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## TYPE-CERTIFICATE DATA SHEET

No. IM.E.059

**for**

Pratt & Whitney Canada  
PT6T series engines

**Type Certificate Holder**

Pratt and Whitney Canada Corp.  
1000 Marie Victorin  
Longueuil, Québec, J4G 1A1  
Canada

For Models:

PT6T-3  
PT6T-3B  
PT6T-3BE  
PT6T-3D  
PT6T-3DE  
PT6T-3DF  
PT6T-6  
PT6T-9



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## **I. General**

### **1. Type/ Model/ Variants**

PT6T / PT6T-3, PT6T-3B, PT6T-3BE, PT6T-3D, PT6T-3DE, PT6T-3DF, PT6T-6,  
PT6T-9

### **2. Type Certificate Holder**

Pratt and Whitney Canada Corp.  
1000 Marie Victorin  
Longueuil, Québec, J4G 1A1  
Canada

### **3. Manufacturer**

Pratt and Whitney Canada

### **4. Date of Application**

15 August 2013 for PT6T-3DE, PT6T-9

### **5. Certification Reference Date:**

1 April 1968 (PT6T-3)  
23 April 1971 (all except PT6T-3 and PT6T-9)  
26 February 1998 (PT6T-9)

### **6. EASA Type Certification Date**

PT6T-3	PT6T-3B	PT6T-3BE	PT6T-3D	PT6T-3DE
06 March 1976	12 June 1981	18 July 1991	13 January 1998	30 October 2015
PT6T-3DF	PT6T-6	PT6T-9		
13 January 1998	07 March 1974	30 October 2015		

EASA Type-Certification for the above mentioned engine models, except PT6T-3DE, PT6T-9, is granted, in accordance with Article 3 of Commission Regulation (EC) No. 748/2012, based on the respective CAA UK, DGAC France (TC/TCDS M-IM 27), LBA Germany (TC/TCDS 3040, 7022) and ENAC Italy validation letters issued following NAA approvals prior to 28 September 2003.



## **II. Certification Basis**

### **1. State of Design Authority Certification Basis**

see Transport Canada TCDS E-10.

### **2. EASA Certification Basis**

#### **2.1. Airworthiness Standards**

- FAR Part 33 effective 1 February 1965, and amendments 33-1 to 33-3 (PT6T-3)
- FAR Part 33 effective 1 February 1965, and amendments 33-1 to 33-4 (except PT6T-3 and PT6T-9)
- JAR-E Change 9 incl. Amend. E/96/1 and E/97/1 (PT6T-9)
- 30 sec/2 min OEI Rating: JAR-E 20; JAR-E 25; JAR-E 40; JAR-E 50; JAR-E 60; JAR-E 140; JAR-E 150; JAR-E 690; JAR-E 730; JAR-E 740 and JAR-E 830 of JAR-E Amendment 12 (PT6T-9)
- Inclement Weather: JAR-E 790 Ingestion of Rain and Hail of JAR-E Change 10 (PT6T-3DE, PT6T-9)

#### **2.2. Special Conditions (SC)**

- Additional Engine and Gearbox Testing: Special Conditions contained in FAA letter to DOT dated June 22, 1970, and attachment of June 8, 1970 and additional requirements forming part of the DOT Approved Compliance Program dated October 8, 1969 (PT6T-3DE)
- Additional Engine and Gearbox Testing: Special Condition SCA 2000-03, P&WC Model PT6T-9 Engine Mechanical Tests for the Twin-Pac Configuration dated April 10th, 2000 (PT6T-9)

#### **2.3. Equivalent Safety Findings**

None

#### **2.4. Deviations**

None

#### **2.5. Environmental Protection**

CS-34.1, Fuel Venting



### **III. Technical Characteristics**

#### **1. Type Design Definition**

As defined by the applicable PT6T-3, PT6T-3B, PT6T-3BE, PT6T-3D, PT6T-3DE, PT6T-3DF, PT6T-6, PT6T-9 Engine Parts Lists.

#### **2. Description**

The PT6T basic configuration consists of two PT6A power sections coupled to a combining gearbox with a clutch system enabling both twin and single engine operation. The power section configurations are exactly the same as that of the PT6A turboprop, i.e. a two-shaft configuration consisting of a 3-stage axial and single-stage centrifugal compressor driven by a single-stage compressor turbine and an independent shaft coupling the power turbine to the output shaft through the combining reduction gearbox. The reverse flow combustor has a single annular combustion chamber. The fuel control is a single channel electronic engine control with hydro-mechanical backup (PT6T-9) or purely hydro-mechanical (all except PT6T-9).

#### **3. Equipment**

Approved equipment is defined in the applicable PT6T-3, PT6T-3B, PT6T-3BE, PT6T-3D, PT6T-3DE, PT6T-3DF, PT6T-6, PT6T-9 Engine Parts Lists.

#### **4. Dimensions**

Model	Overall Length (mm)	Overall Width (mm)	Overall Height (mm)	Dry Spec. Weight (kg)
PT6T-3	1670.05	1104.14	828.29	315.2
PT6T-3B	1670.05	1104.14	828.29	320.7
PT6T-3BE	1670.05	1104.14	828.29	320.0
PT6T-3D	1670.05	1104.14	828.29	325.0
PT6T-3DE	1670.05	1104.14	828.29	326.4
PT6T-3DF	1670.05	1104.14	828.29	326.4
PT6T-6	1670.05	1104.14	828.29	325.1
PT6T-9	1672.69	1138.38	905.48	346.1



## 5. Ratings

PT6T-3	Total Shaft Power (kW)	Single Section Shaft Power (kW)	Output Speed (rpm) when Governor P/N 3018712 is fitted	Output Speed (rpm) when Governor P/N 3020150 is fitted	Gas Generator Speed (rpm)
Maximum Continuous	1193	597	6600	6798	38100
30 min at sea level	-	671	6600	6798	38100
Take-off	1342	671	6600	6798	38100

PT6T-3B PT6T-3BE	Total Shaft Power (kW)	Single Section Shaft Power (kW)	Output Speed (rpm)	Gas Generator Speed (rpm)
Maximum Continuous	1193	597	6600	38800
30 min at sea level	-	723	6600	38800
2.5 min at sea level	-	764	6600	39400
Take-off	1342	671	6600	38800

PT6T-3D	Total Shaft Power (kW)	Single Section Shaft Power (kW)	Output Speed (rpm)	Gas Generator Speed (rpm)
Maximum Continuous	1194	597	6600	39300
30 min at sea level	-	764	6600	39500
2.5 min at sea level	-	846	6600	41600
Take-off	1342	671	6798	39300

PT6T-3DE	Total Shaft Power (kW)	Single Section Shaft Power (kW)	Output Speed (rpm)	Gas Generator Speed (rpm)
Maximum Continuous	1194	597	6600	39300
30 min at sea level	-	805	6600	40250
2.5 min at sea level	-	846	6600	41600
Take-off	1342	671	6798	39300



PT6T-3DF	Total Shaft Power (kW)	Single Section Shaft Power (kW)	Output Speed (rpm)	Gas Generator Speed (rpm)
Maximum Continuous	1194	597	6600	39300
30 min at sea level	-	805	6600	40700
2.5 min at sea level	-	846	6600	41600
Take-off	1342	671	6798	39300

PT6T-6	Total Shaft Power (kW)	Single Section Shaft Power (kW)	Output Speed (rpm)	Gas Generator Speed (rpm)
Maximum Continuous	1249	615	6600	38400
30 min at sea level	-	723	6600	38400
2.5 min at sea level	-	764	6600	39000
Take-off	1398	690	6600	38400

PT6T-9	Total Shaft Power (kW)	Single Section Shaft Power (kW)	Output Speed (rpm)	Gas Generator Speed (rpm)
Maximum Continuous	1230	615	6798	38100
Continuous OEI	-	820	6798	39500
2 min OEI	-	858	6798	40160
30 sec OEI	-	946	6798	41200
Take-off	1383	692	6798	38850

## 6. Control System

The PT6T series engines except PT6T-9 are controlled by purely hydromechanical fuel control system. The fuel control of the PT6T-9 is a single channel electronic engine control with hydro-mechanical backup. Refer to model specific Installation Manuals for unit part numbers.





## 7. Fluids (Fuel, Oil, Coolant, Additives)

### 7.1 Fuel:

The approved fuels and additives must conform to the latest revision of the P&WC Service Bulletin SB 5144 (all except PT6T-9) resp. to the Maintenance Manual (for PT6T-9)

### 7.2 Oil:

The approved fuels and additives must conform to the latest revision of the P&WC Service Bulletin SB 5001 (all except PT6T-9) resp. to the Maintenance Manual (for PT6T-9)

## 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:

Maximum External (%): 5.25

No air bleed is permissible during the starting cycle.

Bleed air contains less than one part per million of engine-introduced contamination.

## IV. Operating Limitations

### 1. Temperature Limits

#### 1.1 Maximum Interstage Turbine Temperature (ITT), °C :

	PT6T-3	PT6T-3B PT6T-3BE	PT6T-3D	PT6T-3DE	PT6T-3DF	PT6T-9
	(°C)	(°C)	(°C)	(°C)	(°C)	(°C)
Starting Transient (2 sec)	1090	1090	1090	1090	1090	1090
30 sec OEI	-	-	-	-	-	960
2 min OEI	-	-	-	-	-	905
2.5 min at sea level	-	850	940	940	940	-
30 min at sea level	810	822	-	855	885	-
Cont. OEI at sea level	-	-	820	-	-	860
Take-off	810	810	810	810	810	825
Max. Cont.	765	765	810	810	810	785



1.2 Maximum Exhaust Gas Temperature (EGT) :

	PT6T-6
	(°C)
Starting Transient (2 sec)	760
2.5 min at sea level	645
30 min at sea level	624
Take-off	624
Max. Cont.	593

1.3 Oil Temperature:

Refer to Installation Manual.

1.4 Fuel Temperature, °C

Refer to Installation Manual.

**2. Speed Limits**

PT6T-3	Output Speed (rpm) when Governor P/N 3018712 is fitted	Output Speed (rpm) when Governor P/N 3020150 is fitted	Gas Generator Speed (rpm)
Maximum Continuous	6600 (100%)	6798 (103%)	38100 (100%)
No load	6798 (103%)	6798 (103%)	24500 (64.3%)
30 min OEI at sea level	6600 (100%)	6798 (103%)	38100 (100%)
Take-off	6600 (100%)	6798 (103%)	38100 (100%)

PT6T-3B PT6T-3BE	Output Speed (rpm)	Gas Generator Speed (rpm)
Maximum Continuous	6600 (100%)	38800 (100,8%)
No load	6930 (105%)	24500 (64.3%)
30 min OEI at sea level	6600 (100%)	38800 (100,8%)
2.5 min OEI at sea level	6600 (100%)	39400 (103,4%)
Take-off	6600 (100%)	38800 (100,8%)



PT6T-3D	Output Speed (rpm)	Gas Generator Speed (rpm)
Maximum Continuous	6600 (100%)	39300 (103,2%)
No load	6930 (105%)	24500 (64.3%)
Max Continuous OEI at sea level	6600 (100%)	39500 (103,7%)
2.5 min OEI at sea level	6600 (100%)	41600 (109,2%)
Take-off	6798 (103%)	39300 (103,2%)

PT6T-3DE	Output Speed (rpm)	Gas Generator Speed (rpm)
Maximum Continuous	6600 (100%)	39300 (103,2%)
No load	6930 (105%)	24500 (64.3%)
30 min OEI at sea level	6600 (100%)	40250 (105,7%)
2.5 min OEI at sea level	6600 (100%)	41600 (109,2%)
Take-off	6798 (103%)	39300 (103,2%)

PT6T-3DF	Output Speed (rpm)	Gas Generator Speed (rpm)
Maximum Continuous	6600 (100%)	39300 (103,2%)
No load	6930 (105%)	24500 (64.3%)
30 min OEI at sea level	6600 (100%)	40700 (106,8%)
2.5 min OEI at sea level	6600 (100%)	41600 (109,2%)
Take-off	6798 (103%)	39300 (103,2%)



PT6T-6	Output Speed (rpm)	Gas Generator Speed (rpm)
Maximum Continuous	6600 (100%)	38400 (100.8%)
No load	6798 (103%)	24500 (64.3%)
30 min at sea level	6600 (100%)	38400 (100.8%)
2.5 min at sea level	6600 (100%)	39000 (100.8%)
Take-off	6600 (100%)	38400 (100.8%)

PT6T-9	Output Speed (rpm)	Gas Generator Speed (rpm)
Maximum Continuous	6798 (103%)	38100 (100%)
Continuous OEI	6798 (103%)	39500 (103,4%)
2 min OEI	6798 (103%)	40160 (105,4%)
30 sec OEI	6798 (103%)	41200 (108,1%)
Take-off	6798 (103%)	38850 (102%)

### 3. Maximum Permissible Engine Torque:

	PT6T-3	PT6T-3B PT6T-3BE	PT6T-3D	PT6T-3DE
	(Nm)	(Nm)	(Nm)	(Nm)
Acceleration (< 10 sec)	1084	1186	1288	1288
30 sec OEI	-	-	-	-
2 min OEI	-	-	-	-
2.5 min	-	1104	1222	1222
30 min	-	1104	-	1164
Cont. OEI	-	-	1104	-
Take-off	1000 <sup>1)</sup>	1000 <sup>1)</sup>	1000 <sup>2)</sup>	1000 <sup>2)</sup>
Max. Cont.	-	-	-	-



	PT6T-3DF	PT6T-6	PT6T-9
	(Nm)	(Nm)	(Nm)
Acceleration (< 10 sec)	1288	1186	-
30 sec OEI	-	-	1369 <sup>3)</sup>
2 min OEI	-	-	1241 <sup>3)</sup>
2.5 min	1222	1104 <sup>1)</sup>	-
30 min	1164	1104 <sup>1)</sup>	-
Cont. OEI	-	-	1186 <sup>3)</sup>
Take-off	1000 <sup>2)</sup>	1000 <sup>1)</sup>	1000 <sup>3)</sup>
Max. Cont.	-	-	891 <sup>3)</sup>

<sup>1)</sup> Speed range 6000 to 6600 rpm

<sup>2)</sup> Speed range 6000 to 6798 rpm

<sup>3)</sup> Speed range 6402 to 6798 rpm

### 3. Pressure Limits

#### 3.1 Fuel Pressure

Refer to Installation Manual.

#### 3.2 Oil Pressure

Refer to Installation Manual.

### 4. Oil capacity, consumption limit

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

### 5. Time Limited Dispatch

Not applicable to PT6T series engines equipped with hydro-mechanical control.

The PT6-T-9 engine is not approved for Time Limited Dispatch in accordance with CS-E 1030.

## V. Operating and Service Instructions

Engine Model	Engine Operating Instructions	Engine Installation Manual	Engine Maintenance Manual	Engine Overhaul Manual	Service Bulletins *
PT6T-3	PT6T-3 series	PT6T-3 series	3017042	3017043	5000 series
PT6T-3B	PT6T-3 series	PT6T-3 series	3017042	3017043	5000 series
PT6T-3BE	PT6T-3 series	PT6T-3 series	3017042	3017043	5000 series
PT6T-3D	PT6T-3 series	PT6T-3 series	3040592	3040593	5000 series
PT6T-3DE	PT6T-3 series	PT6T-3 series	3040592	3040593	5000 series



PT6T-3DF	PT6T-3 series	PT6T-3 series	3040592	3040593	5000 series
PT6T-6	3024841	PT6T-6 series	3024842	3024843	5000 series
PT6T-9	PT6T-9 series	PT6T-9 series	3053182	3053183	5000 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 static sea level ICAO Standard Atmospheric conditions with compressor intake screen installed, no external accessory loads and no air bleed. Power may be restored in hot-day conditions by means of water or water/methanol injection when accomplished in accordance with the requirements of the P&WC Installation Manual.
- Note 3:** For the PT6T-3, PT6T-3B, PT6T-3BE, PT6T-3D, PT6T-3DE, PT6T-3DF, and PT6T-6 models the unit is approved as a multiple engine for installation in CS 29 Category "A" transport helicopters, and comprises two separate power sections capable of independent operation. The unit is also approved as a single engine. The engine also meets the requirements of BCAR Sub-Section C.4 with regard to the use of Maximum and Intermediate Contingency Powers not exceeding the approved operating limitations for 2.5 Minute and 30 Minute Powers respectively..
- Note 4:** These engines meet FAA (FAR 33.68) and EASA (CS-E 780) requirements for operation in icing conditions when the intake system conforms with the appropriate Installation Manual Instructions for inertial separation of snow and icing particles. The engines also meet FAA (FAR 33.27) and EASA (CS-E 840) requirements for adequate disc integrity and rotor blade containment.
- Note 5:** The PT6T-9 is a derivative of PT6T-3 Twin-Pac engine models. The certification basis of earlier Twin Pac models, does not address the 30 second and 2 minute OEI ratings of the PT6T-9. TCCA Special Condition 2000-03 was issued address these ratings.  
The following definitions are specified by SCA 2000-03:  
"Twin-Pac Engine Configuration" means two power section modules and a combining gearbox module.  
"Twin-Pac OEI" means operation with one power section module not providing power and the other power section module driving the combining gearbox.
- Note 6:** Software for the Electronic Engine Control (EEC) for the PT6T-9 model has been developed and tested in accordance with the provisions of RTCA/D0178B Level A. The EEC has not been fire tested and therefore, must not be mounted in a designated fire zone.  
Lightning protection limits, including power quality, electromagnetic compatibility and interference for the engine electronic control system are specified in Section 6 of the Installation Manual.



- Note 7:** The EASA approved Airworthiness Limitations Section of the Instructions for Continued Airworthiness is published in the PT6T-9 maintenance manual P/N 3053182, chapter "Airworthiness Limitations Section".  
For the other models, the EASA approved airworthiness limitations are published in P&WC Engine Service Bulletin No. 5002 as revised.
- Note 8:** The recommended Operating Time Between Overhaul (TBO) and Hot Section Inspection (HSI) frequency is defined in the Service Bulletin SB 5003 for all models except PT6T-9 and in the Maintenance Manual for PT6T-9.



**SECTION: ADMINISTRATIVE**

**I. Acronyms and Abbreviations**

n/a

**II. Type Certificate Holder Record**

n/a

**III. Change Record**

<b>Issue</b>	<b>Date</b>	<b>Changes</b>	<b>TC issue</b>
Issue 01	30 October 2015	Initial Issue	Initial Issue, 30 October 2015

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