

Supplemental Type Certificate

Number SA1016WE

This Certificate issued to Staggerwing Museum Foundation, Inc.
560 Old Shelbyville Highway
Tullahoma, TN 37388

*certifies that the change in the type design for the following product with the limitations and conditions therefor as specified hereon meets the airworthiness requirements of Part * of the Civil Air Regulations.*

* See page 7 of this STC for Certification Basis

Original Product Type Certificate Number: 765

Make: BEECH

Model: D18C, D18S, E18S, E18S-9700, G18S, H18, C-45G, TC-45G, C-45H, TC-45H, TC-45J (SNB-5), JRB-6, 3N, 3NM, 3TM

Description of Type Design Change: Installation of United Aircraft of Canada Ltd. PT6 series engines in accordance with FAA Sealed American Turbine Engine Company Drawing No. 600, N.C. through Revision W, FAA sealed Hamilton Drawing No. 600 DL, Revision A, or subsequent FAA sealed revision to Hamilton Drawing No. 600DL.

Limitations and Conditions: The limitations and conditions of Aircraft Specification No. A-765 applies except as outlined in pages 3 through 10 of this STC. A copy of this STC must be included in the permanent records of each airplane modified in accordance with this STC. If the holder agrees to permit another person to use this certificate to alter the product, the holder shall give the other person written evidence of that permission.

(See continuation pages)

This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.

Date of application: July 14, 1960

Date reissued: May 17, 1971; April 28, 1977;
September 3, 2004

Date of issuance: July 22, 1965

Date amended: September 18, 1974. See page 9 of this STC for previous amendment dates.



By direction of the Administrator

(Signature)

Manager, Technical & Administrative Support
Staff, Los Angeles Aircraft Certification Office

(Title)

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.

United States Of America
Department of Transportation - Federal Aviation Administration
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NOTE:

DO NOT DELETE THIS PAGE.

DO NOT ADD ANY DATA TO THIS PAGE.

THIS PAGE IS FOR PAGE NUMBERING PURPOSES,
PLEASE DISCARD PRINTED COPY.

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1 – Beech D18C, D18S, E18S, E18S-9700, G18S, H18, C-45G, TC-45G, C-45H, TC-45H, TC-45J (SNB-5), JRB-6, 3N, 3NM, 3TM as modified by this STC (Normal Category)

Engines	Two United Aircraft of Canada Ltd. PT6A-6, PT6-6A, PT6A-20 or PT6A-27 See NOTE 6(a)	
Fuel	JP-1, JP-4 and JP-5 fuels conforming to P&W Spec. No. 522. See NOTE 4.	
Oil	Refer to UACL PT6 Engine Service Bulletin No. 1.	
Engine Ratings	PT6A-6, PT6A-6A	
	Takeoff (5 min.)	550 shp. 578 eshp at 2, 200 rpm
	Max. Continuous	500 shp. 525 eshp at 2, 200 rpm
	PT6A-20, PT6A-27	
	For all operations	550 shp. 579 eshp at 2, 200 rpm
	See NOTE 3 for applicable conditions.	
Engine Limits		
RPM	Gas generator (Ng)	
	Max. Continuous	101.6% (38,100 rpm)
	Transient overspeed (10 sec.)	102.7% (38,500 rpm)
	Propeller Shaft (Np)	
	For all forward operations	100% (2,200 rpm)
	* Reverse	95.4% (2,100 rpm)
	(* PT6A-6 engine not equipped for reverse).	

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Torque	For all forward operations	1315 lb-ft.
	Reverse (500 shp. at 21,100 rpm. reverse).	1251 lb-ft. PT6A-6 not equipped for
Turbine temperature	PT6A-6, PT6A-6A (turbine inlet)	
	Takeoff (5 min.)	1820°F (994°C)
	Maximum Continuous	1745°F (952°C)
	Starting Transient (2 sec.)	1900°F (1038°C)
	PT6A-20 (inter turbine)	
	For all steady state operations	1380°F (750°C)
	Starting Transient (2 sec.)	1994°F (1090°C)
	PT6A-27 (inter turbine)	
	For all steady state operations	1336°F (725°C)
	Starting Transient (2 sec.)	1994°F (1090°C)
Oil temperature	Maximum	
	MIL-L-23699 type oils	210°F (99°C)
	MIL-L-7808 type oils	185°F (85°C)
	Minimum	-40°F (-40°C)
Propeller and propeller limits	Two Hartzell HC-B3TN-3/T10173B-8 Diameter 93.5 in. No reduction for repairs permitted.	
	Pitch settings at 42 in. station High (feather)	86°

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Low (flight idle) 19°
* Reverse 11°
* except with non reversing PT6A-6.

Two Hartzell C-300-PG spinners

Airspeed limits
(CAS)

Max. Operating (V_{MO})
Sea level to 13,000 ft. 248 mph (215 kts)
25,000 ft. 195 mph (170 kts)
(Straight line variation between points given).
Maneuvering (V_a) 153 mph (133 kts)
Flaps extended (V_f) 136 mph (118 kts)
Landing gear operating/
extended (V_{lo}/V_{le}) 160 mph (139 kts)

E18 type landing gear doors, item 208 of Aircraft specification No. A-765 or FAA approved equipment modification, must be installed on all Models with conventional landing gear except E18S, E18S-9700, G18S and H18. FAA Approved metal covered flaps Required on all models.

C.G. range
(landing gear
extended)

All models with tricycle landing gear:

(+113.8) to (+120.5) at max. wt.
+108.5) to (+120.5) at 7,000 lbs.
Straight line variation between points given. Moment
change due to landing gear retraction +8,931 in-lb.

All models with conventional gear:

(+113.8) to (+117.5) at max. wt.
(+108.5) to (+117.5) at 7,000 lbs.
Straight line variation between points given. Moment
change due to landing gear retraction +8,200 in-lb
for Model H18 and +12,000 for all other models.

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Empty wt. C.G. range	None
Maximum weights	Takeoff 9,900 lbs. (may be increased to 10,200 lbs. When wing tips are modified per STC SA4-1368). Landing 9,772 lbs. Zero fuel 9,000 lbs. (may be increased to 9,400 lbs. When aircraft is equipped with FAA approved heavy cargo floor).
Number of Seats	Same as shown on Aircraft Specification No. A-765.
Maximum baggage	Same as shown on Aircraft Specification No. A-765.
Fuel capacity	312, 436 or 516 gal. Total Two nacelle tanks at (+67.7), 57 gal. each total, 54 gal. each usable *Two center wing tanks at (+126), 76 gal. each total and usable *Two center wing tanks at (+155) 23 gal. each total and usable Two optional outer wing tanks at (+139), 60.5 gal. each total, 60 gal. each usable. Two optional outer wing tanks at (+123.5), 100.5 gal. each total, 100 gal. each usable *Some H18 aircraft incorporate two tanks at (+128). 99 gal. each total and usable in lieu of these four tanks See NOTE 1(a) for unusable fuel data.
Oil Capacity	7.0 gal. total usable (two integral engine tanks of 3.5 gal. Including 1 gal. in each oil cooler). See NOTE 1(b) for system oil.

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Maximum operating altitude 25,000 ft.

Control surface movements Same as shown on Aircraft Specification No. A-765 except:

Elevator trim tab	Up 8°	Down 22°
Rudder	Left 20°	Right 20°

Serial numbers Same as shown on Aircraft Specification No. A-765. See NOTE 5.

Data Pertinent to All Models

Datum Same as shown on Aircraft Specification No. A-765.

Leveling Means Same as shown on Aircraft Specification No. A-765.

Certification Basis

1. Civil Air Regulations Part 03 effective November 13, 1945 except where superseded by the CAR 3 requirements and Special Conditions outlined below.
2. Paragraph 3.242 only of Civil Air Regulations Part 3 effective November 1, 1949 with Amendments 3-14 thereto.
3. For the powerplant installation – Civil Air Regulations Part 3 effective May 15, 1956 including Amendments 3-1 through 3-6 thereto.
4. Special Conditions outlined by FAA letter dated November 18, 1961 to American Turbine Engine Company.

Production Basis None. An inflight operational check must be conducted in accordance with FAR 91.167(a) for each aircraft modified to incorporate this STC. When original airworthiness certification has not previously been accomplished, the applicant must also comply with FAR 21.130 and FAR 21.183(d).

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Equipment

The following must be installed in the aircraft for airworthiness Certification subsequent to the incorporation of this STC:

1. The basic required equipment is prescribed in the applicable airworthiness regulations (see Certification Basis outlined above).
2. Stall warning indicator, Safe Flight instrument Corp. P/N 164 installed in accordance with American Turbine Engine Company Drawing No. 708.
3. Refer to the applicable drawings shown on the above noted American Turbine Engine Company Drawing No. 600 or Hamilton Drawing No. 600DL for additional equipment required as a result of the incorporation of this STC.

The following FAA Approved American Turbine Engine Company or Hamilton Aircraft Company Airplane Flight Manuals are required in lieu of those specified for the basic unmodified aircraft:

1. Manual dated July 22, 1965, for PT6A-6 engines and tricycle landing gear. This manual was later re-identified as Manual No. 900-F.
2. Manual dated December 28, 1965, for PT6A-6A engines, tricycle landing gear. This manual was later re-identified as Manual 900-G.
3. Manual dated February 1, 1966, or Manual No. 900 dated July 8, 1966, for PT6A-20 engines and tricycle landing gear. The former manual was later re-identified as Manual No. 900H.
4. Manual No. 900-A dated October 18, 1968, for PT6A-20 engines and tricycle landing gear.
5. Manual No. 900-B dated February 19, 1969, for PT6A-27 engines and tricycle landing gear.

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Previous STC Amendment Dates	1. December 20, 1965	5. February 18, 1969
	2. December 28, 1965	6. May 17, 1971
	3. August 1, 1966	7. March 23, 1973
	4. December 27, 1968	8. August 15, 1973

Inspection Period The repetitive inspection specified in AD 72-20-5 must be accomplished at intervals not to exceed 200 hours time in service when this STC is incorporated unless an FAA approved reinforcement has been installed. All other items of AD 72-20-5 remain unchanged.

NOTE 1. Current weight and balance data, including a list of equipment included in the certificated empty weight and loading instructions when necessary, must be provided at the time of airworthiness certification for return to service.

The certificated empty weight and corresponding center of gravity locations must include unusable fuel and oil as follows:

Fuel: 33 lbs. In nacelle tanks at (+700)
 7 lbs. in outer wing tanks at (+145.0) if installed

Oil: 33 lbs. at (+45)

NOTE 2. Refer to the applicable FAA Approved Airplane Flight Manual for required placards and instrument markings. All required placards must be installed in the appropriate locations.

NOTE 3. The ratings shown on this STC for the PT6A series engines are based on static standard day conditions with no external accessory loads and no airbleed. Those shown for the PT6A-6, PT6A-6A and PT6A-20 engines are available at sea level. Those shown for the PT6A-27 engines are available from sea level to approximately 13,000 ft.

NOTE 4. Phillips anti-icing fuel additive PFA-55MB (MIL-L-27686D) may be used if concentration delivered to the airplane does not exceed 0.15% by volume. No fuel system anti-icing credit is allowed.

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- NOTE 5. The approval of this change in type design applies to the basic aircraft of the Beech 18, C-45 and 3 Series models noted on page 1 of this STC that are otherwise unmodified. Except as noted below, this approval should not be extended to other aircraft of these models on which other previously approved modifications are incorporated unless it is determined that the interrelationship between this change and any of those other previously approved modifications will introduce no adverse effect on the airworthiness of those aircraft.
- NOTE 6. The following additional modifications are required or optional as noted when this STC is incorporated.
- (a) Volpar tricycle landing gear. The various bases for approval of this installation are as follows:
- (1) For all models shown on page 1 of this STC – in accordance with FAA sealed Drawing No. 768 as a part of this STC.
 - (2) For all models shown on page 1 of this STC except Models 3N, 3NM and 3TM – in accordance with STC SA111WE issued to Volpar, Inc.
 - (3) For all models show on page 1 of this STC except D18C and JRB-6 - in accordance with Beech Drawing 18-800001 or Mod. C.O. B7381 (item 632 of Aircraft Specification No. A-765). This installation is required when PT6A-6, PT6A-6A or PT6A-27 engines and/or the single fin and rudder are incorporated. It is optional for all other configurations.
- (b) Single fin and rudder installed in accordance with Pacific Airmotive Corporation Top Drawing No. 45002. This installation may be installed as a pat of this STC or as a part of STC No. SA360WE, the PAC “Tradewind” Conversion, if SA360WE is incorporated prior to this STC. This installation is optional on all models provided the Volpar Tricycle landing gear is also incorporated.
- NOTE 7. Any autopilot that was approved for unmodified aircraft of these models must be rendered inoperative unless that specific autopilot model has received FAA Approval for use with these aircraft when this STC is incorporated.

Autopilots that are listed in the applicable FAA Approved Airplane Flight Manuals (Ref. “Equipment” above), have been previously approved for use with these aircraft when this STC is incorporated.

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