

Ultra Electronics

# SERVICE INFORMATION LETTER

## SERVICE INFORMATION LETTER LG 05/03

(Issue 1, June '03)

### LANDING GEAR CONTROL AND INTERFACE UNITS 6647 SERIES

(Used on A318, A319, A320 and A321 Aircraft)

#### CORRECTIVE ACTION FOR CRACKED SOLDER JOINTS ON TRANSISTORS

1. Description

This Service Information Letter is applicable to all versions of the LGCIU **Pt. No. 664700500A4X**. It addresses the correct procedure for repairing cracked solder joints around transistors on the Interface and Output Boards.

Cracked solder joints have been reported on TO-5 / TO-39 style transistors fitted on the Interface Board 1 (P/N 001-LG-01-0030), Interface Board 2 (P/N 001-LG-01-0040), Interface Board 3 (P/N 001-LG-01-0050), and Output Board (P/N 001-LG-01-0350) assemblies.

Each transistor is fitted on a thin spacer. The probable failure mechanism is due to the ingress of conformal coating beneath some transistors. This is a result of production variations that can, in some instances, allow a gap beneath the transistor into which conformal coating can penetrate. The coating expands and contracts with temperature changes, causing stress cycles that eventually crack the solder joint. (See Fig. 1)

If an assembly is returned from service with cracked solder joints on a TO-5 / TO-39 style transistor, it is not sufficient to simply re-solder the joints. Although at the time of rework they would be sound, the conditions that led to the crack are still present, and after further temperature cycles the joint will fail again.

The transistors on the Output Board are at a higher risk of this type of failure due to the larger temperature variations experienced by its components.

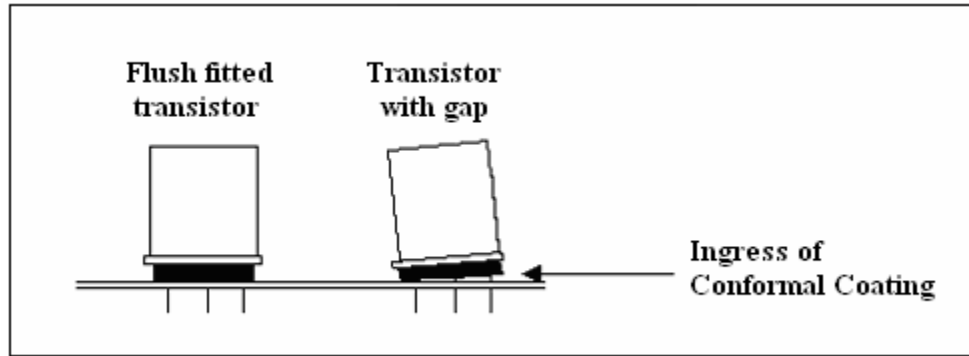


Figure 1

The T0-5 / TO-39 style transistors are fitted in the following locations:

**Output Board:** TR 3, 8, 13, 18

**Interface Board 1:** TR 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15

**Interface Board 2:** TR 2, 6, 7, 8, 9, 10, 20, 21, 22, 23, 24, 25, 26, 27

**Interface Board 3:** TR 5, 8, 9, 11, 13, 15, 17, 19, 21, 23, 25, 30, 31

## 2. Implementation

The following procedure is to be carried out when an SA LGCIU (P/N 664700500A4X) is returned for service/repair for any reason:

- Inspect the solder-side joints for evidence of a cracked solder joint on all T0-5 / TO-39 style transistors. A bench magnifier having a magnification of 4 – 6 is recommended. A crack appears as a light grey ring in the solder joint around the transistor lead. Be especially vigilant if there are fault codes present that indicate an Interface or Output Board failure.
- If a crack is detected in any transistor's solder joint, follow the instructions below for repair.

### **Cleaning conformal coat from the underside of a TO-5/TO-39 style transistor**

For general information on the application and rework of conformal coat Dow Corning 1-2577, refer to the LGCIU CMM, ATA Ref. No. 32-31-39, REPAIR page 601.

When using coating material or solvents, use appropriate personal protection (gloves and protective glasses) in an area with adequate fume extraction.

- Clear coating (1-2577) from PCB solder side in transistor location.
- De-solder joints.
- Remove transistor (with heatsink still attached).
- Carefully clean coating from the PCB. Use Toluene to soften the coating, then a soft scraper to remove it from the PCB. Ensure the plated-through-holes are uncontaminated.
- Place the transistor(s) in a small container of Toluene for 5 – 10 minutes.
- Remove the pad and the coating on the underside of the transistor. Discard the pad.
- Thoroughly clean the transistor's underside, and the leads.
- Fit new pad (P/N 28682-193-0-8) and ensure all items are flush to the board.
- Fit transistor, then solder leads and clean joints using IPA (Isopropyl Alcohol).
- Re-coat with conformal coating on solder side of PCB.
- Coat the top of the transistor around the heatsink, as this aids its retention.  
**Sparingly** re-coat the sides of the transistor.

Note 1: If a transistor is damaged during this process, it must be replaced.

- Carry out any further fault-correction tasks necessary and then reassemble the LGCIU.
- Perform a full acceptance test on the LGCIU as detailed in the CMM, ATA Ref 32-31-39, TESTING AND FAULT ISOLATION page 101.

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