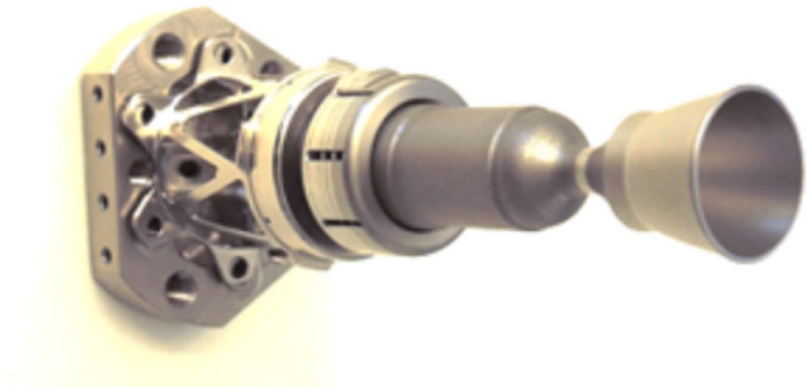
5N HPGP Thruster



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The Bradford ECAPS's **5N HPGP Thruster** is designed for attitude, trajectory and orbit control of small and medium satellites, providing higher thrust when and where it is needed.

- **Non-toxic propellant** makes for easier and less costly integration on secondary or 'piggy-back' missions.
- Propellant loading is simple, fast and avoids the cost associated with loading hydrazine. Allows the operator to spend less time on ground operations and more time on space operations.
- 'Fuel at the factory' – be ready for launch vehicle integration upon arrival at the launch pad.
- Non-toxic propellant makes payload adaptor rings suitable for a new class of small satellite launchers, where handling hazardous hydrazine may impede operations or where fully equipped hydrazine processing facilities may be non-existent.
- **Higher performance** over hydrazine allows for more payload or longer mission durations.
- Allows for more secondary or 'piggy-back' launch opportunities, especially missions where there is concern about the hazards of hydrazine and its risks to the primary payload.
- Allows for more capable missions than spacecraft without propulsion.
- Allows for more **agile mission profiles** than electric propulsion. Spacecraft take significantly less time to execute maneuvers and orbit changes.

The **5N HPGP thruster** is currently undergoing a test fire campaign with the **NASA Goddard Space Flight Center**, characterizing the performance of the thruster. The **5N HPGP** is being examined for potential use for an interplanetary mission, where it will provide a key maneuver and orbit-insertion capability.

Specifications Table

Thruster Type	HPGP
Propellant	LMP-103S
Thrust Class	5 N
Primary Operational Mode	RCS + Δ v
Inlet Pressure Range	5.5 - 24 Bar

Thrust Range	1.5 - 5.5 N
Nozzle Expansion Ratio	150:1
Steady State ISP (vacuum) Typical	2345 - 2480 Ns/Kg (239 -253 s)
Density Impulse (vacuum)	2908 - 3075 Ns/L
Minimum Impulse Bit	≤0.1 Ns
Overall Length	221 mm
Mass	0.48 kg
FCV Type	Solenoid
- No of Seats	Dual Seat
- Pull-in Voltage	28 ± 4 VDC
- Holding Voltage	10 ± 1 VCD
- Coil Resistance (each coil)	72 Ω
Nominal Reactor Pre-heating Voltage	28 VDC
Regulated Reactor Ore-heating Power	15 - 25 W TBC
Target Life - Qual. Level	
Pulses	50,000
Propellant Throughput	100 kg
Longest Continues Firing	10 minutes
Accumulated Firing Time	20 hours
Firing Sequences	350
Demonstrated Life	
Pulses	10,000
Propellant Throughput	5 kg
Longest Continues Firing Time	60 seconds
Accumulated Firing Time	1 hour
Firing Sequences	115
Maturation Level	TRL 5
Current Status	
	EQM in Manufacturing