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SB-GA8-2014-116
Issue 1

OPTIONAL

Service Bulletin

Subject:

Installation of a Secondary Starter Solenoid

Applicability:

All GA8 & GA8-TC 320 aircraft

Amendments:

Issue 1: Initial issue. GippsAero Reference GAE11#1448

Background:

This Service Bulletin details and approves the installation of a secondary starter solenoid which will be mounted on the forward face of the firewall. This Service Bulletin applies to aircraft which are fitted with an alternative PMA'd or Lycoming approved starter motor that do not have an in-built solenoid. Examples include the Skytec 149NL or Prestolite MZ4222.

Compliance:

This optional Service Bulletin may be incorporated at the owner's discretion. The installer shall ensure the suitability of this option in conjunction with existing modifications/repairs to the aircraft. Contact GippsAero if clarification is required.

Weight and Balance:

Accomplishment of the Service Bulletin results in an increase in weight of approximately 1.1 lb (0.5kg) at fuselage station -1 in (-25.4mm).

Electrical Load Analysis:

The solenoid field coil will draw a current of 0.7A maximum for the duration of engine cranking.

Approval:

This Service Bulletin has been approved pursuant to Regulation 21.095 of CASR (1998).

Parts:

The following parts are necessary to accomplish the requirements of this Service Bulletin.

PART No.	DESCRIPTION	QTY
GA8-714025-021	FIREWALL SOLENOID BRACKET	1
GA8-246012-017	DIODE ASSEMBLY	1
CR3213-4-01	RIVET, CHERRYMAX	8
AN3-3A	BOLT, MACHINE, STRUCTURAL, UNDRILLED	1
AN3-4A	BOLT, MACHINE, STRUCTURAL, UNDRILLED	1
AN960-10	WASHER, FLAT	2
AN970-3	WASHER, FLAT (INSIDE FIREWALL)	2
M22759/16-2-9	WIRE, ELECTRICAL	55"
MS21042-3	NUT, SELF-LOCKING, REDUCED-HEX, THIN	2

PART No.	DESCRIPTION	QTY
MS25171-3S	TERMINAL NIPPLES	2
MS25171-1S	TERMINAL NIPPLES	1
324112-0 (841G00010)	CONN, CRIMP, TERMINAL, RING 2 AWG M8 RED	3
4357-6868 (841G00023)	CONN, TERMINAL, RT1.25-5/100, 5MM, RED	1
4357-6876 (841G00026)	CONN, TERMINAL, RT2-4/100, 4MM, BLUE	1
SNLS-135 (855G00002)	SOLENOID, STARTER 12V (INCLUDES WASHERS AND NUTS)	1

Parts Availability:

Parts can be obtained directly as Kit No. SB-GA8-2014-116-1 from GippsAero

Tel: +61 03 5172 1200

Fax: +61 03 5172 1201

Email: spares@gippsaero.com

Labour:

Approximately 5 man hours should be allocated for completing the work detailed in this Service Bulletin.

Accomplishment Instructions:

NOTE:

Prepare the aircraft for Maintenance and ensure that appropriate safety precautions are taken when performing work outlined in this Service Bulletin.

Unless otherwise specified, reference to the GA8 or GA8-TC 320 Service Manual as well as FAA AC43.13-1B & FAA AC43.13-2B should be made when carrying out the procedure prescribed in this Service Bulletin. In case of discrepancy between the Service Manual and the AC, the Service Manual takes precedence.

WARNING:

DO NOT CARRY OUT ANY SORT OF WORK ON THE ELECTRICAL SYSTEM IN CONJUNCTION WITH MAINTENANCE ON THE FUEL SYSTEM. THE ESCAPE OF FUEL FUMES UNDER THE FLOOR AND/OR IN THE AIRCRAFT MAY CAUSE AN EXPLOSION.

1. Mounting The Solenoid

1.1. Remove the engine cowls. Retain the cowls and fasteners.

1.2. In the cockpit locate the LH Underdash Kick Panel Assembly (GA8-252015-017) as shown in Figure 1. Remove the 3 screws (6 x ½ PTA) that attach to the firewall heating duct and retain for re-assemble. The Kick Panel can be lowered and slid forward to release the upper slot attachment to the Instrument Panel.

Figure 1: LH Underdash Kick Panel Location

1.3. Locate and undo the Insulation Firewall Centre LH (GA8-258012-025) to provide access to aft face of the firewall in the area of the solenoid mounting. Retain the fastening hardware.

1.4. Place the Firewall Solenoid Bracket (GA8-714025-021) in position as per Figure 2 and back drill the 8 x ø0.098" bracket mounting holes through the firewall. Open holes up to ø0.128" and clip in location.

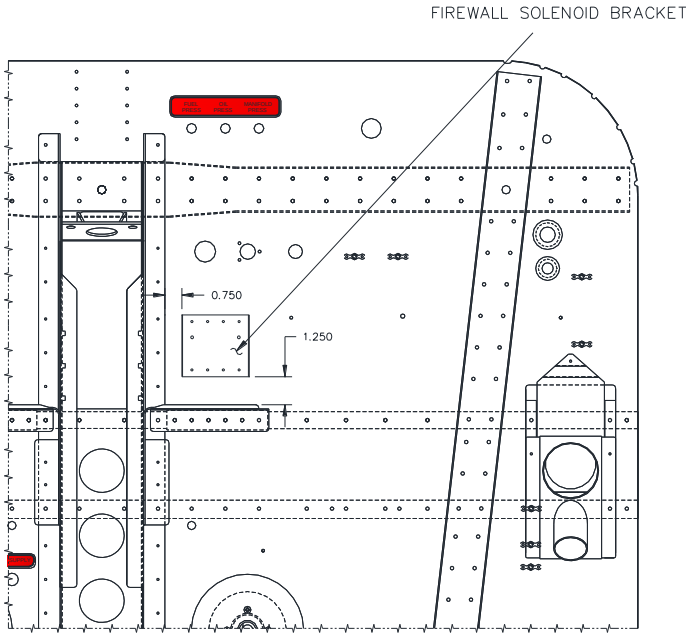

Figure 2: View Looking Aft on Firewall

1.5. Back drill 2 x ø0.128" solenoid mounting holes through the firewall. Open holes up to ø0.191".

1.6. Disassemble and deburr all drilled components and restore any primer removed.

NOTE:

Ensure any swarf is vacuum cleaned from the aircraft work area.

1.7. Wet assemble the bracket to the firewall with a suitable aerospace dissimilar metal jointing compound and install 8 x rivets (CR3213-4-01).

1.8. Locate the 4mm ring terminal (RT1.25-4) on the Diode Assembly (GA8-246012-017) and remove. Crimp on a 5mm ring terminal (4357-6876) at this end.

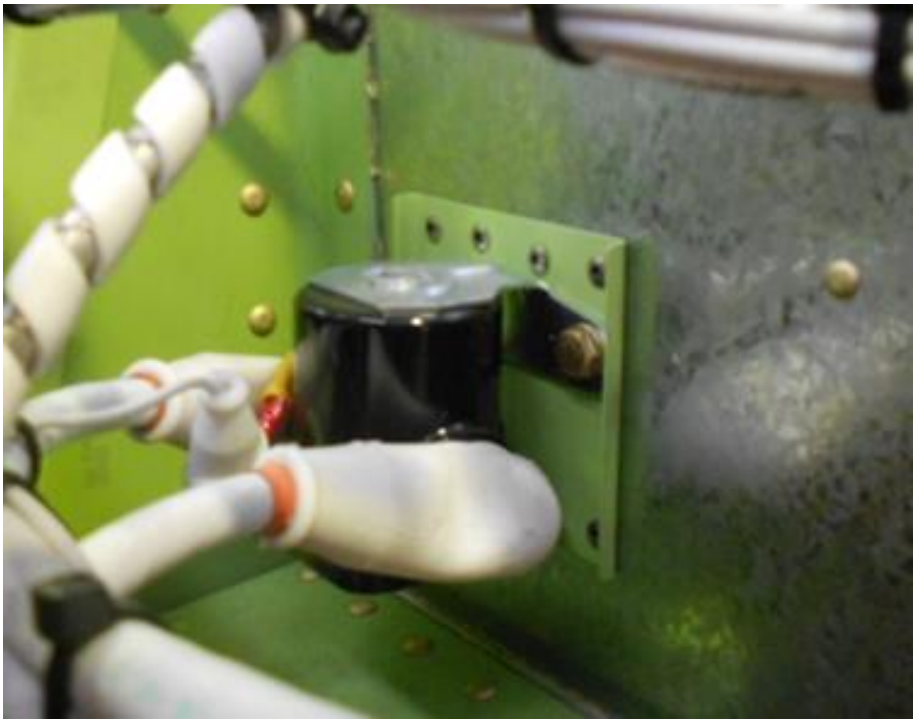

Figure 3: Solenoid Mounted

1.9. Mount the inboard lug of the solenoid (SNLS-135) as shown in Figure 3 using Bolt (AN3-4A), Diode Assembly (GA8-246012-017 – mount the ring terminal as modified in step 1.8), Washer (AN960-10), Penny Washer (AN970-3 on aft face of firewall) and Nut (MS21042-3).

1.10. Mount the inboard lug of the solenoid (SNLS-135) using Bolt (AN3-3A), Washer (AN960-10), Penny Washer (AN970-3 on aft face of firewall), and Nut (MS21042-3).

NOTE:

A low resistance bond is required between the solenoid and the firewall. The bolts used to secure the solenoid shall provide the conductive path to the firewall. A resistance of less than 30 milliohms is required.

2. Electric Connection Of Solenoid

2.1. An overview of the original and modified wiring diagrams is shown in Figure 6 and Figure 7.

2.2. Refer to Figure 6, on the engine starter motor (mounted below the engine) locate the terminals PS1A & PS2B. Undo the cables attached to the terminals identified as PS1A2 & PS2B14. Retain hardware for reinstallation. Remove both cables through the existing fire sleeve back to the firewall.

2.3. Crimp the terminal ring red (324112-0) to the PS1A2 cable and heat shrink the sleeve.

2.4. Crimp the terminal ring blue (4357-6868) to the PS2B14 cable and heat shrink the sleeve.

2.5. Pass the cable assembled in step 2.3 through the supplied Terminal nipple (MS25171-3S) and attached to the respective terminal of the Solenoid with the hardware supplied.

2.6. The cable assembled in step 2.4 is to be inserted through the supplied Terminal nipple (MS25171-1S) and attached to the respective terminal of the solenoid with the hardware supplied. Slide the Terminal nipple into position. See Figure 4 for the cable routing for PS1A2 & PS2B14 from firewall to Solenoid.

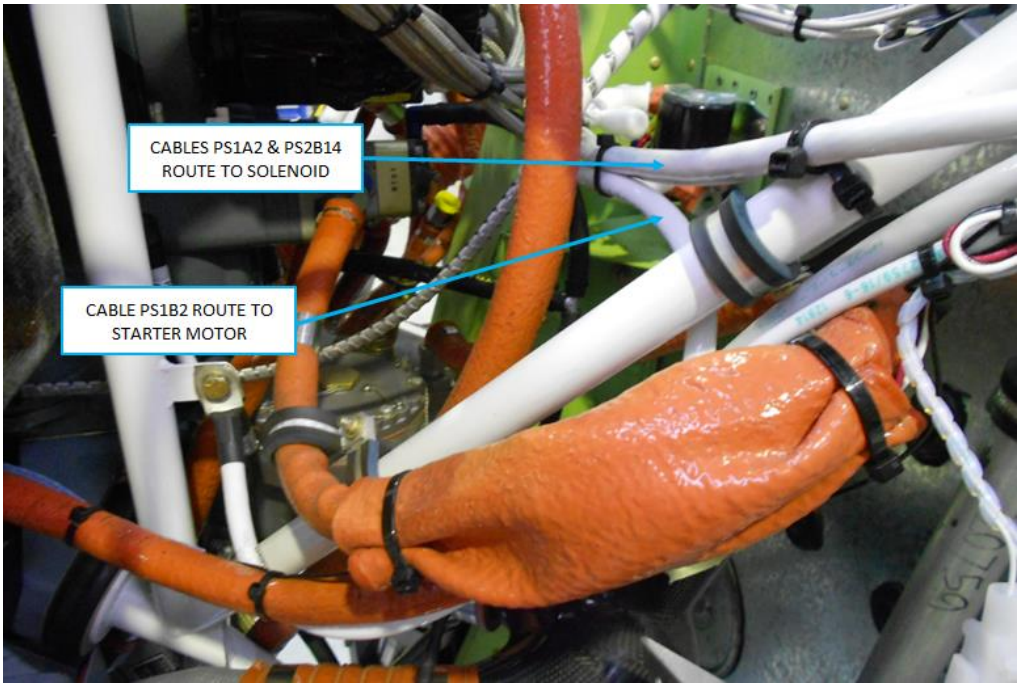

Figure 4: Cable Routing, View Looking Inboard/Aft On Firewall LHS

2.7. Using the supplied 55" length of Wire AWG White ETFE (MS22759/16-2-9), crimp the terminal ring red (324112-0) and heat shrink the sleeve to both ends. Identify the cable PS1B2.

2.8. Slide the cable PS1B2 assembled in step 2.7 through the fire sleeve forward to the engine starter motor and attach with the hardware retained in step 2.2. Pass the other end through the supplied terminal nipple (MS25171-3S) and attach to the outboard terminal of the solenoid with the hardware supplied. Slide the terminal nipple into position. For routing details see Figure 4 & Figure 5.

2.9. If installing a new starter at this time, verify freedom from rubbing or chafing of looms with adjacent equipment or structure. In particular, verify that that wiring connected to the starter motor is not chafing against the second alternator if installed.

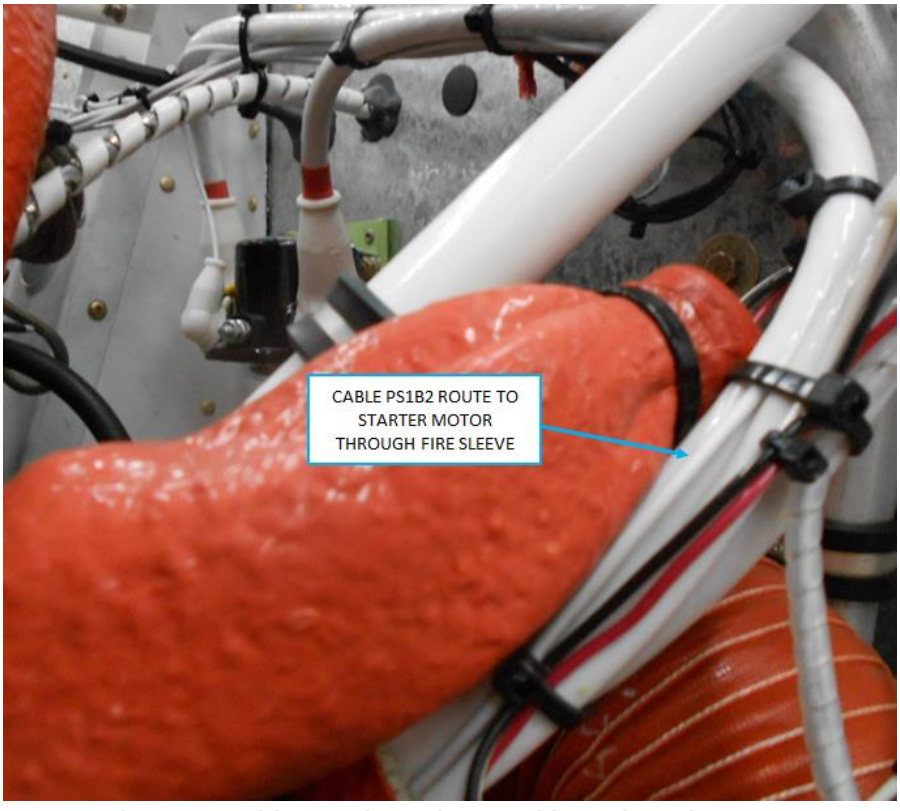

Figure 5: Cable Routing, View Looking Inboard on LHS

2.10. When cables pick up on existing looms, remove existing cable ties and attach new ties to the looms. Where there are no existing looms, the new cables are to be tied together. For both cases an approved aerospace cable tie is to be used at standard spacing.

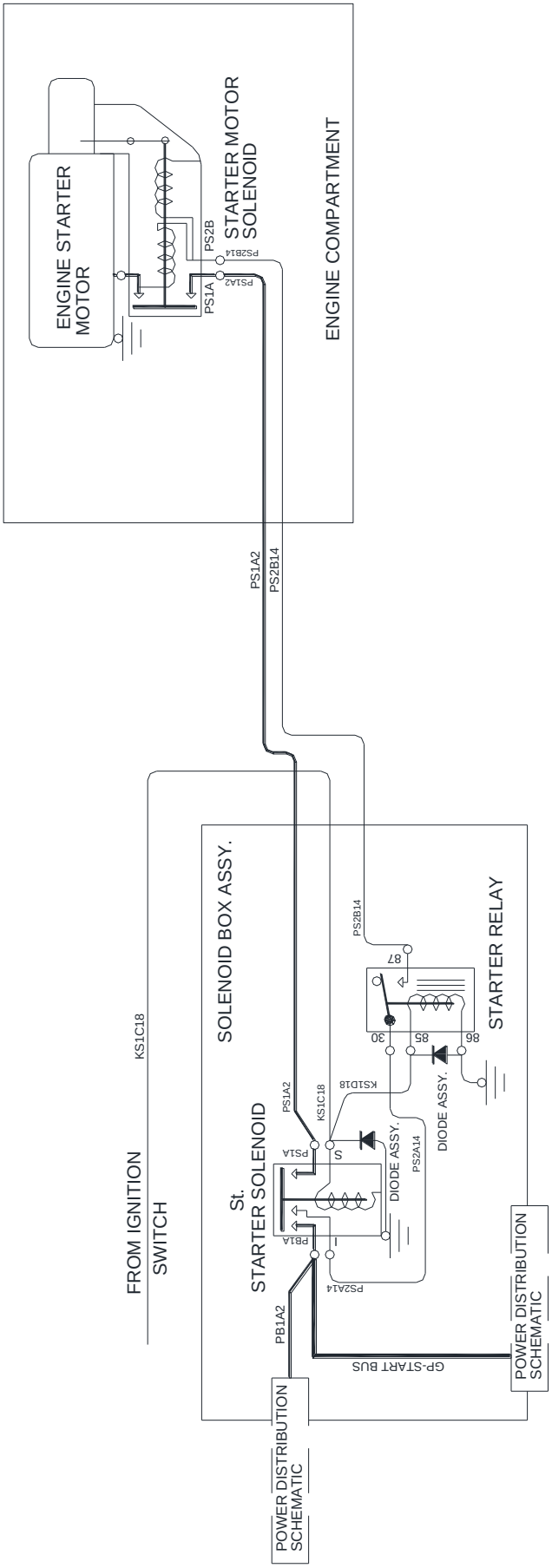

Figure 6: Original Configuration

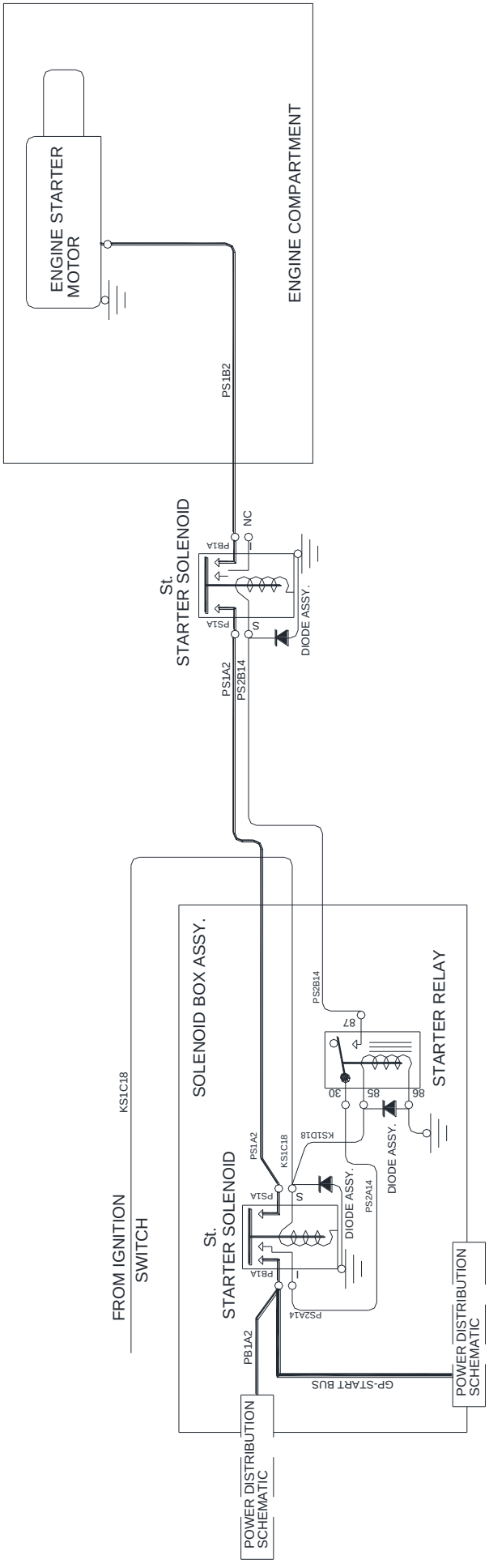

Figure 7: Modified Configuration

3. Reassembly

NOTE:

If any hardware retained is unserviceable it should be replaced with new.

3.1. Reinstall the Insulation Firewall Centre LH (GA8-258012-025) to the aft face of the firewall with the hardware retained in step 1.3.

3.2. Reinstall the LH Underdash Kick Panel Assembly (GA8-252015-017) by engaging the slot along the top edge into the instrument panel and attach the lower edge to the firewall heating duct with 3 screws (6 x ½ PTA) retained in step 1.2.

3.3. Reinstall the engine cowls.

4. Testing

4.1. Prepare the aircraft for an engine run.

4.2. Undertake an engine start to confirm the operation of the starter. Undertake this for no more than 3 seconds.

4.3. Reinstall the engine cowls.

Documentation:

Update aircraft log book to reflect incorporation of this Service Bulletin.

Continuing Airworthiness:

After the first 15 engine starts after incorporation of this Service Bulletin:

Confirm that the installed solenoid contactor terminals are open circuit in the absence of power to the field of the externally mounted starter solenoid. Refer to Figure 8. Replace the solenoid if an electrical path exists between the terminals.

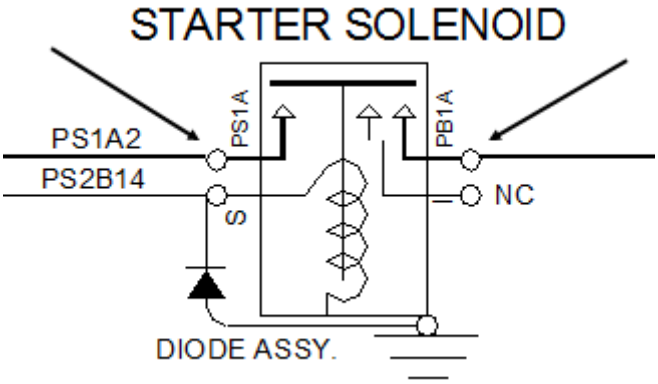

Figure 8: Arrows indicate where a check for continuity is to be made.

A latent defect check for “welded contacts” of each individual solenoid is to be carried out every 100 hours in accordance with instructions specified in the applicable aircraft Service Manual.

Compliance Notice:

Complete the Document Compliance Notice and return to GippsAero by mail, fax or email.

DOCUMENT COMPLIANCE NOTICE

Document:

SB-GA8-2014-116

Issue 1

Aircraft Serial Number: GA8-_____

Service Bulletin SB-GA8-2014-116 Issue 1 has been incorporated in the above aircraft.

Date of Incorporation:_____

_____
Signed

Print Name: _____

Please post, fax or email this compliance notice to:

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