Thermal 1.7 Head
Temperature or Safety Loop Errors Occur Intermittently with No Apparent Cause

1. SYMPTOMS

You will see one of the following thermal imaging head error messages:

- `17699 "Laser safety loop just opened"` occurs intermittently with no apparent cause (that is, all panels are closed and the safety loop is intact).
- `17667 "HEAD: head ambient over temperature"` appears, the laser shuts down, and the output device aborts the current plot.

You may also see one of the following host error messages:

- MCE: `44946 WLC PCB overheated, reset head`
- MPE: `17646 Exposure Head: WLC PCB overheated, reset head`

2. CAUSE

There is a poor connection on the WLC board.

3. SOLUTION

3.1 Required tools

- 3 mm hex key
- Fine-point electronics soldering iron and solder
- Small length of insulated 18-20 gauge wire
- Silicon RTV sealant

3.2 Procedure

WARNING: You must wear a static strap during this procedure. Ensure that both you and the head are protected from electro-static discharge.

1. Check that the head temperature is within the normal range. Type `>>head status` and confirm that the `list temp` is within the normal range.
2. Check that the safety loop is intact. Make sure all the panels are closed and that the circuit is complete.

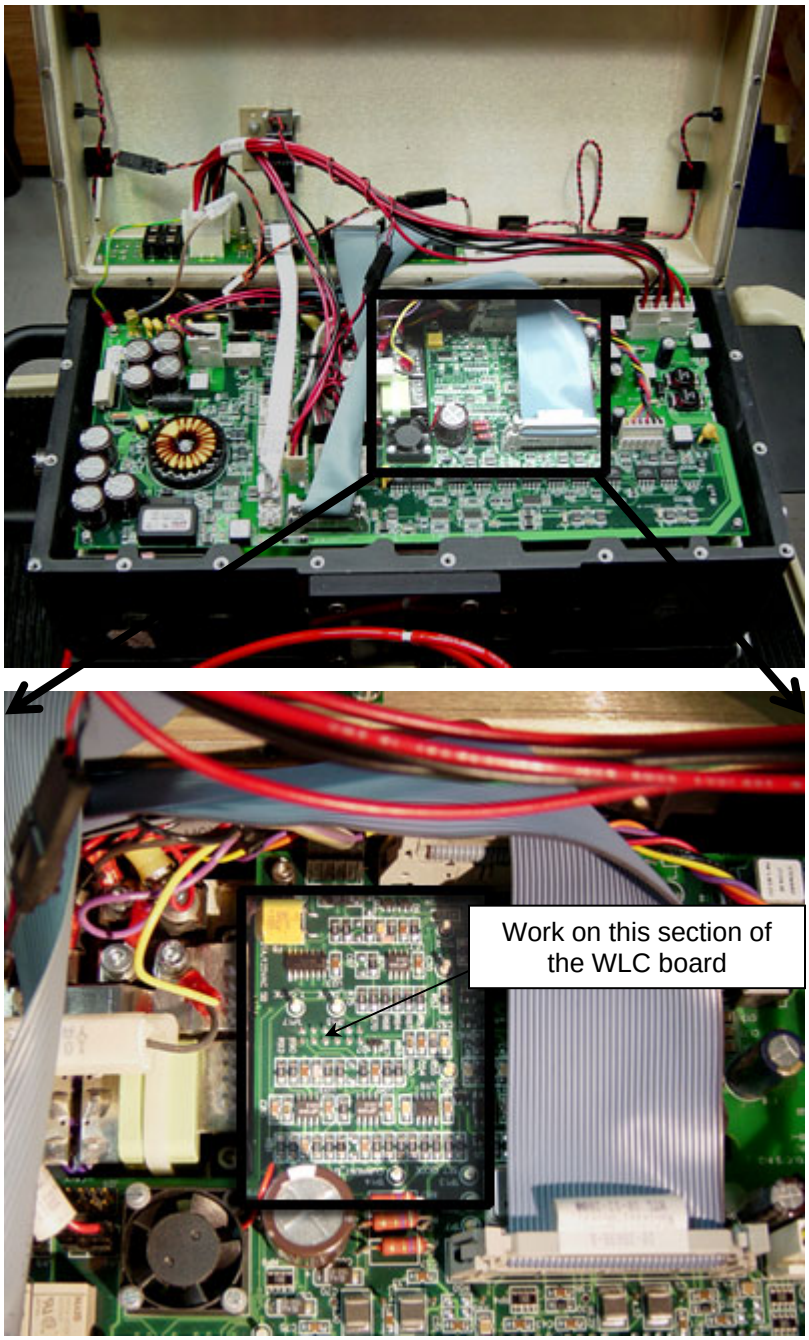
CAUTION: Do not attempt the next step in this procedure if you are not experienced at soldering electronics boards.

3. Remove the head from the output device and place it on a safe, clean work surface.

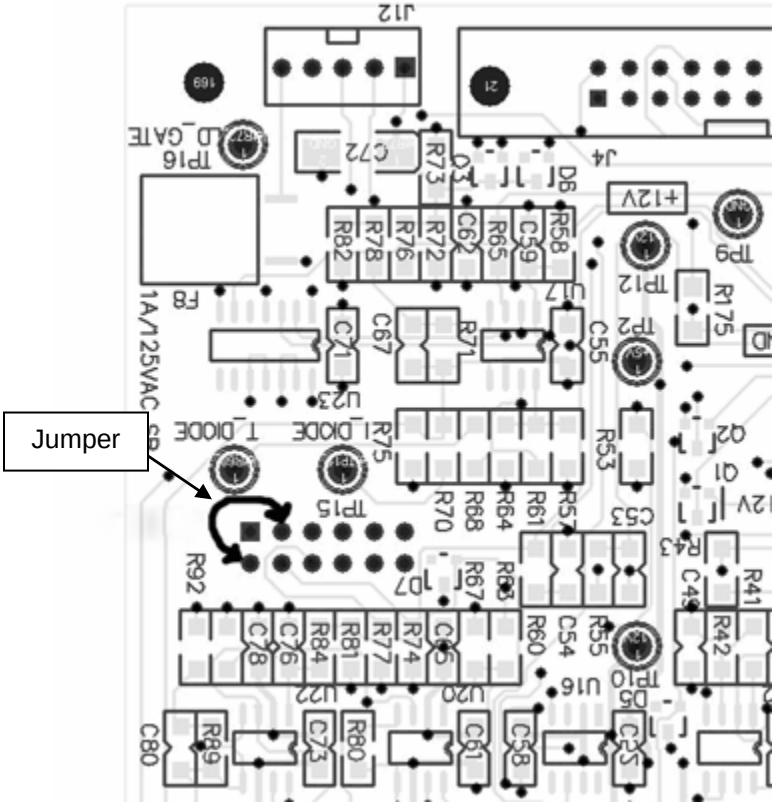
   CAUTION: Do not attempt to remove the cover.

4. Using a 3 mm hex key, remove the 20 hex screws that hold down the top cover on the head and carefully tilt it up. *Do not attempt to remove the cover.* The cover is connected to the board with cables.

5. Locate the section of the WLC circuit board (10-3686B) that has the bad connection (see the following photographs).



6. Solder a jumper between Pin 2 and Pin 12 of U13. For the jumper location, see the following illustration and photograph:





7. After you have soldered the jumper to the PCB, fasten the jumper in place with a dab of silicon RTV. For the new wire's location, see the following photograph:



8. Being careful not to pinch any wires, replace the gold cover. Tighten the 20 hex screws.
9. Test that the repair was successful. Re-install the head and check that all systems are functional.

If the intermittent errors persist, replace the head.