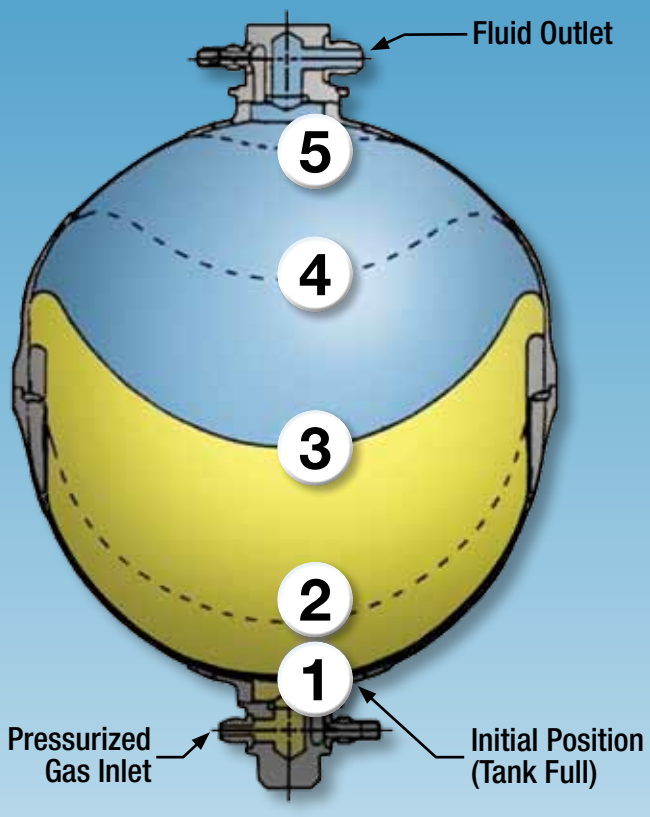
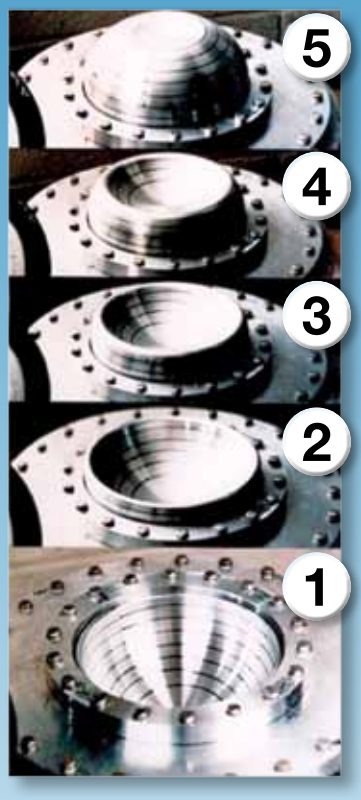
DIAPHRAGM PROPELLANT TANKS_

MOOG ISP





Rolling Diaphragm Tanks

Moog – ISP's rolling diaphragm tanks are fabricated from commercially available aluminum alloys providing a low-cost short leadtime alternative to titanium propellant tanks. The tanks are easily sized to meet customer specifications and are individually designed to meet pressure, temperature, and flow requirements. The design approach and technology has been successfully scaled to a tank diameter of more than 30 inches. Our tanks are well suited to applications that require precise CG control or minimum propellant slosh and have demonstrated operations in demanding target and missile applications.

- Compatible with Hydrazine, MMH, and N204 for long term storage
- Tanks are low cost by design (conventional metal forming processes)
- Simplicity of design allows for short fabrication cycles (6 to 9 months) as compared to titanium tanks.
- Patented Al rolling diaphragm design, no elastomerics
- Demonstrated scalability
- High expulsive efficiency
- Proven operation with warm or cold gas pressurization with regulated or blowdown systems
- Demonstrated high g operation

Rolling Diaphragm Tanks

Performance Characteristics

Applications	Shape / Volume / Weight	MEOP / Proof / Burst (Psig)	Propellant	Shell Material
Hit to Kill	Oblate Spheroid			
	4.9 in ϕ 36 in^3 Ox 0.60 lbm	1755 2194 2633	N_2O_4	Overwrapped Alum. Alloy
	5.5 in ϕ 52 in^3 Fuel 0.82 lbm	1755 2194 2633	MMH	Overwrapped Alum. Alloy
Strategic Missile	Oblate Spheroid 6.4 in ϕ 81 in^3 1.61 lbm	700 1050 1400	Hydrazine	Aluminum Alloy
Hit to Kill (DEV)	Near Sphere 7.6 in ϕ 205 in^3 2.0 lbm	520 780 1040	N_2O_4 & Hydrazine	Aluminum Alloy
Hit to Kill	Near Sphere 9.6 in ϕ 396 in^3 3.3 lbm	665 831 997	N_2O_4 & MMH	Aluminum Alloy
Leo Satellite	Near Sphere 12 in ϕ 840 in^3 7.1 lbm*	400 600 800	Hydrazine	Aluminum Alloy
Target	Near Sphere 12 in ϕ 840 in^3 9.3 lbm*	830 948 1250	Amine Fuel N_2O_4	Aluminum Alloy
Strategic Missile	Near Sphere 12 in ϕ 840 in^3 6.3 lbm*	430 685 890	Hydrazine	Aluminum Alloy
Target	Near Sphere 18.2 in ϕ 3100 in^3 16.9 lbm	400 488 650	Hydrazine	Aluminum Alloy
Exploration	Near Sphere 18.2 in ϕ 3100 in^3 16.9 lbm	325 488 650	N_2O_4 & MMH	Aluminum Alloy
GEO Satellite	Near Sphere 31 in ϕ 13,400 in^3 60.1 lbm	378 472 567	Hydrazine	Aluminum Alloy

* The variation in tank mass is due to specific operating requirements.

MOOG ISP

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