



ECS Protector Manual Vent (PAV-D)



Specifications

Stock Number:	PAV-D
Service Pressure:	Up to 175 PSIG
System Connection:	1/2" FNPT inlet
Temperature Range:	40°F to 120°F (4.5°C to 49°C)
Dimensions:	13.5" (W) X 4.25" (D) X 7.5" (H)



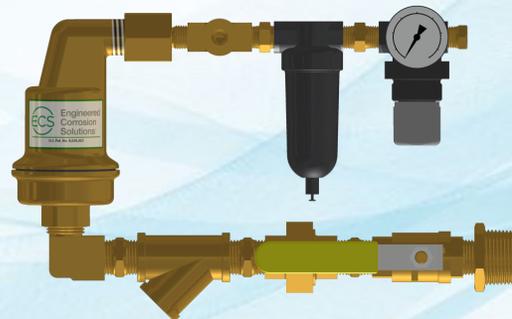
**For use under U.S. Patents
8,720,591, 9,144,700 and 9,186,533**

General Description

The ECS Protector Manual Vent provides automatic gas venting in dry pipe fire sprinkler systems. As a fire sprinkler system is filled with a continuous supply of nitrogen gas from the ECS Protector Nitrogen Generator System, the ECS Protector Manual Vent allows oxygen rich gas to be purged from the fire sprinkler system. Over a short period of time the ECS Protector Manual Vent will almost completely remove oxygen from the fire sprinkler system (< 2% oxygen).

The ECS Protector Manual Vent must be installed as shown on the engineering design documents. If a location is not specified install the ECS Protector Manual Vent on the fire sprinkler system riser on the system side of the main control valve. The vent is also installed to provide source gas when used in conjunction with the ECS Protector SMART Gas Analyzer (SGA-1).

The ECS Protector Manual Vent is equipped with a levered float valve that allows gas to discharge but prevents liquid water from leaking through the discharge orifice in the event that water enters the fire sprinkler system. A back pressure regulator is also included to prevent total system depressurization from the vent assembly.



The discharge restricted orifice allows gas to be purged from the fire sprinkler system at a controlled rate to achieve a minimum nitrogen concentration of 98%. A special fitting is provided to receive 5/32" tubing when the vent is used in conjunction with the ECS Protector Permanent Gas Analyzer.

There are two models of the ECS Protector Automatic Vent, the PAV-D and the PSV-D. The units both operate as described above but the PSV-D model includes an electronic solenoid valve wired to a control panel that automatically closes the vent once the desired nitrogen concentration has been reached. The control panel is also equipped with a reset switch to allow the purging process to restart should oxygen be reintroduced into the fire sprinkler system.



Installation Instructions

1. The ECS Protector Manual Vent is equipped with a ball valve to be connected to the fire sprinkler riser. The contractor shall install a 1/2" outlet (welded or mechanical) to connect the vent assembly to the sprinkler system on the system side of the main control valve (see Figure 2). The vent assembly does not require a hangar. The ball valve shall remain in the closed position until the ECS Protector Nitrogen Generator System has been commissioned.
2. Install the vent assembly in a level position. Recommended mounting height is between two (2) - three (3) meters above the finished floor. **NOTE:** Piping to the vent assembly cannot be installed in a configuration that would trap water and prevent drainage to the sprinkler system; a water trap impedes the ability of the vent assembly to purge oxygen from the fire sprinkler system.
3. Inspection of the vent assembly should be performed after installation and hydrostatic testing of the fire sprinkler system. Inspection should be performed periodically thereafter in accordance with the applicable NFPA codes and standards and/or the authority having jurisdiction. **NOTE:** Inspection must include the condition of the in-line filter and checking for blockage in the "Y" strainer and the discharge orifice.

Operating Instructions

1. Verify the vent assembly has been equipped with a restricted orifice downstream of the backpressure regulator. **NOTE:** If the vent assembly is not equipped with a restricted orifice, one will be provided by ECS during system commissioning. The restricted orifice must be installed before proceeding with the steps below.
2. Determine the low air alarm pressure and normal operating pressure of the fire sprinkler system.
3. Choose a pressure setting for the backpressure regulator that is 3 to 5 psig above the low air alarm pressure but below the normal operating pressure of the fire sprinkler system
4. Pull the grey knob out from the regulator to adjust pressure setting. Turn the knob clockwise to raise the pressure, counter-clockwise to lower the pressure.
5. Close the ball valve and allow device to depressurize through discharge orifice to pressure setting. Make adjustment to pressure setting using the knob, then open ball valve to pressurize device and close ball valve again to check pressure setting. Repeat process until desired pressure setting is achieved. **NOTE:** This process can only be performed when fire sprinkler system is at normal operating pressure.
6. Push grey knob back into regulator until it clicks into place.
7. Once the ECS Protector Nitrogen Generator System has been commissioned, open the isolation ball valve on the vent assembly. The ECS Protector Manual Vent is now open and actively purging oxygen from the fire sprinkler system. It should remain open for approximately 14 days or until the system nitrogen concentration reaches 98% or greater. Use an ECS Protector Handheld Gas Analyzer to verify the gas concentration inside the fire sprinkler system.
8. Close the isolation ball valve. Failure to close the manual ball valve after 14 days or once fire sprinkler system nitrogen concentration reaches 98% will result in additional oxygen corrosion damage to the system and unnecessary run time of the air compressor and nitrogen generator.
9. If the sprinkler system actuates or another event introduces oxygen to the sprinkler system the manual ball valve shall be opened again for a period of 14 days to purge oxygen from the system.



Maintenance Instructions

1. The ECS Protector Manual Vent shall be inspected annually at minimum. While isolation ball valve is in the open position check for air/water leaks and ensure the pressure gauge is displaying normal system pressure.
2. While isolation ball valve is in the closed position the inspection must include the condition of the inline filter and for blockage in the “Y” strainer and the discharge orifice. Twist the black filter housing clockwise until it can be removed to expose the filter element.
3. The filter element in the in-line filter should be replaced if a visual inspection reveals a significant collection of debris.

In-Line Filter Replacement Instructions

1. Close the isolation ball valve.
2. Depressurize the housing by pressing the Schrader valve on the bottom of the in-line filter housing.
3. Remove the lower section of the in-line filter housing by turning the filter housing counterclockwise. **NOTE:** A rubber o-ring/seal is located between the upper and lower sections of the filter housing.
4. Remove the old filter by turning the filter counterclockwise.
5. Replace with new filter (PV-DRF). The filter is secured to the housing by turning the filter clockwise **NOTE:** Ensure the filter is secured only finger/hand tight.
6. Install the rubber o-ring/seal on the lower section of the filter housing.
7. Re-install the filter housing by turning the filter housing clockwise **NOTE:** Ensure the filter housing is secured only finger/hand tight.

FIGURE 1 – In-Line Filter





FIGURE 2 – ECS Protector Manual Vent Components

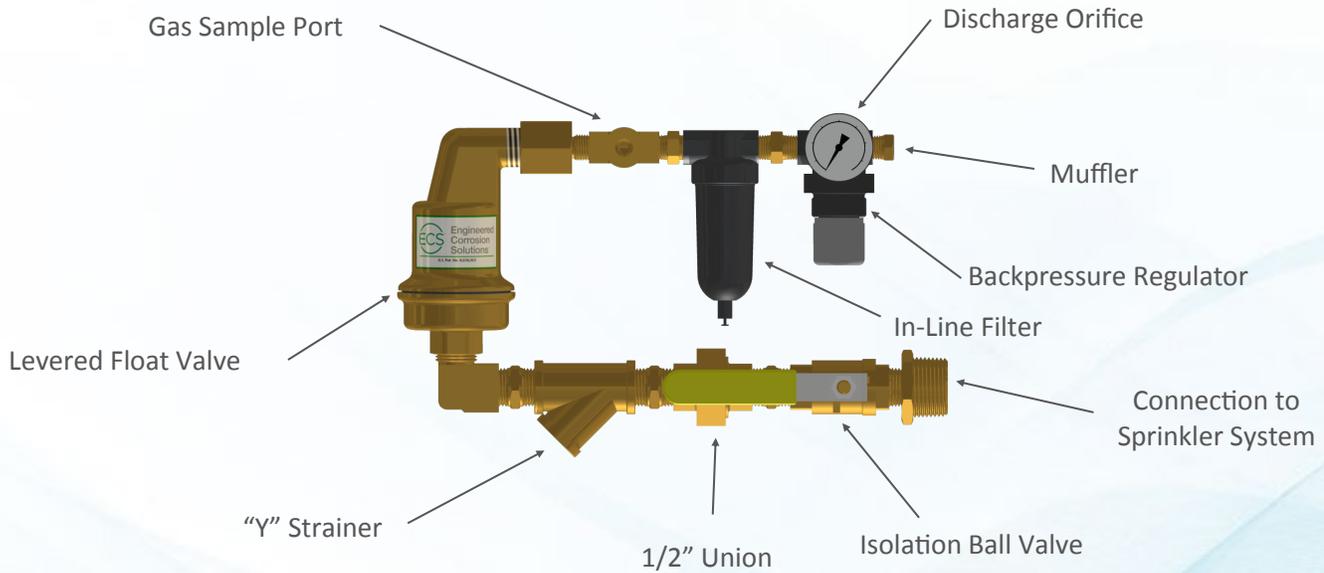


FIGURE 3 – ECS Protector Manual Vent Installation Schematic

