



CLASS I SERVICE INSTRUCTIONS

76

No. 1038, Rev I
ATA Code 24-30

SUBJECT: ELECTRICAL POWER - MODIFICATION OF ELECTRICAL SYSTEM AND IMPROVED ALTERNATOR PARALLELING

SYNOPSIS OF CHANGE: Reversed steps 7i and 7j under ACCOMPLISHMENT INSTRUCTIONS to correct check procedure.

EFFECTIVITY: BEEHCRAFT Duchess 76, serials ME-1 through ME-7, and ME-9 through ME-102.

REASON: To provide improved paralleling of alternators.

COMPLIANCE: Beech Aircraft Corporation considers this to be a mandatory modification and it should be accomplished as soon as possible after receipt of these Service Instructions, but no later than within the next 50 service hours.

APPROVAL: FAA Appved - DOA CE-2.

MANPOWER: The following information is for planning purposes only:

Estimated man-hours: 3 hours.
Suggested number of men: 1 man.

MATERIAL: The following parts required for this modification may be ordered through BEEHCRAFT Aero or Aviation Centers and International Distributors and Dealers.

PART NUMBER	DESCRIPTION	QUANTITY
MDA30	Fuse	1 per airplane
3833-1	Fuse Block	1 per airplane
105-320000-21	Bus	2 per airplane
ANLM50	Limiter	3 per airplane

The value of the parts required for the incorporation of these Service Instructions on one airplane is to be advised. Prices, when issued, will be subject to change without notice.

WARRANTY: Warranty credit for parts and labor to the extent noted under MATERIAL and MANPOWER will be allowed on claims submitted prior to September 30, 1979.

All warranty reimbursements are handled through franchised BEEHCRAFT outlets.

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Beech Aircraft Corporation issues service information for the benefit of owners and fixed base operators in the form of three classes of Service Instructions. CLASS I (Red Border) are changes, inspections, and modifications that could affect safety. The factory considers compliance mandatory. CLASS II (Green Border) covers changes, modifications, improvements or inspections the factory feels will benefit the owner and although highly recommended, they are not considered mandatory compliance, unless specified at the time of issuance. Class I and II are mailed to:

- (a) BEEHCRAFT Aero or Aviation Centers and International Distributors and Dealers
- (b) Owners of record on the FAA Registration list and the

BEEHCRAFT International Owner Notification Service List.
(c) Those having a publications subscription.

CLASS III (No Border) covers changes which are optional, maintenance aids, product improvement kits and miscellaneous service information. Compliance is at the owner or operator's prerogative. Copies of Class III are distributed per a and c above. Information on Owner Notification Service or Subscriptions can be obtained through any BEEHCRAFT Aero or Aviation Center, International Distributor and Dealer, or the Factory. As Service Instructions are issued, temporary notation in the index should be made until the index is revised. Warranty will be allowed only when specifically defined in the Service Instructions and in accordance with Beech Warranty Policy.

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Owners and operators may arrange with these outlets to perform the work and submit the standard Beech Aircraft Corporation warranty claim form to the Commercial Service Department, Beech Aircraft Corporation, Wichita, Kansas, 67201.

SPECIAL TOOLS:

None.

WEIGHT AND BALANCE:

None.

REFERENCES:

BEEHCRAFT 76 Wiring Diagram Manual, P/N 105-590000-15 or subsequent, Chapter 24-51-01.

PUBLICATIONS AFFECTED:

It is recommended that a note to "See Service Instructions No. 1038 Rev. I" be made in the following:

76 Maintenance Manual copies, P/N 105-590000-7 or subsequent, Chapter 24-30.
76 Wiring Diagram Manual copies, P/N 105-590000-15 or subsequent, Chapters 24-50 and 24-51.

ACCOMPLISHMENT INSTRUCTIONS:

These Service Instructions may be accomplished as follows:

1. Turn off and/or disconnect battery and all other electrical power.
2. Install a P/N 3833-1 fuse block and an MDA30 fuse between the No. 1 and No. 2 circuit breaker buses behind the RH subpanel using two P/N 105-320000-21 bus ties as shown in the illustration.

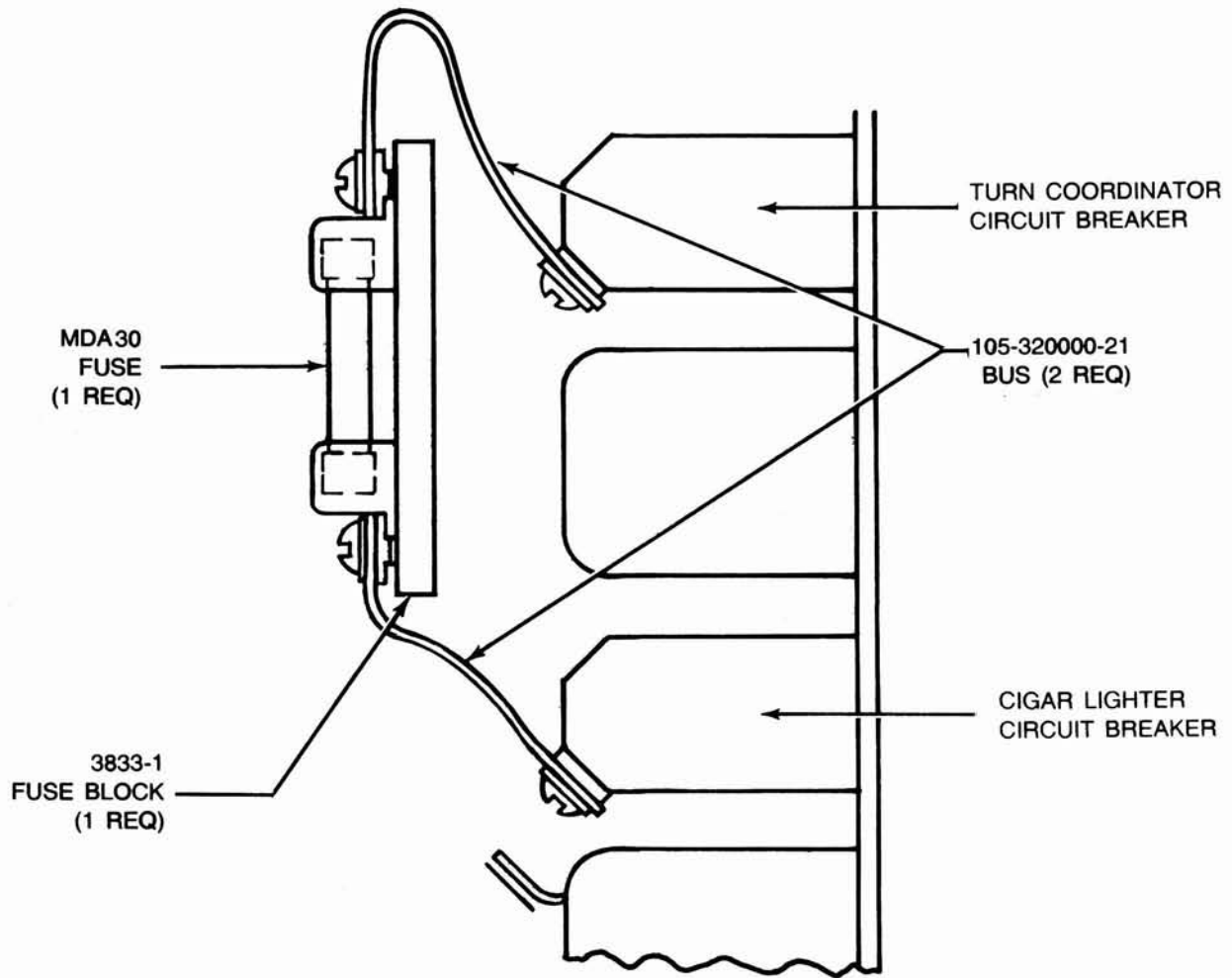
NOTE

The P/N 105-320000-21 bus ties may be hand formed as necessary to facilitate installation as shown in the illustration.

3. Remove the aft baggage compartment bulkhead to gain access to the battery relay installation.
4. Remove the clear plastic cover from the relay assembly and remove and discard the two existing ANLM100 limiters attached to the battery bus and the spare limiter attached to the relay cover.
5. Replace all three limiters removed in step 4 with new ANLM50 limiters.
6. Reinstall the relay cover, reconnect battery and reinstall the aft compartment bulkhead.
7. Parallel the alternators as follows:
 - a. Remove the access covers on top of both nacelles to gain access to the voltage regulators.
 - b. Disconnect the lead from the "PAR" terminal of the RH regulator and secure the free end of the lead so it cannot contact the airframe or other circuits.
 - c. With the LH alternator switch ON and the RH alternator switch OFF, start the LH engine and operate it at 1200 to 1500 rpm for 5 to 10 minutes with approximately 30% load on the alternator to warm up the alternator and the regulator.
 - d. Using a precision voltmeter, measure the voltage on the RH sub panel No. 1 bus. Adjust the LH voltage regulator as required to a reading of $14.0 \pm .2$ volts.
 - e. Shut down the LH engine. Connect a portable voltmeter between the "FIELD" terminals of the RH and LH regulators with the positive lead of the meter on the LH regulator. Set the meter on a scale of 30 volts or higher. Connect an alligator or other suitable type clip to the paralleling lead removed in step b so the lead can be easily connected and disconnected to the "PAR" terminal of the regulator.

NOTE

A length of wire, at least 18 gage, may be connected to the "FIELD" terminal of the LH regulator and routed through the cabin to the RH nacelle to allow both meter connections to be made in the RH nacelle.

**CAUTION**

The length of wire should be secured so it will not come in contact with the propeller. Care should also be exercised to ensure that meter leads must not contact the airframe ground, as this will damage the regulators.

f. Start the LH engine with both alternator switches ON. Apply approximately a 30% load on the system with the engine at 1200 to 1500 rpm and observe the indication on the voltmeter. If a reverse indication (downscale) is obtained, the RH regulator voltage adjustment should be turned counterclockwise until a positive indication is obtained.

g. Adjust the RH regulator for lowest voltage indication that can be obtained. Any indication less than 8 volts is acceptable, however the lower the indication obtained, the more accurate the adjustment will be. The meter indication will not be steady, but the average indication should be as low as possible.

h. Connect the paralleling lead to the "PAR" terminal of the RH regulator. The meter indication should drop to a stable indication of 0.2 to 0.5 volts. Recheck the Bus No. 1 voltage as in step d and readjust the LH regulator as necessary. A final adjustment of the RH regulator should be made following a 5 to 10 minute warm-up period by opening paralleling lead and adjusting as in step g.

i. Shut down both engines, replace snap plugs over the adjustment screws on both regulators, reinstall the paralleling lead on the RH regulator and check all wires for security.

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j. Start both engines and operate them at the same rpm between 1200 and 1500 rpm. Apply enough load to the electrical system to indicate approximately 50% on both loadmeters. The loadmeter indication should remain nearly equal if the load is varied throughout the loadmeter range.

NOTE

Under very low load conditions, one alternator may cut off. This does not necessarily indicate a malfunction, as the system may be operating below the threshold of the paralleling circuit. An increase in electrical load should clear this condition.

k. Reinstall the nacelle access covers and any other covers or panels which may have been removed to accomplish these Service Instructions.

RECORD COMPLIANCE:

Upon completion of these Service Instructions, make an appropriate maintenance record entry.