European Aviation Safety Agency

EASA

TYPE-CERTIFICATE
DATA SHEET

Number : IM.E.077
Issue : 01
Date : 07 September 2006
Type : Pratt & Whitney Canada Corp.
JT15D series engines

Variants
JT15D-1
JT15D-1A
JT15D-1B
JT15D-4
JT15D-4B
JT15D-4C
JT15D-4D
JT15D-5
JT15D-5A
JT15D-5C
JT15D-5R

List of effective Pages:

Page	1	2	3	4	5	6	7	8										
Issue	1	1	1	1	1	1	1	1										

Intentionally left blank

I. General:

1. Type/Variants:

Type: JT15D

Variants:

JT15D-1	JT15D-1A	JT15D-1B	JT15D-4	JT15D-4B
JT15D-4C	JT15D-4D	JT15D-5	JT15D-5A	JT15D-5C
JT15D-5R				

2. Type Certificate Holder:

Pratt & Whitney Canada Corp.
(formerly Pratt & Whitney Aircraft of Canada Ltd)
Longueuil, Quebec
Canada

3. Manufacturer:

Pratt & Whitney Canada Corp.

4. Certification Application Date for Transport Canada and EASA Certification *) (see also note 7):

JT15D-1	JT15D-1A	JT15D-1B	JT15D-4	JT15D-4B
June 2, 1969	April 29, 1976	April 6, 1982	March 27, 1972	October 21, 1982
JT15D-4C	JT15D-4D	JT15D-5	JT15D-5A	JT15D-5C
February 10, 1981	July 11, 1983	January 5, 1982	December 23, 1987	November 30, 1989
JT15D-5R				
February 7, 2006*				

*) EASA application date

5. EASA Certification Reference Date *): see Transport Canada TCDS No. E-11

6. EASA Certification Date *):

JT15D-1	JT15D-1A	JT15D-1B	JT15D-4	JT15D-4B
March 10, 1977	March 10, 1977	June 18, 1985	May 9, 1974	March 8, 1985
JT15D-4C	JT15D-4D	JT15D-5	JT15D-5A	JT15D-5C
September 3, 1991	June 1, 1984	July 15, 1988	April 30, 1990	April 29, 1993
JT15D-5R				
September 07, 2006				

*) The JT15D-1, -1A, -1B, -4, -4B, -4C, -4D, -5, -5A and -5C engines had been certified in several EU Member States before 28 September 2003. According to Article 2, 3(a)(i) of (EC) 1702/2003 for these engines the European TC and associated TCDS have been issued based on the Certification Basis as established by the State of Design.
The JT15D-5 and JT15D-5A engines had been certified in France according to JAR-E change 6 under French TC M-IM 1.

II. Certification Basis:

1. Models JT15D-1, JT15D-1A, JT15D-1B:

a) FAR Part 33, Amendment 1 effective February 1, 1965; Amendment 2 effective July 6, 1966; and Amendment 3 effective April 3, 1967; and Advisory Circulars AC 33-1A and 33-3.
b) Requirements stated in D.O.T. letters of November 10, 1970, and December 9, 1970.

2. Models JT15D-4, JT15D-4B, JT15D-4C and JT15D-4D:

a) FAR Part 33, Amendment 1 effective February 1, 1965; Amendment 2 effective July 6, 1966; and Amendment 3 effective April 3, 1967; and Amendment 4 effective Apil 23, 1971; and Advisory Circulars AC 33-1B and 33-3.
b) FAR Part 33, Amendment 6, para. 33.68.
c) Requirements stated in D.O.T. letters of November 10, 1970, and December 9, 1970.

3. Models JT15D-5, JT15D-5A, JT15D-5C (see also Note 5):

a) FAR Part 33 Amendments 1 to 9 inclusive, effective October 14, 1980 with the exception of 33-77, 33-88 and 33-92, these exceptions are addressed by compliance with Advisory Circulars AC33-1B and 33.3.

4. Model JT15D-5R:

a) JAR-E change 6, dated August 28, 1981

b) ICAO Annex 16, Volume II, Part II, Chapter 2 - Fuel Venting
ICAO Annex 16, Volume II, Part III, Chapter 2 – Smoke Number

III. Technical Characteristics:

1. Type Design Definition:

The Engine Type Designs are defined in the following Documents:

JT15D-1	JT15D-1A	JT15D-1B	JT15D-4	JT15D-4B
EAPL A3018700	EAPL A3018700	EAPL A3018700	EAPL A3021000	EAPL A3035800
JT15D-4C	JT15D-4D	JT15D-5	JT15D-5A	JT15D-5C
EAPL A3101800	EAPL A3035800	EAPL A3030100	EAPL A3042000	EAPL A3043400
JT15D-5R				
EAPL A3072300				

2. Description:

Two Spool Turbofan Engine consisting of a single front fan, single stage centrifugal compressor (JT15D-1, -1A, -1B), a single stage axial compressor and a single stage centrifugal compressor (JT15D-4, -4B, -4C, -4D, -5, -5A, -5C, -5R), annular combustion chamber, single stage high pressure turbine, two stage low pressure turbine, accessory gearbox and hydromechanical control system.

3. Equipment:

Fuel Control, HMU, EEC, flow divider, fuel pump, oil cooler and ignition system without power source are standard equipment as shown in the Approved Parts List. For additional information in regard to output drive specification, accessory drives, principal dimensions, weights, inertias and C.G. locations, refer to Installation Manual. The JT15D-5R has a fuel heater.

4. Dimensions:

The maximum diameter of the engines is about 0,68 m.
Engine length for the JT15D-1, -1A, -1B is about 1,5m, for the other engine models 1,6m.

5. Dry Weight:

	JT15D-1	JT15D-1A	JT15D-1B	JT15D-4
Dry Weight [kg]	231	233	235	252
	JT15D-4B	JT15D-4C	JT15D-4D	JT15D-5
Dry Weight [kg]	258	261	254	287
	JT15D-5A	JT15D-5C	JT15D-5R	
Dry Weight [kg]	287	302	293.5	

6. Ratings:

	JT15D-1	JT15D-1A	JT15D-1B	JT15D-4
Take-off [daN]	978,6	978,6	978,6	1112,1
Max. Continuous [daN]	929,6	929,6	929,6	1056,5
	JT15D-4B	JT15D-4C	JT15D-4D	JT15D-5
Take-off [daN]	1112,1	1112,1	1112,1	1319
Max. Continuous [daN]	1056,5	1056,5	1056,5	1290
	JT15D-5A	JT15D-5C	JT15D-5R	
Take-off [daN]	1290	1418,9	1319	
Max. Continuous [daN]	1290	1418,9	1290	

7. Control System:

The engines are equipped with a hydromechanical control system.

8. Fluids

Approved fuels are listed in the Installation Manual, Section 5 and Service Bulletin 7144.

Approved Oils are listed in the Installation Manual, Section 7 (Section 6 for JT15D-4C) and Service Bulletin 7001.

IV. Operating Limitations:

1. Temperature Limits

Interturbine Temperature [°C]:

	JT15D-1, -1A, -1B, -4, -4C	JT15D-4B	JT15D-4D	JT15D-5, -5A, -5R	JT15D-5C
Take-off	700	710	720	700	700
Max. Cont.	680	690	680	680	700
Starting	500	500	500	550	550
Transient(2sec.)	720	730	740	720	720

Fuel Temperatures:

Maximum fuel pump inlet temperature for starting and operating is 57°C; minimum inlet temperature is -54°C.
JT15D-5R may be used above -40°C without the use of fuel system icing inhibitor.

Oil Temperatures [°C]:

	JT15D-1, -1A, -1B	JT15D-4, -4B, -4C, -4D	JT15D-5, -5A, -5R	JT15D-5C
Maximum	121	121	121	121
Minimum	-40	-40	-40	-40
Max. Transient (90 sec.)	138	138		
Max. Transient (15 sec.)			135	129

2. Permissible Rotational Speeds [min^{-1}]:

	JT15D-1	JT15D-1A	JT15D-1B	JT15D-4	JT15D-4B	JT15D-4C	JT15D-4D	JT15D-5, -5A, -5C, -5R
N1	15840	16540	16540	16540	16860	16860	16540	16540
N2	31120	31120	31120	31450	31800	31800	31800	31450

3. Pressure Limits :

Fuel Pressures: Refer to Installation Manual, Section 5.

Oil Pressure [MPa]:

	JT15D-1, -1A, -1B	JT15D-4, -4B, -4D	JT15D-4C	JT15D-5, -5A, -5R	JT15D-5C
Minimum ($N2 \geq 20000\ min^{-1}$)	0,448	0,483	0,483	0,414	0,414
Minimum ($N2 < 20000\ min^{-1}$)	0,241	0,241	0,241	0,276	0,241
Minimum Aerobatics	N/A	N/A	0,172	N/A	0,276
Maximum	0,655	0,655	0,655	0,572	0,621
Max. Transient (90 sec.)	N/A	N/A	N/A	0,655	0,689

4. Bleed Air: Refer to Installation Manual, Section 2

V. Operating and Service Instructions:

1. Maintenance Manual:

P/N 3017542 for JT15D-1, -1A, -1B, -4, -4B, -4D
P/N 3032942 for JT15D-4C
P/N 3033442 for JT15D-5, JT15D-5R
P/N 3037322 for JT15D-5A
P/N 3034534 for JT15D-5C

2. Overhaul Manual:

P/N 3017543 for JT15D-1, -1A, -1B, -4, -4B, -4D
P/N 3032943 for JT15D-4C
P/N 3033443 for JT15D-5, JT15D-5R
P/N 3037323 for JT5D-5A

3. Approved Service Bulletins defining the engine operating Time Between Overhaul limits and sampling and escalation procedures.
SB 7003 for JT15D-1, -1A, -1B, -4, -4B, -4C, -4D, -5, -5A, -5C, -5R

4. Approved Engine Conversion Bulletins:

JT15D-1 to JT15D-1A	SB 7109
JT15D-1A to JT15D-1B	SB 7177
JT15D-4 to JT15D-4B	SB 7364
JT15D-4 to JT15D-4D	SB 7348
JT15D-4D to JT15D-4	SB 7200
JT15D-5 to JT15D-5R	SB 7605
JT15D-5R to JT15D-5	SB 7606

VI. Notes:

1. The Critical Parts Life Limits are included in the Approved Service Buletins:

SB 7002 for JT15D-1, -1A, -1B, -4, -4B, -4D, -5, -5A, -5R
SB 7302 for JT15D-4C, -5C

2. The ratings shown under III.6. are achieved at sea level and ISA standard day conditions and compressor inlet air (dry) temperatures as follows:

JT15D-1, -1A, -1B, -4, -4B, -4C, -5C:		15°C
JT15D-4D:		20,6°C
JT15D-5, -5A, -5R:	Take-off :	26,7°C
	Max. Continuous:	15°C

3. Certain JT15D engines carry an additional designation in form of a Build Specification Number shown on the supplementary data plate. Designation and users are listed in P&WC Service Bulletin Number 7150.

4. For JT15D-5 model the take-off rating was revised to 1319daN to suit aircraft performance as of 6 July 1993. There is no change to hardware, Part List or Limits. Refer to SB 7406 for data plate reidentification.

5. The JT15D-5A incorporates a dual idle solenoid P/N 3242737. When operating at low idle speed, the engine is not approved for operation in icing conditions as defined by FAR Part 33, para. 33.68(b).

6. The take-off ratings that are nominally limited to 5 minutes duration may be used up to 10 minutes for OEI operations without adverse effects upon engine airworthiness. Such operations are anticipated on an infrequent basis (as engine failure events during take-off are uncommon) and no limits or special inspections have been imposed.

7. Variants of the JT15D engine series were previously covered under several EU Member State Type Certificates prior to being superseded by this EASA Type Certificate and Type Certificate Data Sheet.
