



US Department  
of Transportation  
Federal Aviation  
Administration

**MAJOR REPAIR AND ALTERATION**  
(Airframe, Powerplant, Propeller, or Appliance)

Form Approved  
OMB No. 2120-0020  
2/28/2011

Electronic Tracking Number


For FAA Use Only

INSTRUCTIONS: Print or type all entries. See Title 14 CFR §43.9, Part 43 Appendix B, and AC 43.9-1 (or subsequent revision thereof) for instructions and disposition of this form. This report is required by law (49 U.S.C. §44701). Failure to report can result in a civil penalty for each such violation. (49 U.S.C. §46301(a))

1. Aircraft	Nationality and Registration Mark <b>N318DS</b>	Serial No. <b>40.1137</b>
	Make <b>DIAMOND AIRCRAFT IND INC</b>	Model <b>DA 40</b>
2. Owner	Name (As shown on registration certificate) <b>FIVE STAR MARKETING INC</b>	Address (As shown on registration certificate) <b>204 RELEASE CIR</b>
		City <b>RALEIGH</b> State <b>NC</b> Zip <b>27615-1695</b> Country <b>UNITED STATES</b>

**3. For FAA Use Only**

The data identified herein complies with the applicable  
airworthiness requirements and is approved only for the above  
described aircraft, subject to conformity inspection by a person  
authorized in FAR 43, section 43.7


04/17/2012   
Date Signature of FAA Inspector

4. Type		5. Unit Identification			
Repair	Alteration	Unit	Make	Model	Serial No.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	AIRFRAME		(As described in Item 1 above)	
<input type="checkbox"/>	<input type="checkbox"/>	POWERPLANT			
<input type="checkbox"/>	<input type="checkbox"/>	PROPELLER			
<input type="checkbox"/>	<input type="checkbox"/>	APPLIANCE	Type Manufacturer		

**6. Conformity Statement**

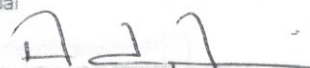
A. Agency's Name and Address		B. Kind of Agency	
Name <b>PREMIER AIRCRAFT SERVICE</b>	Address <b>5540 NW 23RD AVE</b>	<input type="checkbox"/> U. S. Certificated Mechanic	<input type="checkbox"/> Manufacturer
City <b>FT LAUDERDALE</b> State <b>FLORIDA</b>	Zip <b>33309</b> Country <b>UNITED STATES</b>	<input type="checkbox"/> Foreign Certificated Mechanic	C. Certificate No.
		<input checked="" type="checkbox"/> Certificated Repair Station	
		<input type="checkbox"/> Certificated Maintenance Organization	<b>9PRR402B</b>

D. I certify that the repair and/or alteration made to the unit(s) identified in item 5 above and described on the reverse or attachments hereto have been made in accordance with the requirements of Part 43 of the U.S. Federal Aviation Regulations and that the information furnished herein is true and correct to the best of my knowledge.

Extended range fuel per 14 CFR Part 43 App. B <input type="checkbox"/>	Signature/Date of Authorized Individual <b>ADRIAN ARIAS</b>  <b>03-28-2012</b>
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**7. Approval for Return to Service**

Pursuant to the authority given persons specified below, the unit identified in item 5 was inspected in the manner prescribed by the Administrator of the Federal Aviation Administration and is ☒ Approved ☐ Rejected

BY	FAA Flt. Standards Inspector	Manufacturer	Maintenance Organization	Persons Approved by Canadian Department of Transport
	FAA Designee <input checked="" type="checkbox"/>	Repair Station	Inspection Authorization	Other (Specify)
Certificate or Designation No. <b>9PRR402B</b>		Signature/Date of Authorized Individual <b>ADRIAN ARIAS</b>  <b>03-28-2012</b>		



# NOTICE

Weight and balance or operating limitation changes shall be entered in the appropriate aircraft record. An alteration must be compatible with all previous alterations to assure continued conformity with the applicable airworthiness requirements.

## 8. Description of Work Accomplished

(If more space is required, attach additional sheets. Identify with aircraft nationality and registration mark and date work completed.)

N318DS

3-28-2012

Nationality and Registration Mark

Date

- 1) Installed B&C Specialties Model BC410-28 Standby Alternator system in accordance with B&C Specialties Products Installation Instructions 410LST3.DOC (from STC #SA01066WI), Form 8110-3 provided by DC Aerospace dated 03/11/2012, and DC Aerospace Drawing BC410 28v ALT INST'L dated 03/11/2012.
- 2) Utilized all wiring as supplied by B&C Specialty Products. Circuit protection provided by factory circuit breakers. Switch supplied by Diamond and annunciator supplied by B&C were installed in lower instrument panel and comply with FAR23.1361.
- 3) The alternator required 25 in-lbs of torque and has an 18 in-lb overhang moment which is within limits for an AND 2000 drive pad per TCDS E1E10.
- 4) Instructions for Continued Airworthiness provided by B&C Specialties Products document ICA-BC410 Rev. A, and ICA-BC217-aA.wpd.
- 5) Flight Manual Supplement FMS-N318DS installed into POH.
- 6) Weight and balance revised. Equipment list revised.
- 7) This additional system does not adversely effect aircraft system performance and in fact enhances aircraft safety. Alternator output allows full use of the G1000 avionics, less than 13 amps load, plus another 7 amps excess power capacity.

-----END-----

☐ Additional Sheets Are Attached



1. ALL PITOT-STATIC LINES, EXPOSED CONNECTORS OR ANY LOOSE WIRING BUNDLES AFFECTED DURING THE REMOVAL - INSTALLATION PHASE OF THE DATA HEREIN ARE TO BE CAPPED, PROTECTED, TIED BACK, ETC., AND IDENTIFIED AS TO ITS FUNCTION.
2. ALL COMPONENTS, PANELS, EQUIPMENT, MISC. SWITCHES, ETC., THAT ARE CAUSED TO BE REMOVED BY THE DATA HEREIN, ARE TO BE BAGGED AND IDENTIFIED AND STORED IN A SUITABLE PLACE.
3. CABLE/WIRING CLAMPS SHALL BE USED OF SUFFICIENT SIZE AND AT LOCATED AT EVERY STRUCTURE CROSSING OR MAXIMUM SEPARATION OF 18 INCHES. ENOUGH WIRE SLACK WILL BE PROVIDED FOR AT LEAST 3 RE-CONNECTS.
4. ALL CABLE WIRE USED SHALL MEET MIL-C-27500-16-xx, ALL SINGLE WIRE USED SHALL MEET MIL-W-22759-16-xx AND HAVE WIRE NUMBERS AS SHOWN HEREIN MARKED EITHER BY LASER, INK-JET OR SLEEVES.
5. NEW INSTALLATIONS OF WIRE / CABLE SHALL FOLLOW THE SAME ROUTING AS REMOVED / INSTALLED SYSTEMS WHERE POSSIBLE.
6. ALL GROUNDS TO BE TREATED IN ACCORDANCE WITH THE AIRCRAFT MANUFACTURES MAINTENANCE / WIRING PRACTICES MANUAL AND / OR FAA AC 43-13-1x, 2x AS APPLICABLE.
7. ALL UNMARKED WIRES ARE NOT TO EXCEED 6 INCHES IN LENGTH. ALL WIRES TO BE 22 AWG UNLESS OTHERWISE NOTED.
8. MAXIMUM WIRE LENGTHS: UNLESS OTHERWISE NOTED;
  - A. CHASSIS GROUND 16 INCHES
  - B. SHIELD GROUND 18 INCHES
  - C. EXPOSED FROM SHIELD 3 INCHES
9. SHIELD CONTINUITY SHALL BE MAINTAINED THROUGH ALL BREAK POINTS, UNLESS OTHERWISE SHOWN.
10. PERFORM "COLD WIRING" CHECK BEFORE APPLYING POWER.
11. REMOVE TOP ENGINE COWL, REMOVE BATTERY AIRCRAFT POWER
12. REFERENCE SHEET 2 FOR BC410 ALTERNATOR INSTALL
13. REFERENCE SHEET 3 FOR ANNUNCIATOR / ALTERNATOR CONTROL SWITCH / CIRCUIT BREAKERS INSTALLATION
14. REFERENCE SHEET 4 FOR WIRING / ANCILLARY COMPONENT INSTALLATION
15. ROUTE ALL NEW WIRING AWAY FROM CHAGE POINTS AND FLIGHT CONTROLS USING NYLON WIRE TIES. CHECK THE WIRE CLEARANCES FROM FLIGHT AND ENGINE CONTROLS. CHECK FLIGHT AND ENGINE CONTROLS AT AT FULL CONTROL STOPS.
16. RE-CONNECT AIRCRAFT BATTERY

##### REMOVED WIRE(S)  
 \_\_\_\_\_ ADDED WIRE(S)  
 - - - - - EXISTING WIRE(S)  
 ~~~~~~ RELOCATED WIRE(S)

17. PERFORM FUCTIONAL TEST OF NEW BC410 ALTERNATOR INSTALLATION:
  - A. CLOSE THE "STBY ALT", "FIELD" AND "SENSE" CIRCUIT BREAKER AND THE "STBY ALT" MASTER SWITCH, BATTERY SWITCH "ON"
  - B. USING A HIGH DIGITAL VOLTAMETER, CHECK THE VOLTAGE BETWEEN PIN 7 OF THE REGULATOR AND BOTH THE AIRFRAME AND THE BATTERY NEGATIVE POST. VERIFY READING <0 VOLTS DC.
  - C. USE PIN 7 OF THE REGULATOR OR AIRFRAME AS NEGATIVE REFERENCE. VERIFY THE VOLTAGE ON PIN 1 OF THE BC203-20 (REGULATOR) IS EQUAL TO BUS VOLTAGE.
  - D. USE PIN 7 OF THE REGULATOR OR AIRFRAME. CHECK VOLTAGE ON PIN 6 OF THE REGULATOR. VERIFY VOLTAGE IS WITHIN 1.0 VOLT DC OF THE BUS VOLTAGE.
  - E. USE PIN 7 OF THE REGULATOR OR AIRFRAME. CHECK VOLTAGE ON PIN 5 OF THE REGULATOR READS 13 TO 15 VOLTS DC.
  - F. "TRIP" THE "STBY ALT" "FIELD" CIRCUIT BREAKER. VERIFY VOLTAGE ON PIN 6 READS "0" VOLTS, AND ANNUNCIATOR "STBY ALT ON" EXTINGUISHES. RESET CIRCUIT BREAKER.
  - G. "TRIP" THE "STBY ALT" CIRCUIT BREAKER. VERIFY VOLTAGES ON PIN 6 READS "0" VOLTS, AND AND ANNUNCIATOR "STBY ALT ON" EXTINGUISHES. RESET CIRCUIT BREAKER.
  - H. "TRIP" THE STBY ALT "SENSE" CIRCUIT BREAKER. VERIFY VOLTAGE ON PIN 1 OF THE REGULATOR READS "0" VOLTS, AND AND ANNUNCIATOR "STBY ALT ON" EXTINGUISHES. RESET CIRCUIT BREAKER.
  - I. AT THE ALTERNATOR, VERIFY VOLTAGE ON "F" FIELD TERMINAL AND ENGINE GROUND, IS SAME AS VOLTAGE MEASURED ON PIN 5 OF THE REGULATOR WITHIN +- 1.0 VOLT. ALTERNATOR CONNECTOR MUST REMAIN CONNECTED FOR THIS TEST.

- J. PREPARE AIRCRAFT FOR ENIGNE RUN. REINSTALL COWLING.
- K. PERFORM A NORAML ENIGNE START AND ALLOW THE ENGINE TO REACH PROPER OPERATING TEMP.
- L. ASSURE THAT THE "STB ALT" AND "STBY ALT SENSE" CIRCUIT BREAKERS, AND "ATBY ALT" MASTER SWITCH ARE IN THE "ON" POSITION.
- M. REDUCE SYSTEM ELECTRICAL LOADS TO APPROXIMATELY 10 TO 15 AMPS.
- N. SET ENGINE RPM TO 2000 RPM MINIMUM.
- O. SWITCH PRIMARY ALTERNATOR FIELD SWITCH "OFF".
- P. CHECK THAT THE "STBY ALT ON" ANNUNCIATOR ILLUMINATES.
- Q. INCREASE THE ELECTRICAL LOAD TO OVER 20 AMPS, VERIFY THE "STBY ALT ON" ANNUNCIATOR ILLUMINATES AND IS BLINKING. REDUCE ELECTRICAL LOAD TO LESS THAN 20 AMPS, VERIFY THE "STBY ALT ON" ANNUNCIATOR REMAINS ILLUMINATED AND IS NOT BLINKING.
- R. SWITCH THE PRIMARY ALTENATOR FILED SWITCH TO "ON". VERIFY THE "STB ALT ON" ANNUNCIATOR EXTINGUISHES.
- S. REDUCE ENGINE TO IDLE, THEN SHUT ENIGNE DOWN, REINSTALL ALL OPENED PANELS AND MAKE LOG BOOK ENTRY INDICATING ACCOMPLISHMENT OF THIS MODIFICATION.
18. CONTINUED AIRWORTHINESS, MAINTENANCE OF THE BC410 ALTERNATOR SYSTEM IS "ON CONDITION". REFER TO B & C SPECIALTY PRODUCTS INC, DOC. ICA-BC410, REV A OR LATER FOR INPSECTION REQUIRMENTS.
19. PREMIER AIRCRAFT SALES, INC. AIRPLANE FLIGHT MANUAL SUPPLEMENT DOC. # FMS-N318DS, AS APPROVED, IS REQUIRED TO BE ON-BOARD AIRCRAFT DURING OPERATION

THIS DRAWING CONTAINS SPECIFICATIONS AND/OR DATA, TECHNICAL MATERIAL, PROPRIETARY DESIGNS AND INFORMATION THAT ARE THE SOLE PROPERTY OF DC AEROSPACE, LLC.. TO BE HELD AND TREATED BY ITS RECIPIENT ON A CONFIDENTIAL BASIS. NO DISCLOSURE, USE, OR DUPLICATION SHALL BE MADE WITHOUT PRIOR WRITTEN PERMISSION OF DC AEROSPACE, LLC. OR THEIR LEGAL REPRESENTATIVES.

DC Aerospace LLC  
FAA-DEI-DAR SERVICES

Eagle Springs  
104 Grove Court  
Centerville, GA. 31028

TITLE: Drawing

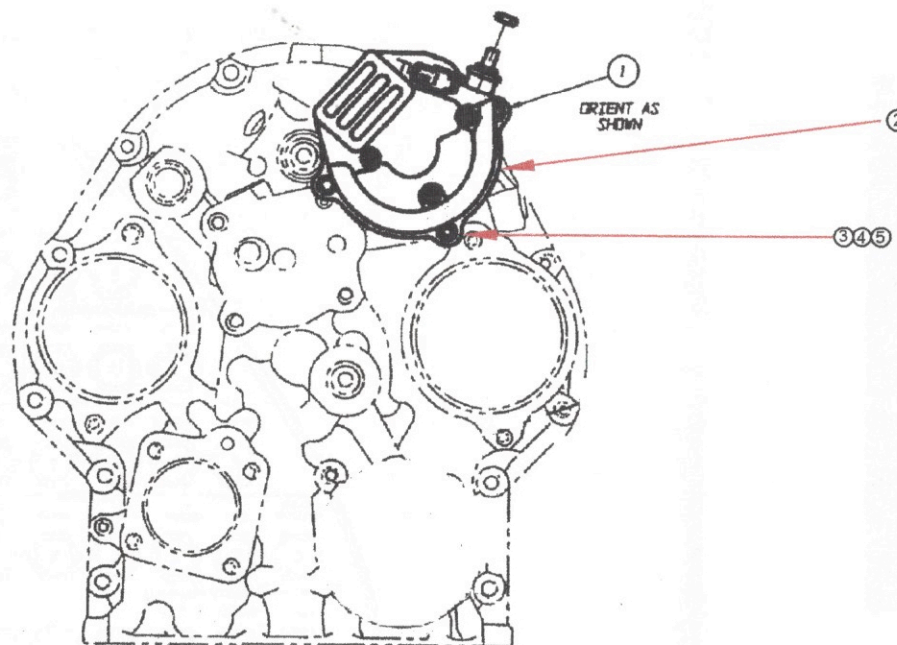
## BC410 28v ALT. INST'L

|              |             |      |         |          |              |      |  |
|--------------|-------------|------|---------|----------|--------------|------|--|
| Drawn By:    | D. Chadwick | Date | 3-11-12 | DWG NO.: | N318DS-24-00 | REV  |  |
| Approved By: | D. Chadwick |      | 3-11-12 |          |              | I.R. |  |

EFF: DIAMOND DA-40  
S.N. 40.1137

SHEET





VIEW LOOKING FORWARD - ENGINE

1. CAREFULLY CLEAN THE GASKET SURFACES, ORIENT THE ALTERNATOR AS SHOWN AND INSTALL IT ON THE ACCESSORY PAD USING A NEW GASKET (ITEM 2), 4 NUTS, (ITEM 3), 4 LOCKWASHERS (ITEM 4) AND 4 FLAT WASHERS (ITEM 5). TORQUE NUTS TO 90 TO 110 IN-ILBS.

||||| REMOVED WIRE(S)  
——— ADDED WIRE(S)  
- - - - - EXISTING WIRE(S)  
~~~~~ RELOCATED WIRE(S)

| 5    | 4    | AN960-416L  | FLAT WASHER 1/4                  | QPL                      |
|------|------|-------------|----------------------------------|--------------------------|
| 4    | 4    | MS35333-40  | LOCK WASHER, INTERNAL TOOTH, 1/4 | QPL                      |
| 3    | 4    | S804-420    | NUT, HEX-HD, 1/4-20UNC           | QPL                      |
| 2    | 1    | MS9134-01   | GASKET                           | QPL                      |
| 1    | 1    | BC410-100-1 | 14V/28V, 20AMP ALTERNATOR        | B & C SPECIALTY PRODUCTS |
| ITEM | QTY. | PART NUMBR  | DESCRIPTION                      | VENDOR / MFG             |

TITLE: Drawing

BC410 28v ALT. INST'L

REV  
I.R.

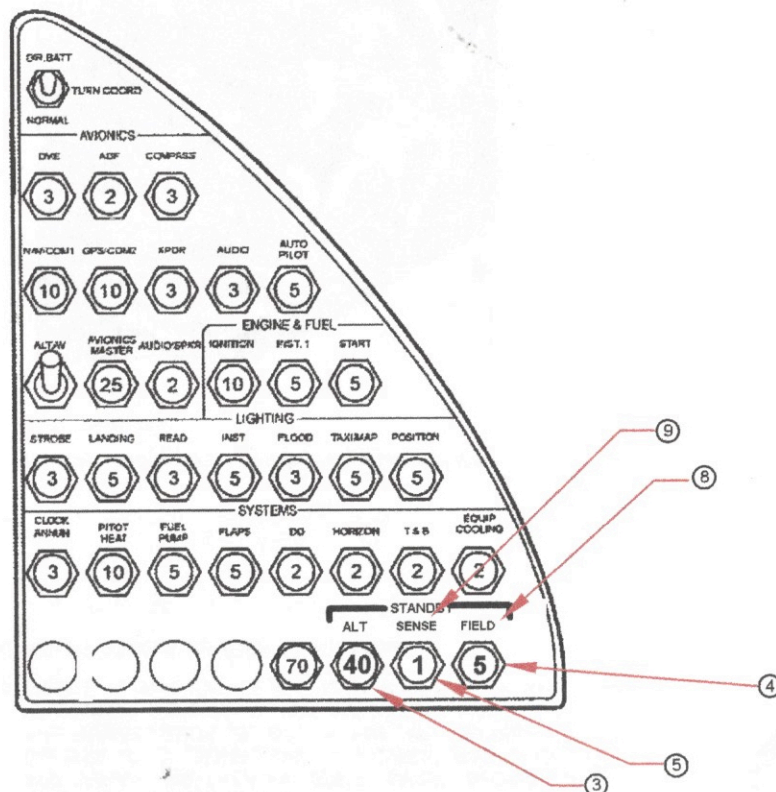
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N318DS-24-00

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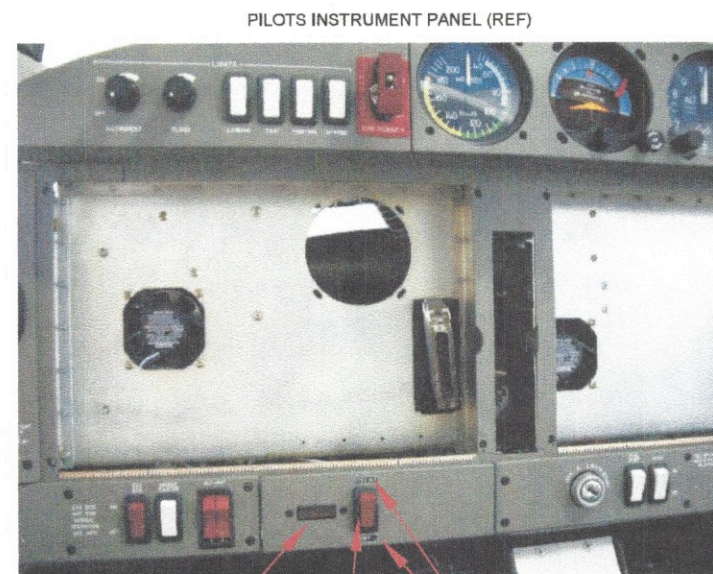
2





1. INSTALL ANNUNCIATOR (ITEM 1) IN PANEL ON PILOTS SIDE AS SHOWN.
2. INSTALL STANDBY ALTERNATOR CONTROL SWITCH (ITEM 2) AS SHOWN, ADJACENT TO ANNUNCIATOR (ITEM 1).
3. INSTALL CIRCUIT BREAKERS (ITEMS 3, 4, 5) AS SHOWN.
4. INSTALL PLACARDS (ITEMS 7, 8, 9) AS SHOWN. TRIM TO FIT.

===== REMOVED WIRE(S)  
 \_\_\_\_\_ ADDED WIRE(S)  
 - - - - - EXISTING WIRE(S)  
 ~~~~~ RELOCATED WIRE(S)



| 10   | 2    | MS35214-14 | SCREW, PAN HD. 6-32 x.38 | QPL             |
|------|------|------------|--------------------------|-----------------|
| 9    | 1    | 410-401    | PLACARD "FIELD"          | B & C SPECIALTY |
| 8    | 1    | 410-401    | PLACARD "SENSE"          | B & C SPECIALTY |
| 7    | 1    | 410-402    | PLACARD "STBY ALT"       | B & C SPECIALTY |
| 6    | 1    | 410-404    | ANNUNCIATOR PLACARD      | B & C SPECIALTY |
| 5    | 1    | S871-1     | 1A CIRCUIT BREAKER       | B & C SPECIALTY |
| 4    | 1    | S871-5     | 5A CIRCUIT BREAKER       | B & C SPECIALTY |
| 3    | 1    | S878-40    | 40A CIRCUIT BREAKER      | B & C SPECIALTY |
| 2    | 1    | 425-401    | SWITCH                   | B & C SPECIALTY |
| 1    | 1    | 425-205-1  | ANNUNCIATOR              | B & C SPECIALTY |
| ITEM | QTY. | PART NUMBR | DESCRIPTION              | VENDOR / MFG    |

TITLE: Drawing

BC410 28v ALT. INST'L

REV  
I.R.

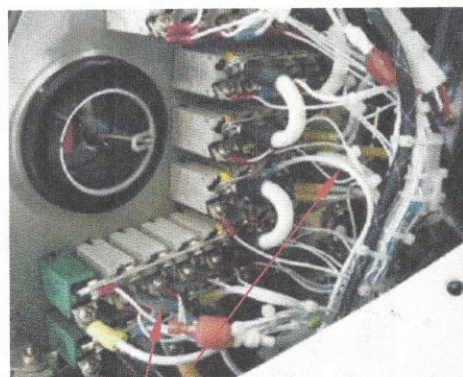
DWG NO.:

N318DS-24-00

SHEET

3

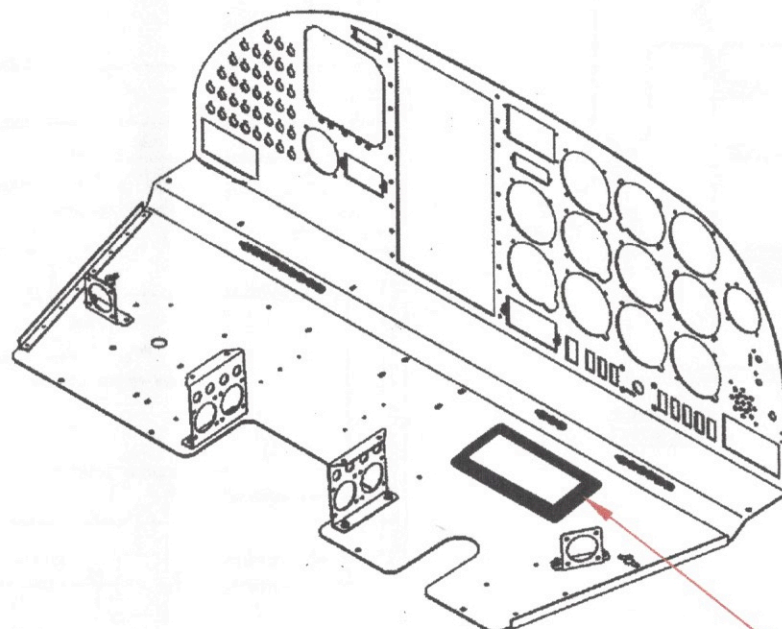




RIGHT CIRCUIT BREAKER PANEL (VIEW FROM REAR)

1. INSTALL REGULATOR (ITEM 1) AS SHOWN.
2. INSTALL 10 AWG JUMPER WIRE FROM MAIN BUS TO 40A ALT CIRCUIT BREAKER "B" SIDE AS SHOWN. INSTALL 10 AWG JUMPERS FROM "B" SIDE OF 40A "ALT CIRCUIT BREAKER TO 1A "SENSE" CIRCUIT BREAKER, INSTALL 10 AWG JUMPER WIRE FROM 1A "SENSE" CIRCUIT BREAKER TO 5A "FIELD" CIRCUIT BREAKER.
3. MOUNT THE REGULATOR (ITEM 1) AS SHOWN.
4. MATCH DRILL 2 ATTACHMENT HOLES FOR (ITEM 2). USE REGULATOR AS TEMPLATE.
5. USE (ITEMS 2, 3) TO SECURE REGULATOR.
6. CONNECT AN AIRFRAME GROUND TO THE STUD UNDER THE REGULATOR TERMINAL STRIP. THIS GROUND MUST BE SEPARATE FROM MOUNTING SCREWS OR GROUND TERMINAL PIN 7.

===== REMOVED WIRE(S)  
 \_\_\_\_\_ ADDED WIRE(S)  
 - - - - - EXISTING WIRE(S)  
 ~~~~~ RELOCATED WIRE(S)



| 4    | AR   | MIL-W-22759-16/10 | WIRE, SINGLE    | QPL             |
|------|------|-------------------|-----------------|-----------------|
| 3    | 2    | 10-32             | CLIP NUTS 10-32 | QPL             |
| 2    | 2    | 10-32             | SCREW 10-31 SS  | QPL             |
| 1    | 1    | BC203-20          | REGULATOR 28V   | B & C SPECIALTY |
| ITEM | QTY. | PART NUMBR        | DESCRIPTION     | VENDOR / MFG    |

TITLE: Drawing

BC410 28v ALT. INST'L

REV

I.R.

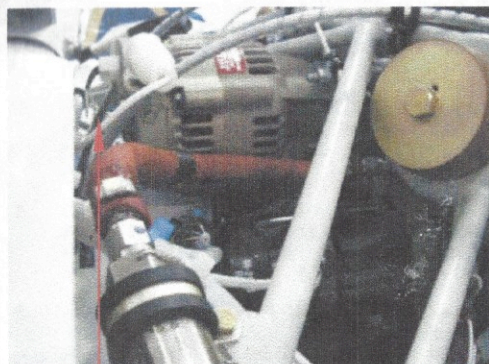
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4



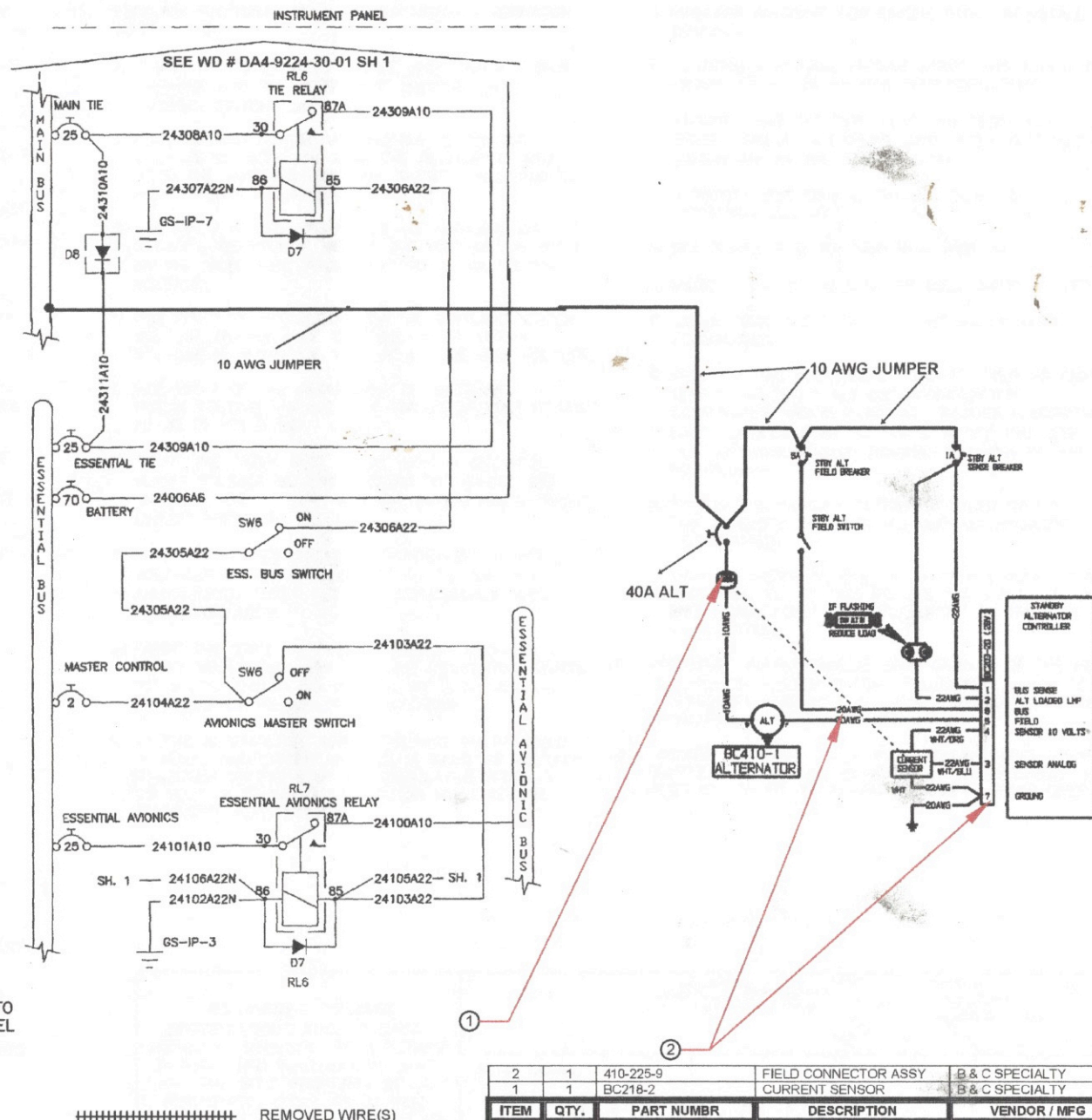


FIREWALL, INBD VIEW - FWD



VIEW LOOKING AFT, RH FIREWALL FEEDTHRU

1. INSTALL 10 AWG OUTPUT / CURRENT SENSOR (ITEM 1) AND FIELD HARNESS (ITEM 2), FROM THE BC410 AFT TO THE REGULATOR AND CIRCUIT BREAKER PANEL. USE ADEL CLAMPS, (ITEM 3) TO ATTACH THE HARNEESES TO THE BACK SIDE OF THE AFT ENGINE COMPARTMENT FWD FIREWALL. ROUTE HARNESS THU EXISTING CUTOUT RH SIDE FIREWALL AS SHOWN IN FLAG NOTE 3.
2. ROUTE THE FIELD HARNESS AND THE THREE COLORED WIRES CODED CURRENT SENSOR WIRES TO THE REGULATOR (BC203-20).
3. ROUTE HERE AS SHOWN



TITLE: Drawing

BC410 28v ALT. INST'L

REV  
I.R.

DWG NO.:

N318DS-24-00

SHEET

5



# B & C Specialty Products Inc

123 East 4th St, P.O. Box "B", Newton KS 67114-0894  
Telephone (316) 283-8000 \*\*\*\*\* Fax (316) 283-7400

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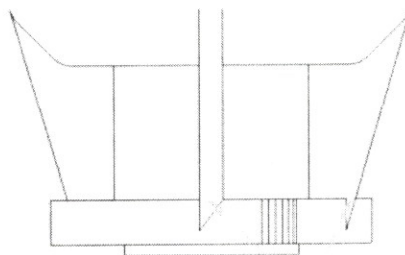
## Manufacturer of Lightweight Electrical Systems

### Instructions for Continued Airworthiness for B&C Specialty Products Model BC410 & BC425 Alternators

The B&C Model BC410 or BC425 alternator requires no recurrent maintenance during its service life of 1700 hours. It is recommended that at 1700 hours or less time in service or during engine overhaul the alternator be returned to B&C Specialty Products for factory overhaul.

At each Annual or 100 hour inspection required by the FAA, make the following inspections:

1. Note during a normal run-up whether the alternator vibrates or is mechanically noisy. If so, suspect a bearing failure. Bearing failure may also be indicated by gray dust residue around the rear housing cooling slots. If bearing failure is suspected, return the alternator to the factory for repair or replacement.
2. Check the alternator externally for security of mounting. If oil is leaking around the alternator base, check the torque of the mounting bolts to be 70 In-Lbs. If there is still a leak, try replacing the gasket. Do not increase torque above 70 In-Lbs.
3. Clean the area around the mounting flanges and the casting webs between the mounting flanges and the alternator housing. Check for cracks in the webs as shown in the figure below.



*Check for cracks.  
4 places*

Normal tooling parting lines should not be mistaken for cracks. Any alternator identified as having cracks in any of the four webs must be returned to the factory for repair or replacement.

4. Check for security of alternator wiring. Look for dark discoloration of the copper plated output stud and nut. If it is discolored or corroded, be suspicious of a poor terminal crimp on the output wire.

Disconnect the terminal and clean the output post and nut with a brass wire brush. Replace the crimp terminal by removing enough conductor length to obtain a clean, bright stripped conductor before crimping on a new ring terminal. Re-install the terminal on the output post using a lock washer and nut and torque the nut to 50 In-Lbs.



5. Perform the before takeoff test described under the "Normal Procedures" section of the Airplane Flight Manual Supplement. Alternately, the "Final Test" described in the installation drawing may be used for this test.

Failure due to broken wires or damaged connectors may be corrected in the field using repair procedures complying with the latest revision of AC43.13-xx. All other repairs are by replacement only.

**IF THESE UNITS ARE NOT BEING INSTALLED UNDER AN STC, THEY MUST BE  
ACCOMPANIED BY A ONE TIME FIELD APPROVAL FOR USE ON A TYPE  
CERTIFICATED AIRCRAFT**