

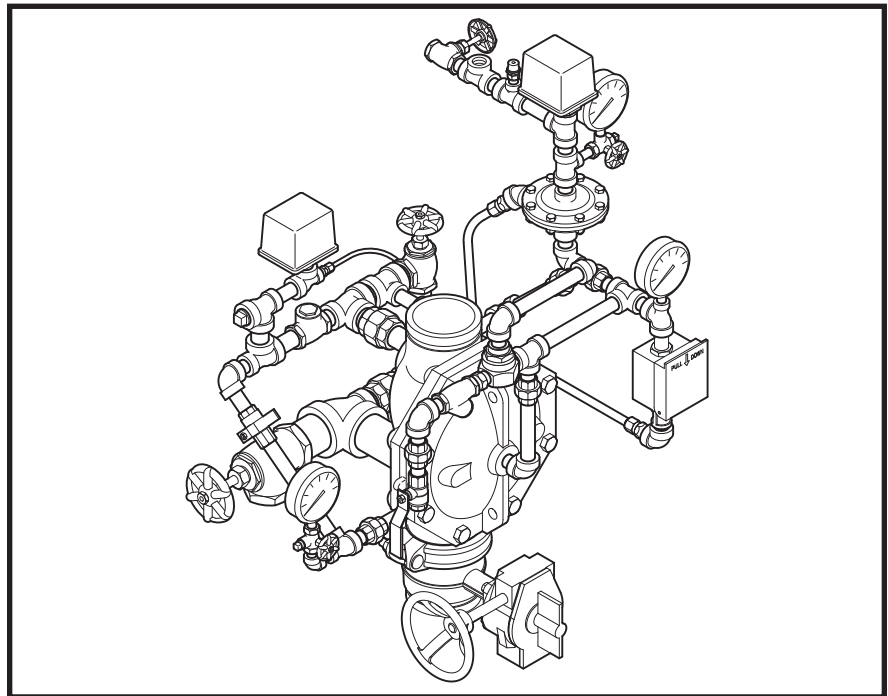
## **DV-5 Deluge Valve, Diaphragm Style, 1-1/2 thru 8 Inch (DN40 thru DN200), Deluge System – Dry Pilot Actuation**

### **General Description**

The DV-5 Deluge Valve (described in Technical Data Sheet TFP1305) is a diaphragm style valve that depends upon water pressure in the Diaphragm Chamber to hold the Diaphragm closed against the water supply pressure. When the DV-5 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, for example an O.S.&Y. gate valve or butterfly valve (Ref. Figures 1 and 4).

Opening of a dry pilot sprinkler releases pneumatic pressure from the pilot line. In turn, the Dry Pilot Actuator (Item D3 - Fig. 3A and 5) opens and releases water from the Diaphragm Chamber faster than it can be replenished through the 1/8 inch (3,2 mm) restriction provided by the Model ASV-1 Automatic Shut-Off Valve in the diaphragm supply connections (Item 5 - Fig. 3A and 5, also described in Technical Data Sheet TFP1384). This results in a rapid pressure drop in the Diaphragm Chamber, and the force differential applied through the Diaphragm that holds it in the set position is reduced below the valve trip point. The water supply pressure then forces the Diaphragm open permitting water to flow into the system piping, as well as through the Alarm Port to actuate the system alarms.

As water flows into the system, the pilot chamber of the Model ASV-1 Automatic Shut-Off Valve (Item 5 - Fig. 3A and 5) becomes pressurized and the ASV-1 automatically shuts off the diaphragm chamber supply flow to the DV-5 Diaphragm Chamber. Shutting off the diaphragm chamber supply flow prevents the DV-5 Diaphragm Chamber from becoming re-pressurized, there-

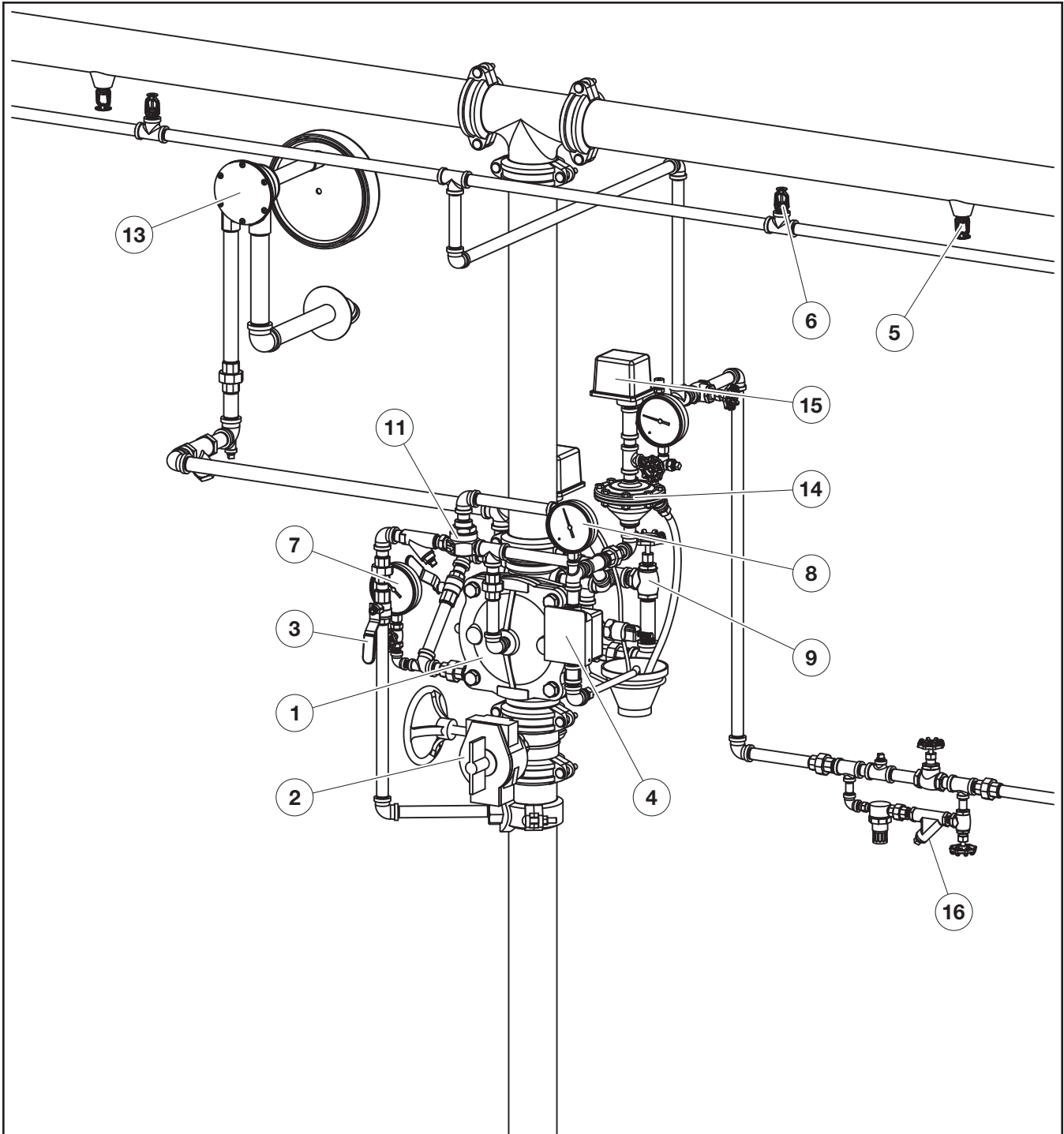


by preventing inadvertent closing of the DV-5 during a fire (as may be the case if an actuation device other than a pilot sprinkler were to be closed after its initial operation, e.g., a remote manual control station).

#### **NOTICE**

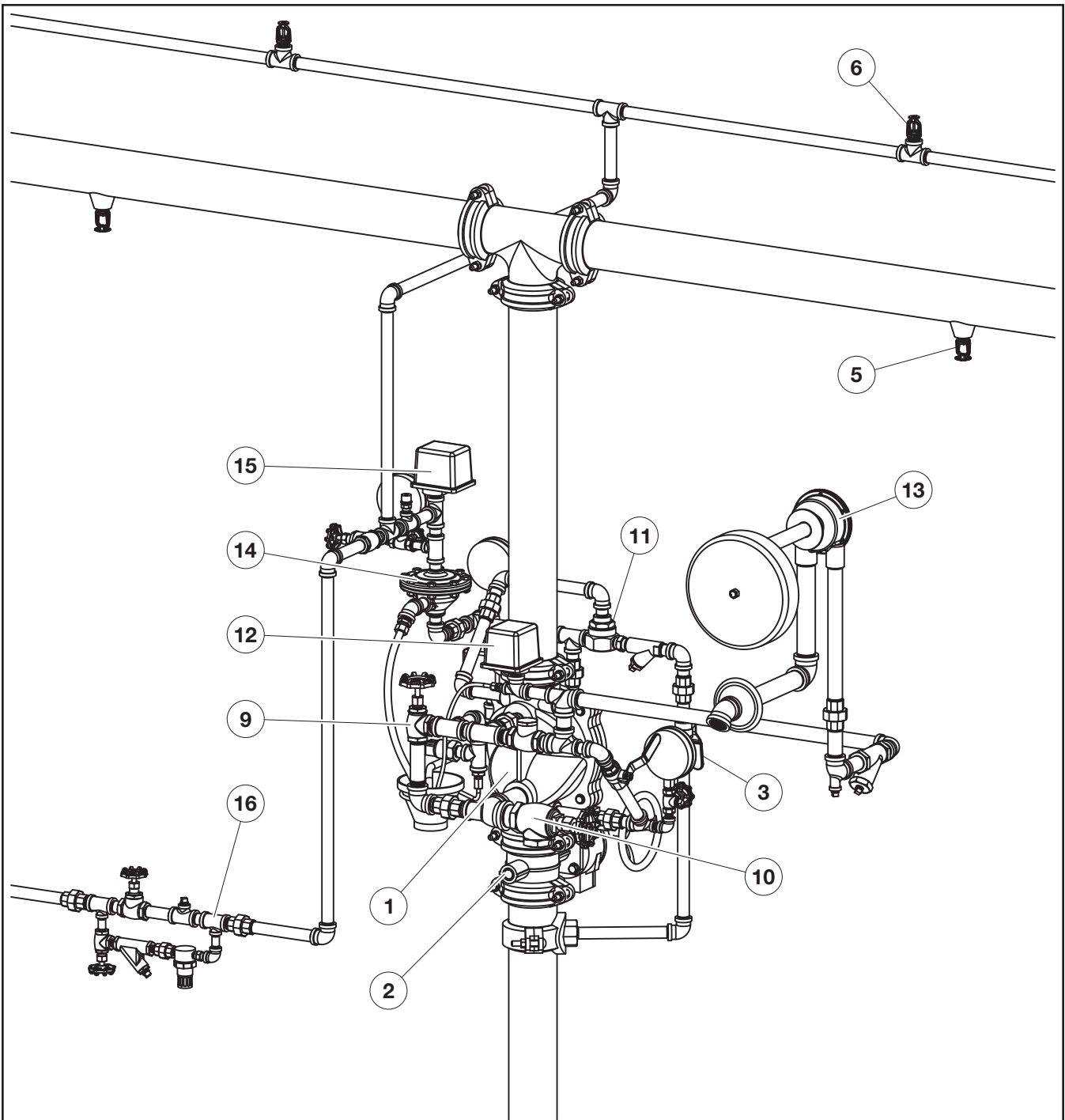
*The DV-5 Deluge Valve with Dry Pilot Actuation Trim described herein must be installed and maintained in compliance with this document, as well as with the applicable standards of the National Fire Protection Association, in addition to the standards of any other authorities having jurisdiction. Failure 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 manufacturer with any questions.*



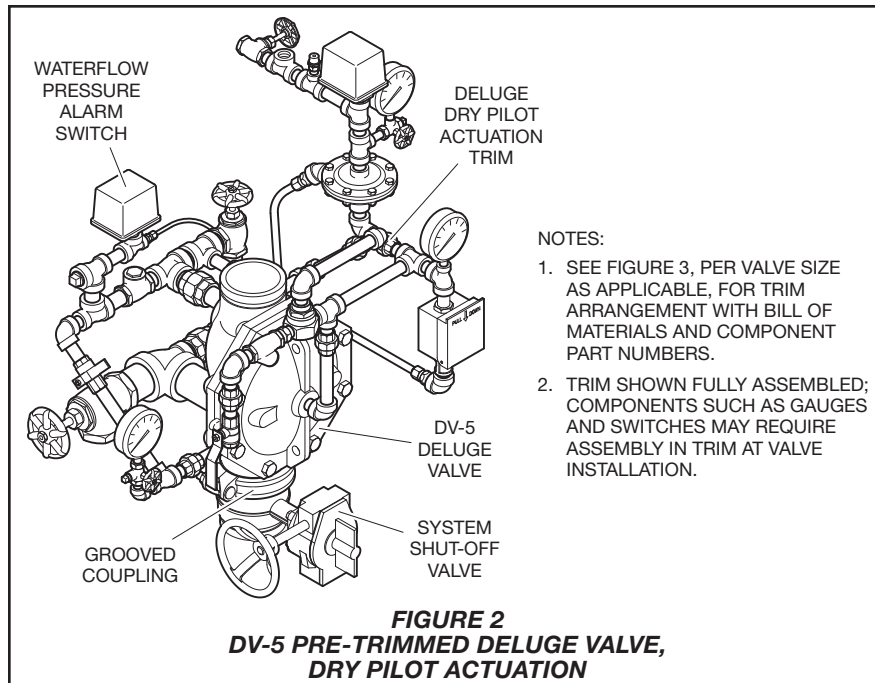
- |  |  |  |
|--|--|--|
| 1 - DV-5 Deluge Valve                                | 7 - Water Supply Pressure Gauge                          | 12 - Waterflow Pressure Alarm Switch<br>(Shown at Rear of Valve) |
| 2 - Main Control Valve (N.O.)                        | 8 - Diaphragm Chamber Pressure<br>Gauge                  | 13 - Water Motor Alarm (Optional)                                |
| 3 - Diaphragm Chamber Supply<br>Control Valve (N.O.) | 9 - System Drain Valve (N.C.)                            | 14 - Dry Pilot Actuator  |
| 4 - Local Manual Control Station                     | 10 - Main Drain Valve (N.C.)<br>(Shown at Rear of Valve) | 15 - Low Pressure Alarm Switch                                   |
| 5 - Open Nozzles or Sprinklers                       | 11 - Diaphragm Chamber Automatic<br>Shut-Off Valve       | 16 - Automatic Air/Nitrogen Supply                               |
| 6 - Dry Pilot Line Sprinklers<br>(Fire Detection)    |  |  |

**FIGURE 1 (1 OF 2)**  
**SYSTEM SCHEMATIC (FRONT VIEW)**  
**DRY PILOT ACTUATION**



- |  |  |                                    |
|--|--|------------------------------------|
| 1 - DV-5 Deluge Valve                                      | 7 - Water Supply Pressure Gauge (Shown at Front of Valve)      | 13 - Water Motor Alarm (Optional)  |
| 2 - Main Control Valve (N.O.)                              | 8 - Diaphragm Chamber Pressure Gauge (Shown at Front of Valve) | 14 - Dry Pilot Actuator            |
| 3 - Diaphragm Chamber Supply Control Valve (N.O.)          | 9 - System Drain Valve (N.C.)                                  | 15 - Low Pressure Alarm Switch     |
| 4 - Local Manual Control Station (Shown at Front of Valve) | 10 - Main Drain Valve (N.C.)                                   | 16 - Automatic Air/Nitrogen Supply |
| 5 - Open Nozzles or Sprinklers                             | 11 - Diaphragm Chamber Automatic Shut-Off Valve                |                                    |
| 6 - Dry Pilot Line Sprinklers (Fire Detection)             | 12 - Waterflow Pressure Alarm Switch                           |                                    |

**FIGURE 1 (2 OF 2)**  
**SYSTEM SCHEMATIC (REAR VIEW)**  
**DRY PILOT ACTUATION**



## Technical Data

**Approvals**  
UL and C-UL Listed  
FM Approved.

### Valve Trim

The Vertical Dry Pilot Actuation Trim (Fig. 3A/3B) and Horizontal Dry Pilot Actuation Trim (Fig. 5) form a part of the laboratory listings and approvals for the DV-5 Valve and are necessary for its proper operation.

Each package of trim includes the following items:

- Water Supply Pressure Gauge
- Diaphragm Chamber Pressure Gauge
- Diaphragm Chamber Connections
- Manual Control Station
- Main Drain Valve
- System Drain Valve
- Alarm Test Valve
- Automatic Drain Valve
- Dry Pilot Actuator
- Dry Pilot Line Pressure Gauge

The following items are included in the Pre-trimmed Valve Assembly and can be ordered separately for the valve trim:

- Model BFV-N Butterfly Valve
- Waterflow Pressure Alarm Switch (PS10-2)
- Low Pressure Alarm Switch (PS40-2)
- Figure 577 Grooved Coupling

To ease field assembly of the trim arrangement, the vertical trim components are provided partially assembled as shown in Figure 3B.

The trim arrangement is provided with galvanized, black, or brass nipples and fittings. The galvanized and brass trim are intended for non-corrosive or corrosive conditions, whereas the black trim is principally intended for use with AFFF systems.

**NOTE:** 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, shown in Figure 3A/3B and 5, with separately ordered 600 psi (41,4 bar) Water Pressure Gauges.

The Dry Pilot Actuation Trim provides for installation of a detection system consisting of pilot sprinklers (heat detectors) and manual control stations interconnected with minimum 1/2 inch (DN15) steel pipe. The dry pilot line, which is to be pressurized with air or nitrogen, is connected to the Dry Pilot Detection connection shown in Figure 3B. Nominal installation dimensions for Vertical Dry Pilot Actuation Trim are shown in Figure 4.

Pilot sprinklers are to be minimum 5.6 K-factor orifice listed or approved automatic sprinklers. Manual Control

Stations are to be the Model MC-1 described in Technical Data Sheet TFP1382.

The Dry Pilot Actuation Trim is provided with a listed and approved 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 A 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

**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). See Technical Data Sheet TFP1241.

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

Supervision of the pressure in the dry pilot actuation system and/or alarm that separately indicates operation of the detection system is recommended and may be required by the authority having jurisdiction. A dual setting low pressure alarm switch, such as Potter Electric PS40-2, is suitable for this service. The recommended pressure settings are as follows:

NO.	DESCRIPTION	QTY.	P/N
1	300 psi/ 2000 kPa Water Pressure Gauge	2	92-343-1-005
2	1/4" Gauge Test Valve	1	46-005-1-002
3	Model MC-1 Manual Control Station	1	52-289-2-001
4	Model AD-1 Automatic Drain Valve	1	52-793-2-004
5	Model ASV-1 Automatic Shut-Off Valve	1	92-343-1-021
6	Item No. Not Used		
7	1/2" Ball Valve	2	46-050-1-004
8	1/2" Spring Loaded Check Valve	1	92-322-1-002
9	1/2" Y-Strainer	1	52-353-1-005
10	3/4" Swing Check Valve	1	46-049-1-005
11	3/4" Angle Valve	2	46-048-1-005
12	Drip Funnel Connector	1	92-211-1-005
13	Drip Funnel Bracket	1	92-211-1-003
14	Drip Funnel	1	92-343-1-007
15	3/32" Vent Fitting	1	92-032-1-002
16	1/4" x 18" Tubing	1	CH
17	1/2" Tubing Connector	1	CH
18	1/2" x 12" Tubing	1	CH
19	1/4" Plug	1	CH
20	3/4" Plug	1	CH
21	1/2" Union	5	CH
22	3/4" Union	2	CH
23	1/4" 90° Elbow	1	CH
24	1/2" 90° Elbow	8	CH
25	3/4" 90° Elbow	1	CH
26	1/2" Tee	3	CH
27	1/2" x 1/4" x 1/2" Tee	3	CH
28	3/4" Tee	2	CH
29	3/4" x 1/2" x 3/4" Tee	2	CH
30	3/4" x 3/4" x 1/2" Tee	1	CH

NO.	DESCRIPTION	QTY.	P/N
31	1/4" x Close Nipple	2	CH
32	1/2" x Close Nipple	3	CH
33	1/2" x 1-1/2" Nipple	10	CH
34	1/2" x 2" Nipple	1	CH
35	1/2" x 2-1/2" Nipple	4	CH
36	1/2" x 5" Nipple	2	CH
37	1/2" x 7" Nipple	1	CH
38	Select Nipple per Table	1	CH
39	Select Nipple per Table	1	CH
40	Select Nipple per Table	1	CH
41	3/4" x Close Nipple	1	CH
42	3/4" x 1-1/2" Nipple	8	CH
43	3/4" x 2" Nipple	1	CH
44	3/4" x 4" Nipple	1	CH
45	Select Nipple per Table	1	CH

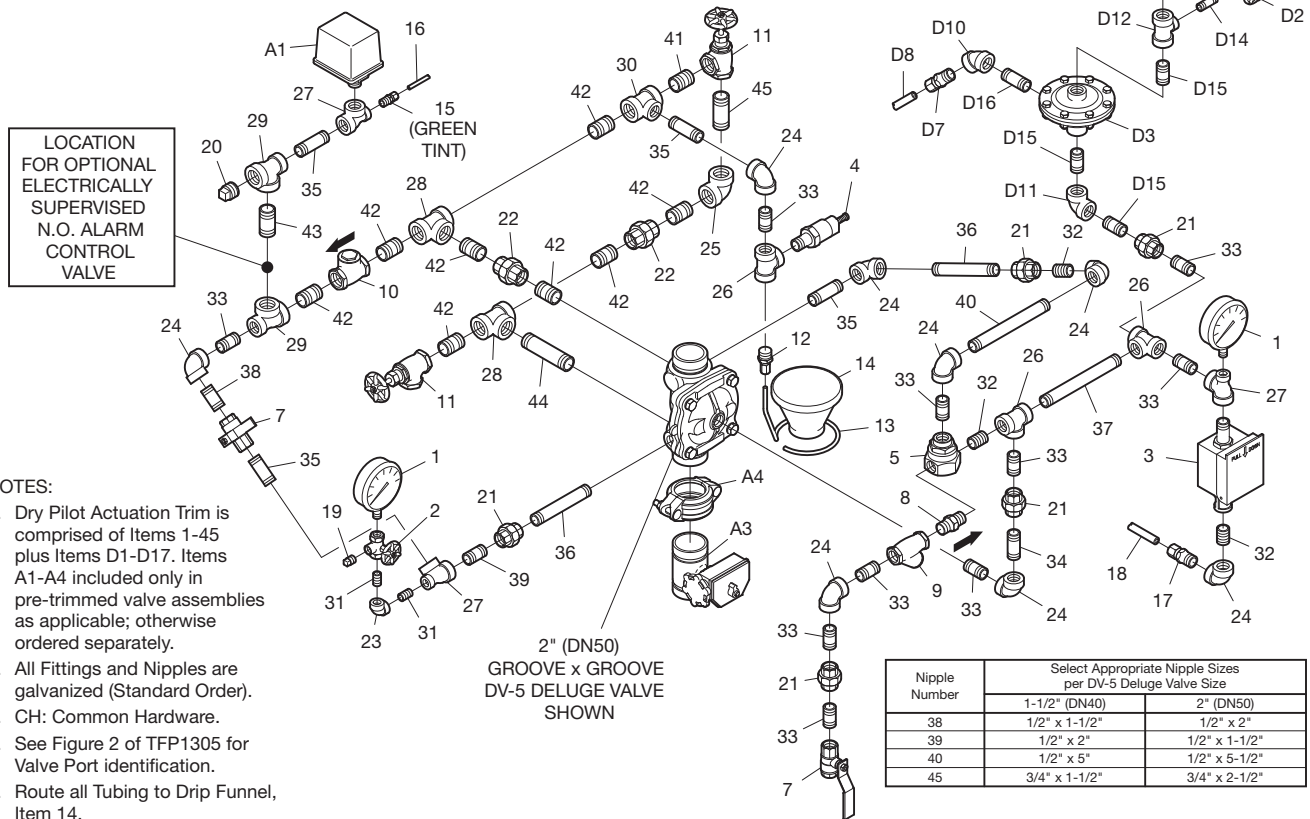
  

NO.	DESCRIPTION	QTY.	P/N
D1	250 psi/ 1750 kPa Air Pressure Gauge	1	92-343-1-012
D2	1/4" Gauge Test Valve	1	46-005-1-002
D3	Model DP-1 Dry Pilot Actuator	1	52-280-1-001
D4	Item No. Not Used		
D5	1/2" Globe Valve	1	46-047-1-004
D6	1/4" Pressure Relief Valve	1	92-343-1-020
D7	1/2" Tubing Connector	1	CH
D8	1/2" x 24" Tubing	1	CH
D9	1/4" Plug	1	CH
D10	1/2" 45° Elbow	1	CH
D11	1/2" 90° Elbow	1	CH
D12	1/2" x 1/2" x 1/4" Tee	2	CH
D13	1/2" Tee	2	CH
D14	1/4" x 1-1/2" Nipple	1	CH

NO.	DESCRIPTION	QTY.	P/N
D15	1/2" x 1-1/2" Nipple	6	CH
D16	1/2" x 2" Nipple	1	CH
D17	1/2" x 3" Nipple	1	CH

COMPONENTS INCLUDED ONLY IN PRE-TRIMMED VALVE ASSEMBLIES:

A1	Waterflow Pressure Alarm Switch, Model PS10-2	1	25710
A2	Low Air Pressure Alarm Switch, Model PS40-2	1	25730
A3	Butterfly Valve, Power Ball 300: 1-1/2" (DN40)	1	51024A
	2" (DN50)	1	51021A
A4	Figure 577 Coupling: 1-1/2" (DN40)	1	57715ACP
	2" (DN50)	1	57720ACP



**NOTES:**

- Dry Pilot Actuation Trim is comprised of Items 1-45 plus Items D1-D17. Items A1-A4 included only in pre-trimmed valve assemblies as applicable; otherwise ordered separately.
- All Fittings and Nipples are galvanized (Standard Order).
- CH: Common Hardware.
- See Figure 2 of TFP1305 for Valve Port identification.
- Route all Tubing to Drip Funnel, Item 14.

**FIGURE 3A (1 OF 3)**  
**1-1/2 AND 2 INCH (DN40 AND DN50) DV-5 DELUGE VALVES**  
**EXPLODED VIEW OF VERTICAL DRY PILOT ACTUATION TRIM**



NO.	DESCRIPTION	QTY.	P/N
1	300 psi/ 2000 kPa Water Pressure Gauge	2	92-343-1-005
2	1/4" Gauge Test Valve	1	46-005-1-002
3	Model MC-1 Manual Control Station	1	52-289-2-001
4	Model AD-1 Automatic Drain Valve	1	52-793-2-004
5	Model ASV-1 Automatic Shut-Off Valve	1	92-343-1-021
6	Item No. Not Used		
7	1/2" Ball Valve	2	46-050-1-004
8	1/2" Spring Loaded Check Valve	1	92-322-1-002
9	1/2" Y-Strainer	1	52-353-1-005
10	3/4" Swing Check Valve	1	46-048-1-005
11	3/4" Angle Valve	1	46-048-1-005
12	1-1/4" Angle Valve	1	46-048-1-007
13	Drip Funnel Connector	1	92-211-1-005
14	Drip Funnel Bracket	1	92-211-1-003
15	Drip Funnel	1	92-343-1-007
16	3/32" Vent Fitting	1	92-032-1-002
17	1/4" x 18" Tubing	1	CH
18	1/2" Tubing Connector	1	CH
19	1/2" x 12" Tubing	1	CH
20	1/4" Plug	1	CH
21	3/4" Plug	1	CH
22	1/2" Union	5	CH
23	3/4" Union	2	CH
24	1/4" 90° Elbow	1	CH
25	1/2" 90° Elbow	8	CH
26	3/4" 90° Elbow	1	CH
27	1/2" Tee	3	CH
28	1/2" x 1/4" x 1/2" Tee	3	CH
29	3/4" Tee	1	CH
30	3/4" x 1/2" x 3/4" Tee	2	CH
31	3/4" x 3/4" x 1/2" Tee	1	CH

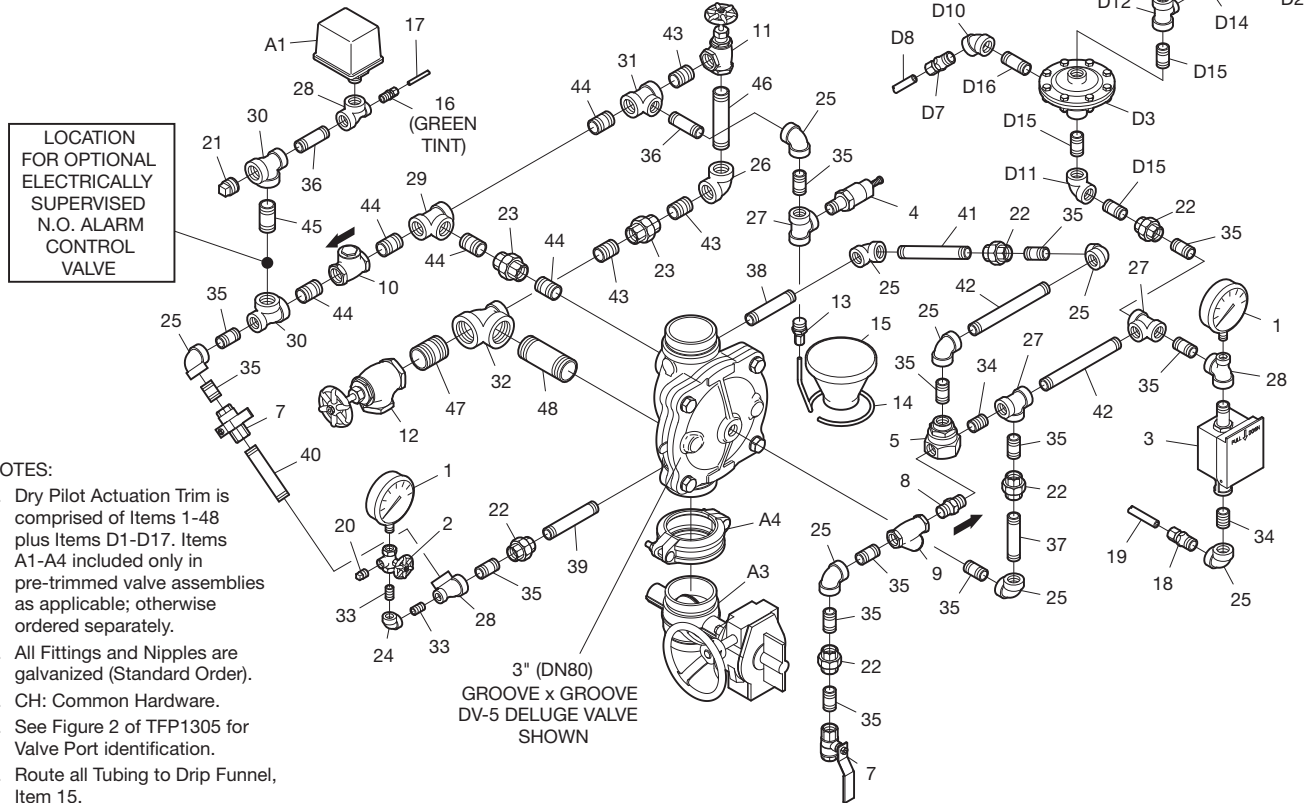
NO.	DESCRIPTION	QTY.	P/N
32	1-1/4" x 3/4" x 1-1/4" Tee	1	CH
33	1/4" x Close Nipple	2	CH
34	1/2" x Close Nipple	2	CH
35	1/2" x 1-1/2" Nipple	13	CH
36	1/2" x 2-1/2" Nipple	2	CH
37	1/2" x 3-1/2" Nipple	1	CH
38	1/2" x 4" Nipple	1	CH
39	1/2" x 4-1/2" Nipple	1	CH
40	1/2" x 5" Nipple	1	CH
41	1/2" x 5-1/2" Nipple	1	CH
42	1/2" x 7" Nipple	2	CH
43	3/4" x Close Nipple	3	CH
44	3/4" x 1-1/2" Nipple	5	CH
45	3/4" x 2" Nipple	1	CH
46	3/4" x 2-1/2" Nipple	1	CH
47	1-1/4" x 2" Nipple	1	CH
48	1-1/4" x 4" Nipple	1	CH

NO.	DESCRIPTION	QTY.	P/N
D1	250 psi/ 1750 kPa Air Pressure Gauge	1	92-343-1-012
D2	1/4" Gauge Test Valve	1	46-005-1-002
D3	Model DP-1 Dry Pilot Actuator	1	52-280-1-001
D4	Item No. Not Used		
D5	1/2" Globe Valve	1	46-047-1-004
D6	1/4" Pressure Relief Valve	1	92-343-1-020
D7	1/2" Tubing Connector	1	CH
D8	1/2" x 24" Tubing	1	CH
D9	1/4" Plug	1	CH
D10	1/2" 45° Elbow	1	CH
D11	1/2" 90° Elbow	1	CH
D12	1/2" x 1/2" x 1/4" Tee	2	CH
D13	1/2" Tee	2	CH

NO.	DESCRIPTION	QTY.	P/N
D14	1/4" x 1-1/2" Nipple	1	CH
D15	1/2" x 1-1/2" Nipple	6	CH
D16	1/2" x 2" Nipple	1	CH
D17	1/2" x 3" Nipple	1	CH

COMPONENTS INCLUDED ONLY IN PRE-TRIMMED VALVE ASSEMBLIES:

A1	Waterflow Pressure Alarm Switch, Model PS10-2	1	25710
A2	Low Air Pressure Alarm Switch, Model PS40-2	1	25730
A3	Model BFV-N Butterfly Valve, 3" (DN80)	1	59300F030N
A4	Figure 577 Coupling, 3" (DN80)	1	57730ACP



- NOTES:
1. Dry Pilot Actuation Trim is comprised of Items 1-48 plus Items D1-D17. Items A1-A4 included only in pre-trimmed valve assemblies as applicable; otherwise ordered separately.
  2. All Fittings and Nipples are galvanized (Standard Order).
  3. CH: Common Hardware.
  4. See Figure 2 of TFP1305 for Valve Port identification.
  5. Route all Tubing to Drip Funnel, Item 15.

**FIGURE 3A (2 OF 3)**  
**3 INCH (DN80) DV-5 DELUGE VALVE**  
**EXPLODED VIEW OF VERTICAL DRY PILOT ACTUATION TRIM**

NO.	DESCRIPTION	QTY.	P/N
1	300 psi/ 2000 kPa Water Pressure Gauge	2	92-343-1-005
2	1/4" Gauge Test Valve	1	46-005-1-002
3	Model MC-1 Manual Control Station	1	52-289-2-001
4	Model AD-1 Automatic Drain Valve	1	52-793-2-004
5	Model ASV-1 Automatic Shut-Off Valve	1	92-343-1-021
6	Item No. Not Used		
7	1/2" Ball Valve	2	46-050-1-004
8	1/2" Spring Loaded Check Valve	1	92-322-1-002
9	1/2" Y-Strainer	1	52-353-1-005
10	3/4" Swing Check Valve	1	46-049-1-005
11	1" Angle Valve	1	46-048-1-006
12	2" Angle Valve	1	46-048-1-009
13	Drip Funnel Connector	1	92-211-1-005
14	Drip Funnel Bracket	1	92-211-1-003
15	Drip Funnel	1	92-343-1-007
16	3/32" Vent Fitting	1	92-032-1-002
17	Select Tubing per Table	1	CH
18	1/2" Tubing Connector	1	CH
19	1/2" x 24" Tubing	1	CH
20	1/4" Plug	1	CH
21	3/4" Plug	1	CH
22	1/2" Union	5	CH
23	1" Union	2	CH
24	1/4" 90° Elbow	1	CH
25	1/2" 90° Elbow	8	CH
26	1" 90° Elbow	1	CH
27	1/2" Tee	3	CH
28	1/2" x 1/4" x 1/2" Tee	3	CH
29	3/4" x 1/2" x 3/4" Tee	2	CH
30	1" x 1" x 1/2" Tee	1	CH
31	1" x 3/4" x 1" Tee	1	CH
32	2" x 1" x 2" Tee	1	CH
33	1/4" x Close Nipple	2	CH
34	1/2" x Close Nipple	2	CH
35	1/2" x 1-1/2" Nipple	10	CH
36	1/2" x 2-1/2" Nipple	3	CH
37	Select Nipple per Table	1	CH
38	1/2" x 5" Nipple	2	CH
39	1/2" x 6" Nipple	1	CH
40	1/2" x 7" Nipple	2	CH
41	Select Nipple per Table	1	CH
42	Select Nipple per Table	1	CH
43	Select Nipple per Table	1	CH

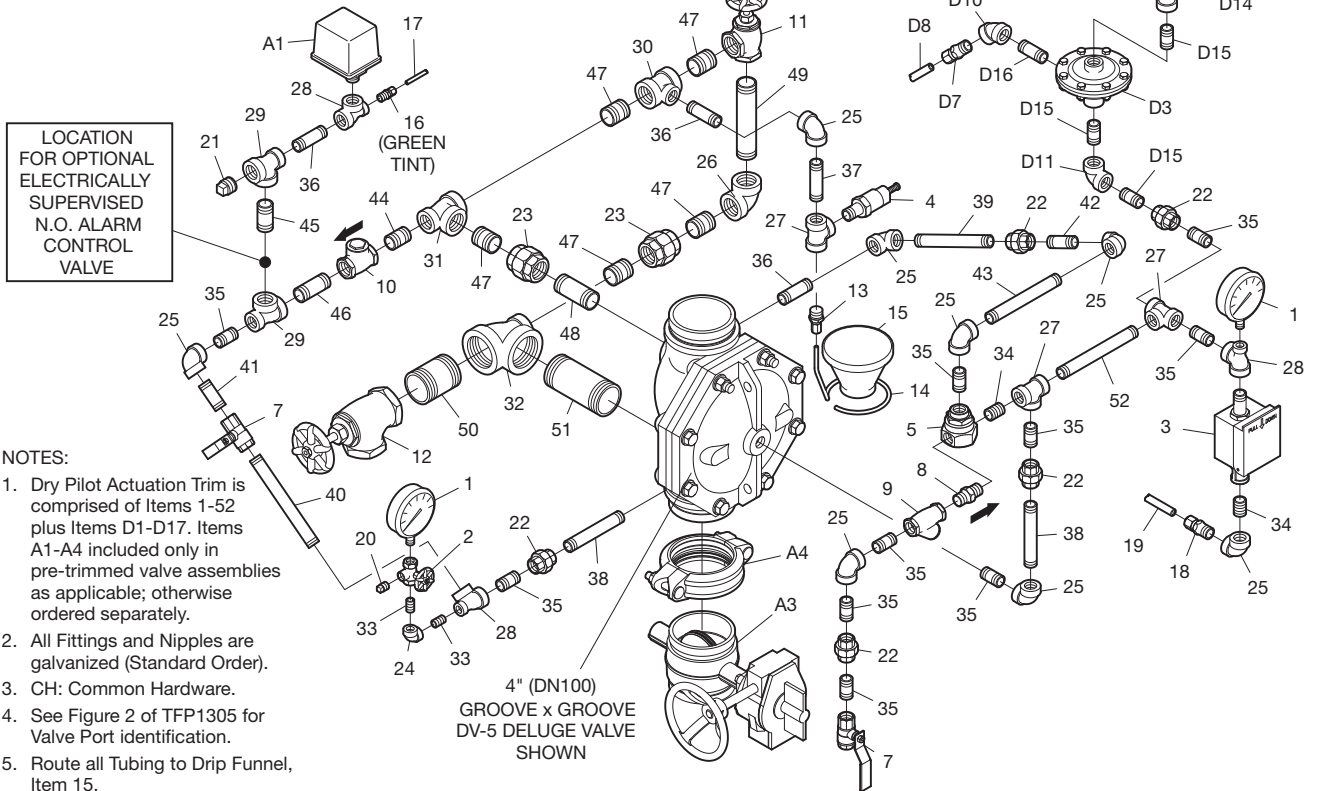
NO.	DESCRIPTION	QTY.	P/N
44	3/4" x 1-1/2" Nipple	1	CH
45	3/4" x 2" Nipple	1	CH
46	Select Nipple per Table	1	CH
47	1" x Close Nipple	5	CH
48	1" x 3" Nipple	1	CH
49	Select Nipple per Table	1	CH
50	2" x 3" Nipple	1	CH
51	2" x 5" Nipple	1	CH
52	Select Nipple per Table	1	CH
D1	250 psi/ 1750 kPa Air Pressure Gauge	1	92-343-1-012
D2	1/4" Gauge Test Valve	1	46-005-1-002
D3	Model DP-1 Dry Pilot Actuator	1	52-280-1-001
D4	Item No. Not Used		
D5	1/2" Globe Valve	1	46-047-1-004
D6	1/4" Pressure Relief Valve	1	92-343-1-020
D7	1/2" Tubing Connector	1	CH
D8	1/2" x 24" Tubing	1	CH
D9	1/4" Plug	1	CH
D10	1/2" 45° Elbow	1	CH
D11	1/2" 90° Elbow	1	CH
D12	1/2" x 1/2" x 1/4" Tee	2	CH
D13	1/2" Tee	2	CH
D14	1/4" x 1-1/2" Nipple	1	CH
D15	1/2" x 1-1/2" Nipple	6	CH
D16	1/2" x 2" Nipple	1	CH
D17	1/2" x 3" Nipple	1	CH

**COMPONENTS INCLUDED ONLY IN PRE-TRIMMED VALVE ASSEMBLIES:**

A1	Waterflow Pressure Alarm Switch, Model PS10-2	1	25710
A2	Low Air Pressure Alarm Switch, Model PS40-2	1	25730
A3	Model BFV-N Butterfly Valve:		
	4" (DN100)	1	59300F040N
	6" (DN150)	1	59300F060N
	8" (DN200)	1	59300F080N
A4	Figure 577 Coupling:		
	4" (DN100)	1	57740ACP
	6" (DN150)	1	57760ACP
	8" (DN200)	1	57780ACP

Tube No.	Select Appropriate Tube Size per DV-5 Deluge Valve Size		
	4" (DN100)	6" (DN150)	8" (DN200)
17	1/4" x 24"	1/4" x 24"	1/4" x 32"

Nipple No.	Select Appropriate Nipple Sizes per DV-5 Deluge Valve Size		
	4" (DN100)	6" (DN150)	8" (DN200)
37	1/2" x 3"	1/2" x 3"	1/2" x 5"
41	1/2" x 2-1/2"	1/2" x 5-1/2"	1/2" x 8-1/2"
42	1/2" x 2"	1/2" x 3"	1/2" x 3-1/2"
43	1/2" x 6-1/2"	1/2" x 7-1/2"	1/2" x 9"
46	3/4" x 2-1/2"	3/4" x 3-1/2"	3/4" x 4-1/2"
49	1" x 6"	1" x 9"	1" x 12"
52	1/2" x 7"	1/2" x 7"	1/2" x 9"



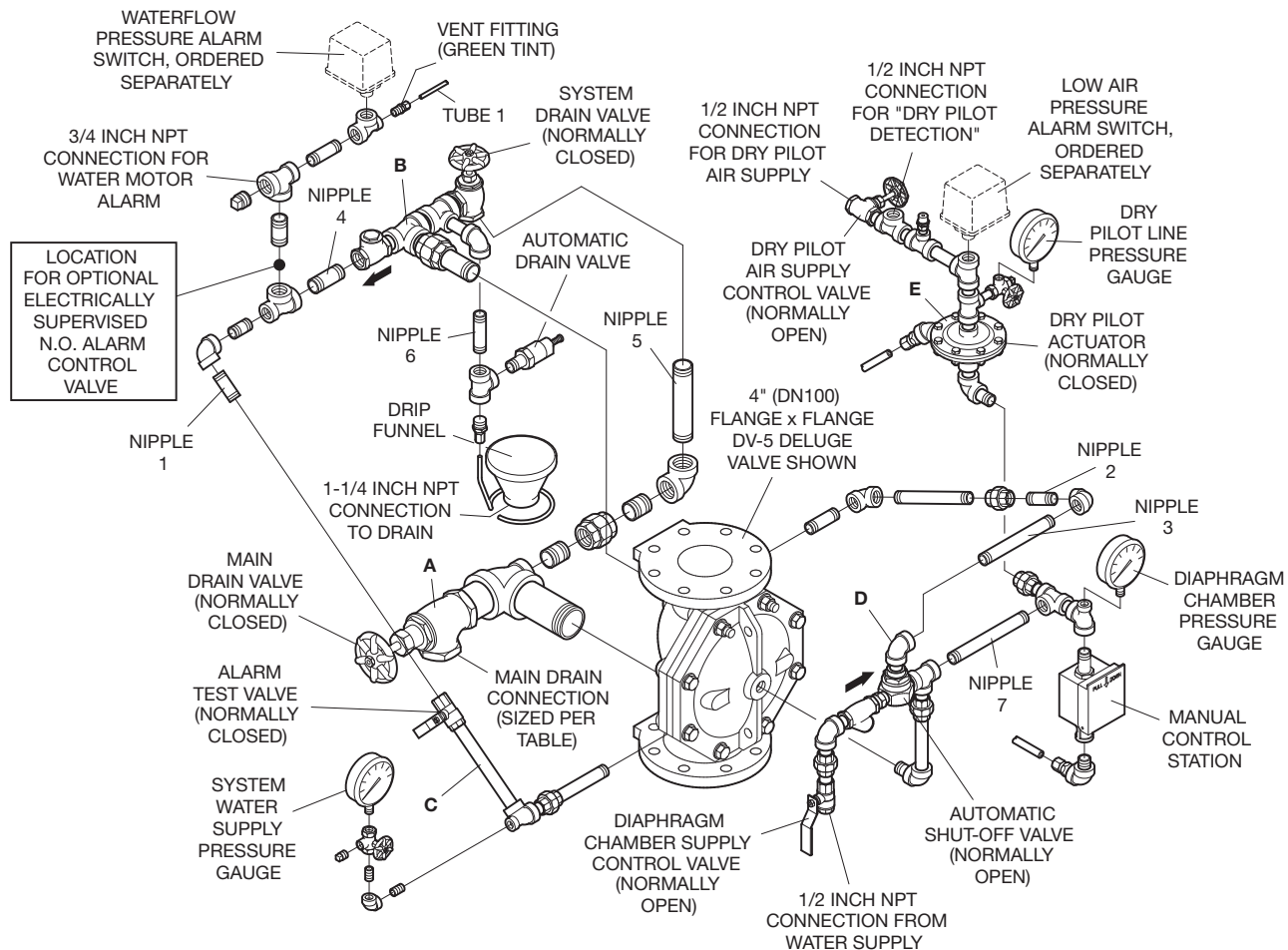
- NOTES:**
1. Dry Pilot Actuation Trim is comprised of Items 1-52 plus Items D1-D17. Items A1-A4 included only in pre-trimmed valve assemblies as applicable; otherwise ordered separately.
  2. All Fittings and Nipples are galvanized (Standard Order).
  3. CH: Common Hardware.
  4. See Figure 2 of TFP1305 for Valve Port Identification.
  5. Route all Tubing to Drip Funnel, Item 15.

**FIGURE 3A (3 OF 3)**  
**4, 6, AND 8 INCH (DN100, DN150 AND DN200) DV-5 DELUGE VALVES**  
**EXPLODED VIEW OF VERTICAL DRY PILOT ACTUATION TRIM**

**NOTES:**

1. Install subassemblies in alphabetical order.
2. See Figure 2 of TFP1305 for Valve Port identification.
3. Route all Tubing to Drip Funnel.
4. When DV-5 trips, Automatic Shut-Off Valve shuts off diaphragm chamber supply.
5. Nipples 1-7 and Tube 1 vary in length relative to DV-5 size. Select per table. All other nipples and tubing packed unassembled shall be installed per appropriate trim exploded view, Figure 3A Part 1, 2, or 3.

Nipple Number	Select Appropriate Nipple and Tube Sizes per DV-5 Deluge Valve Size					
	1-1/2" (DN40)	2" (DN50)	3" (DN80)	4" (DN100)	6" (DN150)	8" (DN200)
1	1/2" x Close	1/2" x 2"	1/2" x 1-1/2"	1/2" x 2-1/2"	1/2" x 5-1/2"	1/2" x 8-1/2"
2	1/2" x Close	1/2" x Close	1/2" x 1-1/2"	1/2" x 2"	1/2" x 3"	1/2" x 3-1/2"
3	1/2" x 5"	1/2" x 5-1/2"	1/2" x 7"	1/2" x 6-1/2"	1/2" x 7-1/2"	1/2" x 9"
4	3/4" x 1-1/2"	3/4" x 1-1/2"	3/4" x 1-1/2"	3/4" x 2-1/2"	3/4" x 3-1/2"	3/4" x 4-1/2"
5	3/4" x 1-1/2"	3/4" x 2-1/2"	3/4" x 4-1/2"	1" x 6"	1" x 9"	1" x 12"
6	1/2" x 1-1/2"	1/2" x 1-1/2"	1/2" x 1-1/2"	1/2" x 3"	1/2" x 3"	1/2" x 5"
7	1/2" x 7"	1/2" x 7"	1/2" x 7"	1/2" x 7"	1/2" x 7"	1/2" x 9"
Main Drain Size	3/4" NPT	3/4" NPT	1-1/4" NPT	2" NPT	2" NPT	2" NPT
Tube 1	1/4" x 18"	1/4" x 18"	1/4" x 18"	1/4" x 24"	1/4" x 24"	1/4" x 32"



**FIGURE 3B**  
**1-1/2 THRU 8 INCH (DN40 THRU DN200) DV-5 DELUGE VALVES**  
**OPERATIONAL COMPONENTS OF VERTICAL DRY PILOT ACTUATION TRIM**  
**EXPLODED ARRANGEMENT OF SEMI-PREASSEMBLED TRIM**



Valve Size	Nominal Installation Dimensions in Inches and (mm)												
	A	B	C	D	E	F	G	H	J	K	L	M	N
1-1/2" (DN40)	7.00 (177,8)	8.88 (225,4)	13.19 (335,0)	13.13 (333,4)	24.69 (627,1)	1.25 (31,8)	5.81 (147,6)	1.81 (46,0)	3.00 (76,2)	7.00 (177,8)	3.88 (98,4)	8.00 (204,0)	4.02 (102,1)
2" (DN50)	7.13 (181,0)	9.13 (231,8)	13.19 (335,0)	13.13 (333,4)	25.00 (635,0)	0.94 (23,8)	6.00 (152,4)	2.00 (50,8)	3.00 (76,2)	7.00 (177,8)	3.00 (76,2)	8.63 (220,0)	4.09 (103,9)
3" (DN80)	7.81 (198,4)	10.44 (265,1)	13.19 (335,0)	13.13 (333,4)	28.56 (725,5)	1.63 (41,3)	6.69 (170,0)	2.69 (68,3)	4.25 (108,0)	7.00 (177,8)	0.88 (22,2)	12.75 (324,0)	3.85 (98,0)
4" (DN100)	10.00 (254,0)	11.75 (298,5)	14.31 (363,5)	13.13 (333,4)	31.50 (800,1)	1.75 (44,5)	8.56 (217,5)	4.44 (112,7)	6.25 (158,8)	7.13 (181,0)	0.63 (15,9)	15.75 (400,0)	4.56 (116,0)
6" (DN150)	11.38 (289,0)	14.31 (363,5)	15.31 (388,9)	13.13 (333,4)	32.69 (830,3)	3.50 (88,9)	9.94 (252,4)	5.81 (147,6)	6.25 (158,8)	7.13 (181,0)	1.81 (46,0)	18.13 (460,4)	5.86 (149,0)
8" (DN200)	12.00 (304,8)	16.00 (406,4)	16.25 (412,8)	13.13 (333,4)	35.00 (889,0)	1.75 (44,5)	10.75 (273,1)	6.50 (165,1)	6.25 (158,8)	7.13 (181,0)	7.38 (187,3)	22.50 (570,0)	5.26 (134,0)

\* MINIMUM CLEARANCE

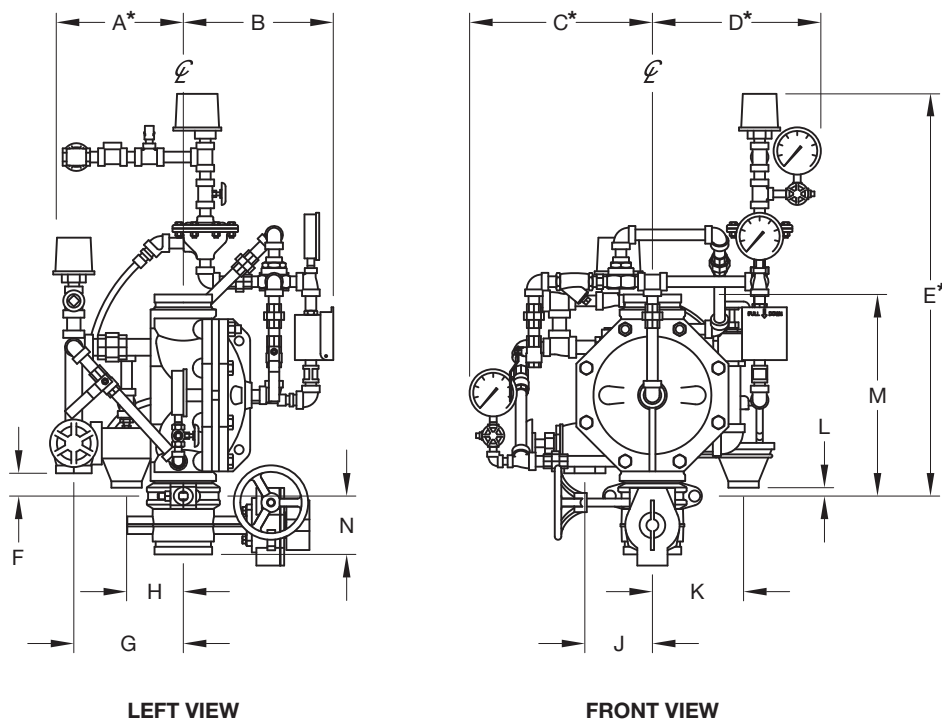


FIGURE 4  
1-1/2 THRU 8 INCH (DN40 THRU DN200) DV-5 DELUGE VALVES  
VERTICAL DRY PILOT ACTUATION / NOMINAL INSTALLATION DIMENSIONS

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

The Pressure Relief Valve (Ref. Item D6 - Fig. 3A and 5) 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.

## Materials of Construction

**NOTES:** The galvanized or brass, nipples and fittings for the Valve Trim provide corrosion resistance and are intended to extend the life of the installation of the DV-5 Valve when exposed to internal and external corrosive conditions. Although these selections are intended to resist corrosion, it is recommended that the end user or other technical expert familiar with conditions at the proposed installation be consulted with respect to these selections for a given corrosive condition.

Systems using a seawater or brackish water supply require special considerations in order to extend the life of the valve and trim. This type of system ideally should be configured with a primary source of clean fresh water (e.g., a pressurized water tank) and that only upon system operation is the secondary water supply (seawater or brackish water) allowed to enter the system. After the system operation, the system should be thoroughly flushed with clean fresh water. Following this recommendation will increase the service life of the DV-5 Valve and Valve Trim.

**Pressure Gauges.** Bronze bourdon tube with brass socket.

**Gauge Test Valve.** Bronze body per ASTM B584.

**Manual Control Station.** Corrosion resistant copper alloys and glass filled PTFE seals. Thermoplastic enclosure.

**Automatic Drain Valve.** Brass body per ASTM B584, Type 440 stainless steel or brass per ASTM B134 Ball, and galvanized steel inlet.

**Automatic Shut-Off Valve.** Brass body, cover, and center seat per UNS C36000, Type 316 stainless steel spring, and Nylon fabric reinforced, natural rubber diaphragm per ASTM D2000.

**Ball Valve.** Corrosion resistant copper alloys and glass filled PTFE seals.

**Spring Loaded Check Valve.** Brass body and buna-n seal.

**Y-Strainer.** Bronze body per ASTM B584 and Type 304 stainless steel screen.

**Swing Check Valve.** Bronze body per ASTM B584 and buna-n seal.

**Angle Valve.** Bronze body per ASTM B584 and nitrile disc (TEFLON disc for 2 inch size valve).

**3/32" Vent Fitting.** Brass per ASTM B16.

**Tubing Connector.** Brass per ASTM B16.

**Tubing.** Type L copper per ASTM B88.

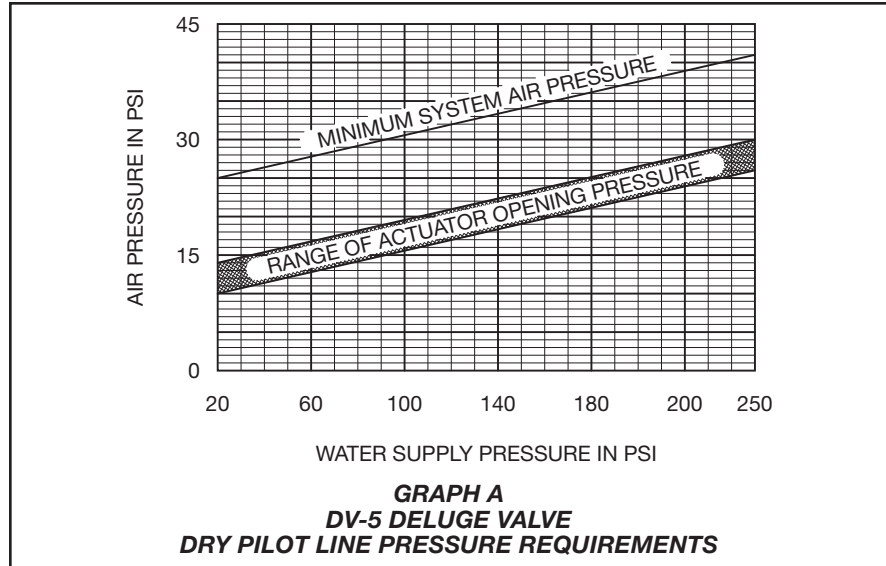
**Dry Pilot Actuator.** Bronze body per ASTM B62, Type 302 stainless steel spring, Type 304 seat and guide, brass per ASTM diaphragm retainer, nitrile diaphragm, and buna-n seal.

**Globe Valve.** Bronze body per ASTM B584 and nitrile disc.

**Pressure Relief Valve.** Brass body, stainless steel spring, and buna-n disc.

**Pipe Fittings.** Galvanized malleable iron per ANSI B16.3 or cast iron per ANSI B16.4; black malleable iron per ANSI B16.3 or cast iron per ANSI B16.4; or, bronze per ANSI B16.15.

**Pipe Nipples.** Schedule 40 galvanized steel per ASTM A53 or A135; Schedule 40 black steel per ASTM A53 or A135; or, Schedule 40 red brass pipe per ASTM B43.



## Installation

### General Instructions

Proper operation of the DV-5 Deluge 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-5 Valve from functioning properly, as well as void listings, approvals, and the manufacturer's warranties.

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

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

Heat tracing of the DV-5 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-5 Deluge 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-5 Valve must be trimmed in accordance with Figure 3A/3B or 5.

**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 inches (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 Chamber Supply Control Valve to the inlet side of the system's Main Control Valve in order to facilitate setting of the DV-5 Valve (Ref. Figure 4).

**Step 8.** An Inspector's Test Connection, as described in the Technical Data section, must be provided for Dry Pilot Actuation systems.

**Step 9.** An Air Maintenance Device, as described in the Technical Data Section, must be provided for Dry Pilot Actuation.

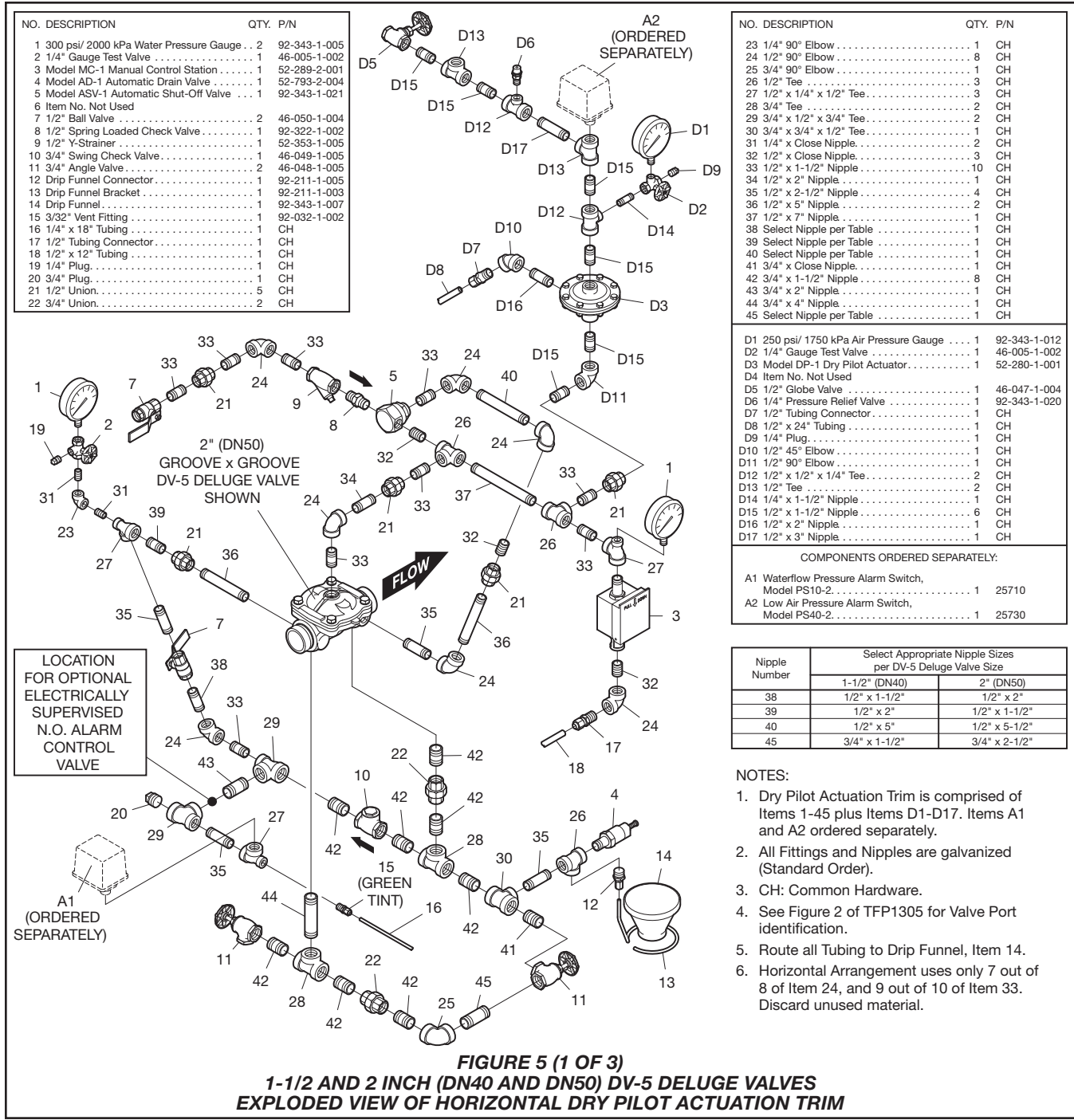
**Step 10.** A desiccant dryer, when specified for Dry Pilot Actuation, is to be installed between a drip leg and the Air Maintenance Device.

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

**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



NO.	DESCRIPTION	QTY.	P/N
1	300 psi/ 2000 kPa Water Pressure Gauge	2	92-343-1-005
2	1/4" Gauge Test Valve	1	46-005-1-002
3	Model MC-1 Manual Control Station	1	52-289-2-001
4	Model AD-1 Automatic Drain Valve	1	52-793-2-004
5	Model ASV-1 Automatic Shut-Off Valve	1	92-343-1-021
6	Item No. Not Used		
7	1/2" Ball Valve	2	46-050-1-004
8	1/2" Spring Loaded Check Valve	1	92-322-1-002
9	1/2" Y-Strainer	1	52-353-1-005
10	3/4" Swing Check Valve	1	46-049-1-005
11	3/4" Angle Valve	2	46-048-1-005
12	Drip Funnel Connector	1	92-211-1-005
13	Drip Funnel Bracket	1	92-211-1-003
14	Drip Funnel	1	92-343-1-007
15	3/32" Vent Fitting	1	92-032-1-002
16	1/4" x 18" Tubing	1	CH
17	1/2" Tubing Connector	1	CH
18	1/2" x 12" Tubing	1	CH
19	1/4" Plug	1	CH
20	3/4" Plug	1	CH
21	1/2" Union	5	CH
22	3/4" Union	2	CH

NO.	DESCRIPTION	QTY.	P/N
23	1/4" 90° Elbow	1	CH
24	1/2" 90° Elbow	8	CH
25	3/4" 90° Elbow	1	CH
26	1/2" Tee	3	CH
27	1/2" x 1/4" x 1/2" Tee	3	CH
28	3/4" Tee	2	CH
29	3/4" x 1/2" x 3/4" Tee	2	CH
30	3/4" x 3/4" x 1/2" Tee	1	CH
31	1/4" x Close Nipple	2	CH
32	1/2" x Close Nipple	3	CH
33	1/2" x 1-1/2" Nipple	10	CH
34	1/2" x 2" Nipple	1	CH
35	1/2" x 2-1/2" Nipple	4	CH
36	1/2" x 5" Nipple	2	CH
37	1/2" x 7" Nipple	1	CH
38	Select Nipple per Table	1	CH
39	Select Nipple per Table	1	CH
40	Select Nipple per Table	1	CH
41	3/4" x Close Nipple	1	CH
42	3/4" x 1-1/2" Nipple	8	CH
43	3/4" x 2" Nipple	1	CH
44	3/4" x 4" Nipple	1	CH
45	Select Nipple per Table	1	CH

D1	250 psi/ 1750 kPa Air Pressure Gauge	1	92-343-1-012
D2	1/4" Gauge Test Valve	1	46-005-1-002
D3	Model DP-1 Dry Pilot Actuator	1	52-280-1-001
D4	Item No. Not Used		
D5	1/2" Globe Valve	1	46-047-1-004
D6	1/4" Pressure Relief Valve	1	92-343-1-020
D7	1/2" Tubing Connector	1	CH
D8	1/2" x 24" Tubing	1	CH
D9	1/4" Plug	1	CH
D10	1/2" 45° Elbow	1	CH
D11	1/2" 90° Elbow	1	CH
D12	1/2" x 1/2" x 1/4" Tee	2	CH
D13	1/2" Tee	2	CH
D14	1/4" x 1-1/2" Nipple	1	CH
D15	1/2" x 1-1/2" Nipple	6	CH
D16	1/2" x 2" Nipple	1	CH
D17	1/2" x 3" Nipple	1	CH

COMPONENTS ORDERED SEPARATELY:

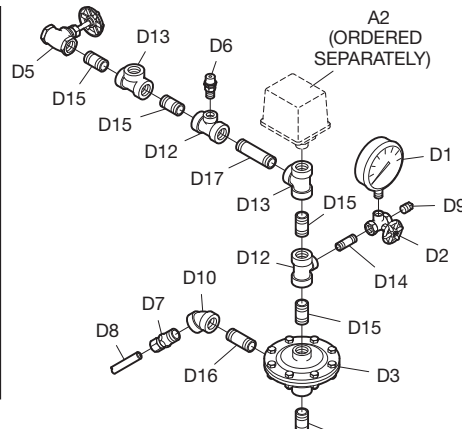
A1	Waterflow Pressure Alarm Switch, Model PS10-2	1	25710
A2	Low Air Pressure Alarm Switch, Model PS40-2	1	25730

Nipple Number	Select Appropriate Nipple Sizes per DV-5 Deluge Valve Size	
	1-1/2" (DN40)	2" (DN50)
38	1/2" x 1-1/2"	1/2" x 2"
39	1/2" x 2"	1/2" x 1-1/2"
40	1/2" x 5"	1/2" x 5-1/2"
45	3/4" x 1-1/2"	3/4" x 2-1/2"

- NOTES:
- Dry Pilot Actuation Trim is comprised of Items 1-45 plus Items D1-D17. Items A1 and A2 ordered separately.
  - All Fittings and Nipples are galvanized (Standard Order).
  - CH: Common Hardware.
  - See Figure 2 of TFP1305 for Valve Port identification.
  - Route all Tubing to Drip Funnel, Item 14.
  - Horizontal Arrangement uses only 7 out of 8 of Item 24, and 9 out of 10 of Item 33. Discard unused material.

**FIGURE 5 (1 OF 3)**  
**1-1/2 AND 2 INCH (DN40 AND DN50) DV-5 DELUGE VALVES**  
**EXPLODED VIEW OF HORIZONTAL DRY PILOT ACTUATION TRIM**

NO.	DESCRIPTION	QTY.	P/N
1	300 psi/ 2000 kPa Water Pressure Gauge	2	92-343-1-005
2	1/4" Gauge Test Valve	1	46-005-1-002
3	Model MC-1 Manual Control Station	1	52-289-2-001
4	Model AD-1 Automatic Drain Valve	1	52-793-2-004
5	Model ASV-1 Automatic Shut-Off Valve	1	92-343-1-021
6	Item No. Not Used		
7	1/2" Ball Valve	2	46-050-1-004
8	1/2" Spring Loaded Check Valve	1	92-322-1-002
9	1/2" Y-Strainer	1	52-353-1-005
10	3/4" Swing Check Valve	1	46-049-1-005
11	3/4" Angle Valve	1	46-048-1-005
12	1-1/4" Angle Valve	1	46-048-1-007
13	Drip Funnel Connector	1	92-211-1-005
14	Drip Funnel Bracket	1	92-211-1-003
15	Drip Funnel	1	92-343-1-007
16	3/32" Vent Fitting	1	92-032-1-002
17	1/4" x 18" Tubing	1	CH
18	1/2" Tubing Connector	1	CH
19	1/2" x 12" Tubing	1	CH
20	1/4" Plug	1	CH
21	3/4" Plug	1	CH
22	1/2" Union	5	CH
23	3/4" Union	2	CH



NO.	DESCRIPTION	QTY.	P/N
24	1/4" 90° Elbow	1	CH
25	1/2" 90° Elbow	8	CH
26	3/4" 90° Elbow	1	CH
27	1/2" Tee	3	CH
28	1/2" x 1/4" x 1/2" Tee	3	CH
29	3/4" Tee	1	CH
30	3/4" x 1/2" x 3/4" Tee	2	CH
31	3/4" x 3/4" x 1/2" Tee	1	CH
32	1-1/4" x 3/4" x 1-1/4" Tee	1	CH
33	1/4" x Close Nipple	2	CH
34	1/2" x Close Nipple	2	CH
35	1/2" x 1-1/2" Nipple	13	CH
36	1/2" x 2-1/2" Nipple	2	CH
37	1/2" x 3-1/2" Nipple	1	CH
38	1/2" x 4" Nipple	1	CH
39	1/2" x 4-1/2" Nipple	1	CH
40	1/2" x 5" Nipple	1	CH
41	1/2" x 5-1/2" Nipple	1	CH
42	1/2" x 7" Nipple	2	CH
43	3/4" x Close Nipple	3	CH
44	3/4" x 1-1/2" Nipple	5	CH
45	3/4" x 2" Nipple	1	CH
46	3/4" x 4-1/2" Nipple	1	CH
47	1-1/4" x 2" Nipple	1	CH
48	1-1/4" x 4" Nipple	1	CH

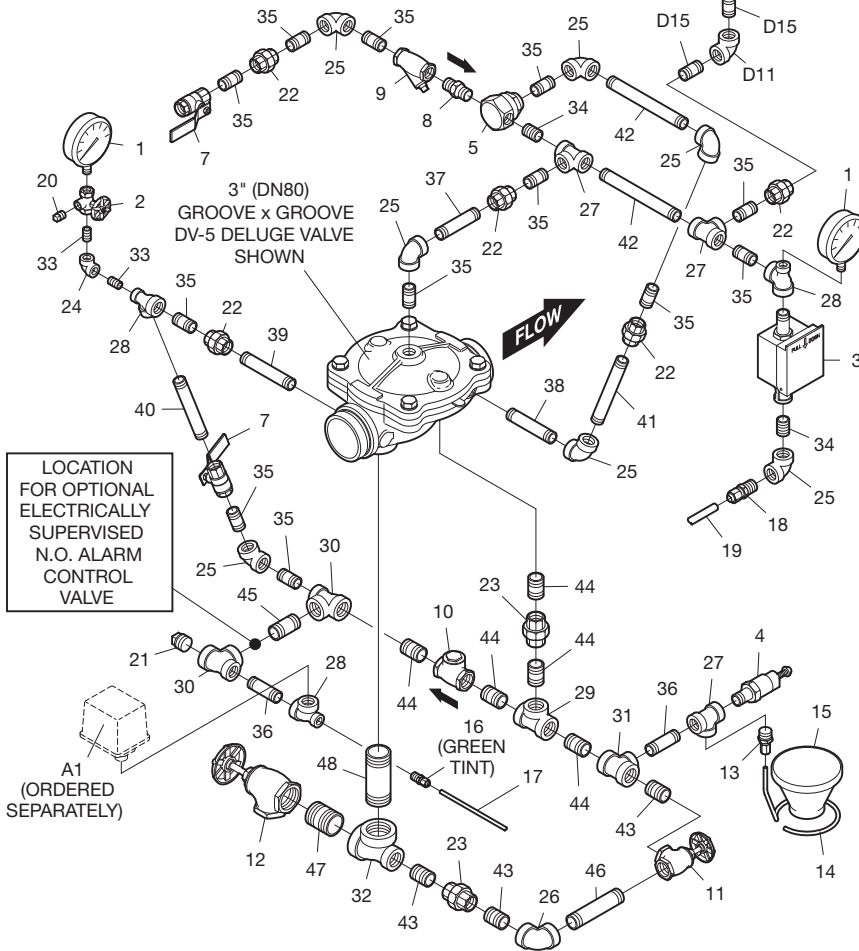
D1	250 psi/ 1750 kPa Air Pressure Gauge	1	92-343-1-012
D2	1/4" Gauge Test Valve	1	46-005-1-002
D3	Model DP-1 Dry Pilot Actuator	1	52-280-1-001
D4	Item No. Not Used		
D5	1/2" Globe Valve	1	46-047-1-004
D6	1/4" Pressure Relief Valve	1	92-343-1-020
D7	1/2" Tubing Connector	1	CH
D8	1/2" x 24" Tubing	1	CH
D9	1/4" Plug	1	CH
D10	1/2" 45° Elbow	1	CH
D11	1/2" 90° Elbow	1	CH
D12	1/2" x 1/2" x 1/4" Tee	2	CH
D13	1/2" Tee	2	CH
D14	1/4" x 1-1/2" Nipple	1	CH
D15	1/2" x 1-1/2" Nipple	6	CH
D16	1/2" x 2" Nipple	1	CH
D17	1/2" x 3" Nipple	1	CH

COMPONENTS ORDERED SEPARATELY:

A1	Waterflow Pressure Alarm Switch, Model PS10-2	1	25710
A2	Low Air Pressure Alarm Switch, Model PS40-2	1	25730

NOTES:

1. Dry Pilot Actuation Trim is comprised of Items 1-48 plus Items D1-D17. Items A1 and A2 ordered separately.
2. All Fittings and Nipples are galvanized (Standard Order).
3. CH: Common Hardware.
4. See Figure 2 of TFP1305 for Valve Port identification.
5. Route all Tubing to Drip Funnel, Item 15.
6. Horizontal Arrangement uses only 7 out of 8 of Item 25, and 12 out of 13 of Item 35. Discard unused material.



**FIGURE 5 (2 OF 3)**  
**3 INCH (DN80) DV-5 DELUGE VALVE**  
**EXPLODED VIEW OF HORIZONTAL DRY PILOT ACTUATION TRIM**



NO.	DESCRIPTION	QTY.	P/N
1	300 psi/ 2000 kPa Water Pressure Gauge	2	92-343-1-005
2	1/4" Gauge Test Valve	1	46-005-1-002
3	Model MC-1 Manual Control Station	1	52-289-2-001
4	Model AD-1 Automatic Drain Valve	1	52-793-2-004
5	Model ASV-1 Automatic Shut-Off Valve	1	92-343-1-021
6	Item No. Not Used		
7	1/2" Ball Valve	2	46-050-1-004
8	1/2" Spring Loaded Check Valve	1	92-322-1-002
9	1/2" Y-Strainer	1	52-353-1-005
10	3/4" Swing Check Valve	1	46-049-1-005
11	1" Angle Valve	1	46-048-1-006
12	2" Angle Valve	1	46-048-1-009
13	Drip Funnel Connector	1	92-211-1-005
14	Drip Funnel Bracket	1	92-211-1-003
15	Drip Funnel	1	92-343-1-007
16	3/32" Vent Fitting	1	92-032-1-002
17	Select Tubing per Table	1	CH
18	1/2" Tubing Connector	1	CH
19	1/2" x 24" Tubing	1	CH
20	1/4" Plug	1	CH
21	3/4" Plug	1	CH
22	1/2" Union	5	CH
23	1" Union	2	CH
24	1/4" 90° Elbow	1	CH
25	1/2" 90° Elbow	8	CH
26	1" 90° Elbow	1	CH
27	1/2" Tee	3	CH
28	1/2" x 1/4" x 1/2" Tee	3	CH

NO.	DESCRIPTION	QTY.	P/N
29	3/4" x 1/2" x 3/4" Tee	2	CH
30	1" x 1" x 1/2" Tee	1	CH
31	1" x 3/4" x 1" Tee	1	CH
32	2" x 1" x 2" Tee	1	CH
33	1/4" x Close Nipple	2	CH
34	1/2" x Close Nipple	2	CH
35	1/2" x 1-1/2" Nipple	10	CH
36	1/2" x 2-1/2" Nipple	3	CH
37	Select Nipple per Table	1	CH
38	1/2" x 5" Nipple	2	CH
39	1/2" x 6" Nipple	1	CH
40	1/2" x 7" Nipple	2	CH
41	Select Nipple per Table	1	CH
42	Select Nipple per Table	1	CH
43	Select Nipple per Table	1	CH
44	3/4" x 1-1/2" Nipple	1	CH
45	3/4" x 2" Nipple	1	CH
46	Select Nipple per Table	1	CH
47	1" x Close Nipple	5	CH
48	1" x 3" Nipple	1	CH
49	Select Nipple per Table	1	CH
50	2" x 3" Nipple	1	CH
51	2" x 5" Nipple	1	CH
52	Select Nipple per Table	1	CH

D1	250 psi/ 1750 kPa Air Pressure Gauge	1	92-343-1-012
D2	1/4" Gauge Test Valve	1	46-005-1-002
D3	Model DP-1 Dry Pilot Actuator	1	52-280-1-001
D4	Item No. Not Used		
D5	1/2" Globe Valve	1	46-047-1-004
D6	1/4" Pressure Relief Valve	1	92-343-1-020
D7	1/2" Tubing Connector	1	CH
D8	1/2" x 24" Tubing	1	CH
D9	1/4" Plug	1	CH
D10	1/2" 45° Elbow	1	CH
D11	1/2" 90° Elbow	1	CH
D12	1/2" x 1/2" x 1/4" Tee	2	CH
D13	1/2" Tee	2	CH
D14	1/4" x 1-1/2" Nipple	1	CH
D15	1/2" x 1-1/2" Nipple	6	CH
D16	1/2" x 2" Nipple	1	CH
D17	1/2" x 3" Nipple	1	CH

COMPONENTS ORDERED SEPARATELY:

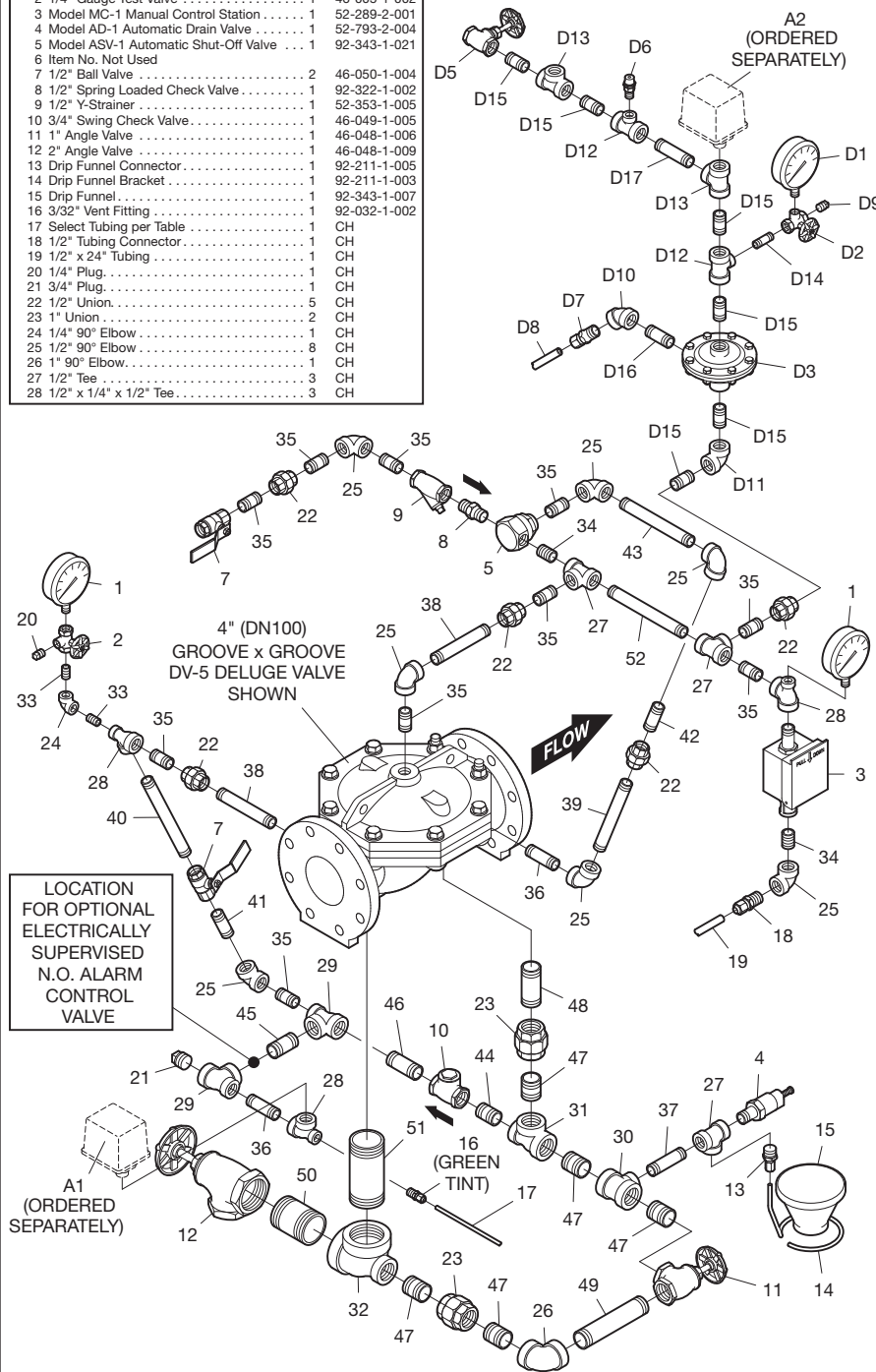
A1	Waterflow Pressure Alarm Switch, Model PS10-2	1	25710
A2	Low Air Pressure Alarm Switch, Model PS40-2	1	25730

Tube No.	Select Appropriate Tube Size per DV-5 Deluge Valve Size		
	4" (DN100)	6" (DN150)	8" (DN200)
17	1/4" x 24"	1/4" x 24"	1/4" x 32"

Nipple No.	Select Appropriate Nipple Sizes per DV-5 Deluge Valve Size		
	4" (DN100)	6" (DN150)	8" (DN200)
37	1/2" x 3"	1/2" x 3"	1/2" x 5"
41	1/2" x 2-1/2"	1/2" x 5-1/2"	1/2" x 8-1/2"
42	1/2" x 2"	1/2" x 3"	1/2" x 3-1/2"
43	1/2" x 6-1/2"	1/2" x 7-1/2"	1/2" x 9"
46	3/4" x 2-1/2"	3/4" x 3-1/2"	3/4" x 4-1/2"
49	1" x 6"	1" x 9"	1" x 12"
52	1/2" x 7"	1/2" x 7"	1/2" x 9"

**NOTES:**

1. Dry Pilot Actuation Trim is comprised of Items 1-52 plus Items D1-D17. Items A1 and A2 ordered separately.
2. All Fittings and Nipples are galvanized (Standard Order).
3. CH: Common Hardware.
4. See Figure 2 of TFP1305 for Valve Port identification.
5. Route all Tubing to Drip Funnel, Item 15.
6. Horizontal Arrangement uses only 7 out of 8 of Item 25, and 2 out of 3 of Item 36. Discard unused material.



**FIGURE 5 (3 OF 3)**  
**4, 6, AND 8 INCH (DN100, DN150, AND DN200) DV-5 DELUGE VALVES**  
**EXPLODED VIEW OF HORIZONTAL DRY PILOT ACTUATION TRIM**



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 requirements of the authority having jurisdiction and/or the National Electric Code.

**Step 15.** Before a system hydrostatic test is performed in accordance with NFPA 13 system acceptance test requirements, the DV-5 Diaphragm Chamber is to be depressurized, the Automatic Drain Valve (Item 4, Fig. 3A and 5) is to be temporarily replaced with a 1/2 inch NPT plug, the 3/32 inch Vent Fitting (16 - Fig. 3A and 5) is to be temporarily replaced with a 1/4 inch NPT 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.

## **Valve Setting Procedure**

Steps 1 through 11 are to be performed when initially setting the DV-5 Deluge Valve, after an operational test of the fire protection system, or after system operation due to a fire.

**NOTE:** When the system is using either a seawater or brackish water supply, it is recommended that the system be thoroughly flushed with clean fresh water. Following this recommendation will increase the service life of the DV-5 Valve and Trim.

**Step 1.** Close the Main Control Valve.

**Step 2.** Close the Diaphragm Chamber Supply Control Valve, and close the Air Supply Control Valve (Ref. Fig. 3B).

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

**Step 4.** Depress the plunger of the Automatic Drain Valve to verify that it is open and that the DV-5 Valve is completely drained.

**Step 5.** Clean the Strainer in the Diaphragm Chamber Supply connection by removing the clean-out plug and strainer basket. The Strainer may be flushed out by momentarily opening the Diaphragm Chamber Supply Control Valve.

**Step 6.** Reset the actuation system.

Manual Actuation — Push the operating lever up; however, do not close the hinged cover at this time.

Dry Pilot Actuation — Replace operated pilot sprinklers and/or reset the manual control stations. Re-establish dry pilot pneumatic pressure.

**NOTE:** In order to prevent the possibility of a subsequent operation of an over-heated 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.** Open the Diaphragm Chamber Supply Control Valve and allow time for full pressure to build up in the Diaphragm Chamber.

**Step 8.** Operate (open) the Manual Control Station to vent trapped air from the Diaphragm Chamber. If necessary, first open the hinged cover, and then fully pull down on the operating lever. Slowly close the operating lever, by pushing it up, after aerated water ceases to discharge from the Manual Control Station drain tubing. Close the hinged cover and insert a new break rod in the small hole through the top of the enclosing box.

**Step 9.** Inspect the drain connections from the Manual Control Station and the Dry Pilot Actuator. Any leaks must be corrected before proceeding to the next step.

**Step 10.** Verify the ability of the DV-5 Diaphragm to hold pressure as follows:

- With the Diaphragm Chamber pressurized per Step 8, temporarily close the Diaphragm Chamber Supply Control Valve, and then observe the Diaphragm Chamber Pressure Gauge for a drop in pressure.
- If a drop in pressure is noted, the DV-5 Diaphragm is to be replaced and/or any leaks must be corrected before proceeding to the next step.
- If the Diaphragm Chamber Pressure Gauge indicates no drop in pressure, re-open the Diaphragm Chamber Supply Control Valve and proceed to the next step.

**Step 11.** Slowly open the Main Control Valve. Close the Main Drain Valve as soon as water discharges from the drain connection. Observe the Automatic Drain Valve for leaks. If there are leaks, determine/correct the cause of the leakage problem. If there are no leaks, the DV-5 Valve is ready to be placed in service and the Main Control Valve must then be fully opened.

**NOTE:** When the Main Control Valve is opened, the pressure on the Diaphragm Chamber may increase. This increase in pressure is normal, and if the pressure is greater than 250 psi (17,2 bar), the pressure is to be relieved by partially and temporarily opening the Manual Control Station; however, do not allow the pressure as indicated on the Diaphragm Chamber Pressure Gauge to drop below the supply pressure shown on the Water Supply Pressure Gauge, since this action may result in tripping of the DV-5 Valve.

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

## **Care and Maintenance**

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

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. Reset the DV-5 Deluge Valve in accordance with the Valve Setting Procedure section.

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. Contact the installing contractor or product manufacturer with 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.

**NOTICE**

Some of the procedures outlined in this section will result in operation of the associated alarms. Consequently, notification must first be given to the owner and the fire department, central station, or other signal station to which the alarms are connected.

When the system is using either a sea-water or brackish water supply, internal and external inspection of the DV-5 Valve and Trim is essential. Parts showing any signs of corrosion must be replaced to ensure the integrity of the system.

**Annual Operation Test Procedure**

Proper operation of the DV-5 Valve (i.e., opening of the DV-5 Valve as during a fire condition) must be verified at least once a year as follows:

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

- Close the Main Control Valve.
- Open the Main Drain Valve.
- Open the Main Control Valve one turn beyond the position at which water just begins to flow from the Main Drain Valve.
- Close the Main Drain Valve.

**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-5 Valve has tripped, as indicated by the flow of water into the system.

**Step 4.** Close the Diaphragm Chamber Supply Control Valve.

**Step 5.** Close the system's Main Control Valve.

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

**Quarterly Waterflow Alarm Test Procedure**

Testing of the system waterflow alarms must be performed quarterly. To test the waterflow alarm, open the Alarm Test Valve, which will allow a flow of water to the Pressure Alarm Switch and/or Water Motor Alarm. Upon satisfactory completion of the test, close the Alarm Test Valve.

**Quarterly Dry Pilot Actuator Test Procedure for Dry Pilot Actuation**

Proper operation of the Dry Pilot Actuator for dry pilot actuation must be verified at least quarterly as follows:

**Step 1.** Close the Main Control Valve.

**Step 2.** Open the Main Drain Valve.

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

**Step 4.** Verify that the flow of water from the Dry Pilot Actuator drain connection increases to a full flow.

**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. Check the Dry Pilot Actuator drain for leaks. Any leaks must be corrected before proceeding to the next step.

**Step 7.** Slowly open the Main Control Valve. Close the Main Drain Valve as soon as water discharges from the drain connection. Observe the Automatic Drain Valve for leaks. If there are leaks, determine/correct the cause of the leakage problem. If there are no leaks, the DV-5 Valve is ready to be placed in service and the Main Control Valve must then be fully opened.

**Quarterly Low Pressure Alarm Test Procedure and Condensate Drain Procedure for Dry Pilot Actuation**

For Dry Pilot Actuation, testing of the Low Pressure Alarm Switch and drainage of the pilot line condensate must be performed quarterly as follows.

**Step 1.** Close the Main Control Valve.

**Step 2.** Close the Diaphragm Chamber Supply Control Valve.

**Step 3.** Open the Main Drain Valve.

**Step 4.** Drain the dry pilot line condensate as follows:

- Close the Gauge Test Valve located below the Dry Pilot Line Pressure Gauge.
- Remove the 1/4 inch Plug from the Gauge Test Valve.
- Crack Open the Gauge Test Valve and allow all condensate, if any, to drain out.
- Close the Gauge Test Valve, replace the Plug, and then open the Gauge Test Valve.

**Step 5.** Open the Inspector's Test Connection, and slowly relieve pneumatic pressure. Verify that the Low pressure Alarm Switch 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 A.
- Fire alarm setting at approximately 15 psi (1,0 bar) below the minimum pilot line service pressure requirement shown in Graph A.

**Step 6.** Close the Inspector's Test Connection, and allow the Dry Pilot Line to automatically repressurize.

**Step 7.** Open the Diaphragm Chamber Supply Control Valve.

**Step 8.** Slowly open the Main Control Valve. Close the Main Drain Valve as soon as water discharges from the drain connection. Observe the Automatic Drain Valve for leaks. If there are leaks, determine/correct the cause of the leakage problem. If there are no leaks, fully open the Main Control Valve.

## Limited Warranty

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

## Ordering Procedure

**NOTE:** Part Numbers for factory pre-trimmed DV-5 Valves are provided in the Price Book.

### DV-5 Semi-Pre-assembled Vertical Dry Pilot Actuation Trim

Specify: (specify size and finish — galvanized is standard) Semi-Preassembled Vertical Dry Pilot Actuation Trim for DV-5 Deluge Valves, P/N (specify):

1-1/2 & 2 Inch Galvanized . . . P/N 52-477-2-308  
1-1/2 & 2 Inch Black . . . . . P/N 52-477-1-308  
1-1/2 & 2 Inch Brass . . . . . P/N 52-477-3-308

3 Inch Galvanized . . . . . P/N 52-477-2-105  
3 Inch Black . . . . . P/N 52-477-1-105  
3 Inch Brass . . . . . P/N 52-477-3-105

4, 6 & 8 Inch Galvanized . . . . P/N 52-477-2-302  
4, 6 & 8 Inch Black . . . . . P/N 52-477-1-302  
4, 6 & 8 Inch Brass . . . . . P/N 52-477-3-302

### DV-5 Unassembled Dry Pilot Actuation Trim for Vertical or Horizontal Installation

Specify: (specify size and finish — galvanized is standard) Unassembled Dry Pilot Actuation Trim for vertical or horizontal installation of DV-5 Deluge Valves, P/N (specify):

1-1/2 & 2 Inch Galvanized . . . P/N 52-477-2-208  
1-1/2 & 2 Inch Black . . . . . P/N 52-477-1-208  
1-1/2 & 2 Inch Brass . . . . . P/N 52-477-3-208

3 Inch Galvanized . . . . . P/N 52-477-2-205  
3 Inch Black . . . . . P/N 52-477-1-205  
3 Inch Brass . . . . . P/N 52-477-3-205

4, 6 & 8 Inch Galvanized . . . . P/N 52-477-2-202  
4, 6 & 8 Inch Black . . . . . P/N 52-477-1-202  
4, 6 & 8 Inch Brass . . . . . P/N 52-477-3-202

### DV-5 Pre-trimmed Assembly Dry Pilot Actuation Trim with Butterfly Valve

Specify: (size), G x G End Connection, Pre-trimmed DV-5 Assembly with Butterfly Valve, P/N (specify):

1-1/2 Inch G x G . . . . . P/N 52-912-0-1AP  
2 Inch G x G . . . . . P/N 52-922-0-1AP  
3 Inch G x G . . . . . P/N 52-932-0-1AP  
4 Inch G x G . . . . . P/N 52-942-0-1AP  
6 Inch G x G . . . . . P/N 52-962-0-1AP  
8 Inch G x G . . . . . P/N 52-982-0-1AP

### DV-5 Pre-trimmed Assembly Dry Pilot Actuation Trim without Butterfly Valve

Specify: (specify size), (specify) End Connection, Pre-trimmed DV-5 Assembly without Butterfly Valve, P/N (specify):

1-1/2 Inch T x T . . . . . P/N 52-912-3-1AP  
2 Inch T x T . . . . . P/N 52-922-3-1AP  
3 Inch F x F . . . . . P/N 52-932-1-1AP  
3 Inch F x G . . . . . P/N 52-932-2-1AP  
4 Inch F x F . . . . . P/N 52-942-1-1AP  
4 Inch F x G . . . . . P/N 52-942-2-1AP  
6 Inch F x F . . . . . P/N 52-962-1-1AP  
6 Inch F x G . . . . . P/N 52-962-2-1AP  
8 Inch F x F . . . . . P/N 52-982-1-1AP  
8 Inch F x G . . . . . P/N 52-982-2-1AP

### Accessories

Refer to the Technical Data Sheets for the following, as applicable, for details and additional accessories:

600 psi Water Pressure Gauge . . . . . P/N 92-343-1-004  
Model PS10-2  
Potter Electric Waterflow Pressure Alarm Switch . . . . . P/N 25710  
Model PS40-2  
Potter Electric Dry Pilot Low Air Pressure Alarm Switch . . . . . P/N 25730  
Model WMA-1 Water Motor Alarm . . . . . P/N 52-630-1-001P  
Model AMD-1  
Air Maint. Device . . . . . P/N 52-324-2-002  
Model AMD-2  
Air Maint. Device . . . . . P/N 52-326-2-001  
Model AMD-3  
Nitrogen Maint. Device. . . . . P/N 52-328-2-001  
Model MC-1  
Manual Control Stations with galvanized connections for remote dry pilot actuation . . . . . P/N 52-289-2-001

### Replacement Trim Parts

Specify: (description) for use with DV-5 Deluge Valve, P/N (see Figure 3A or 5).