

**REPÚBLICA FEDERATIVA DO BRASIL
AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL - ANAC**

TYPE CERTIFICATE DATA SHEET Nº EA-2006T02

Type Certificate Holder:

THRUSH AIRCRAFT, INC.
P.O. Box 3149
Albany, GA 31706
USA

EA-2006T02
Sheet 01

THRUSH
AIRCRAFT, INC.

S2R-T660

August 2006

This data sheet, which is part of Type Certificate No. 2000T06, prescribes conditions and limitations under which the product, for which the Type Certificate was issued, meets the airworthiness requirements of the Brazilian Aeronautical Regulations.

I – Model S2R-T660 (Restricted Category Only)*, approved 23 August 2006.

ENGINE United Aircraft of Canada PT6A-60 AG
Optional Engines: Pratt & Whitney Canada PT6A-65AG, -65AR, -65B (-65AR must have automatic power reverse feature disabled)
Pratt & Whitney Canada PT6A-45A, -45B, -45R eligible on S/N T660-108 and up. Pratt & Whitney Canada PT6A-67AG eligible on S/N T660-109 & up.

FUEL Jet A, Jet B, JP-4, JP-5, Automotive Diesel Number 1 D or 2D in accordance with P&WC Specifications CPW 204, CPW 46, CPW 381. (If jet fuel is not available, aviation gasoline, MIL-G-5572, all grades, may be used for a maximum of 150 hours between overhauls). Automotive diesel fuel is approved only for agricultural application flights and only when the free air temperature is above: + 20°F for Grade No. 1D
+ 40°F for Grade 2D

OIL UACL PT6 Engine Service Bulletin Number 1001, 3001, 4001, 11001, 12002 and 13001 lists approved brands oil.

ENGINE LIMITS	<u>PT6A-60AG</u>			
	T/O (Max. Cont.)	Transient Start (Accel.)	Idle	Reverse
• SHP	1 050 (1 020)			900
• Torque (psi) (2sec)	38.8 (37.7)	61.0 Trans		
• ITT - °C	820 (775)	1 000 (850) Start (5 sec.)	750	760
• Ng - (%)	104 (104)	104 (104)	58	
• Np (rpm)	1 700 (1 700)	1870 Trans (5 sec.)		1 650
• Oil Temp - °C	0 to 110	0 to 110 (oil temp.)	60 min.	90 to 135
• Oil Press (Psig)	90 to 135	0 to 200 (40 to 200)	-40 to 110	0 to 99

The ratings shown are based on the static sea level standard condition with no external accessory loads and no air bleed.

**ENGINE LIMITS
(Cont.)**PT6A-65AG/ -65AR/ -65B

	T/O and Max. Cont.	Transient Start/Accel.	Idle	Reverse
• SHP	1 300 (1 220)			900
• Torque (psi) (2sec)	48.0 (45.1)	61 Trans		
• ITT - °C	810 (800)	1 000 (850) Start (5 sec.)	750	760
• Ng -(%)	104 (104)	104 (104)	56	
• Np (RPM)	1 700 (1 700)	1 870 Trans (5 sec.)		1 650
• Oil Temp - °C	0 to 110	-40 to 110 (oil temp.)	60 min.	90 to 135
• Oil Press (Psig)	90 to 135	0 to 200 (40 to 200)	-40 to 110	0 to 110

The ratings shown are based on the static sea level standard condition with no external accessory loads and no air bleed.

PT6A-45A/ -45B/ -45R

	Take off	Max. Cont	Accel	Reverse
• SHP	1 050	1 020		900
• Torque (psi) (2sec)	38.8	37.7		
• ITT - °C	800	800	850	760
• Ng -(%)	104	104	104	
• Np (rpm)	1 700	1 870		1 650
• Oil Press (Psig)	90 to 135	90 to 135	40 to 200	100 to 135
• Oil Temp - °C	0 to 110	0 to 110	99 to 110	0 to 99

PT6A-67AG

	T/O and Max. Cont.	Transient Start (Accel.)	Idle	Reverse
• SHP	1 300 (1 220)			900
• Torque (psi) (2sec)	48.0 (45.1)	61 Trans		
• ITT - °C	800 (800)	1 000 (850) Start (5 sec.)	750	760
• Ng -(%)	104 (104)	104 (104)	56	
• Np (RPM)	1 700 (1 700)	1870 Trans (5 sec.)		1650
• Oil Temp - °C	0 to 110	-40 to 110 (oil temp.)	-40 to 110	10 to 105
• Oil Press (Psig)	90 to 135	0 to 200 (40 to 200)	60 min.	90 to 135

The ratings shown are based on the static sea level standard condition with no external accessory loads and no air bleed.

**PROPELLER AND
PROPELLER LIMITS**

PT6A-60AG, PT6A-45Z, -45B -45R: Hartzell HC-B5MP-3C propeller, constant speed, feathering and reversing; Hub Model HC-B5MP-3C; Blade Model M10876ANS or M10876AS. Diameter 2.819m (111.2 in) max., 2.811m (110.7in) min.

Pitch (42 in. Sta.) 16.5° low, 79.0° feather, -11.0° reverse

PT6A-65AG, -65B -65AR: Hartzell HC-B5MP-3F propeller, constant speed, feathering and reversing; Hub Model HC-B5MP-3F; Blade Model M11276NS. Diameter 2.926m (115.2in) max., 2.913m (114.7 in) min.

Pitch (42 in. Sta.) 13.9 ° low, 83.1° feather, -10.0° reverse

PT6A-67AG: Hartzell HC-B5MA-3D propeller, constant speed, feathering and reversing; Hub Model HC-B5MA-3D; Blade Model M11276NS. Diameter 2.926m (115.2in) max., 2.913m (114.7 in) min.

Pitch (42 in. Sta.) 13.9 ° low, 83.1° feather, -10.0° reverse

**CERTIFICATION
BASIS**

- FAR 21.25;
 - RBHA 23, which endorses the FAR 23 effective 01 February 1965:
 - RBHA/FAR subpart A, amendment 23-53;
 - RBHA/FAR subpart B, amendment 23-53;
 - RBHA/FAR subpart C, amendment 23-53 except 23.423, 23.425, 23.427, 23.441;
 - RBHA/FAR 23.443, and 23.455 at amendment 23-34;
 - RBHA/FAR subpart D, Amendment 23-53 except 23.607 at amendment 23-34;
 - RBHA/FAR 23.629 at Amendment 23-31 and RBHA/FAR 23.785, 23.807, 23.853, 23.863;
 - RBHA/FAR 23.865 and 23.867 at Amendment 23-14;
 - RBHA/FAR Subpart E, Amendment 23-14;
 - RBHA/FAR Subpart F, Amendment 23-0;
 - RBHA/FAR Subpart G, Amendment 23-53;
- except those regulations found inappropriate for restrict category agricultural airplanes as listed in FAA Advisory Circular 21.25-1, dated 01 December 1997, and compliance with regulations listed in ACE-110 policy memorandum, dated 01 December 1997, demonstrated in accordance with that memorandum.

**AIRSPEED
LIMITS (CAS)**

V _{NE} (Never Exceed)	191 kt
V _P (Maneuvering)	140 kt
V _{NO} (Max. Structural Cruising)	180 kt
V _{FE} (Flap Extended)	126 kt

C. G. RANGE

Forward limit at 12 500 lb. Is 24 inches aft of datum with straight line variation to 8 000 lb. At 27 inches aft of datum.

Forward limit below 8 000 pounds is 27 inches aft of datum.

Aft limit at 12 500 lb. Is 27 inches aft of datum with straight line variation to 8 000 lb. At 30 inches aft of datum.

Aft limit below 8 000 lb. Is +30.0 inches aft of datum.

Datum is the leading edge of the wing.

MAXIMUM TAKE OFF WEIGHT	12 500 lb.		
MAXIMUM LANDING WEIGHT	12.500 lb		
MAXIMUM EMPTY WEIGHT	6 100 lb.		
MAXIMUM OPERATING ALTITUDE	12 000 ft		
NUMBER OF SEATS	1 (+89)*		
MAXIMUM CARGO LOAD	Maximum baggage compartment 200 lb. (+112)* Maximum hopper load, 5 500 lb. (+20.6)* * Distance from CG (inches)		
FUEL CAPACITY	225.6 gallons usable, one 115 gallons tank in each wing, tanks interconnected. See Note 1 for data on unusable fuel.		
OIL CAPACITY	10 US quarts - usable oil tank capacity 6 quarts.		
CONTROL SURFACE MOVEMENTS	Elevator	Up $27^{\circ} \pm 1^{\circ}$	Down $17^{\circ} \pm 1^{\circ}$
	Elevator	Up $8^{\circ} \pm 1^{\circ}$	Down $22^{\circ} \pm 1^{\circ}$
	Tab	Left $19^{\circ} \pm 1^{\circ}$	Right $19^{\circ} \pm 1^{\circ}$
	Rudder	Up $21^{\circ} \pm 1^{\circ}$	Down $17^{\circ} \pm 1^{\circ}$
	Aileron		Down $15^{\circ} \pm 1^{\circ}$
	Flaps		
SERIAL NUMBERS ELIGIBLE	T660-101 and subsequent		
REQUIRED EQUIPMENT	The basic required equipment as prescribed in the applicable airworthiness regulations (see certification basis) must be installed in the aircraft for certification. This equipment must include Ayres Corporation Airplane Flight Manual approved 13 March 2000, or later approved version.		
AGRICULTURAL DISPERSAL EQUIPMENT	Standard Spray, Ayres Dwg. No. 95340 Spreader Installation, Ayres Dwg. No. 95370 Transland Hydraulic Fire Door Installation, Ayres Dwg. No. 95385		
STRUCTURAL LIMITATIONS	<u>Part Name</u>	<u>Part Number</u>	<u>Life Limit</u>
	Rear Spar Doubler, Lower	95627-3	20 000
	Rear Spar, Inboard, L&R	95623-1/-2	20 000
	Aft Main Spar Lug, L&R	95605-1/-2	21 750
	Forward Main Spar Lug, L&E	95606-1/-2	20 000
	Spar Cap Assy, L&R	95603-1/-2	26 625
	Steel Doubler Plate	95614-1	38 400

DATA PERTINENT TO ALL MODELS:

Certification Basis for all models, except S2R-T65, S2RHG-T65, S2RGH-T34 and S2R-T660.

DATUM	Wing leading edge.
LEVELING MEANS	Lower longeron below cockpit.
EXPORT ELIGIBILITY	Aircraft will be eligible for issuance of an Export Certificate of Airworthiness subject to compliance with Federal Regulations Part 21, Subpart L, Sections 21.321 through 21.339. Special requirements of specific foreign countries are contained in Advisory Circular 21-2D.
PRODUCTION BASIS	Production Certificate Number 5SO.

NOTES:

- NOTE 1** Weight and balance: current weight and balance report including list of equipment included in certificated empty weight, and loading instructions must be provided for each aircraft at the time of original certification and at all times thereafter. The empty weight and corresponding center of gravity location must include the following unusable fuel:
- | | |
|---|--|
| Models S2R-T15, S2R-T34, S2R-G5,
S2R-G6, S2R-G10, all serial numbers | 8.16 kg (18 lb) at +97.79 cm (+38.5 in) |
| Models S2R-T660 | 11.97 kg (26.4 lb) at +97.79 cm (+38.5 in) |
- NOTE 2** Markings and placards: the aircraft must be operated in accordance with the FAA approved Brazilian Airplane Flight Manual. Required placards translated into Portuguese are listed in the last revision of the acceptance ANAC Report H.10-1420.
- NOTE 3** Continuing of Airworthiness: Service Bulletins, structural repair manuals, and aircraft flight manuals which contain a statement that the document is FAA approved are accepted by the ANAC and are considered ANAC approved. These approvals pertain to the type design only. Compliance with the tasks and intervals specified in the "Airworthiness Limitations Section", section of the Maintenance Program listed in Approved Publications, is required to ensure continuing compliance with the type certification basis. Components which are life limited are also listed in the "Airworthiness Limitations Section".
- NOTE 4** The ANAC approved type design corresponds to the FAA approved type design plus the following specific requirements:
1. FAA Approved Brazilian AFM;
 2. Markings and placards in Portuguese or bilingual;
 3. The international System of units, in accordance with ICAO Annex 5 must be used.
 - a. Oil quantity - must be in liters and followed by the correspondent amount in gallons, between brackets;
 - b. Dimensions - must be in meters;
 - c. Weight or mass - must be kilograms;
 - d. Fuel quantity - must be in liters;
 - e. Temperatures - must be in degrees C;
 - f. Altimeter set - must be in millibar or hPa;
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- NOTE 4 (Cont.)**
4. The weight and balance sheet must be consistent with the modifications required by item 3 above.
 5. Night VFR operations is not approved.
 6. The use of JP4, JetB as well as AVGAS can only be done having the emergency fuel pump turned on. ANAC requires the above to be stated in the AFM.
 7. Automotive fuels are not approved for aeronautical use.

NOTE 5 The following models and serial numbers have been or are currently produced by Thrush Aircraft, Inc. (originally Ayres Corp.) at its Albany, Georgia, facility. (earlier serial numbers, not listed below, were manufactured prior to July 2003 by Ayres Corp.) Model S2R-T660, S/N T660-109 and up, Model S2RHG-T65 S/N T65HG-011 and up, Model S2RHG-T34 S/N T34HG-103 and up, Model S2R-T34 S/N T34-273 and up.

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