MQX2 Instrumentation Line Continuity Test Reports

.o connector (non-ip, or non-lead end) for Q3-DFBX connection. Completed 11-20-03.

Module	Pin	CERN Label	Description	Technician Connector End	Technician Non Connect End
M1	1		Blank Module		
M1	2				
M1	3				
M1	4				
M1	5				
M2	1	EE1111	Q1 Lead Voltage Tap "a", primary	✓	✓
M2	2	EE1121	Q1 Lead Voltage Tap "a", redundant	✓	✓
M2	3	EE1211	Q1 Center Voltage Tap "c", primary	✓	✓
M2	4	EE1221	Q1 Center Voltage Tap "c", redundant	✓	✓
M2	5	EE1311	Q1 Lead Voltage Tap "b", primary	✓	✓
M3	1	EE1222	Q2a Center Voltage Tap "c", redundant	✓	✓
M3	2	EE1212	Q2a Center Voltage Tap "c", primary	✓	✓
M3	3	EE1122	Q2a Lead Voltage Tap "a", redundant	✓	✓
M3	4	EE1112	Q2a Lead Voltage Tap "a", primary	✓	✓
M3	5	EE1321	Q1 Lead Voltage Tap "b",redundant	✓	✓
M4	1	EE1312	Q2a Lead Voltage Tap "b", primary	✓	✓
M4	2	EE1322	Q2a Lead Voltage Tap "b", redundant	✓	✓
M4	3	EE1612	Q2b Lead Voltage Tap "b", primary	✓	✓
M4	4	EE1622	Q2b Lead Voltage Tap "b", redundant	✓	✓
M4	5	EE1512	Q2b Center Voltage Tap "c", primary	✓	✓
M5	1	EE1123	Q3 Lead Voltage Tap "a", redundant	✓	✓
M5	2	EE1113	Q3 Lead Voltage Tap "a", primary	✓	✓
M5	3	EE1422	Q2b Lead Voltage Tap "a", redundant	✓	✓
M5	4	EE1412	Q2b Lead Voltage Tap "a", primary	✓	✓
M5	5	EE1522	Q2b Center Voltage Tap "c", redundant	✓	✓
M6	1	EE1213	Q3 Center Voltage Tap "c", primary	✓	✓
M6	2	EE1223	Q3 Center Voltage Tap "c", redundant	✓	✓
M6	3	EE1313	Q3 Lead Voltage Tap "b", primary	✓	✓
M6	4	EE1323	Q3 Lead Voltage Tap "b", redundant	✓	✓
M6	5	Empty	No connection	✓	✓
M7	1		Blank Module		
M7	2				
M7	3				
M7	4				
M7	5				
M8	1	EE8121	Corrector voltage tap Q1-H1 (skew dipole) (on MCBX, MCBXH, A+ lead)	✓	✓
M8	2	EE8111	Corrector voltage tap Q1-V1 (normal dipole) (on MCBX, MCBXV A+ lead)	✓	✓
M8	3	EE8122	Corrector voltage tap Q2-H2 (skew dipole) (on MCBX, MCBXH, A+ lead)	✓	✓
M8	4	EE8112	Corrector voltage tap Q2-V2 (normal dipole) (on MCBX, MCBXV, A+ lead)	✓	✓
M8	5	Empty	No connection	✓	✓
M9	1	EE8123	Corrector voltage tap Q3-H3 (skew dipole) (on MCBXA, MCBXH, A+ lead)	✓	✓
M9	2	EE8113	Corrector voltage tap Q3-V3 (normal dipole) (on MCBXA, MCBXV, A+ lead)	✓	✓
M9	3	EE8223	Corrector voltage tap Q3-A2 (skew quadrupole) (on MQSX, MQSX, A+ lead)	✓	✓
M9	4	EE8323	Corrector voltage tap Q3-A3 (skew sextupole) (on MCSOX, MCSSX, A+ lead)	✓	✓
M9	5	Empty	No Connection	✓	✓

Q3 connector (non-ip, or non-lead end) for Q3-DFBX connection. Completed 11-20-03.

Module	Pin	CERN Label	Description	Technician Connector End	Technician Connector End
M10	1	EE8313	Corrector voltage tap Q3-B3 (normal sextupole)(on MCBXA, MCSX, A+ lead)	✓	✓
M10	2	EE8423	Corrector voltage tap Q3-A4 (skew octupole) (on MCSOX, MCOSX, A+ lead)	✓	✓
M10	3	EE8413	Corrector voltage tap Q3-B4 (normal octupole) (on MCSOX, MCOX, A+ lead)	✓	✓
M10	4	EE8613	Corrector voltage tap Q1-B6 (normal dodecapole) (on MCBXA, MCTX, A+ lead)	✓	✓
M10	5	Empty	No Connection		
M11	1		Blank Module		
M11	2				
M11	3				
M11	4				
M11	5				
M12	1	EH8311+	Q1 Cryogenic Heater lead end - wire at top (CERN #1 I+)	✓	✓
M12	2	EH8311-	Q1 Cryogenic Heater lead end - wire at bottom (CERN #1 I-)	✓	✓
M12	3	EH8321+	Q1 Cryogenic Heater non-lead end - wire at top (CERN #2 I+)	✓	✓
M12	4	EH8321-	Q1 Cryogenic Heater non-lead end - wire at bottom (CERN #2 I-)	✓	✓
M12	5	Empty	No Connection		
M13	1	EH8312+	Q2A Cryogenic Heater lead end - wire toward cold mass end plate (CERN #1 I+)	✓	✓
M13	2	EH8312-	Q2A Cryogenic Heater lead end - wire toward cold mass mag center (CERN #1 I-)	✓	✓
M13	3	EH8322+	Q2A Cryogenic Heater non-lead end- wire toward cold mass end plate (CERN #2 I+)	✓	✓
M13	4	EH8322-	Q2A Cryogenic Heater non-lead end- wire toward cold mass mag center (CERN #2 I-)	✓	✓
M13	5	Empty	No connection		
M14	1	EH8332+	Q2B Cryogenic Heater lead end - wire toward cold mass end plate (CERN #1 I+)	✓	✓
M14	2	EH8332-	Q2B Cryogenic Heater lead end - wire toward cold mass mag center (CERN #1 I-)	✓	✓
M14	3	EH8342+	Q2B Cryogenic Heater non-lead end- wire toward cold mass end plate (CERN #2 I+)	✓	✓
M14	4	EH8342-	Q2B Cryogenic Heater non-lead end - wire toward cold mass mag center (CERN #2 I-)	✓	✓
M14	5	Empty	No connection		
M15	1	EH8313+	Q3 Cryogenic Heater lead end - wire at top (CERN #1 I+)	✓	✓
M15	2	EH8313-	Q3 Cryogenic Heater lead end - wire at bottom (CERN #1 I-)	✓	✓
M15	3	EH8323+	Q3 Cryogenic Heater non-lead end - wire at top (CERN #2 I+)	✓	✓
M15	4	EH8323-	Q3 Cryogenic Heater non-lead end - wire at bottom (CERN #2 I-)	✓	✓
M15	5	Empty	No Connection		
M16	1		Blank Module		
M16	2				
M16	3				
M16	4				
M16	5				
M17	1	YT1111+	Q1 Protection (Strip) Heater, ("a" circuit) (CERN lead #1+)	✓	✓
M17	2	Empty	No connection		
M17	3	YT1111-	Q1 Protection (Strip) Heater, ("a" circuit) (CERN lead #1-)	✓	✓
M17	4	Empty	No connection		
M17	5	YT1121+	Q1 Protection (Strip) Heater, ("b" circuit) (CERN lead #2+)	✓	✓
M18	1	Empty	No connection		
M18	2	YT1112+	Q2a Protection (Strip) Heater, 1-4 & 2-3 circuit (FNAL lead A+) (CERN lead #1+)	✓	✓
M18	3	Empty	No connection		
M18	4	YT1121-	Q1 Protection (Strip) Heater, ("b" circuit) (CERN lead #2-)	✓	✓
M18	5	Empty	No connection		

Q3 connector (non-ip, or non-lead end) for Q3-DFBX connection. Completed 11-20-03.

Module	Pin	CERN Label	Description	Technician Connector End	Technician Non Connector End
M19	1	YT1112-	Q2a Protection (Strip) Heater, 1-4 & 2-3 circuit (FNAL lead A-) (CERN lead #1-)	✓	✓
M19	2	Empty	No connection		
M19	3	YT1122+	Q2a Protection (Strip) Heater, 1-2 & 3-4 circuit (FNAL lead B+) (CERN lead#2+)	✓	✓
M19	4	Empty	No connection		
M19	5	YT1122-	Q2a Protection (Strip) Heater, 1-2 & 3-4 circuit (FNAL lead B-) (CERN lead #2-)	✓	✓
M20	1	Empty	No connection		
M20	2	YT1132-	Q2b Protection (Strip) Heater, 1-4 & 2-3 circuit (FNAL lead A-) (CERN lead #1-)	✓	✓
M20	3	Empty	No connection		
M20	4	YT1132+	Q2b Protection (Strip) Heater, 1-4 & 2-3 circuit (FNAL lead A+) (CERN lead #1+)	✓	✓
M20	5	Empty	No connection		
M21	1	YT1142+	Q2b Protection (Strip) Heater, 1-2 & 3-4 circuit (FNAL lead B+) (CERN lead#2+)	✓	✓
M21	2	Empty	No connection		
M21	3	YT1142-	Q2b Protection (Strip) Heater, 1-2 & 3-4 circuit (FNAL lead B-) (CERN lead #2-)	✓	✓
M21	4	Empty	No Connection		
M21	5	YT1113+	Q3 Protection (Strip) Heater, ("a" circuit) (CERN lead #1+)	✓	✓
M22	1	Empty	No Connection		
M22	2	YT1123+	Q3 Protection (Strip) Heater, ("b" circuit) (CERN lead #2+)	✓	✓
M22	3	Empty	No Connection		
M22	4	YT1113-	Q3 Protection (Strip) Heater, ("a" circuit) (CERN lead #1-)	✓	✓
M22	5	Empty	No Connection		
M23	1	YT1123-	Q3 Protection (Strip) Heater, ("b" circuit) (CERN lead #2-)	✓	✓
M23	2	Empty	No Connection		
M23	3	Empty	No Connection		
M23	4	Empty	No Connection		
M23	5	Empty	No Connection		
M24	1		Blank Module		
M24	2				
M24	3				
M24	4				
M24	5				
M25	1	TT8311 I+	Q1 RTD, primary Wire color: Yellow	✓	✓
M25	2	TT8311 I-	Q1 RTD, primary Wire color: Green	✓	✓
M25	3	TT8311 U+	Q1 RTD, primary Wire color: Black	✓	✓
M25	4	TT8311 U-	Q1 RTD, primary Wire color: Red	✓	✓
M25	5	TT8321 I+	Q1 RTD, redundant Wire color: Yellow	✓	✓
M25	6	TT8321 I-	Q1 RTD, redundant: Wire color: Green	✓	✓
M25	11	TT8321 U+	Q1 RTD, redundant: Wire color: Black	✓	✓
M25	10	TT8321 U-	Q1 RTD, redundant: Wire color: Red	✓	✓
M25	9	TT8312 I+	Q2a RTD, primary Wire color: Yellow	✓	✓
M25	8	TT8312 I-	Q2a RTD, primary Wire color: Green	✓	✓
M25	7	TT8312 U+	Q2a RTD, primary Wire color: Black	✓	✓
M25	12	TT8312 U-	Q2a RTD, primary Wire color: Red	✓	✓
M25	13	TT8322 I+	Q2a RTD, redundant: Wire color: Yellow	✓	✓
M25	14	TT8322 I-	Q2a RTD, redundant: Wire color: Green	✓	✓
M25	15	TT8322 U+	Q2a RTD, redundant: Wire color: Black	✓	✓
M25	16	TT8322 U-	Q2a RTD, redundant: Wire color: Red	✓	✓
M25	17	Empty	No connection	✓	✓

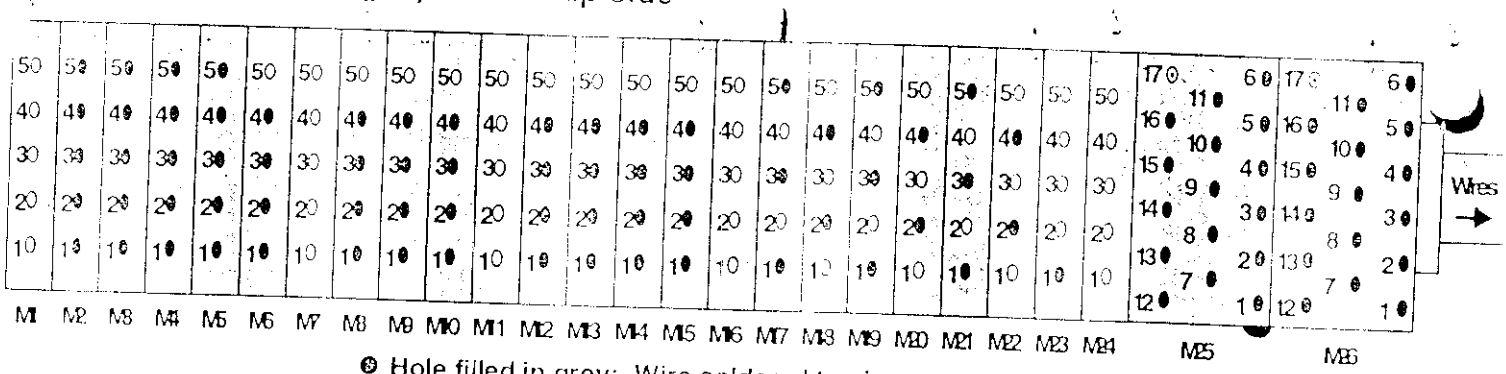
Note: Pin numbers of module M25 are not listed in numerical order

Q3 connector (non-ip, or non-lead end) for Q3-DFBX connection. Completed 11-20-03.

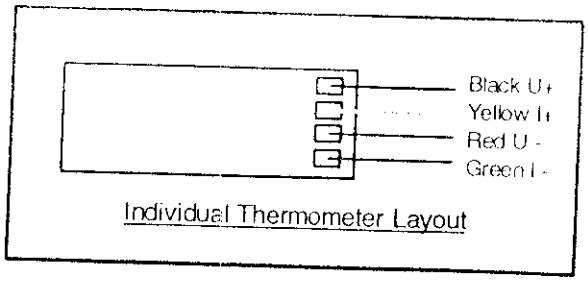
Module	Pin	CERN Label	Description	Technician Connector End	Technician Connected End
M26	1	TT8332 I+	Q2b RTD, primary Wire color: Yellow	✓	✓
M26	2	TT8332 I-	Q2b RTD, primary Wire color: Green	✓	✓
M26	3	TT8332 U+	Q2b RTD, primary Wire color: Black	✓	✓
M26	4	TT8332 U-	Q2b RTD, primary Wire color: Red	✓	✓
M26	5	TT8342 I+	Q2b RTD, redundant: Wire color: Yellow	✓	✓
M26	6	TT8342 I-	Q2b RTD, redundant: Wire color: Green	✓	✓
M26	11	TT8342 U+	Q2b RTD, redundant: Wire color: Black	✓	✓
M26	10	TT8342 U-	Q2b RTD, redundant: Wire color: Red	✓	✓
M26	9	TT8313 I+	Q3 RTD, primary Wire color: Yellow	✓	✓
M26	8	TT8313 I-	Q3 RTD, primary Wire color: Green	✓	✓
M26	7	TT8313 U+	Q3 RTD, primary Wire color: Black	✓	✓
M26	12	TT8313 U-	Q3 RTD, primary Wire color: Red	✓	✓
M26	13	TT8323 I+	Q3 RTD, redundant: Wire color: Yellow	✓	✓
M26	14	TT8323 I-	Q3 RTD, redundant: Wire color: Green	✓	✓
M26	15	TT8323 U+	Q3 RTD, redundant: Wire color: Black	✓	✓
M26	16	TT8323 U-	Q3 RTD, redundant: Wire color: Red	✓	✓
M26	17	Empty	No connection	✓	✓

Note: Pin numbers of module M26 are not listed in numerical order

Hypertronics Connector Pin Locations Q3 non-lead (non-ip) end.
VIEW: Female (pin) solder cup side



● Hole filled in grey: Wire soldered to pin.
⊙ Hole with dot in center: Pin exists but no wire soldered to it.
○ Hole filled in white: No pin. Hole is drilled out.



Individual Thermometer Layout

Jan W.
Technician(s)

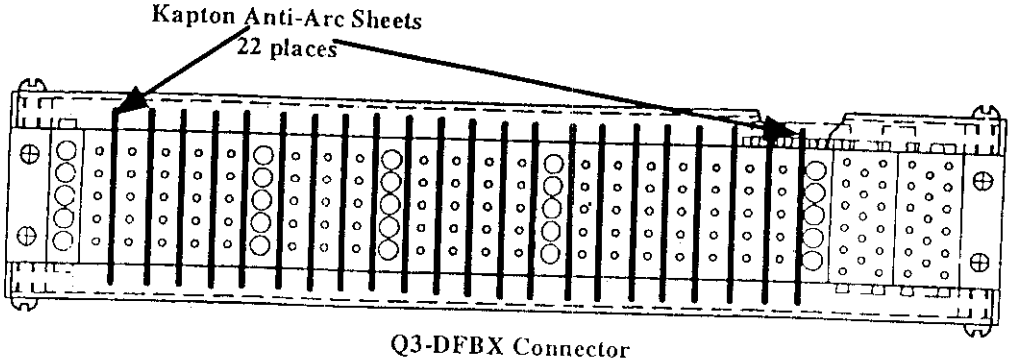
1-21-04
Date

4.2 Assemble the wire packages and secure into a bundle.

Dan W.
Technician(s)

1-21-04
Date

4.3 Terminate ends of the wire bundle and install them into the Q3-DFBX Connector – 28 unit (MB-418106) using the following parts:



Q3-DFBX Connector
MA-418106

MA-418097	Blank 5 Pin #LAHT	5 ea
MA-418095	Female 5 Pin #LAMSTH	19 ea
MA-419099	Female 17 Pin #LDMSTH	2 ea
MA-418103	Plastic Block #YHD0027	50ea
MA-418104	End Part #YEC0076C	2 ea
MA-418102	Mounting Rail #YSR0028Z	2 ea
MA-418195	Screw, M-3	4 ea.

Note: Install Kapton Anti-Arc Sheets in position noted above as wires are being terminated to connector.

Dan W.
Technician(s)

1-21-04
Date

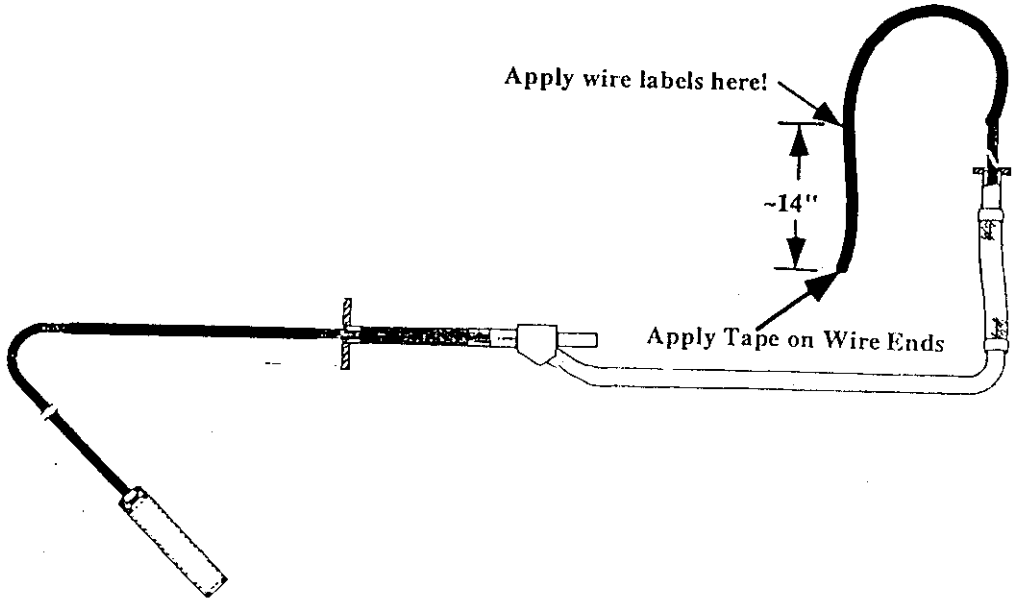
4.4 Install wire package into DFBX Duct Assembly.

Dan W.
Technician(s)

1-21-04
Date

4.5 Label the non-connector end wires ~ 14" from the end of each wire.

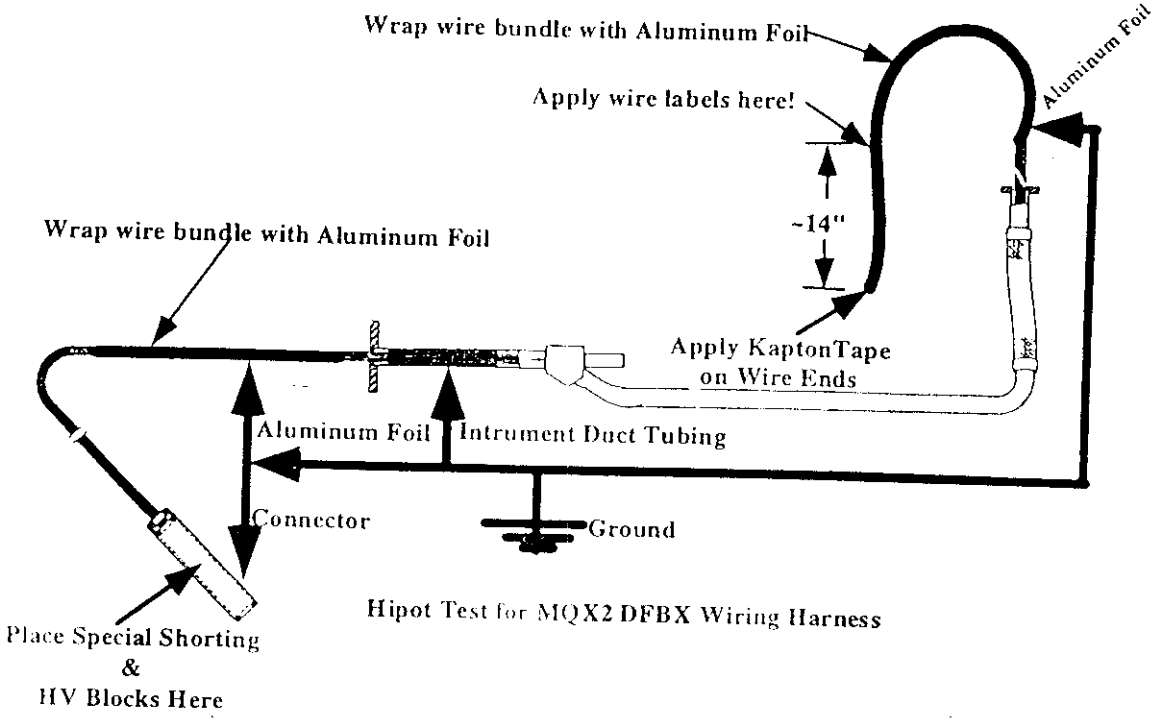
Note: See Step 4.1 for labeling spreadsheet.



Dan W.
Technician(s)

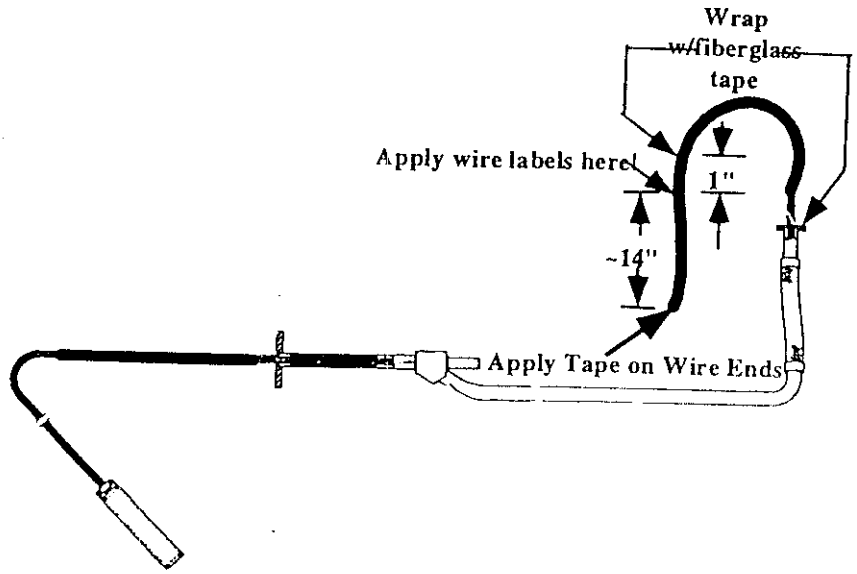
1-21-04
Date

4.6 Prepare the wire bundle for hipotting by performing the following:



Hipot Test for MQX2 DFBX Wiring Harness

4.6.1	Check for continuity between all wire and for shorts between each pin and all other pins of the RTD's	☐ ✓
4.6.2	Ground Outer Tube	☐ ✓
4.6.3	Place Kapton Tape on wire ends to prevent shorting.	☐ ✓
4.6.4	Install Connector & Access Cover (MB-418067).	☐ ✓
4.6.5	Wrap entire lengths of excess wire extending out from both ends of the tube with aluminum foil.	☐ ✓
4.6.6	Wrap wire around both ends of the tube extending over the foil to make a connection between foil and tube.	☐ ✓
4.6.7	Using the special Hypertronic HV Modules and Hipot Form, attach High Voltage from HV Power Supply to First set or group of wires to be tested.	☐ ✓
4.6.8	Follow Hipot Form until all Hipots are completed (See Step 4.5).	☐ ✓
4.6.9	If wire(s) fail Hipot, determine which one(s) are bad, remove from the tube and install new one(s).	☐ ✓
4.6.10	After Hipot is determined good, remove aluminum foil and attach wire.	☐ ✓



4.6.11 Put glass tape one inch from the labels on the non-connector end to keep them from sliding off. ☐

Pan W.
Technician(s)

1-21-04
Date

4.7 Electrically check the wire bundle by performing a hipot and record results below.

Hipot	All Others Grounded	All Other Floating	Trip Voltage	5.0 Kv/Current	Comments
VTAPS	X			.04uA	
VTAPS		X		.04uA	
CCOIL	X			.04uA	
CCOIL		X		.04uA	
RTD's (to 300V)	X			.01uA	
RTD's (to 300V)		X		.01uA	
CRYO HEATERS (Warm-Up Heaters)	X			.04uA	
CRYO HEATERS (Warm-Up Heaters)		X		.04uA	
Strip Heaters (Potted In Pairs)					
Pair #1	X			.04uA	
Pair #2	X			.04uA	
Pair #3	X			.04uA	
Pair #4	X			.04uA	
Pair #5	X			.04uA	
Pair #6	X			.04uA	
Pair #7	X			.04uA	
Pair #8	X			.04uA	
Strip Heaters (Potted In Pairs)					
Pair #1		X		.04uA	
Pair #2		X		.04uA	
Pair #3		X		.04uA	
Pair #4		X		.04uA	
Pair #5		X		.04uA	
Pair #6		X		.04uA	
Pair #7		X		.04uA	
Pair #8		X		.04uA	
Spare VTAP Wire(4)	X				
Corrector Voltage Taps		X		.04uA	
				.04uA	
Spare Heater Wires (2 pair)	X				
		X		.04uA	
				.04uA	
Spare RTD Wire (1)	X				
		X		.01uA	
				.01uA	

Dan W
Technician(s)

1-21-04
Date

5.0 Material Development Lab

5.1 Prepare DFBX Instrument Duct for Pre-Cast Dam and Epoxy Plug. Process Pre-Cast Dam and Epoxy Lug in accordance with ME-418180 and other approved methods.

Note: Ensure proper Wire Bundle Length of 24" is maintained from Wire Bundle Connector and DFBX Instrument Duct Weldment Assy as per Dwg ME-418180.

Note: Dave Burk at the Materials Testing and Development Lab in the village processed the pre-cast epoxy dam and epoxy plug for all the conduits.
Tom Peterson, March 19, 2004

Meyer Tool & Mfg., Inc.
4601 SOUTHWEST HWY., OAK LAWN, ILLINOIS 60453
708 / 425-9080
FAX 708 / 425-2612

CONTINUITY TESTING
MTM-MP-1020

BOX G MBX2 HARNESS

Function Designator, Tag or Description	Resistance ohms	Assembly Step	By Date	
TT 831	.001 Ω	BEFORE SOLDERING	W.J.	7-12-04
SPARE 5	.001 Ω			
SPARE 4	.001 Ω			
YT 112 +	.001 Ω			
YT 112 -	.001 Ω			
SPARE 1	.001 Ω			
EH 832 +	.001 Ω			
EH 832 -	.001 Ω			
SPARE 2	.001 Ω			
TT 832	.001 Ω			
SPARE 3	.001 Ω			
EE 132	.001 Ω			
EE 152	.001 Ω			
EE 151	.001 Ω			
EH 831 +	.001 Ω			
EH 831 -	.001 Ω	✓	✓	

Multimeter Make and MTM Serial Number: OMEGA HHM57A DM3

Test Report Form TR-1020A
Rev. B

Meyer Tool & Mfg., Inc.
4601 SOUTHWEST HWY., OAK LAWN, ILLINOIS 60453
708 / 425-9080
FAX 708 / 425-2612

CONTINUITY TESTING
MTM-MP-1020

Box G

MBX2 HARNESS

Function Designator, Tag or Description	Resistance ohms	Assembly Step	By Date
EE 111	.001 Ω	BEFORE SOLDERING	WJ. 7-12-04
EE 131	.001 Ω	↓	↓
EE 112	.001 Ω		
YT 111-	.001 Ω		
YT 111+	.001 Ω		

Multimeter Make and MTM Serial Number: OMEGA HHM574 DM3

Test Report Form TR-1020A
Rev. B

Meyer Tool & Mfg., Inc.
4601 SOUTHWEST HWY., OAK LAWN, ILLINOIS 60453
708 / 425-9080
FAX 708 / 425-2612

QX2 S/N # 1 "G" BOX

CONTINUITY TESTING
MTM-MP-1020

Function Designator, Tag or Description				Resistance ohms	Assembly Step	By Date
HYPERTRONICS MODULE Q3 END		CERAMASEAL PL46			AFTER SOLDERING	7/27/04
M2	1	A-1	✓	.6	"	MJ 7/28
	2	A-2	✓	.6	"	MJ 7/28
	3	A-3	✓	.6	"	MJ 7/28
	4	A-4	✓	.5		MJ 7/28
	5	A-5	✓	.5	"	MJ 7/28
M3	1	A-6	✓	.5	"	MJ 7/28
	2	B-1	✓	.6	"	MJ 7/28
	3	B-2	✓	.6	"	MJ 7/28
	4	B-3	✓	.6		MJ 7/28
	5	B-4	✓	.6		MJ 7/28
M4	1	B-5	✓	.6		MJ 7/28
	2	B-6	✓	.5		MJ 7/28
	3	C-1				
	4	C-2				
	5	C-3				

Multimeter Make and MTM Serial Number: FLUKE 85
47900002

Test Report Form TR-1020A
Rev. B

Meyer Tool & Mfg., Inc.
4601 SOUTHWEST HWY., OAK LAWN, ILLINOIS 60453
708 / 425-9080
FAX 708 / 425-2612

CONTINUITY TESTING
MTM-MP-1020

Function Designator, Tag or Description			Resistance ohms	Assembly Step	By Date
HYPERTRONICS MODULE Q3		CERRASEAL PLUG			
M5	1	C-4			
	2	C-5			
	3	C-6			
	4	D-1 ✓	.6	" "	MJ 7/29
	5	D-2 ✓	.6	AFTER SOLDERING	MJ 7/29
M6	1	D-3 ✓	.6	" "	MJ 7/29
	2	D-4 ✓	.5	" "	MJ 7/29
	3	D-5 ✓	.6	" "	MJ 7/29
	4	D-6 ✓	.6	" "	MJ 7/29
	5				
M8	1	E-1 ✓	.6	AFTER SOLDERING	MJ 7/28
	2	E-2 ✓	.5	" "	MJ 7/28
	3	E-3 ✓	.6	" "	MJ 7/28
	4	E-4 ✓	.5	" "	MJ 7/28
	5				

Multimeter Make and MTM Serial Number: FLUKE 85 47900002

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Meyer Tool & Mfg., Inc.
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CONTINUITY TESTING
MTM-MP-1020

Function Designator, Tag or Description			Resistance ohms	Assembly Step	By Date
HYPERTRONICS MODULE		CERMASEAL PLUG			
M9	1	E-5 ✓	.6	AFTER SOLDERING	MJ 7/28
	2	E-6 ✓	.5	" "	MJ 7/28
	3	F-1 ✓	.6	" "	MJ [illegible]
	4	F-2 ✓	.5	" "	[illegible]
	5				
M10	1	F-3 ✓	.6	" "	[illegible]
	2	F-4 ✓	.6	" "	[illegible]
	3	F-5 ✓	.5		[illegible]
	4	F-6 ✓	.5	" "	[illegible]
	5				
M-12	1	I-5 ✓	.3	" "	MJ 7/27
	2	I-6 ✓	.3	" "	MJ 7/27
	3	J-1 ✓	.4	" "	MJ 7/27
	4	J-2 ✓	.4	" "	[illegible]
	5				

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CONTINUITY TESTING
MTM-MP-1020

Function Designator, Tag or Description			Resistance ohms	Assembly Step	By Date
HYPERTRONICS MODULE		CERMASEAL PLUG			
M13	1	J-3 ✓	.3	AFTER SOLDERING	MJ 7/27
	2	J-4 ✓	.3	" "	MJ 7/27
	3	J-5 ✓	.4	" "	MJ 7/27
	4	J-6 ✓	.4	" "	MJ 7/27
	5				
M-14	1	K-1 ✓	.3	" "	MJ 7/27
	2	K-2 ✓	.4	" "	MJ 7/27
	3	K-3 ✓	.4	" "	MJ 7/27
	4	K-4 ✓	.4	" "	MJ 7/27
	5				
M15	1	K-5 ✓	.4	" "	MJ 7/27
	2	K-6 ✓	.4	" "	MJ 7/27
	3	L-1 ✓	.4	" "	MJ 7/27
	4	L-2 ✓	.4	" "	MJ 7/27
	5				

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CONTINUITY TESTING
MTM-MP-1020

7/27/04

Function Designator, Tag or Description		Resistance ohms	Assembly Step	By Date
HYPERTRONICS MODULE	CERMASEAL PLUG			
M17 1	G-1 ✓	.3	AFTER SOLDERING	MJ
2	∿			
3	G-2 ✓	.3	" "	MJ
4	∿			
5	G-3 ✓	.3	" "	MJ
M18 1	∿			
2	G-5 ✓	.4	" "	MJ
3	∿			
4	G-4 ✓	.4	" "	MJ
5	∿			
M19 1	G-6 ✓	.4	" "	MJ
2	∿			
3	H-1 ✓	.4	" "	MJ
4	∿			
5	H-2 ✓	.4	" "	MJ

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CONTINUITY TESTING
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7/27/04

Function Designator, Tag or Description		Resistance ohms	Assembly Step	By Date
HYPERTRONICS MODULE	CERMASEAL PLUG			
M20 1				
2	H-4 ✓	.4	METER SOLDERING	MJ
3				
4	H-3 ✓	.3	" "	MJ
5				
M21 1	H-5 ✓	.3	" "	MJ
2				
3	H-6 ✓	.4	" "	MJ
4				
5	I-1 ✓	.4	" "	MJ
M22 1				
2	I-3 ✓	.4	" "	MJ
3				
4	I-2 ✓	.4	" "	MJ
5				

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CONTINUITY TESTING
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Function Designator, Tag or Description		Resistance ohms	Assembly Step	By Date
HYPERTRONICS MODULE	CERAMASEAL PLUG			
M23 1	.14 ✓	.3	AFTER SOLDERING	MJ
2				
3				
4				
5				
M				

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CONTINUITY TESTING
MTM-MP-1020

Function Designator, Tag or Description 32 PIN		Resistance ohms	Assembly Step	By Date
M26	CERAMASEAL			
1 ✓	TT 8332-19 I+	1.1	AFTER	MJ
2 ✓	TT 8332-20 I-	1.1	SOLDERING	MJ
3 ✓	TT 8332-17 V+	1.1	↑	MJ
4 ✓	TT 8332-18 V-	1.1		MJ
5 ✓	TT 8342-23 I+	1.1		MJ
6 ✓	TT 8342-24 I-	1.3		MJ
7 ✓	TT 8313-25 V+	1.1		MJ
8 ✓	TT 8313-28 I-	1.1		MJ
9 ✓	TT 8313-27 I-	1.1		MJ
10 ✓	TT 8342-22 V-	.1		MJ
11 ✓	TT 8342-21 V+	1.2		MJ
12 ✓	TT 8313-26 V-	1.2		MJ
13 ✓	TT 8323-31 I+	1.1		MJ
14 ✓	TT 8323-32 I-	1.1		MJ
15 ✓	TT 8323-29 V+	1.1		MJ
16 ✓	TT 8323-30 V-	1.1	↓	MJ
17		N/A	N/A	N/A

HYPERTRONICS MODULE

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Function Designator, Tag or Description			Resistance ohms	Assembly Step	By / Date
Hyperbarics Module Q3 Seal		Ceramaseal Plug	Ω	After potting	KJS / GK 8/3/2004
M2	1	A-1	.5 Ω		
	2	A-2	.5 Ω		
	3	A-3	.5 Ω		
	4	A-4	.6 Ω		
	5	A-5	.6 Ω		
M3	1	A-6	.6 Ω		
	2	B-1	.5 Ω		
	3	B-2	.5 Ω		
	4	B-3	.6 Ω		
	5	B-4	.6 Ω		
M4	1	B-5	.6 Ω		
	2	B-6	.6 Ω		
	3	C-1	.6		
	4	C-2	.6		
	5	C-3	.5		

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CONTINUITY TESTING
MTM-MP-1020

Function Designator, Tag or Description			Resistance ohms	Assembly Step	By Date
Hyperfronics module Q3		Ceramscrew plug	Ω	After potting	8/3/04
M5	1	C-4	.5		
	2	C-5	.5		
	3	C-6	.5		
	4	D-1	.6 Ω		
	5	D-2	.6 Ω		
M6	1	D-3	.6 Ω		
	2	D-4	.5 Ω		
	3	D-5	.6 Ω		
	4	D-6	.5 Ω		
	5	—	—		
M8	1	E-1	.6 Ω		
	2	E-2	.6 Ω		
	3	E-3	.5 Ω		
	4	E-4	.5 Ω		
	5	—	—		

KJS/GK

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CONTINUITY TESTING
MTM-MP-1020

Function Designator, Tag or Description			Resistance ohms	Assembly Step	By Date
Hypertronics module	Q3 end	Ceramaseal Plug	Ω	After potting	8/3/04
M9	1	E-5	.6 Ω		
	2	E-6	.6 Ω		
	3	F-1	.5 Ω		
	4	F-2	.6 Ω		
	5	—	—		
M10	1	F-3	.5 Ω		
	2	F-4	.6 Ω		
	3	F-5	.5 Ω		
	4	F-6	.6 Ω		
	5	—	—		
M-12	1	I-5	.3 Ω		
	2	I-6	.3 Ω		
	3	J-1	.3 Ω		
	4	J-2	.3 Ω		
	5	—	—		

KJS/GK

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CONTINUITY TESTING
MTM-MP-1020

Function Designator, Tag or Description			Resistance ohms	Assembly Step	By Date
Hypertronics Module Q3end		Ceramaseal plug	Ω	After potting	8/3/04 KJS/GK
M13	1	J-3	.3 Ω		
	2	J-4	.3 Ω		
	3	J-5	.3 Ω		
	4	J-6	.3 Ω		
	5	—			
M-14	1	K-1	.3 Ω		
	2	K-2	.3 Ω		
	3	K-3	.3 Ω		
	4	K-4	.3 Ω		
	5	—			
M15	1	K-5	.3 Ω		
	2	K-6	.3 Ω		
	3	L-1	.3 Ω		
	4	L-2	.3 Ω		
	5	—			

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CONTINUITY TESTING
MTM-MP-1020

KSS/GK

Function Designator, Tag or Description Hyperbaric Module	Q3end	Ceramaseal plug	Resistance ohms Ω	Assembly Step after potting	By Date 8/3/04
M17	1	G-1	.3 Ω		
	2	—			
	3	G-2	.3 Ω		
	4	—			
	5	G-3	.3 Ω		
M18	1	—			
	2	G-5	.3 Ω		
	3	—			
	4	G-4	.3 Ω		
	5	—			
M19	1	G-6	.3 Ω		
	2	—			
	3	H-1	.3 Ω		
	4	—			
	5	H-2	.3 Ω		

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MTM-MP-1020

Function Designator, Tag or Description			Resistance ohms	Assembly Step	By Date
Hypertronics Module	Q3 end	Coramaseal Plug	Ω	after potting	8/3/04
M20	1	—			
	2	H-4	.3 Ω		
	3	—			
	4	H-3	.3 Ω		
	5	—			
M21	1	H-5	.3 Ω		
	2	—			
	3	H-6	.4 Ω		
	4	—			
	5	I-1	.3 Ω		
M22	1	—			
	2	I-3	.3 Ω		
	3	—			
	4	I-2	.3 Ω		
	5	—			

KJS/GK

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Function Designator, Tag or Description			Resistance ohms	Assembly Step	By Date
Hypertronics module		Ceramaseal plug	Ω	after potting	8/3/04
M23	1	I-4	3Ω		
	2	—			
	3	—			
	4	—			
	5	—			

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CONTINUITY TESTING
MTM-MP-1020

Function Designator, Tag or Description			Resistance ohms	Assembly Step	By Date
Hypertronics module Q3 end		(erma seal 32 pin		After potting	8/3/04
M25	1	TT8311 - 3I+ (C)	.001		
	2	TT8311 - 4I- (D)	.001		
	3	TT8311 - 1V+ (A)	.001		
	4	TT8311 - 2V- (B)	.001		
	5	TT8321 - 7I+ (G)	.001		
	6	TT8321 - 8I- (H)	.001		
	7	TT8312 - 9V+ (I)	.001		
	8	TT8312 - 12I- (L)	.001		
	9	TT8312 - 11I+ (K)	.001		
	10	TT8321 - 6V- (E)	.001		
	11	TT8321 - 5V+ (F)	.001		
	12	TT8312 - 10V- (J)	.001		
	13	TT8322 - 15I+ (O)	.001		
	14	TT8322 - 16I- (P)	.001		
	15	TT8322 - 13V+ (M)	.001		
	16	TT8322 - 14V- (N)	.001		

MJ

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Function Designator, Tag or Description			Resistance ohms	Assembly Step	By Date	
Hypertronics Module	Qs end	Ceramaseal 32 pin	Ω	After potting	8/3/04	MJ
M26	1	TT8332-19 I+ (S)	.001			
	2	TT8332-20 I- (T)	.001			
	3	TT8332-17 V+ (Q)	.001			
	4	TT8332-18 V- (R)	.001			
	5	TT8342-23 I+ (W)	.001			
	6	TT8342-24 I- (X)	.001			
	7	TT8313-25 V+ (Y)	.001			
	8	TT8313-28 I-	.001			
	9	TT8313-27 I+	.001			
	10	TT8342-22 V- (V)	.001			
	11	TT8342-21 V+ (U)	.001			
	12	TT8313-26 V- (Z)	.001			
	13	TT8323-31 I+	.001			
	14	TT8323-32 I-	.001			
	15	TT8323-29 V+	.001			
	16	TT8323-30 V-	.001			

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Function Designator, Tag or Description: Hypertronics module		Ceramiseal plug	Resistance ohms	Assembly Step	By Date
			Ω	After welding	8/6/04
M2	1	A-1	.5 Ω		
	2	A-2	.5 Ω		
	3	A-3	.5 Ω		
	4	A-4	.6 Ω		
	5	A-5	.6 Ω		
M3	1	A-6	.6 Ω		
	2	B-1	.5 Ω		
	3	B-2	.5 Ω		
	4	B-3	.6 Ω		
	5	B-4	.6 Ω		
M4	1	B-5	.6 Ω		
	2	B-6	.6 Ω		
	3	C-1	.6 Ω		
	4	C-2	.6 Ω		
	5	C-3	.5 Ω		

GK

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Function Designator, Tag or Description		Resistance ohms	Assembly Step	By Date
Hypertronics Module	Ceramaseal Plug	Ω	After welding	8/6/04
M5 1	C-4	.5 Ω		
2	C-5	.5 Ω		
3	C-6	.5 Ω		
4	D-1	.6 Ω		
5	D-2	.6 Ω		
M6 1	D-3	.6 Ω		
2	D-4	.5 Ω		
3	D-5	.6 Ω		
4	D-6	.5 Ω		
5	—	—		
M8 1	E-1	.6 Ω		
2	E-2	.6 Ω		
3	E-3	.5 Ω		
4	E-4	.5 Ω		
5	—	—		

GK

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Function Designator, Tag or Description		Resistance ohms	Assembly Step	By Date
Hypertronics Module	Ceramaseal Plug	Ω	After welding	8/6/04
M9 1	E-5	.6 Ω		
2	E-6	.6 Ω		
3	F-1	.5 Ω		
4	F-2	.6 Ω		
5	—	—		
M10 1	F-3	.5 Ω		
2	F-4	.6 Ω		
3	F-5	.5 Ω		
4	F-6	.6 Ω		
5	—	—		
M12 1	I-5	.3 Ω		
2	I-6	.3 Ω		
3	J-1	.3 Ω		
4	J-2	.3 Ω		
5	—	—		

GK

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CONTINUITY TESTING
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Function Designator, Tag or Description		Resistance ohms	Assembly Step	By Date	
Hyperbonics Module	Ceramaseal Plug	Ω	After welding	8/6/04	CK
M13 1	J-3	.3 Ω			
2	J-4	.3 Ω			
3	J-5	.3 Ω			
4	J-6	.3 Ω			
5	—	—			
M14 1	K-1	.3 Ω			
2	K-2	.3 Ω			
3	K-3	.3 Ω			
4	K-4	.3 Ω			
5	—	—			
M15 1	K-5	.3 Ω			
2	K-6	.3 Ω			
3	L-1	.3 Ω			
4	L-2	.3 Ω			
5	—	—			

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Function Designator, Tag or Description		Resistance ohms	Assembly Step	By Date
Hyperbonics Module	Ceramaseal Plug	Ω	After welding	5/6/04
M17 1	G-1	.3 Ω		
2	—	—		
3	G-2	.3 Ω		
4	—	—		
5	G-3	.3 Ω		
M18 1	—	—		
2	G-5	.3 Ω		
3	—	—		
4	G-4	.3 Ω		
5	—	—		
M19 1	G-6	.3 Ω		
2	—	—		
3	H-1	.3 Ω		
4	—	—		
5	H-2	.3 Ω		

GK

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Function Designator, Tag or Description		Resistance ohms	Assembly Step	By Date
Hypertronics Module	Ceramaseal Plug	Ω	After Welding	8/6/04
M20 1	—	—		
2	H-4	.3 Ω		
3	—	—		
4	H-3	.3 Ω		
5	—	—		
M21 1	H-5	.3 Ω		
2	—	—		
3	H-6	.4 Ω		
4	—	—		
5	I-1	.3 Ω		
M22 1	—	—		
2	I-3	.3 Ω		
3	—	—		
4	I-2	.3 Ω		
5	—	—		

OK

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CONTINUITY TESTING
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Function Designator, Tag or Description		Resistance ohms	Assembly Step	By Date
~~Hyperbarics~~ Module	Ceramaseal plug	Ω	After welding	CK 8/6/04
23 1	I-4	.3Ω		
2	—	—		
3	—	—		
4	—	—		
5	—	—		

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GK

Function Designator, Tag or Description		Resistance ohms	Assembly Step	By Date
Hypertronics Module	Ceramaseal 32 con. pn	Ω	After Welding	8/6/04
M25 1	C	.001		
2	D	.001		
3	A	.001		
4	B	.001		
5	G	.001		
6	H	.001		
7	I	.001		
8	L	.001		
9	K	.001		
10	F	.001		
11	E	.001		
12	J	.001		
13	O	.001		
14	P	.001		
15	M	.001		
16	V	.001		

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Function Designator, Tag or Description		Resistance ohms	Assembly Step	By Date
Hypertronics Module	Ceramaseal 32 comp.in	Ω	After Welding	8/6/04
M26 1	S	.001		
2	T	.001		
3	Q	.001		
4	R	.001		
5	W	.001		
6	X	.001		
7	Y	.001		
8	28 I-	.001		
9	27 I+	.001		
10	V	.001		
11	U	.001		
12	Z	.001		
13	31 I+	.001		
14	~~22~~ 32 I-	.001		
15	29 V+	.001		
16	30 V-	.001		

Multimeter Make and MTM Serial Number: FLUKE 83
47900002

Test Report Form TR-1020A
Rev. B