

# **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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## **Installation Manual for**

## **Stand-by Alternator System Bonanza 14 & 28 Volt**

INSTALLATION INSTRUCTIONS:

\* DENOTES REFER TO AIRCRAFT MAINTENANCE MANUAL

- \* 1. OPEN ENGINE COWL TO ACCESS REAR OF ENGINE AND FIREWALL ELECTRICAL SUB-PANEL.
- \* 2. DISCONNECT BATTERY NEGATIVE LEAD.
- \* 3. REMOVE GLARE SHIELD TO ACCESS AREA BETWEEN INSTRUMENT PANEL AND FIREWALL.
- \* 4. IF THE AIRCRAFT HAS AIR CONDITIONING, DETERMINE WHETHER THE COMPRESSOR SUPPORT BRACKET HAS A CLEARANCE SLOT ON THE INBOARD SIDE FOR THE STANDBY ALTERNATOR. IF NOT, REMOVE THE COMPRESSOR SUPPORT BRACKET AND RETURN TO B&C FOR MODIFICATION. THE COMPRESSOR MAY BE SUPPORTED ON THE BATTERY BOX AND THE REFRIGERANT LINES NOT DISCONNECTED, COMPLETE STEPS 5 AND 6 WHILE THE COMPRESSOR BRACKET IS REMOVED. RE-INSTALL THE MODIFIED BRACKET AND COMPRESSOR.
- 5. IF THE AIRCRAFT HAS A STANDBY GENERATOR, REFER TO SHEET 5 AND REMOVE THE OLD STANDBY SYSTEM. IF THERE IS NO STANDBY GENERATOR, PROCEED TO STEP 6.
- 6. REFER TO SHEET 3. REMOVE COVER PLATE AND INSTALL BC410 ALTERNATOR.
- 7. REFER TO SHEET 7. INSTALL THE REGULATOR.
- 8. REFER TO SHEET 5. INSTALL CURRENT LIMITER.
- 9. REFER TO SHEET 8. INSTALL STANDBY ALTERNATOR "FIELD" AND "SENSE" CIRCUIT BREAKERS AND PLACARD.
- 10. REFER TO SHEET 4. INSTALL MASTER SWITCH.
- 11. REFER TO SHEET 9. INSTALL GLARE SHIELD MOUNTED ANNUNCIATOR.
- 12. REFER TO SHEET 5. COMPLETE ELECTRICAL CONNECTIONS.
- \* 13. CONNECT BATTERY LEADS.
- 14. REFER TO SHEET 11. COMPLETE PRELIMINARY FUNCTIONAL TEST.
- \* 15. INSTALL GLARE SHIELD.
- \* 16. CLOSE ENGINE COWL
- 17. UPDATE WEIGHT AND BALANCE DATA, LOG BOOKS AND PILOT OPERATING HANDBOOK.

- NOTES:
1. ALL ITEMS EXCEPT ITEMS 1, 2 AND 3 MAY BE MANUFACTURED OR SOURCED BY THE OEM DIRECTLY FOR USE ON NEW PRODUCTION AIRCRAFT.
  2. FOR INSTRUCTIONS FOR CONTINUED AIR WORTHINESS SEE B&C DOCUMENT NUMBERS ICA-BC410.DOC, ICA-BC203-20.WPD AND ICA-BC217-1A.WPD.
  3. -1 KIT FOR 28 VOLT AIRCRAFT  
-2 KIT FOR 14 VOLT AIRCRAFT
  4. FOR STC/ KIT APPLICABILITY, SEE SEET 12 OF 12
  5. IF BC203-2E IS USED FOR ITEM 2, IT MUST BE FACTORY PRESET TO 26.0 VOLTS.

V&B REFERENCE INFO

BC410 ALTERNATOR WEIGHT = 5.75 LBS.

BC203-2A OR D AND BC217-1A CONTROLLERS WEIGHT = 0.6 LBS.

35		AR	AR	410-337	PANEL, EL., 1983 AND OLDER BONANZAS
34			AR	410-329	PANEL, EL., BONANZA W/ CURRENT SENSOR
33		J	J	410-404	PLACARD, ANNUNCIATOR
32		2	2	60617-1	PIN, CONNECTOR, FEMALE, AMP
31		2	2	60618-1	PIN, CONNECTOR, MALE, AMP
30		1	1	1-480318-0	HOUSING, CONNECTOR, 2 CONDUCTOR, AMP
29		1	1	1-480318-0	HOUSING, CONNECTOR, 2 CONDUCTOR, AMP
28		1	1	MS25171-2S	INSULATOR, SILICON ELBOW
27		1	1	S884-01	SWITCH, TOGGLE, SPST
ITEM		-2	-1		
		USED ON		PART NO.	DESCRIPTION
		UNLESS OTHERWISE SPECIFIED			

SYMBOL	REVISION	DRAWN	APPROV
A	ITEM 26 P/N WAS MS35207-263; DELETED ITEM 25. CUSHIONED CLAMP	TH	8/16/00
B	ADDED ICA FOR REGULATORS IN NOTE 2; ITEM 2 WAS BC203-2A; ITEM 3 WAS BC217-1 ADDED GROUNDS ON SHTS 3 AND 7.	TH	2/12/01
C	CORRECTED 35-C33A SERIAL NUMBERS ON SHT 12 OF 12, WERE CD-1 THRU CD-179	TH	2/13/02
D	ADDED W&B REFERENCE INFO THIS SHEET	TH	2/14/02
E	ADDED E REV OF ITEM 2 AND NOTE 5	TH	3/15/05
F	ADDED ITEMS 34 & 35 & NOTES PG 4	TH	7/26/08

26		2	2	MS35191-274	SCREW, FLAT HEAD, 10-32 x .50
25					
24		1	1	410-405-1	PLACARD, STBY ALT MASTER SWITCH
23		1	1	MS21919WDG3	CLAMP, CUSHIONED, "B" LEAD
22		3	3	S814Y416	TERMINAL, RING, 1/4 x 10 GA., INSUL.
21		2	2	S814Y518	TERMINAL, RING, 5/16 x 10 GA., INSUL.
20		1	1	410-225-8	FIELD CONNECTOR ASSEMBLY
19		2	2	MS35214-14	SCREW, PAN HEAD, 8-32 x .375, BLACK
18		1	1	MS9134-01	GASKET (DR EQUAL)
17		20	20	M22759/18-20-9	WIRE, 20 AWG
16		25	25	MS3367-1-9	CABLE TIE, NYLON
15		3	3	S814R10	TERMINAL, RING, #10 x 18-22 GA., INSUL
14		9	9	S814R6	TERMINAL, RING, #6 x 18-22 GA., INSUL.
13		25	25	M22759/18-22-9	WIRE, 22 GA.
12			1	425-205-1	SUB-ASSEMBLY, ANNUNCIATOR, STOBY ALT
11			1	425-205-2	SUB-ASSEMBLY, ANNUNCIATOR, STOBY ALT
10		10	10	M22759/18-10-9	WIRE, 10 GA.
9		1	1	410-401-1	PLACARD, BREAKER
8		1	1	S871-5	BREAKER, 5A
7		1	1	S871-1	BREAKER, 1A
6		1	1	C905-40	CURRENT LIMITER
5		1	1	C903-1	BASE, CURRENT LIMITER
4		1	1	218-300	CURRENT SENSOR
3			1	BC217-1A	REGULATOR, 14V
2			1	BC203-2D DR	E REGULATOR, 28V
1			1	BC410-1	ALTERNATOR
ITEM		-2	-1		
		USED ON		PART NO.	DESCRIPTION

UNLESS OTHERWISE SPECIFIED

DIMENSIONS ARE IN INCHES  
TOLERANCES ARE:  
DECIMAL DIM = ±0.03  
DECIMAL DIM = 15.000  
ANGLES = ±0.6 DEGREES

	NAME	DATE
DRAWN	TH	3/7/00
CHECKED	TH	
PROJECT		

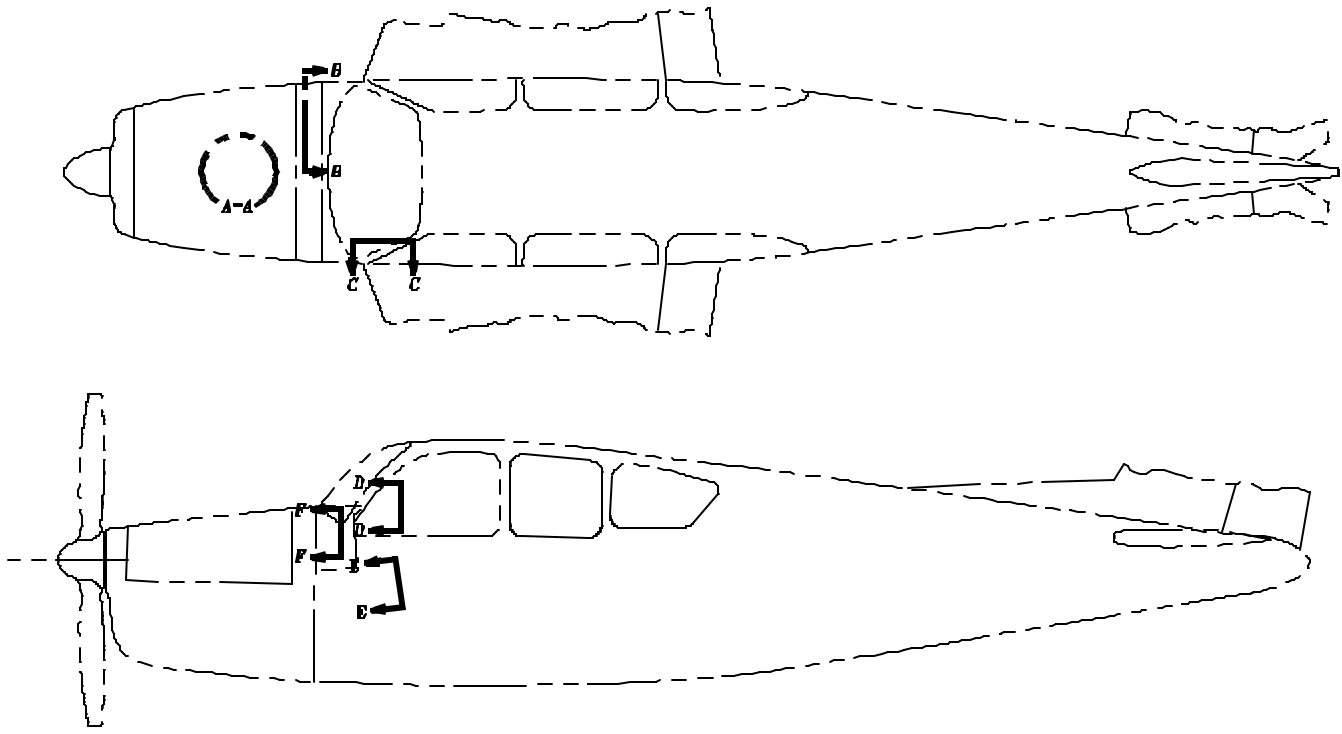
B & C Specialty Products  
P.O. Box B, Newton, Kansas 67114

TITLE  
INSTALLATION, BC410 ON  
BONANZAS W/ CURRENT SENSE

DRAWING NO. 410-500-3  
REVISION F  
DATE 7/26/08  
PAGE 1 OF 12

SCALE FULL JOB NO.

SYMBOL	REVISION	DRAWN	APPROVED



ITEM		-J	PART NO.	DESCRIPTION	
				B & C Specialty Products P.O. Box B, Newton, Kansas 67114	
	UNLESS OTHERWISE SPECIFIED			TITLE	
	DIMENSIONS ARE IN INCHES TOLERANCES ARE: DECIMAL 0.005 - 0.002 ANGLES = ±0.5 DEGREES			INSTALLATION, BC410 ON BONANZAS W/ CURRENT SENSE	
	NAME	DATE			
ENGINEER	TH				
DRAWN	TH	3/7/00	DRAWING NO.	410-500-3	REVISION
CHECKED	TH		DATE		
PROJECT			SCALE	FULL	SHEET NO.
					PAGE 2 OF 12





## REMOVAL OF STANDBY GENERATOR SYSTEM

- 1. THE STANDBY GENERATOR IS MOUNTED TO THE RIGHT HAND ACCESSORY PAD ON THE REAR OF THE ENGINE. DISCONNECT THE ARMATURE AND FIELD WIRES FROM THE STANDBY GENERATOR. THE WIRE ENDS MAY BE INSULATED AND TIED BACK INTO THE HARNESS OR REMOVED ENTIRELY IF CONVENIENT.
- 2. REMOVE THE STANDBY GENERATOR FROM THE ENGINE ACCESSORY PAD. RETAIN THE MOUNTING HARDWARE FOR USE IN INSTALLING THE BC410. CLEAN THE OLD GASKET MATERIAL FROM THE ENGINE MOUNTING SURFACE TAKING CARE NOT TO DAMAGE THE SURFACE.
- 3. REMOVE THE STANDBY GENERATOR REGULATOR FROM THE AIRCRAFT. RETAIN THE HARDWARE FOR USE IN INSTALLING THE NEW REGULATOR. INSULATE AND SECURE THE WIRING OR REMOVE THE WIRES ENTIRELY.
- 4. REFER TO THE FACTORY MAINTENANCE/PARTS MANUAL FOR THE APPROPRIATE MODEL AND SERIAL NUMBER AIRCRAFT. THE STANDBY GENERATOR TRANSFER RELAY ISOLATES A SMALL STANDBY BUS FROM THE MAIN BUS AND CONNECTS THE STANDBY GENERATOR TO THE STANDBY BUS. THE RELAY SHOULD BE REMOVED AND THE STANDBY BUS PERMANENTLY CONNECTED TO THE MAIN BUS VIA CONDUCTORS THAT WERE GOING TO THE NORMALLY CLOSED CONTACTS. THE REMAINING WIRES MAY BE REMOVED FROM THE HARNESS COMPLETELY OR INSULATED AND TIED BACK INTO THE HARNESS.
- 5. THE INSTRUMENT PANEL MOUNTED SWITCH WHICH OPERATES THE STANDBY SYSTEM MUST BE REMOVED AND THE WIRES INSULATED AND TIED INTO THE HARNESS OR REMOVED ENTIRELY.
- 6. IF THE OLD STANDBY SYSTEM HAS "BAT TEST" AND "GEN TEST" LAMPS IN THE INSTRUMENT PANEL THEY MUST BE REMOVED AND THE WIRES REMOVED OR SAFELY SECURED.
- 7. IF THE AIRCRAFT HAS A STANDBY GENERATOR AND TWO NAVIGATION/COMMUNICATION RADIOS THERE IS A NAV1/COM1 TO NAV2/COM2 SWITCH FOR RADIO SELECTION WHILE THE STANDBY GENERATOR IS IN OPERATION. REMOVE THE SWITCH AND CONNECT THE WIRE COMING FROM THE NAV1 BREAKER TO THE NAV1 RADIO. THE WIRE COMING FROM THE COM1 BREAKER TO THE COM1 RADIO AND SO ON FOR ALL FOUR RADIOS. MAKE SURE THE SPLICES ARE INSULATED AND TIE THEM BACK INTO THE HARNESS. FOUR JUMPER WIRES CONNECTED BETWEEN THE TERMINALS OF THE SWITCH ARE NOT NEEDED AND MAY BE REMOVED OR INSULATED AND TIED BACK TO THE HARNESS.
- 8. REMOVE THE STANDBY GENERATOR FUSES AND REMOVE THE FUSE HOLDER LABELS. WIRING TO THE FUSE HOLDERS MAY BE REMOVED OR INSULATED AND TIED INTO THE HARNESS AS DESIRED.
- 9. CHECK THAT THE SYSTEM FUNCTIONALLY MATCHES THE WIRING DIAGRAM FOR AIRCRAFT WITHOUT A STANDBY GENERATOR FOUND IN THE APPROPRIATE FACTORY MAINTENANCE MANUAL.

## INSTALLATION OF CURRENT LIMITER & BASE

- 1. LOCATE A CONVENIENT MOUNTING PLACE ON THE FORWARD FIREWALL AREA FOR THE CURRENT LIMITER BASE, ITEM 5. ELECTRICALLY THE LIMITER WILL BE BETWEEN THE BUS AND THE STANDBY ALTERNATOR OUTPUT OR "B" LEAD. WHEN CHOOSING A LOCATION, KEEP THE FOLLOWING IN MIND:
  - 1. CLEARANCE FROM OTHER ITEMS THAT MOVE INCLUDING HOSES, CABLES, ETC.,
  - 2. ALLOW ROOM BETWEEN THE LIMITER BASE AND THE BUS CONNECTION FOR ITEM 3, CURRENT SENSOR.
  - 3. EASE OF REPLACEMENT OF THE LIMITER.
- 2. MS35207 SCREWS, ITEM 26, MAY USED FOR MOUNTING ALONG WITH "AN" LOCK NUTS OR ANCHOR NUTS AS APPROPRIATE.
- 3. INSTALL LIMITER, ITEM5, AFTER COMPLETING THE ALTERNATOR AND SENSOR WIRING PER SHEET 6.

SYMBOL	REVISION	DRAWN	APPROV

ITEM	QUANTITY	UNIT	PART NO.	DESCRIPTION
			-1	
				UNLESS OTHERWISE SPECIFIED
				DIMENSIONS ARE IN INCHES TOLERANCES ARE: DECIMAL 0.25 = ±0.02 DECIMAL 0.100 = ±0.002 FRACTIONS = ±0.01 UNLESS NOTED
				TITLE B & C Specialty Products P.O. Box B, Newton, Kansas 67114 INSTALLATION, BC410 ON BONANZAS W/ CURRENT SENSE
				ENGINEER TH DATE DRAWN TH 3/7/00 DRAWING NO. 410-500-3 REVISION CHECKED TH DATE PROJECT SCALE FULL JOB NO. PAGE 5 OF 12









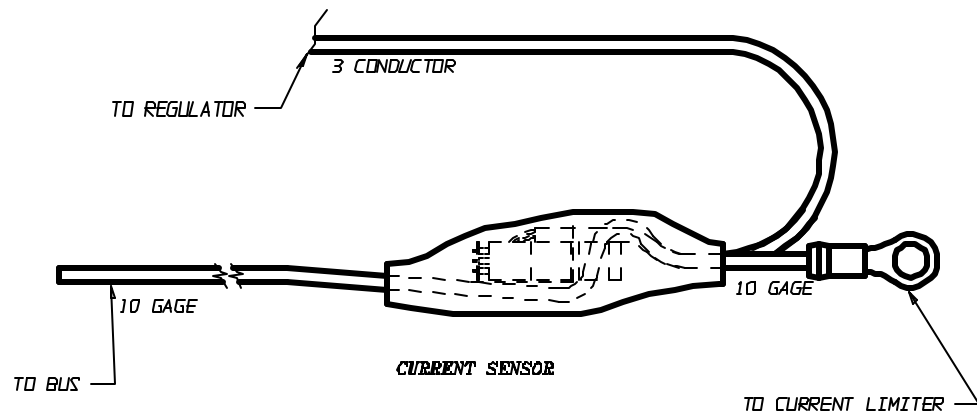
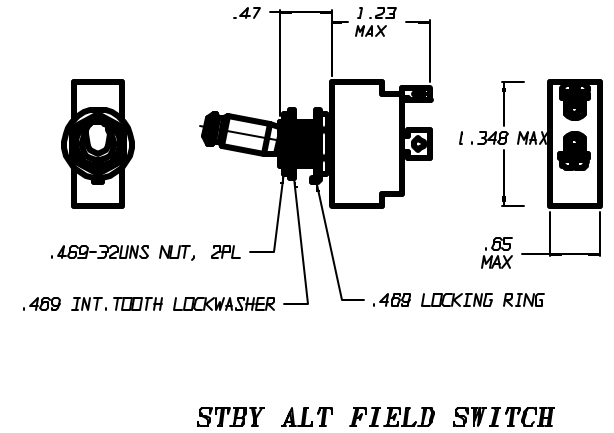
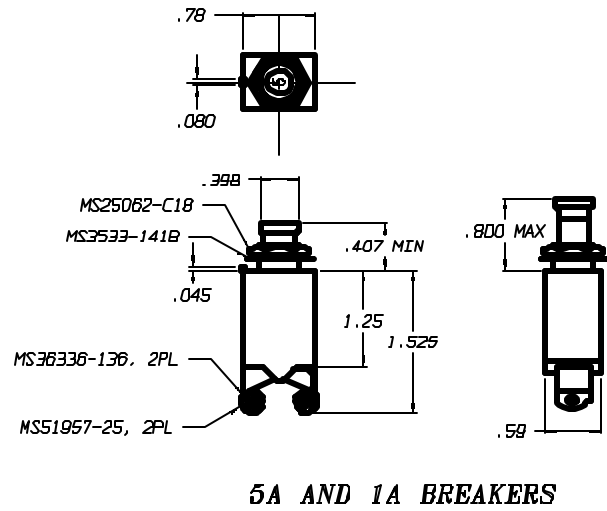
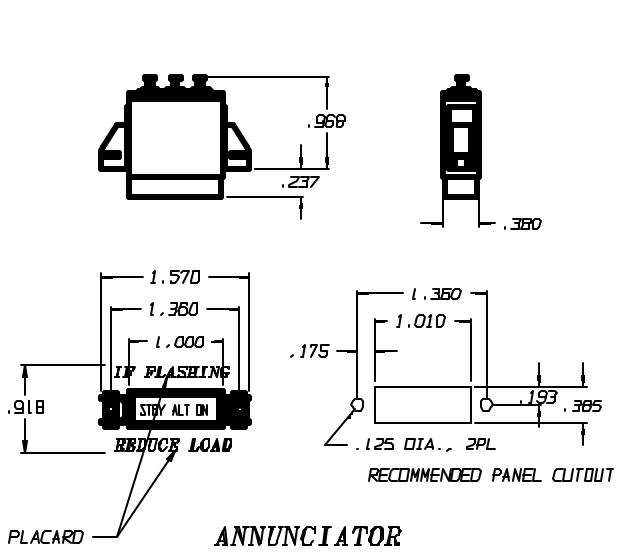




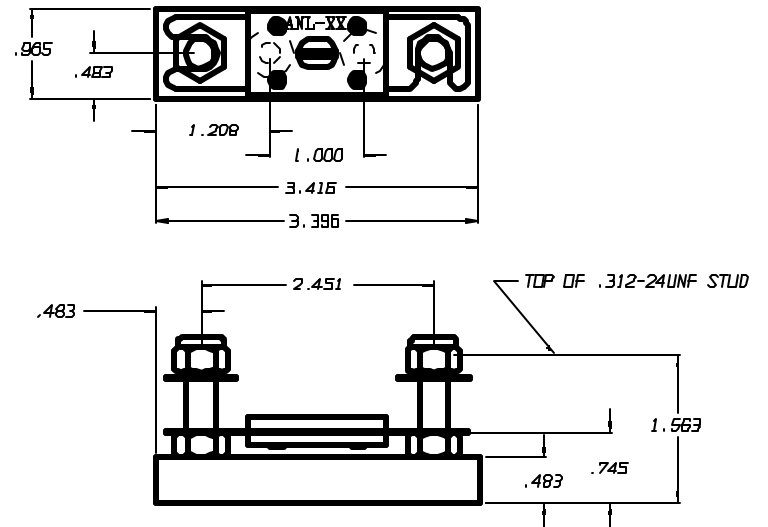
MODEL	SERIAL NUMBERS	SYSTEM VOLTS	CURRENT DETECTION	INSTALLATION DRAWING NO.	FLIGHT MANUAL SUPPLEMENT
J	D5062, D5331 THRU D-5725	14	ANNUNCIATOR	410-500-3	FMS410-2
K	D-5726 THRU D-6161	14	ANNUNCIATOR	410-500-3	FMS410-2
M	D-6162 THRU D-6561	14	ANNUNCIATOR	410-500-3	FMS410-2
35-33	CD-1 THRU CD-224, CD-233, CD-234, CD-236 CD-241, CD-246 THRU CD250	14	ANNUNCIATOR	410-500-3	FMS410-2
		14	ANNUNCIATOR	410-500-3	FMS410-2
35-A33	CD-225 THRU CD-232, CD-235, CD-237 THRU CD-240, CD-242 THRU CD-245, CD-251 THRU CD-387	14	ANNUNCIATOR	410-500-3	FMS410-2
		14	ANNUNCIATOR	410-500-3	FMS410-2
35-B33	CD-388 THRU CD-813	14	ANNUNCIATOR	410-500-3	FMS410-2
35-C33	CD-814 THRU CD-1118	14	ANNUNCIATOR	410-500-3	FMS410-2
E33	CD-1119 THRU CD-1234	14	ANNUNCIATOR	410-500-3	FMS410-2
F33	CD-1235 THRU CD-1254	14	ANNUNCIATOR	410-500-3	FMS410-2
N35	D-6562 THRU D-6841	14	ANNUNCIATOR	410-500-3	FMS410-2
P35	D-6842 THRU D-7139, D-7141 THRU D-7309	14	ANNUNCIATOR	410-500-3	FMS410-2
S35	D-7140, D-7310 THRU D-7976	14	ANNUNCIATOR	410-500-3	FMS410-2
V35/TC	D-7977 THRU D-8598	14	ANNUNCIATOR	410-500-3	FMS410-2
V35A/TC	D-8599 THRU D-9068	14	ANNUNCIATOR	410-500-3	FMS410-2
V35B/TC	D-9069 THRU D-10096, D-10098 THRU D-10119	14	ANNUNCIATOR	410-500-3	FMS410-2
	D-10097, D-10120 AND AFTER	28	ANNUNCIATOR	410-500-3	FMS410-2
35-C33A	CE-1 THRU CE-179	14	ANNUNCIATOR	410-500-3	FMS410-2
E33A	CE-180 THRU CE-289	14	ANNUNCIATOR	410-500-3	FMS410-2
E33C	CJ-1 THRU CJ-25	14	ANNUNCIATOR	410-500-3	FMS410-2
F33A	CE-290 THRU CE-247, CE249 THRU CE-771	14	ANNUNCIATOR	410-500-3	FMS410-2
	CE-248, CE-772 AND AFTER	28	ANNUNCIATOR	410-500-3	FMS410-2
F33C	CJ-26 THRU CJ-148	14	ANNUNCIATOR	410-500-3	FMS410-2
	CJ-149 AND AFTER	28	ANNUNCIATOR	410-500-3	FMS410-2
G33	CD-1255 THRU CD-1304	14	ANNUNCIATOR	410-500-3	FMS410-2
36	E-1 THRU E-184	14	ANNUNCIATOR	410-500-3	FMS410-2
A35	E185 THRU E-1110, E-1112 THRU E-1240	14	ANNUNCIATOR	410-500-3	FMS410-2
	E2104, E2111 AND AFTER	28	LOADMETER	410-500-1 OR -2	FMS410-1
	E-1111, E-1241 AND AFTER	28	ANNUNCIATOR	410-500-3	FMS410-2
A36TC	EA-1 THRU EA-241, EA-243 THRU EA-272	28	ANNUNCIATOR	410-500-3	FMS410-2
B36TC	EA-320, EA-440 AND AFTER	28	LOADMETER	410-500-1 OR -2	FMS410-1
	EA-242, EA-273 AND AFTER	28	ANNUNCIATOR	410-500-3	FMS410-2

APPLICABILITY CHART

PART NO.		DESCRIPTION	
B & C Specialty Products P.O. Box B, Merion, Kansas 67114		INSTALLATION, BC410 DN BONANZAS W/ CURRENT SENSE	
DATE	BY	DATE	BY
10/02	10/02	09/7/88	
REVISION	TH	REVISION	TH
01	TH	01	TH
02	TH	02	TH
03	TH	03	TH
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99	TH	99	TH
100	TH	100	TH



NOTE: THE CURRENT LIMITER AND CURRENT SENSOR ARE INSTALLED ON THE FORWARD SIDE OF THE FIREWALL.



# COMPONENTS TO INSTALL

**B & C Specialty Products Inc.****STC No. SA00724WI****Bonanza Standby Alternator Approved Models List**

<b>Model</b>	<b>Serial Numbers</b>
<b>J</b>	<b>D5062, D5331 thru D-5725</b>
<b>K</b>	<b>D-5726 thru D-6161</b>
<b>M</b>	<b>D-6162 thru D-6561</b>
<b>35-33</b>	<b>CD-1 thru CD-224, CD-233, CD-234, CD-236, CD-241, CD-246 thru CD-250</b>
<b>35-A355</b>	<b>CD-225 thru CD-232, CD-235 CD-237 thru CD-240 CD-242 thru CD-245 CD-251 thru CD-387</b>
<b>35-B33</b>	<b>CD-388 thru CD-813</b>
<b>35-C33</b>	<b>CD-814 thru CD-1118</b>
<b>E33</b>	<b>CD-1119 thru CD-1234</b>
<b>F33</b>	<b>CD-1235 thru CD-1254</b>
<b>N35</b>	<b>D-6562 thru D-6841</b>
<b>P35</b>	<b>D-6842 thru D-7139 &amp; D-7141 thru D-7309</b>
<b>S35</b>	<b>D-7140 &amp; D-7310 thru D-7976</b>
<b>V35/TC</b>	<b>D-7977 thru D-8598</b>
<b>V35A/TC</b>	<b>D-8599 thru D-9068</b>
<b>V35B/TC</b>	<b>D-9069 and after</b>
<b>35-C33A</b>	<b>CE-1 thru CE-179</b>
<b>E33A</b>	<b>CE-180 thru CE-289</b>
<b>E33C</b>	<b>CJ-1 thru CJ-25</b>
<b>F33A</b>	<b>CE-290 and after</b>
<b>F33C</b>	<b>CJ-26 and after</b>
<b>G33</b>	<b>CD-1255 thru CD-1304</b>
<b>36</b>	<b>E-1 thru E-184</b>
<b>A36</b>	<b>E-185 and after</b>
<b>A36TC</b>	<b>EA-1 thru EA-241 &amp; EA-243 thru EA-272</b>
<b>B36TC</b>	<b>EA-242 &amp; EA-273 and after</b>

# Supplemental Type Certificate

**SAMPLE**

*Number* SA00724WI

*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 :* 3A15

*Make :* Raytheon Aircraft Company

*Model :*

\* See Attached Approved Model List (AML) SA00724WI

*Description of Type Design Change:*

Installation of B&C Specialty Products

BC410-1 Standby Alternator on airplanes listed on FAA Approved Model List (AML) No. SA00724WI:

Data Required: (1) B&C Specialty Products, Inc. Master Drawing No. 410LST1.DOC, Rev C, dated December 1, 1998, and Document No. FMS410-1, FAA Approved Airplane Flight Manual Supplement, dated December 18, 1998; or (2) B&C Specialty Products, Inc. Master Drawing No. 410LST2.DOC, Rev 0, dated March 10, 2000; and Document No. FMS410-2, FAA Approved Airplane Flight Manual Supplement, dated June 26, 2000, 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.

\* Note: The attached AML is applicable only to the aircraft serial numbers called out on the Installation Drawing Applicability Chart.

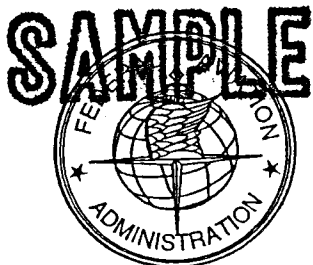
*This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.*

*Date of application :* May 18, 1998

*Date reissued :*

*Date of issuance :* December 18, 1998

*Date amended :* June 26, 2000



*By direction of the Administrator*

*Joel Ligon*  
(Signature)

Joel Ligon  
Program Manager  
Wichita Aircraft Certification Office

(Title)

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.