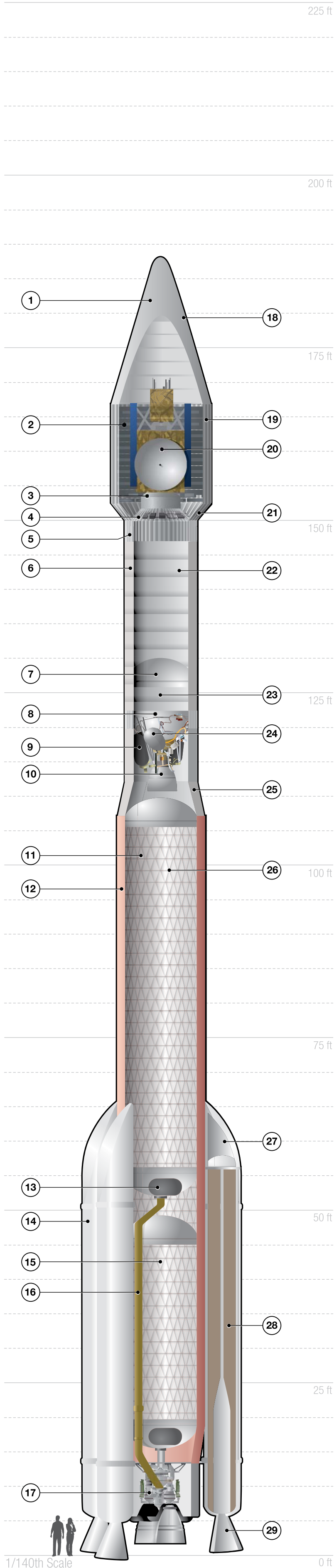


Atlas V

400 Series



The Atlas V common core booster (CCB) is 3.8 m (12.5 ft) in diameter and 32.5 m (106.5 ft) long. The booster's tanks are structurally stable and constructed of isogrid aluminum barrels, spun-formed aluminum domes, and intertank skirts. Atlas first-stage propulsion is provided by the RD-180 engine system (a single engine with two thrust chambers). The RD-180 burns RP-1 (Rocket Propellant-1 or highly purified kerosene) and liquid oxygen, and delivers 3,827 kN (860,300 lbf) of thrust at sea level. The Atlas V vehicle is controlled by an avionics system that provides guidance, flight control, and vehicle sequencing functions during the booster and Centaur phases of flight.

The spacecraft is encapsulated inside the Atlas V 4-m (13.8-ft) diameter payload fairing (PLF). The PLF is a bisector (two-piece shell) fairing consisting of aluminum skin/stringer construction with vertical split-line longerons. The Atlas V 400 series offers three payload fairing options, the large (LPF, shown at left), the extended (EPF), and the extra extended (XPF) payload fairings.

The Centaur second stage is 3.1 m (10 ft) in diameter and 12.7 m (41.6 ft) long. Its propellant tanks are constructed of pressure-stabilized, corrosion resistant stainless steel. Centaur is a liquid hydrogen/liquid oxygen-(cryogenic-) fueled vehicle. It uses a single RL10 engine producing 99.2 kN (22,300 lbf) of thrust. The cryogenic tanks are insulated with a combination of helium-purged insulation blankets, radiation shields, and closed-cell foam insulation. The Centaur forward adapter (CFA) provides the structural mountings for vehicle electronics and the structural and electronic interfaces with the spacecraft.

The solid rocket boosters (SRB), with a diameter of 158 cm (62.2 in) and a length of 20 m (65.6 ft) are constructed of a graphite-epoxy composite with the throttle profile designed into the propellant grain. The SRBs are jettisoned by thrusters following a burn lasting approximately a minute and a half.

The vehicle's height with the LPF is approximately 57.3 m (188 ft). The vehicle's height with the EPF is 58.2 m (191 ft) and 59.1 m (194 ft) with the XPF.

Performance

GTO	4,750 - 7,700 kg (10,470 - 16,970 lb)
LEO	9,370 - 15,130 kg (20,650 - 33,360 lb)

GTO = Geosynchronous Transfer Orbit 35,786 x 185 km (19,323 x 100 nmi) at 27.0°
LEO = Low Earth Orbit 400 km (216 nmi) circular at 28.5°

1. Payload Fairing
2. Acoustic Panels
3. Payload Adapter
4. Centaur Forward Adapter
5. Cylindrical Adapter
6. Centaur Second-Stage
7. Common Bulkhead
8. Aft Bulkhead
9. High-Pressure Helium Bottle
10. Centaur Second-Stage Engine (RL10)
11. First-Stage Oxidizer (LO₂) Tank
12. Common Core Booster
13. High-Pressure Helium Bottle
14. Solid Rocket Booster
15. First-Stage Fuel (RP-1) Tank
16. First-Stage Oxidizer (LO₂) Feedline
17. First-Stage Engine (RD-180)
18. Conical Fairing Section
19. Cylindrical Fairing Section
20. Spacecraft
21. Fairing Boattail
22. Centaur Fuel (LH₂) Tank
23. Centaur Oxidizer (LO₂) Tank
24. Hydrazine Bottle
25. 400 Series Interstage Adapter
26. Isogrid Structure
27. Solid Rocket Booster Nose Cone
28. Solid Rocket Propellant
29. Solid Rocket Booster Nozzle

Developed by the United States Air Force to assure access to space for Department of Defense and other government payloads, the Evolved Expendable Launch Vehicle (EELV) program supports the full range of government mission requirements, while delivering on schedule and providing significant cost savings over heritage launch systems. The EELV program includes the Atlas V and Delta IV families of launch vehicles.

With the addition of up to three solid rocket boosters, the Atlas V 400 series launch vehicle is available in four configurations.

Atlas V 400 series configurations deliver vital national security, exploration and commercial missions for our nation including Defense Meteorological Satellites Program (DMSP), Space-based Infrared Systems (SBIRS) and Wideband Global SATCOM (WGS) satellites for the U.S. Air Force, classified missions for the National Reconnaissance Office and missions to Mars, the moon and the sun for NASA.

Launch of Atlas V 400 series rockets takes place from Space Launch Complex-41 at Cape Canaveral Air Force Station in Florida and Space Launch Complex-3 at Vandenberg Air Force Base in California.