

DESCRIPTION

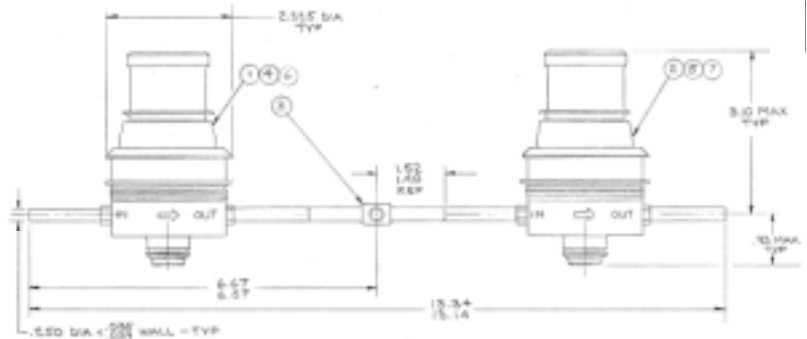
VACCO Industries offers a compact, Helium regulator to precisely control propellant feed system pressure. The series-redundant regulator is qualified for use in spacecraft and missile dynamic environments. Dynamic stability and accuracy protection has been demonstrated under all operating conditions, including rapid application of inlet pressure from a pyrotechnic valve.

The series-redundant pressure regulator assembly consists of two nearly identical regulators welded together into a tandem assembly. Over 200 of these assemblies (over 400 regulators) have been flown over the past 18 years for satellite applications.



FEATURES

- ⊕ Over 400 Regulators built with hundreds of years failure-free on-orbit performance
- ⊕ Series redundant CRES construction
- ⊕ All welded against external leakage
- ⊕ Regulation accuracy within $\pm 2.5\%$
- ⊕ Inlet pressure: 4200 to 400 psig
- ⊕ Outlet pressure: 4200 to 224 psig
- ⊕ Internal leakage less than 23 scc/hour
- ⊕ 1.86 lbm mass per individual regulator
- ⊕ Integral flow limiter

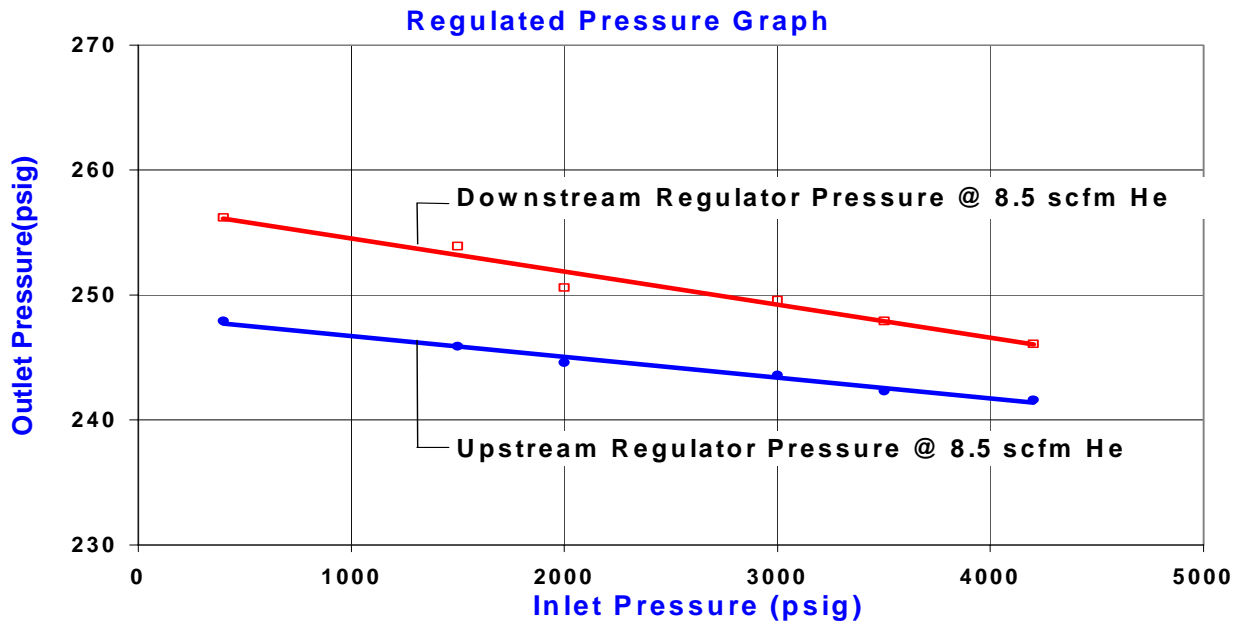


OPERATING PARAMETERS

Inlet Pressure Range	4200 to 400 psig	Flow	8.5 scfm/GHe
Proof Pressure (inlet & outlet)	6300 psig	Internal Leakage	< 23 scc/hour GHe
Burst Pressure (inlet & outlet)	8400 psig	External Leakage	1×10^{-6} scch GHe
Regulated Pressure	224 - 271 psig	Mass	< 3.8 lbm
Lock up Pressure	260 - 275 psig	Operating Temperature	0° to 170° F
Response Time	32 msec		

Performance characteristics are based upon customer requirements, as such, are not representative of component capabilities or limitations

PERFORMANCE CHARACTERISTICS



VACCO FAMILY OF SPACECRAFT REGULATORS



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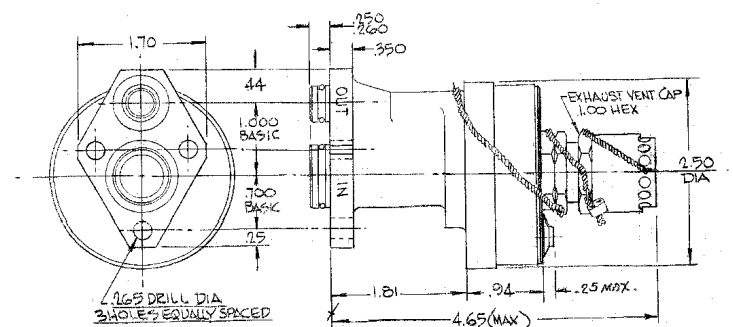
VACCO Aerospace Products offers a compact, pre-integrated Pressure Regulator and Relief Valve that is ideally suited to cold gas propulsion systems.

The unit contains an 18 micron absolute inlet filter, a Vespel seat, and an integral relief valve that prevents the outlet pressure from exceeding 340 psig (2.34 MPa gage) in the event of a regulator failure. This manifold mounted design was qualified and flown in the NASA Manned Maneuvering Unit (MMU).



FEATURES

- ⊕ Combination Relief Valve and Regulator
- ⊕ Vespel Seat
- ⊕ Inlet Pressure Range: 3600 to 350 psig
- ⊕ Outlet Pressure: 212 +/-15 psig
- ⊕ 18 Micron (absolute) Filtration
- ⊕ Mass: 0.80 lbm. (363 grams)



OPERATING PARAMETERS

Operating Pressure Range

Inlet 3600 to 350 psig
 Outlet 212 +/-15 psig

Proof Pressure

Inlet 5400 psig
 Outlet 510 psig

Burst Pressure

Inlet 7200 psig
 Outlet 680 psig

Outlet Flow Variations 9 to 42 SCFM GN2
 Internal Leakage < 20 sccm GHe

Lockup Leakage

At -30° to +150° F 15 sccm of GN2
 At -90° to -35° F 5000 sccm of GN2

Outlet Pressure at Flow

At -30° to +150° F 212 +/- 15 psig
 At -90° to -35° F 212 +/- 15 psig

Pressure Relief

Cracking Pressure 285 +/-10 psig
 Rated Flow Pressure 340 psig at 160 SCFM GN2

Reset

At -30° to +150° F 255 psig at 15 sccm
 At -90° to -31° F 255 psig at 5000 sccm

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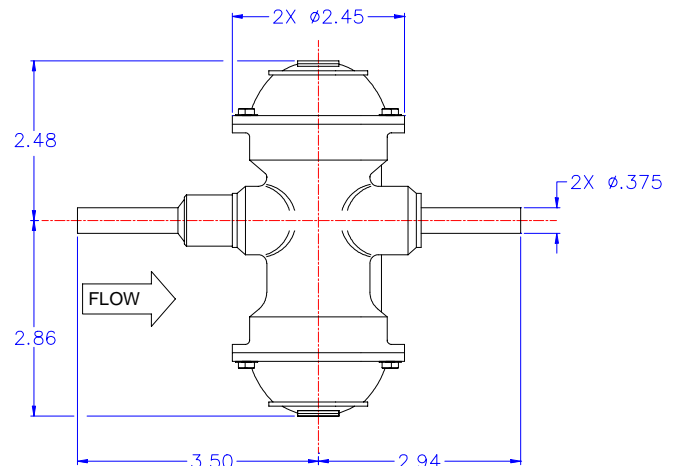
VACCO Industries offers a compact, pre-integrated system filter and Helium regulator to precisely control the pressure to propellant feed systems. The series-redundant regulator is qualified for use in spacecraft and missile dynamic environments. Dynamic stability and contamination protection has been demonstrated under all operating conditions, including rapid application of inlet pressure from a pyrotechnic valve.

The series-redundant pressure regulators are completely protected from external contamination by filters in the inlet, outlet, and sensing ports. For added protection; there is a separate inlet filter for the redundant regulator.



FEATURES

- ⊕ Combination System Filter and Regulator
- ⊕ Series Redundant CRES Regulators
- ⊕ Regulation Accuracy within $\pm 2.5\%$
- ⊕ Inlet Pressure Range from 4500 to 400 psig
- ⊕ Internal Leakage is less than 20 sccm
- ⊕ Rapid Transient Recovery
- ⊕ 25 Micron (absolute) Filtration
- ⊕ Etched Disc Titanium Filters
- ⊕ Clog-Proof Titanium Sensing Restrictor

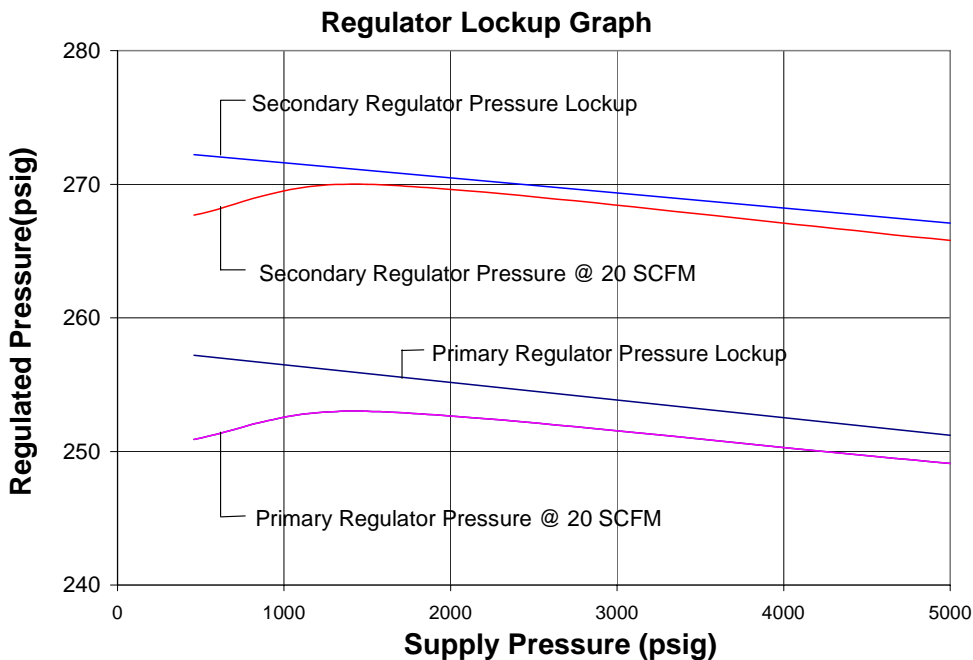


OPERATING PARAMETERS

Operating Pressure Range	4500 to 400 psig	External Leakage	1×10^{-6} scch GH
Proof Pressure	6750 psig	Mass	< 2.30 lbm
Burst Pressure	11,250 psig	Operating Temperature	0° to 100° F
Flow	0.003 lbm/sec GHe	Back Pressure Relief	350 psid
Internal Leakage	< 20 sccm GHe	Filter Rating	25 micron

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PERFORMANCE CHARACTERISTICS



SCHEMATIC

