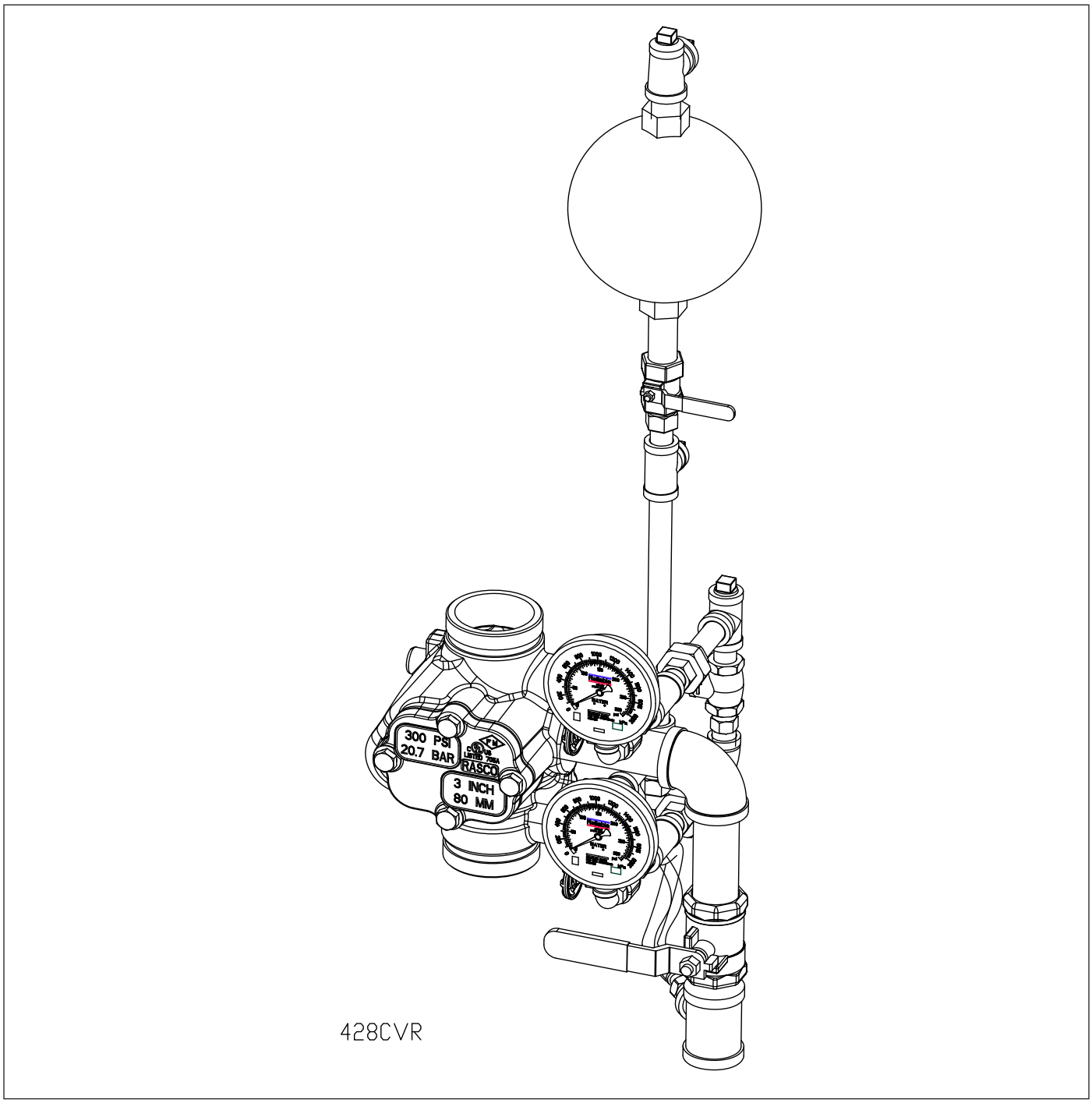
Reliable®

Model E & E3
2½" (65mm), 3" (80mm)
& 76mm Sizes
Alarm Check Valves
With Model E3 Trim

Bulletin 428 August 2022

Instructions for Installation, Operation, Care and Maintenance



Reliable Automatic Sprinkler Co., Inc., 103 Fairview Park Drive, Elmsford, New York 10523

General

Reliable Model E & E3 Alarm check Valves are installed in either the vertical or horizontal position in the main supply to the wet pipe system. Variable pressure water supply requires the use of either of two Model E3 variable pressure trim sets and a Reliable Model E1 Retard Chamber. Constant pressure water suppy requires the use of a Model E3 constant pressure trim set only. Model E & E3 Alarm Valves are shipped with the designated Model E3 trim set, i.e., variable pressure or constant pressure.

Valve Description

1. Rated working pressure:
   - Model E valves are rated to 175 psi (12,1 bar)
   - Model E3 valves are rated to 300 psi (20,7 bar)
2. Factory hydrostatic test pressure:
   - Model E valves are tested to 350 psi (24,2 bar)
   - Model E3 valves are tested to 600 psi (41,4 bar)
3. End and Trim connections – Four valve connection styles are available
   a. Model E valve with US Standard Flanged Inlet and Outlet
      - Flanges mate with ANSI B 16.1 (Class 150) Flange

US Flange Table (in(mm)):					
Valve Size:	**Bolt Circle Diameter**	**Bolt Hole Diameter**	**Square Flange Dimension**	**Flange Thickness**	**No. Bolts**
2½	5½ (140)	¾ (19)	6⅛ (156)	¾ (19)	4
3	6 (152)	¾ (19)	6⅛ (156)	¾ (19)	4

      - Threaded openings per ANSI B 2.1
      - Reliable's standard trim sets are compatible with 2½" (65mm) & 3" (80mm) US Flanged Valves
      - Color - Black

   b. Model E valve with US Standard Flanged Inlet and Grooved Outlet (Fig. 1)
      - Inlet flange mates with ANSI B 16.1 (Class 150) Flange
      - Outlet groove dimensions per ANSI/AWWA C606

Groove Dimension Table

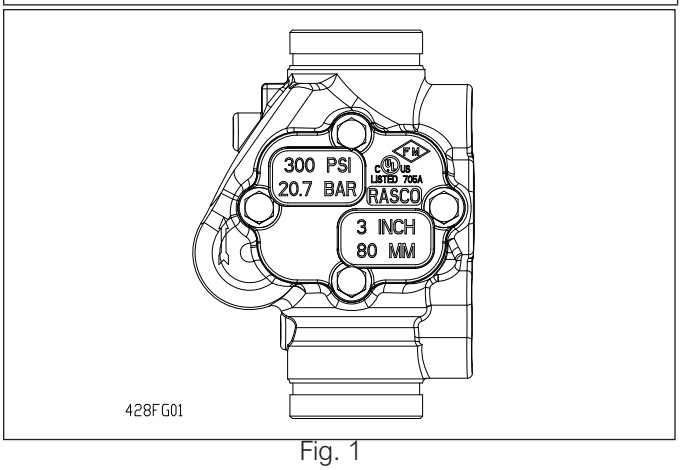


Fig. 1

Valve Size:	Outlet Diameter	Groove Diameter	Groove Width	Outlet Face to Groove
2½" (65 mm)	2.875" (73mm)	2.720" (69mm)	11/32" (9.0mm)	5/8" (16mm)
76 mm	3.000" (76mm)	2.845" (72mm)	11/32" (9.0mm)	5/8" (16mm)
3" (80 mm)	3.500" (89mm)	3.344" (85mm)	11/32" (9.0mm)	5/8" (16mm)

      - Threaded openings per ANSI B 2.1
      - Reliable's standard trim sets are compatible with 2½" (65mm) & 3" (80mm) US Flanged Valves
      - Color - Black

   c. Model E valve with Metric flanged inlet and outlet
      - 65mm valve plain faced flanges mate with DIN 2500 8.66, NF-E-29-282 and BS 4504 NP16 Flanges

Metric Flange Table (mm):					
Valve Size:	**Bolt Circle Diameter**	**Bolt Hole Diameter**	**Square Flange Dimension**	**Flange Thickness**	**No. Bolts**
65	145	18	156	19	4

      - Threaded openings per ANSI B 2.1
      - Reliable's standard trim sets may be used with metric valves providing trim is assembled carefully and extra thread sealant is applied to the connections between valves and trim.
      - Color – Red

   d. Model E3 valve with Grooved End Connections
      - 2½" (65mm), 3" (80mm) & 76mm inlet and outlet groove dimensions per ANSI/AWWA C606 (See table above)
      - Threaded openings per ANSI B 2.1
      - Reliable's standard trim sets are compatible with 2½" (65mm) & 3" (80mm) & 76mm Grooved Valves
   - Color – Black (2½" & 3") or Red (65mm, 80mm and 76mm)
4. Face to Face Dimensions:

Face to Face Dimension Table:		
Valve Size:	**End Connection:**	**End to End Dimension:**
2½" (65mm), 76mm & 3" (80mm)	Flange/ Flange	9 3/16 (233)
	Flange/ Groove	9 3/16 (233)
	Groove/ Groove	10¼ (260)

5. Shipping Weight:

Valve Shipping Weight Table:		
Valve Size:	**End Connection:**	**Weight lb(kg):**
2½" (65mm), 76mm & 3" (80mm)	Flange/ Flange	35.0 (15.9)
	Flange/ Groove	32.0 (14.5)
	Groove/ Groove	26.5 (12.0)

Trim Shipping Weight Table:	
Trim Type:	**Weight lb(kg):**
Horizontal Trim	16.0 (7.3)
Vertical Trim	17.0 (7.7)
Retard Chamber	4.0 (1.8)

6. Friction Loss – Expressed in Equivalent Length of Pipe, Based on Hazen & Williams Formula

Friction Loss Table		
Valve Size:	Equivelant Length (ft(m))	
	C=100	C=120
2½" (65mm) & 76mm	5.5 (1.7)	7.7 (2.4)
3" (80mm)	15.3 (4.7)	21.5 (6.6)

Trim Description

The Model E3 trim sets for the Reliable Model E and Model E3 Alarm Valve (Figure 2 & 5) are arranged for rapid, easy and compact attachment, and serves as connection points to Reliable Alarm and other devices. The trim also serves as means for testing the operation of the alarm devices without causing the system to operate.

Three basic Model E-3 trim sets are available for use with the Model E Alarm Valve:

- **Constant Pressure Closed Drain** — Retard chamber is not required.
  This trim set is used where water supply pressure does not vary. Automatic draining is provided to drain the mechanical sprinkler alarm line. This drain connection is piped directly into the 1¼" (32mm) main drain.
- **Variable Pressure with Closed Retard Chamber Drain** — Model E1 Retard chamber is required.
  This trim set is used where water supply pressures vary. The retard chamber and the mechanical sprinkler alarm line are drained through a closed connection to the 1¼" (32mm) drain line. Only one drain connection is required. Each Model E-3 basic trim set permits either horizontal or vertical installation (valve installation position must be specified when ordering).
- **Variable Pressure with Open Retard Chamber Drain** — Model E1 Retard chamber is required.
  Optional Drain Line Kit required (Figs. 2 & 3 & 5)
  This trim set is used where water supply pressures vary. An open drip cup is provided to drain the retard chamber and the mechanical sprinkler alarm line. This drain connection is piped directly into the 1¼" (32mm) main drain.

Note: Connection to drain (by customer) must allow safe discharge of water from main drain at full system pressure, and also allow gravity draining of the alarm line trim. Care shall be taken to prevent back pressurization of system main drain.

Alarm valves are listed and approved by Underwriters Laboratories, Inc. and Factory Mutual Corp. only when used with the valve manufacturer's trim sets.

Trim kits are available, galvanized and in three trims styles:

- Individual Part Trim
- Pre-Assembled Trim
- Factory Trimmed Valve

Pressure Relief Trim Kits

A pressure relief valve is required for all systems to be installed in accordance with the 2010 edition (or newer) of NFPA 13. For convenience, a Pressure Relief Trim Kit (illustrated in Figs. 2, 7, and 8) is available.

Assembly of Model E3 Trim

Variable Pressure Vertical Installation (Figure 2)

The following description is the recommended sequence for installing the trim as illustrated in this bulletin.

After the alarm check valve has been installed in the riser, attach Segment "A" in the orientation shown and in a leak tight condition.

Insert Segment "B" leak tight with the union facing the back of the valve. Note: Segments "B" and "C" are the same.

Install Segment "C" leak tight with the union facing the back of the valve. Note: Segments "B" and "C" are the same.

Install Segment "D" leak tight.

Attach Segment "E" at the unions. Verify that the arrow on the check valve is pointing to system.

Install Segment "F" with the street elbow pointing up. **Note:** Segments "F" and "G" are the same.

Install Segment "G" with the street elbow pointing up. **Note:** Segments "F" and "G" are the same.

Install the gauges.

Install Segment "H" leak tight by wrenching on the 1¼" (32mm) tee. Orientate the ½" nipple towards the back of the alarm valve. Connect Item 15 (alarm line drain port) to Item 15 in the drain line using the flex hose provided (Item 9). Note: the hose should be free of kinks. Note: An open line drain kit segment is optional, to be purchased separately, installed in Segment "H" and the tee rotated so that drip cup is under the drain outlet.

Install ¾"x 3" (20mm x 76mm) long galvanized nipple, Model E1 Retard Chamber and Segment "I" in the orientation shown and in a leak tight condition.

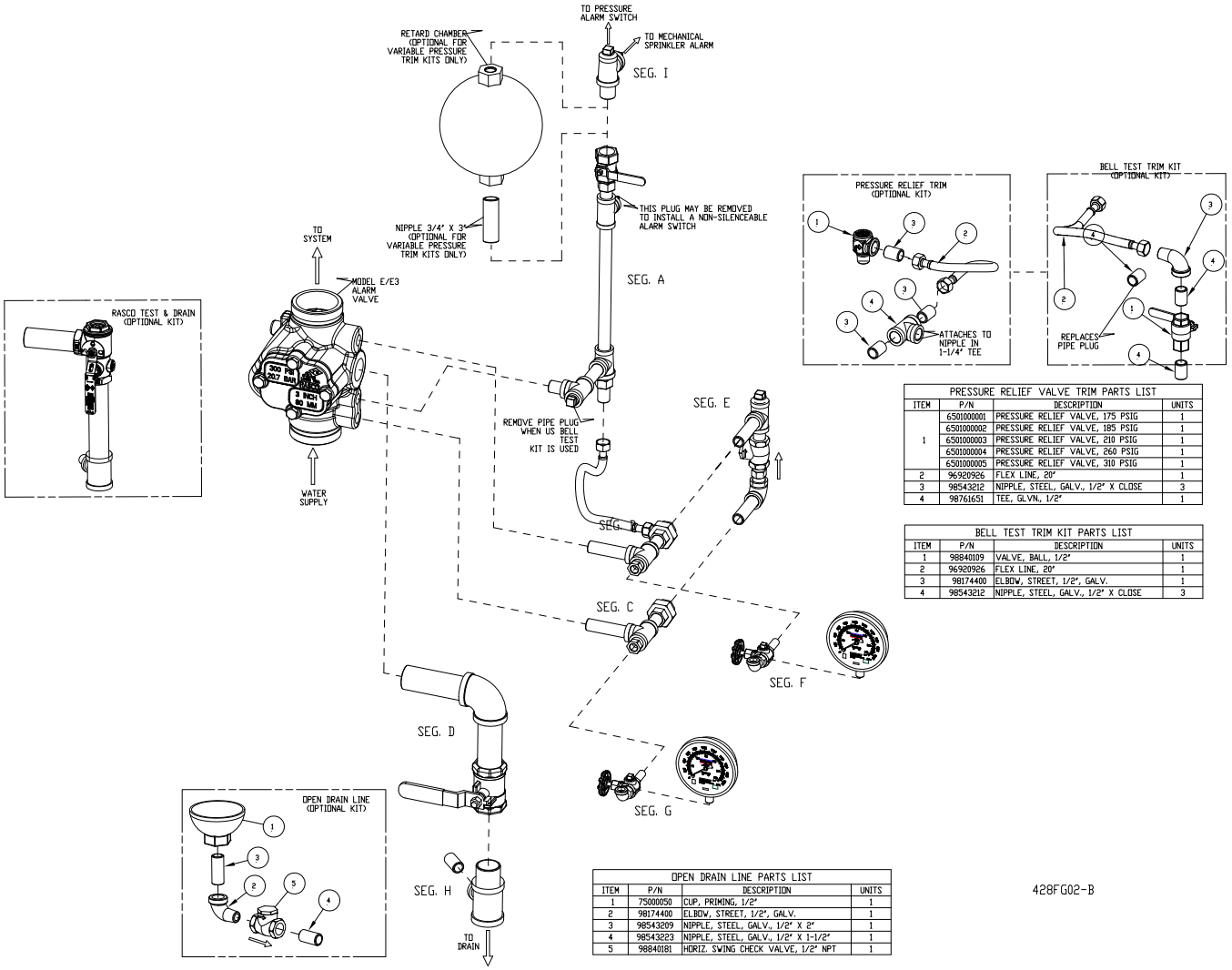
Connect appropriate water flow alarm devices.

Constant Pressure Vertical Installation (Figs. 2, 3 & 7)

The Trim for this installation follows the same sequence given in Steps 1 through 9 above. The only exception is step 8 where Segment "I" is installed directly into the ¾" (20mm) shut-off valve in Segment "A".

Note: In all cases, carefully install the check valve in the position shown with the flow arrow pointing in the direction shown.

- **Horizontal Installation (Figs. 5 & 6 & 8)**
  Follow a sequence similar to that given above for vertical installation, and refer to Figs. 5 & 6 for illustration.
- **Variable Pressure Equipment**
  The normal position of the alarm valve parts is shown in Fig. 9.
  Flow of water into the system piping resulting from the discharge through one or more fused automatic sprinklers causes the Clapper (4) to rise off the Grooved Seat (3) and permits water from the supply piping to enter the system.
  The movement of Clapper (4) on Hinge Pin (8) uncovers the groove in Seat (3) and allows water to flow through the groove into the Alarm Line Outlet and to the Alarm Line, Fig. 2 (cont. page 7).



PRESSURE RELIEF VALVE TRIM PARTS LIST			
ITEM	P/N	DESCRIPTION	UNITS
1	6501000001	PRESSURE RELIEF VALVE, 175 PSIG	1
	6501000002	PRESSURE RELIEF VALVE, 185 PSIG	1
	6501000003	PRESSURE RELIEF VALVE, 210 PSIG	1
	6501000004	PRESSURE RELIEF VALVE, 260 PSIG	1
	6501000005	PRESSURE RELIEF VALVE, 310 PSIG	1
2	96920926	FLEX LINE, 20"	1
3	98543212	NIPPLE, STEEL, GALV., 1/2" X CLOSE	3
4	98761651	TEE, GLVN., 1/2"	1

BELL TEST TRIM KIT PARTS LIST			
ITEM	P/N	DESCRIPTION	UNITS
1	98840109	VALVE, BALL, 1/2"	1
2	96920926	FLEX LINE, 20"	1
3	98174400	ELBOW, STREET, 1/2", GALV.	1
4	98543212	NIPPLE, STEEL, GALV., 1/2" X CLOSE	3

OPEN DRAIN LINE PARTS LIST			
ITEM	P/N	DESCRIPTION	UNITS
1	75000050	CUP, PRIMING, 1/2"	1
2	98174400	ELBOW, STREET, 1/2", GALV.	1
3	98543209	NIPPLE, STEEL, GALV., 1/2" X 2"	1
4	98543223	NIPPLE, STEEL, GALV., 1/2" X 1-1/2"	1
5	98840181	HORIZ. SWING CHECK VALVE, 1/2" NPT	1

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FIG. 2

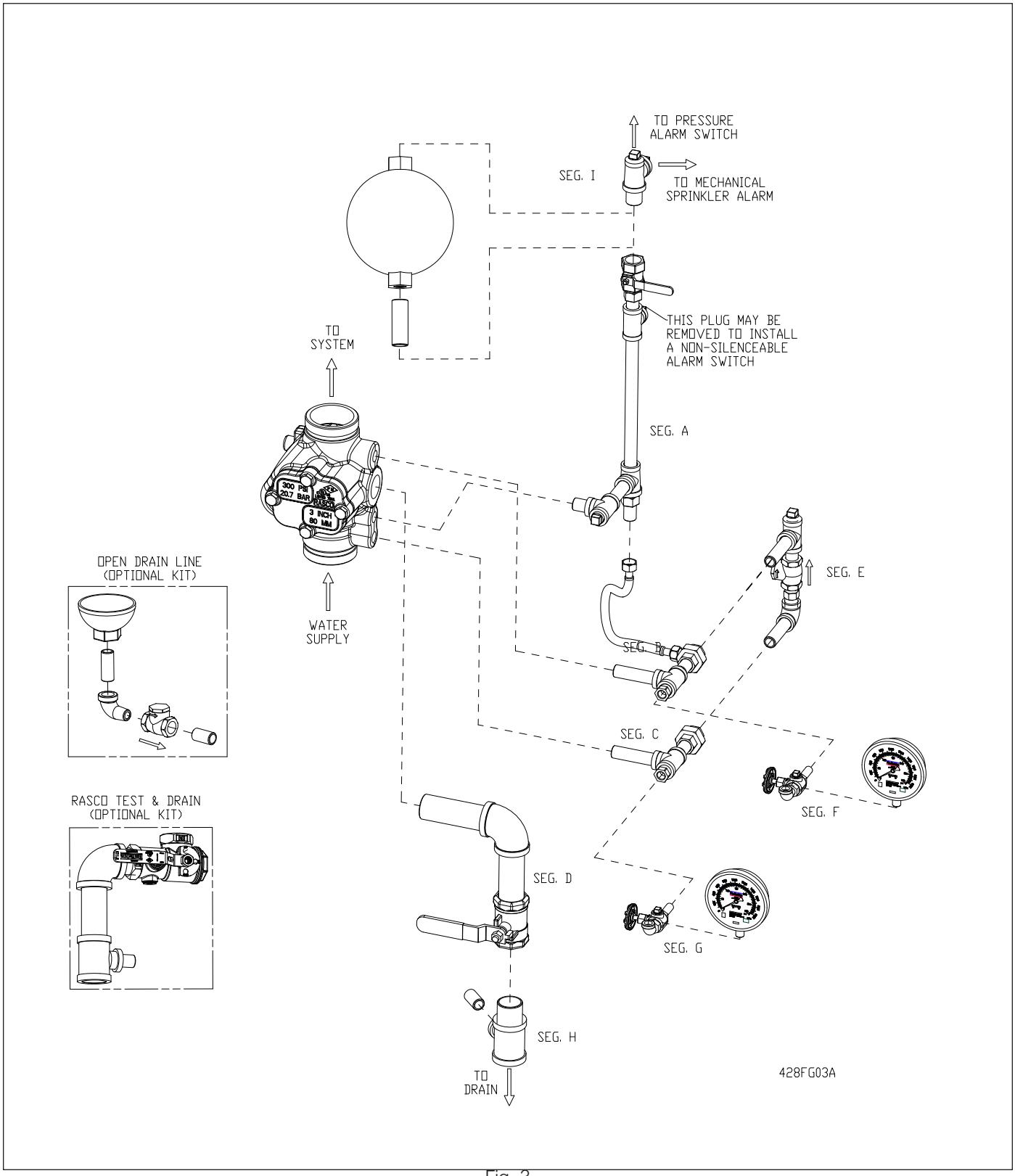

TO PRESSURE
ALARM SWITCH
SEG. I
TO MECHANICAL
SPRINKLER ALARM
THIS PLUG MAY BE
REMOVED TO INSTALL
A NON-SILENCEABLE
ALARM SWITCH
TO
SYSTEM
SEG. A
300 PSI
20.7 BAR
RASCO
3 INCH
80 MM
OPEN DRAIN LINE
(OPTIONAL KIT)
SEG. E
SEG. B
SEG. C
RASCO TEST & DRAIN
(OPTIONAL KIT)
SEG. F
SEG. D
SEG. G
SEG. H
WATER
SUPPLY
TO
DRAIN
428FG03A

Fig. 3

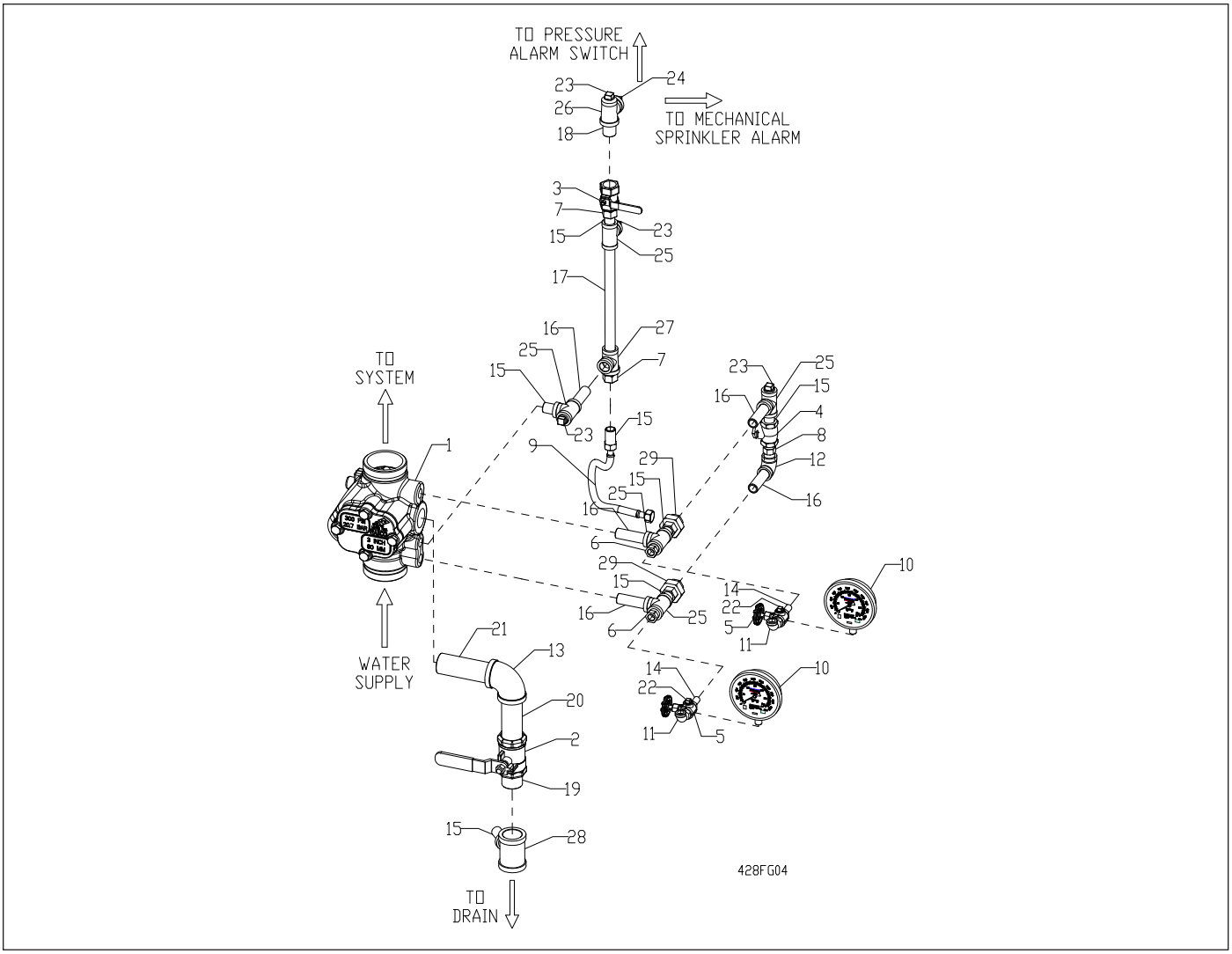


Fig. 4

Model E & E3 Vertical Trim Parts List (Refer to Fig. 4)

Item No.	Part No.	Description
1	6102025549	Model E Valve Assembly 2½" Class 150 Flange/Flange
	6102030549	Model E Valve Assembly 3" Class 150 Flange/Flange
	6102025547	Model E Valve Assembly 65mm PN16 Flange/Flange
	6102025548	Model E Valve Assembly 65mm BS-E Flange/Flange
	6102030548	Model E Valve Assembly 80mm BS-E Flange/Flange
	6102025539	Model E Valve Assembly 2½" Class 150 Flange/Groove
	6102030539	Model E Valve Assembly 3" Class 150 Flange/Groove
	6102025519	Model E3 Valve Assembly 2½" Groove/Groove
	6102030519	Model E3 Valve Assembly 3" Groove/Groove
	6102030517	Model E3 Valve Assembly 76mm Groove/Groove
2	98840137	Ball Valve 1¼"
3	98840108	Ball Valve, ¾"
4	98840181	Check Valve, ½"
5	98840160	3-way Valve, ¼"
6	98048000	Reducer Bushing, ½" x ¼"
7	98580002	Drain Orifice
8	98580014	Restricting Orifice
9	96920912	Flex Line, Steel Braided 1/2" FIP x 1/2" FIP x 12 Long
10*	98248001	Gauge (0-300 psi)
11	98174408	Street Elbow, ¼"
12	98174401	Elbow, ½"
13	98174414	Elbow, 1¼"
14	98543226	Nipple, ¼" x 1½"
15	98543223	Nipple, ½" x 1½"

Item No.	Part No.	Description
16	98543230	Nipple, ½" x 3"
17	98543252	Nipple, ½" x 10½"
18	98543215	Nipple, ¾" x 1½"
19	98543281	Nipple, 1¼" x Close
20	98543271	Nipple, 1¼" x 4½"
21	98543284	Nipple, 1¼" x 5"
22	98614403	Plug, ¼"
23	98604406	Plug, ½"
24	98614401	Plug, ¾"
25	98761651	Tee, ½"
26	96606610	Tee, ½" x ¾" x ¾"
27	96606612	Tee, ¾" x ½' x ½"
28	96606629	Tee, 1¼" x 1¼" x ½"
29	98815200	Union, ½"

* For Optional 0 - 600 psi Gauges Specify P/N 98248005

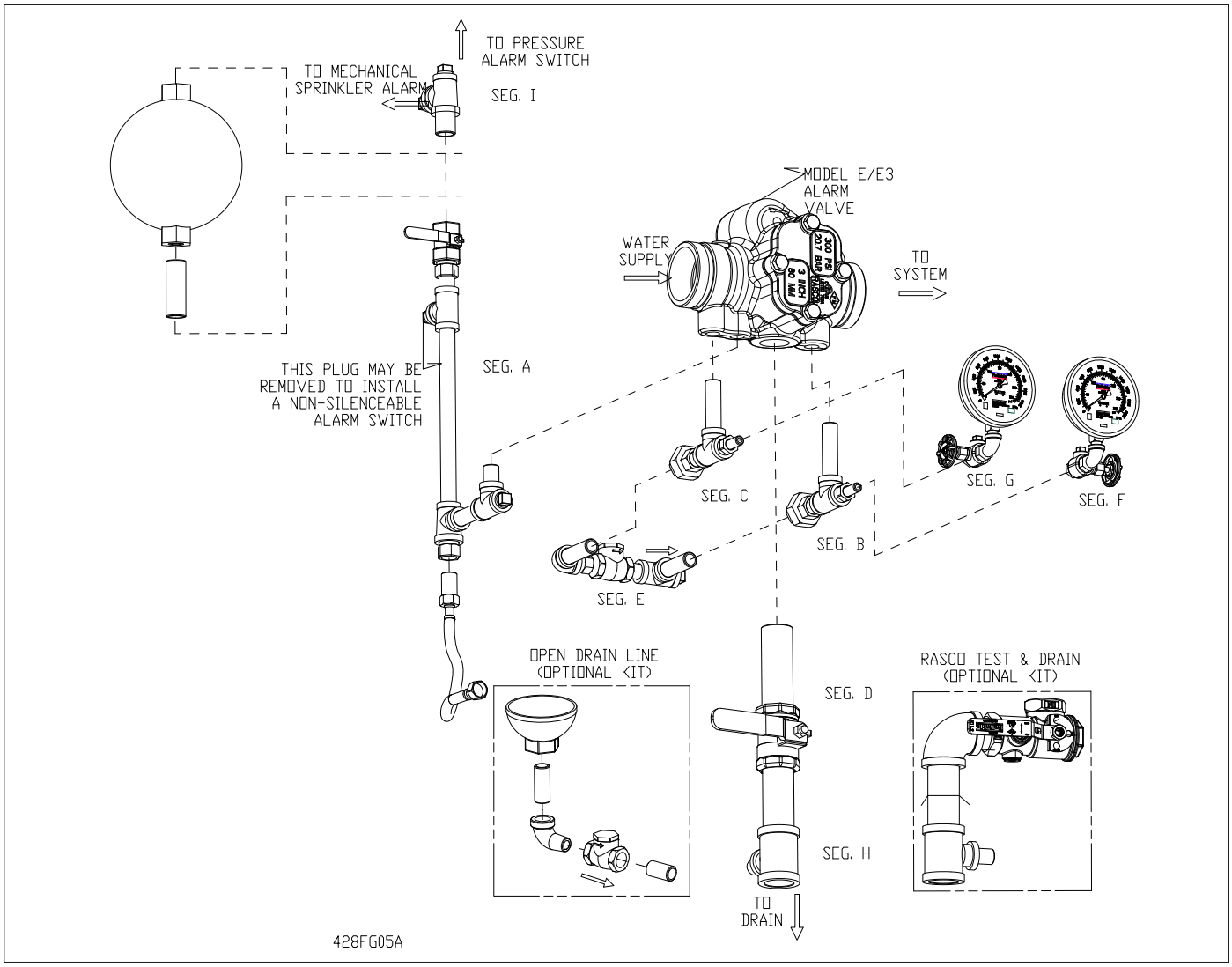


Fig. 5

Continual flow of water fills the retard chamber and flows to mechanical and/or electric alarms. (For details on mechanical and electric alarms, refer to their individual instruction sheets.) A small amount of water will simultaneously flow into the drain line.

When the water ceases to flow through the Alarm Valve, the Clapper (4) returns to its seat thus stopping the flow of water to the retard chamber. Drain Orifices (Item 7, Fig. 4 & 6) allow the retard chamber and alarm line to empty through the drain line (Item 9, Fig. 4 & 6).

Virtually all sprinkler system piping contains confined air. If a water hammer or pressure surge occurs in the supply line, the increased pressure will compress the confined air and cause the alarm valve clapper to lift intermittently which may result in false alarms.

The Model E & E3 Alarm Valves with E3 Trim minimizes false alarms under these conditions by two features:

1. The Bypass Line, Fig. 7 & 8, with Check Valve (B) allows surges to pass from the supply to the system side of the alarm valve clapper without lifting the clapper off its seat. Repeated surges build up an effective excess pressure in the system which steadies the clapper and prevents false alarms. Should a heavy surge force the clapper off its seat and allow water to flow into the alarm line, the Model E1 Retard Chamber comes into action
2. The retard chamber and the restriction and drain orifices allow intermittent flows to be drained before they can fill the chamber and pass on to operate the electric and mechanical alarms.

- **Constant Pressure Equipment**

  The operation of this equipment is the same as described for the variable pressure equipment, except that due to the water supply pressure being constant, the retard chamber is not required. The water, on passing through the groove in the seat of the alarm valve, flows directly to operate the electric and mechanical alarms.

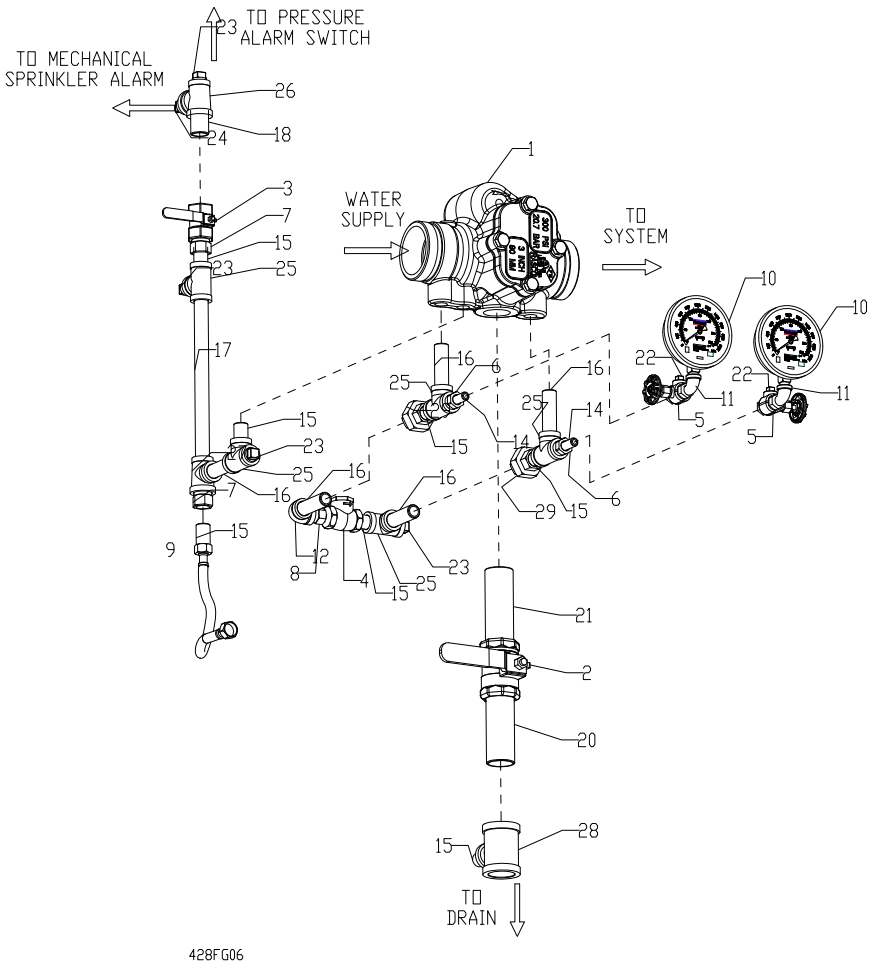


Fig. 6

Horizontal Trim Parts List (Refer to Fig. 6)

Item No.	Part No.	Description
1	6102025549	Valve Assembly 2½" Class 150 Flange/Flange
	6102030549	Valve Assembly 3" Class 150 Flange/Flange
	6102025547	Valve Assembly 65mm PN16 Flange/Flange
	6102025548	Valve Assembly 65mm BS-E Flange/Flange
	6102030548	Valve Assembly 80mm BS-E Flange/Flange
	6102025539	Valve Assembly 2½" Class 150 Flange/Groove
	6102030539	Valve Assembly 3" Class 150 Flange/Groove
	6102025519	Valve Assembly 2½" Groove/Groove
	6102030519	Valve Assembly 3" Groove/Groove
	6102030517	Valve Assembly 76mm Groove/Groove
2	98840137	Ball Valve 1¼"
3	98840108	Butterfly Valve, ¾"
4	98840181	Check Valve, ½"
5	98840160	3-way Valve, ¼"
6	98048000	Reducer Bushing, ½" x ¼"
7	98580002	Drain Orifice
8	98580014	Restricting Orifice
9	96920912	Flex Line
10	98248001	Gauge (0-300 psi)
11	98174408	Street Elbow, ¼"
12	98174401	Elbow, ½"
13	98174414	Elbow, 1¼"
14	98543226	Nipple, ¼" x 1½"
15	98543223	Nipple, ½" x 1½"

Item No.	Part No.	Description
16	98543230	Nipple, ½" x 3"
17	98543252	Nipple, ½" x 10½"
18	98543215	Nipple, ¾" x 1½"
19	98543281	Nipple, 1¼" x Close
20	98543271	Nipple, 1¼" x 4½"
21	98543284	Nipple, 1¼" x 5"
22	98614403	Plug, ¼"
23	98604406	Plug, ½"
24	98614401	Plug, ¾"
25	98761651	Tee, ½"
26	96606610	Tee, ½" x ¾" x ¾"
27	96606612	Tee, ¾" x ½' x ½"
28	96606629	Tee, 1¼" x 1¼" x ½"
29	98815200	Union, ½"

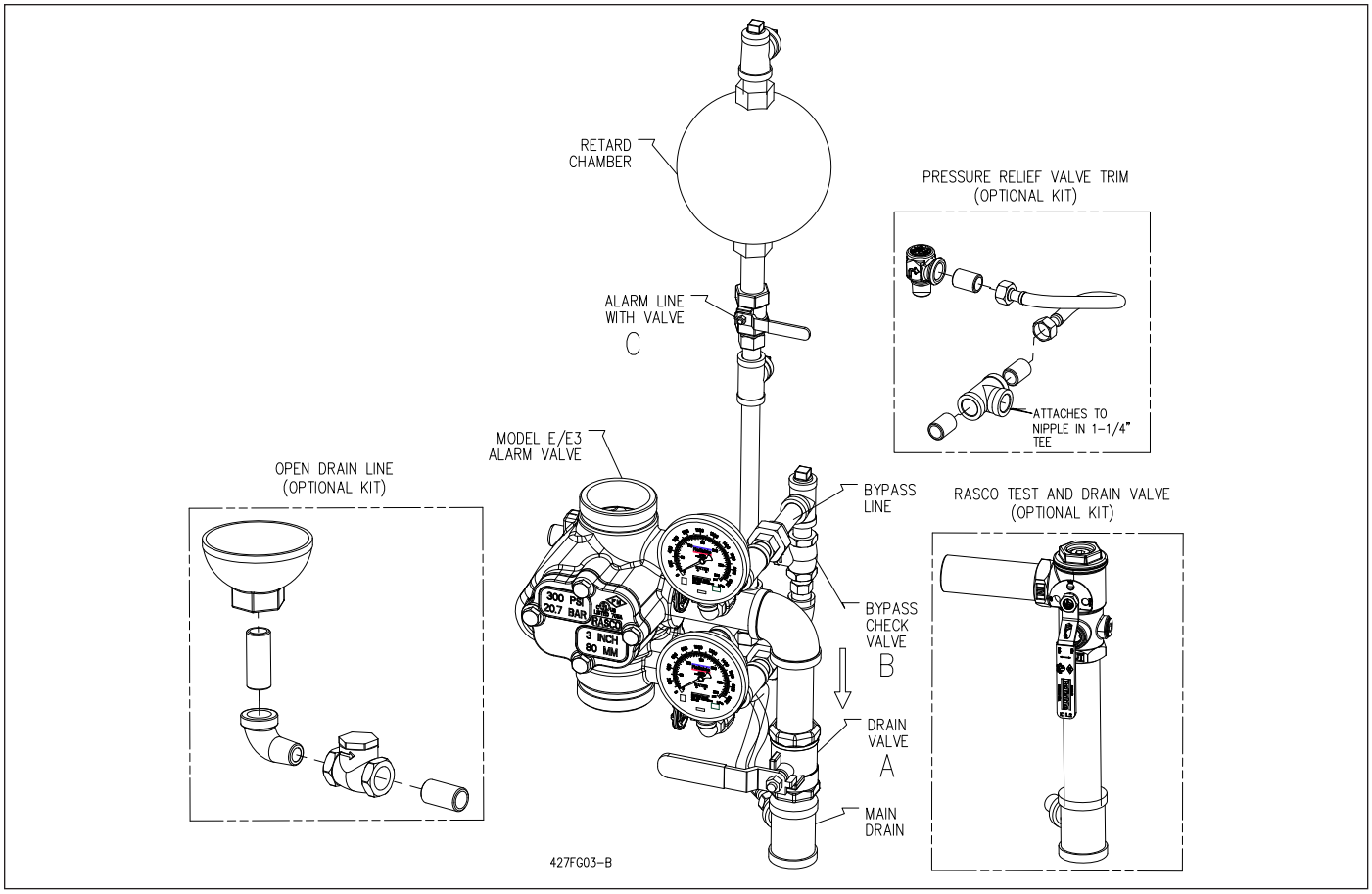

RETARD CHAMBER
ALARM LINE WITH VALVE
C
MODEL E/E3 ALARM VALVE
BYPASS LINE
BYPASS CHECK VALVE
B
DRAIN VALVE
A
MAIN DRAIN
PRESSURE RELIEF VALVE TRIM (OPTIONAL KIT)
ATTACHES TO NIPPLE IN 1-1/4" TEE
OPEN DRAIN LINE (OPTIONAL KIT)
RASCO TEST AND DRAIN VALVE (OPTIONAL KIT)
300 PSI 20.7 BAR
3 INCH 80 MM
427FG03-B

Fig. 7

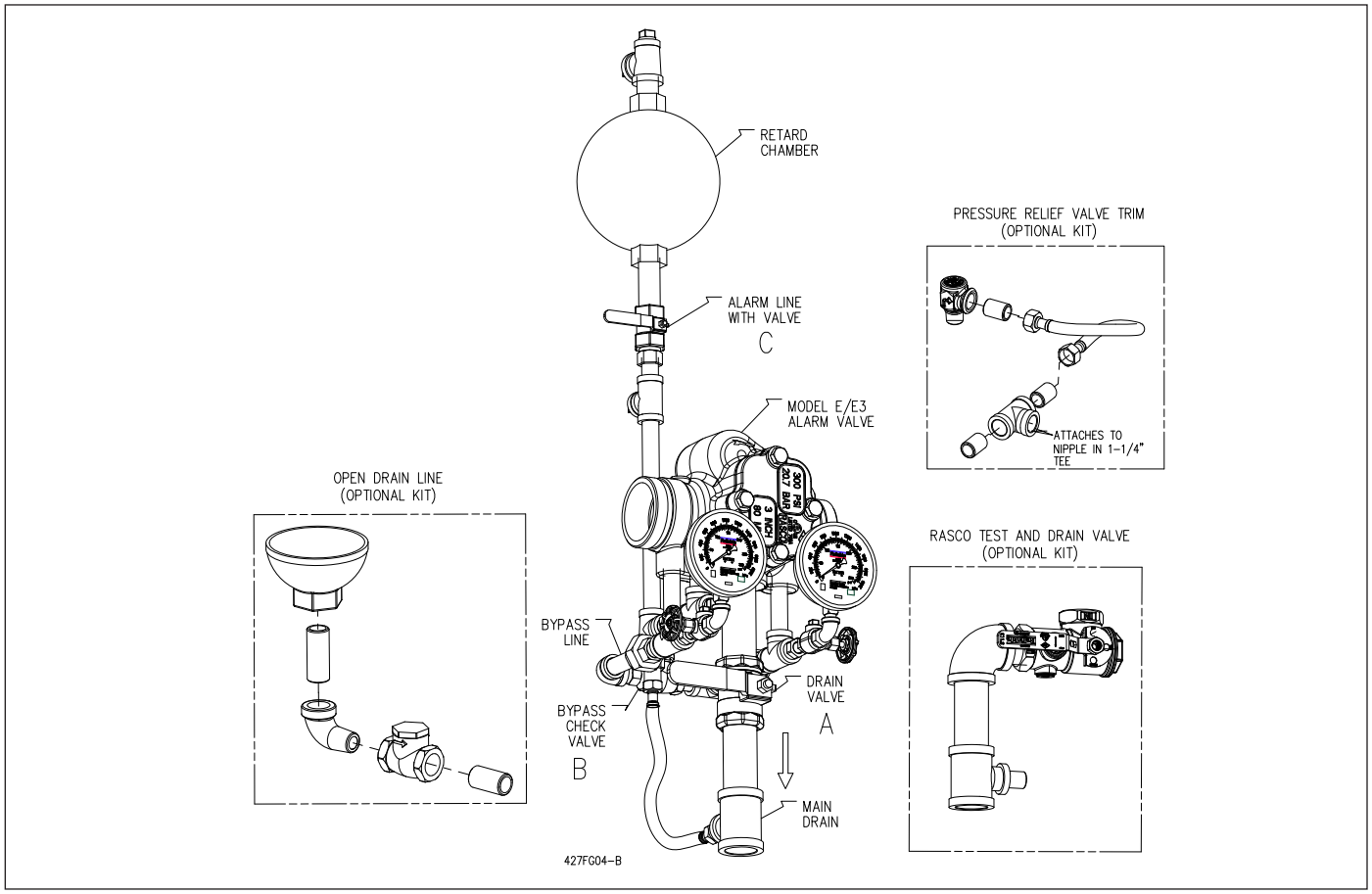

RETARD CHAMBER
ALARM LINE WITH VALVE
C
MODEL E/E3 ALARM VALVE
BYPASS LINE
BYPASS CHECK VALVE
B
DRAIN VALVE
A
MAIN DRAIN
PRESSURE RELIEF VALVE TRIM (OPTIONAL KIT)
ATTACHES TO NIPPLE IN 1-1/4" TEE
OPEN DRAIN LINE (OPTIONAL KIT)
RASCO TEST AND DRAIN VALVE (OPTIONAL KIT)
427FG04-B

Fig. 8

- **Tests (see Figs. 7 & 8)**
  To test the readiness of the entire wet pipe system, open the inspectors test connection which should cause the mechanical and the electric alarms to sound. This test connection is usually located on the end or top line of the system and its opening is the equivalent to the fusing of one automatic sprinkler.
  To test the operation of the alarm equipment only, open Valve (A), until alarm sounds. For the optional Reliable TD test and drain valve kit open the valve to the "Test" position. Testing this way has the added benefit of exercising the clapper assembly. Should the mechanical sprinkler alarm (water motor) not operate, most likely the strainer is clogged. Remove the strainer cap and filter to clean. Be sure to replace the cleaned filter and tighten cap securely. Refer to Bulletin 613 for cleaning information.
  To test supply piping for unobstructed flow, close Valve (C), and open Valve (A) to the drain position. When test is completed, close Drain Valve (A) securely and open Valve (C) which must be monitored with a suitable supervising device.

For FM insured applications the placement of a Reliable TD test and drain valve (E3 Trim Option) in the 1¼" (32mm) drain line does not replace the need for an inspector's test connection at the outer reaches of the sprinkler system. The drain valve shall not be used in lieu of the inspector's test connection for the testing of the entire wet piping system. The drain valve shall only be used to exercise the clapper and test valve associated alarm devices. For all other applications please refer to NFPA 13 or to the authority having local jurisdiction.

Maintenance

Reliable alarm valves and associated equipment shall periodically be given a thorough inspection and test. NFPA 25 provides minimum inspection, testing and maintenance requirements. Alarm valves shall be tested, operated, cleaned, inspected and parts replaced, as required, at least annually.

Usually, any trouble will be shown by one or more of the following symptoms:

A. Mechanical Sprinkler Alarm (Water Motor) Not Operating.
See Tests for corrective measures.

B. Steady Water Flow Into Drain Line
Steps in the following sequence should be taken to correct steady water flow into the drain line:

1. Open Valve (A), Fig.7, to drain which should flush any loose matter off alarm valve seat. Close valve and observe if water flow ceases.
2. Close main control valve to determine if water flow is coming from above or below alarm valve clapper.
   Note: Supply pressure gauge should read '0' psi when main control valve is closed tight and water pressure between this valve and the alarm valve is relieved. If necessary, pressure can be relieved through the lower gauge valve when the ¼" NPT plug is removed.
   a. If water flow is coming from below clapper, water will stop running to drain line.
   b. If water flow is coming from above clapper, water will continue to run to drain line.
      Note: To minimize downtime, the following parts should be on hand before the valve is disassembled:
      1) Seat installation Wrench: Part No. 6881230000
      2) Clapper Assembly: Item 4, Figure 9.
      3) Seat "O"-Rings: Items 9 and 10, Figure 9.
   c. In either case (a or b), drain system by opening Valve (A), Figs. 7 & 8 to drain. Remove Cover (2), Fig. 9, Shaft Pipe Plug (14), Hinge Pin (8) and Clapper Assembly (4).
      Note: Hold down Spring (13) when removing Hinge Pin (8).
   d. Carefully inspect for the following:
      1) Damage to clapper rubber facing – Inspect surface for imbedded foreign matter. Replace facing if found damaged (be certain that clapper and clapper clamping ring surfaces are thoroughly cleaned before assembling with new facing.)
      2) Damage to seat surface –Clean seat thoroughly. Inspect for any nicks in seat or stones or other foreign matter lodged in seat groove. If seat or other parts of valve are found to be severely damaged, an authorized Reliable distributor should be contacted.
   e. To replace seat "O"-Rings:
      1) Using the seat wrench, unscrew the seat. Use care to avoid damage to the seat surface.
      2) Remove "O"-Rings, Items 9 and 10, Fig. 9. Thoroughly clean "O"-Ring grooves and sealing surfaces. Inspect for damage or foreign material.
      3) Apply a light coat of lubricant to new "O"-Rings and install in the proper grooves. Use care to avoid stretching, twisting or other damage to "O"-Rings.
      4) After checking that "O"-Rings are correctly installed, carefully reinstall seat and tighten securely with the seat wrench.
   f. To reassemble alarm valve:
      1) Replace clapper assembly (Fig. 6) on seat alarm valve – insert Hinge Pin (8) in valve and pass it through one bearing of Clapper (4) – Press and hold Spring (13) securely in position between clapper alarm bearings and push hinge pin through spring coils and bushings to far side of valve – Replace Shaft Pipe Plug (14).
      2) Lift toe of clapper – check for freedom of rotation and proper seating.
      3) Replace Cover (2) being sure Cover Gasket (11) is in position and bolts and nuts are securely tightened.
      4) Close Drain Valve (A), Fig. 7. Slowly open main control valve. Be sure Valve (C) and the main control valve are properly supervised in the OPEN position.

C. False Alarms

False alarms are generally caused by pressure surges in the water supply and can occur if the system loses its effective excess pressure (see "Operation"). Similar readings on the system and supply pressure gauges are a visual indication that the excess pressure condition has been lost. One or more of the following will contribute to this loss of pressure:

– Leaking system drain valves, leaking at the Alarm Valve Seat (3), Fig. 9, leaking between the Clapper (4) and the Facing (5), or leaking at the Bypass Check Valve (B), Figs. 7 & 8.

Corrective Steps:

1. Check system drain valves for tightness.
2. In order to find and correct a leak at the alarm valve seat, proceed as outlined in B.1. through 2.
3. To correct a leak between the clapper and the clapper facing, proceed as outlined in B.2.c. and B.2.d.1.
4. In order to find and correct a leak through the bypass check valve, proceed as follows:
   a. Close the main control valve and relieve pressure between main control valve and clapper of the alarm valve through the ¼" NPT lower gauge valve. Close this valve before removing the ¼" NPT plug, and open after the plug is removed to relieve pressure. If water continues to flow from this valve, the bypass Check Valve (B) should be cleaned, repaired or replaced.
   b. Bypass Check Valve (B) is leaking, repair after opening Valve (A) to drain and draining the system completely.
   c. Following all repairs, close Valves (A) and then slowly open the main control valve, and supervise it appropriately.
5. If the retard and mechanical sprinkler alarm line does not drain completely, false alarms may result. In this case, check both drain orifices (Item 7, Fig. 4. & 6) to ensure they are not plugged.

D. Intermittent Alarms

Intermittent alarms are the result of excessive confined air trapped in the sprinkler system piping. To correct this problem, fill the system slowly while venting air at all system openings. When the system is fully pressurized, vent air at all system high points including sprinkler connections if necessary. Contact the installing contractor or Reliable if any difficulties are experienced. Should replacement parts be needed, use only genuine Reliable made parts. When ordering, specify part number, name, size, model and serial number of the unit.

Service Kits

Service kits are available for routine servicing of the valve (reference Figure 9). Service kits for the Model E and E3 Alarm Check Valve include the following components:

- Clapper Rubber Facing and Clamping Ring Assembly (item 4)
- Clamping Ring Nut (item 7)
- Cover Gasket (item 11)

2-1/2" and 3" Model E & E3 Service Kit: PN 6501200R17

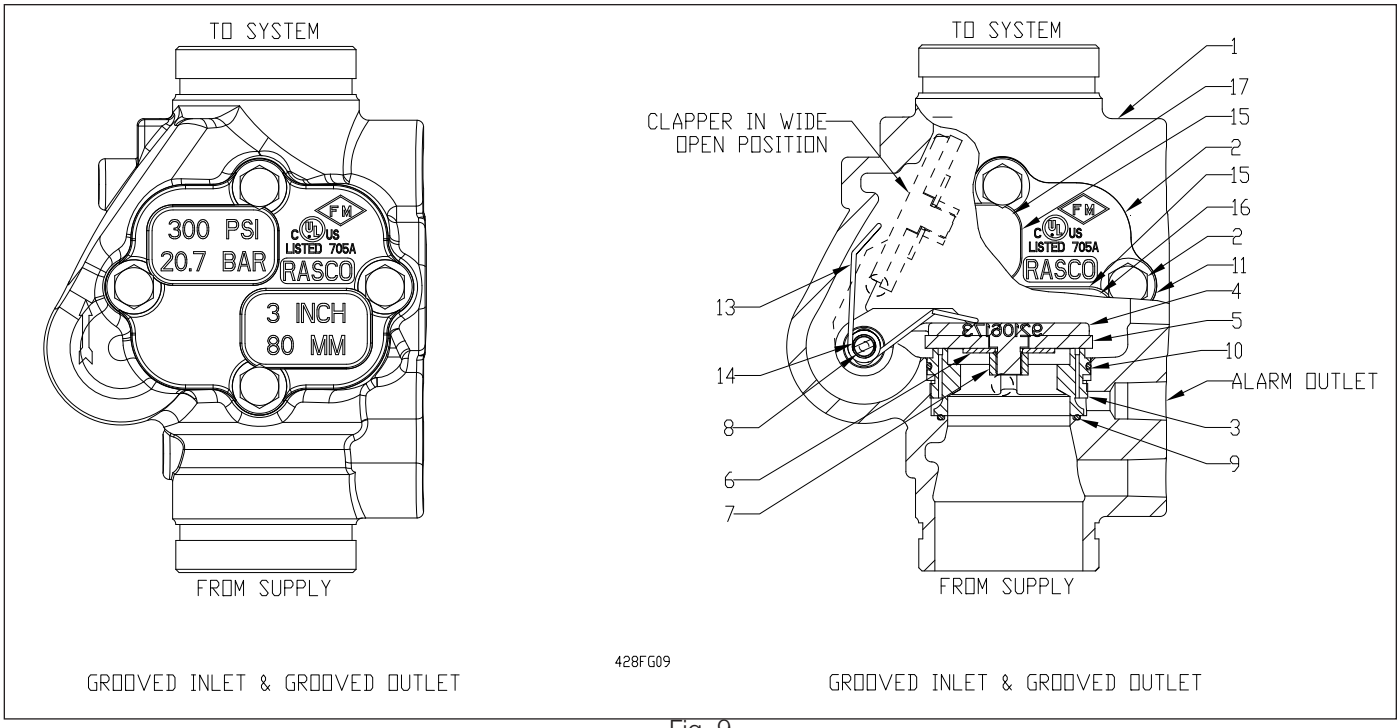


Fig. 9

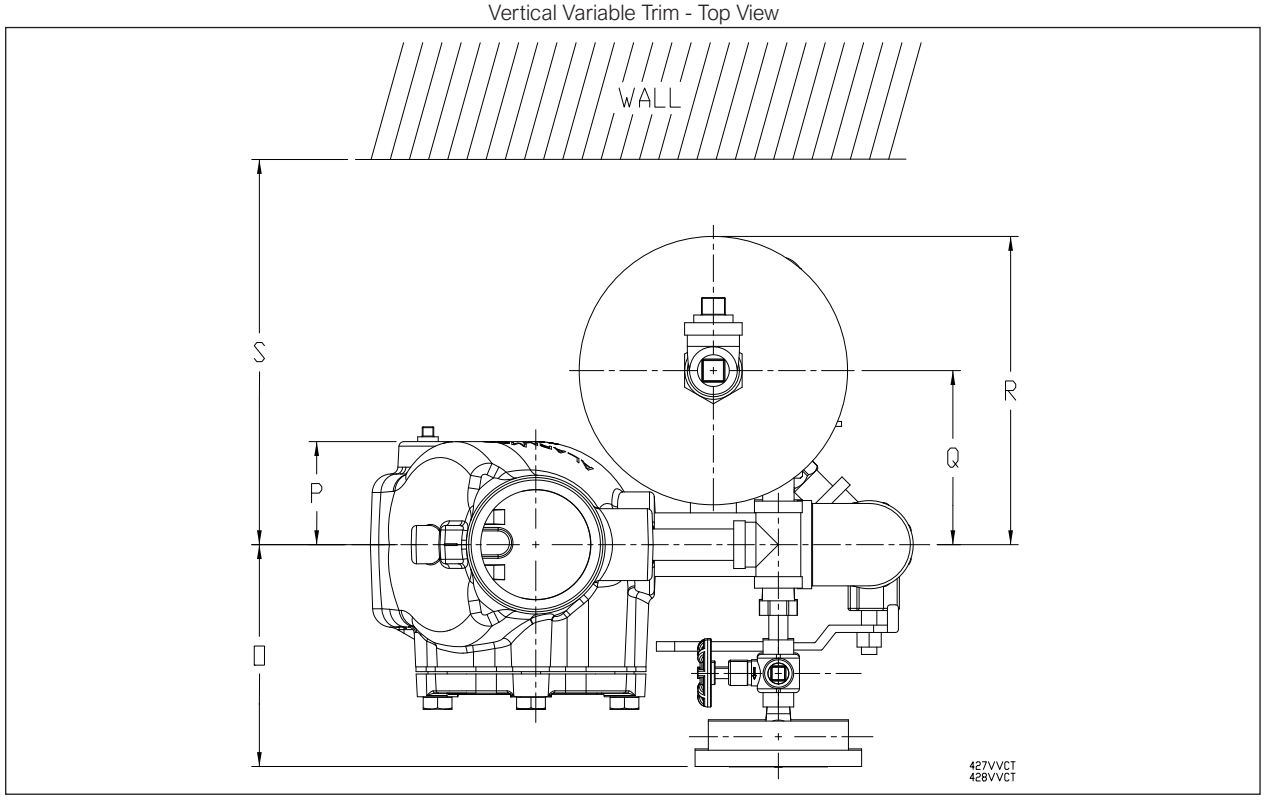
Item Number:	Part Number:	Description:	Quantity:	Material:
1	91007122	Model E Valve Body 2½" Class 150 Flange/Flange	1	Grey Cast Iron Class 30
	91007121	Model E Valve Body 3" Class 150 Flange/Flange		
	91007120	Model E Valve Body 65mm PN16 Flange/Flange		
	91007149	Model E Valve Body 65mm BS-E Flange/Flange		
	91007139	Model E Valve Body 80mm BS-E Flange/Flange		
	91007152	Model E Valve Body 2½" Class 150 Flange/Groove		
	91007153	Model E Valve Body 3" Class 150 Flange/Groove		
	91007172	Model E3 Valve Body 2½" Groove/Groove		
	91007173	Model E3 Valve Body 3" Groove/Groove		
	91007176	Model E3 Valve Body 76mm Groove/Groove		
2	92116173	Cover	1	Grey Cast Iron Class 30
3	96016123	Seat	1	Bronze UNS C83600
4	71020320	Clapper, Bushing, Seal, Washer & Nut Assembly	1	Grey Cast Iron, Brass, EPDM, Stainless Steel
5	93406123	Clapper Rubber Facing	1	EPDM
6	95306123	Clamping Ring	1	Stainless Steel UNS S30400
7	94906124	Clamping Ring Nut	1	Stainless Steel 18-8
8	95006123	Hinge Pin	1	Brass UNS C36000
9	95446123	Lower Seat O-Ring	1	Buna-N
10	95436123	Upper Seat O-Ring	1	Buna-N
11	93706123	Cover Gasket	1	Neoprene
12	91106123	Cover Bolts	4	Steel
13	96406123	Clapper Spring	1	Bronze UNS C51000
14	98604403	Shaft Pipe Plug	1	Steel
15	94617000	Adhesive Pad	2	Urethane
16	94617002	Size Nameplate, 2½" 65MM	1	Aluminum
	94617003	Size Nameplate, 3" 80MM		
	94617004	Size Nameplate, 76MM		
	94617009	Size Nameplate, 65MM DN16		
	94617013	Size Nameplate, 65MM BS-E		
	94617014	Size Nameplate, 80MM BS-E		
17	94617010	Pressure Nameplate, 175 PSI 17,2 BAR	1	Aluminum
	94617011	Pressure Nameplate, 300 PSI 20,7 BAR		
	94617012	Pressure Nameplate, PN16		

Installation Dimensions in Inches (mm)																			
A	**B**	**C**	**D**	**E**	**F**	**G***	**G****	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**	**Q**	**R**	**S**
4¼ (108)	9 (229)	10 (254)	4¾ (121)	12¾ (324)	21¼ (540)	10¼ (260)	9 3/16 (233)	17 (432)	16½ (419)	10¾ (273)	7¼ (184)	15 (381)	23½ (597)	4¾ (121)	6 (152)	4¾ (121)	3 (76)	8¼ (210)	9¼ (235)

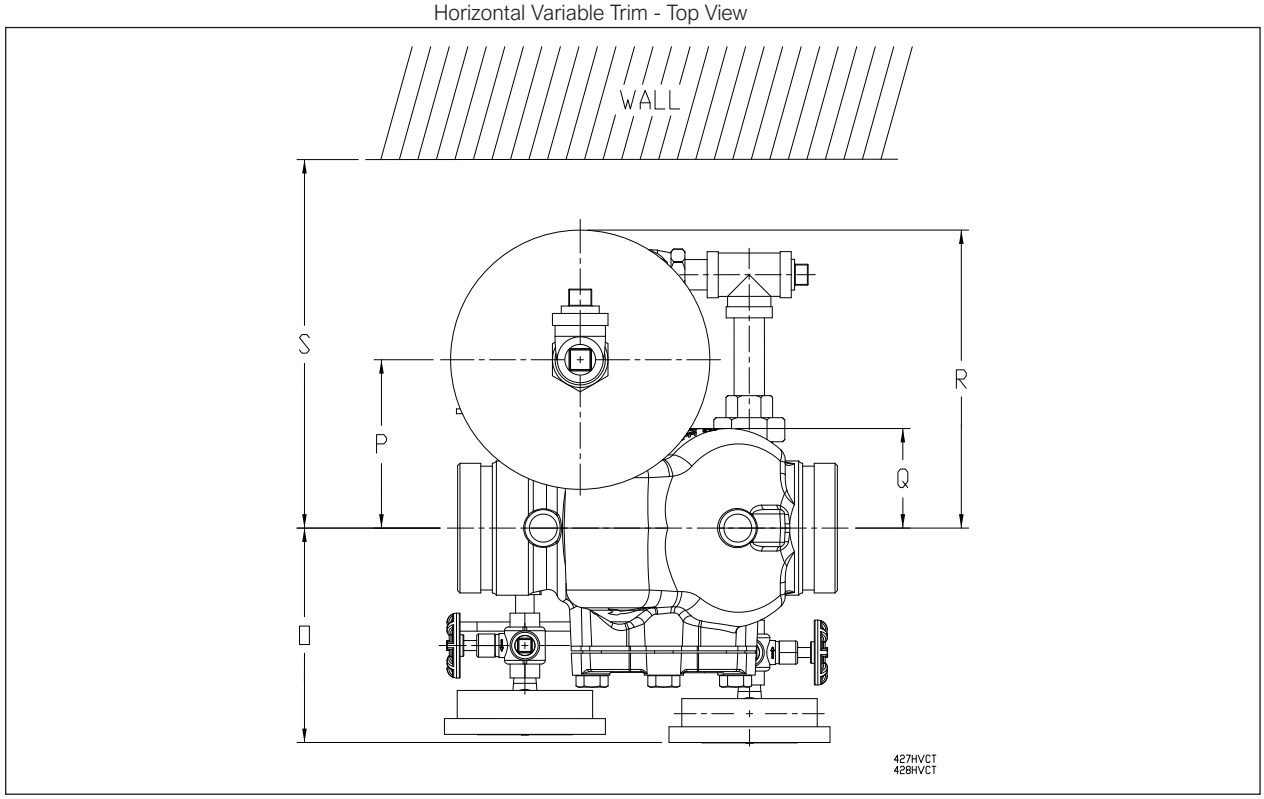
G* is total takeout for Grv/Grv Valve Configurations

G** is total takeout for Flg/Grv and Flg/Flg Valve Configurations

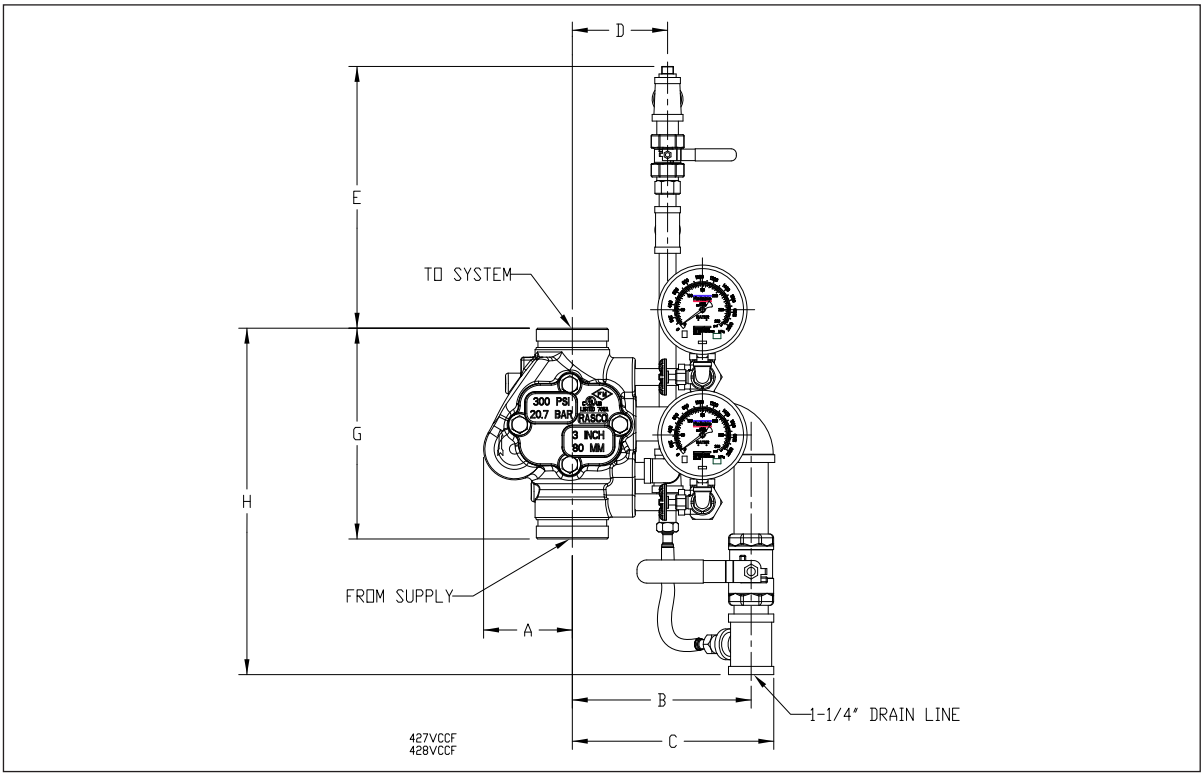
Vertical Variable Trim - Top View



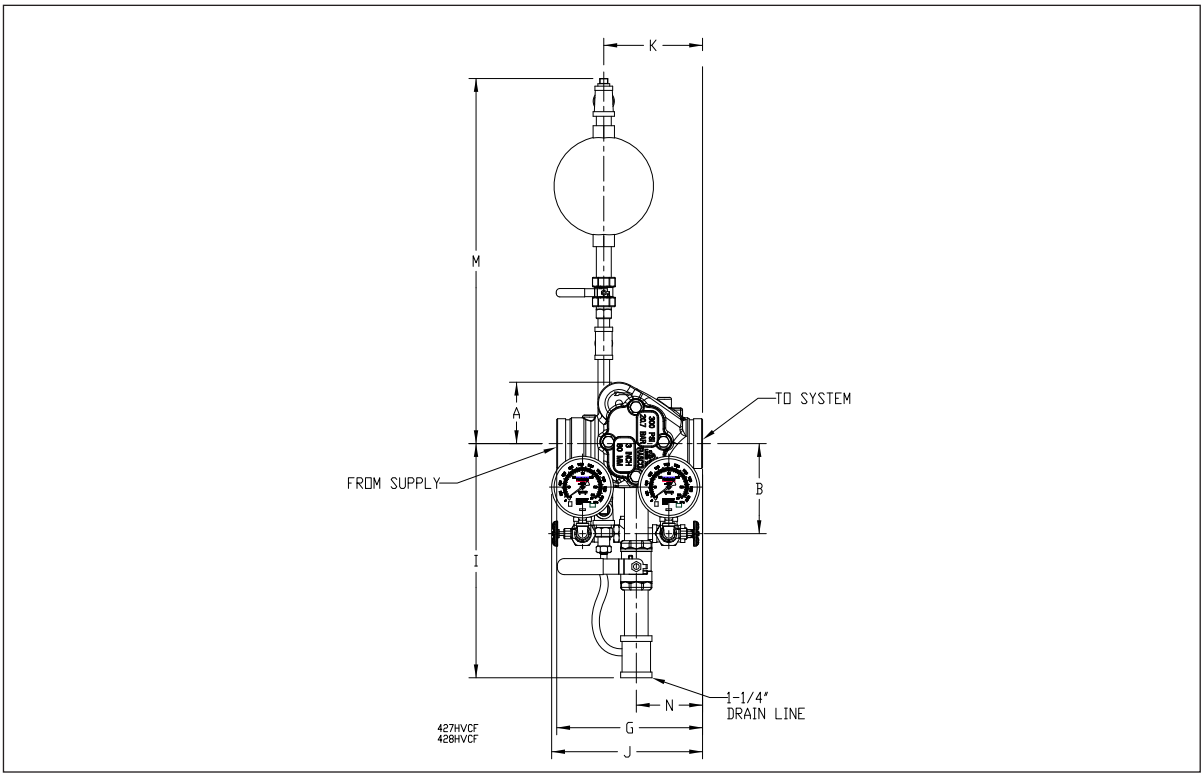
Horizontal Variable Trim - Top View



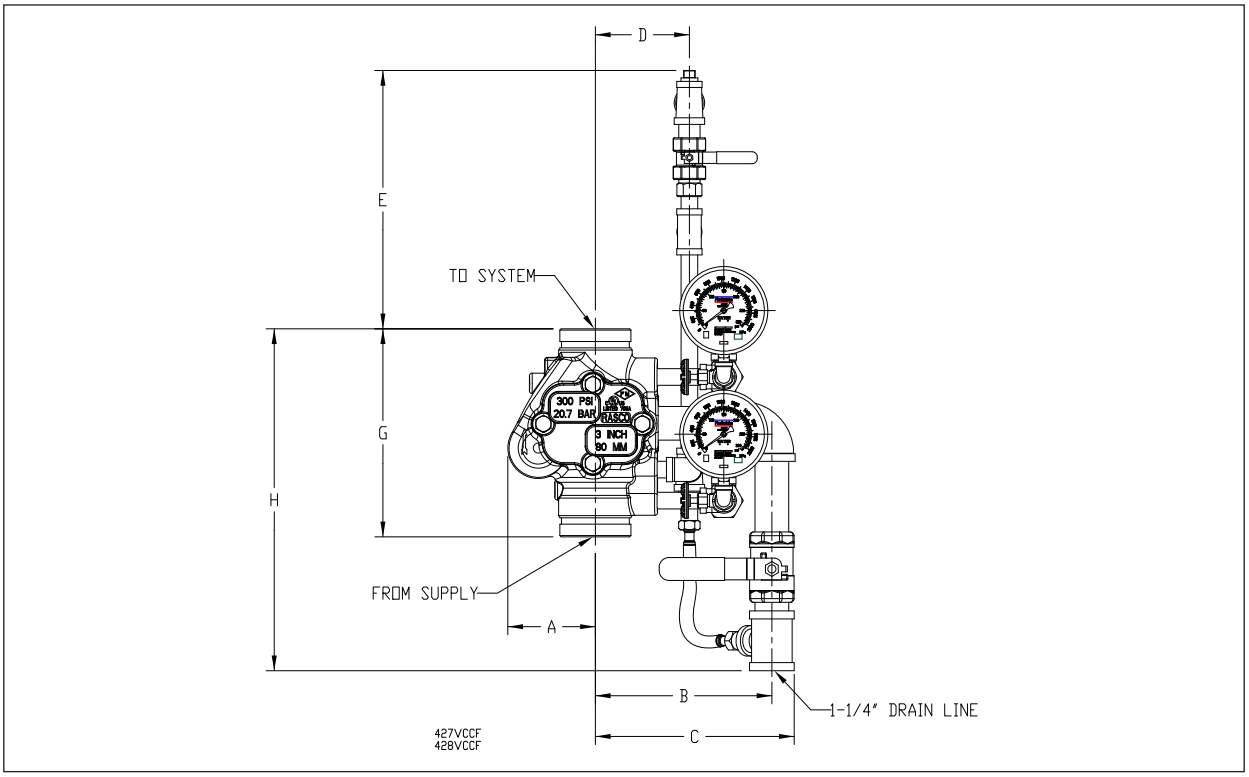
Vertical Variable Trim - Front Elevation



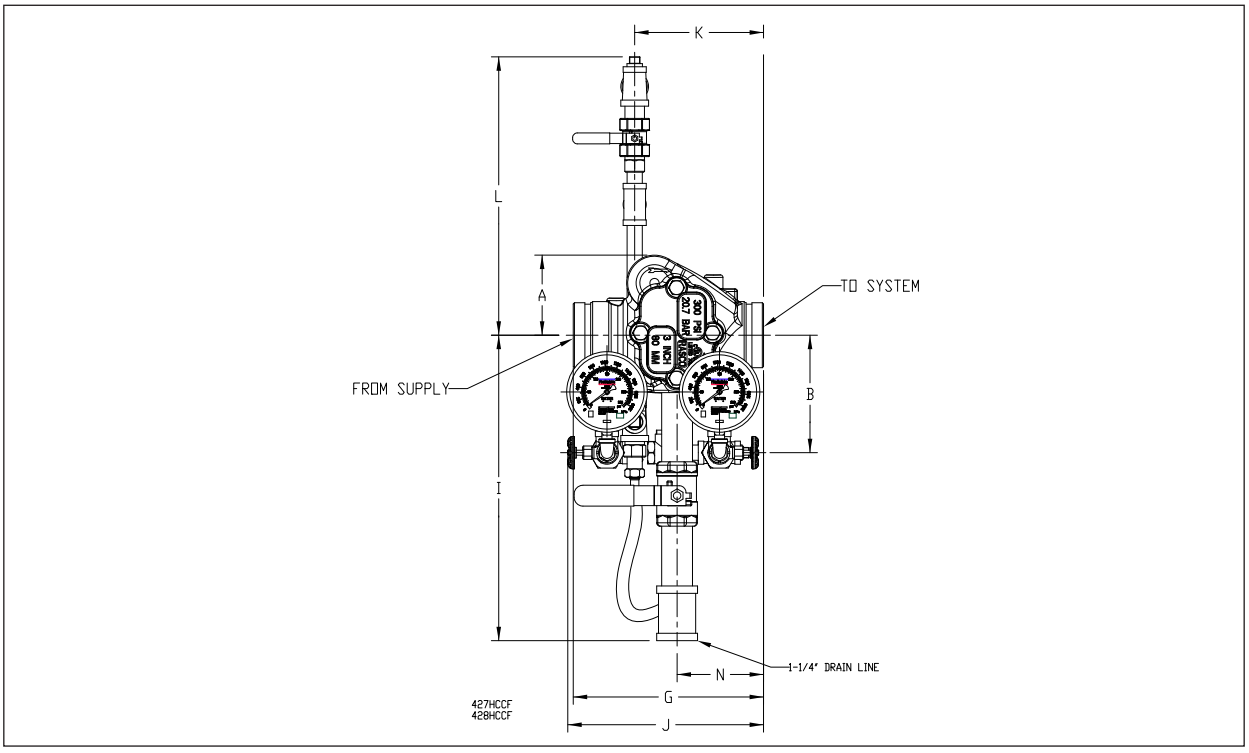
Horizontal Variable Trim - Front Elevation



Vertical Constant Trim - Front Elevation



Horizontal Constant Trim - Front Elevation



The equipment presented in this bulletin is to be installed in accordance with the latest published Standards of the National Fire Protection Association, Factory Mutual Research Corporation, or other similar organizations and also with the provisions of governmental codes or ordinances whenever applicable.
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