Fike®

Install Instructions

# AIR PULSE CLEANING VALVE (APCV)

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## DESCRIPTION

The Air Pulse Cleaning Valve (APCV) is an optional accessory that installs onto the Dual-Flap Isolation valve to automatically dislodge and lift dust that may have accumulated on the flap seal or at the bottom of the valve, which can prevent the valve flaps from fully closing.

The primary component of the APCV is a solenoid operated air valve, which must be connected to the facility's compressed plant air. The APCV solenoid must be connected to a timing circuit capable of continuously cycling the air valve open and closed to introduce an air pulse into the valve's bottom through a provided air connection port.

## SPECIFICATIONS

| **General** | | |
|---|---|---|
| Part Number: | E30-0696-1 (ATEX solenoid)<br>E30-0696-2 (CSA solenoid) | |
| Net weight: | 10.67 lbs. (4.84 kg) | |
| Air supply: | Regulated air supply that is free of moisture and oil per ISO 8573-1-2010, category 3.2.3 | |
| **Solenoid** | **ATEX - IECEx** | **CSA - IECEx** |
| Wattage: | 2W | 3W |
| Voltage: | 24 Vdc | 24 Vdc |
| Ambient Temp: (operating) | -25 to 60°C (-13°F to 140°F) | -15°C to 60°C (5°F to 140°F) |
| De-energized State: | Normally closed | Normally closed |
| Protection: | IP 65 | NEMA 7 & 9 |
| Wiring: | Flying leads, 3 m (118 in) long<br>Blue (Ground)<br>Yellow/green stripe (Protected Earth)<br>Red (Signal +24 VDC to open) | |
| **Air Filter** | | |
| Micron: | 40µm | |
| Drain Type: | Semi-auto | |
| Pressure Range: | 0.15 – 0.9 MPa (20 – 130 psi) | |
| Proof Pressure: | 1.5 MPa (215 psi) | |
| Temperature Range: | -5 to 60°C (23°F to 140°F) | |
| Drain Bowl: | 10 CC capacity | |
| **Optional APCV Field Junction Box** | | |
| Part Number: | E10-0235 | |
| Degree of: Protection | IP66 (according to IEC/EN 60529) | |
| Application Range: | Zones 1, 2, 21, 22 | |
| Material: | Polyester resin, glass fiber reinforced | |
| Cover: | Screw-on cover | |
| Color: | Dark grey | |
| Weight: | 0.2 kg (0.44 lb.) | |
| Dimensions: (W x H x D) | 71 mm x 161 mm x 45 mm<br>2.8 in x 6.42 in x 1.77 in | |
| Cable Entry: | Polyamide cable glands | |

## INSTALLATION

Adhere to the following steps to install the APCV onto the DFI valve. Install the APCV with the isolation valve secured on the ground, mounted in the process piping, or suspended safely by the lifting lugs.

See Figures 2 and 3 on page 3 for the APCV installation.

Step 1. Locate the stainless steel fasteners supplied with the APCV and apply a small amount of thread locker adhesive (Loctite 222-purple or Loctite 242-blue, or equal) to the cap-screw threads.

Step 2. Use the (2) cap-screws, (2) washers, and (2) nuts to attach the APCV to the mounting bracket provided on the DFI valve's flange stand. Torque to 3 N-m (2.2 ft-lb.).

Step 3. Remove and discard the 3/8" NPT plug from the DFI valve's APCV port(s).

Step 4. Locate the straight tubing adapter for the valve's APCV port and apply two wraps of Teflon tape on the straight tubing adapter's 3/8" NPT threads.

Step 5. Install the straight tubing adapter in the valve's APCV port and torque to ½ turn past hand tight.

Step 6. Locate the air supply tubing and insert one end into the straight tubing adapter provided on the APCV solenoid until it bottoms out.

Step 7. Route the tubing from the APCV to the straight tubing adapter installed in the valve's APCV port. **DO NOT ATTACH THE TUBING AT THIS TIME**.

**Note:** The DN600 through DN800 DFI valves have two ports for connection of the air pulse tubing. The ports are located on the bottom and the top of the valve. A tee is provided with the APCV that allows the air pulse tubing to be split to allow it to be connected to the two ports.

**CAUTION:** The tubing has a minimum bend radius of 20 mm (0.78 in). Use care not to kink the tubing. Allow enough slack to make the final connections.

Step 8. Mark and cut air supply tubing to length using a plastic tubing cutter or a sharp utility knife, making sure to cut the tubing perpendicular, round, and smooth.

Step 9. Insert the tubing end into the straight tubing adapter installed in the valve's APCV port until it bottoms out.

Step 10. Connect the plant air supply to the APCV. The air supply must be regulated to 6.5 ±1.0 bar (94 ±15 psig). The air supply connection should be made after the isolation valve is installed in the process line. Refer to Fike DFI manual E06-162.

**Note:** The air supply to the ACPV should be kept free of any moisture and oil per ISO 8573-1-2010, Category 3.2.3, which specifies the purity of compressed air required at a particular point in a compressed air system. The APCV has a filter and a semi-automatic condensate drain that allows it to drain to prevent hazardous levels from accumulating automatically.

Step 11. Connect the APCV solenoid directly to a timing circuit, a programmable logic controller (PLC), or to a Fike DFI Interface Module equipped with the APCV Timer Circuit to control the on and off cycling of the APCV.

**Note:** The recommended pulse rate for the APCV is one (1) pulse/60 seconds for five (5) seconds. If the media is sticky or prone to buildup, the pulse rate may be increased (for example, two pulses/second).

Step 12. Proceed to Step 13 if the optional APCV junction box is being used.

Step 13. Fasten the junction box to a flat surface using the mounting holes provided. The box must be mounted within 3 m (118 in) of the DFI valve to allow connection of the APCV solenoid wire leads.

Step 14. Remove the cover from the APCV field junction box.

Step 15. Route the APCV solenoid wiring into the box using the cable gland provided (Figure 1). Use caution not to cause damage the conductor insulation due to rubbing it against sharp-edged or moving metal parts.

Step 16. Connect the solenoid wire leads to the provided terminals ensuring that the conductor insulation reaches the clamping units (Figure 1). Do not damage the conductor (nicking) when stripping it.

Step 17. Route the timer circuit wiring for APCV on and off control into the box using the cable gland provided (Figure 1). Use caution not to cause damage the conductor insulation due to rubbing it against sharp-edged or moving metal parts.

Step 18. Connect the timer circuit wiring to the provided terminals, verifying correct polarity (Figure 1). Ensure that the conductor insulation reaches the clamping units. Do not damage the conductor (nicking) when stripping it.

Step 19. Reinstall the box cover.

Step 20. Test the operation of the APCV.

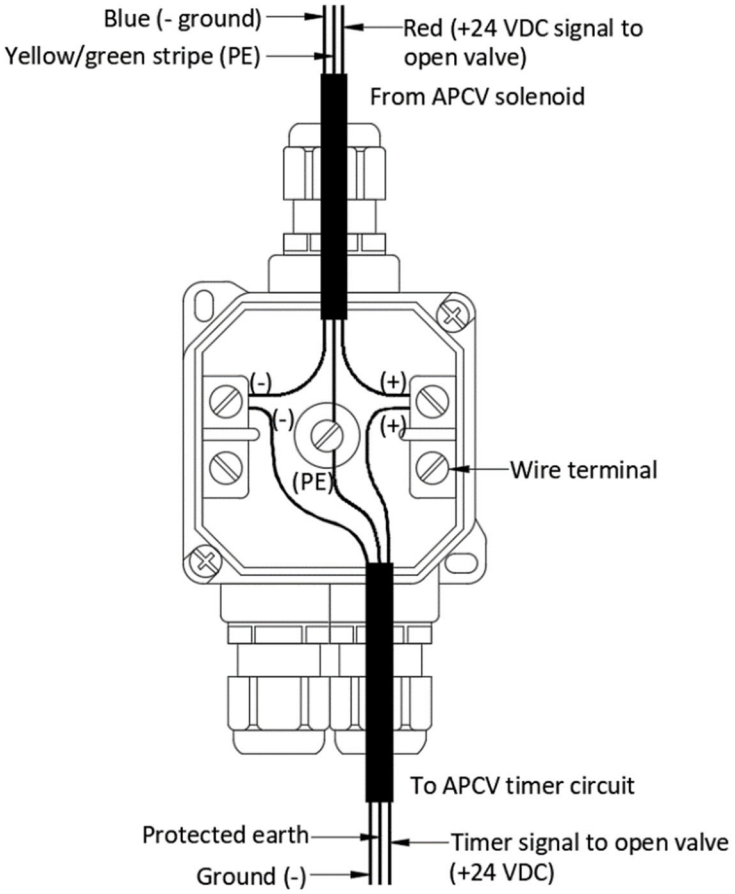


**Figure 1 – APCV Field Junction Box Wiring**

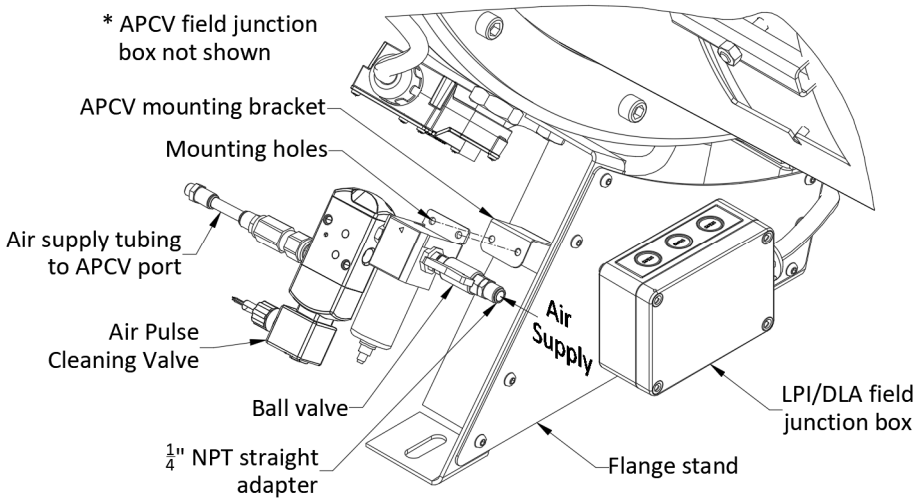


**Figure 2 - APCV Attachment to DFI Valve Flange Stand**

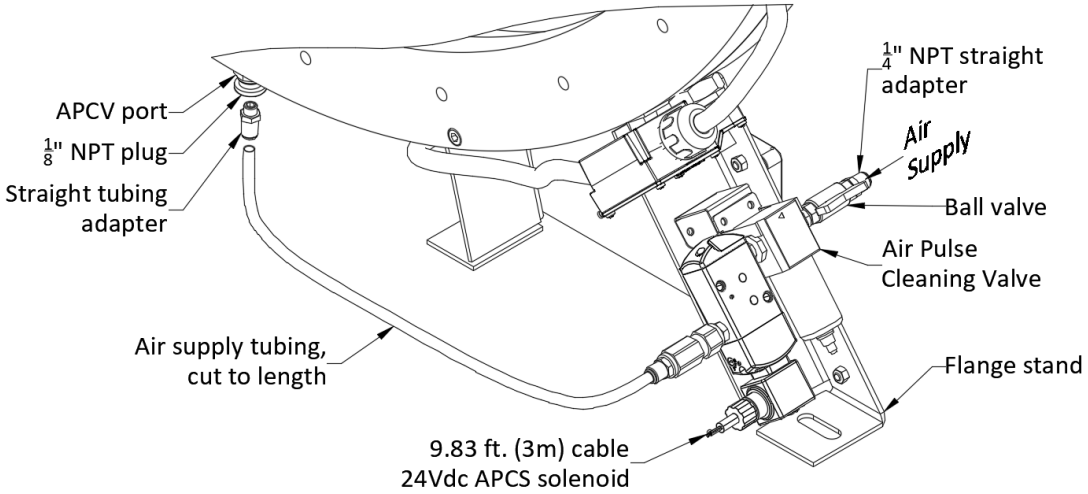


**Figure 3 - APCV Air Supply Tubing Connection to DFI Valve**

**Note:** Figure 3 shows the typical APCV tubing connection for valve sizes up to and including DN560. Valve sizes DN600 through DN800 have two air pulse ports located on the bottom and the top of the valve. This requires a tee to be installed to split the air-pulse tubing to facilitate connection to the two ports provided on the valve.