

Service Bulletin

Subject:

Weldon Fuel Pump Upgrade

Applicability:

GA8 serial numbers GA8-00-004 through GA8-06-107.

Amendments:

Issue 2: Parts list revised. Minor corrections and clarifications in procedure.

Issue 3: Section heading revised.

Background:

Gippsland Aeronautics has incorporated the Weldon 8172-A/A8172-A continuous duty electric fuel pump into new build GA8 aircraft. This service bulletin provides operators the option of upgrading the Dukes 4140 series pump with the Weldon 8172-A/A8172-A pump.

The 8172-A and A8172-A pumps are identical in fit, form and function, however Weldon is phasing out the 8172-A with minor improvements having been incorporated in the A8172-A.

Compliance:

This Service Bulletin may be incorporated at the owner's discretion.

Weight and Balance:

The net weight increase resulting from the upgrade of the Dukes 4140 series pump with the Weldon pump is 0.3 kg (0.7 lb) at an arm of 970 mm (28 in) aft of datum (aft face of firewall).

Approval:

The technical aspects of this Service Bulletin have been approved under a CASA Authorisation.

Parts:

Item	Part Number	Description	Qty
1	GA8-246015-81	Wire Lead QA1D18	1
2	GA8-282013-43	Sump Tank Outlet Fuel Line	1
3	GA8-282030-27	Fuel Drain Spigot	1
4	GA8-282030-29	Fuel Drain Hose	1
5	GA8-532021-173	Rib No. 4 Doubler	1
6	GA8-532021-175	Rib No. 4 Doubler Packer	1
7	GA8-532021-177	Rib No. 4 Stiffener	1
8	GA8-532021-223	Fuel Pump Mounting Bracket	1
9	AMP 1-480-350-0	Pin Housing	1
10	AMP 163305-2	Contact Pin	1
11	AN833-6D	90° Elbow Pipe Fitting	1
12	AN924-6D	Nut Pipe Fitting	1
13	CherryMAX CR3213-4-02	Rivet	4
14	Hellermann Tyton KR6G5	Wiring Mount	2
15	M83248-1-906 (MS9387-06)	O Ring	2
16	MS20470AD3-4	Rivet	6
17	MS20470AD4-4	Rivet	27
18	MS20470AD4-4.5	Rivet	4
19	Panduit LHMS-S5D	Wiring Mount	1
20	RT1.25-5	Ring Terminal (Red)	1
21	Thomas & Betts TY075-18X	Cable Tie	5
22	TLED429	Pop Rivet	8
23	Weldon 8172-A/A8172-A	Electric Fuel Pump	1

NOTES:

Kit obtained from Gippsland Aeronautics is supplied with:

- 1. the AN833-6D elbow installed onto the pump inlet with an M83248/2-906 O ring and AN924-6D nut*
- 2. RT1.25-5 ring terminal fitted to the ground (black) wire of the pump*
- 3. 163305-2 contact pin with a 1-480-350-0 pin housing labelled P142 fitted to the positive (orange) wire of the pump*
- 4. Fuel drain spigot (P/N GA8-282030-27) and fuel drain hose (P/N GA8-282030-29) fitted to the drain port of the pump*

Parts Availability:

Parts may be sourced locally or a kit can be obtained directly from Gippsland Aeronautics.

Tel.: +61 03 5172 1208

Fax.: +61 03 5172 1237

Email: spares@gippsaero.com

Labour:

Approximately 16 hours should be allocated for completing the work detailed in this Service Bulletin.

Warranty:

Gippsland Aeronautics participation is limited to the supply of parts, including freight, at the owner's expense.

Instructions:

1. Installation

NOTE:

Refer to GA8 Service Manual, Chapter 24 (Electrical Power) for safety precautions and procedures to be adhered to when performing any maintenance or modification to the electrical system. Refer to Chapter 28 (Fuel System) preamble for detailed safety precautions and procedures to be adhered to when performing any fuel system maintenance or modifications.

1. Ground the aircraft to a suitable grounding point.
2. Pull the 1 Amp BUS 2 CONTROL breaker and switch the BUS 2 MASTER to the ON position to ensure the capacitor circuit is disarmed.
3. Pull the 70 Amp BUS 2 MAIN breaker.
4. Remove the co-pilot's crew seat and the floor coverings over the sump tank and fuel pump area.
5. Unscrew and remove floor panels over the sump tank, fuel pump and fuel shutoff valve on the outboard side of the fuel pump.

CAUTION:

DURING THE FOLLOWING STEP, ENSURE THAT THE TOP OF EACH FILTER BOWL IS HELD DOWN (BY HAND) AS THE RETAINING PLATE WING NUTS ARE LOOSENED, AS THE FUEL PRESSURE HEAD IS ADEQUATE TO LIFT THE FILTER BOWL TOP AND ALLOW FUEL SPILLAGE. AFTER THE SERVICING TAP IS TURNED OFF, DRAIN FUEL FROM THE FILTER BOWL WATER DRAIN PRIOR TO RELEASING THE TOP TO ENSURE NO SPILLAGE OCCURS.

6. For each fuel filter, cut the lock wire and remove the three wing nuts securing the filter bowl retaining plate. Whilst holding down the filter top, remove the retaining plate to gain access to the servicing tap. Shut off the fuel supply by turning off the servicing tap.

7. Drain fuel from the sump tank water drain.
8. Remove the water drain valve from the bottom of the sump tank to allow the removal of the sump tank from the aircraft.

WARNING:

RESIDUAL FUEL DRAINING FROM THE SUMP TANK CONSTITUTES A FIRE HAZARD. USE CAUTION TO PREVENT THE ACCUMULATION OF FUEL WHEN THE DRAIN VALVE IS DISCONNECTED FROM THE SUMP TANK.

9. Cut the cable ties securing the wires for the boost pump into the wiring mounts on the rib and keel as required.
10. Disconnect plug P42 (existing Dukes pump power supply) from socket J42 and unscrew the ground terminal of the Dukes pump from rib no. 4.
11. Disconnect the left and right tank sump inlet fuel lines, the sump tank outlet fuel line and the sump tank vent line from the sump tank.

Figure 1 shows the location of the relevant fuel lines.

WARNING:

RESIDUAL FUEL DRAINING FROM FUEL LINES CONSTITUTES A FIRE HAZARD. USE CAUTION TO PREVENT THE ACCUMULATION OF FUEL WHEN LINES ARE DISCONNECTED.

NOTE:

Cap open lines and cover connections to prevent thread damage and the entrance of foreign material.

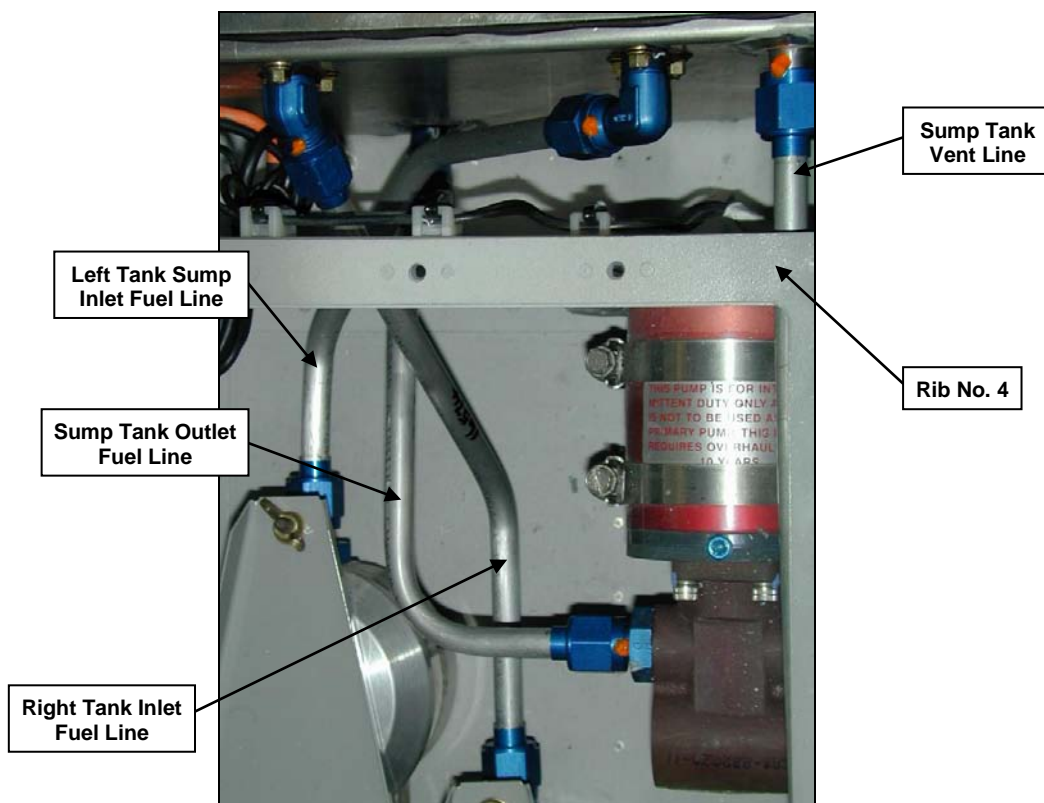
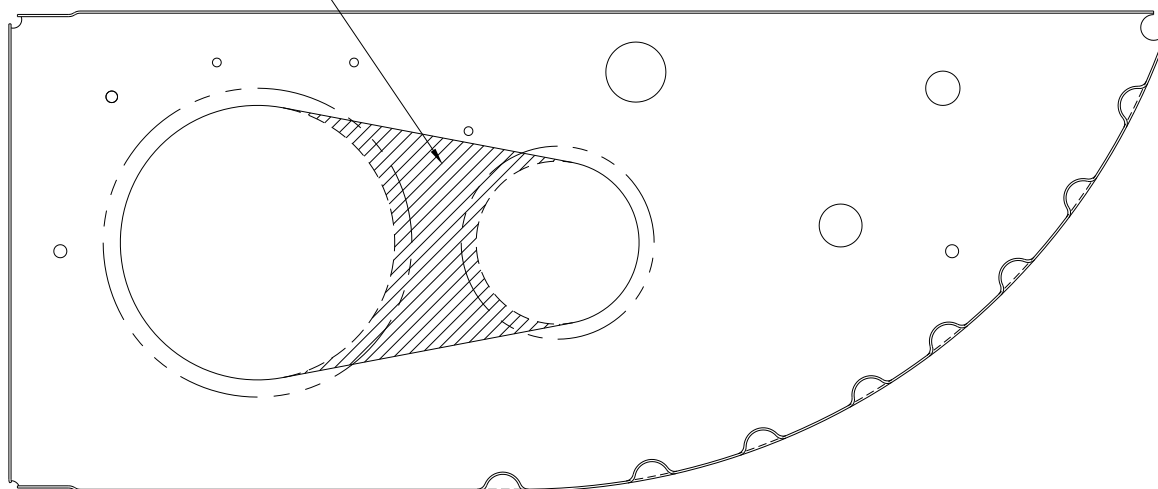


Figure 1

12. Disconnect plug P12 (sump tank float sender) from socket J12 and plug P9 (sump tank optical sensor) from socket J9.
13. Remove the sump tank from the aircraft.
14. Loosen the hose clamps used to secure the existing Dukes pump, and remove the pump and existing sump tank outlet fuel line.
15. Drill out and remove the eight rivets securing the existing fuel pump mounting bracket.
16. Drill out and remove the rivets attaching the wiring mounts to rib no. 4.
17. Trim rib no. 4 in accordance with figure 2. Deburr and prime the trimmed edges with a suitable primer, such as zinc chromate primer.

SHADED REGION IS TO
BE TRIMMED FROM RIB



VIEWED LOOKING FORWARD AT RIB AS INSTALLED IN THE AIRCRAFT

Figure 2: Modification of rib no. 4.

18. Position the rib no. 4 doubler (P/N GA8-532021-173) on the forward face of the rib, centrally over the lightening holes of the rib in accordance with figure 3. Back drill the holes in the doubler to 1/8" diameter in accordance with figure 3.

CAUTION:

DO NOT BACK DRILL THE SIX 3/32" DIAMETER HOLES DOWN THE MIDDLE OF THE DOUBLER (SHOWN AS SOLID CIRCLES IN FIGURE 3) TO 1/8" DIAMETER. THESE HOLES ARE USED TO ATTACH THE PACKER AND STIFFENER AND MUST REMAIN AT 3/32" DIAMETER.

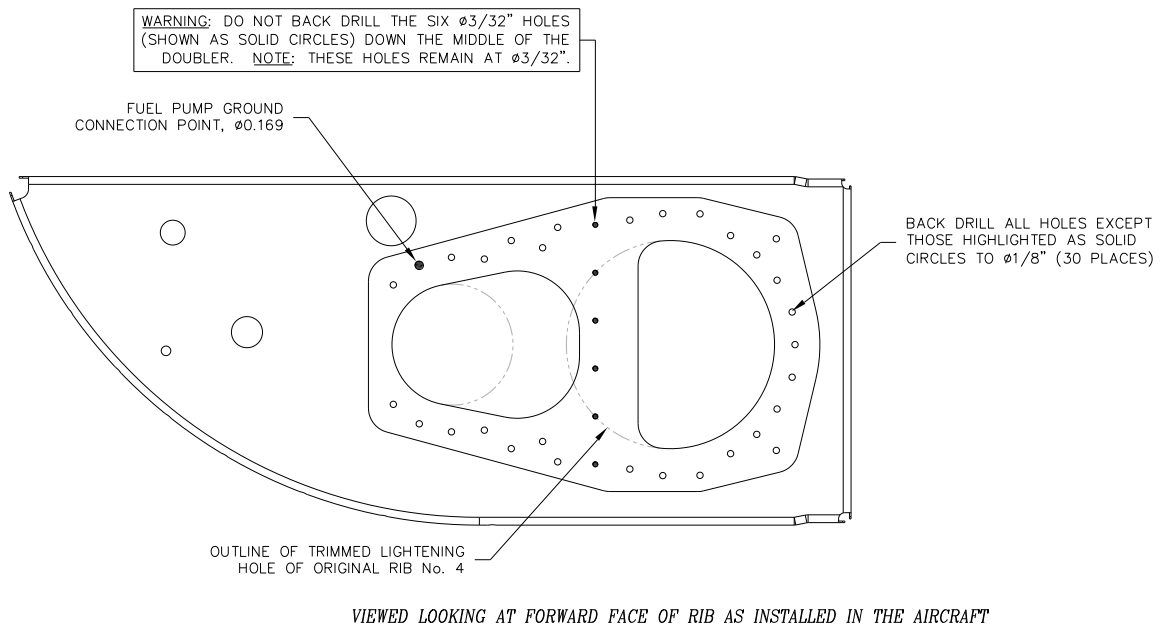


Figure 3

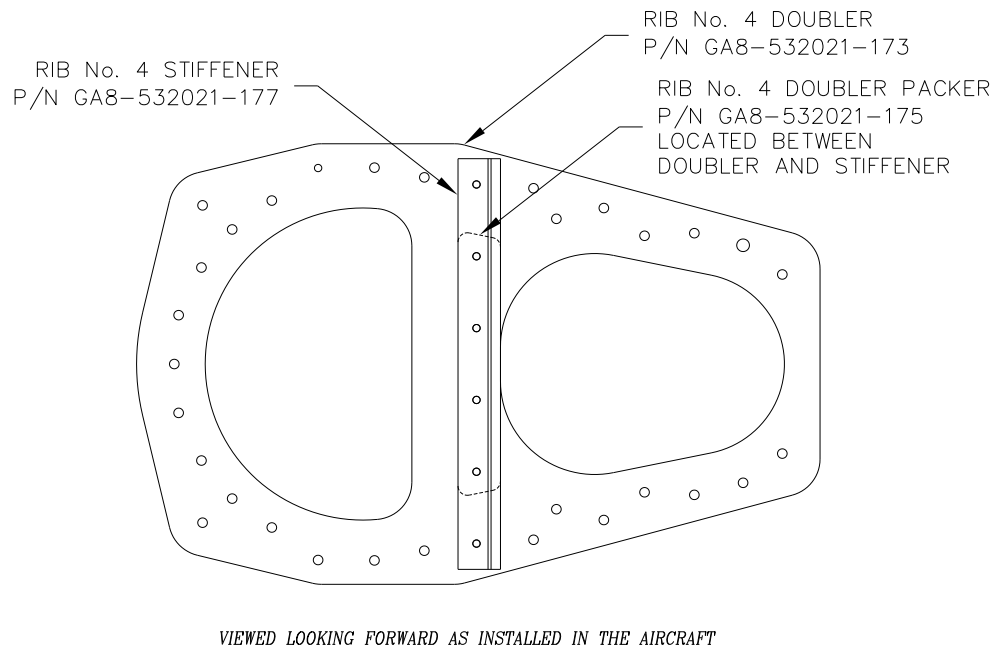


Figure 4: Location of the packer and stiffener over the doubler.

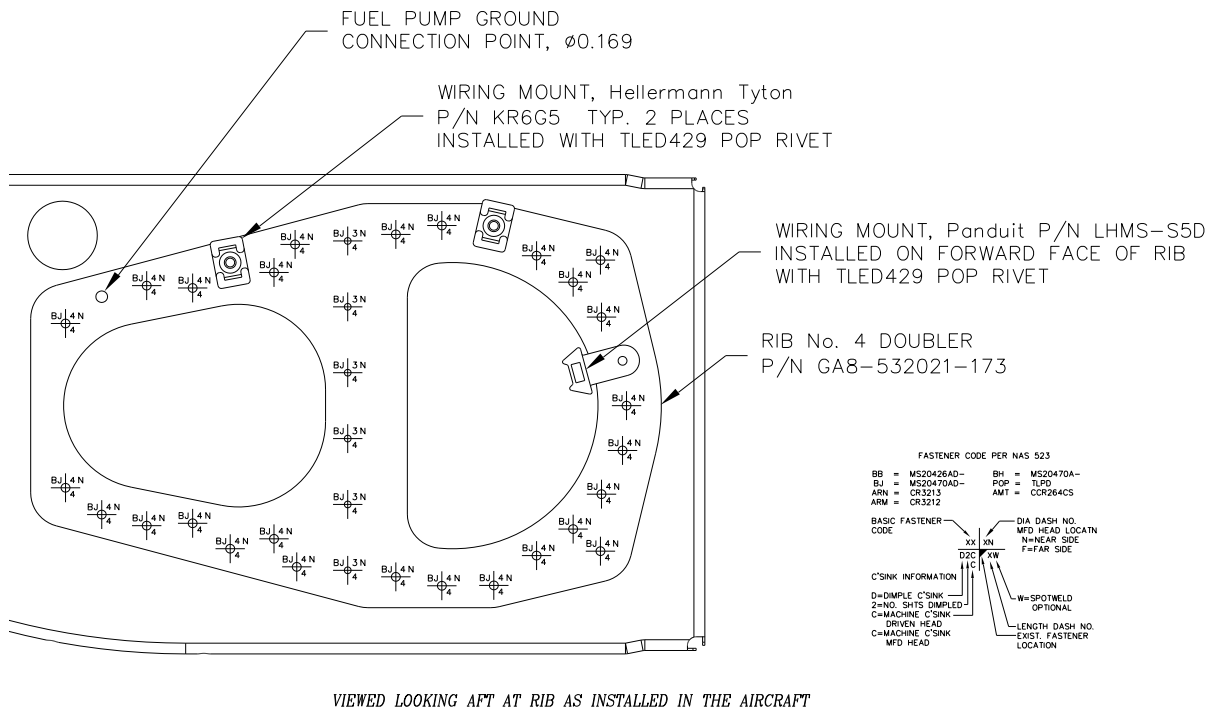


Figure 5: Installation of fasteners into the doubler.

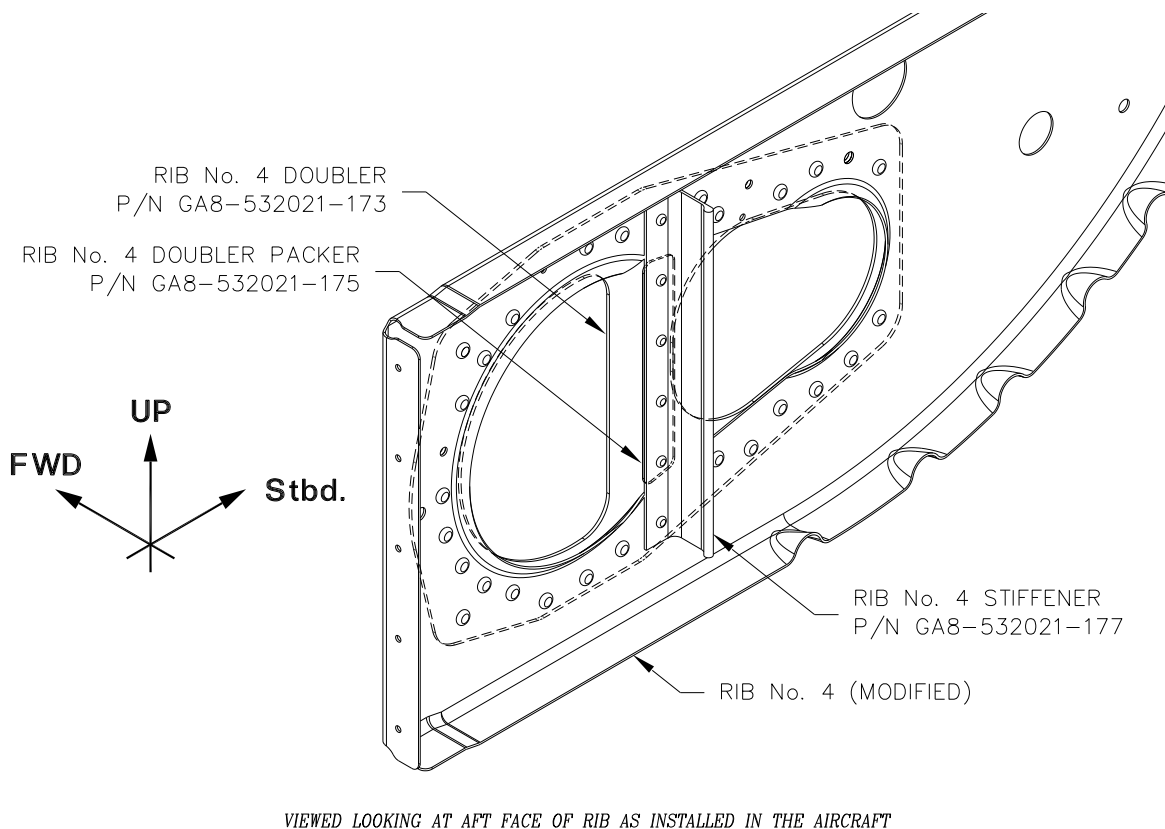


Figure 6: Installation of doubler, packer and stiffener on the rib.

19. Fasten the doubler to the rib using MS20470AD4-4 rivets with rivet heads on the forward face in accordance with figure 5.
20. Locate the doubler packer (P/N GA8-532021-175) and the doubler stiffener (P/N GA8-532021-177) in accordance with figure 4. Back drill the 3/32" holes shown in figure 4 at each end of the stiffener from the doubler through the rib and stiffener.
21. Fasten the packer and stiffener to the doubler and rib using MS20470AD3-4 rivets with rivet heads on the forward face in accordance with figure 5.
22. Back drill the hole for the ground connection of the pump to 0.169" diameter in accordance with figure 5.
23. Attach wiring mounts to the rib/doubler in accordance with figure 5 using TLED429 pop rivets, with rivet heads on the wiring mounts.
24. Position the new fuel pump mounting bracket (P/N GA8-532021-223) using the existing 1/8" diameter holes used by the previous bracket. Fasten the bracket using MS20470AD4-4.5 rivets for the upper flange, and CR3213-4-2 CherryMAX rivets for the lower flange, with rivet heads on the fuel pump mounting bracket, in accordance with figure 7.

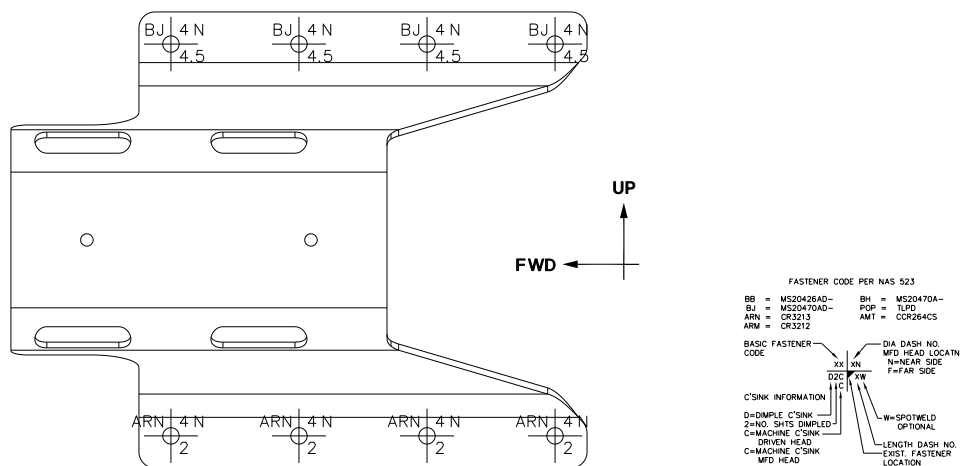


Figure 7: Installation of the fuel pump mounting bracket.

25. Connect the new sump tank outlet fuel line (P/N GA8-282013-43) to the inlet of the Weldon pump using AN924-6D and AN833-6D fittings with an M83248-1-906 O ring (lubricated with a suitable lubricant, ie: Dow Corning 55 O-ring lubricant) in accordance with figure 8.

NOTE:

Use Parker Sealtube (or equivalent) as a thread lubricant or to seal a leaking connection. Apply sparingly to male fittings only, omitting the first two threads. Always ensure that the residue from any previously used compound, or any other foreign material, cannot enter the system.

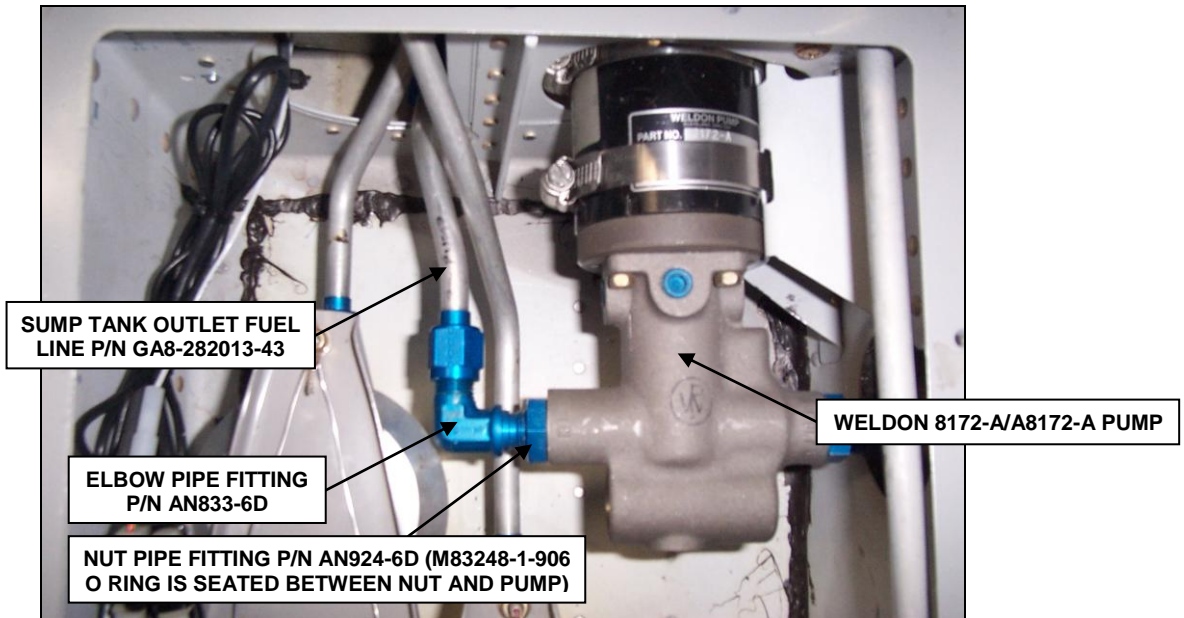


Figure 8: Connection of sump tank outlet fuel line to the Weldon pump.

26. Fit the hose clamps through the slots in the new fuel pump mounting bracket.
27. Install the Weldon pump assembly into the hose clamps, ensuring that the sump tank outlet fuel line is located through the modified rib no. 4.
28. Connect the fuel pump/shutoff fuel line to the outlet of the Weldon pump using the union fitting from the Dukes pump connection. Replace the O ring if worn.
29. Reinstall the sump tank, reconnect all fuel lines and install the sump tank water drain valve.

NOTE:

Ensure clearance between the fuel lines to the sump tank and the rib/doubler structure.

30. Attach the ring terminal at the end of the ground wire from the Weldon pump to rib no. 4 with the same hardware used to attach the ground connection from the Dukes pump. Ensure that the electrical contact surface area is clean and free of paint prior to connection.
31. Feed wire lead QA1D18 (P/N GA8-246015-81) through the modified rib no. 4. Connect plug P142 from the pump to socket J142 from the wire lead, and connect plug P42 from the wire lead to socket J42 from the aircraft main electrical loom.
32. Secure the wires from the new pump to the wiring mounts using cable ties.
33. Ensure that the sump tank is seated correctly, all fuel lines are secure, and that all water drain valves are closed.

CAUTION:

DURING THE NEXT STEP, ENSURE THAT THE TOP OF EACH FILTER BOWL IS HELD DOWN (BY HAND) WHILE THE RESPECTIVE SERVICING TAP IS OPENED AND RETAINING PLATE REPLACED, AS THE FUEL PRESSURE HEAD IS ADEQUATE TO LIFT THE FILTER BOWL TOP AND ALLOW FUEL SPILLAGE.

34. Open the servicing taps at the fuel filter bowls and replace the filter bowl retaining plates. Replace the lock wire on the retaining plate wing nuts.
35. Reset the BUS 2 CONTROL breaker.
36. Reset the BUS 2 MAIN breaker.
37. Disconnect the hose at the inlet to the engine driven fuel pump and decant fuel into a container to purge air and flush any foreign material from the fuel system and prime the Weldon pump.

WARNING:

FUEL SPILLAGE CONSTITUTES A FIRE HAZARD. USE CAUTION TO PREVENT FUEL SPILLAGE WHEN DECANTING FUEL FROM THE DISCONNECTED FUEL LINE.

38. Perform a functional test to ensure the Weldon fuel pump operates when the FUEL PUMP breaker switch in the overhead panel is switched to the ON position.
39. Reconnect the hose to the engine driven fuel pump.
40. Reinstall the floor panels over the sump tank, fuel pump and shutoff valve, floor coverings, and the co-pilot's crew seat.

Documentation:

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

Compliance Notice:

Complete the Document Compliance Notice and return to Gippsland Aeronautics by fax or mail.

DOCUMENT COMPLIANCE NOTICE



Document: Service Bulletin SB-GA8-2005-30
Issue 03

Aircraft Serial Number: GA8-_____

Service Bulletin SB-GA8-2005-30 Issue 3 has been incorporated in the above aircraft.

Date: _____

Signed

Print Name: _____

Please post or fax this compliance notice to:

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