

Description:

Sentry Sprinklers Model ACVV-300 is a ductile iron, Alarm Check Valve that is intended for use in wet pipe (automatic sprinkler) fire protection systems. The Alarm Check Valve Assembly consists of the Alarm Check Valve (ACVV-300), the Water Motor Gong (WMG-300), the Retard Chamber (RC-300) and the Trim. The assembly is rated for a maximum operating pressure of 300 PSI (20.7 Bar). The Alarm Check Valve Assembly serves two purposes, it prevents a reverse flow of water above the valve clapper (non-return) from the sprinkler piping and it provides a hydraulic alarm when there is a steady flow of water into the system that is equivalent to the discharge rate of one or more sprinklers. The valve is anti-corrosion with 10 mil (250µ) of fusion-bonded epoxy coating on both the inside & outside.

The Alarm Check Valve Assembly is suitable for vertical installation. A Retard Chamber (RC-300) can be installed to the valve assembly trim in order to prevent false alarms where the water main supply pressure varies. Where constant pressure water supply is used, the Retard Chamber (RC-300) (time-delay) is not necessary. The Alarm Check Valve Trim incorporates a port to install an electrical pressure switch to provide other supplemental alarms and annunciators that can also be used.

Features:

- Sizes 2" – 12" Maximum working pressure 300 PSI (20.7 Bar) @ 39° F - 158° F (4° C - 70° C).
- Lightweight Ductile Iron Body and Clapper.
- Pre-Trimmed assembly.
- Constant and Variable Pressure.
- EPDM Clapper Facing.
- Corrosion resistance SS304 Stainless Steel trim and Ball Valves.
- Epoxy coated inside & outside.
- External By-Pass Check Valve to minimize clapper movement upon varying pressure to eliminate false alarm.
- Trim is equipped with Alarm Test Valve to operate the alarm without reducing sprinkler system pressure.
- Trim includes a port to install a pressure switch.
- End Connection are available in Flange Inlet-by-Flange Outlet (FF), Flange Inlet-by-Groove Outlet (FG), Groove Inlet-by-Flange Outlet (GF) and Groove Inlet-by-Groove Outlet (GG). Flange Standard connections: ANSI B16.1 Class 125, ANSI B16.42 Class 150 or BS EN1092-2 PN16. Groove Standard Connections: AWWA C606/ISO 6182-12.
- UL/FM listed.



Flange-By-Flange (FF)



Flange-By-Groove (FG)



Groove-By-Flange (GF)



Groove-By-Groove (GG)



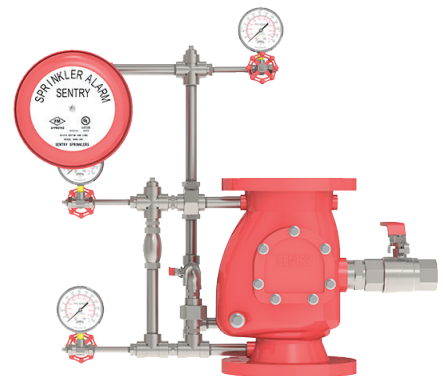
ACVV-300



WMG-300



RC-300

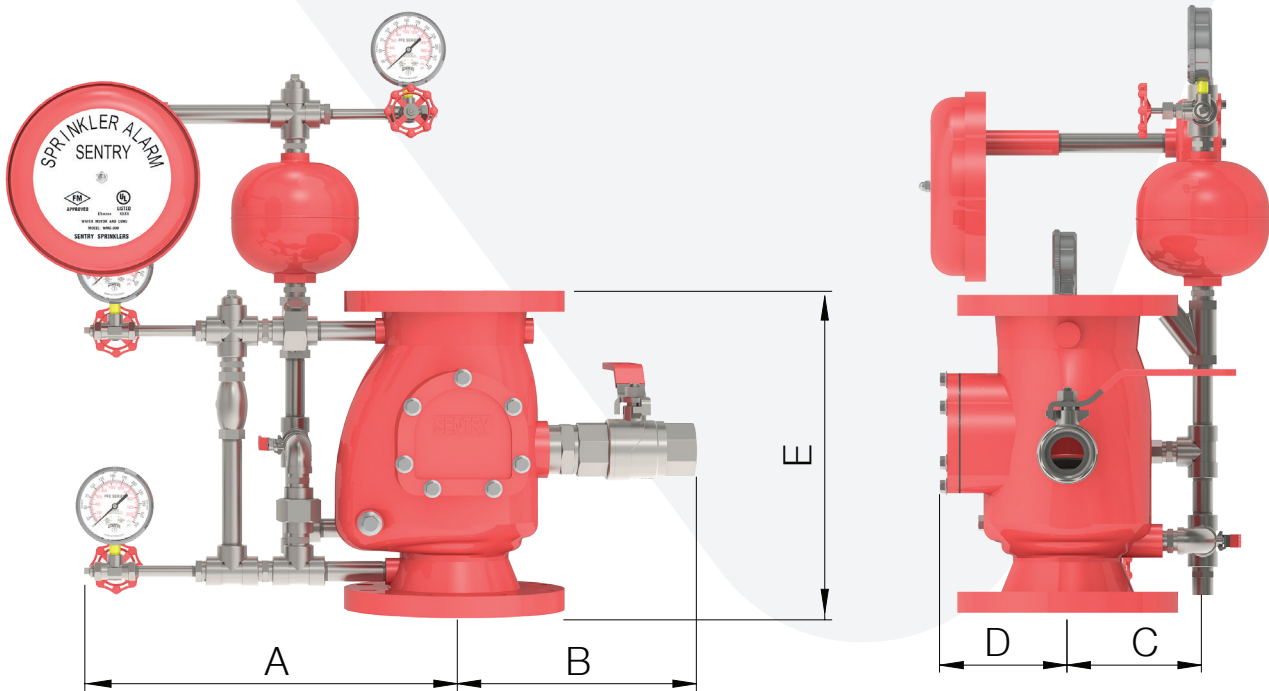


ACVV-300-FF Assembly



Dimensions:

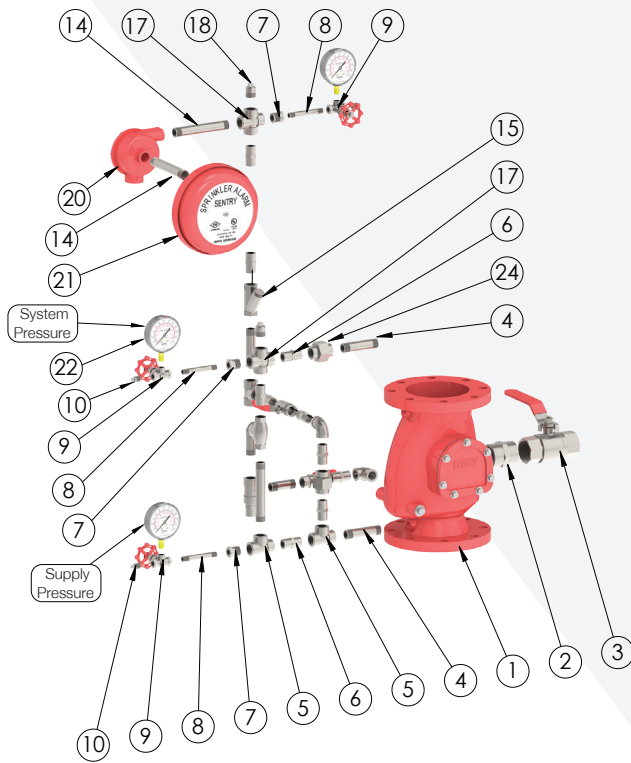
SIZE	Inch (DN)	2 (50)	2.5" (65)	3 (80)	4 (100)	5 (125)	6 (150)	8 (200)	10 (250)	12 (300)
A	inch (mm)	13 3/8" (340)	13 3/8" (340)	13 3/8" (340)	13 7/16" (342)	13 3/4" (349)	13 3/4" (349)v	16 5/16" (415)	18 11/16" (475)	19 1/2" (495)
B	inch (mm)	8 1/16" (205)	8 1/16" (205)	8 1/16" (205)	9 13/16" (250)	10 13/16" (274)	10 13/16" (274)	11 7/16" (290)	13 3/8" (340)	14 1/2" (368)
C	inch (mm)	5 11/16" (145)	5 11/16" (145)	5 11/16" (145)	6 5/16" (160)	7 1/16" (180)	7 1/16" (180)	8 1/16" (205)	9 7/16" (240)	10 5/8" (270)
D	inch (mm)	4 5/16" (110)	4 5/16" (110)	4 5/16" (110)	5 3/8" (136)	6 3/8" (162)	6 3/8" (162)	7 11/16" (195)	9 1/4" (235)	10 5/8" (270)
E	inch (mm)	9 3/16" (233)	9 5/16" (237)	9 5/8" (245)	12 7/16" (316)	15 3/16" (386)	15 11/16" (399)	17 1/4" (438)	21 1/16" (535)	24 1/2" (622)



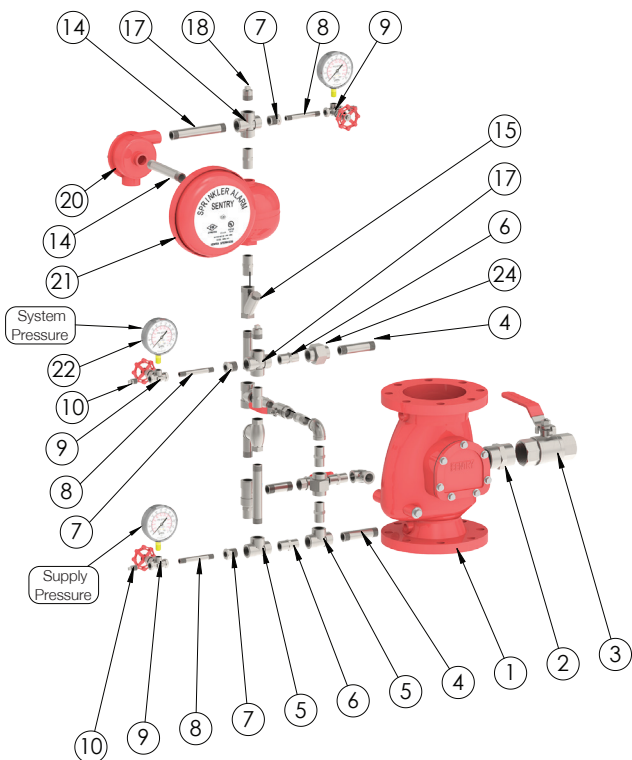
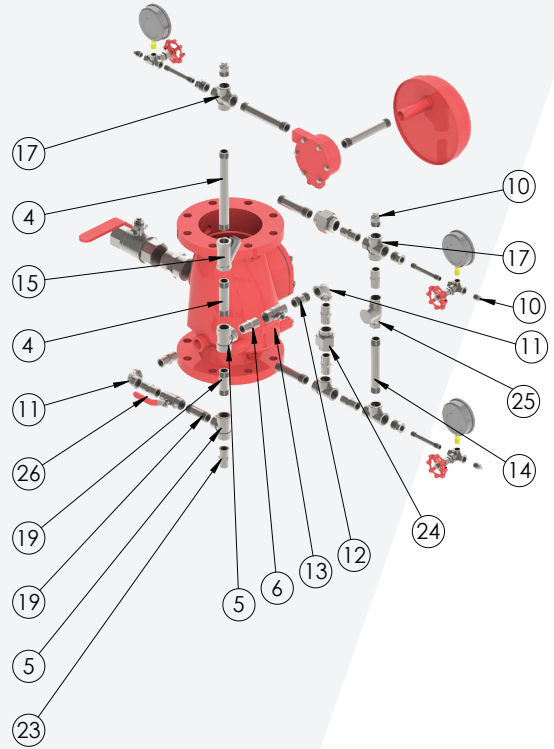
Material List:

ITEM	NAME	MATERIAL
1	ALARM CHECK VALVE	DUCTILE IRON
2	MM NIPPLE	STAINLESS STEEL 304
3	Main Drain Valve (Normally Closed)	STAINLESS STEEL 304
4	MM NIPPLE	STEEL
5	TEE	STAINLESS STEEL 304
6	MM NIPPLE	STAINLESS STEEL 304
7	FM BUSHING	STAINLESS STEEL 304
8	NIPPLE	STEEL
9	THREE-WAY VALVE	BRASS
10	PLUG	STAINLESS STEEL 304
11	ELBOW	STAINLESS STEEL 304
12	MM NIPPLE	STAINLESS STEEL 304
13	Alarm Test Valve (Normally Closed)	STAINLESS STEEL 304

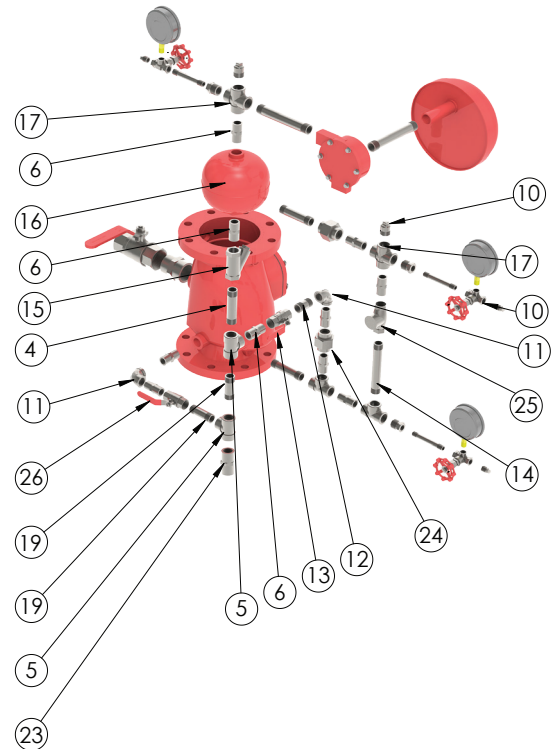
ITEM	NAME	MATERIAL
14	NIPPLE	STEEL
15	Y-STRAINER	STAINLESS STEEL 304
16	RETARD CHAMBER	STEEL
17	CROSS	STAINLESS STEEL 304
18	PLUG / PRESSURE SWITCH PORT	STAINLESS STEEL 304
19	NIPPLE	STEEL
20	GONG WHEEL CASING	STEEL
21	GONG	STEEL
22	PRESSURE GAUGE	PFE 300 PSI
23	Discharge Orifice	STAINLESS STEEL 304
24	UNION	STAINLESS STEEL 304
25	By-Pass Check Valve	STAINLESS STEEL 304
26	Inspector Test Valve (Normally Open)	STAINLESS STEEL 304

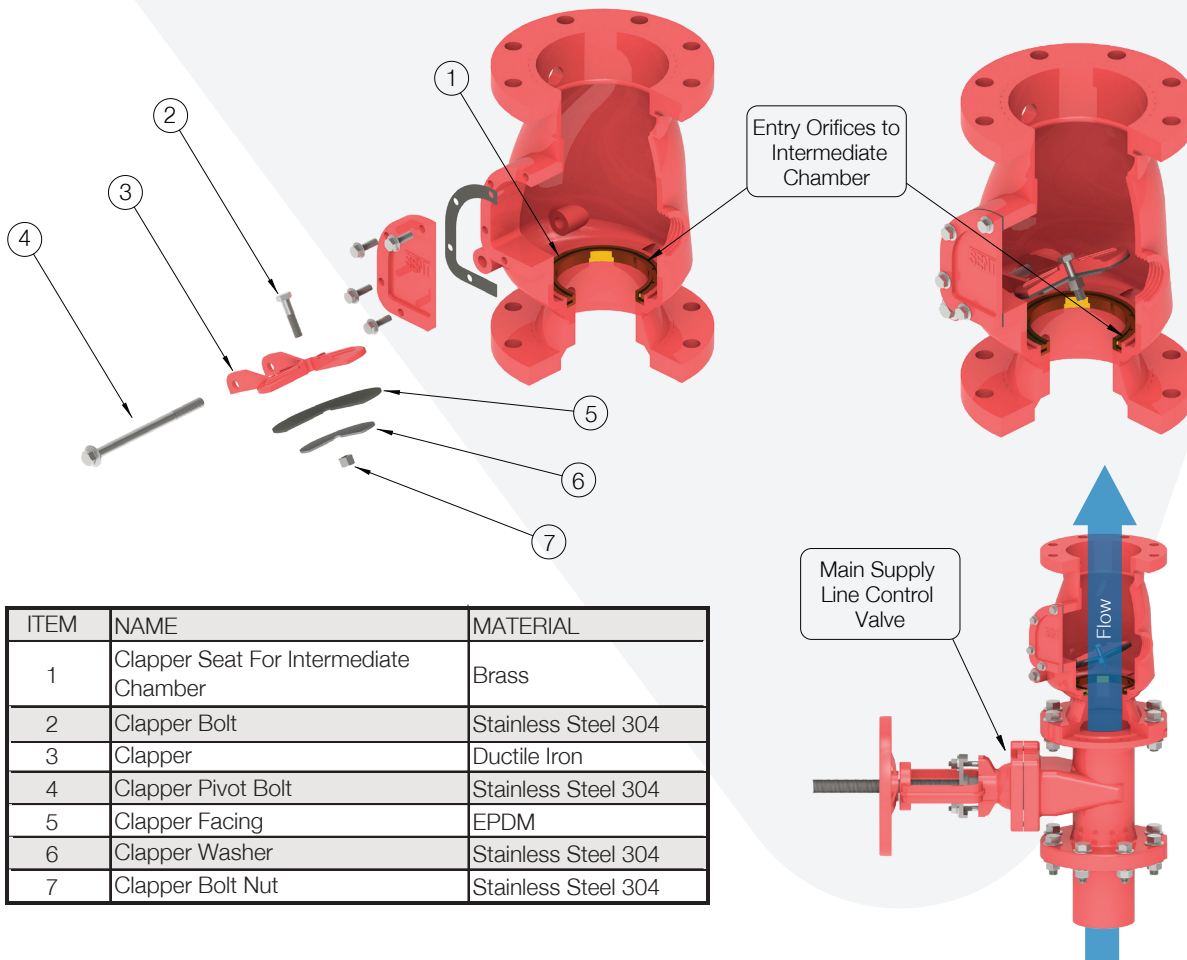


Vertical Position / Constant Pressure Trim



Vertical Position / Variable Pressure Trim





Installation and Maintenance:

Sentry Sprinkler Alarm Check Valve (ACVV-300) comes as pre-assembled with most trim components except for the Retard Chamber (RC-300) and the Water Motor Gong (WMG-300) that must be assembled at site. Once the assembly is built, it must be tested for proper operation. Sentry Sprinklers Alarm Check Valve assembly must be tested and maintained per NFPA 25, Standard for the Inspection, Testing and Maintenance of Water-Based Fire Protection Systems.

NFPA 25 recommends that the alarm check valve assembly is tested and inspected quarterly. Prior to testing, it is necessary to notify the owner and the fire department central station of the testing schedule so they are not affected by the test. Testing will initiate an alarm on all devices.

Alarm Check Valve Assembly Testing:

- 1- Before testing, ensure that the system is supplied with fresh water line that is free of any water impurities. Water impurity will damage the clapper seat resulting in a continuous alarm or an intermittent alarm.
- 2- Check the location where test connections discharges at to ensure that no water damage or injury resulting from the discharge.
- 3- Check the end of the test connections from any obstructions to secure a proper flow.

The Alarm Check Valve Assembly must be tested for water flow through the Alarm Check Valve and water flow through Alarm Devices. To test the Alarm Check Valve for flow, first locate the Inspector Test Connection, which is typically located at the highest and most remote point on the sprinkler piping system in relation to the alarm check valve position. The Inspector Test Connection must have a Control Valve and an Orifice that simulates the flow of the lowest sprinkler orifice in the sprinkler system. Opening the Inspector Test Connection Control Valve simulates a sprinkler activation and a full steady flow of water discharge will be observed through the Inspector Test Connection Orifice. This flow will sound the alarm and or activates the pressure switch.

The second part is to test the activation of Alarm Devices. To test Alarm Devices, open the Alarm Test Valve provided as part of the alarm check valves trim. Locate the Alarm Test Valve and slowly open the valve observing the sound of water flowing through the Retard Chamber and or the Water Motor Gong. Note and ensure the Alarm sounding and the activation of other annunciators. This part does not test the water flow through the alarm check valve since the supply for the alarm test line is taken from a source below the alarm check valve clapper, see drawing below.

Main Drain Flow Test:

- 1- With the alarm check valve Drain Valve in the full closed position, record the supply line pressure at the supply line pressure gauge, the lower pressure gauge. This is the Static Pressure reading for the supply line.
- 2- Slowly open the Main Drain Valve to the fully open position and observe a full steady flow of water discharge. If the Main Drain Valve is connected to a drain-piping network and a full steady stream discharge is not realized, check the drain-piping network for any possible obstructions.
- 3- Allow the water to flow until the reading on the supply line pressure gauge drops and stabilize. Take record for the pressure reading as this will be the Residual Pressure for the supply line.
- 4- Now slowly close the Main Drain Valve to the fully closed position and monitor the pressure reading on the supply system pressure gauge rise again. After the reading for the supply line pressure gauge stabilized, compare the new reading with the initial reading and see if they are similar. If they are similar then the supply line is considered satisfactory. If the difference is large, then investigate if the control valve for the supply line is partially closed or there is a possible leak at the valve or the supply line.

Maintenance:

The Sentry Sprinklers Alarm Check Valve Assembly and its related components should be examined periodically to ensure system proper operation.

- 1- Clapper Facing, the clapper rubber facing should be checked for any wear or damage resulting from any dirt or water impurity. If the rubber facing is found to be dirty, it should be cleaned with a compound that does not damage the rubber facing. If the rubber facing is found to be damaged or worn out, it must be replaced.
- 2- Clapper Seat Ring, the clapper seat ring should be inspected for nicks from stones, dirt or other foreign matters that are stuck in the seat ring groove or the entry orifices to the intermediate chamber. Any foreign matter that is lodged within the seat ring groove or the entry orifices must be removed without damaging the seat ring. If there is any damage to the seat ring, the valve must be replaced.

- 3- By-Pass Check Valve, the by-pass check Valve clapper and seat ring must be checked for any damage. The valve must be in good working condition for the Alarm Check Valve Assembly to work properly.
- 4- Retard Chamber, the retard chamber inlet and outlet must be cleaned from any obstructions.
- 5- Y-Strainer, the Strainer Alarm must be checked and cleaned thoroughly.
- 6- Alarm Test Valve, Main Drain Valve and Inspector Test Valve must be checked for any leaks and must be in good working condition. Alarm Test Valve is Normally Closed, Main Drain Valve is Normally Closed and the Inspector Test Valve is Normally Open. To eliminate alarm sounding upon testing the Alarm Check Valve flow, the Inspector Test Valve must be closed before opening the control valve for the Inspector Test Connection.
- 7- Pressure Gauges, Pressure Gauges must be checked for good working condition and reading. Remove the Plug on the Three-Way Brass Valve and connect an Inspector Pressure Gauge. Open the Three-Way Valve and verify that that the Inspector Pressure Gauge and System Installed Pressure Gauges are reading the same.
- 8- Discharge Orifice, ensure that the discharge orifice is free from any impurity.

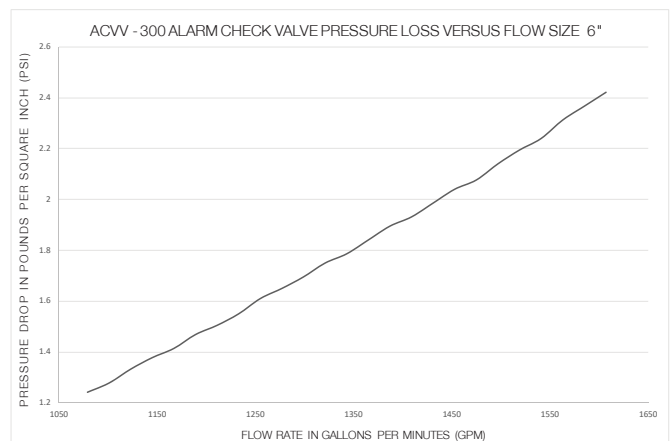
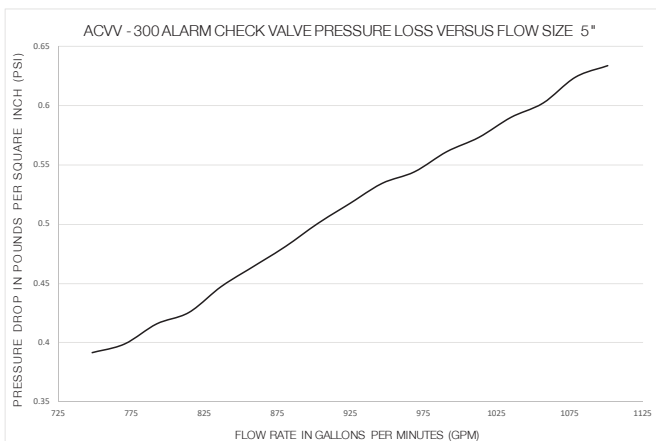
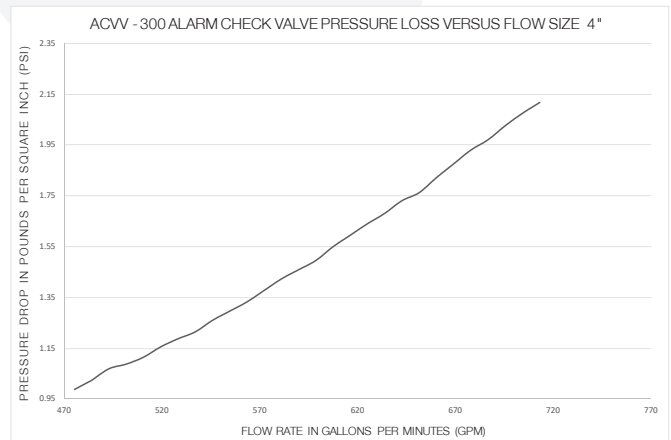
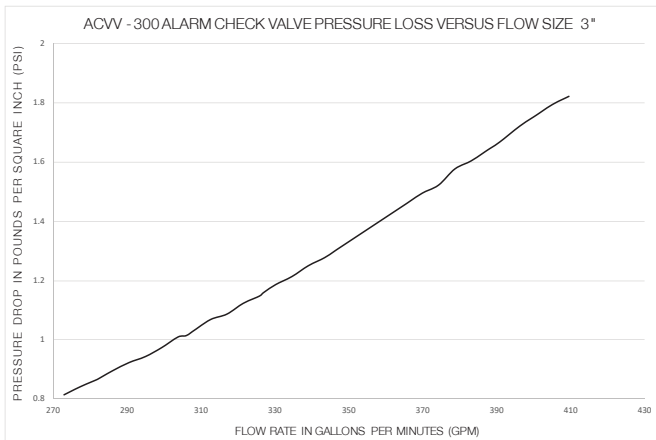
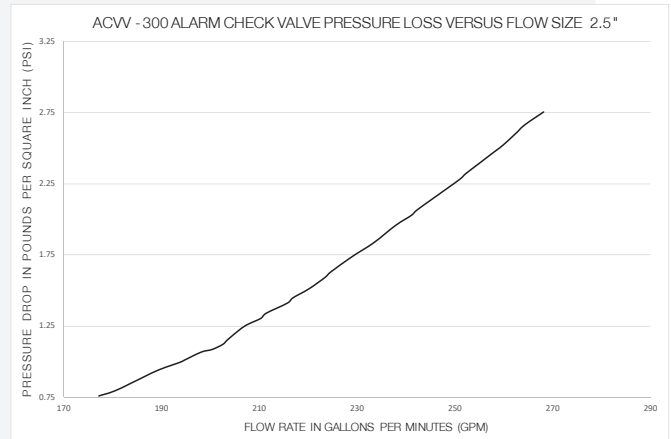
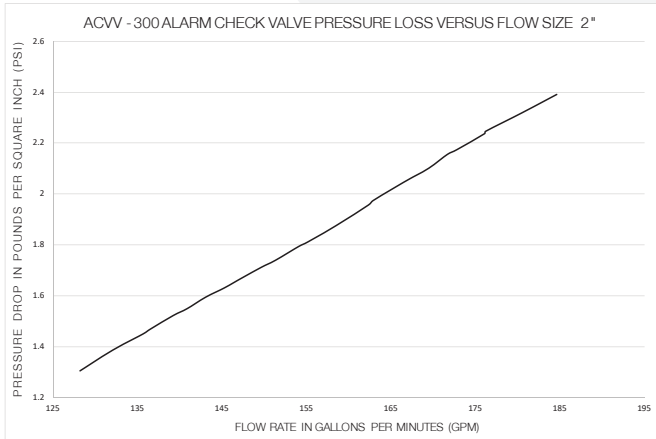
Alarm Check Valve Resetting:

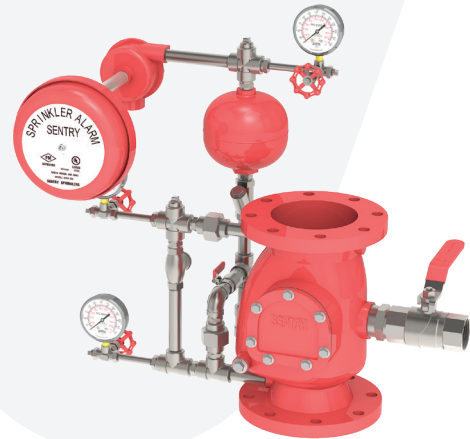
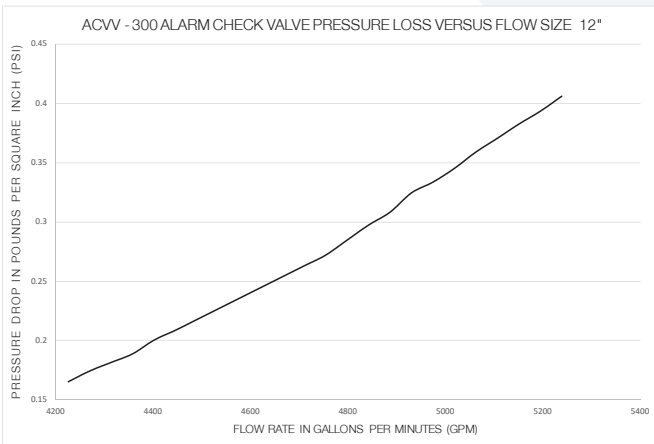
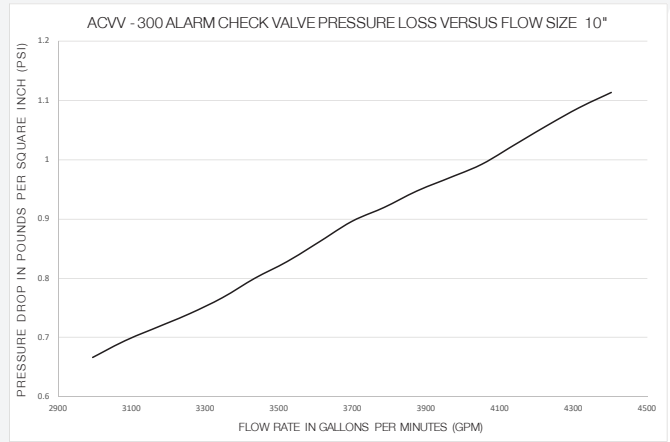
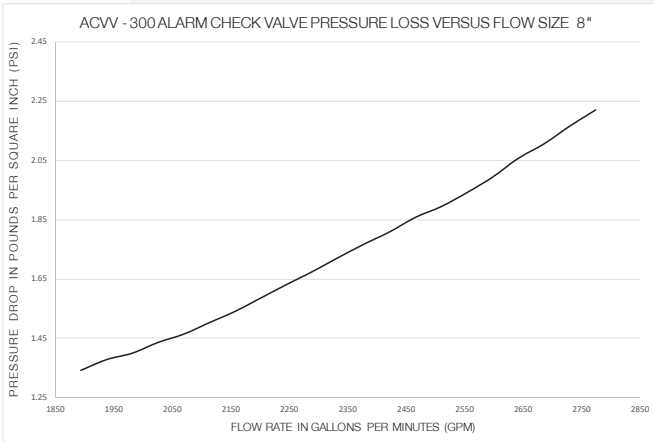
Upon a sprinkler activation, the Main Supply Line Control Valve to the Alarm Check Valve Assembly must not be closed until it has been determined by the Authority that the fire has been fully extinguished. The following steps must be followed to reset the system.

- 1- Close the Control Valve for the Main Supply Line, OS&Y Gate Valve or Butterfly Valve.
- 2- Open the Main Drain Valve on the Alarm Check Valve to drain the system.
- 3- Replace activated sprinklers.
- 4- Close Main Drain Valve on the Alarm Check Valve.
- 5- Open the Control Valve on the Inspector Test Connection to permit air to be vented from the system as the system is being filled with water.
- 6- Close the Inspector Test valve to avoid alarm sounding while filling up the system piping.
- 7- Slowly and partially open the Main Supply Line Control Valve to start filling the system piping. Do not open the Control Valve fully as this will cause water hammer and a large trapping of air. Both conditions will damage the valve.
- 8- Continue to fill the systems until a steady flow of water is discharged from the Inspector Test Connection Orifice.
- 9- Close the Control Valve for the Inspector Test Connection.
- 10- Fully open the Main Supply Line Control Valve.
- 11- Fully open Inspector Test valve.
- 12- Check Pressure Gauges readings, System Supply pressure verse System Piping pressure.
- 13- Conduct a Main Drain Flow Test to ensure water supply is satisfactory.
- 14- Conduct an Alarm Check Valve Assembly Testing.
- 15- Check that Inspector Test Valve is in the fully Open position.

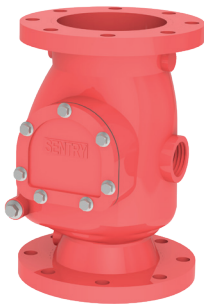
Friction Losses:

The graphs below represents the pressure loss versus flow through the Sentry Sprinklers ACV-300 Alarm Check Valve for each valve size.





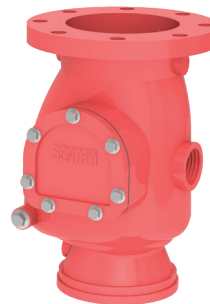
ACVV-300-FF Assembly



Flange-By-Flange (FF)



Flange-By-Groove (FG)



Groove-By-Flange (GF)



Groove-By-Groove (GG)

FLANGE CODE	CLASS ANSI 125 → A	CLASS ANSI 150 → B	CLASS PN16 → D	PRESSURE TYPE CODE	CONSTANT C	VARIABLE V
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ORDER KEY	PRESSURE TYPE	END CONNECTION			FLANGE CODE	
	MODEL #	ACVV-300	XX	X-	X-	XXX
						SIZE CODE