INTER AV, INC.

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SAN ANTONIO, TEXAS 78216
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To: Derek Fulton
FAA FSDO
fax transmission [redacted]

P1 of 4

Reference : STC SA334SW , install instructions, 60 Circ. Breaker

Dear Mr. Fulton,
Transmitting pages 6,7,8 of install booklet , report 65-113 .

Eric Buschfort , Inter Av Inc.

PART II: INSTALLATION OF OVERVOLTAGE RELAY

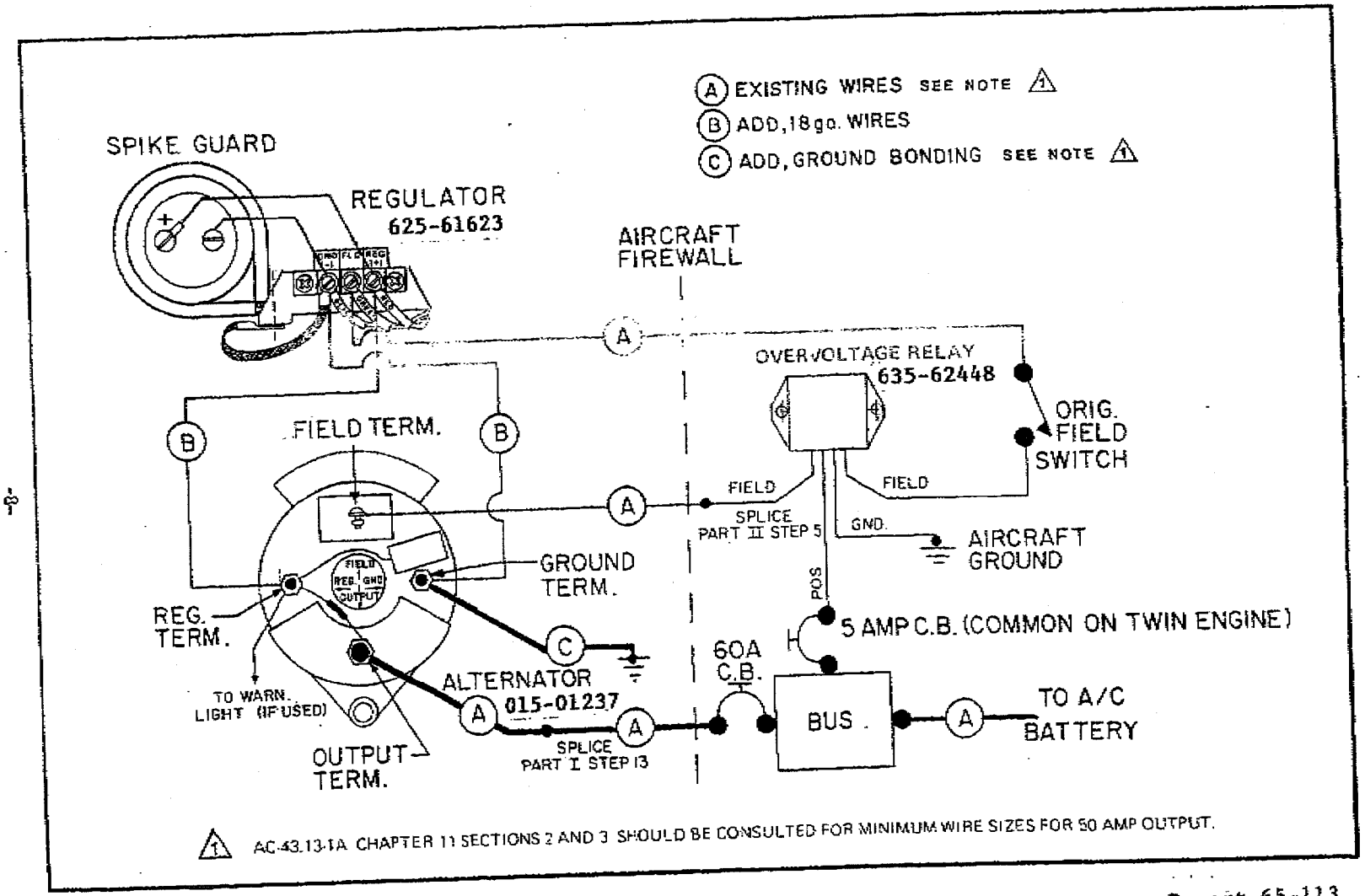
1. Install Overvoltage Relay, Part No. 635-62448, in an area behind instrument panel which will provide clearance from other electrical component connections and clear of moving parts. Mount to convenient structure using No.8 screws and nuts.
2. Install a 5 amp trip free circuit breaker such as MS24510-5 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.

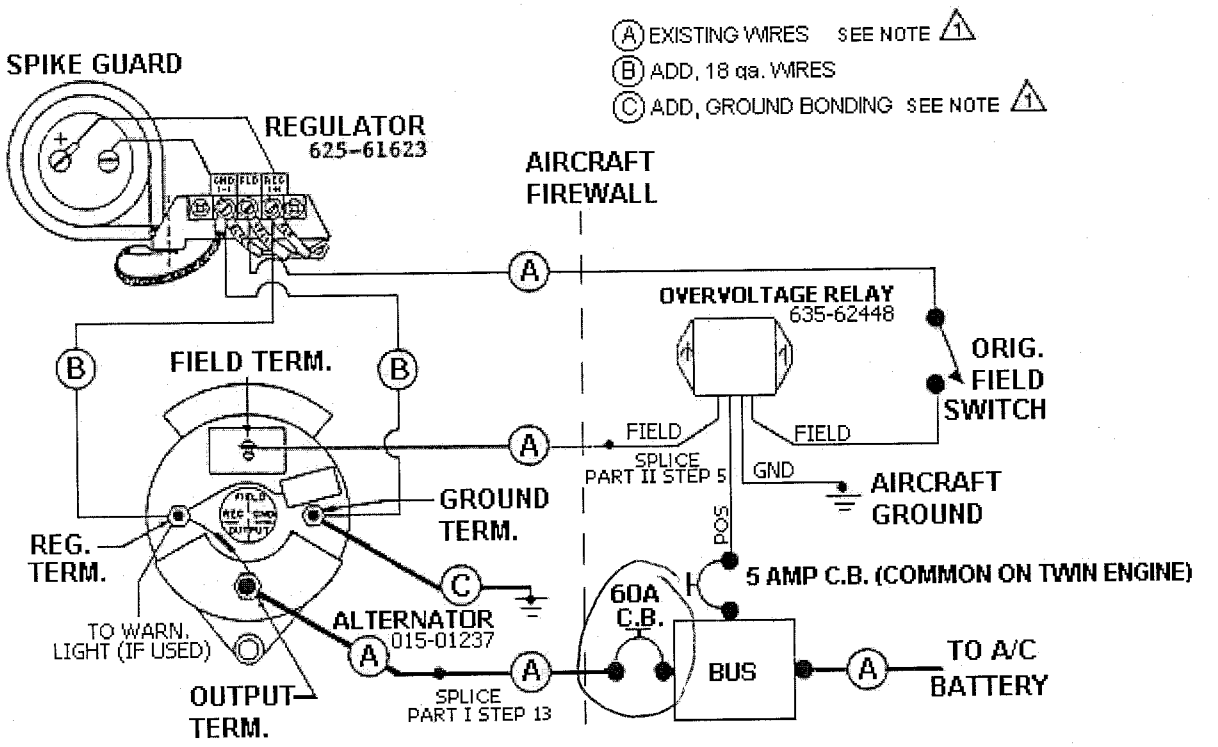


TYPICAL WIRING DIAGRAM
ALTERNATOR SYSTEM, SINGLE AND TWIN ENGINE INSTALLATION

Report 65-113

INTER AV INC.
SAN ANTONIO, TEXAS 78216

INTER AV ALTERNATOR WIRING DIAGRAM



1 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

Back to Alternators T/S Chart T/S Suggestions Home

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SAN ANTONIO TX 78216
STC-SA3345W
ERIC BUSCHFORT

INTER AV INC.
SAN ANTONIO, TEXAS 78216

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INTER AV TROUBLE SHOOTING SUGGESTIONS

1. Be sure before trouble shooting your system that **ALL** electrical components are **OFF** in the aircraft to minimize the chance of damaging avionics or other electrical components.
2. **Always** hook a volt-meter/ multi-meter to the main buss so that you can quickly and accurrately determine if the system is charging or discharging and most importantly is the system in an Over Voltage state . **Record** the buss voltage at low load and high load and also what buss voltage is with just battery voltage on the buss. This will help determine how your system is operating . Ammeters do not tell us enough about what is happening on the charging system other than the indicated charge or dis-charge condition .
3. Use the **Trouble Shooting Chart (TSC)** with Master Switch "On" , Field Switch "On", Engine "Off" . Write the voltages measurements down and where you took the measurement & then go back to the chart to see if you can get a match with the **TSC** .
4. Make that the system is wired as per the **diagram** otherwise the **TSC** will not help and your system may not charge as designed. There are several ways to mis-wire the system so it works but it does not put out the correct output voltage.
5. If the Resistor on the back of the Alternator is Open or missing the **TSC** will not be helpful because the Resistor is providing the voltage being measured on the **TSC**. Many times a system will self excite during run-up or takeoff indicating that the Resistor is Open or missing . If all is normal the system will be on-line at low RPM after start up .
6. If all checks are normal on the TSC it is possible that the **Over Voltage Relay (OVR)** is tripping at startup . To diagnose this do the reset of the **OVR**. Field Switch Off , Master Off, Master On, Field Switch On . If this brings the system back on-line the OVR probably tripped at startup because of a voltage spike from the starter contactor .
7. The **wiring diagram** shows a separate ground wire or ground strap on the diagram . Be sure to install one or inspect the system to see if one is installed. The system may work, or have been working for years, but may not have full output capability and/or cause the output to vary as the grounding is changing.
8. Be sure the voltage regulator is grounded to the ground terminal on the back of the Alternator as shown on the **diagram.** Firewalls are not always good grounding points and if the Voltage Regulator does not have a good reference ground it cannot regulate properly.
9. Be sure the External Diode Plate on the back of the Alternator is not touching a ground point . The External Diode Plate has power to it which then flows across the diodes imbedded in the plate to the output terminal/stud.
10. Old Master Switches can cause problems with the charging system. As the contacts and plastic age on the Master Switches both the field to the alternator and the ground for the battery contactor can be opening/closing without someone moving the switch. Remember it is important for the charging system to **always** have the battery in the circuit while the alternator is charging otherwise there is a risk of damaging the charging system components. If the battery contactor is opening/closing because of a bad Master Switch this can cause repetitive failures of the charging system.
11. Low Buss Voltage can be caused by several things. Worn Brushes on the Alternator. Poor Grounding . Abnormal resistance in the output wire . Resistance in the aircrafts Field Circuit . Heavy electrical loads - battery discharged- pitot heat - landing lights- storm scope etc. can quickly add up to a 50 amp load . Alligator clip a wire onto the output terminal of the Alternator and compare output voltage to the voltage on the buss . They should be within .1-.2 volts difference . If you are getting more there could be a problem on the output wire. The Voltage Regulator is typically not the culprit in Low Buss voltage. The vast majority of the time a Voltage Regulator would fail completely and totally and not weaken .
12. Some mechanics install a temporary field circuit between the Voltage Regulator field terminal and the Alternator field terminal . They do this so they can bypass the aircraft field circuit and associated splices/switches and see if the Alternator and Voltage Regulator will perform properly . They start the aircraft while monitoring buss voltage and look for normal voltages or can shut down the system off if needed. If the systems peform normally they focus their attention on the aircrafts field circuit.
13. Some mechanics momentarily (1 - 3 seconds) flash 12 volts to the field of the alternator while monitoring buss voltage to see if the alternator goes to full output. If the Alternator does not do anything they know the problem is in the Alternator.

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INTER AV TROUBLE SHOOTING CHART

Condition or Fault	1 Alternator Regulator Terminal	2 Volt. Regulator Regulator Terminal	3 Volt. Regulator Field Terminal	4 Alternator Field Terminal
Normal	1.0 +/- 0.2	1.0 +/- 0.2	1.0 +/- 0.4	1.0 +/- 0.4
Field Circuit Open				
1 Broken Wire	7.5	7.5	7.5	0
2 Open Field Switch	7.5	7.5	7.5	0
3 Open O.V.R.	7.5	7.5	7.5	0
4 Open Brush	7.5	7.5	7.5	7.5
5 Faulty Rotor	7.5	7.5	7.5	7.5
Faulty Regulator				
1 Regulator Open	9.00 / 11.5	9.00 / 11.5	0	0
2 Regulator Shorted	0.8	0.8	0.6	0.6
Reg. Wire Open	12.5	0	0	0
Resistor Open	0 - 0.4	0 - 0.4	0	0
Grounded	0	0	0	0
external diode plate, field circuit, regulator wire				

Instructions

1 Engine Not Running

2 Master Switch "ON"

3 Field Switch "ON"

4 Confirm Alt. Output Terminal has 12.5 Volts

5 Take voltage readings at points 1 Thru 4 to diagnose fault

¡gestions:

sure Alternator Output Plate (external diode plate) is not touching ground.

sure Alternator is Grounded with adequate size wire.

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INTER AV ALTERNATORS PARTS LIST

015-01236	Alternator Kit, 50 AMP -	fits most belt driven applications
015-01236WD	Alternator Kit, 50 AMP -	fits Wide Deck Lycoming O320 / O360
015-01237	Alternator , 50 AMP -	with standard pulley
625-61623	Voltage Regulator	
635-62448	Over Voltage Relay	
115-09964	Brush & Holder Assy.	
655-64139	Resistor, 75 ohm	
015-01240	Mounting Bar Assy.	
015-01241	Mounting Bar	
095-08098	Bracket, Alt. Mount Assy.	

KIT #SE

Report 65-113

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.