

European Aviation Safety Agency

EASA TYPE-CERTIFICATE DATA SHEET

Number : IM.E.017
Issue : 05
Date : 28 July 2009
Type : Pratt and Whitney Canada
PW206 & PW207 series engines

Variants

PW206A
PW206B
PW206B2
PW206C
PW206E
PW207C
PW207D
PW207D1
PW207D2
PW207E

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I. General

1. Type/Variants: PW206A, PW206B, PW206B2, PW206C, PW206E, PW207C, PW207D, PW207D1, PW207D2, PW207E

2. Type Certificate Holder:

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

3. Manufacturer:

Pratt and Whitney Canada Corp.

4. EASA Certification/JAA Validation Application Date:

PW206A	28 June 1991
PW206B	28 June 1991
PW206B2	8 December 1999
PW206C	22 June 1995
PW206E	1 October 1996
PW207C	17 January 2000
PW207D	15 May 1998
PW207D1	20 July 2007
PW207D2	20 July 2007
PW207E	8 December 1999

5. Certification Reference Date:

12 April 1990

6. EASA Certification Date:

PW206A	03 Nov. 1995 – DGAC-F Type Certificate M-IM42
PW206B	2 July 1996 – DGAC-F Type Certificate M-IM42
PW206B2	4 July 2002 – CAA UK Letter ref. 9/80/PW206/C01/1
PW206C	2 July 1996 – DGAC-F Type Certificate M-IM42
PW206E	8 June 1998 – DGAC-F Type Certificate M-IM42
PW207C	10 May 2005
PW207D	1 July 2002 – CAA UK letter ref. 9/80/PW207/C01/1
PW207D1	28 July 2009
PW207D2	28 July 2009
PW207E	31 October 2000 – CAA UK letter ref. 9/80/PW207/C01/2

EASA Type Certification for some of the PW206 & PW207 series engine models is granted, in accordance with Article 2 paragraph 3(a) of EU Commission Regulation EC 1702/2003, based on respective CAA United Kingdom validation letters or DGAC-France Type Certificates issued following JAA Validation Recommendation prior to 28 September 2003.

II. Certification Basis

1. Transport Canada Certification Basis:

See Transport Canada TCDS E-23

2. EASA Certification Basis:

2.1 Airworthiness Standards:

2.1.1 PW206A, PW206B, PW206C, PW206E

JAR-E change 8 dated 4 May 1990 plus Orange Paper E/91/1 dated 27 May 1991

2.1.2 PW206B2, PW207D, PW207E

JAR-E change 8 dated 4 May 1990 plus Orange Paper E/91/1 published 27 May 1991 and JAR-E650 as amended by Orange Paper E/97/1 effective 30 December 1997

2.1.3 PW207C

JAR-E change 8 dated 4 May 1990 plus Orange Paper E/91/1 published 27 May 1991 and JAR-E650 as amended by Orange Paper E/97/1 effective 30 December 1997 and CS-E570 effective 24 October 2003

2.1.4 PW207D1, PW207D2

JAR-E change 8 dated 4 May 1990, except paragraphs JAR-E 40(b)(3), JAR-E 570, JAR-E 650, JAR-E 820, JAR-E 830 and JAR-E 840(a) and (b), plus Orange Paper E/91/1 published 27 May 1991, and CS-E Initial Issue effective 24 October 2003 paragraphs CS-E 20(f), CS-E 40(b)(3), CS-E 50(j), CS-E 60(d), CS-E 140(d)(2), CS-E 570, CS-E 650, CS-E 690 (a)(3)(ii), CS-E 730, CS-E 740(c)(3)(iii) and (h)(2), CS-E 820, CS-E 830, CS-E 840(a) and (b) and CS-E 920

2.2 Special Conditions:

30-Second and 2-Minute One Engine Inoperative Rating:

Special Condition for Ratings for PW206B2, PW207D

Special Condition for Controls for PW206B2, PW207D

Special Condition for Provision for Instruments for PW206B2, PW207D

Special Condition for Conditions Applicable to Endurance Tests for PW206B2, PW207D

Special Condition for Endurance Tests – Inspection Checks and Calibration Tests for PW206B2, PW207D

Special Condition for Functioning for PW206B2, PW207D

Special Condition for Vibration Surveys for PW206B2, PW207D

Special Condition for Endurance Tests for PW206B2, PW207D, PW207D1 and PW207D2

Special Condition for Cyclic Endurance Test and Power Availability Test for PW206B2, PW207D, PW207D1 and PW207D2

Special Condition for Safe Life Determination for PW206B2, PW207D

Special Condition for Overtemperature Test for PW206B2, PW207D

Special Condition for Overtorque and Overspeed for PW206B2, PW207D

Override of 30-Second OEI limits for PW207D, PW207D1 and PW207D2.

2.3 Deviations:

JAR-E570(a)(4)(ii) and (a)(5)(ii) - Oil System (Impending Blockage Indication) for all engines except PW207C, PW207D1 and PW207D2

JAR-E570(a)(3) - Oil System (Oil Scavenge Pump Strainer) for PW206B, PW206C, PW206E, PW207E, PW206B2 and PW207D

2.4. Equivalent Safety Findings:

JAR-E740(c)(2) - Endurance Test Schedule for all engine models.

JAR-E840(a)(2) - Rotor Integrity Tests for all engine models except PW207D1 and PW207D2.

2.5 Environmental Standards:

ICAO Annex 16, Volume II, 2nd Edition, 1993. (Fuel Venting)

III. Technical Characteristics

1. Type Design Definition:

As defined by the applicable PW206A, PW206B, PW206B2, PW206C, PW206E, PW207C, PW207D, PW207D1, PW207D2, PW207E Engine Parts Lists.

2. Description:

Single stage centrifugal compressor, reverse flow annular combustor, single stage high pressure turbine, single stage free power turbine. Single channel Full Authority Digital Electronic Control System (FADEC) with 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 Installation Manual

4. Dimensions:

	Overall Length m (inches)	Overall Width m (inches)	Overall Height m (inches)
PW206A	0.93 (36.7)	0.54 (21.3)	0.62 (24.4)
PW206B	1.04 (41.0)	0.52 (20.5)	0.73 (28.8)
PW206B2	1.04 (41.0)	0.52 (20.5)	0.73 (28.8)
PW206C	0.93 (36.7)	0.54 (21.3)	0.62 (24.4)
PW206E	0.93 (36.7)	0.54 (21.3)	0.62 (24.4)
PW207C	0.93 (36.7)	0.54 (21.3)	0.62 (24.4)
PW207D	0.93 (36.7)	0.54 (21.3)	0.62 (24.4)
PW207D1	0.93 (36.7)	0.54 (21.3)	0.62 (24.4)
PW207D2	0.93 (36.7)	0.54 (21.3)	0.62 (24.4)
PW207E	0.93 (36.7)	0.54 (21.3)	0.62 (24.4)

5. Dry Weight:

	Weight ⁽¹⁾ kg (lb)
PW206A	107.5 (237)
PW206B	118.9 (262)
PW206B2	117.2 (260.6)
PW206C	107.5 (237)
PW206E	113.7 (250)
PW207C	113.7 (250)
PW207D	113.7 (250)
PW207D1	110.9 (244)
PW207D2	112.7 (248)
PW207E	113.7 (250)

(1) Includes Pratt and 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, and the reference intake and exhaust ducts as specified in the relevant Installation Manual.

6.1 All Engines Operative:

	Take-Off Power, 5 minutes, Sea Level kW (SHP)	Maximum Continuous Power, , Sea Level kW (SHP)	Output Shaft Speed rpm
PW206A	463 (621)	410 (550)	6240
PW206B	321 (431)	321 (431)	6134
PW206B2	333 (447)	321 (431)	6134
PW206C	418 (561)	418 (561)	6120
PW206E	482 (646)	426 (572)	6240
PW207C	426 (572)	426 (572)	6120
PW207D	426 (572)	426 (572)	6240
PW207D1	463 (621)	455 (610)	6240
PW207D2	463 (621)	455 (610)	6240
PW207E	482 (646)	426 (572)	6240

6.2 One Engine Inoperative (OEI):

	30-Second OEI kW (SHP)	2-Minute OEI kW (SHP)	2½ -Minute OEI kW (SHP)	30-Minute OEI kW (SHP)	Continuous OEI kW (SHP)	Output Shaft Speed rpm
PW206A			504 (676)		463 (621)	6240
PW206B			427 (573)		368 (493)	6134
PW206B2	547 (734)	534 (716)			404 (542)	6134
PW206C			487 (653)		472 (633)	6120
PW206E			509 (682)		482 (646)	6240
PW207C			555 (745)		482 (646)	6120
PW207D	504 (676)	504 (676)		426 (572)	426 (572)	6240
PW207D1	565 (758)	544 (730)		514 (689)	509 (681)	6240
PW207D2	565 (758)	544 (730)		514 (689)	509 (681)	6240
PW207E			543 (728)		482 (646)	6240

7. Control System:

Fuel controls and power management are controlled by an Electronic Engine Control (EEC) with a backup hydromechanical control. The hardware and software configuration of this system and the associated engine fuel pump and hydromechanical unit are controlled by the approved engine equipment list for each specific engine model and aircraft application.

8. Fluids (Fuel/Oil/Additives):

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

9. Aircraft Accessory Drives:

See Installation Manual

10. Maximum Permissible Air Bleed Extraction:

The maximum permissible air bleed extraction is 5% of the engine inlet airflow and nil during start for all engine models.

IV. Operational Limits:

1. Temperature Limits:

1.1 Maximum Measured Gas Turbine Temperature Limits:

1.1.1 All Engines Operative:

	Take-Off (5 minutes) °C	Maximum Continuous °C	Starting (2 seconds) °C	Transient (20 seconds) ⁽¹⁾ °C
PW206A	863	820	875	960
PW206B	854	820	875	972
PW206B2	900	835	875	950
PW206C	863	820	875	972
PW206E	863	820	875	972
PW207C	900	840	875	1000
PW207D	900	850	875	950
PW207D1	900	850	875	950
PW207D2	900	850	875	950
PW207E	900	850	875	1000

1.1.2 One Engine Inoperative (OEI):

	30-Second OEI °C	2-Minute OEI °C	2½ -Minute OEI °C	30-Minute OEI °C	Continuous OEI °C
PW206A			902		863
PW206B			930		885
PW206B2	990	950			900
PW206C			930		885
PW206E			930		885
PW207C			970		900
PW207D	990	950		925	900
PW207D1	990	950		925	900
PW207D2	990	950		925	900
PW207E			970		900

(1) For ratings of longer than 2 minutes duration

1.2 Maximum Oil Inlet Temperature Range:

	Minimum for Starting °C	Maximum for Continuous Operation °C	Minimum for Continuous Operation °C
PW206A	-45	110	71
PW206B	-45	120	71
PW206B2	-45	129.5	71
PW206C	-45	125	71
PW206E	-45	110	71
PW207C	-45	128.5	71
PW207D	-45	127	71
PW207D1	-45	127	71
PW207D2	-45	127	71
PW207E	-45	125	71

1.3 Fuel Inlet Temperature:

See Installation Manual

2. Maximum Permissible Rotor Speeds:

2.1 All Engines Operative:

	Rotor Shaft	Take-Off (5 Minutes) rpm	Maximum Continuous rpm	Transient 20 seconds rpm
PW206A	Output Shaft	6271	6271	6741
	Gas Generator	57250	57250	59772
	Power Turbine	41606	41606	44726
PW206B	Output Shaft	6165	6165	6741
	Gas Generator	57250	56500	59994
	Power Turbine	40891	40891	44726
PW206B2	Output Shaft	6165	6165	6741
	Gas Generator	57900	56500	59500
	Power Turbine	40891	40891	44726
PW206C	Output Shaft	6151	6151	6741
	Gas Generator	57250	56500	59994
	Power Turbine	40806	40806	44726
PW206E	Output Shaft	6271	6271	6741
	Gas Generator	57250	56500	59994
	Power Turbine	41606	41606	44726
PW207C	Output Shaft	6151	6151	6151
	Gas Generator	57900	56400	60348
	Power Turbine	40806	40806	44726
PW207D	Output Shaft	6271	6271	6741
	Gas Generator	57900	56400	59300
	Power Turbine	41606	41606	44726
PW207D1	Output Shaft	6271	6271	6741
	Gas Generator	57900	56400	59300
	Power Turbine	41606	41606	44726
PW207D2	Output Shaft	6271	6271	6741
	Gas Generator	57900	56400	59300
	Power Turbine	41606	41606	44726
PW207E	Output Shaft	6271	6271	6741
	Gas Generator	57900	56400	60348
	Power Turbine	41606	41606	44726

2.2 One Engine Inoperative (OEI):

	Rotor Shaft	30-Second OEI rpm	2-Minute OEI rpm	2½-Minute OEI rpm	30-Minute OEI rpm	Continuous OEI rpm
PW206A	Output Shaft Gas Generator Power Turbine			6271 58600 41606		6271 57250 41606
PW206B	Output Shaft Gas Generator Power Turbine			6165 59400 40891		6165 58250 40891
PW206B2	Output Shaft Gas Generator Power Turbine	6165 60500 40891	6165 59500 40891			6165 58250 40891
PW206C	Output Shaft Gas Generator Power Turbine			6151 59400 40806		6151 58250 40806
PW206E	Output Shaft Gas Generator Power Turbine			6271 59400 41606		6271 58250 41606
PW207C	Output Shaft Gas Generator Power Turbine			6151 59750 40806		6151 57900 40806
PW207D	Output Shaft Gas Generator Power Turbine	6271 60500 41606	6271 59300 41606		6271 58700 41606	6271 57900 41606
PW207D1	Output Shaft Gas Generator Power Turbine	6271 60500 41606	6271 59300 41606		6271 58700 41606	6271 57900 41606
PW207D2	Output Shaft Gas Generator Power Turbine	6271 60500 41606	6271 59300 41606		6271 58700 41606	6271 57900 41606
PW207E	Output Shaft Gas Generator Power Turbine			6271 59750 41606		6271 57900 41606

100% reference speeds: Power Turbine: 39807 rpm all engines except PW206B & B2
39123 rpm (PW206B & B2 only)
Gas Generator: 58000 rpm for all engines

3. Maximum Permissible Torque Limits:

3.1 All Engines Operative:

	Take-Off (5Minutes) N-m (lb-ft)	Maximum Continuous N-m (lb-ft)	20seconds Transient N-m (lb-ft)
PW206A	737 (544)	652 (481)	983 (725)
PW206B	500 (369)	500 (369)	831 (613)
PW206B2	519 (383)	500 (369)	732 (540)
PW206C	652 (481)	652 (481)	983 (725)
PW206E	737 (544)	652 (481)	983 (725)
PW207C	666 (491)	666 (491)	983 (725)
PW207D	652 (481)	652 (481)	847 (625)
PW207D1	709 (523)	696 (513)	832 (614)
PW207D2	709 (523)	696 (513)	832 (614)
PW207E	737 (544)	652 (481)	861 (635)

3.2 One Engine Inoperative:

	30-Second OEI N-m (lb-ft)	2-Minute OEI N-m (lb-ft)	2½-Minute OEI N-m (lb-ft)	30-Minute OEI N-m (lb-ft)	Continuous OEI N-m (lb-ft)
PW206A			771 (569)		737 (544)
PW206B			665 (491)		572 (421)
PW206B2	851 (628)	831 (613)			629 (464)
PW206C			759 (560)		737 (544)
PW206E			778 (574)		737 (544)
PW207C			866 (639)		751 (554)
PW207D	771 (569)	771 (569)		652 (481)	652 (481)
PW207D1	865 (638)	832 (614)		786 (580)	777 (573)
PW207D2	865 (638)	832 (614)		786 (580)	777 (573)
PW207E			831 (613)		737 (544)

4. Pressure limits:

4.1 Fuel Pump Inlet pressure:

See Installation Manual.

4.2 Oil Pressure Limits:

See Installation Manual.

5. Installation Assumptions:

The installation assumptions are quoted in the applicable Engine Installation Manual.

6. Time Limited Dispatch:

The engines are not herein approved for Time Limited Dispatch (see note 5).

V. Operating and Service Instructions

	Engine Maintenance Manual	Engine Overhaul Manual	Installation and Operating Instructions Manual
PW206A	3038324	3038325	PW206A
PW206B	3039732	3039733	PW206B
PW206B2	3039732	3039733	PW206B2
PW206C	3043322	3033323	PW206C
PW206E	3038324	3038325	PW206E
PW207C	3043322	3033323	PW207C
PW207D	3043612	3043613	PW207D Series
PW207D1	3071602	3071603	PW207D Series
PW207D2	3071602	3071603	PW207D Series
PW207E	3038324	3038325	PW207E

VI. Notes

1. Lightning protection levels and electromagnetic interference are specified in the Installation Manual, Section 6.
2. The Electronic Engine Control must not be installed in a designated fire zone.
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 JAR-E790(c) and JAR-E800.
4. The life limited parts are listed in Pratt & Whitney Canada Maintenance Manual, Airworthiness Limitations Section.
5. Dispatch is not permitted with faults in the FADEC or in any engine-associated equipment unless it is included in an approved MMEL. For PW206A, PW206C, PW206E, PW207C, PW207D, PW207D1, PW207D2 and PW207E engines, aircraft dispatch with failed engine T6 thermocouples is permitted for one ferry flight only and within the envelope declared in the relevant Installation Manual, Section 2.
6. The uninstalled engines meet the JAR requirement for operation in icing conditions within the envelope defined in JAR 29 Appendix C when installed and operated in accordance with the Installation Manual.
7. The software for the Electronic Engine Control has been developed and tested in accordance with the provisions of Flight Critical category (level 1) of RTCA DO 178A for PW206A, PW206B, PW206C and PW206E and the provisions of Flight Critical category (level A) of RTCA DO 178B for PW206B2, PW207C, PW207D, PW207D1, PW207D2 and PW207E.
8. The PW207D, PW207D1 and PW207D2 engines features a means for the override of the limits associated with the 30-Second OEI rating. The use of this override function is permitted for one excursion only of no longer than 20 seconds in any one flight and shall be followed by the overhaul of the engine. This override function does not constitute a rating and there is no performance credit associated with this function.
