

Alarm Check Valve

Flange x Groove - G

Flange x Flange - F

Manufactured by: Central Sprinkler Company
451 North Cannon Avenue, Lansdale, Pennsylvania 19446

Product Description

The Central Alarm Check Valve is a wet pipe sprinkler system water-supply check valve. It makes possible the installation of sprinkler systems in buildings not subject to freezing temperatures. It is designed so that water pressure in the piping system will hold back water pressure at the valve until such time as a sprinkler is activated.

The Alarm Check Valve Trim package includes the necessary valves, gauges, fittings and nipples to provide retard chamber connection, drain connections and alarm test bypass.

Alarm Check Valves are UL Listed and FM Approved with Central's Trim only. No substitutions or omissions, in part or in full, are approved without prior consent from Central Sprinkler Corporation.

The Alarm Check Valves are available in two styles, flange-by-flange, Model F; and flange-by-groove, Model G. Each valve style is available in the 2½" and 3" sizes. (Note: Alarm Check Valves are also available in 4", 6" and 8" sizes, see appropriate literature.)

The Alarm Check Valves are Listed and approved by applicable agencies for use in fire sprinkler systems with a maximum working pressure of 175 psi.

Technical Data

Model: F or G

Style: Flange-x-Flange (F)
Flange-x-Groove (G)

Size: 2½" and 3"

Approvals: U.L., F.M., ULC and
MEA (CAL. No. 284-75-SA)

Maximum Working Pressure: 175 psi

Factory Hydro Test: 100% at 350 psi
(with clapper open)

Standard Finish: Blue Enamel

Flange Specifications:

F Inlet - Class 125 ANSI B16.1

G Inlet - Class 125 ANSI B16.1

F Outlet - Class 125 ANSI B16.1

Groove Specifications:

G Outlet - Std. AWWA C-606

Required Accessories:

Standard Trim

Optional Accessories:

Retard Chamber
Pressure Alarm Switch
Water Motor Alarm

Mfgr. Source: U.S.

Weight:

Valve:

2½" F 45 lbs.

2½" G 44 lbs.

3" F 45 lbs.

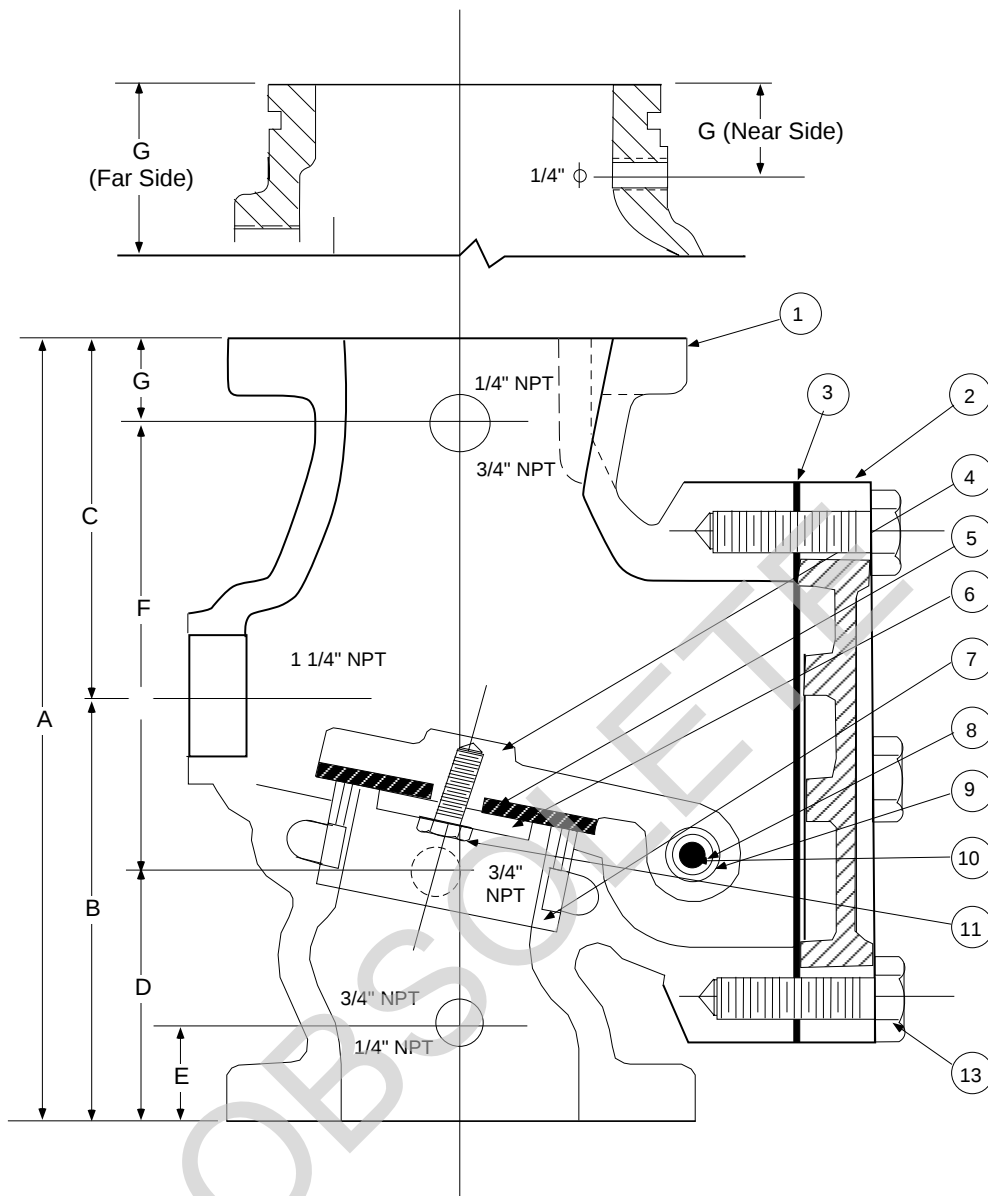
3" G 44 lbs.

Trim: 23 lbs.



2½" & 3"
Alarm Check
Valve & Trim

Figure 1 - Alarm Check Valve, Partial Sections



Parts List

2½" & 3" Alarm Check Valve Model "F" & "G"

Detail Number	Number Required	Part Number	Description
1	1	813-01-004	2½" Valve Body/Model F
	1	813-01-000	3" Valve Body/Model F
	1	8125-01-10	2½" Valve Body/Model G
	1	813-09-100	3" Valve Body/Model G
2	1	813-02-000	Valve Cover
3	1	813-03-000	Cover Gasket
4	1	813-04-000	Clapper
5	1	813-05-000	Rubber Facing
6	1	300-59-000	Retaining Ring
*7	1	813-07-000	Seat Ring
*8	2	816-08-000	Clapper Bushing
*9	2	816-09-000	Body Bushing
10	1	816-10-200	Hinge Pin
11	1	813-08-000	Hex Head Cap Screw
**12	2	816-12-000	Pipe Plug
13	4	814-13-000	Hex Head Cover Bolt

* Not Field Replaceable.

** Item 12 is not depicted in Figure 1.

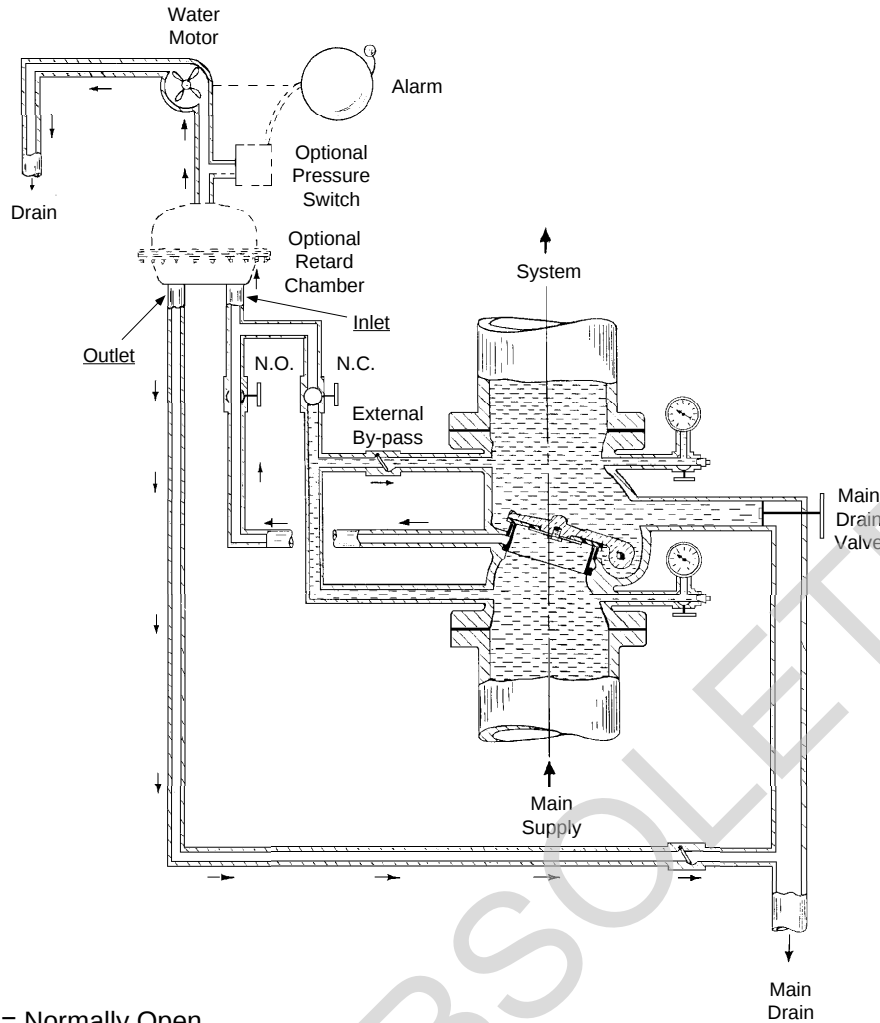
Valve Size	A	B	C	D
Model F 2½"	10 ¹ / ₁₆ "	5½"	4 ⁹ / ₁₆ "	3 ¹⁹ / ₆₄ "
Model G 2½"	10 ⁷ / ₈ "	5½"	4 ⁹ / ₁₆ "	3 ¹⁹ / ₆₄ "
Model F 3"	10 ¹ / ₁₆ "	5½"	4 ⁹ / ₁₆ "	3 ¹⁹ / ₆₄ "
Model G 3"	10 ⁷ / ₈ "	5½"	4 ⁹ / ₁₆ "	3 ¹⁹ / ₆₄ "

<i>Near Side of Valve</i>			
Valve Size	E	F	G
Model F 2½"	1 ³ / ₈ "	7 ⁵ / ₁₆ "	1 ³ / ₈ "
Model G 2½"	1 ³ / ₈ "	7 ⁵ / ₁₆ "	2 ³ / ₁₆ "
Model F 3"	1 ³ / ₈ "	7 ⁵ / ₁₆ "	1 ³ / ₈ "
Model G 3"	1 ³ / ₈ "	7 ⁵ / ₁₆ "	2 ³ / ₁₆ "

<i>Far Side of Valve</i>			
Valve Size	E	F	G
Model F 2½"	1 ³ / ₈ "	7 ¹ / ₈ "	1 ¹⁵ / ₃₂ "
Model G 2½"	1 ³ / ₈ "	7 ¹ / ₈ "	2 ⁹ / ₃₂ "
Model F 3"	1 ³ / ₈ "	7 ¹ / ₈ "	1 ¹⁵ / ₃₂ "
Model G 3"	1 ³ / ₈ "	7 ¹ / ₈ "	2 ⁹ / ₃₂ "

Figure 2 - Alarm Check Valve System with Accessories

Installation



Alarm Check Valves should be installed in areas that are accessible and easily visible. Prior to the actual installation of the Alarm Check Valve, the water supply line should be thoroughly flushed of all foreign matter. Now the valve can be unpacked and end-and-end thread protectors removed. Inspect the valve clapper to ensure freedom of movement.

Install the valve in the system so that the direction of water flow is the same as that indicated by the flow direction arrow on the valve body with the appropriate gaskets, bolts and/or couplings. Tighten all flange mounting fasteners uniformly as per piping standards. The valve can now be trimmed exactly as shown in Figures 4 or 5.

The trim must be installed in accordance with the instructions given in this bulletin. It is recommended that provisions be made for viewing of the alarm line drain water either by using an open type drain or by locating the main drain outlet in a readily visible area. Assure that all equipment is adequately heated and protected to prevent freezing and physical damage.

Care must be taken when installing check valves in the trim to be certain that they are located with the arrow on the body pointing in the proper direction. **The arrow on the body of the 3/4" check valve in the bypass line must point toward the alarm valve body. The arrow on the body of the 1/2" check valve in the drain line from the retard chamber must point toward the main drain.**

N.O. = Normally Open
N.C. = Normally Closed

Operation

Central Model "F" & "G" Alarm Check Valves are manufactured in 2½" and 3" sizes. They may be installed vertically or horizontally in the main supply to wet type sprinkler systems. Where water pressure fluctuates, such as encountered with city water supplies, Alarm Valve Trim and a Central Model "F" Retard Chamber must be used. For installations where water pressure does not fluctuate, such as tank supplies, Alarm Valve Trim may be used without the need of a Retard Chamber. In certain applications, the *Authority Having Jurisdiction* may

specify an excess pressure pump in place of a retard chamber.

Two different trim packages for Central Model "F" & "G" Alarm Check Valves can be used for both variable and constant pressures:

1. Vertical - Detail Trim
2. Horizontal - Detail Trim

When ordering, specify valve size, type of trim and retard chamber (if needed) separately.

Optional equipment (retard chamber, pressure switch, excess pressure pump, etc.) may be connected in accordance with the installation instructions accompanying the equipment. Upon completion of the system side of the installation, the system should be ready for pressurization.

Variable Pressure Installations

Under normal conditions, the water pressure gauge connected to the system side of the valve clapper would show a higher pressure reading than the water pressure gauge connected to the supply side of the valve clapper. This occurs because the $\frac{3}{4}$ " bypass line joining the area below the valve clapper to the area above it allows water pressure surges to pass without lifting the valve clapper off its seat. Repeated high pressure surges causing excessive pressure to be entrapped in the system will normally not cause false alarms, due to the presence of the $\frac{3}{4}$ " check valve in the bypass line. A sudden surge of very high pressure, as might be encountered by the start-up of a large fire pump, could cause the valve clapper to lift, allowing water to flow through the valve seat grooves to the retard chamber. The retard chamber drain should allow this water flow to be drained prior to completely filling the retard chamber which would result in water flow to the water motor alarm and/or electric alarm pressure switch. As all sprinkler system piping contains a certain amount of confined air, pressure surges could compress this air allowing the valve clapper to lift from its seat. Under some conditions, this could result in false alarms. Obviously, it is advantageous to bleed-off the air in the system piping to the greatest extent possible.

NOTE: Excessive water pressure fluctuations may require the installation of an excess pressure pump.

Constant Pressure Installations

Under these conditions, the water pressure gauges connected to both the supply and system sides of the valve clapper will show the same pressure. A retard chamber is not necessary as a lifting of the valve clapper would be the result of water flow from the sprinkler system piping, thus allowing water to flow directly to the water motor and/or electric alarm via the valve seat grooves.



Testing

Valve and Alarm Equipment

Open the 1" Inspector's Test Connection on the remote system piping to simulate the opening of one sprinkler. This should activate the water motor and/or electric alarm.

Alarm Equipment Only

Close the $\frac{3}{4}$ " ball valve (Fig. 4 and Fig. 5, #20) and open the $\frac{1}{2}$ " ball valve (Fig. 4 and Fig. 5, #13). This allows water to flow directly to the alarm devices and does not cause the valve clapper to lift. After testing has been completed, close the $\frac{1}{2}$ " ball valve and open the $\frac{3}{4}$ " ball valve.

Supply Piping Only

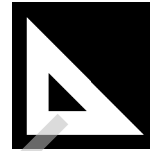
To test main water supply piping for unobstructed flow:

1. Close the $\frac{3}{4}$ " ball valve (Fig. 4 and Fig 5, #20,).

2. Open main drain valve (Fig. 4, #2, Fig. 5, #34). A full flow of water indicates a clear supply line and also verifies that the alarm valve clapper has lifted from its normal seated position.

3. Close the main drain valve. Allow system piping to fill completely with water.

4. Open the $\frac{3}{4}$ " ball valve.



Design Data

Design Considerations

Friction Loss

For use in hydraulic calculations, the pressure loss through the Alarm Check Valves may be expressed in equivalent length of pipe, based on Hazen & Williams formula with $C=120$.

2½" & 3" Valve = 17 feet

Figure 3 - Friction Loss - Model F & G Alarm Valves

Pressure Loss Curves

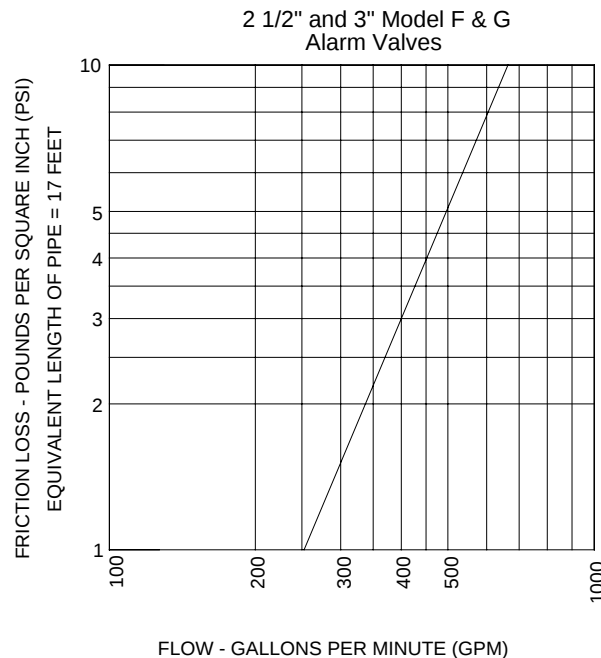
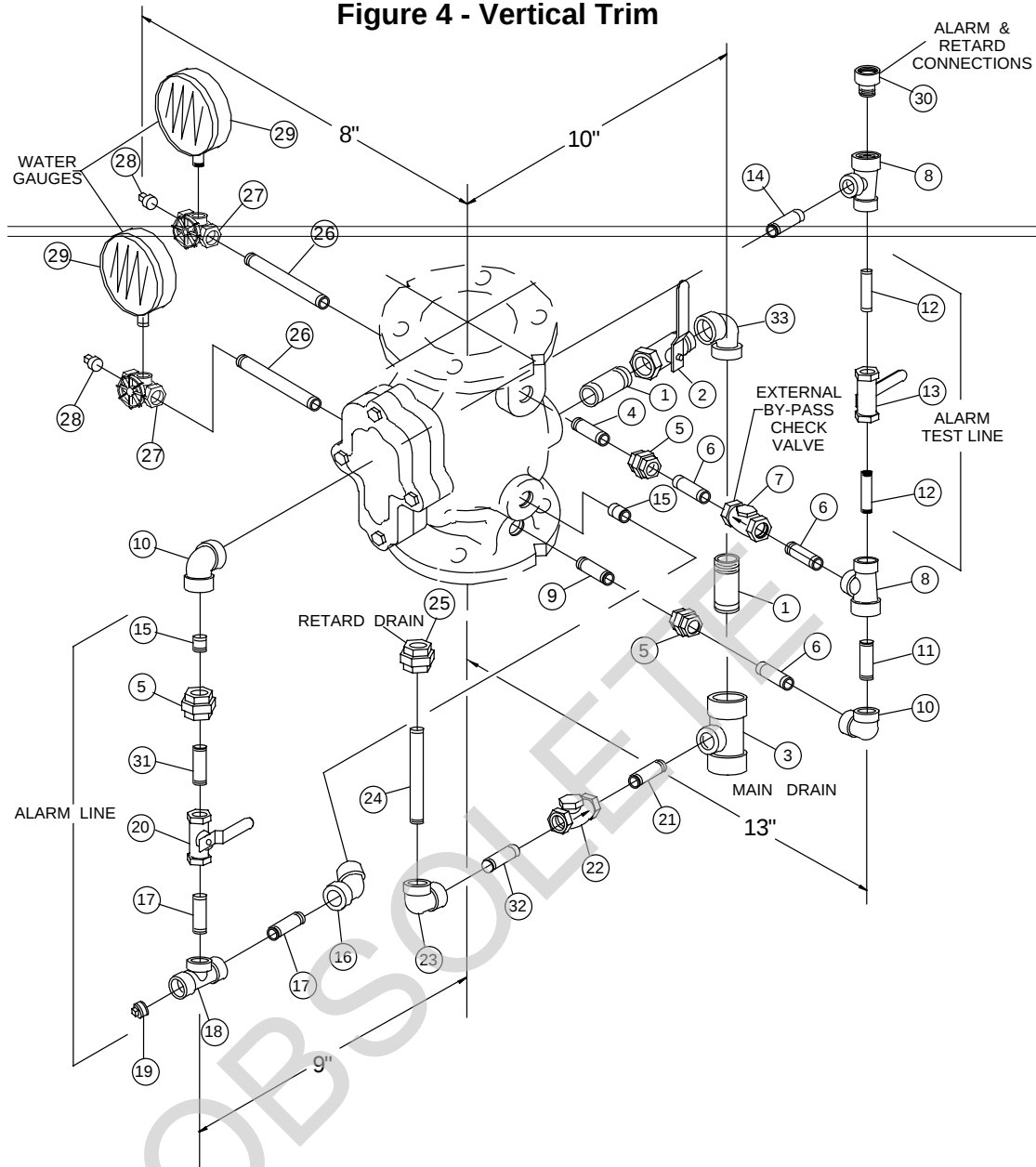


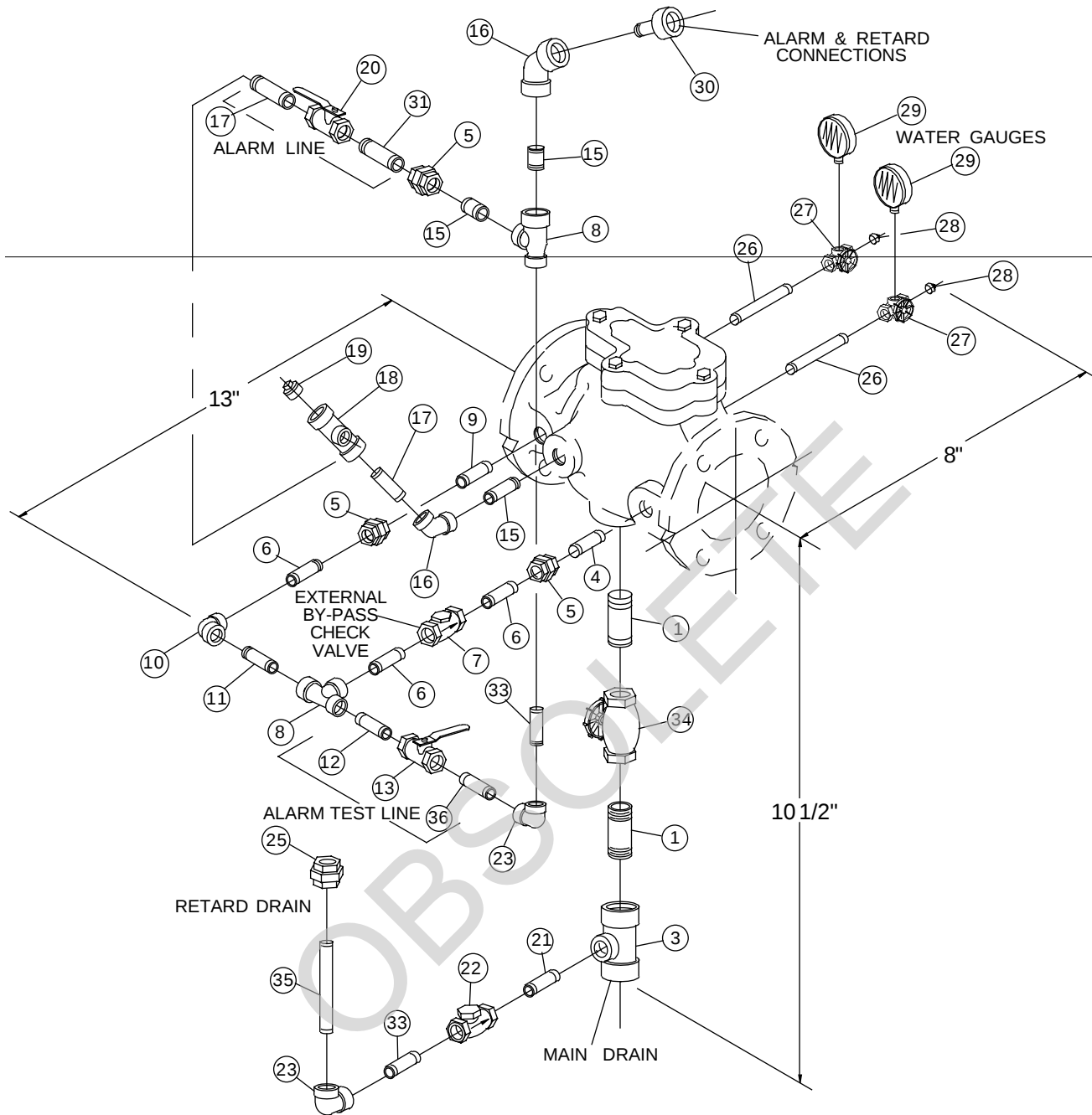
Figure 4 - Vertical Trim



**2½" & 3" Alarm Check Valve Vertical Trim
Bill of Materials**

Detail No.	Description	w/ Gauge Qty.	w/o Gauge Qty.	Detail No.	Description	w/ Gauge Qty.	w/o Gauge Qty.
1	1¼" x 2" Nipple	2	2	18	¾" Tee	1	1
2	1¼" M x F Ball Valve	1	1	19	¾" Pipe Plug	1	1
3	1¼" x 1¼" x ½" Tee	1	1	20	¾" Ball Valve	1	1
4	¾" x 2½" Nipple	1	1	21	½" x 4" Nipple	1	1
5	¾" Union	3	3	22	½" Check Valve	1	1
6	¾" x 2" Nipple	3	3	23	½" 90° Elbow	1	1
7	¾" Check Valve	1	1	24	½" x 14" Nipple	1	1
8	¾" x ½" x ¾" Tee	2	2	25	½" Union	1	1
9	¾" x 6" Nipple	1	1	26	½" x 4" Nipple	2	2
10	¾" 90° Elbow	2	2	27	¼" 3-way Globe Valve	2	2
11	¾" x 5½" Nipple	1	1	28	¼" Pipe Plug	2	2
12	½" x 1½" Nipple	2	2	29	¼" Gauge	2	N/A
13	½" Ball Valve	1	1	30	¾" M-F Extension	1	1
14	¾" x 3" Nipple	1	1	31	¾" x 1½" Nipple	1	1
15	¾" x Close Nipple	2	2	32	½" x 6" Nipple	1	1
16	¾" 45° Elbow	1	1	33	1¼" 90° Elbow	1	1
17	¾" x 3½" Nipple	2	2				

Figure 5 - Horizontal Trim



Bill of Materials

Detail No.	Description	Qty.	Detail No.	Description	Qty.	Detail No.	Description	Qty.
1	1 1/4" x 2" Nipple	2	13	1/2" Ball Valve	1	25	1/2" Union	1
2	1 1/4" Angle Valve	N/A	14	3/4" x 3" Nipple	N/A	26	1/4" x 4" Nipple	2
3	1 1/4" x 1 1/4" x 1/2" Tee	1	15	3/4" x Close Nipple	3	27	1/4" 3-way Globe Valve	2
4	3/4" x 2 1/2" Nipple	1	16	3/4" 45° Elbow	2	28	1/4" Pipe Plug	2
5	3/4" Union	3	17	3/4" x 3 1/2" Nipple	2	29	1/4" Gauge	2
6	3/4" x 2" Nipple	3	18	3/4" Tee	1	30	3/4" M-F Extension	1
7	3/4" Check Valve	1	19	3/4" Pipe Plug	1	31	3/4" x 1 1/2" Nipple	1
8	3/4" x 1/2" x 3/4" Tee	2	20	3/4" Ball Valve	1	32	1/2" x 6" Nipple	N/A
9	3/4" x 6" Nipple	1	21	1/2" x 4" Nipple	1	33	1/2" x 3" Nipple	2
10	3/4" 90° Elbow	1	22	1/2" Check Valve	1	34	1 1/4" Globe Valve	1
11	3/4" x 5 1/2" Nipple	1	23	1/2" 90° Elbow	2	35	1/2" x 15" Nipple	1
12	1/2" x 1 1/2" Nipple	1	24	1/2" x 14" Nipple	N/A	36	1/2" x 2" Nipple	1



Care & Maintenance

Alarm Check Valves and their accessories should be examined at least semiannually and tested to ensure dependable and trouble-free service. Testing will reveal the valve's basic condition. However, there are several areas that should be routinely inspected as follows:

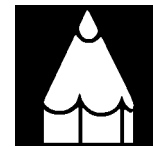
1. Inspect the valve rubber clapper facing. If worn or damaged, replace it with one obtained from Central. Be certain that dirt or other foreign substances have not accumulated under the rubber clapper facing. Clean thoroughly!
2. Inspect the clapper seat ring for stones, dirt or other foreign matter lodged in the grooves or holes. Clean thoroughly! If the seat ring surfaces are nicked or scored, it may be possible to repair same using a lapping compound. If not, replace the complete valve or return it to the factory for possible rebuilding.
3. Inspect the $\frac{3}{4}$ " swing check valve clapper (Fig. 4 and Fig. 5, #7) located in the $\frac{3}{4}$ " external bypass, for clapper and seat condition.
4. Inspect the $\frac{1}{2}$ " ball valve (Fig. 4 and Fig. 5, #13) for leaks. A flow of water through the drain outlet of the retard chamber to the main drain indicates a leaking ball valve or alarm valve seat.

5. If the retard chamber and/or water motor alarm are malfunctioning, follow these basic maintenance steps:

- a. Retard Chamber - Inspect inlet and outlet drain nozzles for foreign matter.
- b. Water Motor Alarm - Inspect to determine if drive shaft and the connected propelling and striker sections are turning freely without any binding action. If not, inspect for foreign matter. Be sure that the $\frac{3}{4}$ " strainer in the supply line is not clogged.

If service is required beyond that outlined above, refer to the particular device bulletin.

IMPORTANT NOTE: If it becomes necessary to shut down the sprinkler system water supply valve, notify the fire department, insurance company, central receiving station, and any other interested agencies or individuals. After tests and servicing have been completed, open the control valve to place the system back in service.



Ordering Information

When placing an order, indicate the full product name. Please specify the quantity, model, style and size.

Additional options, such as trim, pressure switch, water motor alarm, retard chamber, flange nuts, bolts, gaskets and mechanical grooved couplings must be ordered separately.

Availability and Service: Central sprinklers, valves, accessories, and other products are available throughout the U.S., Canada, and internationally, through a network of Central Sprinkler sales and distribution centers. You may write directly to Central Sprinkler Company or call (215) 362-0700 for the center nearest you.

Guarantee: Central Sprinkler Company will repair and/or replace any products found to be defective in material or workmanship within a period of one year from the date of shipment. Please refer to the current price list for further details of the warranty.

Conversion table:

1 inch	= 25.4 mm
1 foot	= 0.3040 M
1 pound	= 0.4536 kg
1 foot pound	= 1.36 Nm
1 p.s.i.	= 6.895 Kpa
	= 0.0689 bar
	= 0.0703 kg/cm ²
1 U.S. gallon	= 3.785 dm ³
	= 3.785 liters

Conversions are approximate.

OBSOLETE



Central Sprinkler Company

451 N. Cannon Avenue, Lansdale, PA 19446

Phone (215) 362-0700

FAX (215) 362-5385