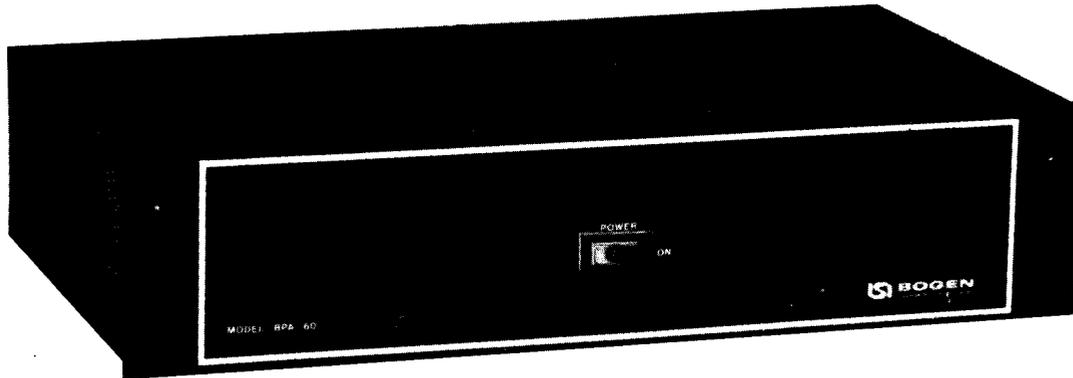




BASIC POWER AMPLIFIER

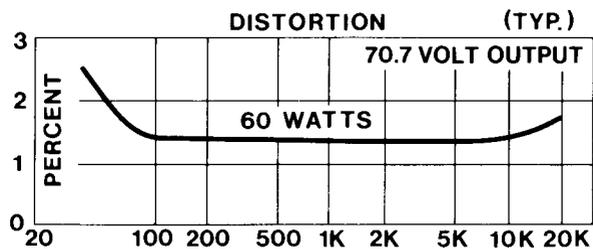
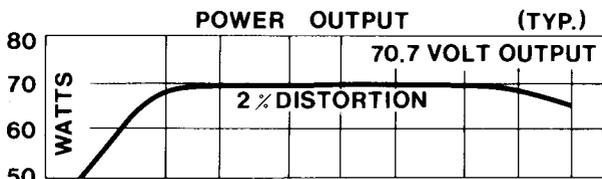
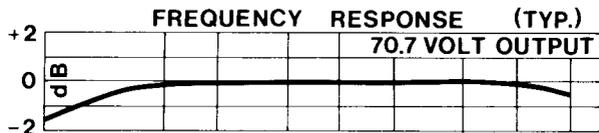
**MODELS
BPA-60 & BPA-125**



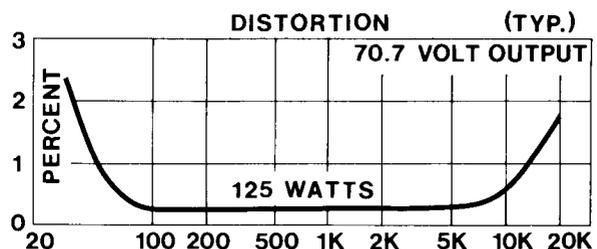
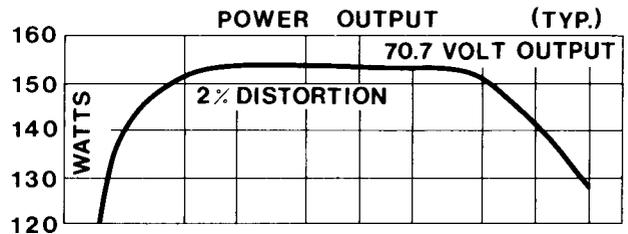
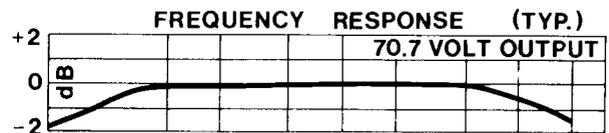
Before Operating This Unit, Please Read These Instructions Carefully

PERFORMANCE CHARACTERISTICS

BPA-60



BPA-125



TECHNICAL SPECIFICATIONS

	Model BPA-60	Model BPA-125
Rated Output Power:	60 watts (rms) from 50Hz to 15kHz at less than 2% THD into rated load impedances	125 watts (rms) from 50Hz to 15kHz at less than 2% THD into rated load impedances
Frequency Response:	-2dB from 20Hz to 20kHz	
Input Sensitivity:	High-impedance: 300mV; Low-impedance, balanced: 75mV with accessory transformer Model TL600	
Output Regulation:	Better than 2dB from no load to full load	
Hum and Noise:	85dB below rated output	
Inputs (Impedance):	High-impedance: 50k-ohms unbalanced; Low-impedance: 600-ohms balanced, with accessory transformer TL600; Line-bridging with accessory transformers TL100 or TL10K	
Output Loads:	8-ohm/25V, 16-ohms, 25VCT and 70V	4-ohm/25V, 16-ohms, 25VCT and 70V
Lo-Cut Filter:	-10dB @ 100Hz (Switch-Selectable)	
Controls, Indicators; Front Panel: Rear Panel:	Illuminated Power Switch Input Level Control; Circuit Breaker Reset Switch; Lo-Cut Filter Switch	
Power Consumption; 120VAC, 60Hz @ Full Rated Output:	180W	360w
Overload Protection:	AC Circuit Breaker, Thermal Circuit Breaker, Transient Protection Diodes	
Auxiliary Receptacle: (not switched)	Three-wire grounded* 300 watts maximum	
Dimensions:	15.25"Wx8"Dx3.5"H (38.7 x 20.3 x 8.9 cm)	15.25"Wx8"Dx5.25"H (38.7 x 20.3 x 13.3 cm)
Finish:	Black	
Weight:	19 lbs. (8.6 kg)	27 lbs. (12.3 kg)
Rack Panel Brackets:	RPK-53	RPK-54
Accessories:	Model TL600, 600-ohm line-matching transformer Model TL100, 1:1 ratio transformer Model TL10K, 10,000-ohm line-matching transformer	

*This receptacle will be grounded only if the power amplifier has been grounded properly

All specifications subject to change without notice

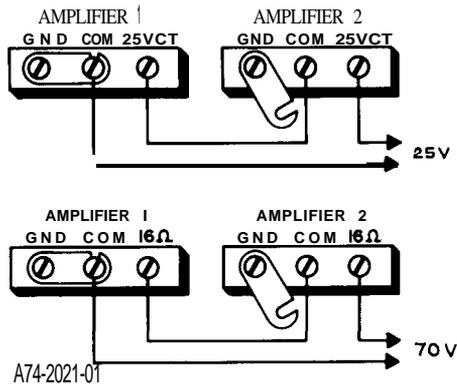


Figure 1 - Connecting Amplifiers in Series

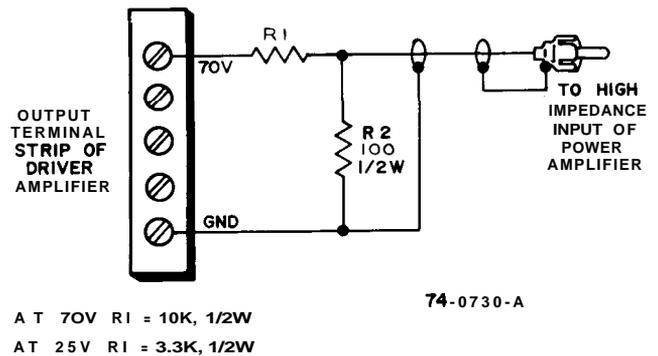


Figure 2 - Input From Another Amplifier

DESCRIPTION

The Bogen Models BPA-60 and BPA-125 amplifiers have been designed to fulfill the basic power amplification requirements of professional and commercial sound systems. The BPA-60 and BPA-125 supply 60 watts and 125 watts rms output, respectively. Total harmonic distortion is less than 2% at rated output from 50 to 15,000Hz with a frequency response of -2dB from 20 to 20,000Hz, as illustrated in the performance characteristics graphs.

An input signal of only 300mV is required for full rated output (75mV for low-impedance balanced input with accessory transformer TL600). Input impedances are: high-impedance (50k-ohms) unbalanced; low-impedance (600-ohms) balanced, with accessory transformer TL600. Output impedance for the BPA-60 amplifier includes 8-ohm/25V, 16-ohm, 25VCT and 70V. The BPA-125 output impedances are 4-ohm/25V, 16-ohm, 25VCT and 70V.

An amplifier that provides a 25-volt or 70-volt constant voltage output may be used to drive the BPA-series amplifiers. Amplifiers of the same type may also be connected in series to effectively double the power output into the load line. Line-bridging may be achieved using accessory transformers TL100 or TL10K.

A lo-cut filter provides -10dB attenuation at 100Hz. An input level control (screwdriver-adjustable) allows higher inputs without overdrive.

An AC circuit breaker and transient protection diodes prevent damage due to overloads. The amplifiers are also thermally protected from excessive temperatures; however, they will deliver the full rated power output continuously, even at +55°C (130°F).

An illuminated power switch is located on the front panel. Input and output connectors, input level control, lo-cut filter switch, AC circuit breaker, and auxiliary power receptacle are located on the rear panel. The thermal breaker and accessory transformer socket are located internally.

The amplifiers operate from a 120 volt, 60Hz source. The three-wire line cord provides automatic grounding of the amplifier and auxiliary receptacle when connected to a properly grounded three-wire power outlet.

INSTALLATION

UNPACKING

The amplifier was carefully checked before leaving the factory. Inspect the shipping container carefully for indications of damage. If the amplifier has been damaged, place an immediate claim with the distributor from whom the unit was purchased. If the amplifier was shipped to you, notify the carrier without delay and place a claim.

RACK MOUNTED INSTALLATION

The amplifiers may be mounted in a standard 19-inch equipment rack, using Bogen Rack Panel Kit Model RPK-53 for BPA-60, or a Bogen Rack Panel Kit Model RPK-54 for BPA-125. Two brackets and the necessary hardware are provided with each kit.

NOTE

Before installing the amplifier in a rack, install any accessory transformers required. See INPUT CONNECTIONS.

RPK-53. Attach a bracket to each side of the unit and secure (with screws provided) through the predrilled holes on the side

panel. Each bracket measures 3-1/2 "H x 1-15/16 "W x 1 "D (8.9 x 4.9 x 2.5 cm).

RPK-54. On each side panel of the amplifier, remove the screw closest to the front panel. Attach a bracket to each side of the unit and secure (with screws provided) through the predrilled holes on the side panel. Each bracket measures 5-1/4 "H x 1-15/16 "W x 1 "D (13.3 x 4.9 x 2.5 cm).

VENTILATION

The amplifier generates heat during operation. Although the amount of heat is relatively low, the amplifier must be ventilated to prevent excessive rise in temperature. If other heat-producing equipment, or several amplifiers have been installed in an enclosed rack or cabinet, ensure that the ambient air temperature does not exceed 55°C (130°F). To determine this, operate the system until the temperature stabilizes, then measure the air temperature near the amplifier, using a bulb-type thermometer. If the temperature exceeds 55°C, space the equipment farther apart or install a fan.

POWER AND GROUNDING

The three-wire AC line cord has a three-prong plug which should be plugged into a properly grounded, three-wire, 120V, 60Hz outlet. IT IS IMPORTANT TO GROUND THE AMPLIFIER. If the outlet is not properly grounded, connect a wire from the GND terminal of the amplifier to a suitable earth ground.

AUXILIARY POWER

CAUTION

The front panel POWER switch does not control the auxiliary receptacle.

The AUX POWER receptacle on the rear panel is a three-wire grounded outlet and may be used to supply power to accessory equipment in the sound system. Ensure that the accessory equipment does not require more than 300 watts. Equipment connected to the auxiliary receptacle will be grounded, providing the amplifier line cord has been properly grounded.

INPUT CONNECTIONS

WARNING

Installation of the accessory transformer requires removal of the top cover. Use standard precautions to prevent electric shock or accidental short circuits within the unit.

LOW-IMPEDANCE BALANCED INPUT. A balanced input, provided at the BAL LO-Z terminal strip (Figures 3,4), requires the installation of a Bogen Model TL600 line-matching transformer. Remove the top cover of the unit and install the transformer in the socket designated XT-1 (see Figure 5) on the printed circuit board. If an unbalanced input is required, connect a jumper from the GND terminal to an adjacent input terminal.

HIGH-IMPEDANCE INPUT. A high-impedance input is provided by standard phono jacks (see Figures 3,4). An input signal of 300mV is required for full rated output.

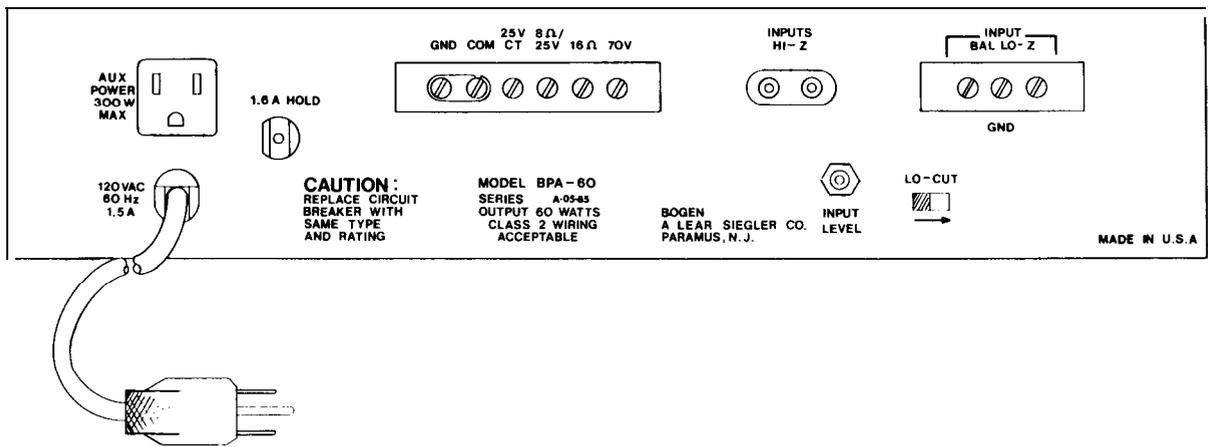


Figure 3 - BPA-60 Rear Panel Connection Diagram

CONNECTING AMPLIFIERS IN SERIES. Pairs of the same amplifier model may be connected in series to effectively double the power output into the same load line (see Figure 1). Be certain to remove the link between COM and GND terminals on amplifier No. 2.

BRIDGING INPUT. The inputs of two or more amplifiers may be paralleled by installing accessory transformer TL100 (for up to 6 amplifiers) or TL10K (for more than 6 amplifiers) in the transformer socket designated XT-1 (see Figure 5) on the printed circuit board. Connect the signal source to the BAL LO-Z terminal strip and connect the cable shield to the GND terminal. For an unbalanced input, connect a jumper wire from the GND terminal to an adjacent input terminal.

INPUT FROM ANOTHER AMPLIFIER. The BPA-60 and BPA-125 amplifiers may be driven from an amplifier that provides a 25-volt or 70-volt constant voltage output. Connect the output of the driver amplifier to one of the HI-Z input jacks via a resistor network (see Figure 2). These resistors are in addition to the normal loudspeaker load impedance on the output of the driver amplifier.

OUTPUT CONNECTIONS

CAUTION

Follow local electrical codes when connecting amplifier output.

Fires 3 and 4 show the location and impedance values for the output terminal strip. Class 2 wiring is acceptable for output loads.

SPEAKERS. The amplifier may be used with most conventional speaker systems. For detailed information on the installation of multiple speaker systems, refer to the Speaker Installation Bulletin (No. 54-5001) included with this unit.

Connect speaker systems directly to the output terminal strip on the rear panel. Connect one speaker lead to the COM terminal and the other to the terminal corresponding to the impedance of the speaker system. If the load impedance falls between two output terminal values, use the terminal of lower impedance. Total power distribution to the speakers should not be greater than the power rating of the amplifier. For balanced output lines, remove the link between the COM and GND terminals. If the line is shielded, connect the shield to the GND terminal. For unbalanced speaker lines, close the link between the COM and GND terminals.

HUM. If the connections between the signal sources and amplifier are incorrect or defective, hum-type interference may occur. Check for proper grounding, broken wires, shields, poor connector contacts, etc. Keep input cables away from speaker cables and speaker cables away from AC power lines. Where a turntable or other auxiliary equipment is used, it may be necessary to connect a separate ground wire from the chassis of such equipment to a suitable earth ground.

OPERATION

POWER. The POWER switch applies power to the amplifier; it does not control any associated equipment which may be connected to the auxiliary power receptacle on the rear panel. The switch lamp will illuminate when power has been applied to the unit.

LO-CUT FILTER SWITCH. The LO-CUT filter switch, located on the rear panel, provides -10dB attenuation at 100Hz.

INPUT LEVEL CONTROL. The INPUT LEVEL control, located on the rear panel, adjusts the input signal applied to the amplifier. Turn the adjustable screw clockwise to increase the level.

CAUTION

Many loudspeakers may be damaged if overdriven. Therefore, always begin system setup with the input level control fully counterclockwise and gradually increase the setting to obtain the desired output level.

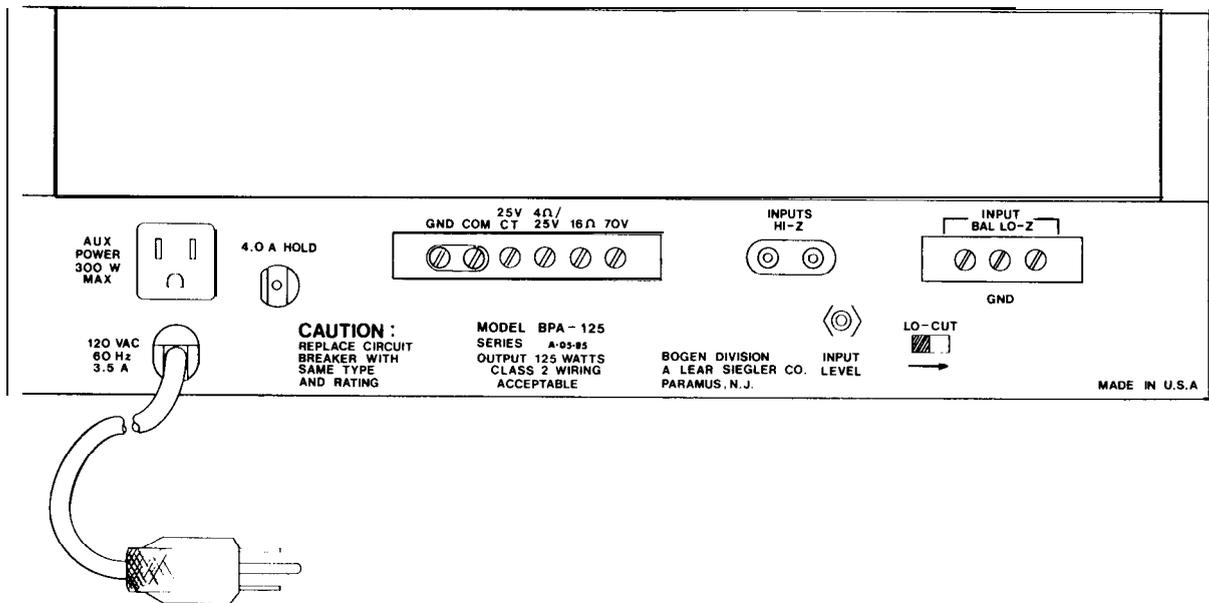


Figure 4 - BPA-125 Rear Panel Connection Diagram

THERMAL BREAKER. If the thermal breaker opens, there will be no audio output; however, the power switch lamp will remain illuminated. Wait approximately two minutes for the breaker to reset. If it resets and then opens again, investigate the cause of the temperature overload. This may be due to improper connections at the output terminals or to excessive environmental heat with inadequate ventilation. The thermal breaker will open when the temperature at the output transistor heat sink reaches 105 °C.

CIRCUIT BREAKER. If the AC circuit breaker opens, the power switch lamp will go out and the amplifier will have no output; however, there will be power at the AUX POWER receptacle on the rear panel. Set the POWER switch to OFF and momentarily depress the red button on the circuit breaker to reset it. Return the POWER switch to ON. If the circuit breaker trips again, do not attempt to reset it; have the trouble investigated by a qualified technician.

MAINTENANCE

CAUTION

There are no user-serviceable parts within the amplifier. Have all internal servicing performed by a qualified technician. The warranty will become void if repairs are made by other than the Bogen Service Department or authorized service agency.

BOGEN SERVICE

Our Service Department is interested in the maintenance of your Bogen equipment. If trouble ever develops, do not hesitate to ask our advice or assistance. Information may be obtained by writing to: Service Department, Bogen Division, P.O. Box 500, Paramus, N.J. 07653.

When communicating with us, give the model and series designation of your unit. Describe the difficulty and include details on the electrical connections to associated equipment, such as preamplifiers, speakers, etc. We will send you service information if the trouble appears simple. If the amplifier requires servicing, we will send you the name and address of the nearest authorized Bogen service agency.

When shipping the amplifier, pack it well, using the original shipping carton or similar container and filler material to prevent damage in transit. *Remove any plug-in transformer from the printed circuit board before shipping.* Send the unit, fully insured and freight prepaid via UPS or other responsible carrier. The repaired unit may be picked up by you personally or will be returned to you freight prepaid while in warranty.

REPLACING COMPONENTS

All semiconductor components on the printed circuit board are soldered in place to ensure maximum reliability. When soldering or unsoldering transistors and diodes, use a heat sink (such as a small alligator clip) between the source of heat and the component. When replacing driver and output transistors, be certain to install the case/heat sink insulator, after lightly coating both sides with a thermal conducting compound (such as Dow Corning No. 340, or equivalent).

REPLACEMENT PARTS

Most components used in the amplifier are standard parts available through reputable parts suppliers. The parts listed here may be obtained through Bogen distributors, service agencies or directly from the factory. When ordering a part, specify the part number and the description, as listed. Specify the model of the unit and give the series designation, which is a letter followed by numbers, located on the rear panel. For parts on the circuit board, also give the component board assembly number, which begins with "45".

TRANS. SKT. XT1

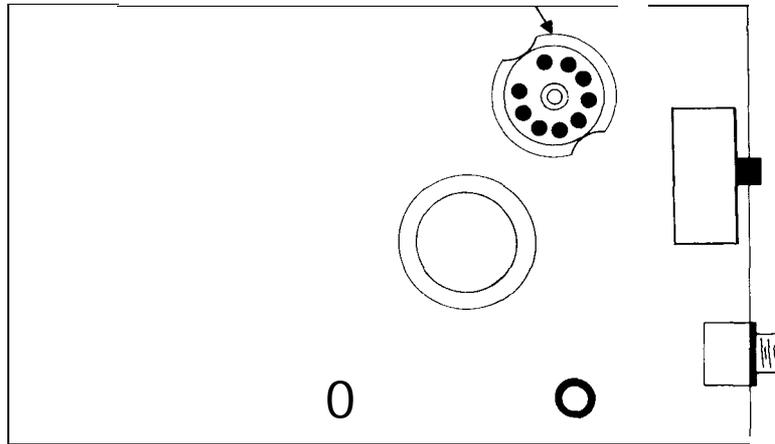


Figure 5 - BPA-60/BPA-125 Printed Circuit Board

PARTS LIST

Schematic Designation	Part Number	Description	Schematic Designation	Part Number	Description
<i>PC Board</i>					
—	45-7241-05	Ptd. Cir. Bd. Assy.	CB101	94-0023-10	Breaker, Circuit, 4.OA (BPA-125)
c 2	79-1 19-001	Cap., Elect., 470 μF, 63V	CB102	94-0014-07	Thermostat
C3,4	79-008-065	Cap., Elect., 10 μF, 63V	CB201	94-0023-05	Breaker, Circuit, 1.6A (BPA-60)
C6	79-008-062	Cap., Elect., 100 μF, 50V	CR101	96-5373-01	Rectifier, Bridge (BPA-125)
CR1-4	96-5333-01	Diode, 400prv @ 1A	CR201 -204	96-5241-01	Diode, 300prv @ 3A (BPA-60)
Q1	96-5643-01	Transistor, KTC2240	Q101	96-5213-01	Transistor, 2N5089
Q2	96-5365-01	Transistor, MPSA56	4102,103	96-5385-01	Transistor, 2N3055H, RCA
Q3	96-5459-01	Transistor, 2N6292	Q104-107	96-5385-01	Transistor, 2N3055H, RCA (BPA-125)
Q4	96-5458-01	Transistor, 2N6107	R101,102	76-114-107	Resistor, 3.3 ohm, 5W (BPA-125)
R1	77-001-818	Control, Scr. Adj., 100 kilohm	R103-106	76-1 14-102	Resistor, 0.27 ohm, 5W (BPA-125)
R3	75-154-124	Resistor, 120 kilohm, ¼ W, 1%	R107	75-154-182	Resistor, 1800 ohm, 1/4W, 1% (BPA-125)
R4	75-154-154	Resistor, 150 kilohm, 1/4W, 1%	R109	75-742-101	Resistor, 100 ohm, 7W
R5	75-154-334	Resistor, 330 kilohm, 1/4W, 1%	R201,203	76-1 14-102	Resistor, 0.27 ohm, 5W (BPA-60)
R18,19	76- 107-096	Resistor, .82 ohm, 2W	R202	75-154-132	Resistor, 1300 ohm, 1/4W, 1% (BPA-60)
S1	81-003-067	Switch, Slide, Miniature	SW101	81-009-036	Switch, Power
—	70-9302-01	Clip, Heat Sink (2)	T101	83-831-000	Transformer, Power (BPA-125)
<i>Chassis</i>					
CI01	78-200-1 16	Cap., Cer. Disc, 0.01 μF, 1400V	T102	83-492-000	Transformer, Output (BPA-125)
CI03	79- 118-002	Cap., Elect., 13,000 μF, 40V (BPA-125)	T201	83-814-000	Transformer, Power (BPA-60)
CI04	79-118-004	Cap., Elect., 8800 μF, 75V (BPA-125)	T202	83-491-000	Transformer, Output (BPA-60)
C201	79-118-006	Cap., Elect., 5000 μF, 50V (BPA-60)	—	14-9088-01	Foot, Rubber
C202	79-509-056	Cap., Elect., 6000 μF, 75V (BPA-60)			

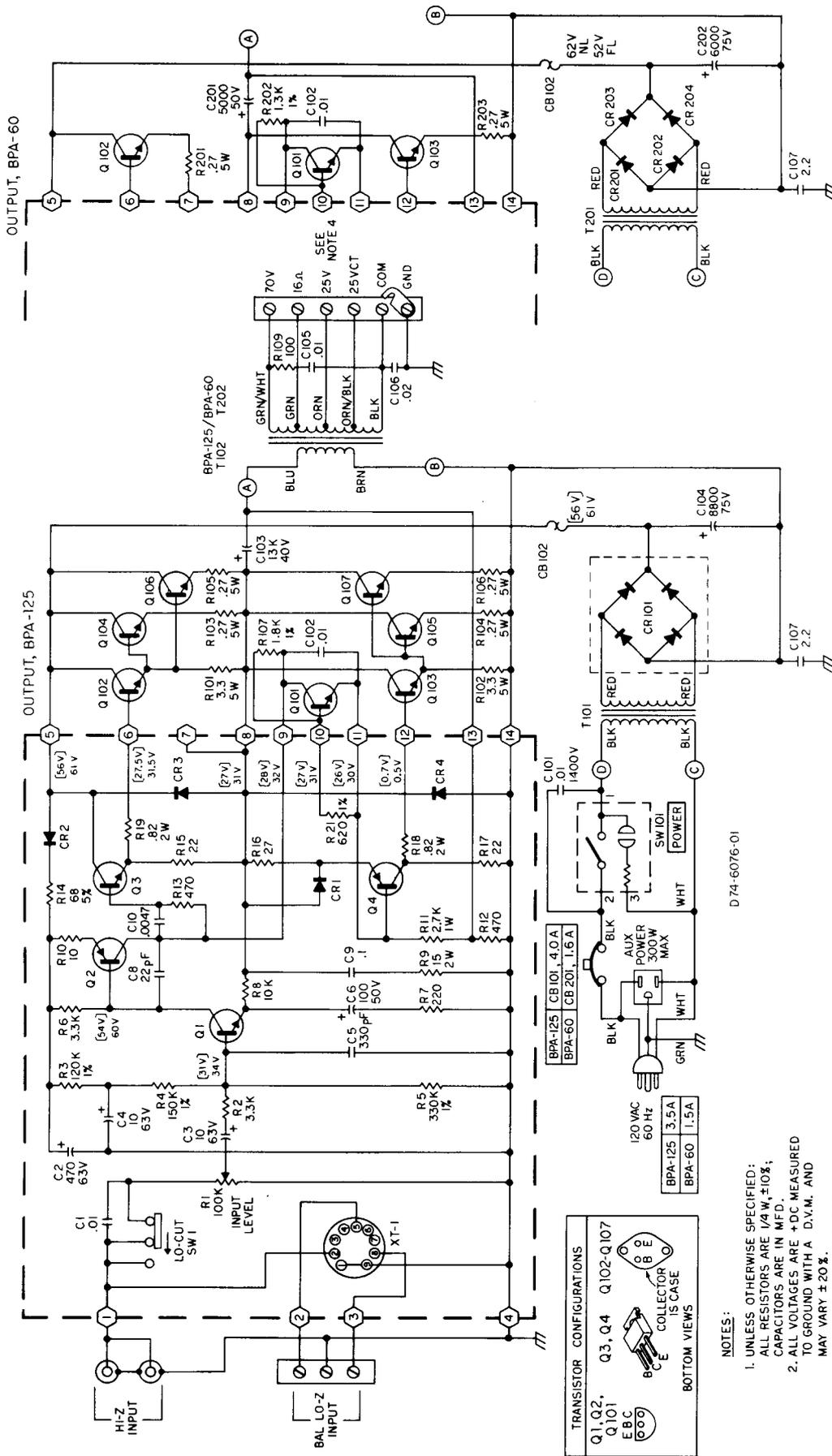


Figure 6 - BPA-60/BPA-125 Schematic Diagram