DV-5 Preaction Type A Valve EN12845 Compliance

General Description

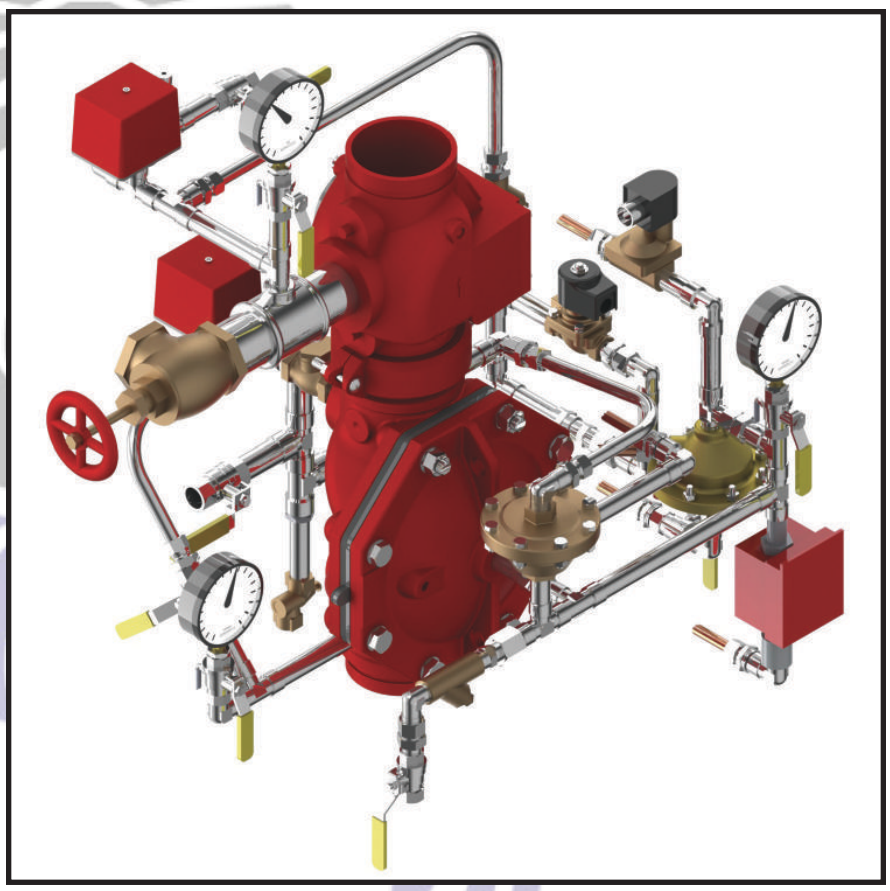
Fire protection systems controlled by the TYCO DV-5 Preaction Type A Valve utilize automatic sprinklers and a supplemental detection system. The supplemental detection system is typically comprised of 24 VDC heat detectors, smoke detectors, and manual pull stations. Actuation of the detection system automatically operates (releases) the DV-5 Deluge Valve, allowing water to flow into the sprinkler piping system and to be discharged from any sprinklers that may subsequently open. In the event of loss of power, the DV-5 Deluge Valve with Preaction Type A Trim will act as a regular dry-pipe valve station. The Preaction Type A assembly is rated for a maximum service pressure of 16 bar.

These DV-5 Preaction Type A Valves have been designed in accordance with the EN12845 Standard describing Preaction Type A Trim criteria. This standard defines operation as a dry pipe system activated by an automatic fire detection system but not operation of sprinklers.

Typically, the system designer selects detection components for the DV-5 Preaction Type A Valves that will respond to a fire sooner than the automatic sprinklers. Consequently, the system will experience a minimal delay in water delivery over that for a wet pipe sprinkler system because the system will have begun to fill with water before a sprinkler operates. Preaction Type A systems will need to be designed as wet pipe systems or according to the local authority having jurisdiction.

DV-5 Preaction Type A Valves are generally used to protect areas where there is danger of serious water damage that might result from damaged automatic sprinklers or piping. Typically, such areas include computer rooms, storage areas for valuable artifacts, libraries, and archives.

DV-5 Preaction Type A Valves are also effectively used to protect properties where a pre-alarm of a possible fire condition may allow time for fire extinguishment by alternate suppression means, prior to a sprinkler discharge. In the event the fire cannot otherwise be extinguished, the preaction sprinkler system will then perform as the primary fire protection system.



DV-5 Deluge Valve

The DV-5 Deluge Valve (Ref. Figure 1), 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 Preaction Type A Valve is set for service, the Diaphragm Chamber is pressurized through the trim connections from the inlet side of the system Main Control Valve, such as an OS&Y gate valve or butterfly valve (Ref. Figure 6). Refer to Technical Data Sheet TFP1305 for more DV-5 Deluge Valve details.

Riser Check Valve

In a DV-5 Preaction Type A Valve, a Model CV-1FR Riser Check Valve (Ref. Figure 2), which does not require the use of priming water, provides an air check so that the system can be automatically pressurized with a nominal supervisory air or nitrogen pressure (Ref. Graph B). A supervisory low/high pressure alarm switch that is set to transfer its contacts at nominally 0,7 bar, on decreasing pressure, is utilized to indicate whether there are any abnormal leaks in the sprinkler system piping. Loss of air pressure from the system as a result of a damaged sprinkler or broken piping will not cause the DV-5 Valve to open since the air pressure is for supervisory alarm only.

Detection System
Operation of an electrical detection device such as a heat-sensitive thermostat or smoke detector signals the deluge valve releasing panel to energize the Solenoid Valve. In turn, the energized Solenoid Valve opens to release water from the Diaphragm Chamber faster than it can be replenished through the restriction provided in the diaphragm supply connection. This release of water results in a rapid pressure drop in the Diaphragm Chamber to 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.

In the event of a fault in the fire detection system, the installation shall operate as an ordinary dry pipe system, which means the energized-to-close Solenoid Valve in the actuation loop will open. As soon as a sprinkler operates/activates, the subsequent drop in air pressure opens the Dry Pilot Actuator. Water from the diaphragm pressure piping will exit the Dry Pilot Actuator through this drain, resulting in the activation of the DV-5 Deluge Valve.

Fail-Safe Valve
As water flows into the system, pressurization of the pilot chamber opens the Model FSV-1 Fail-Safe Valve. With the Model FSV-1 Valve open, make-up pressure to the diaphragm chamber of the DV-5 Valve cannot occur, thereby preventing inadvertent closing of the DV-5 Valve during a fire, as may be the case should the Solenoid Valve become de-energized after its initial operation. Refer to Technical Data Sheet TFP1386 for more Model FSV-1 Fail Safe Valve details.

Dry Pilot Actuator
In the case of dry pilot actuation, air pressure is released from the system piping due to the opening of an automatic sprinkler. When actuated by this event, the Model DP-1 Dry Pilot permits the release of water pressure from the deluge valve differential chamber, thereby allowing the DV-5 Deluge Valve to open. Refer to Technical Data Sheet TFP1380 for more Model DP-1 Dry Pilot Actuator details.

NOTICE

The DV-5 Preaction Type A Valves described herein must be installed and maintained in compliance with this document, as well as with the EN12825 installation standard of preaction systems, in addition to the standards of any other authorities having jurisdiction. Failure to do so may impair the performance of the related devices. Owners are responsible for maintaining their fire protection system and devices in proper operating condition. Contact the installing contractor or product manufacturer with any questions.

Technical Data

Approvals
Sizes DN100 and DN150 are VdS Approved and have been designed in accordance with EN12845.

For more information on approvals, contact Tyco Fire Protection Products (TFPP) at the following office:

Kopersteden 1
7547 TJ Enschede
The Netherlands
Tel: +31-(0)53-428-4444
Fax: +31-(0)53-428-3377

Nominal Sizes
DN40 thru DN200

Deluge Valve
DV-5

Riser Check Valve
Model CV-1FR

DN40 risers utilize a DN50 Riser Check valve in combination with the DN40 DV-5 Deluge Valve.

Valve Trim
The trim arrangement is provided with galvanized fittings. The galvanized trim is intended for non-corrosive or corrosive conditions.

Maximum Service Pressure
16 bar

Detection System
In order for DV-5 Preaction Type A Valves to be hydraulically calculated as a wet pipe system, the detection system must be designed to operate sooner than the automatic sprinklers on the sprinkler piping.

DV-5 Preaction Type A Valve provides for electric operation of the DV-5 Valve by a detection system consisting of electrical devices such as heat sensitive thermostats, smoke detectors, and/or manual pull stations. Nominal installation dimensions for the Preaction Type A Trim configuration are shown in Figure 4.

NOTICE

Consult with the authority having jurisdiction regarding installation criteria pertaining to electric actuation circuitry.

System Air Pressure Requirements
The DV-5 Preaction Type A Valve includes a Model DP-1 Dry Pilot Actuator, an auxiliary releasing device. The Model DP-1 Valve actuates control valves upon release of air (or nitrogen) pressure (Ref. TFP1380).

The air (or nitrogen) pressure in the sprinkler system is recommended to be automatically maintained using one of the following pressure maintenance devices, as appropriate:

- an air supply in combination with Model AMD-1 Air Maintenance Device (pressure-reducing type) described in TFP1221
- an air supply in combination with Model AMD-2 Air Maintenance Device (compressor-control type) described in TFP1231
- a nitrogen cylinder in combination with Model AMD-3 Nitrogen Maintenance Device (high pressure-reducing type) described in TFP1241
- the minimum system supply pressure is 3,0 bar

NOTICE

The dew point of the air or nitrogen supply for a system exposed to freezing conditions must be maintained below the lowest ambient temperature to which the system piping will be exposed. Introduction of moisture into the system piping can create ice build-up which could prevent proper operation of the system.

The Supervisory Low/High Pressure Alarm Switch (Ref. Figures 3, 5 and 6) is factory set for 2,8 bar normal system pressure. The low pressure alarm is set to operate at a pressure decrease of 0,7 bar at 2,1 bar.

The high pressure alarm is set to operate at a pressure increase of 0,7 bar at 3,5 bar. The Pressure Relief Valve (Ref. Figure 3) is factory set to fully open at 3,1 bar plus or minus 0,14 bar.

Friction Loss
The nominal pressure loss versus flow data for the DV-5 Deluge Valve plus Riser Check Valve is provided in Graph A.

VALVE PARTS

No.	Description	Qty.	Repair Parts
1	Valve Body	1	NR
2	Diaphragm	1	(a)
3	Diaphragm Cover	1	NR
4	Flat Washer:		
	DN40 Valve, M12	4	CH
	DN50 & DN80 Valve, M16	4	CH
	DN100 & DN150 Valve, M16	8	CH
	DN200 Valve, M20	8	CH
5	Hex Bolt:		
	DN40 Valve, M12 x 30 mm	4	CH
	DN50 & DN80 Valve, M16 x 50 mm	4	CH
	DN100 Valve, M16 x 50 mm	6	CH
	DN150 Valve, M16 x 55 mm	6	CH
	DN200 Valve, M20 x 70 mm	6	CH
6	Hex Nut:		
	DN100 & DN150 Valve, M16	2	CH
	DN200 Valve, M20	2	CH

NOTES:

1. NR - Not Replaceable
2. CH - Common Hardware
3. Valve Bodies of DN100, DN150 & DN200 valves are equipped with studs and Valve Covers are secured by Hex Nuts and Hex Bolts.
4. V-Ring is attached to Diaphragm of DN100, DN150 & DN200 valves at factory. If, during internal valve inspection, V-Ring is discovered to be detached from Diaphragm, be advised that V-Ring is a required valve component and that detachment will not affect normal valve operation or performance. Should V-Ring become detached, reinstall between Diaphragm and Diaphragm Cover concentrically as shown.

NOTE: *Do not apply adhesives, lubricants, or other substances to Diaphragm, V-Ring, or Valve Body.*

REPLACEMENT PARTS

No.	Description	P/N
(a)	Diaphragm Kit, Includes Item 2:	
	DN40 Valve	92-477-1-105
	DN50 Valve	92-477-1-107
	DN80 Valve	92-477-1-109
	DN100 Valve	92-477-1-101
	DN150 Valve	92-477-1-103
	DN200 Valve	92-477-1-111

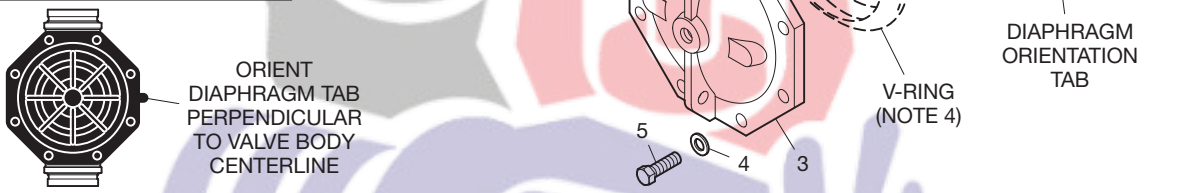


FIGURE 1
DV-5 VALVE ASSEMBLY

Detail	Part	Material	Qty.
1	Body	Ductile Iron	1
2	Cover	Ductile Iron	1
3	Cover Gasket	Nitrile Rubber	1
4	Hex Cap Screw	Steel, Zinc Plated	AR
5	Clapper	Stainless Steel	1

Detail	Part	Material	Qty.
6	Clapper Facing	EPDM Grade "E"	1
7	Spring	Stainless Steel	1
8	Hinge Shaft	Stainless Steel	1
9	Retaining Ring	Stainless Steel	AR
11	Retention Bolt	Stainless Steel	1

Detail	Part	Material	Qty.
13	Retaining Disc	Stainless Steel	1
14	Locknut	Stainless Steel	1
15	Adhesive	Thread Sealer	AR
16	Nameplate	Aluminum	1
17	Rivet	Steel	2

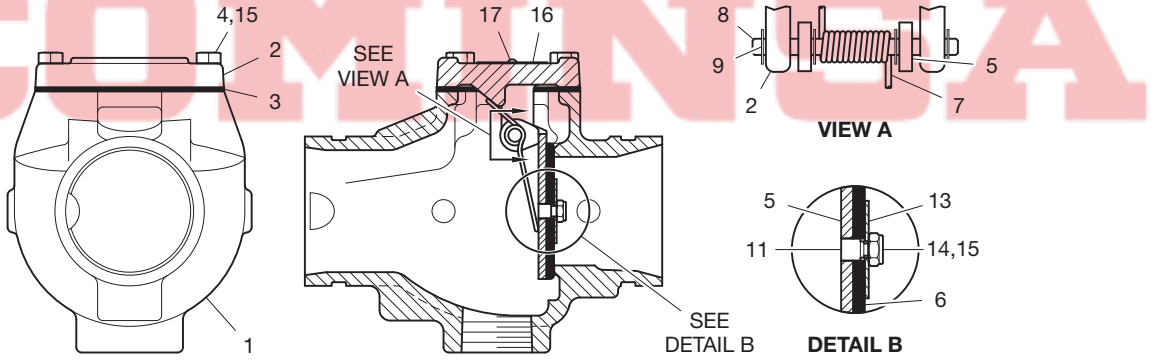


FIGURE 2
MODEL CV-1FR CHECK VALVE ASSEMBLY

NO.	DESCRIPTION	QTY
1	Tube, 15 x 1mm, 550 x 400mm; P/N WS00000124	1
2	Tube, 15 x 1mm, 370 x 225mm; P/N WS00000096	2
3	Pipe, 10 x 12mm, 900mm; P/N WS00000007	5
4	Hose, 3 x 6mm, 1.2m; P/N WS00000004	3
5	Check Valve, 1/2" NPT; P/N V923221002	2
6	Union, DN15 x DN15; P/N UTDMDFN	5
7	Tee, DN20 x DN20 x DN20; P/N TTEMEEFN	2
8	Tee, DN20 x DN20 x DN20; P/N TTEEEFN	2
9	Tee, DN15 x DN15 x DN15; P/N TTDMDFDMN	2
10	Tee, DN15 x DN15 x DN15; P/N TTDMDDFN	5
11	Tee, DN15 x DN15 x DN15; P/N TTDDMDFN	1
12	Tee, DN15; P/N TTDDDFN	6
13	Adapter, DN15 x DN15; P/N STDDFN	1
14	Reducer, DN20 x DN15; P/N RTEMDFN	1
15	Reducer, DN20 x DN15; P/N RTEDMN	2
16	Reducer, DN15 x DN8; P/N RTDMBFN	5
17	Elbow, DN15 x DN15; P/N ETDMDFN	5
18	Elbow, DN15 x DN15; P/N ETDDMN	2
19	Elbow, DN15 x DN15; P/N ETDDFN	5
20	Adapter, DN20 x DN20; P/N ATEEMN	2
21	Compression Fitting, DN15 x 15mm; P/N ATDMCON	6
22	Pipe Nipple, 1/2" x 90mm; P/N AP90D2	1
23	Pipe Nipple, 1" x 80mm; P/N AP80F2	1
24	Pipe Nipple, 3/4" x 80mm; P/N AP80E2	2
25	Pipe Nipple, 1/2" x 80mm; P/N AP80D2	2
26	Pipe Nipple, 1/2" x 70mm; P/N AP70D2	1
27	Pipe Nipple, 1/2" x 60mm; P/N AP60D2	4
28	Pipe Nipple, 1/2" x 50mm; P/N AP50D2	3
29	Pipe Nipple, 1/2" x 40mm; P/N AP40D2	4
30	Pipe Nipple, 1/2" x 250mm; P/N AP250D2	1
31	Pipe Nipple, 1/2" x 160mm; P/N AP160D2	3
32	Pipe Nipple, 3/4" x 100mm; P/N AP100E2	2

NO.	DESCRIPTION	QTY
33	Plug, 3/4"; P/N A291E2	1
34	Plug, 1/4"; P/N A290B2	2
35	Reducing Tee, 1" x 3/4" x 1/2"; P/N A130RFDE2	1
36	Pressure Relief Valve, 1/4"; P/N 923431020	1
37	Air Pressure Gauge, 250 PSI; P/N 923431012	1
38	Tube Connector, 1/2" x 12mm; P/N 81900211	5
39	Reducing Coupling, Figure 716, 2" x 1-1/2" - DN50 x DN40; P/N 716AE20151	1
40	Restriction, 3mm Orifice, 1/2" x 1/2"; P/N 700485	1
41	Riser Check Valve, Model CV-1FR, 2" - DN50; P/N 595901020	1
42	Ball Valve, DN15, Venthole M5; P/N 59304FO	3
43	Deluge Valve, DV-5, 1-1/2" - DN40, ISO Ports; P/N 524771919	1
44	Fail Safe Valve, Model FSV-1; P/N 523431001	1
45	Break Station, Model MC-1; P/N 522892001	1
46	Solenoid Valve, 24 VDC, 1/2" NPT, 20-250 PSI / 1.4-17.2 bar; P/N 522871124P	1
47	Dry Pilot Actuator, Model B-1; P/N 522801001	1
48	Check Valve, Swing Type, 3/4"; P/N 460491005	1
49	Check Valve, Swing Type, 1/2"; P/N 460491004D	1
50	Elbow, WES 3mm x M5; P/N 406012	3
51	Solenoid Valve, 24 VDC, 1/2" NPT, 0.2 - 16 bar; P/N 2191866	1
52	Drain Valve, Self-Closing, 1/2" NPT; P/N 2162156	1
53	Strainer, 1/2" NPT; P/N 20005025	2
54	Ball Valve, DN20; P/N 1610000270	2
55	Ball Valve, DN15; P/N 1610000210	4
56	Angle Valve, 3/4"; P/N 126S00270D	1
57	Pressure Switch, Model PS40-2; P/N 0263	1
58	Pressure Switch, Model PS10-2; P/N 0261	1
59	Water Pressure Gauge, 300 PSI; P/N 025500013	3

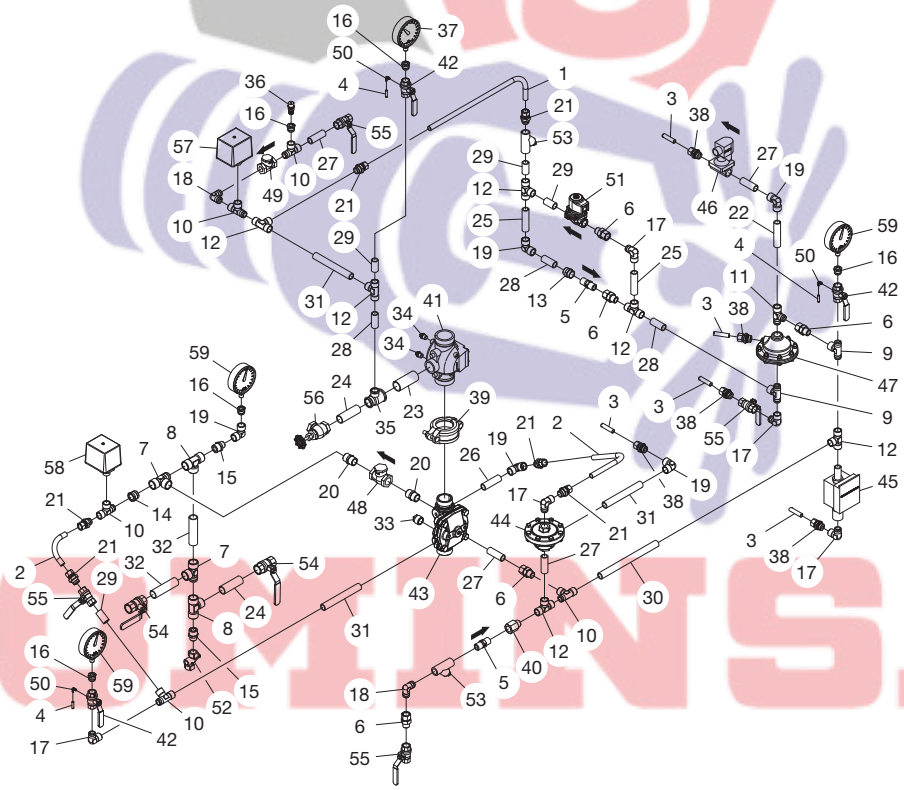


FIGURE 3 (1 OF 6)
DN40 DV-5 PREACTION TYPE A TRIM ASSEMBLY
EXPLODED VIEW

NO.	DESCRIPTION	QTY
1	Tube, 15 x 1mm, 550 x 400mm; P/N WS00000124	1
2	Tube, 15 x 1mm, 370 x 225mm; P/N WS00000096	2
3	Pipe, 10 x 12mm, 900mm; P/N WS00000007	5
4	Hose, 3 x 6mm, 1.2m; P/N WS00000004	3
5	Check Valve, 1/2" NPT; P/N V923221002	2
6	Union, DN15 x DN15; P/N UTDMDFN	5
7	Tee, DN20 x DN20 x DN20; P/N TTEMEEFN	2
8	Tee, DN20 x DN20 x DN20; P/N TTEEEFN	2
9	Tee, DN15 x DN15 x DN15; P/N TTDMDFDMN	2
10	Tee, DN15 x DN15 x DN15; P/N TTDMDDFN	5
11	Tee, DN15 x DN15 x DN15; P/N TTDDMDFN	1
12	Tee, DN15; P/N TTDDDFN	6
13	Adapter, DN15 x DN15; P/N STDDFN	1
14	Reducer, DN20 x DN15; P/N RTEMDFN	1
15	Reducer, DN20 x DN15; P/N RTEDMN	2
16	Reducer, DN15 x DN8; P/N RTDMBFN	5
17	Elbow, DN15 x DN15; P/N ETDMDFN	5
18	Elbow, DN15 x DN15; P/N ETDDMN	2
19	Elbow, DN15 x DN15; P/N ETDDFN	5
20	Adapter, DN20 x DN20; P/N ATEEMN	2
21	Compression Fitting, DN15 x 15mm; P/N ATDMCON	6
22	Pipe Nipple, 1/2" x 90mm; P/N AP90D2	1
23	Pipe Nipple, 1" x 80mm; P/N AP80F2	1
24	Pipe Nipple, 3/4" x 80mm; P/N AP80E2	2
25	Pipe Nipple, 1/2" x 80mm; P/N AP80D2	2
26	Pipe Nipple, 1/2" x 70mm; P/N AP70D2	1
27	Pipe Nipple, 1/2" x 60mm; P/N AP60D2	4
28	Pipe Nipple, 1/2" x 50mm; P/N AP50D2	3
29	Pipe Nipple, 1/2" x 40mm; P/N AP40D2	4
30	Pipe Nipple, 1/2" x 250mm; P/N AP250D2	1
31	Pipe Nipple, 1/2" x 160mm; P/N AP160D2	2
32	Pipe Nipple, 1/2" x 150mm; P/N AP150D2	1

NO.	DESCRIPTION	QTY
33	Pipe Nipple, 3/4" x 100mm; P/N AP100E2	2
34	Plug, 3/4"; P/N A291E2	1
35	Plug, 1/4"; P/N A290B2	2
36	Reducing Tee, 1" x 3/4" x 1/2"; P/N A130RFDE2	1
37	Pressure Relief Valve, 1/4"; P/N 923431020	1
38	Air Pressure Gauge, 250 PSI; P/N 923431012	1
39	Tube Connector, 1/2" x 12mm; P/N 81900211	5
40	Restriction, 3mm Orifice, 1/2" x 1/2"; P/N 700485	1
41	Riser Check Valve, Model CV-1FR, 2" - DN50; P/N 595901020	1
42	Ball Valve, DN15, Venthole M5; P/N 59304FO	3
43	Rigid Coupling, Figure.577,.2". - DN50;.P/N 577ME00601	1
44	Deluge Valve, DV-5, 2" - DN50, ISO Ports; P/N 524771910	1
45	Fail Safe Valve, Model FSV-1; P/N 523431001	1
46	Break Station, Model MC-1; P/N 522892001	1
47	Solenoid Valve, 24 VDC, 1/2" NPT, 20-250 PSI / 1.4-17.2 bar; P/N 522871124P	1
48	Dry Pilot Actuator, Model B-1; P/N 522801001	1
49	Check Valve, Swing Type, 3/4"; P/N 460491005	1
50	Check Valve, Swing Type, 1/2"; P/N 460491004D	1
51	Elbow, WES 3mm x M5; P/N 406012	3
52	Solenoid Valve, 24 VDC, 1/2" NPT, 0.2 - 16 bar; P/N 2191866	1
53	Drain Valve, Self-Closing, 1/2" NPT; P/N 2162156	1
54	Strainer, 1/2" NPT; P/N 20005025	2
55	Ball Valve, DN20; P/N 1610000270	2
56	Ball Valve, DN15; P/N 1610000210	4
57	Angle Valve, 3/4"; P/N 126S00270D	1
58	Pressure Switch, Model PS40-2; P/N 0263	1
59	Pressure Switch, Model PS10-2; P/N 0261	1
60	Water Pressure Gauge, 300 PSI; P/N 025500013	3

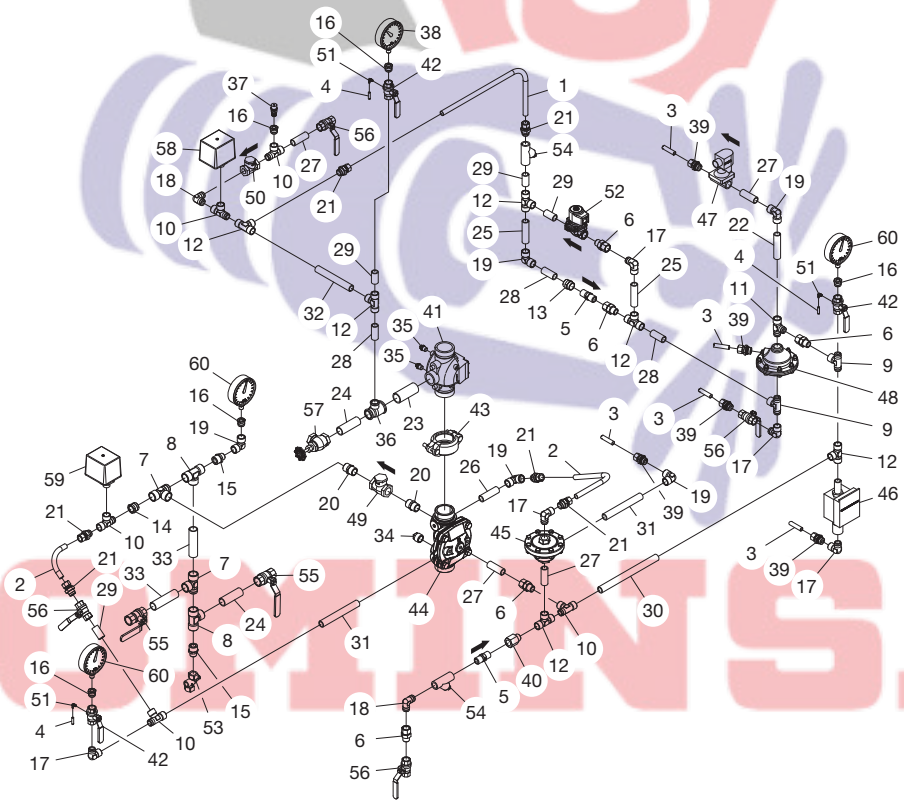


FIGURE 3 (2 OF 6)
DN50 DV-5 PREACTION TYPE A TRIM ASSEMBLY
EXPLODED VIEW

NO.	DESCRIPTION	QTY
1	Tube, 15 x 1mm, 550 x 400mm; P/N WS00000124	1
2	Tube, 15 x 1mm, 370 x 225mm; P/N WS00000096	2
3	Pipe, 10 x 12mm, 900mm; P/N WS00000007	5
4	Hose, 3 x 6mm, 1.2m; P/N WS00000004	3
5	Check Valve, 1/2" NPT; P/N V923221002	2
6	Union, DN15 x DN15; P/N UTDMDFN	5
7	Tee, DN20 x DN20 x DN20; P/N TTEMEEFN	2
8	Tee, DN20 x DN20 x DN20; P/N TTEEEFN	2
9	Tee, DN15 x DN15 x DN15; P/N TTDMDFDMN	2
10	Tee, DN15 x DN15 x DN15; P/N TTDMDDFN	6
11	Tee, DN15 x DN15 x DN15; P/N TTDDMDFN	1
12	Tee, DN15; P/N TTDDDFN	5
13	Adapter, DN15 x DN15; P/N STDDFN	1
14	Reducer, DN20 x DN15; P/N RTFEMN	1
15	Reducer, DN20 x DN15; P/N RTEMDFN	2
16	Reducer, DN20 x DN15; P/N RTEDMN	1
17	Reducer, DN15 x DN8; P/N RTDMBFN	5
18	Elbow, DN15 x DN15; P/N ETDMDFN	5
19	Elbow, DN15 x DN15; P/N ETDDMN	2
20	Elbow, DN15 x DN15; P/N ETDDFN	5
21	Adapter, DN20 x DN20; P/N ATEEMN	1
22	Compression Fitting, DN15 x 15mm; P/N ATDMCON	6
23	Pipe Nipple, 1/2" x 90mm; P/N AP90D2	1
24	Pipe Nipple, 1-1/4" x 80mm; P/N AP80G2	2
25	Pipe Nipple, 3/4" x 80mm; P/N AP80E2	1
26	Pipe Nipple, 1/2" x 80mm; P/N AP80D2	4
27	Pipe Nipple, 1/2" x 70mm; P/N AP70D2	1
28	Pipe Nipple, 1/2" x 60mm; P/N AP60D2	6
29	Pipe Nipple, 1/2" x 50mm; P/N AP50D2	2
30	Pipe Nipple, 1/2" x 40mm; P/N AP40D2	1
31	Pipe Nipple, 1/2" x 250mm; P/N AP250D2	1
32	Pipe Nipple, 1/2" x 160mm; P/N AP160D2	2
33	Pipe Nipple, 1/2" x 120mm; P/N AP120D2	1

NO.	DESCRIPTION	QTY
34	Pipe Nipple, 3/4" x 100mm; P/N AP100E2	2
35	Plug, 1-1/4"; P/N A291G2	1
36	Plug, 1/4"; P/N A290B2	2
37	Reducing Tee, 1-1/4" x 1-1/4" x 1/2"; P/N A130RGDG2	1
38	Pressure Relief Valve, 1/4"; P/N 923431020	1
39	Air Pressure Gauge, 250 PSI; P/N 923431012	1
40	Tube Connector, 1/2" x 12mm; P/N 81900211	5
41	Restriction, 3mm Orifice, 1/2" x 1/2"; P/N 700485	1
42	Riser Check Valve, Model CV-1FR, 3" - DN80; P/N 595901030	1
43	Ball Valve, DN15, Venthole M5; P/N 59304FO	3
44	Rigid Coupling, Figure 577, 3" - DN80; P/N 577ME00891	1
45	Deluge Valve, DV-5, 3" - DN80, ISO Ports; P/N 524771922	1
46	Fail Safe Valve, Model FSV-1; P/N 523431001	1
47	Break Station, Model MC-1; P/N 522892001	1
48	Solenoid Valve, 24 VDC, 1/2" NPT, 20-250 PSI / 1.4-17.2 bar; P/N 522871124P	1
49	Dry Pilot Actuator, Model B-1; P/N 522801001	1
50	Check Valve, Swing Type, 3/4"; P/N 460491005	1
51	Check Valve, Swing Type, 1/2"; P/N 460491004D	1
52	Elbow, WES 3mm x M5; P/N 406012	3
53	Solenoid Valve, 24 VDC, 1/2" NPT, 0.2 - 16 bar; P/N 2191866	1
54	Drain Valve, Self-Closing, 1/2" NPT; P/N 2162156	1
55	Strainer, 1/2" NPT; P/N 20005025	2
56	Ball Valve, DN20; P/N 1610000270	2
57	Ball Valve, DN15; P/N 1610000210	4
58	Angle Valve, 1-1/4"; P/N 126S00420D	1
59	Pressure Switch, Model PS40-2; P/N 0263	1
60	Pressure Switch, Model PS10-2; P/N 0261	1
61	Water Pressure Gauge, 300 PSI; P/N 025500013	3

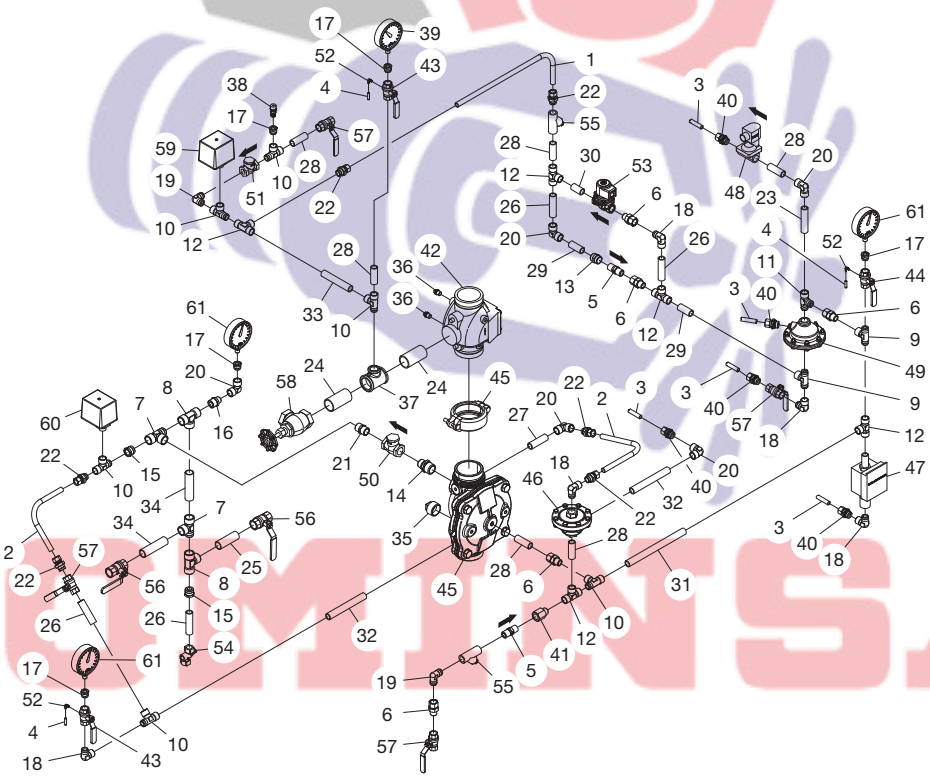


FIGURE 3 (3 OF 6)
DN80 DV-5 PREACTION TYPE A TRIM ASSEMBLY
EXPLODED VIEW

NO.	DESCRIPTION	QTY
1	Tube, 15 x 1mm, 550 x 400mm; P/N WS00000124	1
2	Tube, 15 x 1mm, 370 x 225mm; P/N WS00000096	2
3	Pipe, 10 x 12mm, 900mm; P/N WS00000007	5
4	Hose, 3 x 6mm, 1.2m; P/N WS00000004	3
5	Check Valve, 1/2" NPT; P/N V923221002	2
6	Union, DN15 x DN15; P/N UTDMDFN	5
7	Tee, DN20 x DN20 x DN20; P/N TTEMEEFN	2
8	Tee, DN20 x DN20 x DN20; P/N TTEEEFN	2
9	Tee, DN15 x DN15 x DN15; P/N TTDMDFDMN	2
10	Tee, DN15 x DN15 x DN15; P/N TTDMDDFN	6
11	Tee, DN15 x DN15 x DN15; P/N TTDDMDFN	1
12	Tee, DN15; P/N TTDDDFN	5
13	Adapter, DN15 x DN15; P/N STDDFN	1
14	Reducer, DN20 x DN15; P/N RTFEMN	1
15	Reducer, DN20 x DN15; P/N RTEMDFN	2
16	Reducer, DN20 x DN15; P/N RTEDMN	1
17	Reducer, DN15 x DN8; P/N RTDMBFN	5
18	Elbow, DN15 x DN15; P/N ETDMDFN	5
19	Elbow, DN15 x DN15; P/N ETDDMN	2
20	Elbow, DN15 x DN15; P/N ETDDFN	5
21	Adapter, DN20 x DN20; P/N ATEEMN	1
22	Compression Fitting, DN15 x 15mm; P/N ATDMCON	6
23	Pipe Nipple, 1/2" x 90mm; P/N AP90D2	1
24	Pipe Nipple, 2" x 80mm; P/N AP80I2	2
25	Pipe Nipple, 3/4" x 80mm; P/N AP80E2	2
26	Pipe Nipple, 1/2" x 80mm; P/N AP80D2	4
27	Pipe Nipple, 1/2" x 70mm; P/N AP70D2	2
28	Pipe Nipple, 1/2" x 60mm; P/N AP60D2	6
29	Pipe Nipple, 1/2" x 50mm; P/N AP50D2	1
30	Pipe Nipple, 1/2" x 250mm; P/N AP250D2	1
31	Pipe Nipple, 1/2" x 160mm; P/N AP160D2	1
32	Pipe Nipple, 1/2" x 140mm; P/N AP140D2	1
33	Pipe Nipple, 1/2" x 120mm; P/N AP120D2	1

NO.	DESCRIPTION	QTY
34	Pipe Nipple, 3/4" x 100mm; P/N AP100E2	1
35	Pipe Nipple, 1/2" x 100mm; P/N AP100D2	1
36	Plug, 2"; P/N A291I2	1
37	Plug, 1/4"; P/N A290B2	2
38	Reducing Tee, 2" x 2" x 1/2"; P/N A130RIDI2	1
39	Pressure Relief Valve, 1/4"; P/N 923431020	1
40	Air Pressure Gauge, 250 PSI; P/N 923431012	1
41	Tube Connector, 1/2" x 12mm; P/N 81900211	5
42	Restriction, 3mm Orifice, 1/2" x 1/2"; P/N 700485	1
43	Riser Check Valve, Model CV-1FR, 4" - DN100; P/N 595901040	1
44	Ball Valve, DN15, Venthole M5; P/N 59304FO	3
45	Rigid Coupling, Figure 577, 4" - DN100; P/N 577ME01141	1
46	Deluge Valve, DV-5, 4" - DN100, ISO Ports; P/N 524771923	1
47	Fail Safe Valve, Model FSV-1; P/N 523431001	1
48	Break Station, Model MC-1; P/N 522892001	1
49	Solenoid Valve, 24 VDC, 1/2" NPT, 20-250 PSI / 1.4-17.2 bar; P/N 522871124P	1
50	Dry Pilot Actuator, Model B-1; P/N 522801001	1
51	Check Valve, Swing Type, 3/4"; P/N 460491005	1
52	Check Valve, Swing Type, 1/2"; P/N 460491004D	1
53	Elbow, WES 3mm x M5; P/N 406012	3
54	Solenoid Valve, 24 VDC, 1/2" NPT, 0.2 - 16 bar; P/N 2191866	1
55	Drain Valve, Self-Closing, 1/2" NPT; P/N 2162156	1
56	Strainer, 1/2" NPT; P/N 20005025	2
57	Ball Valve, DN20; P/N 1610000270	2
58	Ball Valve, DN15; P/N 1610000210	4
59	Angle Valve, 2"; P/N 028300060	1
60	Pressure Switch, Model PS40-2; P/N 0263	1
61	Pressure Switch, Model PS10-2; P/N 0261	1
62	Water Pressure Gauge, 300 PSI; P/N 025500013	3

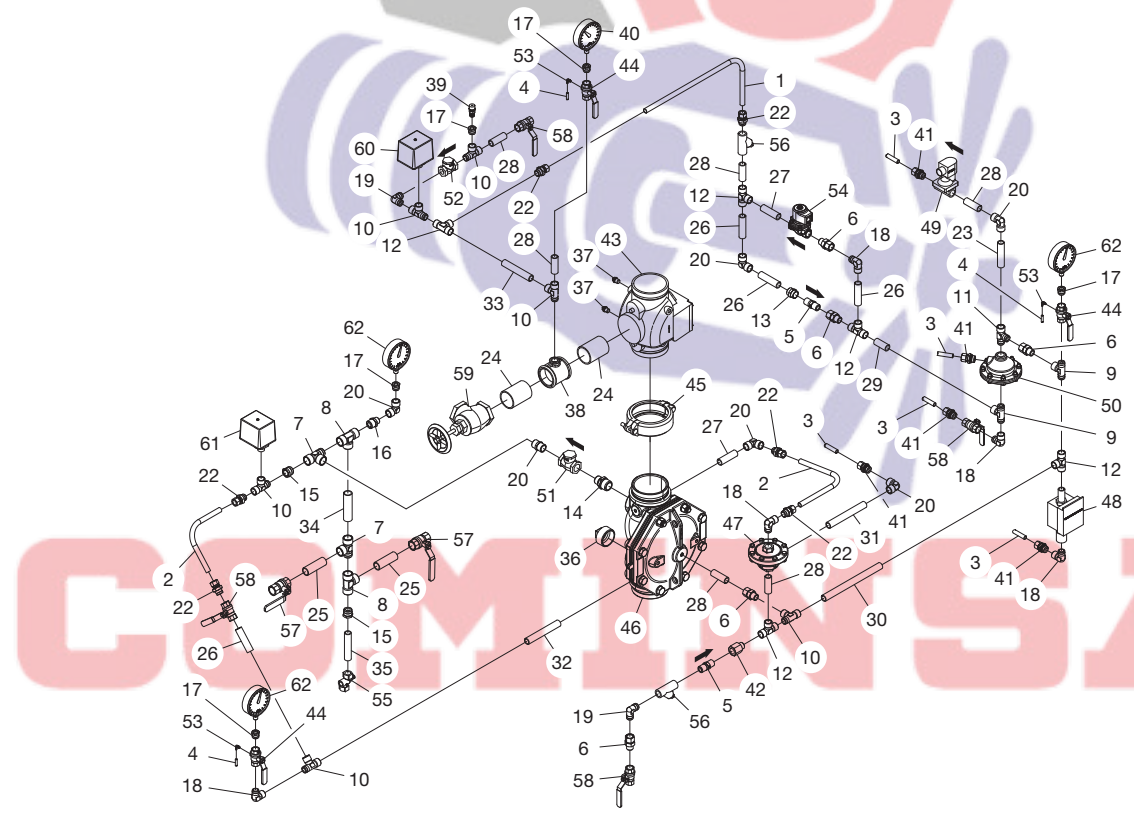


FIGURE 3 (4 OF 6)
DN100 DV-5 PREACTION TYPE A TRIM ASSEMBLY
EXPLODED VIEW

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NO.	DESCRIPTION	QTY
1	Tube, 15 x 1mm, 550 x 400mm; P/N WS00000124	1
2	Tube, 15 x 1mm, 370 x 225mm; P/N WS00000096	2
3	Pipe, 10 x 12mm, 900mm; P/N WS00000007	5
4	Hose, 3 x 6mm, 1.2m; P/N WS00000004	3
5	Check Valve, 1/2" NPT; P/N V923221002	2
6	Union, DN15 x DN15; P/N UTDMDFN	5
7	Tee, DN20 x DN20 x DN20; P/N TTEMEEFN	2
8	Tee, DN20 x DN20 x DN20; P/N TTEEEFN	2
9	Tee, DN15 x DN15 x DN15; P/N TTDMDFDMN	2
10	Tee, DN15 x DN15 x DN15; P/N TTDMDDFN	6
11	Tee, DN15 x DN15 x DN15; P/N TTDDMDFN	1
12	Tee, DN15; P/N TTDDDFN	5
13	Adapter, DN15 x DN15; P/N STDDFN	1
14	Reducer, DN20 x DN15; P/N RTFEMN	1
15	Reducer, DN20 x DN15; P/N RTEMDFN	3
16	Reducer, DN15 x DN8; P/N RTDMBFN	5
17	Elbow, DN15 x DN15; P/N ETDMDFN	5
18	Elbow, DN15 x DN15; P/N ETDDMN	2
19	Elbow, DN15 x DN15; P/N ETDDFN	5
20	Adapter, DN20 x DN20; P/N ATEEMN	1
21	Compression Fitting, DN15 x 15mm; P/N ATDMCON	6
22	Pipe Nipple, 1/2" x 90mm; P/N AP90D2	1
23	Pipe Nipple, 2" x 80mm; P/N AP80I2	2
24	Pipe Nipple, 3/4" x 80mm; P/N AP80E2	2
25	Pipe Nipple, 1/2" x 80mm; P/N AP80D2	3
26	Pipe Nipple, 1/2" x 70mm; P/N AP70D2	1
27	Pipe Nipple, 1/2" x 60mm; P/N AP60D2	6
28	Pipe Nipple, 1/2" x 50mm; P/N AP50D2	1
29	Pipe Nipple, 1/2" x 250mm; P/N AP250D2	1
30	Pipe Nipple, 1/2" x 190mm; P/N AP190D2	1
31	Pipe Nipple, 1/2" x 150mm; P/N AP150D2	1
32	Pipe Nipple, 1/2" x 140mm; P/N AP140D2	2
33	Pipe Nipple, 1/2" x 130mm; P/N AP130D2	1

NO.	DESCRIPTION	QTY
34	Pipe Nipple, 1/2" x 120mm; P/N AP120D2	2
35	Pipe Nipple, 3/4" x 100mm; P/N AP100E2	1
36	Plug, 2"; P/N A291I2	1
37	Plug, 1/4"; P/N A290B2	2
38	Reducing Tee, 2" x 2" x 1/2"; P/N A130RIDI2	1
39	Pressure Relief Valve, 1/4"; P/N 923431020	1
40	Air Pressure Gauge, 250 PSI; P/N 923431012	1
41	Tube Connector, 1/2" x 12mm; P/N 81900211	5
42	Restriction, 3mm Orifice, 1/2" x 1/2"; P/N 700485	1
43	Riser Check Valve, Model CV-1FR, 6" - DN150; P/N 595901060	1
44	Ball Valve, DN15, Venthole M5; P/N 59304FO	3
45	Rigid Coupling, Figure 577, 6" - DN150; P/N 577ME01681	1
46	Deluge Valve, DV-5, 6" - DN150, ISO Ports; P/N 524771925	1
47	Fail Safe Valve, Model FSV-1; P/N 523431001	1
48	Break Station, Model MC-1; P/N 522892001	1
49	Solenoid Valve, 24 VDC, 1/2" NPT, 20-250 PSI / 1.4-17.2 bar; P/N 522871124P	1
50	Dry Pilot Actuator, Model B-1; P/N 522801001	1
51	Check Valve, Swing Type, 3/4"; P/N 460491005	1
52	Check Valve, Swing Type, 1/2"; P/N 460491004D	1
53	Elbow, WES 3mm x M5; P/N 406012	3
54	Solenoid Valve, 24 VDC, 1/2" NPT, 0.2 - 16 bar; P/N 2191866	1
55	Drain Valve, Self-Closing, 1/2" NPT; P/N 2162156	1
56	Strainer, 1/2" NPT; P/N 20005025	2
57	Ball Valve, DN20; P/N 1610000270	2
58	Ball Valve, DN15; P/N 1610000210	4
59	Angle Valve, 2"; P/N 028300060	1
60	Pressure Switch, Model PS40-2; P/N 0263	1
61	Pressure Switch, Model PS10-2; P/N 0261	1
62	Water Pressure Gauge, 300 PSI; P/N 025500013	3

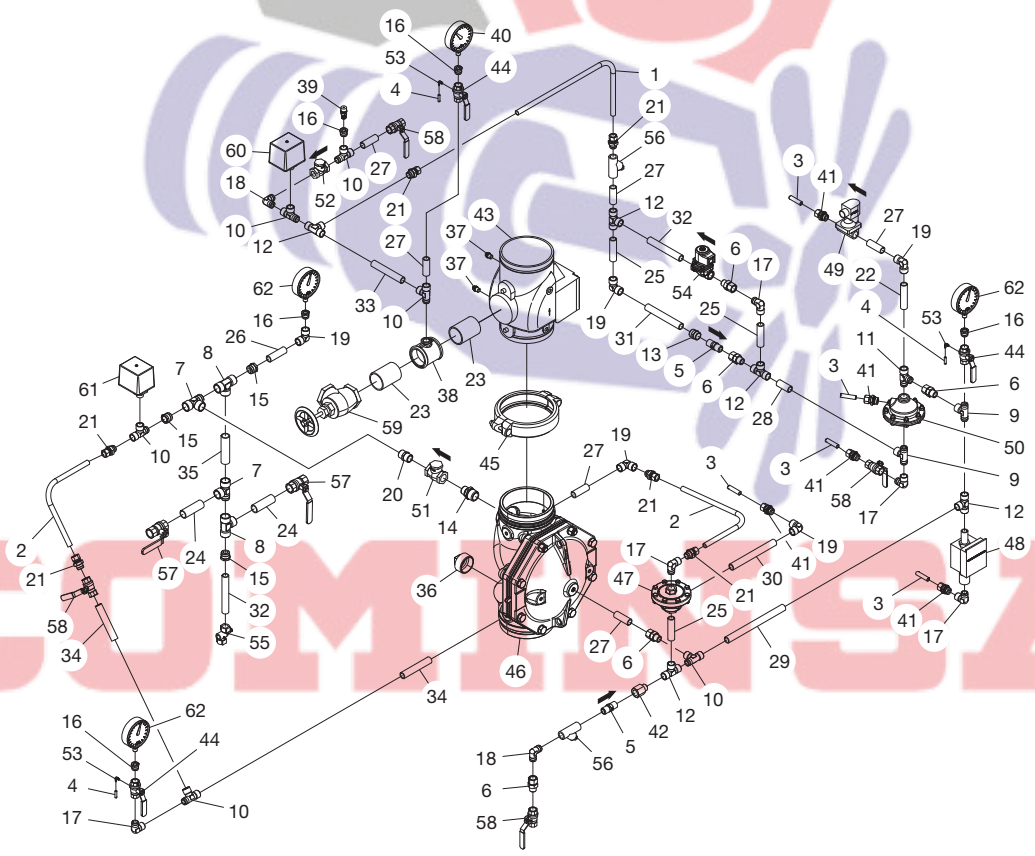


FIGURE 3 (5 OF 6)
DN150 DV-5 PREACTION TYPE A TRIM ASSEMBLY
EXPLODED VIEW

NO.	DESCRIPTION	QTY
1	Tube, 15 x 1mm, 550 x 400mm; P/N WS00000124	1
2	Tube, 15 x 1mm, 370 x 225mm; P/N WS00000096	2
3	Pipe, 10 x 12mm, 900mm; P/N WS00000007	5
4	Hose, 3 x 6mm, 1.2m; P/N WS00000004	3
5	Check Valve, 1/2" NPT; P/N V923221002	2
6	Union, DN15 x DN15; P/N UTDMDFN	5
7	Tee, DN20 x DN20 x DN20; P/N TTEMEEFN	2
8	Tee, DN20 x DN20 x DN20; P/N TTEEEFN	2
9	Tee, DN15 x DN15 x DN15; P/N TTDMDFDMN	2
10	Tee, DN15 x DN15 x DN15; P/N TTDMDDFN	6
11	Tee, DN15 x DN15 x DN15; P/N TTDDMDFN	1
12	Tee, DN15; P/N TTDDDFN	5
13	Adapter, DN15 x DN15; P/N STDDFN	1
14	Reducer, DN20 x DN15; P/N RTFEMN	1
15	Reducer, DN20 x DN15; P/N RTEMDFN	3
16	Reducer, DN15 x DN8; P/N RTDMBFN	5
17	Elbow, DN15 x DN15; P/N ETDMDFN	5
18	Elbow, DN15 x DN15; P/N ETDDMN	2
19	Elbow, DN15 x DN15; P/N ETDDFN	5
20	Adapter, DN20 x DN20; P/N ATEEMN	1
21	Compression Fitting, DN15 x 15mm; P/N ATDMCON	6
22	Pipe Nipple, 1/2" x 90mm; P/N AP90D2	1
23	Pipe Nipple, 2" x 80mm; P/N AP80I2	2
24	Pipe Nipple, 3/4" x 80mm; P/N AP80E2	2
25	Pipe Nipple, 1/2" x 80mm; P/N AP80D2	2
26	Pipe Nipple, 1/2" x 60mm; P/N AP60D2	5
27	Pipe Nipple, 1/2" x 50mm; P/N AP50D2	1
28	Pipe Nipple, 1/2" x 300mm; P/N AP300D2	1
29	Pipe Nipple, 1/2" x 220mm; P/N AP220D2	3
30	Pipe Nipple, 1/2" x 150mm; P/N AP150D2	1
31	Pipe Nipple, 1/2" x 140mm; P/N AP140D2	1
32	Pipe Nipple, 1/2" x 130mm; P/N AP130D2	1
33	Pipe Nipple, 1/2" x 120mm; P/N AP120D2	3

NO.	DESCRIPTION	QTY
34	Pipe Nipple, 3/4" x 100mm; P/N AP100E2	1
35	Pipe Nipple, 1/2" x 100mm; P/N AP100D2	1
36	Plug, 2"; P/N A291I2	1
37	Plug, 1/4"; P/N A290B2	2
38	Reducing Tee, 2" x 2" x 1/2"; P/N A130RIDI2	1
39	Pressure Relief Valve, 1/4"; P/N 923431020	1
40	Air Pressure Gauge, 250 PSI; P/N 923431012	1
41	Tube Connector, 1/2" x 12mm; P/N 81900211	5
42	Restriction, 3mm Orifice, 1/2" x 1/2"; P/N 700485	1
43	Riser Check Valve, Model CV-1FR, 8" - DN200; P/N 595901080	1
44	Ball Valve, DN15, Venthole M5; P/N 59304FO	3
45	Rigid Coupling, Figure 577, 8'' - DN200; P/N 577ME02191	1
46	Deluge Valve, DV-5, 8" - DN200, ISO Ports; P/N 524771926	1
47	Fail Safe Valve, Model FSV-1; P/N 523431001	1
48	Break Station, Model MC-1; P/N 522892001	1
49	Solenoid Valve, 24 VDC, 1/2" NPT, 20-250 PSI / 1.4-17.2 bar; P/N 522871124P	1
50	Dry Pilot Actuator, Model B-1; P/N 522801001	1
51	Check Valve, Swing Type, 3/4"; P/N 460491005	1
52	Check Valve, Swing Type, 1/2"; P/N 460491004D	1
53	Elbow, WES 3mm x M5; P/N 406012	3
54	Solenoid Valve, 24 VDC, 1/2" NPT, 0.2 - 16 bar; P/N 2191866	1
55	Drain Valve, Self-Closing, 1/2" NPT; P/N 2162156	1
56	Strainer, 1/2" NPT; P/N 20005025	2
57	Ball Valve, DN20; P/N 1610000270	2
58	Ball Valve, DN15; P/N 1610000210	4
59	Angle Valve, 2"; P/N 028300060	1
60	Pressure Switch, Model PS40-2; P/N 0263	1
61	Pressure Switch, Model PS10-2; P/N 0261	1
62	Water Pressure Gauge, 300 PSI; P/N 025500013	3

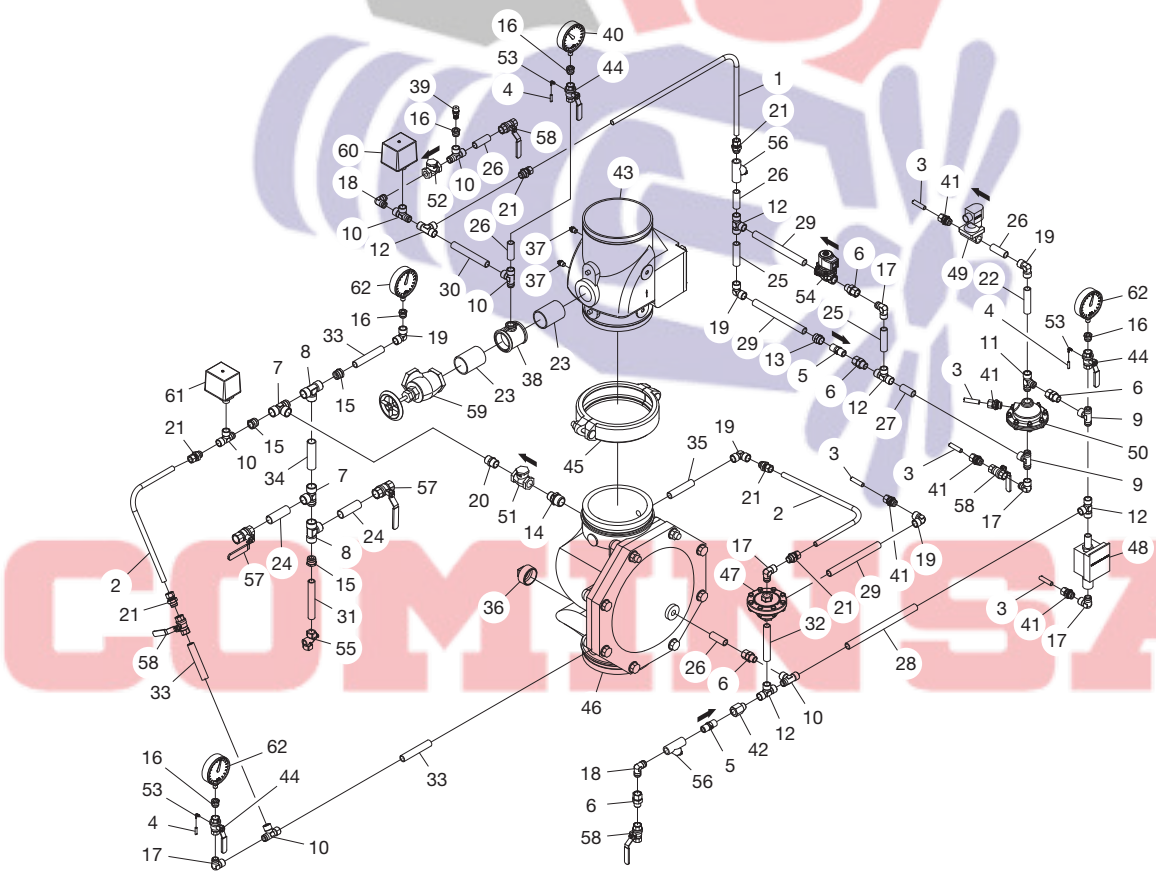


FIGURE 3 (6 OF 6)
DN200 DV-5 PREACTION TYPE A TRIM ASSEMBLY
EXPLODED VIEW

Nominal Valve Size	Nominal Dimensions in Millimeters						
	A	B*	C*	D	E*	F*	G
DN40	376	346	356	236	323	221	178
DN50	390	346	356	243	316	221	155
DN80	536	432	356	276	284	184	111
DN100	645	478	356	314	275	176	68
DN150	759	500	356	380	286	140	36
DN200	936	529	406	420	309	88	N/A

* Minimum Clearance

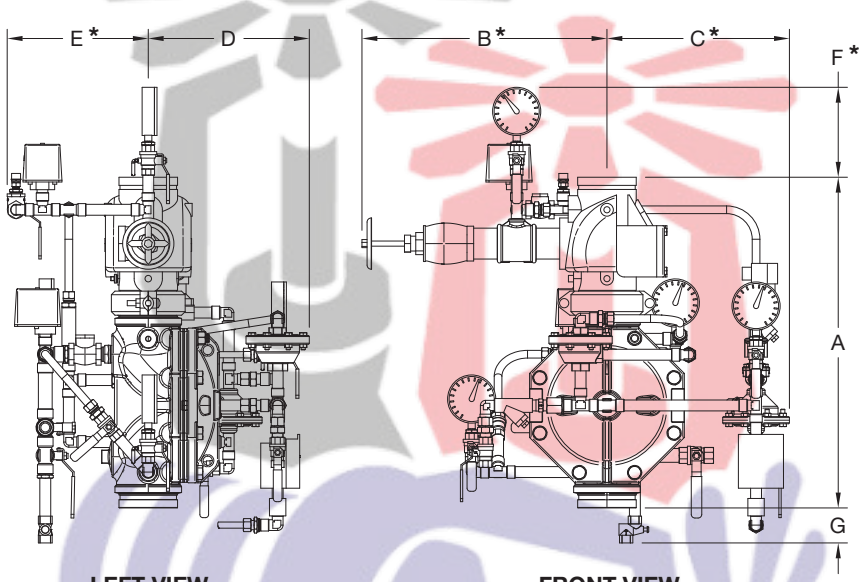


FIGURE 4
DV-5 PREACTION TYPE A VALVE
NOMINAL INSTALLATION DIMENSIONS

Installation

DV-5 Preaction Type A Valves are to be installed in accordance with this section.

General Instructions
Proper operation of the DV-5 Preaction Type A Valve depends upon installation in accordance with the instructions given in this technical data sheet. Failure to follow the appropriate steps may prevent the DV-5 Valve with Preaction Type A Trim from functioning properly, may void the manufacturer's warranty, and will void listings and approvals.

The DV-5 Preaction Type A Valve must be maintained at a minimum temperature of 40°F (4°C).

NOTICE

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

Notes:

- *Install the valve in a readily visible and accessible location.*
- *Ensure the fully assembled Preaction Type A Trim is installed in accordance with Figure 3.*
- *Ensure suitable provision for disposal of drain water. Direct drainage water so that it will not cause accidental damage to property or danger to persons.*

Step 1. Connect the Diaphragm Chamber Supply Control Valve to the inlet side of the system's Main Control/ Shut-off Valve in order to facilitate setting of the Preaction Type A Trim (Ref. Figures 3, 5 and 6).

Step 2. Install a suitable automatic supervisory air (nitrogen) supply, as described in the Technical Data section, in accordance with the referenced Technical Data Sheet. Set the device according to Graph B.

Step 3. Install a desiccant dryer, when required for the supervisory air supply, between a drip leg and the Model AMD-1 Air Maintenance Device or between the Automatic Supervisory Air Supply and the Preaction Type A Trim.

Step 4. Wire the Supervisory Low Pressure Alarm Switch to the supervisory alarm initiating circuit of an alarm panel.

Step 5. Make conduit and electrical connections in accordance with the requirements of the authority having jurisdiction.

Valve Setting Procedure

With reference to Figures 5 and 6, perform these steps when initially setting the DV-5 Preaction Type A Valve, after an operational test of the fire protection system, or after system operation due to a fire.

Step 1. Close the Main Control/Shut-off Valve.

Step 2. Close the Diaphragm Chamber Supply Control Valve and the Air Supply Control Valve.

Step 3. Open the Main Drain Valve, System Drain Valve, and all auxiliary drains in the system. After water ceases to discharge, close the System Drain Valve and auxiliary drain valves. 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 Preaction Type A Trim is completely drained.

Step 5. Clean the Strainers in the Diaphragm Chamber Supply connection and in the pneumatic actuation loop by removing the clean-out plug and strainer basket.

Step 6. Replace operated automatic sprinklers on the system piping.

NOTICE

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

Step 7. Reset the Local Hydraulic Manual Pull Station by pushing the operating lever up; however, do not close the hinged cover at this time.

Step 8. Reset the Deluge Valve Releasing Panel in accordance with the manufacturer's instructions.

Step 9. Re-establish system air pressure to reset the Model DP-1 Dry Pilot Actuator by opening the Air Supply Control Valve, which allows the system to automatically re-establish its nominal air pressure. Observe the Automatic Drain Valve for leaks. If there are leaks, determine/correct the cause of the leakage problem within the Riser Check Valve.

Step 10. Drain the actuation loop to remove any water out of the piping.

Step 11. Re-establish system air pressure to reset the Model DP-1 Dry Pilot Actuator if applicable.

Step 12. Open the Diaphragm Chamber Supply Control Valve and allow time for full pressure to build up in the Diaphragm Chamber.

Step 13. 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 14. Inspect the drain connections from the Manual Control Station and the Solenoid Valve. Correct any leaks must before proceeding to the next step.

Step 15. 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 16. 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 Preaction Type A Valve is ready to be placed in service and the Main Control Valve must then be fully opened.

NOTICE

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 16 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 Preaction Type A Valve.

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

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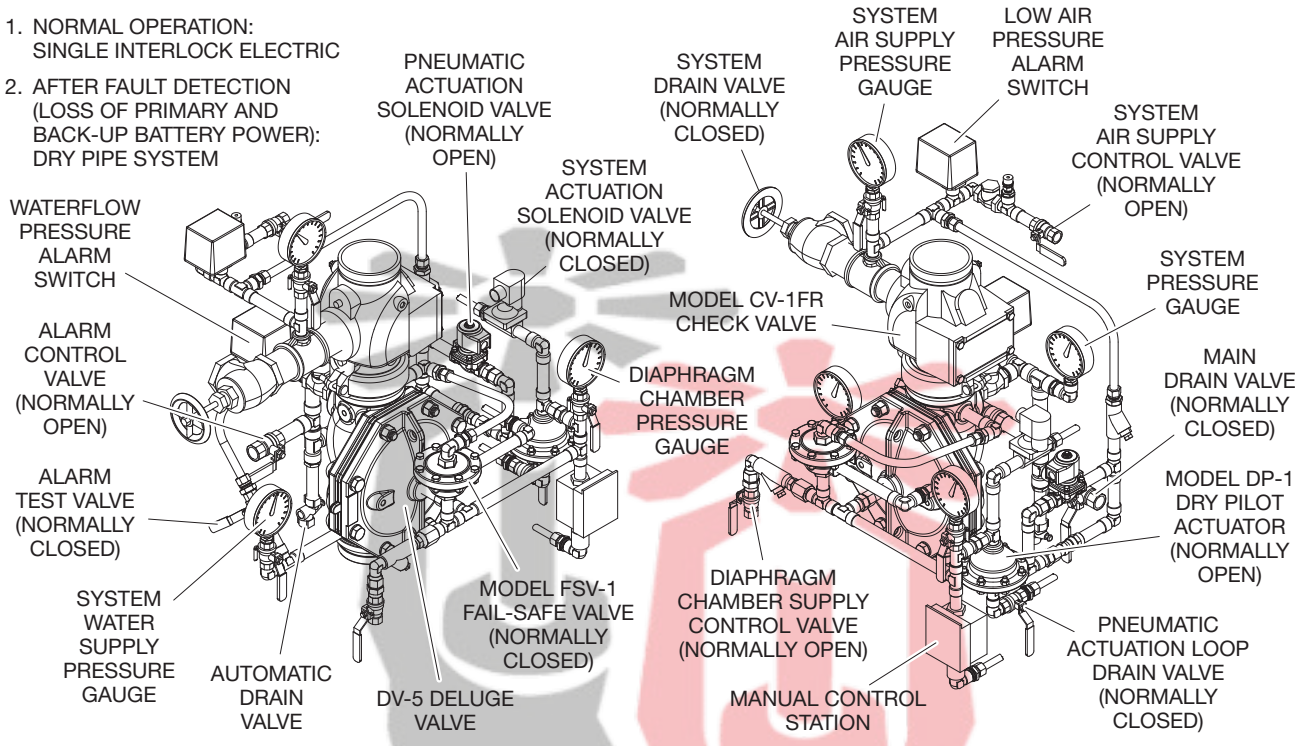


FIGURE 5
DV-5 PREACTION TYPE A VALVE
TRIM ASSEMBLY FUNCTIONAL COMPONENTS

Care and Maintenance

With reference to Figures 5 and 6, the following procedures, inspections, and maintenance must be performed as indicated, in addition to any specific requirements of EN12845, 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, obtain permission to shut down the affected fire protection systems from the proper authorities and notify all personnel who may be affected by this action.

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.

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 EN12845 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.

Weekly 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 Waterflow Pressure Alarm Switch and/or Water Motor Alarm. Upon satisfactory completion of the test, close the Alarm Test Valve.

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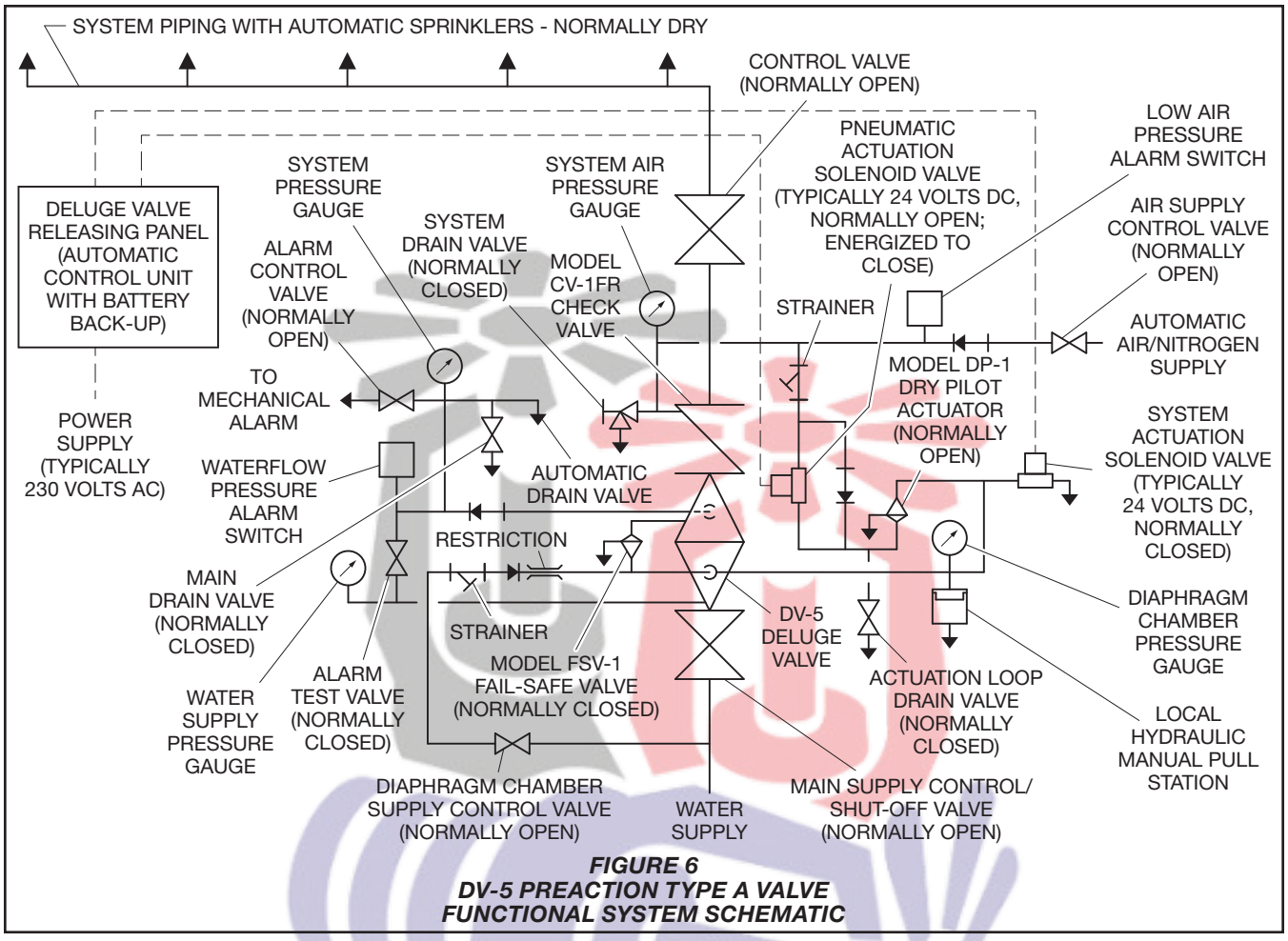


FIGURE 6
DV-5 PREACTION TYPE A VALVE
FUNCTIONAL SYSTEM SCHEMATIC

Quarterly Solenoid Valve Test Procedure for Electric Actuation

Proper operation of the Solenoid Valves for electric 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. Test the deluge releasing panel in accordance with the manufacturer's instructions to energize the Solenoid Valves.

Step 4. Verify that the flow of water from the Solenoid Valve 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. Reset the electric detection system in accordance with the manufacturer's instructions to de-energize the solenoid valve. Check the Solenoid Valve drain for leaks. Correct any leaks 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 Preaction Type A Valve is ready to be placed in service and the Main Control Valve must then be fully opened.

Quarterly Solenoid Valve Test Procedure for Pneumatic Actuation Loop (Detection Failure)

Proper operation of the Solenoid Valve must be verified at least quarterly as follows:

Step 1. Close the Main Control Valve.

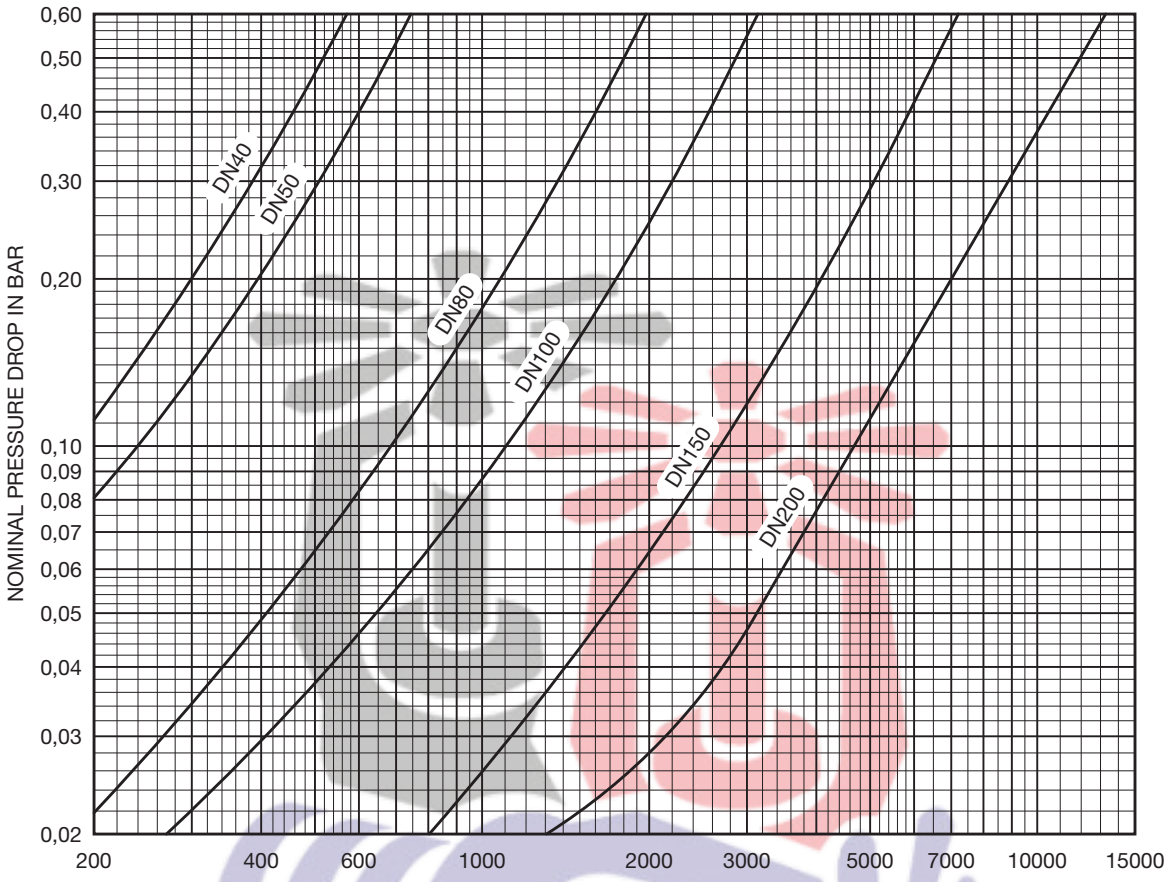
Step 2. Open the System Drain Valve.

Step 3. Test the deluge releasing panel in accordance with the manufacturer's instructions to de-energize the Solenoid Valve.

Step 4. Verify that the flow of water from the Dry Pilot Valve 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. Reset the electric detection system in accordance with the manufacturer's instructions to energize the Solenoid Valve. Check the Dry Pilot Valve drain for leaks. Correct any leaks before proceeding to the next step.



GRAPH A
DN40 THRU DN200 DV-5 VALVE AND MODEL CV-1FR VALVE
NOMINAL PRESSURE LOSS VERSUS FLOW

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 Preaction Type A Valve is ready to be placed in service and the Main Control Valve must then be fully opened.

NOTICE

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 16 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 Preaction Type A Valve.

Quarterly
Supervisory Low Pressure Alarm
Test Procedure

Proper operation of the Supervisory Low Pressure Alarm Switch must be performed quarterly as follows:

Step 1. Crack open the System Drain Valve for the Riser Check Valve to slowly relieve air pressure from the system. Verify that the Supervisory Low Pressure Alarm Switch is operational and that the low pressure set point is approximately 0,7 bar under the system pressure.

Step 2. Close the System Drain Valve and allow the system supervisory pressure to be automatically re-established. The Supervisory Low Pressure Alarm Switch should return to its “normal” condition.

Annual
Operation Test Procedure

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

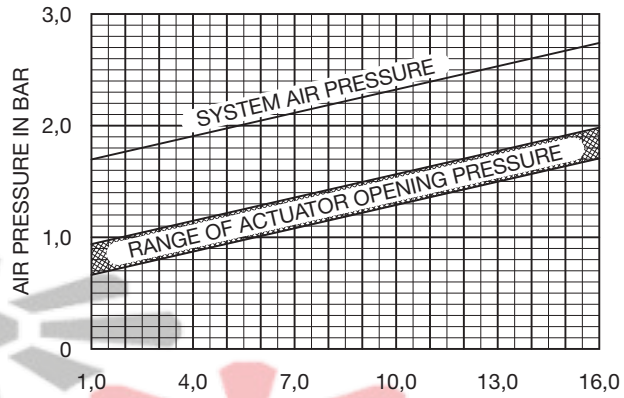
If water must be prevented from flowing beyond the riser, perform the following steps:

- 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 1. Test the deluge releasing panel in accordance with the manufacturer’s instructions to energize the Solenoid Valve.

Nominal Valve Sizes DN	Torque Nm
DN40	22
DN50	29
DN80	54
DN100	65
DN150	72
DN200	87

TABLE A
DIAPHRAGM COVER BOLTS
MAXIMUM TORQUE



GRAPH B
AIR (NITROGEN)
MINIMUM SUPPLY PRESSURE (VdS) 3 BAR
PRESSURE REQUIREMENT

NOTICE

Be prepared to perform Steps 2, 3, and 4 quickly if water must be prevented from flowing beyond the riser.

Step 2. Verify that the DV-5 Preaction Type A Valve has tripped, as indicated by the flow of water into the system.

Step 3. Close the system's Main Control Valve.

Step 4. Close the Diaphragm Chamber Supply Control Valve and the Air Supply Control Valve.

Step 5. Reset the DV-5 Preaction Type A Valve in accordance with the Valve Setting Procedure.

Pressure Relief Valve Maintenance

Over pressurization of the system piping with air will result in the opening of the Pressure Relief Valve. If the Relief Valve continues to bleed air after the system pressure has been reduced to its normal supervisory pressure range, most likely debris became lodged in the seating area. Open the Pressure Relief Valve and clean the seating area.

Internal Valve Inspection

With reference to Figure 1, once every five years during the annual operational test procedure and prior to the DV-5 Deluge Valve being reset, the interior of the Deluge Valve must be cleaned and inspected for wear and damage. Damaged or worn parts must be replaced. (Replacement of the Diaphragm every ten years is recommended, or more frequently if inspections and/or wear and tear warrant more frequent replacement.)

When reinstalling the Diaphragm Cover, complete the following steps to assure the Diaphragm Cover Fasteners (Hex Bolts) are uniformly and securely tightened.

Step 1. Align Diaphragm and Diaphragm Cover in proper orientation with valve body (Ref. Figure 1) and hold in place

Step 2. Assemble Flat Washers onto Hex Bolts

Step 3. Apply LOCTITE No. 242 (or equivalent) to Hex Bolt threads

Step 4. Insert Hex Bolts through Diaphragm Cover and Diaphragm, hand-tighten into valve body

Step 5. Using crossdraw sequence to assure uniformity, wrench-tighten Hex Bolts to appropriate torque values (Ref. Table A)

Step 6. Inspect to assure all Hex Bolts are securely tightened

NOTICE

If the water supply contains chemicals which tend to attack a nylon fabric-reinforced, natural rubber or the five year inspection indicates a build-up of debris within the Deluge Valve that could affect its proper operation, then the frequency of the internal valve inspection procedure must be appropriately increased. If the system has a seawater or brackish water supply, then the frequency of the internal valve inspection procedure must be appropriately increased. (An annual internal valve inspection for a system having a seawater or brackish water supply is recommended.)

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

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

The V-Ring is attached to the Diaphragm at the factory. If, during an internal valve inspection, the V-Ring is discovered to be detached from the Diaphragm, be advised that the V-Ring is a required valve component and that detachment will not affect normal valve operation or performance. Should the V-Ring become detached, reinstall it between the Diaphragm and Diaphragm Cover concentrically as shown in Figure 1.

Note: *Do not apply adhesives, lubricants, or other substances to the Diaphragm, V-Ring, or Valve Body.*

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P/N XX—X—XX—XX—X—XX

END CONNECTION	
74	Flange x Groove, PN16
75	Groove x Groove

SIZE	
A	DN40
2	DN50
3	DN80
4	DN100
6	DN150 (168,3 mm)
7	DN150 (165,1 mm)
8	DN200

TRIM	
90	Preaction A*

* Preaction Type A according to EN12845

SWITCH	
2	PS10-2

STOP VALVE	
00	To Be Ordered Separately

ACCESSORIES	
00	None

TABLE B
DV-5 PREACTION TYPE A VALVE PART NUMBER SELECTION

Limited Warranty

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

Ordering Procedure

Contact your local distributor for availability. When placing an order, indicate the full product description and Part Number (P/N).

Preaction Type A Trim Configuration (DV-5 Deluge Valve included)
Specify: (specify size) TYCO DV-5 Preaction Type A Valve, P/N (specify from Table B)

Accessories

Releasing Panel (select one)
Specify: Hekatron Integral IP MXF/MXE (VdS: G204109) Releasing Panel Programmed for Preaction Type A

Specify: Hekatron Integral IP CXF/CXE (VdS: G205049) Releasing Panel Programmed for Preaction Type A

Supervisory Air Supply * (select one)
Specify: Model (specify number) (specify Air or Nitrogen, as applicable) Mainenance Device, P/N (specify):

Model AMD-1
Air Maintenance Device
(Ref. TFP1221) 52-324-2-002

Model AMD-2
Air Maintenance Device
(Ref. TFP1231) 52-326-2-001

Model AMD-3
Nitrogen Maintenance Device
(Ref. TPF1241) 52-328-2-001

*A device capable of maintaining a nominal system air or nitrogen pressure must be separately ordered

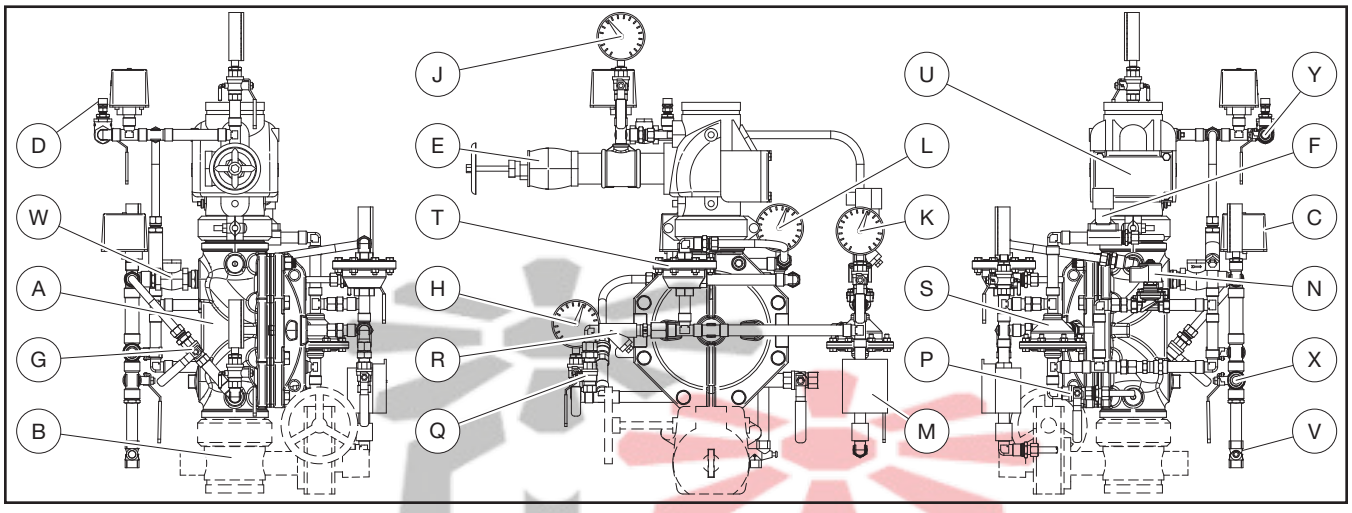
Water Motor Alarm (ordered separately)
Specify: Model WMA-1 Water Motor Alarm European Conformity, P/N 52-630-1-021R

*Refer to Technical Data Sheet TFP922

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Appendix A of TFP1484 (12/2016)
Summary Instructions (if problems occur, consult full document)
Product Description



I. Normal Conditions

- The Main Control Valve is open and locked.
- The Diaphragm Chamber Supply Valve (Q) is open.
- The Air Supply Control Valve (Y) is open.
- The Alarm Test Valve (G) and Drain Valves (E, P, and X) are closed.
- The Alarm Control Valve (2) is normally open.
- The Pneumatic Actuation Loop Drain Valve (P) is closed.
- The Pressure Gauge Valves are open:
  - — Pressure gauge (H) reads the system water supply pressure.
  - — Pressure gauge (J) reads the system air supply pressure.
  - — Pressure gauge (K) reads the diaphragm chamber pressure.

II. Operation

When set for service, the TYCO DV-5 Preaction Type A Valve (A) utilizes automatic sprinklers and a supplemental detection system. The supplemental detection system is typically comprised of 24 VDC heat detectors, smoke detectors, and manual pull stations. Actuation of the detection system automatically operates (releases) the DV-5 Deluge Valve, allowing water to flow into the sprinkler piping system and to be discharged from any sprinklers that may be open.

At the same time, the Model FSV-1 Fail-Safe Valve (T) pilot chamber is pressurized, opening the Model FSV-1 Valve (T). Make-up pressure to the diaphragm chamber of the DV-5 Valve cannot occur. The main waterway is now open and water now enters into the system piping.

In case of an emergency, the valve can be operated manually by opening the Manual Control Station (M).

In case of a power cut, the Solenoid Valve (N) will open. As soon as a sprinkler operates/activates, air pressure will drop, opening the Dry Pilot Actuator (S). Water from the diaphragm pressure piping will leave the Dry Pilot Actuator through this drain, resulting in the activation of the DV-5 Deluge Valve (A).

III. Removing System from Service

Step 1. Close the Main Control Valve and close the Water Motor Alarm Control Valve (2).

Step 2. Close the Diaphragm Chamber Supply Valve (Q).

Step 3. Close the Air Supply Control Valve (Y).

Step 4. Drain the system with drain valves E, P, and X. Open all other valves in the system to make sure that cross-mains and branchlines are vented and drained.

IV. Returning System to Service

Step 1. Replace operated/damaged sprinklers and/or reset the manual control station.

Step 2. Close System Drain Valve (E).

Step 3. Clean the Diaphragm Supply Strainer (R) and the strainer in the pneumatic actuation loop.

Step 4. Reset the actuation system:

Manual Actuation — Push the operating lever of the Manual Control Station (M) up. However, do not close the hinged cover at this time.

Electric Actuation — Reset the electric detection system to de-energize the Solenoid Valve (F).

Step 5. Open the Diaphragm Chamber Supply Valve (Q) to pressurize the DV-5 diaphragm chamber.

Step 6. Open and then close the Manual Control Station (M) to vent trapped air from the DV-5 diaphragm chamber.

Step 7. Close Dry Pilot Drain Valve (P).

Step 8. Reset the air pressure in the sprinkler system by opening the Air Supply Control Valve (Y).

Step 9. Slowly open the Main Control Valve. Close all Drain Valves (E, P, and X).

Step 10. Observe for leaks. If there are no leaks, the DV-5 Deluge Valve is ready to place in service.

Step 11. Reset fire alarm panel and notify central alarm station.

V. Weekly Test

Note: *Prior to closing any valves or activating any alarms, notify local security guards and the central alarm station, if applicable.*

Step 1. Check self-closing Drain Valve (V) for leaks.

Step 2. Open the Alarm Test Valve (G); verify that the alarm signal created by the Waterflow Switch (C) is visible at the fire panel. If applicable, check that the sound of the Water Motor Alarm is clear and steady. Close the Alarm Test Valve (G).

Step 3. Drain the alarm line by pushing the self-closing Drain Valve (V). If the supply pressure is below the normal, use the instructions from the water supply to obtain the usual pressure.