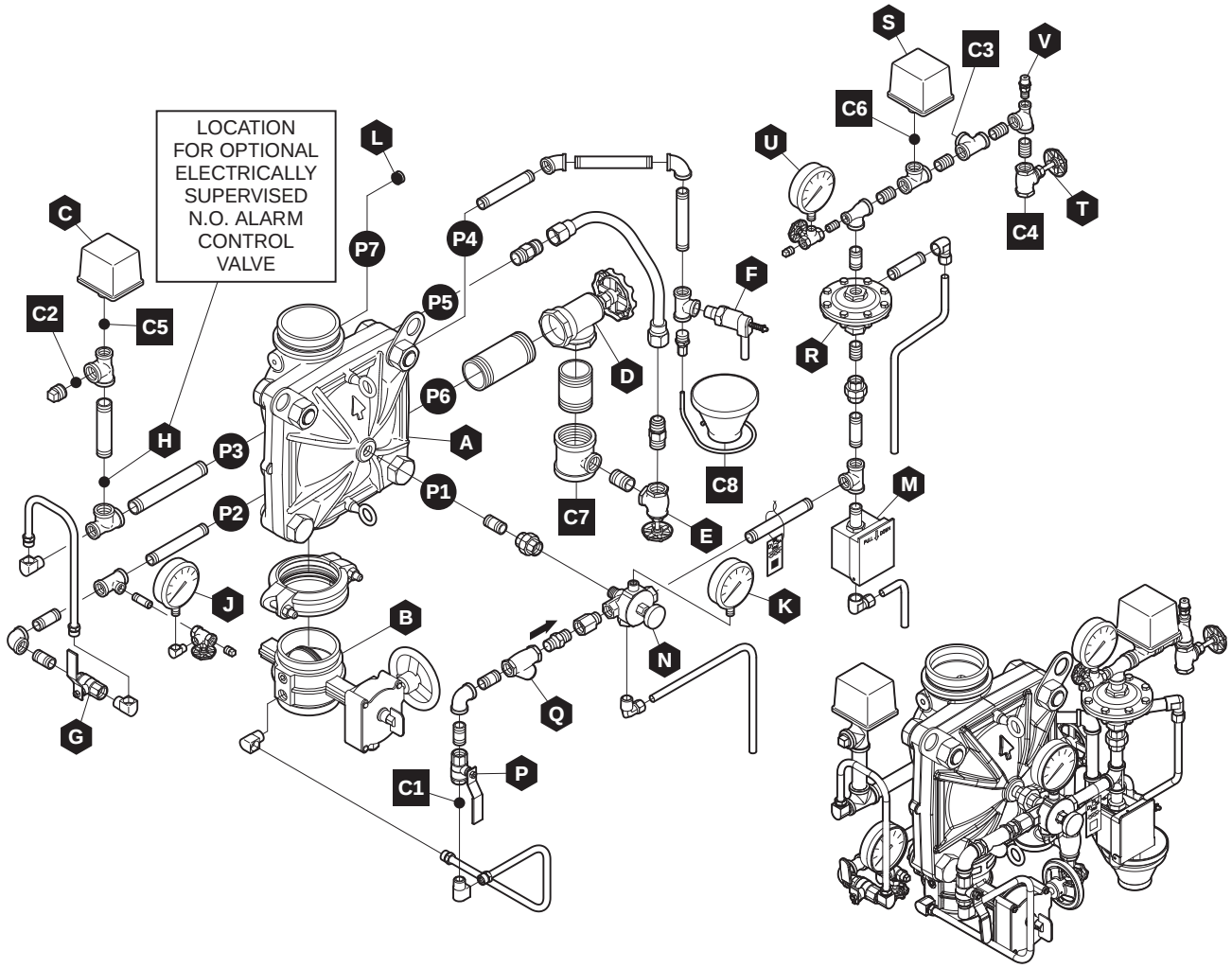
Note:
Port Connections P1 through P7 are described in Figure 2.

FIGURE 16
DV-5A VALVE
DELUGE WET PILOT ACTUATION TRIM
(Refer To Figure 10 For Specific Bills Of Materials)

Item	Description
A	DV-5A Valve
B	System Main Control Valve
C	Water□ow Pressure Switch
D	Main Drain Valve
E	System Drain Valve
F	Automatic Drain Valve
G	Alarm Test Valve
H	Alarm Control Valve (Optional)
J	Water Supply Gauge
K	Diaphragm Gauge

Item	Description
L	System Gauge (Optional)
M	Manual Control Station
N	Manual Reset Actuator
P	Diaphragm Supply Valve
Q	Diaphragm Supply Strainer
R	Dry Pilot Actuator
S	Dry Pilot Low Pressure Switch
T	Dry Pilot Air Supply Valve
U	Dry Pilot Line Gauge
V	Pressure Relief Valve

External Trim Connections	
C1	Diaphragm Supply Connection
C2	Water Motor Alarm Connection
C3	Dry Pilot Line Connection
C4	Dry Pilot Air Supply Connection
C5	Water□ow Pressure Alarm Switch Connection
C6	Low Air Pressure Switch Connection
C7	Main Drain Connection
C8	Drip Funnel Drain Connection



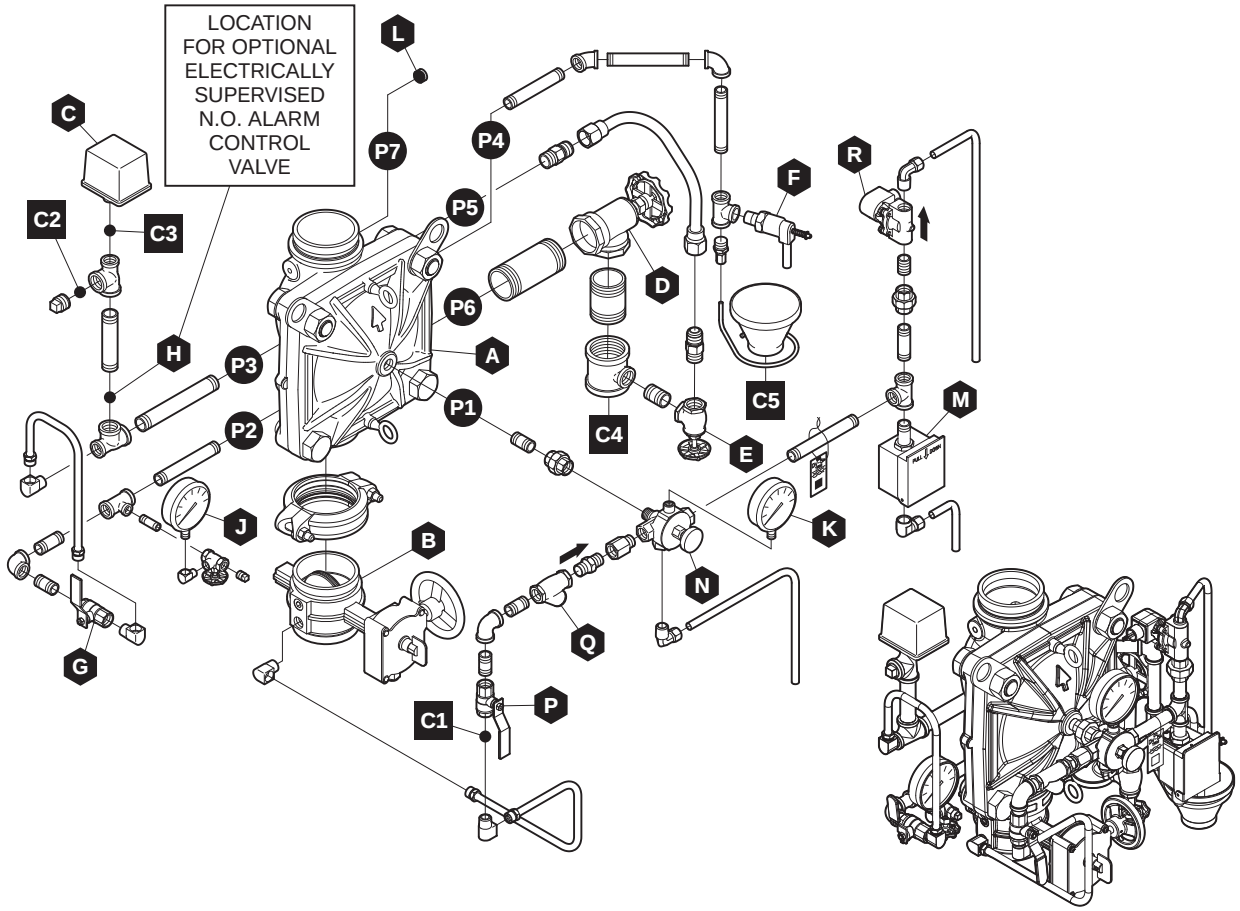
Note:
Port Connections P1 through P7 are described in Figure 2.

FIGURE 17
DV-5A VALVE
DELUGE DRY PILOT ACTUATION TRIM
(Refer To Figure 11 For Specific Bills Of Materials)

Item	Description
A	DV-5A Valve
B	System Main Control Valve
C	Water□ow Pressure Switch
D	Main Drain Valve
E	System Drain Valve
F	Automatic Drain Valve
G	Alarm Test Valve
H	Alarm Control Valve (Optional)

Item	Description
J	Water Supply Gauge
K	Diaphragm Gauge
L	System Gauge (Optional)
M	Manual Control Station
N	Manual Reset Actuator
P	Diaphragm Supply Valve
Q	Diaphragm Supply Strainer
R	Solenoid Valve

External Trim Connections	
C1	Diaphragm Supply Connection
C2	Water Motor Alarm Connection
C3	Water□ow Pressure Alarm Switch Connection
C4	Main Drain Connection
C5	Drip Funnel Drain Connection



Note:
Port Connections P1 through P7 are described in Figure 2.

FIGURE 18
DV-5A VALVE
DELUGE ELECTRIC ACTUATION TRIM
(Refer To Figure 12 For Specific Bills Of Materials)

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. Refer to Figure 16, 17, or 18, as applicable.

NOTICE

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).

Wet Pilot Actuation
Operation Test Procedure

Proper operation of the DV-5A Valve (i.e., 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. Open the Inspector's Test Connection.

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.

Dry Pilot Actuation
Operation Test Procedure

Proper operation of the DV-5A Valve (i.e., 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. Open the Inspector's Test Connection.

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
Operation Test Procedure

Proper operation of the DV-5A Valve (i.e., 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.

Dry Pilot Actuator Test Procedure
Proper operation of the Dry Pilot Actuator for dry pilot actuation must be verified as follows:

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

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

Step 3. Open the Inspector's Test Connection on the Dry Pilot Line.

Step 4. Verify that there is a flow of water from the Dry Pilot Actuator (R) drain connection.

Step 5. Verify that the Diaphragm Chamber pressure has decreased to below 25% of the water supply pressure.

Step 6. Close the Inspector's Test Connection and allow the dry pilot line pressure to re-establish, and proceed as follows:

- Water should cease draining from the Dry Pilot Actuator (R) 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 valve.
- Pressure will then build up in the DV-5A Diaphragm Chamber.
- After system pressure is restored in the DV-5A Diaphragm Chamber, inspect the Dry Pilot Actuator (R) and Manual Reset Actuator (N) for leaks at the drain tubes. 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) and then close 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.

Low Pressure Alarm and Condensate Drain for Dry Pilot Actuation Test Procedures
For Dry Pilot Actuation, testing of the Dry Pilot Low Pressure Switch (S) and drainage of the pilot line condensate must be performed as follows:

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).

Step 4. Open the Inspector's Test Connection, and slowly relieve pneumatic pressure. Verify that the Dry Pilot Low Pressure Switch (S) is operational and that the low pressure set points are as follows:

- Low pressure alarm setting at approximately 6 psi (0,4 bar) below the minimum pilot line service pressure requirement shown in Graph B
- Fire alarm setting at approximately 14.5 psi (1,0 bar) below the minimum pilot line service pressure requirement shown in Graph B.

Step 5. Close the Inspector's Test Connection and allow the Dry Pilot Line to automatically repressurize.

Step 6. Individually open each low point drain and then close after discharge of any trapped condensate.

The gauge test valve to which the Dry Pilot Line Gauge (U) is connected must be used as a low point drain. Close the gauge test valve, remove the plug, and partially open the gauge test valve (as necessary, collect water in a cup). After condensate water ceases to drain, close the gauge test valve, replace the plug, and then completely open the gauge test valve.

Step 7. Allow the Dry Pilot Line to automatically repressurize.

Step 8. Open the Diaphragm Supply Valve (P).

Step 9. 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.

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.

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

- Water should cease draining from the Solenoid Valve (R) 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 (R) 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 must 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. Remove the Copper Tube Fitting between the Diaphragm Supply Valve (P) and the System Main Control Valve (B).

Step 2. Loosen the union securing the Actuation Trim (Wet, Dry, or Electric) and remove the Actuation Trim.

Step 3. 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 4. 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 in proper orientation 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 valves 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 Actuation Trim (Wet, Dry, or Electric).

Step 7. Replace the Copper Tube Fitting between the Diaphragm Supply Valve and the System Main Control Valve (B).

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

Step 9. Proceed with Step 5 of the Valve Setting Procedures section in this data sheet.

NOTICE

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.

Nominal Valve Sizes ANSI Inches (DN)	Torque lb-ft (N·m)	
	Nuts	Short Hex Bolts
1-1/2 (40)	44 (59,7)	35 (47,5)
2 (50)	44 (59,7)	35 (47,5)
3 (80)	188 (254,9)	150 (203,4)
4 (100)	396 (536,9)	316 (428,4)
6 (150)	265 (359,3)	212 (287,4)
8 (200)	545 (738,9)	436 (591,1)

TABLE C
DIAPHRAGM COVER BOLTS
MAXIMUM TORQUE

Limited Warranty

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

Ordering Procedure

The TYCO DV-5A Automatic Water Control Valves may be ordered as follows:

Pre-Assembled Ordering

DV-5A Valves with Galvanized Valve Trim and Butterfly Valve
Specify: Size (specify), DV-5A Automatic Water Control Valve, G x G connections with assembled galvanized Americas (Wet Dry, or Electric) Actuation Valve Trim, complete with assembled Model BFV-300 Butterfly Valve, P/N (Ref. Table D)

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

DV-5A Valves with Galvanized Valve Trim
Specify: Size (specify), DV-5A Automatic Water Control Valve, (specify) end connection with assembled galvanized (Americas, EMEA, or APAC), (Wet, Dry, or Electric) Actuation Valve Trim, P/N (Ref. Table E)

VdS Approved DV-5A Valves with Galvanized Valve Trim
Specify: VdS Approved, Size (specify), DV-5A Automatic Water Control Valve, (specify) end connection with assembled galvanized (Wet, Dry, or Electric) Actuation Trim, P/N (Ref. Table J)

Separate Parts Ordering

DV-5A Valves
Refer to Table A for flange drilling specifications.

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

G x G Valve Size	AMERICAS[1]		
	Wet	Dry	Electric
1-1/2 in. (DN40)	551010115	551010215	551010315
2 in. (DN50)	551010120	551010220	551010320
3 in. (DN80)	551010130	551010230	551010330
4 in. (DN100)	551010140	551010240	551010340
6 in. (DN150)	551010160	551010260	551010360
8 in. (DN200)	551010180	551010280	551010380

Notes;
1. AMERICAS DV-5A Valve with Trim and Butter□y Valve: Americas pressure switches, P/N 52-287-1-124 Solenoid Valve, and psi/kPa water pressure gauges are provided.

TABLE D
DV-5A VALVES WITH GALVANIZED VALVE TRIM AND BUTTERFLY VALVE PART NUMBER SELECTION
— DELUGE SYSTEM —

DV-5A Valve Trim
Specify: Size (specify), finish (specify), (Wet Dry, or Electric) Actuation Valve Trim for DV-5A Automatic Water Control Valves used in Deluge Fire Protection System, P/N (Ref. Table G)

DV-5A Valve Trim Accessories (for separately ordered valve trim)
Refer to Table H for separately ordered accessories not included with the Valve Trim.

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

DV-5A Valve Trim Replacement Parts
Specify: (Description) for use with DV-5A Valve Trim, P/N (Refer to Figures 10, 11, and 12 as applicable)

G x G Valve Size	AMERICAS1			EMEA2			APAC3		
	Wet	**Dry**	**Electric**	**Wet**	**Dry**	**Electric**	**Wet**	**Dry**	**Electric**
1-1/2 (DN40)	550010115	550010215	550010315	550110115	550110215	550110315	550010115	550010215	550010315
2 in. (DN50)	550010120	550010220	550010320	550110120	550110220	550110320	550010120	550010220	550010320
3 in. (DN80)	550010130	550010230	550010330	550110130	550110230	550110330	550010130	550010230	550010330
4 in. (DN100)	550010140	550010240	550010340	550110140	550110240	550110340	550010140	550010240	550010340
6 in. (DN150)	550010160	550010260	550010360	550110160	550110260	550110360	550010160	550010260	550010360
8 in. (DN200)	550010180	550010280	550010380	550110180	550110280	550110380	550010180	550010280	550010380
F x F ANSI Valve Size	**Wet**	**Dry**	**Electric**	**Wet**	**Dry**	**Electric**	**Wet**	**Dry**	**Electric**
3 in. (DN80)	550020130	550020230	550020330	550120130	550120230	550120330	550020130	550020230	550020330
4 in. (DN100)	550020140	550020240	550020340	550120140	550120240	550120340	550020140	550020240	550020340
6 in. (DN150)	550020160	550020260	550020360	550120160	550120260	550120360	550020160	550020260	550020360
8 in. (DN200)	550020180	550020280	550020380	550120180	550120280	550120380	550020180	550020280	550020380
F x G ANSI Valve Size	**Wet**	**Dry**	**Electric**	**Wet**	**Dry**	**Electric**	**Wet**	**Dry**	**Electric**
3 in. (DN80)	550030130	550030230	550030330	550130130	550130230	550130330	550030130	550030230	550030330
4 in. (DN100)	550030140	550030240	550030340	550130140	550130240	550130340	550030140	550030240	550030340
6 in. (DN150)	550030160	550030260	550030360	550130160	550130260	550130360	550030160	550030260	550030360
8 in. (DN200)	550030180	550030280	550030380	550130180	550130280	550130380	550030180	550030280	550030380
T x T NPT Valve Size	**Wet**	**Dry**	**Electric**	**Wet**	**Dry**	**Electric**	**Wet**	**Dry**	**Electric**
1-1/2 in. (DN40)	550060115	550060215	550060315	—	—	—	550060115	550060215	550060315
2 in. (DN50)	550060120	550060220	550060320	—	—	—	550060120	550060220	550060320
F x F ISO Valve Size	**Wet**	**Dry**	**Electric**	**Wet**	**Dry**	**Electric**	**Wet**	**Dry**	**Electric**
3 in. (DN80)	—	—	—	550140130	550140230	550140330	550040130	550040230	550040330
4 in. (DN100)	—	—	—	550140140	550140240	550140340	550040140	550040240	550040340
6 in. (DN150)	—	—	—	550140160	550140260	550140360	550040160	550040260	550040360
8 in. (DN200)	—	—	—	550140180	550140280	550140380	550040180	550040280	550040380
F x G ISO Valve Size	**Wet**	**Dry**	**Electric**	**Wet**	**Dry**	**Electric**	**Wet**	**Dry**	**Electric**
3 in. (DN80)	—	—	—	550150130	550150230	550150330	550050130	550050230	550050330
4 in. (DN100)	—	—	—	550150140	550150240	550150340	550050140	550050240	550050340
6 in. (DN150)	—	—	—	550150160	550150260	550150360	550050160	550050260	550050360
8 in. (DN200)	—	—	—	550150180	550150280	550150380	550050180	550050280	550050380
T x T ISO Valve Size	**Wet**	**Dry**	**Electric**	**Wet**	**Dry**	**Electric**	**Wet**	**Dry**	**Electric**
1-1/2 in. (DN40)	—	—	—	550160115	550160215	550160315	—	—	—
2 in. (DN50)	—	—	—	550160120	550160220	550160320	—	—	—

Notes:
1. AMERICAS DV-5A Valve with Trim: Americas pressure switches, P/N 52-287-1-124 solenoid valve, and psi/kPa water pressure gauges are provided.
2. EMEA DV-5A Valve with Trim: 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 are provided.
3. APAC DV-5A Valve with Trim: APAC pressure switches, P/N 52-287-1-124 solenoid valve, and psi/kPa water pressure gauges are provided.

TABLE E
DV-5A VALVES WITH GALVANIZED VALVE TRIM
PART NUMBER SELECTION
— DELUGE SYSTEM —

	REGIONS OF TYPICAL AVAILABILITY (indicated by "□")							
	AMERICAS	□	□	□	□	—	—	—
	EMEA	□	□	□	□	□	□	□
	APAC	□	□	□	□	□	□	□
Valve Size	**Nominal Groove O.D.**	**G x G**	**F X F ANSI**	**F x G ANSI**	**T x T NPT**	**F x F ISO**	**F x G ISO**	**T x T ISO**
1-1/2 in. (DN40)	1.990 in. (48,3 mm)	530010015	—	—	530060015	—	—	530070015
2 in. (DN50)	2.375 in. (60,3 mm)	530010020	—	—	530060020	—	—	530070020
3 in. (DN80)	3.500 in. (88,9mm)	530010030	530020030	530030030	—	530040030	530050030	—
4 in. (DN100)	4.500 in. (114,3 mm)	530010040	530020040	530030040	—	530040040	530050040	—
6 in. (DN150)	6.625 in. (168,3mm)	530010060	530020060	530030060	—	530040060	530050060	—
8 in. (DN200)	8.625 in. (216,3 mm)	530010080	530020080	530030080	—	530040080	530050080	—

Notes:
1. Valves are typically provided with □ange drilling per ANSI B16.1 (Class 125) or ISO (7005-2 PN16).
2. Upon request, valves can be provided with □ange drilling per JIS B 2210 or AS 2129. In which case part numbers are not assigned.

TABLE F
DV-5A VALVES PART NUMBER SELECTION

	AMERICAS Galvanized[1]			**AMERICAS Black[1]**		
Valve Size	**Wet**	**Dry**	**Electric**	**Wet**	**Dry**	**Electric**
1½ in. (DN40)	540000120	540000220	540000320	542000120	542000220	542000320
2 in. (DN50)	540000120	540000220	540000320	542000120	542000220	542000320
3 in. (DN80)	540000130	540000230	540000330	542000130	542000230	542000330
4 in. (DN100)	540000140	540000240	540000340	542000140	542000240	542000340
6 in. (DN150)	540000160	540000260	540000360	542000160	542000260	542000360
8 in. (DN200)	540000180	540000280	540000380	542000180	542000280	542000380
	EMEA Galvanized[2]			**EMEA Black[2]**		
Valve Size	**Wet**	**Dry**	**Electric**	**Wet**	**Dry**	**Electric**
1½ in. (DN40)	540100120	540100220	540100320	542100120	542100220	542100320
2 in. (DN50)	540100120	540100220	540100320	542100120	542100220	542100320
3 in. (DN80)	540100130	540100230	540100330	542100130	542100230	542100330
4 in. (DN100)	540100140	540100240	540100340	542100140	542100240	542100340
6 in. (DN150)	540100160	540100260	540100360	542100160	542100260	542100360
8 in. (DN200)	540100180	540100280	540100380	542100180	542100280	542100380
	APAC Galvanized[3]			**APAC Black[3]**		
Valve Size	**Wet**	**Dry**	**Electric**	**Wet**	**Dry**	**Electric**
1½ in. (DN40)	540000120	540000220	540000320	542000120	542000220	542000320
2 in. (DN50)	540000120	540000220	540000320	542000120	542000220	542000320
3 in. (DN80)	540000130	540000230	540000330	542000130	542000230	542000330
4 in. (DN100)	540000140	540000240	540000340	542000140	542000240	542000340
6 in. (DN150)	540000160	540000260	540000360	542000160	542000260	542000360
8 in. (DN200)	540000180	540000280	540000380	542000180	542000280	542000380

Notes:
1. Americas Valve Trim: Pressure switches and/or solenoid valves for electric actuation are separately ordered.
2. EMEA Valve Trim: Pressure switches, solenoid valves for electric actuation, water pressure gauges, and BFV-300 Butter□y Valve are separately ordered. NPT to ISO threaded adaptors are provided for External Trim Connections (drains, pressure switches, water motor alarms, etc.).
3. APAC Valve Trim: Pressure switches and/or solenoid valves for electric actuation are separately ordered.

TABLE G
DV-5A VALVE TRIM
PART NUMBER SELECTION
— DELUGE SYSTEM —

ACCESSORIES, DELUGE FIRE PROTECTION SYSTEMS	P/N	Data Sheet	CONSIDERED FOR USE WITH ACTUATION TYPE:		
			Wet Pilot	Dry Pilot	Electric
Water□ow Pressure Alarm Switch, Potter PS10-2 (America/APAC)	25720	—	□	□	□
Water□ow Pressure Alarm Switch PS10-1 (EMEA)	0260	—	□	□	□
Air Pressure Alarm Switch, Potter PS40-2 (America/APAC)	25710	—	—	□	—
Air Pressure Alarm Switch PS40-1 (EMEA)	0262	—	—	□	—
Model WMA-1 Water Motor Alarm (America/APAC)	526301001	TFP921	□	□	□
Model WMA-1 Water Motor Alarm (EMEA)	526301001P	TFP922	□	□	□
Model AMD-1 Air Maintenance Device	523242002	TFP1221	—	□	—
Model AMD-2 Air Maintenance Device	523262001	TFP1231	—	□	—
Model AMD-3 Nitrogen Maintenance Device	523282001	TFP1241	—	□	—
Model MC-1 Manual Control Stations	522892001	TFP1382	□	□	—
Water Gauges with bar/psi	025500013	—	□	□	□
Solenoid Valve for Releasing Service	Refer to Technical Data Sheet	TFP2180	—	—	□
600 psi Water Gauge psi/kPa (service pressure over 300 psi)	923431004	—	□	□	□

TABLE H
DV-5A VALVES ACCESSORIES
PART NUMBER SELECTION
— DELUGE SYSTEM —

G x G Valve Size	VdS Approved[1]		
	Wet	**Dry**	**Electric**
1-1/2 (DN40)	550110115VDS	550110215VDS	550110315VDS
2 in. (DN50)	550110120VDS	550110220VDS	550110320VDS
3 in. (DN80)	550110130VDS	550110230VDS	550110330VDS
4 in. (DN100)	550110140VDS	550110240VDS	550110340VDS
6 in. (DN150)	550110160VDS	550110260VDS	550110360VDS
8 in. (DN200)	550110180VDS	550110280VDS	550110380VDS
F x F ANSI Valve Size	**Wet**	**Dry**	**Electric**
3 in. (DN80)	550120130VDS	550120230VDS	550120330VDS
4 in. (DN100)	550120140VDS	550120240VDS	550120340VDS
6 in. (DN150)	550120160VDS	550120260VDS	550120360VDS
8 in. (DN200)	550120180VDS	550120280VDS	550120380VDS
F x G ANSI Valve Size	**Wet**	**Dry**	**Electric**
3 in. (DN80)	550130130VDS	550130230VDS	550130330VDS
4 in. (DN100)	550130140VDS	550130240VDS	550130340VDS
6 in. (DN150)	550130160VDS	550130260VDS	550130360VDS
8 in. (DN200)	550130180VDS	550130280VDS	550130380VDS
F x F ISO Valve Size	**Wet**	**Dry**	**Electric**
3 in. (DN80)	550140130VDS	550140230VDS	550140330VDS
4 in. (DN100)	550140140VDS	550140240VDS	550140340VDS
6 in. (DN150)	550140160VDS	550140260VDS	550140360VDS
8 in. (DN200)	550140180VDS	550140280VDS	550140380VDS
F x G ISO Valve Size	**Wet**	**Dry**	**Electric**
3 in. (DN80)	550150130VDS	550150230VDS	550150330VDS
4 in. (DN100)	550150140VDS	550150240VDS	550150340VDS
6 in. (DN150)	550150160VDS	550150260VDS	550150360VDS
8 in. (DN200)	550150180VDS	550150280VDS	550150380VDS
T x T ISO Valve Size	**Wet**	**Dry**	**Electric**
1-1/2 in. (DN40)	550160115VDS	550160215VDS	550160315VDS
2 in. (DN50)	550160120VDS	550160220VDS	550160320VDS

Notes:
1. VdS Approved DV-5A Valve with Trim: EMEA pressure switches, P/N 52-287-1-124 solenoid valve, bar/psi water pressure gauges, NPT to ISO threaded trim adaptors for external connections, and VdS required water column prevention drain components are provided.

TABLE J
VDS APPROVED DV-5A VALVES WITH GALVANIZED VALVE TRIM
PART NUMBER SELECTION
— DELUGE SYSTEM —

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CENTRAL

Customer Service/Sales:
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Fax: (215) 362-5385

Model WMA-1 Water Motor Alarm Hydraulically Operated Mechanical Sprinkler Alarm

General Description

The Model WMA-1 Water Motor Alarm is a hydraulically operated outdoor alarm designed for use with fire protection system waterflow detection valves. It is lightweight yet rugged, and it can be used in conjunction with alarm check, dry pipe, deluge, and preaction valves to sound a local alarm.

The Water Motor Alarm is suitable for mounting to any type of rigid wall and can accommodate a wall thickness range of 2 to 18 inches (50 to 450 mm). It is provided with a listed and approved Model WM-1 Y-Strainer for use in the alarm line.

The WMA-1 utilizes a lightweight, impeller design which can produce a very high sound pressure level. The Gong, Gong Mount, and Water Motor Housing are fabricated from corrosion resistant aluminum alloys. The polymer drive bearings do not require lubrication, and the Gong is closely fitted to the Gong Mount to eliminate the need for a separate cover.

The Model WMA-1 Water Motor Alarm is a redesignation for the Central Model F-2, Gem Model F630, and Star Model S450.

WARNING

The Model WMA-1 Water Motor Alarm 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, in addition to the standards of any other authorities having jurisdiction. ***Failure to do so may impair the performance of this device.***

The owner is responsible for maintaining their fire protection system and devices in proper operating condition. The installing contractor or sprinkler manufacturer should be contacted with any questions.

Technical Data

Approvals
UL and ULC Listed.
FM, LPCB, and VdS Approved.

Gong Finish
Red or Aluminum

Working Water Pressure Range
7 to 300 psi (0,5 to 20,7 bar)

Nozzle K-Factor
0.7 GPM/psi$^{1/2}$ (10,1 LPM/bar$^{1/2}$)

Y-Strainer
3/4 inch, cast iron, 20 mesh screen

Trim Components
Galvanized steel nipples and cast iron fittings.

Design Data

The Model WMA-1 Water Motor Alarm must be used in accordance with the following design criteria:

Item 1. The Y-Strainer is to be located at the “alarm outlet” of the waterflow detection valve trim.

Item 2. The Water Motor Alarm must only be mounted to a rigid wall surface, which will not permit the Striker/Gong Mount to loosen and fall out of alignment.

Item 3. In order to obtain the highest possible sound level, the Water Motor Alarm should be located as close as possible to the waterflow detecting valve. (Refer to NFPA 13 for guidance.)

Item 4. The alarm line piping from the alarm outlet of the waterflow detection valve trim to the Water Motor Alarm must be 3/4 inch size throughout and it must be galvanized steel, brass, or other suitable corrosion resistant material.

Item 5. The alarm line piping must be

positioned such that it can be drained back to the water flow detection valve trim.

Item 6. The Clean-Out Sump Plug is to be located vertically below the Inlet to the Water Motor.

Item 7. Piping from the Water Motor Drain must be a minimum of 1 inch in size throughout and directed to an open drain, in order to ensure proper drainage for obtaining the maximum sound pressure level.

NOTE

The Water Motor Alarm Drain may be connected to the main drain of a water flow detection valve if a non-spring loaded swing type check valve is installed in a horizontal portion of the water motor alarm drain piping (before its connection to the main drain).

Item 8. In order to minimize any wall staining that can be created by drain water, it is recommended that the drain piping from the Water Motor be galvanized steel, brass, or other suitable corrosion resistant material.

Item 9. Drain water must be directed such that there will be no accidental damage to property or danger to persons when the alarm is operating or thereafter.

Item 10. The alarm line drain (at the

NO.	DESCRIPTION	QTY.	P/N
1	Water Motor	1	92-630-1-012
2	Support Washer	1	NR
3	Drive Shaft Sleeve	1	NR
4	Drive Shaft	1	NR
5	Gong Mount	1	NR
6	Striker	1	See (a)
7	Gong	1	See (a)
8	Cap Nut	1	See (a)
(a)	Repair Parts Kit Includes Items 6, 7 (red), and 8	1	92-630-1-025
(a)	Repair Parts Kit Includes Items 6, 7 (alum.), and 8	1	92-630-2-025

NR: Not Replaceable

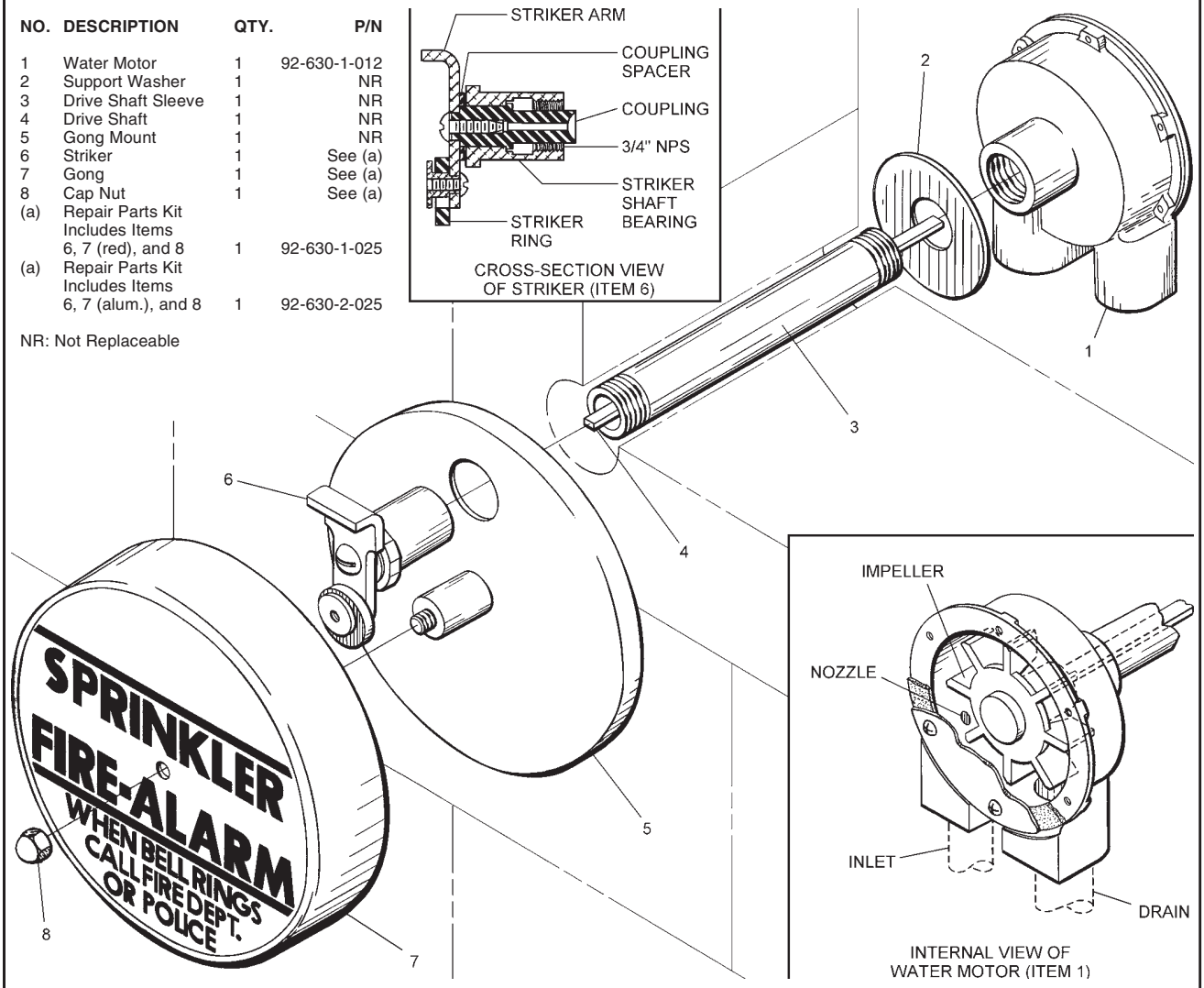


FIGURE 1 — MODEL WMA-1 WATER MOTOR ALARM

waterflow detection valve) must be maintained at a minimum temperature of 40°F/4°C.

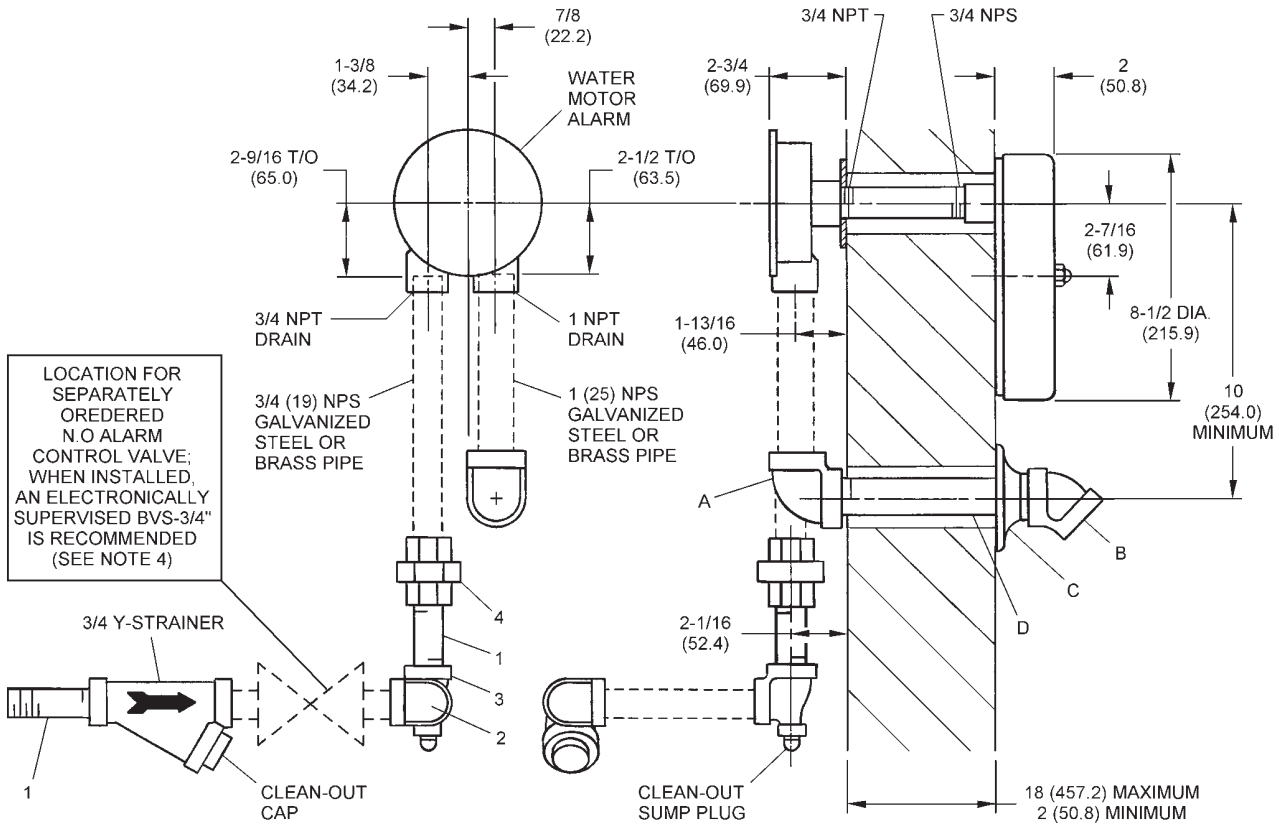
Item 11. A single Water Motor Alarm may be connected to the alarm lines from a maximum of three separate fire protection systems. However, when two or three alarm lines are interconnected, each alarm line must be provided with a 3/4 inch (P/N 52-271-1-001) Model WM-1 Y-Strainer and a 3/4 inch (P/N 52-403-1-005) Check Valve with 3/32 inch orifice. The strainers must be located at the "alarm outlet" in the trim of each of the waterflow detection valves. The check valves must be located between each strainer and the interconnection with the alarm line from another system.

Operation

Upon operation of the alarm check, dry pipe, deluge, or preaction valve to which the Model WMA-1 Water Motor Alarm is connected, water will flow to the Water Motor and through the Inlet Nozzle. As water flows through the Inlet Nozzle, a high velocity jet is formed which impinges on the Impeller, causing the Impeller and the Striker to rotate. With each rotation, the free swinging Striker Ring hits the Gong and sounds the alarm. The spent water is then drained through the 1 inch outlet.

The alarm will sound as long as water is flowing into the system and flowing to the Water Motor Alarm. Water in the alarm line will automatically drain back through the orifice which is also provided in the trim of the waterflow detection valve.

The Water Motor Alarm does not have to be reset after an operation. However, if the alarm was silenced during operation by closing of an alarm control valve, the alarm control valve must be reopened after the fire protection system is restored to service.



NOTES:

1. All installation dimensions are shown at nominal value.
2. All dimensions are in inches and (mm).
3. Pipe shown in dotted lines is not included with the WMA-1.
4. Consult with the Authority Having Jurisdiction as to local requirements for isolating valves for local mechanical alarms.
5. All trim components are galvanized.

STANDARD INLET TRIM

NO.	DESCRIPTION	QTY.
1	3/4" x 3" Nipple	2
2	3/4" 90° Elbow	1
3	3/4" x 1/4" x 3/4" Tee w/ 1/4" Plug	1
4	3/4" Union	1

OPTIONAL DRAIN TRIM

NO.	DESCRIPTION	QTY.
A	1" 90° Elbow	1
B	1" 45° Elbow	1
C	Wall Plate	1
D	1" x 1' - 6" Pipe, T.O.E.	1

FIGURE 2 — TYPICAL INSTALLATION OF MODEL WMA-1 WATER MOTOR ALARM

Installation

The Model WMA-1 Water Motor Alarm must be installed in accordance with the following instructions:

Step 1. Mark the through-wall locations for the centerlines of the Sleeve and Drain Outlet. The Drain Outlet must be located at least 10 inches (250 mm) below the Sleeve per Figure 2.

Step 2. Make 1-1/2 inch (38 mm) diameter holes straight through the wall at both locations.

Step 3. Cut the non-threaded end of the Sleeve to a length equal to that of the wall thickness plus 0 to 1/8 inch (0 to 3 mm). Thread the cut end to 3/4 inch NPT per ANSI B1.20.1.

Step 4. Install the alarm line piping up to and including the union half, Item 4 - Fig. 2.

NOTE

Use thread sealant sparingly on male threads only.

Step 5. Prior to initiating installation of the Water Motor Alarm, mount the Drain Trim (less the Wall Plate and 45° Elbow), as well as the balance of alarm line piping (including other union half) to the Water Motor.

Step 6. Tighten the NPT threaded end of the Sleeve into the Body hand tight plus 1/8 turn.

Step 7. Slip the Support Washer over the Sleeve and place the assembly in position against the wall.

Step 8. Tighten the 3/4 inch Union. Install the Wall Plate and tighten the 45° Elbow.

NOTE

Apply pressure against the outside edge of the Water Motor Body and verify that the Body and Support Washer sit square against the wall. If not, adjust the alarm line and/or drain piping to suit.

Step 9. From the outside wall, insert the Drive Shaft through the Sleeve and fully insert it into the Impeller. (*When fully inserted, the Shaft should protrude beyond the face of the wall by approximately 20" minus 2" minus wall thickness.*)
Mark the Drive Shaft at a point of approximately 1/8 to 1/4 inch inside the face of the wall; remove the Shaft; cut the Shaft where previously marked; file off burrs from the cut end of the Drive Shaft; and, re-insert the Drive Shaft through the Sleeve and fully insert it into the Impeller.

Step 10. Hold the Gong Mount in position against the wall, engage the Coupling with the Drive Shaft and then carefully thread the Striker Shaft Bear-

ing onto the Sleeve. Securely tighten the Striker Shaft Bearing using a pair of channel locks on the 1-1/2 inch (38 mm) hex end.

Step 11. Spin the Striker by hand and verify that it spins freely (without any sign of binding). If not, make the necessary adjustments.

Step 12. Install the gong and securely tighten the Cap Nut. The identification sign lettering must be orientated horizontally,

Step 13. Test the Water Motor Alarm by opening the alarm test valve in the trim of the water flow detection valve. The alarm must be clear and steady. If not, make the necessary adjustments.

NOTE

Testing of the Water Motor Alarm may result in operation of other associated alarms. Consequently, notification must be given to the owner and the fire department, central control station, or other signal station to which the alarms are connected.

Care and Maintenance

The following procedures and inspections should be performed as indicated, in addition to any specific requirements of the NFPA, and any impairment must be immediately corrected.

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 applicable standards of the National Fire Protection Association (e.g., NFPA 25), in addition to the standards of any authority having jurisdiction. The installing contractor or product manufacturer should be contacted relative to any questions.

It is recommended that automatic sprinkler systems be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

NOTES

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 decision must be notified.

Testing of the Water Motor Alarm may result in operation of other associated alarms. Consequently, notification must be given to the owner and the fire department, central control station, or other signal station to which the alarms are connected.

If the alarm was silenced during operation, the alarm control valve must be reopened immediately after the fire protection system is restored to service.

The Model WMA-1 Water Motor Alarm must be maintained and serviced in accordance with the following instructions:

Step 1. The Model WMA-1 Water Motor Alarm does not require any regularly scheduled maintenance. Rotating parts do not require lubrication. It is recommended, however, that fire alarms be periodically operated, i.e., inspected, to verify that they generate a clear and steady sound. Any impairment must be be immediately corrected.

Step 2. The inspection should be made quarterly or more frequently, as may be necessary in the case of locations subject to vandalism. The Y-Strainer and Sump are to be cleaned out after each operation of the Water Motor Alarm and after the alarm line piping has been drained.

Limited Warranty

Products manufactured by Tyco Fire Products are warranted solely to the original Buyer for ten (10) years against defects in material and workmanship when paid for and properly installed and maintained under normal use and service. This warranty will expire ten (10) years from date of shipment by Tyco Fire Products. No warranty is given for products or components manufactured by companies not affiliated by ownership with Tyco Fire Products or for products and components which have been subject to misuse, improper installation, corrosion, or which have not been installed, maintained, modified or repaired in accordance with applicable Standards of the National Fire Protection Association, and/or the standards of any other Authorities Having Jurisdiction. Materials found by Tyco Fire Products to be defective shall be either repaired or replaced, at Tyco Fire Products' sole option. Tyco Fire Products neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of products or parts of products. Tyco Fire Products shall not be responsible for sprinkler system design errors or inaccurate or incomplete information supplied by Buyer or Buyer's representatives.

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THE FOREGOING WARRANTY IS MADE IN LIEU OF ANY AND ALL OTHER WARRANTIES EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Ordering Information

Orders for the WMA-1, Optional Drain Trim, and replacement parts must include the description and Part Number (P/N).

The Complete Model WMA-1 Alarm Assembly includes the Model WMA-1 Water Motor Alarm, Model WM-1 Strainer, and Standard Inlet Trim.

WMA-1 Alarm Assemblies:

Specify: Model WMA-1 Alarm Assembly with Red Finish Gong,
P/N 52-630-1-001.

or

Specify: Model WMA-1 Alarm Assembly with Aluminum Finish Gong,
P/N 52-630-2-001

Optional Drain Trim:

Specify: Optional Drain Trim for Model WMA-1 Water Motor Alarm,
P/N 52-630-2-002.

Separately Ordered Alarm Control Valve:
Specify: UL/FM 3/4 Inch Ball Valve, P/N 92-300-1-006.

Separately Ordered Parts for Multiple Systems:
Specify: Model WM-1 Y-Strainer, P/N 52-271-1-001. (1 required for two system, 2 required for 3 systems.)

Specify: 3/4 Inch Check valve with 3/32 Inch Orifice, P/N 52-403-1-005 (2 required for two system, 3 required for 3 systems.)

Replacement Parts for Water Motor Alarm:
(Specify description) for use with Model WMA-1 Water Motor Alarm, P/N (see Figure 1).

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Grinnell

GRINNELL G-FIRE Figure 577 Grooved Rigid Coupling 1-Inch to 12-Inch (DN25 to DN300)

General Description

For use in fire protection systems, the GRINNELL G-FIRE Figure 577 Grooved Rigid Coupling provides a rigid joint by firmly gripping along the full circumference of the pipe grooves. Figure 577 Grooved Rigid Couplings are a proven dependable method of joining pipe and are an economical alternative to welding, threading, or using flanges. It is capable of pressures up to 350 psi (24, 1 bar) depending on pipe size and wall thickness when used in fire protection services.

⚠WARNING

Never remove any piping component nor correct or modify any piping deficiencies without first de-pressurizing and draining the system. Failure to do so may result in serious personal injury, property damage, and/or impaired device performance.

It is the Designer's responsibility to select products suitable for the intended service and to ensure that pressure ratings and performance data are not exceeded. Material and gasket selection should be verified to be compatible for the specific application. Always read and understand the installation instructions.

The GRINNELL G-FIRE Figure 577 Grooved Rigid Coupling described herein must be installed and maintained in compliance with this document, as well as with the applicable standards of the Approval agency, in addition to the standards of any other authorities having jurisdiction. Failure to do so may result in serious personal injury or impair the performance of these devices.

Owners are responsible for maintaining their mechanical system and devices in proper operating condition. The installing contractor or device manufacturer should be contacted with any questions.

Technical Data

Approvals
UL, FM, ULC, VdS, and LPCB

Sizes
1-Inch to 12-Inch (DN25 to DN300)

Housing
Ductile iron conforming to ASTM A 536, Grade 65-45-12

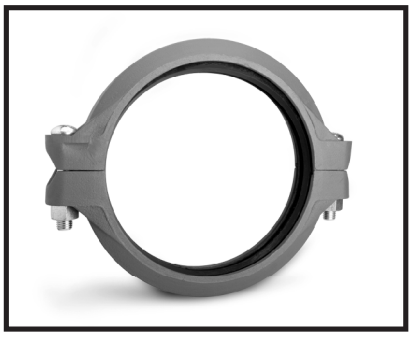
Finish
- Orange non-lead paint
- Red non-lead paint
- Hot-dipped, Galvanized conforming to ASTM A 153

Bolts/Nuts
- ANSI:
  Carbon Steel oval neck track head bolts are heat-treated and conform to the physical properties of ASTM A 183 Grade 2 and SAE J429 Grade 5 with a minimum tensile strength of 110,000 psi.

  Carbon Steel heavy hex nuts conform to the physical properties of ASTM A 183 Grade 2 and SAE J995 Grade 5. Bolts and nuts are zinc-electroplated conforming to ASTM B 633.

  Stainless Steel Bolts and Nuts are available upon request.
- Metric:
  Carbon steel oval neck track head bolts (Gold color coded) are heat-treated and conform to the physical properties of ASTM F 568 M with a minimum tensile strength of 760 MPa.

  Carbon Steel heavy hex nuts conform to the physical properties of ASTM A 563 M Class 9. Bolts and nuts are zinc-electroplated conforming to ASTM B 633.



For Fire Protection pressure rating, listing, and approval information, contact your GRINNELL Representative.

Gaskets
- Pre-lubricated Grade "A" EPDMA, Violet color code, -30°F to 150°F (-34°C to 66°C)

  Not recommended for hot water systems
- Tri-Seal Grade "E" EPDM, Green color code, -30°F to 150°F (-34°C to 66°C)

For proper gasket selection, refer to Technical Data Sheet TFP1895.

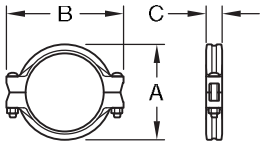


FIGURE 577
GROOVED RIGID COUPLING
1" - 12" (DN25 TO DN300)

Pipe Size		Max. † Pressures psi (bar)	Max. † End Load Lbs. (kN)	Max. *‡ End Gap Inches (mm)	Nominal Dimensions			Coupling Bolts		Approx. Weight Lbs. (kg)
Nominal ANSI Inches DN	O.D. Inches (mm)				A Inches (mm)	B Inches (mm)	C Inches (mm)	Qty.	Size** Inches (mm)	
1 DN25	1.315 (33,4)	350 (24,1)	475 (2,11)	0.06 (1,5)	1.63 (2)	3.92 (100)	1.65 (42)	2	3/8 x 2-1/4 M10 x 57	1.2 (0,55)
1-1/4 DN32	1.660 (42,2)	350 (24,1)	757 (3,37)	0.06 (1,5)	2.66 (68)	4.40 (112)	1.64 (42)	2	3/8 x 2-1/4 M10 x 57	1.3 (0,59)
1-1/2 DN40	1.900 (48,3)	350 (24,1)	992 (4,41)	0.06 (1,5)	2.90 (74)	4.66 (118)	1.66 (42)	2	3/8 x 2-1/4 M10 x 57	1.5 (0,68)
2 DN50	2.375 (60,3)	350 (24,1)	1,551 (6,90)	0.06 (1,5)	3.38 (86)	5.20 (132)	1.70 (43)	2	3/8 x 2-1/4 M10 x 57	1.8 (0,82)
2-1/2 DN65	2.875 (73,0)	350 (24,1)	2,272 (10,11)	0.06 (1,5)	3.88 (99)	5.64 (143)	1.75 (44)	2	3/8 x 2-1/4 M10 x 57	2.0 (0,91)
– DN65	3.000 (76,2)	350 (24,1)	2,474 (11,01)	0.06 (1,5)	4.00 (102)	5.78 (147)	1.75 (2)	2	– M16 x 83	2.0 (0,91)
3 DN80	3.500 (88,9)	350 (24,1)	3,367 (14,98)	0.06 (1,5)	4.50 (114)	6.33 (161)	1.75 (44)	2	3/8 x 2-1/4 M10 x 57	3.3 (1,50)
4 DN100	4.500 (114,3)	300 (20,7)	4,771 (21,22)	0.06 (1,5)	5.70 (145)	7.50 (191)	1.83 (46)	2	3/8 x 2-1/4 M10 x 57	3.3 (1,50)
– DN125	5.500 (139,7)	300 (20,7)	7,127 (31,71)	0.125 (3,2)	6.80 (173)	8.75 (222)	1.91 (49)	2	– M12 x 76	5.3 (2,41)
5 DN125	5.563 (141,3)	300 (20,7)	7,290 (32,43)	0.125 (3,2)	6.86 (174)	8.82 (224)	1.91 (49)	2	1/2 x 3 M12 x 76	5.3 (2,41)
– DN150	6.500 (165,1)	300 (20,7)	9,955 (44,28)	0.125 (3,2)	7.80 (198)	9.75 (248)	1.91 (49)	2	– M12 x 76	5.7 (2,59)
6 DN150	6.625 (168,3)	300 (20,7)	10,341 (46.00)	0.125 (3,2)	8.47 (215)	9.88 (251)	1.91 (49)	2	1/2 x 3 M12 x 76	5.9 (2,68)
8 DN200	8.625 (219,1)	300 (20,7)	17,528 (77,97)	0.125 (3,2)	10.25 (260)	12.78 (325)	2.40 (61)	2	5/8 x 3-1/4 M16 x 83	11.7 (5,32)
10 DN250	10.750 (273,1)	175 (12,1)	15,883 (70,7)	0.25 (6,4)	12.50 (318)	16.50 (419)	2.56 (65)	2	3/4 x 4-3/4 M20 x 121	19.5 (8,86)
12 DN300	12.750 (323,9)	175 (12,1)	22,343 (99,4)	0.25 (6,4)	14.50 (368)	18.50 (470)	2.56 (65)	2	3/4 x 4-3/4 M20 x 121	22.0 (10,00)

* Maximum available gap between pipe ends. Minimum gap = 0.

† Maximum Pressure and End Load are total from all loads based on standard weight steel pipe. Pressure ratings and end loads may differ for other pipe materials and/or wall thickness. Contact your GRINNELL Representative.

** Gold color coded metric bolt sizes for DN25 - DN300 couplings are available upon request.

‡ Max End Gap is for cut grooved standard weight pipe.

TABLE 1
GRINNELL G-FIRE FIGURE 577 GROOVED RIGID COUPLING
— DIMENSIONS —

Care and Maintenance

NOTICE

Before closing a fire protection system main control valve for maintenance work on the fire protection system that it controls, obtain permission to shut down the affected fire protection system from the proper authorities and notify all personnel who may be affected by this decision.

After placing a fire protection system in service, notify the proper authorities and advise those responsible for monitoring proprietary and/or central station alarms.

Owners are responsible for the inspection, testing, and maintenance of their fire protection system and devices in compliance with this document, as well as with the applicable standards of the National Fire Protection Association (for example, NFPA 25), in addition to the standards of any authority having jurisdiction. The installing contractor or product manufacturer should be contacted relative to any questions. Any impairments must be immediately corrected.

Automatic sprinkler systems are recommended to be inspected, tested, and maintained by a qualified Inspection Service in accordance with local requirements and/or national codes.

Limited Warranty

Products manufactured by Tyco International (Tyco) under the GRINNELL brand are warranted solely to the original Buyer for ten (10) years from date of shipment by Tyco against defects in material and workmanship when paid for and properly installed and maintained under normal use and service, except for the G-MINE line of products, which are warranted solely to the original Buyer for six (6) months from date of shipment by Tyco against defects in material and workmanship when paid for and properly installed and maintained under normal use and service. No warranty is given for products or components manufactured by companies not affiliated by ownership with Tyco or for products and components which have been subject to misuse, improper installation or maintenance, corrosion, or other external sources of damage. Materials found by Tyco to be defective shall be either repaired or replaced, at Tyco's sole option. Tyco neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of products or parts of products. Tyco shall not be responsible for system design errors or inaccurate or incomplete information supplied by Buyer or Buyer's representatives.

In no event shall Tyco be liable, in contract, tort, strict liability or under any other legal theory, for incidental, indirect, special or consequential damages, including but not limited to labor charges, regardless of whether Tyco was informed about the possibility of such damages, and in no event shall Tyco's liability exceed an amount equal to the sales price.

The foregoing warranty is made in lieu of any and all other warranties, express or implied, including warranties of merchantability and fitness for a particular purpose.

This limited warranty sets forth the exclusive remedy for claims based on failure of or defect in products, materials or components, whether the claim is made in contract, tort, strict liability or any other legal theory.

This warranty will apply to the full extent permitted by law. The invalidity, in whole or part, of any portion of this warranty will not affect the remainder.

Ordering Procedure

GRINNELL Products are available globally through a network of distribution centers. For the nearest distributor, visit www.grinnell.com. When placing an order, indicate the full product name.

Specify G-FIRE Figure 577 Grooved Rigid Coupling, quantity, pipe size (Nominal ANSI or O.D.), finish (Orange, Red, or Galvanized), and type of gasket:

- Pre-lubricated Grade "A" EPDMA
- Tri-Seal Grade "E" EPDM

PRESSURE SWITCH

BRAND NAME	**:**	**POTTER ELECTRIC**
COUNTRY	**:**	**U.S.A.**
MODEL	**:**	**PS10-2**
SIZE	**:**	**1/2" NPT**
APPROVED	**:**	**UL/FM APPROVED**
MAX. DIFFERENTIAL	**:**	**2 PSI.**
MAX. SYSTEM PRESSURE	**:**	**300 PSI.**

MATERIAL OF CONSTRUCTION

ENCLOSURE	**:**	**DIE-CAST ALUMINIUM**
FINISHED	**:**	**RED POWDER COAT**
BASE	**:**	**PLATED STEEL**

ACCESSORIES

CONTACT RATINGS	**:**	**ONE SET OF SPDT.**
	:	**10.1 AMP., 125/250 VAC.**
	:	**2.0 AMP., 0-30 VDC.**

PS10 SERIES
PRESSURE SWITCH

Patent Pending

(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 screws 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: 4 - 8 PSI (0,27 - 0,55 BAR)
Differential: 2 PSI (0,13 BAR) typical

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 PS10-1, Two SPDT in PS10-2

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)

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.
PS10-1	Pressure switch with one set SPDT contacts	1340103
PS10-2	Pressure switch with two sets SPDT contacts	1340104
	Hex Key	5250062
	Cover Tamper Switch Kit	0090200

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.

Installation
The Potter PS10 Series Pressure Actuated Switches are designed for the detection of a waterflow condition in automatic fire sprinkler systems of particular designs such as wet pipe systems with alarm check valves, dry pipe, preaction, or deluge valves. The PS10 is also suitable to provide a low pressure supervisory signal; adjustable between 4 and 15 psi (0,27 and 1,03 BAR).
1. Apply Teflon tape to the threaded male connection on the device. (Do not use pipe dope)
2. Device should be mounted in the upright position (threaded connection down).
3. 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.
4. Connect the wires to the appropriate terminal connections for the service intended. See Figures 2,4,5, and 6. See Fig 7 for two switch, one conduit wiring.

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).

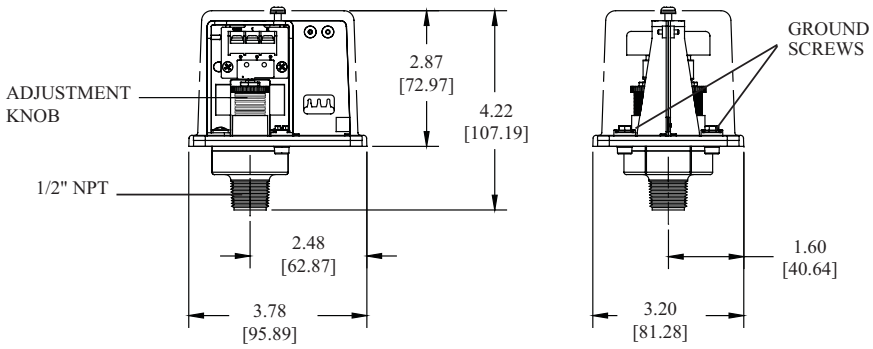
Wet System
Method 1: When using PS10 and control unit with retard - connect PS10 into alarm port piping on the input side of retard chamber and electrically connect PS10 to control unit that provides a retard to compensate for surges. Insure that no unsupervised shut-off valves are present between the alarm check valve and PS10.
Method 2: When using the PS10 for local bell application or with a control that does not provide a retard feature - the PS10 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.
Note: 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 PS10.

Wet System With Excess Pressure
Connect PS10 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 PS10.
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 PS10 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 PS10.
Testing: Accomplished by opening the water by-pass test valve.
Note: The above tests may also activate any other circuit closer or water motor gongs that are present on the system.

Dimensions

Fig. 1

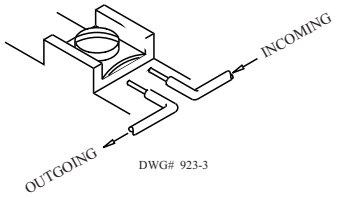


NOTE: To prevent leakage, apply Teflon tape sealant to male threads only.

DWG# 930-1

Switch Clamping Plate Terminal

Fig. 2

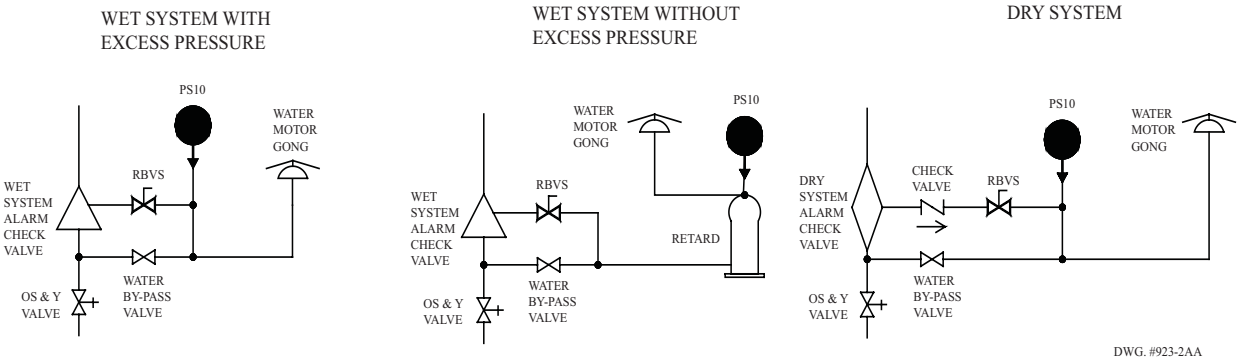


⚠ WARNING

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

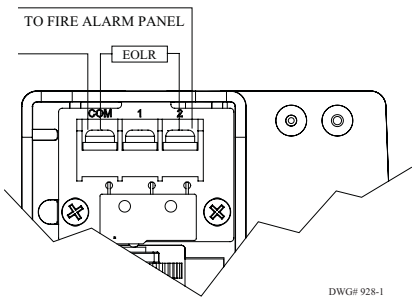


⚠ CAUTION

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.

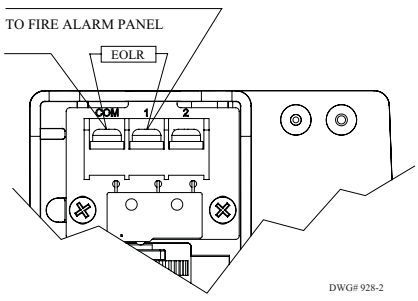
Low Pressure Signal Connection

Fig. 4



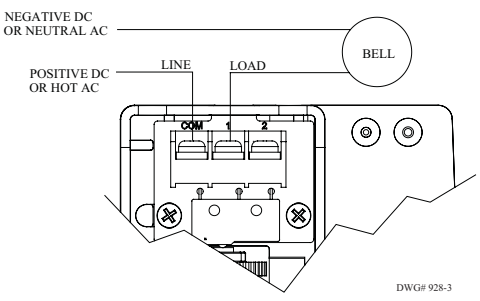
Waterflow Signal Connection

Fig. 5



Local Bell For Waterflow Connection

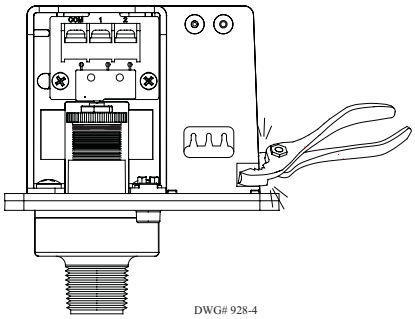
Fig. 6



One Conduit Wiring

Fig. 7

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



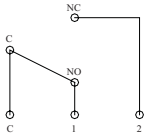
DWG# 928-4

Switch Operation

Fig. 8

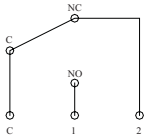
Terminal
C: Common
1: Closed when installed under normal system pressure.
2: Open when installed under normal system pressure. Closes on pressure drop. Use for low pressure supervision.

W/ PRESSURE APPLIED



Terminal
1: Open with no pressure supplied. Closes upon detection of pressure. Use for waterflow indication.
2: Closed with no pressure applied.

W/O PRESSURE APPLIED



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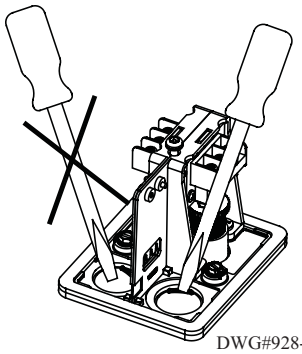
Removing Knockouts

Fig. 9



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⚠ 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.

Engineer/Architect Specifications Pressure Type Waterflow Switch

Pressure type waterflow switches; shall be a Model PS10 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 ½" NPT male pressure connection and shall be connected to the alarm port outlet of; Wet Pipe Alarm Valves, Dry Pipe Valves, Pre-Action Valves, or Deluge Valves. The pressure switch shall be actuated when the alarm line pressure reaches 4 - 8 PSI (0,27 - 0,55 BAR).

Pressure type waterflow switches shall have a maximum service pressure rating of 300 PSI (20,68 BAR) and shall be factory adjusted to operate on a pressure increase of 4 - 8 PSI (0,27 - 0,55 BAR)

Pressure switch shall have one or two form C contacts, switch contact rating 10.1 Amps at 125/250 VAC, 2.0 Amps at 30 VDC.

Pressure type waterflow 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 type waterflow switch shall be Zinc die-cast with rain lip and shall attach with one tamper resistant screw. The Pressure type waterflow switch shall be suitable for indoor or outdoor service with a NEMA 4/IP55 rating.

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