

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 Piper PA32 Standby Alternators

B&C Specialty Products is pleased to announce that we have received FAA STC/PMA approval for installation of the BC410 standby alternator and BC203-2D (28v) or BC217-1A (14v) regulator on all Piper PA32, Cherokee Six, Lance and Saratoga models (including those w/ turbocharged engines).

Prices for the components are as follows:

Alternator & Regulator w/ STC (specify 14v or 28v) \$2200.00
Installation Kit 410-506-1 (28v) or 410-506-2 (14v) \$435.00

This system has been installed by New Piper as factory equipment on all new PA32's since late 2005.

System Operation

The standby system provides 20 amps of power to support continued flight in the event of primary alternator failure. It turns on 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.

Installation Notes

The B&C Standby Alternator is mounted on the hydraulic accessory drive pad on the Lycoming "dual mag" (2-in-1 magneto) drive engines. On engines with two separate magnetos, the standby alternator is mounted on the vacuum pump drive and the vacuum pump is re-located to the hydraulic accessory drive pad. Lycoming parts needed to complete the hydraulic accessory drive are not included in the installation kit and must be purchased separately.

Panel mounted equipment includes a STBY ALT ON annunciator light, a STBY ALT rocker switch (purchased separately to match the existing switches) and three standard pull-type circuit breakers (1 amp, 5 amp and 40 amp). Appropriate placards are provided for each panel mounted device. The regulator is mounted in the area between the instrument panel and the firewall.

Because of the poor service record of the primary alternator and increased dependency on electrical power over the last 5 to 10 years, installing the B&C Standby Alternator System will greatly increase your flying safety.

Supplemental Type Certificate

SAMPLE

Number SA01066WI

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 : A3SO

Make : Piper

Model : PA-32-260, PA-32-300, PA-32S-300, PA-32R-300, PA-32RT-300,
PA-32R-301, PA-32-301, PA-32R-301T, PA-32-301T, PA-32RT-300T, PA-32-301XTC, PA-32-301FT

Description of Type Design Change: Installation of B&C Specialty Products BC410-1 Standby Alternator System. Data Required: (1) B&C Specialty Products, Inc. Drawing List No. 410LST3.DOC, Revision (-), dated June 4, 2001; (2) B&C Specialty Products Document No. FMS410-3, FAA Approved Airplane Flight Manual Supplement, dated April 3, 2002; or later FAA Approved Revisions to (1) or (2).

SAMPLE

Limitations and Conditions: The limitations and conditions for any 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 : June 7, 2001

Date reissued :

Date of issuance : April 3, 2002

Date amended : November 6, 2006



By direction of the Administrator

Harvey E. Nero

(Signature)

Harvey E. Nero
FAA Program Manager
 Wichita Aircraft Certification Office

(Title)

SAMPLE

| | | | |
|--------|----------|-------|----------|
| SYMBOL | REVISION | DRAWN | APPROVED |
| | | | |

PRELIMINARY FUNCTIONAL TEST

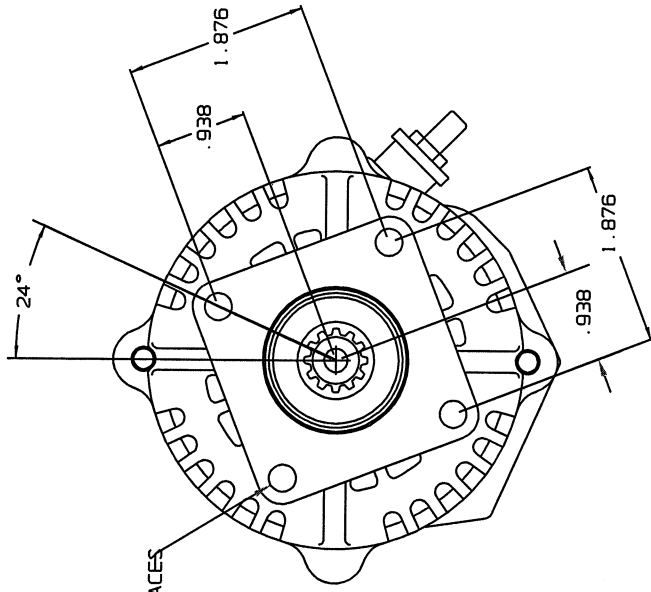
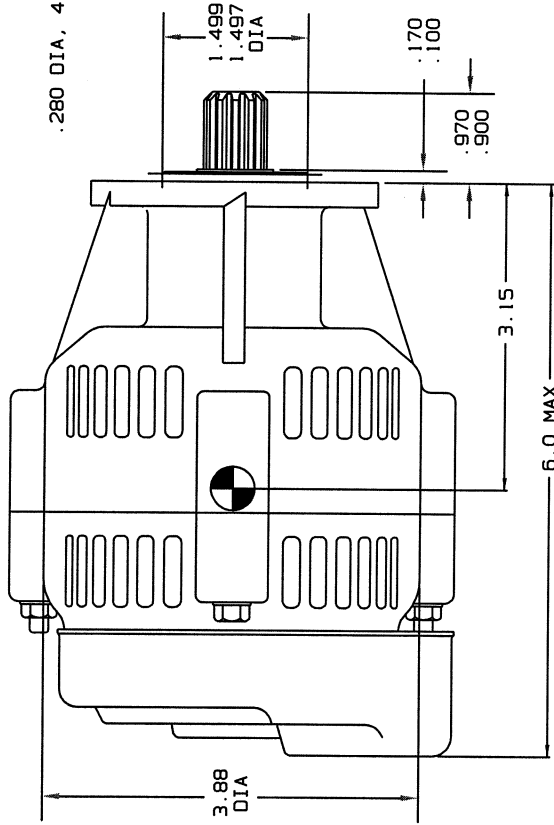
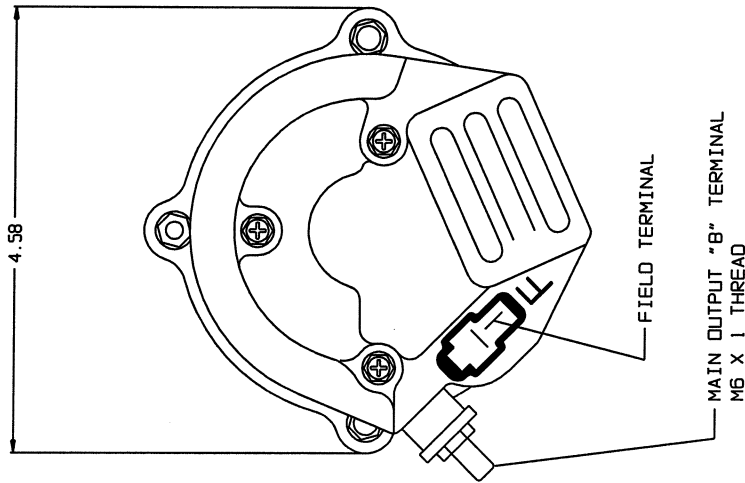
- 1. REFER TO AIRCRAFT DIMMERS OR MAINTENANCE MANUAL AND RE-CONNECT THE BATTERY. THE MAG SWITCH SHOULD REMAIN OFF.
- 2. CLOSE THE "STBY ALT", "FIELD" AND "SENSE" CIRCUIT BREAKERS AND THE "STBY ALT" MASTER (OR FIELD) SWITCH.
- 3. TURN ON THE BATTERY MASTER SWITCH. CHECK THAT NEITHER STANDBY ALTERNATOR 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 REGULATOR AND BOTH THE AIRFRAME AND THE BATTERY NEGATIVE POST. THE VOLTAGE SHOULD BE NEAR 0 VOLTS.
- 5. USE PIN 7 OF THE REGULATOR OR AIRFRAME AS NEGATIVE REFERENCE. MEASURE THE VOLTAGE ON PIN 1 OF THE BC203-2A OR PIN 3 OF THE BC217-1 AS APPROPRIATE. 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 6 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. IF THE REGULATOR IS A BC203-2A, CHECK THE VOLTAGE ON PIN 5. THE VOLTAGE SHOULD BE 13 TO 15 VOLTS. IF THE REGULATOR IS A BC217-1 CHECK THE VOLTAGE ON PIN 4. IT SHOULD BE 1.2 VOLTS LESS THAN THE VOLTAGE ON PIN 6.
- 8. CHECK THAT PULLING THE STANDBY ALTERNATOR "FIELD" CIRCUIT BREAKER CAUSES THE VOLTAGE ON PIN 6 TO GO TO ZERO AND THE "STBY ALT ON" ANNUNCIATOR TO GO OFF. CLOSE THE CIRCUIT BREAKER.
- 9. CHECK THAT OPENING THE "STBY ALT" MASTER CAUSES THE VOLTAGE ON PIN 6 TO GO TO ZERO AND THE "STANDBY ALT ON" ANNUNCIATOR TO GO OFF. CLOSE THE "STANDBY ALT" MASTER SWITCH.
- 10. CHECK THAT PULLING THE STANDBY ALTERNATOR "SENSE" CIRCUIT BREAKER CAUSES THE VOLTAGE ON PIN 1 OF THE BC203-2A OR PIN 3 OF THE BC217-1 TO GO TO ZERO AND THE "STBY ALT ON" ANNUNCIATOR TO GO OFF. CLOSE THE BREAKER.
- 11. MOVE TO THE ENGINE COMPARTMENT. LISTING 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 CONNECTOR. THE VOLTAGE SHOULD MEASURE WITHIN 1.0 VOLT OF THE VALUE ON PIN 5 OF THE BC203-2A OR PIN 4 OF THE BC217-1 AS APPROPRIATE.
- 12. 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.
- 13. 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.

| | | | |
|---------------------------------|--|----------------------------------|--|
| PART NO. | | DESCRIPTION | |
| B & C Specialty Products | | P.O. Box B, Newton, Kansas 67114 | |
| TITLE INSTALLATION, BC410 ON | | | |
| DRAWING NO. 410-506 | | REVISED | |
| DATE 5/14/01 | | DATE | |
| PROJECT | | SCALE | |
| FILL | | JOB NO. | |
| PAGE 6 | | OF 7 | |

| REV | DATE | DESCRIPTION |
|-----|---------|--|
| A | 8/26/97 | ADDED 24 DEG DIMENSION |
| B | 5/20/98 | REMOVED SPLINE CALLOUT; ADDED 4.58 DIM & REF. NOTE |
| C | 6/16/99 | TBD WAS 1600 HRS. |

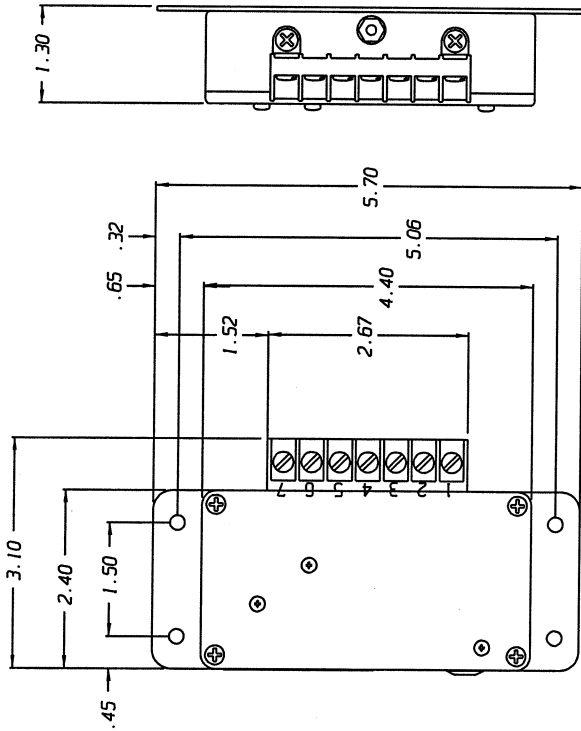


NOTE: 1. ALL DIMENSIONS FOR REFERENCE ONLY
 2. RECOMMENDED INTERVAL BETWEEN OVERHAUL IS 1700 HRS.

-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

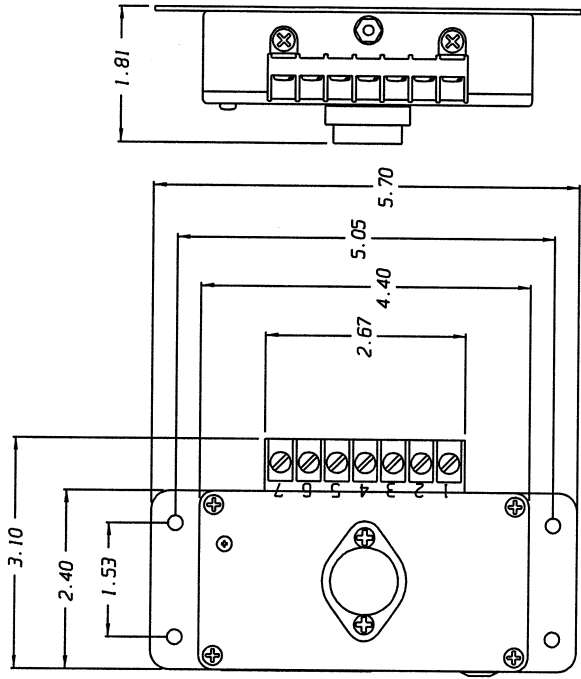
| | | |
|----------------------------------|-----------|------------------------------|
| 1 | 410-100-1 | ALTERNATOR ASSY, 14/28V, 20A |
| | -1 | ALTERNATOR, 14/28V, 20A |
| | | PART NO. |
| | | DESCRIPTION |
| UNLESS OTHERWISE SPECIFIED | | |
| DIMENSIONS ARE IN INCHES | | |
| TOLERANCES ARE: | | |
| DECIMAL 0.XX = ± 0.03 | | |
| DECIMAL 0.XXX = ± 0.010 | | |
| ANGLES = ± 0.5 DEGREES | | |
| ENGINEER | NAME | DATE |
| DRAWN | NUCKOLLS | 8-31-95 |
| CHECKED | DLS | 8-31-95 |
| PROJECT | TH | 8/13/98 |
| | | SCALE |
| | | JOB NO. |
| B & C Specialty Products | | REVISION C |
| P.O. Box B, Newton, Kansas 67114 | | DATE 6/16/99 |
| TITLE ENVELOPE DRAWING | | |
| AIRCRAFT ALTERNATOR, | | |
| 14/28 VOLT, 20 AMP | | |
| DRAWING NO. BC410 | | |
| SHEET 1 OF 1 | | |



TERMINAL FUNCTIONS (-2A):
(STANDBY CONTROLLER)

1. BUS SENSE
2. STBY ALT ON ANNUNCIATOR
3. CURRENT SENSOR ANALOG (OPTIONAL)
4. CURRENT SENSOR +10 VOLTS (OPTIONAL)
5. FIELD
6. BUS SUPPLY
7. GROUND

BC203-2D
(28 V)



TERMINAL FUNCTIONS:

1. SENSOR +10 VOLTS
2. SENSOR ANALOG
3. BUS VOLTAGE SENSE
4. FIELD
5. LOW VOLTAGE WARNING LIGHT
6. BUS SUPPLY (ALSO TEMPERATURE PROBE WHITE WIRE (OPTIONAL))
7. GROUND

BC217-1A
(14 V)

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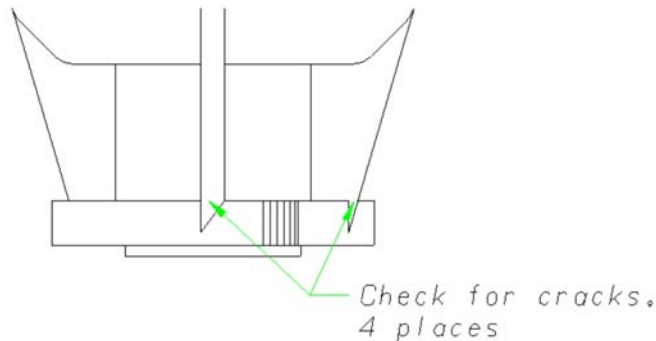
Manufacturer of Lightweight Electrical Systems

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.



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**