Positive Isolation Valve—Normally Closed

The VACCO Normally Closed Positive Isolation Valve (PIV) is an ordinance-free “Drop-In” replacement for Pyrovalve applications. Features include all-welded titanium construction and a robust, electrically redundant non-pyro actuator. The normally closed PIV features a Frangible Seat that provides a positive seal against internal leakage after actuation. The thick-walled, all-welded titanium pressure boundary prevents external leakage when open or closed.

The PIV actuation mechanism opens the valve with a 100% force margin independent of inlet pressure. The PIV eliminates the explosion hazard, blow-by and shock loads inherent to traditional Pyro Valves.

Features

- High Operating Pressure (5,000 psi/345 bar)
- Positive Isolation:
  - Hermetic Titanium Barrier
  - Burst Tested to 20,000 psi
- All Welded Against Leakage
- Robust Actuation Mechanism:
  - Eliminates Pyrotechnic Charge
  - Low Shock
  - Precludes Blow-By
  - Electrically Redundant
  - Uses Existing Driver Circuits
- Frangible Seat:
  - High Flow Capacity
  - Minimal Debris Generation
  - Positive Retention of Seat Parts

Operating Parameters

| Inlet / Outlet Pressure Range | 0 to 5000 psig/345 bar |
| Proof Pressure               | 7500 psig/517 bar |
| Burst Pressure               | 12500 psig/862 bar |
| Operating Temperature        | -34°C to +77°C |
| Flow Capacity                | 0.128 inch ESEOD/3.25 mm |
| Operating Voltage            | 24 to 32 VDC |
| Inlet/Outlet Tubes           | 1/4” or 3/8” Ti |
| Iso Valve Response           | <120 sec |
| Internal Leakage             | <1 X 10^-6 scs GHe |
| External Leakage             | <1 X 10^-6 scs GHe |
| Weight                       | 0.50 lbs (227 gms) max |

Performance characteristics are based on customer requirements. As such, they are not representative of component capabilities or limitations.
Functional Diagram

Actuator Mechanism maintains valve in the closed condition

When an electrical pulse is applied, Actuator fractures Frangible Seat

Hermetic Frangible Seat has been hydrostatically tested up to 20,000 psi

Envelope Drawing

2.000 [50.8 mm]

1.360 [34.5 mm]

3.125 [79.4 mm]

4.380 [111.3 mm]

Electrical Schematic

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