

## 4" Cryogenic Fill and Drain Valve

VACCO's 4" Cryogenic Fill and Drain Valves, LH<sub>2</sub> and LO<sub>2</sub>, are pneumatically actuated butterfly elements that control high-rate propellant system filling and draining.

VACCO's robust, double offset, shaft mounted butterfly design has a 25-year service record and is SATURN S-IVB qualified. VACCO developed electromechanical actuators for specific valve applications that may be adaptable as a design option.



SPACE

### Features

- Pneumatic actuator
  - Closes or opens valve
  - Removable from valve housing
- Holds neutral, closed position without applying pneumatic actuation pressures
- Double offset butterfly pivot
  - Minimizes seal drag and wear
  - Improves leakage
- Robust rack and pinion mechanism pivots butterfly
- Electrical position indicator device
  - Pinion mounted in actuator
  - Dual redundant indicator switches—two open and two closed
- Removable modular back pressure relief assembly

### Operating Parameters

Valve		Relief Valve	
Operating Pressure .....	55 psig	Cracking Pressure.....	30 to 50 psid
Proof Pressure .....	315 psig	Reseat Pressure .....	0 to 25 psid
Burst Pressure.....	525 psig	Relief Flow, LO <sub>2</sub> .....	60 lbs/min
Actuator		Fill Flow Rate and Pressure Drop	
Operating Pressure .....	475 +/- 25 psig	LO <sub>2</sub> .....	9,500 lbs/min at 4.1 psi
Proof Pressure .....	773 psig	LH <sub>2</sub> .....	1,770 lbs/min at 2.3 psi
Burst Pressure.....	1,273 psig	Drain Flow Rate and Pressure Drop	
Response Time.....	1.5 sec max	LO <sub>2</sub> .....	4,750 lbs/min at 1.0 psi
Leakage at Operating Pressure, Cryo		LH <sub>2</sub> .....	1,090 lbs/min at 0.9 psi
GHe at LO <sub>2</sub> temp.....	100 SCCM max	Weight.....	8.0 lbs max
GHe at LH <sub>2</sub> temp.....	300 SCIM max	Operating Life .....	2,000 Cycles

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

