

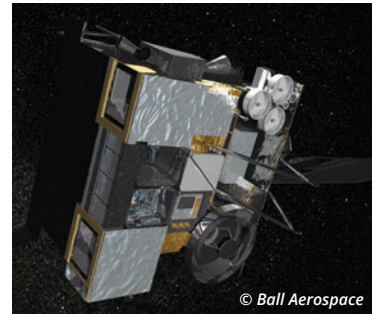
MECHANICAL REGULATORS FOR ELECTRIC PROPULSION – SINGLE STAGE AND TWO STAGE DESIGNS



The PMA and XIPS regulators were developed based on experience from the Pluto Fast Fly-By Mission and ROSAT programs. These regulators have been qualified and flown, and use an absolute sensing bellows element. The two stage regulator is a forward cascading design.

KEY ADVANTAGES

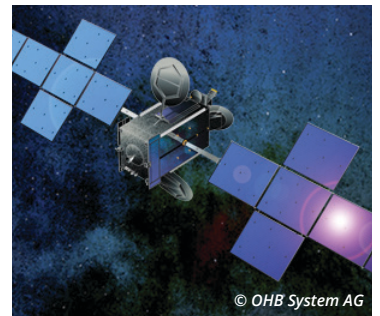
- All welded design to prevent external leakage
- Titanium and stainless steel construction
- Transition joints available if CRES tubes are needed



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MECHANICAL REGULATORS

PERFORMANCE CHARACTERISTICS



Characteristic	Single Stage	Two Stage	Two Stage
Inlet Operating Pressure [psia(bar)]	88 to 2,700 (6.07 to 186)	100 to 2,000 (6.9 to 138)	88 to 2200 (6.07 to 152)
Proof Pressure [psia(bar)]	4,050 (279) Inlet 150 (10.3) Outlet	3,000 (206.9) Inlet 3,000 (206.9) Interstage 80 (5.52) Outlet	3300 (228) Inlet 3300 (228) Interstage 150 (10.3) Outlet
Burst Pressure [psia(bar)]	8,100 (558) Inlet 300 (20.7) Outlet	4,000 (275.9) Inlet, Interstage, and Outlet at the same time	5500 (379) Inlet 300 (20.7) Outlet
Regulated Outlet Pressure [psia(bar)]	35.55 to 38.45 (2.45 to 2.65)	20.15 to 23.25 (1.390 to 1.603) First Stage 20.15 to 22.70 (1.390 to 1.566) Second Stage 20.15 to 20.95 (1.390 to 1.445) Both Stages	38.5 (2.65) First or Second Stage Nominal 37.0 (2.55) Combined in Series
Max Lock-up Pressure [psia(bar)]	50 (3.45)	25.25 (1.741) First Stage 23.30 (1.607) Second Stage 22.55 (1.555) Both Stages	38.9 (2.68) Max Combined in Series
Flow	4 mg/s Xe nominal, 60 mg/s Xe max	4.5 mg/s Xe max	33.2 mg/s Xe (Specification Limit)
Leakage per Seat, Internal [scc/hr GHe]	3	3	3
Leakage, External [scc/s Ghe]	1E-6	1E-6	1E-6
Operating Cycles	12,000	40,000	40,000
Weight [lbm (g)]	0.99 (450)	2.19 (994)	2.19 (994)
Operating Temperature Range [°F (°C)]	61 to 140 (16 to 60)	60-131 (15.5 to 55)	60-140 (15.5 to 60)
Representative Model Numbers	-050-857 (PMA)	-050-823 (XIPS)	-050X1246



500 Jamison Road Plant 20, East Aurora, NY 14052 USA
(818) 734-6700
www.moog.com/space



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