W. W. Hansen Experimental Physics Laboratory

STANFORD UNIVERSITY

STANFORD, CALIFORNIA 94305 - 4085

Gravity Probe B Relativity Mission

PROCEDURE
FOR
SOLDERING CONNECTOR ONTO GRT

GP-B P0116 Rev -C

February 25, 1999
ECO 941

_____

Approved by: Barry Muhlfelder Date
Manager, SQUID Development

_____

Approved by: D. Bardas Date
Manager, Integrated Systems

X_____

Approved by: Phil Unterreiner Date
Quality Assurance

_____

Approved by: J. Turneaure Date
Hardware Manager

PROCEDURE FOR SOLDERING CONNECTOR ONTO GRT

Document Revision Record

Rev	Date	ECO #	Pages Affected	Description
A	11/16/98	875	all	modification
-	7/1/98	NA	NA	new procedure

Note: This part is not ESD sensitive.

Authorized Personnel: M. Bogan, B. Melendez

Authority to Redline: B. Muhlfelder, M. Luo, D. Bardas, or Program QE

This procedure gives the information required to assemble a grt onto either a 4 pin lemo connector or 4 single socket connectors.

ASSEMBLY PROCEDURE for 25486-201:

Assembly procedure for grt with 4 pin lemo for SQUID bracket application.
(Note: this procedure is also used for assembly 23180-101 with the corresponding parts list).

MATERIALS AND SUPPLIES

1. GRT sensor 23531-101.
2. Kester,60/40 solder Lead/Tin.
3. Teflon sleeving #1933.
4. Heat Shrink Tubing # 022075cst
5. Heat Shrink Tubing # 032100cst
6. Alcohol #2 Propanol.
7. Texwipe small foam swab #TX751B
8. Stycast epoxy #1266
9. 4 pin instrumentation plug connector 65113-1C34317-101
10. Plug adapter 65113-1C34321-101
11. Keithley 196 voltmeter

1. PREPARATION

1.1 Record serial number for GRT _____. Record final wire length_____. Record Probe C connector name_____.

_____ _____
RE **Date**

1.2 Visually inspect the wire carefully. Use the microscope to look for any deep scratches, breaks or kinks in the insulation.

1.3 Cut twisted pair wire (connected to grt) to the specified length. Install heat-shrink tubing over full length of wire excluding final .5". See DR213. Untwist the wires so that length of untwisted wire is approximately 0.5". Strip approximately 0.1" of insulation.

1.4 Using the Keithley 196, connect the green wire from the green/clear pair to V+ on the voltmeter, connect the clear wire to V- , connect the green wire from the green/red pair to I+ and connect the red wire to I-. Set the voltmeter to measure resistance in the autorange mode and record the resistance on the traveler. It must be less than 20 ohms, if not contact RE.

_____ _____
Operator **Date**

2. PLUG CONNECTOR ADAPTER INSTALLATION

2.1 Slide the connector adapter over the 4 wires. The small end of the adapter should face the grt.

_____ _____
Operator **Date**

3. CUT HEAT SHRINK TUBING

3.1 Cut Polyester shrink tubing #022075cst to 2" long. Slide the tubing over the 4 wires.

3.2 Cut Polyester shrink tubing #032100cst to 1" long. Slide the tubing over the 4 wires.

_____ _____
Operator **Date**

4. SOLDER TINNING OF 4 PIN LEMO CONNECTOR

4.1 Tin the connector pin solder cups using solder 60/40.

4.2 deleted.

4.3 Slide Teflon sleeving #1933 over each wire.

4.4 Locate the green/clear twisted pair of wire. Solder the green wire from this pair to pin 1 on the connector, solder the clear wire to pin 2 on the connector. Locate the green/red twisted pair of wire. Solder the green wire to pin 3 on the connector and solder the red wire to pin 4 of the connector.

_____ _____
Operator **Date**

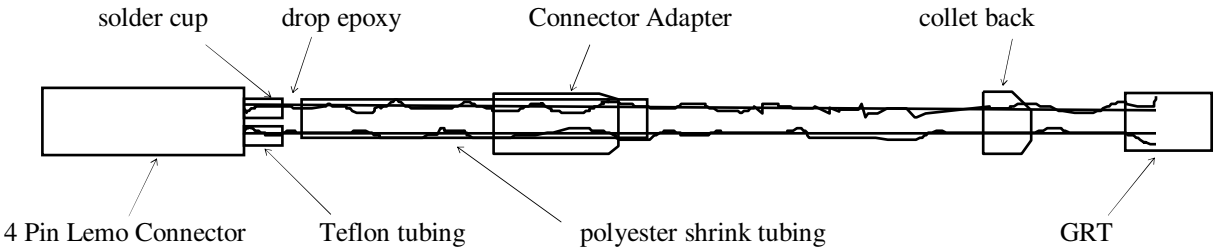
_____ _____
QE **Date**

5. WIRE AND SLEEVING

5.1 Slide the 2" Polyester shrink tubing back down to the end of the solder cups until it is against the Teflon tubing. Use the heat gun and shrink it down to size.

5.2 Slide the 1" Polyester shrink tubing back over the 2" shrink tubing and shrink it down to size.

5.3 Use a drop of Stycast 1266 epoxy at the end of the solder cups where the Teflon tubing and the two polyester shrink tubing meet. (Refer to procedure P0157 "Use of Stycast epoxy of 1266")



5.4 Slide the connector adapter back down over the sleeving locate the position by threading collet back nut onto latch sleeve. Put a drop of stycast 1266 epoxy at the end of the adapter to bond the wires and adapter in place. Be careful not to epoxy the collet back to the adapter. (Refer to procedure P0157 "Use of Stycast epoxy of 1266")

_____ _____

Operator **date**

6. ASSEMBLE CONNECTOR OUTER SHELL

6.1 Slide the latch sleeve over insert and connector adapter until the key engages in latch sleeve. Verify that the key in the 4 pin plastic insert is lined up with the key in the connector's keyed insert.

6.2 Slide outer shell over latch sleeve.

6.3 Secure latch sleeve by threading collate nut onto latch sleeve (finger tight).

6.4 Scribe the specified connector name on the outer shell.

_____ _____

Operator **Date**

_____ _____

QA **Date**

ASSEMBLY PROCEDURE for 23180-101:

Assembly procedure for grt with 4 pin lemo connector for gyro and quartz block applications.

MATERIALS AND SUPPLIES

1. GRT sensor 23531-101.
2. Kester,60/40 solder Lead/Tin.
3. Teflon sleeving #1933.
4. Heat Shrink Tubing # 022075cst
5. Heat Shrink Tubing # 032100cst
6. Alcohol #2 Propanol.
7. Texwipe small foam swab #TX751B
8. Stycast epoxy #1266
9. 4 pin instrumentation plug connector 65113-1C34317-117
10. Plug adapter 65113-1C34321-104

PROCEDURE:

Identical to assembly procedure for 25486-201. Check off completion of steps using the procedure for 25486-201.

ASSEMBLY PROCEDURE for 23180-102:

Assembly procedure for grt with 4 individual sockets for telescope application.

MATERIALS AND SUPPLIES

1. GRT sensor 23531-101.
2. Kester,60/40 solder Lead/Tin.
3. 65113-1C34339-102, 4 ea
4. Alcohol #2 Propanol.
5. Texwipe small foam swab #TX751B
6. Heat shrink #076100 CST
7. Keithley 196 voltmeter

1. PREPARATION

1.1 Record serial number for GRT _____. Record final wire length_____. Record Probe C connector name_____

_____ _____
RE **Date**

1.2 Visually inspect the wire carefully. Use the microscope to look for any deep scratches, breaks or kinks in the insulation.

1.3 Cut twisted pair wire (connected to grt) to the specified length. Install heat-shrink tubing over full length of wire excluding final 0.5". See DR213. Untwist the wires so that length of untwisted wire is approximately 0.5". Strip approximately 0.1" of insulation. Pretin wires using 60/40 solder.

1.4 Using the Keithley 196, connect the green wire from the green/clear pair to V+ on the voltmeter, connect the clear wire to V- , connect the green wire from the green/red pair to I+ and connect the red wire to I-. Set the voltmeter to measure resistance in the autorange mode and record the resistance on the traveler. It must be less than 20 ohms, if not contact RE.

_____ _____
Operator **Date**

2. SOLDERING

2.1 Tin socket cups using 60/40 solder.

2.2 Slip 0.3 inch long pieces of heat shrink over each of the 4 wires.

2.3 Solder each of the 4 wires to a socket.

2.4 Clean the solder joint using propanol and swab_ _____
Solder Inspection **Date**

2.5 Move heat shrink over socket. Apply heat to the heat shrink.

_____ _____
Operator **Date**

3. BAG AND TAG

3.1 Label bag with GRT serial number and Probe C connector ID.

3.2 Place GRT assembly into bag.

_____ _____
Operator **Date**

_____ _____
` **QA** **Date**