



LE144

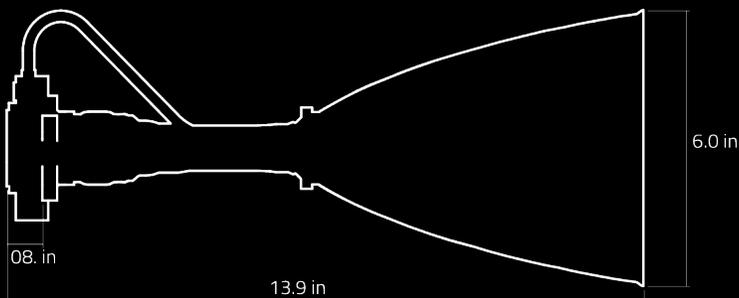
BIPROPELLANT THRUSTER

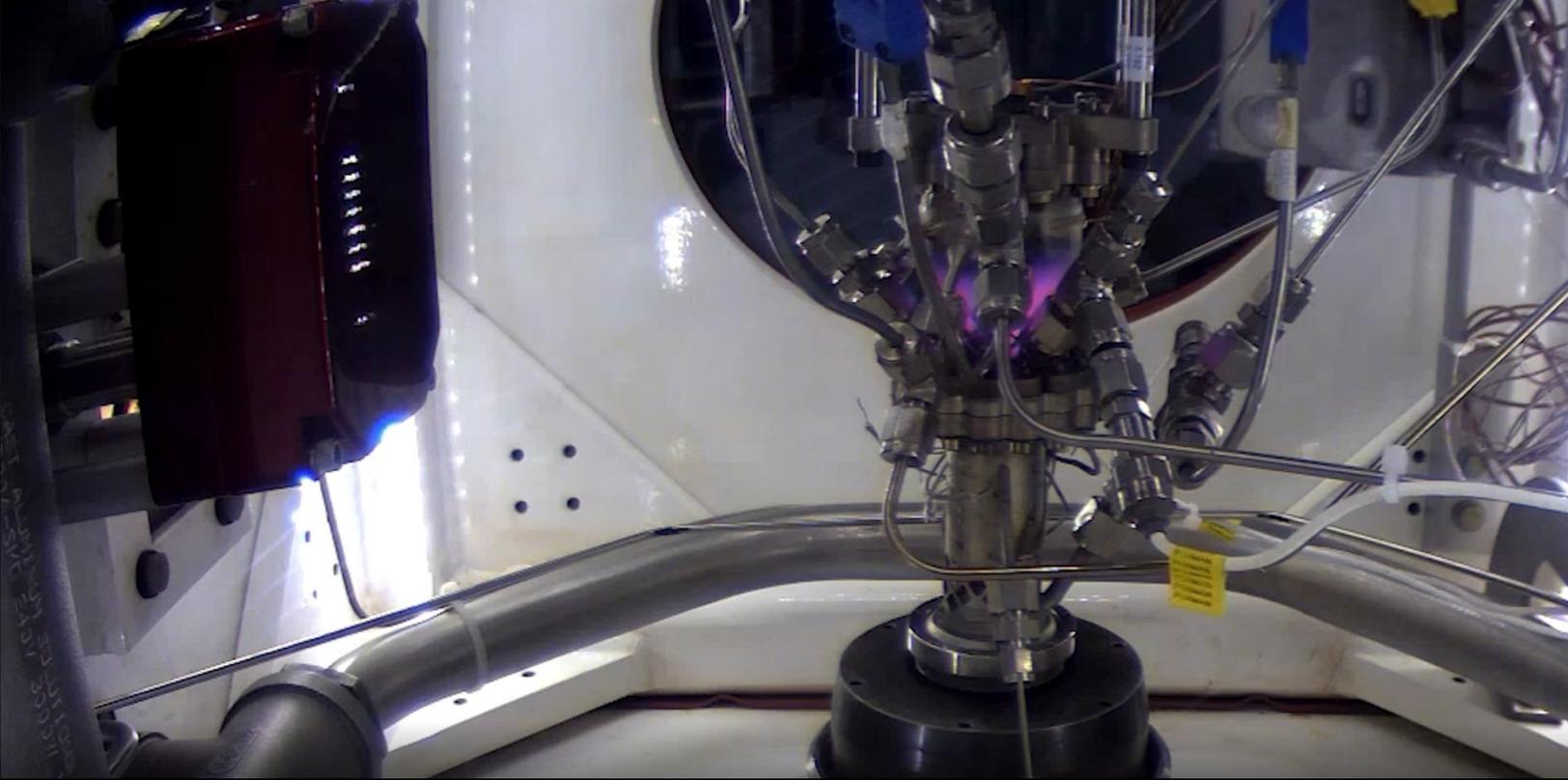
The LE144 thruster is a bipropellant regeneratively cooled dual-mode thruster. It uses hydrazine and MON3 at mixture ratios between 0.80 and 1.45, and produces a thrust of 111 N (25 lbf) at nominal operating conditions with a specific impulse up to 328 seconds.

Hot-fire testing of the LE144 has demonstrated a versatile operating box that includes chamber pressure and mixture ratio (Pc-MR) excursions, heated propellants up to 60°C (155°F), and gaseous helium ingestion through propellant flow paths. Testing has varied the mixture ratio from 0.60 to 1.45 and inlet pressures from 230-450 psi of nominal feed pressures to envelope mission Pc-MR excursions. Overall, the thruster has achieved 15,455 seconds of accumulated on time and a maximum continuous burn time of 6,000 seconds.

The LE144 achieves its unprecedented performance and operating envelope through a novel micro-coaxial gas-gas injection scheme and an innovative regeneratively cooled combustion chamber, which uses the oxidizer as the working fluid. In addition, the fuel provides cooling to the hydrazine reactor section of the thruster.

The thruster is throttleable through the use of metering valves, allowing for variable thrust between 25 and 170% of nominal. The LE111 can run in hydrazine monopropellant mode by command or by oxidizer depletion, allowing for 100% propellant utilization. With a nominal inlet pressure of 300 psia the LE111 is compatible with low-mass tank systems.





SPECS:

THROTTLING	No
THRUST	144 N (32 lbf)
FUEL	Hydrazine
OXIDIZER	MON3
INLET PRESSURES	300 psia Nominal
O/F RATIO	0.80 - 1.45
SPECIFIC IMPULSE	320 s
CHAMBER PRESSURE	140 psia Nominal
EXPANSION RATIO	300
LONGEST SINGLE BURN DEMONSTRATED	6000 s
START AND SHUTDOWN TIME	100 ms
TOTAL MASS	1.8 kg

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Based in beautiful Durango, CO, AGILE Space Industries is the premier innovation center for hypergolic propulsion systems.

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