TYPE-CERTIFICATE DATA SHEET

No. IM.E.126

for
PW210 series engines

Type Certificate Holder
Pratt and Whitney Canada

1000 Marie-Victorin
Longueuil
Quebec
Canada J4G 1A1

For Models:

PW210S
PW210A

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I. General

1. Type/ Model

PW210S, PW210A

2. Type Certificate Holder

Pratt and Whitney Canada
1000 Marie-Victorin
Longueuil,
Quebec
Canada J4G 1A1

3. Manufacturer

Pratt and Whitney Canada

4. Date of Application

PW210S	**PW210A**			
05 Jan 2006	21 July 2011			

5. EASA Certification Reference Date:

PW210S	PW210A			
16 October 2008	11 July 2011			

6. EASA Certification Date:

PW210S	PW210A			
5 July 2013	5 December 2014			

I. Certification Basis

1. State of Design Authority Certification Basis

see Transport Canada TCDS E-36

2. Reference Date for determining the applicable airworthiness requirements

3. EASA Certification Basis

3.1. Airworthiness Standards

PW210S	**PW210A**
CS-E Amendment 1	CS-E Amendment 3, dated 23 December 2010

3.2. Special Conditions (SC)

PW210S	PW210A
Engine Operation in Auxiliary Power Unit (APU) Mode 30 Minutes Take-Off Power Rating	- 30 Minutes Take-Off Power Rating

3.3. Equivalent Safety Findings

PW210S	PW210A
None	None

3.4. Deviations

PW210S	PW210A
None	None

3.5. Environmental Protection

PW210S	PW210A
CS-34.1. Fuel Venting	CS-34.1. Fuel Venting

III. Technical Characteristics

1. Type Design Definition

As defined by the applicable Engine Assembly Drawings:

PW210S	PW210A
30L0022	30L1860

2. Description

Compressor rotor, comprising of a single mixed flow and a single centrifugal flow rotors, driven by a single stage high pressure turbine rotor. Combustion system comprised of a reverse flow annular combustor. A two stage power turbine drives the helicopter rotor system through an engine reduction gearbox. The engine incorporates a self-contained oil system comprising of an oil tank and air cooled oil cooler. The engine is controlled by a dual channel EEC without manual back-up. The starter and engine mounts are not part of the engine definition.

3. Equipment

The engine equipment list is included in the Type Design Definition.

4. Dimensions

Model	Overall Length	Radial Projection
PW210S	1.11 m	0.39 m
PW210A	1.11 m	0.38 m

5. Dry Weight

Model	Dry Weight
PW210S	162.4 kg
PW210A	161.2 kg

The Dry Weight includes Pratt & Whitney Canada supplied engine build-up components.

6. Ratings

The engine ratings are based on dry sea level ICAO standard atmospheric conditions, with no external accessory loads and no air bleed. The quoted ratings are obtainable on a test stand with the fuel, oil, reference intake and exhaust ducts as specified in the relevant Installation Manual.

6.1 All Engine Operative Power (kW)

Model	30 Minutes Power Take-off Power (5 minutes)	Maximum Continuous Power	Output shaft speed (rpm)
PW210S (1)	599	599	6409
PW210A (2)	652.8	614.9	14832

Power at 107.0 % output shaft speed = 6409 rpm
Power at 103.0 % output shaft speed = 14832 rpm

6.2 One Engine Inoperative (OEI) Power (kW)

PW210S:

30-second OEI	2-minute OEI	Continuous OEI	Output shaft speed
837	814	766	6409 rpm

PW210A:

Flat 30-sec and 2-min OEI*	Continuous OEI	Output shaft speed
905.5	768.6	14832 rpm

** "Flat 30-sec & 2-min OEI rating" is the combination of the 30-Second OEI Power and 2-Minute OEI Power identical ratings.*

7. Control System

Fuel control, IGV actuator and power management are controlled by a dual channel Engine Electronic Control. The engine control system hardware, software and components compatibility are controlled by part number in a SCID (System Configuration Identification Document) .

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

See applicable Engine Maintenance Manual for specific approved oil, fuel and additives.

9. Aircraft Accessory Drives

Model	Drive	Rotation	Speed Ratio	Max. Torque Continuous Nm	Max. Torque Static Nm	Max. Moment Overhang Nm
PW210S	Starter Generator	CW	0.235:1(1)	21.01 (3) 56.95 (4)	198.9	17.29
PW210S	AC Generator	CW	0.454:1 (2)	28.1	198.9	21.47
PW210A	Starter Generator	CW	0.251:1 (1)	16.00 (3) 56.94 (4)	146.9	16.94

(1) Ratio to Gas Generator Speed,
(2) Ratio to Power Turbine Speed,
(3) Generator mode
(4) Starting mode

10. Maximum Permissible Air Bleed Extraction

The maximum permissible air bleed extraction is 6% of the engine inlet airflow and nil during start. Refer to Installation Manual Section 2.

IV. Operating Limitations

1. Temperature Limits

Maximum Measured Gas Turbine Temperature Limits (°C):

Rating and Transient	**PW210S**	**PW210A**
30-second OEI	1006	N/A
2-minute OEI	980	N/A
Flat* 30-sec & 2-min OEI	N/A	1020
Continuous OEI	924	941
30 min Power	924	930
Take-off (5 minutes)	924 (**)	930
Maximum Continuous	886	868
Starting (2 seconds)	825	825

APU mode	760	N/A
Transient (20 seconds)	980	941

(*) *"Flat 30-sec & 2-min OEI rating" is the combination of the 30-Second OEI Power and 2-Minute OEI Power identical ratings.*
(**) *Refer to Installation Manual for initial Take-off ITT limit setting*

1.2 Oil Temperature:

Refer to Installation Manual Section 2

1.3 Fuel Inlet Temperature (ºC):

Refer to Installation Manual Section 5

2. Maximum Permissible Rotor Speeds (rpm) :

2.1 All Engine Operative:

Model	**Rotor Shaft**	**30 Min. Power Take-off (5 Minutes)**	**Maximum Continuous**	**Transient 20 seconds**
PW210S	Gas Generator Power Turbine Output Shaft	51000 28692 6514	51000 28692 6514	51900 31211 7085
PW210A	Gas Generator Power Turbine Output Shaft	50100 28120 15372	49200 28120 15372	50430 30293 16560

100% reference speeds:

PW210S Gas Generator: 51000 RPM
Power Turbine: 26383 RPM

PW210A Gas Generator: 51000 RPM
Power Turbine: 26342 RPM

2.2 One Engine Inoperative:

PW210S:

Rotor Shaft	**30-second OEI**	**2-minute OEI**	**Continuous OEI**
Gas Generator	52400	51900	51000
Power Turbine	28692	28692	28692
Output Shaft	6514	6514	6514

PW210A:

Rotor Shaft	Flat 30-sec and 2-min OEI	Continuous OEI
Gas Generator	51360	50430
Power Turbine	28120	28120
Output Shaft	15372	15372

3. Maximum Permissible Torque Limits (Nm):

PW210S :

30-second OEI	2-minute OEI	Continuous OEI	30 Min. Power Take-off (5 minutes)	Maximum Continuous	Transient (20 seconds)
1248	1212	1147	892	892	1212

PW210A :

Flat 30-sec and 2-min OEI	Continuous OEI	30 min Power Take-off (5 minutes)	Maximum Continuous	Transient (20 seconds)
583	494.9	420.3	395.9	641.3

4. Pressure Limits:

4.1 Fuel Pump Inlet pressure:

Refer to Installation Manual Section 5

4.2 Oil Pressure Limits:

Refer to Installation Manual Section 2

5. Installation Assumptions:

The engine is approved for multiple engine installation only.
Refer to Section 1 of the Installation Manual for Safety Analysis assumptions.

6. Dispatch Limitations: see Note 5

The engine has been approved for Time Limited Dispatch. The maximum rectification period for each dispatchable state is specified in the Airworthiness Limitations Section of the Maintenance Manual.

V. Operating and Service Instructions

Manuals	PW210S	PW210A
Engine Maintenance Manual	30L0892	*30L2392*
Engine Overhaul Manual	30L0893	*30L2393* *(see Note 9)*
Installation Manual	ER 6421	ER 7434
Operating Instruction Manual		
Electrical Interface Control Document	ER 6368	ER 7436

VI. Notes

Note 1: Lightning protection levels and electromagnetic interference are specified in the Installation Manual, Section 6.

Note 2: The Electronic Engine Control Unit must not be installed in a designated fire zone.

Note 3: The engines are approved to be fitted to rotorcraft only where the installation precludes foreign objects from entering the engine inlet as defined in CS-E 790(b) and CS-E 800.

Note 4: The EASA approved Airworthiness Limitations Section of the Instructions for Continued Airworthiness is published in the applicable “Engine Maintenance Manual, chapter 5 “Airworthiness Limitations”.

Note 5: The engine is equipped with a FADEC which is approved for Time Limited Dispatch (TLD). The dispatch criteria are defined in the Airworthiness Limitations Section of the Maintenance Manual. The TLD dispatchable fault configurations are defined in Electrical Interface Control document.

Note 6: The engine meets the CS requirement for operation in icing conditions within the envelope defined in FAR/CS-29 Appendix C when installed and operated in accordance with the Installation Manual.

Note 7: The software contained in the Electronic Engine Control has been designed, developed, tested and documented in accordance with the provisions of Critical Catefory, Level A of RTCA / DO178B. The Electronic Engine Control also includes CPLD that meets Level A of RTCA / DO254

Note 8: For One Engine Inoperative (OEI) limits and appropriate maintenance actions refer to the Airworthiness Limitations Section of the Maintenance Manual

Note 9: Prior to issue of an accepted Overhaul Manual for the PW210A, overhauls are not permitted

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SECTION: ADMINISTRATIVE

I. Acronyms and Abbreviations

n/a

II. Type Certificate Holder Record

n/a

III. Change Record

Issue	Date	Changes	TC issue
Issue 04	03 August 2015	editorial	n/a

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