

**COMANDO DA AERONÁUTICA
DEPARTAMENTO DE PESQUISAS E DESENVOLVIMENTO
CENTRO TÉCNICO AEROESPACIAL**

TYPE CERTIFICATE DATA SHEET Nº EM-8105

Type Certificate Holder:

PRATT & WHITNEY CANADA, INC.
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CANADA

EM-8105

Sheet 01

PRATT & WHITNEY

PT6T-3B
PT6T-3D
PT6T-3DE
PT6T-3DF

February 2002

Engines of models described herein conforming with this data sheet, which is part of Type Certificate No.8105, meet the minimum standards for use in certificated aircraft in accordance with pertinent aircraft data sheets and applicable portions of the Brazilian Aeronautical Regulations provided they are installed, operated, and maintained as prescribed by the approved manufacturer's manuals and other instructions.

MODELS PT6T-3B, PT6T-3D, PT6T-3DE and PT6T-3DF.

TYPE Twin Power Section Turboshaft.

RATINGS (See Note 1)	PT6T-3B	PT6T-3D	PT6T-3DE	PT6T-3DF
Maximum continuous				
Total output shaft, kW (hp)	1 193 (1 600)	--	--	--
Single power section shaft, kW (hp)	597 (800)	--	--	--

RATINGS (Cont.)		PT6T-3B	PT6T-3D	PT6T-3DE	PT6T-3DF
	Takeoff				
	Total output shaft, kW (hp)	1 342 (1 800)	--	--	--
	Single power section shaft, kW (hp)	671 (900)	--	--	--
	30 min. at sea level				
	Single power section shaft, kW (hp)	723 (970)	#	805 (1079)	--
	Continuous OEI power rating				
	Single power section shaft, kW (hp)	#	764 (1024)	#	#
	2 ½ min. at sea level				
	Single power section shaft, kW (hp)	764 (1025)	846 (1133)	--	--
DIMENSIONS	Nominal length, cm (in)	167.1 (65.8)	--	--	--
	Nominal width, cm (in)	110.5 (43.5)	--	--	--
	Nominal height, cm (in)	82.8 (32.6)	--	--	--
CENTER OF GRAVITY	Forward of gearbox mount plane, cm (in)	53.64 (21.12)	54.08 (21.29)	--	--
	Above engine centerline, cm (in)	4.42 (1.74)	4.45 (1.75)	--	--
	Right side of engine centerline, cm (in)	0.46 (0.18)	--	--	--
	Forward - direction from combining gearbox toward power section intake				
WEIGHT (DRY)	Specification weight – dry, kg (lb)	299.3 (660.0)	306.6 (676)	--	308 (679)
	Additional equipment – dry, kg (lb)	17.0 (37.5)	--	--	--
	Weight of oil & fuel to wet engine & full tank – approx, kg (lb)	16.9 (37.3)	--	--	--
	Total wet weight – approx, kg (lb)	333.2 (734.8)	340.6 (750.8)	--	342 (753.8)
FUEL	JP-1, JP-4 and JP-5 fuel conforming to PWA Specification No. 522 and later revisions (see Note 2).				

		PT6T-3B	PT6T-3D	PT6T-3DE	PT6T-3DF
OIL	Synthetic type conforming to the current PWA 521 Type I or PWA 521Type II Specifications. Pratt & Whitney Canada Service Bulletin 5001 lists approved brand oils.				
OIL CAPACITY	Power Section (each)				
	Usable, liters (U.S.gal)	2.82 (0.75)	--	--	--
	Unusable, liters (U.S.gal)	3.23 (0.85)	--	--	--
	Total, liters (U.S.gal)	6.05 (1.60)	--	--	--
	Gearbox				
	Usable, liters (U.S.gal)	0.95 (0.25)	--	--	--
	Unusable, liters (U.S.gal)	3.87 (1.00)	--	--	--
	Total, liters (U.S.gal)	4.82 (1.25)	--	--	--
TEMPERATURE LIMITS		See Note 2	--	--	--
PRESSURE LIMITS		See Note 5	--	--	--
OUTPUT TORQUE		See Note 4	--	--	--
IGNITION	Ignition Exciter	Bendix	TGLN-28	--	--
	Igniter Plugs	Bendix	10-380700 or	--	--
		Bendix	10-390667-1	--	--
		AC	YB6	--	--
		Champion	34055	--	--
AIR BLEED		See Note 10	--	--	--

LEGEND

-- Same as preceding
Does not apply

IMPORT REQUIREMENTS

Each engine imported separately and/or spare parts must be accompanied by an export airworthiness approvals issued by a foreign primary authority approval attesting that the particular engine and/or parts were submitted to the governmental quality control before delivery and are in conformity with the CTA approved type design.

CERTIFICATION BASIS

The Certification Basis for the engine are those indicated in the RBHA 33 which endorses the FAR 33 effective February 1, 1965, as amended by FAR 33-1 through 33-4 effective April 23, 1971 plus Special Conditions 33-23-EA-6 dated June 8, 1970, including amendment No. 1.

Model	Application	Issued TC
PT6T-3B	20 Aug. 1980	30 Dec. 1981
PT6T-3D	20 Nov. 2000	25 Oct. 2001
PT6T-3DE	20 Nov. 2000	25 Oct. 2001
PT6T-3DF	20 Nov. 2000	25 Oct. 2001

NOTES**NOTE 1**

The engine ratings are based on static sea level conditions.
Compressor inlet air (dry) 15°C (59°F), 101.32 kPa (29.92 inHg).
Compressor intake screen installed.
No external accessory loads and no airbleed.

NOTE 2

Temperature Limitations

Maximum Interturbine Temperature (ITT), °C (°F)

	PT6T-3B	PT6T-3D	PT6T-3DE	PT6T-3DF
Maximum Continuous	765 (1 410)	810 (1 490)	--	--
30 min at sea level	822 (1 512)	#	855 (1 571)	885 (1 625)
2 ½ min at sea level	850 (1 562)	940 (1 724)	--	--
Take-off	810 (1 490)	810 (1 490)	--	--
Starting transient (2 sec.)	1 090 (1 995)	--	--	--
Continuous OEI at sea level	#	820 (1 508)	#	#

NOTE 2		PT6T-3B	PT6T-3D	PT6T-3DE	PT6T-3DF
(Cont.)	Oil Temperature °C (°F)				
	Takeoff and maximum continuous, 0°C (32°F) to 115°C (240°F)				
	Limited periods of 5 minutes at 135°C (275°F)				
	Minimum Oil Temperature for starting, PWA 521 Type II -40°C (-40°F)				
	PWA 521 Type I -54°C (-65°F)				
NOTE 3	Maximum Permissible Engine Rotor Speeds (see Note 1)				
	Maximum Continuous				
	Output rpm (%)	6 600 (100)	6 600 (100)	--	--
	Gas Generator rpm	38 800	39 300	--	--
	Takeoff				
	Output rpm (%)	6 600 (100)	6 798 (103)	--	--
	Gas Generator rpm	38 800	39 300	--	--
	30 minutes at sea level				
	Output rpm (%)	6 600 (100)	#	6 600 (100)	--
	Gas Generator rpm	38 800	#	40 250	40 700
	2 1/2 min at sea level				
	Output rpm (%)	6 600 (100)	--	--	--
	Gas Generator rpm	39 400	41 600	--	--
	Continuous OEI				
	Output rpm	#	6 600 (100)	#	
	Gas Generator rpm	#	39 500	#	

	PT6T-3B	PT6T-3D	PT6T-3DE	PT6T-3DF
NOTE 4 Allowable Torque (Max) Each Section, N.m (lb.ft)				
Maximum Continuous	890 (657)	--	--	--
30 minutes at sea level	1 104 (815)	#	1 164 (859)	1164 (859)
2 ½ min. at sea level within range of 6 000 to 6 600 rpm	1 104 (815)	1 222 (902)	--	--
Takeoff (applies within range of 6 000 to 6 600 rpm (6 000 to 6 798 for -3D)	1 000 (738)	--	--	--
Acceleration	1 186 (875)	1 288 (950)	--	--

NOTE 5 Fuel and Oil Pressure Limits

Fuel Inlet Pressure:

Minimum pressure at the inlet to the engine driven fuel pumps must be such that the vapor/liquid ratio of the fuel does not exceed 0.1 for continuous operation and does not exceed 0.3 for emergency operation. Fuel pump operation with vapor/liquid ratios between 0.1 and 0.3 is limited to a cumulative time of 10 hours in any pump overhaul period. If fuel pressure at engine inlet interface is maintained at least 5 psi above the true vapor pressure of the fuel, the vapor/liquid ratio will always be less than 0.1. The pressure should not exceed 345 kPa (50 psig) at the engine inlet.

The fuel. For emergency operation, with airframe boost pump inoperative, it must be such that vapour liquid ratio does not exceed 0.1 for continuous operation and does not exceed 0.3 for 10 hours in a pump overhaul life. Refer to Installation Manual.

Oil Pressure:

The following pressures apply to normal operating temperatures. During extremely cold starts, oil pressure may reach 2 068 kPa (300 psig).

Power Section

552 kPa (80 psig) to 793 kPa (115 psig) at 30 000 rpm gas generator speed and above.

276 kPa (40 psig) minimum, bellow 30 000 rpm gas generator speed.

Gearbox

414 kPa (60 psig) to 552 kPa (80 psig) output speeds of 6 200 to 6 798 rpm.

NOTE 6 Accessory Drives

	Maximum Torque, N.m (in-lb)		Maximum Overhang, N.m (in.lb)
	Continuous	Static	
Driven by Gas Generator Turbine			
Tachometer, Accessory Gearbox	0.8 (7.0)	5.6 (50)	2.8 (25)
Starter* and/or Generator	22.6 (200)	180.8 (1 600)	20.3 (180)
Driven by Power Turbine			
Tachometer, Combining Gearbox	0.8 (7.0)	5.6 (50)	2.8 (25)
Blower Drive	17.5 (155)	170.0 (1500)	18.0 (160)

* Overload torque 34 N.m (300 in.lb) 30 sec. max. per application

NOTE 7 Model Description

<u>Model</u>	<u>Characteristics</u>
PT6T-3	Basic model
PT6T-3B	Similar to PT6T-3 except for single power section contingency ratings and PT6T-6 compressor turbine components.
PT6T-3D	Same as PT6T-3B except for improved hot section hardware to allow for increased ratings.
PT6T-3DE	Same as PT6T-3D except continuous OEI replaced by 30 minute rating.
PT6T-3DF	Similar to PT6T-3DE except for improved hot section hardware to allow for increased ratings

NOTE 9 This engine meets FAA requirements for operation in icing conditions when the intake system conforms with the Pratt & Whitney Canada Installation Manual instructions for inertial separation of snow and icing particles.

NOTE 10 Maximum Permissible Air Bleed

External air bleed shall not exceed 5.25 percent.
No air bleed is permissible during the starting cycle.

NOTE 11 Emergency use of MIL-G-5572 (all grades) is permitted for a total time period not exceeding 150 hours during any overhaul period.

It is not necessary to purge the unused fuel from the system when changing fuel types.

- NOTE 12** Phillips FPA-55MB anti-icing additive at a concentration not in excess of 0.15% by volume is approved for use in fuels for these engines.
- NOTE 13** Reserved.
- NOTE 14** 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 Pratt & Whitney Canada Installation Manual (PT6T).
- NOTE 15** Reserved.
- NOTE 16** Reserved.
- NOTE 17** Reserved.
- NOTE 18** Reserved.
- NOTE 19** Certain engine parts are life limited. These limits are listed in Pratt & Whitney Canada Service Bulletin No. 5002 as revised.
- NOTE 20** This engine is certified as a unit comprising two separate power sections with the capability of single engine operation with either power section alone in multi-engine helicopters. The unit is also approved as a single engine. In either event, the installation compatibility of the mixing gearbox components with the rotorcraft drive system will have to be established.

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