



Tortured and Tested, 3.5-Liter PowerBoost Full Hybrid Powertrain in the All-New 2021 F-150 Is Built Ford Tough

- The 3.5-liter PowerBoost™ in the 2021 Ford F-150 is the only full hybrid powertrain available in a pickup and the only one Built Ford Tough; generating 430 horsepower and 570 lb.-ft. of torque, it can tow up to 12,700 pounds
- The PowerBoost hybrid is tested to the extreme standards the rest of the F-150 powertrain lineup endures; engineers punished the all-new F-150 PowerBoost in grueling real-world proving grounds and laboratory conditions
- A special laboratory test rig was specifically built to abuse the 1.5-kilowatt-hour lithium-ion battery used in the PowerBoost system, simulating 10 years of pummeling in just 82 hours

DEARBORN, Mich., Oct. 6, 2020 – The all-new 3.5-liter PowerBoost™ full hybrid powertrain is available in the all-new F-150 and is the only full-hybrid powertrain available in a pickup. PowerBoost was created by the Ford team to deliver years of dependable, hardworking service with 430 horsepower 570 lb.-ft of torque - the most torque ever in an F-150.

“Just because it’s a hybrid doesn’t mean we treated PowerBoost with kid gloves,” said Craig Schmatz, F-150 chief engineer. “To earn Built Ford Tough certification, PowerBoost went through the torture testing we put all of our powertrains through. No F-150 powertrain gets a pass, we have one standard for quality and durability.”

The full hybrid powertrain is the most powerful engine in the all-new F-150 lineup, delivering 430 horsepower and 570 lb.-ft. of torque. To prove it will deliver the long-term performance customers demand, it also had to pass the same tests all other F-150s must complete. Tests included towing fully loaded trailers over desert mountain passes in 100-plus degree temperatures, withstanding punishing terrain off-road, conquering frozen tundras, and enduring high-humidity chambers, salt baths and roads designed to destroy.

Engineers added a unique durability test specifically for PowerBoost. Ford built a custom testing machine using multi-axis hydraulic actuation to violently shake the powertrain’s 1.5-kilowatt-hour lithium-ion battery – simulating conditions like hitting the harshest of potholes and washboard roads, then subjecting it to even more daily abuse. Putting the battery through just 82 hours on this machine is the equivalent of 10 years of mechanical torture. “This thing is like a mechanical bull on steroids,” said Jack Parnoutsoukian, high-voltage application engineer.

In combination with the modular hybrid transmission, the battery enables the operation of Pro Power Onboard to deliver a standard 2.4 kilowatts of exportable power or available 7.2 kilowatts – 18 times more power than what the nearest competitor can manage.

That was in addition to the battery of Built Ford Tough testing that spans America.

For instance, Davis Dam in the Mojave Desert of Arizona is a massive 11.4-mile slope that climbs 3,500 feet with an average 6 percent grade and harsh heat. It is one of the toughest places in the United States to test towing performance. PowerBoost trucks loaded to the maximum available tow rating of 12,700 pounds climbed and descended the Davis Dam pass over and over and over again to prove the full durability of the engine, modular hybrid transmission, cooling systems and towing technologies.

At the Ford Michigan proving grounds, PowerBoost was tested on road surfaces too punishing for test drivers. Robots repeatedly drove PowerBoost over a continuous series of man-made potholed and grooved roads at the unique Silver Creek test course. Silver Creek includes a dozen distinct types of metal-edged chuckholes repeated for almost a quarter mile. Fully loaded to the maximum available payload of 2,120 pounds, PowerBoost successfully ran the course hundreds of times. It also proved itself against the extreme inclines of the proving grounds, on high-speed ovals, and in water intrusion events.

Part of pushing F-150 to the extreme means putting it through punishing off-road adventures, so engineers traveled to the unrelenting terrain of the Anza-Borrego Desert in Southern California. By subjecting PowerBoost-equipped trucks to mountainous sand dunes, slippery and jagged rocks, high-speed trails and mud walls, engineers ensured the hybrid system can deliver the power and capability F-150 owners need for work or recreation.

The all-new 2021 Ford F-150 goes on sale this fall. It is proudly built and assembled in America at Dearborn Truck Plant in Dearborn, Michigan, and Kansas City Assembly Plant in Claycomo, Missouri.

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