



Pratt and Whitney JT15D

The JT15D is a small turbopfan engine built by Pratt & Whitney Canada. It was introduced in 1971 at 2,200 lbf thrust, and has since undergone a series of upgrades to just over 3,000 lbf thrust in the latest versions. It is the primary powerplant for a wide variety of smaller jet aircraft, notably businessjets. Over 6,000 JT15D's have been delivered since the 1970s, with over 30 million hours of operation. Fact Sheet.



The JT15D is fairly unique among modern turbopfans in that it uses a centrifugal compressor as its main high-pressure system. This was a common feature of early jet engines, but was quickly replaced by axial compressors in most roles due to its large frontal size. In the turbopfan role most of the jet thrust is generated by the cold air blown past the engine, and the internal "jet" portion is quite small. In this role the high single-stage compression of the centrifugal design has advantages, and the main reason most small turbopfans don't use them is that they are often developments of previous turbojet designs.

In the JT15D the fan blows about 70% of the air into the bypass duct, producing most of the overall thrust. Behind the fan is a small "booster" axial stage, running at the same speed as the fan and directing the remaining 30% of the airflow into the engine core. This air is further compressed by the centrifugal stage, and burned in a reverse-flow annular combustor. The hot gasses flow through a "high-pressure" turbine that drives the centrifugal stage, and then two more turbines driving the fan and booster.

The first model, the JT15D-1, was introduced to power the Cessna Citation I, then known as the Fanjet 500. Deliveries started in 1972, and eventually on 1,417 -1's were delivered. The JT15D-4 was introduced the next year, improving thrust to 2,500 lbf. The -4 was the primary engine for the Cessna Citation II, and went on to find use on the Mitsubishi Diamond 1A, Aerospatiale Corvette and Agusta S211. Eventually 2,195 engines of the -4 series were delivered.

The next major model was the JT15D-5, certified in 1983. The first versions delivered 2,900 lbf and were used on the Beechjet 400A and Cessna T-47A. Several minor versions were introduced, the -5A for the Cessna Citation V, while the -5B powered the Beechcraft T-1A Jayhawk, the -5C the DASA Ranger 2000 and Agusta S211A.

A more major upgrade was the JT15D-5D, which was certified in 1993. It increased thrust again, this time to 3,045 lbf. The -5D is used on the Cessna UC-35A and Cessna Citation Ultra. More recently the original -5 (apparently) was selected for the VisionAire Vantage, although this aircraft has not entered production. It seems more likely it would be the -5C or -5D. More...

Source: Wikipedia, http://en.wikipedia.org/wiki/Pratt_&_Whitney_Canada_JT15D

Precision Turbines, Inc.
4225 Tranquility Drive, Boca Raton, FL 33487
phone: 561.350.3028 • fax: 561.276.1443
www.precisionturbines.net • info@precisionturbines.net