ELECTRON DIPOLE CRYOSTAT 9/19/94
INSTRUMENT CABLE "J-2"
Hi POT TEST

THIS TEST IS TO Q.A. THE ASSEMBLED TEST CABLE FOR THE ELECTRON DIPOLE CRYOSTAT INSTRUMENT CABLE SET.

THIS CABLE WILL BE USED FOR INSTRUMENTATION OF THE CRYOSTAT DURING THE INITIAL COOL-DOWN/ACCEPTANCE TEST TO BE PERFORMED IN OCTOBER 1994.

IT IS MY INTENTION TO CERTIFY THAT THE VOLTAGE SENSE WIRES TO THE CRYOSTAT COIL CAN WITHSTAND A HIGH-VOLTAGE BREAKDOWN TEST OF 1,000 VDC. (THIS ISOLATION MAY BE NEEDED IF THE SUPERCONDUCTIVE COIL QUENCHES DURING OPERATION).

TEST DESCRIPTION:

EQUIPMENT USED:

ONE HiPOTRONICS MODEL HD-100 AND INTERCONNECTING LEADS.

TEST CONDITIONS:

70°F, ≈70% RELATIVE HUMIDITY.

TEST PROCEDURE:

EACH VOLTAGE SENSE PAIR WILL BE TESTED FOR LEAKAGE/BREAKDOWN AT 1,000 VDC BETWEEN THE TWISTED PAIR, AND THEN BETWEEN PAIRS. EACH TEST WILL BE SUSTAINED AT 1,000 VDC FOR A MINIMUM OF 60 SECONDS. THE CHART ON THE FOLLOWING PAGE WILL DOCUMENT THE RESULTS. THE HiPOT TESTER WILL BE CONNECTED ACROSS THE TEST POINTS LISTED, AND RAMPED UP TO THE TEST VOLTAGE.
IN THE FINAL TEST ALL OF THE VOLTAGE SENSE PAIRS ARE JUMPERED TOGETHER, AND THE REMAINING CABLE PAIRS ARE JUMPERED TOGETHER. THE TESTER IS PLACED ACROSS THE TWO JUMPERED SETS, AND TESTS LEAKAGE BETWEEN THE VOLTAGE SENSE WIRES AND ANY/ALL OTHER CONDUCTORS IN THE CABLE.

TEST POINTS: J-2 PINS:	SIGNAL NAMES:	RESULTS CURRENT LEAKAGE IN μA D.C.	REMARKS
B/C	VMAN/VMBP	0.0	
A/P	VMAP/VMBN	0.0	
M/N	VLAN/VLBP	0.0	
M+N/A+P	VLAN+VLBP / VMAP+VMBN	0.0	
M+N/B+C	VLAN+VLBP / VMAN+VMPP	0.0	
B+C/A+P	VMAN+VMPP / VMAP+VMBN	0.0	
A,B,C,M,N,P / D-L+R-U	ALL V SENSE / BALANCE OF CABLE	0.0	

RS
M Stevens

LOCALLY ASSEMBLED CABLE FOR CRYOSTAT INSTRUMENTATION FOR OCTOBER TEST – CRYOSTAT RECEPTACLES J3 & J4

J3 COLOR CODE:	
PIN:	COLOR:
A	~~BLK~~ N.C.
B	~~BLK~~ N.C.
C	BLK
D	BRN
E	BLK
F	RED
G	BLU
H	BLK
J	BRN
K	RED
L	RED
M	RED
N	BLU
P	BLK
R	YEL
S	BLK
T	GRN
U	BLK
V	BLU
W	BLK
X	ORG
Y	YEL
Z	RED
a	WHT
b	BLK
c	WHT

J4 COLOR CODE:	
PIN:	COLOR:
A	BLK
B	BRN
C	YEL
D	RED
E	RED
F	RED
G	BLU
H	BLK
~~J~~	BLK
K	ORG
L	RED
M	BLK
N	GRN
P	BLK
Q	WHT
R	BLU
S	WHT + YEL + RED + BLK
T	BLK
U	ORG + RED
V	GRN

NOTE: COLOR CODE OF CABLE IN SIGNAL PAIR ORDER ON NEXT PAGE.

J3 + J4 CABLE COLOR CODE IN SIGNAL PAIR ORDER

J3:

SIGNAL NAME:		PIN:	PAIR COLOR:
PR1	I+	C	BLK
	I-	D	BRN
	V+	E	BLK
	V-	F	RED
PR2	I+	P	BLK
	I-	R	YEL
	V+	S	BLK
	V-	T	GRN
PR3	I+	U	BLK
	I-	V	BLU
	V+	b	BLK
	V-	c	WHT
PR4	I+	M	RED
	I-	N	BLU
	V+	Z	RED
	V-	a	WHT
PR5	I+	G	ORG
	I-	H	RED
	V+	W	BLK
	V-	X	ORG
PR6	I+	J	GRN
	I-	K	RED
	V+	L	RED
	V-	Y	YEL

J4:

SIGNAL NAME:		PIN:	PAIR COLOR:
PR7	I+	K	ORG
[redacted]	V-	A	BLK
	V+	B	BRN
SD8	I+	J	BLK
[redacted]	V-	T	BLK
	V+	L	RED
	I-	U	ORG / RED
SG1	P+	N	GRN
(EM1)	S-	M	BLK
	S+	C	YEL
SG2	P+	V	GRN
(EM2)	S-	H	BLK
	S+	R	BLU
SG3	P+	D	RED
(EM3)	S-	P	BLK
	S+	Q	WHT
SG4	P+	E	RED
(EM4)	S-	F	RED
	S+	G	BLU
SG COM	P-	S	WHT / YEL / RED / BLK

NOTE: V+ AND V- ARE USED TO SHOW SIGNAL OUT FOR THE PLATINUM RESISTORS, TO BE CONSISTENT WITH THE WANG CABLE DRAWINGS. THESE SIGNALS SHOULD BE LABELED R+ AND R-, RESPECTIVELY.

V/R [redacted] Stevens

DIPOLE POWER SUPPLY MODIFICATION NOTE 9/21/94

THE DYNAPOWER DIPOLE POWER SUPPLY HAS BEEN MODIFIED AS FOLLOWS.

1. UPON RECEIPT OF THE POWER SUPPLY AN INSPECTION REVEALED EXTENSIVE CORROSION ON THE OUTPUT FILTER CAPACITOR BANK (C1/C2). LEAKING LCW DRAIN VALVES ABOVE THE BANK WERE THE CAUSE. I INSTALLED PLASTIC TUBING ON THE VALVE OUTLETS AND ROUTED THEM AROUND THE CAPACITOR BANK AND DOWN THROUGH TWO HOLES WHICH I DRILLED THROUGH THE BASE-PLATE.

2. DURING AN INTERLOCK TEST OF THE POWER SUPPLY WE DISCOVERED THAT THERE WAS NO LOGIC COMMON WIRE FROM THE TTL OUTPUT MODULE (SLOT 7) TO THE STATUS AND CONTROL OUTPUT CONNECTOR, J1. I ADDED A WIRE, ROUTING IT FROM THE MODULE COMMON TERMINAL TO PIN 14 OF J1.

—GM Stevens

DIPOLE POWER SUPPLY REPAIR NOTE 9/30/94

THE DYNAPOWER DIPOLE POWER SUPPLY HAS BEEN REPAIRED AS FOLLOWS:

1. UPON RECEIPT AN INSPECTION REVEALED EXTENSIVE CORROSION ON THE OUTPUT FILTER CAPACITOR BANK (REFER TO ITEM #1 ABOVE). THE CAPACITOR BANK WAS DISASSEMBLED, CLEANED OF CORROSION, AND RE-ASSEMBLED.

2. UPON RECEIPT AN INSPECTION REVEALED A HOLE IN THE INSULATION OF ~~THE~~ ONE OF THE OUTPUT POWER CABLES (INTERNAL WIRING OF THE POWER SUPPLY) BETWEEN THE MOTORIZED SWITCH AND THE OUTPUT PADDLE, PROBABLY CAUSED BY THE MOTION OF THE CABLE DURING TRANSPORT. THE WORN INSULATION WAS REPAIRED WITH ELECTRICAL TAPE.

3. EXCESS FLUX WAS REMOVED FROM THE SHUTDOWN/PROTECTION RESISTOR SOLDERED CONNECTIONS.

9/28/94

THIS ENTRY DOCUMENTS THE BALANCE AND GAIN SETTINGS OF THE DIPOLE STRAIN GAGE INSTRUMENTS RECEIVED FROM WANG NMR. THESE SETTINGS MAY BE NEEDED TO RESET THESE INSTRUMENTS TO THEIR ORIGINAL CONDITIONS.

SWITCH + BALANCE UNIT SETTINGS:

CHANNEL:	10 TURN POT:
1	499.5
2	500.0
3	~~492.5~~ 494.5
4	500.0
5	502.5
6	522.5
7	500.0
8	~~502.0~~ 505.0
9	500.0
10	508.0

MODEL 2120A STRAIN GAGE CONDITIONER SETTINGS

LEFT HAND CHANNEL:	RIGHT HAND CHANNEL:
10 TURN POT = 100	10 TURN POT = 1009
MULTIPLIER = X2	MULTIPLIER = X200

MODEL 2130 OUTPUT DISPLAY/DIGITAL READOUT:

ATTEN = X 1

LOCALLY ASSEMBLED CABLES FOR CRYOSTAT INSTRUMENTATION FOR OCT. 94 TEST - CRYOSTAT MISC. INSTRUMENTS

He PRESSURE SENSOR -

SENSOR CONNECTOR PIN:	3COND. CABLE COLOR:
1	BLK
2	RED
3	WHT
4	N/C

N_2 PRESSURE SENSOR:

SENSOR CONNECTOR PIN:	3COND. CABLE COLOR:
1	BLK
2	RED
3	WHT
4	N/C

10/18/94

VPS MANUAL TEST

THIS IS A TEST OF THE HYDRAULIC SYSTEM, JACKS, TEMPOSONIC FOLLOW-UP XDUCERS, AND DYVAL SERVO VALVE CONTROL AMPS.

JACK/CHANNEL #1 S/N 9200619_5

INPUT TO DRIVE:	VALVE CURRENT:	FEEDBACK XDUCER	MECHANICAL EXTENSION
FULL UP:			
+9.7 VDC	+4 mA	+9.82 VDC	8.125"
TRANSITION DN	+57 mA		
0.000 VDC	+7 mA	+.196 VDC	5.25"
FULL DN:			
-220 mVDC	+7 mA	+.003 VDC	5.125"

JACK/CHANNEL #2 S/N 9200619[illegible]_3

FULL UP:			
+9.5 VDC	+13 mA	+9.79 VDC	8.125"
TRANSITION DN	+53 mA		
0.000 VDC	+17 mA	+0.415 VDC	5 5/16"
FULL DN.			
-.470 VDC	+20 mA	+0.003 VDC	5.125

CONT'D

JACK / CHANNEL #3 S/N 9200619_6

INPUT TO DRIVE:	VALVE CURRENT:	FEEDBACK XDUCER	MECH. EXT:
FULL UP:			
+9.56 VDC	0 mA	+9.85 VDC	8.125"
TRANSITION	+54 mA		
0.000 VDC	1 mA	+.038 VDC	5 3/16"
FULL DN:			
-0.080 VDC	2 mA	+.005 VDC	5,200

JACK SER. NO. 9200619_6, WHEN EXTENDING FROM THE FULLY RETRACTED POSITION WILL TRAVEL .040" BEFORE ~~RE~~ THE FOLLOW-UP XDUCER SHOWS ANY CHANGE.

JACK SER. NO. 9200619_3, WHEN EXTENDING FROM THE FULLY RETRACTED POSITION WILL TRAVEL .088" BEFORE THE FOLLOW-UP XDUCER SHOWS ANY CHANGE.

INPUT:	MECH. POS:	FOLLOW UP
2.586 VDC	1"	3.056 VDC
~~4.28~~		
4.28 VDC	1.5"	4.73 VDC

JACK SER. NO. 9200619_7

INPUT TO DRIVE:	FEEDBACK XDUCER:	MECH. EXT:
FULL UP: 10.06 VDC	9.81 VDC	8.125" (3.00")
AT 10.00 VDC INPUT →	9.76 VDC	? LESS THAN FULL
FULL DN. 0.000 VDC	0.002 VDC	FULL DN
TO BEGIN UP-STROKE +0.250 VDC	0.002 VDC	0.002"

.080" WHEN EXTENDING FROM THE FULLY RETRACTED POSITION, RAM TRAVELS .080" BEFORE THE FOLLOW UP MOVES.

INPUT:	MECH. POS:	FOLLOW UP:
1.614 VDC	0.500"	1.390 VDC
3.249 VDC	1.000"	3.031 VDC
4.25 VDC	1.500"	4.03

JACK SER. NO. 9200619_4, CH. #2

INPUT TO DRIVE:	FEEDBACK XDUCER:	MECH. EXT:
FULL UP: 9.33 VDC	9.78 VDC	8.125" (3.00")
FULL DN: -.490 VDC	.003 VDC	0.000"
1.211 VDC	1.727 VDC	½" 0.500"
2.867 VDC	3.38 VDC	1.000"
4.55 VDC	5.07 VDC	1.500"

JACK SER. NO. 9200619_2 CH # 3

INPUT TO DRIVE:	FEEDBACK XDUCER	MECH. EXT:
FULL UP: 9.90 VDC	9.79 VDC	8.125" (3.00")
FULL DN: 0.030 VDC	0.006 VDC	0.000"
0.030 VDC	0.006 VDC	0.000"
1.428 VDC	1.408 VDC	0.500"
3.108 VDC	3.084 VDC	1.000"
4.79 VDC	4.76 VDC	1.500"

.083" TRAVEL W/O INDICATION (FEEDBACK)

JACK SER. NO. 9200619-5 CH. #1

INPUT TO DRIVE:	FEEDBACK XDUCER:	MECH. POS:
FULL UP: 9.82 VDC	9.75 VDC	8.125" (3.000")
FULL DN: -225 VDC	0.003 VDC	0.000"
1.235 VDC	1.492 VDC	0.500"
2.897 VDC	3.149 VDC	1.000"
4.60 VDC	4.82 VDC	1.500"

0.050 TRAVEL W/O INDICATION (FOLLOW UP).

JACK SER. NO. 9200619-1 CH. #1

INPUT TO DRIVE:	FEEDBACK XDUCER:	MECH. EXT:
FULL UP: 10.05 VDC	9.80 VDC	8.125" (3.000")
FULL DN: 0.233 VDC	0.002 VDC	0.000"
1.666 VDC	1.460 VDC	0.500"
3.317 VDC	3.127 VDC	1.000"
4.99 VDC	4.79 VDC	1.500"

0.066 TRAVEL UP W/O INDICATION (FOLLOW UP)

DIPOLE VOLTAGE SENSE-CURRENT LIMITING RESISTOR BOX

QA TEST FOR ASSEMBLED DIPOLE VOLTAGE SENSE-CURRENT LIMITING RESISTOR BOX, TEST EQUIPMENT HO 100 SERIES

THIS TEST IS TO DETERMINE THE DIELECTRIC QUALITY OF CONDUCTORS HIPOTED AT 2000 v Dc IN INCREMENTS OF 200 v Dc. TESTING WILL BE PIN TO GROUND & PIN TO ADJACENT PIN TO FIND DEFECTS ~~TO FIND~~ POSSIBLE IN CONDUCTOR QUALITY DURING ASSEMBLY OF THE EQUIPMENT.

Pin	Volts Dc	Ω	uA dc		Volts	uA
H	200V		-0-	G	1000V	-0-
H	400V		-0-	G	2000V	-0-
H	600V		-0-	K	1000V	-0-
H	800V		-0-	K	2000V	-0-
H	1000V		-0-	J	1000V	-0-
H	1200V		-0-	J	2000V	-0-
H	1400V		-0-	C	1000V	-0-
H	1600V		-0-	C	2000V	-0-
H	1800V		-0-	F	1000V	-0-
H	2000V		-0-	F	2000V	-0-
A	200V		-0-	E	1000V	-0-
A	400V		-0-	E	2000V	-0-
A	600V		-0-	D	1000V	-0-
A	800V		-0-	D	2000V	-0-
A	1000V		-0-			
A	1200V		-0-			
A	1400V		-0-			
A	1600V		-0-			
A	1800V		-0-			
A	2000V		-0-			
B	1000V		-0-			
	2000 V		-0-			

		VOLTS	uA
1)	H to A	1000V	-0-
	" "	2000V	-0-
2)	A to B	1000V	-0-
		2000V	.24A
3)	B to C	1000V	-0-
		2000V	-0-
4)	C to D	1000V	-0-
		2000V	-0-
5)	D to E	1000V	-0-
		2000V	-0-
6)	E to F	1000V	-0-
		2000V	-0-

1 DIPOLE VOLTAGE SENSE / CURRENT LIMITING RESISTOR BOX
2ND ASSEMBLY 9-23-95 HIPOTED AT 1000V + 2000V

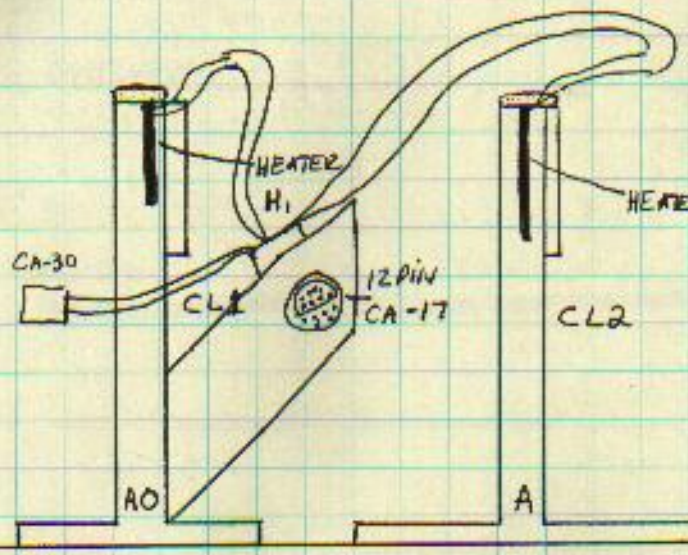
PIN TO GROUND			PIN TO PIN		
	VOLTS	uA	VOLTS		uA
H	1000V	-0-	H to A	1000V	-0-
H	2000V	-0-	H to A	2000V	-0-
A	1000V	-0-	A to B	1000V	-0-
A	2000V	-0-	A to B	2000V	-0-
B	1000V	-0-	B to C	1000V	-0-
B	2000V	-0-	B to C	2000V	-0-
G	1000V	-0-	C to J	1000V	-0-
G	2000V	-0-	C to J	2000V	-0-
K	1000V	-0-	J to K	1000V	-0-
K	2000V	-0-	J to K	2000V	-0-
J	1000V	-0-	K to G	1000V	-0-
J	2000V	-0-	K to G	2000V	-0-
C	1000V	-0-	G to F	1000V	-0-
C	2000V	-0-	G to F	2000V	-0-
F	1000V	-0-	F to E	1000V	-0-
F	2000V	-0-	F to E	2000V	-0-
E	1000V	-0-	E to D	1000V	-0-
E	2000V	-0-	E to D	2000V	-0-
D	1000V	-0-		1000V	
D	2000V	-0-		2000V	

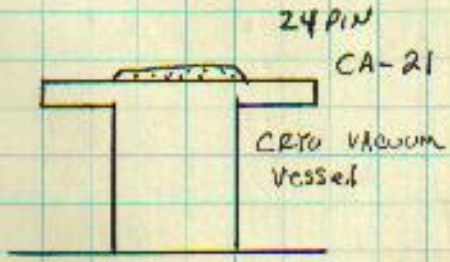
ELECTOPNEUMATIC ACTUATOR - 8"

TEST FOR MDC VACUUM 8" FLANGE
SERIAL NUMBER 93-11782-G
MODEL NUMBER GV-8000 M-P-SP
MDC CATALOG, PAGE 79 UNIT PRICE $3,175.00

TEST PRESURE 75PSI NITROGEN COMPRESSED
AT 24VDC THE ELECTROPNEUMATIC ACTUATOR VALVE OPENED UP, WHEN POWER WAS LOST THE VALVE CLOSED AND SEATED PROPERLY

MECHANICAL DRAWING FOR Q_2/Q_3 CRYOSTAT CONNECTIONS

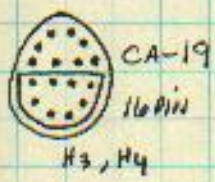


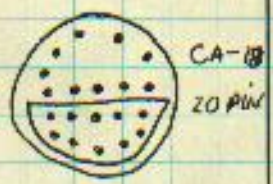


CABLES

CA-17
CA-18
CA-19
CA-20
CA-21

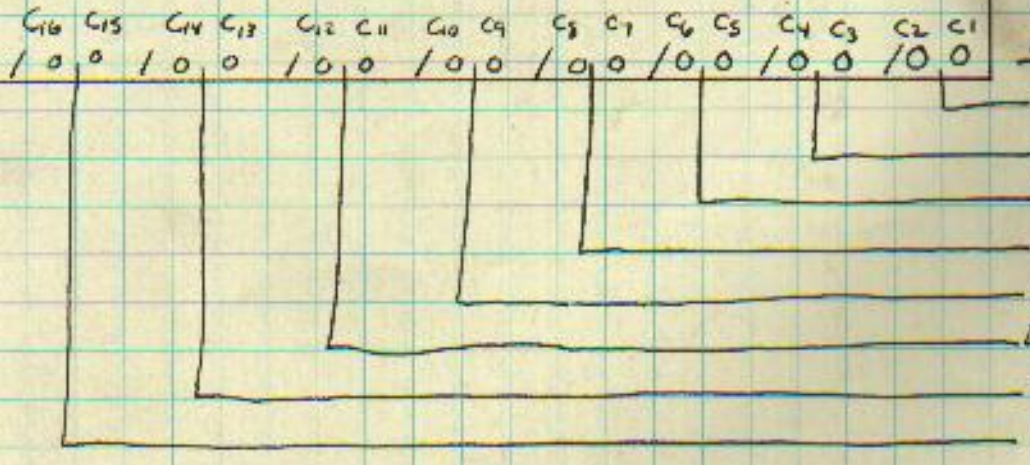
THESE CONNECTORS ARE LOCATED BELOW WITH LAKESHORE CONNECTIONS





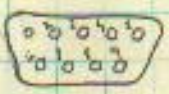
EACH PAIR OF CONNECTORS MAY BE IDENTIFIED BY CIRCULAR COLOR RING ON END OF CONNECTOR

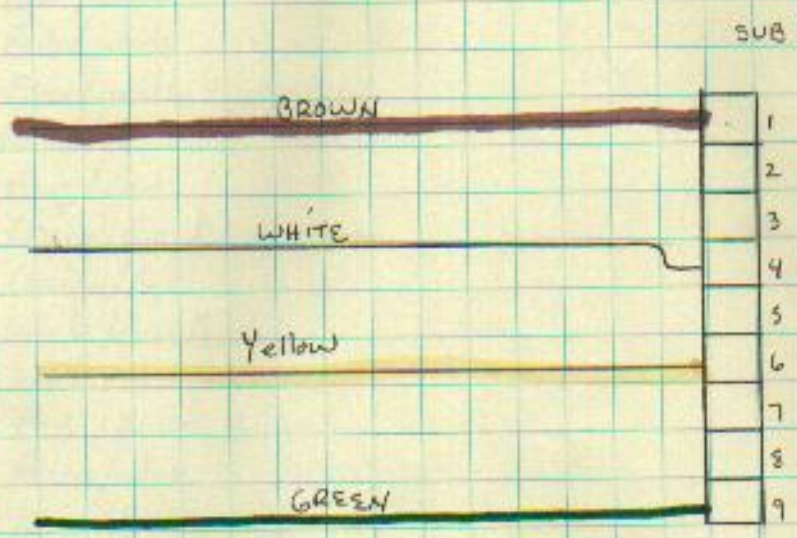
LAKESHORE P.S. CONNECTIONS



PLUG CONNECTOR FROM SETRA PRESURE AT CRYOSTAT

APPROX, 8' OF CABLE





CA-17 Leptos Q2 Siemens Rack to Cryostat

EQ2 17

DQ271Q-J17 to MQ271-C17

pin	Color
1	Red / Green
2	Red / White
3	Blue / White
4	Green / Black
5	Blue / Red
6	Orange / Black
7	Orange / Red
8	White / Black
9	White / Red
10	Red / Black
11	Green / White
12	Blue / Black

CA-18 Leptos Q2 Siemens Rack to Cryostat
(EQ2-18) (OQ271Q-J18 to MQ271-C18)

pin	Color
1	Black/White
2	Red / Black
3	Blue / Black
4	Red / White
5	Orange/Black
6	Green/White
7	White
8	Orange
9	Blue
10	Green/Black
11	Blue/White
12	Green
13	Red
14	Black
15	White/Black
16	Black/Red
17	Blue/Red
18	White/Red
19	Orange/Red
20	Red/Green

CA-19 Leptos Q2 Siemens Rack to Cryostat
EQ2-19 (MQ271-C19 to DQ2719-1A)

pin	Color
1	Red/White
2	Black/White
3	Blue/Black
4	Orange/Black
5	Green
6	Red
7	White
8	Red/Black
9	Orange
10	Blue
11	Black
12	White/Black
13	Orange/Red
14	Red/Green
15	Blue/Red
16	Green/Black

CA-20
(EQ2-20)

Leptos Q2

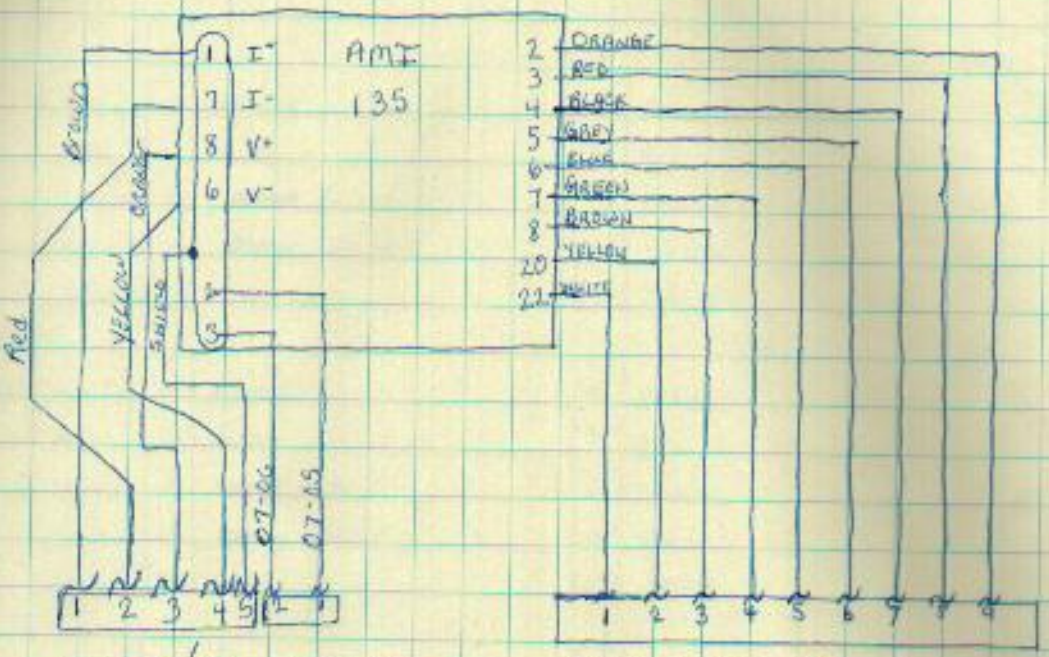
Siemens to Cryostat
(MQ211-C20 to CQ271Q-J20)

pin	Color
1	White
2	Brown
3	Green
4	Yellow
5	Black
6	Orange
7	Blue
8	Red

CA-21 (EQ2-21) Leptos Q2 Siemens Rack to Cryostat (MQ271-C21 to OQ27/Q-J21)

Pin	Color
1	Green / Black
2	Black / Blue
3	Green / White
4	White / Black / Green
5	Red / White
6	Blue / White
7	White / Red
8	Red / Black / White
9	Black / Red
10	Black / Orange
11	White
12	Green
13	Red / Black
14	White / Black
15	Blue
16	Black
17	Orange / Red
18	White / Black / Red
19	White / Black / Brown
20	Red
21	Orange
22	Orange / Green
23	Red / Green
24	Blue / Brown

SACLAY SYSTEM WIRING NOTES



plugs 01/02 plugs 05/06 PLUGS 03/04 CRAFT CONTROL (RS 232) D-SUB

	CIB1			CRYO TAM	
LE 170	BROWN	41	BLACK	36	BROWN
	RED	42	RED	37	RED
	YELLOW	43	WHITE	38	YELLOW
	ORANGE	44	BLACK	39	ORANGE
	SHIELD	45	SHIELD	40	SHIELD
LE 171	BROWN	46	BLACK	41	BROWN
	RED	47	RED	42	RED
	YELLOW	48	WHITE	43	YELLOW
	ORANGE	49	BLACK	44	ORANGE
	SHIELD	50	SHIELD	45	SHIELD

SACLAY SYSTEM WIRING NOTES

★ CAUTION: Wiring Sequence Changed @ TBM

★ CAUTION: Wiring Sequence Changed @ TBM

FLOW TRANSMITTER SWITCH 158A

pin	Function
1	Valve Test Point *
2	Flow Out (+)
3	Valve Close *
4	Valve Open *
5	Power Commen
6	NC
7	24 vac
8	Setpoint (+) *
9	Flow Out (-)
10	Optional Input (0-5 vdc) *
11	NC
12	Analog Commen
13	Setpoint in (-) *
14	NC
15	Chassis

* Controller Only

Removed interlock circuit from FIS and rerouted through Relay 1 output of Newport Controllers FT102 & FT112.

ELECTRON ARM Q1 SACLAY SYSTEM
[redacted] CABLES DT151, DT152 VS141/142
VOLTAGE SENSE LINES Between C2D2/01, C2D2/02, C2D2/03 & TDM 01, 02, and 03 Respectively.
Hi Pot Test:

This test is to Q.A. the assembled Voltage Sense Cables to ensure Cables can withstand a high voltage breakdown test of 1000 VDC and document current leakage.

Equipment used:
Hipotronics HD100 Hipot Tester

Test Conditions
73°F @ ≈70% Relative humidity

Procedure:
Each Twisted pair will be tested for current leakage / breakdown @ 1000 VDC for a minimum of 60 seconds. The chart on the following page will document results. The Hi Pot tester will be connected to the test points listed and ramped up to the test voltage. Upon satisfactory results, the pair will be tested for leakage / breakdown with the shield wire. The twisted pairs will be jumpered together and tested with all other twisted pairs in cable. The final test will be all twisted pairs to each shield wire.

74 DT 151, DT152, VS141/142

	Test Point	to	Test Point	DT 151 Current leakage in μAmps	DT 152	VS141, 142
Voltage Sense Pairs	1		2	Ø	Ø	Ø
	4		5	Ø	Ø	Ø
	7		8	Ø	Ø	Ø
	10		11	Ø	Ø	Ø
V.S. pairs to respective Shield	1-2		3	Ø	Ø	Ø
	4-5		6	Ø	Ø	Ø
	7-8		9	Ø	Ø	Ø
	10-11		12	Ø	Ø	Ø
V.S. pair to V.S. pair	1-2		4-5	Ø	Ø	Ø
	1-2		7-8	Ø	Ø	Ø
	1-2		10-11	Ø	Ø	Ø
	4-5		7-8	Ø	Ø	Ø
	4-5		10-11	Ø	Ø	Ø
	7-8		10-11	Ø	Ø	Ø
V.S. pair to all other Shields	1-2		6	Ø	Ø	Ø
	1-2		9	Ø	Ø	Ø
	1-2		12	Ø	Ø	Ø
	4-5		3	Ø	Ø	Ø
	4-5		9	Ø	Ø	Ø
	4-5		12	Ø	Ø	Ø
	7-8		3	Ø	Ø	Ø
	7-8		6	Ø	Ø	Ø
	7-8		12	Ø	Ø	Ø
	10-11		3	Ø	Ø	Ø
	10-11		6	Ø	Ø	Ø
	10-11		9	Ø	Ø	Ø

7/5

Rick

C2D2/01


1 Brown
2 Black
3 Shield
4 Red
5 Black
6 Shield
7 White
8 Black
9 Shield
10 Yellow
11 Black
12 Shield

SACLAY MTG. 2/16/96

1. DISCONNECT CRYOSTAT FROM CONTROLS/INSTRUMENT/POWER UNTIL APPROVAL FROM SACLAY FRANCE. ~(TUESDAY?)

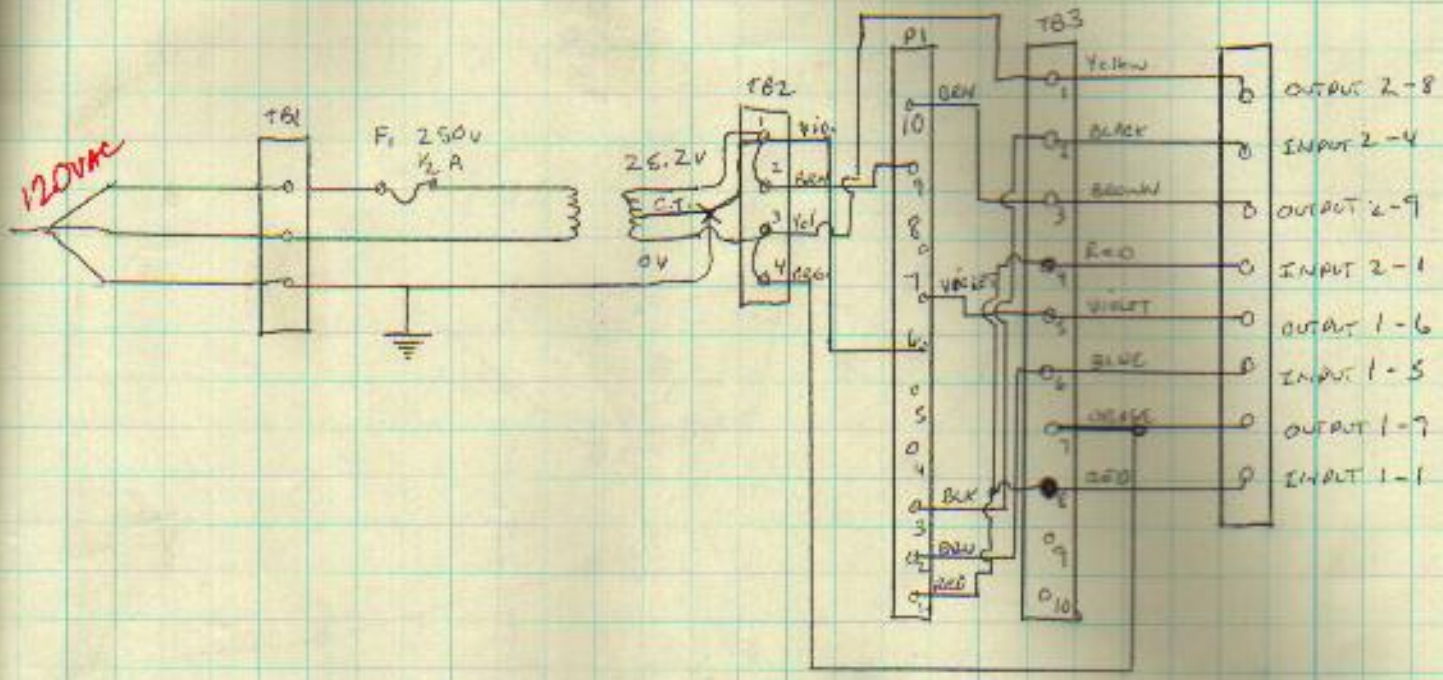
2. WE WILL ASK SACLAY IF WE CAN ADD OPTO-ISOLATORS TO HELIUM LEVEL

3. WE WILL RETROFIT THE FLOWMETER WIRING BACK TO SACLAY'S CONFIGURATION. + INSTALL OPTO-SWITCH CABLES

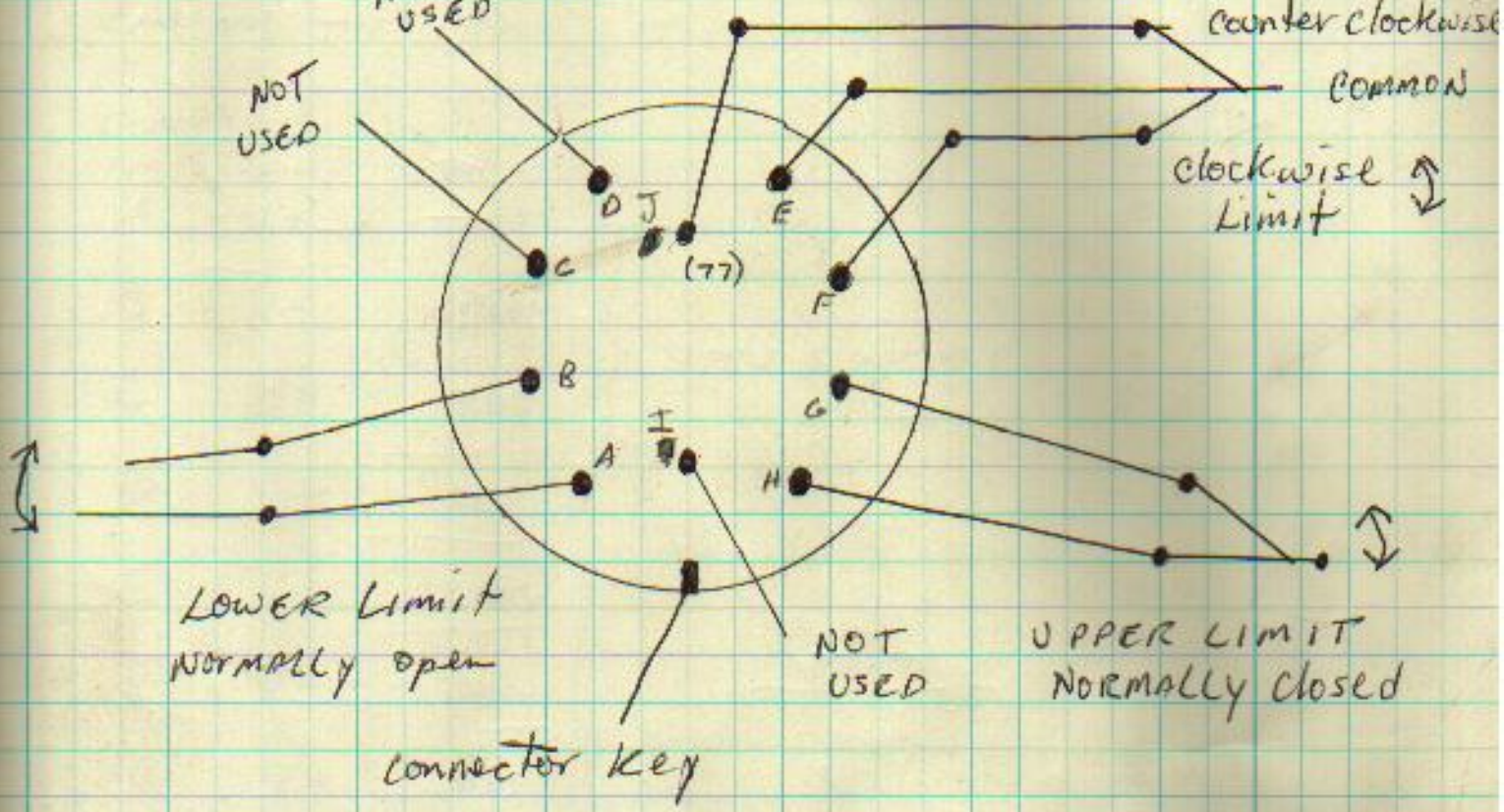
4. WE WILL ASK SACLAY FOR PERMISSION TO ISOLATE THE LEAD HEATERS (TAKE NO FURTHER ACTION) ON INSTALLING THE ISOLATED BLOCKS)

5. WE WILL INSTALL THE CONVECTRON + COLD-CATHODE SUPPLIED BY SACLAY. SPOIL W/ N_2

WIRING DIAGRAM FOR RELAY CARD CHASIS #1



LIMIT SWITCH POSITIONS FOR ROTATING TARGET



NOTE: * SWITCH CONFIGURATON WHEN TARGET IN LOWERED POSITION.

S. Spiegel
4-5-96

HADRON DIPOLE SUPPLY/RETURNE (HELIUM) DIODES.

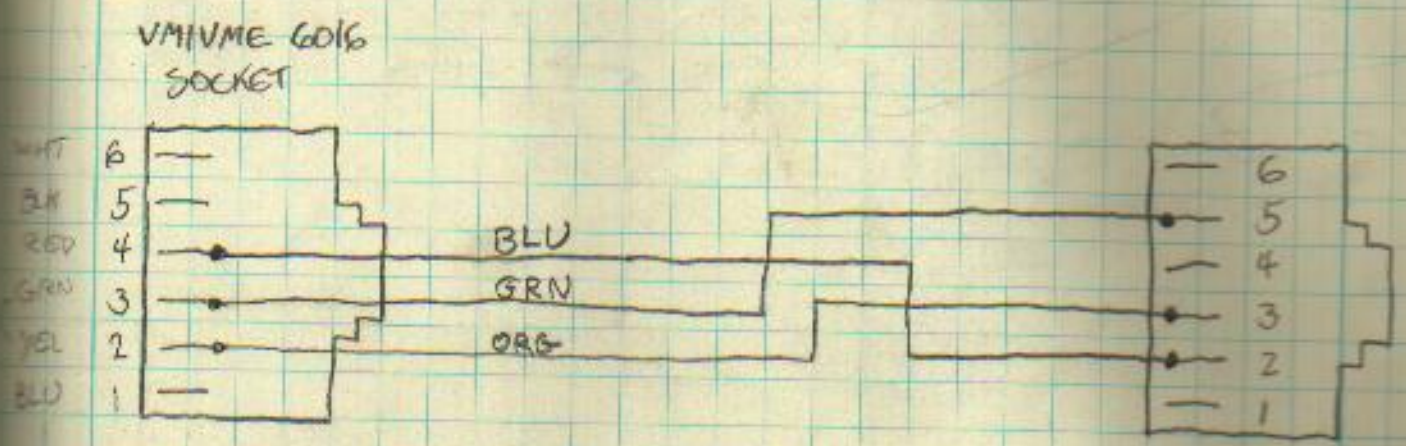
CONNECTOR LOCATED ON LINE BETWEEN DIPOLE BAYONET CAN AND THE DIPOLE. IT IS A 10-PN CERAMISEAL CONNECTOR.

PIN:	SIGNAL:	CABLE COLOR:		EXTERNAL CABLE COLOR?
A	V+	CLEAR	SUPPLY DIODE # 1	YEL
B	V-	GREEN		WHT
C	I+	BLUE		BLK
D	I-	RED		GRN
E	V+	CLEAR	RETURN DIODE # 1	BLU
F	V-	GREEN		ORG
G	I+	BLUE		BRN
H	I-	RED		GRN
I	SUPPLY DIODE #2 (ALL FOUR WIRES SOLDERED ON SAME PN)			
J	RETURN " " " " " " " " "			

THERE ARE TWO DIODES MOUNTED ON EACH LINE, SUPPLY AND RETURN. THE SPARE CABLES ARE STOWED/SHORTED ON PINS I AND J OF THE CONNECTOR. EACH CABLE IS LABELED.

COMMUNICATIONS CABLES PINOUT, ELECTRON ARM

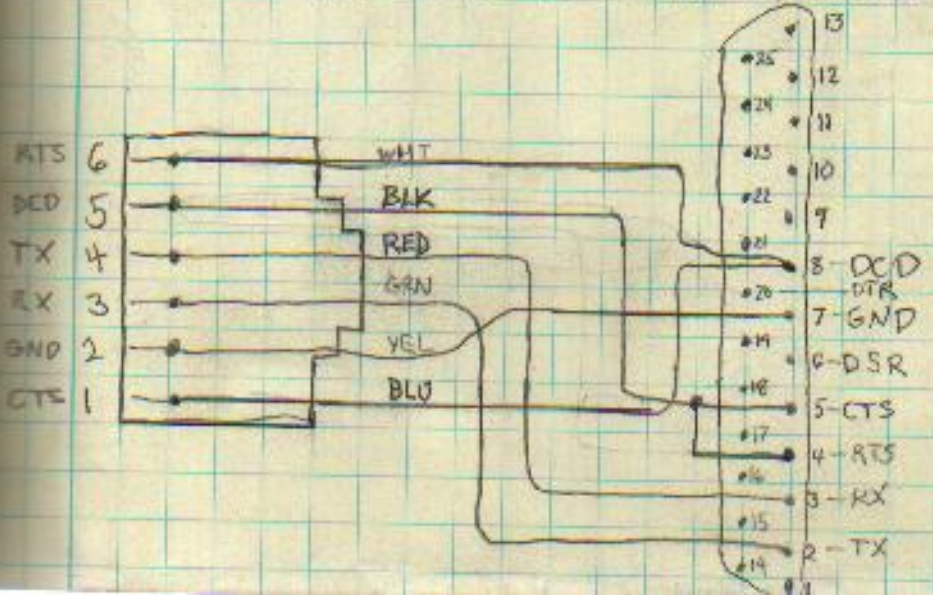
LAKESHORE MULTIPOLE POWER SUPPLIES AND LAKESHORE HALL PROBE METERS USE THE SAME CABLE, AS FOLLOWS:



MY OLD
YEL - GRN ✓
GRN - BLK ✓
RED - YEL ✓

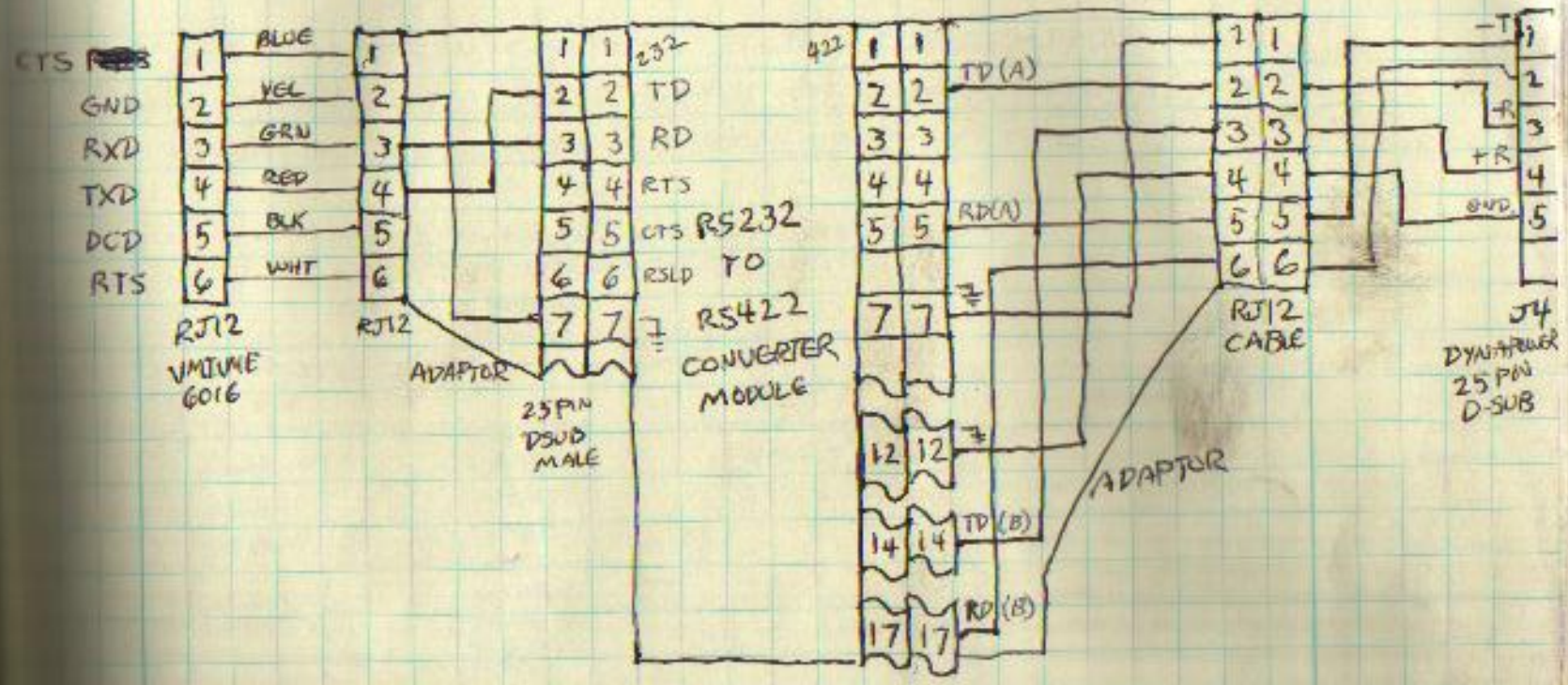
HALL Q1 ~~BLU~~ ↓ FIXED
Q3 BLU ↓ - NOT FIXED.

THE METROLAB PRECISION NMR TESLAMETER USES A 6 WIRE CABLE WIRED PIN-TO-PIN. THE ADAPTOR ON THE METER END IS WIRED AS FOLLOWS:



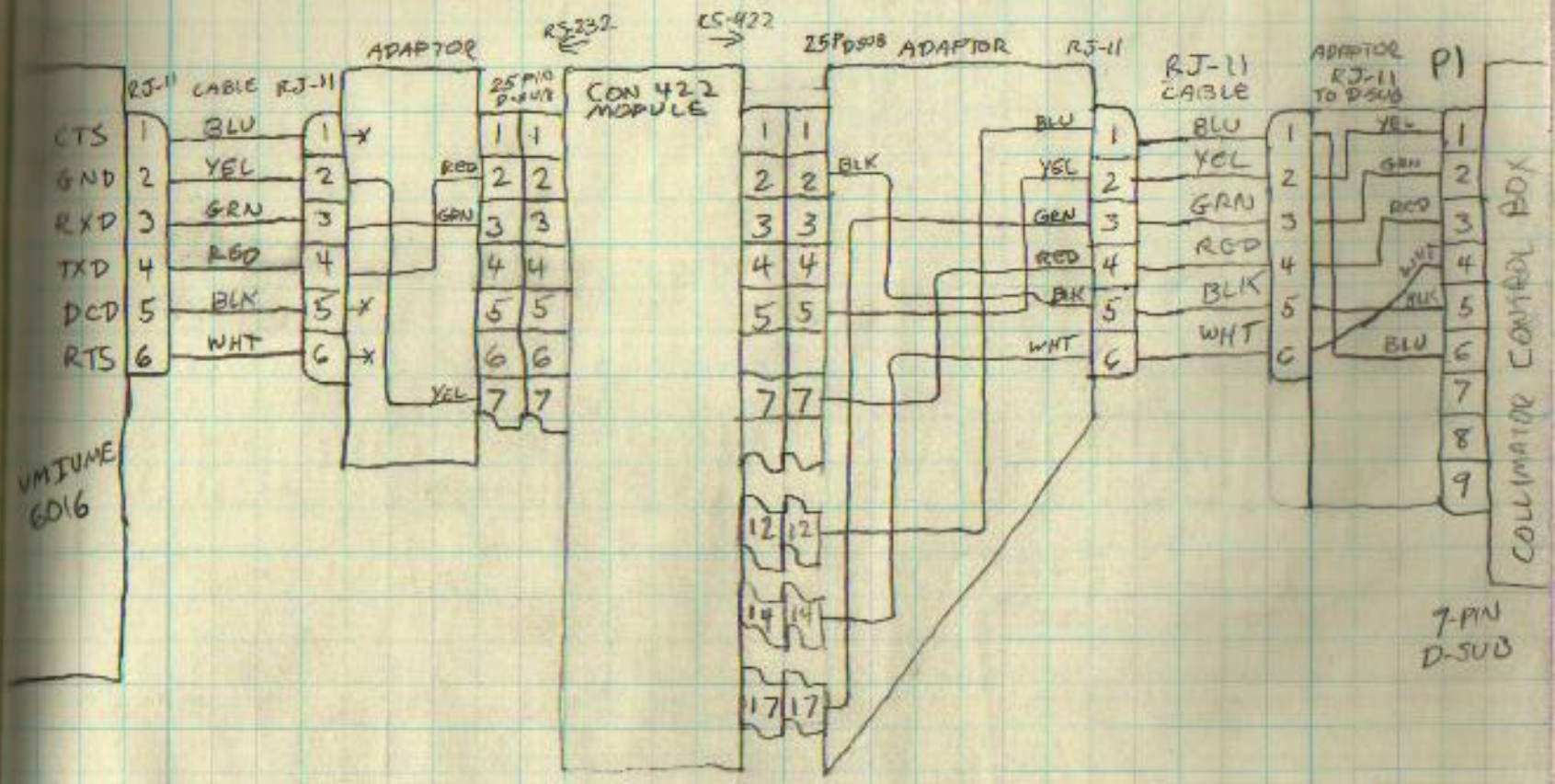
(CONTINUED)

THE DYNAPOWER SERIAL CABLE IS WIRED AS FOLLOWS:



THE COLLIMATOR SERIAL CABLES ARE WIRED AS FOLLOWS:

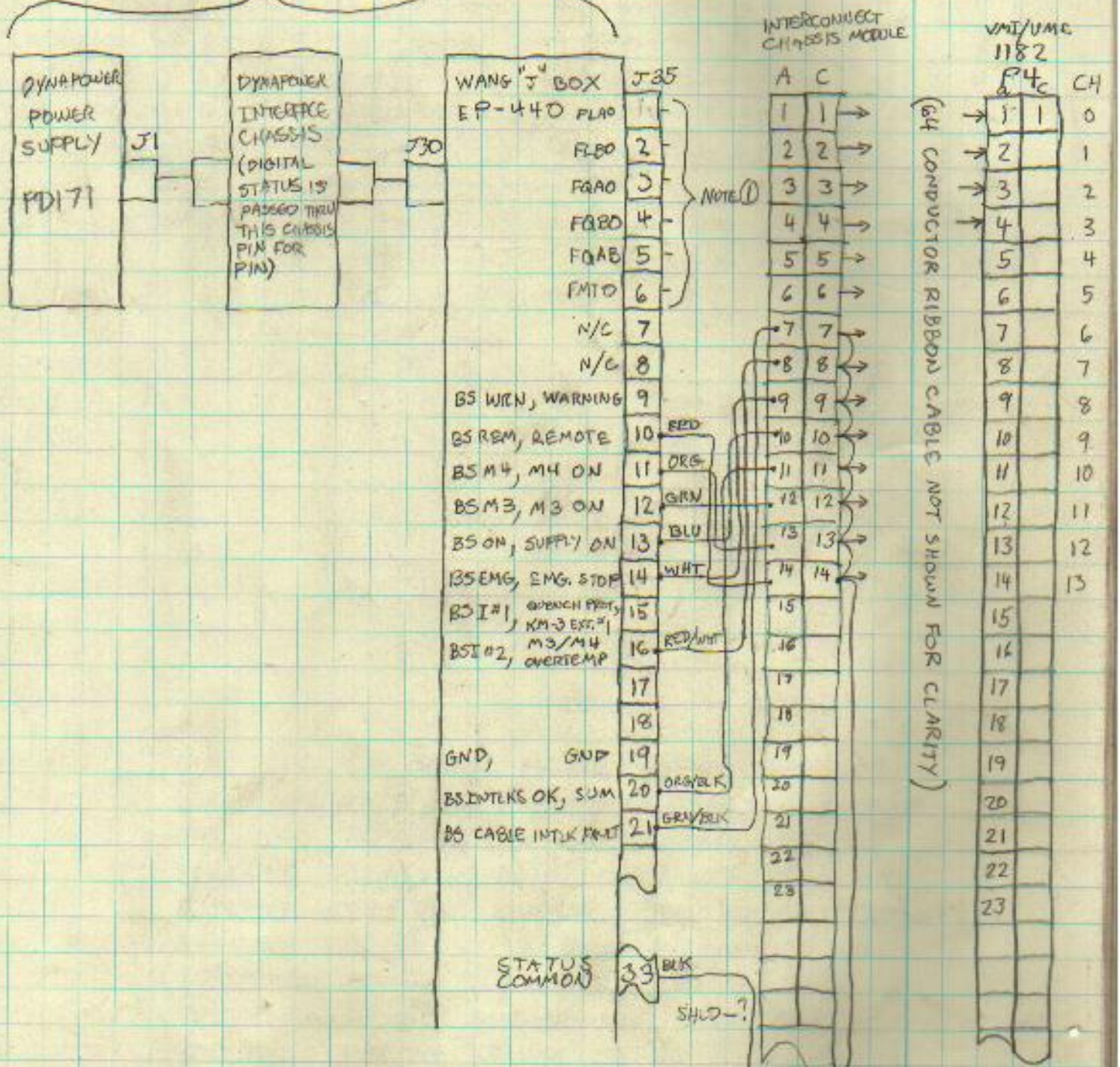
THE COLLIMATOR SERIAL CABLES ARE WIRED AS FOLLOWS:



CABLE PINOUT

ELECTRON SLOW CONTROLS DIGITAL INPUT MODULE INPUT FROM DYNAPOWER POWER SUPPLY TTL OUTPUT, PLUS CABLE INTERLOCK STATUS FROM DYNAPOWER RELAY KC1E2.

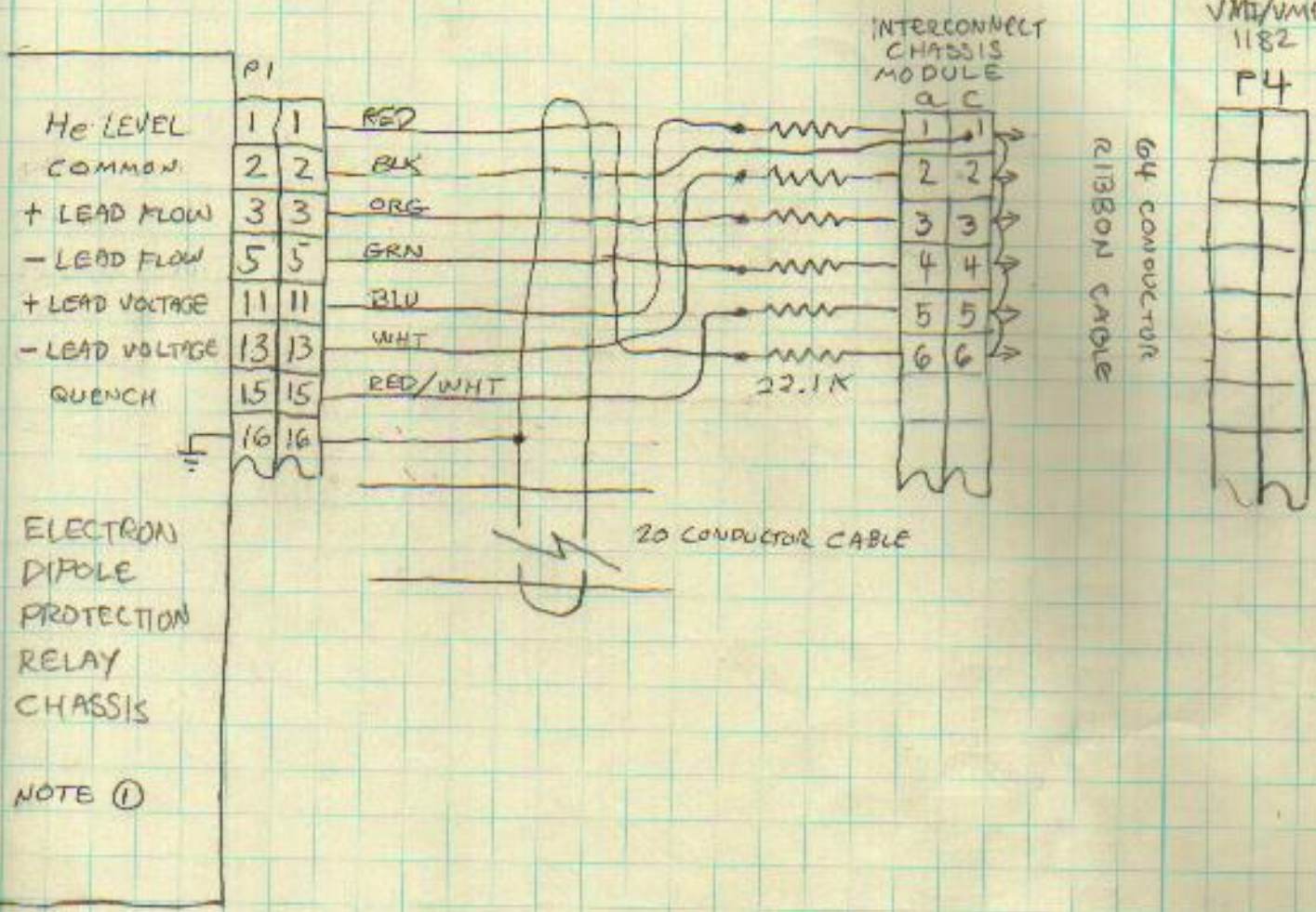
REFER TO "USER MANUAL FOR CEBAF HALL A HRS SUPERCONDUCTING DIPOLE" FOR CABLE PINOUTS.



NOTE (1) THIS IS A SHIELDED 20 CONDUCTOR CABLE. THE EXTRA WIRES ARE CAPED + STOWED AT BOTH ENDS.

CABLE PINOUT

ELECTRON SLOW CONTROLS DIGITAL INPUT MODULE
FROM DIPOLE PROTECTION RELAY CHASSIS

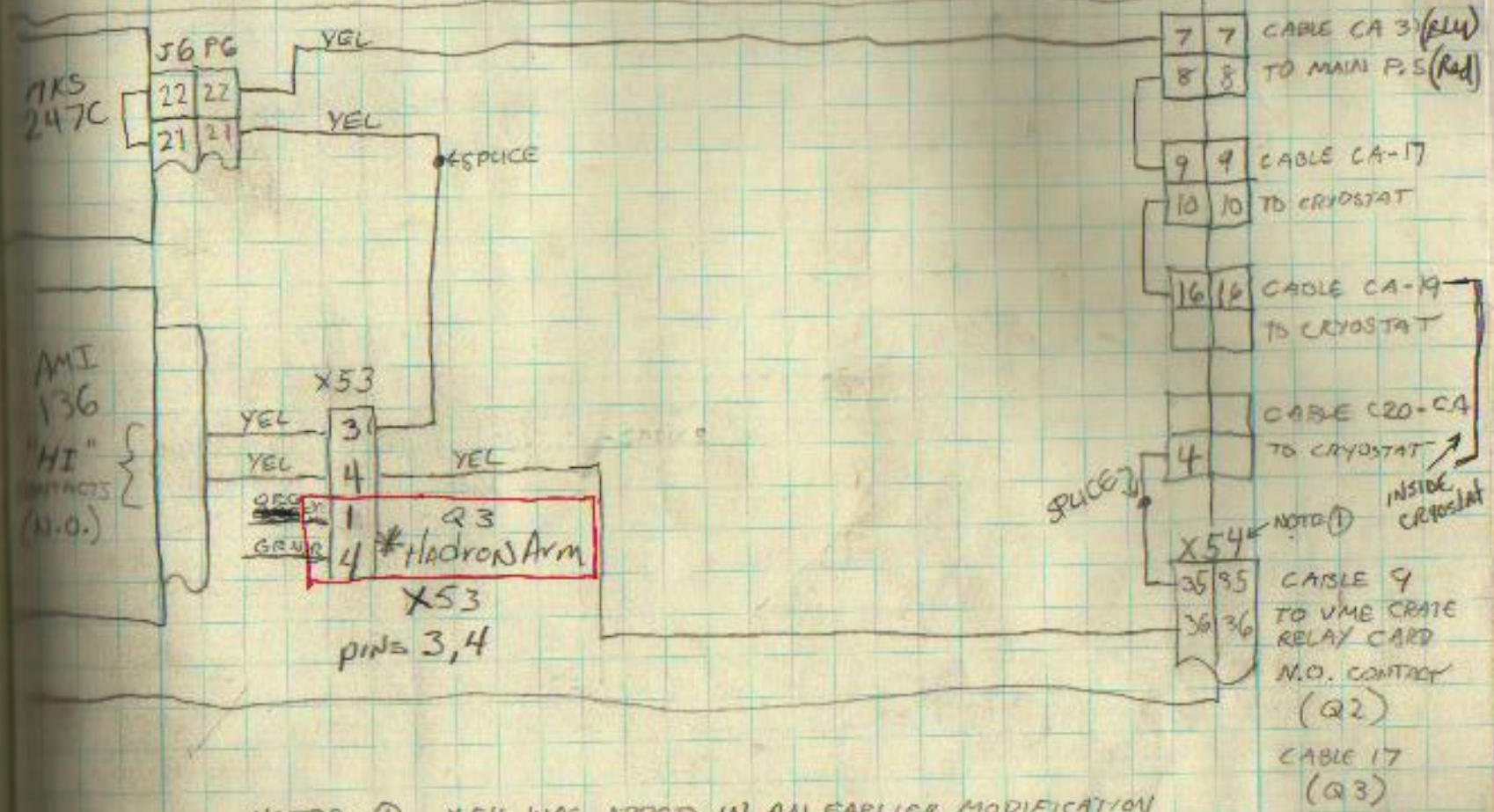


NOTE ① THE ELECTRON DIPOLE PROTECTION CHASSIS WAS FIELD MODIFIED TO PROVIDE A VOLTAGE SOURCE FOR THE TTL LOGIC CARD (VMI/VME 1182) BY POWERING THE STATUS-RELAY CONTACTS FROM THE INTERNAL 24 V POWER SUPPLY. TO DROP THE VOLTAGE DOWN TO TTL LEVEL, A DROPPING RESISTOR WAS INSTALLED AT THE INTERCONNECT CHASSIS MODULE, ON THE END OF THE CABLE WIRES. ROW C IS JUMPERED FOR THE RETURN PATH.

OPERATIONS LOG 5/9/96

1450 - TURNED ON DYNAPOWER (ELECTRON) AND SET IT TO REMOTE CONTROL FOR A COMMUNICATIONS TEST

WIRING MODIFICATION - SIEMENS Q2/Q3 ELECTRON
INSTRUMENT RACK MODIFICATION INCORPORATING
LHe LEVEL RELAY CONTACTS FROM THE INSTALLED AMI 136
AND A SET OF RELAY CONTACTS IN THE SLOW CONTROLS CRATE
RELAY CARD (TO ALLOW SOFTWARE SHUTDOWN/ENABLE).

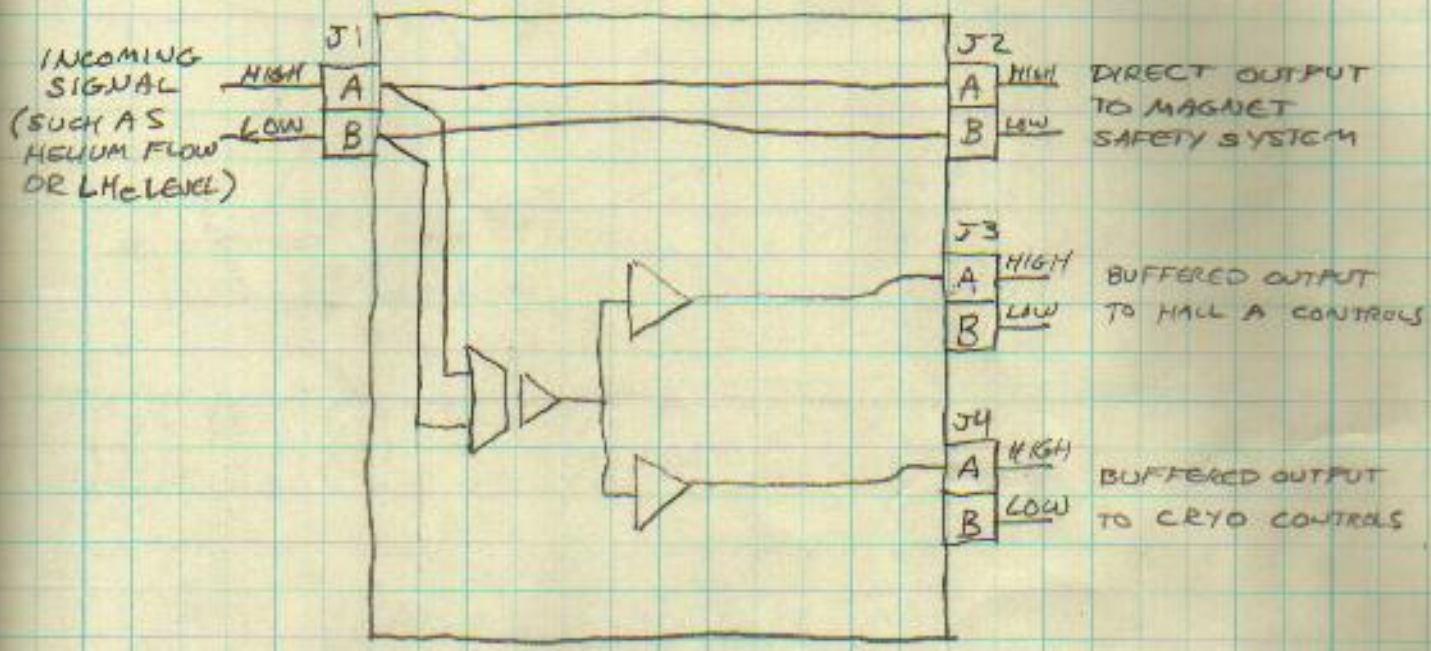


NOTES: (1) X54 WAS ADDED IN AN EARLIER MODIFICATION
AND DOES NOT APPEAR IN THE SIEMENS DOCUMENTATION.

THIS SINGLE CIRCUIT PROVIDES CABLE INTERLOCK FOR LEAD DROP
AND QUENCH INTERCABLING; FLOW CONTROLLER OUTPUT CABLE;
AND (NOW) HELIUM LEVEL INTERLOCK FROM THE AMI-136 "HI"
RELAY CONTACT. REFER TO SIEMENS DRAWINGS NO. 50 794 744
PAGES 12 AND 8.

ISOLATION CHASSIS INTERCONNECT DIAGRAM

THE HALL A ISOLATION CHASSIS IS A 3 OR 4 CHANNEL OPTO-ISOLATION UNIT WHICH PROVIDES 3 OUTPUTS PER CHANNEL. ONE OUTPUT IS HARD-WIRED THROUGH THE CHASSIS TO PROVIDE A SIGNAL FOR THE SUPERCONDUCTIVE MAGNET SAFETY SYSTEM. THE OTHER TWO OUTPUTS (PER CHANNEL) ARE OPTO-ISOLATED FROM THE INPUT AND BUFFERED SO THAT A DOWN-LINE EQUIPMENT FAILURE ON EITHER OUTPUT WILL NOT AFFECT THE OTHER ONE.



ELECTRON INTERCABLING:

Q2/Q3

INPUTS – LEAD FLOW – PIGTAIL CABLE FROM X54 BLOCKS 29+30 (CL1) AND 31+32 (CL2). INPUT FOR CHANNELS 1+2

LHe – PIGTAIL CABLE FROM X54 BLOCKS ___+___. INPUT FOR Q1.3.

OUTPUTS – LEAD FLOW – CL1 HALL A SLOW CONTROLS – CABLE #5 (Q2); #12 (Q3).

" CRYO CONTROLS –

LEAD FLOW – CL2 HALL A SLOW CONTROLS – CABLE #6 (Q2); #14 (Q3).

" CRYO CONTROLS –

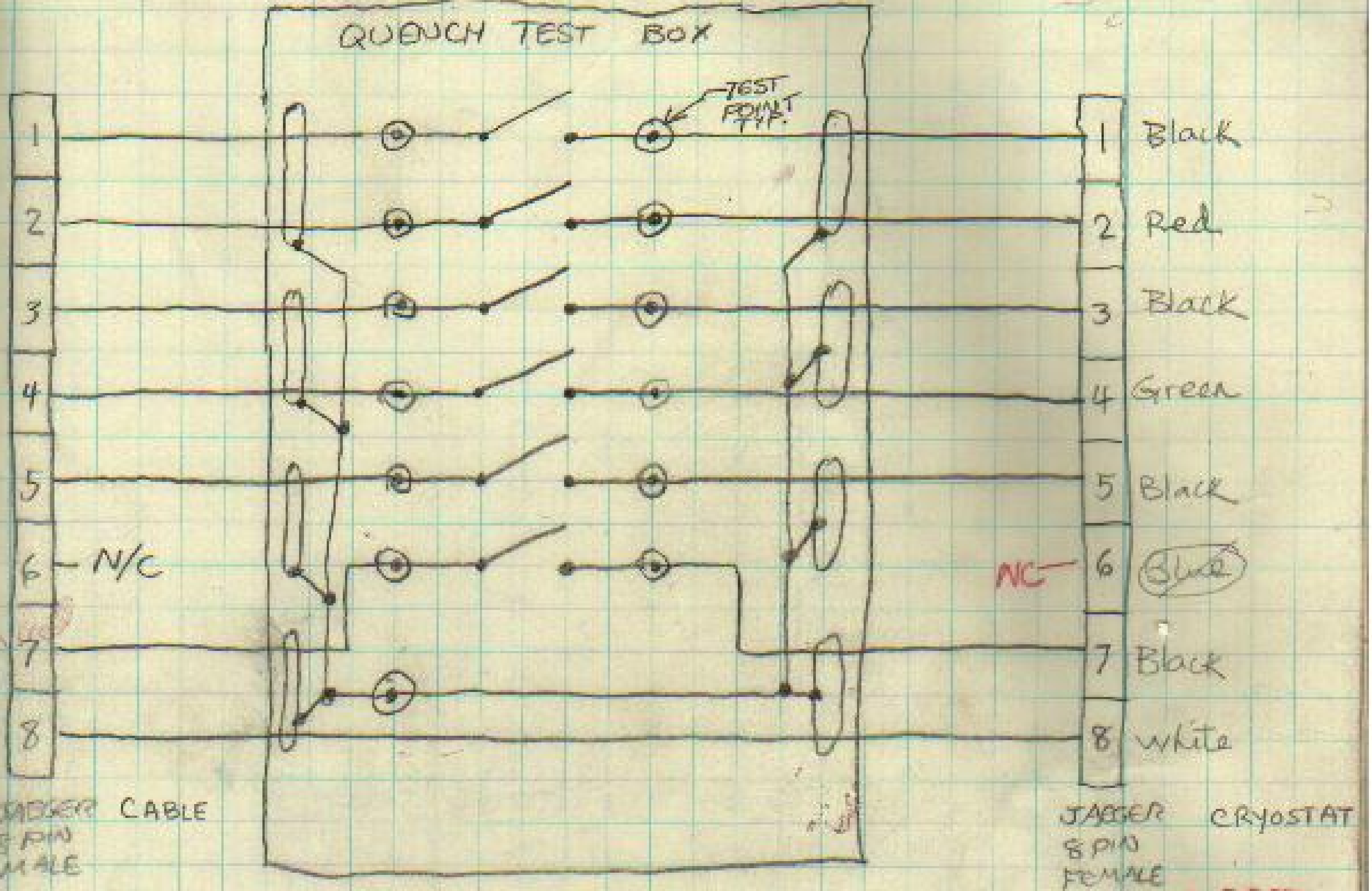
HELIUM LEVEL – HALL A SLOW CONTROLS – CABLE #8 (Q2); #16 (Q3).

" CRYO CONTROLS

LABEL

Q1 - QUADRAPOLE - FOCUSING MAGNET

SACLAY Q1 SAFETY SYSTEM TEST BOXES



~~[illegible]~~ Box P/N 597513010 66.11 — 170 DPDT

TYPICAL 6 SPST SWITCHES TOGGLE size? on/on P/N 593010~~[illegible]~~ (Red 6)

13 BANNANNA PLUG TEST POINTS CW0.9 P/N IN PN 593581230 / Orange 5 P/N 593581240 / OUT SHIELD PN 593581260

BANANA

male outside? female outside?

← 6' cables →

* 8 COND. CABLE 20 AWG P/N 614532235

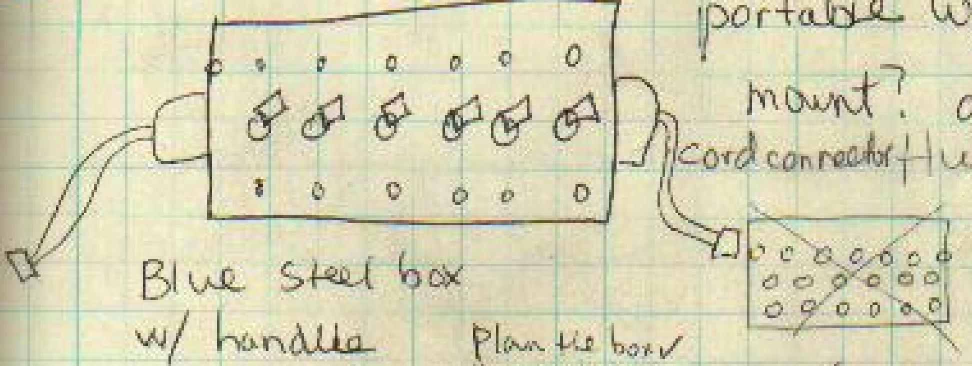
CABLE TIES P/N 61155 0030

CAMA SLIDE RAILS slide in/out N/A

[illegible]day June 04, 1996

portable w/ bracket

mount? on top of Q1 mount



cord connector Hubbell for strain relief

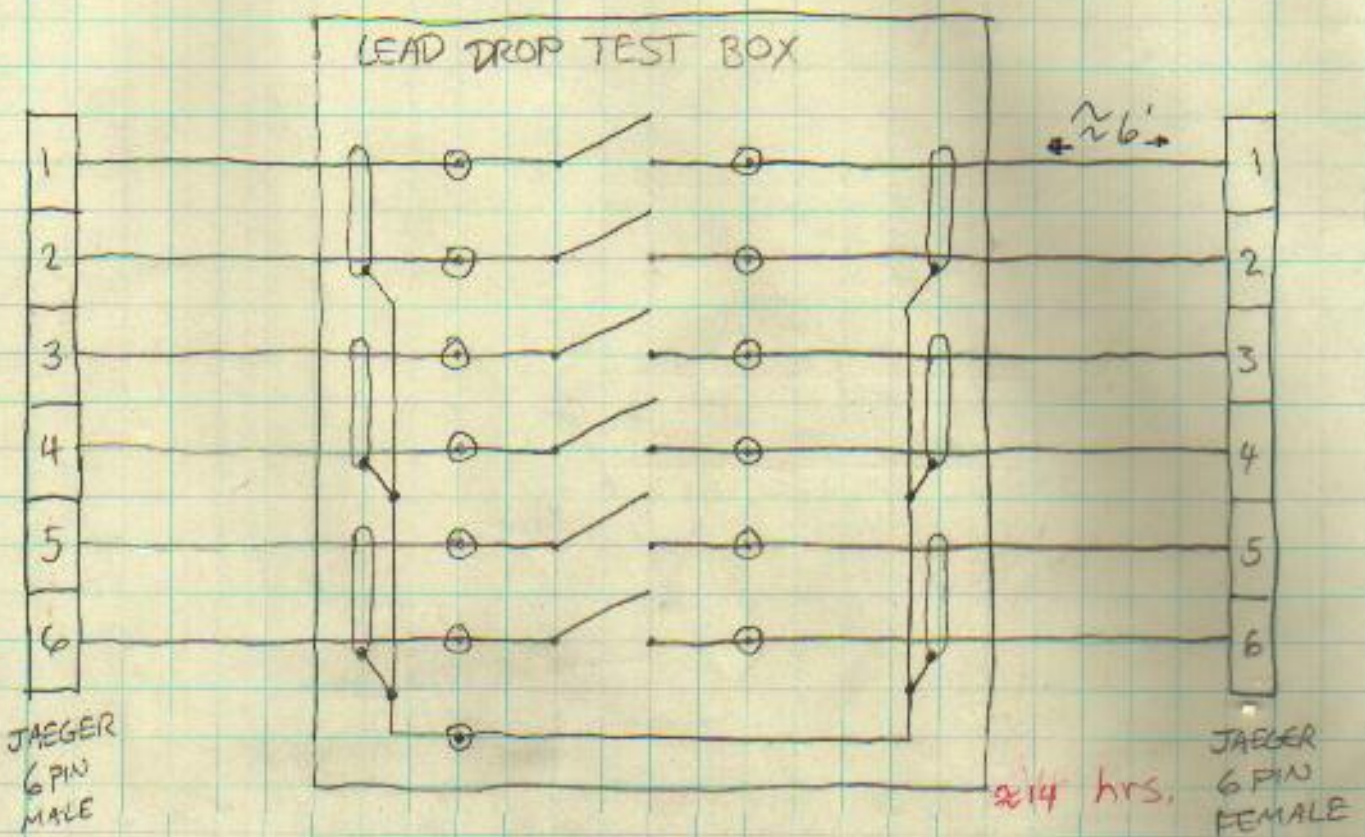
Hubbell @ Norfolk Wire

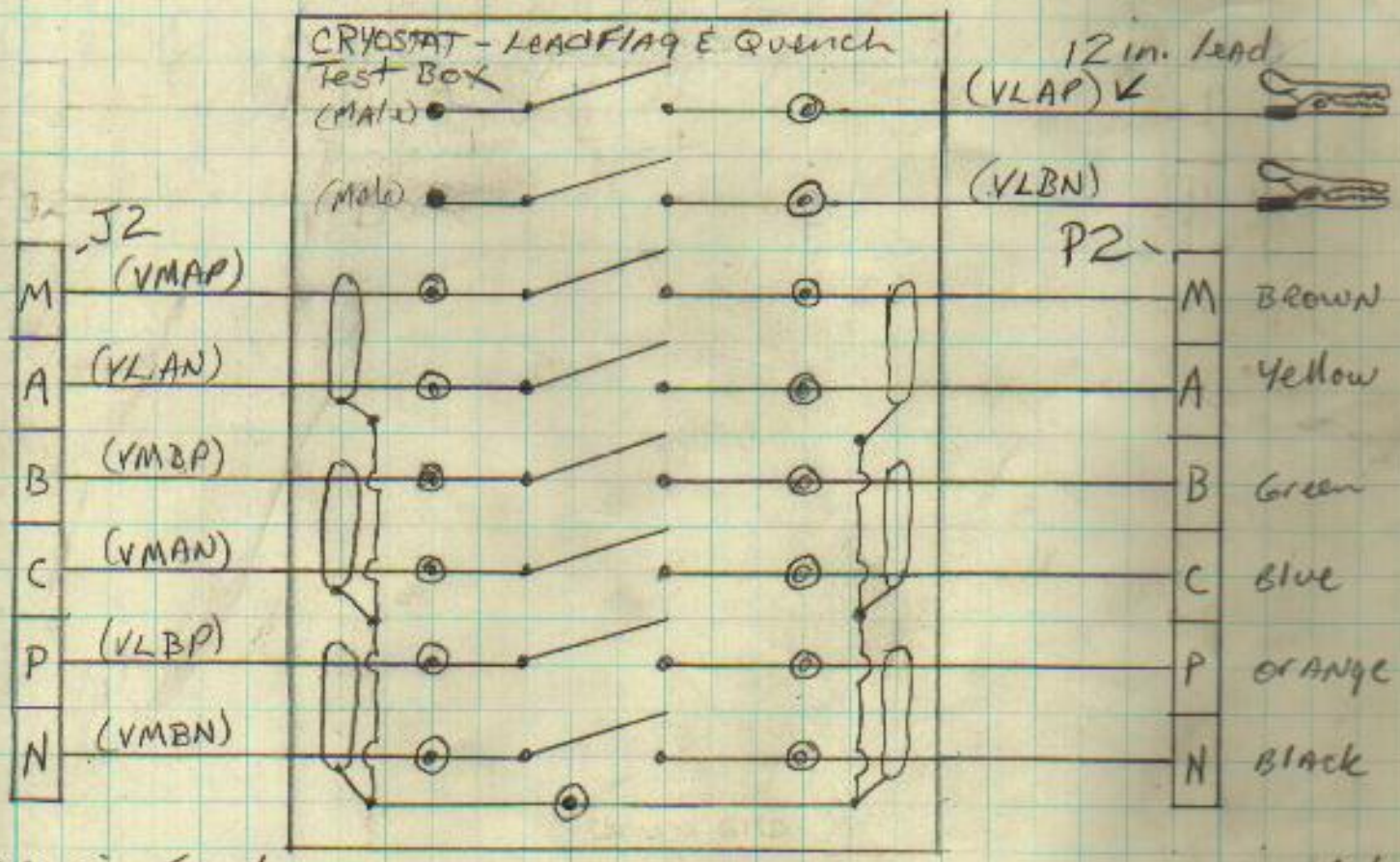
don't complete the soldered end (vacuum connect to be replaced w/ pin conn. type)

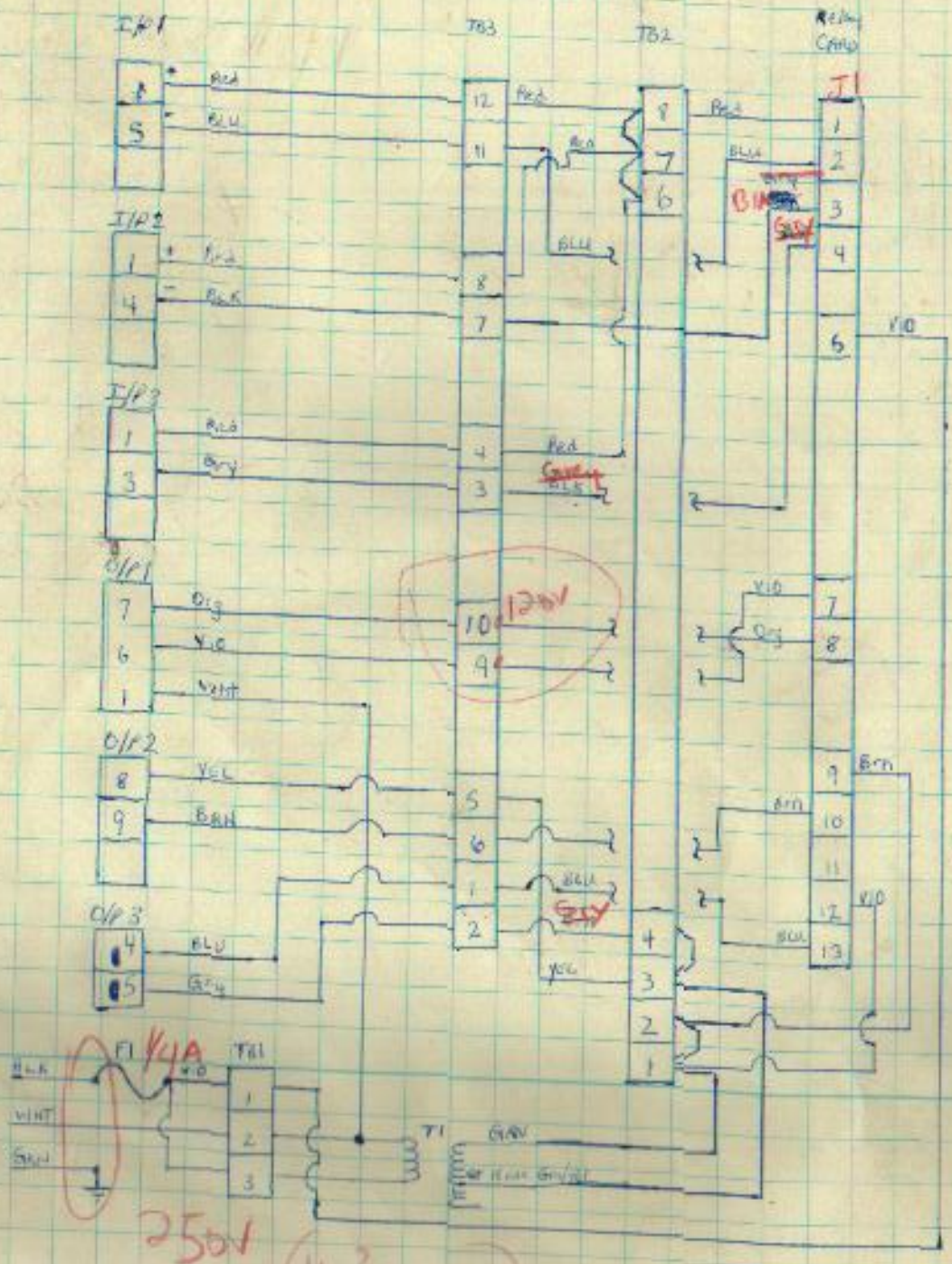
Blue steel box w/ handle

- Plan the box ✓
- Buy the bug ✓
- Buy the components, cable measure ✓
- Drill holes punch ✓ — PUNCH C on front panel 6 ~~[illegible]~~ PLCS. (6, 13 pcs.)
- Install components ✓
- Wires

6/4/96


LEAD DROP TEST BOX
≈6'
1
2
3
4
5
6
JAEGER 6 PIN MALE
JAEGER 6 PIN FEMALE
≈14 hrs.


CRYOSTAT - LEAD FLAG & Quench Test Box
12 in. lead
(VLAP)
(MALN)
(MALP)
(VLBN)
J2
P2
M (VMAP)
A (VLAN)
B (VMBP)
C (VMAN)
P (VLBP)
N (VMBN)
M BROWN
A Yellow
B Green
C Blue
P ORANGE
N BLACK
26 pin Female Socket Plug
26 pin Male Bulk head
≈16 hrs.
17 banana jacks
8 switches



Q2-19 M-1 Alert Wh
L-11 - close Blk
14 - open Rd

2 → 13
3 → 10

See Drawing ON Reverse Side

TB3 for extra test points

+1 -24V
disconnect G/B
use G/Y

J1 clock wiring

TB1 - cover w/ plexiglass
LABEL: TB3 - 9,10 hV 120V
Install TB3

on power cord
twist LOCK connectors

DANGER HIGH VOLTAGE
1) EXPOSED LIVE

111

Q2/Q3
Weka Valve 19

Q2/Q3
Relay Card
Chassis O/P 1

Wiring from Danfysik to Saclay

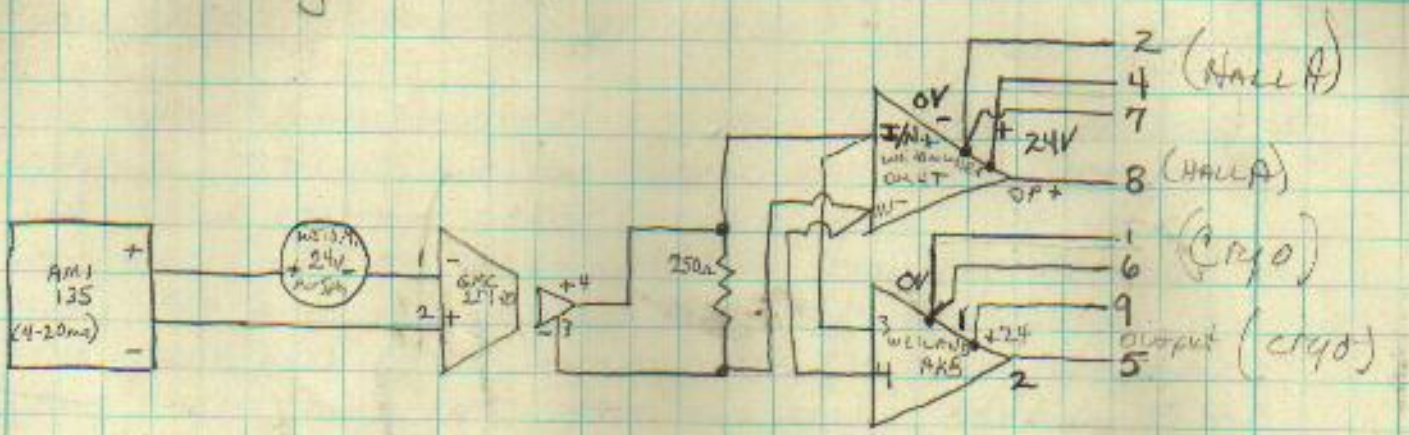
Electron

Danfysik		Saclay C283
1	W/Blu	8
2	W/Brn	9
3	W/Org	10
4	W/Gry	11
5		
6		
7	White	21
8	Red	15
9		
10	Blu	14
11	N/C	
12	Wh/Blk	2
13	N/C	
14	Wh/Red	4
15	Wh/Vio	12
16	Org	13
17	Wh/yel	7
18	Wh/Grn	5
19		
20	yel	17
21		
22	Brn	16
23		
24	Gry	19
25		
26	Vio	18

Hadron

Danfysik		Saclay C283
1	W/Blu	8
2	Tan	9
3	R/yel	10
4	R/Blk	11
5		
6		
7	Wh	21
8	R	15
9		
10	Blu	14
11	N/C	
12	Wh/Blk	2
13	N/C	
14	Wh/R	4
15	R/Brn	12
16	Org	13
17	Wh/yel	7
18	Wh/Grn	5
19		
20	yel	17
21		
22	Brn	16
23		
24	Gry	19
25		
26	Vio	18

Q1 Signal Isolation



C103-06 CRYO +24VDC I/P, 4-20mA O/P LL71Q105

C103/04 TO C181

I/P - 6	65	0VDC
I/P + 9	64	+24VDC
O/P - 1	67	
O/P + 5	66	

(CABLE 110)

C103-07 HALL A +24VDC I/P 0-10VDC O/P LL71Q105

C103/07 TO C181

I/P + 4	114
I/P - 7	115
O/P + 8	116
O/P - 2	117

C103-08 CRYO +24VDC I/P 4-20mA O/P LL71Q106

I/P + 9	59
I/P - 6	60
O/P + 5	61
O/P - 1	62

C103-09 HALL A +24VDC I/P 0-10VDC O/P LL71Q106

I/P + 4	69
I/P - 7	70
O/P + 8	71
O/P - 2	72

TROUBLESHOOTING NOTES 7/20/96

WHILE TROUBLESHOOTING Q2 04 & 16 YESTERDAY KAREN AND I THOUGHT WE HAD TRACED THE LOW OUTPUT OF HER VALVE CONTROL CARDS (-0.4 TO +19.2 mA VICE 0.0 TO 24 mA) TO A GROUND LOOP PROBLEM BETWEEN HER CARD AND THE VALVE. BUT TODAY I ISOLATED THE VALVE (Q2 16) BY CUTTING THE TRACE ON THE CARD AND STILL COULD NOT DRIVE THE VALVE BEYOND 19 mA. AFTER CUTTING THE TRACE AND TEMPORARILY REMOVING THE CONTROL RETURN AND VOLTAGE READBACK COMMON WIRES FROM THE VALVE, I SAW 43 kΩ RESISTANCE TO GROUND.

I THEN BECAME SUSPICIOUS OF THE CARD OUTPUT AND TESTED IT THROUGH A 500Ω RESISTOR, AND GOT THE SAME LOW CURRENT VALUES. SINCE I HAD ONLY ONE WORKING CURRENT METER, I CROSS-CALIBRATED IT WITH THE ROSEMONT SOURCE, AND FOUND MY FLUKEMETER WAS READING 0.4 mA LOW ACROSS THE SCALE.

NOW WITH CONFIDENCE IN MY METER AND LESS CONFIDENCE IN THE CAMAC VALVE CONTROL CARDS, I BEGAN TO TEST EVERY CHANNEL OF EVERY CARD AND FOUND THEM ALL TO HAVE LOW OUTPUT SIMILAR TO THE ABOVE VALUES. ONE CARD (SLOT 1) HAD LOOSE CONNECTIONS IN IT WHICH RESULTED IN CURRENT VARIATIONS OF UP TO 6 mA ON 2 CHANNELS. THE CARD IN SLOT 6 HAD NO OUTPUT. (ANY CHANNEL).

I STILL DON'T KNOW IF WE HAVE A GROUND LOOP PROBLEM BUT I RATHER DOUBT IT BECAUSE ISOLATING Q2 16 AT THE VALVE DID NOT CHANGE THE CURRENT IN THE LOOP. I CHECKED A COUPLE OF CHANNELS ON REMOTE, AND SAW ≈2-3 mA. I COULDN'T DO A COMPLETE CHECK OF THE DAC'S BECAUSE NO ONE WAS IN THE CHL CONTROL ROOM.

RECOMMENDATIONS FOR MONDAY: TEST THE DAC'S, RE-CALIBRATE (ON BENCH) THE CARDS AND START OVER.

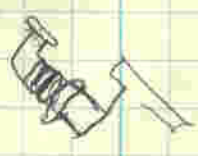
8/13/96 CHARACTERIZATION OF THE ELECTRON SIEVE/SLIT LINEAR POSITION TRANSDUCER

THIS SYSTEM IS A POTENTIOMETER-BASED LINEAR TRANSDUCER WHICH DEVELOPS 0-10 VDC OUTPUT. IT REQUIRES 24 VDC POWER. THE TRANSDUCER IS A PRECISION CABLE + DRUM MECHANISM WHICH HAS A SPRING RETRACT. DO NOT ALLOW THE CABLE TO SNAP-BACK (RAPID RETRACTION) INTO THE TRANSDUCER, AS THAT COULD CAUSE DAMAGE TO THE MECHANISM.

POSITION:	OUTPUT OF TRANSDUCER:
VALVE CLOSED (TOPMOST POSITION)	0.085 VDC
SIEVE CENTER	3.66
SLIT CENTER	6.17
BOTTOM	8.81

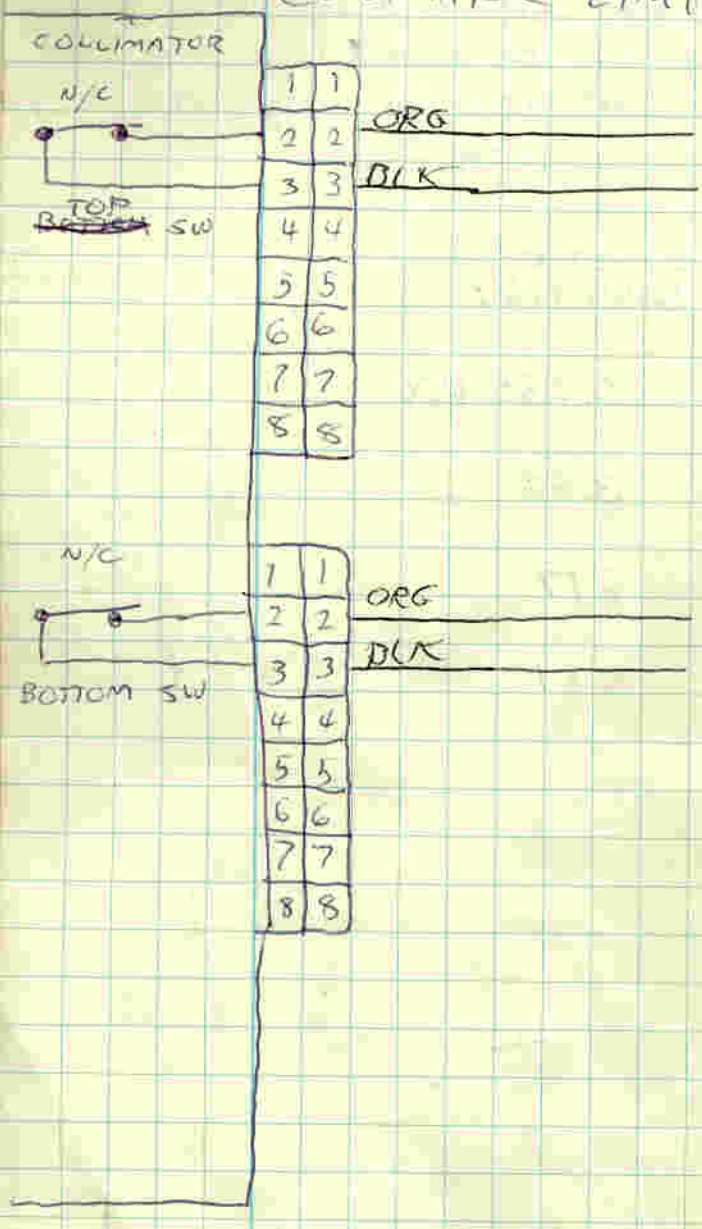
11/19/96 CHARACTERIZATION OF HADRON SIEVE/SLIT

POSITION:	
VALVE CLOSED (TOPMOST POSITION)	~~0.805~~ (0.834 (SWITCH)
SIEVE CENTER	3.64
SLIT CENTER	~~4.78~~ 6.15
BOTTOM	8.78 (SWITCH) 8.81 STOP

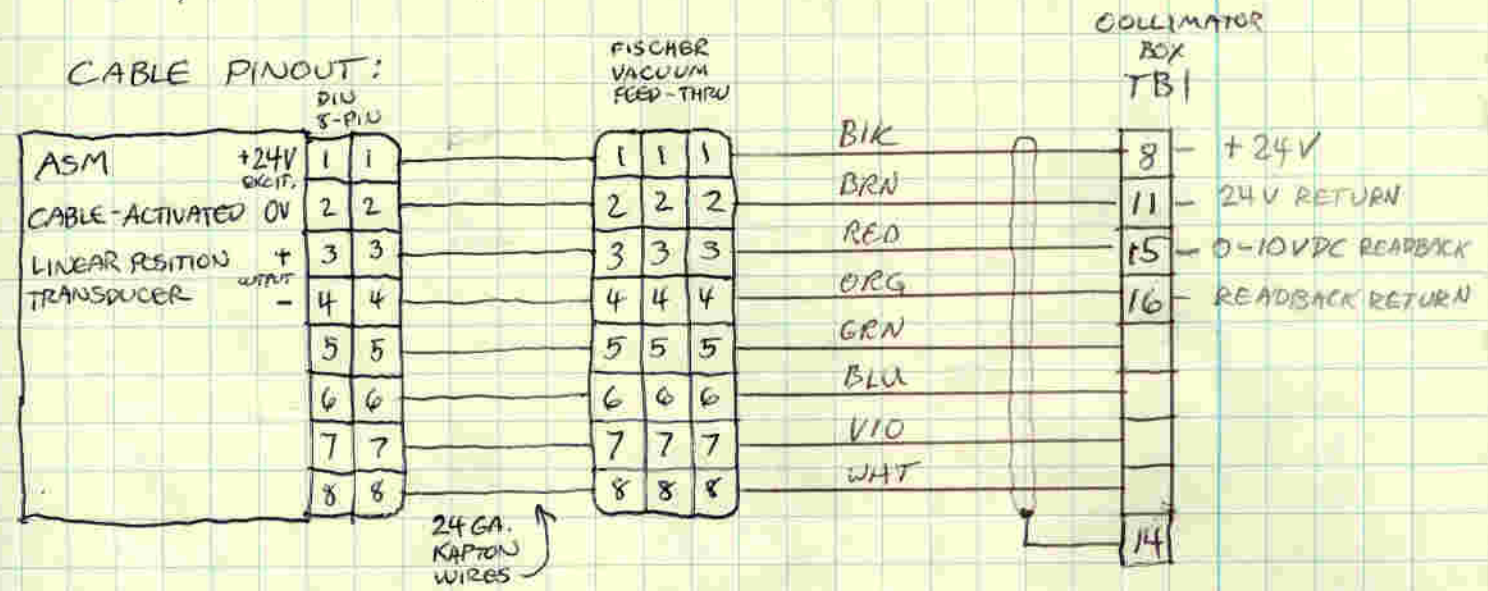


2/13/97

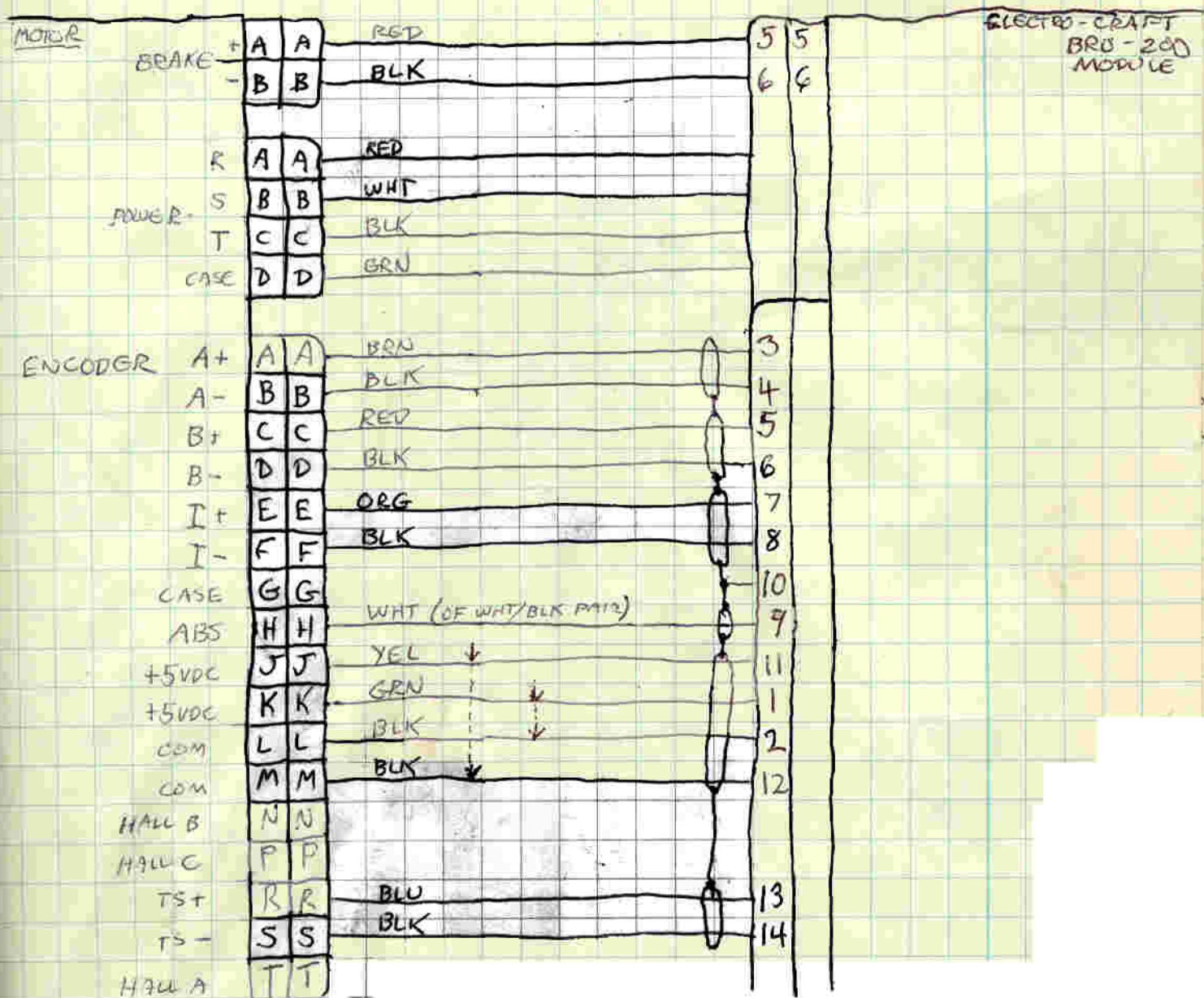
COLLIMATOR LIMIT SWITCHES



9/5/96 SIEVE/SLIT LINEAR TRANSDUCER



2/10/97 COLLIMATOR MOTOR CABLES



10/31/96

CABLE PINOUTS
HADROS Q3

CA-17

PIN:	COLOR:
1	WHT
2	~~PINK~~ BRN
3	~~YEL~~ GRN
4	YEL
5	~~BLK~~ GREY
6	PINK
7	BLU
8	RED
9	BLK
10	VIO
11	GREY/PINK
12	RED/BLU

CA-19

PIN:	COLOR:
1	WHT
2	BRN
3	GRN
4	YEL
5	~~RED~~ GREY
6	PINK
7	BLU
8	RED
9	BLK
10	VIOLET
11	GREY/PINK
12	RED/BLU
13	WHT/GRN
14	BRN/GRN
15	WHT/YEL
16	YEL/BRN

CA-18

PIN:	color:
1	WHT
2	BRN
3	GRN
4	yel
5	GRY
6	PNK
7	BLU
8	RED
9	BLK
10	VIO
11	GRY/PNK
12	RED/BLU
13	WHT/GRN
14	BRN/GRN
15	WHT/YEL
16	BRN/YEL
17	WHT/GRY
18	BRN/GRY
19	WHT/PNK
20	BRN/PNK

CA-20

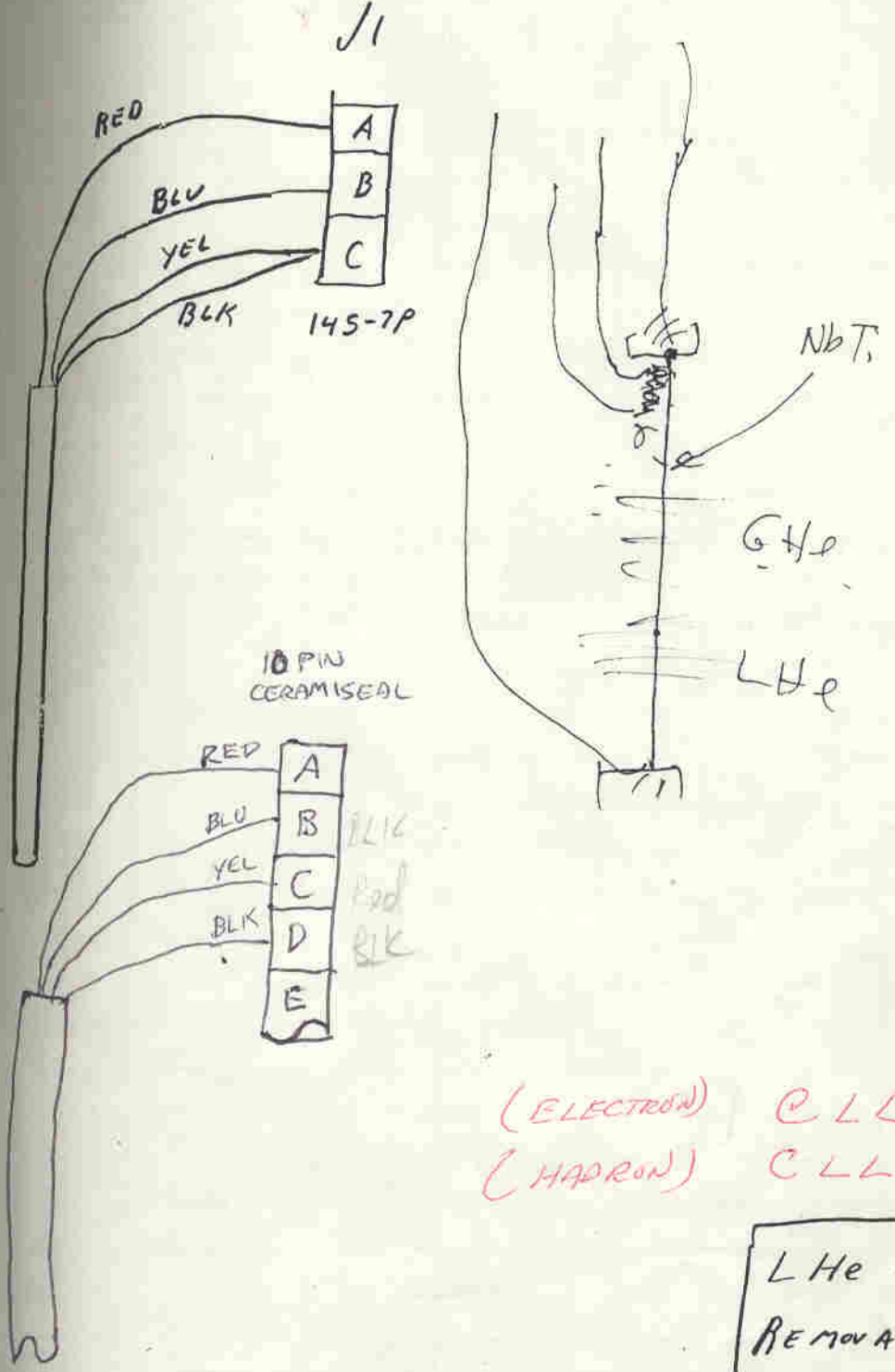
PIN:	COLOR:
1	WHT
2	BRN
3	GRN
4	YEL
5	GREY
6	PINK
7	BLU
8	RED

BALZERS TCP 121 EXTENDED CABLE PINOUT

CABLE #1	CONTROLLER CONNECTOR a	CONTROLLER CONNECTOR b	CABLE #2
BLU/RED, GRN/BLK, WHT/BLK, ORG/BLK			BLU
BLK/WHT, WHT, BLU/BLK, RED/BLK	2		ORG
ORG/RED, BLU/WHT, BLK/RED, RED/GRN	3		BRN
BLU, BLK	4		RED
WHT/RED, ORG	5		VIA; ~~GRN, SHLD~~
CABLE #2 GRAY	6		GRN, SHLD
CABLE #2 BLK	7		WHT
GRN, RED, SHLD	8		CABLE #1 GRN/WHT, RED/WHT

CABLE #1
CAROL LL6938/ 24 AWG/19 CONDUCTOR

CABLE #2
E-57497 22 AWG

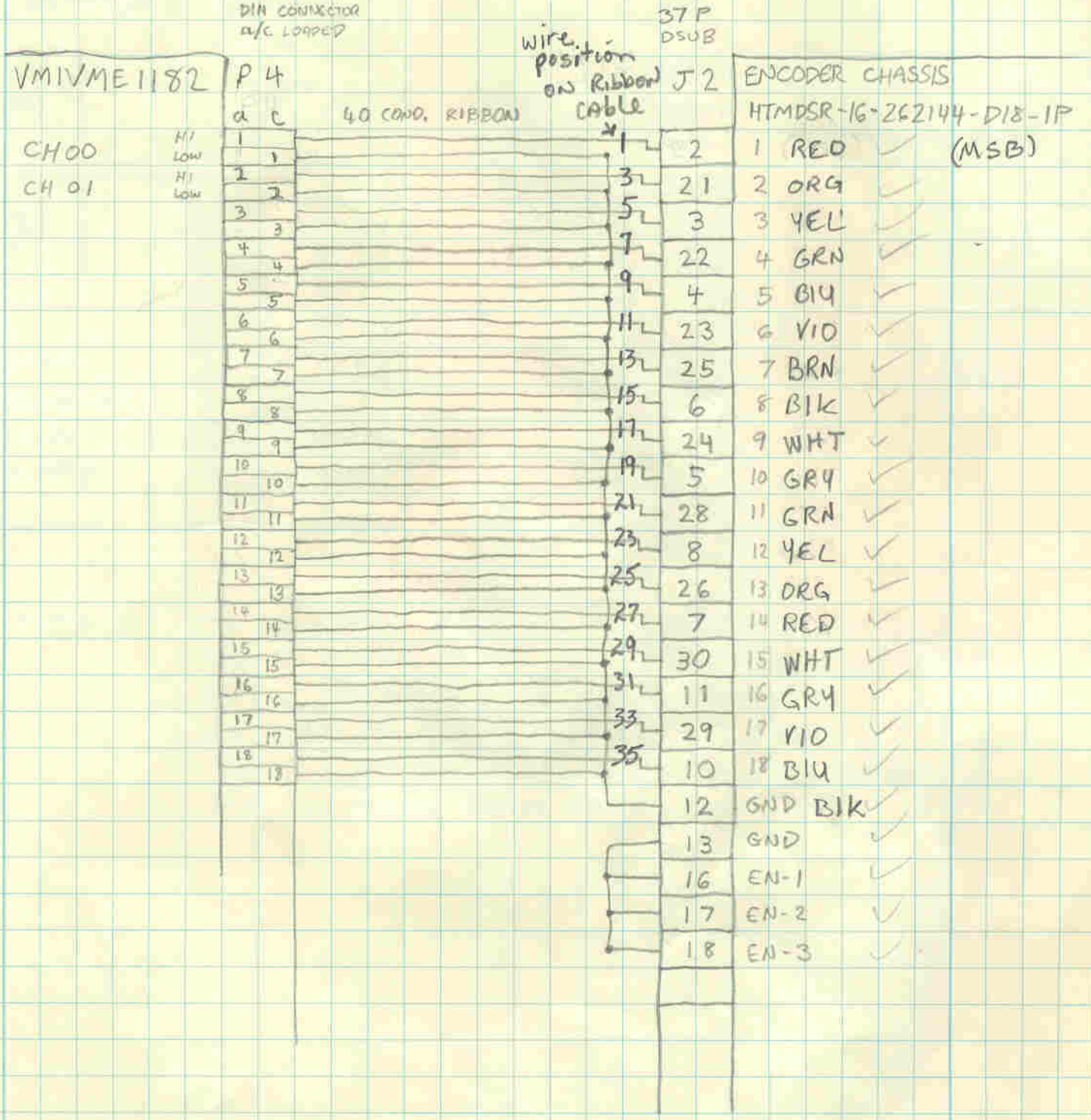


(ELECTRON) CLL 71 D1Ø6

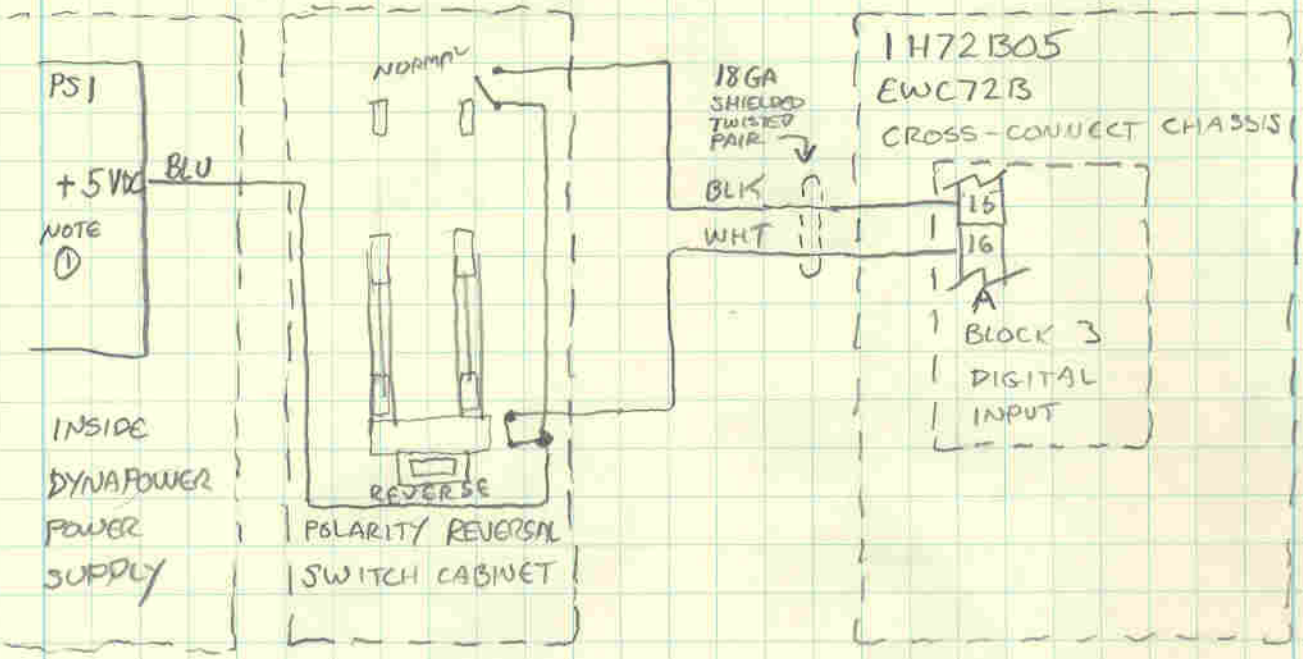
(HADRON) CLL 72 D1Ø6

LHe #1 (J1)
REMOVABLE PROBE
CBF-EP805 7/25/9

ABSOLUTE ENCODER TEMPORARY VME CABLE



HADRON/ELECTRON DIPOLE POLARITY REVERSAL SWITCH READBACK CIRCUIT



NOTE ① THE DYNAPOWER 5 VDC POWER SUPPLY PS1 ALSO POWERS DIGITAL STATUS BITS FROM THE DYNAPOWER TO THE CONTROLS. THE +5VDC RETURN IS JUMPERED TO LUGS C15 AND C16 ON BLOCK 3 FROM LUG#C14, WHICH RETURNS TO PS1 THROUGH THE DYNAPOWER STATUS CABLE.