

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

Manufacturer of Lightweight Electrical Systems

General Information on Cessna 210 Standby Alternators

B&C Specialty Products is pleased to announce that we have received FAA STC/PMA approval for installation of the BC425 standby alternator and BC203-2D regulator on Cessna 210L, 210M, 210N, T210L, T210M, T210N, and P210 models as the standby electrical system.

Prices for the components are as follows:

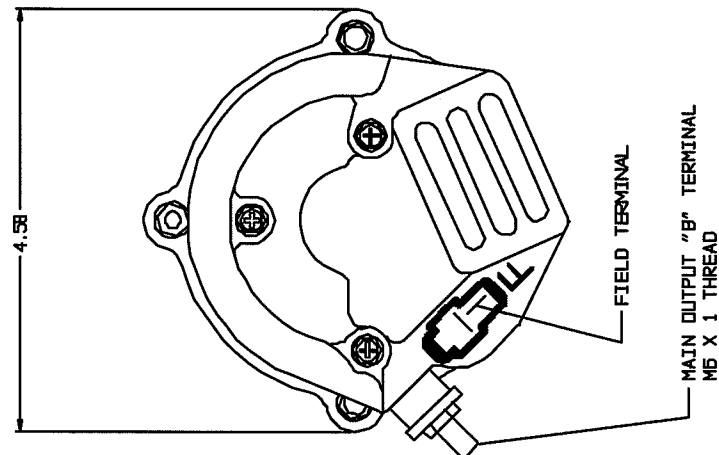
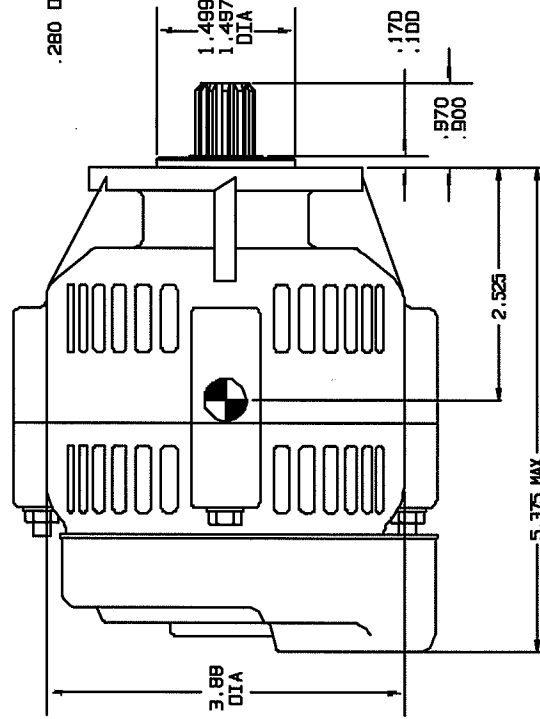
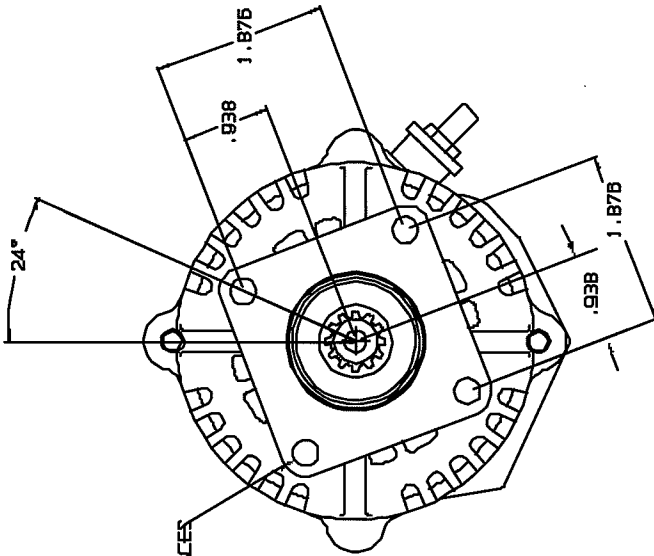
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| BC425 and BC203-2D w/ STC..... | \$2200.00 |
| Installation Kit..... | \$435.00 |

The standby system provides 20 amps of power to support continued flight in the event of primary alternator failure. It operates automatically, annunciating its operation to the pilot through a panel mounted annunciator which doubles as a standby alternator load monitor.

If the primary alternator fails in flight, the standby regulator will sense the drop in system voltage and automatically activate the standby alternator. If the current requirement is over 20 amps when the standby alternator is activated, the annunciator will flash. Reducing the current usage to 20 amps or less will cause the annunciator to cease flashing and light steadily. The pilot may choose which equipment he needs for the given flight conditions by simply keeping the total load below the flashing point of the annunciator. This will reserve battery energy for transient loads (gear, flaps, landing lights, etc.) during approach. Loads may be beyond the flashing point of the annunciator for up to 5 minutes without damaging the standby alternator.

The standby alternator is mounted on the right hand accessory drive pad on the Continental engine to allow throttle linkage clearance. This means the vacuum pump usually mounted in this location must be moved to the left hand accessory drive pad. Panel mounted equipment includes a STBY ALT ON annunciator, a STBY ALT toggle type breaker and two standard pull type circuit breakers (1 amp and 40 amp). Appropriate placards are provided for each panel mounted device. The regulator is mounted behind the interior panel to the left of the pilot's left leg.

| REV | DATE | DESCRIPTION |
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NOTE: 1. ALL DIMENSIONS FOR REFERENCE ONLY
2. RECOMMENDED INTERVAL BETWEEN OVERHAUL IS 1700 HRS.

-1 ALTERNATOR 14/28V, 20 AMP
WEIGHT: 5.72 LBS.
MAX STATOR TEMP: 300° F
FOR USE ON AND20000 ACCESSORY PAD.
ALL DIMENSIONS ARE REFERENCE ONLY

| USED ON | PART NO. | DESCRIPTION |
|---------|-----------|------------------------------|
| 1 | 425-100-1 | ALTERNATOR ASSY, 14/28V, 20A |
| -1 | -1 | ALTERNATOR, 14/28V, 20A |

| UNLESS OTHERWISE SPECIFIED | | DIMENSIONS ARE IN INCHES | |
|----------------------------|----|--------------------------|----|
| ENGINEER | TH | DATE | TH |
| | | 10/13/08 | |
| DRAWN | TH | 10/13/08 | |
| CHECKED | TH | 10/13/08 | |
| PROJECT | | | |

| | |
|--|--|
| B & C Specialty Products P.O. Box B, Newton, Kansas 67114 | |
| TITLE | ENVELOPE DRAWING AIRCRAFT ALTERNATOR, 14/28 VOLT, 20 AMP |
| DRAWING NO. | BC425 |
| REVISION | |
| DATE | |
| SCALE | |
| JOB NO. | |
| SHEET | 1 OF 1 |

United States of America
Department of Transportation -- Federal Aviation Administration

Supplemental Type Certificate

SAMPLE

Number SA00846WI

This certificate issued to B & C Specialty Products, Inc.
123 E. 4th Street
Newton, KS 67114-0894

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 : 3A21

Make : Cessna

Model : 210L, 210M, 210N, P210N, T210L, T210M, T210N

Description of Type Design Change: Installation of B&C Specialty Products BC425-1 Standby Alternator.
Data Required: (1) B&C Specialty Products, Inc. Master Drawing list No. 425LST1.DOC, Revision B, dated December 17, 1999; (2) B&C Specialty Products Document No. FMS425-1, FAA Approved Airplane Flight Manual Supplement, dated December 23, 1999; or later FAA Approved Revisions to (1) or (2).

Limitations and Conditions: Compatibility of this design change with previously approved modifications must be determined by the installer.

If the holder agrees to permit another person to use this certificate to alter the product, the holder shall give the other person written evidence of that permission.

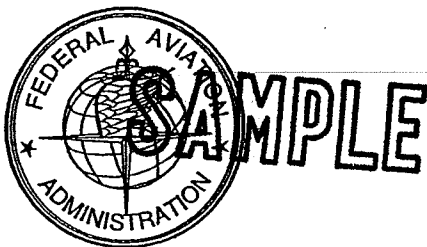
This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.

Date of application : December 10, 1998

Date reissued :

Date of issuance : December 23, 1999

Date amended :



By direction of the Administrator

Joel M. Ligon
(Signature)

Joel M. Ligon
Program Manager
Wichita Aircraft Certification Office

(Title)

Cessna Standby Alternator Drawing List

| Drawing Number | Drawing Title | Issue | Date |
|----------------|---|-------|----------|
| 425LST1.DOC | Cessna 210 Standby Alternator Drawing List | C | 3/14/01 |
| BC425 | Envelope Drawing, Aircraft Alternator, 14/28 Volt, 20 amp | Orig | 10/13/98 |
| BC203 | Envelope Drawing, Controller, 28 V (Design data previously approved on STC SA00724WI) | D | 2/09/01 |
| 425-502-1 | Installation, BC425 on Cessna 210 | D | 3/14/01 |



B&C Specialty Products
 123 E. 4th Street
 Newton, Kansas
 Document 425LST1.DOC
 Rev C
 14 Mar 2001

| SYMBOL | REVISION | DATE | APPROVED | SYMBOL | REVISION | DATE | APPROVED |
|--------|---|------|----------|--------|---|-------|----------|
| D | ITEM 2 WAS BC203-2A; ADDED NOTE 5, PAGE 5 | TH 5 | 3/14/01 | A | CHANGED SHEETS 1, 4 AND 6 TO COMBINE SA BREAKER AND FIELD SWITCH TO A SA TOGGLE BREAKER | TH 10 | 3/17/99 |
| | | | | B | CORRECTED ITEM 13 P/N, WAS MS20365-428 | TH 10 | 3/23/00 |
| | | | | C | CORRECTED LOCATION OF CURRENT SENSOR TORRUID ON SHEET 6 | TH 10 | 5/3/00 |

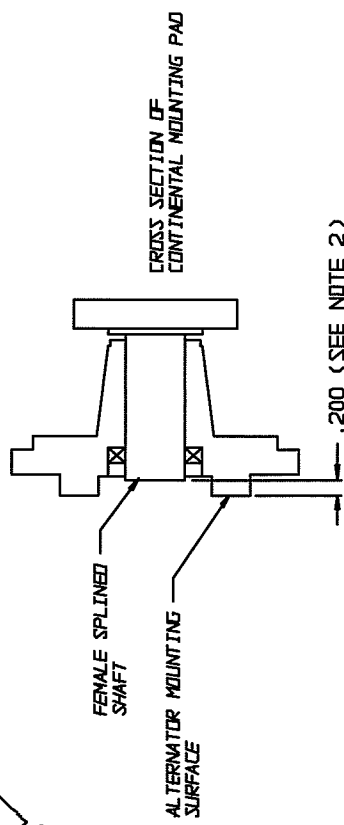
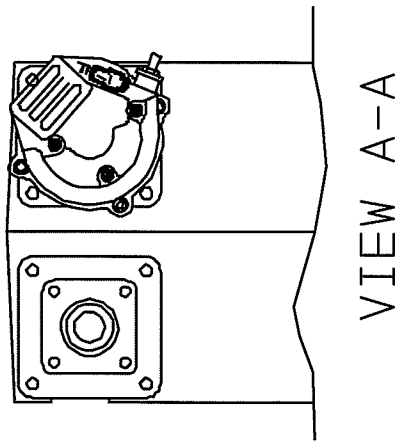
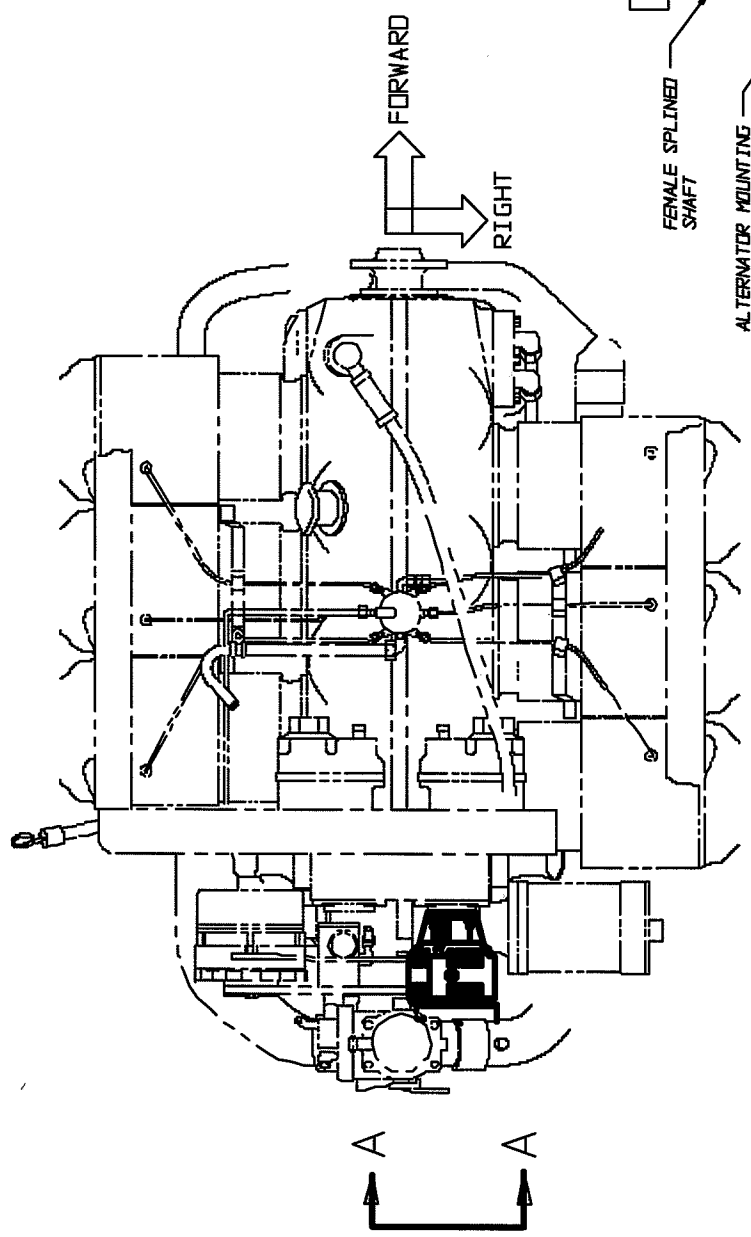
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INSTALLATION INSTRUCTIONS

1. REMOVE TOP ENGINE COWLINGS LEFT AND RIGHT.
2. DISCONNECT THE AIRCRAFT BATTERY.
3. REMOVE ENGINE AIR FILTER AND FILTER BOX TO THROTTLE BODY INDUCTION DUCTS
4. REFERENCE PAGE 2 OF 7 FOR ALTERNATOR INSTALLATION INSTRUCTIONS.
5. REFERENCE PAGE 5 OF 7 FOR CONTROLLER INSTALLATION INSTRUCTIONS.
6. REFERENCE PAGE 4 OF 7 FOR ANNUNCIATOR, FIELD SWITCH AND BREAKER INSTALLATION INSTRUCTIONS.
7. REFERENCE PAGE 3 OF 7 FOR PLACEMENT OF WIRING HARNESS FORWARD OF AND PASSING THROUGH THE FIREWALL.
8. REFERENCE PAGE 6 OF 7 FOR FINAL WIRING SCHEMATICS.
9. DRESS ALL WIRES AWAY FROM CHAFE POINTS AND FLIGHT CONTROLS USING NYLON WIRE TIES. CHECK THE WIRE CLEARANCES FROM FLIGHT CONTROLS AT ALL EXTREMES OF CONTROL MOVEMENT.
10. REFERENCE PAGE 7 OF 7. PERFORM FINAL TEST PROCEDURE.
11. RE-INSTALL ENGINE AIR CLEANER, INDUCTION AIR DUCTS, COWLING AND INTERIOR PANELS.

| UNLESS OTHERWISE SPECIFIED | DESCRIPTION |
|-----------------------------------|--------------|
| DIMENSIONS ARE IN INCHES | |
| TOLERANCES ARE: | |
| DECIMAL 0.015 | ±0.003 |
| FRACTIONAL 0.001 | ±0.005 |
| ANGLES | ±0.5 DEGREES |
| ENGINEER | |
| DATE | |
| TH 10 | 9/27/99 |
| JJ | 11/1/99 |
| PROJECT | |
| 425-502-1 | |
| DRIVING NO. | |
| 210L/M/N, T20L/M/N, AND P210N | |
| TITLE | |
| INSTALLATION, BC425 ON | |
| B & C Specialty Products | |
| P. O. Box B, Newton, Kansas 67114 | |
| SCALE | |
| FULL | |
| DATE | |
| 3/14/01 | |
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ALTERNATOR INSTALLATION INSTRUCTIONS:

1. REMOVE VACUUM PUMP FROM RIGHT ACCESSORY ADAPTER. REMOVE COVER PLATE FROM LEFT ACCESSORY ADAPTER. RETAIN ALL HARDWARE. REMOVE ALL OLD GASKET MATERIAL FROM EACH ACCESSORY ADAPTER BEING CAREFUL NOT TO DAMAGE ALUMINUM SURFACE.
2. CHECK THE DIMENSION SHOWN IN THE CONTINENTAL MOUNTING PAD DETAIL. IT MUST BE .200, $\pm .050$, $-.015$ PER ANO20000 SPEC. DO NOT MOUNT THE ALTERNATOR UNLESS THE DIMENSION IS WITHIN SPEC.
3. PLACE A NEW GASKET, ITEM 14, ON STUDS OF EACH MOUNTING PAD. INSTALL VACUUM PUMP ON LEFT ACCESSORY ADAPTER. INSTALL ALTERNATOR WITH OUTPUT POST CLOCKED TO THE LOWER RIGHT POSITION.
4. SECURE THE VACUUM PUMP AND ALTERNATOR WITH NUTS, LOCKWASHERS, AND FLAT WASHERS RETAINED FROM STEP 1 ABOVE. TORQUE NUTS TO 80 - 110 IN-LBS.

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| ITEM | QTY | DESCRIPTION |
| | 1 | PART NO. |
| | | DESIGN SPECIFICATIONS SPECIFIED |
| | | DIMENSIONS ARE IN INCHES |
| | | TOLERANCES ARE: |
| | | FINISHES ARE: |
| | | ANGLES = 10:1 UNLESS NOTED |
| | | DATE |
| | | TH |
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| | | JOB NO. |
| | | PAGE 2 OF 7 |

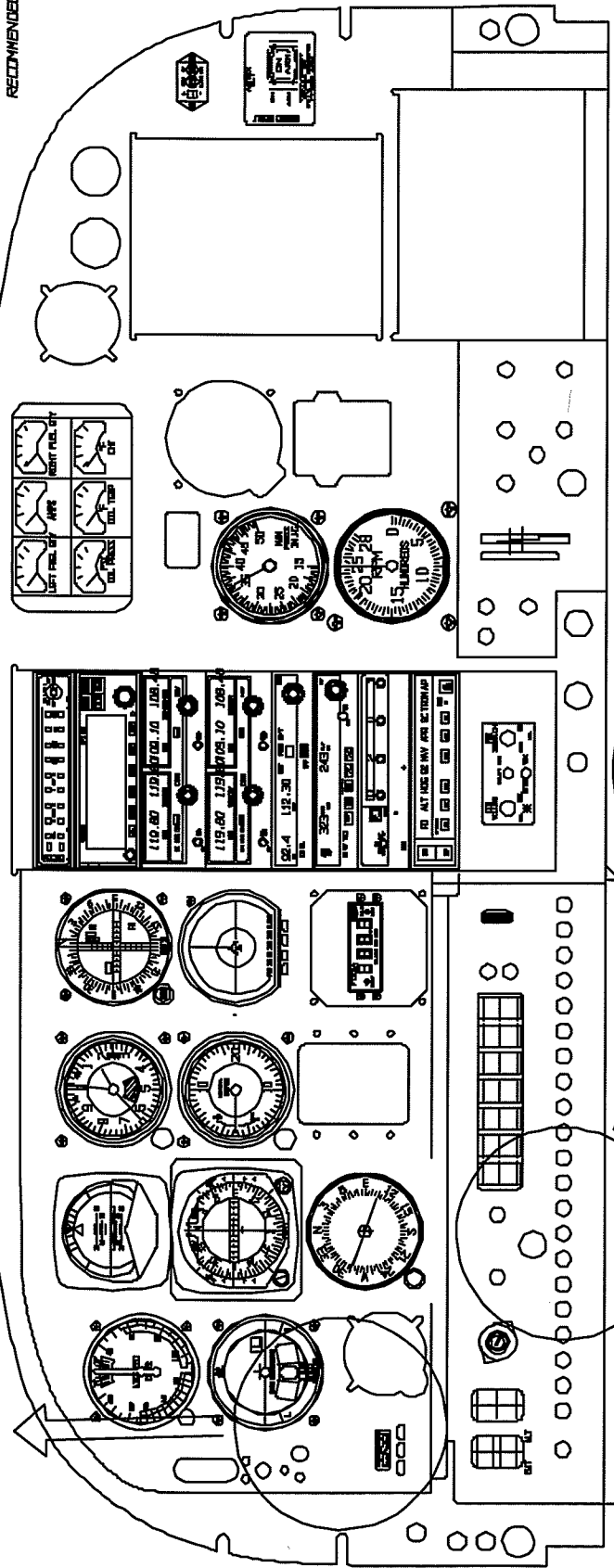
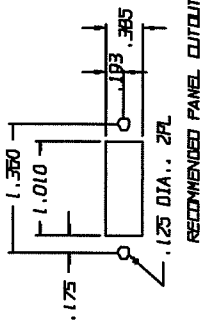
B & C Specialty Products
P.O. Box B, Newton, Kansas 67114

INSTALLATION, BC425 ON
210L/M/N, T20L/M/N, AND P210N

425-502-1

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| STEEL | STATION | DRAIN | APPROV |
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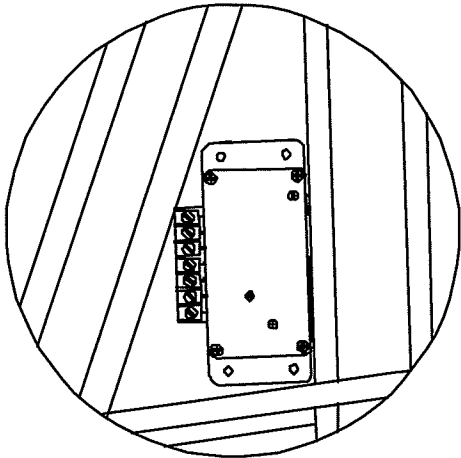
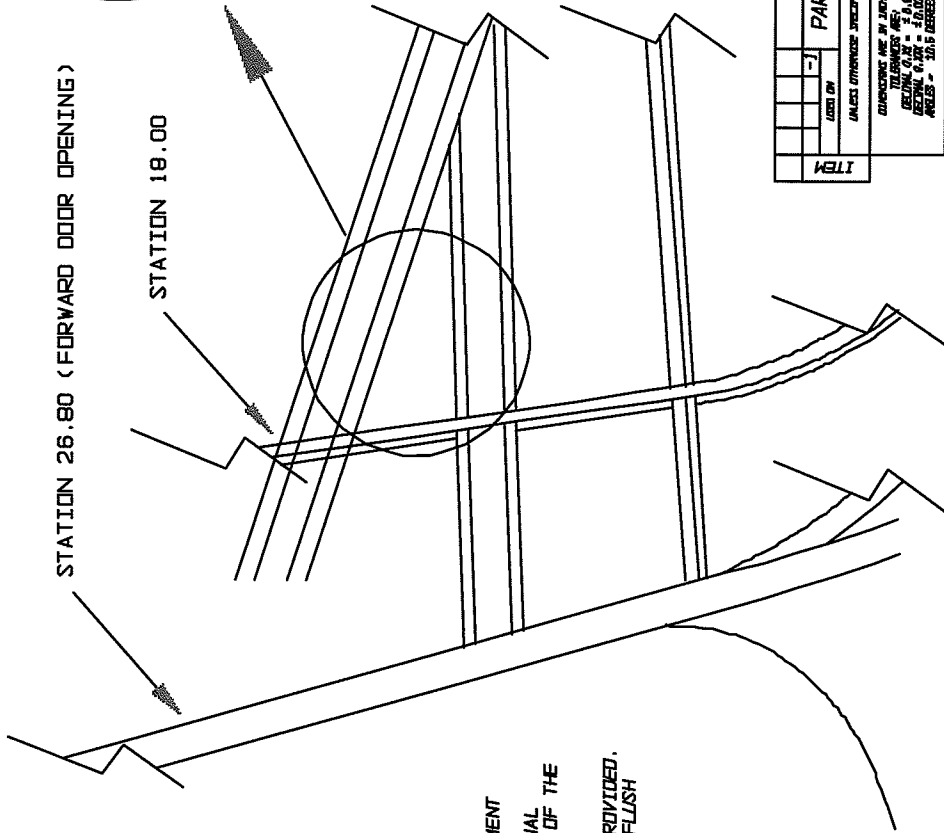
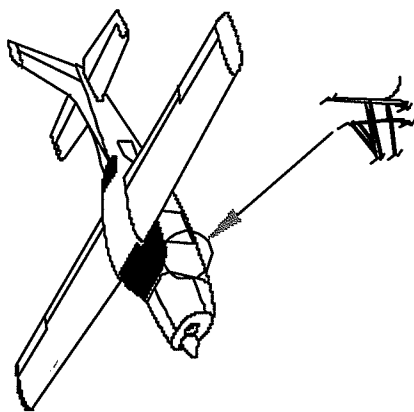
1. INSTALL ANNUNCIATOR, ITEM 7 IN PANEL ON PILOT'S SIDE IN CLEAR VIEW. MAKE SURE A TALL PILOTS VIEW OF THE ANNUNCIATOR IS NOT OBSTRUCTED BY THE GLARE SHIELD AND LEAVE ROOM FOR PLACARD, ITEM 16, PLACARD MAY BE CUT IN HALF HORIZONTALLY AND INSTALLED ABOVE AND BELOW ANNUNCIATOR IF DESIRED AS SHOWN ON PAGE 6 OF 7.



2. INSTALL FIELD SWITCH, ITEM 5 AND BREAKERS, ITEMS 4 AND 6 ON PILOT'S SUBPANEL IN CLEAR VIEW. INSTALL PLACARDS, ITEMS 8, 9 AND 15 TO IDENTIFY CORRESPONDING BREAKERS. TRIM PLACARDS AS REQUIRED TO FIT IN ALLOTTED SPACE.

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| PART NO. | | DESCRIPTION | |
| B & C Specialty Products | | P.O. Box B, Herndon, Kansas 67114 | |
| TITLE | | INSTALLATION, BC-425 ON | |
| 210L/M/N, T210L/M/N, & P210N | | PART NO. | |
| DRAWING NO. 425-502-1 | | DATE | |
| SCALE | | FILL | |
| PAGE 4 OF 7 | | | |

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| STEEL | REVISION | DATE | APPROV |
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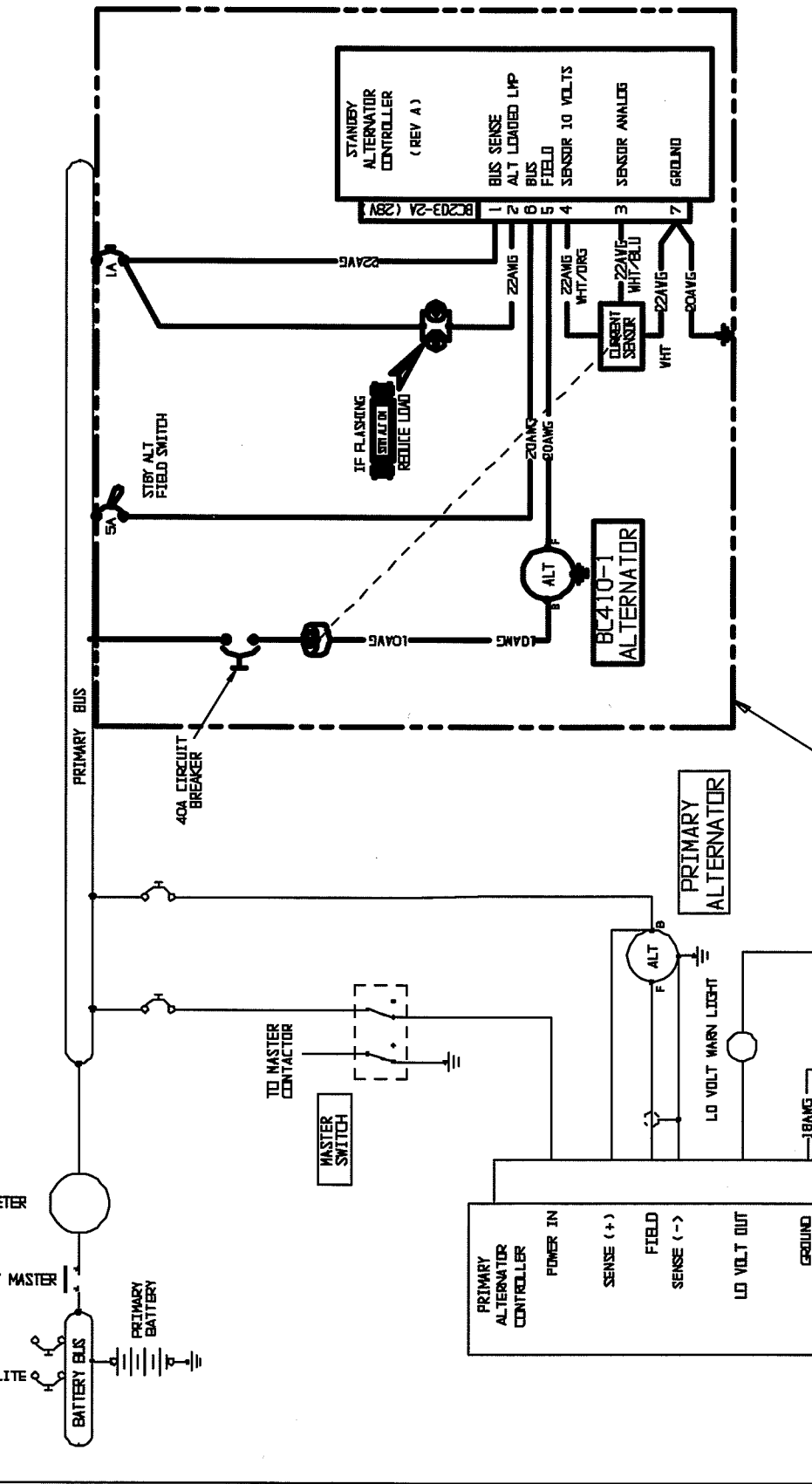
1. REMOVE LOWER INTERIOR SIDE PANEL FORWARD OF THE LEFT FORWARD DOOR FRAME.
2. THE STANDBY ALTERNATOR CONTROLLER, ITEM 2 WILL BE MOUNTED IN THE TRIANGULAR SPACE FORWARD OF STATION 18.00 AS SHOWN.
3. DRILL AND COUNTERSINK 4 ATTACHMENT HOLES FOR MACHINE SCREWS, ITEM 11. DRILL THE ATTACHMENT HOLES ON EQUAL SPACING BETWEEN THE EXISTING ATTACHMENT HOLES, AS A REFERENCE, THE ADDITIONAL HOLES WILL BE ON A .50" PITCH FROM THE CENTER OF THE EXISTING HOLES.
4. USE NUTS, ITEM 13, AND WASHERS, ITEM 12, AS PROVIDED. DRAW COUNTERSINK HEADS OF THE MACHINE SCREWS FLUSH WHEN TIGHTENING THE NUTS.

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|------|-----|-------------|
| ITEM | QTY | DESCRIPTION |
| 1 | 1 | BRACKET |
| 2 | 1 | SCREW |
| 3 | 1 | NUT |
| 4 | 1 | WASHER |

| | | |
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| UNLESS OTHERWISE SPECIFIED | PART NO. | DESCRIPTION |
| CONDUCTOR | | B & C Specialty Products |
| DRIVER | | F.O. Box B, Newton, Kansas 67114 |
| FINISH | | INSTALLATION, BC410 ON |
| ITEMS | | 210L/M/N, T210L/M/N, & P210N |
| DATE | 11/1/58 | SCALE |
| DESIGNED BY | JJ | FILL |
| CHECKED BY | | DATE |
| PROJECT | | PAGE 5 OF 7 |

VIEW LOOKING FROM INSIDE CABIN

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| PART NO. | | DESCRIPTION | |
| B & C Speciality Products | | B & C Speciality Products | |
| P.O. Box B, Newton, Kansas 67114 | | P.O. Box B, Newton, Kansas 67114 | |
| TITLE | | INSTALLATION, BC425 ON | |
| DRAWING NO. | | 210L/M/N, T210L/M/N, & P210N | |
| DATE | | 425-502-1 | |
| PROJECT | | SCALE FULL | |
| JOB NO. | | PAGE 6 OF 7 | |

PRELIMINARY FUNCTIONAL TEST

- 1. REFER TO AIRCRAFT OWNERS OR MAINTENANCE MANUAL AND RE-CONNECT THE BATTERY. THE MAG SWITCH SHOULD REMAIN OFF.
- 2. CLOSE THE STANDBY ALTERNATOR "FIELD" AND "SENSE" CIRCUIT BREAKERS.
- 3. TURN ON THE BATTERY AND STANDBY ALTERNATOR MASTER SWITCHES. CHECK THAT NEITHER STANDBY ALTERNATOR BREAKER TRIPS. CHECK THAT THE "STBY ALT ON" ANNUNCIATOR ILLUMINATES.
- 4. USING A HIGH IMPEDANCE VOLTMETER (PREFERABLY DIGITAL) CHECK THE VOLTAGE BETWEEN PIN 7 OF THE STANDBY REGULATOR AND BOTH THE AIRFRAME AND THE BATTERY NEGATIVE POST. THE VOLTAGE SHOULD BE NEAR 0 VOLT.
- 5. USE PIN 7 OF THE REGULATOR OR AIRFRAME AS NEGATIVE REFERENCE. MEASURE THE VOLTAGE ON PIN 1 OF THE REGULATOR. THE VOLTAGE SHOULD BE EQUAL TO THE BUS VOLTAGE.
- 6. USE PIN 7 OF THE REGULATOR OR AIRFRAME AS NEGATIVE REFERENCE. CHECK THE VOLTAGE ON PIN 8 OF THE REGULATOR. THE VOLTAGE SHOULD BE WITHIN 1.0 VOLT OF THE BUS VOLTAGE.
- 7. USE PIN 7 OF THE REGULATOR OR AIRFRAME AS NEGATIVE REFERENCE. CHECK THE VOLTAGE ON PIN 5 OF THE REGULATOR. THE VOLTAGE SHOULD BE 1.3 TO 1.5 VOLTS.
- 8. CHECK THAT OPENING THE "STBY ALT" MASTER SWITCH CAUSES THE VOLTAGE ON PIN 6 TO GO TO ZERO AND THE "STBY ALT ON" ANNUNCIATOR TO GO OFF. CLOSE THE "STBY ALT" MASTER SWITCH.
- 9. CHECK THAT PULLING THE STANDBY ALTERNATOR "SENSE" CIRCUIT BREAKER CAUSES THE VOLTAGE ON PIN 1 TO GO TO ZERO AND THE "STBY ALT ON" ANNUNCIATOR TO GO OFF. CLOSE THE BREAKER.
- 10. MOVE TO THE ENGINE COMPARTMENT. USING A CLEAN ENGINE GROUND FOR NEGATIVE REFERENCE, CHECK THE VOLTAGE ON THE ALTERNATOR FIELD TERMINAL. THE CONNECTOR MUST NOT BE DISCONNECTED FOR THIS MEASUREMENT. USE A THIN PROBE OR SMALL WIRE TO ACCESS THE TERMINAL THRU THE BACK OF THE CONNECTOR. THE VOLTAGE SHOULD MEASURE WITHIN 1.0 VOLT OF THE VALUE ON PIN 5 OF THE REGULATOR.
- 11. USING ENGINE GROUND AS NEGATIVE REFERENCE CHECK THE VOLTAGE ON THE "B" LEAD (OUTPUT TERMINAL) OF THE ALTERNATOR. THE VOLTAGE SHOULD BE EQUAL TO THE BUS VOLTAGE.
- 12. TURN OFF THE BATTERY MASTER.

FINAL TEST

- 1. PERFORM A NORMAL PREFLIGHT INSPECTION.
- 2. MOVE THE AIRCRAFT TO AN AREA SAFE FOR ENGINE START.
- 3. PERFORM A NORMAL ENGINE START AND ALLOW THE ENGINE TO REACH PROPER TEMPERATURE FOR RUNUP RPM.
- 4. ASSURE THAT THE "STBY ALT" AND "STBY ALT SENSE" CIRCUIT BREAKERS AND "STBY ALT" MASTER SWITCH ARE IN THE ON POSITION.
- 5. REDUCE SYSTEM ELECTRICAL LOADS TO APPROX 10-15 AMPS.
- 6. SET ENGINE TO 2000 RPM MINIMUM.
- 7. SWITCH PRIMARY ALTERNATOR FIELD SWITCH TO OFF.
- 8. CHECK THAT THE "STBY ALT ON" ANNUNCIATOR LIGHTS.
- 9. INCREASE THE ELECTRICAL LOAD TO OVER 20 AMPS. THE "STBY ALT ON" ANNUNCIATOR SHOULD BE BLINKING. REDUCE THE ELECTRICAL LOAD TO LESS THAN 20 AMPS. THE "STBY ALT ON" ANNUNCIATOR SHOULD BE ON STEADILY.
- 10. SWITCH THE PRIMARY ALTERNATOR FIELD SWITCH TO ON. THE "STBY ALT ON" ANNUNCIATOR SHOULD GO OFF.
- 11. RETURN THE ENGINE TO IDLE RPM.

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| ITEM | | PART NO. | | DESCRIPTION | |
| QUANTITY | | - | | B & C Specialty Products | |
| UNLESS OTHERWISE SPECIFIED | | CONDUCTIVE METAL SURFACES TO BE ANODIZED | | P.O. Box 8, Newton, Kansas 67114 | |
| FINISH | | DYE | | TITLE | |
| MATERIAL | | 7H | | 210L/M/N, T210L/M/N, & P210N | |
| DIMENSIONS | | J1 | | DRAWING NO. 425-502-1 | |
| DATE | | 11/1/88 | | SCALE | |
| PROJECT | | FULL | | PAGE 7 OF 7 | |

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

Manufacturer of Lightweight Electrical Systems

Instructions for Continued Airworthiness for

B&C Specialty Products Model BC410 & BC425 Alternators

The B&C Model 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, check the alternator externally for security of mounting and wiring and 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**