



# Pratt & Whitney

A United Technologies Company

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## **Pratt & Whitney's PW4000 112-inch-fan**

The 112-inch-fan PW4000 is an ultra-high-thrust model covering the 74,000 to 98,000-pound-thrust class to meet the requirements for the Boeing 777 -200/-200ER/-300 twinjets. It was the launch engine for the 777, entering service in 1995.

The PW4084, with 84,000 pounds of thrust, was the first engine to enter service already approved for 180-minute ETOPS and has subsequently been approved for 207 minutes, the maximum allowable, along with all the other PW4000-112 inch models. A higher-thrust model, the PW4090, with 90,000 pounds of thrust, powers an increased-gross-weight version of the 777. And the 98,000-pound-thrust PW4098 currently powers the 777 up to 660,000 lbs take-off weight.

The 112-inch PW4000 also is our largest commercial engine, its diameter nearly as wide as the fuselage of a Boeing 737. Using hollow titanium, shroudless fan blades, the PW4000 provides high efficiency and low noise along with superb resistance to foreign object damage.

In addition to being the market-experience leader, the PW4000-112 on the 777 has the best-in-class reliability statistics, attributable to its mature, derivative, high technology design and validation methodology.

### **Engine Characteristics**

Fan tip diameter: 112 inches

Length, flange to flange: 191.7 inches

Takeoff thrust: 74,000 - 98,000 pounds of thrust

Flat rated temperature: 86 degrees F

Bypass ratio: 5.8-to-1 to 6.4-to-1

Overall pressure ratio: 34.2 - 42.8

Fan pressure ratio: 1.70 - 1.80

### **Program Milestones**

October 1990 - Program launch

May 1993 - 100,000 pounds thrust achieved (industry first)

November 1993 - First flight

April 1994 - FAA engine certification  
May 1995 - 180-minute ETOPS approval  
June 1995 - Entry into service  
March 1997 - PW4090 service entry  
August 1999 - PW4098 service entry  
May 2000 - 207-minute ETOPS approval

**Engine Models**

PW4074  
PW4077  
PW4077D  
PW4084  
PW4084D  
PW4090  
PW4098

**Airplanes Powered**

Boeing 777-200/-300