

**SUPPLEMENT No.2 to DOC.NO. SC-AMM-1-0-00****ADDITIONAL BC425-H ALTERNATOR****1 LIST OF AIRPLANES COVERED BY THIS SUPPLEMENT**

Airplane model	Serial No.	Note
SportCruiser / PiperSport – operating outside EASA rules	-	Valid only for these airplanes the owners of which decide to install the additional BC425-H alternator



2.3.4 Additional BC425-H Alternator inspections and overhauls schedule

ITEM	TIME TO NO RECURRENT OVERHAUL	NOTES
BC425-H alternator	1700 hours of operation or during engine overhaul	Alternator to be returned to B&C Specialty Products for factory overhaul.

2.5.2 Tables of inspection tasks

Changes in the table SCHEDULED ANNUAL PERIODICAL INSPECTION OR INSPECTION AFTER 100 FH are made only in the Page 6 of 7 - Chapter 11 – Electrical System as follows:

SCHEDULED ANNUAL PERIODICAL INSPECTION (API) OR INSPECTION AFTER 100 (100) FLIGHT / OPERATION HRS					
Aircraft S/N:		TSN (FH/OH):			
Registration mark:					
Type of inspection:		Page 6 of 8			
Chpt.	Prescribed works	API / 100	FH / OH	Made by	Checked by
11	Electrical system	Both	FH		
	Check attachment and condition of battery.	Both	FH		
	Check level of battery charge.	Both	FH		
	Perform battery capacity test- applied for annual inspection only.	API	FH		
	Check condition, attachment and integrity of wiring.	Both	FH		
	Check condition and securing of plug/socket outlets.	Both	FH		
	Check condition of switches, fuses and circuit breakers.	Both	FH		
	Check condition of the landing light.	Both	FH		
	Check condition of the position / strobe lights.	Both	FH		
	Check the BC425-H alternator according to the section 11.5 of this Supplement.	Both	OH		
12	No change				
13	No change				
All	No change				
Notes:					
Date:		Signature:			

CHAPTER 3 FUSELAGE
No Change

CHAPTER 4 WING
No Change

Revision No.: -

Date of issue: 2020-01-31

**CHAPTER 5 TAIL UNIT**

No Change

CHAPTER 6 CONTROL SYSTEM

No Change

CHAPTER 7 EQUIPMENT

No Change

CHAPTER 8 LANDING GEAR

No Change

CHAPTER 9 FUEL SYSTEM

No Change

CHAPTER 10 POWER UNIT

No Change

CHAPTER 11 ELECTRICAL SYSTEM**11.2 Description and Operation**

The airplane is equipped with 14 VDC electrical installations with grounded negative pole (see Fig. 11-1 in SC-AMM-1-0-00). Primary source of electrical energy is formed by the Rotax generator.

An additional source of electrical energy is also the battery 12 V, which is located on the firewall. It is used for starting the engine and in the case of generator failure as a back-up source of electric energy.

If a higher supply of electric energy is requested, the additional BC425-H alternator (GEN 2) is installed. Together with the alternator regulator LR3C-14 must be installed. This regulator is mounted in pilot side of the firewall.

The additional BC425-H alternator is installed on the Rotax 912 engine vacuum pump accessory pad in the gearbox. Speed reduction from the Rotax crankshaft to the BC425-H alternator is 1.842, i.e. the alternator runs with 0.54 of engine RPM.

For typical installation of the additional BC425-H alternator on the Rotax 912 ULS engine, see Figures below:

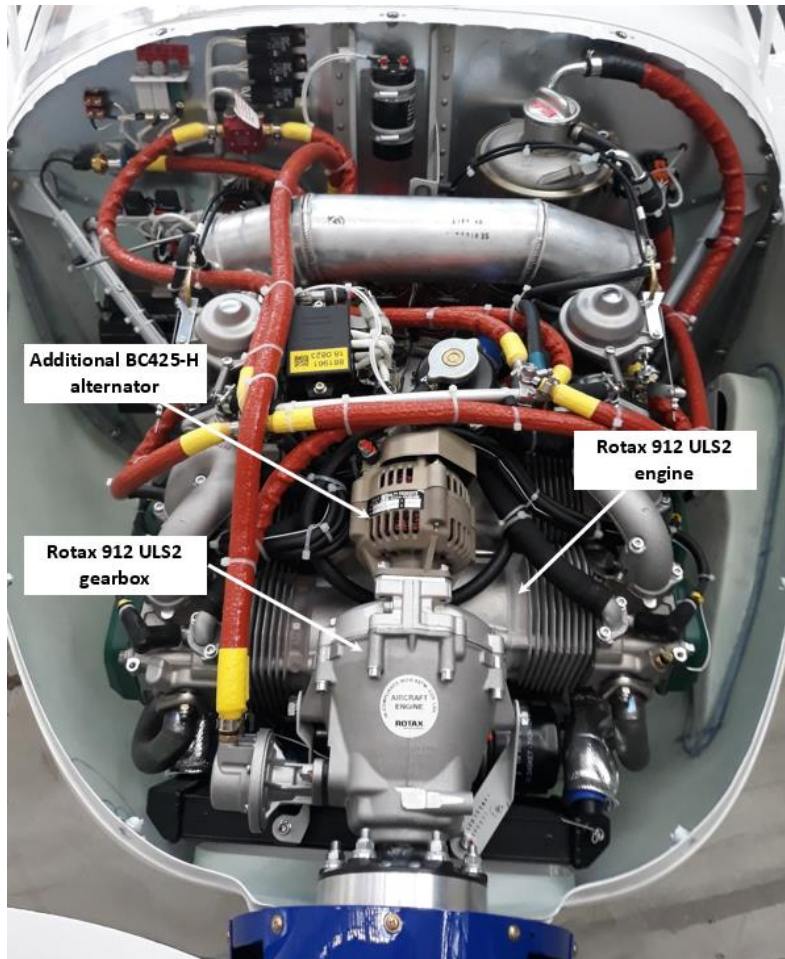


Fig. 1: Installation of the additional BC425-H alternator in the Rotax 912 ULS engine

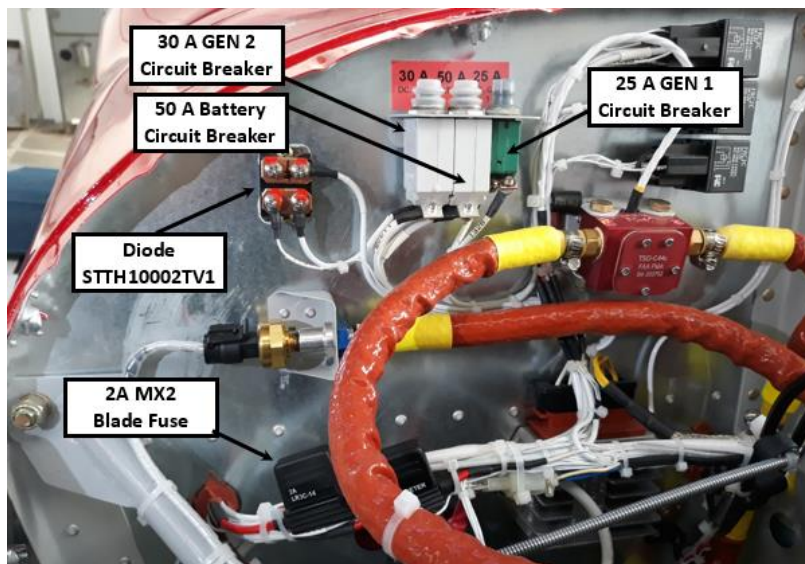


Fig. 2: Circuits protection of the additional BC425-H alternator (GEN 2)

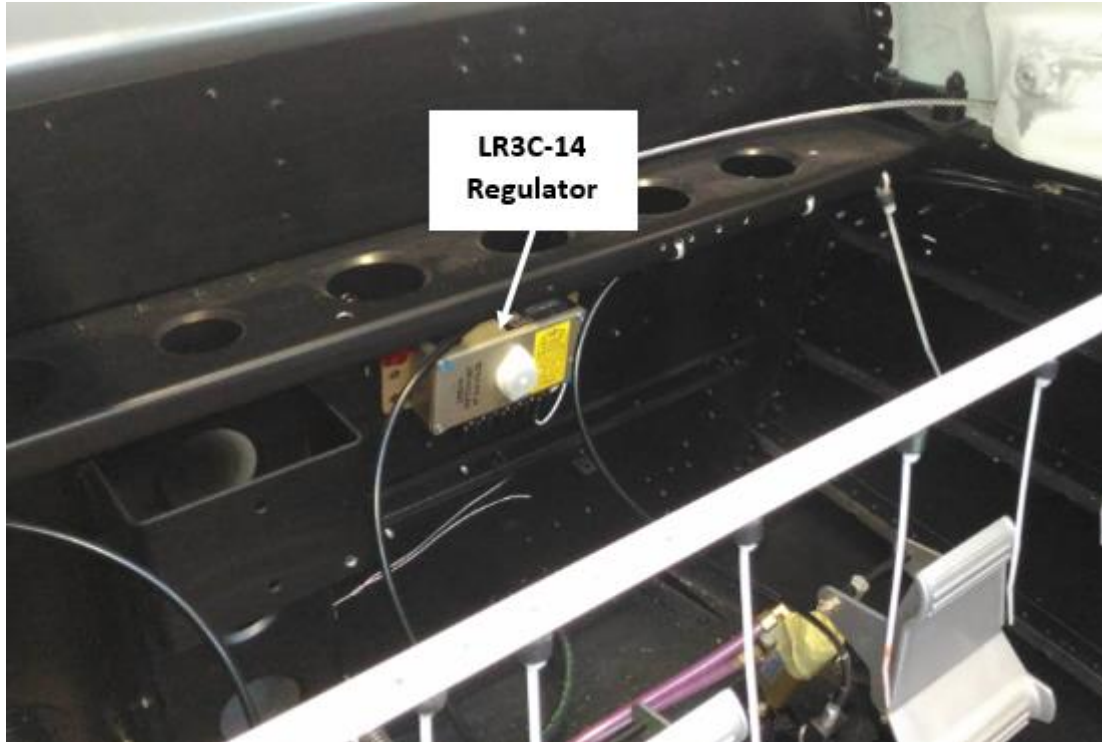


Fig. 3: LR3C-14 regulator installed on the firewall (cockpit right side)

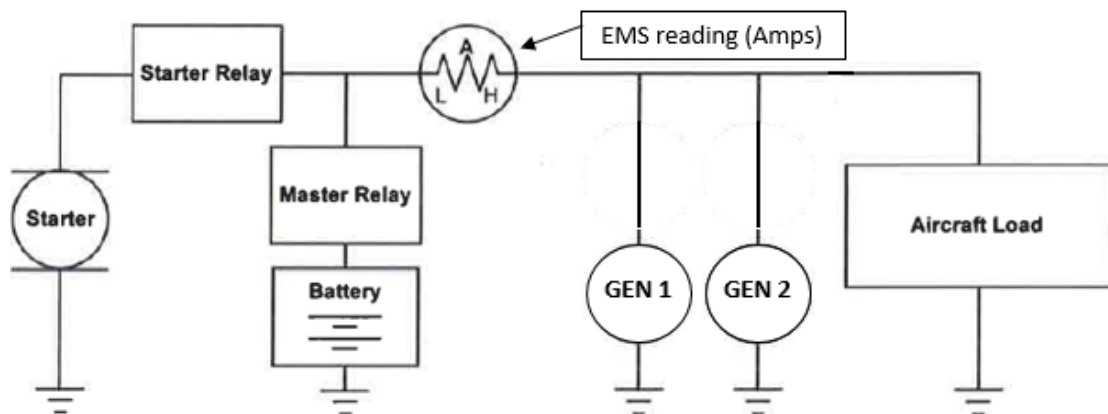
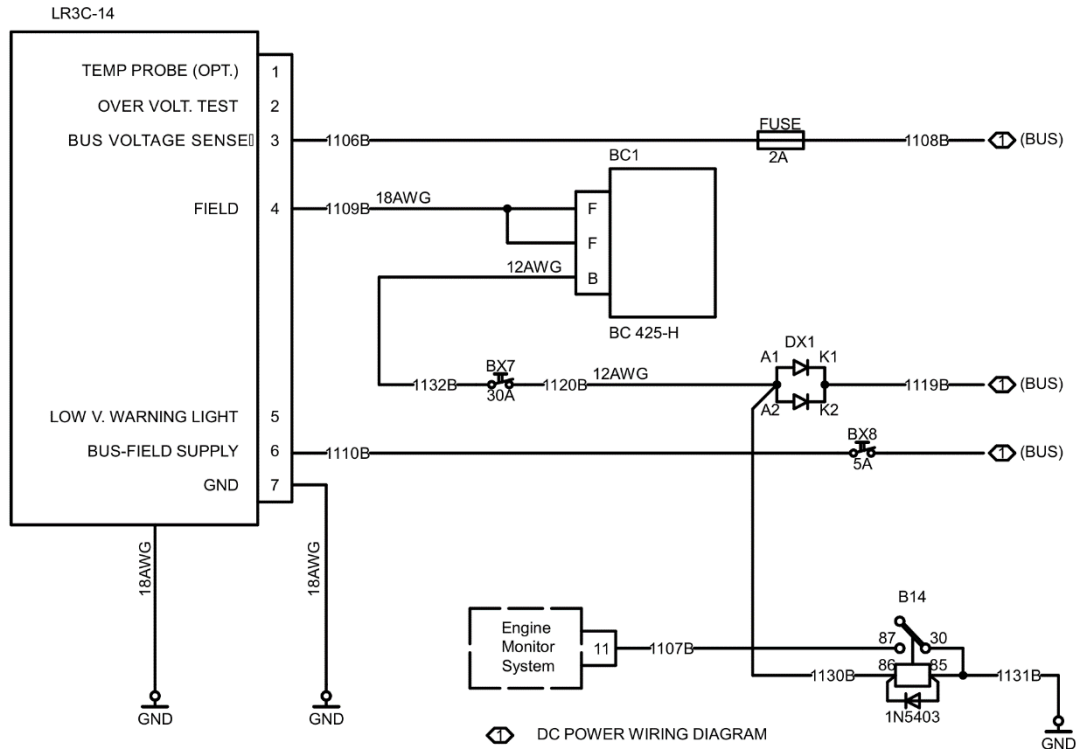


Fig. 4: General scheme of the Rotax and the additional BC425-H alternator arrangement



Note: DX1 and Relay B14 is installed for voltage signal to EMS

Fig. 5: Connection of the BC425-H in the airplane wiring system (CA0408N)

The factory output voltage setting of the additional BC425-H alternator is 14,0-14,4 V.

The additional BC425-H alternator system consists of engine driven BC425-H alternator, LR3C-14 rectifier regulator and wiring. The alternator provides a nominal output up to 25 amps, depending on engine RPM.

The LR3C-14 rectifier regulator is a field adjustable unit that combines the following essential functions:

- Linear voltage regulator
- Safeguards the electrical system with solid-state “crowbar” over-voltage protection circuitry

Note: Special circuitry with a STTH10002 ultrafast recovery diode (see Figure 2) is included in the wiring to monitor additional BC425-H alternator condition. The circuitry is connected to HDX1100 MFD GEN 2 warning light output. When the additional BC425-H alternator is connected / working the GEN 2 warning light illuminates green. Whenever the additional BC425-H alternator fails, the GEN 2 warning light changes to red. Function of the main (Rotax) generator is indicated by the GEN 1 warning light output. GEN 1 and GEN 2 warning lights are located in the MFD screen on the instrument panel, see the red arrows in Figure below.



Fig. 6: Position of the GEN 1 and GEN 2 warning lights on the MFD screen

Information about voltage in the main busbar is indicated by EMS / MFD screen on the instrument panel.

NOTE: Wiring diagrams are mentioned in the SportCruiser Wiring Manual.

DC voltage is distributed to the individual systems by means of the main busbar. Systems are protected by circuit breakers which are permanently ON and switch-circuit breakers which are turned on as needed. If some of the circuit is overloaded, then the circuit breaker disconnects the circuit. Some circuits are protected by fuses.

After switching the MASTER BAT / MASTER switch on and by turning the ignition key to the position START the starter is activated. The starter is supplied from the battery during starting the engine. After starting the engine up and reaching the idle RPM and switching the GEN 1 switch on, the generator starts supplying current to the electrical network. After switching the GEN 2 circuit breaker on, the additional alternator starts supplying as soon as the engine rotations reach above 2000 – 2500 RPM. Voltage in the main busbar is indicated by EMS on the instrument panel.

Technical parameters of the Rotax and BC425-H additional alternators / LR3C-14 regulator:

	Rotax generator (GEN 1)	BC425-H alternator (GEN 2)
Maximum output power	12 V / 20 A at 5,000 rpm	14 V / 25 A at 5,000 rpm
LR3C-14 regulator	14 ± 0.3 V (from 1,000 ± 250 rpm)	14 -14,4 V (from 2000 - 2500 rpm)



11.2.1 Switches – Circuit breakers – Fuses of the GEN 1 / GEN 2 system

When the additional BC425-H alternator is installed, the **MASTER GEN** switch is replaced by **GEN 1** switch for the master (Rotax) generator and **GEN 2** circuit breaker for the BC425-H additional alternator. The circuits are protected by circuit breakers and fuses and are installed on the firewall, see Figure 2 above and the table below.

Tab.1: Protection of the GEN 1 and GEN 2 circuits

Switches – Circuit breakers – Fuses of the GEN 1 / GEN 2 system		Fuse (Amps)
GEN 1	Master Generator (Rotax) circuit	25
GEN 2	Additional alternator BC425-H circuit *	30
BATTERY	Main battery circuit	50
MX2	Blade fuse for BUS VOLTAGE SENSE (LR3C)	2

*) Excitation circuit of the BC425-H alternator is protected by 5A circuit breaker (GEN 2) on the instrument panel.

11.3 BC425-H alternator: REMOVAL

Note: Consult also the relevant section in the B&C Specialty Products Inc. Installation Manual for BC425 Alternator and BRP-Powertrain Maintenance Manual (Heavy).

Type of maintenance: Heavy

Authorization to perform:

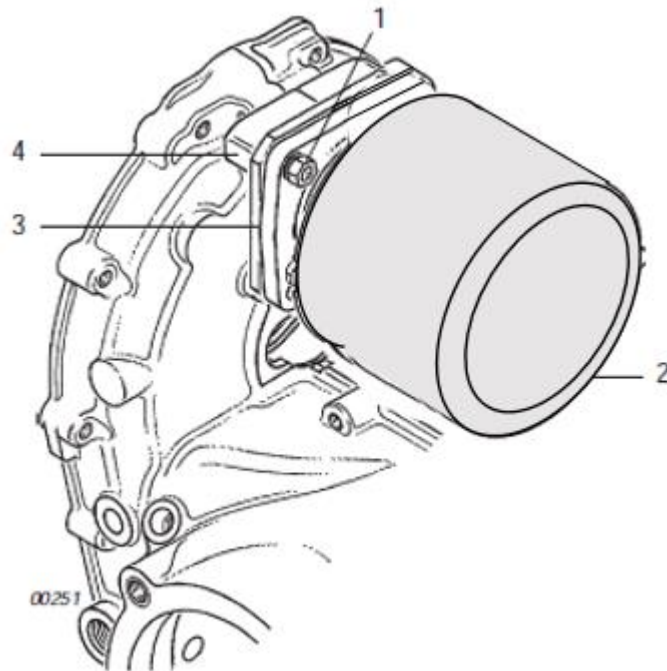
- Europe: Certifying staff in accordance with EU 1321/2014
- USA: Repairman (LS-M) or Mechanic (A&P)

Tools needed:

- common aircraft maintenance tool

See Figure 7.

- (a) Remove engine cowlings (see CR-MM-1-0-00, latest revision).
- (b) Disconnect aircraft battery (see CR-MM-1-0-00, latest revision).
- (c) Remove fixing tapes, disconnect wiring from the alternator.
- (d) Unscrew the 4 hex. nuts M6 (1) and remove the lock washers.
- (e) Remove the alternator (2) from the crankcase (4) together with the gasket and the retaining flange (3).



- | | | | |
|---|--|---|------------------|
| 1 | Hex. nut | 3 | Retaining flange |
| 2 | BC425-H alternator (illustrative view) | 4 | Crankcase |

Fig. 7: Additional BC425-H alternator

11.4 BC425-H alternator: INSTALLATION

Note: Consult also the relevant section in the B&C Specialty Products Inc. Installation Manual for BC425 Alternator and BRP-Powertrain Maintenance Manual (Heavy).

Type of maintenance: Heavy

Authorization to perform:

Europe: Certifying staff in accordance with EU 1321/2014

USA: Repairman (LS-M) or Mechanic (A&P)

Tools needed:

- common aircraft maintenance tool

General: The BC425-H alternator is mounted on vacuum pump accessory drive pad.

It is important to use new, proper gasket (AS3491-01, MS9134-01 or equivalent), sealer and fastener torque for correct installation of the alternator to the pad. To tighten the nuts common tool or a tool specifically designed for use of aircraft vacuum pump or similar devices may be used.

See Figure 7.



- (a) Fit the alternator (2), the gasket and the retaining flange (3) to the crankcase (4). Make sure the mating surfaces of the crankcase and BC425-H alternator flange are free of old gasket material and clean and dry. A thin coating of Permatex, Hylomar HPF or Loctite 518 gasket sealer on both sides of the gasket is recommended. Use aviation grade fasteners. There should be a flat washer, lock washer and full frame (not a thin frame or jamb type) nut on each mounting stud.
- (b) Insert lock washers and tighten the alternator to the crankcase using the 4 hex. nuts M6 (1). When tightening the nuts use a crossing torque pattern and torque the nuts to 2.3 Nm (20 in/lb). Again use a crossing pattern and torque the nuts to 6.8-7.91 Nm (60-70 in/lb).
- (c) Connect the alternator output wiring (see the scheme in Figure 5). The large gage wiring shall be installed on the cooper post labeled "B". Torque the "B" Lead nut to 5.65 Nm (50 in/lb). Take care to protect the wiring from mechanical damage. Use fixing tapes to route the wiring as needed (high vibration conditions).
- (d) Connect the aircraft battery (see CR-MM-1-0-00, latest revision).
- (e) Check all fasteners for security and safety.
- (f) Install the engine cowlings (see CR-MM-1-0-00, latest revision).
- (g) Perform engine run test (see CR-MM-1-0-00, latest revision) and check as follows:
 - when the GEN 2 is switched off, the GEN 2 control light on EFIS display is illuminated red,
 - when the GEN 1 is switched off and the GEN 2 is switched on, the GEN 2 control light on EFIS display is illuminated green,
 - when the GEN 1 is switched off and the GEN 2 is switched on, the current (BATT AMPS on EFIS display) increases with increasing rpm,
 - when the GEN 1 is switched off and the GEN 2 is switched on, the voltage (BATT VOLTS on EFIS display) increases and reaches about 14 volts at the end of the test.

11.5 Additional alternator BC425-H: MAINTENANCE

Maintenance and inspection must be performed at each annual or 100 hour inspection.

Note: Consult also the relevant section in the B&C Specialty Products Inc. - Instructions for Continued Airworthiness for BC425 Alternator

Type of maintenance: Heavy

Authorization to perform:

Europe: Certifying staff in accordance with EU 1321/2014

USA: Repairman (LS-M) or Mechanic (A&P)

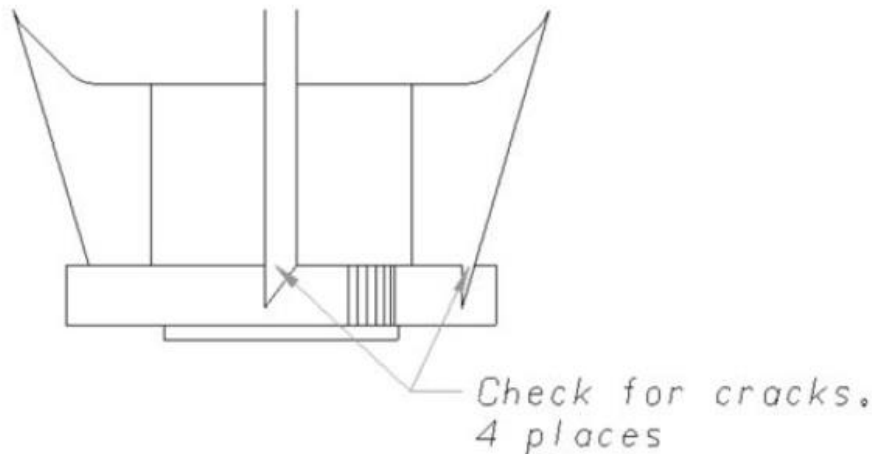
Tools needed:

- common aircraft maintenance tool

General: The BC425-H 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 make the following inspection:**

- (a) 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 grey dust residue around the rear housing cooling slots. If bearing failure is suspected, return the alternator to the factory for repair or replacement.
- (b) Check the alternator externally for security of mounting. If oil leaking around the alternator base, check the torque of mounting bolts to be 7.91 Nm (70 in/lb). If there is still a leak, try replacing the gasket. Do not increase torque above 7.91 Nm (70 in/lb).
- (c) Clean the area around mounting flanges and the casting webs between the mounting flanges and the alternator housing. Check for cracks in the webs (Fig. 8). 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.

**Fig. 8:** Location of possible cracks

- (d) Check for security of alternator wiring. Look for dark discoloration of the copper plated output stud and nut. If it is discoloured or corroded, be suspicious of a poor terminal crimp on the output wire.
- (e) 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.
- (f) Re-install the terminal on the output post using a lock washer and nut and torque the nut to 5.65 Nm (50 in/lb).
- (g) Perform engine run test and check that when the GEN 1 is switched off and the GEN 2 is switched on, the GEN 2 control light is illuminated green. Check that electric current increases with increasing rpm.

CHAPTER 12 INSTRUMENTS AND AVIONOICS



12.1 Instrument panel with additional BC425-H alternator switch

Instrument panel arrangement with the additional BC425-H alternator installed on the airplane is in Figure 12-7c.

Circuit breakers of the GEN 1 (Rotax) and GEN 2 (BC425-H) alternators are located in the bottom row of the instrument panel.

Arrangement of other components on instrument panel may be different depending on equipment installed.

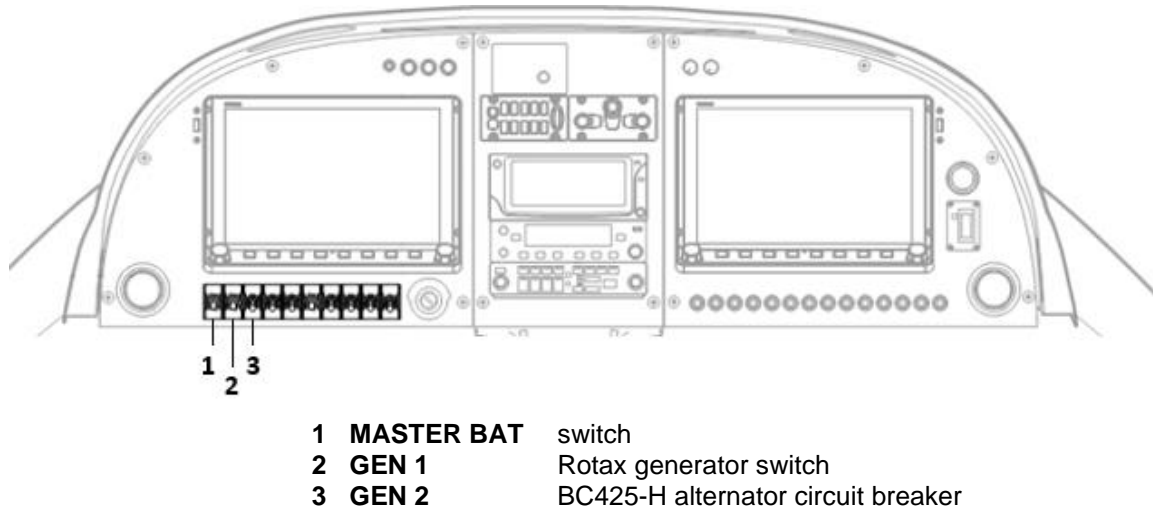


Fig. 12-7c: Instrument panel with additional BC425-H alternator and Skyview

CHAPTER 13 VENTING / HEATING

No Change

CHAPTER 14 AIRPLANE HANDLING

No Change

CHAPTER 15 AIRPLANE REPAIRS

No Change

CHAPTER 16 WIRING DIAGRAMS

No Change

CHAPTER 17 APPENDICES

No Change