

P0202 Rev - Cable Assembly, Ground

Materials & Supplies

1. Ground Cable Sub-Assy # 23543-101 Rev -
2. Teflon grommet # 23192-101 1ea.
3. Teflon grommet # 23192-103 1ea.
4. Stanford connector Suspension wire, #22778-101
5. 100 M Ω Resistor 1ea.
6. Silver-Plated copper wire #178-8679
7. Indium Solder, Indalloy #9 solder.
8. Flux, Indalloy Rma #5.
9. Tra-Bond BA-2115 epoxy.
10. B-D 1cc Syringes (tuberculin) with out stainless needle #309602
11. Sem-Flex-needle-Teflon tip Lavender #232749
12. Vacuum system for outgassing epoxy.
13. Hot Weezers (model #M-10) #4 B cutter.
14. Non-magnetic cutter #M-17
15. Isopropyl Alcohol #2
16. Clean room wipes Durx #670.
17. Baxter clean room glove #G7300-26
18. Texwipe small foam swab #TX751B
19. Ultrasonic Cleaner (Branson B-220 H)
20. Fluke 77 Multimeter (calibrated).
21. Napco E series (model 5831) vacuum oven.
22. LN Dewar for testing soldered resistors.
23. Keithly Electrometer Model# 617 Programable (or equivalent).
24. Soldering to be performed by *NASA Certified Solder Personel.*
25. Travel sheets for Cable Assembly, ground (Drawing #25692-101 Rev-)
26. All test equipment must be calibrated in accordance to original manufacture's specifications.

Procedure

1. Preparation

- 1.1 Check kits, clean hardware by ultrasonic parts for 20 minutes in Alcohol, use 80ml. glass beaker.

2. Wire Cutting

- 2.1 Cut silver-plated wires #178-8679 from the # 23543-101 Rev- cable sub-assy. to 7.0" long from the back of the H.V Lemo connector.
- 2.2 Cut silver-plated wire #178-8679 to a length of 3.125" and another wire to a length of 2.25".
- 2.3 Clean the wire with clean room wipe #Durx 670 and alcohol #2-Propanol. Wipe the wire until there is no residue on the wipe.

3. Wire Tinning

- 3.1 Soldering to be performed by *NASA Certified Solder Personnel*. (Pre-tin per GPB Solder Specification 5835072.) Use the Hot Weezer #4B set the setting at 10(Hi). Remove outer insulation 0.15”.
- 3.2 Remove one layer of wrap wire from one end of the 2.25” and 3.125” wires. Verify that the end can be completely inserted into solder opening to obtain flush interface between insulation and connector. (This is important for hi-voltage reason.) Trim the exposed wire length and width as required in order to butt the Teflon insulation up against the connector interface. Use a Q-tip and rub a small amount of flux rma #5.
- 3.3 Use alloy Ind #9 solder to tin the end of the wire. Use a Q-tip and wipe away any flux residue.
- 3.4 Bend over the exposed wire 90° at the end of the #23543-101 cable sub-assy. Also, bend over the exposed wire at the end of the 2.25” piece of wire that Did Not have one layer of wire wrap.
- 3.5 Ultrasonic the tined end of the wire in alcohol for 10 minutes. Use a small beaker.

Note: The wire is made up of 19 stands of 5 mil wire and will need to be trimmed in order to fit into the pin solder opening. Unravel the stranded wire and cut off strands as required to obtain clearance with the pin opening.

- 3.6 Visually inspect the wire carefully, check for any breaks in the insulation.
- 3.7 Do a resistance check.

4. Install Teflon Grommets

- 4.1 Take one Teflon Grommet #23192-103 and slip it onto the 7.0” wire assembly # 23543-101
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5. Tinning of 100MΩ Resistor

- 5.1 Soldering to be performed by *NASA Certified Solder Personnel*. (Pre-tin per GPB Solder Specification 5835072.) Pre-tin the metallic contacts at the sides of the resistor. Use a Q-tip and rub a small amount of flux #5 at the end of the tin wire.
- 5.2 Use #9 solder, and solder the resistor to the end of the wire. Use a Q-tip wipe away any flux residue with alcohol.
- 5.3 Test continuity, Verify resistance from end to end of connector pin to the solder connection on the resistor. Make sure resistance is within range. 00.1 Ω / 00.2 Ω.
- 5.4 Ultrasonic the hole assembly in a large breaker for 20 minutes. Use Alcohol.
- 5.5 Bake-out the Assembly in the vacuum oven set temperature control #1.5 (temperature range between 130°F / 146°F) for 20 minutes. Remove the assembly from the oven and visually inspect the wires carefully.

6. Inspect Point

- 6.1 A Product Assurance representative will inspect solder joints.

7. Encapsulate the 100 MΩ Resistor with Epoxy

- 7.1 Mount the ground cable assembly onto the fixture that rotates the cable assy with resistor as the epoxy cures.
- 7.2 Tra-Bond epoxy comes in a two-part package, Remove the clamp knead and mix the two parts together.
- 7.3 Vacuum system should be used to remove any entrapped air introduced during the mixing process.
The foam will rise several times and then subside, Continue vacuum outgassing until most of the Bubbling has ceased. This usually requires 3-10 minutes, Using the dessicator pumped to 3 torr.
- 7.4 Use a 1cc Syringe #309602 with a 22 lewar lock teflon tip put enough tra-bond epoxy 2115 on the resistor to form a ball of epoxy completely around the resistor.
- 7.5 Let Tra-Bond epoxy cure over night or 24 hours as the wire assembly is rotating on the fixture.
- 8. **Solder tinning of Connectors.**
- 8.1 Soldering to be performed by *NASA Certified Solder Personnel*. (Pre- tin per GPB Solder Specification 5835072). Pre-tin the inside of two #22778-101
- 9. **Soldering Connectors to 26 Awg Wires**
- 9.1 Slide the #22778-101 connector over the end of the 3.125” wire that hasn’t had any of the strands of wire removed.. Position the connector so that it is against the back of the insulation. Solder connector with Indalloy #9 solder.
- 9.2 Slide the second # 22778-101 connector over the end of both the 2.25” and 3.125” cables that have had one layer of wrapped wire removed so that it is against the back of the insulation. Solder connector with Indalloy #9 solder.
- 10. **Inspect Point**
- 10.1 A Product Assurance representative will inspect solder joints.
- 11. **Cable Assembly, Ground is completed.**