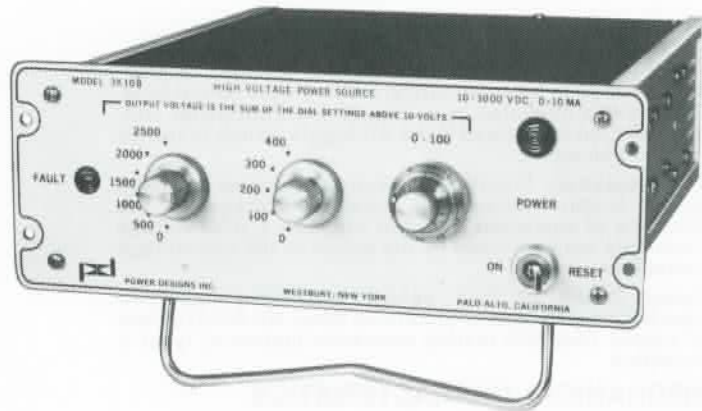


CALIBRATED HIGH VOLTAGE POWER SOURCE

MODEL 3K10B 10-3000 VDC 0-10 MA



GENERAL DESCRIPTION

The Model 3K10B is a calibrated high voltage laboratory power source ideally suited for photomultiplier and similar applications requiring high stability low noise and superior regulation.

This all solid state supply achieves high efficiency and unusually compact construction through the use of high frequency switching technology.

The Model 3K10B incorporates proprietary overvoltage and arc protection circuitry which prevents damage to the supply and its load. In the event of an overvoltage condition or voltage transients generated by sustained arcing at the load the power supply will automatically shut off and a fault indicator will illuminate. Normal operation is restored by turning the power switch off, then on again.

An option is available which provides remote resistance or voltage programming over its entire range. It may also be programmed over a limited range ($\pm 250V$) around a preset voltage by an analog signal to provide automatic photomultiplier tube system. The power supply may be operated in either positive or negative output polarity by means of a reversing switch. Units selected with remote programming option may only be operated in negative polarity. The reversing switch is replaced by the programming switch.

Two paralleled Safety High Voltage (SHV) BNC connectors provide dual output or meter monitoring at the rear panel. These connectors are National Bureau of Standards approved per DWG ND-545A.

High voltage transformers and critical circuit elements are environmentally isolated in vacuum encapsulated epoxy modules. The output may be continuously shorted without damage to the power supply.

ELECTRICAL SPECIFICATIONS

Input: 103-129 VAC, 47-440 Hz, 65 watts.

Output: Adjustable from 10-3000 volts DC at 0-10 milliamperes.

Calibration Accuracy: 0.25% of the dial settings from 500-3000 volts; 0.5% from 200-500 volts; 2% below 200 volts.

Resolution: 50 millivolts (10-turn vernier potentiometer with 100 volt range).

Resetability: 0.1% or 50 millivolts, whichever is greater.

Noise and Ripple: 3 millivolts peak-to-peak to 15 MHz.

Regulation: .001% or 3 millivolts, whichever is greater, for line or load variations.

Stability: Drift is less than 100 PPM or 10 millivolts per hour, whichever is greater; less than 300 PPM or 30 millivolts per day (measured under constant load, line voltage and ambient temperature conditions and output level over 200 volts).

Temperature Coefficient: Less than 50 PPM per $^{\circ}C$ change in output voltage at levels over 200 volts.

Operating Environment: 0-60 $^{\circ}C$ at relative humidities up to 90% and altitudes to 10,000 feet.

Voltage Controls: 0-2500 volts in five 500 volt steps; 0-400 volts in four 100 volt steps, 0-100 volts, continuously adjustable 10-turn potentiometer with calibrated dial and lock. Minimum useful output is 10 volts.

Overcurrent Protection: Output current is limited to approximately 15 milliamperes. The power supply can be operated in an overload or short circuited condition indefinitely and will restore automatically to normal operation upon fault removal.

Overvoltage Protection: An electronic sensor monitors output voltage and shuts the down supply if internal or ex-

POWER DESIGNS INC.

1700 SHAMES DRIVE • WESTBURY, NEW YORK 11590
Tel: 516 333-6200 • TWX 510 222-6561

SECTION 1
GENERAL DESCRIPTION

1-1. DESCRIPTION

The Model 3K10B is a calibrated laboratory power source ideally suited for photomultiplier and similar applications requiring high stability, low noise and superior regulation.

This all solid-state, highly efficient and compact power supply incorporates proprietary overvoltage and arc protection circuitry which prevents damage to the supply and its load in the event of failure or voltage transients generated by sustained arcing at the load. It is automatically shut off and a fault indicator illuminated. Normal function is restored by turning the AC switch off, then on again.

The Model 3K10B may be remote resistance or voltage programmed over its entire range. It may also be programmed over a limited range around a preset voltage by an analog signal to provide automatic amplitude or drift compensation control for a photomultiplier tube system.

The power supply may be operated in either positive or negative output polarity by means of a reversing switch on the rear of the unit.

1-2. ELECTRICAL CHARACTERISTICS

INPUT: 103-129 VAC, 47-440 Hz, 65 watts.

OUTPUT: Adjustable from 10-3000 volts DC at 0-10 milliamperes.

CALIBRATION ACCURACY: 0.25% of the dial settings from 500-3000 volts; 0.5% from 200-500 volts; 2% below 200 volts.

RESOLUTION: 50 millivolts (10-turn vernier potentiometer with 100 volt range).

RESETABILITY: 0.1% or 50 millivolts, whichever is greater.

NOISE AND RIPPLE: 3 millivolts peak-to-peak to 15 MHz.

REGULATION: 0.001% or 3 millivolts, whichever is greater, for line or load variations.

STABILITY: Drift is less than 100 ppm or 10 millivolts per hour, whichever is greater, less than 300 ppm or 30 millivolts per day (measured under constant load, line voltage and ambient temperature conditions at output levels over 200 volts).

TEMPERATURE COEFFICIENT: Less than 50 ppm per °C change in output voltage at levels over 200 volts.

OPERATING ENVIRONMENT: 0-60°C at relative humidities up to 90% and altitudes to 10,000 feet.

VOLTAGE CONTROLS: 0-2500 volts in five 500 volt steps; 0-400 volts in four 100 volt steps, 0-100 volts, continuously adjustable 10-turn potentiometer with calibrated dial and lock. Minimum useful output is 10 volts.

OUTPUT POLARITY: Reversing switch on back of unit permits operation with either the positive or negative output terminal at ground potential.

OVERCURRENT PROTECTION: Output current is limited to approximately 15 milliamperes. The power supply can be operated in an overload or short circuited condition indefinitely and will restore automatically to normal operation when the fault is removed.

OVERVOLTAGE PROTECTION: An electronic sensor monitors output voltage and shuts down the supply if internal or external malfunction results in output voltages or transients 500 volts (approximately) over a preset output level. Operation is indicated by a lamp on the front panel. Normal function is restored if the AC toggle switch is turned off, then on again.

ARC PROTECTION: Proprietary electronic system protects power supply components from damage in the presence of sustained arcing at the load. $L di/dt$ voltage transients are controlled by the action of the overvoltage protection circuits.

OUTPUT CONNECTORS: Two "safety" BNC receptacles (SHV type per National Bureau of Standards ND-545A) at rear of supply. One SHV mating connector (approved type) is furnished.

1-3. MECHANICAL CHARACTERISTICS

DIMENSIONS: 3" x 8-1/2" x 11-1/2"

WEIGHT: 8.5 lbs.

FINISH: Natural aluminum panel and chassis; blue vinyl dust covers.

SECTION 2 INSTALLATION AND OPERATION

2-1. INSTALLATION

The Model 3K10B may be operated on a bench, or two units mounted in a 3-1/2" high rack adapter for standard 19" EIA mounting.

2-2. OPERATION

Set the POWER switch in the RESET position and connect the supply to a source of AC power of the correct voltage and frequency rating.

Set the reversing switch on the rear of the unit for the desired polarity and the front panel switches for the desired output voltage. The output voltage is the sum of the switch and vernier settings.

The POWER switch may now be set to the ON position. The pilot light will come on and high voltage will appear at the output of the supply.

CAUTION: Because of the high voltages which this power supply can produce, ALWAYS OPERATE THE POWER SUPPLY WITH A THREE-WIRE LINE CORD, OR WITH A SOLID GROUND CONNECTION TO THE CASE.

To reverse the output polarity, turn the POWER switch to RESET, wait 30 seconds for the output voltage to decay, turn the reversing switch to the desired polarity, and turn the POWER switch to ON. The polarity reversal switch should not be operated with high voltage on.

Indefinite operation into a short circuit is possible because of the fast-acting electronic overload and short circuit protection system. Operation of the power supply is restored automatically as soon as the fault is corrected. This protection system operates at output load currents of 13 milliamperes nominal.

When operation below 10 volts is attempted, the output voltage drops abruptly. Regulation in this region is uncertain.

The nature of the power supply is such that high frequency switching transients appear across the output terminals. These transients are fast-rise pulses in the order of a microsecond in duration and are 1 to 5 millivolts peak-to-peak amplitude in a 50 MHz system.

SECTION 3 THEORY OF OPERATION

3-1. GENERAL

The Model 3K10B contains two separate regulating loops; one a fast regulator of the conventional series pass transistor type; the other a pre-regulator operating to hold the voltage across the series pass transistor constant and in its operating range.

The sub-assemblies making up the Model 3K10B are encapsulated in a series of epoxy modules to minimize corona noise and provide high voltage isolation as well as environmental protection. Since the power supply is made up of physically separate modules, the operation of the unit is described in terms of the function of each module.

3-2. AUXILIARY POWER SUPPLY

This section, mounted on an insulated terminal board, is powered by transformer T3 (3003B) and produces bias voltages for the control circuitry. The outputs from this section are:

- +40 volts (unregulated)
- +20 volts
- +15 volts
- 20 volts
- 10 volts
- 5 volts
- Constant Current Source for the reference zener diode

3-3. FEEDBACK DIVIDER

This is a voltage divider which senses the regulated output voltage, compares it with a reference voltage and feeds an error signal back to the regulator.

The high voltage end of this divider is in the FB-03 block. The resistors in this block are temperature compensated.

The low voltage end of the divider is made up of resistors R41 through R48 and vernier potentiometer R49. These low temperature coefficient precision wirewound resistors are switched in and out of the circuit by the front panel voltage selector switches. Trimmer potentiometer R50 provides a small voltage adjustment for use in calibrating the power supply.

3-4. DC AMPLIFIER

This is a 3-stage DC amplifier housed in module PE-320. The input to the amplifier is derived from the feedback divider. The output feeds the series pass transistor in such a manner as to maintain the regulated output voltage and degenerate output noise and ripple.

Series pass transistor Q6 is mounted externally on the PE-320 module. This series element acts as a variable resistance in series with the output of the power supply. As line

or load conditions vary, the resistance of this series element is changed electronically to hold the regulated output voltage constant.

The PE-320 module also contains a current limiter, which limits the output current from the supply to 13 milliamperes (nominal) under any overload condition, including a short circuit. The current limiter is self-restoring and the power supply automatically resumes normal operation when the overload is removed.

3-5. PREREGULATOR AND DRIVER

The preregulator circuit is housed in the PR-02 module and develops the drive signal for the inverter transistors Q3 and Q4. The PR-02 module senses the voltage drop collector-to-emitter on the series pass transistor (Q6) and by controlling the duty cycle of its 4.5 KHz drive signal, which feeds Q3 and Q4 through transformer T1 (2001-H), holds the voltage on Q6 to approximately 22 volts.

3-6. RECTIFIER AND FILTER

The IV-120 module rectifies the incoming AC line to provide appropriate DC voltages for the operation of the inverter power transistors. These power transistors operate on DC potentials derived from the AC power line and provide the input to high voltage transformer T2 (A3K02). No isolation transformer is used to obtain maximum efficiency and minimum weight and size.

3-7. AC LINE FILTER

This is contained in the 3021-C module and is intended to keep transients generated in the inverter section from feeding back into the AC line. This filter reduces the noise level to less than 1 millivolt rms.

3-8. OUTPUT CAPACITOR

The output capacitor consists of capacitor C10 (one section) and inductor L4. It provides energy storage on the output of the supply and acts as a filter to reduce the output noise and ripple.

3-9. OVERVOLTAGE FAULT PROTECTION

This circuit is housed in the OVF-01 module. It senses the voltage at the summing junction and clamps the input to the preregulator module upon an error signal corresponding to an overvoltage condition of 750volts (nominal). The output voltage will drop to zero and can be reset only by interrupting the AC input. A switch marked "POWER", "ON", "RESET" is provided on the front panel.

SECTION 4 MAINTENANCE

4-1. GENERAL

All maintenance and adjustments should be made with the power supply set for negative output. Most of the low-level regulation circuits are tied electrically to the positive output bus. Setting the supply for negative output brings most of these circuits close to ground potential.

4-2. CALIBRATION

To check or reset the calibration of the unit, the power supply should be set for negative output and the voltage selector switches for 2000 volts output, with the vernier control at its minimum setting.

The output of the supply should be connected, through an appropriate voltage divider to the input of a differential or digital voltmeter of 0.1% accuracy or better. Allow the supply to warm up for 10 minutes or more, then adjust potentiometer R50, if necessary, for an output voltage the same as the selector switch settings to within 0.25% as measured on the external meter.

The same measuring setup may be used to check the calibration of the unit at other output voltages and the tracking of the vernier control.

4-3. LOAD REGULATION

To adjust load regulation, set the power supply for negative polarity and 500 volts output. Monitor the output voltage by means of a differential voltmeter. Adjust trimmer potentiometer R20, if necessary, until the change in output voltage when a 10 milliamperere load is applied or removed is less than 0.001% or 3 millivolts (load regulation can generally be set closer than this). Load regulation should also be checked at 3 KV output, but will be well within specification at this voltage level if it has been correctly set at 500 volts.

CAUTION: THE IV-120 BLOCK, THE TRANSISTORS ON THE HEAT SINK, THE PRIMARY OF T2 AND THE SECONDARY OF T1 ARE OPERATED DIRECTLY FROM THE LINE WITHOUT AN ISOLATION TRANSFORMER. FOR SAFETY AND TO PREVENT DAMAGE TO THE POWER SUPPLY, OPERATE THE SUPPLY FROM A 1:1 ISOLATION TRANSFORMER WHEN SERVICING OR TROUBLESHOOTING THIS SECTION OF THE CIRCUIT.

DANGEROUS POTENTIALS MAY EXIST INSIDE THIS POWER SUPPLY. CAPACITORS MAY HOLD THEIR CHARGE FOR SOME TIME AFTER THE UNIT HAS BEEN TURNED OFF. TAKE ALL PRECAUTIONS NORMALLY OBSERVED IN WORKING ON HIGH VOLTAGE EQUIPMENT. CONTROL CIRCUITS AND SEMICONDUCTORS ARE OPERATING AT HIGH VOLTAGE IN THE POSITIVE OUTPUT POLARITY POSITION AND DANGEROUS POTENTIALS MAY EXIST ON THE SEMICONDUCTOR CIRCUITRY.

A D D E N D A

POWER SUPPLY

MODELS AEC-315B and 3K10B

The Electrical Parts List and/or Schematic Diagram have been modified as follows:

<u>Circuit Number</u>	<u>Description</u>	<u>Mfr Code Number</u>	<u>Part Number</u>
C9	Capacitor, Assembly Dual 0.5 MF, 2KVDC	98095	B77073
R39	Resistor, Precision, Metal Film, 499Ω, ±1%, 1/4W	98095	RD-4990-1QA
3021-C-220	Line Filter	98095	3021-C-220

ADD:

CR35, CR36	Diode, Silicon	98095	GI44
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A P P E N D I X

1. INTRODUCTION

This Appendix contains an Electrical Parts List, Schematic Diagram, Parts Location Diagram and equipment Warranty.

2. ELECTRICAL PARTS LIST

All electrical and electronic parts are listed in the sequence of their circuit numbers as shown on the Schematic Diagram. A brief description of each part is given, followed by the code number of the manufacturer and his part number. All manufacturers' code numbers are taken from Cataloging Handbooks H4-1 and H4-2, Federal Supply Code for Manufacturers. These handbooks can be obtained from Federal Agencies or ordered directly from the Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402.

We recommend that all parts with the code number 98095 be ordered directly from Power Designs, Inc. The commercial equivalents of these parts may have wide parameter tolerances or require special factory inspection or modification before they can be used in the power supply.

All components used in the power supply or supplied as replacements are carefully inspected at the factory. Inspections are performed on a 100% basis or at AQL levels to Military Specification MIL-Q-9858 under which Power Designs, Inc. has been qualified.

All semiconductors are inspected on a 100% basis, not only for operating parameters, but also for critical characteristics related to reliability and predictable life expectancy. Some of these characteristics are observed when the device is taken beyond its normal operating regions. These test techniques have been developed under a "predictable reliability" program in operation at Power Designs, Inc. for the past twelve years. Under this program, quality control procedures are constantly reevaluated and updated as advances are made in solid state technology and experience is gained from field history.

Semiconductor manufacturers are continually modifying their products. Complete lines are discontinued to be replaced by devices having improved gain, operating voltage levels and frequency responses. The high gain, closed loop DC amplifiers used in regulator circuits are particularly sensitive to slight changes in these parameters. Commercial or military "equivalent" transistors may affect the performance of the power supply. We can assure compliance with the original specifications if replacement semiconductors are ordered from the Factory.

All replacement semiconductors are processed and stocked at the factory to insure complete interchangeability with the devices in the original equipment. These devices are coded with a Power Designs, Inc. part number. For example:

<u>MS</u>	<u>1028</u>	<u>A</u>
Semiconductor Manufacturer's Code	Power Designs, Inc. Type	Suffix Identifying Special Parameters

When ordering replacements, please identify the device as thoroughly as possible, giving the model and serial number if available.

The replacement part you receive may not have the same part number as that shown on the Electrical Parts List. This can be due to several factors:

- a. A different prefix indicates that Power Designs, Inc. is using another vendor source. The operating characteristics of the devices are identical.
- b. A completely different part number indicates:
 1. The original vendor has discontinued manufacture of the item or can no longer manufacture it to the original specifications.
 2. A better device for use in a particular circuit has been substituted.
 3. Tighter controls for interchangeability have provided greater assurance of reliability with the replacement.

AEC-315B/3K10B CODE LIST OF MANUFACTURERS

01121	Allen-Bradley Company	Milwaukee, Wisconsin
09408	Star-tronics, Inc.	Georgetown, Massachusetts
71400	Bussman Manufacturing Division	St. Louis, Missouri
98095	Power Designs Inc.	Westbury, New York

AEC-315B/3K10B
ELECTRICAL PARTS LIST

NOTE: Before replacing semiconductors, see paragraph 2 of this Appendix.

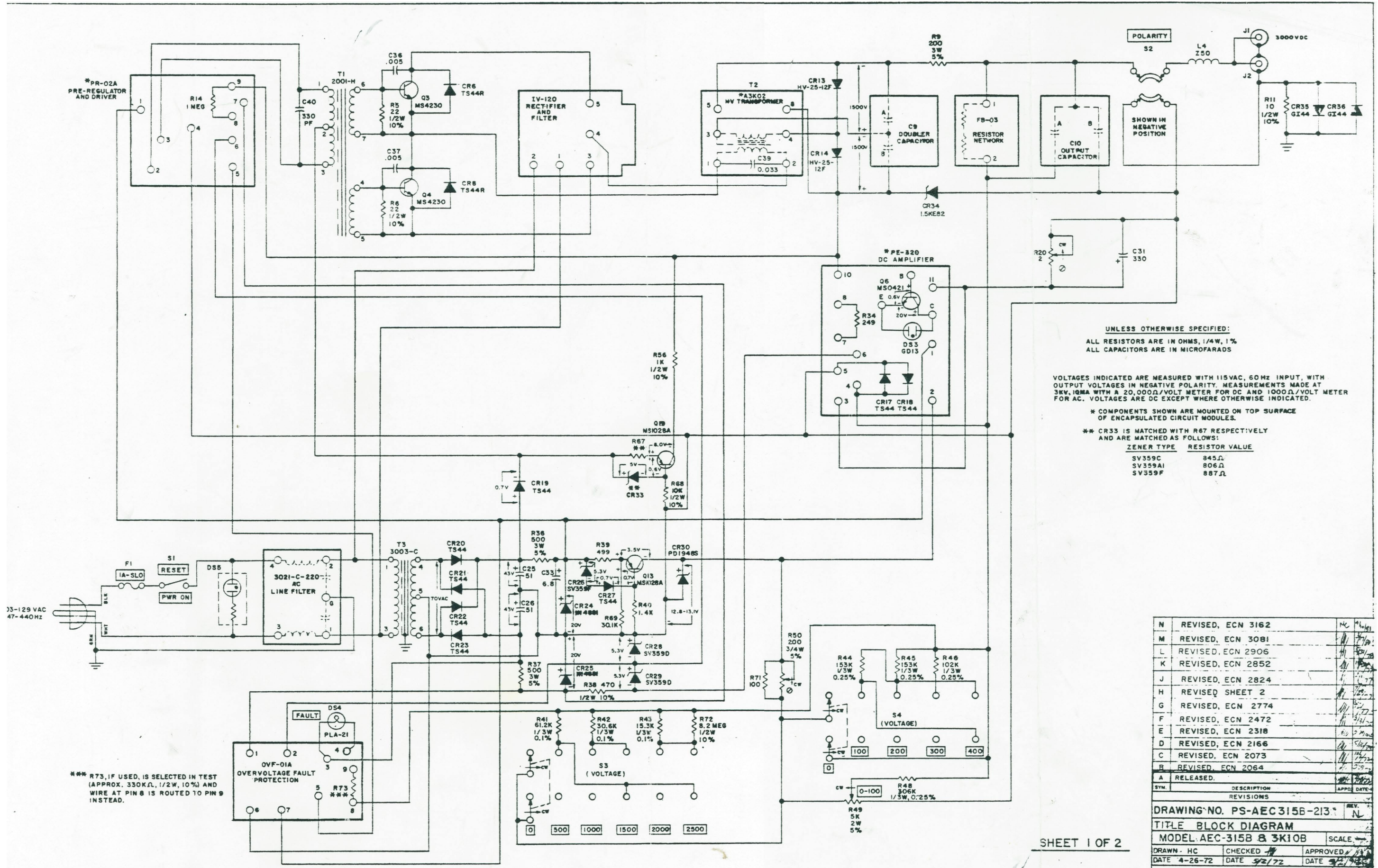
Circuit Number	Description	Mfr Code Number	Part Number
C9	Capacitor, plastic film, dual. 0.5 μ f, 2 kvdc	98095	CP-2XA.5-202
C10	Capacitor, plastic film, dual, 0.25 μ f, 3 kvdc	98095	CP-2XA.25-302
C25, C26	Capacitor, electrolytic, 51 μ f, 50 vdc	98095	CEX-51-50
C31	Capacitor, electrolytic, 330 μ f, 1.5 vdc	98095	CE-77-.015
C33	Capacitor, tantalum, 6.8 μ f, 35 vdc	98095	CE-6A8-.35
C36, C37	Capacitor, ceramic disc, .005 μ f, 1 kvdc	98095	CC-30-10
C39	Capacitor, mylar, .033 μ f, 600 vdc	98095	CP-A033-6
C40	Capacitor, ceramic tubular, 330 pf, 500 vdc	98095	CC-26-5
CR6	Diode, silicon	98095	TS44R
CR8	Diode, silicon	98095	TS44R
CR13, CR14	Diode, silicon	98095	HV-25-12F/10F
CR17 thru CR23	Diode, silicon	98095	TS44
CR24, CR25	Diode, silicon	98095	1N4881
CR26	Diode, silicon, zener	98095	SV359F, G
CR27	Diode, silicon	98095	TS44
CR28, CR29	Diode, silicon, zener	98095	SV359D, E, F
CR30	Diode, silicon, zener	98095	PD1948S
CR33	Diode, silicon, zener	98095	*SV359C/A1/F
CR34	Diode, silicon, zener	98095	1.5KE82
DS2	Pilot Lamp Assembly	98095	PLA-14
DS3	Neon Lamp	98095	GD-13
DS4	Incandescent Lamp	98095	PLA-21
DS5	Neon Lamp	98095	PLA-19
F1	Fuse, 1 A, Slo Blo	71400	MDL-1
FB-03	Feedback resistor	98095	FB-03
IV-120	Inverter	98095	IV-120
J1, J2	Receptacle	09408	7758A
L4	Choke	98095	PS-1565-49/82(A)
OVF-01A	Overvoltage protector and fault indicator	98095	OVF-01A
P1	Connector (mates with J1 and J2)	09408	5135A
PE-320	Current limit and DC amplifier	98095	PE-320
PR-02A	Pre-regulator and driver stage	98095	PR-02A

* See R67 values

AEC-315B/3K10B
ELECTRICAL PARTS LIST

Circuit Number	Description	Mfr Code Number	Part Number
Q3, Q4	Transistor, silicon, NPN	98095	MS4230
Q6	Transistor, silicon, NPN	98095	MS0421 (red dot)
Q13	Transistor, silicon, PNP	98095	MS1028A
Q19	Transistor, silicon, PNP	98095	MS1028A
R5, R6	Resistor, composition, 22 Ω , $\pm 10\%$, 1/2 w	01121	EB2201
R9	Resistor, wirewound, 200 Ω , $\pm 5\%$, 3 w	98095	RW-201-3KA
R11	Resistor, composition, 10 Ω , $\pm 10\%$, 1/2 w	01121	EB1001
R14	Resistor, precision, metal film, 1 meg Ω , $\pm 1\%$, 1/4 w	98095	RD-105-1QA
R20	Resistor, wirewound, trimmer, 2 Ω , $\pm 10\%$, 1-1/4 w	98095	RWT-020-C4
R34	Resistor, precision, metal film, 249 Ω , $\pm 1\%$, 1/4 w	98095	RD-2490-1QA
R36, R37	Resistor, wirewound, 500 Ω , $\pm 5\%$, 3 w	98095	RW-501-3KA
R38	Resistor, composition, 470 Ω , $\pm 10\%$, 1/2 w	01121	EB4711
R39	Resistor, precision, metal film, 649 Ω , $\pm 1\%$, 1/4 w	98095	RD-6490-1QA
R40	Resistor, precision, metal film, 1.4 k Ω , $\pm 1\%$, 1/4 w	98095	RD-142-1QA
R41	Resistor, wirewound, 61.2 k Ω , $\pm 0.1\%$, 1/3 w	98095	RW-6122-8SA
R42	Resistor, wirewound, 30.6 k Ω , $\pm 0.1\%$, 1/3 w	98095	RW-3062-8SA
R43	Resistor, wirewound, 15.3 k Ω , $\pm 0.1\%$, 1/3 w	98095	RW-1532-8SA
R44, R45	Resistor, wirewound, 153 k Ω , $\pm 0.25\%$, 1/3 w	98095	RW-1533-11SA
R46	Resistor, wirewound, 102 k Ω , $\pm 0.1\%$, 1/3 w	98095	RW-1023-8SA
R48	Resistor, wirewound, 306 k Ω , $\pm 0.25\%$, 1/3 w	98095	RW-3063-11SA
R49	Resistor, wirewound, variable, 5 k Ω , $\pm 5\%$, 2 w	98095	RWV-502-3C
R50	Resistor, wirewound, trimmer, 200 Ω , $\pm 5\%$, 3/4 w	98095	RWT-201-3X
R56	Resistor, composition, 1 k Ω , $\pm 10\%$, 1/2 w	01121	EB1021
R67	Resistor, precision, metal film	98095	**
R68	Resistor, composition, 10 k Ω , $\pm 10\%$, 1/2 w	01121	EB1031
R69	Resistor, precision, metal film, 30.1 k Ω , $\pm 1\%$, 1/4 w	98095	RD-3012-1QA
R71	Resistor, precision, metal film, 100 Ω , $\pm 1\%$, 1/4 w	98095	RD-101-1QA
R72	Resistor, composition, 8.2 meg Ω , $\pm 10\%$, 1/2 w	01121	EB8251
R73	Resistor, composition, selected at test		
S1	Switch, toggle, SPST	98095	ST-31
S2	Switch, rotary	98095	PS-3K10-1(A)
S3	Switch, rotary, 6-position	98095	PS-3K10-10(B)
S4	Switch, rotary, 5-position	98095	PS-3K10-2(B)
T1	Transformer, base drive	98095	2001-H
T2	Transformer, HV	98095	A3K02
T3	Transformer, main	98095	3003-B
3021-C	Line Filter	98095	3021-C

** If CR33 is SV359C, R67 is 845 Ω , $\pm 1\%$, 1/4 w, part #RD-8450-1QA.
 SV359A1, R67 is 806 Ω , $\pm 1\%$, 1/4 w, part #RD-8060-1QA.
 SV359F, R67 is 887 Ω , $\pm 1\%$, 1/4 w, part #RD-8870-1QA.



UNLESS OTHERWISE SPECIFIED:
 ALL RESISTORS ARE IN OHMS, 1/4W, 1%
 ALL CAPACITORS ARE IN MICROFARADS

VOLTAGES INDICATED ARE MEASURED WITH 115VAC, 60Hz INPUT, WITH
 OUTPUT VOLTAGES IN NEGATIVE POLARITY. MEASUREMENTS MADE AT
 3KV, 10MA WITH A 20,000Ω/VOLT METER FOR DC AND 1000Ω/VOLT METER
 FOR AC. VOLTAGES ARE DC EXCEPT WHERE OTHERWISE INDICATED.

* COMPONENTS SHOWN ARE MOUNTED ON TOP SURFACE
 OF ENCAPSULATED CIRCUIT MODULES.

** CR33 IS MATCHED WITH R67 RESPECTIVELY
 AND ARE MATCHED AS FOLLOWS:

ZENER TYPE	RESISTOR VALUE
SV359C	845Ω
SV359AI	806Ω
SV359F	887Ω

*** R73, IF USED, IS SELECTED IN TEST
 (APPROX. 330KΩ, 1/2W, 10%) AND
 WIRE AT PIN 8 IS ROUTED TO PIN 9
 INSTEAD.

N	REVISED, ECN 3162	MC	4/1/72
M	REVISED, ECN 3081	MC	7/1/72
L	REVISED, ECN 2906	MC	8/2/72
K	REVISED, ECN 2852	MC	11/1/72
J	REVISED, ECN 2824	MC	11/1/72
H	REVISED SHEET 2	MC	11/1/72
G	REVISED, ECN 2774	MC	11/1/72
F	REVISED, ECN 2472	MC	11/1/72
E	REVISED, ECN 2318	MC	11/1/72
D	REVISED, ECN 2166	MC	11/1/72
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B	REVISED, ECN 2064	MC	11/1/72
A	RELEASED	MC	11/1/72

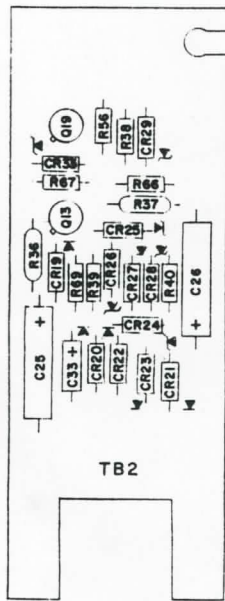
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MODEL AEC-315B & 3K10B		
SCALE		
DRAWN - HC	CHECKED -	APPROVED -
DATE 4-26-72	DATE 5/2/72	DATE 5/2/72

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 NEW YORK

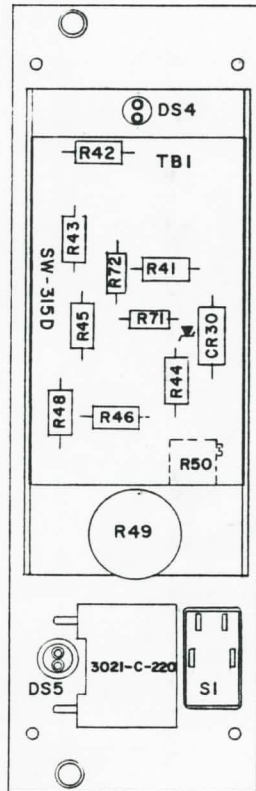
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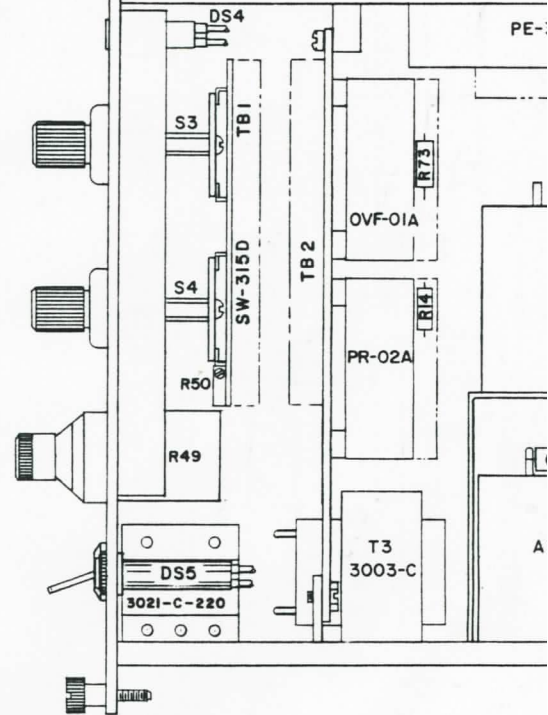
ON MODEL
AEC-315B ONLY



POWER AMPLIFIER BOARD

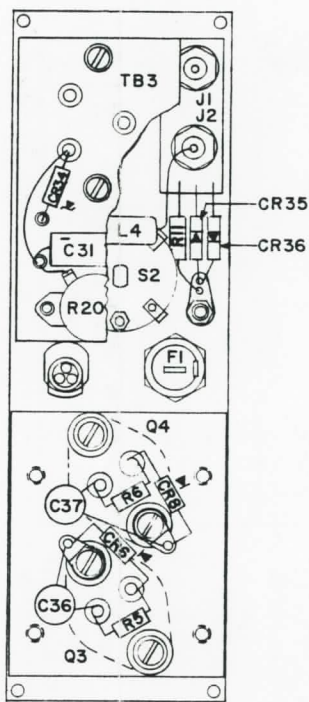
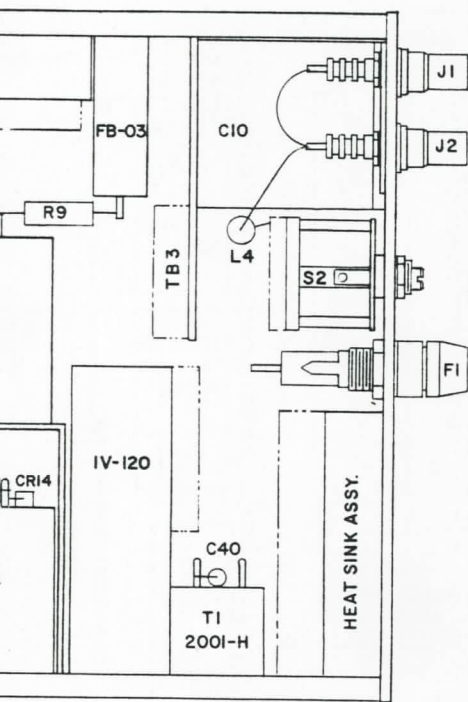


REAR VIEW - FRONT PANEL ASSEMBLY

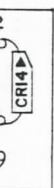


T2 A





REAR VIEW - REAR PANEL ASSEMBLY



N	REVISED, ECN 3162	MC	4/10/81
M	REVISED, ECN 3081	MC	3/1/80
L	REVISED, ECN 2906	MC	5/31/78
K	REVISED, ECN 2852	MC	10/28/77
J	REVISED, ECN 2824	MC	5/1/77
H	REVISED-TBI PICTORIALY	MC	3/20/77
G	REVISED, ECN 2774	MC	1/12/77
F	REVISED, ECN 2472	MC	8/27/76
E	REVISED, ECN 2318	MC	1/22/76
D	REVISED, ECN 2166	MC	1/22/75
C	REVISED, ECN 2073	MC	1/22/75
B	REVISED, ECN 2064	MC	1/22/75
A	RELEASED	MC	1/22/75

SHEET 2 OF 2

DO NOT SCALE THIS DRAWING

UNLESS OTHERWISE SPECIFIED

TOLERANCES	FRACTIONAL ± 1/64	DECIMAL ± .005	ANGLES ± 0° 30'
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DIMENSIONS AND TOLERANCES TO BE HELD

REMOVE ALL BURRS AND SHARP EDGES

SYMBOL	DESCRIPTION	APPROVED	DATE
REVISIONS			
DRAWING NO. PS-AEC315B-213			REV. N
TITLE LOCATION OF COMPONENTS			SCALE
MODEL AEC-315B & 3K10B			
DRAWN	HC	CHECKED	APPROVED
DATE	4-26-72	DATE	5/2/72
		DATE	5/2/72

Power Designs inc.
NEW YORK

CABLE ASSEMBLY INSTRUCTIONS FOR *SHV CONNECTOR

PROCEDURE:

(IMPORTANT: READ CABLE TRIM RECOMMENDATIONS BEFORE BEGINNING ASSEMBLY.)

1. Slide clamp nut, washer and V-groove gasket over cable as shown in Fig. 1.
2. Remove cable jacket to dimension shown; do not damage braid. Comb out braid wires, then fold back and make dielectric cut. Do not nick center conductor (Fig. 1).
3. Fold braid wires forward and taper toward center conductor. Place braid clamp over braid and set firmly against cable jacket. Fold braid wires back in even distribution and trim excess braid where indicated. Check for exposed dielectric dimension shown and retrim if necessary (Fig. 2).
4. For applications requiring use of RG-62 and 71/U cables, add the insulator bushing as shown in Fig. 3.
5. Place contact onto center conductor and bottom on insulator bushing. Soft solder as shown using 60/40 alloy multicore solder with rosin or ersin flux. Remove any surplus solder from outside of contact and thoroughly clean insulator bushing of chips, flux, etc. (Fig. 4).
6. Insert prepared cable into connector shell and tighten clamp nut securely using 20-40 inch-lbs. torque.

*Per National Bureau of Standards Dwg. ND-545A.


DO NOT SCALE THIS DRAWING

UNLESS OTHERWISE SPECIFIED

TOLERANCES	FRACTIONAL ± 1/64	DECIMAL ANGLES ± .005 ± 0°30'
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DIMENSIONS AND TOLERANCES TO BE HELD

REMOVE ALL BURRS AND SHARP EDGES

A RELEASED		AW	2/4/79
SYM.	DESCRIPTION	APPD	DATE
REVISIONS			
DRAWING NO. B76006			REV. A
TITLE CABLE ASS'Y. INSTRUCTIONS			
FOR SHV MATING CONNECTOR			
DRAWN M	CHECKED	APPROVED	
DATE 8/16/79	DATE	DATE	
 Power Designs inc. NEW YORK			

CABLE ASSEMBLY INSTRUCTIONS FOR *SHV CONNECTOR

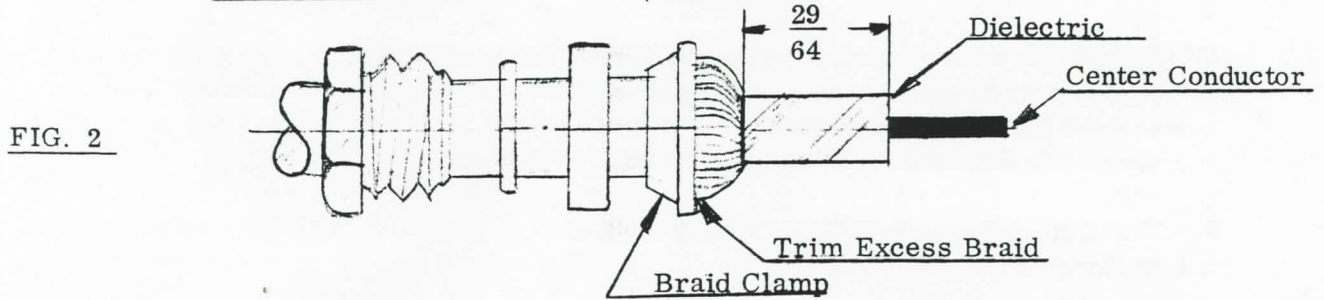
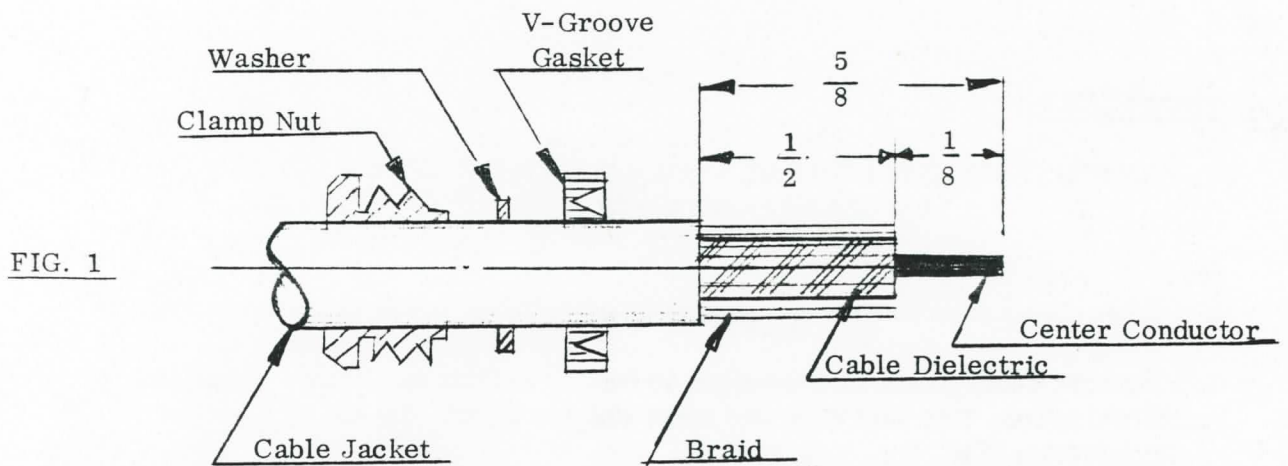


FIG. 3
Assembly for
RG-62/U and
RG-71B/U
Cables

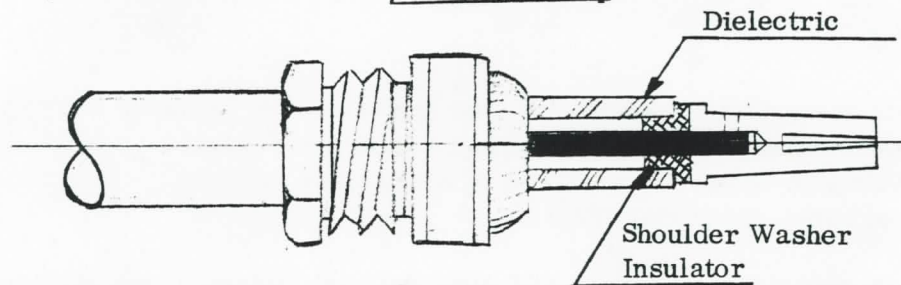
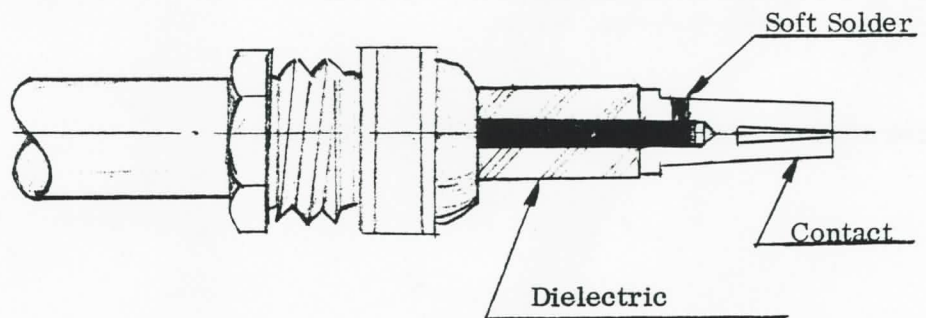


FIG. 4
Assembly for
RG-59/U Cable



*Per National Bureau of Standards Dwg. ND-545A "Safety High Voltage Connector"

CABLE TRIM RECOMMENDATIONS

1. Use only proper razor-edged tools or special automatic trimming tools.
2. Keep all trims square, maintain 90° relationship between cable jacket O. D. on all cuts.