

Technical Services: Tel: (800) 381-9312 / Fax: (800) 791-5500

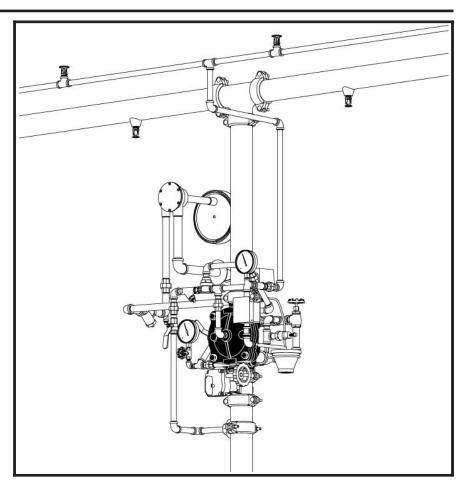
Model DV-5 Deluge Valve, Diaphragm Style, 1-1/2 thru 8 Inch (DN40 thru DN200), Deluge System — Wet Pilot Actuation

General Description

The Model 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 3).

Opening of a wet pilot sprinkler, 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. 2A and 4, 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. 2A and 4) 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, thereby 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, for example a remote manual control station).



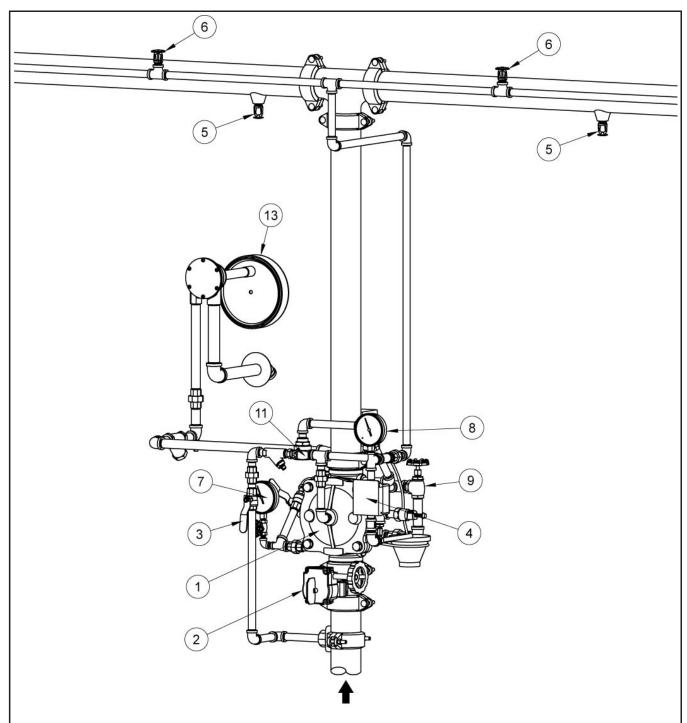
WARNING

The Model DV-5 Deluge Valve with Wet 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.

The installing contractor or manufacturer should be contacted with any questions.

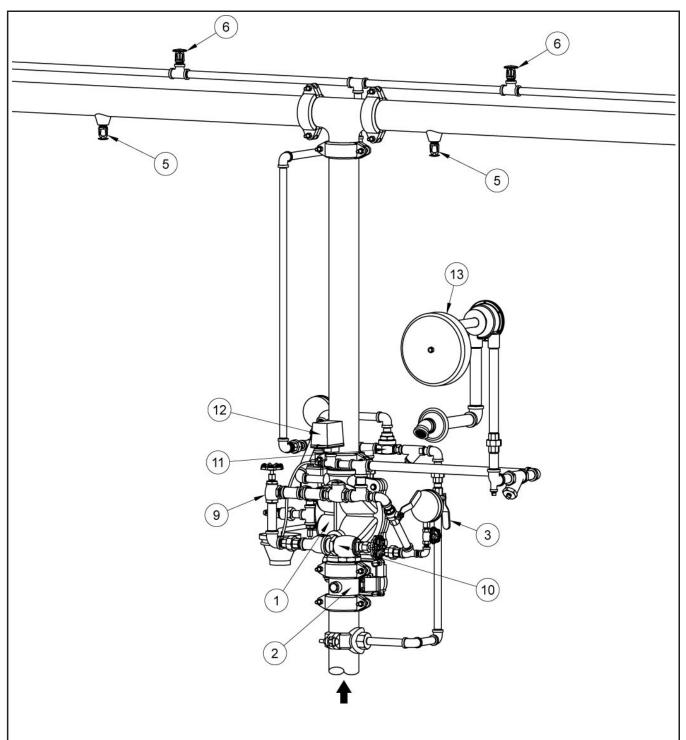
Page 2 of 16 TFP1310



- 1 Model DV-5 Deluge Valve
- 2 Main Control Valve (N.O.)
- 3 Diaphragm Chamber Supply Control Valve (N.O.)
- 4 Local Manual Control Station
- 5 Open Nozzles or Sprinklers
- 6 Wet Pilot Line Sprinklers (Fire Detection)

- 7 Water Supply Pressure Gauge
- 8 Diaphragm Chamber Pressure Gauge
- 9 System Drain Valve (N.C.)
- 10 Main Drain Valve (N.C.) (Shown at Rear of Valve)
- 11 Diaphragm Chamber Automatic Shut-Off Valve
- 12 Waterflow Pressure Alarm Switch (Shown at Rear of Valve)
- 13 Water Motor Alarm (Optional)

FIGURE 1 — PART 1 OF 2 SYSTEM SCHEMATIC (Front View) — WET PILOT ACTUATION TFP1310 Page 3 of 16



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

FIGURE 1 — PART 2 OF 2 SYSTEM SCHEMATIC (Rear View) — WET PILOT ACTUATION Page 4 of 16 TFP1310

l	NO.	DESCRIPTION	QTY.	P/N
I	1	300 psi/ 2000 kPa		
ı		Water Pressure Gauge	2	92-343-1-005
ı	2	1/4" Gauge Test Valve	1	46-005-1-002
ı	2	Model MC-1 Manual		
ı		Control Station	1	52-289-2-001
ı	4	Model AD-1 Automatic		
ı		Drain Valve	1	52-793-2-004
ı	5	Automatic Shut-Off Valv	e,	
ı		Model ASV-1	1	92-343-1-021
ı	6	Waterflow Pressure		Ordered
ı		Alarm Switch	1	Separately
ı	7	1/2" Ball Valve	2	46-050-1-004
ı	8	1/2" Spring Loaded		
ı		Check Valve	1	92-322-1-002
ı	9	1/2" Y-Strainer	1	52-353-1-005
I	10	3/4" Swing Check Valve	.1	46-049-1-005

NO.	DESCRIPTION	QTY.	P/N
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		92-343-1-007
15	3/32" Vent Fitting		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		CH
22	3/4" Union		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		CH

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

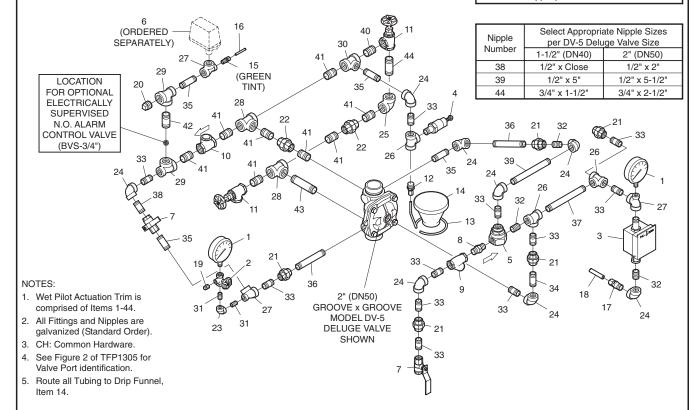


FIGURE 2A — PART 1 OF 3
1-1/2 and 2 INCH (DN40 and DN50) MODEL DV-5 DELUGE VALVES
— EXPLODED VIEW OF VERTICAL WET PILOT ACTUATION TRIM (52-477-X-107) —

TFP1310 Page 5 of 16

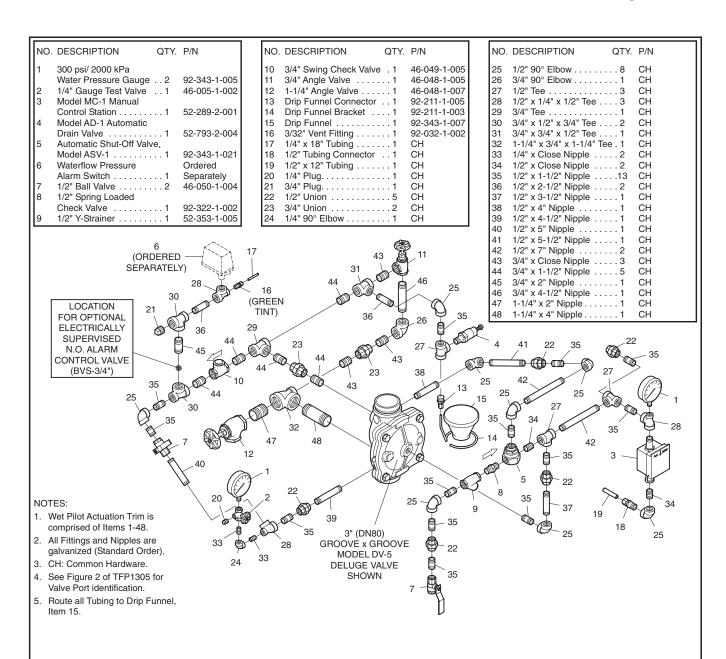


FIGURE 2A — PART 2 OF 3 3 INCH (DN80) MODEL DV-5 DELUGE VALVES — EXPLODED VIEW OF VERTICAL WET PILOT ACTUATION TRIM (52-477-X-104) — Page 6 of 16 TFP1310

N	D. DESCRIPTION	QTY.	P/N
1	300 psi/ 2000 kPa		
Ш	Water Pressure Gauge	2	92-343-1-005
2	1/4" Gauge Test Valve	1	46-005-1-002
2 3	Model MC-1 Manual		
Ш	Control Station	1	52-289-2-001
 4	Model AD-1 Automatic		
Ш	Drain Valve	1	52-793-2-004
H ₅	Automatic Shut-Off Val		
Ш	Model ASV-1		92-343-1-021
H 6	Waterflow Pressure		Ordered
$\prod_{i=1}^{n}$	Alarm Switch	1	Separately
117	1/2" Ball Valve		46-050-1-004
 8	1/2" Spring Loaded		
Ш	Check Valve	1	92-322-1-002
 9	1/2" Y-Strainer		52-353-1-005
1110			46-049-1-005
111	1" Angle Valve		46-048-1-006
1112			46-048-1-009
113	g		92-211-1-005
1114			92-211-1-003
اا	F : 51=130101		

NO.	DESCRIPTION	QTY.	P/N
15	Drip Funnel	. 1	92-343-1-007
16	3/32" Vent Fitting		92-032-1-002
17	1/4" x 24" Tubing		CH
18	1/2" Tubing Connector .		CH
19	1/2" x 24" Tubing		CH
20	1/4" Plug		CH
21	3/4" Plug		CH
22	1/2" Union		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		CH
34	1/2" x Close Nipple	. 2	CH

NO.	DESCRIPTION	QTY.	P/N
35	1/2" x 1-1/2" Nipple	10	CH
36	1/2" x 2-1/2" Nipple	3	CH
37	1/2" x 3" Nipple	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	2	CH
42	Select Nipple per Table	2	CH
43	Select Nipple per Table	2	CH
44	3/4" x 1-1/2" Nipple	1	CH
45	3/4" x 2" Nipple	1	CH
46	Select Nipple per Table	2	CH
47	1" x Close Nipple	5	CH
48	1" x 3" Nipple	1	CH
49	Select Nipple per Table		CH
	2" x 3" Nipple		CH
	2" x 5" Nipple		CH

Select Appropriate Nipple Sizes per DV-5 Deluge Valve Size

	No.	4"	6"	8"
	'10.	(DN100)	(DN150)	(DN200)
6 17 47 11	41	1/2" x 2-1/2"	1/2" x 5-1/2"	1/2" x 8 -1/2"
(ORDERED	42	1/2" x 2"	1/2" x 3"	1/2" x 3-1/2"
SEPARATELY) 49	43	1/2" x 6-1/2"	1/2" x 7-1/2"	1/2" x 9"
28 25	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"
LOCATION FOR OPTIONAL ELECTRICALLY SUPERVISED LOCATION (GREEN TINT) 36 47 47 47 47 47 47 47 47 47 47 47	<u> </u>	39 22	42 🙉	22
N.O. ALAHW 45 / 27		Landon et e		35
CONTROL VALVE (BVS-3/4") 36	A		27	> _
35 10 47	25	43	· / _/	
25 46	15		25	1
29 48	` '	27		
41	35 (34 /	35	G 28
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12 35			0 0	7 J
	7	5 \iint 2	2	
40	8	Ā		
NOTES: 22 22	9	35 - 3	8	™ 34
1. Wet Pilot Actuation Trim is			19 /	
comprised of items 1-51.		2	18 5	25
2. All Fittings and Nipples are galvanized (Standard Order). 33 4" (DN100) 22		9		
3. CH: Common Hardware.				
4. See Figure 2 of TFP1305 for 24 NODEL DV-5 DELUGE VALVE Valve Port identification. 33 MODEL DV-5 DELUGE VALVE SHOWN				
5. Route all Tubing to Drip Funnel, Item 15.				

FIGURE 2A — PART 3 OF 3 4, 6, and 8 INCH (DN100, DN150, and DN200) MODEL DV-5 DELUGE VALVES — EXPLODED VIEW OF VERTICAL WET PILOT ACTUATION TRIM (52-477-X-101) — TFP1310 Page 7 of 16

Nipple Select Appropriate Nipple Sizes per DV-5 Deluge Valve Size								
	umber	1-1/2" (DN40)	2" (DN50)	3" (DN80)	4" (DN100)	6" (DN150)	8" (DN200)	ĺ
	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"	ĺ
	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"	l
	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"	1
	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"	
	n Drain Size	3/4" NPT	3/4" NPT	1-1/4" NPT	2" NPT	2" NPT	2" NPT	
WAT PRESS SWITC SEF 3/4 INCH I CONNECTIO WATER MC ALARM NIPP 1 DR (N'	NTERFLO SURE ALCH, ORDIN PARATEI NPT DN FOR DTOR 4 NIPPLE MAIN RAIN VALIORMALIORMALIORMALIOSED	ALARM EST VALVE NORMALLY CLOSED) M R Y JIRE E	MAIN DRACONNECT (SIZED PITABLE)	ALVE ALLY ED) AUTOMATIC DRAIN VALVE NIPPLE 5 AIN TION ER CHAMBER S CONTROL N (NORMAI) OPEN	2. See Figure 2 identification. 3. Route all Tub 4. When DV-5 tr shuts off the off shuts off shuts off shuts off shuts off shuts of shuts	AUTOM SHUT-OFF (NORM OPE CH NPT TION FROM SUPPLY	Shut-Off Valve supply. e to the Model all other nipples stalled per the sigure 2A Part IPT ON ILOT IN" NIPPLE 2 NIPP 3 ATTIC E VALVE ALLY N)	
	1-1/2 thru 8 INCH (DN40 thru DN200) MODEL DV-5 DELUGE VALVES — OPERATIONAL COMPONENTS OF VERTICAL WET PILOT ACTUATION TRIM —							

Technical Data

Approvals:

UL Listed, C-UL Listed, and FM Approved.

Valve Trim:

The Vertical Wet Pilot Actuation Trim (Fig. 2A/2B) and Horizontal Wet Pilot Actuation Trim (Fig. 4) form a part of the laboratory listings and approvals for the DV-5 Valve and is 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

To ease field assembly of the trim arrangement, the vertical trim components are provided partially assembled as shown in Figure 2B.

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 2A/2B and 4 with separately ordered 600 psi (41,4 bar) Water Pressure Gauges.

The Wet Pilot Actuation Trim provides for connection of a detection system consisting of wet pilot line sprinklers (heat detectors) and manual control Page 8 of 16 TFP1310

Valve				Nomin	al Installa	tion Dime	nsions in I	nches and	d (mm)			
Size	Α	В	С	D	Е	F	G	Н	J	K	L	М
1-1/2"	7.00	8.88	13.19	10.50	15.25	1.25	5.81	1.81	3.00	7.00	3.88	8.00
(DN40)	(177,8)	(225,4)	(335,0)	(266,7)	(387,4)	(31,8)	(147,6)	(46,0)	(76,2)	(177,8)	(98,4)	(204,0)
2"	7.13	9.13	13.19	10.50	15.56	0.94	6.00	2.00	3.00	7.00	3.00	8.63
(DN50)	(181,0)	(231,8)	(335,0)	(266,7)	(395,3)	(23,8)	(152,4)	(50,8)	(76,2)	(177,8)	(76,2)	(220,0)
3"	7.81	10.44	13.19	10.50	19.13	1.63	6.69	2.69	4.25	7.00	0.88	12.75
(DN80)	(198,4)	(265,1)	(335,0)	(266,7)	(485,8)	(41,3)	(170,0)	(68,3)	(108,0)	(177,8)	(22,2)	(324,0)
4"	10.00	11.75	14.31	10.50	22.13	1.75	8.56	4.44	6.25	7.13	0.63	15.75
(DN100)	(254,0)	(298,5)	(363,5)	(266,7)	(562,0)	(44,5)	(217,5)	(112,7)	(158,8)	(181,0)	(15,9)	(400,0)
6"	11.38	14.31	15.31	10.50	23.31	3.50	9.94	5.81	6.25	7.13	1.81	18.13
(DN150)	(289,0)	(363,5)	(388,9)	(266,7)	(592,1)	(88,9)	(252,4)	(147,6)	(158,8)	(181,0)	(46,0)	(460,4)
8"	12.00	16.00	16.25	10.50	25.50	1.75	10.75	6.50	6.25	7.13	7.38	22.50
(DN200)	(304,8)	(406,4)	(412,8)	(266,7)	(647,7)	(44,5)	(273,1)	(165,1)	(158,8)	(181,0)	(187,3)	(570,0)

* MINIMUM CLEARANCE.

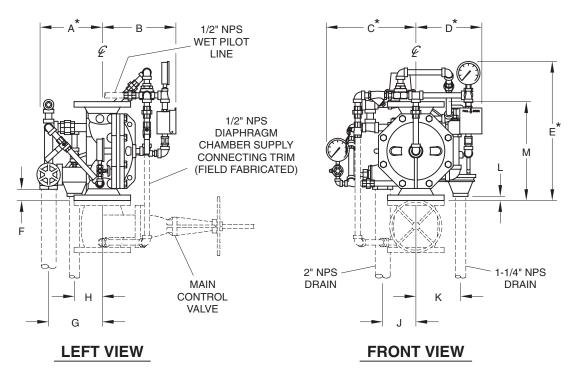


FIGURE 3 1-1/2 thru 8 INCH (DN40 thru DN200) MODEL DV-5 DELUGE VALVE — VERTICAL WET PILOT ACTUATION / NOMINAL INSTALLATION DIMENSIONS —

stations interconnected with minimum 1/2 inch (DN15) Schedule 40 steel pipe. The pilot line is connected to the "Wet Pilot Detection" connection shown in Figure 2B. Nominal installation dimensions for the Vertical Wet Pilot Actuation Trim are shown in Figure 3.

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 TD1382.

The maximum height of a wet pilot line above the DV-5 Valve must not exceed the limitations shown in Graph A as a

function of the minimum water supply pressure to the DV-5 Valve for an equivalent length (pipe plus fittings) of the pilot line up to 500 feet to the most remote pilot sprinkler.

Provision must be made for installing a 5.6 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.

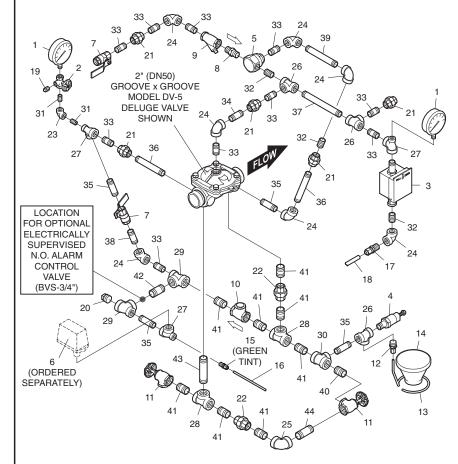
At a minimum, it is recommended that

internally galvanized pipe and cast iron fittings be used for wet pilot lines.

TFP1310 Page 9 of 16

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	Automatic Shut-Off Valv	e,	
	Model ASV-1	1	92-343-1-021
6	Waterflow Pressure		Ordered
	Alarm Switch	1	Separately

NO.	DESCRIPTION	QTY.	P/N
7 8	1/2" Ball Valve	. 2	46-050-1-004
	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		46-048-1-005
12	Drip Funnel Connector .	. 1	92-211-1-005
13	Drip Funnel Bracket		92-211-1-003
14	Drip Funnel		92-343-1-007
15	3/32" Vent Fitting		92-032-1-002
16	1/4" x 18" Tubing	. 1	CH



NO.	DESCRIPTION	QTY.	P/N
17 18 19 20 21 22 23 24	1/2" Tubing Connector 1/2" x 12" Tubing	1	CH CH CH CH CH CH CH
25	3/4" 90° Elbow		CH
26	1/2" Tee	3	CH
27	1/2" x 1/4" x 1/2" Tee		CH
28 29	3/4" Tee		CH
30	3/4" x 3/4" x 1/2" Tee		CH CH
31	1/4" x Close Nipple		CH
32	1/2" x Close Nipple		CH
33	1/2" x 1-1/2" Nipple		CH
34	1/2" x 2" Nipple		CH
35	1/2" x 2-1/2" Nipple		CH
36	1/2" x 5" Nipple	2	CH
37	1/2" x 7" Nipple	1	CH
38	Select Nipple per Table	2	CH
39	Select Nipple per Table	2	CH
40	3/4" x Close Nipple		CH
41	3/4" x 1-1/2" Nipple		CH
42	3/4" x 2" Nipple		CH
43	3/4" x 4" Nipple		CH
44	Select Nipple per Table	2	CH

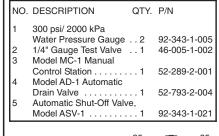
Nipple	Select Appropriate Nipple Sizes per DV-5 Deluge Valve Size		
Number	1-1/2" (DN40)	2" (DN50)	
38	1/2" x Close	1/2" x 2"	
39	1/2" x 5"	1/2" x 5-1/2"	
44	3/4" x 1-1/2"	3/4" x 2-1/2"	

NOTES:

- Wet Pilot Actuation Trim is comprised of Items 1-44.
- 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 14.
- Horizontal Arrangement uses only 7 out of 8 of Item 24, and 10 out of 11 of Item 33.
 Discard unused material.

FIGURE 4 — PART 1 OF 3
1-1/2 and 2 INCH (DN40 and DN50) MODEL DV-5 DELUGE VALVES
— EXPLODED VIEW OF HORIZONTAL WET PILOT ACTUATION TRIM (52-477-X-207) —

Page 10 of 16 TFP1310



NO.	DESCRIPTION	QTY.	P/N
6	Waterflow Pressure Alarm Switch		Ordered Separately
7	1/2" Ball Valve	2	46-050-1-004
ľ	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
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

QTY. P/N

NO. DESCRIPTION

35 35 25
25 35
22 9
35 8 42
2 ¹ (DN90) 37 25 35 1
2 GROOVE x GROOVE 25 MODEL DV-5 35 27 22 22
33 DELUGE VALVE 22 42
35 SHOWN 35 27 27 28
24 22 30 35
28 \ 322
38
41
LOCATION 25
ELECTRICALLY 25 35
N.O. ALARM 30 19
CONTROL 25 23 244
(BVS-3/4") 10 10 44 44 4
21 28 27 27
30 29 36 29 31 15
36 (GREEN G)
6 TINT) 17 13 13
SEPARATELY) 44 43
12 47 43 46 14
32 26 11
43

NOTES:

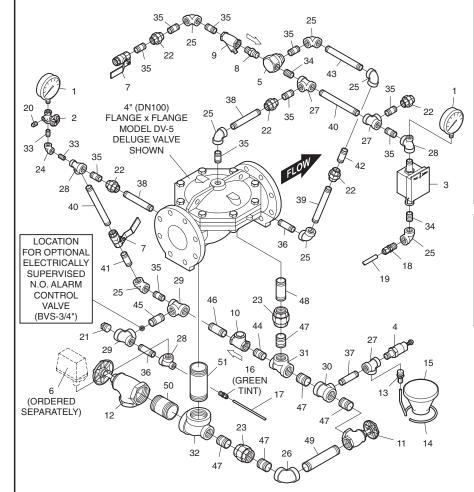
- Wet Pilot Actuation Trim is comprised of Items 1-48.
- 2. All Fittings and Nipples are galvanized (Standard Order).
- 3. CH: Common Hardware.
- 4. See Figure 2 of TFP1305 for Valve Port identification.
- 5. Route all Tubing to Drip Funnel, Item 15.
- Horizontal Arrangement uses only 7 out of 8 of Item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

FIGURE 4 — PART 2 OF 3
3 INCH (DN80) MODEL DV-5 DELUGE VALVES
— EXPLODED VIEW OF HORIZONTAL WET PILOT ACTUATION TRIM (52-477-X-204) —

TFP1310 Page 11 of 16

NO.	DESCRIPTION	QTY.	P/N
1	300 psi/ 2000 kPa		
1	Water Pressure Gauge	2	92-343-1-005
2	1/4" Gauge Test Valve	1	46-005-1-002
3	Model MC-1 Manual		
1	Control Station	1	52-289-2-001
4	Model AD-1 Automatic		
1	Drain Valve	1	52-793-2-004
5	Automatic Shut-Off Valv	e,	
1	Model ASV-1	1	92-343-1-021
6	Waterflow Pressure		Ordered
1	Alarm Switch	1	Separately
7	1/2" Ball Valve	2	46-050-1-004

NO.	DESCRIPTION	QTY.	P/N
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	1/4" x 24" Tubing	1	CH
18	1/2" Tubing Connector	1	CH



NO.	DESCRIPTION	QTY.	P/N
19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47	1/2" x 24" Tubing 1/4" Plug 3/4" Plug 1/2" Union 1" Union 1" Union 1" "90° Elbow 1/2" Tee 1/2" x 1/4" x 1/2" Tee 3/4" x 1/2" Tee 1" x 3/4" x 1/2" Tee 1" x 3/4" x 1" Tee 1" x 3/4" x 1" Tee 1" x 1" x 2" Tee 1" x 2" Tee 1/4" x Close Nipple 1/2" x Close Nipple 1/2" x 2-1/2" Nipple 1/2" x 2-1/2" Nipple 1/2" x 5" Nipple 1/2" x 6" Nipple 1/2" x 7" Nipple 1/2" x 6" Nipple per Table Select Nipple per Table Select Nipple per Table Select Nipple per Table 3/4" x 1-1/2" Nipple 3/4" x 2" Nipple 3/4" x 1-1/2" Nipple 3/4" x 2" Nipple 5elect Nipple per Table	1152133111	C C C C C C C C C C C C C C C C C C C
48 49	1" x 3" Nipple Select Nipple per Table		CH CH
50	2" x 3" Nipple	1	CH
51	2" x 5" Nipple	1	CH

Nipple	Select Appropriate Nipple Sizes per DV-5 Deluge Valve Size		
No.	4"	6"	8"
	(DN100)	(DN150)	(DN200)
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"

NOTES:

- Wet Pilot Actuation Trim is comprised of Items 1-51.
- 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.
- Horizontal Arrangement uses only 7 out of 8 of Item 25, and 2 out of 3 of Item 36.
 Discard unused material.

FIGURE 4 — PART 3 OF 3
4, 6 and 8 INCH (DN100, DN150, and DN200) MODEL DV-5 DELUGE VALVES
— EXPLODED VIEW OF HORIZONTAL WET PILOT ACTUATION TRIM (52-477-X-201) —

Supply Pressure, ⁽¹⁾	Maximum Pilot Height, (2) Feet (Meters)					
PSI	1-1/2"	2"	3"	4"	6"	8"
(Bar)	(DN40)	(DN50)	(DN80)	(DN100)	(DN150)	(DN200)
20	7	3	7	17	18	9
(1,4)	(1,4)	(0,9)	(1,4)	(5,2)	(5,5)	(2,7)
40	24	19	30	39	38	38
(2,8)	(7,3)	(5,8)	(9,1)	(11,9)	(11,6)	(11,6)
60	46	38	52	54	56	44
(4,1)	(14,0)	(11,6)	(15,8)	(16,5)	(17,1)	(13,4)
80	58	54	70	60	70	58
(5,5)	(17,8)	(16,5)	(21,3)	(18,3)	(21,3)	(17,8)
100	78	78	93	78	99	65
(6,9)	(23,8)	(23,8)	(28,3)	(23,8)	(30,2)	(19,8)
120	87	87	117	115	130	96
(8,3)	(26,5)	(26,5)	(35,7)	(35,10	(39,6)	(29,3)
140	105	107	139	142	154	141
(9,7)	(32,0)	(32,6)	(42,4)	(43,3)	(46,9)	(43,0)
160	127	123	161	176	161	170
(11,0)	(38,7)	(37,5)	(49,1)	(53,6)	(49,1)	(51,8)
175	134	138	172	171	194	194
(12,1)	(40,8)	(42,1)	(52,4)	(52,1)	(59,1)	(50,1)
200	160	160	206	223	216	206
(13,8)	(48,8)	(48,8)	(62,8)	(68,0)	(65,8)	(62,8)
225	185	166	237	233	246	250
(15,5)	(56,4)	(50,6)	(72,2)	(71,0)	(75,0)	(76,2)
250	201	199	251	247	275	257
(17,2)	(61,3)	(60,7)	(76,5)	(75,3)	(83,8)	(78,3)

 $^{^{(1)}}$ If supply pressure is variable, assume minimum expected value.

TABLE A 1-1/2 thru 8 INCH (DN40 thru DN200) MODEL DV-5 DELUGE VALVE WET PILOT DESIGN CRITERIA FOR UP TO 500 FEET OF EQUIVALENT LENGTH OF PILOT LINE (PIPE PLUS FITTINGS)

⁽²⁾ Maximum pilot height for up to 500 feet (150 meters) of equivalent length of pilot line (pipe plus fittings).

⁽³⁾ Interpolation between data points is permitted.

TFP1310 Page 13 of 16

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 only upon system operation is the secondary water supply (seawater or brackish water) allowed to enter the system should then 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.

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

NOTES

Proper operation of the Model 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, associated trim, and wet pilot lines 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 Model 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 2A/2B or 4.
- **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 3).
- **Step 8.** An Inspector's Test Connection, as described in the Technical Data section, must be provided for Wet Pilot Actuation systems.
- **Step 9.** Unused pressure alarm switch connections must be plugged.
- **Step 10.** Conduit and electrical connections are to be made in accordance

Page 14 of 16 TFP1310

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

Step 11. 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. 2A and 4) is to be temporarily replaced with a 1/2 inch NPT plug, the 3/32 inch Vent Fitting (16 - Fig. 2A and 4) 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, doublecheck 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 Model 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.
- **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.

Wet Pilot Actuation — Replace operated pilot sprinklers and/or reset the manual control stations.

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.

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.

- **Step 9.** Inspect the drain connection from the Manual Control Station. Any leaks must be corrected before proceeding to the next step.
- **Step 10.** Verify the ability for 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 monitor 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 does not indicate a 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.

NOTES

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.

TFP1310 Page 15 of 16

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.

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

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 seawater 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.

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

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 system's Main Control Valve.

Step 5. Close the Diaphragm Chamber Supply 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.

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.

IN NO EVENT SHALL TYCO FIRE PRODUCTS 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 FIRE PRODUCTS WAS INFORMED ABOUT THE POSSIBILITY OF SUCH DAMAGES, AND IN NO EVENT SHALL TYCO FIRE PRODUCTS' 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.

Page 16 of 16 TFP1310

Ordering Procedure

NOTE

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

DV-5 Semi-Preassembled Vertical Wet Pilot Actuation Trim:

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

1-1/2 & 2 Inch Galvanized . 1-1/2 & 2 Inch Black 1-1/2 & 2 Inch Brass	P/N 52-477-2-107 P/N 52-477-1-107 P/N 52-477-3-107
3 Inch Galvanized	P/N 52-477-2-104 P/N 52-477-1-104 P/N 52-477-3-104
4, 6 & 8 Inch Galvanized 4, 6 & 8 Inch Black 4, 6 & 8 Inch Brass	P/N 52-477-2-101 P/N 52-477-1-101 P/N 52-477-3-101

DV-5 Unassembled Wet Pilot Actuation Trim for Vertical or Horizontal Installation:

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

1-1/2 & 2 Inch Galvanized . 1-1/2 & 2 Inch Black 1-1/2 & 2 Inch Brass	P/N 52-477-2-207 P/N 52-477-1-207 P/N 52-477-3-207
3 Inch Galvanized 3 Inch Black	P/N 52-477-2-204 P/N 52-477-1-204 P/N 52-477-3-204
4, 6 & 8 Inch Galvanized 4, 6 & 8 Inch Black 4, 6 & 8 Inch Brass	P/N 52-477-2-201 P/N 52-477-1-201 P/N 52-477-3-201

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 PS10-2A	
Potter Electric	
Waterflow	
Pressure	
Alarm Switch	P/N 2571
Model WMA-1 Water	
Motor Alarm	P/N 52-630-1-001
Model MC-1	
Manual Control	
Stations with	
galvanized	
connections for	
remote wet pilot	
actuation	P/N 52-289-2-001

Replacement Trim Parts:

Specify: (description) for use with Model DV-5 Deluge Valve, P/N (see Figure 2A or 4).