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SERVICE BULLETIN

SUBJECT: ELECTRICAL POWER – Static Inverter AI² Model 1G1000-1A-2170, Part Number 1-002-0102-2170 – Modification.

TRANSMITTAL: Service Bulletin 1-002-0102-2170-24-47 Initial Release (Revision 0).

I. Planning Information

A. Effectivity

Applies to Static Inverters, AI² Part Number 1-002-0102-2170, Boeing P/N: S281W204-1 marked as "MOD LVL –". Existing units that are labeled as "MOD LVL A" already contain the product improvement.

B. Concurrent Requirements

None.

C. Reason

Avionic Instruments has investigated and tested numerous scenarios that could cause a no fault found (NFF) return of the static inverter. The root cause of the NFF returns has been identified as unspecified power interruption to the unit. The power interrupt limits defined by the specification do not cause this problem. However, a power interrupt of a certain duration may cause a race condition within the bias supply leading to a latching fault condition. The latch can only be cleared by recycling power to the unit. At the aircraft level, this unexpected latching fault is falsely interpreted as a static inverter hard failure.

D. Description

Updating the Inverter Control Assembly will prevent the false alarm due to power interruptions beyond the levels identified in the specification. This will greatly improve availability of the static inverter by eliminating NFF returns attributed to this false alarm condition. This upgrade will require partial disassembly of the static inverter and changing four resistors.

E. Compliance Recommendation

Recommended – Service Bulletin recommended to be accomplished when manpower and facilities are available to prevent operational impact.

F. Approval

This Service Bulletin has been reviewed by Boeing and the FAA. The repairs and modifications herein comply with the applicable regulations and are on record with the Supplier as FAA-approved for installation.

G. Manpower

The estimated time required to accomplish the task of disassembly, inspection and/or rework, and reassembly of the unit in relation to this service bulletin is four and a half (4.5) hours. Activity related to product return to service is included in this time estimate.

H. Weight and Balance

Subject change has no significant impact on balance and weight.

I. Electrical Load Data

Subject change has no effect on electrical performance or connections.

J. Software Accomplishment Summary

Subject change has no effect on Software.

K. References

- Component Maintenance Manual 24-20-52 (1-001-4902-0052)

L. Other Publications Affected

- Component Maintenance Manual 24-20-52 (1-001-4902-0052) Rev "14"

M. Interchangeability of Parts

Refer to Paragraph 2.E., Re-identified Parts/Existing Parts Accountability for interchangeability information.

II. Material Information

A. Material

Customers may contact Avionic Instruments customer service at 732-388-3500. Products upgraded by Avionic Instruments. Avionic Instruments will not perform any repair beyond that which is specified in this document without first notifying the customer of any associated charges and receiving customer consent. The price may be subject to escalation one year after the release of this service bulletin.

Part Number	Name	Price
1-001-6301-0030	1-002-0102-2170-24-47 SB Kit	$2,849.00

It is highly recommended that any units in need of modification be returned to Avionic Instruments however if field upgrades are performed by operators or operator designees, it is requested that they notify AI² Repair Department, within 30 days, at: 732-388-3500, repair@avionicinstruments.com or FAX (732) 382-4996 prior to performing the work to report unit S/N so we can provide the new label and kit. Any units received in-house for service bulletin upgrade will be subjected to the ATP prior to the upgrade being completed. AI² will notify the Airline Operator of any out-of-specification condition noted during performance of the ATP. The unit would need to be repaired prior to the upgrade being initiated and the repair will be quoted in accordance with AI2's published catalog.

B. Industry Support Information

This modification is a chargeable event and is not an under warranty condition.

C. Material Necessary for Each Component

1-001-6301-0030 Kit Contents	
Quantity	Material
1	Resistor R130
1	Resistor R131
1	Resistor R162
1	Resistor R163
1	Label

D. Material Necessary for Each Spare

Not Applicable.

E. Re-identified Parts/Existing Parts Accountability

The part shown below is changed as shown in this Service Bulletin.

New P/N	Keyword	Old P/N	Quantity	Disposition
1-002-0102-2170 Mod A	Static Inverter	1-002-0102-2170 Mod -	1	Replacement

F. Special Tooling

1. SMT Rework Station
2. Standard Tools
3. Safety glasses
4. Solder iron

III. Accomplishment Instructions

A. Instructions for Part Number for Installation of Kit Part Number 1-001-6301-0030

1. Remove (23) screws (8x 0404CPP188, 15x MS51957-13) from the left side of the top cover. (Figure 1).
2. Remove (22) screws (8x 0404CPP188, 14x MS51957-13) from the right side of the top cover. (Figure 2).
3. Remove (8) screws (4x 0404CPP188, 4x MS51957-13) from the top of the top cover. (Figure 3).
4. Remove (10) screws (10x MS51957-14) from the front panel. (Figure 4).
5. Remove (2) screws (2x MS51957-13) from the rear panel. (Figure 5).
6. Carefully lift the top cover to remove it from the unit. (Figure 6).
7. Remove (2) screws (2x 0605CPP188) from output (cable assembly). (Figure 6).
8. Remove (1) cable tie (1x MS3367-4-9). (Figure 7).
9. Carefully disconnect the connector. This step may require removing the shrink tubing (1.5”±.06 M23053/5-108-0 (Black)) and tie with lacing from the connector. (Figure 7, 8).
10. Remove (2) screws (2x MS51957-13) from (top) lugs on the bus assembly. Ensure that the top two lugs are removed before the bottom two. (Figure 7).
11. Remove (2) lower screws (2x 0405CPP188). (Figure 7).
12. Tilt the unit so that it is resting on its right side.
13. Remove (4) screws (4x MS51959-13) from bottom of unit. (Figure 9).
14. Remove the Inverter Module Assembly (1-002-0107-1653) and Inverter Control Link Cap Assembly (1-002-0107-1707). (Figure 10).
15. Remove (5) screws (5x MS51959-12) from shield. (Figure 10, 11).
16. Remove (2) screws (2x 0404CPP188) from inverter control. (Figure 12).
17. Locate resistors R130, R131 R162 and R163 on the inverter board. (Figure 13). (IPL Figure 26 items 225, 210 and 235).
18. Use solder tool to remove and replace resistors as follows:

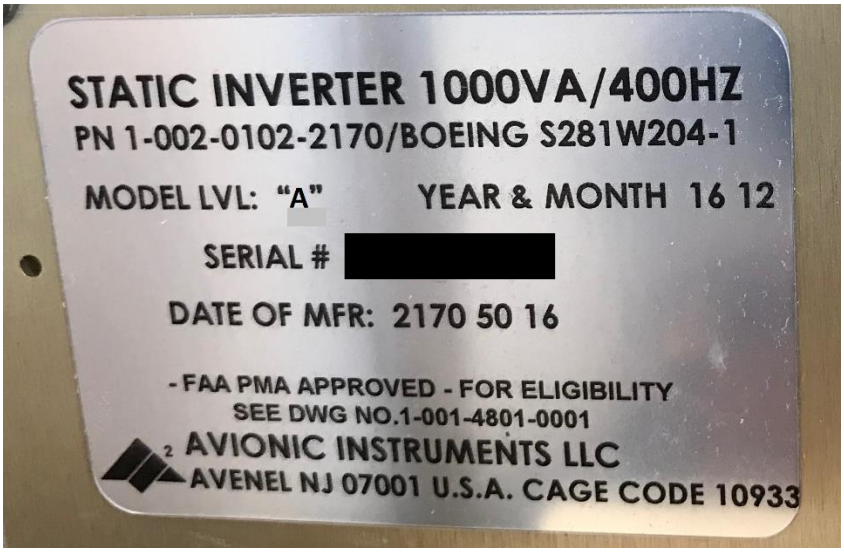
Reference #	Original Part #	Replace with Part #
R130	1-001-0662-0023 (7.32k Ohm)	1-001-0662-0025 (7.68k Ohm)
R131	1-001-0662-0023 (7.32k Ohm)	1-001-0662-0013 (2k Ohm)
R162	1-001-0662-0007 (1k Ohm)	1-001-0662-0029 (10k Ohm)
R163	1-001-0662-0040 (68.1k Ohm)	1-001-0662-0129 (182k Ohm)

Re-assemble the unit as follows:

19. Bring the cable through the panel and attach the cable to the connector on the front of the inverter control.
20. Insert (2) screws (2x 0404CPP188) into the inverter control. (Figure 12).
21. Attach shield to inverter control using (5) screws (5x MS51959-12). (Figure 10, 11)
22. Tilt unit so it is resting on one side.
23. Insert (4) screws (4x MS51959-13) into the bottom of the unit. (Figure 9).
24. Insert (2) bottom screws (2x 0405CPP188) to the bus assembly. (Figure 7).
25. Attach (2) top screws (2x MS51957-13) to the bus assembly. (Figure 7).
26. Reconnect the connector to the DC-AC power supply. This step may require attaching shrink tubing (1.5”±.06 M23053/5-108-0 (Black)), and tie with lacing. (Figure 7, 8).
27. Attach (1) new cable tie (1x MS3367-4-9). (Figure 7).
28. Insert (2) screws (2x 0605CPP188) into lugs to attach output (cable assembly). (Figure 6).
29. Place cover onto the unit.
30. Insert (2) screws (2x MS51957-13) into the rear panel. (Figure 5).
31. Insert (10) screws (10x MS51957-14) into the front panel. (Figure 4).
32. Insert (8) screws (4x 0404CPP188, 4x MS51957-13) into the top of the top cover. (Figure 3).
33. Insert (22) screws (8x 0404CPP188, 15x MS51957-13) into the right side of the top cover. (Figure 2).
34. Insert (23) screws (8x 0404CPP188, 15x MS51957-13) into the left side of the top cover. (Figure 1).

B. Completion

Upon completion of the modification, the label on the cover will be changed to indicate the model/part number change. Units that have completed the modification described in this service bulletin are to be changed to part number 1-002-0102-2170 MOD "A".



Note: The new label has the same AI2 part number as the old label (1-001-2501-0131). The content of the label is determined by the outline drawing.

C. Testing

Upon completion of the modification and re-labeling of the unit, the unit shall complete and pass the testing shown in the "Testing and Troubleshooting" section of CMM 24-20-52 (1-001-4902-0052) before returning to service.

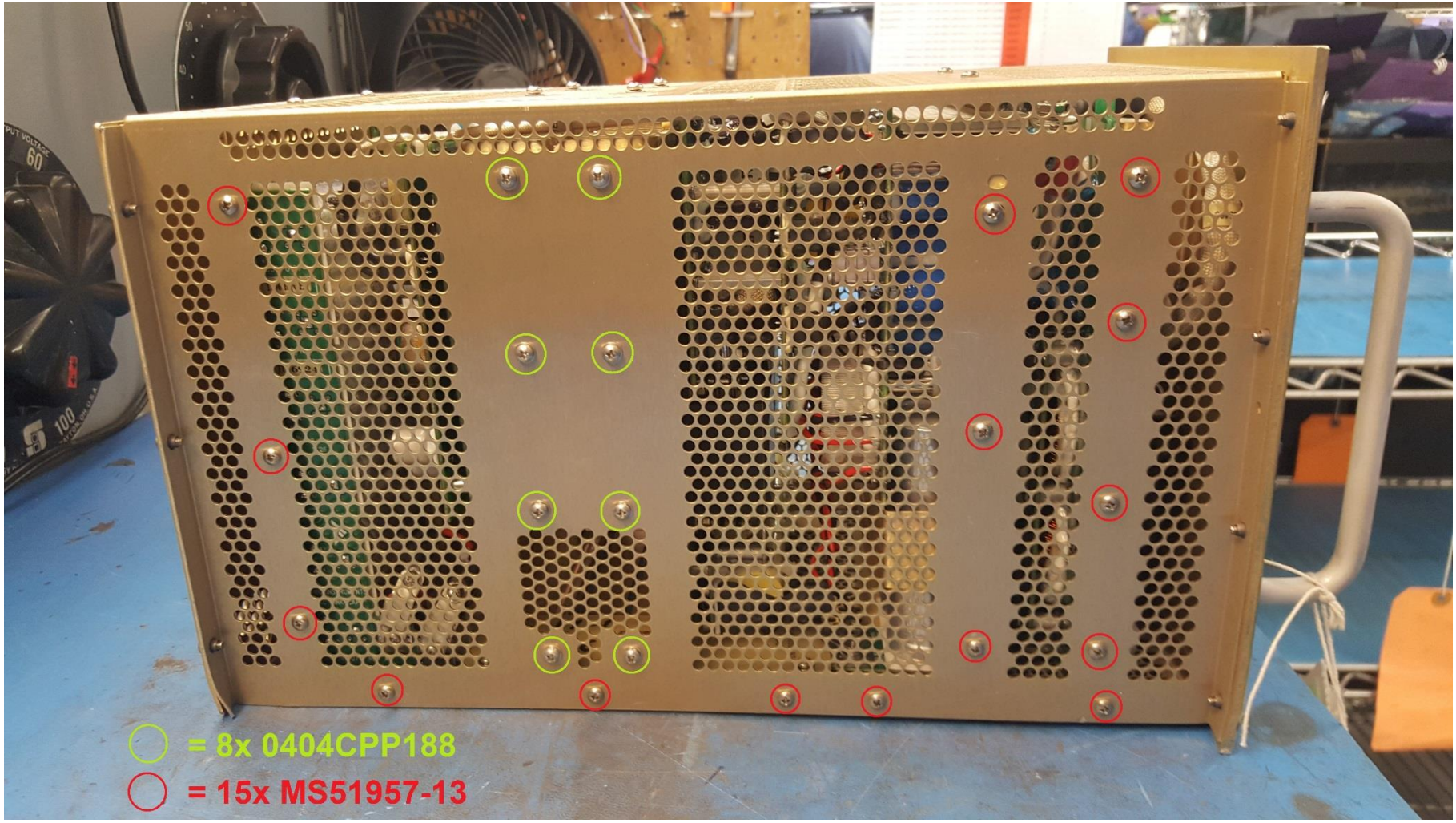


Figure 1 – Left Side of Unit (Top Cover) Screw Locations

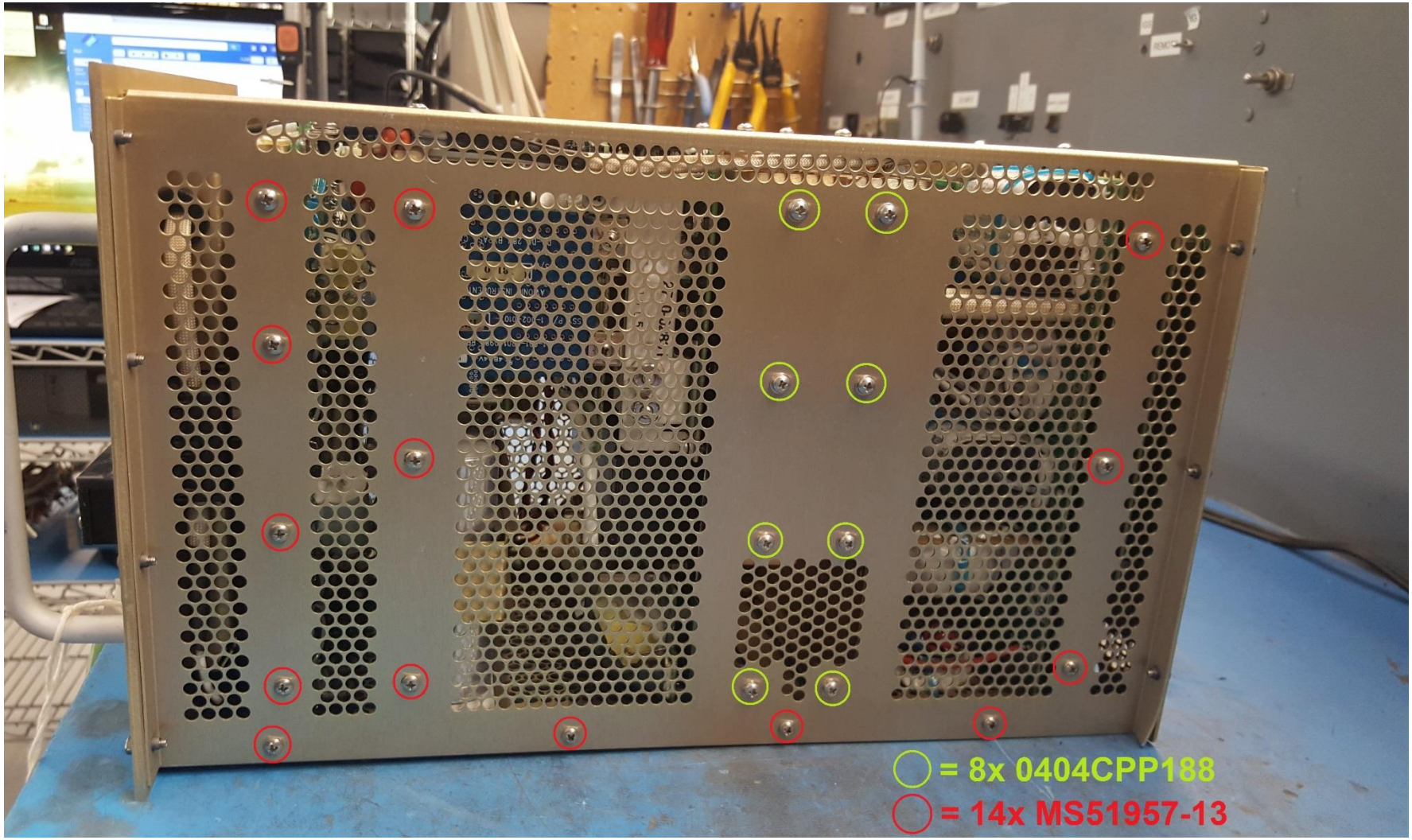


Figure 2 – Right Side of Unit (Top Cover) Screw Locations

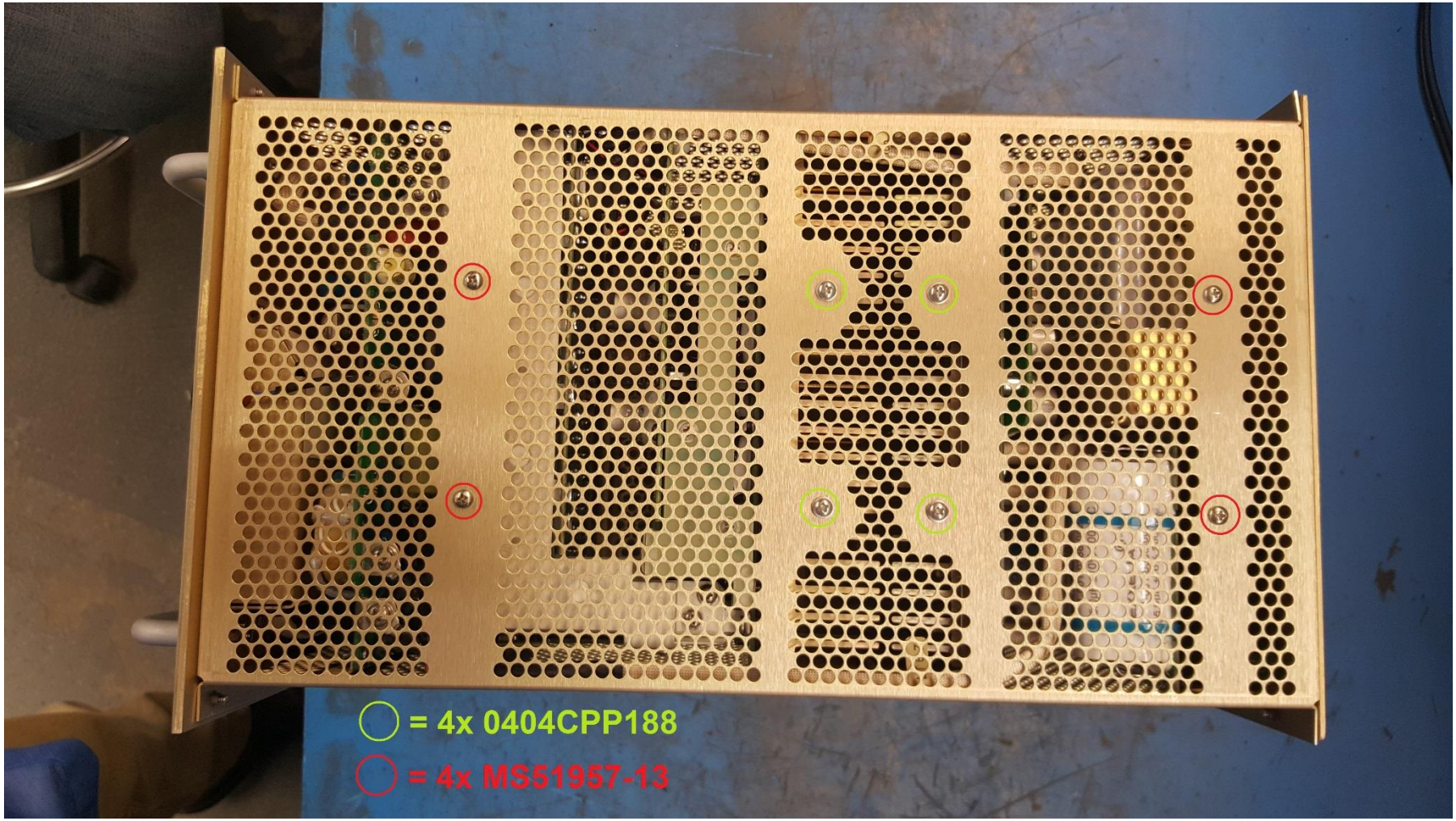


Figure 3 – Top of Unit (Top Cover) Screw Locations

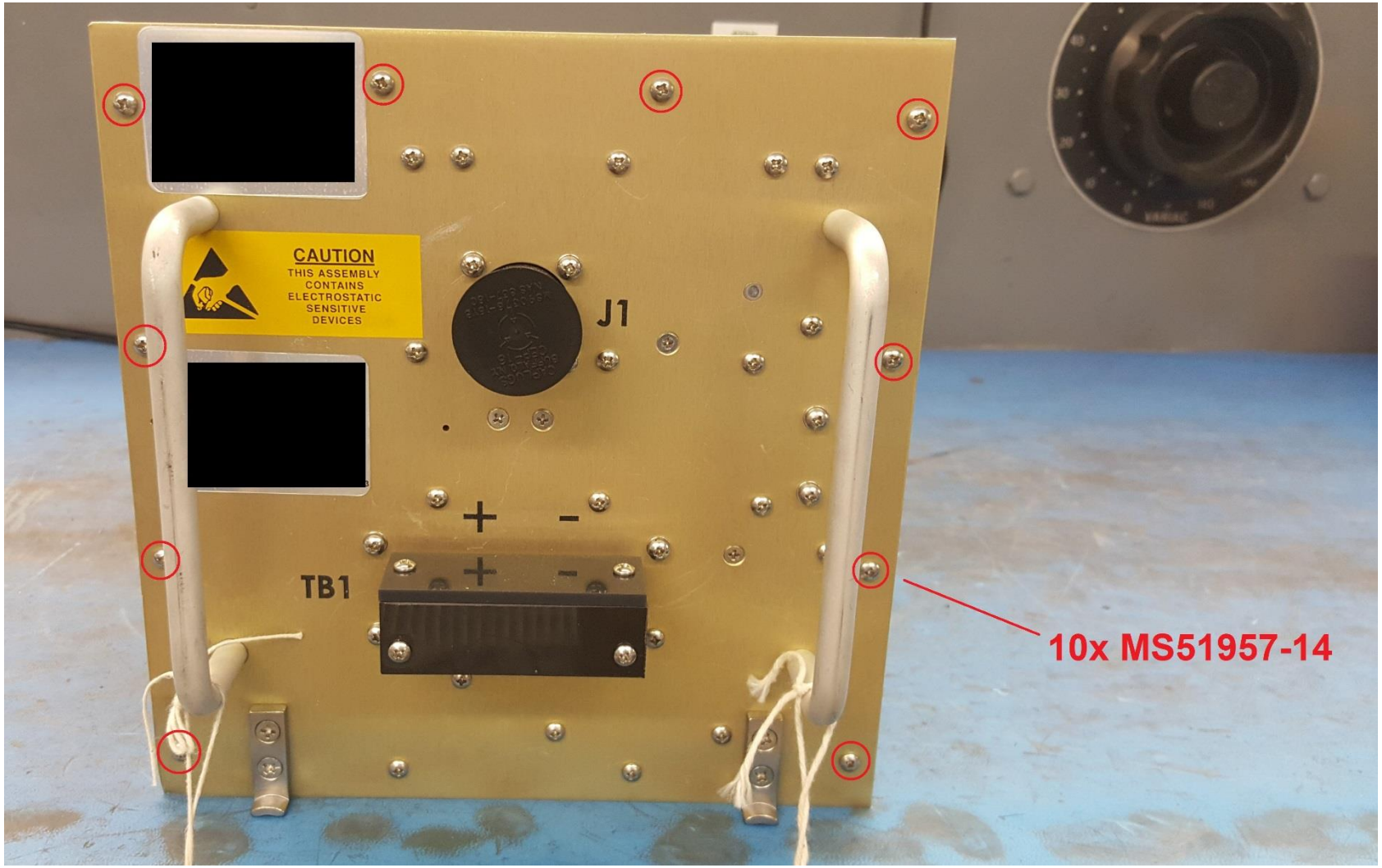


Figure 4 – Front Panel Screw Locations

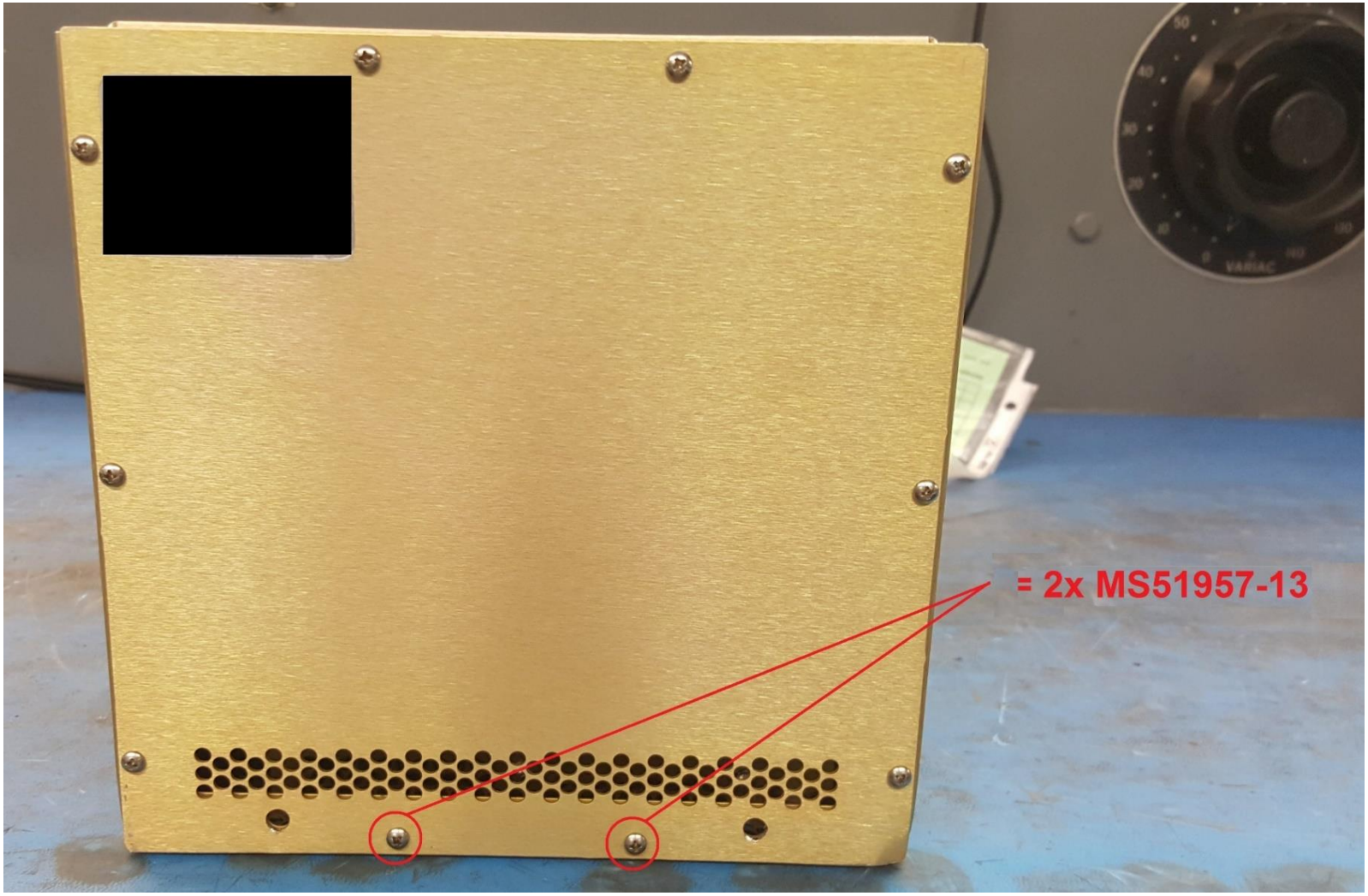


Figure 5 - Rear Panel Screw Locations

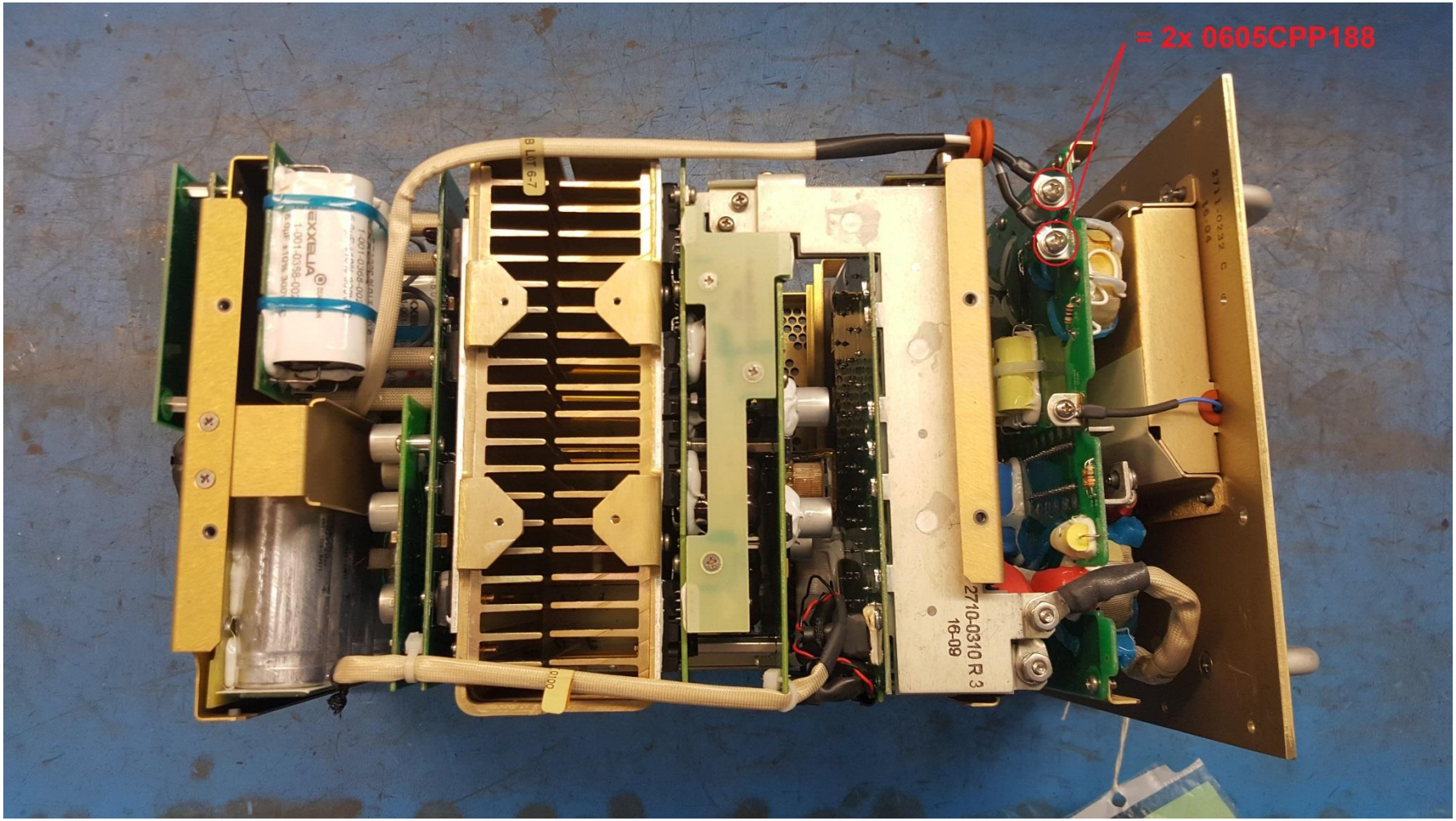


Figure 6 – Output Cable Assembly Screw Locations

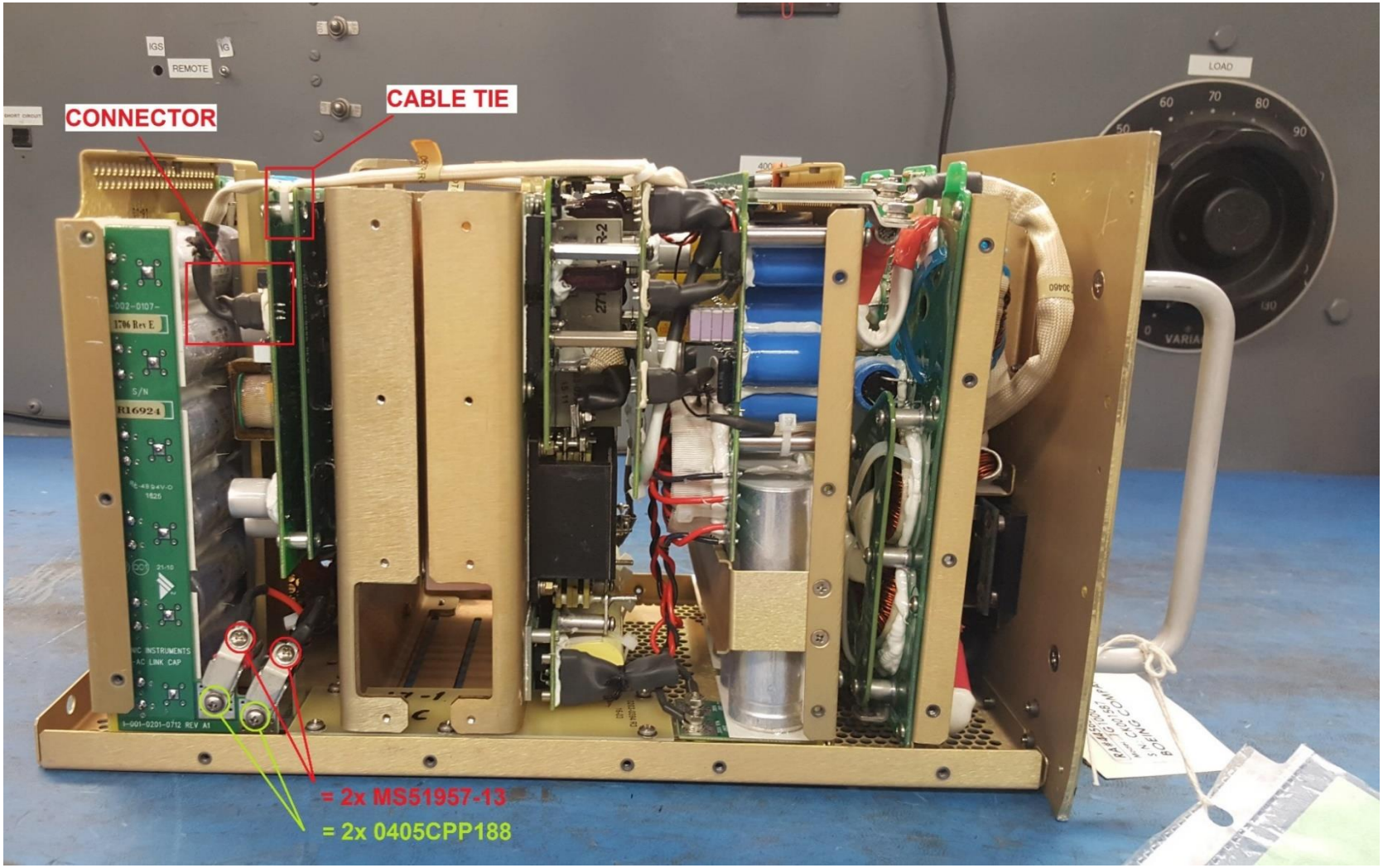


Figure 7 – Bus Assembly Screw, Connector, and Cable Tie Locations

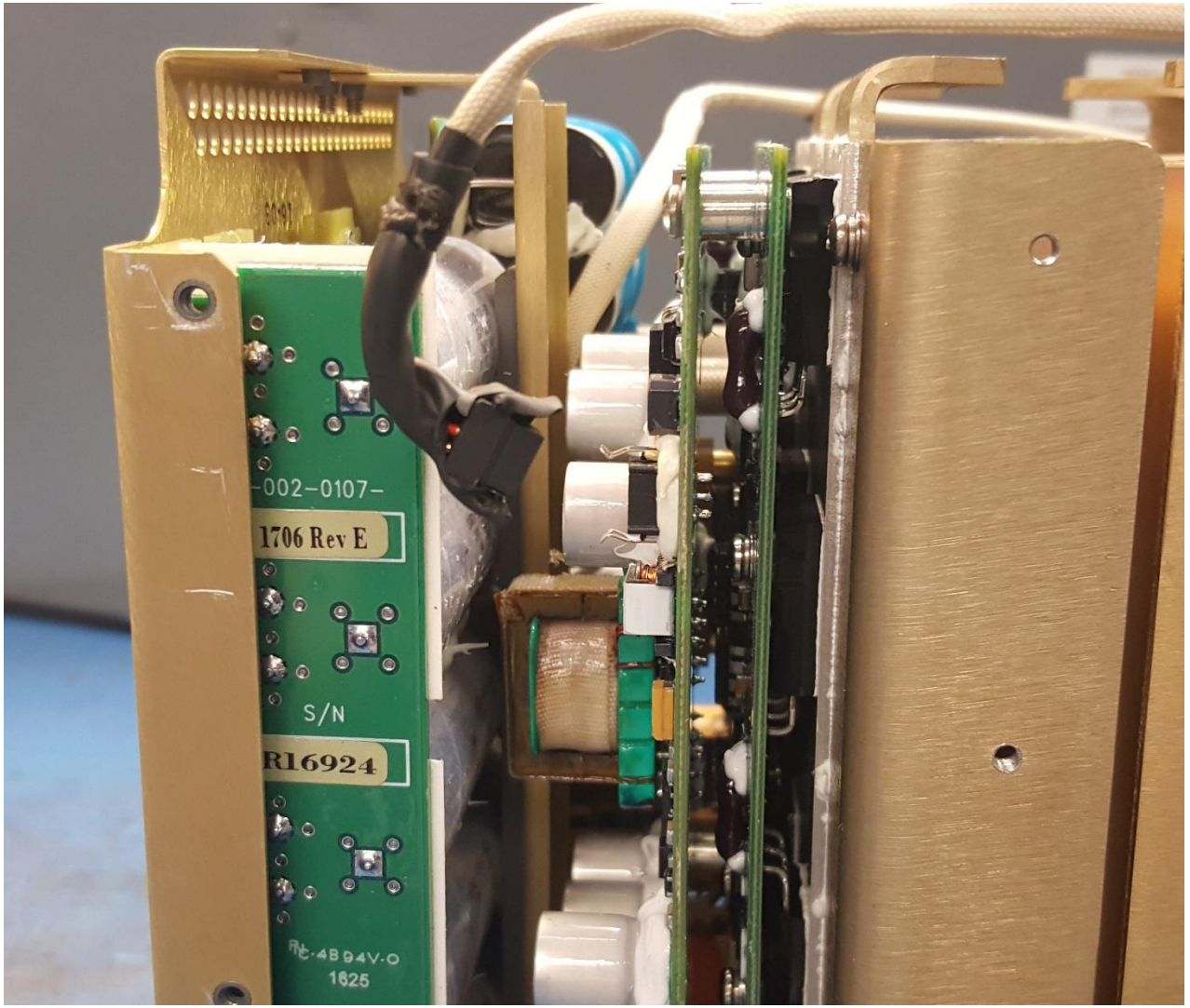


Figure 8 – Connector Disconnected and Cable Tie Removed

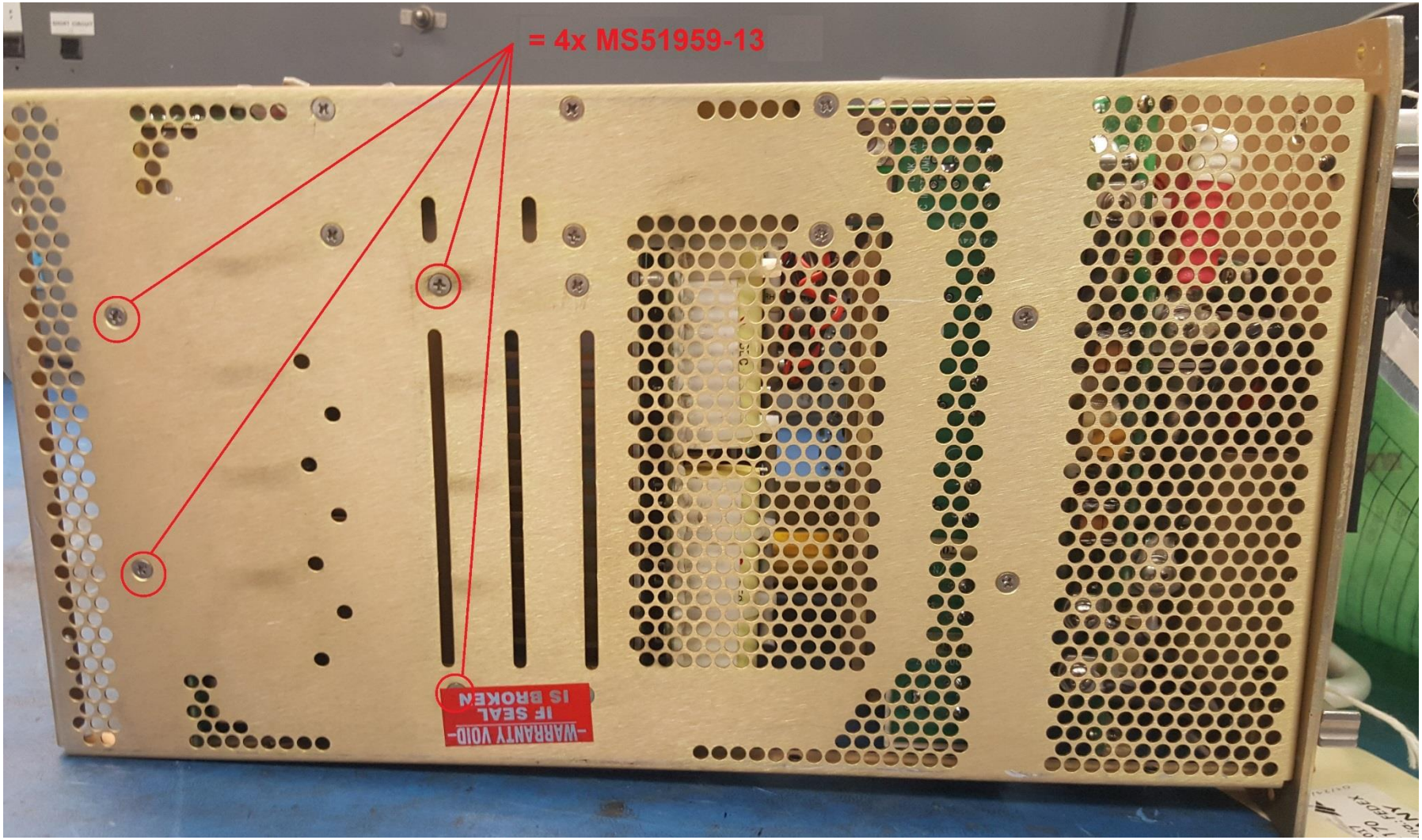


Figure 9 - Bottom of Unit Screw Locations

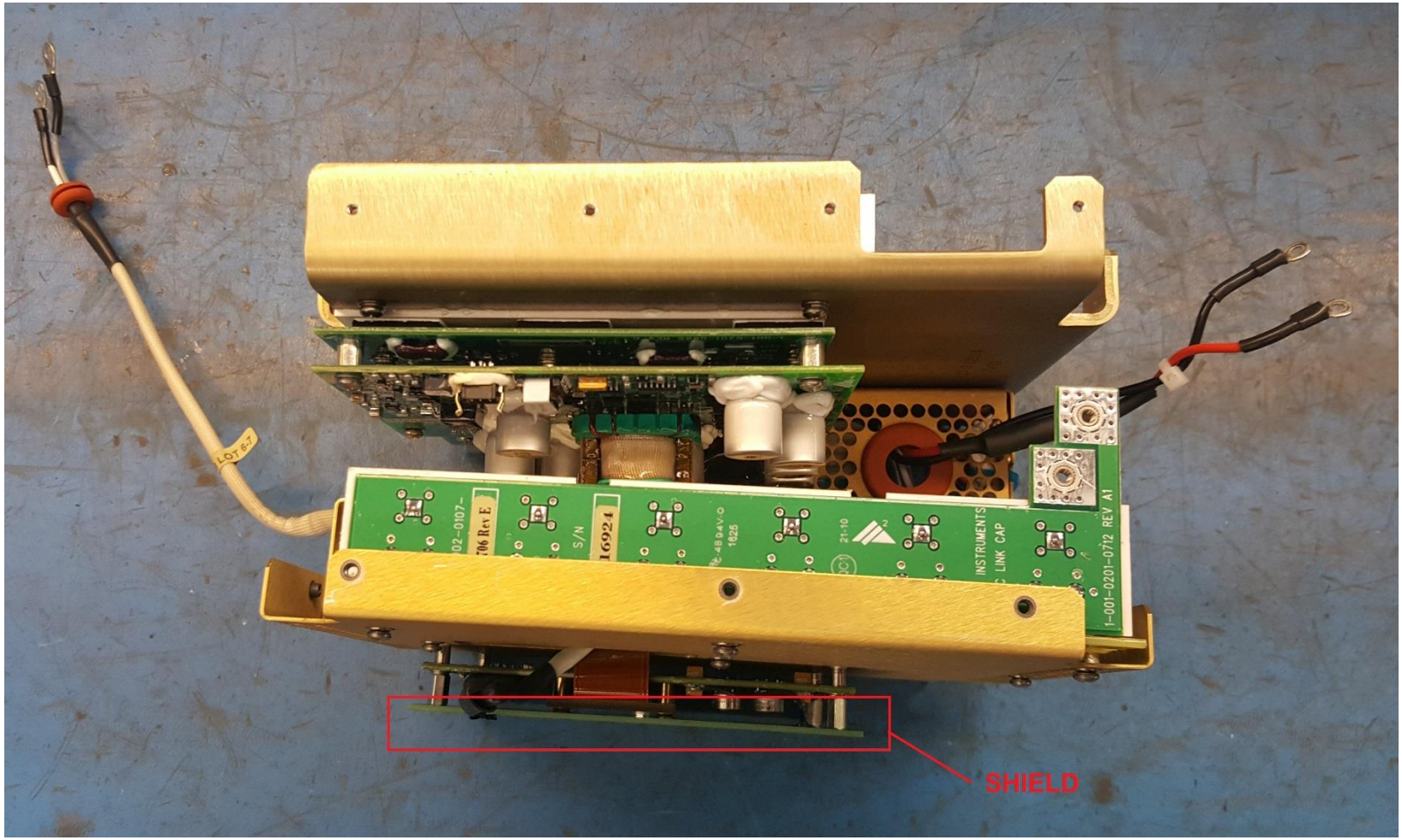


Figure 10 - Inverter Module Assembly and Inverter Control Link Cap Assembly Removed

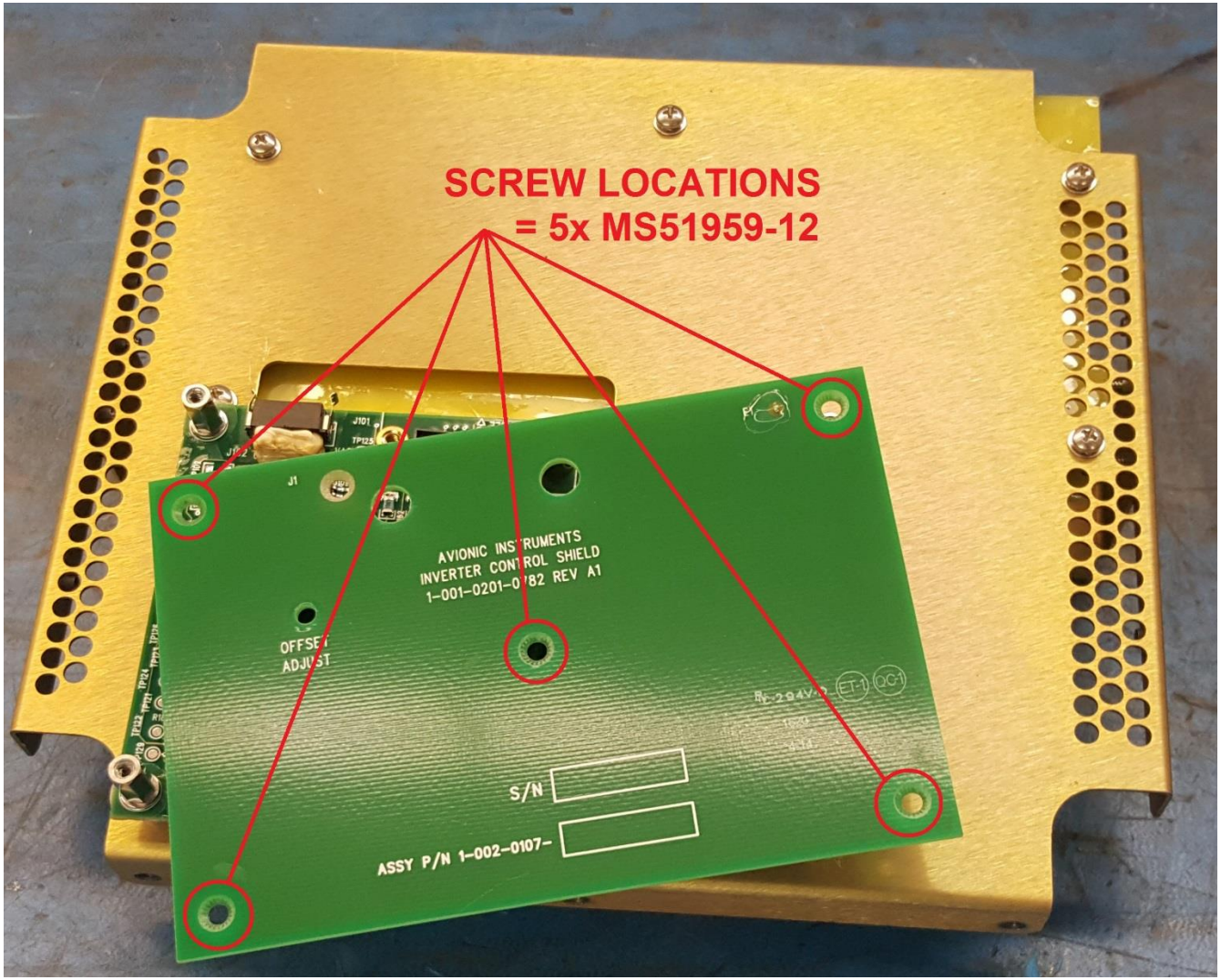


Figure 11 – Inverter Control Shield Screw Locations

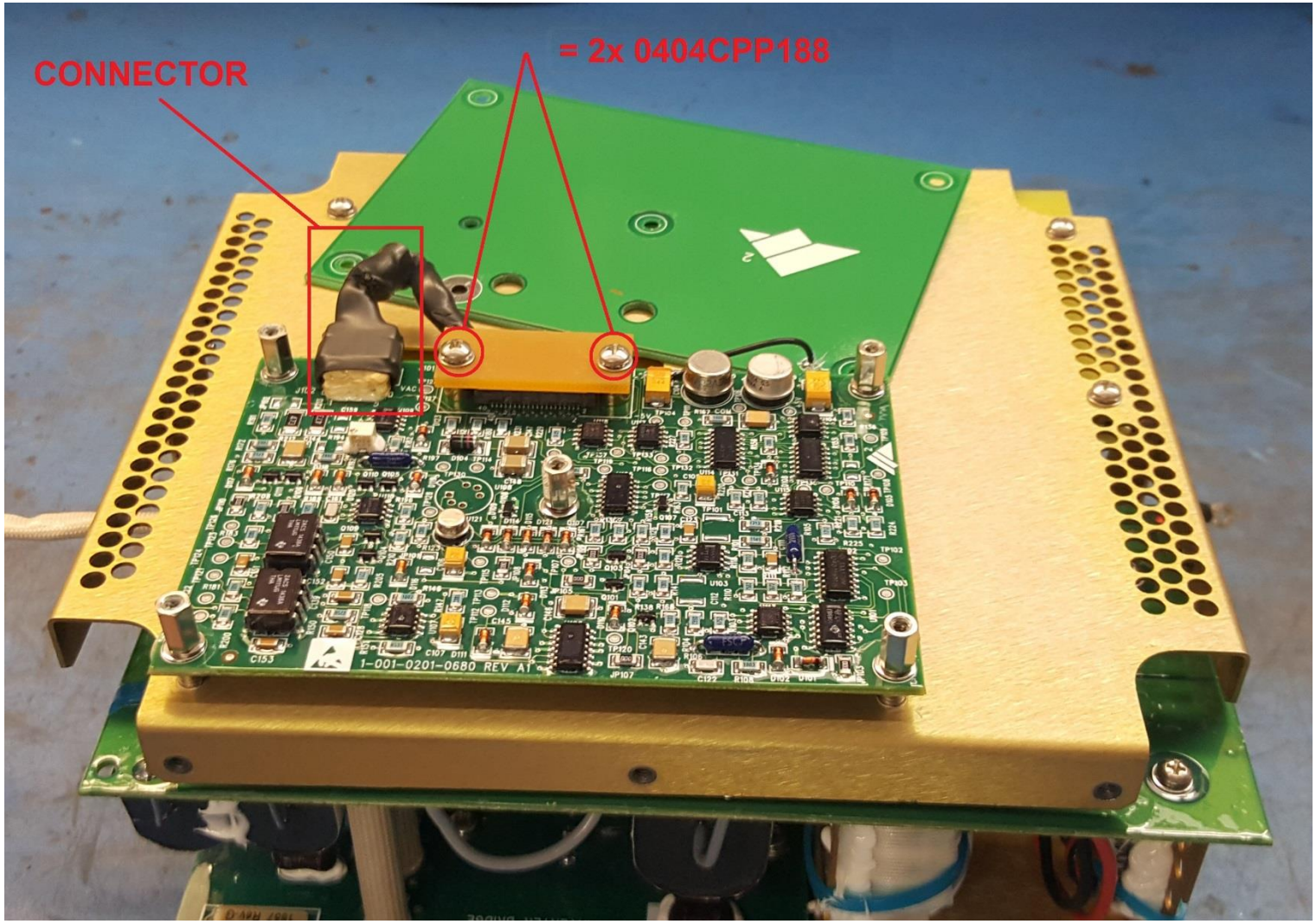


Figure 12 – Inverter Control Screw, and Connector Locations

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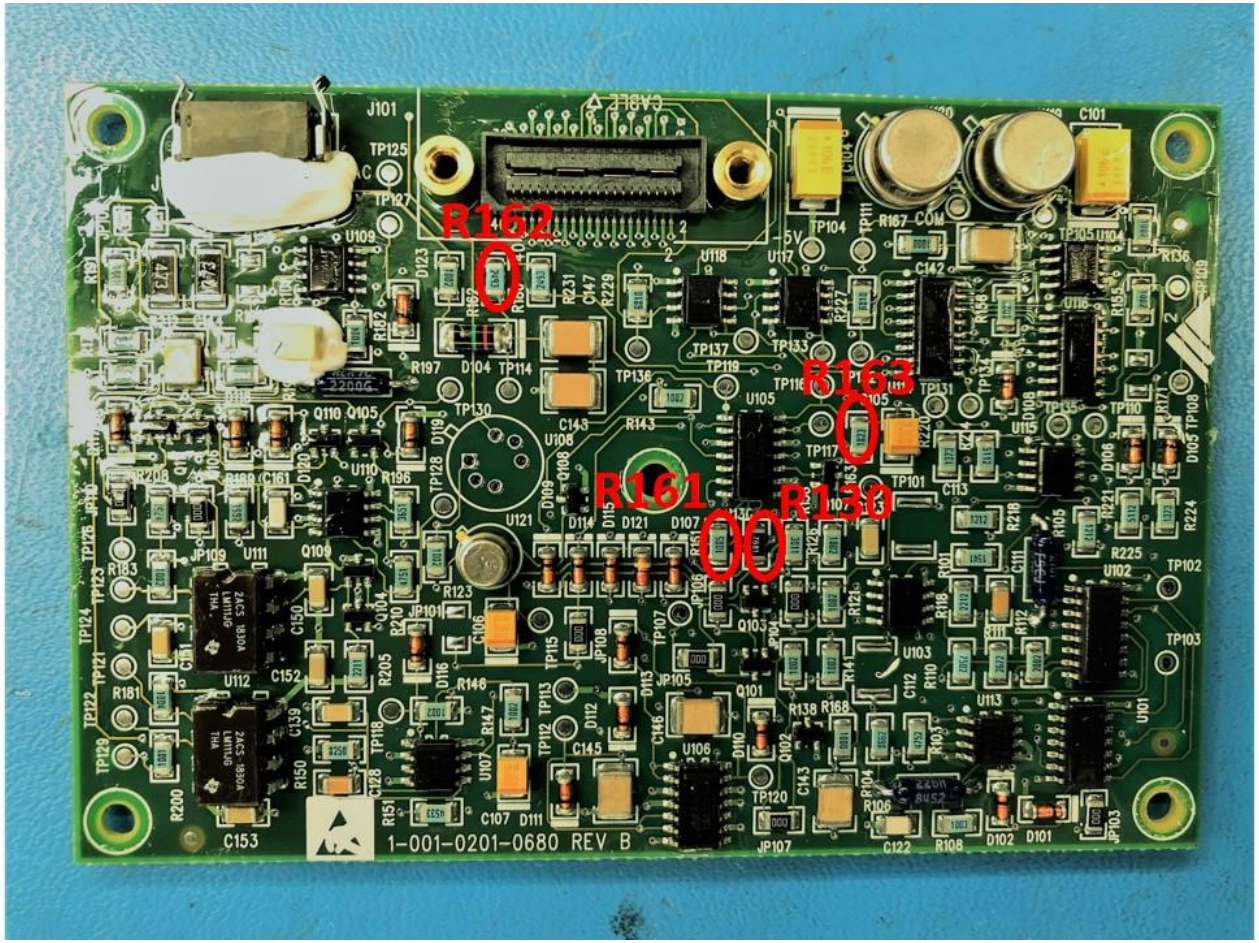

Figure 13 – Inverter board removed