L3HARRIS®
FAST. FORWARD.

RS-25 PROPULSION SYSTEM

Powering deep space exploration

RS-25 ENGINE (FULL POWER LEVEL)

SPECIFICATIONS	
Maximum Thrust: (109% Power Level)	
At Sea Level	418,000 lb
In Vacuum	512,300 lb
Throttle Range	67% - 109%
Pressures	
Hydrogen Pump Discharge	6,276 psia
Oxygen Pump Discharge	7,268 psia
Chamber Pressure	2,994 psia
Specific Impulse	
In Vacuum	452.3 sec
Power: High Pressure Pumps	
Hydrogen	71,140 hp
Oxygen	23,260 hp
Area Ratio	
Exit/Throat	69:1
Weight	
Dry	7,774 lb
Mixture Ratio	
Oxidizer/Fuel	6.03:1
Dimensions	168 in. long 96 in. wide
Propellants	
Fuel	Liquid Hydrogen
Oxidizer	Liquid Oxygen

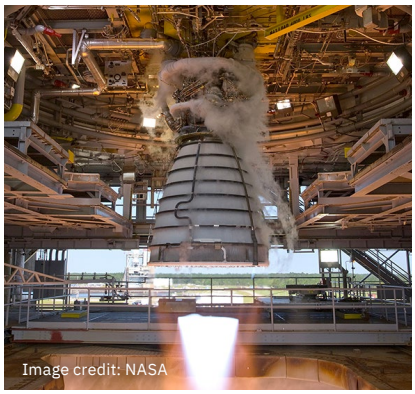
Image credit: NASA

The RS-25 evolved from the Space Shuttle Main Engine (SSME) that successfully provided liftoff thrust for all 135 Space Shuttle flights. The RS-25 uses a staged-combustion engine cycle and is powered by liquid hydrogen and liquid oxygen. The RS-25 will continue to serve the nation's human exploration propulsion needs as the core stage engine for NASA's super heavy-lift Space Launch System (SLS), America's exploration rocket.

Between the Space Shuttle and SLS programs, the RS-25 and SSME engines have experienced more than 1.1 million seconds of testing — making it one of highest-performing engines the nation has ever produced. The Space Shuttle program provided 16 engines for the Artemis program, enough for the first four flights.

Starting with Artemis V, SLS will use brand new RS-25 engines that will cost 30% less than the engines produced for the shuttle program.

Image credit: NASA

The first three Artemis missions will use a Block 1 SLS configuration that can send more than 27 metric tons (59,500 lbs) to orbits beyond the Moon. As SLS evolves, it will be the most capable rocket ever built and provide an unprecedented lift capability of 46 metric tons (101,400 lbs.) to deep space. SLS is built on the most powerful and proven propulsion system in the world.

RS-25 Propulsion System

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