United States Of America

Department of Transportation - Federal Aviation Administration

Supplemental Type Certificate

Project Number SA8161SC-A, JEP

Number SA5223NM

This Certificate issued to Engine Technologies, Inc.
400 Airport Road
Ada, OK 74820

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 **3** *of the* **Civil Air** *Regulations.*

Original Product Type Certificate Number: 3A15

Make: Beech

Model: 35-C33A; 36; A36; E33A; F33A; G33, S35, V35, V35A, V35B, A36TC, B36TC

Description of Type Design Change: Installation of modified Teledyne Continental engine equipped with turbonormalizing system in accordance with Tornado Alley Turbo Drawing List Number TAT-B-MDL, Rev NC, dated September 29, 1999, or later FAA approved revision.

Limitations and Conditions: 1. Installation of STC SE5222NM is required.

(See continuation sheets)

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: March 21, 1991

Date of issuance: August 22, 1991

Date reissued: 7/13/92; 1/23/97; 10/16/98

Date amended: 3/11/92; 6/21/94; 7/25/94; 10/28/99; 8/31/00; 8/15/03; 5/26/04; 6/20/05, Rev. 8

By direction of the Administrator

(*Signature*)

Fred Stellar
Acting Manager, Special Certification
Southwest Region

(*Title*)

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

 This certificate may be transferred in accordance with FAR 21.47.

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Number SA5223NM

Date of Issuance: August 22, 1991
Date Amended: June 27, 2005

Limitations and Conditions (Continued):

2. This STC is approved for installation on aircraft; which have the aftermarket Teledyne Continental IO-550 B engine and Beech Aircraft Corp engine mounts P/N 35-910027-3, 35-910027-5, 35-910027-9, 35-910027-11, installed in accordance with STC SA2200SW.

3. This STC is approved for Beech Model 36 and A36 aircraft; which have the aftermarket Teledyne Continental IO-550-B engine installed in accordance with STC SA1835SO.

4. This STC is approved for Beech Models V35, V35A, V35B, S35, E33A, 35-C33A, F33A; which have the aftermarket Teledyne Continental IO-550-B engine (derated to 285 HP) installed in accordance with STC SA1835SO (Requires AFMS-550-C).

5. This STC is approved for Beech Models V35, V35A, V35B, S35, E33A, 35-C33A, F33A, and Model 36 and Model A36 aircraft originally equipped with Teledyne Continental IO-520 engines, when that engine is replaced with a Teledyne Continental IO-550-B engine during the installation of this STC in accordance with the installation drawings of this STC and STC No. SE5222NM. This STC is approved for Beech Model G33 aircraft originally equipped with Teledyne Continental IO-470 engine, when that engine is replaced with a Teledyne Continental IO-520-B, IO-520-BA, IO-520-BB, or IO-550-B engine during the installation of this STC in accordance with the installation drawings of this STC and STC No. SE5222NM. This STC is approved for Beech Model A36TC and B36TC aircraft originally equipped with Teledyne Continental TSIO-520-U or TSIO-520-UB engine, when that engine is replaced with a Teledyne Continental IO-550-B engine during the installation of this STC in accordance with the installation drawings of this STC and STC No. SE5222NM. The approval for installation of the Teledyne Continental IO-550-B engine under this paragraph 5 of this STC is limited to aircraft equipped with one of the following propellers:

McCauley: D3A32C409/82NDB model propellers in the 80” to 78” diameter range. The following operating limitation shall be affixed near the tachometer: “Continuous propeller operation between 2350 and 2450 RPM at 24 inches Hg and higher manifold pressure is prohibited”.

3A32C76/82NB in the 80” to 78.” diameter range. The following operating limitation shall be affixed near the tachometer: “Continuous Propeller Operation Between 2350 and 2450 RPM at 24 inches Hg and higher manifold pressure is prohibited”.

3A32C76/82NB in the 80” to 78.5” diameter range provided the IO-550-B engine is derated form 300 HP at 2700 RPM and 27.7” Hg of manifold pressure having 2-6th, 1-5th and 1-4th order crankshaft dampers installed. The following operating limitation shall be affixed near the manifold pressure gage: “DO NOT EXCEED 27.7” MANIFOLD PRESSURE AT SEA LEVEL”.

Hartzell: PHC-C3YF-1RF/F8468A-6R with propeller diameter limits of 80 to 77 inches, when installed with the Raytheon/Beech Aircraft Models ()33(), ()35(), and ()36(), equipped with Teledyne Continental Engine Models IO-520-B, -BA, -BB rated at 285 HP at 2700 RPM and the IO-550-B rated at 300 HP at 2700 RPM.

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Number SA5223NM

Date of Issuance: August 22, 1991
Date Amended: June 27, 2005

Limitations and Conditions (Continued):

The approval for installation of the Teledyne Continental IO-520-B, IO-520-BA, or IO-520-BB engine on the G33 under this paragraph 5 of this STC is limited to aircraft equipped with one of the following propellers:

McCauley: 2A36C23/84B-0 with propeller diameter limits of 84” to 82”
3A32C76/82NDB with propeller diameter limits of 80” to 78.5”
3A32C406-X/X-82NDB-2 with propeller diameter limits of 80” to 78.5”

Hartzell: PHC-A3VF-4/V8433-2R or -4R with propeller diameter limits of 82” to 78.25”
PHC-C3YF-1RF/F8468A-6R with propeller diameter limits of 80” to 77”

All aircraft listed in this STC equipped with Teledyne Continental IO-520-B, IO-520-BA, IO-520-BB, or IO-550-B engine installed per this STC in accordance with the installation drawings of this STC and STC No. SE5222NM may use the following propeller:

Hartzell: PHC-C3YF-1RF/F8068 with propeller diameter limits of 82” to 78”

Note: Other STC (SA2200SW, SA1835SO) listed in this STC which approve installation of IO-550-B engines in models of aircraft approved for this STC may authorize other propeller installations and those propellers may be used when installed pursuant to those STCs and are not excluded merely because they are not on the list of approved propellers under this paragraph.

6. An increase in maximum take off and landing weight is allowed on certain models, with certain equipment combinations installed. The changes in takeoff and landing weights, equipment required to qualify for the weight changes, and the required AFMS for each model is listed in the following chart:

Model	Engine	Intercooler	Fuel Injectors	Baffle Changes	Maximum Take Off /Landing Weight	Required AFMS
S35 V35 V35A V35B	IO-520-B IO-520-BA IO-520-BB	Generation I or Generation II or Rammer	Stock TCM or Balanced Flow GAMIjectors	None, #2, or #6, or both #2 and #6	As listed in TCDS 3A15 or other STC	AFMS-520 dated August 22, 1991 or later FAA approved revision
S35 V35 V35A V35B	IO-550-B	Generation I or Generation II	Stock TCM or Balanced Flow GAMIjectors	None, #2, or #6, or both #2 and #6	As listed in TCDS 3A15 or other STC	AFMS-550 dated August 22, 1991 or later FAA approved revision

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Model (Continued)	Engine	Inter-cooler	Fuel Injectors	Baffle Changes	Maximum Take Off /Landing Wt	Required AFMS
S35, V35, V35A V35B, 35-C33A E33A, F33A	IO-550-B derated to 285 HP per STC SA1835SO	Generation I or Generation II or Rammer	Stock TCM or Balanced Flow GAMIjectors	None, #2, or #6, or both #2 and #6	As listed in TCDS 3A15 or other STC	AFMS-550 C dated July 25, 1994 or later FAA approved revision
35-C33A E33A G33 F33A 36 A36	IO-520-B IO-520-BA IO-520-BB	Generation I or Generation II	Stock TCM or Balanced Flow GAMIjectors	None, #2, or #6, or both #2 and #6	As listed in TCDS 3A15 or other STC	AFMS-520 dated August 22, 1991 or later FAA approved revision
35-C33A, E33A, G33 F33A, 36, A36	IO-550-B	Generation I or Generation II	Stock TCM or Balanced Flow GAMIjectors	None, #2, or #6, or both #2 and #6	As listed in TCDS 3A15 or other STC	AFMS-550 dated August 22, 1991 or later FAA approved revision
35-C33A E33A	IO-550-B	Rammer	Balanced Flow GAMIjectors	#2 and #6 and louvered access panels	3642/3600	AFMS-550 dated May ___ , 2004 or later FAA approved revision
G33	IO-550-B	Rammer	Balanced Flow GAMIjectors	#2 and #6 and louvered access panels	3789/3600	AFMS-550 dated May ___ , 2004 or later FAA approved revision
F33A	IO-550-B	Rammer	Balanced Flow GAMIjectors	#2 and #6 and louvered access panels	3754/3600	AFMS-550 dated May ___ , 2004 or later FAA approved revision
36, A36 S/N E-1 thru E-324	IO-550-B	Rammer	Balanced Flow GAMIjectors	#2 and #6 and louvered access panels	4000/4000	AFMS-550 dated May ___ , 2004 or later FAA approved revision
36, A36 S/N E-325 and up	IO-550-B	Rammer	Balanced Flow GAMIjectors	#2 and #6 and louvered access panels	4000/4000	AFMS-550 dated May ___ , 2004 or later FAA approved revision
A36TC	IO-550-B	Rammer	Balanced Flow GAMIjectors	#2 and #6 and louvered access panels	4000/4000	AFMS-550 dated May ___ , 2004 or later FAA approved revision
B36TC	IO-550-B	Rammer	Balanced Flow GAMIjectors	#2 and #6 and louvered access panels	4042/3850	AFMS-550-B36TC dated August 22, 2003 or later FAA approved revision

Note: The IO-550-B engine, Rammer Intercooler, Balanced Flow GAMIjectors, the #2 Baffle Mod, and the #6 Baffle Mod and the louvered engine access panels must all be installed to be eligible for a gross weight increase on 35-C33A, E33A, F33A, G33, 36, A36, A36TC, and B36TC. The S35, V35, V35A, and V35B are not eligible for a gross weight increase. Engines converted from IO-520 to IO-550 pursuant to paragraph 7, below, qualify as an IO-550-B for the purpose of this eligibility table.

7. For those aircraft for which the installation of an IO-550B with turbonormalizing system is approved under this STC, the installation of an IO-520 modified pursuant to STC No. SE09979SC (Ultimate Engines) or pursuant to STC No. SE09997SC (Barrett Performance Aircraft) is also approved. These engines have data plates re-stamped and bear the following designations: IO-550-B/UE (Ultimate Engines) and IO-550-B/BP (Barrett Performance Aircraft), respectively.

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8. All aircraft listed in this STC are eligible for a built-in oxygen dispensing system installed in accordance with the installation instructions and drawings of this STC.

9. FAA Approved Airplane Flight Manual Supplements as detailed in the table in paragraph 6, above, are required.

10. Approval of this change in type design applies to the above model aircraft only. This approval should not be extended to aircraft of this model 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, including changes in type design, will introduce no adverse effect upon the airworthiness of that aircraft. A copy of this Certificate, Continuation Sheet, and the appropriate FAA Flight Manual Supplement as listed in the table in paragraphs 6, above, or later approved revision, must be maintained as part of the permanent records of the modified aircraft.

12. FAA Approved Airplane Flight Manual Supplement -550-A36TC for Beech Aircraft A36TC Models with Teledyne Continental IO-550-B engines, dated _____, 2003 or later approved revision is required.

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Date of Issuance: August 22, 1991
Date Amended: June 27, 2005

Limitations and Conditions (Continued):
13. FAA Approved Airplane Flight Manual Supplement -550-B36TC for Beech Aircraft B36TC Models with Teledyne Continental IO-550-B engines, dated _____, 2003, or later approved revision is required.

14. Approval of this change in type design applies to the above model aircraft only. This approval should not be extended to aircraft of this model 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, including changes in type design, will introduce no adverse effect upon the airworthiness of that aircraft. A copy of this Certificate, Continuation Sheet, and the appropriate FAA Flight Manual Supplement as listed in paragraphs 9, 10, 11, 12, or 13 of this STC, or later approved revision, must be maintained as part of the permanent records of the modified aircraft.

6. FAA Approved Airplane Flight Manual Supplement -520 for Beech Aircraft Models with Teledyne Continental IO-520-B, -BA,-BB engines, dated August 22, 1991, or later approved revision is required.

7. FAA Approved Airplane Flight Manual Supplement -550, for Beech Aircraft Models with Teledyne Continental IO-550-B engine, dated August 22, 1991, or later approved revision is required.

8. FAA Approved Airplane Flight Manual Supplement -550 C, for Beech Aircraft Models with Teledyne Continental IO-550-B engine (derated to 285 HP), installed per STC SA1835SO, dated July 25, 1994, or later approved revision is required.

9. Approval of this change in type design applies to the above model aircraft only. This approval should not be extended to aircraft of this model 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, including changes in type design, will introduce no adverse effect upon the airworthiness of that aircraft. A copy of this Certificate, Continuation Sheet, and the FAA Flight Manual Supplement, dated August 22, 1991, or later approved revision, must be maintained as part of the permanent records for the modified aircraft.

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Compatibility of this design change with previously approved modifications must be determined by the installer. If the holder agrees to permit another person to alter the product, the holder shall give the other person written evidence of that permission.

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