The Vulcan Centaur rocket design leverages the flight-proven success of the Delta IV and Atlas V launch vehicles while introducing new technologies and innovative features to ensure a reliable and affordable space launch service. Vulcan Centaur will service a diverse range of markets including commercial, civil, science, cargo and national security space customers.

The spacecraft is encapsulated in a 5.4-m- (17.7-ft)-diameter payload fairing (PLF), a sandwich composite structure made with a vointed aluminum-honeycomb core and graphite-epoxy face sheets. The bisector (two-piece shell) PLF encapsulates the spacecraft. The payload attach fitting (PAF) is a similar sandwich composite structure creating the mating interface from spacecraft to second stage. The PLF separates using a debris-free horizontal and vertical separation system with spring packs and frangible joint assembly. The payload fairing is available in the 15.5-m (51-ft) standard and 21.3-m (70-ft) long configurations.

The Centaur upper stage is 5.4 m (17.7 ft) in diameter and 11.7 m (38.5 ft) long with a 120,000-lb propellant capacity. Its propelled tanks are constructed of pressure-stabilized, corrosion-resistant stainless steel. Centaur is a liquid hydrogen/liquid oxygen-fueled vehicle, with two RL10C engines. The Vulcan Centaur Heavy vehicle, flies the upgraded Centaur using RL10C engines with nozzle extensions. The cryogenic tanks are insulated with spray-on foam insulation (SOFI) to manage boil off of cryogens during flight. An aft equipment shell provides the structural mountings for vehicle electronics.

The Vulcan Centaur booster is 5.4 m (17.7 ft) in diameter and 33.3 m (109.2 ft) long. The booster’s tanks are structurally stable and constructed of orthogrid aluminum barrels and spun-formed aluminum domes. Vulcan Centaur booster propulsion is provided by a pair of BE-4 engines, each producing 550,000 lbs of thrust. The Vulcan Centaur 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 solid rocket boosters (SRBs), with a diameter of 160.3 cm (63.1 in) and a length of 21.9 m (71.8 ft), are constructed of a graphite-epoxy composite with the throttle profile designed into the propellant grain. The SRBs burn for approximately a minute and a half, following SRB burnout they are jettisoned from the core vehicle.

With the addition of up to six solid rocket boosters, the Vulcan Centaur is available in four configurations. The two and six SRB variants are the standard offering, with the zero and four SRB variants offered on a mission-unique basis.

The rocket’s height with the standard PLF is approximately 61.6 m (202 ft) and 67.4 m (221 ft) with the long PLF.

The Vulcan Centaur rocket is built at ULA’s 1.6-million square-foot, state-of-the-art production facility in Decatur, Alabama.

Vulcan Centaur will launch 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.