

Boostivac Ion Pump Control

Part No. 1001724 Rev. H

Limited Warranty

Except as otherwise provided herein, the Seller warrants to Buyer that the equipment sold hereunder, whether it is new equipment or remanufactured (reconditioned) equipment, is, at the time of shipment to Buyer from Seller, free from defects in material and workmanship. As Buyer's sole exclusive remedy under this warranty Seller agrees either to repair or replace, at Seller's sole option and free of part charge to Buyer, any part or parts of such equipment which, under proper and normal conditions of use prove to be defective within 12 months from the date of receipt by the Buyer. Warranty period for equipment requiring installation by Seller will commence on completion of standard installation services. If customer delays installation beyond 45 days after delivery, the warranty period will commence to run 45 days after delivery. After installation, any realignment, readjustment, recleaning or recalibration, provided it does not relate to a proven defect in material or workmanship, shall be performed only at Seller's then current rates for service.

Exclusions and Limitations

It is recognized that some parts by their nature (expendable items) may not function for one full year; therefore, excluded from the foregoing warranty are filaments, anodes, cathodes, multipliers, retard grids, special ceramics, ionizers, along with other such parts mentioned in the applicable operating manual.

The foregoing warranty excludes certain major items or accessories specifically indicated on applicable price lists or quotations, as to which Seller passes to Buyer whatever warranty is provided to Seller by the manufacturer or the

specific warranty indicated by the price list or quotation.

This warranty does not cover loss, damage, or defects resulting from transportation to the Buyer's facility, improper or inadequate maintenance by Buyer, buyer-supplied software or interfacing, unauthorized modification or misuse, operation outside of the environmental specifications for the equipment or improper site preparation and maintenance.

Product Service

All claims must be brought to the attention of Seller within 30 days of the failure to perform.

Seller at his option may require the product to be returned to the factory, transportation prepaid, for repair.

Refund of Purchase Price

In lieu of the foregoing, Seller may at any time elect, in its sole discretion, to discharge its warranty by accepting the return of such equipment and refunding any portion of the purchase price paid by Buyer.

Software and Firmware Products

The sole exclusive warranty applicable to software and firmware products provided by Seller for use with a processor will be as follows: Seller warrants that such software and firmware will conform to Seller's program manuals current at the time of shipment to Buyer when properly installed on that processor. Seller does not warrant that the operation of the processor software or firmware will be uninterrupted or error free.

No other warranty is expressed or implied. Seller expressly disclaims the implied warranties of merchantability and fitness for a particular purpose.

OPERATOR SAFETY SUMMARY

All PHI Systems have been designed to assure operator safety. However, like all other sophisticated instruments, continual operator safety is dependent on the proper use of system components. Such use is described in the manuals supplied with each unit.

LISTED BELOW ARE WARNINGS APPLICABLE TO THIS EQUIPMENT. ALL PERSONNEL INVOLVED IN THE OPERATION AND MAINTENANCE OF THIS EQUIPMENT MUST FULLY UNDERSTAND THE WARNINGS AND THE PROCEDURES BY WHICH THE HAZARD IS TO BE REDUCED OR ELIMINATED.

WARNING

THE PRODUCT(S) COVERED IN THIS MANUAL HAS BEEN DESIGNED TO FUNCTION SAFELY WITH THE REQUIRED DEGREE OF PRECISION WHEN USED IN THE PRESCRIBED MANNER.

WE DO NOT RECOMMEND THAT THIS EQUIPMENT BE MODIFIED FOR ANY NON-STANDARD APPLICATION SINCE HAZARDOUS CONDITIONS MAY RESULT. DUE TO THE FACT THAT PHYSICAL ELECTRONICS DIVISION OF PERKIN-ELMER HAS NO CONTROL OVER CUSTOMER MODIFICATIONS TO PHI PRODUCTS SHIPPED, IT DISCLAIMS ANY RESPONSIBILITY FOR ANY MALFUNCTIONS OR ACCIDENTS THAT MAY RESULT!

DANGER ELECTRICAL SHOCK HAZARD

HIGH VOLTAGES ARE PRESENT IN THE SYSTEM WHEN THE SYSTEM POWER INPUT LINES ARE CONNECTED. DISCONNECT INPUT POWER AT THE WALL BEFORE MAKING ANY ADJUSTMENTS. REFER SERVICING TO PERSONNEL WHO HAVE BEEN TRAINED AND HAVE WORKING EXPERIENCE WITH VOLTAGES IN EXCESS OF 50 VOLTS.

ALL ELECTRICAL CABLES ASSOCIATED WITH VARIOUS UNITS INCLUDED IN A SYSTEM ARE WELL SHIELDED. HOWEVER, CARE MUST BE TAKEN NEVER TO COME IN CONTACT WITH ANY ASSOCIATED TERMINALS WHEN THE POWER IS ON. SOME OF THESE LEADS CARRY POTENTIALLY LETHAL HIGH VOLTAGES. OTHER LEADS MAY CARRY SUFFICIENT RF POWER TO INFLICT SEVERE BURNS.

RF INTERFERENCE

THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO-FREQUENCY ENERGY, AND IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE INTERFERENCE TO RADIO COMMUNICATIONS. OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE INTERFERENCE IN WHICH CASE THE USER AT HIS OWN EXPENSE WILL BE REQUIRED TO TAKE WHATEVER MEASURES MAY BE REQUIRED TO CORRECT THE INTERFERENCE.

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GENERAL INFORMATION

GENERAL DESCRIPTION

The Ultek Boostivac Ion Pump Control Unit (Figure 1) was specifically designed to start and operate Ultek Boostivac High Vacuum Ion Pumps (Models 210-1500, 210-1560) and TNB/TBK and MX-14 Table-Top Systems. This power unit incorporates the latest design features and provides both high current at low voltage for ion pump starting and high voltage at low current for ion pump operation. The power unit includes a meter circuit with log-linear meter for direct reading of current, voltage, or pump pressure. A recorder output permits direct graphic recording of system pressure. The power unit also includes a low voltage, high current section with current meter for operation of the titanium sublimator. This section includes a power set variable transformer and adjustable cycle timer.

Protection for the ion pump is provided by an overload protection device which shuts off the power unit if pressure in the pump rises above a preset value. This prevents pump operation at pressures above the upper pressure limit and eliminates the possibility of damage to the pump by overheating.

Operating controls are located on the front panel and cable connections are on the rear panel of the unit. The unit can be mounted on a standard 19-inch-wide rack cabinet.

Top quality components are selected to provide a power unit that will operate under any conditions of output requirements from open to short circuit. The components of the unit are illustrated in Figure 2.

REFERENCE TABLES

Control units designed to operate with particular input power and frequency requirements are identified by their Ultek model and part numbers in Table 1. The operating characteristics and performance specifications of the control units are described in Table 2.

TABLE 1
IDENTIFICATION OF BOOSTIVAC ION PUMP CONTROL UNITS

Ultek Model Number	Input Power	Input Frequency	Ultek Part Number
224-0630	115V	60 Hz	221-293-000
224-0635	200/220V	50 Hz	221-293-300

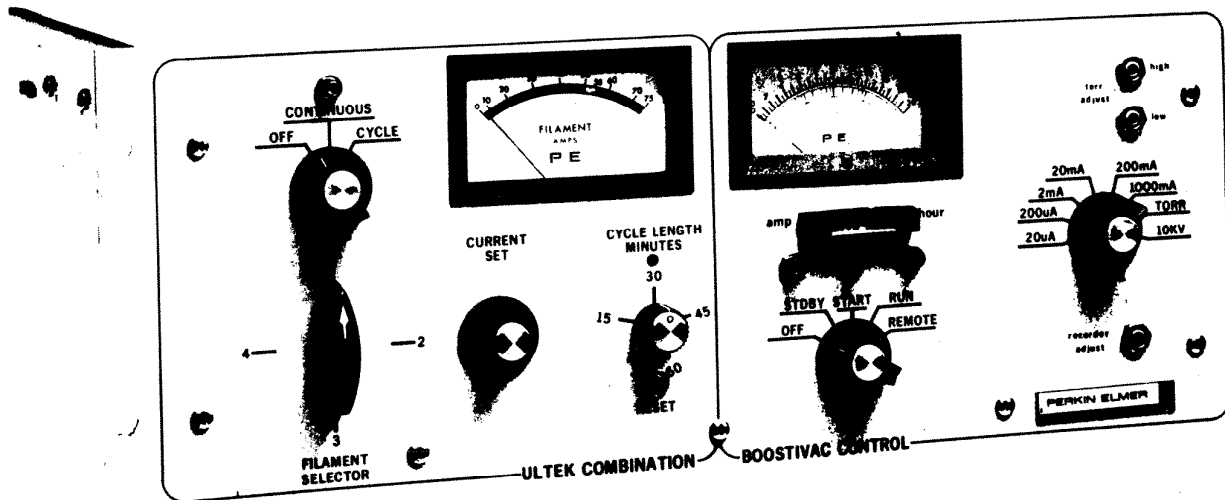


FIGURE 1. BOOSTIVAC ION PUMP CONTROL UNIT

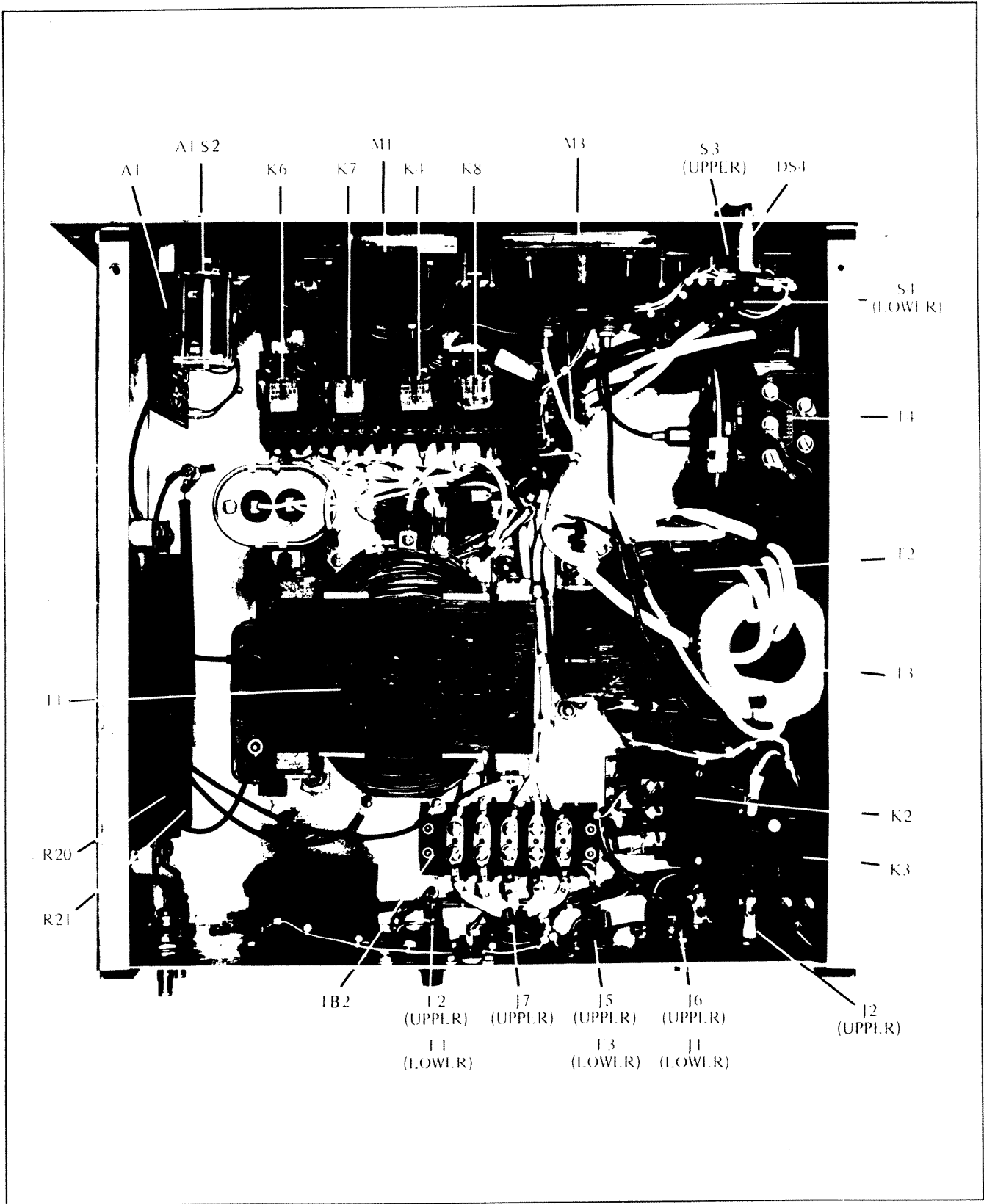


FIGURE 2. COMPONENTS OF THE BOOSTIVAC ION PUMP CONTROL UNIT

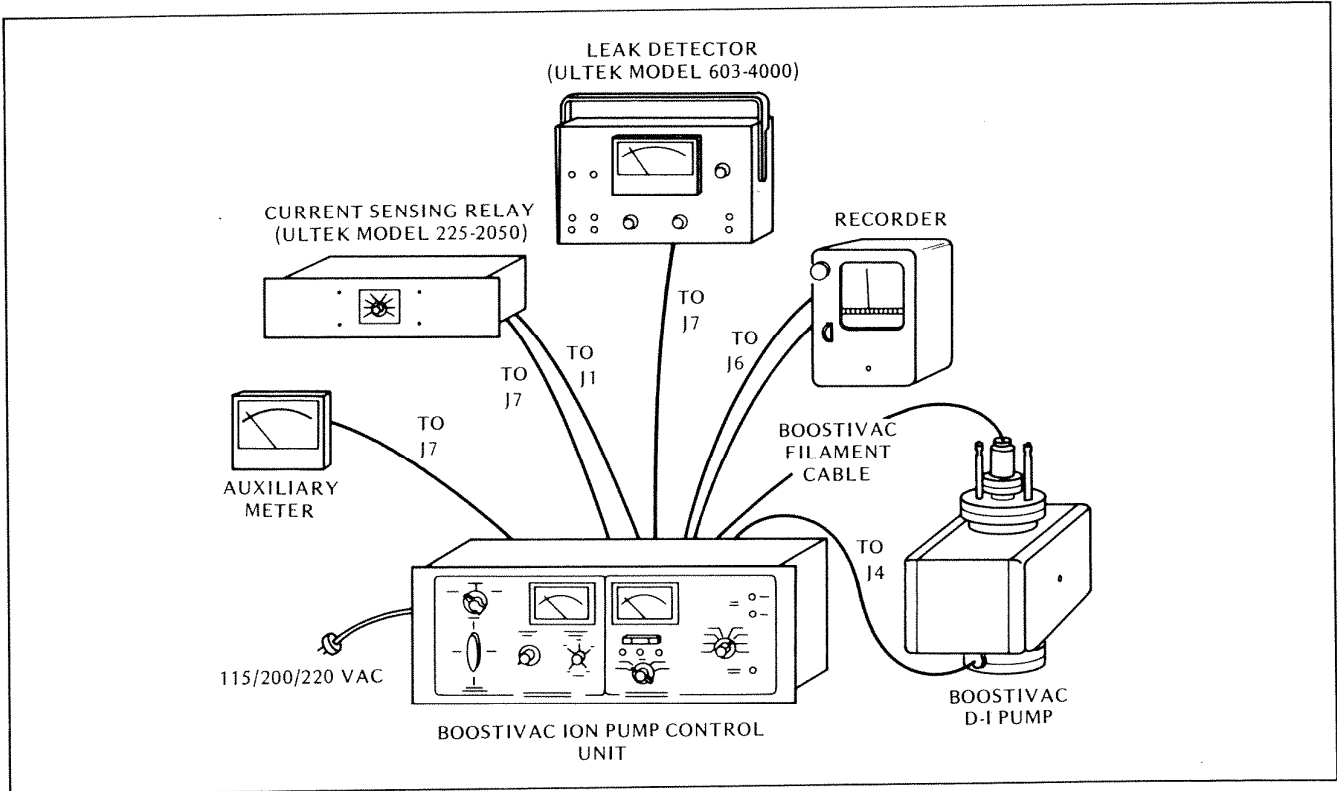


FIGURE 3. EQUIPMENT INTERCONNECTION DIAGRAM

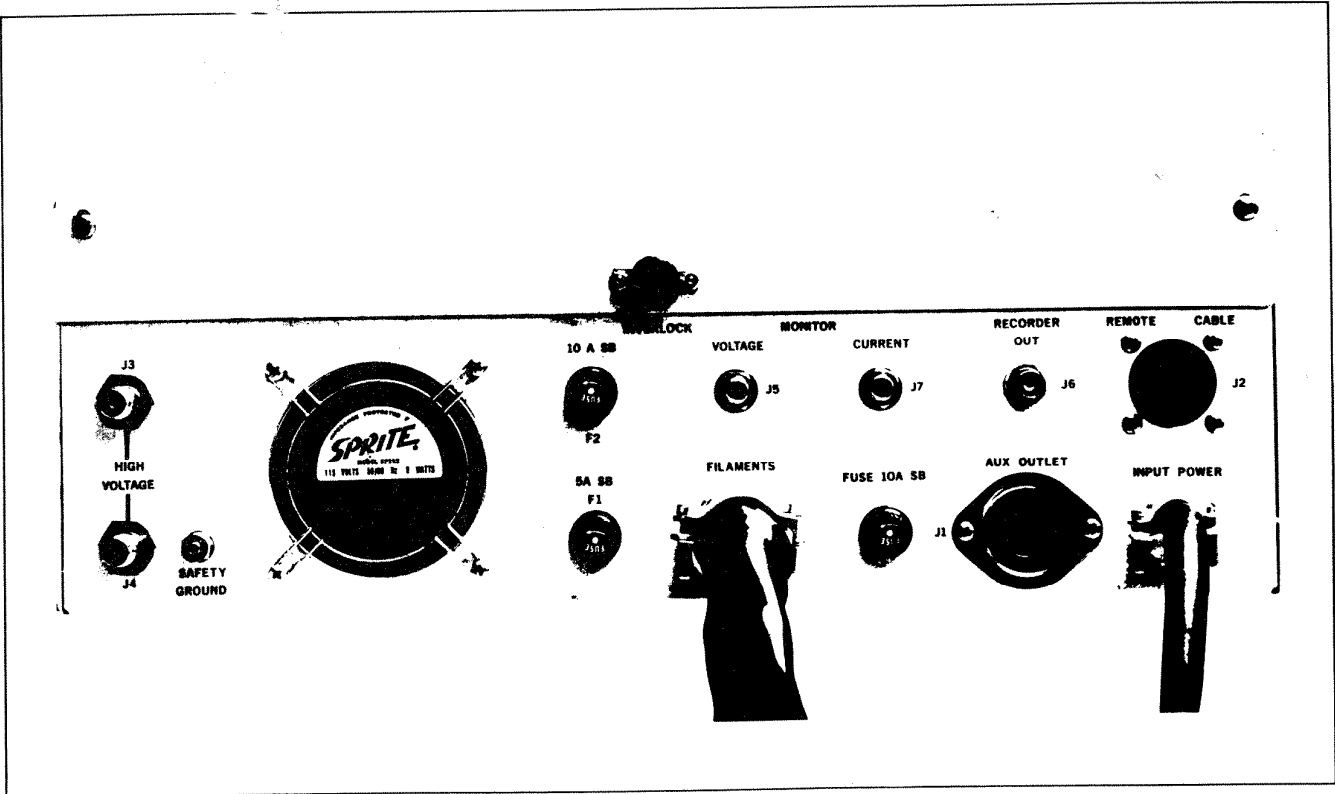


FIGURE 4. REAR PANEL OF BOOSTIVAC ION PUMP CONTROL UNIT

Current/Pressure/Voltage Meter

A high impedance meter, whose functions are controlled by the RANGE selector switch, displays output current or voltage on a linear scale and pump pressure, in Torr, on a logarithmic scale. A mechanical zero adjustment point is located directly below the meter.

RECORDER ADJUST

This 15-turn potentiometer permits calibration of the recorder output signal to produce a desired deflection on an external device recording pressure or current.

HIGH/LOW TORR ADJUST

Two 15-turn potentiometers provide calibration of the meter pressure indication, at both the high and low end of the Torr range, so that the pressure in a particular pump may be monitored accurately.

AMP HOUR Meter

A microcoulombmeter measures the operational life of an ion pump by the displacement of a column of mercury. The meter scale is calibrated so that 40 ampere-hours of ion pump operation equals a 100% displacement of the mercury column. Table 3 shows the relation between the amount of mercury displacement in the meter for operation of a particular ion pump and that pump's expected lifetime of operation. The data in this table are computed for an ion pump with an expected life of 45,000 hours of operation at 1×10^{-6} Torr. The meter can be used with ion pumps whose life expectancy is greater than 40 ampere-hours. After continued pump operation has resulted in a 100% displacement of the mercury column and further monitoring of pump life is required, remove the cover assembly (which contains the mercury column) from the meter, rotate it 180° and replace it.

The meter's zero point can be reset, while the cover is removed, by sliding the white meter scale until its zero line coincides with the gap in the column of mercury.

The cover assembly has ten reference marks molded on it to facilitate placement of the scale when the zero point is being adjusted. These marks are matched by identical marks on the bed for the tube containing the mercury. To determine where the sliding scale should be set, observe the position of the gap in the

mercury column in relation to the reference marks on the cover, then move the scale until its zero line corresponds to the appropriate mark on the bed for the mercury tube.

TABLE 3
LIFE EXPECTANCY OF ION PUMPS AS A FUNCTION
OF AMP HOUR METER DISPLACEMENT

Pump Size 1/s	Expected Lifetime of Operation as a Per Cent of Full Scale Meter Displacement
5	7%
11	15%
20	35%
25	40%
60 or 80	100%
120 or 150	200%
220 or 270	350%
400 or 500	800%

RECORDER OUTPUT Receptacle

At this rear panel receptacle, an output signal is provided which is proportional to the front panel meter deflection and is adjustable from 0 to -200 mV on all scales. The signal allows continuous graphic recording of ion pump system pressure or current. For correct readings, this output must be calibrated against the current output to the ion pump.

CURRENT MONITOR Option

At this rear panel receptacle, a current output signal is provided which corresponds to the front panel meter current ranges. It is used to monitor actual ion pump current in a remote manner.

VOLTAGE MONITOR Option

At this rear panel receptacle, a 0 to 10 Vdc voltage output signal is provided which corresponds proportionally to 0 to 10 kV on the front panel voltage meter range. It is used to monitor ion pump voltage in a remote manner.

REMOTE Control Computer Option

At this rear panel receptacle, an external control device may be connected for remote control and monitoring of the OFF, STDBY, START and RUN functions of the ion pump section MODE switch.

tection is incorporated in the control unit. It can be bypassed when starting the pump by placing the ion pump section MODE switch in the START position. After the pump has started, the switch should be placed in the RUN position to ensure protection.

Reading Pressure

With a constant voltage, the pressure in the pump can be determined by reading the control unit current. The relationship between pump pressure and current has been established by using a Bayard-Alpert ionization gauge located near the pump flange. A sensitive meter circuit is incorporated in the control unit for reading pump current. In addition, a logarithmic scale is provided to read pressure when adjusted for the appropriate pump. The limits of current or pressure measurements are leakage current at a low pressure, and changing pump operating mode at high pressure. It must be noted, however, that any pumping gauge may indicate a pressure substantially different from the pressure in the attached system. To read pressure:

1. Set the RANGE switch for on-scale reading of current.
2. Convert current reading to pressure with the calibration curve appropriate for the pump size being used (see Figures 5 to 8).

3. Return RANGE switch to maximum current range, or set RANGE switch to TORR and read pressure directly.
4. Return RANGE switch to maximum current range.

Operation with a Recorder

1. See the specifications in Table 2 regarding output voltage impedance and proper connector.
2. Isolate the recorder input or chassis.
3. Connect the recorder connector.
4. Set RANGE switch to maximum current position.
5. Turn RECORDER ADJUST potentiometer fully counterclockwise.
6. Set recorder zero to desired position on its scale.
7. Select desired range on RANGE switch.
8. Calibrate system by adjusting RECORDER ADJUST potentiometer to produce desired deflection on recorder.
9. The system is now ready for recording. Remember that the recorder deflection is proportional to meter deflection on all ranges, except 10 kV, where the output voltage is zero.

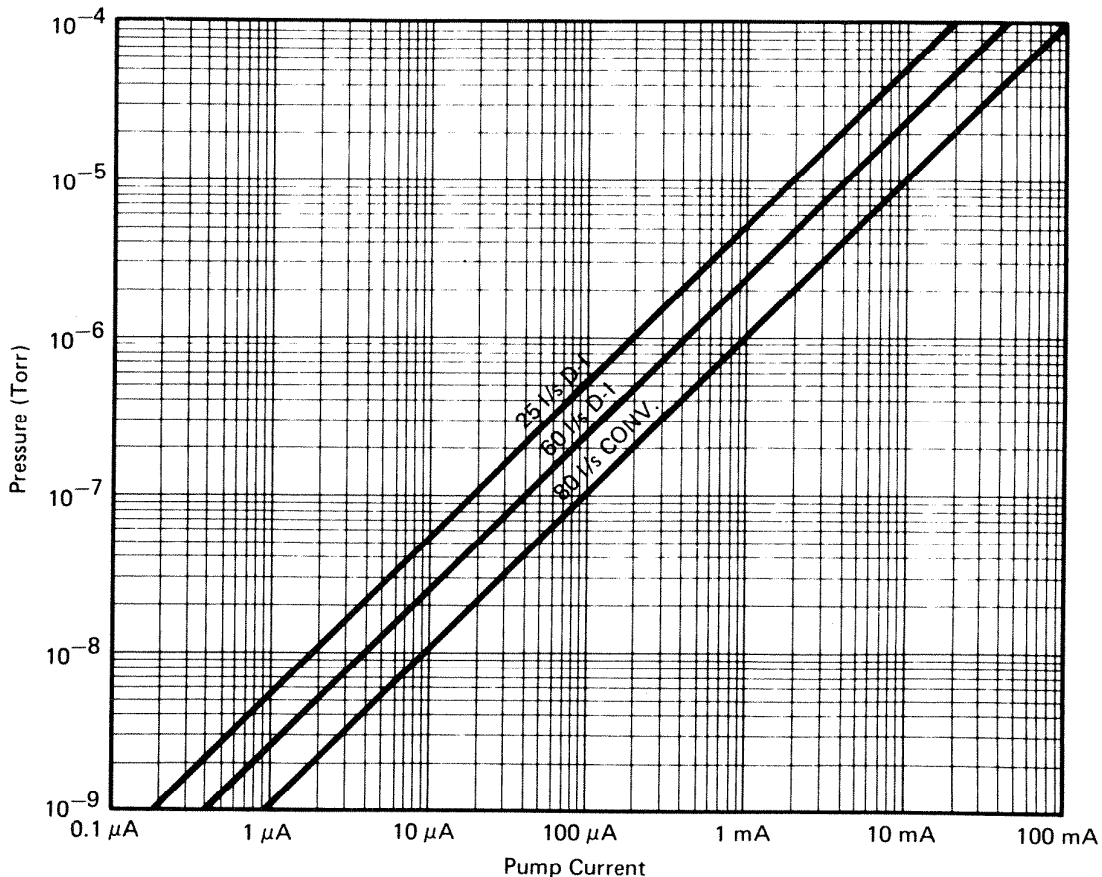


FIGURE 5. CURRENT-TO-PRESSURE CONVERSION CHART 25-80 L/S PUMPS

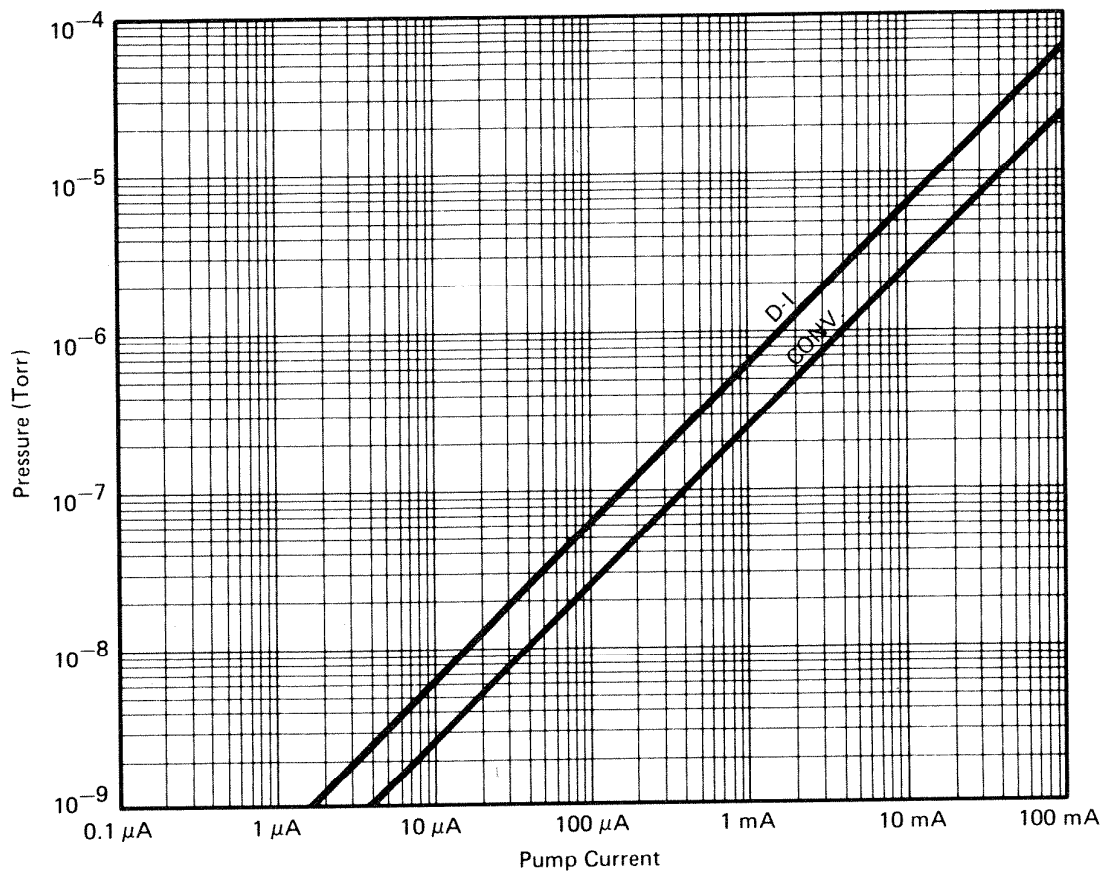


FIGURE 7. CURRENT-TO-PRESSURE CONVERSION CHART 220-270 L/S (8 CUBBYHOLE) PUMPS

BOOSTIVAC PUMPING

The Boostivac titanium gettering pumping technique is generally used during:

1. The pumpdown cycle when high pumping speeds are required for a rapid and time-saving operation.
2. Operation of the system when heavy gas loads are experienced and when pumping of high throughput is demanded.

Boostivac pumping is an economical method of pumping gases that can be gettered (chemically combined) with titanium such as H₂, O₂, and N₂. The titanium provided by Ultek is supplied on filaments mounted on a filament holder in the system. When heated, the titanium is sublimed from the filament onto a substrate surface area in the system. The titanium thus deposited combines with the getterable gases and permanently removes them from the system volume. Since the titanium combines with a selective group of gases, other gases must be pumped by other means. The ion pump will pump all gases, but does not have the capacity to pump the getterable gases as rapidly as the titanium film. In combination they act to enhance each other; the ion pump by ionizing such gases as H₂O so they can be pumped by the titanium film and the gettering pump by providing high pumping speeds for gases most commonly observed as residuals in vacuum systems.

PUMPING RATES

Relative pumping rates as a percentage of the pumping speed for N₂ are given below:

TABLE 5
RELATIVE PUMPING RATES OF ION AND GETTERING PUMPS

Gas	D-I Ion Pump	Gettering Film
H ₂	270	225
O ₂	70	100
N ₂	100	100
He	30	0
CO ₂	100	100
Ar	25	0

H₂ is pumped most efficiently and is quite often the most common residual gas in a metal system.

It has been observed by Ultek that the substrate area onto which the titanium film is deposited must be cooled for effective pumping. There are three commonly used working temperatures. Any one of these may be selected for use in a vacuum system, depending on the size, shape, and operating requirements of the system. The three temperatures are:

1. Air cooling (20-25°C.)
2. Water cooling (12-18°C.)
3. LN₂ cooling (77-100°K.)

Hydrogen is not easily gettered because it has such strong chemical bonds. Therefore, hydrogen pump-

ing is strongly temperature-dependent. If the deposited film is heated, the hydrogen previously pumped will be re-emitted. Hence, for hydrogen pumping, the substrate should be cooled by water or liquid nitrogen.

TITANIUM CONSUMPTION

The consumption of titanium is a function of pressure and the gas load present during a pumpdown cycle. At higher pressures the titanium combines with a relatively large quantity of gas. At high pressures the rate of arrival of gas molecules at the getter surface is greater than the rate of arrival of titanium. Under these conditions all the molecules of titanium combine with a gas molecule before the next monolayer of metal is deposited. At lower pressures the opposite is the case and unused titanium can be covered before it combines with a gas molecule. It is therefore desirable at lower pressures to deposit a thin film of titanium and allow it to pump before covering up that layer. To accomplish this, Ultek provides a means of cycling the filament power supply to increase the filament life. After a period of time, the residual pumping effect of the titanium will decay and a fresh layer of material must be deposited. Table 4 is a guide to the most effective cycling for various pressures. The settings in Table 4 are applicable for both system pumpdown and for continuous operating in the pressure ranges specified, assuming maximum pumping speeds are desired. Lower pumping speeds can be obtained with lower timer settings.

In ultrahigh vacuum operation, pressures of 1 X 10⁻⁹ Torr and below, it may not be necessary to sublimate titanium as often as indicated by the settings above because of the considerable residual pumping effect of the titanium film in the ultrahigh vacuum region. For example, a sublimation period of only a minute or two in 24 hours is required for a system maintaining vacuum in the 10⁻¹² Torr range. Experimentation in specific applications can determine the intervals at which titanium should be sublimated.

Should you not want to cycle the filament but prefer to run it continuously for short, rapid pumpdown operations, you can use the following table as a guide to the titanium consumption. Each filament has about 1.5 gm of usable titanium.

TABLE 6
GAS CONSUMPTION BY TITANIUM IN
CONTINUOUS FILAMENT OPERATION

Pressure	Torr-Liters per gm
1 X 10 ⁻⁶ Torr	100 T-L/gm
1 X 10 ⁻⁷ Torr	30 T-L/gm
1 X 10 ⁻⁸ Torr	10 T-L/gm
1 X 10 ⁻⁹ Torr	3 T-L/gm
1 X 10 ⁻¹⁰ Torr	1 T-L/gm

PREVENTIVE MAINTENANCE

Preventive maintenance procedures consist of periodically cleaning the control unit. Clean the interior of the unit with an industrial vacuum cleaner to remove dust, dirt and metal particles which may cause electrical shorts. If a source of compressed, clean, dry air is available, it is recommended that the entire interior of the chassis be cleaned, paying particular attention to areas such as the high voltage terminals.

WARNING

Always turn power off, remove input power cord and wait 3 minutes before opening the chassis for cleaning.

The high voltage components are particularly important since they are susceptible to arcing. If the equipment is operated in the vicinity of oil diffusion pumps or oil-backed mechanical pumps, oil vapor will settle on components. This attracts dust, which will cause arcing under conditions of high voltage operation. While cleaning the interior of the chassis, inspect all high voltage wires for wear and cracking. Wipe off all high voltage terminals, connectors and the encapsulated diode rectifier bridge with a lint-free cloth moistened in trichloroethylene or another suitable solvent.

CHECKOUT AND ALIGNMENT OF ION PUMP SECTION

Voltage and Current Checkout

An overall checkout of the unit can be performed by checking the value of the rated voltage and current outputs.

1. Turn off the control unit and allow the filter capacitor to discharge for 3 minutes.
2. Disconnect the high voltage connector from the ion pump and suspend it away from any ground connection.

WARNING

Make sure that all personnel are away from the high voltage connector when power is turned on.

3. Set the MODE switch in the START position.
4. Turn the RANGE switch to 10 kV and observe that the meter reads between 5.0 kV and 6.0 kV.
5. Turn off power and allow three minutes for filter capacitors to discharge.
6. Short across the high voltage connector and turn on power.
7. Set the RANGE switch to the highest current

scale and observe that the meter indicates a value that is within 10% of the rated short circuit current.

8. Set the MODE switch in the RUN position and observe the circuit breaker trip within 3 minutes.
9. If the above current or voltage readings are not obtained, troubleshoot the unit.

Adjustment of Torr Range

A variable current source is required to perform adjustment of Torr potentiometers. The high voltage output connector should be used as a current input for this adjustment.

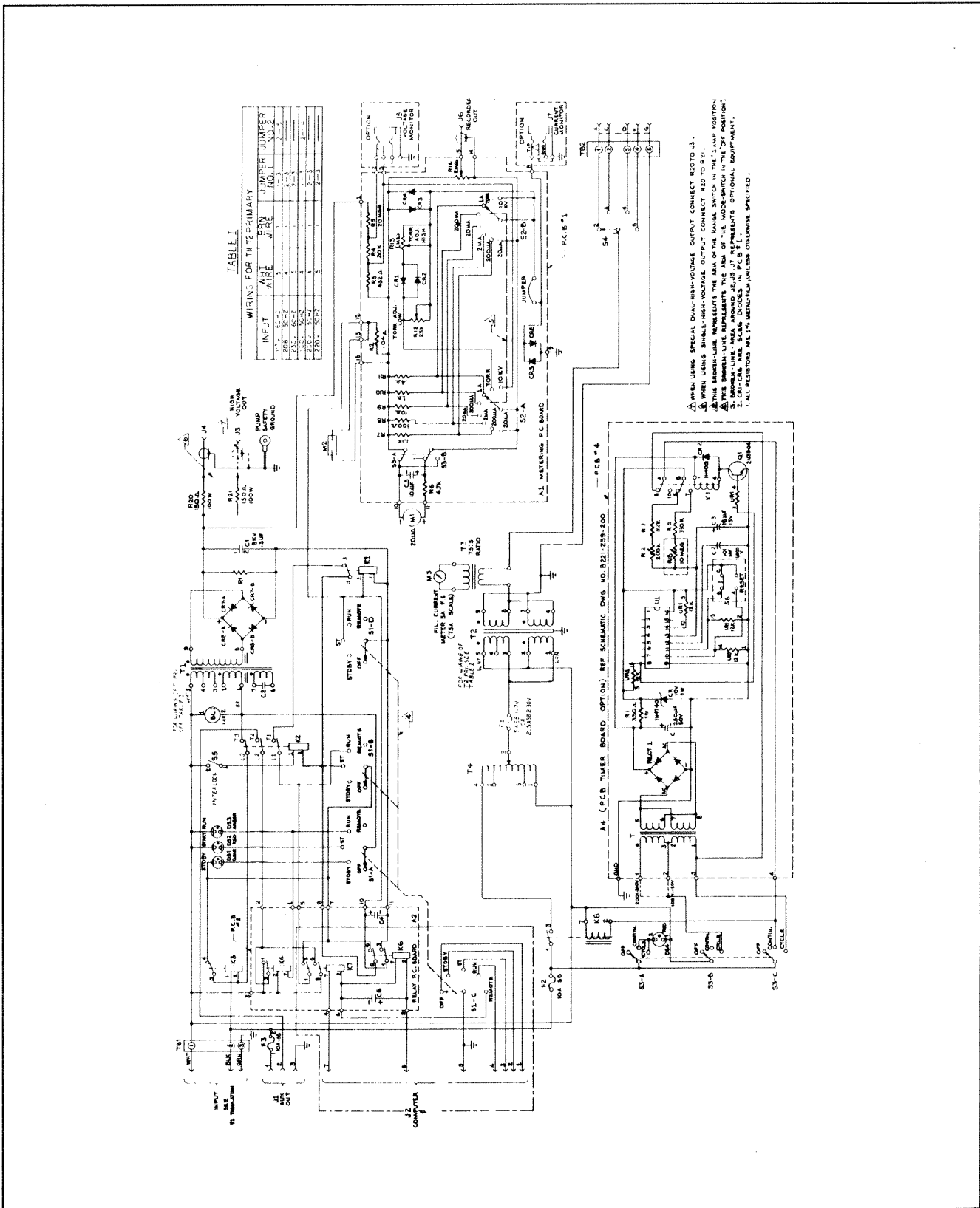
1. Turn off the control unit and disconnect the main power lines.
2. Set the variable current source to zero and connect it as a pump load to the high voltage receptacle.
3. Turn the TORR HIGH and TORR LOW potentiometers to mid-range.
4. From the conversion charts (Figures 5 to 8) determine the current for 10^{-5} Torr and 10^{-8} Torr. This value depends on the size of the pump with which the control unit is used.
5. Turn the RANGE switch to the current scale corresponding to the current determined above for 10^{-5} Torr.
6. Increase the current to the unit until the meter indicates the value determined above for 10^{-5} Torr.
7. Turn the RANGE switch to the TORR position.
8. Adjust the TORR HIGH potentiometer until the meter indicates 10^{-5} Torr.
9. Turn off the current source and set the current to zero.
10. Set the RANGE switch to the current range for reading the current corresponding to 10^{-8} Torr, as determined above.
11. Turn on the current source and increase it until the meter indicates the current for 10^{-8} Torr.
12. Set the RANGE switch to the TORR position.
13. Adjust the TORR LOW potentiometer until the meter indicates 10^{-8} Torr.
14. Repeat steps 8 through 13 until meter reads correctly for the high and low values.
15. Turn off the current source and disconnect the test equipment.

Mechanical Adjustment of Meter Zero

If the meter pointer does not indicate zero after the power unit has been off for a few minutes, adjust the mechanical zero.

1. Turn the adjustment screw located below the

SCHEMATIC DIAGRAM 7



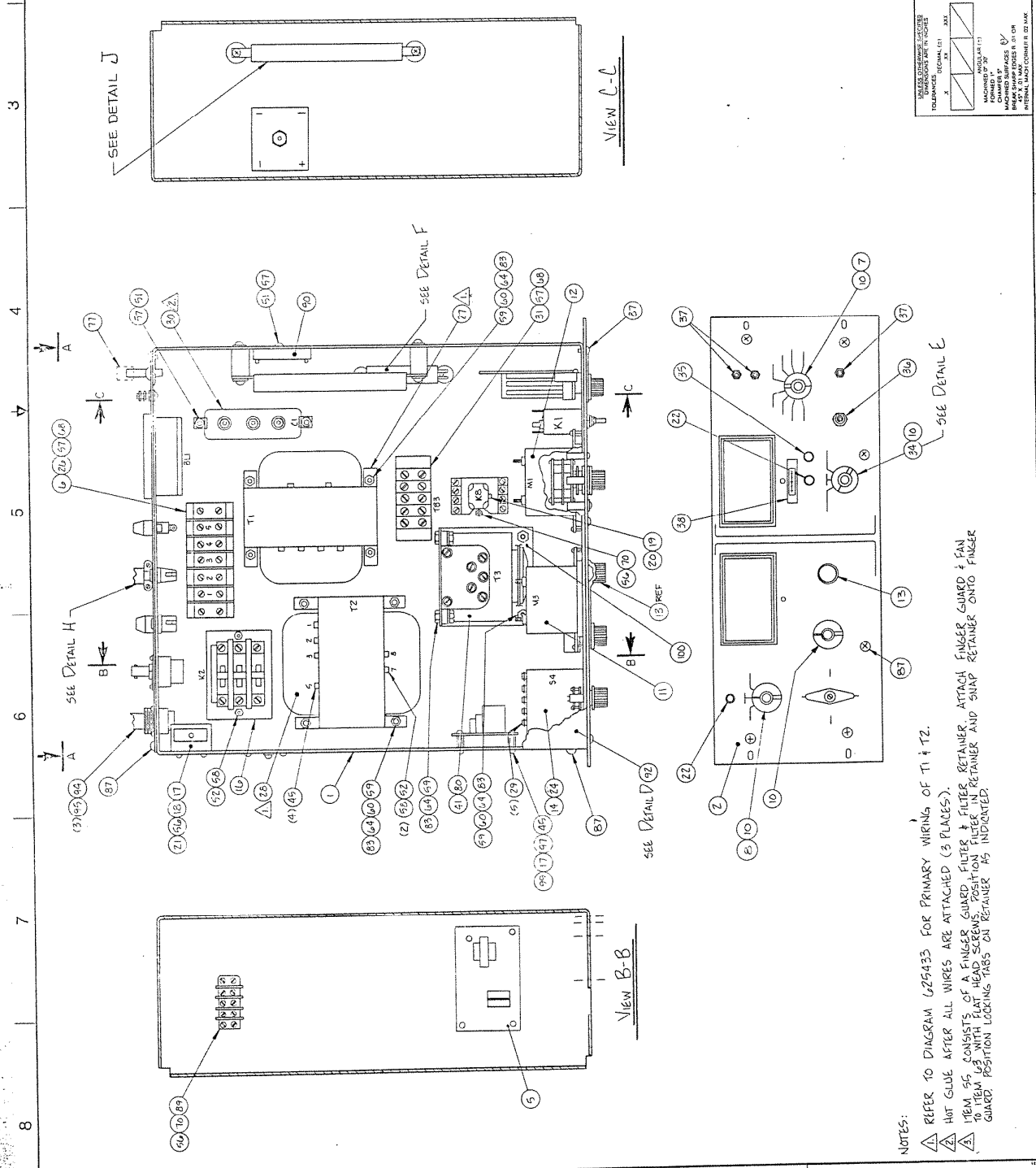
SCHEMATIC DIAGRAM OF BOOSTIVAC ION PUMP CONTROL (D221-293-900)

REPLACEABLE PARTS 8

Circuit Ref. Des.	Description	Part No.
DS3	Indicator Light, Amber, 110V	122-159-000
DS3	Indicator Light, Amber, 220V	122-159-100
DS2, DS4	Indicator Light, Red, 110V	122-158-900
DS2, DS4	Indicator Light, Red, 220V	122-159-300
DS1	Indicator Light, Clear, 110V	122-158-800
DS1	Indicator Light, Clear, 220V	122-159-200
F2, F3 (110V)	Fuse, 10A, S.B., 3AG	179-657-000
F1 (110V)-F2, F3 (220V)	Fuse, 5A, S.B., 3AG	179-676-000
F1 (220V)	Fuse, 2.5A, S.B., 3AG	179-677-000
	Fan, 110V	132-313-000
	Fan, 220V	122-132-200
T3	Transformer, Current	132-074-000
T2	Transformer, Filament	400-587-000
T1 with C2	Transformer, Ion Pump, 60Hz	221-224-700
T1 with C2	Transformer, Ion Pump, 50Hz	221-281-400
TB2	Terminal Strip, 5 Pos.	139-519-000
TB1	Terminal Strip, 3 Pos.	139-522-000
S4	Switch, 4 Pole, 45A	135-406-000
R20-R21	Resistor, 150Ω, 100W	134-088-000
	Stand-off, for R20-R21	139-020-000
R3	Resistor, 2.5MΩ, 18W	122-148-800
K8-XX	Socket, for K8	140-245-000
K4, K8	Relay, DPDT, 117 Vac	135-723-010
K3-XX	Heater Element, 15.1A, for 117V Unit	122-148-700
K3-XX	Heater Element, 7.75A, for 220V Unit	122-149-500
K3	Relay, Overload	122-143-900
K2	Relay, 3PST, 117V	122-096-400
K2	Relay, 3PST, 230V	139-923-000
K1	Relay, SPDT, Overload	122-148-900
CR7 and CR8	Diode Stack, 10kV	136-406-300
Knob	Knob	139-777-000
	Cable Assy., Filament	221-117-200
Conn. for Filament Cable Clamp for Filament Cable	Connector, MS 3108 B 24-10s	140-006-000
	Cable Clamp	139-972-000
C1	Capacitor, .5μF, 6kV	133-062-000
T4	Transformer, Variable, 110V	122-159-600
T4	Transformer, Variable, 220V	122-159-500
A2	Relay Board Assy.	221-271-800
C6	Capacitor, 100μF, 50V	133-081-900
C4	Capacitor, 250μF, 25V	122-205-600
	Socket, Octal, P.C. Type	140-211-000
	P.C. Board	221-271-700
S3	Switch, Rotary	122-160-200
S1	Switch, Rotary	135-444-700
	Knob	139-790-020
M3	Meter, 5A, with Bezel	137-058-000
M1	Meter, 20μA, with Bezel	122-144-600
M2	Meter, AMP HOUR	132-509-600
A1	P.C. Board Assy., Metering	221-221-000
A1-C5	Capacitor, 10μF, 50 V	133-081-500
A1-S3	Switch, POLARITY	122-118-300
A1-S2	Switch, RANGE	221-220-800
A1-R14	Potentiometer, Trimmer, 2MΩ	122-116-000
A1-R13	Potentiometer, Trimmer, 25KΩ	122-115-800
A1-R12	Potentiometer, Trimmer, 1KΩ	122-115-900
	Adaptor, Panel Mount, for A1-R12, 13, 14	122-116-800
A1-CR1-CR6	Diode, S6M, SCE6	136-000-000
A1-R11	Resistor, .2Ω, 1%	122-132-300
A1-R10	Resistor, 1Ω, 1%	134-131-700
A1-R9	Resistor, 10Ω, 1%	134-131-800
A1-R8	Resistor, 100Ω, 1%	134-129-100

continued . . .

ZONE REV	DESCRIPTION	DATE	APPROVED
1	DESIGNED & DRAWN BY PERKIN ELMER	1-21-74	[Signature]
2	SEE ZC 11118 (NEW X-FANS)	11-22-72	[Signature]
3	DELETE # 65 - C.O. 1205-A	2-27-55	[Signature]



DATE	BY	DATE	BY
1-21-74	[Signature]	1-21-74	[Signature]
11-22-72	[Signature]	11-22-72	[Signature]
2-27-55	[Signature]	2-27-55	[Signature]

PERKIN ELMER
 Physical Electronics Division
 6008 Flynn Road Drive • Eden Prairie, MN.

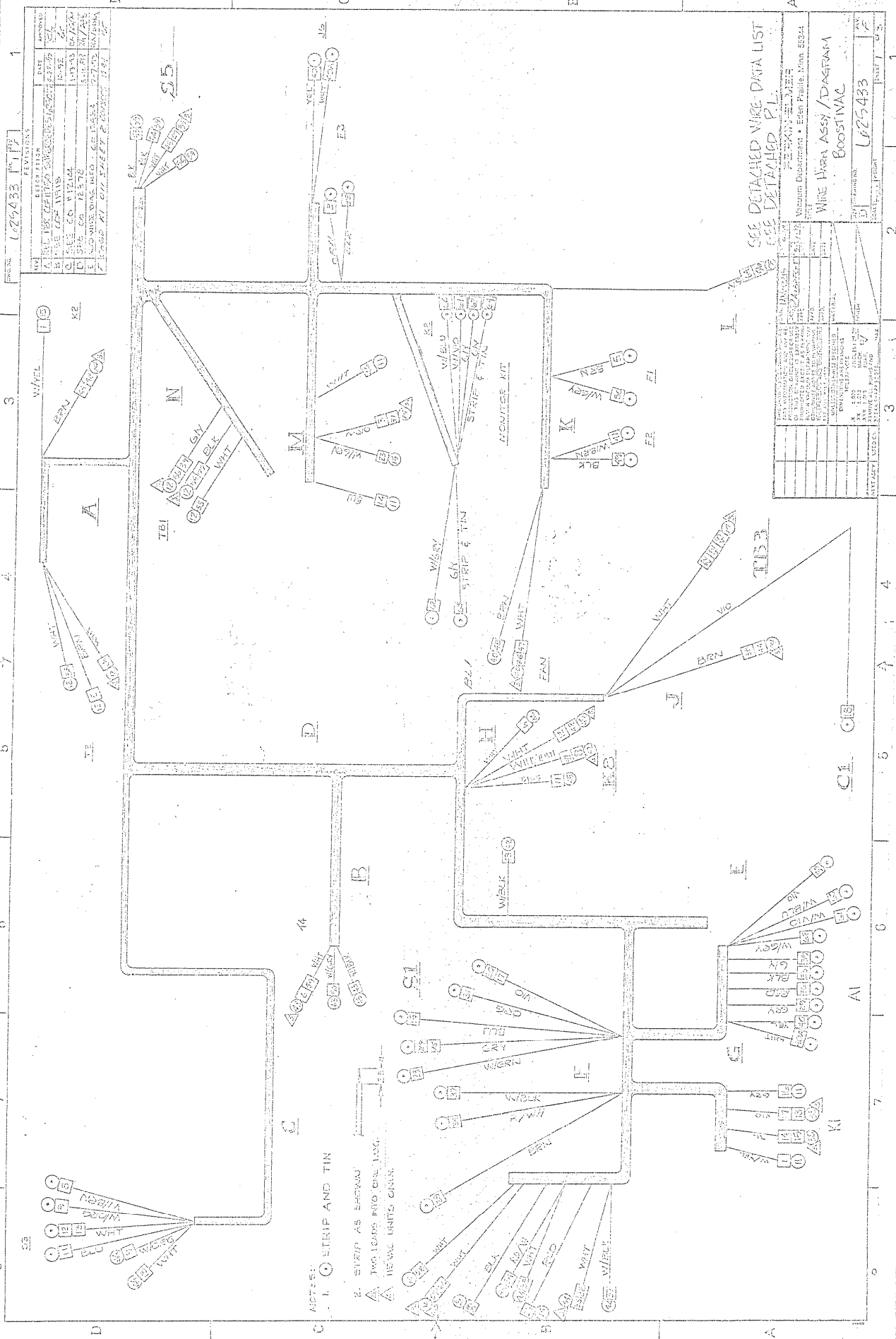
FILE: 224-355
 DRAWING NO: 224-355
 SCALE: 1/2" = 1" DETACHED: 1/2" = 1"

NOTES:
 A REFER TO DIAGRAM 625433 FOR PRIMARY WIRING OF T1 & T2.
 B HOT GLUE AFTER ALL WIRES ARE ATTACHED (3 PLACES).
 C ITEM 95 CONSISTS OF A FINGER GUARD, FILTER & FILTER RETAINER. ATTACH FINGER GUARD & FAN RETAINER ONTO FINGER GUARD. POSITION LOCKING TABS ON RETAINER AS INDICATED.

PERKIN-ELMER SHEET: 1 7/07/93 TITLE SPLY-BOOSTIVAC

PHYSICAL ELEC. DIV. PWR SPLY-BOOSTIVAC

ITEM	PART NO.	QTY	UM	DESCRIPTION	PART STATUS	PART NUMBER	REV	EFFECTIVITY DATES:
					1	2240635	G	FROM TO
1	625541	1.000	EA	CHASSIS-BOOSTIVAC/SUBLIMATOR				102792
2	625432	1.000	EA	FRONT PNL-BOOST/ION PMP,SLKSCN				090192
3	1000520	1.000	EA	REAR PANEL-BOOST ION PUMP CONT				090192
4	624062	0.000	EA	TEST & CAL PROC-BOOSTIVAC				090192
5	1000698	1.000	EA	PCB ASSY-TIMER,BOOSTIVAC				090192
6	1000787	1.000	EA	MARKER STRIP-5 POSN				090192
7	1000539	1.000	EA	PCB ASSY-METERING,BOOSTIVAC				090192
8	1000675	1.000	EA	SW-RTRY,MOD,4P,3POS				090192
9	1000904	0.000	EA	SCHEMATIC DIAGRAM-BOOSTIVAC				090192
10	1000537	4.000	EA	KNOB-SKT BAR,.25 SFT,BLK				101292
11	623965	1.000	EA	METER-ANALOG,0-60A,TSP				090192
12	1000533	1.000	EA	METER-ANALOG,PNL,TRISCALE TORR				090192
13	1000789	1.000	EA	KNOB-SKD BAR,.25 SFT,BLK				090192
14	1000790	4.000	EA	SCR-FLH, 1/4-20X .380,SLTD,SST				090192
16	1000792	1.000	EA	RLY-PNL ,3PST,120VAC,30A/600V				090192
17	541906	6.000	EA	SCR-PNH, 6-32X .375,PHHD,SST				101292
18	1002905	1.000	EA	BRKT-SWITCH				090192
19	1000795	1.000	EA	RLY-DCTL,DPDT,120V ,10A/				090192
20	473035	1.000	EA	SKT-RLY, 8P,RND,SCR,				090192
21	1002928	1.000	EA	SW-INTERLOCK,DPDT,10A@125/250V	NP			090192
22	171235	2.000	EA	LAMP-NEON,CYL,.125V,.3W,RED	NP			090192
23	1000799	4.000	EA	STDF-.75 OD,10-32X1.25 LG,CER	NP			090192
24	1000800	1.000	EA	SW-RTRY,1P4T,480VAC/30A,	NP			090192
26	1000802	1.000	EA	TERM BLOCK-5 DBL POSN,40A	NP			090192
27	1003337	1.000	EA	XFMR-PWR,120-240:5500VDC				101292
28	625467	1.000	EA	XFMR-FILAMENT				090192
29	512110	11.000	EA	WSHR-INT TOOTH LOCK,#10, SST	*			090192
30	1003323	1.000	EA	CAP-0.3 UF X2,5KV,20%,DIL,CAN	NP			090192
31	1004982	1.000	EA	TERM BLOCK-5 DBL POSN,30A	PP			090192
32	1000554	1.000	EA	RES-20M OHM, 4W ,1%,15KV				090192
33	501110	2.000	EA	SOLDER LUG- #10,LKG,BENT				090192
34	1000674	1.000	EA	SW-RTRY,MOD,4P,5POS	NP			090192
35	477073	1.000	EA	LAMP-NEON,CYL,125V,.3W,AMBER	NP			090192
36	624143	1.000	EA	CKT PROT-SP, 0.05A,RLYTRIP,CSA	NP			090192
37	1000550	3.000	EA	PANEL MNT ADPTR,POTENTIOMETER	NP			090192
38	1000535	1.000	EA	MICROCOULOMETER,MERCURY				090192
39	1000532	1.000	EA	CONN-COAX,BNC,F,CHAS,ISOL GND				090192
40	612689	1.000	EA	STRAIN RELIEF-ROMEX CA,.38 ID				090192
41	625262	1.000	EA	SHAFT-STEP,1-4,.251X.375X.44ST				090192
42	1002083	2.000	EA	CONN-PHONE,.25",F,CHAS,SLDR				090192
43	1000816	2.000	EA	FUSE-3AB, 10A,A250V,SLO BLO				090192
44	601265	1.000	EA	FUSE-3AG, 5A,250V,SLO BLO				090192



REF ID: A629433

NO.	DESCRIPTION	DATE	APPROVED BY
1	INITIAL DESIGN	1-23-59	[Signature]
2	REVISED TO SHOW	1-23-59	[Signature]
3	REVISED TO SHOW	1-23-59	[Signature]
4	REVISED TO SHOW	1-23-59	[Signature]
5	REVISED TO SHOW	1-23-59	[Signature]
6	REVISED TO SHOW	1-23-59	[Signature]
7	REVISED TO SHOW	1-23-59	[Signature]
8	REVISED TO SHOW	1-23-59	[Signature]

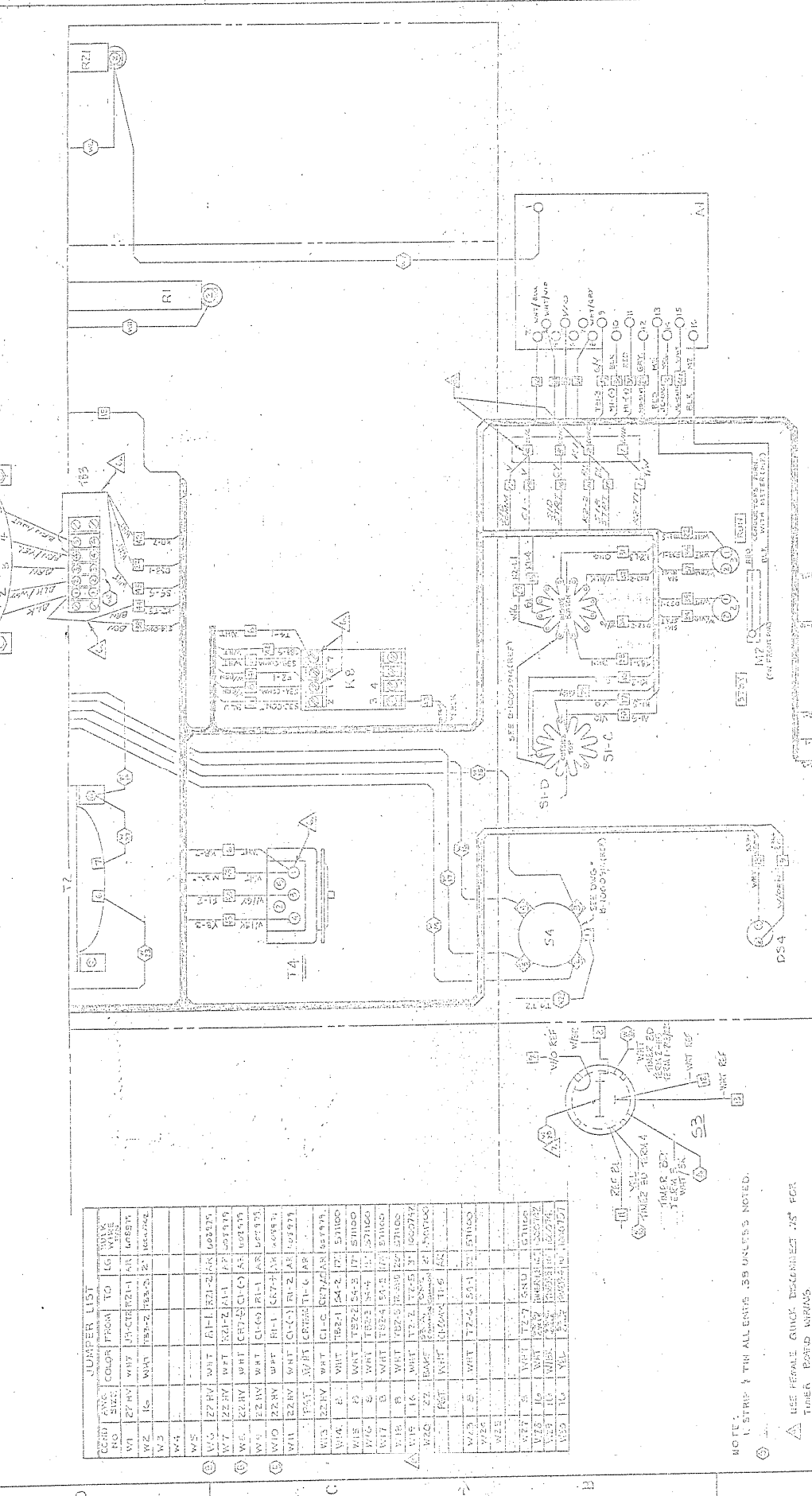
SEE DETACHED WIRE DATA LIST
SEE DETACHED P.L.

Vacuum Department • Eden Prairie, Minn 55344

WIRE HARV ASSY / DIAGRAM
BOOSTINAC

REF ID: A629433

NO.	DESCRIPTION	DATE	APPROVED BY
1	INITIAL DESIGN	1-23-59	[Signature]
2	REVISED TO SHOW	1-23-59	[Signature]
3	REVISED TO SHOW	1-23-59	[Signature]
4	REVISED TO SHOW	1-23-59	[Signature]
5	REVISED TO SHOW	1-23-59	[Signature]
6	REVISED TO SHOW	1-23-59	[Signature]
7	REVISED TO SHOW	1-23-59	[Signature]
8	REVISED TO SHOW	1-23-59	[Signature]



JUMPER LIST

WIRE NO.	WIRE SIZE	COLOR FROM	TO	WIRE WARE
W1	27 AWG	WHT	11-1-1	100274
W2	16	WHT	11-1-1	100274
W3	16	WHT	11-1-1	100274
W4	16	WHT	11-1-1	100274
W5	27 AWG	WHT	11-1-1	100274
W6	22 AWG	WHT	11-1-1	100274
W7	22 AWG	WHT	11-1-1	100274
W8	22 AWG	WHT	11-1-1	100274
W9	22 AWG	WHT	11-1-1	100274
W10	22 AWG	WHT	11-1-1	100274
W11	22 AWG	WHT	11-1-1	100274
W12	22 AWG	WHT	11-1-1	100274
W13	22 AWG	WHT	11-1-1	100274
W14	22 AWG	WHT	11-1-1	100274
W15	22 AWG	WHT	11-1-1	100274
W16	22 AWG	WHT	11-1-1	100274
W17	22 AWG	WHT	11-1-1	100274
W18	22 AWG	WHT	11-1-1	100274
W19	22 AWG	WHT	11-1-1	100274
W20	22 AWG	WHT	11-1-1	100274
W21	22 AWG	WHT	11-1-1	100274
W22	22 AWG	WHT	11-1-1	100274
W23	22 AWG	WHT	11-1-1	100274
W24	22 AWG	WHT	11-1-1	100274
W25	22 AWG	WHT	11-1-1	100274
W26	22 AWG	WHT	11-1-1	100274
W27	22 AWG	WHT	11-1-1	100274
W28	22 AWG	WHT	11-1-1	100274
W29	22 AWG	WHT	11-1-1	100274
W30	22 AWG	WHT	11-1-1	100274
W31	22 AWG	WHT	11-1-1	100274
W32	22 AWG	WHT	11-1-1	100274
W33	22 AWG	WHT	11-1-1	100274
W34	22 AWG	WHT	11-1-1	100274
W35	22 AWG	WHT	11-1-1	100274
W36	22 AWG	WHT	11-1-1	100274
W37	22 AWG	WHT	11-1-1	100274
W38	22 AWG	WHT	11-1-1	100274
W39	22 AWG	WHT	11-1-1	100274
W40	22 AWG	WHT	11-1-1	100274
W41	22 AWG	WHT	11-1-1	100274
W42	22 AWG	WHT	11-1-1	100274
W43	22 AWG	WHT	11-1-1	100274
W44	22 AWG	WHT	11-1-1	100274
W45	22 AWG	WHT	11-1-1	100274
W46	22 AWG	WHT	11-1-1	100274
W47	22 AWG	WHT	11-1-1	100274
W48	22 AWG	WHT	11-1-1	100274
W49	22 AWG	WHT	11-1-1	100274
W50	22 AWG	WHT	11-1-1	100274
W51	22 AWG	WHT	11-1-1	100274
W52	22 AWG	WHT	11-1-1	100274
W53	22 AWG	WHT	11-1-1	100274
W54	22 AWG	WHT	11-1-1	100274
W55	22 AWG	WHT	11-1-1	100274
W56	22 AWG	WHT	11-1-1	100274
W57	22 AWG	WHT	11-1-1	100274
W58	22 AWG	WHT	11-1-1	100274
W59	22 AWG	WHT	11-1-1	100274
W60	22 AWG	WHT	11-1-1	100274
W61	22 AWG	WHT	11-1-1	100274
W62	22 AWG	WHT	11-1-1	100274
W63	22 AWG	WHT	11-1-1	100274
W64	22 AWG	WHT	11-1-1	100274
W65	22 AWG	WHT	11-1-1	100274
W66	22 AWG	WHT	11-1-1	100274
W67	22 AWG	WHT	11-1-1	100274
W68	22 AWG	WHT	11-1-1	100274
W69	22 AWG	WHT	11-1-1	100274
W70	22 AWG	WHT	11-1-1	100274
W71	22 AWG	WHT	11-1-1	100274
W72	22 AWG	WHT	11-1-1	100274
W73	22 AWG	WHT	11-1-1	100274
W74	22 AWG	WHT	11-1-1	100274
W75	22 AWG	WHT	11-1-1	100274
W76	22 AWG	WHT	11-1-1	100274
W77	22 AWG	WHT	11-1-1	100274
W78	22 AWG	WHT	11-1-1	100274
W79	22 AWG	WHT	11-1-1	100274
W80	22 AWG	WHT	11-1-1	100274
W81	22 AWG	WHT	11-1-1	100274
W82	22 AWG	WHT	11-1-1	100274
W83	22 AWG	WHT	11-1-1	100274
W84	22 AWG	WHT	11-1-1	100274
W85	22 AWG	WHT	11-1-1	100274
W86	22 AWG	WHT	11-1-1	100274
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W88	22 AWG	WHT	11-1-1	100274
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W93	22 AWG	WHT	11-1-1	100274
W94	22 AWG	WHT	11-1-1	100274
W95	22 AWG	WHT	11-1-1	100274
W96	22 AWG	WHT	11-1-1	100274
W97	22 AWG	WHT	11-1-1	100274
W98	22 AWG	WHT	11-1-1	100274
W99	22 AWG	WHT	11-1-1	100274
W100	22 AWG	WHT	11-1-1	100274

NOTE: 1. STRIP 1/16" TIN ALLEYS. 2. UNLESS NOTED.
 3. USE REPAIR GUIDE DESIGNATED IN FOR TURNER BOARD WIRING.
 4. TWO LEADS INTO ONE LUG.
 5. COVER WITH TEFLON TUBING.
 6. PER INEWAC OPERATION ONLY.



PHYSICAL ELECTRONICS INDUSTRIES INC.

WIRE DATA

ITEM NO.	DWG TITLE			REV.	SHEET OF	REMARKS	
	HARNESS ASSY - BOOSTINAC						
WIRE/COMP.				TO			
PART NO.	COLOR	AWG	TERM	NOTE	TERM	NOTE	PART NO.
1	570215	Y/W	20	K2-T1	A-D		K1-1
2							
3	1000736	O	16	F3-2	M-M		K2-L3
4							
5	1000734	BR	16	T2-5	A-K		F1-1
6	1000742	W	16	T4-1	B-H		K8-7
7							
8	570212	BR/W	20	S3A-COMM	C-H		K8-1
9	570214	O/W	20	S3A-CYC/CONT	C-C		DS4-2
10							
11	570207	BL	20	S3C-CONT	C-H		K8-2
12	570210	W	20	S3B-COMM	C-H		K8-7
13	570210	W	20	S3B-COMM	C-C		DS4-1
14	570207	BL	20	K1-2	G-M		K2-2
15	570207	BL	20	K1-2	G-F		S1B-STRT
16	570209	G4	20	K1-3	G-F		S1D-STRT
17	570208	V	20	K1-4	G-F		S1D-COMM
18	570208	V	20	K1-4	G-J		C1-(-)
19							
20							
21							
22	570210	W	20	TB3-5	J-F		DS3-1
23	570216	G/W	20	S1B-RUN	F-M		K2-L1
24							
25							

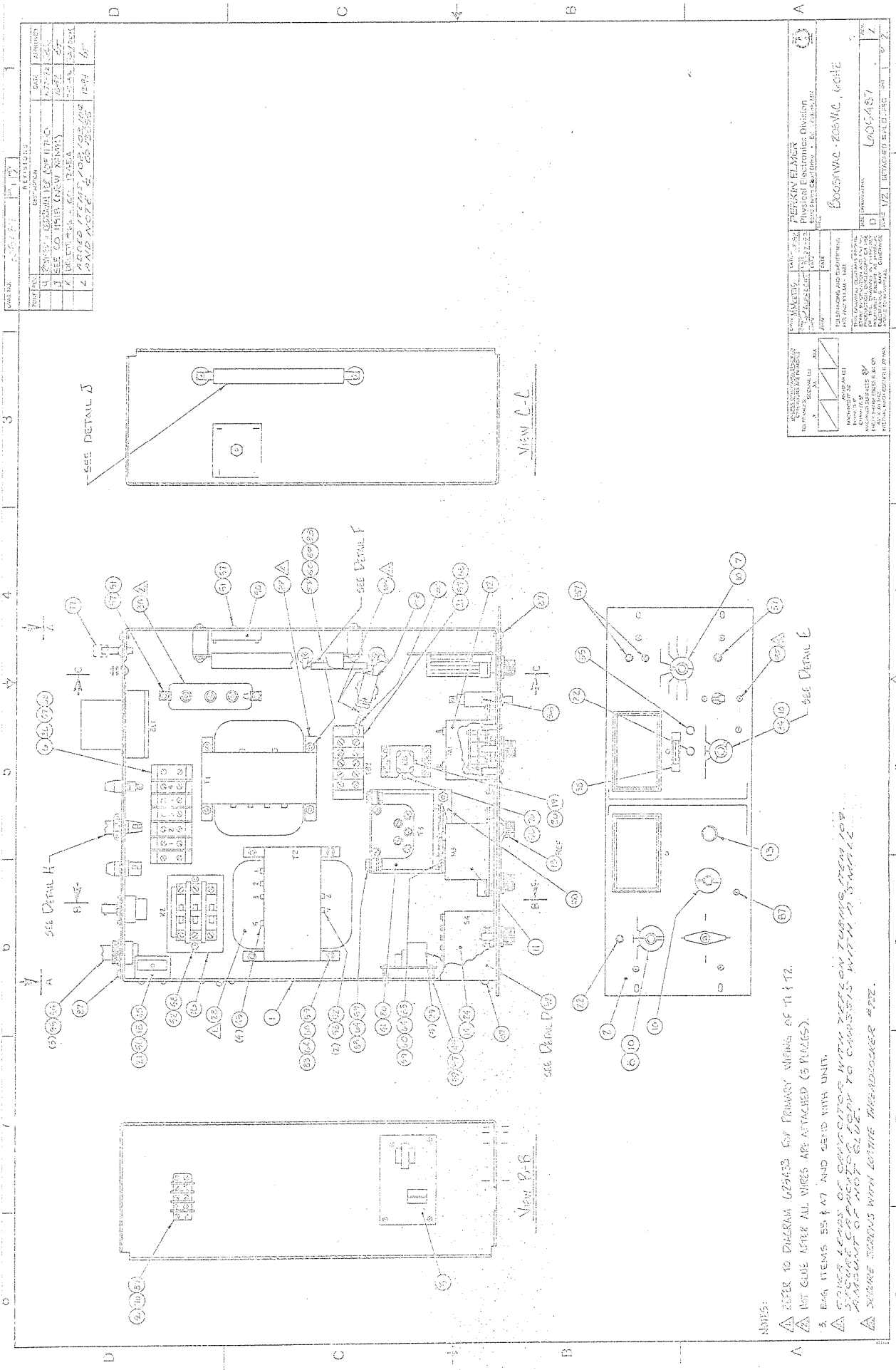


PHYSICAL ELECTRONICS INDUSTRIES INC.

WIRE DATA

ITEM NO.	DWG TITLE	WIRE/COMP.		FROM			ROUTE			TO		SHEET 2 OF 3
		PART NO.	COLOR	AWG	TERM	NOTE	PART NO.	TERM	NOTE	PART NO.	REMARKS	
26												
27												
28												
29	570209	G4	20	SID-STR			F-M	A1-12				
30	570208	V	20	A1-5			G-F	SID-COMM				
31	570204	O	20	SIB-COMM			F-F	K2-L3				
32												
33	570201	BK	20	M1-(C)			F-G	A1-10				
34	570213	RD/W	20	DS2-2			F-E	SIA-STR				
35	570210	W	20	DS2-1			F-F	DS3-1				
36	570203	R	20	M1-(+)			F-G	A1-11				
37	570211	BK/W	20	DS3-2			F-F	SIA-RUN				
38	570202	BR	20	SIA-COMM			F-J	TB3-1				
39	570256	G/Y	20	A1-9			G-N	TB1-3				
40	570205	Y	20	A1-15			G-M	J6-CENTER				
40A	570210	W	20	A1-14			G-M	J6-LUG				
41	1000744	BR/W	16	K8-1			H-K	F2-1				
42	570210	W	20	K8-7			H-J	TB3-5				
43	1000743	BK/W	16	K8-3			B-E	T4-4				
44	1000734	BR	16	TB3-1			J-A	K2-T3				
45	1000742	W	16	TB3-5			J-N	SS-5				
46	570210	W	20	B61-1			K-M	K2-1				
47	570210	W	20	SS-5			N-K	BL1-1				
48	570202	BR	20	BL1-2			K-A	K2-T3				
49	1000733	BK	16	F2-2			K-N	TB1-2				

PERKIN-ELMER PHYSICAL ELEC. DIV.		TITLE SHEET: 1 7/07/93 WIRE DIAGRAM--BOOST, 220V, 50HZ		PART STATUS IN U/NONE 1		PART NUMBER 625434		REV D		EFFECTIVITY DATES:	
ITEM	PART NO.	QTY	UM	DESCRIPTION	PART STATUS	REFERENCE/NOTES	FROM	TO			
1	1000743	1.000	FT	WIRE-STRD, 16GA, PVC, 300V, W/BLK			122392				
3	1000737	0.800	FT	WIRE-STRD, 16GA, IPVC, 300V, YLW			010191				
4	1000742	1.200	FT	WIRE-STRD, 16GA, IPVC, 300V, WHT			010191				
6	571100	10.000	FT	WIRE-STRD, 8GA, SILI, 600V, 150C			010191				
7	608979	15.000	FT	WIRE-STRD, 22GA, SILI, 30KV, WHT			122392				
8	179029	3.000	EA	LUG-QC, F, 22-18GA, .25X.032, INS			122392				
9	546108	7.000	EA	LUG-RTNG, 16-14GA, #8, INS, .343W			122392				
10	1000868	5.000	EA	LUG-RTNG, 16-14GA, #6, INS, .250W			122392				
11	1000798	14.000	EA	LUG-RTNG, HTEMP, 8GA, # 1/4, UN			122392				
12	603609	4.000	EA	LUG-QC, F, 16-14GA, .25X.032, INS			122392				
13	500610	4.000	EA	LUG-RTNG, 22-18GA, #10, INS, .322W			122392				
				** END OF REPORT **							

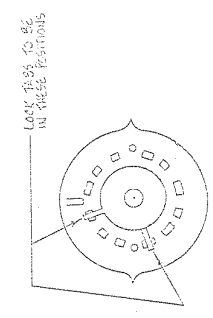


REV	DATE	BY	CHKD	DESCRIPTION
1	10/27/52	WJ	WJ	ISSUED FOR FABRICATION
2	11/12/52	WJ	WJ	REVISIONS TO DRAWING
3	11/12/52	WJ	WJ	REVISIONS TO DRAWING
4	11/12/52	WJ	WJ	REVISIONS TO DRAWING
5	11/12/52	WJ	WJ	REVISIONS TO DRAWING
6	11/12/52	WJ	WJ	REVISIONS TO DRAWING

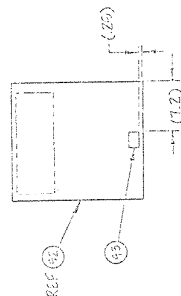
PERMANENT RECORD THIS DRAWING IS THE PROPERTY OF THE U.S. AIR FORCE AND IS LOANED TO YOU BY THE U.S. AIR FORCE IT IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM WITHOUT THE WRITTEN PERMISSION OF THE U.S. AIR FORCE	
DRAWING NO. 60054487 PROJECT NO. 60054487 SHEET NO. 1 OF 1	TITLE CONTROL PANEL DRAWN BY WJ CHECKED BY WJ DATE 11/12/52

- NOTES:
- 1 REFER TO DIAGRAM 605433 FOR PRIMARY WIRING OF T-12.
 - 2 WIRE CLIPS OR CONNECTORS WITH DETENTION TAPPING FOR ATTACHMENT TO CHANNELS WITH A SUTURE.
 - 3 EXA ITEMS 55 & 47 AND SEND WITH UNIT.
 - 4 WIRE CLIPS OR CONNECTORS WITH DETENTION TAPPING FOR ATTACHMENT TO CHANNELS WITH A SUTURE.
 - 5 WIRE CLIPS OR CONNECTORS WITH DETENTION TAPPING FOR ATTACHMENT TO CHANNELS WITH A SUTURE.
 - 6 WIRE CLIPS OR CONNECTORS WITH DETENTION TAPPING FOR ATTACHMENT TO CHANNELS WITH A SUTURE.
 - 7 WIRE CLIPS OR CONNECTORS WITH DETENTION TAPPING FOR ATTACHMENT TO CHANNELS WITH A SUTURE.
 - 8 WIRE CLIPS OR CONNECTORS WITH DETENTION TAPPING FOR ATTACHMENT TO CHANNELS WITH A SUTURE.

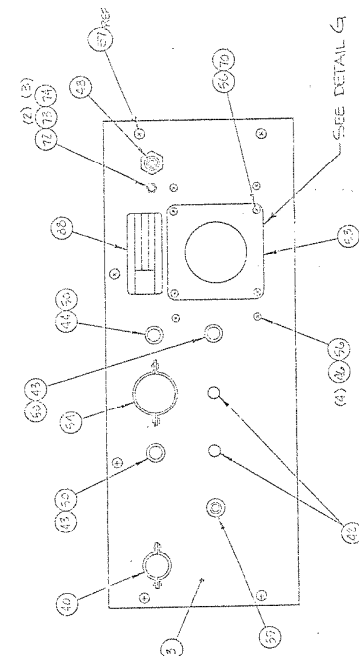
FORM NO. 1-60 62-57 3-1-57
 PERKIN ELMER
 DIVISION
 3000 N. ZEEB RD.
 ANN ARBOR, MICH.
 DATE 1-1-57



DETAIL E
 FRONT VIEW
 OF ITEM 24
 SCALE: NONE

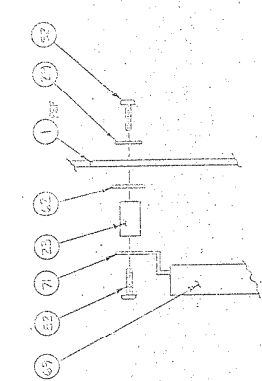


DETAIL D
 SCALE: 1/2

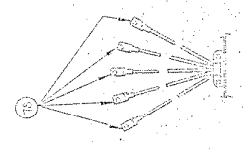


SEE DETAIL G

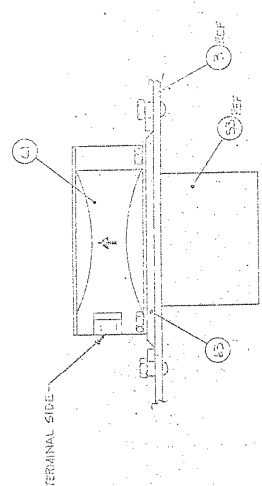
VIEW A-A



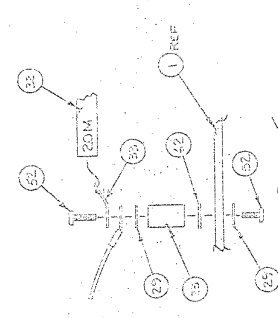
DETAIL J



DETAIL H



DETAIL G



DETAIL F
 SCALE: NONE

PERKIN ELMER Physical Electronics Division 3000 N. ZEEB RD. ANN ARBOR, MICH.		DOOSTWAR - ZOSNVA - LORE	
DRAWN BY: [blank] CHECKED BY: [blank] DATE: [blank]	TITLE: [blank]	PART NO.: 605457 REV. 1	DRAWING DIVISION: [blank]
TELEPHONE AND DIMENSIONS DIMENSIONS IN INCHES DIMENSIONS IN MILLIMETERS DIMENSIONS IN METERS DIMENSIONS IN CENTIMETERS DIMENSIONS IN DECIMETERS DIMENSIONS IN KILOMETERS DIMENSIONS IN MILES DIMENSIONS IN KILOMILES DIMENSIONS IN METERS DIMENSIONS IN CENTIMETERS DIMENSIONS IN MILLIMETERS DIMENSIONS IN DECIMETERS DIMENSIONS IN KILOMETERS		QUANTITY: [blank] QUANTITY BY: [blank] QUANTITY CHECKED BY: [blank] QUANTITY CHECKED DATE: [blank]	

PERKIN-ELMER PHYSICAL ELEC. DIV.		TITLE SHEET: 1 1/02/95 BOOSTIVAC-208VAC, 60HZ		PART STATUS 1		PART NUMBER 605487		EFFECTIVITY DATES:	
ITEM	PART NO.	QTY	UM	DESCRIPTION	PART STATUS	REFERENCE/NOTES	REV L #	FROM	TO
1	625541	1.000	EA	CHASSIS-BOOSTIVAC/SUBLIMATOR	IN U/629248			102792	030695
1	629248	1.000	EA	CHASSIS-BOOSTIVAC/SUBLIMATOR				030795	
2	625432	1.000	EA	PANEL-FRNT, BOOST/ION PMP, S/S	IN U/629249			092192	030695
2	629249	1.000	EA	PANEL-FRNT, BOOSTIVAC/ION PUMP				030795	
3	1000520	1.000	EA	PANEL-REAR, BOOST ION PUMP CONT				092192	
4	624062	0.000	EA	TEST & CAL PROC-BOOSTIVAC				092192	
5	1000698	1.000	EA	ASSY-PCB, TIMER, BOOSTIVAC				092192	
6	1000787	1.000	EA	MARKER STRIP-5 POSN				092192	
7	1000539	1.000	EA	ASSY-PCB, METERING, BOOSTIVAC				092192	
8	1000675	1.000	EA	SW-RTRY, MOD, 4P, 3POS				092192	
9	1000904	0.000	EA	SCHEM DIAG-BOOSTIVAC				092192	
10	1000537	4.000	EA	KNOB-SKT BAR, .25 SFT, BLK				092192	
11	623965	1.000	EA	METER-ANALOG, 0-60A, TSP				101292	
12	1000533	1.000	EA	METER-ANALOG, PNL, TRISCALE TORR				092192	
13	1000789	1.000	EA	KNOB-SKD BAR, .25 SFT, BLK				092192	
14	1000790	4.000	EA	SCR-FLH, 1/4-20X .380, SLTD, SST				092192	
16	1000971	1.000	EA	CNTOR-PWR, 3PST, 240VAC, 20A/660V				092192	
18	1002905	1.000	EA	BRKT-SWITCH				092192	
19	1000975	1.000	EA	RLY-OCTL, DPDT, 240VAC, 10A/250V				092192	
20	473035	1.000	EA	SKT-RLY, 8P, RND, SCR,				092192	
21	1002928	1.000	EA	SW-INTERLOCK, DPDT, 10A@125/250V				092192	
22	1001007	2.000	EA	LAMP-NEON, 250V, RED	PP			092192	
23	1000799	4.000	EA	STDF-1.25LG, 10-32, .750D, CER				092192	
24	1000800	1.000	EA	SW-RTRY, 1P4T, 480VAC/30A,	NP			092192	
26	1000802	1.000	EA	TERM BLOCK-5 DBL POSN, 40A				092192	
27	1003337	1.000	EA	XFMR-PWR, 120-240:5500VDC	NP			092192	
28	625467	1.000	EA	XFMR-FILAMENT				101292	
29	512110	11.000	EA	WSHR-INT TOOTH LOCK, #10, SST	*			092192	
30	1003323	1.000	EA	CAP-0.3 UF X2, 5KV, 20%, DIL, CAN	NP			092192	
31	1004982	1.000	EA	TERM BLOCK-5 DBL POSN, 30A				092192	
32	1000554	1.000	EA	RES-20M OHM, 4W, 1%, 15KV	PP			092192	
33	501110	2.000	EA	SOLDER LUG- #10, LKG, BENT				092192	
34	1000674	1.000	EA	SW-RTRY, MOD, 4P, 5POS				092192	
35	376101	1.000	EA	LAMP-NEON, CYL, 250V, .3W, AMBER	PP			092192	
36	624143	1.000	EA	CKT PROTECTOR-0.05A, RLYTRIP				092192	
36	629262	1.000	EA	CB-.05A, RELAY TRIP, IUG SERIES				092192	
37	1000550	3.000	EA	POT-PNL MTG ADAPTER	NP			092192	
38	1000535	1.000	EA	MICROCOULOMETER, MERCURY				030795	030695
39	1000532	1.000	EA	CONN-COAX, BNC, J, CHAS, ISOL GND				092192	
40	612689	1.000	EA	STRAIN RELIEF-ROMECA, .38 ID				092192	
41	625262	1.000	EA	SHAFT-STEP, T-4, .249X.375X.44ST				092192	
42	1002083	2.000	EA	CONN-PHONE, .25", J, CHAS, SLDR				092192	

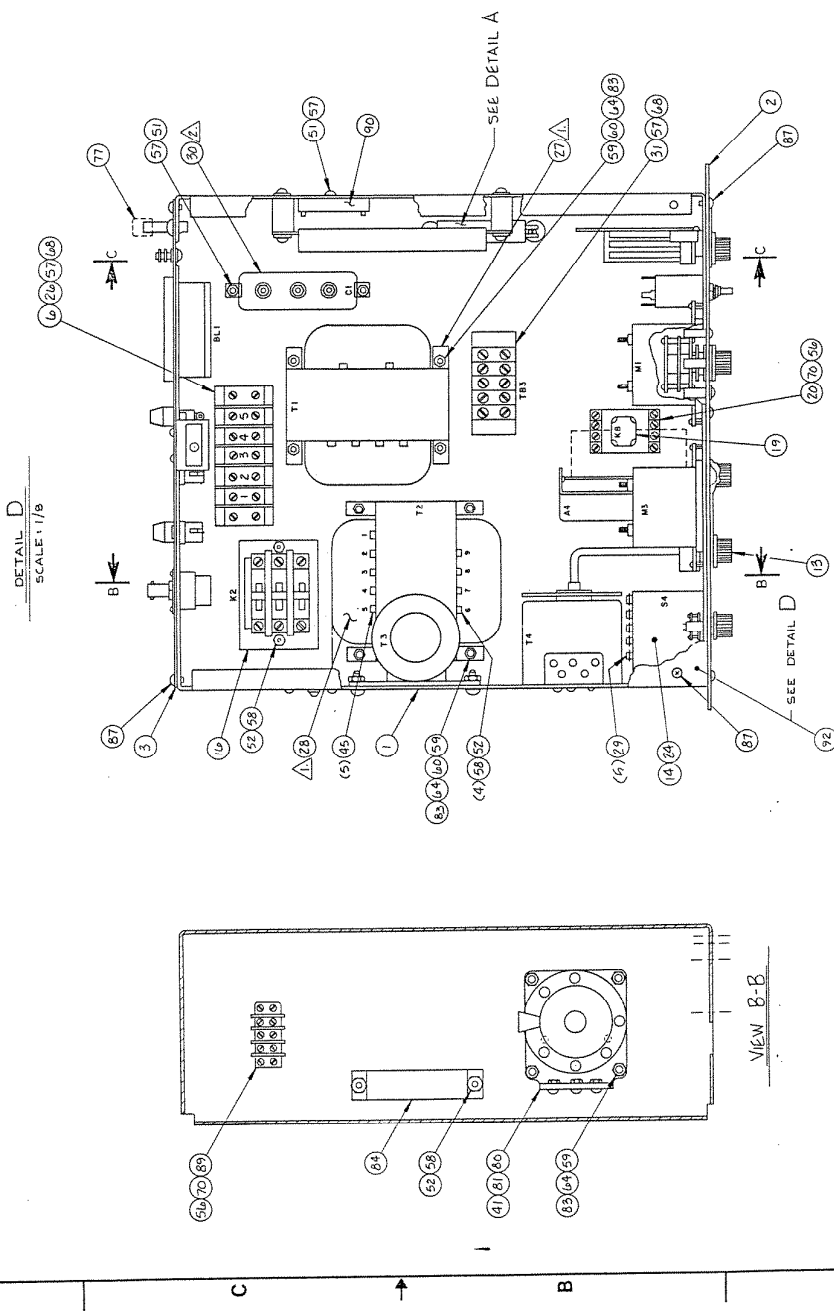
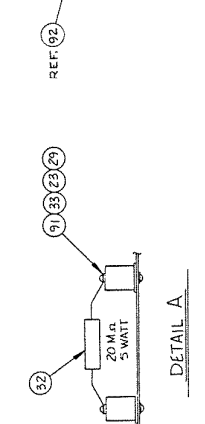
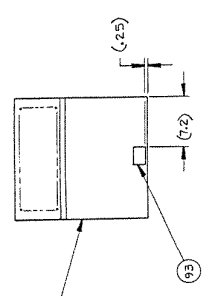
PERKIN-ELMER PHYSICAL ELEC. DIV.		TITLE SHEET: 2 1/02/95 BOOSTIVAC-208VAC, 60HZ		PART STATUS 1		PART NUMBER 605487		REV L		EFFECTIVITY DATES:	
ITEM	PART NO.	QTY	UM	DESCRIPTION	PART STATUS	REFERENCE/NOTES	FROM	TO			
43	601265	2.000	EA	FUSE-3AG, 5A,250V,SLO BLO			092192				
44	175007	1.000	EA	FUSE-3AG, 2.5 A, 250V,SLO BLO			092192				
45	541904	14.000	EA	SCR-PAN, 6-32X .250,PHHD,SST			120293				030695
45	541904	16.000	EA	SCR-PAN, 6-32X .250,PHHD,SST			030795				
46	541908	4.000	EA	SCR-PAN, 6-32X .500,PHHD,SST			092192				
47	546316	4.000	EA	SCR-FLH, 6-32X1.000,PHHD,SST			120293				
48	1000531	1.000	EA	CONN-COAX,10KV,J,CHAS,			092192				
49	1001724	1.000	EA	MANUAL-BOOSTIVAC PUMP CONTROL	NO DOC		092192				
50	171308	3.000	EA	FUSEHOLDER-PNL MTG,KNOB, 3AG			092192				
51	542008	3.000	EA	SCR-PAN, 8-32X .500,PHHD,SST			092192				
52	544908	12.000	EA	SCR-PAN, 10-32X .500,PHHD,SST			120193				
53	623886	1.000	EA	ADPTR-COOLING DUCT,BOOSTIVAC			092192				
54	1000523	1.000	EA	CONDUIT CLAMP-1"ID,NON-MET CBL			092192				
55	622775	1.000	EA	FAN FILTER ASSEMBLY-3.125"			092192				
56	533203	16.000	EA	NUT-KEPS,# 6-32,	*		101292				
57	533204	11.000	EA	NUT-KEPS,# 8-32,	*		092192				
58	533225	4.000	EA	NUT-KEPS,#10-32,	*		101292				
59	1000343	14.000	EA	NUT-HEX, 1/4-20,			092192				
60	1000832	10.000	EA	WSHR-FLT,1/4,.690X.265			092192				
61	1001012	1.000	EA	FAN-230VAC, 33CFM, 3.12 SQ			092192				
62	1000834	4.000	EA	WSHR-FLT, .620X.180X.062, CORK			092192				
63	616849	1.000	EA	FANMOUNT-ISOLATOR,3.125 IN FAN			092192				
64	542214	14.000	EA	WSHR-SPLIT LOCK,1/4,			092192				
65	625433	1.000	EA	WIRE HARN-BOOSTIVAC			092192				
68	542012	8.000	EA	SCR-PAN, 8-32X .750,PHHD,SST			092192				
69	1000838	1.000	EA	RES-150 OHM, 100W ,5%,VK100N	PP		092192				
70	541912	10.000	EA	SCR-PAN, 6-32X .750,PHHD,SST			120293				
71	611715	2.000	EA	BRKT-RESISTOR MTG,SPR GRIP,206			092192				
72	1000526	1.000	EA	SCR-BDH, 10-32X .750,SLTD,BRS			092192				
73	1000529	2.000	EA	WSHR-FLT,#10,.500X.219			092192				
74	1000530	3.000	EA	NUT-HEX,#10-32,			092192				
77	1000845	1.000	EA	CAPLUG-SC, 7/16 I.D.			092192				
78	623566	5.000	EA	ASSY-CA,LUG-LUG,SUB PUMP 5.0FT			092192				
80	1001856	1.000	EA	XFMR-PWR,VARIAC,240-280	PP		092192				
83	510912	14.000	EA	SCR-CAP, 1/4-20X .750,HEXH,SST			092192				
87	542006	18.000	EA	SCR-PAN, 8-32X .375,PHHD,SST			092192				
88	479092	0.000	EA	LABEL-CHASSIS (S/N)			092192				
89	1000853	1.000	EA	TERM BLOCK-3 DBL POSN,20A			092192				
90	1002979	1.000	EA	BRIDGE-RECT,10KV,.50A,VH443	NP		092192				
92	1004947	1.000	EA	PUNCH DETAIL-COVER DIGITEL1500			092192				
93	1000519	1.000	EA	LABEL-DANGER HIGH VOLTAGE			092192				
94	621677	1.000	EA	CORD-250V P:3WIRE,14/3,7.5FT			092192				

PERKIN-ELMER PHYSICAL ELEC. DIV. TITLE SHEET: 3 1/02/95 BOOSTIVAC-208VAC, 60HZ

ITEM	PART NO.	QTY	UM	DESCRIPTION	PART STATUS	PART NUMBER 605487	REV L 8	EFFECTIVITY DATES:	
								FROM	TO
95	546108	3.000	EA	LUG-RTNG,16-14GA, #8,INS,.343W				092192	
97	531308	4.000	EA	STDF-0.50L, 6-32,F/F,.25HEX,BR				092192	
99	512106	4.000	EA	WSHR-INT TOOTH LOCK,# 6, SST	*			092192	
100	1002590	1.000	EA	BRKT-XFMR,SUB PWR SUPPLY				101292	
101	506000	10.000	EA	CABLE TIE-.750 BDL OD,NYL,NAT				010191	
102	276057	1.000	EA	CAP-20 UF,350V,50/10%,ELEC.AXL NP				030795	
103	500608	1.000	EA	LUG-RTNG,22-18GA, #8,INS,.281W				030795	
104	521518	3.000	IN	TUBING-TEF,NAT,.042ID,.012THK				030795	
				** END OF REPORT **					

FORM NO. 620601	REV. 1	DATE	APPROVED
1	1	1-11-50	P.P.S.
2	1	1-2-50	J.R.C.
3	1	9-23-51	P.S.E.
4	1	1-2-52	J.M.M.
5	1	3-20-52	R.A./B.S.H.
6	1	4-4-52	M.A./B.S.H.
7	1	8-22-52	R.T.

DATE	DESCRIPTION	BY	APPROVED
1-11-50	RELEASED FOR CO 9401	P.P.S.	P.P.S.
1-2-50	SEE CO 10311	J.R.C.	J.R.C.
9-23-51	SEE CO 10940	P.S.E.	P.S.E.
1-2-52	SEE CO 11150	J.M.M.	J.M.M.
3-20-52	SEE CO 11772	R.A./B.S.H.	R.A./B.S.H.
4-4-52	SEE CO 12668	M.A./B.S.H.	M.A./B.S.H.
8-22-52	REVISION - FOR SERVICE USE ONLY - SUPERSEDED BY NOISE PRF FR 11150	R.T.	R.T.



DATE	1-11-50	APPROVED	P.P.S.
DATE	1-2-50	APPROVED	J.R.C.
DATE	9-23-51	APPROVED	P.S.E.
DATE	1-2-52	APPROVED	J.M.M.
DATE	3-20-52	APPROVED	R.A./B.S.H.
DATE	4-4-52	APPROVED	M.A./B.S.H.
DATE	8-22-52	APPROVED	R.T.

SEE DETACHED P.L.

PERKIN ELMER
Physical Electronics Div.
8509 Park Center Dr. • Eden Prairie, Minn.

CONTROL - BOOST/VAC
208V 5C/60HZ

DATE DRAWING NO. 620601
SCALE 1/2
WEIGHT 1 OF 1

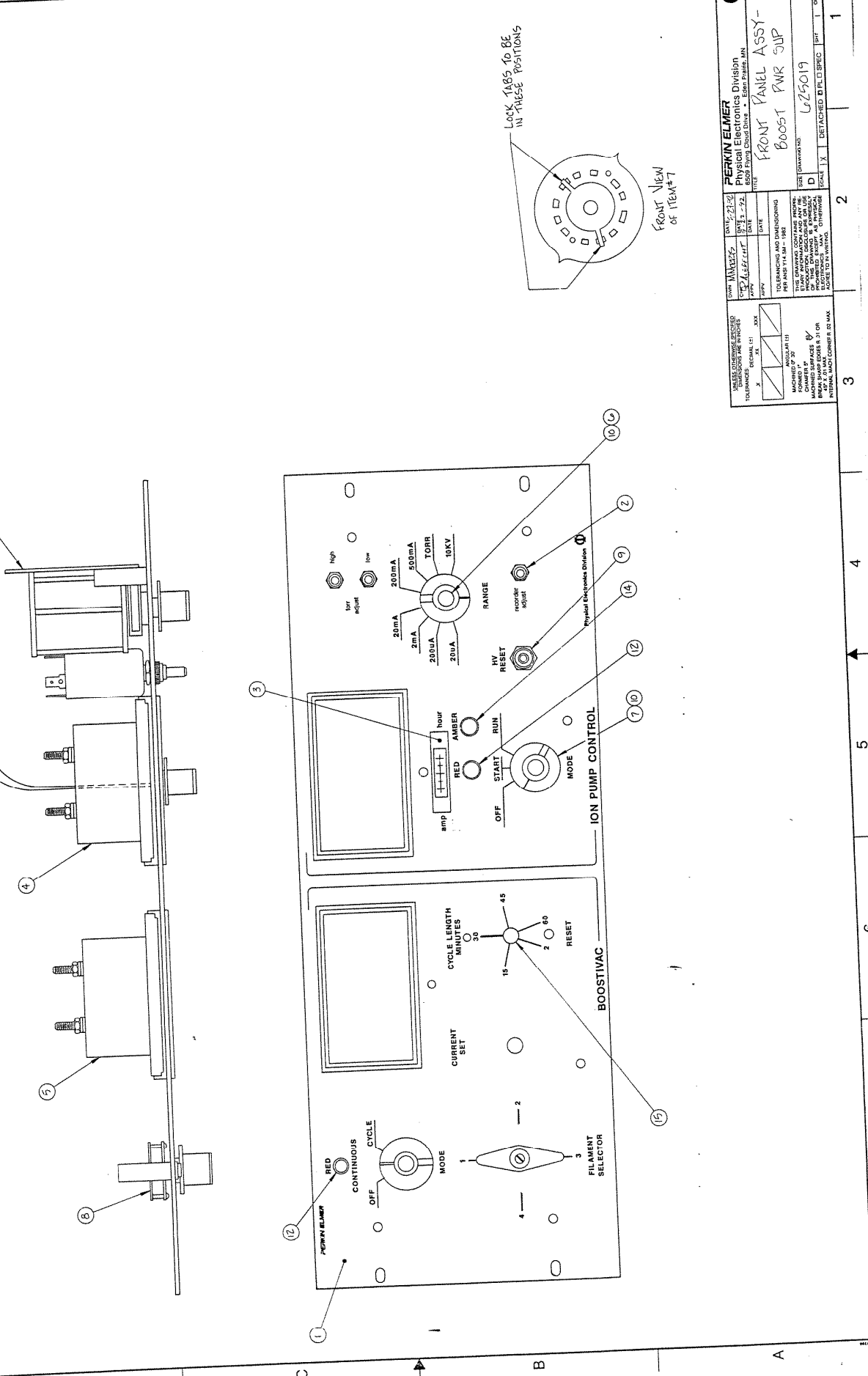
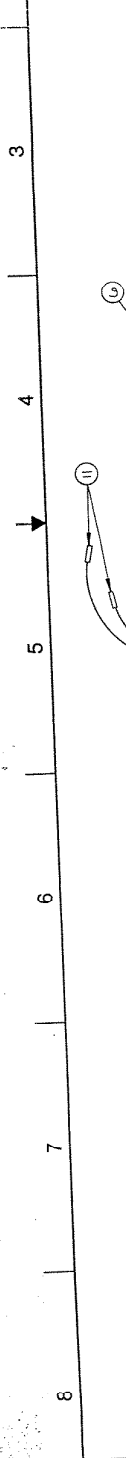
NOTES:
 1. REFER TO SCHEMATIC 1000904 FOR PRIMARY WIRING OF T1 AND T2 TABLE I.
 2. HOT GLUE AFTER ALL WIRES ARE ATTACHED (3 PLACES).
 3. REFER TO SCHEMATIC 1000904 FOR TIMER BOARD INPUT CONNECTIONS.

PERKIN-ELMER PHYSICAL ELEC. DIV.		TITLE SHEET: 1 8/20/92 BOOSTIVAC-COMMON, 208V 50/60 HZ		PART STATUS 1		PART NUMBER 620601		REV H		EFFECTIVITY DATES:	
ITEM	PART NO.	QTY	UM	DESCRIPTION	PART STATUS	REFERENCE/NOTES	FROM	TO			
1	625021	1.000	EA	CHASSIS-BOOSTIVAC PWR SUPPLY	IN U/625263		062292				
2	625020	1.000	EA	FRONT PANEL ASSY-BOOST 220V	IN U/NONE		062292				
3	1004140	1.000	EA	PANEL ASSY-REAR, BOOSTIVAC 220V	IN U/NONE		010101				
4	624062	0.000	EA	TEST & CAL PROC-BOOSTIVAC			112491				
6	1000787	1.000	EA	MARKER STRIP-5 POSN		TB2	010101				
9	1000904	0.000	EA	SCHEMATIC DIAGRAM-BOOSTIVAC			010101				
13	1000789	1.000	EA	KNOB-SKD BAR, .25 SET, BLK			010101				
14	1000790	4.000	EA	SCR-FLH, 1/4-20X .380, SLTD, SST			010101				
16	1000971	1.000	EA	CNTOR-PWR, 3PST, 240VAC, 20A/660V		K2	010101				
19	1000975	1.000	EA	RLY-OCIL, DPDT, 240VAC, 10A/250V		K4,8	121991				
20	473035	1.000	EA	SKT-RLY, 8P, RND, SCR,			120690				
23	1000799	4.000	EA	STDF-.75 OD, 10-32X1.25 LG, CER			112491				
24	1000800	1.000	EA	SW-RTRY, 1P4T, 480VAC/30A,		S4	010101				
26	1000802	1.000	EA	BLOCK-TERM, 5 DBL POSN, 150 SER		TB2	010101				
27	1003337	1.000	EA	XFMR-PWR, 120-240:5500VDC	NP	T1	010101				
28	1000667	1.000	EA	XFMR-PWR, 117/234:8/BVRMS	NP		010101				
29	512110	11.000	EA	WSHR-INT TOOTH LOCK, #10, SST	*		112491				
30	1003323	1.000	EA	CAP-0.3 UF X2, 5KV, 20%, DIL, CAN	NP		010101				
31	1004982	1.000	EA	TERM-BLOCK, 5POS, 30AMPS		TB3	010101				
32	1000554	1.000	EA	RES-20M OHM, 4W, 1%, 15KV	PP		010101				
33	501110	2.000	EA	SOLDER LUG- #10, LKG, BENT			010101				
41	1001794	1.000	EA	PIN-STEP, T-4, BOOSTIVAC	IN U/625262		010101				
45	541904	4.000	EA	SCR-PNH, 6-32X .250, PHHD, SST			010101				
46	541908	2.000	EA	SCR-PNH, 6-32X .500, PHHD, SST			010101				
49	1001724	1.000	EA	MANUAL-BOOSTIVAC PUMP CONTROL	NO DOC		010101				
51	542008	3.000	EA	SCR-PNH, 8-32X .500, PHHD, SST			010101				
52	544908	8.000	EA	SCR-PNH, 10-32X .500, PHHD, SST			010101				
56	533203	8.000	EA	NUT-KEPS, # 6-32,	*		010101				
57	533204	11.000	EA	NUT-KEPS, # 8-32,	*		010101				
58	533225	8.000	EA	NUT-KEPS, #10-32,	*		010101				
59	1000343	12.000	EA	NUT-HEX, 1/4-20,			010101				
60	1000832	8.000	EA	WSHR-FLT, 1/4, .690X.265			010101				
62	1000834	4.000	EA	WSHR-FLT, .620X.180X.062, CORK			112491				
64	542214	12.000	EA	WSHR-SPLIT LOCK, 1/4,	*		010101				
65	625017	1.000	EA	WIRE HARN ASSY-BOOSTIVAC	IN U/625433		062292				

INACTIVE - FOR SERVICE
USE ONLY - SUPERSEDED
 BY NONE PER ECO

60#
 80#
 11750

ZONE REV	DESCRIPTION	DATE	APPROVED
A	REL. PER 25011502 SUPERSEDES 105975A	1-11-72	W. J. ...
B	INACTIVE - FOR SERVICE USE ONLY - SUPERSEDED BY 115015 PER EDD 11150	9-17-79	...



DATE	BY	REVISIONS
2-27-72
...

PERKIN ELMER
Physical Electronics Division
8500 Faint Road Drive • Eden Prairie, MN

FRONT PANEL ASSY -
80051 PWR SUP

DATE: 2-27-72
BY: ...
TITLE: ...

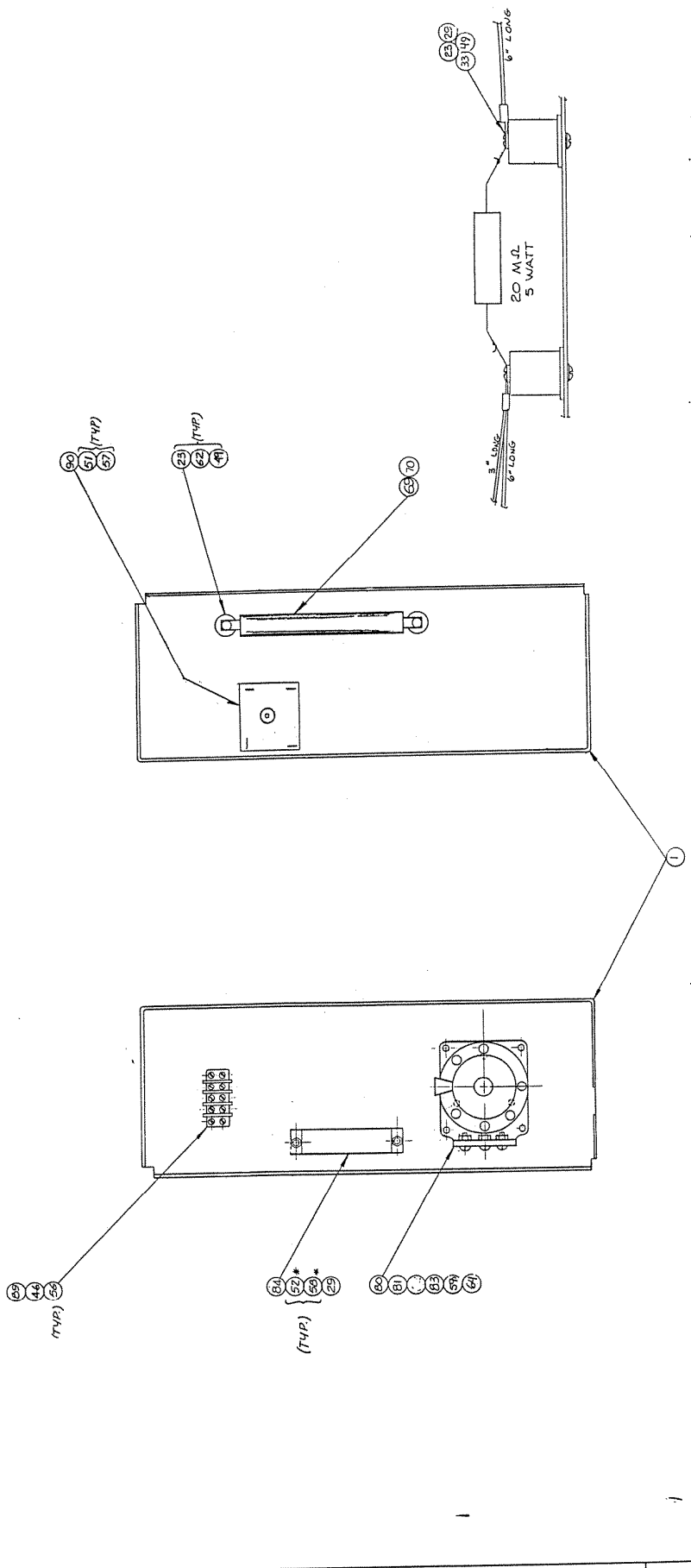
THIS DRAWING CONTAINS PROPRIETARY INFORMATION AND IS TO BE USED ONLY FOR THE MANUFACTURE OF THE EQUIPMENT SPECIFIED HEREIN. IT IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF PERKIN ELMER.

PERKIN-ELMER PHYSICAL ELEC. DIV.		TITLE SHEET: 1 8/20/92 FRONT PANEL ASSY-BOOST PWR SUP		PART STATUS INU/NONE 1		PART NUMBER 625019		REV B		EFFECTIVITY DATES: FROM TO	
ITEM	PART NO.	QTY	UM	DESCRIPTION	PART STATUS	REFERENCE/NOTES					
1	625022	1.000	EA	FRONT PNL-BOOST/ION PMP,SLKSCN	IN U/625432		010191				
2	1000550	3.000	EA	PANEL MNT ADPTR,POTENTIOMETER	NP		010101				
3	1000535	1.000	EA	MICROCOULOMETER,MERCURY			010101				
4	1000533	1.000	EA	METER-PNL,ANALOG,TRISCALE TORR			010101				
5	1000536	1.000	EA	METER-PNL,ANALOG,0-75A SCALE			010101				
6	1000539	1.000	EA	PCB ASSY-METERING,BOOSTIIVAC			010101				
7	1000674	1.000	EA	SWTCH-RTRY,MODIFIED 4POLE SPOS			010101				
8	1000675	1.000	EA	SWTCH-RTRV,MODIFIED 4POLE 3POS			010101				
9	624143	1.000	EA	CKT PROT-SP, 0.05A,RLYTRIP,CSA			010191				
10	1000537	3.000	EA	KNOB-SKT BAR,.25 SFT,BLK			010101				
11	1000924	0.000	EA	TERM-WIRE TO BD,M,22-20GA,CRP	NP	QTY 2.000	010101				
12	1000818	2.000	EA	LAMP-INDICATOR,INCAND,110V,RED	IN U/171235		010101				
14	1000822	1.000	EA	LAMP-INDICATOR,INCAND,110V,AMB	NP		010101				
15	1000693	1.000	EA	KIT-TIMER ASSY	IN U/1000698		010101				
** END OF REPORT **											
INACTIVE - FOR SERVICE USE ONLY - SUPERSEDED BY NONE PER ECO 11750											

FORM NO. 1001594	REV. 2	REV. AD
ZONE REV.	DESCRIPTION	DATE APPROVED

1 3 4 5 6 7 8

D C B A



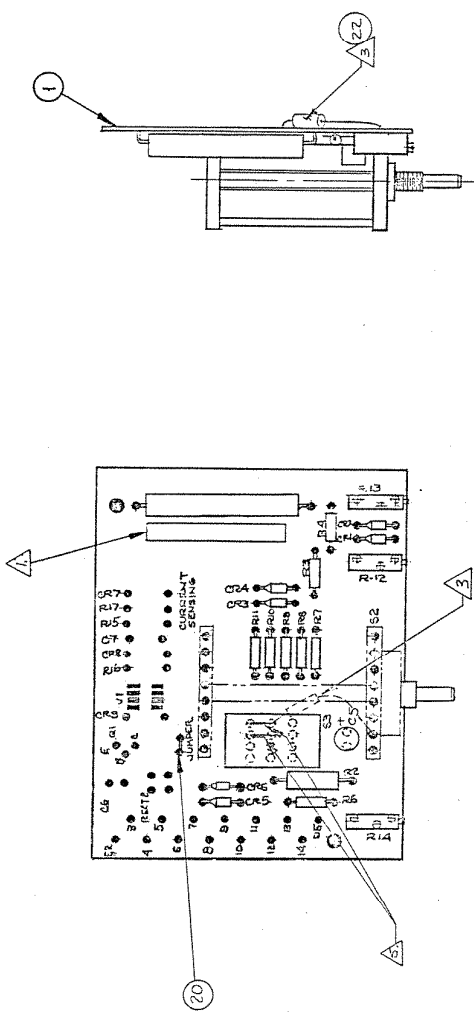
PERKIN-ELMER Physical Electronics Division 5555 JENSEN BLVD., TORONTO, CAN.		ASSEMBLY DRAWING	
TITLE ULTEK BOOSTIVALC ION PUMP CONTROL W/O POWER CORD 117V, 60 HZ		DRAWING NO. 1001594	
DATE	DATE	DATE	DATE
BY	BY	BY	BY
CHECKED	CHECKED	CHECKED	CHECKED
MATERIAL	MATERIAL	MATERIAL	MATERIAL
UNLESS OTHERWISE SPECIFIED	UNLESS OTHERWISE SPECIFIED	UNLESS OTHERWISE SPECIFIED	UNLESS OTHERWISE SPECIFIED
FINISH	FINISH	FINISH	FINISH
SCALE 1/2	SCALE 1/2	SCALE 1/2	SCALE 1/2
SHEET 1	SHEET 2	SHEET 3	SHEET 4
OF 2	OF 2	OF 2	OF 2

PERKIN-ELMER PHYSICAL ELEC. DIV.		TITLE SHEET: 1 8/20/92 BOOSTIVAC-115V,50/60HZ		PART STATUS IN U/NONE 1		PART NUMBER 1001594		EFFECTIVITY DATES:	
ITEM	PART NO.	QTY	UM	DESCRIPTION	PART STATUS	REFERENCE/NOTES	REV	AD	FROM TO
1	625021	1.000	EA	CHASSIS-BOOSTIVAC PWR SUPPLY	IN U/625263				062292
2	625019	1.000	EA	FRONT PANEL ASSY-BOOST_PWR SUP	INU/NONE				062292
3	1000522	1.000	EA	REAR PANEL ASSY-BOOST_PWR SUPP	IN U/NONE				010101
4	1004470	1.000	EA	COVER-CHASSIS,BOOSTIVAC	IN U/1004947				070191
6	1000787	1.000	EA	MARKER STRIP-5 POSN		TB2			010101
7	624062	0.000	EA	TEST & CAL PROC-BOOSTIVAC					112491
10	1000687	1.000	EA	CA ASSY SUBLIMATOR 16FT	IN U/622754				010101
11	546108	3.000	EA	LUG-RTNG,16-14GA, #8,INS,.343W					010101
12	621552	1.000	EA	CORD-125V P:3WIRE,14/3,15FT					010101
13	1000789	1.000	EA	KNOB-SKD BAR,.25 SFT,BLK					010101
14	1000790	4.000	EA	SCR-FLH, 1/4-20X .380,SLTD,SST					010101
16	1000792	1.000	EA	RLY-PNL ,3PST,120VAC,30A/600V		K2			010101
19	1000795	2.000	EA	RLY-OCTL,DPDT,120V ,10A/		K4,B			010101
20	473035	1.000	EA	SKT-RLY, 8P,RND,SCR,		K8			120690
23	1000799	4.000	EA	STDF-.75 OD,10-32X1.25 LG,CER					112491
24	1000800	1.000	EA	SW-RTRY,1P4T,480VAC/30A,		S4			010101
26	1000802	1.000	EA	BLOCK-TERM,5 DBL POSN,150 SER		TB2			010101
28	1000667	1.000	EA	XFMR-PWR,117/234:8/8VRMS	NP	T2			010101
29	512110	11.000	EA	WSHR-INT TOOTH LOCK,#10, SST	*				112491
30	512006	4.000	EA	WSHR-FLT,# 6,.312X.156X.03,SST					010101
31	1003323	1.000	EA	CAP-0.3 UF X2,5KV,20%,OIL,CAN	NP	C1			041988
32	1004982	1.000	EA	TERM-BLOCK,5POS,30AMPS		TB3			010101
33	1000554	1.000	EA	RES-20M OHM, 4W ,1%,15KV	PP				010101
36	601265	1.000	EA	FUSE-3AG, 5A,250V,SLO BLO		F1			021489
37	1000816	1.000	EA	FUSE-3AB, 10A,A250V,SLO BLO		F2			112491
39	1001454	2.000	EA	CONN-PHONE,.25",M,CA,SLDR,CLMP					010101
40	1002083	2.000	EA	CONN-PHONE,.25",F,CHAS,SLDR					010101
41	1001794	1.000	EA	PIN-STEP,T-4,BOOSTIVAC	IN U/625262				010101
43	1003337	1.000	EA	XFMR-PWR,120-240:5500VDC	NP	T1			010101
45	541904	4.000	EA	SCR-PNH, 6-32X .250,PHHD,SST					041988

INACTIVE - FOR SERVICE
USE ONLY - SUPERSEDED
 BY NONE PER EGO
 CO# 1750

4 3 2 1

ECO	REV.	DESCRIPTION	DATE	APPROVED
1002105	A	WAS 1200 545	5-22-85	KEL
	B	ADD 1203720	1-22-86	CMP
	C	SEE ECO # 7931	1-20-86	GPD
	D	SEE ECO # 7936	11-11-88	CMT
	E	SEE ECO # 8493	3-21-91	ELM
	F	SEE CO# 1047	3-23-91	705/KOT
	G	REPROGRAM WIND CHANGES	3-28-91	ELM
	H	SEE CO# 1150	1-2-92	66/LOOM
	I	SEE CD # 11761	1-21-92	RA/LOOM
	J	REMOVE ITEM 19 - CO 13348	18-22-94	1589/AD



- NOTES:
- 1. MARK THE BOARD ASSY NUMBER AND REVISION LEVEL IN SPACE INDICATED.
 - 2. (DELETE)
 - 3. ADD TO BACK OF BD. AS SHOWN
 - 4. DISCARD THE STOP SUPPLIED WITH THE SWITCH.
 - 5. ADD ZERO OHM JUMPERS.

SEE DETACHED P.L.

PERKIN-ELMER Vacuum Department • Eden Prairie, Minn. 55344	DATE: 12-80 DATE: 12-80 DATE: 12-80	REV: 3 SCALE: 1:1 SHEET: 1 OF 1
P.C. METERING BOARD ASSY (FOR PUMP POWER SUPPLY)	DRAWING NO: 000.538	REV: 3

4 3 2 1

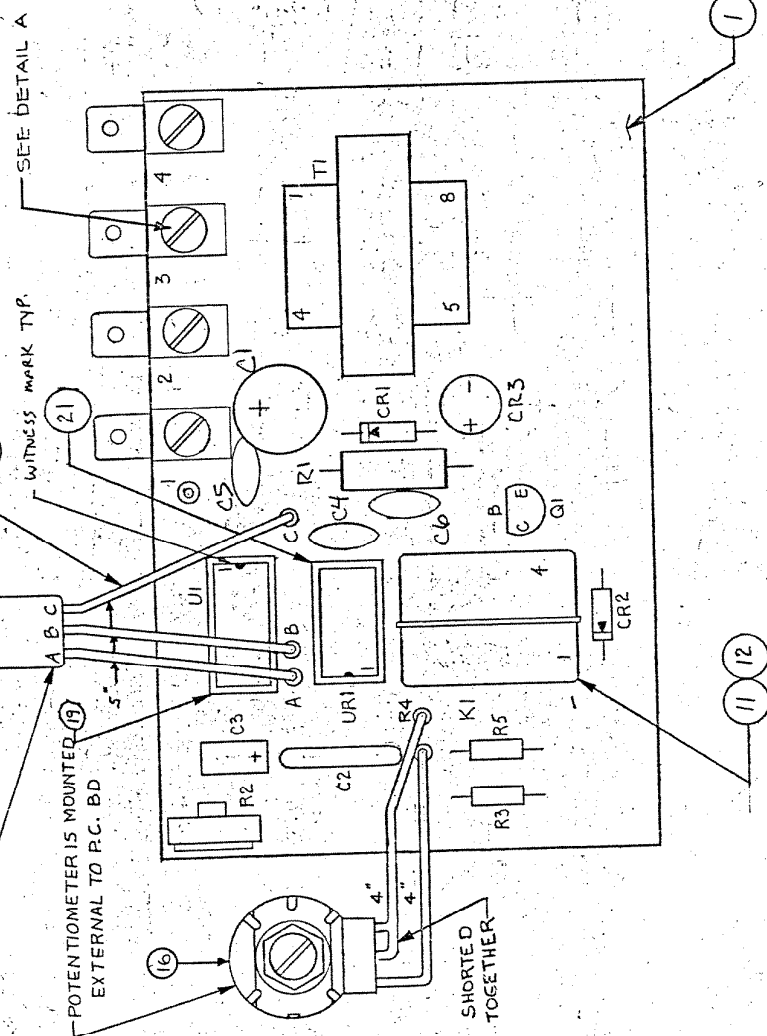
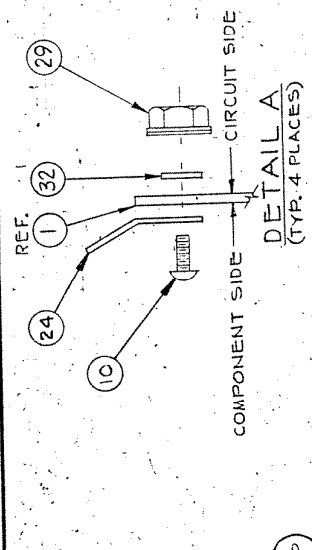
PERKIN-ELMER PHYSICAL ELEC. DIV.		TITLE SHEET: 1 8/19/74 ASSY-PCB, METERING, BOOSTIVAC		PART STATUS 1		PART NUMBER 1000539		REV J		EFFECTIVITY DATES:	
ITEM	PART NO.	QTY	UM	DESCRIPTION	PART STATUS	REFERENCE/NOTES	FROM	TO			
1	1000560	1.000	EA	PCB-METERING, BOOSTIVAC			010101				
2	1000556	1.000	EA	RES-.04 OHM, 2W, 1%, LVR-2	PP	R2	010101				
3	279096	1.000	EA	RES-390 OHM, .25W, 5%, RC07	NP	R3	010101				
4	472015	1.000	EA	RES-20K OHM, .25W, 1%, RN60D	PP	R4	010101				
5	1000574	1.000	EA	RES-20M OHM, 4W, 1%, 15KV	PP	R5	010101				
6	472028	1.000	EA	RES-4.99K OHM, .25W, 1%, RN60D	PP	R6	010101				
7	177045	1.000	EA	RES-1.1K OHM, .25W, 1%, RN60D	PP	R7	010101				
8	1000541	1.000	EA	RES-100 OHM, .25W, 1%, RN60D	PP	R8	010101				
9	174078	1.000	EA	RES-10 OHM, .25W, 1%, RN60D	PP	R9	010101				
10	1000540	1.000	EA	RES-1 OHM, .25W, 1%, METFM	NP	R10	010101				
11	1000549	1.000	EA	RES-.2 OHM, 1W, 1%, RS-1A	PP	R11	010101				
12	1000547	6.000	EA	DIO-RECT, 600V, 1A, 1N4247GP	NP	CR1, 2, 3, 4, 5, 6	112491				
13	1000552	1.000	EA	POT-1.0M, .75W, 15T, PCB, S/A	PP	R12	010101				
14	1000553	1.000	EA	POT-25K, .75W, 15T, PCB, S/A	PP	R13	010101				
15	1000551	1.000	EA	POT-2M, .75W, 15T, PCB, S/A	PP	R14	010101				
16	1000558	1.000	EA	SW-RTRY, 8 POSN/2 DECK, PCB MT		S2	010101				
17	378079	2.000	EA	RES-ZEROHM, MOLDED JUMPER WIRE	PP	R101, 102	020891				
18	1000546	1.000	EA	CAP-10 UF, 50V, 20%, ELECT, RDL	NP	C5	010101				
19	1000585	1.000	EA	CAP-470 UF, 100V, 20%, ELECT, RDL	IN U/NONE	C4	112491	081894			
20	501700	1.000	FT	WIRE-CU, TINNED, .025, 22GA, SOLID			102588				
22	279236	1.000	EA	RES-15K OHM, .25W, 5%, RC07	NP	SEE NOTE 3	010101				
** END OF REPORT **											

U-1000698

3

4

REV	DESCRIPTION	DATE	APP'D
N	SEE CO# 11607 - Similar Part	7-2-72	JRC
P	SEE CO 11784	9-15-72	PKE/DM
R	SEE CO 11845 (DELETE CLIP # 27)	10-7-72	MAS/DM
S	SEE CO 12146 (REMOVE IC SOCKETS)	1-13-72	BBB/DM



SEE DETACHED PARTS LIST

ITEM	REQ.	PART NUMBER	DESCRIPTION
29	4	533203	NUT - KEP. G-32 CAD PL STEEL
28	1	A-1000673	SOLDER, RESIN FLUX CORE 60/40
27	1	A-1000699	SPRING, WIRE HOLD-DOWN
26	4 FT	A-1517101	WIRE, 20 AWG, BLACK
25	5	A-1000924	TERMINAL, PCB MOUNTED AMP
24	4	A-1000701	TERMINAL, QUICK CONNECT, WIRE
23	1	A-1000702	SWITCH, MOMENTARY, SPDT
22	1	A-1000654	SOCKET, WAFER, IC, 14 PIN, AUGAT
21	1	A-1000703	RES. MODULE 1/2 x 5/16 PIN
20	1	A-1000660	SOCKET, WAFER, IC, 16 PIN, AUGAT
19	1	A-1000655	INTEGRATED CIRCUIT, 240x240
18	1	A-1000704	TRANSISTOR/MPN, HIGH SPEED
17	1	A-1000656	TRANSFORMER, POWER
16	1	A-1000705	POTENTIOMETER, 1.5 MEG, 2 W, LINEAR
15	2	A-379245	RESISTOR, 51K, 1/4 W, 10%, CARB
14	1	A-1000707	POTENTIOMETER, 100K, 1/2 W, 5%
13	1	A-506811	RELAY, 24VDC, 2 AMPS, 2 POLE
12	1	A-1000709	SOCKET
11	1	A-1000657	RELAY, 24VDC, 2 AMPS, 2 POLE
10	4	A-1000341	SCREW #6-32x3/8
9	1		
8	1	A-1000710	DIPPER BRIDGE, RECT, AMP, 200V
7	1	A-1000711	DIPPER, LOW CURRENT REST.
6	1	A-473421	DIPPER, ZENER, 10V, 1 WATT
5	1	A-1000659	CAPACITOR, DISC, CER, 0.01uF, 25%
4	1	A-476498	CAPACITOR, ELECTROM, 25V
3	1	A-1000697	SCHEMATIC
2	REF	B-1000697	FABRICATION - PC BOARD
1	1	C-1000661	

ITEM	REQ.	PART NUMBER	DESCRIPTION
C-1000653			BREAK ALL SPACES UNLESS OTHERWISE NOTED
DO NOT SCALE DRAWING			
TOLERANCES UNLESS OTHERWISE SPECIFIED			
FRACTIONS TO BE SHOWN AS DECIMALS			
HOLE DIMENSIONS TO BE SHOWN AS DECIMALS			
CORNER RADIUS TO BE SHOWN AS DECIMALS			
ANGULAR DIMENSIONS TO BE SHOWN AS DECIMALS			
SCALE 2:1			
M.O. NUMBER			
DATE 7-8-80			
APPROVED [Signature]			
DATE 7-25-80			

3-1018 241

PERKINELMER
CORNER R
PALO ALTO, CALIFORNIA

DRAWING NO. C-1000698

CLASS OF DRAWING 57D

REV 5

SCALE 2:1

90-11 2

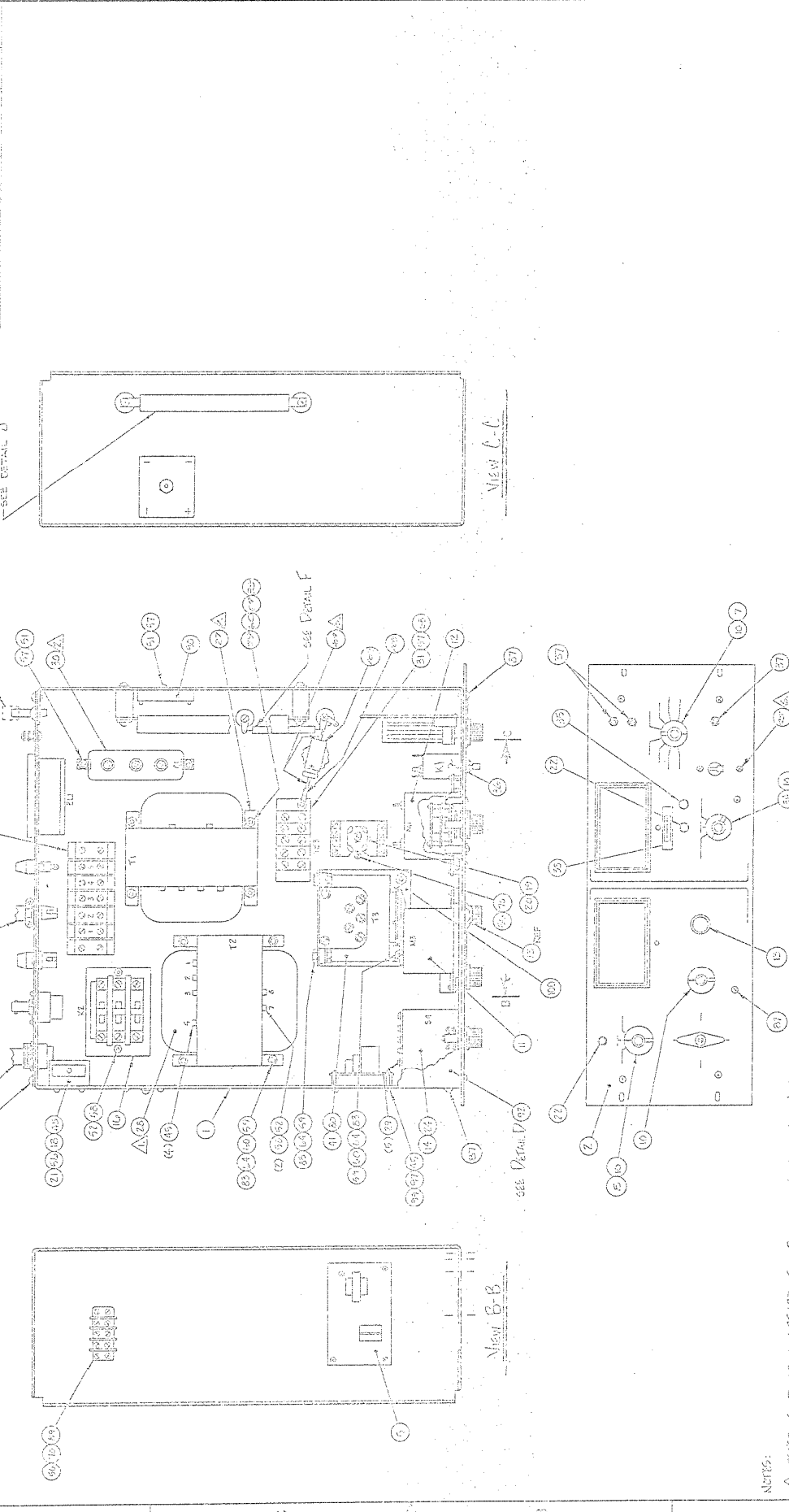
90-11

NOTES:
1. WAS ULTEK PIN C-221-239-100 C

THE INFORMATION ON THIS DRAWING IS PROPRIETARY INFORMATION AND NOT BE LOANED, REPRODUCED, COPIED, OR IN ANY MANNER DISCLOSED TO ANY OTHER PERSON WITHOUT THE WRITTEN PERMISSION OF THE PERKINELMER CORPORATION.

PERKIN-ELMER PHYSICAL ELEC. DIV.		TITLE SHEET: 1 1/13/93 PCB ASSY-TIMER, BOOSTIVAC		PART STATUS 1		PART NUMBER 1000698		REV S		EFFECTIVITY DATES:	
ITEM	PART NO.	QTY	UM	DESCRIPTION	PART STATUS	REFERENCE/NOTES	FROM	TO			
1	1000661	1.000	EA	PCB-TIMER, BOOSTIVAC			010101				
2	1000697	0.000	EA	SCHEM DIAG-TIMER			010101				
3	1002219	1.000	EA	CAP-330 UF, 25V, 20%, ELECT, RDL	NP	C1	010101				
4	471048	1.000	EA	CAP-0.01 UF, 1KV, GMV, CERDSC, RDL	NP	C2	010101				
5	1000659	1.000	EA	CAP-22 UF, 16V, 10%, TANT, RDL	NP	C3	010101				
6	473021	1.000	EA	DIO-ZENER, 10V, 1W, 1N4740	PP	CR1	010101				
7	601321	1.000	EA	DIO-RECT, 200V, 1A, 1N4003	NP	CR2	080792				
8	1000710	1.000	EA	BRIDGE-RECT, 100V, 1A, VE28		CR3	010101				
9	278002	3.000	EA	CAP-0.01 UF, 50V, 20%, CER ML, RDL	PP	C4, 5, 6	032988				
10	541905	4.000	EA	SCR-PNH, 6-32X .312, PHHD, SST			032988				
11	1000657	1.000	EA	RLY-PNL, 4PDT, 24VDC, 3A/115V		K1	010101				
12	1000709	1.000	EA	SKT-RLY, 2POLE, SQR, PCB		K1-XX	010101				
13	606811	1.000	EA	RES-330 OHM, 1W, 5%, RC32	NP	R1	010101				
14	1000707	1.000	EA	POT-100K, .25W, 1T, PCB, S/A	NP	R2	010101				
15	606651	1.000	EA	RES-40.2K OHM, .12W, 1%, RN55D	PP	R5	112471				
16	1000705	1.000	EA	POT-1.5M, 2W, 1T, LINEAR, PNL	PP	R4	010101				
17	1000656	1.000	EA	XFMR-PWR, 115/230:30VCT SEC, PCB	PP	T1	010101				
18	478126	1.000	EA	XSTR-2N3904, NPN, 40V, .3W	PP	Q1	021489				
19	1000655	1.000	EA	IC-TIMER, CNTR PRGM, BIN OUT		U1	010101				
20	471004	1.000	EA	SKT-IC, DIP, 16P, .3W, TIN, L PROF	PP	U1-XX	100488	011193			
21	1000703	1.000	EA	RES NTWK-12K, DIP, 7I, .25W, 5%	PP	UR1	010101				
22	171416	1.000	EA	SKT-IC, DIP, 14P, .3W, TIN, L PROF	PP	URI-XX	100488	011193			
23	1000702	1.000	EA	SW-PB, PNL, SPDT, MDM, .25A@120V		S1	010101				

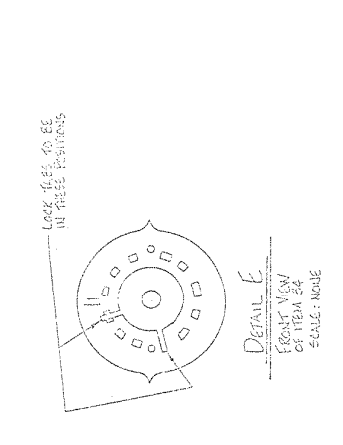
FORM NO. 223 (REV. 5-58)	REV. 1-1-58	REV. 1-1-58	REV. 1-1-58
CONTRACT NO.	ORDER NO.	DATE	APPROVED
1. 62-127-1-10000 (FOR IT-60)	2240430	10-15-57	
2. 62-127-1-10000 (FOR IT-60)		10-15-57	
3. 62-127-1-10000 (FOR IT-60)		10-15-57	
4. 62-127-1-10000 (FOR IT-60)		10-15-57	
5. 62-127-1-10000 (FOR IT-60)		10-15-57	
6. 62-127-1-10000 (FOR IT-60)		10-15-57	
7. 62-127-1-10000 (FOR IT-60)		10-15-57	
8. 62-127-1-10000 (FOR IT-60)		10-15-57	
9. 62-127-1-10000 (FOR IT-60)		10-15-57	
10. 62-127-1-10000 (FOR IT-60)		10-15-57	



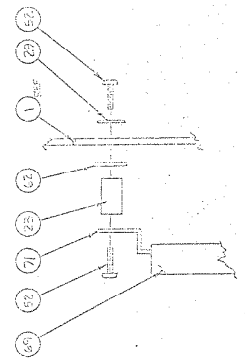
DESIGNER	DATE	REV.
PHYSICAL ELECTRONICS DIVISION	2240430	1
PROJECT NO.	2240430	1
REV.		
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NOTE:

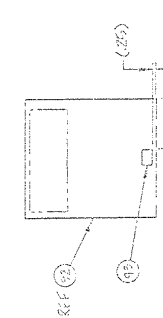
- ▲ PLACE IN PHASES FOR PRIMARY WIRES OF T1 & T2.
- ▲ WIRE GLIDE AFTER ALL WIRES ARE ATTACHED (3 PLACES).
- ▲ ITEM 95 CONSISTS OF A FINGER GUARD, FILTER & FILTER RETAINER. ATTACH FINGER GUARD & FILTER RETAINER TO HEAD SCREENS. POSITION FINGER IN RETAINER AND SNAP RETAINER ONTO FINGER GUARD. POSITION LOCKING TABS ON RETAINER AS INDICATED.
- ▲ ITEM 95 TO BE PACKAGED & SHIPPED WITH UNIT.
- ▲ SOME PARTS OF THIS UNIT TO BE SHIPPED WITH A SMALL PLASTIC BAG.
- ▲ SECURE SCREENS WITH LOCKING THREAD-LOCKER #222.



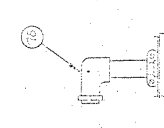
DETAIL E
 FRONT VIEW
 OF FIG. 24
 SCALE: NONE



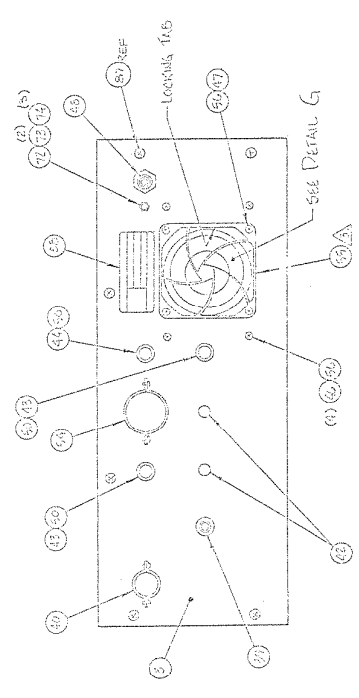
DETAIL D



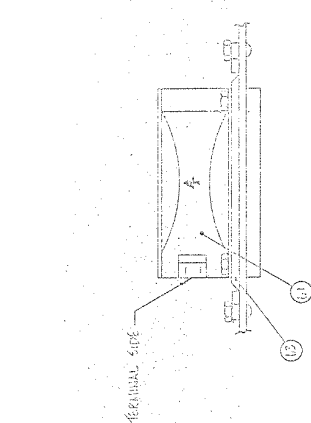
DETAIL D
 SCALE: 1/8



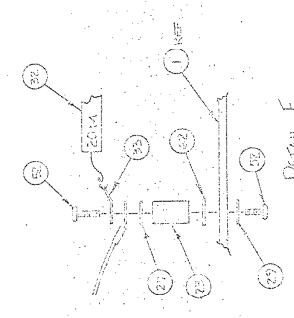
DETAIL H



VIEW A-A



DETAIL G
 SCALE: 1/4

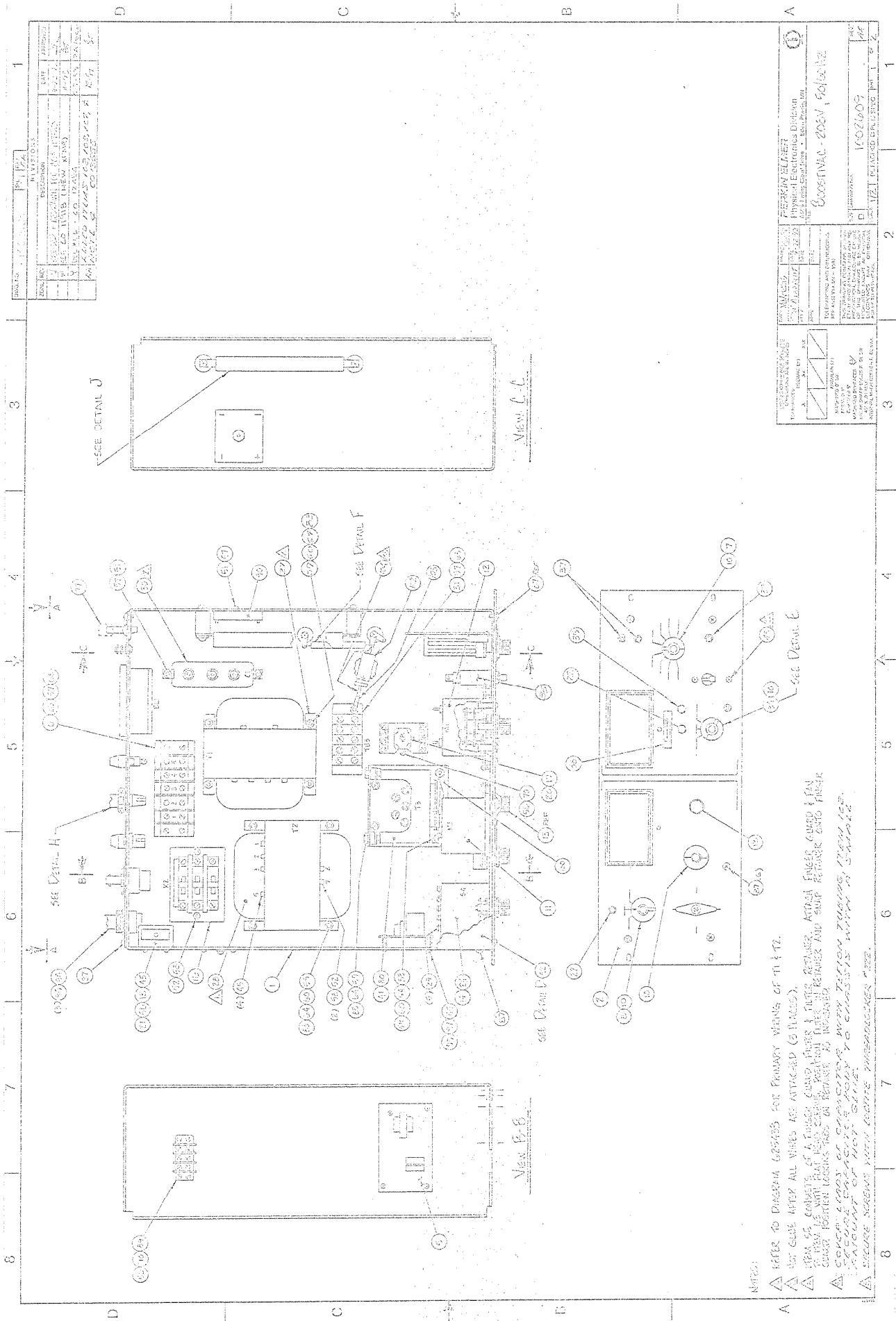


DETAIL F
 SCALE: NONE

PREPARED BY: [Signature] CHECKED BY: [Signature] DATE: 10/15/50	DRAWING NO. 2207-10-02 TITLE: LOCK MECHANISM	PROJECT NO. 2207-10-02 SHEET NO. 2 OF 2
DESIGNED BY: [Signature] CHECKED BY: [Signature] DATE: 10/15/50	DRAWING NO. 2207-10-02 TITLE: LOCK MECHANISM	PROJECT NO. 2207-10-02 SHEET NO. 2 OF 2
DRAWING NO. 2207-10-02 TITLE: LOCK MECHANISM	PROJECT NO. 2207-10-02 SHEET NO. 2 OF 2	DRAWING NO. 2207-10-02 TITLE: LOCK MECHANISM

PERKIN-ELMER PHYSICAL ELEC. DIV.		TITLE SHEET: 1 7/23/96 BOOSTIVAC-220V,50HZ		PART STATUS IN U/NONE 1		PART NUMBER 2240630		EFFECTIVITY DATES:	
ITEM	PART NO.	QTY	UM	DESCRIPTION	PART STATUS	REFERENCE/NOTES	REV Y	FROM	TO
1	629248	1.000	EA	CHASSIS-BOOSTIVAC/SUBLIMATOR				030795	
2	629249	1.000	EA	PANEL-FRNT,BOOSTIVAC/ION PUMP				030795	
3	1000520	1.000	EA	PANEL-REAR,BOOST ION PUMP CONT				090192	
4	624062	0.000	EA	TEST & CAL PROC-BOOSTIVAC				090192	
5	1000698	1.000	EA	ASSY-PCB,TIMER,BOOSTIVAC				090192	
6	1000787	1.000	EA	MARKER STRIP-5 POSN				090192	
7	1000539	1.000	EA	ASSY-PCB,METERING,BOOSTIVAC				090192	
8	1000675	1.000	EA	SW-RTRY,MOD,4P,3POS				090192	
9	1000904	0.000	EA	SCHEM DIAG-BOOSTIVAC				090192	
10	1000537	4.000	EA	KNOB-SKT BAR,.25 SFT,BLK				090192	
11	623965	1.000	EA	METER-ANALOG,0-60A,TSP				101292	
12	1000533	1.000	EA	METER-ANALOG,PNL,TRISCALE TORR				090192	
13	1000789	1.000	EA	KNOB-SKD BAR,.25 SFT,BLK				090192	
14	1000790	4.000	EA	SCR-FLAT,1/4-20X .380,SLTD,SST				090192	
16	1000971	1.000	EA	CNTOR-PWR,3PST,240VAC,20A/660V				090192	
18	1002905	1.000	EA	BRKT-SWITCH				090192	
19	1000975	1.000	EA	RLY-DCTL,DPDT,240VAC,10A/250V				090192	
20	473035	1.000	EA	SKT-RLY, 8P,RND,SCR,				090192	
21	1002928	1.000	EA	SW-INTERLOCK,DPDT,10A@125/250V				090192	
22	1001007	2.000	EA	LAMP-NEON,250V,.5DI,RED,QC	PP			090192	
23	1000799	4.000	EA	STDF-1.25LG,10-32,.750D,CER	NP			090192	
24	1000800	1.000	EA	SW-RTRY,1P4T,480VAC/30A,				090192	
26	1000802	1.000	EA	TERM BLOCK- 5 DBL POSN,40A	NP			090192	
27	1003337	1.000	EA	XFMR-PWR,120-240:5500VDC				090192	
28	625467	1.000	EA	XFMR-FILAMENT				101292	
29	512110	11.000	EA	WSHR-INT TOOTH LOCK,#10, SST	*			090192	
30	1003323	1.000	EA	CAP-0.3 UF X2,5KV,20%,OIL,CAN	NP			090192	
31	1004982	1.000	EA	TERM BLOCK- 5 DBL POSN,30A				090192	
32	1000554	1.000	EA	RES-20M OHM,4W,1%,15KV	PP			090192	
33	501110	2.000	EA	LUG-SOLDER, #10,LKG,BENT				090192	
34	1000674	1.000	EA	SW-RTRY,MOD,4P,5POS				090192	
35	376101	1.000	EA	LAMP-NEON,250V,.5DI,AMBER,QC	PP			090192	
36	629262	1.000	EA	CB-SP,.05A,DC,RELAY TRIP,INSTA				030795	
37	1000550	3.000	EA	POT-PANEL MOUNTING ADAPTER	NP			090192	
38	1000535	1.000	EA	MICROCOULOMETER,MERCURY				090192	
39	1000532	1.000	EA	CONN-COAX,BNC,J,CHAS,ISOL GND				090192	
40	612689	1.000	EA	STRAIN RELIEF-ROMEX CA,.38 ID				090192	
41	625262	1.000	EA	SHAFT-STEP,T-4,.249X.375X.44ST				090192	
42	1002083	2.000	EA	CONN-PHONE,.25",J,CHAS,SLDR				090192	
43	601265	2.000	EA	FUSE-5A,250V,SLO BLO,3AG				090192	
44	175007	1.000	EA	FUSE-2.5A,250V,SLO BLO,3AG				090192	
45	541904	16.000	EA	SCR-PAN, 6-32X .250,PHIL,SST				030795	

INACTIVE - FOR SERVICE
USE ONLY - SUPERSEDED
BY NONE PER ECO 14658



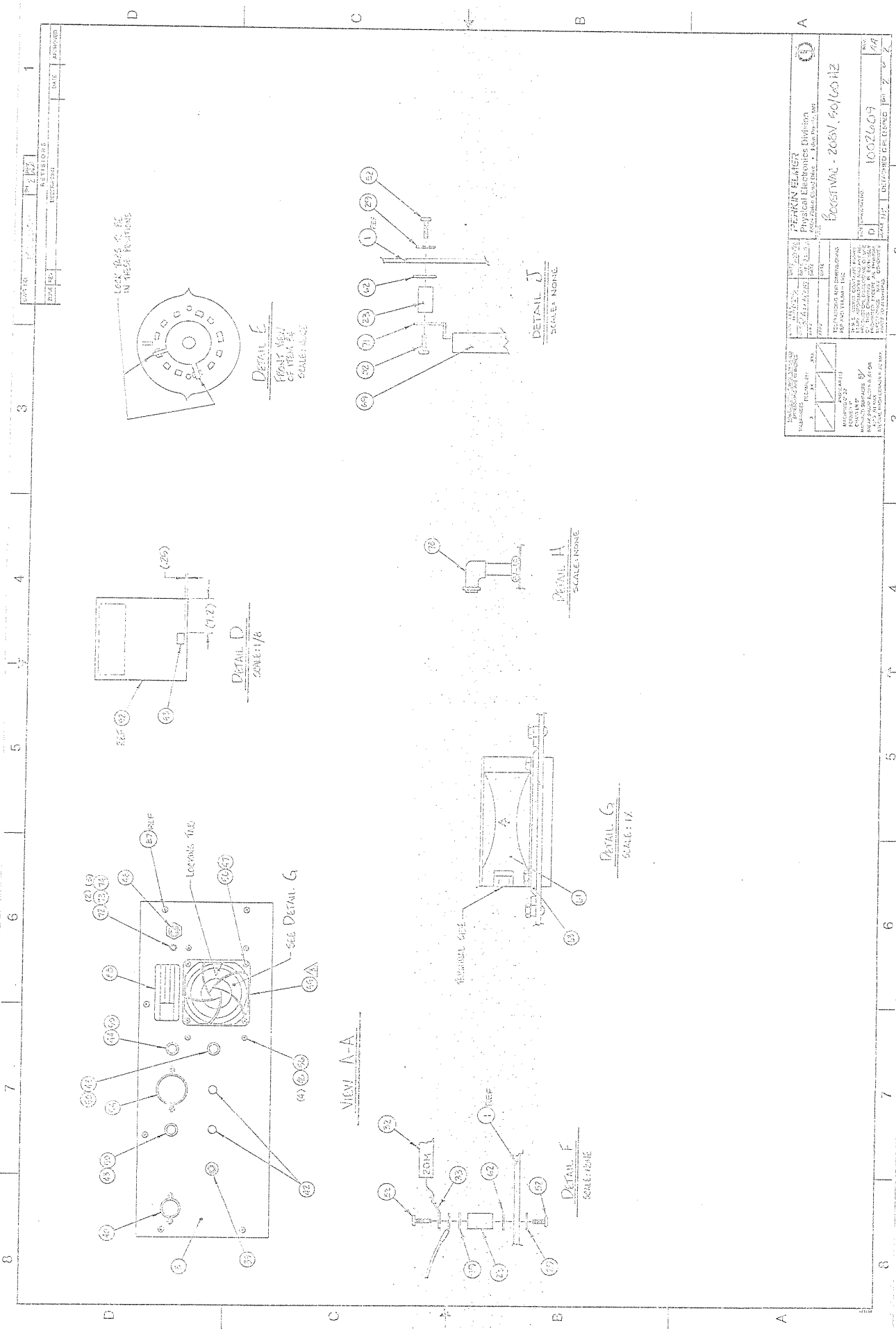
REV.	DATE	BY	CHKD.
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- NOTE:
- ▲ REFER TO DIAGRAM LOCATED FOR PRIMARY WINDING OF T1 & T2.
 - ▲ HOT GAS AFTER ALL WIRDS ARE ATTACHED (2 PLACES).
 - ▲ SPARK CONTACTS OF A POWER SUPPLY MUST BE KEPT CLEAN. REMOVE AND BRUSH FREQUENTLY WITH BRUSH.
 - ▲ SECURE LOOSE CONTACTS WITH WIRE TIE OR WIRE TIE WITH INSULATION.
 - ▲ SECURE SCREENS WITH WIRE TIE OR WIRE TIE WITH INSULATION.



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PERKIN-ELMER		TITLE SHEET: 1 1/02/95		PART STATUS 1		PART NUMBER 1002609		REV AA		EFFECTIVITY DATES:	
PHYSICAL ELEC. DIV.		BOOSTIVAC-208V,50/60HZ		PART STATUS 1		REFERENCE/NOTES				FROM TO	
TEM	PART NO.	QTY	UM	DESCRIPTION	PART STATUS	REFERENCE/NOTES					
1	625541	1.000	EA	CHASSIS-BOOSTIVAC/SUBLIMATOR	IN U/629248					102792	030695
1	629248	1.000	EA	CHASSIS-BOOSTIVAC/SUBLIMATOR						030795	
2	625432	1.000	EA	PANEL-FRNT,BOOST/ION PMP,S/S	IN U/629249					092992	030695
2	629249	1.000	EA	PANEL-FRNT,BOOSTIVAC/ION PUMP						030795	
3	1000520	1.000	EA	PANEL-REAR,BOOST ION PUMP CONT						092992	
4	624062	0.000	EA	TEST & CAL PROC-BOOSTIVAC						092992	
5	1000698	1.000	EA	ASSY-PCB,TIMER,BOOSTIVAC						092992	
6	1000787	1.000	EA	MARKER STRIP-5 POSN						092992	
7	1000539	1.000	EA	ASSY-PCB,METERING,BOOSTIVAC						092992	
8	1000675	1.000	EA	SW-RTRY,MOD,4P,3POS						092992	
9	1000904	0.000	EA	SCHEM DIAG-BOOSTIVAC						092992	
10	1000537	4.000	EA	KNOB-SKT BAR,.25 SFT,BLK						092992	
11	623965	1.000	EA	METER-ANALOG,0-60A,TSP						101292	
12	1000533	1.000	EA	METER-ANALOG,PNL,TRISCALE TORR						092992	
13	1000789	1.000	EA	KNOB-SKD BAR,.25 SFT,BLK						092992	
14	1000790	4.000	EA	SCR-FLH, 1/4-20X .380,SLTD,SST						092992	
16	1000971	1.000	EA	CNTOR-PWR,3PST,240VAC,20A/660V						092992	
18	1002905	1.000	EA	BRKT-SWITCH						092992	
19	1000975	1.000	EA	RLY-OCTL,DPDT,240VAC,10A/250V						092992	
20	473035	1.000	EA	SKT-RLY, 8P,RND,SCR,						092992	
21	1002928	1.000	EA	SW-INTERLOCK,DPDT,10A@125/250V	PP					092992	
22	1001007	2.000	EA	LAMP-NEON,250V,RED						092992	
23	1000799	4.000	EA	STDF-1.25LG,10-32,.750D,CER						092992	
24	1000800	1.000	EA	SW-RTRY,1P4T,480VAC/30A,	NP					092992	
26	1000802	1.000	EA	TERM BLOCK-5 DBL POSN,40A						092992	
27	1003337	1.000	EA	XFMR-PWR,120-240:5500VDC	NP					092992	
28	625467	1.000	EA	XFMR-FILAMENT						101292	
29	512110	11.000	EA	WSHR-INT TOOTH LOCK,#10, SST	*					092992	
30	1003323	1.000	EA	CAP-0.3 UF X2,5KV,20%,OIL,CAN	NP					092992	
31	1004982	1.000	EA	TERM BLOCK-5 DBL POSN,30A						092992	
32	1000554	1.000	EA	RES-20M OHM, 4W ,1%,15KV	PP					092992	
33	501110	2.000	EA	SOLDER LUG- #10,LKG,BENT						092992	
34	1000674	1.000	EA	SW-RTRY,MOD,4P,5POS						092992	
35	376101	1.000	EA	LAMP-NEON,CYL,250V,.3W,AMBER	PP					092992	
36	624143	1.000	EA	CKT PROTECTOR-0.05A,RLYTRIP						092992	
36	629262	1.000	EA	CB-.05A,RELAY TRIP,IUG SERIES	BBB					092992	030695
37	1000550	3.000	EA	POT-PNL MTG ADAPTER	NP					092992	
38	1000535	1.000	EA	MICROCOULOMETER,MERCURY						092992	
39	1000532	1.000	EA	CONN-COAX,BNC,J,CHAS,ISOL GND						092992	
40	612689	1.000	EA	STRAIN RELIEF-ROMEX CA..38 ID						092992	
41	625262	1.000	EA	SHAFT-STEP,T-4,.249X.375X.44ST						092992	
42	1002083	2.000	FA	CONN-PHONE .25" T. CHAS. SI DR						092992	

PERKIN-ELMER PHYSICAL ELEC. DIV.		TITLE SHEET: 2 1/02/95 BOOSTIVAC-208V, 50/60HZ		PART STATUS 1		PART NUMBER 1002609		REV AA		EFFECTIVITY DATES:	
TEM	PART NO.	QTY	UM	DESCRIPTION	PART STATUS	REFERENCE/NOTES	FROM	TO			
43	601265	2.000	EA	FUSE-3AG, 5A, 250V, SLO BLO			092992				
44	175007	1.000	EA	FUSE-3AG, 2.5 A, 250V, SLO BLO			092992				
45	541904	14.000	EA	SCR-PAN, 6-32X .250, PHHD, SST			120293			030695	
45	541904	16.000	EA	SCR-PAN, 6-32X .250, PHHD, SST			030795				
46	541908	4.000	EA	SCR-PAN, 6-32X .500, PHHD, SST			092992				
47	546316	4.000	EA	SCR-FLH, 6-32X1.000, PHHD, SST			120293				
48	1000531	1.000	EA	CONN-COAX, 10KV, J, CHAS,			092992				
49	1001724	1.000	EA	MANUAL-BOOSTIVAC PUMP CONTROL	NO DOC		092992				
50	171308	3.000	EA	FUSEHOLDER-PNL MTG, KNOB, 3AG			092992				
51	542008	3.000	EA	SCR-PAN, 8-32X .500, PHHD, SST			092992				
52	544908	12.000	EA	SCR-PAN, 10-32X .500, PHHD, SST			120293				
54	1000523	1.000	EA	CONDUIT CLAMP-1" ID, NON-MET CBL			092992				
55	622775	1.000	EA	FAN FILTER ASSEMBLY-3.125"		*	092992				
56	533203	16.000	EA	NUT-KEPS, # 6-32,		*	101292				
57	533204	11.000	EA	NUT-KEPS, # 8-32,		*	092992				
58	533225	4.000	EA	NUT-KEPS, #10-32,		*	101292				
59	1000343	14.000	EA	NUT-HEX, 1/4-20,			092992				
60	1000832	10.000	EA	WSHR-FLT, 1/4, .690X.265			092992				
61	1001012	1.000	EA	FAN-230VAC, 33CFM, 3.12 SQ			092992				
62	1000834	4.000	EA	WSHR-FLT, .620X.180X.062, CORK			092992				
63	616849	1.000	EA	FANMOUNT-ISOLATOR, 3.125 IN FAN		*	092992				
64	542214	14.000	EA	WSHR-SPLIT LOCK, 1/4,			092992				
65	625433	1.000	EA	WIRE HARN-BOOSTIVAC			092992				
68	542012	8.000	EA	SCR-PAN, 8-32X .750, PHHD, SST			092992				
69	1000838	1.000	EA	RES-150 OHM, 100W, 5%, VK100N	PP		092992				
70	541912	6.000	EA	SCR-PAN, 6-32X .750, PHHD, SST			120293				
71	611715	2.000	EA	BRKT-RESISTOR MTG, SPR GRIP, 206			092992				
72	1000526	1.000	EA	SCR-BDH, 10-32X .750, SLTD, BRS			092992				
73	1000529	2.000	EA	WSHR-FLT, #10, .500X.219	BRS		092992				
74	1000530	3.000	EA	NUT-HEX, #10-32,	BRS		092992				
77	1000845	1.000	EA	CAPLUG-SC, 7/16 I.D.			092992				
78	622754	1.000	EA	ASSY-CA, SUBLIMATOR, 25.0FT			092992				
80	1001856	1.000	EA	XFMR-PWR, VARIAC, 240-280	PP		092992				
83	510912	14.000	EA	SCR-CAP, 1/4-20X .750, HEXH, SST			092992				
87	542006	18.000	EA	SCR-PAN, 8-32X .375, PHHD, SST			092992				
88	479092	0.000	EA	LABEL-CHASSIS (S/N)			092992				
89	1000853	1.000	EA	TERM BLOCK-3 DBL POSN, 20A			092992				
90	1002979	1.000	EA	BRIDGE-RECT, 10KV, .50A, VH443	NP		092992				
92	1004947	1.000	EA	PUNCH DETAIL-COVER DIGITEL1500			092992				
93	1000519	1.000	EA	LABEL-DANGER HIGH VOLTAGE			092992				
94	621677	1.000	EA	CORD-250V P:3WIRE, 14/3, 7.5FT			092992				
95	544108	3.000	EA	FAN FILTER RTNG 14-14GA #8 TNC 34.911			092992				

