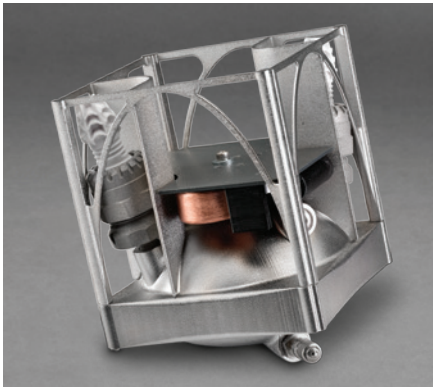


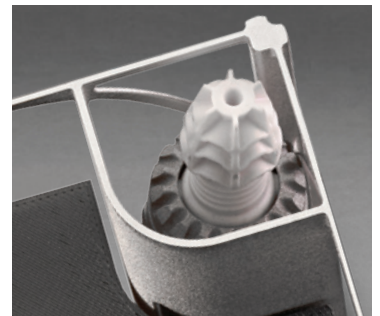
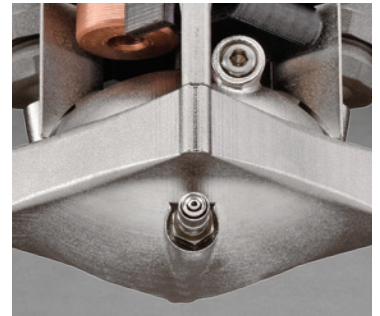
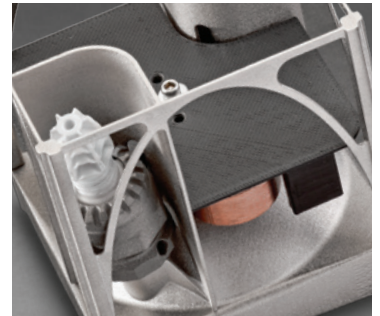
## MONOPROPELLANT PROPULSION MODULE



The Moog additive manufactured small liquid monopropellant blowdown propulsion module is suitable for cubesats and small satellites that require attitude control or delta V maneuvers. This is an all-digital design leveraging Moog additive manufacturing and propulsion equipment design expertise. The module is compact, scalable and can be supplied pre-filled with propellant, either green or traditional chemical, to enable rapid integration into any

space platform. The use of additive manufacturing techniques allows the module to be tailored to mission specific requirements with minimal impact on cost or schedule.

The Module is revolutionary in its use of Laser Powder Bed Fusion Additive Manufacturing techniques for almost all of the metallic parts including the propellant catalyzing agent. It utilizes a Moog heritage Thruster Valve contained within each of the .5N baseline Thruster Assemblies. The non-metallic combustion chamber is additively manufactured using stereo lithography. The COTS based custom circuit card assembly heater driver is made in house at Moog.



# MONOPROPELLANT PROPULSION MODULE

## SPECIFICATIONS

Parameter	Specification
Propellant	Liquid Chemical – Green or Traditional
Dimensions	10cm x 10cm x 10cm baseline – scalable to 24cm x 24cm x 24cm
Thrust	0.1 to 1 N, .5N baseline
Isp – Vacuum	224 sec with 30:1 nozzle baseline
Total Impulse	500 N/sec with 150cc baseline tank capacity
Delta-V	59 m/s
Input Voltage	28 VDC
Power	2 x 22.5 W/Thruster
Mass	1.01 Kg wet baseline
Maximum Expected Operating Pressure	400 psig
Moog Additive Manufacturing Rolling Metal Diaphragm Technology	x1.2 proof pressure tested



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