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Gravity Probe B Relativity Mission

Procedure for Mating DPA and Probe Cables

P0 474 Rev. -

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This document consists of 6 pages.

Procedure for Mating DPA and Probe Cables - P0 474

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Scope:

This procedure describes the process and sequence of events for the following;
1) Connecting the 4 DPA flight connectors to the internal probe connectors.
2) Performing an impedance test to verify correct wiring and proper function of the detectors.
3) Connecting the TRE electronics box to the tophat connector.

Testing the DPA while preventing ESD damage to the detectors is the main focus of this procedure. This procedure requires a minimum of two personnel. All personnel shall wear ESD approved wrist straps during all stages of this operation. Reference ESD Procedure P0 357

Equipment:

1) Two shorting plugs - This 55 pin connector mates with the probe's connector saver. Part number Bendix 9140 TV06RW-17-35S All pins are shorted together and grounded.
2) ESD approved wrist straps.
3) I8 and I9 verification test box (documented in P0411 Rev A)
4) Epoxy 4143 D Tra-Con (de-gas) Exp. Date _____
4) Calibrated Fluke Multi-meter model # 87 Cal due date _____

Step 1 - Connecting the DPA flight connector to the probe.

Connect the two shorting plugs to the I8 and I9 tophat connector through the tophat connector saver. While wearing wrist straps remove the connector saver on the DPA connector and make and secure the connection between the DPA connector and the assigned probe connector. Repeat this procedure for all 4 connectors. Tighten jackposts hand-tight. Stake screws with 2143D. Thoroughly mix and degas the two part epoxy. Using a non-magnetic applicator apply to junction of jackpost and connector and allow a 24 hour cure. Record start time _____ stop time ____

Step 2 - Impedance Test

In this step the resistance of most of the DPA circuits are measured to verify proper mating, labeling and orientation of connectors. For example, the resistance between pin 35 and 43 should be approximately 15.4 kΩ as this series circuit consists of two probe wires and the 15 kΩ heater resistor in the DPA. Remove the tophat shorting plug and connect the test box.

Complete the following table for the corresponding tophat connector.

Warning: Pay close attention to the pin number and polarity. Failure to do so may damage the DPA. If the correct value for test #1 or #2 is not measured then stop and report to RE.

Resistance Check of Flight Probe Top Hat Connector I8

test	Red Lead +	Black com	Nominal Resistance	Measured Value	Within 20% nominal ?	Circuit
1	**35**	**43**	15 kΩ			YHTRVO - YHTRTN
2	**1**	**6**	15 kΩ			XHTRVO - XHTRTN
3	**45**	**42**	few hundred Ω			YSDKV - YSDKI
4	**52**	**46**	few hundred Ω			YSDAV - YSDAI
5	**22**	**5**	few hundred Ω			XSDKV - XSDKI
6	**30**	**23**	few hundred Ω			XSDAV - XSDAI
7	**38**	**18**	20 kΩ			YSRC2- Y+DR
8	**38**	**10**	20 kΩ			YSRC2- Y+DS
9	**38**	**17**	20 kΩ			YSRC2- Y-DR
10	**38**	**25**	20 kΩ			YSRC2- Y-DS
11	**41**	**47**	35 kΩ			XQIDRN - XSRC1
12	**4**	**11**	35 kΩ			YQIDRN - YSRC1
13	**47**	**7**	3.6 MΩ			XSRC1 - XSRC2
14	**11**	**38**	3.6 MΩ			YSRC1 - YSRC2
15	**7**	**47**	O.L			XSRC2 - XSRC1
16	**38**	**11**	O.L			YSRC2 - YSRC1
17	**21**	**13**	7.4 MΩ			XRJFG - XRESV+
18	**21**	**8**	7.4 MΩ			XRJFG - XRESV-
19	**21**	**28**	12.3 MΩ			XRJFG - XPDK
20	**50**	**53**	7.4 kΩ			YRJFG - YRESV+
21	**50**	**37**	7.4 kΩ			YRJFG - YRESV-
22	**50**	**51**	12.3 MΩ			YRJFG - YPDK
23	**14**	**47**	4.1 MΩ			XVRG - XSRC1
24	**47**	**14**	O.L.			XSRC1 - XVRG
25	**36**	**11**	4.1 MΩ			YVRG - YSRC1
26	**11**	**36**	O.L.			YSRC1 - YVRG
27	**7**	**33**	20 kΩ			XSRC2- X+DR
28	**7**	**26**	20 kΩ			XSRC2- X+DS
29	**7**	**40**	20 kΩ			XSRC2- X-DR
30	**7**	**32**	20 kΩ			XSRC2- X-DS

Note: These values may vary. Especially circuits which include a source or drain connection. The measured values should be within 20% of the nominal value indicating a functioning circuit.

All 30 tests must pass. If this is not the case then notify RE.

Resistance Check of Flight Probe Top Hat Connector I9

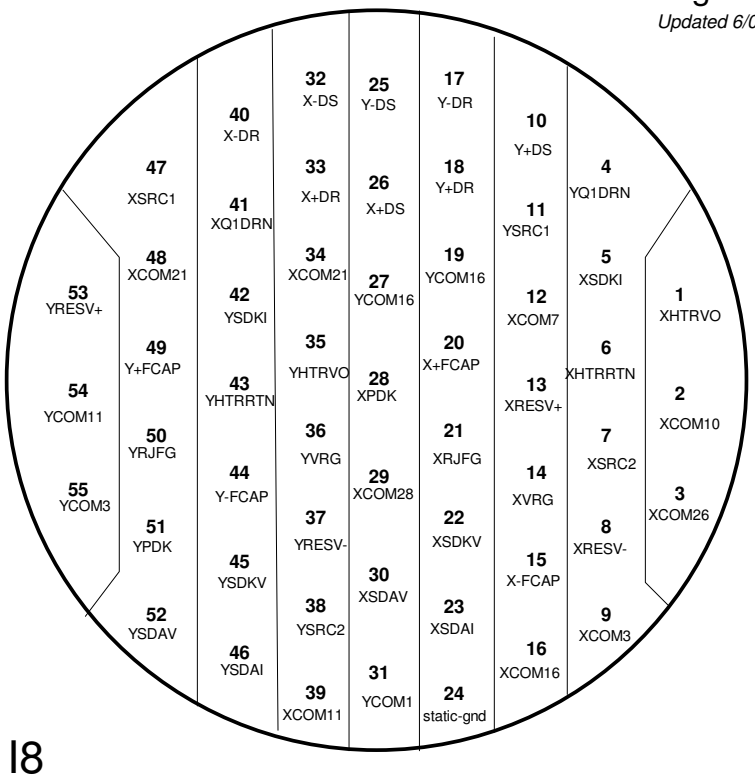
test	Red Lead +	Black com	Nominal Resistance	Measured Value	Within 20% nominal ?	Circuit
1	**35**	**43**	15 kΩ			XHTRVO - XHTRTN
2	**1**	**6**	15 kΩ			YHTRVO - YHTRTN
3	**45**	**42**	few hundred Ω			XSDKV - XSDKI
4	**52**	**46**	few hundred Ω			XSDAV - XSDAI
5	**22**	**5**	few hundred Ω			YSDKV - YSDKI
6	**30**	**23**	few hundred Ω			YSDAV - YSDAI
7	**7**	**33**	20 kΩ			YSRC2- Y+DR
8	**7**	**26**	20 kΩ			YSRC2- Y+DS
9	**7**	**40**	20 kΩ			YSRC2- Y-DR
10	**7**	**32**	20 kΩ			YSRC2- Y-DS
11	**41**	**47**	35 kΩ			YQIDRN - YSRC1
12	**4**	**11**	35 kΩ			XQIDRN - XSRC1
13	**47**	**7**	3.6 MΩ			YSRC1 - YSRC2
14	**11**	**38**	3.6 MΩ			XSRC1 - XSRC2
15	**7**	**47**	O.L			YSRC2 - YSRC1
16	**38**	**11**	O.L			XSRC2 - XSRC1
17	**21**	**13**	7.4 MΩ			YRJFG - YRESV+
18	**21**	**8**	7.4 MΩ			YRJFG - YRESV-
19	**21**	**28**	12.3 MΩ			YRJFG - YPDK
20	**50**	**53**	7.4 kΩ			XRJFG - XRESV+
21	**50**	**37**	7.4 kΩ			XRJFG - XRESV-
22	**50**	**51**	12.3 MΩ			XRJFG - XPDK
23	**14**	**47**	4.1 MΩ			YVRG - YSRC1
24	**47**	**14**	O.L.			YSRC1 - YVRG
25	**36**	**11**	4.1 MΩ			XVRG - XSRC1
26	**11**	**36**	O.L.			XSRC1 - XVRG
27	**38**	**18**	20 kΩ			XSRC2- X+DR
28	**38**	**10**	20 kΩ			XSRC2- X+DS
29	**38**	**17**	20 kΩ			XSRC2- X-DR
30	**38**	**25**	20 kΩ			XSRC2- X-DS

Note: These values may vary. Especially circuits which include a source or drain connection. The measured values should be within 20% of the nominal value indicating a functioning circuit.

All 30 tests must pass. If this is not the case then notify RE.

I8 Pin Assignments

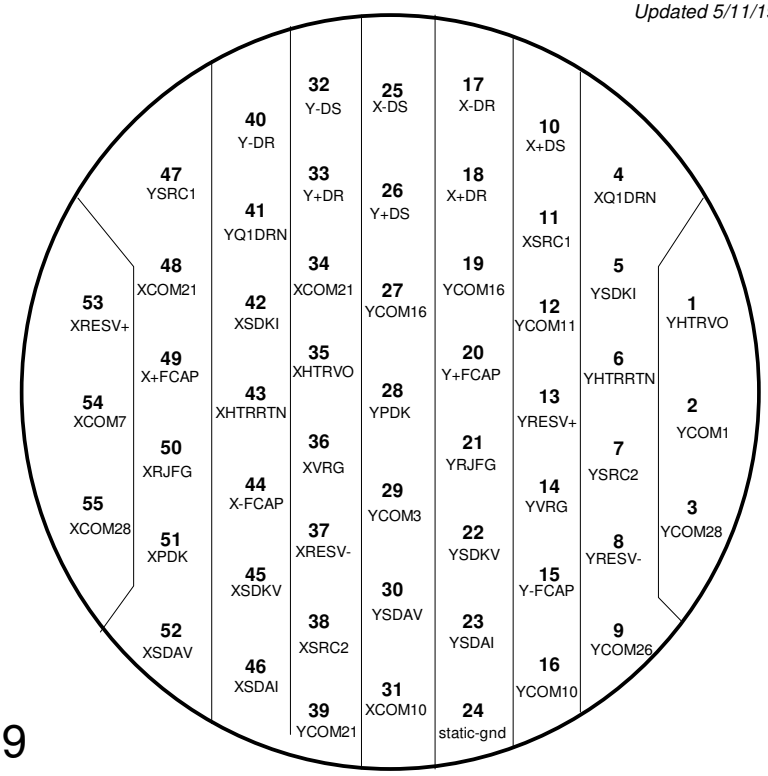
Updated 6/05/1998



I8

I9 Pin Assignments

Updated 5/11/1998



I9

Completion of Procedure

The results obtained in the performance of this test procedure are acceptable.

Test Engineer _____ Date _____

IPT Leader _____ Date _____

This is to certify that the information obtained under this test procedure is as represented and the documentation is complete and correct.

Product Assurance _____Date _____