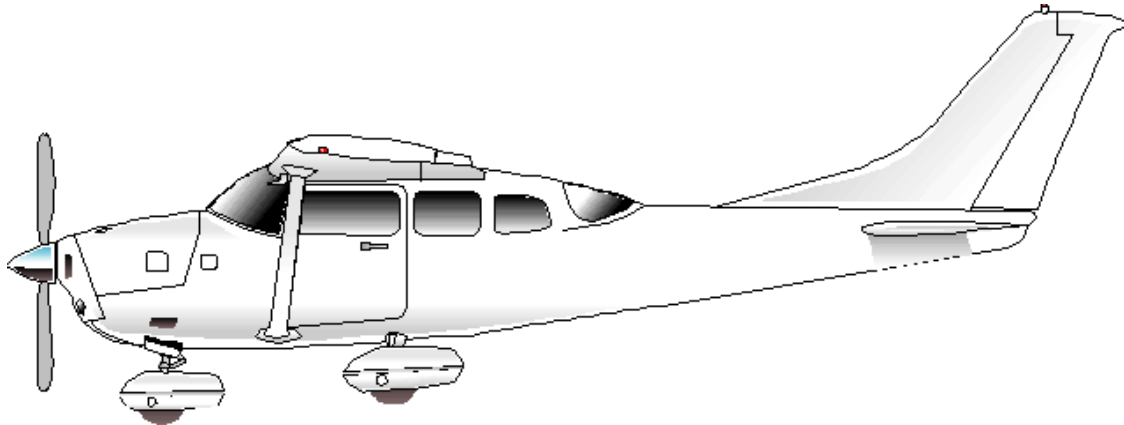
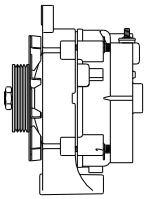


AvSpec Corporation 130 Amp Alternator AV4019



Installation Instructions
for
Cessna 206H and T206H



RECORD OF REVISIONS

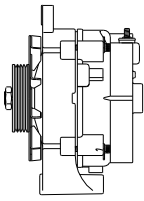
Revision	Description	Date	Approval
-	Initial Release	09/01/04	R. Poe
A	Added General Section. Removed detailed installation of the optional load meter. Added Operational Check.	12/10/04	R. Poe
B	Added note for notch in nose bowl. Corrected wire end terminal P/N.	2/3/05	R. Poe
C	Added optional load meter and AV10091 placard installation. Added AV002 AFMS with optional load meter.	03/22/17	R. Poe

LIST OF EFFECTIVE PAGES

PAGE	REVISION	DATE
1	C	03/22/17
2	C	03/22/17
3	C	03/22/17
4	C	03/22/17
5	C	03/22/17
6	C	03/22/17
7	C	03/22/17
8	C	03/22/17
9	C	03/22/17
10	C	03/22/17
11	C	03/22/17
12	C	03/22/17
13	C	03/22/17
14	C	03/22/17
15	C	03/22/17

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General - Kit Contents	3 to 5
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Weight and Balance Data	15



GENERAL

The Aviation Specialty Corporation (AvSpec) alternator STC increases the electrical load capacity of the Cessna T206H/206H alternator to supply the electrical bus with up to a maximum of 130Amps.

The installation of the 130 Amp alternator requires the upgrading of the aircraft's existing electrical wiring from the alternator to the Power Junction Box (PJB) and from the PJB to the aircraft electrical buses. The circuit breakers in the PJB are upgraded to 50 Amps from either the existing 30 or 40 Amp breakers.

The STC is available in two versions:

VERSION 1

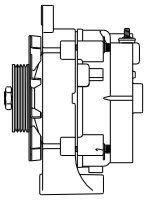
Kit contains an AV4019 130 amp alternator, three 50 amp manual resettable circuit breakers and AFMS AV001. This version increases the electrical load capacity of the Cessna 206 from either 60 or 95 amps to 130 amps. As a result of the extra 35 amp power draw, version 1 has a 30 lb reduction off the maximum take-off weight to 1500 ft AGL.

VERSION 2

Kit contains an AV4019 130 amp alternator, three 50 amp manual resettable circuit breakers, Electronics International model VA-1A-150 Volt/AMP gauge, shunt, AV40091 Placard and AFMS AV002. This version increases the electrical load capacity of the Cessna 206 from either 60 or 95 amps to 130 amps. The load meter, when shunted between the positive lead of the alternator and the PJB, reads alternator amperage output. This load meter will allow the use of 100% of the alternator capacity. The AV10091 Placard is installed near this gauge and requires the operator to maintain a maximum of 95 Amp or less during take-off to 1,500 ft AGL. Aircraft equipped with this version do not have a take-off weight reduction.

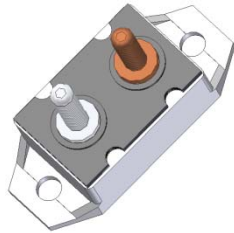
If the operator currently has an aircraft equipped with an equivalent load monitoring gauge, which is shunted between the positive lead of the alternator and the PJB, the operator will need to purchase the AV10091 Placard and AFMS AV002.

The installer is reminded that when installing equipment which consumes electrical power in an aircraft, it should be determined that the total electrical load can be safely controlled or managed within the rated limits of the electrical components of the aircraft's electrical power supply system. The addition of most electrical utilization equipment is a major

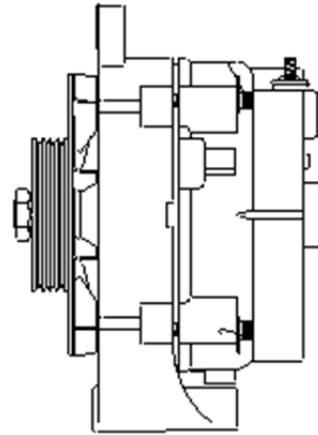


alteration and requires appropriate FAA approval. An electrical load analysis must be prepared in general accordance with good engineering practices. Additionally, an addendum to the FAA approved Aircraft Flight Manual is generally required.

KIT CONTENTS - Version 1 without optional load meter



AV10041 50A Circuit Breaker
3 required



AV4019 130A Alternator Assembly
1 required

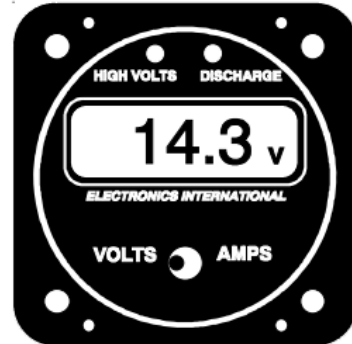
KIT CONTENTS - Version 2 with load meter

(Includes components shown in Version 1)

ALTERNATOR LOAD MUST BE MAINTAINED AT OR BELOW 95 AMPS FROM TAKEOFF TO 1500 FT AGL FOR OPERATIONS AT MAXIMUM GROSS WEIGHT.

FAA-PMA AV10091

AV10091 Ammeter Placard
1 required

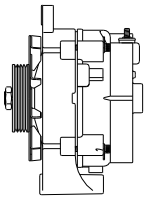


Electronics International model VA-1A-150 kit (or Equivalent)
1 required



150 amp shunt
1 required

- (1) Instructions for Continued Airworthiness (Doc Number AV4019ICA)
- (1) FAA Approved Flight Manual Supplement (Version 1 AV001; Version 2 AV002)

**Not Included In Kit:**

- 2 Gauge Wire (MIL-W-22759/16) @ 9 feet¹
- 8 Gauge Wire (MIL-W-22759/16) @ 10 feet (95A) / 7 feet (60A)
- 6 ea. 33460 Terminal Connectors (4 each 33460 for 60A) (MS20659-107)
- 2 ea. 320383 Terminal Connectors (MS20659-113)
- 1 ea. 322870 Terminal Connector (MS20659-147)
- 1 ea. 330301 Terminal Connector (MS20659-146)
- Alternator Belt² (Cessna P/N 435K4)

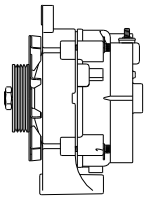
Estimate Time Required

Removal and Replacement of Alternator	0.75 hrs
Removal and Replacement of Circuit Breakers	0.75 hrs
Removal, Assembling and Replacement of Alternator To Power Junction Box Wiring	1.50 hrs
Removal, Assembly and Replacement of Power Junction Box Wiring to Aircraft Buses	<u>4.0 hrs</u>
Installation Hour Estimate ³	<u>7.0 hrs</u>

¹ The installer may need to replace existing Adel clamps with larger sizes to accommodate the larger gauge wire.

² This belt is required only when converting from a 60A alternator system. The original belt for 95A installations may be used if it is determined by the installer to be serviceable.

³ Estimated hours do not include time required to replace the alternator belt on 60A installations or the time required to replace unserviceable belt on 95A installations.



INSTALLATION INSTRUCTIONS

WARNING
THIS INSTALLATION SHOULD NOT BE EXTENDED TO ELIGIBLE AIRCRAFT ON WHICH OTHER PREVIOUSLY FAA APPROVED MODIFICATIONS ARE INCORPORATED UNLESS IT IS DETERMINED BY THE INSTALLER THAT THE INTERRELATIONSHIP BETWEEN THIS CHANGE AND ANY OF THOSE OTHER PREVIOUSLY APPROVED MODIFICATIONS WILL PRODUCE NO ADVERSE EFFECT UPON THE AIRWORTHINESS OF THE AIRCRAFT.

NOTE

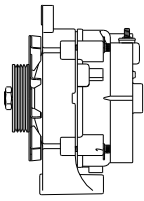
This modification can only be accomplished on aircraft that have complied with Cessna Service Bulletin SB00-24-01. This Service Bulletin replaces the blade type fuses in the Power Junction Box with thermal circuit breakers.

NOTE

Either a 60A or 95A alternator is installed on the forward left side of the engine.

ALTERNATOR REMOVAL

1. Remove the cowl, refer to Chapter 71 of the Cessna T206H, 206H Service Manual (Cowling – Maintenance Practices).
2. Disconnect battery cables – refer to Battery – Maintenance Practices.
3. Disconnect electrical connectors from alternator.
4. Remove safety wire from adjustment bolt and loosen bolt (see Figure 1).
5. Loosen alternator mounting bolt.
6. Rotate alternator and remove drive belt from alternator pulley.
7. Remove adjustment bolt and mounting bolt, then remove alternator from airplane.



8. FOR 60A ALTERNATOR INSTALLATION ONLY. The alternator belt used with the Cessna 60A alternator is not compatible with the alternator belt used with the Cessna 95A alternator or the AvSpec 130A alternator. This alternator belt must be replaced with Cessna P/N 435K4. Replace this belt in accordance with applicable Cessna Service Manual.

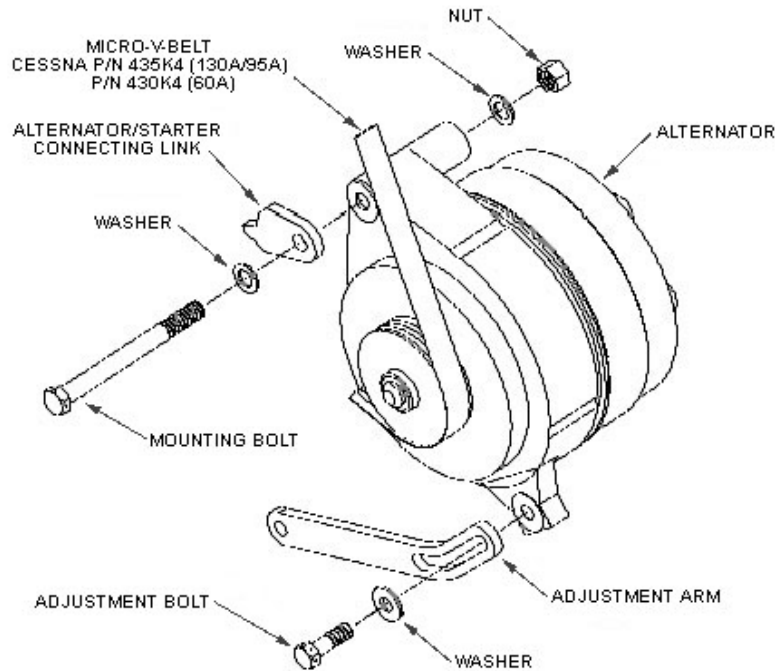
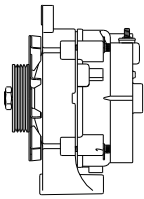


FIGURE 1 – Alternator Installation

INSTALLATION OF AVSPEC 130A ALTERNATOR P/N AV4019

CAUTION
ANY AIRPLANE WITH A NEW ALTERNATOR BELT SHOULD
HAVE THE TENSION RE-CHECKED WITHIN THE FIRST 10
TO 25 HOURS OF OPERATIONS.

1. Position alternator on mounting bracket and install mounting bolt and nut. Do not tighten at this time.
2. Place drive belt on alternator pulley.
3. Install adjustment bolt.



4. Apply a torque wrench to the nut on the alternator pulley and adjust the belt tension so the belt slips at 7 to 9 ft-lbs of torque with a used belt, or 11 to 13 ft-lbs of torque with new belt.
5. Tighten adjusting bolt to a torque of 175 ± 15 in-lbs and safety wire IAW Chapter 7, Section 7 of AC 43.13B.
6. Tighten alternator mounting bolt to a torque 475 ± 25 in-lbs.
7. Tighten alternator swing arm to engine bolt to a torque of 120 ± 20 in-lbs.
8. It may be necessary to notch the fiberglass cowling nose bowl to prevent the rubbing of the alternator shaft/nut. The clearance must be a minimum of 0.25". See Figure 2.

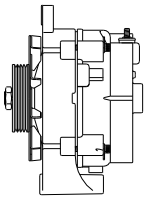


FIGURE 2 – Notch in Cowling Nose Bowl

REPLACEMENT OF ALTERNATOR WIRES

CAUTION
THE WIRE USED BETWEEN THE ALTERNATOR AND GROUND AND BETWEEN THE ALTERNATOR AND THE POWER JUNCTION BOX MUST MEET MIL-W-22759/16 (600 V, 150°C TIN COATED COPPER WIRE).

CAUTION
TORQUE FOR ALL ELECTRICAL CURRENT CARRYING WIRE MUST BE IN ACCORDANCE WITH CHAPTER 20, SECTION 11, PARAGRAPH 4, OF THE CESSNA 206H/T206H MAINTENANCE MANUAL OR AS SPECIFIED IN THIS SECTION.

**NOTE**

The Power Junction Box is mounted on the forward, left side of the firewall.

The Power Junction Box contains a battery relay, a starter relay, alternator relay, current sensor, external power relay, an alternator control unit, a power distribution bus, and bus circuit breakers (when Service Bulletin SB00-24-01 is complied with). See Figure 3.

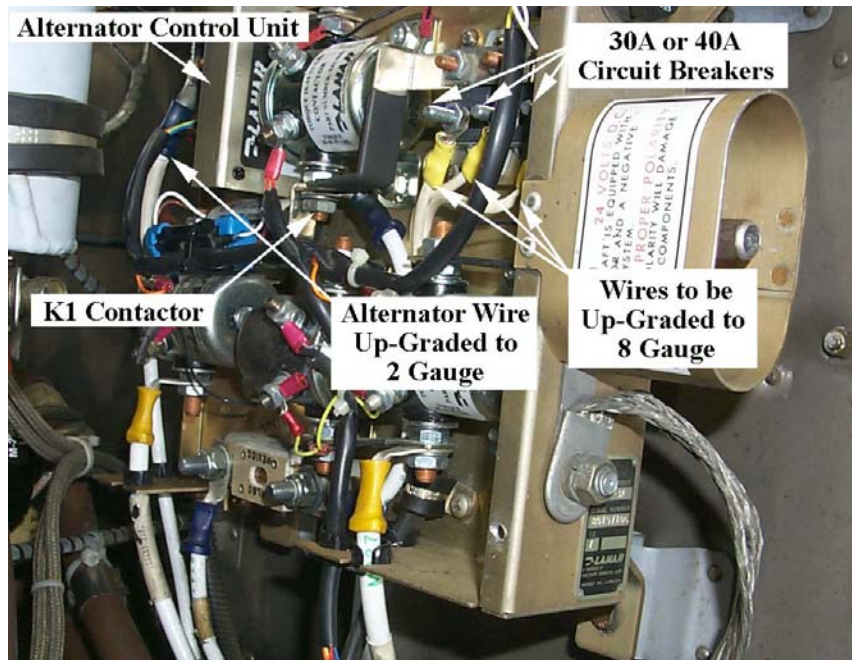
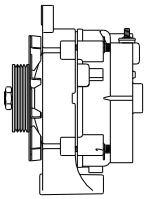


FIGURE 3 – Power Junction Box Modified IAW Cessna SB00-24-01

1. Remove the Power Junction Box cover and retain the 4 screws for reinstallation.
2. Remove the 6 gauge wire between the alternator and Power Junction Box wire (Cessna P/N SACU-BMN001). See Figure 3.
3. Cut a 2 gauge wire to the same length as the wire removed in Step 2. This wire must meet MIL-W-22759/16. Install like end terminals to wire.
4. Reinstall the same capacitor that was previously installed.
5. Reinstall wire using the same tie down point as the wire it is replacing.
6. Remove the 6 gauge wire between the alternator and aircraft grounding point (Cessna P/N GMN001-GN008). See Figure 3.



7. Cut a 2 gauge wire to the same length as the wire removed in Step 6. This wire must meet MIL-W-22759/16. Install like end terminals to wire.

8. Reinstall wire using the same tie down point as the wire it is replacing.

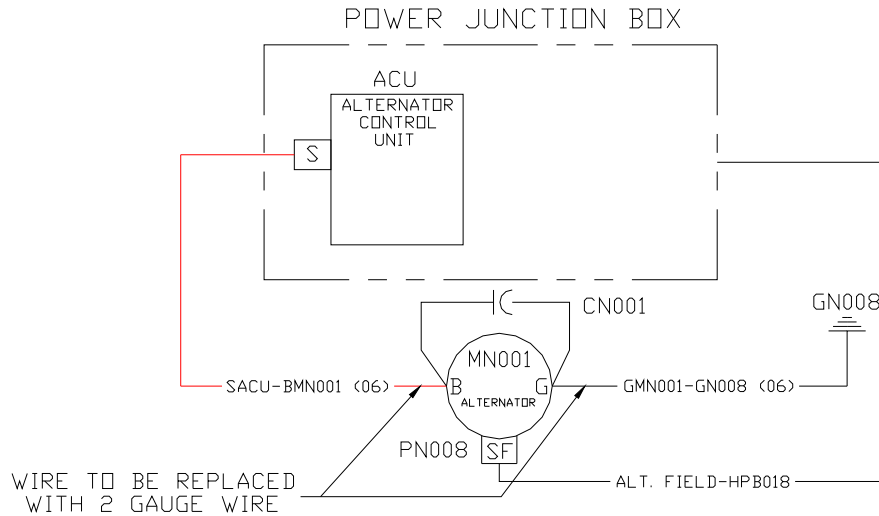
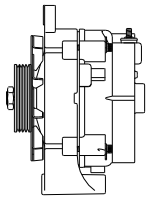


FIGURE 4 – Wiring Diagram for Alternator Wires to Be Changed

REPLACEMENT OF POWER JUNCTION BOX CIRCUITS BREAKERS

1. Remove hardware connecting the load harness to the circuit breakers. Remove cable clamp holding harness to Power Junction Box. The load harness is not re-installed.
2. Remove the hardware connecting the bus bars to the circuit breakers.
3. Loosen the hardware holding the bus bar at K1 (Alternator) Contactor. See Figure 4.
4. Remove the bus bar from the circuit breakers.
5. Remove circuit breaker mounting screws and replace the existing circuit breakers with new 50A circuit breaker, AvSpec P/N AV10041, while observing correct orientation (BATT terminals to the outside). Do not tighten the mounting screws until after the bus bars are reinstalled.
6. Tighten circuit breakers to the Power Junction Box base at 9 to 15 in-lbs.
7. Tighten bus bar circuit breaker contacts to 20 to 25 in-lbs.



8. Tighten bus bar hardware at K1 Contactor to 35 to 45 in-lbs.

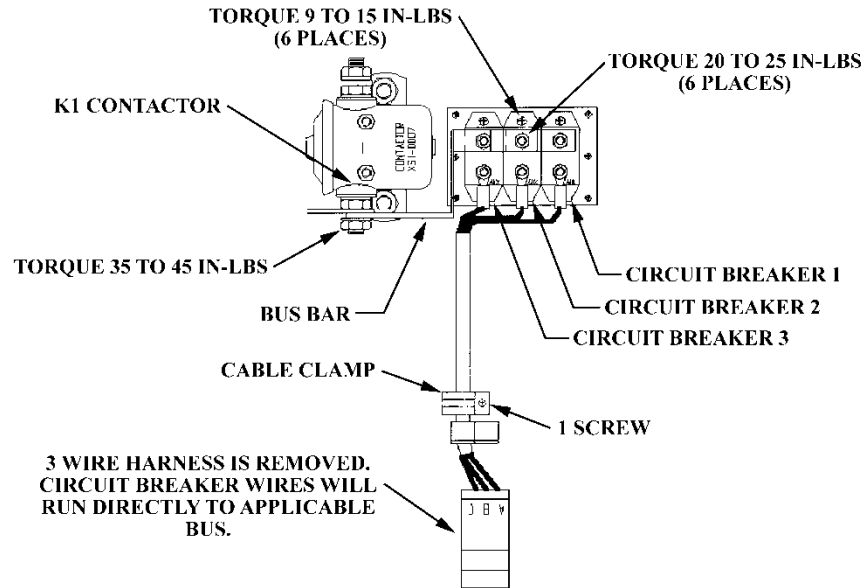


Figure 5 – Circuit Breaker Placement in Power Junction Box

REPLACEMENT OF ELECTRICAL BUS WIRES

CAUTION

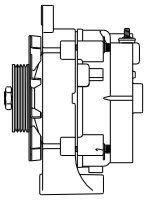
THE WIRE USED BETWEEN THE POWER JUNCTION BOX AND THE AIRCRAFT ELECTRICAL BUSES MUST MEET MIL-W-22759/16 (600 V, 150°C TIN COATED COPPER WIRE).

CAUTION

THIS INSTALLATION WILL ALLOW MORE ELECTRICAL POWER TO BE TAKEN FROM EACH ELECTRICAL BUS. FOR AIRCRAFT WITHOUT THE A CURRENT LOAD METER, SUCH AS ELECTRONIC INSTRUMENTS AV-1A, LOAD REDUCTION PLACARDS MAY BE REQUIRED IF THE INSTALLED ELECTRICAL EQUIPMENT EXCEED 80% OF THE ALTERNATOR MAXIMUM CAPACITY OF 130 AMPS (104 AMPS). IT IS UP TO THE INSTALLER TO PERFORM AN ELECTRICAL LOAD ANALYSIS TO MAKE CERTAIN THE BUSES WILL NOT EXCEED THEIR MAXIMUM CURRENT CAPACITY. REFER TO CHAPTER 11, SECTION 3 OF AC 43.13B.

NOTE

On aircraft equipped with the standard 60A alternator, electrical power is supplied to the aircraft through two electrical buses which are fed through two 30A circuit breakers in the Power Junction Box. On aircraft equipped with the up graded 95A alternator, the optional propeller heat system incorporates three electrical buses fed through three 30A circuit breakers in the Power Junction Box.

**NOTE**

On aircraft equipped with the 60A alternator, the third circuit breaker can be used to power optional equipment or a separate electrical bus. Due to the variety of installations, the approval of this additional electrical bus is not part of this installation.

1. Remove the 10 gauge wires (2 for 60A systems and 3 for 95A systems) connecting to the 3-wire harness to its respective electrical bus. The wire at electrical bus one is Cessna P/N BP017-H1015. The wire at electrical bus 2 is Cessna P/N APB017-H1014. If installed, the wire at electrical bus 3 (heated propeller) is Cessna P/N CPB017-1H1011. See Figure 6
2. Cut 8 gauge wire to the same length plus 12 inches for each wire removed. This wire must meet MIL-W-22759/16. Install like end terminals to the ends of the wires attached to the electrical buses.
3. Reinstall wire using the same tie down points as the wire it is replacing.
4. The wires will be installed directly to the applicable circuit breaker, trim wire as applicable. Make certain bus one is attached to circuit breaker two, bus two to circuit breaker one and bus three (optional) to circuit breaker three. Install ring terminals to the Power Junction Box end of each wire. Tighten circuit breaker contacts to 20 to 25 in-lbs.
5. Install the Power Junction Box cover using the 4 retained screws.

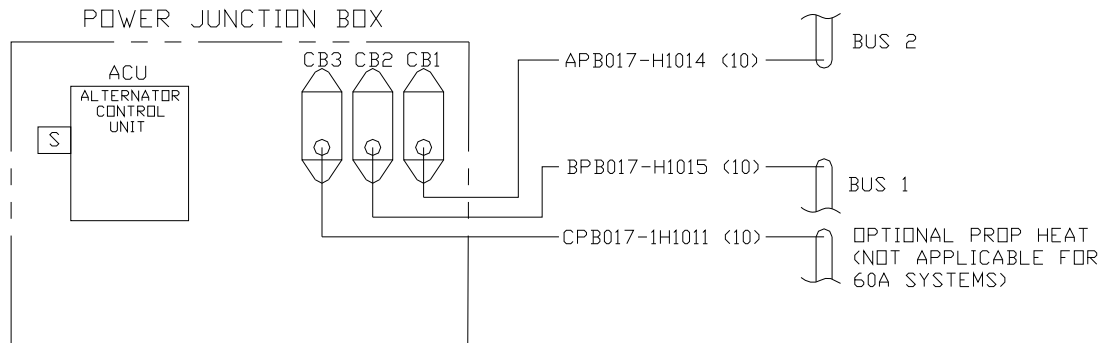
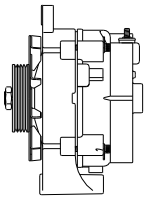


FIGURE 6 – Wires Changed from Power Junction Box to Electrical Buses



ELECTRICAL MONITORING SYSTEM INSTALLATION (Version 2)

NOTE

Installation of this system is not included as part of this STC, but provided through a separate STC or field approval.

1. Install an electrical load monitoring system, such as the Electronics Internationals model VA-1A-150 (STC SA2693NM), or equivalent, in accordance with the appropriate installation instructions. This will allow the pilot to monitor the total current being generated by the alternator and capability to shed electrical load when the output exceeds 130 Amps.
2. Install the current load gauge shunted between the alternator positive lead and the PJB, directly reading the alternator output.

PLACARD INSTALLATION (Version 2)

1. For aircraft equipped with an electrical monitoring system, install the placard, P/N: AV10091, in clear view of the pilot and near the alternator load meter.

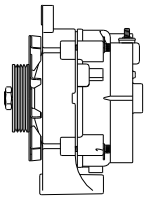
OPERATION CHECK

1. Reconnect battery cables – refer to Battery – Maintenance Practices.
2. Reinstall the cowl, refer to Chapter 71 of the Cessna T206H, 206H Service Manual (Cowling – Maintenance Practices).
3. Start aircraft engine using the normal starting procedures described in Section 4 of the AFM.

NOTE

Illumination of the low voltage annunciator and ammeter discharge indications may occur during low RPM conditions with an electrical load on the system. Under these conditions, the annunciator will go out at higher RPM.

4. Engine RPM – 1000 RPM
5. Taxi and Landing Light Switches – ON



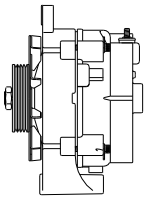
6. Note that the OEM (Cessna) Amp Gauge indicates a positive charge to the battery. For systems equipped with the optional electrical monitoring system, note that the alternator load meter indicates a positive current.

7. Master Power Switch – Alt OFF (left rocker switch of split Master Switch)

8. Note that the OEM (Cessna) Amp Gauge indicates a negative charge to the battery. The low voltage warning annunciator light may illuminate. For systems equipped with the optional electrical monitoring system, note that the alternator load meter indicates zero current.

9. Master Power Switch – Alt ON (left rocker switch of split Master Switch)

10. Note that the OEM (Cessna) Amp Gauge indicates a positive charge to the battery. For systems equipped with the optional electrical monitoring system, note that the alternator load meter indicates a positive current.



WEIGHT AND BALANCE DATA

NOTE

Weight and balance data for the installation of the optional electrical monitoring system is not included.

This weight and balance calculation is for an aircraft that was equipped with the standard 60A alternator and one that was equipped with the optional 95A alternator with the heated propeller. The 60A alternator does not take power from circuit breaker number 3. The wire weights below are the differences between the removed wire weight and replaced wire weight.

Wire weights (MIL-W-22759):

10 Gauge	35.1 lbs/1000 feet
8 Gauge	63.5 lbs/1000 feet
6 Gauge	99.9 lbs/1000 feet
2 Gauge	245.0 lbs/1000 feet

Cessna 60A Alternator	Weight	Arm	Moment
Alternator (60A)	10.3	-32.3	332.7
Alternator (130A)	15.8	-32.3	509.2
Alternator Wire	1.25	-13.0	16.3
Bus Wire	<u>0.19</u>	8.0	<u>1.5</u>
CHANGE	<u>+6.9</u>		<u>-194.3</u>

Cessna 95A Alternator	Weight	Arm	Moment
Alternator (95A)	15.7	-32.3	507.1
Alternator (130A)	15.8	-32.3	510.3
Alternator Wire	1.25	-13.0	16.3
Bus Wire	<u>0.29</u>	8.0	<u>2.3</u>
CHANGE	<u>+1.6</u>		<u>-21.8</u>