NOTES FROM NOTEBOOK

Section 10: Separate Notes

o Bill Aronoff
800-867-6690 NJ
2nd to Houston

732-886-3363
- done tomorrow -

303-517-4330

1701AA UN14E5B701; WN167B4409

8A BN1E774F86

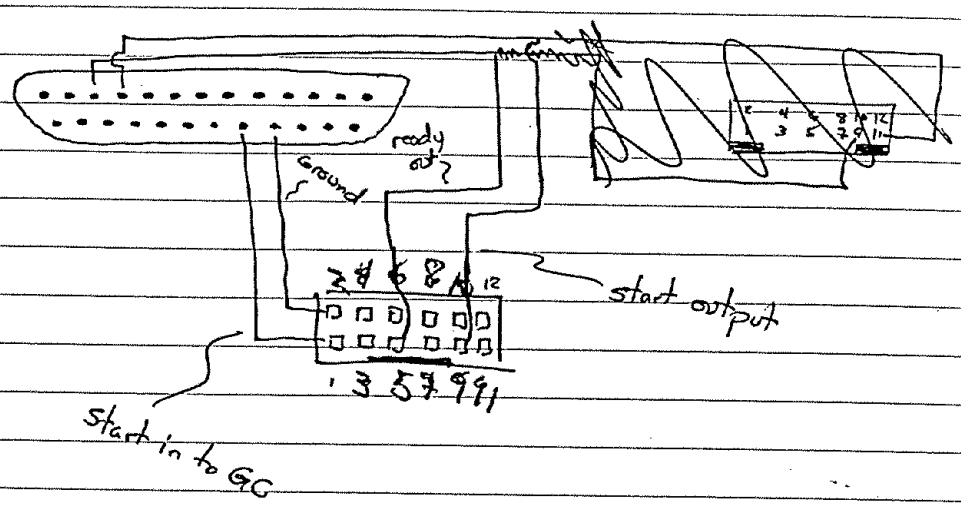
HIN 98 BGT3T-X6TF7-BXG7F-VJWHP-WHQBQ

Thermo — Bill Hill — Hilltech
↳ 520-432-6763
4H40 $100

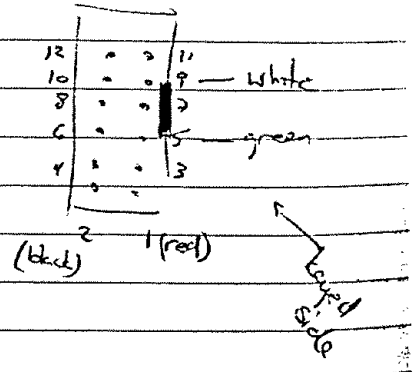
2 pump seals
2 pistons

Tekmar 2000 to HP 5890 Remote stop/start

Tekmar 25-pin: 3 (green) to HP #5
HP 12-pin: 4 (white) to HP 9
22 (red) to HP #1
21 (black) to HP 2



GC view top from front



Tekmar 5971 remote

5890	25 pin male Tekmar	MS 9 pin male
7-11		
1-10	red (22)	
2-6	black (21)	
5	green (3)	white (7)
4		black (1)
8		red (3)
9	white (4)	

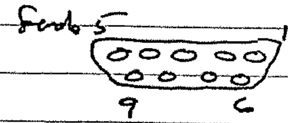
Valco Judy Joyce 800.367.8424

34 port valve DCST-16E-TM $625

PTS P-3204-050 $685

C controller

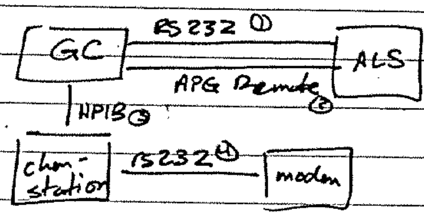
APG Remote
cable # 35900-60670



← looking at back of controller

	fcn	active	color
1	GND		black
2	prepare	low	white
3	start	low	red
4	shutdown	low	green
5	reserved		brown
6	power on	high	blue
7	ready	high	orange
8	stop	low	yellow
9	start request	low	violet

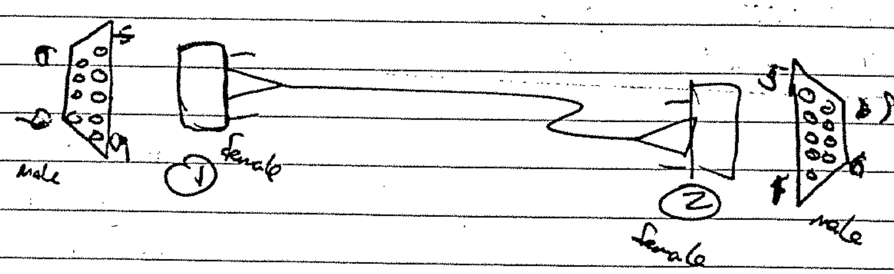
GC / ALS / Chemstation



① G1530 60600
② G1530 60930
③ 8120-3446

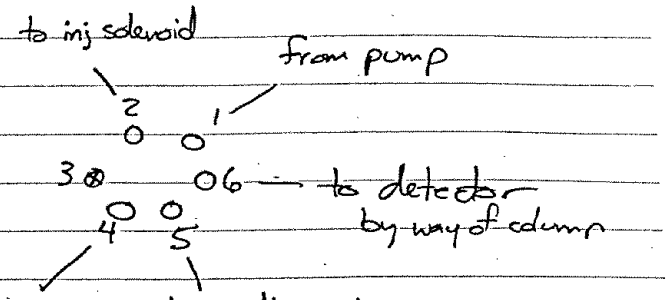
RS232C cable ("sampler" on GC backplane)
part # G1530-60600

800 227 9770

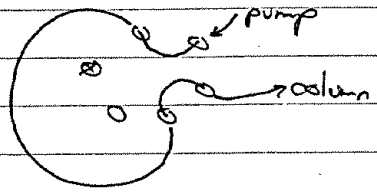


HPLC HP-1050

Autosampler:



an injection flow is 1 → 2 → needle seat → 5 → 6



HP standard capillary colors / IDs		Keystone color
blue	0.25mm	
green	0.17mm	
red	.007"	yellow

Deuterium Lamp 7988 2-60002

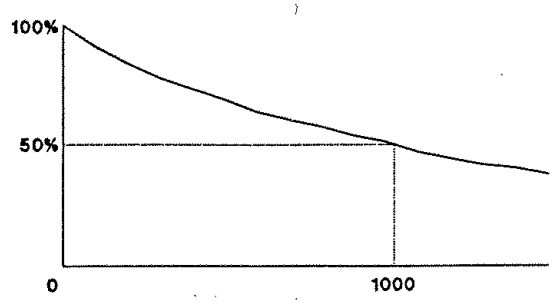
This deuterium lamp is for use with the following Hewlett-Packard detectors:

- Diode Array Detector in:

  HP 1040M and HP 1040M Series II
  HP 1090 Series L and M, and HP 1090 Series II/L and /M
- HP 1050 Series Multiple Wavelength Detector
- HP 1050 Series Variable Wavelength Detector ("C" version)

Lamp Lifetime

The intensity of the emitted light from the lamp decreases with use. The decrease in intensity is faster at lower wavelengths than at higher wavelengths. The intensity measured at 230 nm will typically decrease to half the initial intensity after about 1000 hours of use.



Relative Intensity against Hours of Use

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HP Part No. 79883-90104
Printed in FRG November 1991

HEWLETT PACKARD

RAM

0020PR V54C365804VCT8PC = 8 MB chip 8x64 128pin

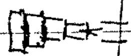
0002 48LC8M8AC -8EC = 8 MB chip 8x64 128pi

P

$20
$53
$44
$10
$10
$28
$58
53
16
100
5
64

1701 AA

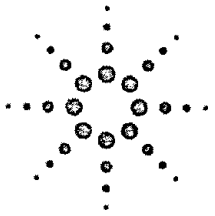
05972 - ~~6705?~~



3pin power board
10 pin? on 72 power supply
9pin into main board

Brian Keller
504-371-8560 fax
504-371-8557 ph

a - PII Kyak
b - vectra VL400 PIII



Agilent Technologies

Innovating the HP Way

Support \ Compatibility Matrix

CE/GC/LC/UV-VIS/A to D ChemStation Revisions A.03.0x→A.08.0x

	A.03.0x	A.04.0x	A.05.0x	A.06.0x	A.07.0x	A.08.0x
Windows 3.1 / WFW 3.11	Yes	Yes	No	No	No	No
Windows 95	No	Yes	Yes	Yes	No	No
Windows NT 4.0	No	No	Yes	Yes	Yes	Yes
Service Pack 3	No	No	Yes	Yes a	No	No
Service Pack 4	No	No	No	Yes	Yes	No
Service Pack 5	No	No	No	No	No	No
Service Pack 6a	No	No	No	No	Yes	Yes
Windows 98	No	No	No	No	No	No
Windows 2000	No	No	No	No	No	No
LAN Communication	No	No	No	Yes	Yes	Yes
82335 GPIB Card	Yes	Yes	Yes	Yes	No	No
82341 GPIB Card	No	No	Yes	Yes	Yes	Yes
82350 PCI GPIB Card	No	No	No	Yes[12]	Yes	Yes
HP I/O Libraries Rev: F.01.02	No	No	Yes	Yes[8]	No	No
HP I/O Libraries Rev: F.01.01	No	No	No	Yes[9]	No	No
HP I/O Libraries Rev: G.02.02.01	No	No	No	No	Yes	No
HP I/O Libraries Rev: H.01.02.00	No	No	No	Yes[10]	Yes[10]	Yes[10]
35900C External A/D	Yes	Yes	Yes	Yes	Yes	Yes
35900D PC A/D Card	Yes	Yes	Yes[1]	Yes	Yes	Yes
35900E External A/D	Yes	Yes	Yes	Yes	Yes	Yes
5890 Series A	Yes	Yes	No	No	No	No
5890 Series II and (+)	Yes	Yes	Yes	Yes	Yes	Yes
6850 (LAN Only)	No	No	No	Yes[11]	Yes	Yes
6890	Yes[7]	Yes	Yes	Yes	Yes	Yes
6890 Enhancements	No	Yes[2]	Yes	Yes	Yes	Yes
7673A (18594A)	Yes	Yes	No	No	No	No
7673B (18594B /G1512A)	Yes	Yes	Yes	Yes	Yes	Yes
7683	No	No	Yes[1]	Yes	Yes	Yes
7683 (variable speed)	No	No	No	Yes	Yes	Yes

A.09.0x

no? b

This document is believed to be accurate and up-to-date. However, Agilent Technologies, Inc. cannot assume responsibility for the use of this material. The information contained herein is intended for use by informed individuals who can and must determine its fitness for their purpose.

	A.03.0x	A.04.0x	A.05.0x	A.06.0x	A.07.0x	A.08.0x
9405A (SECM)	Yes	Yes[3]	Yes	Yes	Yes	Yes
405B (SECM)	No	Yes[2]	Yes	Yes	Yes	Yes
0 LC System	Yes	Yes	Yes	Yes	Yes	Yes
050 LC Modular System	Yes	Yes	Yes	Yes	Yes	Yes
0 LC Modular System	No	Yes[4]	Yes[4]	Yes[4]	Yes	Yes
601A CE System	Yes	Yes[5]	Yes	Yes	Yes	Yes
2182AA GPC	No	No	No	Yes[6]	Yes	Yes
115AA UV-VIS	No	No	Yes[1]	Yes	Yes	Yes
116AA UV-VIS	No	No	Yes[1]	Yes	Yes	Yes
1117AA UV-VIS	No	No	Yes[1]	Yes	Yes	Yes
118AA UV-VIS	No	No	Yes[1]	Yes	Yes	Yes

1) Supported on revisions A.05.02 and above

2) Supported on revisions A.04.02 and above

19405A (ONLY) supported on revision A.04.01
19405B (ONLY) supported on revision A.04.02

1) G1321A FLD supported on revisions A.06.01 and above

G1362A RID supported on revisions A.06.04 and above

G1365A MWD supported on revisions A.06.04 and above

G1315B supported since A.08.01

G1367A and G1376A supported since A.08.03

) CEC-mode supported on revisions A.04.0x and above

5) Supported on revisions A.06.03 and above

Supported on revisions A.03.02 and above

) Supported on revisions A.06.01 / A.06.02 (ChemStation CD)

) Supported on revisions A.06.03 / A.06.04 (ChemStation CD)

) Requires H.01.03.71 BETA Patch (ChemStation CD)

1) Supported on revisions A.06.03 and above

2) Requires GPIB drivers from A.07.0x or A.08.0x CD-ROM

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A.08.0X

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Chemical Analysis Service Note

5971-35

Service Note

Supersedes: 5971-30

Modified Retrofit Kit for the Power Supplies

Serial Numbers:
0000A0000 - 9999X9999

Modified Retrofit Kit for the Power Supplies

Parts Required:

DESCRIPTION	Original P/N	Old Retrofit	New Retrofit
Power Supply	0950-1882	0950-2552	0950-2552
AC Cable	05971-60418	05972-60426	05972-60426
DC Cable	05971-60421	05972-60427	05972-60427
Retrofit Kit with Power Supply	N/A	05972-67006	N/A
Retrofit Kit without Power Supply	N/A	N/A	05972-67007

Situation:

There are two versions of the power supply old style (0950-1882) and new style (0950-2552). When replacing the old style power supply, the 05972-67006 Retrofit Kit is required. When replacing the new style power supply, the retrofit kit is not required. The difficulty is with determining which style supply is in the MSD. This can not be done unless the MSD is disassembled and the power supply is inspected.

Solution/Action:

The retrofit kit (05972-67006) will be obsoleted. A new retrofit kit will be created (05972-67007). This new kit will contain all the parts required to update an MSD to an new supply with the exception of the power supply. By doing this there will be less confusion over what to order when replacing a power supply. By moving the power supply from the kit, both part numbers can be ordered and if the kit is not required, it can be returned for credit.

Additional Information:

None

Date: 03/16/99

Administrative Information

A/S 40

relay on block

1 Ready Out
2 F2 (unused)
3 Load
4 CBL present (A/S 40 determines cable connected... must be connected
5 +5V DC max 50mA to provide power to external load

Parallel

14 run/hold
18 tray ready
26 load
28 ready
39 run/hold

VWD

1 orange +5v DC
black 2 auto offset
red 3 increase
green 4 lamp off
yellow 5 cbl present
brown 6 ground

Kurt III – Stow, Ohio
Canton 330-966-8276

ASM-2 relay pinouts

Dionex ACI RS 232 9 pin cable M to F

1-1
2-2
3-3
4-8
5-5
6-6
7-4
8-8
9-9

GPM-2 Dip Switch Settings

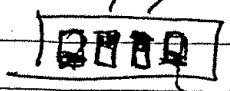
9 pin modification to Remote RJ-45 connection

female DB-9	AMP 2x4 @ motherboard
1- black	1- red
2- yellow	2- yellow
3- green	3- green
4- red	4- brown + all grounds (blue, purple, white)
5- ~~brown~~ ~~orange~~	5- orange
6- ~~ground~~ orange	6- blank
7- ground (purple)	7- blank
8- ground (white)	8- black
9- ~~empty~~ ground (blue)	

GPM-2 Dip Switch Settings

GPM-2 d.p switches for relay control

run/hold = stop/start on



↳ prog+1 off

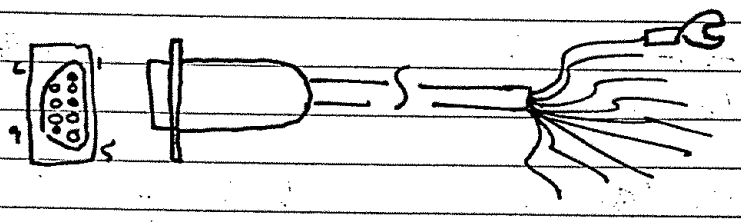
Test mode off

TTL high = relay open

TTL closed = relay closed

↳ From I/O Bus of 35900 D card

35900D card pinout



1	black	GND
2	white	prepare
3	red	start
4	green	shut down
5	brown	reserved
6	blue	power on
7	orange	ready
8	yellow	stop
9	violet	start request
—		shield

Chromatography Module

yellow air line on bottom of valve (sample is side)
gives sample load on valve 5 off
and sample deliver on valve 5 on

5mL vials, proportional sampling, 1 inj per vial = 2.4 min
sample load time (other load times on p.D-5 of A/S manual).

Std eluents: 1.7 mM $NaHCO_3$ / 1.8 mM Na_2CO_3
and 2.8 mM $NaHCO_3$ / 2.2 mM Na_2CO_3

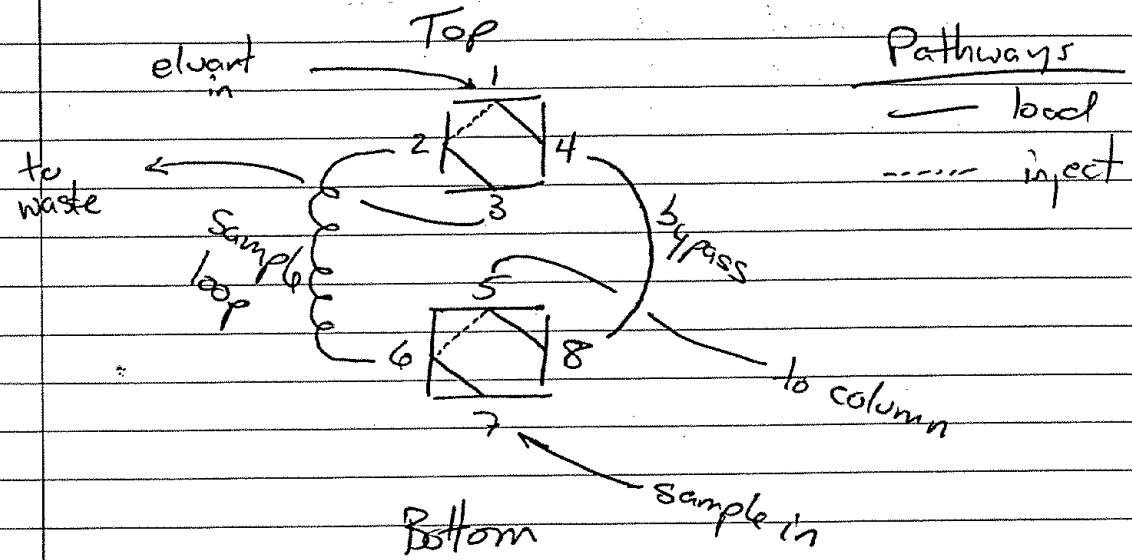
3.4 mL of 0.5 M $NaHCO_3$ + 8.6 mL of 0.5 M Na_2CO_3 into 1 L
and 6.8 mL of 0.5 M $NaHCO_3$ + 8.2 mL of 0.5 M Na_2CO_3 into 1L

.57 g $NaHCO_3$ into 4L = 1.7 mM .1425 g/L
.76 g Na_2CO_3 into 4L = 1.8 mM .190 g/L

Advanced Chromatography Module

Relay		
	4	B on
	3	A on
	2	inject
	1	power off
	5+6	relay control

Load/Inject slider valve 3 passages



890

7373

A injector — EPROM ✓ 07673-80285 ✓ ← apparently bad in 1987 injector year

07673-80580 —

EPROM SC93178P works in year 1989

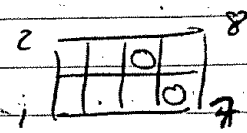
1820-5925

1432E

QEBH8920

Board	Eprom	OK?
7673-60020	7673-80355	

Dionex CDM-1 relay pinout



6+7 — cable present
3 — autozero

Rly 1 — pump start
2 — pump run
3 — supressor
4 — auto zero CDM
5 — load autosampler
6 — start next sample

Turbochrom Relay control

Turn on relay 6 at end of run, + off a little into the run to autostart next vial for sequence

~~Double Ionization Probability~~

(EG+G)

PE lamp DC Power gas discharge 1.1kV

F[redacted]K-7944 Krypton 10.6 eV ~~2Swatt~~ 2.5kV

CPI 4080-03 (PID) ← SRS Stanford Research Systems

Bill Partridge

865-946-1234

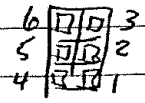
partridgewp@ornl.gov [redacted]

OI. 5200 + 4320(18)

AIB Board

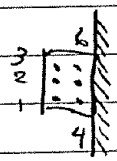
General Purpose Input cable 19251-60500

Female AMP 2×6 looking into sockets, using amp pin-numbering scheme:



1 – ground
2 - +1V white
3 - -V black

AIB board 2×6 looking at pins, using numbering from cable's AMP numbering



Turbochrom Method File : C:\TC4\AIRDATA\AIRTEST.MTH
Created by : esb on : 4/12/02 08:41 AM
Edited by : esb on : 12/9/02 03:49 PM
Description : A.I.R. demo method

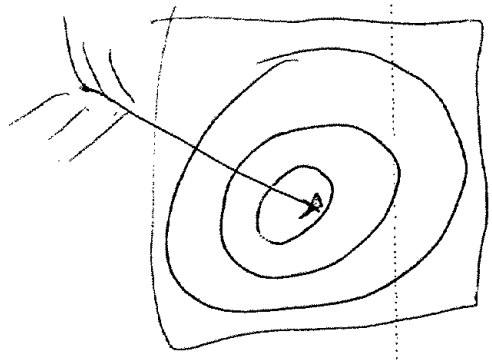
ATTN: PHIL

Number of Times Edited : 2
Number of Times Calibrated : 0

Instrument Conditions :
Sample method

Instrument Control Method:
Instrument name : DIONEX_4000I

Interface Parameters :
Delay Time : 2.30 min.
Run Time : 15.00 min.
Sampling Rate : 10.0000 pts/s
Interface Type : 900
Analog Voltage Input : 1000 mV
Data will be collected from channel A



Timed Events:

RLY1	set to ON at 0.00 min
RLY4	set to ON at 0.00 min
RLY5	set to ON at 0.00 min
RLY2	set to ON at 0.00 min
RLY6	set to OFF at 0.00 min
RLY3	set to OFF at 0.00 min
RLY7	set to OFF at 0.00 min
RLY5	set to OFF at 1.00 min
RLY7	set to ON at 2.20 min
RLY6	set to ON at 12.00 min
RLY2	set to OFF at 14.00 min

load (psm 5 solenoid)

Real Time Plot Parameters :
Channel A -- Pages: 1 Offset: 0.000 mV Scale: 1000.000 mV
Channel B -- Pages: 1 Offset: 0.000 mV Scale: 1000.000 mV

Processing Parameters :
Bunch Factor : 1 points
Noise Threshold : 1 µV
Area Threshold : 100.00 µV

Peak Separation Criteria
Width Ratio : 0.200
Valley-to-Peak Ratio : 0.010

Exponential Skim Criteria
Peak Height Ratio : 5.000
Adjusted Height Ratio : 4.000

Valley Height Ratio : 3.000

Baseline Timed Events :
No baseline timed events

Annotated Replot Parameters :
Offset & Scale determined automatically
Scale Factor : 1.000000

Number of Pages : 1
Plot Title : Chromatogram
X-Axis Label : Time [min]
Y-Axis Label : Response [mV]
Orientation : Landscape
Retention Labels : Top of Plot
Component Labels : Actual Time
Automatically set plot start and end times to data limits

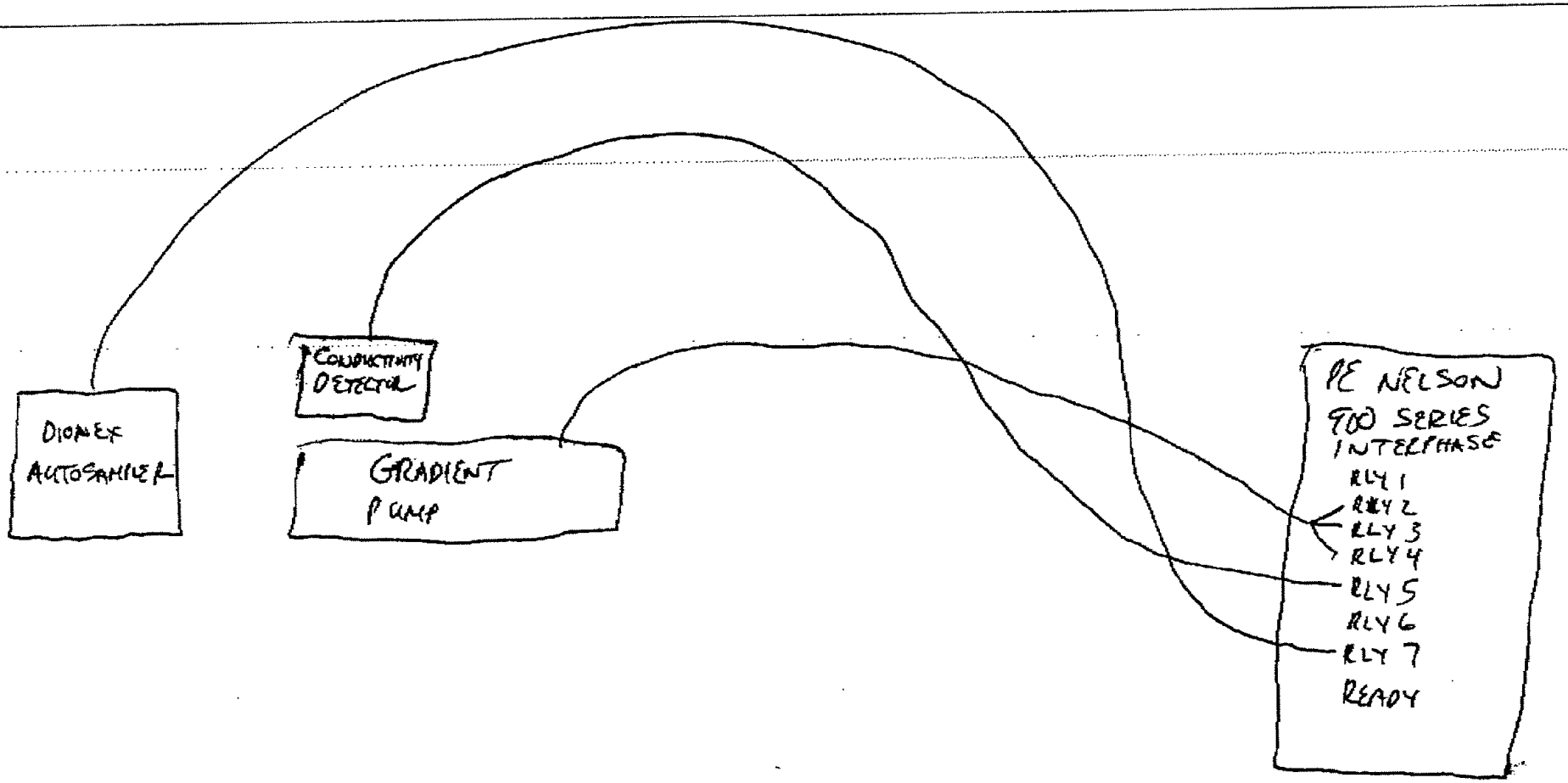
Report Format files :
No report format files given

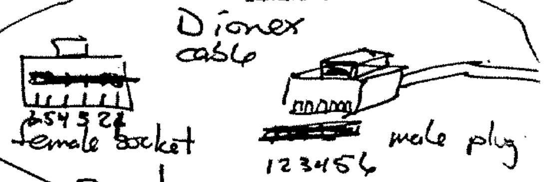
User Programs :
No user programs will be executed

Global Information :
Default Sample Volume : 1.000 ul
Quantitation Units : ng
Void Time : 0.000 min
Correct amounts during calibration : YES
Reject outliers during calibration : NO
An External Standard calibration will be used
Unknown peaks will be quantitated using a response factor of 1.000000e+06

Component Information :
No components present in calibration file

ATTN: PHIL


DIONEX
AUTOSAMPLER
CONDUCTIVITY
DETECTOR
GRADIENT
PUMP
PE NELSON
900 SERIES
INTERPHASE
RLY 1
RLY 2
RLY 3
RLY 4
RLY 5
RLY 6
RLY 7
READY



Relay Control of Ion Chromatography Systems

6 brown
5 ~~3~~ yellow
4 ~~3~~ green
3 ~~4~~ red
~~2 black~~ ~~yellow~~ ~~black~~
~~1 orange~~

Phone Plug Relay Control

5&6

			Relay
Autosampler :	Yellow | Brown		Top
	Black	②	Bottom

→ Start in

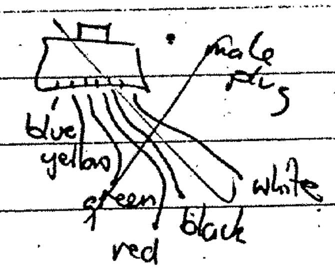
Conductivity Meter :	Yellow | Brown		Top
	② Black (Auto zero)		Bottom

Wire # 6+5

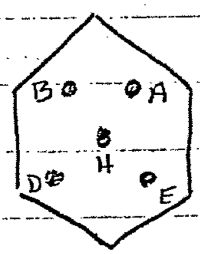
Gradient Pump :	**5+6**	Yellow Brown	↓ Top
	2	③ Black (Hold | Run)	2 Bottom
	3	④ Red (PGM +1)	3 Bottom
	4	Green (ON | OFF)	4 Bottom

Programing Valves 5 & 6 on Gradient Pump

%-5-1	Valve ON
%-5-0	Valve off
%-6-1	Valve ON
%-6-0	Valve off

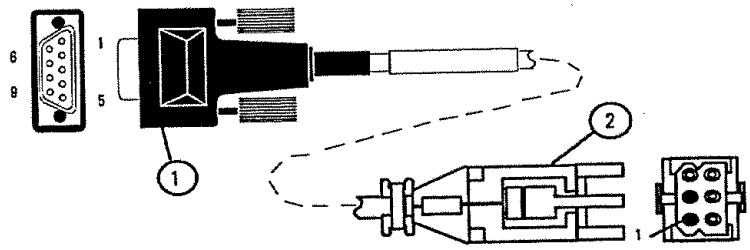


Relay 5 prong Plugs



Autosampler	Brown | Yellow	- B
	Black	- D
Conductivity Meter	Brown | Yellow	- B
(Auto Zero)	Black	- D

Wh bl r gr y blu

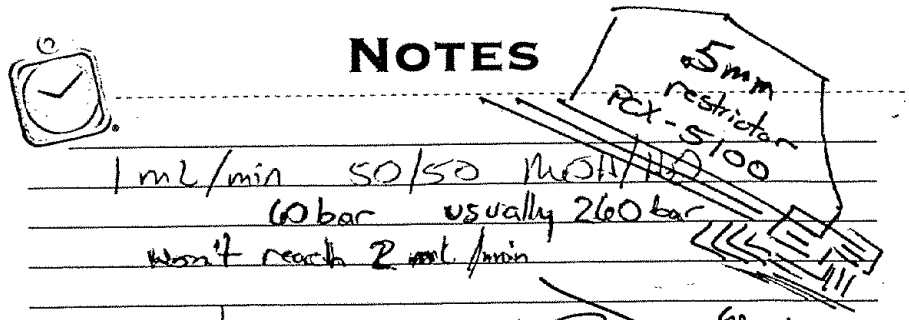


Connector 1 9 pin (male)	Signal Name	Connector 2	
1	GND	4,5	red+white
2	Prepare	NC	
3	Start	6	green
4	Shut down	NC	
5	Reserved	NC	
6	Power on	NC	
7	Ready	3	black
8	Stop	NC	
9	Start request	NC	

NC = no connection

Figure 109. Headspace remote to 6890 GC part no. G1290-60575

NOTES



1 mL/min 50/50 MeOH/H2O

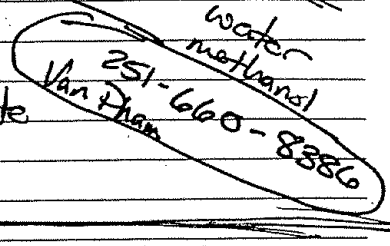
60 bar usually 260 bar

won't reach 2 mL/min

quat

erratic pumping flowrate

before ALS



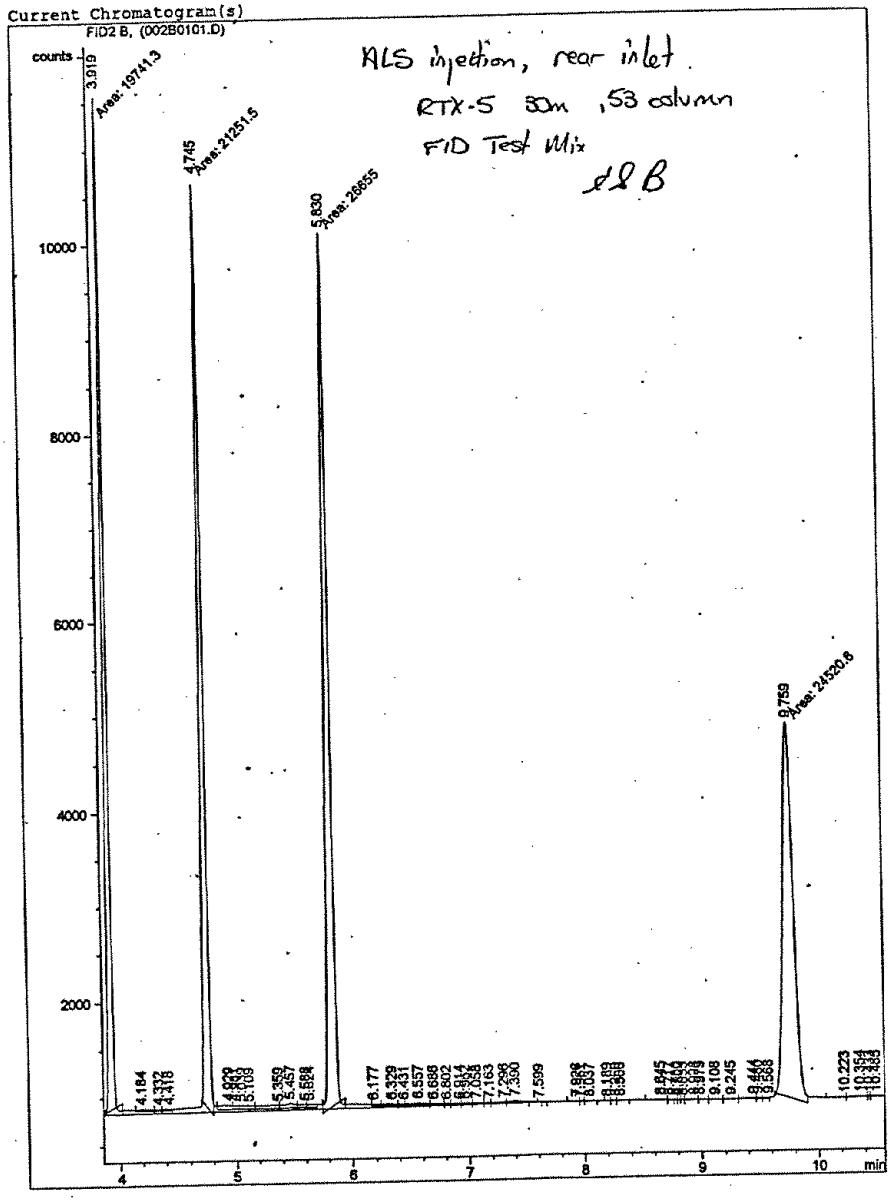
1090	active I/O	DAD
1 d.g.		
2 not used	⟹	8 common clear
3 start	low I/O ⟹	7 error out black
4 shutdown	low I/O ⟹	6 stop in TTL white
5 not used		5 KEY
6 not used	⟹	4 start in TTL white
7 ready	high I/O ⟹	3 ready pur
8 stop	low I/O ⟹	2 +5 V
9 start req	low I only ⟹	1 digital gnd

1-1
3-4
4-7
7-3
8-6

Domain User → Donald
813 878-3
885-7427

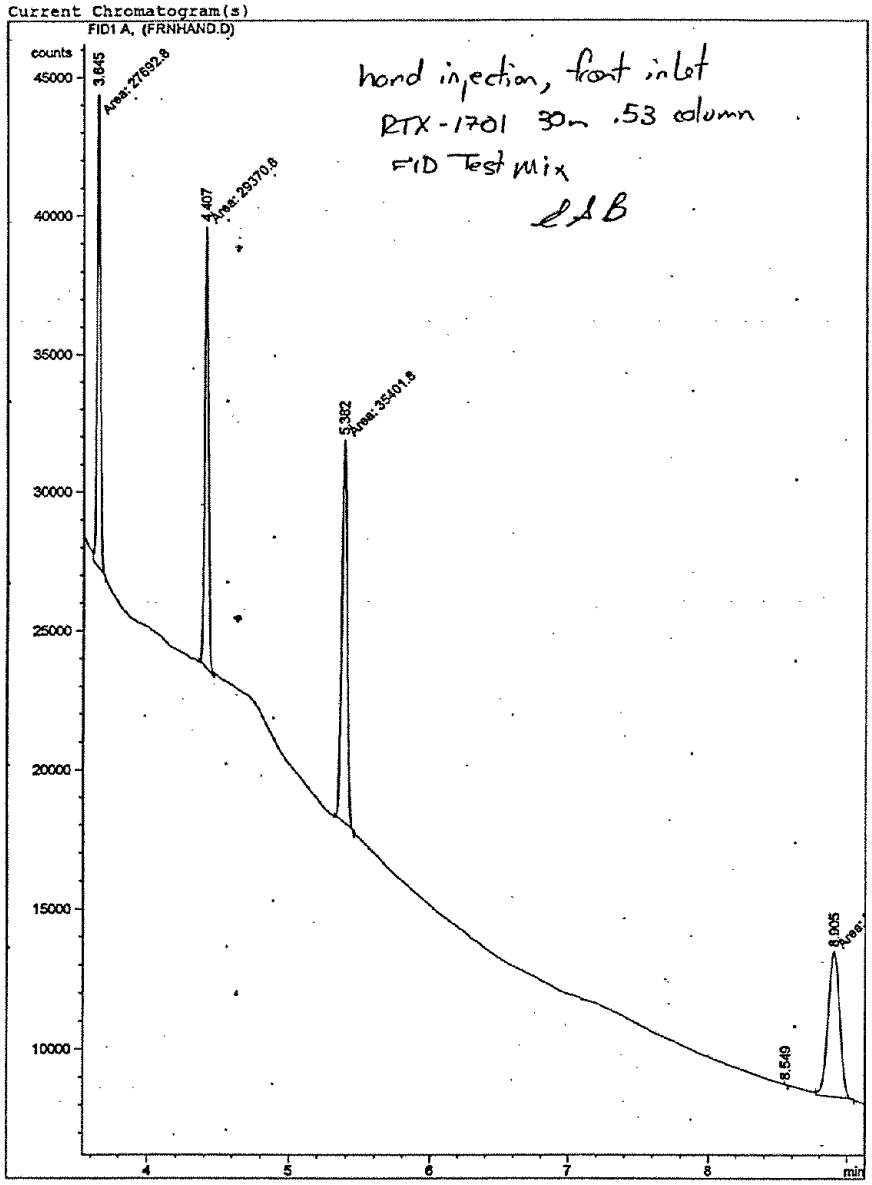
Current Chromatogram(s)

FID2 B, (002B0101.D)



ALS injection, rear inlet.
RTX-5 30m, .53 column
FID Test Mix
22B

Current Chromatogram(s)



NOTES

7673 A packing list

2 M4x12 *
2 M4x30 *
1 M4x8 flathead *
3 M4x8 *
2 5890 self-tapping screws *
1 syringe
1 tray bracket
1 controller
1 injector
1 tray
1 set quadrants
2 solvent bottles *
2 waste bottles *
2 hex spacers *
1 manual
1 power cord
(1 HPIB cable)

* In bagged kits

Wavelength Switching

Table 4-1.
Excitation and Emission Wavelengths for PAH Standard

Component[1]	Excitation Wavelength nm	Emission Wavelength nm	Retention Time min
Naphthalene	220	325	3.7
Acenaphthylene	none	none	4.2
Acenaphthene	220	315	5.0
Fluorene	220	315	5.2
Phenanthrene	244	360	5.9
Anthracene	244	400	6.6
Fluoranthene	237	460	7.4
Pyrene	237	385	8.0
Benzo(a)anthracene	277	376	10.0
Chrysene (93%)	277	376	10.5
Benzo(b)fluoranthene	255	420	12.2
Benzo(k)fluoranthene	255	420	13.0
Benzo(a)pyrene	255	420	13.7
Dibenzo(a,h) anthracene	300	415	15.1
Benzo(g,h,i) perylene	300	415	15.9
Indeno(1,2,3-c,d) pyrene	250	495	16.8

1 Order according to HPLC elution.

1. Identify the peaks and the appropriate times for wavelength switching in your chromatogram.
2. Enter the parameters into the timetable of the fluorescence detector for excitation and emission using times from your chromatogram.

   The appropriate settings for the chromatogram in Figure 4-3 are:

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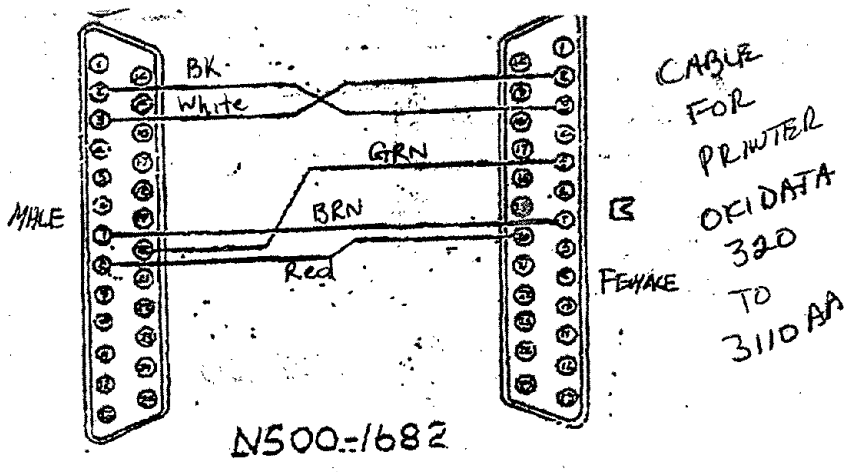
Close

Component Information for PM-525B

Analyte	Concentration
acenaphthylene	500 µg/mL
anthracene	500 µg/mL
benz[a]anthracene	500 µg/mL
benzo[b]fluoranthene	500 µg/mL
benzo[k]fluoranthene	500 µg/mL
benzo[ghi]perylene	500 µg/mL
benzo[a]pyrene	500 µg/mL
chrysene	500 µg/mL
dibenz[a,h]anthracene	500 µg/mL
indeno[1,2,3-cd]pyrene	500 µg/mL
phenanthrene	500 µg/mL
pyrene	500 µg/mL
fluorene	500 µg/mL

Matrix Details

Matrix	acetone
Matrix Density	0.791
Melting Point	-94.9°C
Boiling Point	56.5°C
Vapor Pressure	400 mmHg @ 39.5°C
Vapor Density	2
Water Solubility	soluble
Evaporation Rate	
Appearance	colorless liquid
Odor	mint-like odor
Flash Point	0°F
Autoignition Temperature	869°F
Lower Flammable Limit	2.6
Upper Flammable Limit	12.8
Fire Hazard	flammable
Stability	stable
Incompatibilities	strong oxidizers
Hazardous Decomposition Products	N/A
Hazardous Effects of Polymerization	none



Teklink Pin out

RS232 DB9 NULL Modem Pinout

Use when connecting two systems (e.g. PCs) via their DB9 interfaces without a modem (i.e. back-to-back). See the full signal names in the DB9 section.

If this pinout does not work for you then you could try our Signal/pin primer because you may need to SPOOF connections.

Female DB9	Signal	male DB9	Signal
2 red	RD	3 red	TD
3 orange	TD	2 brown	RD
4 Yellow	DTR	6,1 yellow	DSR, DCD
6,1 Green	DSR, DCD	4 Green	DTR
7 Blue	RTS	8 Blue	CTS
8 Purple	CTS	7 Purp	RTS
5 Black	SGND	5 Black	SGND
9 White	RI	9 White	RI

NOTE:

1. We have received email suggesting that the above pinout looks like DTR from one side is driving into DSR/DCD on the other side - not normally a healthy situation. The emails miss the point that since both ends are DTEs NEITHER should be attempting to drive the DSR/DCD signals. They are essentialy RX only signals on both sides.

▲

Agilent Technologies

Electron Capture Detector

Troubleshooting Tips

CAUTION: Detector disassembly and/or cleaning procedures other than thermal should be performed only by personnel trained and licensed appropriately to handle radioactive materials. Trace amounts of radioactive 63 Ni may be removed during these other procedures, causing possible hazardous exposure to radiation.

WARNING: To prevent possible hazardous contamination of the area with radioactive material, the detector exhaust vent must always be connected to a fume hood, or otherwise vented in compliance with the latest revision of Title 10, CFR, Part 20, or with state regulations with which the Nuclear Regulatory Commission has entered into an agreement (USA only). For other countries, consult with the appropriate agency for equivalent requirements.

TROUBLESHOOTING:

Performance problems associated with the Electron Capture Detector include (but are not limited to) loss of sensitivity (real, or perceived), high signal background, noisy baseline, and chromatographic peaks or humps that are not characteristic of the samples being introduced in the inlet. If the problems are not accompanied by an increase in the signal output, as read from the front keypad of the GC, then suspect the detector only after the other parts of the chromatographic system have been checked.

This document is believed to be accurate and up-to-date. However, Agilent Technologies, Inc. cannot assume responsibility for the use of this material. The information contained herein is intended for use by informed individuals who can and must determine its fitness for their purpose.

Before starting extensive troubleshooting, consider first the nature of the problem:

1. If recent changes were made in the system such as changing carrier or detector gases, performing inlet or column maintenance, or changing the column, investigate the possibilities that contamination or leaks were introduced.
2. If the problem has been chronic and is now acute enough to interfere with analysis, suspect contamination, column degradation, or ultimately a bad ECD Cell.

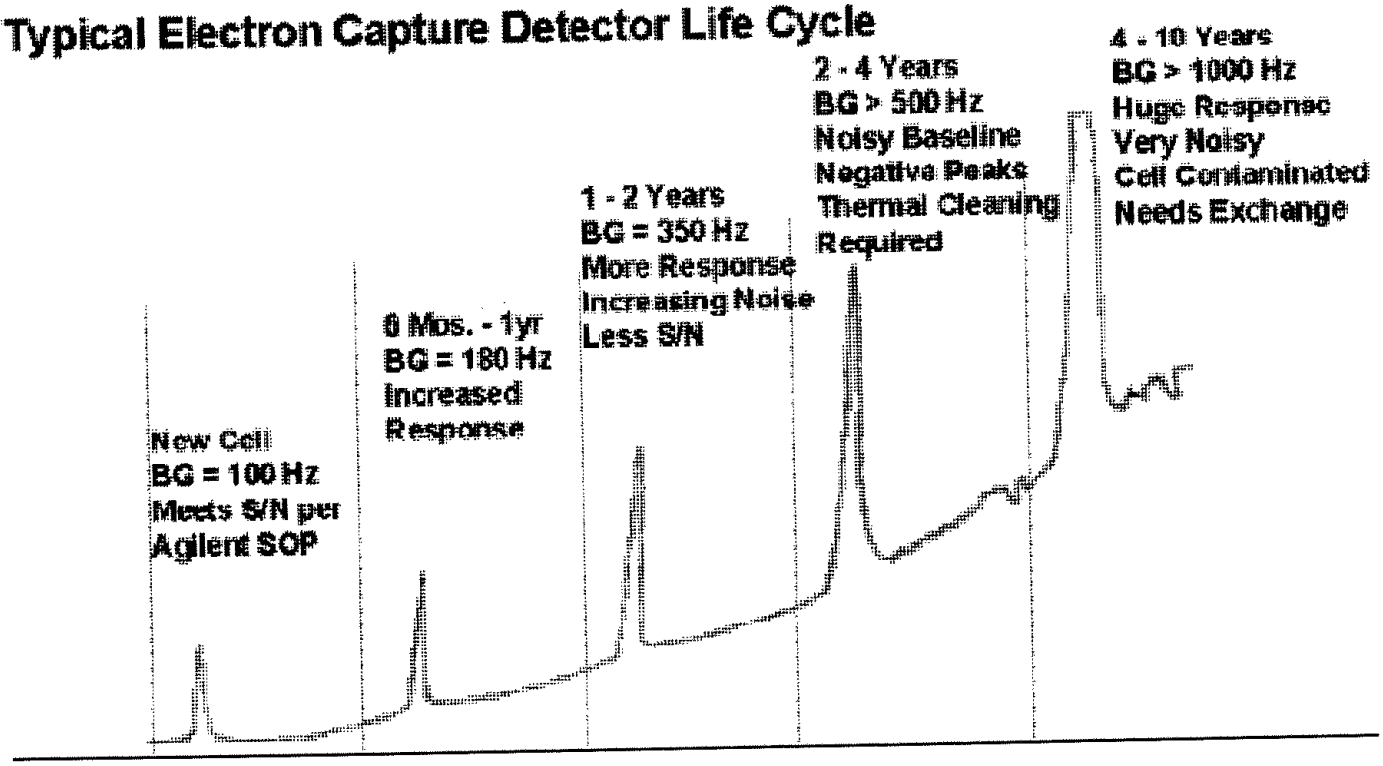
DISPLAY SIGNAL EVALUATION:

The first consideration is the signal value when the GC is in the idle state. The "idle" signal level is a function of the type and quality of the carrier and detector gases, as well as the flows and application. It may be different for different situations but as a general rule, the following values are presented as a guideline.

Signal viewed from the GC display, at ambient oven temperature:

5890	6890 ECD	6890 u-ECD	
<10	<20	<200	ECD is likely in a good state of health.
10-40	20-80	200-400	Slightly elevated, no cause for concern at this point. Signal still in "good" range.
40-80	80-150	400-1000	System showing signs of contamination from gases, column, or samples. If the signal increases in response to increased oven temperature, suspect the column.
80-200	150-300	1000-2000	Suspect more severe contamination, follow the troubleshooting guidelines.
>200	>300	>2000	If the following procedures do not work, suspect the ECD Cell.

Typical Electron Capture Detector Life Cycle



Note: The above example is targeting the 6890 micro-ECD.

SENSITIVITY

If the ECD is in the "good" signal range, and sensitivity is the issue, the problems quite likely may be in the injection port or column. The following issues may need to be considered:

1. If using a split/splitless injection port verify that the mode has not changed and that the valve is functioning. This can be accomplished by verifying that there is a corresponding change in the response by making split and then splitless injection, all other method parameters remaining the same. If using split mode, verify the split flow using a flow meter.
2. Confirm that complete injection port maintenance has been performed. This includes trimming and re-installing the column.

3. Verify that the injection syringe is not clogged. If the method is one using an external sampler (headspace, purge and trap, valve, etc.) make a direct injection of concentration similar to that introduced by the sampler. Rule out a problem with the sampler.
4. Inspect the mixing liner in the 6890 makeup gas adapter – a small piece of graphite or sample contamination will reduce sensitivity.

CONTAMINATION:

If the problem includes stray or ghost peaks, broad humps that do not resemble chromatographic peaks, or elevated signal, as determined from the guidelines above, contamination may be an issue. Resolved ghost peaks are usually from the inlet/column while broad humps are usually from the makeup gas system.

1. Verify that gas supplies are clean. Carrier and makeup gas are recommended to be >99.9995% purity. Even ultra high purity gases should have traps. Moisture, oxygen, hydrocarbon traps are recommended. Check traps for plastic composition or O-Ring seals – these can introduce contamination.
2. Run a series of blank runs:

   Solvent only – If symptoms persist, replace the syringe. If symptoms are gone, check the sample preparation procedure and solvents.

   No injection (Remove Syringe from ALS) – If symptoms persist, the problem is in the GC, column or carrier gas. Proceed to step 3. If symptoms are gone, the problem is in the sample/solvent or the solvent is causing the contamination in the injection port to be released at injection.
3. Remove the column from the detector and cap the base of the makeup gas adapter using no-hole ferrule (p/n 5181-7458). If this is a packed column application, use a column with no packing. Verify that the makeup gas flow is present for capillary column applications or column flow for packed column applications.
4. If the signal changes significantly by simply turning the oven (fan) on and off, suspect a crack in the makeup gas line. STOP HERE and evaluate replacing the makeup gas adapter. Baking the detector with a leak can cause damage to the ECD Cell.

5. Run the GC temperature program. The baseline should be free from peaks or humps – if not, suspect the makeup gas if a capillary system or carrier gas if packed system. The makeup weldment or EPC module could be contaminated – proceed with bakeout.
6. Bake the detector at 350C for 1 hour, taking note of the initial and final signal level during this period. It is timely to increase the oven and injection port temperatures and bake the (capillary) column with flow simultaneously. If the ECD signal decreases immediately after capping the detector, suspect contamination prior to the ECD. If not, but the signal decreases during the bake period, consider contamination in the makeup plumbing or detector. If the signal decreases significantly during the bake, it may be advisable to extend the bake period until the signal stabilizes.
7. If the signal does not decrease during the bake, the possibilities include a leak in the detector or makeup system, or a bad ECD Cell. (Remember that a leak in the makeup area will be an inward or aspirating leak and may not be detected by normal means.)
8. After bake, before reinstalling the column, perform a few blank runs with a typical method. If the baseline is acceptable, the detector and makeup system may be deemed clean. If not, further evaluation of makeup gas quality, leaks in the makeup gas plumbing, and ECD Cell itself are in order.

These suggestions are intended to be used as guidelines for troubleshooting hardware related problems with Electron Capture Detectors. If the problem is not resolved using these techniques, Call Agilent Technical Support for further assistance or on-site service. Please note that Agilent Engineers are not permitted to transport ECD Cells. These arrangements must be made with Bench Repair.

Manual Supplement

Manual title HP 5972A MSD Hardware Manual
Manual number 05972-90001
Manual date February 1993

Manual title HP G1800A GCD User's Guide
Manual number G1800-90002
Manual date March 1994

Supplement number 05972-90018
G1800-90018
Supplement date June 1994

Purpose This manual supplement provides information about changes made to the HP 5971A ,HP 5972A, and HP G1800A since the manual was last updated. Please keep this supplement with your manual.

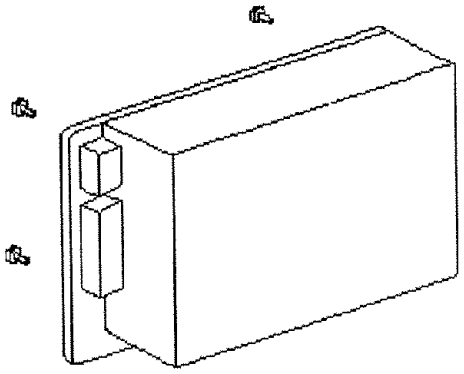
Power Supply Retrofit This kit contains the parts necessary to upgrade 5971A and 5972A MSDs with serial numbers less than 3418A00000; and G1800A GCDs with serial numbers less than 3411A00000

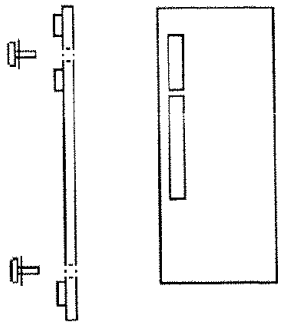
Parts

DESCRIPTION	OLD PART #	NEW PART #
Power Supply	0950-2552	0950-2552
Cable: Pwr Dist bd to Power Supply	05971-60418	05972-60426
Cable: Power Supply to Main bd	05971-60421	05972-60427
Screws: PS to Adapter plate	N/A	2360-0113
Screws: Ground plane to Adapter plate	0624-0428 0624-0428	0515-0070 (for 5971A) 0515-0433 (for 5972A)

Installation

Step 1 Use the Phillips head screws with the attached star washer to attach the power supply to the adapter plate. Position the adapter plate with plate extending past the connector and below the power supply, with the stand-offs away from the power supply.



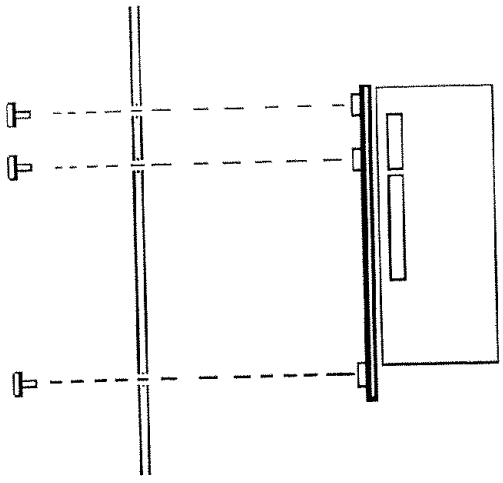


Side View

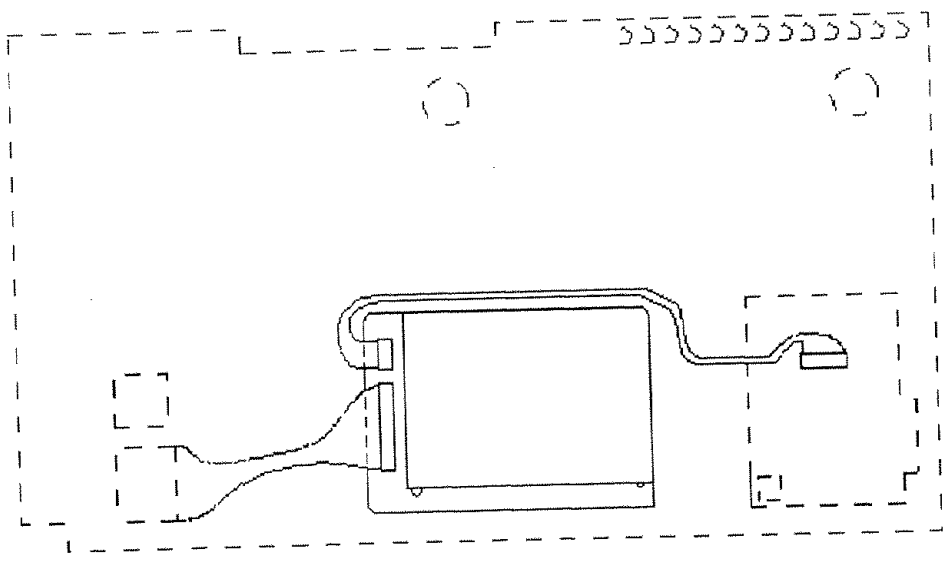
Step 2 Remove the old power supply and its cables, following the instructions in the hardware manual. All these parts may be discarded, including the screws.

Step 3 Install the new power supply on its adapter plate onto the MSD groundplane, using the screws from

the kit. For a 5971A, use the Pozidrive head screws; for a 5972A, use the Torx head screws.



Step 4 Connect the new cables, routing them as shown below. The cables are keyed, and can only be connected one way.



Step 5 Reassemble the instrument following instructions in the manual.

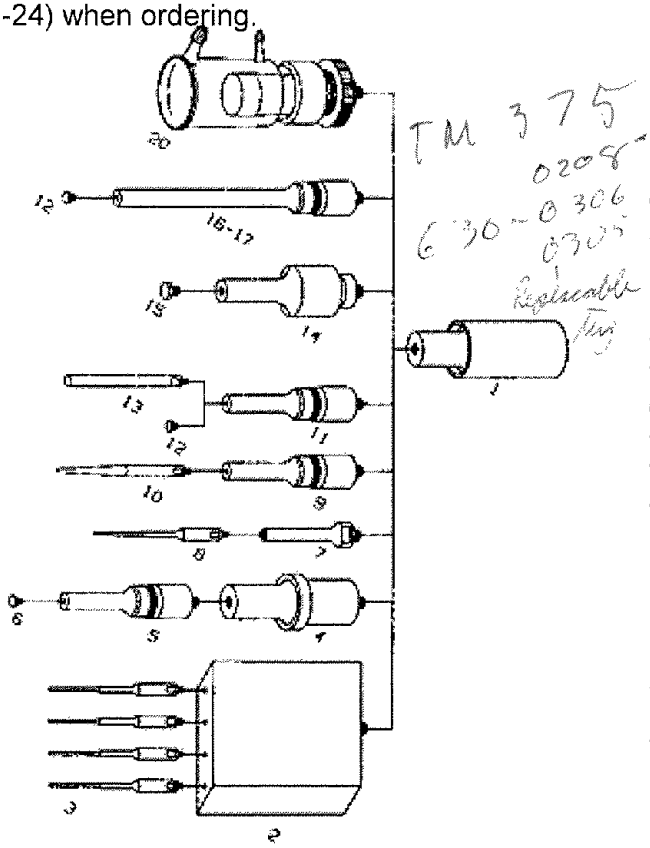
Technical Information The old power supply has a "crowbar" circuit which shuts off all output power in case of excessive current draw; the new supply will cycle power on and then off again when output current exceeds

SONICS
Newtown, CT

ED-316

OPTIONAL ACCESSORIES FOR VC 750, VCX 500 & VCX 750

The accessories and attachments described in this section are compatible with most 20 kHz Ultrasonic Processors. Please specify make, model, and threaded stud size (1/2" -20 or 3/8" -24) when ordering.



TM 375
0209-400
630-0306
0309
Replaceable tip

Probes (Horns)

Probes intensify and radiate the ultrasonic energy into the sample. Probes with smaller tip diameters produce greater intensity of cavitation, but the energy released is restricted to a narrower, more concentrated field immediately below the tip. Conversely, probes with larger tip diameters produce reduced intensity, but the energy is released over a greater area. The larger the tip diameter, the larger the volume that can be processed, but at reduced intensity. High gain probes produce higher intensity than standard probes, and are usually recommended for processing larger volumes or difficult applications. Probes are fabricated from high grade titanium alloy TI-6AL-4V because of its good acoustical properties, low toxicity, high resistance to corrosion, and excellent resistance to cavitaton erosion. They are autoclavable, and are available with threaded ends to accept replaceable tips, microtips and extenders.

Caution:
Do not use a tapered microtip with a coupler. Do not use a stepped microtip without a coupler. Do not use a probe with threaded end and replaceable tip when working with organic solvents or low surface tension liquids. Use a solid probe instead. See caution below.

No.	DESCRIPTION	Order Number
1	Converter Model CV33	CV00033
2	Four element coupler	630-0558
3	⅛" (3 mm) stepped microtip	630-0422
4	Booster	BHNVCGD
5	½" (13 mm) solid probe	630-0219
	½" (13 mm) probe with threaded end and replaceable tip	630-0220
	¾" (19 mm) probe solid	630-0208
	¾" (19 mm) probe with threaded and replaceable tip	630-0207
	1" (25 mm) solid probe	630-0209
	1" (25 mm) probe with threaded and replaceable tip	630-0210

Start IV → Rly 4
Con

'2 + 5 Rly 3

Rly 1 → Inj + Gr
Rly 2 → auto adj + Gr
Rly 5 Pump 5 + Gr

Time 0 Rly 4 Qb
" 101 " 3 on
200 " 1 on
15.95 4 on
3 Qb
1 Qb

HEWLETT® PACKARD

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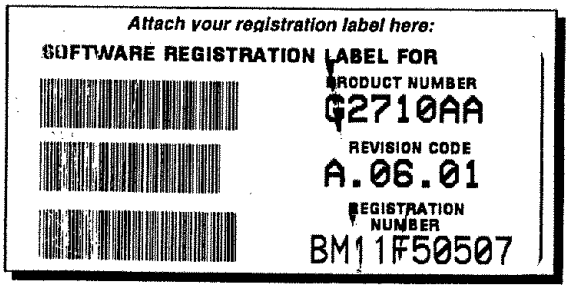
Please affix another registration sticker to your Software Registration Reply Form. Return the form by FAX or mail immediately. The remaining registration stickers are for your convenience and may be affixed to the PC, Software media, manuals, or for your general use.

IMPORTANT:

The number on the registration stickers is more than an identification number. Certain products require you to enter a valid registration number before use. Please have it available during installation, and keep it safe afterwards.



Analytical Marketing Center
Hewlett-Packard Company
2850 Centerville Road
Wilmington, DE 19808-1610 USA

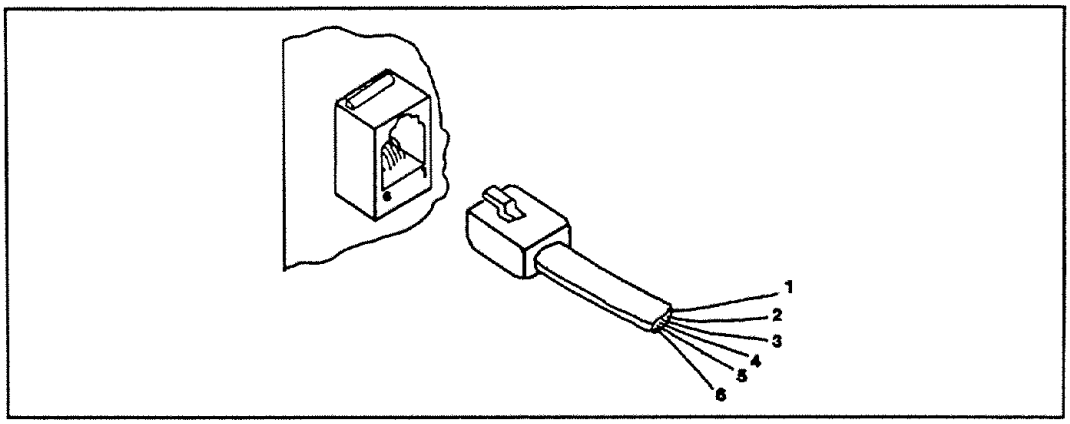
5040-9592

APPENDIX B
REMOTE CONTROL OF THE DIONEX AUTOMATED SAMPLER

B.1 RELAY CONTROL

Relay Control uses a six-pin telephone-style connector (Figure B-1). Each Relay Control function is operated by a separate contact-closure relay or TTL logic level. When the connector key is up, the connector pins are numbered from right to left, with pin 1 on the right and pin 6 on the left. Table 3 lists the six pins and the functions they control. Lines 1 (+5 volts) and 6 (ground) must be connected to each function.

Figure B-1
Relay Cable Connector Detail



When a function is off, the relay contacts are open and the lines are "pulled" high to +5 volts. Turning on the function closes the relay contacts, grounding the corresponding line and dropping it to zero volts (lo).

Table 3
Relay Control Connector Pin Assignments

Pin	Wire Color	Name	Function
1	orange	+5 VDC	Supplies power to an external load (maximum 50 mA)
2	black	LOAD	Function 1: Starts the LOAD cycle. Relay off : Start rinse if a rinse vial is detected, otherwise no change. Relay on: Start LOAD cycle.
3	red	Not used	Function 2: Reserved for future use. Sampler currently ignores this pin.
4	green	Not used	Function 3: Reserved for future use. Sampler currently ignores this pin.
5	yellow	Remote	Must be grounded by the controller. If it is not grounded, the sampler will ignore commands received through the relay cable and respond only to the front panel.
6	brown	Ground	Supplied by the sampler. Must be connected.

WARNING!
RISK OF FIRE!

An open internal fuse indicates a catastrophic failure of circuit component(s). Repair must be by authorized IPD personnel only. Refer to fuse rating on power supply circuit board for rating.

WARNING!
SHOCK HAZARD!

Dangerous voltages are present on some components, printed circuit board traces and heatsinks.

INSTALLATION:

The power supplies listed above are considered components intended for professional installation into end use equipment.

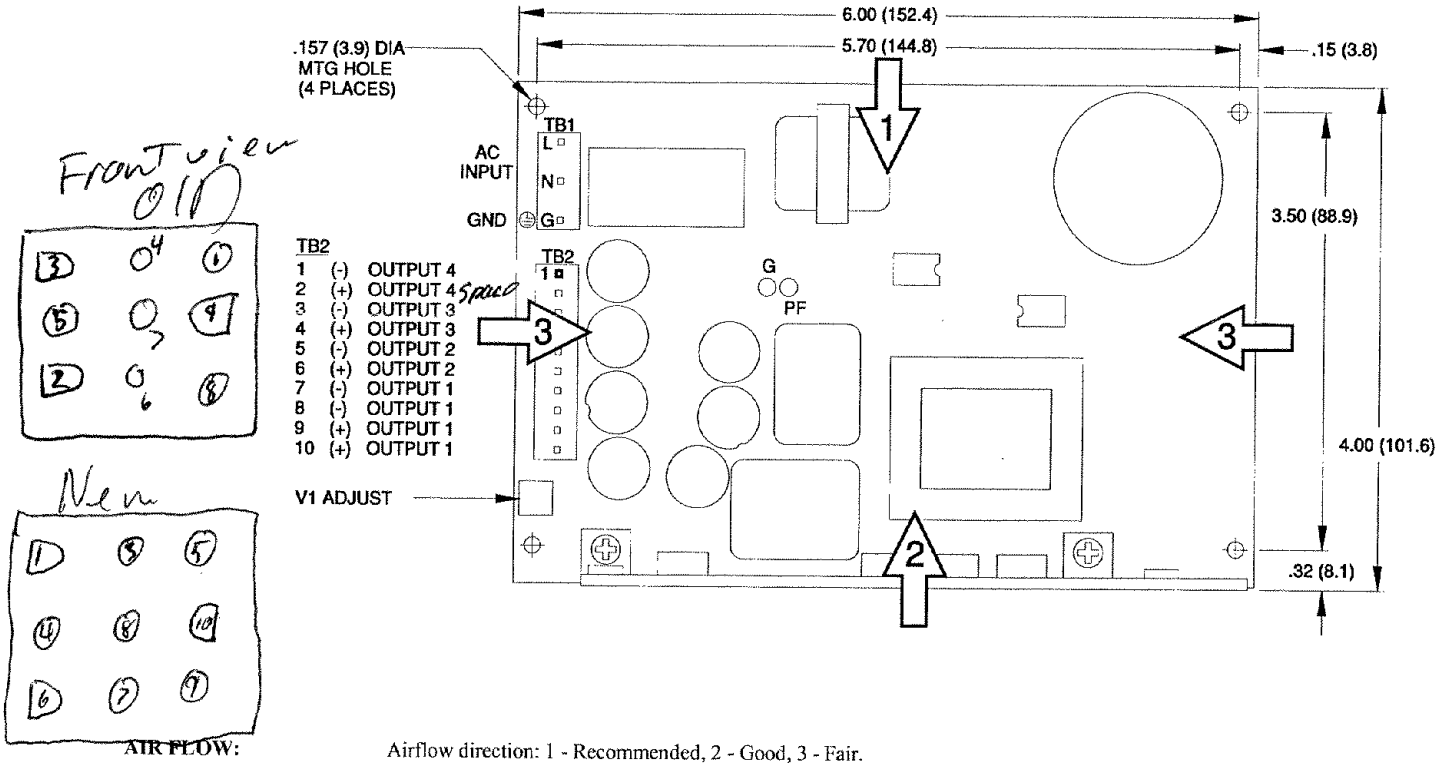
EMISSIONS:

To insure compliance with EN 55022 and EN 55011 Class B conducted and radiated emissions, all or a combination of the following precautions may be necessary:

1. Installation of the power supply, output cables and loads in a shielded enclosure.
2. Use of optional chassis and cover.
3. Use of shielded I/O cables.
4. Use of ferrite beads on I/O cables.
5. Grounded output returns as specified under GROUNDING above.

This product was tested for compliance with EN 55022 and EN 55022 conducted and radiated emissions using the techniques listed above and non-inductive load resistors to simulate operation in a typical installation.

CONNECTIONS:



AIR FLOW:

Airflow direction: 1 - Recommended, 2 - Good, 3 - Fair.

CONNECTORS:

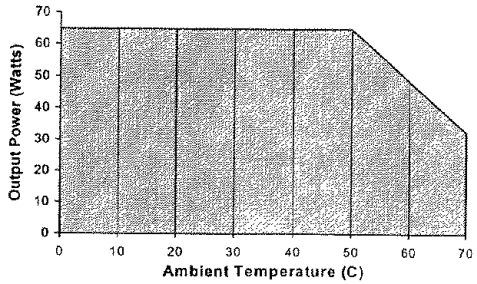
TB1/G: AC Input - .156 friction lock header mates with Molex 09-50-3051 or equivalent crimp terminal housing with Molex 08-50-0189 or equivalent crimp terminal.

TB2: DC Output - .156 friction lock header mates with Molex 09-50-3101 or equivalent crimp terminal housing with Molex 08-50-0189 or equivalent crimp terminal.

PF: Optional power fail signal.

G: Optional power fail signal return.

DERATING:



EXPLANATION OF SYMBOLS:

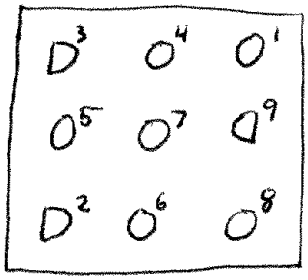
Alternating Current

Attention, Consult Accompanying Documents

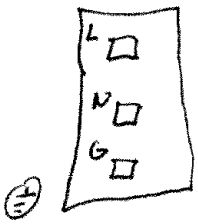
Attention, Dangerous Voltages

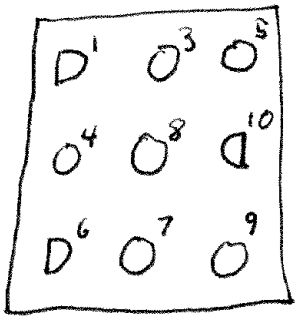
Protective Earth (Ground)

Denise
505-632-1665

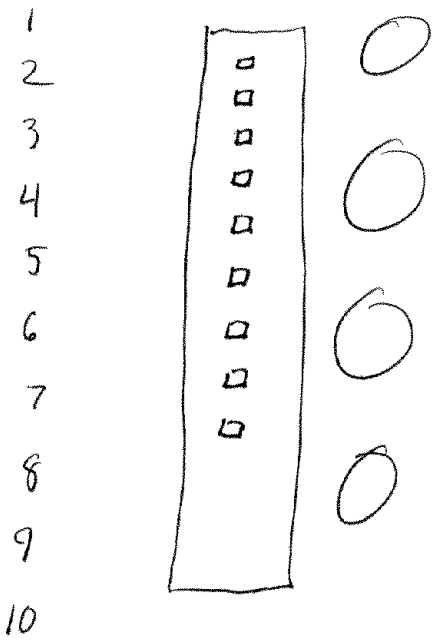


OLD Power Supply

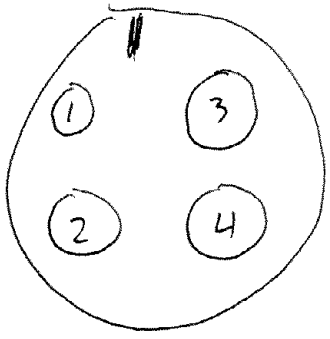




New Power Supply Pin out Front View



Dionex SRS
DX - 500

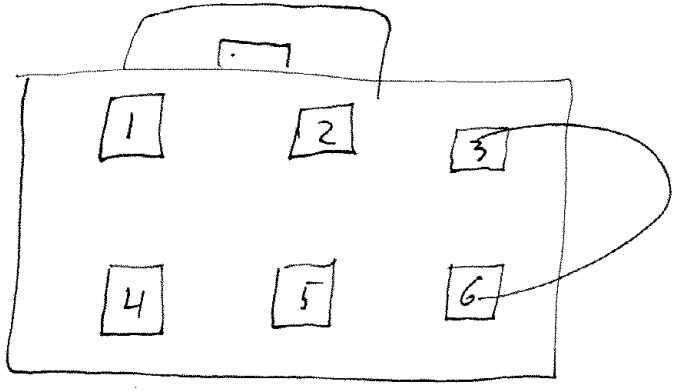


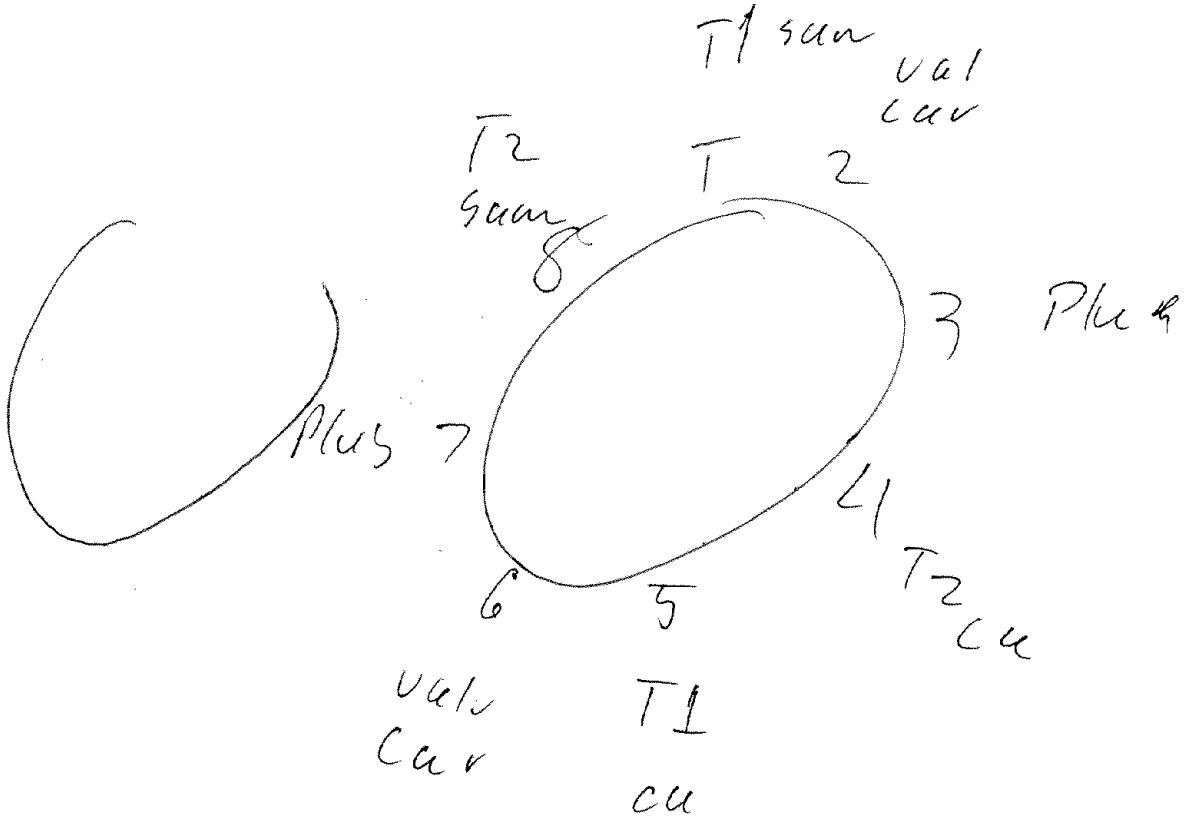
3 — 2

1 — 1

2 — 4

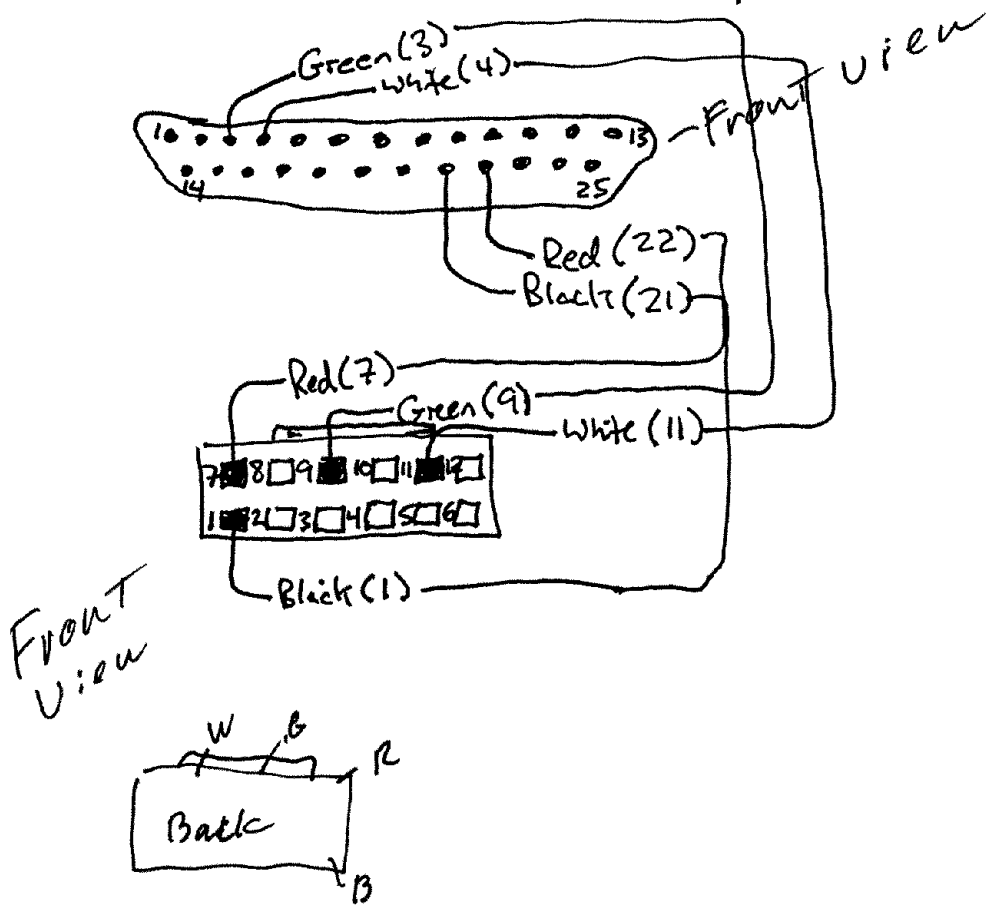
4 — 5





FOG. 39

Tektmar 2000 → HP 5890
Remote stop/start



20 ANALYTICAL INSTRUMENT RECYCLE INC
4630 INDIANA ST
GOLDEN CO 80403
TY GARBER

(CALLER) TY GARBER

YOUR PURCHASE ORDER NUMBER
0730 GARBER

ITEMS ORDERED 2

MCMASTER-CARR SUPPLY COMPANY
600 COUNTY LINE ROAD
ELMHURST IL 60126-2081

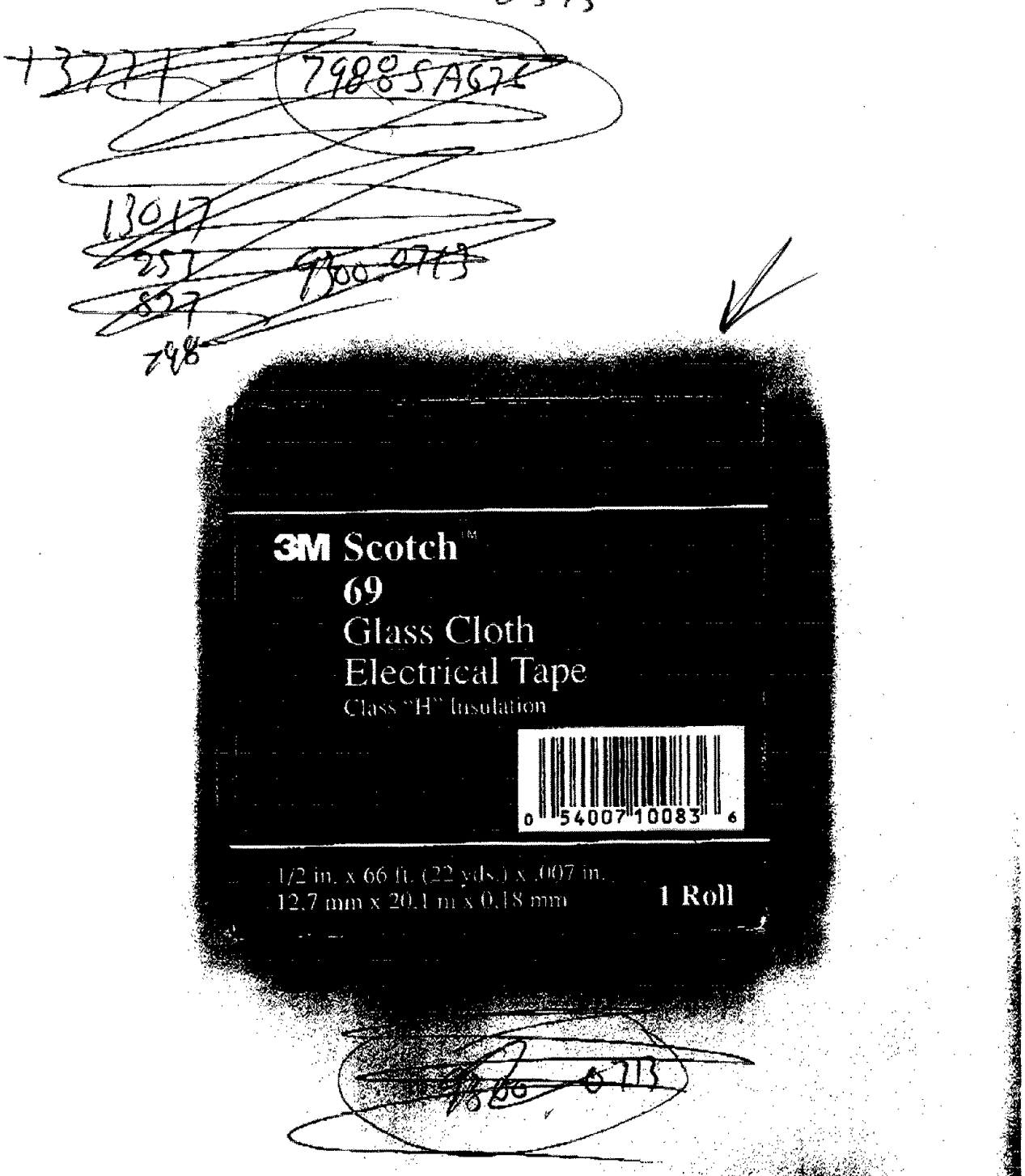
IF THERE ARE ANY QUESTIONS ABOUT THIS SHIPMENT CONTACT OUR SALES DEPARTMENT
(630)833-0300

WAREHOUSE LOCATION	MCMASTER CARR PART NUMBER	FILL QUANTITY	ITEM DESCRIPTION	YOUR LINE	YOU ORDERED	WE SHIPPED
1-126-02 01	76455 A27	5 RL	SCOTCH BRAND ELECTRICAL TAPE 1/2" WD X 66' LG,WHITE,#69 GLASS CLOTH 1 BPA	1	5 RL	!
1-124-09 01	76455 A29	5 RL	SCOTCH BRAND ELECTRICAL TAPE 3/4" WD X 66' LG,WHITE,#69 GLASS CLOTH 1 BPA	2	5 RL	!

ok pm
7/31/98

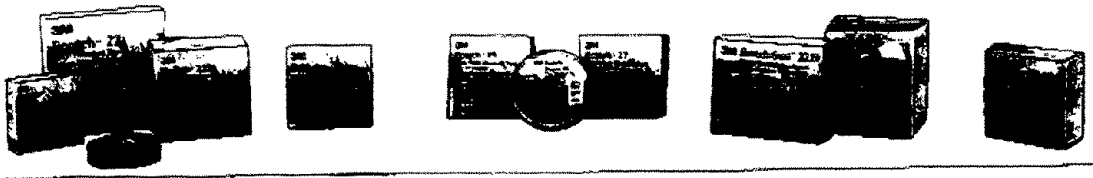
Attn: Ty

303-215-[redacted]0575 2 pages



HAVE A GOOD ONE. SHAUN

3M Scotch Brand Electrical Tape



Vinyl Electrical Tape

All of our vinyl electrical tapes are UL listed and CSA certified.

These tapes are ideal for:
- Insulation of wire and cable splices up to 600 volts
- High-voltage cable splices and terminations
- Fixture wire splices up to 1000 volts
- Harnessing wires and cables

All tapes are flame retardant and resistant to:
- Moisture and weathering
- Ultraviolet rays
- Acids
- Alkalies
- Abrasion and corrosion

SCOTCH SUPER 33+—An excellent all-weather tape. Can be applied at temperatures as low as 0° F and easily conforms to irregular surfaces. Color is black. Available in 20' and 66' rolls. Meets ASTM-D-3005 Type I requirements.

SCOTCH SUPER 88—Same as Scotch 33+ (above) with a thicker backing. Provides a stronger, more durable, moisture-tight seal with fewer wraps than lighter-weight tapes. Ideal for cold weather applications. Color is black. Available in 44' and 66' rolls. Meets ASTM-D-3005 Type II and MIL-I-24391 requirements.

Scotch No.	Roll Size, Wd. × Lg.	Roll Diameter	Overall Thickness, Mils	Dielectric Strength, Volts ♦	Tensile Strength, Lbs.-In. Width	Effective Temp. Range, Fahrenheit		Per Roll
Super 33+	¾" × 20'	1⅞"	7.0	10,000	16.0	–40° to +220°	76455A11	$1.50
Super 33+	¾" × 66'	2¹⁵⁄₁₆"	7.0	10,000	16.0	–40° to +220°	76455A12	3.83
Super 88	¾" × 44'	2¾"	8.5	10,000	20.0	–40° to +220°	76455A34	2.93
Super 88	¾" × 66'	3¹⁵⁄₁₆"	8.5	10,000	20.0	–40° to +220°	76455A15	4.34
Super 88	1½" × 44'	2⅞"	8.5	10,000	20.0	–40° to +220°	76455A13	5.69
	¾" × 108'	4⁹⁄₁₆"	10.0	12,000	30.0	–40° to +176°	76455A31	8.74
	¾" × 66'	2¹⁵⁄₁₆"	7.0	8,750	17.0	–40° to +176°	76455A41	3.60

♦ ASTM-D Dielectric Breakdown.

Splicing and Insulating Tape

SCOTCH 2520 VARNISHED CAMBRIC TAPE—High mechanical protection provides great insulation for bus bars, service drop connectors, and temporary splices. Flexible cotton tape is coated with a high grade yellow electrical insulating varnish and has 2 mils of natural rubber adhesive. It is moisture, cut, and puncture resistant.

SCOTCH 70 SELF-FUSING SILICONE RUBBER ELECTRICAL TAPE—Use to protect terminating high voltage cables and insulate Class H high temperature applications. This fully-cured, blue-gray silicone rubber tape has an easy-strip backing, fuses instantly to surfaces, and is arc and track resistant.

SCOTCH 77 FIRE AND ELECTRIC ARC PROOFING TAPE—This tape expands in a fire to create a barrier that helps protect cables from flames and heat. Also suitable for gas, water and oil pipes. The tape is black in color, 30 mils thick, and consists of an unsupported elastomer which easily conforms to irregular surfaces. Tape does not have an adhesive—use with high-temperature Scotch 69 tape sold below.

SCOTCHFIL ELECTRICAL INSULATING PUTTY TAPE—Non-corrosive synthetic putty in tape form. Use for applications up to 600V. Also suitable for rounding out high voltage (up to 2300V) connections, smoothing bus bar irregularities, and as a moisture seal for ground-wire exits in high voltage splices. Color is black.

SCOTCH 27 AND 69 GLASS CLOTH ELECTRICAL TAPE—This high temperature tape is corrosion-free and puncture resistant. It has a woven glass base, is white in color, and won't shrink, rot, or burn. Adhesive is thermosetting and pressure sensitive. Available in ½" and ¾" rolls. **Scotch 27** provides heat-stable insulation for "hot spot" applications, such as furnace and oven controls, motor leads, and switches, and has a Class "B" rating. Meets MIL-I-15126F. **Scotch 69** reinforces insulation in heavy load and high heat situations, and has a Class "H" rating. Meets MIL-I-19166C.

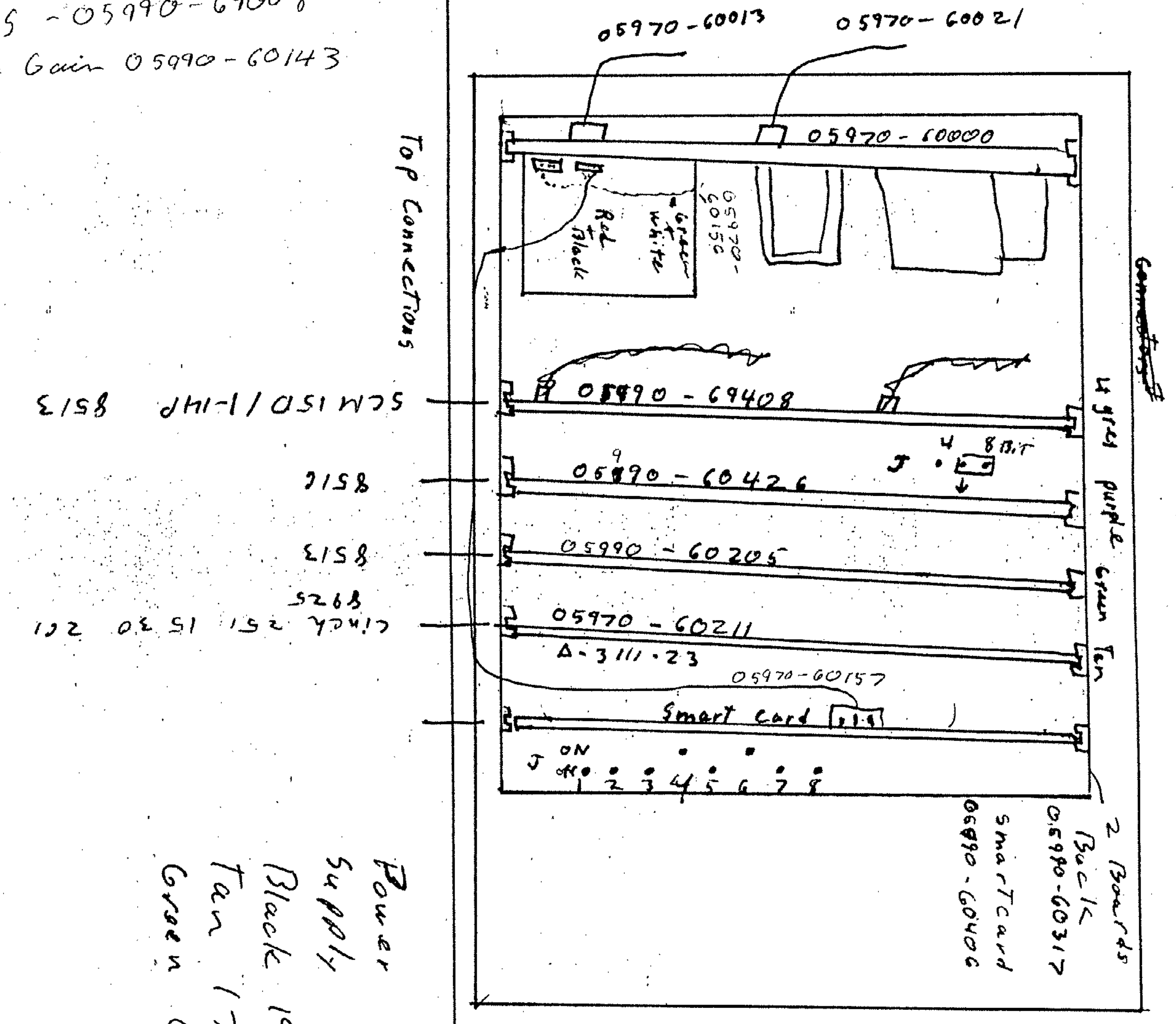
SCOTCH 130C LINERLESS RUBBER SPLICING TAPE—Dissipates splice heat from a continuous 194° F up to 266° F short term at 69kV. This self bonding black tape easily conforms to irregular surfaces. Meets ASTMD-4388, Type III requirements.

SCOTCH 2210 VINYL MASTIC TAPE, SCOTCH 2200 PADS, SCOTCH 2228 RUBBER MASTIC TAPE, AND SCOTCH 2229 SEAL MASTIC TAPE & PADS—Used to pad, insulate, and seal out moisture and environmental contaminants in electrical connections. All are black and bonded to a sticky rubber-based mastic. **Scotch 2210 Vinyl Mastic Tape and Scotch 2200 Pads** are good for general-purpose sealing and insulating, and have an all-weather grade PVC backing, 10 pads per box. **Scotch 2228 Rubber Mastic** is suitable for 1000-volt outdoor applications such as bus bar connections. Conformable rubber backing is easy to work with. **Scotch 2229 Seal Mastic Tape & Pads** consist of pure straight mastic. They can be molded easily around irregular shapes and are UV and chemical resistant. Pads are furnished 10 per box.

Scotch No.	Roll Size, Wd. × Lg.	Roll Diameter	Overall Thickness, Mils	Dielectric Strength, Volts ♦	Tensile Strength, Lbs.-In. Width	Effective Temp. Range, Fahrenheit		Per Roll
2520	¾" × 60'	3"	9.0	9,000	41.0	–40° to +221°	76455A23	$16.23
70	1" × 30'	2¾"	12.0	10,500	12.0	–40° to +356°	76455A35	29.02
77	1½" × 20'	3⁹⁄₁₆"	30.0	——	45.0	–40° to +356°	77255A3	10.02
77	3" × 20'	3⁹⁄₁₆"	30.0	——	45.0	–40° to +356°	77255A4	18.57
Scotchfil	1½" × 60'	3⅛"	125.0	71,675	——	–40° to +176°	75695A87	8.31
27	½" × 66'	2¹³⁄₁₆"	7.0	3,000	150.0	–40° to +302°	76455A17	7.95
27	¾" × 66'	2⅞"	7.0	3,000	150.0	–40° to +302°	76455A19	11.98
69	½" × 66'	2⅞"	7.5	3,500	150.0	–40° to +392°	76455A27	10.33
69	¾" × 66'	2⅞"	7.5	3,500	150.0	–40° to +392°	76455A29	15.47
130C	¾" × 30'	4"	30.0	22,500	9.8	–40° to +266°	76455A18	8.66
2210	4" × 10'	5"	80.0	27,000	20.0	–40° to +176°	75735A66	36.32
2228	1" × 10'	3½"	65.0	25,900•	——	–40° to +194°	75735A71	8.43
2228	2" × 10'	3⁹⁄₁₆"	65.0	25,900•	——	–40° to +194°	75735A65	17.97
2229	1" × 10'	3¾"	125.0	47,375	——	–40° to +194°	75735A72	6.98
								Per Box
2200	3¼" × 4½"•	——	125.0	37,500	20.0	–40° to +176°	75735A67	$22.52
2200	4½" × 6½"•	——	125.0	37,500	20.0	–40° to +176°	75735A68	35.91
2229	2½" × 3¾"•	——	125.0	47,375	——	–40° to +194°	75735A73	12.41
2229	6½" × 3¾"•	——	125.0	47,375	——	–40° to +194°	75735A74	26.55

♦ ASTM-D Dielectric Breakdown. • When dry: 30,500 Volts when wet. • Specification is pad size.

Grey Card #2 MS - 05990-69008
with Mars axis Gain 05990-60143



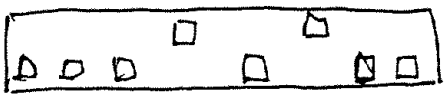
Power Supply
Black 19
Tan 17
Green Ground

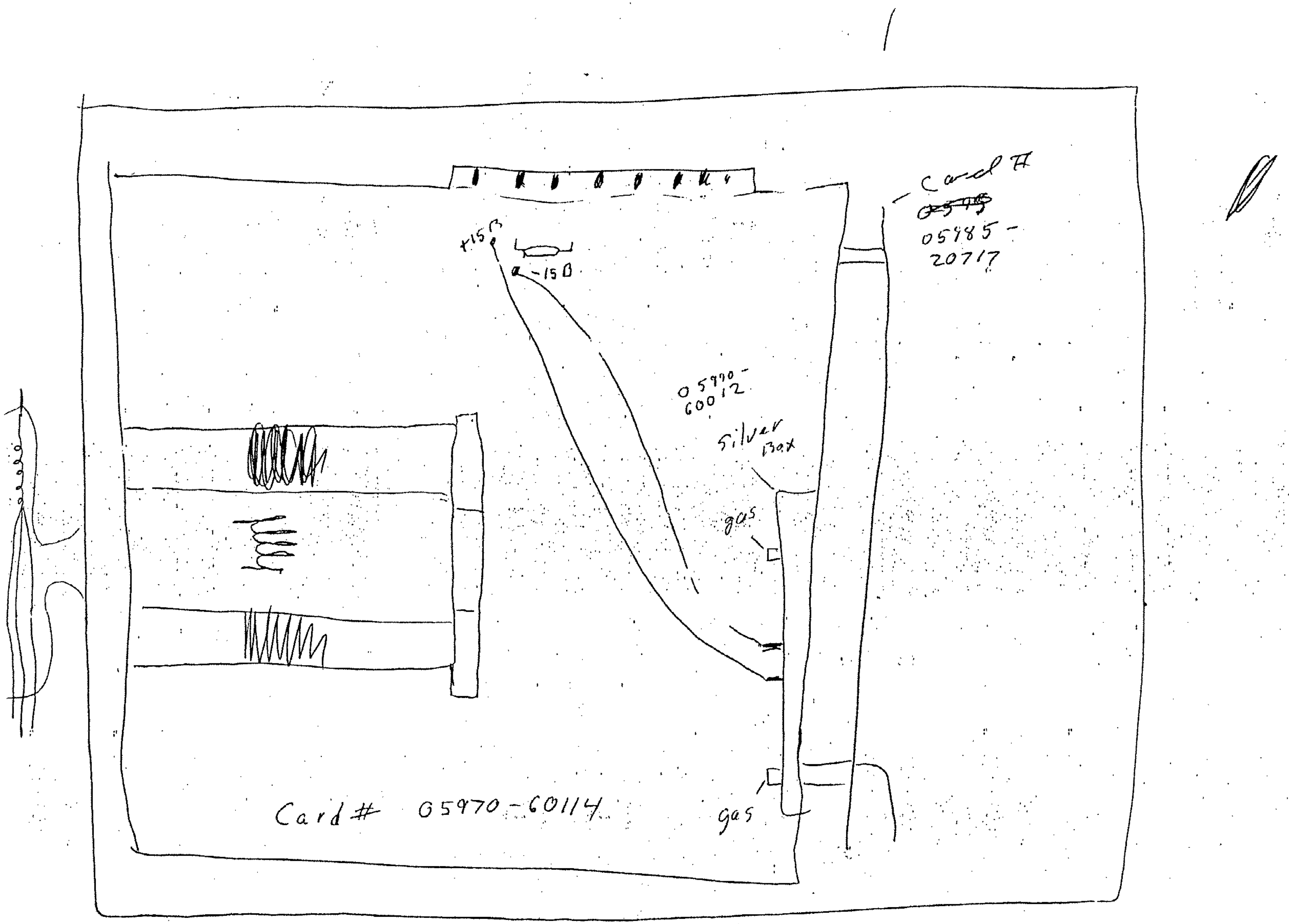
SIDE

5971A MSD Hardware (MSD connected to "DOS" MS Chem Station)

Top Board 05971-60001
APG Card 05971-60009
HPIB / MS Comm Card 05971-60006
Main Board. 05971-69002

HPIB DIP Switch
" " "
Assume " = "20"
15 MS address.





Card # ~~05975~~ 05985-20717
+15 B
-15 B
05970-60012
Silver Box
gas
gas
Card # 05970-60114

HP IB Address on a 5890 Series II

C / R

[.]

5

[Enter]

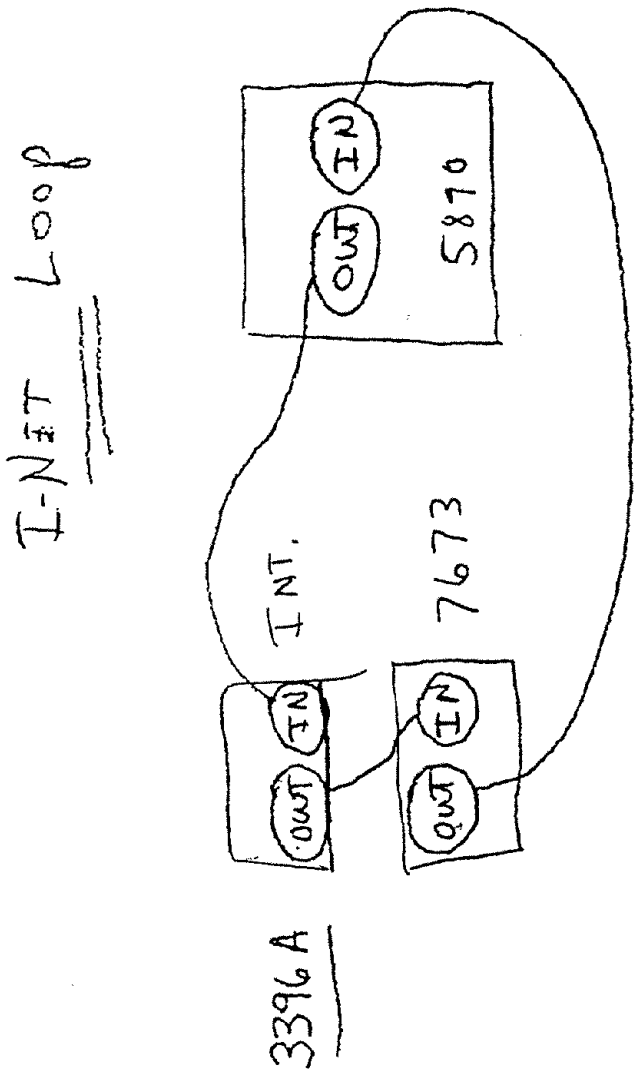
Hold on [CLR]

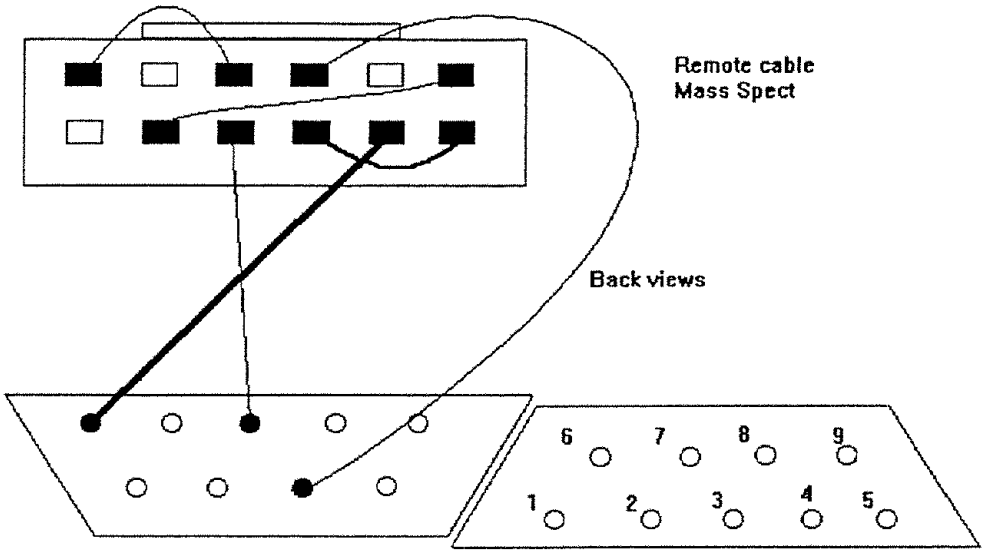
Window comes up "User Test Select"

Press "4"

Should display [HPIB Addr = 15]

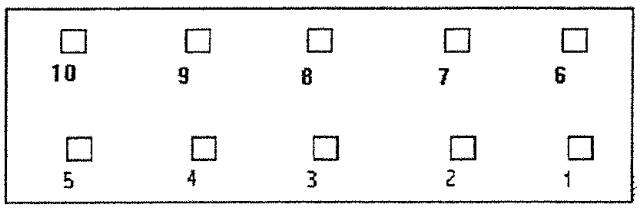
I-Net Loop Set-up





Match the numbers

Smart card remote cable



Agilent Technologies

Part numbers for Turbo pump controllers
Applies to 5973A/N MSD

Note: Order Turbo controller based on what's already installed in your Mass Spec... If there are any questions or confusion on what should be ordered please do not hesitate to call Agilent Technologies technical support before ordering the part.

PART NUMBER FOR 5973A/N TURBO PUMP SUPPLY/CONTROLLER

Turbo controller/pwr supply(std)	P/N G1099-89002
Turbo controller/pwr supply	P/N G2589-80063

(for use with G1946-80035 mini controller)

Note: Turbo controller G1946-80032 is no longer orderable. Use the above controller part number.

Note: Turbo controller G1946-80032 will work but does not fit mounting brackets properly

Turbo controller/pwr supply	P/N G2589-80063

Note: Will work in place of G1946-80032 and will mount properly with the mounting brackets.

This document is believed to be accurate and up-to-date. However, Agilent Technologies, Inc. cannot assume responsibility for the use of this material. The information contained herein is intended for use by informed individuals who can and must determine its fitness for their purpose.

Turbo pump pwr/supply cable P/N G1099-60435

(Back panel to turbo controller)

Turbo pump control cable P/N G1099-60438

(Back panel to turbo controller)