



TYPE-CERTIFICATE DATA SHEET

No. IM.E.094

for Engine
PT6A-100 series engines

Type Certificate Holder
Pratt & Whitney Canada

1000 Marie-Victorin
Longueuil Quebec
J4G 1A1
Canada

For Models:

PT6A-35
PT6A-110
PT6A-112
PT6A-114
PT6A-114A
PT6A-121
PT6A-135
PT6A-135A
PT6A-140
PT6A-140A
PT6A-140AG



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I. General

1. Type / Models

PT6A-35, PT6A-110, PT6A-112, PT6A-114, PT6A-114A, PT6A-121, PT6A-135, PT6A-135A, PT6A-140, PT6A-140A, PT6A-140AG

2. Type Certificate Holder

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

Design Organisation Approval No.: n/a

3. Manufacturers

Pratt and Whitney Canada

4. EASA Certification/JAA Validation Application Date

24 January 2013 for PT6A-140
06 May 2021 for PT6A-140A and PT6A-140AG

5. Validation Reference Date

1 March 1974 (for all models except PT6A-140, PT6A-140A and PT6A-140AG)
30 December 2006 (for models PT6A-140, PT6A-140A and PT6A-140AG)

6. EASA Type Certification Date

PT6A-35 13 Aug. 2002	PT6A-110 17 Jan. 1980	PT6A-112 21 Nov. 1979	PT6A-114 22 Aug. 1986	PT6A-114A 08 May 1992
PT6A-121 23 Dec. 2002	PT6A-135 13 Nov. 1980	PT6A-135A 06 Sep. 1984	PT6A-140 15 Jan. 2014	PT6A-140A 27 March 2023
PT6A-140AG 27 March 2023				

EASA Type-Certification for the above mentioned engine models, except PT6A-140, PT6A-140A and PT6A-140AG 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 65), LBA Germany (TC/TCDS 7020) and ENAC Italy validation letters issued following NAA approvals prior to 28 September 2003.



II. Certification Basis

1. Reference Date for determining the applicable airworthiness requirements:

10 June 1981

2. Transport Canada Certification Basis details

see Transport Canada TCDS E-15

3. EASA Certification Basis

3.1. Airworthiness Standards

- FAR Part 33 effective 1 February 1965, and amendments 33-1 to 33-5 (all models except PT6A-140, PT6A-140A and PT6A-140AG)
- CS-E Amendment 1 dated 03 December 2007 (for models PT6A-140, PT6A-140A and PT6A-140AG)

3.2. Special Conditions (SC)

None

3.3. Equivalent Safety Findings (ESF)

None for all models except PT6A-140, PT6A-140A and PT6A-140AG

For models PT6A-140, PT6A-140A and PT6A-140AG only:

CS-E 790 Ingestion of Rain and Hail, Ingestion of Large Hailstones

3.4. Deviations

None

3.5. Environmental Protection

CS-34, Amendment 4 in accordance with CS-E 1010

III. Technical Characteristics

1. Type Design Definition

As defined by the applicable PT6A-35, PT6A-110, PT6A-112, PT6A-114, PT6A-114A, PT6A-121, PT6A-135, and PT6A-135A Engine Parts Lists.

For PT6A-140: Engine Assembly Drawing No. 3076226 Change A and subsequent revisions.

For PT6A-140A: Engine Assembly Drawing No. 3079594 Change A and subsequent revisions.

For PT6A-140AG: Engine Assembly Drawing No. 3079411 Change A and subsequent revisions.



2. Description

The PT6A-100 series turboprop engines comprise a 2-stage reduction gearbox, single stage power turbine, single stage gas generator turbine and 4 stage gas generator compressor (3 axial, 1 centrifugal) and a single annular combustion chamber. The fuel control is purely hydro-mechanical. The accessory gearbox design is common for all PT6A-100 series engines.

3. Equipment

Approved equipment is defined in the applicable PT6A-35, PT6A-110, PT6A-112, PT6A-114, PT6A-114A, PT6A-121, PT6A-135, and PT6A-135A Engine Parts Lists, in Engine Assembly Drawing No. 3076226 Change A and subsequent revisions for the PT6A-140, in Engine Assembly Drawing No. 3079594 Change A and subsequent revisions for the PT6A-140A and Engine Assembly Drawing No. 3079411 Change A and subsequent revisions for the PT6A-140AG.

4. Dimensions and Weight

<i>Model</i>	<i>Overall Length (mm)</i>	<i>Overall Diameter (mm)</i>	<i>Dry Spec. Weight (kg)</i>
PT6A-35	1572	596	152
PT6A-110	1572	584	156
PT6A-112	1572	584	156
PT6A-114	1572	596	163
PT6A-114A	1341	596	163
PT6A-121	1572	584	156
PT6A-135	1572	584	157
PT6A-135A	1572	584	157
PT6A-140	1629	727	189
PT6A-140A	1629	579	175
PT6A-140AG	1629	579	175



5. Ratings

Model	Maximum Continuous			Take-off (5 minutes)			Maximum Reverse		
	Shaft Power (kW)	Output Speed (rpm)	Gas Generator Speed (rpm)	Shaft Power (kW)	Output Speed (rpm)	Gas Generator Speed (rpm)	Shaft Power (kW)	Output Speed (rpm)	Gas Generator Speed (rpm)
PT6A-35	559	2190	38100	559	2190	38100	537	2100	38100
PT6A-110	354	1900	38100	354	1900	38100	340	1825	38100
PT6A-112	373	1900	38100	373	1900	38100	354	1825	38100
PT6A-114	447	1900	38100	447	1900	38100	447	1825	38100
PT6A-114A	503	1900	38100	503	1900	38100	503	1825	38100
PT6A-121	459	1900	38100	459	1900	38100	441	1825	38100
PT6A-135, PT6A-135A	559	1900	38100	559	1900	38100	537	1825	38100
PT6A-140	647	1900	38850	647	1900	38850	647	1825	38850
PT6A-140A	671	1900	38850	671	1900	38850	671	1825	38850
PT6A-140AG	647	1900	38850	647	1900	38850	647	1825	38850

6. Control System

The PT6A-100 series engines are controlled by purely hydromechanical fuel control system. Refer to model specific Installation Manuals for unit part numbers.

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

7.1 Fuel Type

For PT6A-35, PT6A-114, PT6A-114A, PT6A-135, PT6A-135A engine models the approved fuels and additives must conform to the latest revision of P&WC Service Bulletin SB 1244.

For PT6A-110, PT6A-112 and PT6A-121 engine models the approved fuels and additives must conform to the latest revision of P&WC Service Bulletin SB 12044.

For PT6A-140, PT6A-140A and PT6A-140AG engine models refer to the applicable Maintenance Manual for approved fuels and additives.

7.2 Oil Type

The approved oils must conform to the latest revision of the following PWC Service Bulletins:
SB 1001 (PT6A-35, PT6A-114, PT6A-114A, PT6A-135, PT6A-135A)
SB 12001 (PT6A-110, PT6A-112, PT6A-121)

For PT6A-140, PT6A-140A and PT6A-140AG engine models refer to the applicable Maintenance Manual for approved oils.



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

Maximum External (% of inlet airflow): 5.25
Maximum during Start (kg/min): 0.68

IV. Operating Limitations

1. Temperature Limits

1.1. Maximum Inter-Turbine Temperature (ITT, °C)

<i>Rating</i>	<i>Maximum Continuous</i>	<i>Take-off (5 minutes)</i>	<i>Starting (Ground and Air)</i>
PT6A-35	805	805	1090
PT6A-110	685	685	1090
PT6A-112	725	725	1090
PT6A-114	805	805	1090
PT6A-114A	805	805	1090
PT6A-121	725	725	1090
PT6A-135	805	805	1090
PT6A-135A	805	805	1090
PT6A-140	825	850	1090
PT6A-140A	860	870	1090
PT6A-140AG	825	870	1090

1.2. Maximum Air Inlet Temperature (°C)

<i>Rating</i>	<i>Maximum Continuous</i>	<i>Take-off (5 minutes)</i>
PT6A-35	33.9	33.9
PT6A-110	38	38
PT6A-112	56	56
PT6A-114	57.8	57.8
PT6A-114A	46.1	46.1
PT6A-121	40	40
PT6A-135	29.5	29.5
PT6A-135A	33.9	33.9
PT6A-140	27	39
PT6A-140A	31	37
PT6A-140AG	26	44



1.2. Oil Temperature (°C)

Minimum: -40
Maximum Continuous Operation: 99
Maximum (10 minutes): 104

1.3. Fuel Temperature

Refer to the applicable Installation Manual.

2. Maximum Permissible Rotor Speeds:

<i>Engine Model</i>	<i>Gas Generator (N1) (rpm)</i>	<i>Gas Generator (N1) Transient (rpm)</i>	<i>Power Turbine Module Output (N2) (rpm)</i>	<i>Power Turbine Module Output (N2) Transient 20 sec (rpm)</i>
PT6A-35	38100 (101.7%)	38500 (102.8%) for 2 sec	2190 (99.6%)	2410 (110%)
PT6A-110,PT6A-112, PT6A-114,PT6A-114A, PT6A-121,PT6A-135, PT6A-135A	38100 (101.7%)	38500 (102.8%) for 2 sec	1900 (100 %)	2090 (110%)
PT6A-140	38850 (103.7%)	40000 (106.8) for 20 sec	1900 (100 %)	2090 (110%)
PT6A-140A	38850 (103.7%)	40000 (106.8) for 20 sec	1900 (100 %)	2090 (110%)
PT6A-140AG	38850 (103.7%)	40000 (106.8) for 20 sec	1900 (100 %)	2090 (110%)

100% gas generator speed is defined as 37,468 rpm. Propeller speed of 100% of 1900 rpm corresponds to power turbine speed of 31914 rpm. For the PT6A-35 the 100% propeller speed of 2200 rpm corresponds to power turbine speed of 33159 rpm. For the PT6A-140, PT6A-140A and PT6A-140AG propeller speed of 100% of 1900 RPM corresponds to power turbine speed of 32661 RPM.

3. Maximum Output Torque:

<i>Rating</i>	<i>Maximum-Steady State (Nm)</i>	<i>Transient (Nm)</i>
PT6A-35	2671	2847
PT6A-110	1781	2305
PT6A-112	2007	2576
PT6A-114	2685	3254
PT6A-114A	2685	3254
PT6A-121	2318	2983
PT6A-135	2820	3254
PT6A-135A	2820	3254
PT6A-140	3390	3559
PT6A-140A	3525	4000
PT6A-140AG	3390	3797



4. Pressure Limits

-Fuel Pressure Limit at Engine Pump Inlet:

Refer to Installation Manual.

-Oil Pressure Limits (at reference oil temperature 60°C-70°C):

	<i>Gas generator speed at or above 27000 rpm</i>	<i>Gas generator speed below 27000 rpm</i>
PT6A-35, -114, -114A, -135, -135A	586-724 kPa (85-105 psi)	276 kPa (40 psi) minimum
PT6A-110, -112, -121	592-690 kPa (80-100 psi)	276 kPa (40 psi) minimum
PT6A-140, -140AG	586-827 kPa (85-120 psi)	276 kPa (40 psi) minimum
PT6A-140A	620-896 kPa (90-130 psi)	276 kPa (40 psi) minimum

5. Installation Assumptions

The installation assumptions are quoted in the applicable engine model Installation Manual.

6. Time Limited Dispatch (TLD)

Not applicable as the control system is purely hydromechanical.

V. Operating and Service Instructions

<i>Engine Model</i>	<i>Engine Operating Instructions</i>	<i>Engine Installation Manual</i>	<i>Engine Maintenance Manual</i>	<i>Engine Overhaul Manual</i>	<i>Service Bulletins</i>
PT6A-35	3056646	PT6A-35	3058362	3021243	as issued for each engine model
PT6A-110	3032441	PT6A-100 Series	3030442	3030443	
PT6A-112	3032241	PT6A-100 Series	3030442	3030443	
PT6A-114	3034541	PT6A-100 Series	3043512	3021243	
PT6A-114A	3037338	PT6A-100 Series	3043512	3021243	
PT6A-121	3033641	PT6A-100 Series	3030442	3030443	
PT6A-135	3030341	PT6A-100 Series	3043512	3021243	
PT6A-135A	3033541	PT6A-100 Series	3043512	3021243	
PT6A-140	3075740	3075740	3075742	3075743	
PT6A-140A	3079605	3079605	3077182	3077183	
PT6A-140AG	3079575	3079575	3079582	3079583	



VI. Notes

1. Dry weight includes basic engine accessories and optional equipment as listed in the manufacturer's engine specification.
2. The engine ratings are based on dry sea level static ICAO Standard Atmospheric conditions. Compressor intake screen installed. No external accessory loads and no air bleed. The quoted ratings are obtainable on a test stand with the specified fuel and oil, without intake duct and using exhaust stubs with a total final effective area 447.5 cm².
3. The air inlet temperatures quoted are the highest at which maximum continuous and take-off ratings can be achieved.
4. These engines meet FAA (FAR 33.68) and CS (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 CS (CS-E 840) requirements for adequate disc integrity and rotor blade containment.
5. The PT6A-140, PT6A-140A and PT6A-140AG engines, when separated at "C" flange, may be overhauled or maintained as two modules; the Gas Generator Module and the Power Section Module as follows:

Gas Generator Module	PT6A-140	Part Number 3076223
	PT6A-140A	Part Number 3079592
	PT6A-140AG	Part Number 3079409
Power Section Module	PT6A-140	Part Number 3076225
	PT6A-140A	Part Number 3079593
	PT6A-140AG	Part Number 3079410

6. For models PT6A-140, PT6A-140A and PT6A-140AG the EASA approved Airworthiness Limitations Section of the Instructions for Continued Airworthiness is published in the applicable Engine Maintenance Manual as listed in section V, chapter "Airworthiness Limitations Section". For the other models, the EASA approved airworthiness limitations are published in P&WC Engine Service Bulletin Nos. 1002 (PT6A-35, PT6A-114, PT6A-114A, PT6A-135, PT6A-135A) and 12002 (PT6A-110, PT6A-112, PT6A-121) as revised.
7. The recommended Operating Time Between Overhaul (TBO) and Hot Section Inspection (HSI) frequency is defined in the following Service Bulletins:
SB 1703 for the PT6A-114, -114A
SB 1803 for the PT6A-135, -135A
SB 12003 for the PT6A-110, -112, -121
SB 1403 for the PT6A-35

For models PT6A-140, PT6A-140A and PT6A-140AG The recommended Operating Time Between Overhaul (TBO) and Hot Section Inspection (HSI) frequency is defined in the applicable Engine Maintenance Manual as listed in section V.



SECTION: ADMINISTRATIVE

I. Acronyms and Abbreviations

n/a

II. Type Certificate Holder Record

n/a

III. Change Record

TCDS Issue	Date	Changes	TC issue date
Issue 01	15 January 2014	Initial issue	Initial Issue, 15 January 2014
Issue 02	17 January 2014	Editorial changes	As for issue 01 above
Issue 03	27 March 2023	-Transfer into the new EASA TCDS format -Addition of PT6A-140A and PT6A-140AG models	Amended, 27 March 2023

-END-

