

# F119-PW-100

## Turbofan Engine

### Proven Power for the F-22 Raptor



Pratt & Whitney's F119 turbofan engine is the world's first fifth-generation fighter engine. The F119 combines stealth technologies and vectored thrust performance to provide unprecedented maneuverability and survivability with a high thrust-to-weight ratio. The ability to operate supersonically without afterburner—supercruise—gives the F-22 exceptional combat performance without compromising mission range.

The F119 is equipped with a number of advanced technologies for unmatched operational performance and reliability. Its three-stage integrally bladed fan is powered by a single-stage low-pressure turbine. The robust, yet compact, high-pressure compressor features the most advanced airfoil aerodynamics and integrally bladed rotor disks for ensured durability. The engine's counter-rotating core has an aerodynamically efficient six-stage compressor driven by a single-stage high-pressure turbine featuring the latest single-crystal superalloy blades and advanced cooling

technologies. The engine delivers unparalleled aircraft maneuverability with its unique two-dimensional pitch-vectoring exhaust nozzle.

The F119 engine has achieved a best-in-class safety record since its introduction by outperforming legacy engine benchmarks. Ease of assembly, maintenance and repair were designed into the F119 from its inception using a balanced team approach that included assemblers and flight-line mechanics. Requirements for support equipment and labor were reduced by 50 percent, minimizing the overall F119 logistics footprint.

Pratt & Whitney. **It's in our power.™**



## Product Facts

### Program Milestones

April 1991	F119 selected to power the F-22 Raptor
December 1992	First F119 begins ground testing
September 1997	F-22 makes its first flight
December 2000	First production F119 engine delivered
July 2002	F-22 achieves Initial Service Release
January 2003	First Air Force F-22 base activated
April 2005	DoD approves F-22 full-rate production
December 2005	F-22 achieves Initial Operational Capability
December 2007	F-22 achieves Full Operational Capability
October 2009	400th F119 engine delivered
June 2011	Last install engine delivered
February 2012	200,000 operational F119 flight hours

### F119 Characteristics

Type	Twin-spool, augmented turbofan
Thrust	35,000-pound thrust class
Engine control	FADEC (Full-Authority Digital Engine Control)
Compression system	Dual-rotor, counter-rotating, axial flow, low aspect ratio <ul style="list-style-type: none"> <li>- Three-stage fan</li> <li>- Six-stage high-pressure compressor</li> </ul>
Combustor	Annular, Floatwall™ configuration
Turbines	Axial flow, counter-rotating <ul style="list-style-type: none"> <li>- One-stage high-pressure turbine</li> <li>- One-stage low-pressure turbine</li> </ul>
Nozzle	Two-dimensional pitch-vectoring convergent/divergent

### F119 Applications

F-22 Raptor Air Superiority Fighter  
 Proven reliability and safety for F135/F-35 derivative application



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