

F135 Engine

Proven Power for the F-35 Lightning II — In Flight, In Production



Providing Fifth-Generation Power

Pratt & Whitney's F135 engine powers the F-35 Lightning II, the single-engine strike fighter developed by Lockheed Martin in conjunction with Northrop Grumman and BAE Systems. The F-35 includes three variants – the F-35A CTOL (Conventional Takeoff and Landing), F-35B STOVL (Short Takeoff and Vertical Landing) and F-35C CV (Carrier Variant).

Derived from Proven Technology

The F135 has evolved from the proven F119-PW-100 engine, the technologically advanced turbofan engine that exclusively powers the U.S. Air Force's F-22 Raptor. In service since 2003, the F119 engine has the distinction of being the safest fighter engine introduced in U.S. Air Force history. The F135 offers the same operational pedigree with proven stealth capabilities, along with features such as advanced prognostics and health-management systems.

International Participation

The F-35 is the first truly international fighter aircraft development program – developed to serve the United States, the United Kingdom, Italy, the Netherlands, Turkey, Canada, Australia, Denmark, Norway and other allied nations. To support its customers, Pratt & Whitney has partnered with the best aerospace companies in the world including Rolls Royce and UTC Aerospace Systems to manufacture critical components of the F135, with the goal of producing the most advanced propulsion system the world has ever seen.

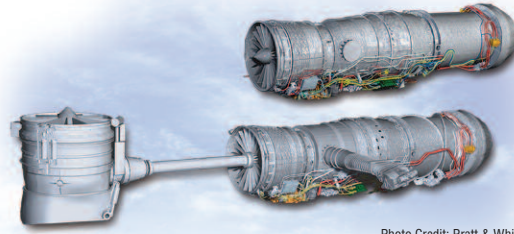


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Reliability

Since powering the F-35's first flight in December 2006, the F135 has maintained high readiness levels that have enabled the program to meet flight test objectives for all three aircraft variants. Supportability features are designed to offer ease of maintenance while achieving unprecedented engine reliability and maintainability. Networked maintenance and logistics support capabilities are projected to significantly lower maintenance costs and increase mission availability. Likewise, common sustainment solutions across the services and partner nations offer economies of scale targeted to lower long-term costs relative to current engine fleets.

Affordability

The F135 program plans to continue to drive down cost as it ramps up production. The F135 produces 20% more thrust and weighs 1,500 pounds more than the F119. The F135 program objective is to achieve comparable production costs as the F119.

Product Facts

Engine Characteristics

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|-------------------------------------|--------------------------|------------------------------------|--------------------------|
| Maximum thrust class (CTOL/CV) | 43,000 pounds (191.3 kN) | Maximum thrust class (STOVL) | 41,000 pounds (182.4 kN) |
| Intermediate thrust class (CTOL/CV) | 28,000 pounds (128.1 kN) | Intermediate thrust class (STOVL) | 27,000 pounds (120.1 kN) |
| Length | 220 inches (5.59 m) | Short takeoff thrust class (STOVL) | 40,740 pounds (181.2 kN) |
| Inlet diameter | 43 inches (1.09 m) | Hover thrust class | 40,650 pounds (180.8 kN) |
| Maximum diameter | 46 inches (1.17 m) | Length | 369 inches (9.37 m) |

F135 Program Milestones

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|-----------------------|--|
| 2003-2004 | F135 first engines to test |
| 2006-2008 | F135 engines power first flights of F-35A and F-35B |
| June 2010 | F135 engine powers first flight of F-35C |
| October 2011 | F135 engine powers first landing of F-35B on a ship |
| March 2012 | F135 engine powers training flight of F-35A at Eglin AFB |
| March 2013 | F135 engine powers first operational vertical landing at Marine Corps Air Station Yuma |
| November 2014 | F135 engine powers first F-35C Navy aircraft testing on board U.S.S. Nimitz |
| July 2015 | USMC declares Initial Operating Capability of F-35B powered by the F135 engine |
| July 2016 | F135 engine System Development and Demonstration completed |
| August 2016 | USAF declares Initial Operating Capability of F-35A powered by the F135 engine |
| June-July 2016 | First successful international airshow debuts in the UK and Netherlands |
| August 2016 | Successful sea trials onboard the USS George Washington |
| October-November 2016 | Successful sea trials onboard the USS America |
| November 2016 | First F135 engine received at Japan IHI FACO |
| December 2016 | 300th F135 engine produced |
| December 2016 | First aircraft arrival in Israel |
| December 2016 | First aircraft arrival in Italy |

Military Applications

F-35 Lightning II A, B, C



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