European Aviation Safety Agency

EASA

TYPE-CERTIFICATE DATA SHEET

Number : IM.E.008
Issue : 04
Date : 20 December 2007
Type : Pratt & Whitney Canada PT6A-67 series engines

Variants
PT6A-67
PT6A-67A
PT6A-67B
PT6A-67D
PT6A-67R
PT6A-67T
PT6A-67AF
PT6A-67AG
PT6A-64
PT6A-66
PT6A-66A
PT6A-66D
PT6A-66B
PT6A-67F
PT6A-67P

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I. General

1. Type/Variants: PT6A-67, PT6A-67A, PT6A-67B, PT6A-67D, PT6A-67R, PT6A-67T, PT6A-67AF, PT6A-67AG, PT6A-64, PT6A-66, PT6A-66A, PT6A-66D, PT6A-66B, PT6A-67F, PT6A-67P

2. Type Certificate Holder: Pratt and Whitney Canada Corp.
1000 Marie Victorin
Longueuil, Québec, J4G 1A1
Canada

3. Manufacturer: Pratt and Whitney Canada

4. EASA Certification/JAA Validation Application Date: 31 October 2002
18 May 2005 for PT6A-66D
03 April 2006 for PT6A-66B
11 May 2005 for PT6A-67F
09 February 2007 for PT6A-67P

5. Validation Reference Date: 27 March 1985

6. EASA Certification Date:

PT6A-64	PT6A-66	PT6A-67	PT6A-67B	PT6A-67D
31 January 1990	31 March 1987	31 March 1987	16 December 1991	15 February 1994

PT6A-67R	PT6A-66A	PT6A-67A	PT6A-67T	PT6A-67AF
10 March 1987	01 October 2004	01 October 2004	01 October 2004	01 October 2004

PT6A-67AG	PT6A-66D	PT6A-66B	PT6A-67F	PT6A-67P
01 October 2004	22 November 2005	05 January 2007	20 December 2007	20 December 2007

EASA Type-Certification for some of the PT6A-67 series engine models is granted, in accordance with Article 2 paragraph 3(a) of EU Commission Regulation EC 1702/2003, based on the respective CAA United Kingdom, DGAC France, LBA Germany and AustroControl validation letters issued following NAA approvals prior to 28 September 2003.

II. Certification Basis

1. Transport Canada Certification Basis details: see Transport Canada TCDS E-21.

2. EASA Certification Basis:

2.1 Airworthiness Standards:

- JAR E Change 7, except for PT6A-66D, PT6A-66B, PT6A-67F, PT6A-67P

- CS-E, issue 01 for PT6A-66D, PT6A-66B, PT6A-67F, PT6A-67P

2.2 Special Conditions, except for PT6A-66D, PT6A-66B, PT6A-67F, PT6A-67P:

SC1 – Ingestion of rain and hail (E790 of JAR-E Change 10)

2.3 Equivalent Safety Findings:

Except for PT6A-66D, PT6A-66B, PT6A-67F, PT6A-67P:
C3-4, 2.2, Pressure Tests
C3-4, 6.6.4(b), Temperatures
C3-4 para 22.1, Rotor Integrity

For PT6A-66D, PT6A-66B, PT6A-67F, PT6A-67P:
CS-E 560(b)(2), provision of Impending Fuel Filter Blockage Indication

For PT6A-66D, PT6A-66B:
CS-E 740(f), Endurance Test Temperatures

2.4 Deviations:

None

2.5 Environmental Requirements:

Fuel Venting : EC 1702/2003 Annex Part 21A.18(b), 27 September 2003.

III.Technical Characteristics

1. Type Design Definition:

As defined by the applicable PT6A-67, PT6A-67A, PT6A-67B, PT6A-67D, PT6A-67R, PT6A-67T, PT6A-67AF, PT6A-67AG, PT6A-64, PT6A-66, PT6A-66A, PT6A-66D, PT6A-66B, PT6A-67F and PT6A-67P Engine Parts Lists.

2. Description:

The PT6A-67 series turboprop engine comprises a 2 stage reduction gearbox, 2 stage power turbine, single stage gas generator turbine and 5 stage gas generator compressor (4 axial, 1 centrifugal). The fuel control is purely hydro-mechanical. The accessory gearbox design is common for all PT6A-67 series with the exception of the PT6A-67P which has a mounting provision for a second generator unit.

3. Equipment:

Approved equipment is defined in the applicable PT6A-67, PT6A-67A, PT6A-67B, PT6A-67D, PT6A-67R, PT6A-67T, PT6A-67AF, PT6A-67AG, PT6A-64, PT6A-66, PT6A-66A, PT6A-66D, PT6A-66B, PT6A-67F and PT6A-67P Engine Parts Lists.

4. Dimensions and Weight:

Rating	Overall Length (mm)	Overall Diameter (mm)	Dry Spec. Weight (kg)
PT6A-66	1771.7	466.1	212.7 / 219.1 *
PT6A-67	1888.5	466.1	237.7
PT6A-67A	1888.5	466.1	237.7
PT6A-67R	1913.1	466.1	240.9
PT6A-67AF	1921.5	466.1	248.6
PT6A-64	1767.3	466.1	215.0
PT6A-67B	1921.5	466.1	244.0
PT6A-67D	1888.5	466.1	242.2
PT6A-67AG	1921.5	466.1	237.2
PT6A-66A	1777.0	466.1	215.0
PT6A-67T	1913.1	466.1	240.9
PT6A-66D	1777.0	466.1	215.0
PT6A-66B	1771.7	466.1	212.7 / 219.1*
PT6A-67F	1913.1	466.1	270.0
PT6A-67P	1921.5	466.1	261.0

* Weight for Standard Rotation and Reverse Rotation engine.

5. Ratings:

Engine Model	Maximum Continuous Power (kW)	Take-off Power (5 minutes) (kW)
PT6A-66	634	634
PT6A-67	895	895
PT6A-67A	895	895
PT6A-67R	910	1062
PT6A-67AF	910	1062
PT6A-64	522	522
PT6A-67B	895	895
PT6A-67D	906	954
PT6A-67AG	910	1006
PT6A-66A	634	634
PT6A-67T	910	1062
PT6A-66D	634	634
PT6A-66B	709	709
PT6A-67F	1268	1268
PT6A-67P	895	895

6. Control System:

The PT6A-67 series engine is controlled by a purely hydromechanical fuel control system. Refer to model specific Installation Manuals for unit part numbers.

7. Fluids

7.1 Fuel:

The approved fuels and additives must conform to PWC Service Bulletin 14004 and 14504. The latest revision of the specification applies.

7.2 Oil:

The engine oil must be a synthetic type conforming to PWC Service Bulletin 14001. The latest revision of the specification applies.

8. Aircraft Accessory Drives:

For accessory drives specifications, including direction of rotation, drive speed ratio to engine speed, torque continuous pad rating and maximum overhung moment, refer to model specific Installation Manual.

9. Maximum Permissible Air Bleed Extraction: For all engine models, the bleed extraction is as follows:

Rating	Maximum External (%)	Maximum during Start (kg/min)
PT6A-66	7.5	0.68
PT6A-67	5.25	0.68
PT6A-67A	5.25	0.68
PT6A-67R	5.25	0.68
PT6A-67AF	5.25	0.68
PT6A-64	7.5	0.68
PT6A-67B	8.0	0.68
PT6A-67D	5.25	0.68
PT6A-67AG	5.25	0.68
PT6A-66A	7.5	0.68
PT6A-67T	5.25	0.68
PT6A-66D	7.5	0.68
PT6A-66B	7.5	0.68
PT6A-67F	5.25	0.68
PT6A-67P	8.0	0.68

IV.Operational Limits:

1. Temperature Limits:

1.1 Maximum Interstage Turbine Temperature (ITT), ^{o}C :

Rating	Maximum Continuous (^{o}C)	Take-off (5 minutes) (^{o}C)	Starting (Ground and Air) (^{o}C)
PT6A-66	830	830	1000
PT6A-67	830	840	1000
PT6A-67A	840	850	1000
PT6A-67R	840	855	1000
PT6A-67AF	840	855	1000
PT6A-64	800	800	1000
PT6A-67B	800	800	1000
PT6A-67D	780	800	1000
PT6A-67AG	800	800	1000
PT6A-66A	800	800	1000
PT6A-67T	840	855	1000
PT6A-66D	840	850	1000
PT6A-66B	840	850	1000
PT6A-67F	870	870	1000
PT6A-67P	840	850	1000

1.2 Oil Temperature, ^{o}C :	PT6A-64, PT6A-66A, PT6A-66D	PT6A-67, PT6A-67A, PT6A-67R, PT6A-67AF, PT6A-67D, PT6A-67B, PT6A-67AG, PT6A-66, PT6A-67T, PT6A-66B, PT6A-67F, PT6A-67P
Minimum:	-40	-40
Maximum Continuous Operation:	104	110

Maximum Ground Operation:	110	110
Maximum (10 minutes):	110	-----

1.3 Fuel Temperature

For starting:
Minimum at pump inlet connections is: a) that equivalent to 12 centistokes or
b) Jet A, A-1 -34°C; JP5 -26°C
Maximum at the pump inlet connection is +57 °C
(Note: Starts may be attempted with fuel at higher or lower temperatures providing other specified engine limitations are observed. The starting temperature applies to ground and air starts.)

For operation:
Minimum at pump inlet is -54 °C or 12 centistokes.
Maximum at pump inlet is that corresponding to a vapour-liquid ratio of 0.3.

2. Maximum Permissible Rotor Speeds:

Engine Model	Gas Generator (N1) (rpm)	Power Turbine Module Output (N2) (rpm)	Power Turbine Module Output (N2) Transient* (rpm)
PT6A-66	39,000	2000 (90.7%)	2205 (100%)
PT6A-67	39,000	1700 (100%)	1870 (110%)
PT6A-67A	39,000	1700 (100%)	1870 (110%)
PT6A-67R	39,000	1700 (100%)	1870 (110%)
PT6A-67AF	39,000	1700 (100%)	1870 (110%)
PT6A-64	39,000	2000 (90.7%)	2205 (100%)
PT6A-67B	39,000	1700 (100%)	1870 (110%)
PT6A-67D	39,000	1700 (100%)	1870 (110%)
PT6A-67AG	39,000	1700 (100%)	1870 (110%)
PT6A-66A	39,000	2000 (90.7%)	2205 (100%)
PT6A-67T	39,000	1700 (100%)	1870 (110%)
PT6A-66D	39,000	2000 (90.7%)	2205 (100%)
PT6A-66B	39,000	2000 (90.7%)	2205 (100%)
PT6A-67F	39,000	1700 (100%)	1870 (110%)
PT6A-67P	39,000	1700 (100%)	1870 (110%)

Propeller speed of 100% of 1700 rpm corresponds to power turbine speed of 29,894 rpm. The 100% propeller speed of 2000 rpm corresponds to power turbine speed of 30,145 rpm. For the PT6A-67F, 100% of 1700 RPM corresponds to power turbine speed of 29564 RPM.

* Transient: 20 seconds

3. Pressure Limits:

3.1 Fuel Pressure Limits at Engine Pump Inlet:

GROUND STARTING, AIR STARTING AND OPERATION
Minimum absolute pressure : 34.47 kPa (5 psi) absolute above the true vapour fuel pressure
Maximum gauge pressure : 344.7 kPa (50 psi) with vapour/liquid ratio of zero at all conditions.

3.2 Oil Pressure Limits:

PT6A-67, PT6A-67A, PT6A-67R, PT6A-67AF, PT6A-67B, PT6A-67D, PT6A-67AG, PT6A-66, PT6A-67T, PT6A-66B, PT6A-67F, PT6A-67P

Pressure range (gauge) 620.4 – 930.7 kPa (90-135 psi)

PT6A-64, PT6A-66A, PT6A-66D

Pressure range (gauge) 689.4 – 930.7 kPa (100-135 psi)

Gas Generator speed 27000 rpm or above and oil temperature 60-71 ^{o}C
Minimum Pressure (gauge) : 413.6 kPa (90 psi)

4. Installation Assumptions:

The installation assumptions are quoted in the respective model engine Installation Manuals.

5. Dispatch Limitations:

Not applicable to PT6A-67 Series engines as all models have hydro-mechanical fuel control.

V. Operating and Service Instructions

Engine Model	Engine Operating Instructions	Engine Maintenance Manual	Engine Overhaul Manual	Service Bulletins
PT6A-66	3034638	3036122	3036123	14000 Series*
PT6A-66A	3045336	3036122	3036123	14000 Series
PT6A-67	3034928	3036132	3036133	14000 Series
PT6A-67A	3037028	3036132	3036133	14000 Series
PT6A-67R	3034929	3036132	3036133	14000 Series
PT6A-67AF	3037035	3036132	3036133	14000 Series
PT6A-64	3037339	3038121	3038322	14000 Series
PT6A-67B	3038535	3038336	3038337	14000 Series
PT6A-67D	3036131	3038336	3038337	14000 Series
PT6A-67AG	3041181	3036132	3036133	14000 Series
PT6A-67T	3053378	3036132	3036133	14000 Series
PT6A-66D	3071159	3070902	3070903	14000 Series
PT6A-66B	3072150	3036122	3036123	14000 Series
PT6A-67F	3071158	3071152	3071153	14000 Series
PT6A-67P	3073490	3038336	3038337	14000 Series

* Service Bulletins as issued for each engine model.

VI. Notes

Note 1: Dry weight includes basic engine accessories and optional equipment as listed in the manufacturer's engine specification.

Note 2: The engine ratings are based on dry sea-level static ICAO Standard Atmospheric Conditions, no air bleed, no external accessory power extraction. The specified engine ratings are the minimum guaranteed using specified fuel and oil and are based on calibrated stand performance using inlet ducting and exhaust stubs as specified in the Installation Manual.

Note 3:

Engine Model	Take off power is flat rated up to an ambient temperature °C	Maximum Continuous power is flat rated up to an ambient temperature °C
PT6A-66	57.2	57.2
PT6A-67	51.1	46.1
PT6A-67A	53	53
PT6A-67R	37.2	48.3
PT6A-67AF	37.2	48.3
PT6A-64	57.2	57.2
PT6A-67B	51.7	45
PT6A-67D	48	46.5
PT6A-67AG	26.1	33.6
PT6A-66A	50.1	50.
PT6A-67T	34.5	33.6
PT6A-66D	70	70
PT6A-66B	64	64
PT6A-67F	32	32
PT6A-67P	44	50

Note 4: The time temperature limits are specified in the Specific Operating Instructions.

Note 5: The approved life limitations for rotating parts are published in the following Service Bulletins:
SB14002 - PT6A-64, PT6A-66, PT6A-67, PT6A-67A, PT6A-67R, PT6A-67B, PT6A-67D, PT6A-66A, PT6A-67T, PT6A-66D, PT6A-66B, PT6A-67P
SB14302 - PT6A-67AF
SB14502 - PT6A-67AG, PT6A-67F

Note 6: The following Service Bulletins defining operating Times Between Overhaul (TBO), Hot Section Inspection (HSI) intervals, and sampling and escalation procedures:
SB14003 - PT6A-67R, PT6A-67D
SB14303 - PT6A-67AF, PT6A-67F
SB14503 - PT6A-67AG
SB14603 - PT6A-64, PT6A-66, PT6A-67, PT6A-67A, PT6A-67B, PT6A-66A, PT6A-67T, PT6A-66D, PT6A-66B, PT6A-67P

Note 7: The PT6A-67AF is a special purpose version of the PT6A-67 series of engines intended for use in military and firefighting aviation. This model may not be re-designated for other than military or firefighting operations.

Note 8: The PT6A-67AG is a special purpose version of the PT6A-67 series of engines intended for use in agricultural aviation. This model may not be re-designated for other than agricultural operations.

Note 9: Compliance with FAR 34.21(e)(3) has been shown for PT6A-67R, PT6A-67AF, PT6A-67AG, PT6A-67F, PT6A-67T.
