

EASA

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Type : Pratt & Whitney JFTD12A Series Engines

Variants

JFTD12A-4A

JFTD12A-5A

List of effective Pages:

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I. General

1. Type/Variants:

Type: JFTD12A
Variants: JFTD12A-4A and JFTD12A-5A

2. Type Certificate Holder:

Pratt & Whitney Aircraft
Division of United Aircraft Corporation
East Hartford, Connecticut 06108

3. Manufacturer:

Pratt & Whitney Aircraft
Division of United Aircraft Corporation
East Hartford, Connecticut 06108

4. Certification Application Date for EASA Certification:

21 September 2005

5. EASA Certification Reference Date:

30 March 1966

6. EASA Certification Date:

JFTD12A-4A: 25 September 2007

JFTD12A-5A: 01 March 2000

(EASA Type Certification for the JFTD12A-5A engine model is granted, in accordance with Article 2 paragraph 3(a) of EU Commission Regulation EC 1702/2003, based on the ENAC-Italy Engine Type Certificate No. MO 108 issued prior to 28 September 2003.)

II. Certification Basis

1. FAA Certification Basis details (see also FAA TCDS No. E15EA):

Federal Aviation Regulations (FAR) Part 33 effective February 1, 1965, as amended by 33-1 and 33-2

2. EASA Certification Basis:

2.1 Airworthiness Standards:

Federal Aviation Regulations (FAR) Part 33 effective February 1, 1965, as amended by 33-1 and 33-2

2.2 Environmental Protection Requirements:

ICAO Annex 16, Volume II, Part II, Chapter 2 – Fuel Venting

III. Technical Characteristics

1. Type Design Definition:

JFTD12A-4A Engine Assembly: 661300

JFTD12A-4A Engine Assembly: 662000

2. Description:

JFTD12A-4A:

Turboshaft engine consisting of a nine stage axial compressor and eight can-annular combustion chambers and two stage gas generator turbine plus two stage free turbine.

JFTD12A-5A:

Same as JFTD12A-4A except for increased takeoff and maximum continuous ratings with the incorporation of improved engine parts.

3. Dimensions:

The dimensions of all variants are as follows:

Length (maximum including nose cone)	2717.80 mm (107.0 inches)
Diameter (maximum)	762.00 mm (30.0 inches)
Radial projection (maximum)	566.42 mm (22.3 inches)

4. Dry Weight (see Note 1 and Note 7):

JFTD12A-4A: 417.3 kg (920 lb.)

JFTD12A-5A: 424.1 kg (935 lb.)

5. Ratings (at nominal free turbine operating speed of 9000 rpm):

	JFTD12A-4A	JFTD12A-5A
Maximum continuous at sea level	2982 KW (4000 HP)	3303 KW (4430 HP)
Takeoff at sea level	3355 KW (4500 HP)	3579 KW (4800 HP)
30 minute OEI rating at sea level	3355 KW (4500 HP)	3579 KW (4800 HP)

6. Fuel Control:

JFTD12A-4A: Hamilton Standard JFC56-4, purely hydromechanical fuel control

JFTD12A-5A: Hamilton Standard JFC56-6, purely hydromechanical fuel control

7. Fuel Pump:

JFTD12A-4A: Chandler Evans 50430

JFTD12A-5A: Same as JFTD12A-4A

8. Ignition:

JFTD12A-4A: Two General Laboratories Associates exciters Model 40367 or BF Goodrich Aerospace Simmonds Precision exciters Model 43140, with two spark igniters, Champion FHE151 ; or General Laboratories Associates exciters Model 42145 and 42194 or BF Goodrich Aerospace Simmonds Precision exciters Model 42145 and 43141, with two spark igniters, Champion AA-335

JFTD12A-5A: Same as JFTD12A-4A

9. Fluids

7.1 Fuel:

JP-1, JP-4 and JP-5 fuels conforming to P&W A Specification No. 522 as revised or P&W A Service Bulletin 2016 as revised may be used separately or mixed in any proportions without adversely affecting the engine operation or power output. No fuel control adjustment is required when switching fuel types.

Phillips PFA-55MB anti-icing additive at the use concentration not in excess of 0.15% by volume is approved for use in fuels conforming to P&W A Specification No. 522 as revised.

7.2 Oil:

The engine oil must be of a type conforming to P&W A Service Bulletin No. 238.

8. Accessory Drive Provisions:

The following accessory drive provisions are incorporated for all engine models:

Drive	Rotation	Speed Ratio to Turbine Shaft	Torque (Nm) (Continuous)	Torque (Nm) (Static)	Overhang (N)
Tachometer (Gas Generator)	Counterclockwise	0.264:1	0.79 Nm (7 in.-lb.)	5.6 Nm (50 in.-lb.)	-
Tachometer (Free Turbine)	Clockwise	0.464:1	0.79 Nm (7 in.-lb.)	5.6 Nm (50 in.-lb.)	-
Starter-Generator**	Clockwise	0.435:1	56.49 Nm (500 in.-lb.)	142 Nm (1260 in.-lb.)	56.49 Nm (500 in.-lb.)
Fluid Power Pump	Clockwise	0.263:1	67.7 Nm (600 in.-lb.)	305 Nm (2700 in.-lb.)	39.5 Nm (350 in.-lb.)
	**: above limits apply only to generator operation. Maximum continuous starter torque – 142 Nm (1260 in.-lb.) Engine starter drive shear section capable of withstanding a static torque up to 284 Nm (2520 in.-lb.)				

9. Maximum Permissible Air Bleed Extraction:

For all engine models, the bleed extraction is as follows:

Idle to maximum continuous -2% of primary engine airflow
 Maximum continuous to take off -2% of primary engine airflow

IV. Operational Limits:

1. Temperature Limits (see Note 3.):

1.1 Free turbine inlet gas temperatures:

	JFTD12A-4A	JFTD12A-5A
Takeoff	688 °C (1270 °F)	720 °C (1328 °F)
30 Minute OEI Rating	688 °C (1270 °F)	720 °C (1328 °F)
Maximum Continuous	655 °C (1211 °F)	675 °C (1247 °F)
Maximum for Acceleration	688 °C (1270 °F)	720 °C (1328 °F)
Starting	525 °C (977 °F)	525 °C (977 °F)

1.2 Oil Inlet Temperature, °C :

For all engine models, the maximum permissible oil inlet temperature is 121 °C (250 °F)

2. Maximum Permissible rotor Speeds:

For all engine models, the maximum permissible engine operating speeds are as follow:

	Free Turbine	Gas Generator
Takeoff	9500 rpm	16700 rpm
30 Minute OEI Rating	9500 rpm	16700 rpm
Maximum Continuous	9500 rpm	16700 rpm
Transient (30 seconds)	9600 rpm	Not Applicable

3. Pressure Limits:

3.1 Fuel Pressure Limits are as follows for all engine models:

At inlet to engine system pump, 51.71 KPa (7.5 PSI) above absolute fuel vapour pressure or 10.34 KPa (1.5 PSI) below fuel tank pressure, whichever is higher, with a maximum of 344.7 KPa (50 PSI) above absolute atmosphere pressure.

3.2 Oil Pressure Limits are as follows for all engine models:

At ground idle - 137.8 KPa (20 PSI) minimum
Operating range – 310.2 KPa (45 PSI) to 379.2 KPa (55 PSI)

4. Installation Assumptions:

The installation assumptions are quoted in the respective Type Engine Installation Manuals.

V. Operating and Service Instructions

1. Maintenance Manual: JT12A-6, -6A and -8 Turbojet Engines and JFTD12A-4A and -5A Free Turbine Engines Maintenance Manual, Part No. 435107
2. Overhaul Manual: JT12A-6, -6A and -8 Turbojet Engines and JFTD12A-4A and -5A Free Turbine Engines Overhaul Manual, Part No. 435108
3. Installation and Operating Manual: JFTD12A-4A and -5A Free Turbine Drive Engine Installation and Operating Manual, PWA INST. 584

VI. Notes

Note 1: Dry weight includes basic engine with all essential accessories but excluding oil tank, fuel-oil cooler, fuel heater system, inlet bullet nose cone, starter, exhaust duct extension and power source for the ignition system.

Note 2: The engine ratings are based on static test stand operation under the following conditions:

Compressor inlet air at 15 °C (59 °F) and 101.3 KPa (29.92 in. Hg.)
P&W A bellmouth on air inlet
No aircraft accessory loads or air extraction
No anti-icing airflow
Free turbine inlet gas temperature limits and engine rotor speed limits not exceeded.

Note 3: Limiting temperatures of specific components are as specified in the engine installation and operating manual.

Note 4: Certain engine parts are life limited. These limits are listed in the FAA – Approved Pratt & Whitney Aircraft JT12A and JFTD12A Overhaul Manual, Part No. 435108, Table of Limits Section.

Note 5: The engine meets FAA requirements for operation in icing conditions, for adequate turbine disc integrity and rotor blade containment and does not require external armouring.

Note 6: Power setting, power checks, and control of engine output in all operations is to be based upon P&W A engine charts referring to free turbine inlet section gas pressures. Pressure probes are included in the engine assembly for this reason.

Note 7: Additional equipment for JFTD-4A and -5A models:

Equipment	Added Weight
Oil Tank	6.35 Kg (14.0 lb.)
Fuel-Oil Cooler	6.80 Kg (15.0 lb.)
Fuel Heater	6.35 Kg (14.0 lb.)
Inlet Bullet Nose Cone	1.36 Kg (3.0 lb.)

Note 8: The following FAA Airworthiness Directives apply to the JFTD12A-4A and JFTD12A-5A engine types:

- FAA AD amendment 39-1847, AD 71-24-05, effective May 31, 1974
- FAA AD amendment 39-9898, AD 97-02-13, effective April 4, 1997