

INSTALLATION INSTRUCTIONS
INTERAV ALTERNATOR

MODEL NO. 1255A

STC SA 334 SW



INTERAV INC.

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Report 65-113

TABLE OF CONTENTS

	Page
AIRCRAFT INDEX	2
SUPPLEMENTAL TYPE CERTIFICATE SA334SW	3
HINTS ON OPERATING YOUR ELECTRICAL SYSTEM	4
SECTION I Basic Single Engine Kit	5
SECTION II Basic Twin Engine Kit	9
SECTION III Radio Noise Suppression	11
SECTION IV Optional Equipment & Spares List	11/12
SECTION V Supplemental Information	13/14/15

FAA-DER APPROVED
MAY 11, 1981

REVISION G
MAY 11, 1981

AIRCRAFT INDEX

AIRCRAFT APPROVED - STC SA334SW - REVISION 16 - JULY 20, 1981

Kit	Aircraft Designation	T. C. No.
SE	Beech 23, all series	A1CE
SE	Beech 35, all series with Continental O-470/IO-470 engines	A-777
SE	Beech H35, J35, K35, M35, N35, P35, 35-33, 35-A33, 35-B33, 35-C33	3A15
SE	Bellanca 14-19, all series with Continental O-470/IO-470 engines	1A3
SE	Cessna 180, all series	5A6
SE	Cessna 182, all series	3A13
SE	Cessna 185, all series	3A24
SE	Cessna 210, all series	3A21
SE	Cessna 210-5, all series	3A21
SE	Cessna 206	A4CE
SE	Consolidated Aeronautics Colonial C1, C2, Lake LA-4, all series	1A13
SE	Downer (Republic) RC-3	A-769
SE	Helio H250	1A8
SE	Hughes 269, all series with belt-driven generators	4H12
SE	Intermountain (Callair) A, all series with belt-driven generators	A-758
SE	Lockheed 402-2	2A11
SE	Meyers 200, all series	3A18
SE	Mooney M20, all series	2A3
SE	Navion D, E, F, G, and others with O-470 and IO-470 engines	782
SE	Piper PA-12, PA-12S, with Lycoming O-290 series engines	A-780
SE	Piper PA-16	1A1
SE	Piper PA-18, all series with belt-driven generators	1A2
SE	Piper PA-18, all series with belt-driven generators	AR-7
SE	Piper PA-20, all series with belt-driven generators	1A4
SE	Piper PA-22, all series with belt-driven generators	1A6
SE	Piper PA-24, PA-24-250 series	1A15
SE	Piper PA-25, all series	2A8
SE	Piper PA-25, all series	2A10
SE	Piper PA-28, all series	2A13
SE	Varga 2150A, all series with wide-deck Lycoming O-320 engines	4A19
TE	Camair 480	2A2
TE	Helio 500	A2EA
TE	Pine Air (and) Fleet Aircraft Ltd. Super-V	4A29 & A5IN
TE	Piper PA-23, all series	1A10
TE	Piper PA-30	A1EA

FAA Approval L. B. Anderson
Chief, Engineering & Manufacturing Branch, ASW-210
Date 7/20/81

Report 65-113

United States of America Department of Transportation—Federal Aviation Administration Supplemental Type Certificate

Number SA334SW

This certificate, issued to InterAv, Inc.
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San Antonio, Texas 78216

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: See Limitations and Conditions

Make: See Limitations and Conditions

Model: See Limitations and Conditions

Description of Type Design Change: Installation of InterAv Alternator in accordance with Report 65-113, Revision G dated 5/11/81, or later FAA or FAA DER approved revisions.

Limitations and Conditions

See attached Eligibility List dated July 20, 1981, FAA approved, for original type certificate numbers, makes, and models.

Compatibility of this modification with other previously approved modifications must be determined by the installer.

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: January 8, 1964

Date of issuance: February 3, 1964

7/27/64; 10/8/64; 12/8/64;
3/26/65; 9/16/65; 11/24/65;
1/19/66; 3/18/66; 5/3/66; 10/21/66; 9/15/75;
4/6/76; 11/22/77; 5/17/79; 5/4/81; 7/20/81
Revision 16

By direction of the Administrator



Don P. Watson
Chief, Engineering and Manufacturing Branch

(Signature)

(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.

HINTS ON OPERATING YOUR ELECTRICAL SYSTEM

Alternators have different characteristics than DC Generators. Although the InterAv Alternator has several "built-in" safety features to protect its system, no mechanical devices can substitute for Good Operating Practices. To insure that your Alternator system will always render you dependable service, thoroughly familiarize yourself with the warnings listed below. See that these warnings are complied with. Failure to comply could result in damage to the electrical system.

DON'T open battery switch at any time that Alternator is operating.

DON'T operate Alternator with battery disconnected at any time.

DON'T turn battery switch "ON" when battery is being charged with battery charger.

DON'T use outside power source to start aircraft unless certain that polarity is correct; positive to positive and negative to negative.

DON'T open Alternator circuit breaker at any time when Alternator is operating if manual-type circuit breaker is used. Leave in "ON" or closed position at all times.

DON'T install battery cables in reverse polarity. Connect positive lead to positive post and negative lead to negative post.

DON'T operate Alternator at any time with Alternator "OUTPUT" lead disconnected.

DON'T ground field terminal at any time Alternator is operational.

NOTE: To Make Alternator inoperative when checking for radio noise, only the field circuit should be opened. On aircraft that do not have an individual switch for the Alternator field circuit (gen. switch), it will be necessary to disconnect the field lead at the Alternator and then run engine. (see Section III)

SECTION I

ALTERNATOR INSTALLATION BASIC INSTALLATION KIT

PART NO. 015-01236

SINGLE ENGINE AIRCRAFT

PARTS LIST

<u>Quantity</u>	<u>Part Number</u>	<u>Reference Number</u>	<u>Description</u>
1 each	015-01237	A-152A	Alternator Assembly
1 each	625-61623	A-153D	Voltage Regulator
1 each	635-62448	OVR-12B	Overvoltage Relay
1 each	015-01240	A-167D	Mounting Bar Assy. Kit
1 each	245-23709	A-178	Spike Guard Capacitor
2 each	165-15041	A-178-2	Clamps
1 each	435-42408	A-178-4	Lead Kit
1 each	395-37992	A-178C	Hardware Kit
1 each	415-40054	OVR-12A-6	Placard
1 each		R-65-113	Installation Instructions

SEE SECTION IV for OPTIONAL EQUIPMENT.

INTERAV ALTERNATOR INSTALLATION

Instructions for Installation / Single Engine Aircraft

PART I: INSTALLATION OF ALTERNATOR AND REGULATOR

1. Disconnect battery, identify, mark, and disconnect original wires from Gen. & Reg.
2. Remove Generator and Voltage Regulator.
3. Install Alternator, Part #015-01237, using existing generator mounting brackets. Install mounting bar with hardware supplied in kit, Part #015-01240. Use AN-970-5 washers to adjust spacing between generator bracket and bar bracket. If front hole in bar is utilized, install short AN5H5A bolt with two washers to prevent interference with AN8H16A bolt.
4. Adjust for proper pulley alignment and install approved drive belt and adjust belt tension in accordance with standard procedures. Safety wire bolts together as required and safety AN8H16A bolt around support bar.
5. Install Voltage Regulator, Part #625-61623, where original regulator was mounted. Check that the free end on the bonding strap is well grounded to the airframe. Using hardware, clamps and leads, mount spike guard capacitor, Part #245-23709 to regulator as shown in the diagram.
6. If original circuit breaker is rated less than 60 amp, remove and replace with Part #295-29694, or equivalent 60 amp circuit breaker. Reconnect wires.
7. Connect the large wire removed from the generator output terminal to the output terminal of the Alternator. AC-43.13-1A, Chapter 11 covers in detail wire size requirements to accommodate the 50 amp alternator output.
8. Connect the small wire removed from the generator field terminal to the field terminator of the alternator.
9. Install a bonding strap or wire, as large, or larger than, the Alternator output wire, from the ground terminal of the Alternator to the engine mount or engine case. Be sure you have a good ground between the Alternator and the airframe.
10. Install an 18 ga. wire from the ground terminal of the Alternator to the ground terminal of the Voltage Regulator.
11. Install an 18 ga. wire from the Regulator terminal of the Alternator to the Regulator terminal of the Voltage Regulator.
12. Connect the original field wire from the cabin generator field switch to the field terminal of the Voltage Regulator. Note that this wire was originally attached to the field terminal of the old regulator.
13. Splice the remaining two heavy wires which were connected to bat. and gen/armature terminals of the original voltage regulator together using butt or ring type amp terminals of proper size.

PART II: INSTALLATION OF OVERVOLTAGE RELAY

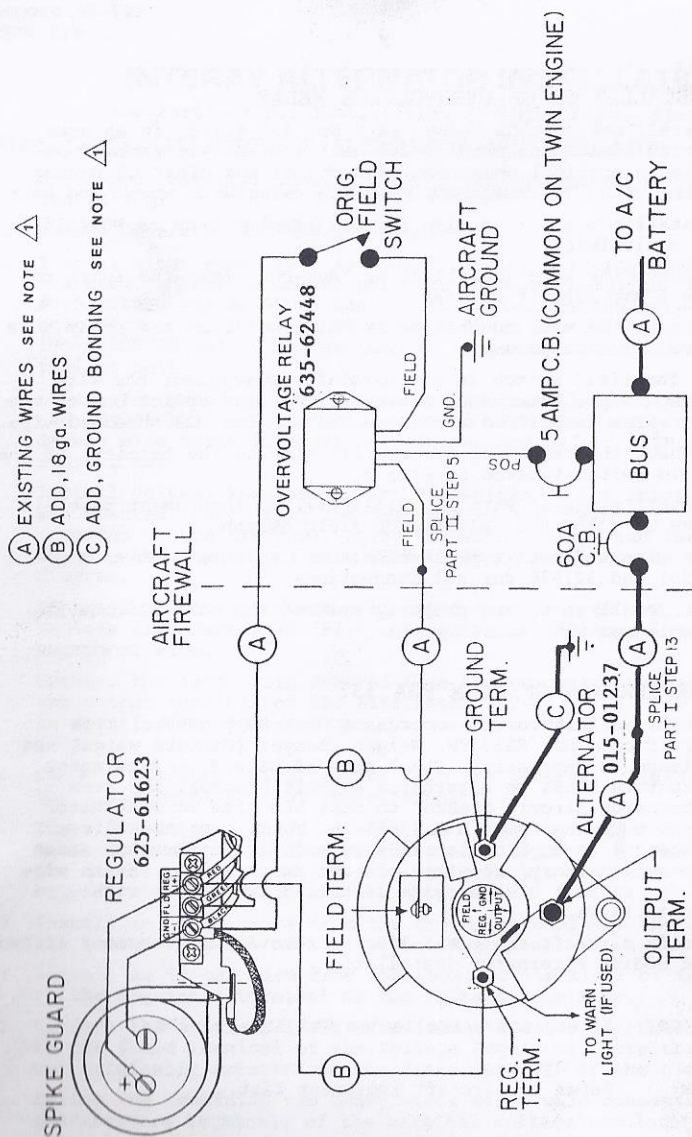
1. Install Overvoltage Relay, Part No. 635-62448, in an area behind instrument panel which will provide clearance from other electrical component connections and clear of moving parts. Mount to convenient structure using No.8 screws and nuts.
2. Install a 5 amp trip free circuit breaker such as MS24510-5 or equivalent.
3. Connect the wire identified as "Red-Pos" from the relay to the 5 amp circuit breaker.
4. Connect the wire identified as "Blk-Gnd" from the relay to a good airframe ground.
5. At the field switch in the aircraft, disconnect the wire going to the Alternator field terminal and splice one of the two wires identified as "Green-Fld" to the disconnected wire.
6. Connect the remaining "Green-Fld" wire to the terminal of the field switch vacated in Step 5.
7. Install placard, Part No. 415-40054, on instrument panel in view of pilot near Alternator field switch.
8. Use ring and butt type terminals and splices such as amp 32951 and 321026 for all connections.
9. Insure all wires are properly secured and work is done in compliance with A.C.43.13-1A.

PART III: PREPARATION OF FORM FAA 337

1. Install Alternator in accordance with Supplemental Type Certificate No. SA334SW. Weight Change: (Compute weight and balance as necessary). Check size of wire from Alternator output terminal to Alternator circuit breaker, and from Alternator circuit breaker to buss and size of Alternator circuit breaker with A.C.43.13-1A. **Note:** continue this statement as applicable. If wire and circuit breaker sizes are satisfactory, so state. If not satisfactory, state wire and/or circuit breaker size installed to conform with A.C.43.13-1A.)
2. Modify aircraft equipment list by removal of generator listed and adding Alternator installation.

WEIGHT: Alternator Installation Weight - 11 lbs.

ARM: Refer to Aircraft Equipment List.



A AC-43.13-1A CHAPTER 11 SECTIONS 2 AND 3 SHOULD BE CONSULTED FOR MINIMUM WIRE SIZES FOR 50 AMP OUTPUT.



TYPICAL WIRING DIAGRAM
 ALTERNATOR SYSTEM, SINGLE AND TWIN ENGINE INSTALLATION

Report 65-113

Report 65-113

KIT #TE

SECTION II ALTERNATOR INSTALLATION BASIC INSTALLATION KIT 2 EACH, PART NO. 015-01236 TWIN ENGINE AIRCRAFT

PARTS LIST

Quantity	Part Number	Reference Number	Description
2 each	015-01237	A-152A	Alternator Assembly
2 each	625-61623	A-153D	Voltage Regulator
2 each	635-62448	OVR-12B	Overvoltage Relay
2 each	015-01240	A-167D	Mounting Bar Assy. Kit
2 each	245-23709	A-178	Spike Guard Capacitor
4 each	165-15041	A-178-2	Clamps
2 each	435-42408	A-178-4	Lead Kit
2 each	395-37992	A-178C	Hardware Kit
1 each	415-40055	OVR-12A-7	Placard
1 each		R-65-113	Installation Instructions

SEE SECTION IV for OPTIONAL EQUIPMENT.

ALTERNATOR INSTALLATION

Instructions for Installation

TWIN ENGINE AIRCRAFT

PART I: INSTALLATION OF ALTERNATOR AND REGULATOR

1. Install Alternators and Regulators on each engine in accordance with instructions for single engine.
2. Remove paralleling relays and secure wires. The Alternator system does not require paralleling relays.

PART II: INSTALLATION OF OVERVOLTAGE RELAY

1. Install Overvoltage Relays for each engine in accordance with instructions for single engine.
2. Install placard, Part No. 415-40055, on instrument panel in view of pilot near alternator field switch.

PART III: PREPARATION OF FORM FAA 337

Install Alternator in accordance with Supplemental Type Certificate No. SA334SW. Weight Change: (Compute weight and balance as necessary). Check size of wire from right and left Alternator output terminals to right and left Alternator circuit breakers, and from right and left Alternator circuit breakers to buss and size of right and left Alternator circuit breakers with A.C.43.13-1A. **Note:** continue this statement as applicable. If wire and circuit breaker sizes are satisfactory, so state. If not satisfactory, state wire and/or circuit breaker size installed to conform with A.C.43.13-1A.)

WEIGHT: Dual Alternator Installation Weight - 22 lbs.

ARM: Refer to Aircraft Equipment List.

SECTION III

RADIO NOISE

SUPPRESSION TECHNIQUES

The Alternator system has built-in radio noise suppression, and virtually eliminates all noise and interference on most installations. If additional suppression is required, a qualified Radio Maintenance Technician should be consulted for recommendations.

SECTION IV

OPTIONAL EQUIPMENT

AND SPARES LIST

OPTIONAL EQUIPMENT

<u>Req. Per</u> <u>Engine</u>	<u>Part</u> <u>Number</u>	<u>Reference</u> <u>Number</u>	<u>Description</u>
1	295-29694	A-154	Circuit Breaker, 60 amp
1	295-29699	A-200	Circuit Breaker, 5 amp
1	015-01246	A-152-3	Fan, Cooling, for opposite rotation engine
1	015-01245	A-179-1	Arm, Belt Adjust, PA-22

SPARE PARTS

Req. Per Engine	Part Number	Reference Number	Description
1	015-01237	A-152A	Alternator Assembly
1	245-23693	A-177-1	Capacitor
1	655-64139	A-152A-1	Resistor
1	115-09964	A-152-2	Brush Assembly
1	015-01247	A-152-4	Fan, Cooling, Std. Rot.
1	015-01246	A-152-3	Fan, Cooling, Opp. Rot.
1	015-01240	A-167D	Mounting Bar Assembly
1	015-01241	A-167-9	Bar, Alt. Mounting
2	095-08098	A-167-10	Bracket, Alt. Mounting
1	015-01245	A-179-1	Arm, belt adjust, PA-22
1	625-61623	A-153-D	Voltage Regulator Assbly
1	625-61610	A-153-3	Strap, Grounding
1	245-23810	A-178A	Spike Guard Assembly
1	245-23709	A-178	Capacitor
2	165-15041	A-178-2	Clamp
1	435-42371	A-178-1	Lead Assembly 3.5"
1	435-42372	A-178-3	Lead Assembly 5.5"
1	395-37992	A-178C	Hardwire Kit
1	635-62448	OVR-12B	Overvoltage Relay
1	415-40054	OVR-12A-6	Placard, Single Engine
1	415-40055	OVR-12A-7	Placard, Twin Engine

SECTION V
SUPPLEMENTAL INFORMATION

- Bonanza Aircraft S/N's D4866 through D6162
 - Reverse Rotating Engines and Fan Rotation
 - Piper PA 24-250 Belt Recommendations
 - Lycoming Wide Deck Engines
 - Downer (Republic) RC-3 Seabee, Franklin 6A8-215
- Compliance with the following excerpt from Beechcraft Service News Vol. XIII, No. 2, Feb. 1960 is recommended when an InterAv Alternator kit is retrofitted to Bonanza Aircraft.

"SHOCK MOUNTED GENERATOR BRACKETS - A new shock mounted generator bracket which will reduce vibration, the major cause of generator and generator bracket failures, has been developed for the Continental O-470 and IO-470 series engines. The shock mounted generator bracket is available for installation on the Bonanza series of airplanes, serials D-4866 through D-6161. Installation of this new bracket will be made at the factory on all Model 33 aircraft and on Bonanzas, Serials D-6162 and after. This improved bracket assembly was developed by Continental Motors and is available in Continental kit EQ-5841. The kit consists of four rubber shock mounts, a new generator brace, a new mounting bracket, attach-parts and installation instructions. Further information concerning Kit EQ-5841 or the kit itself may be obtained by contacting the Continental Motors Corporation of Muskegon, Michigan, or any authorized Continental Distributor."

NOTE: The above mentioned kit is no longer available as a kit, but individual parts are currently available from Teledyne Continental Motors Distributor or through their customer service department in Mobile, Alabama.
 - Installation of Alternators on aircraft equipped with Reverse Rotating Engines:

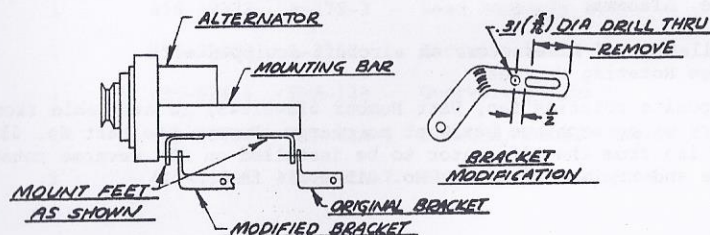
An opposite rotation fan, Part Number 015-01246, is available from the factory on an exchange basis at no charge. Remove the Part No. 015-01247 fan from the Alternator to be installed on the reverse rotation engine and replace with Part No. 015-01246 fan.

3. Piper PA-24-250 Belt Recommendations; Gates Belt P/N's 575TG (31"), 8353 (31-1/8") or 8242 (32-1/8").
4. STC SA334SW was originally approved for installation on those aircraft listed on Page 2 using the "narrow deck" Lycoming engines. Later versions of some aircraft will have the "wide deck" Lycoming engine installed. For these engines the standard Mounting Bar Assembly in the kit is replaced by Lycoming brackets which bolt directly to the engine case. The Alternator requires a special extended pulley and belt. Installation must be accomplished in accordance with Drawing No. A-181.

ALTERNATOR INSTALLATION

Downer (Republic) RC-3 / SEABEE / Franklin 6A8-215

5. This is an illustration of one method of mounting the Alternator. Other methods may be employed at the discretion of the installing agency, provided the installation conforms with instructions outlined in Report 65-113 (single engine).
1. In order to properly align the alternator belt it will be necessary to modify the existing front generator steel mounting bracket by drilling one 5/16" hole 1/2" ahead of the slot. Cut the slotted end off and reinstall the bracket on the engine, using the same cap screw.
2. Assemble the Alternator feet on the Alternator mounting bar and install the feet on the front side of the original generator brackets, using the original bolts, as shown on the sketch.



3. The generator belt tension adjustment bar is turned upward and attached to the threaded hole in the Alternator, nearest the engine case. It may be necessary to add washers to the lower end of the bar in order to align the bar with the Alternator. In the event your belt adjustment bar is the long type, drill a new hole in the bar per sketch and cut off excess material. Use Franklin P/N 14883 or Goodyear 5L380 belt.

