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I. General

1. Type/Models: 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. EASA Certification Application Date:

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			
4 July 2013	5 December 2014			

II. Certification Basis

1. Transport Canada Certification Basis Details: see Transport Canada TCDS E-36

2. EASA Certification Basis:

PW210S

2.1 Airworthiness Standards:

- CS-E Amendment 1

2.2 Special Conditions:

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

2.3 Deviations:

- None.

2.4 Equivalent Safety Findings:

- None

2.5 Environmental Standards:

- CS-34.1, Fuel Venting

PW210A

2.1 Airworthiness Standards:

- CS-E Amendment 3, dated 23 December 2010

2.2 Special Conditions:

- 30 Minutes Take-Off Power Rating

2.3 Deviations:

- None.

2.4 Equivalent Safety Findings:

- None

2.5 Environmental Standards:

- CS-34.1, Fuel Venting

III. Technical Characteristics

1. Type Design Definition:

As defined by the applicable Engine Assembly Drawings
30L0022 for the PW210S
30L1860 for the PW210A

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 and Weight:

Model	Overall Length	Radial Projection	Dry Weight
PW210S	1.11 m	0.39 m	162.4 kg
PW210A	1.11 m	0.38 m	161.2 kg

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

5. 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.

5.1 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

- (1) Power at 107.0 % output shaft speed = 6409 rpm
(2) Power at 103.0 % output shaft speed = 14832 rpm

5.2 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.

6. 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) .

7. Fluids

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

8. 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

9. 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. Operational Limits:

1. Temperature Limits:

1.1 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 (°C):

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	51000	51000	51900
	Power Turbine	28692	28692	31211
	Output Shaft	6514	6514	7085
PW210A	Gas Generator	50100	49200	50430
	Power Turbine	28120	28120	30293
	Output Shaft	15372	15372	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 <i>(see Note 9)</i>
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 Category, 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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