

BOGEN®

Solid-State PA Components

MODEL MT 125

125-Watt Booster Amplifier

INSTALLATION

UNPACKING

The amplifier was thoroughly checked before leaving the factory. Inspect the amplifier and shipping container carefully for evidence of improper handling during shipment. In case of damage, make an immediate claim to the dealer or distributor from whom the unit was purchased. If the amplifier was shipped to you, notify the carrier without delay and file a claim.

INPUT CONNECTIONS

Keep the input lead away from the output lead and ac power cables. Unless the driving source provides a low-impedance output, keep the input lead under ten feet in length. Refer to Table I for Bogen preamplifiers suitable for use with the amplifier.

HIGH IMPEDANCE INPUT: The amplifier can be driven to full output from any source developing 800 mV across one of the Hi-Z inputs. Wire a single-conductor, low-capacity shielded input cable to a standard phono plug (Cinch 18A, or equivalent) and connect to one of the Hi-Z jacks on the rear of the chassis.

LOW IMPEDANCE INPUT: The amplifier may be driven from a low-impedance (500/600Ω) input, if a Bogen Model TL-600 transformer is installed in socket XI on top of the chassis. Connect a twisted, shielded pair (Bogen BB-8450, or equiv.) input cable to the BAL. INPUT LOW Z terminal strip on the rear of the unit. Use the two terminals on the

TABLE I. COMPANION UNITS AND ACCESSORIES

Model	Description
CTM	Seven input solid-state preamplifier mixer.
MXM-A*	Seven input solid-state preamplifier mixer.
MX6A-T	Six input solid-state preamplifier mixer.
RPK-18	Rack mounting kit 19" x 7" (mounts 2 units).
TL600	Low-impedance (500/600Ω) plug-in transformer.
TL10K	Bridging (10kΩ) plug-in transformer.

*See "Use with MXM-A Preamplifier Mixer" in the Operation section.

SPECIFICATIONS

POWER OUTPUT (RMS): 125 Watts.

PEAK OUTPUT: 250 Watts.

GAIN: 68 dB.

***FREQUENCY RESPONSE:** ±2 dB, 38 Hz to 20K Hz.

TOTAL HARMONIC DISTORTION: Less than 5% at rated output; less than 1% at 115 Watts.

HUM & NOISE: -80 dB below rated output

REGULATIONS: Less than 2 dB variation from no load to full load.

INPUT SENSITIVITY (FOR RATED OUTPUT): Hi-Z, 0.8V; LO-Z balanced with TL600 Xfmr, 0.25V; Hi-Z with TL10K Xfmr, 0.4V.

INPUT IMPEDANCE: Hi-Z, 30KΩ; Lo-Z, 500/600Ω with TL600 Xfmr; Bridging 10KΩ with TL10K Xfmr.

OUTPUT CONNECTIONS: 8Ω, 25VCT, 25V, 16Ω, 70V terminals.

OUTPUT IMPEDANCE (BALANCED OR UNBALANCED): 1.25Ω (25V C.T.); 5Ω (25V); 8Ω (31.7V); 16Ω (44.8V); 39Ω (70V).

CONTROLS AND INDICATORS: Ac power switch, ac power indicator lamp, volume control, music-speech selector switch.

SEMICONDUCTORS: 8 silicon transistors, 5 diodes.

POWER CONSUMPTION: 325W @ 120 Vac, 60 Hz; 48-56 vdc @ 2.7A.

OVERLOAD PROTECTION: Ac Circuit Breaker, 4A; Dc fuse, 3A; Thermal Breaker, 104° C. with recovery in approx. 2 minutes.

DIMENSIONS: 8" wide x 13" deep x 6-½" high.

WEIGHT: 25 lbs.

*Variations in performance characteristics normally will not exceed 1 dB.

right of the strip and connect the cable shield to the GND terminal on the left. If an unbalanced input is required, connect a jumper from the GND terminal to the adjacent input terminal.

CAUTION

Remove all power from unit before installing transformers.

BRIDGING INPUT: The inputs for two or more amplifiers may be paralled without loss of gain. To do this, install a Bogen Model TL-10K transformer in socket XI on top of the chassis. Connect the bridged inputs to BAL LOW Z terminal strip on the rear of the unit. Use the two terminals on the right of the strip and connect the cable shields to the GND terminal on the left. If an unbalanced input is required, connect a jumper from the GND terminal to the adjacent input terminal.

CONSTANT-VOLTAGE INPUT: The amplifier can be driven from a standard public address amplifier that provides a 25-volt or 70-volt constant voltage output. To do this, connect the output of the amplifier to one of the Hi-Z INPUT jacks via a resistor network (see figure 1). The resistors shown in figure 1 are in addition to the normal loudspeaker load on the output of the public address amplifier.

OUTPUT CONNECTIONS

Speakers may be connected with standard flexible line cord (zip-cord) and up to 100 feet of cable may be used without appreciable loss. Class II wiring is acceptable unless prohibited by local codes.

70V CONSTANT-VOLTAGE OUTPUT. For 70V constant-voltage operation, connect the speaker leads to the 70V (39Ω and COM 2) terminals on the rear of unit. If grounding is required, connect a jumper from the COM 2 to GND.

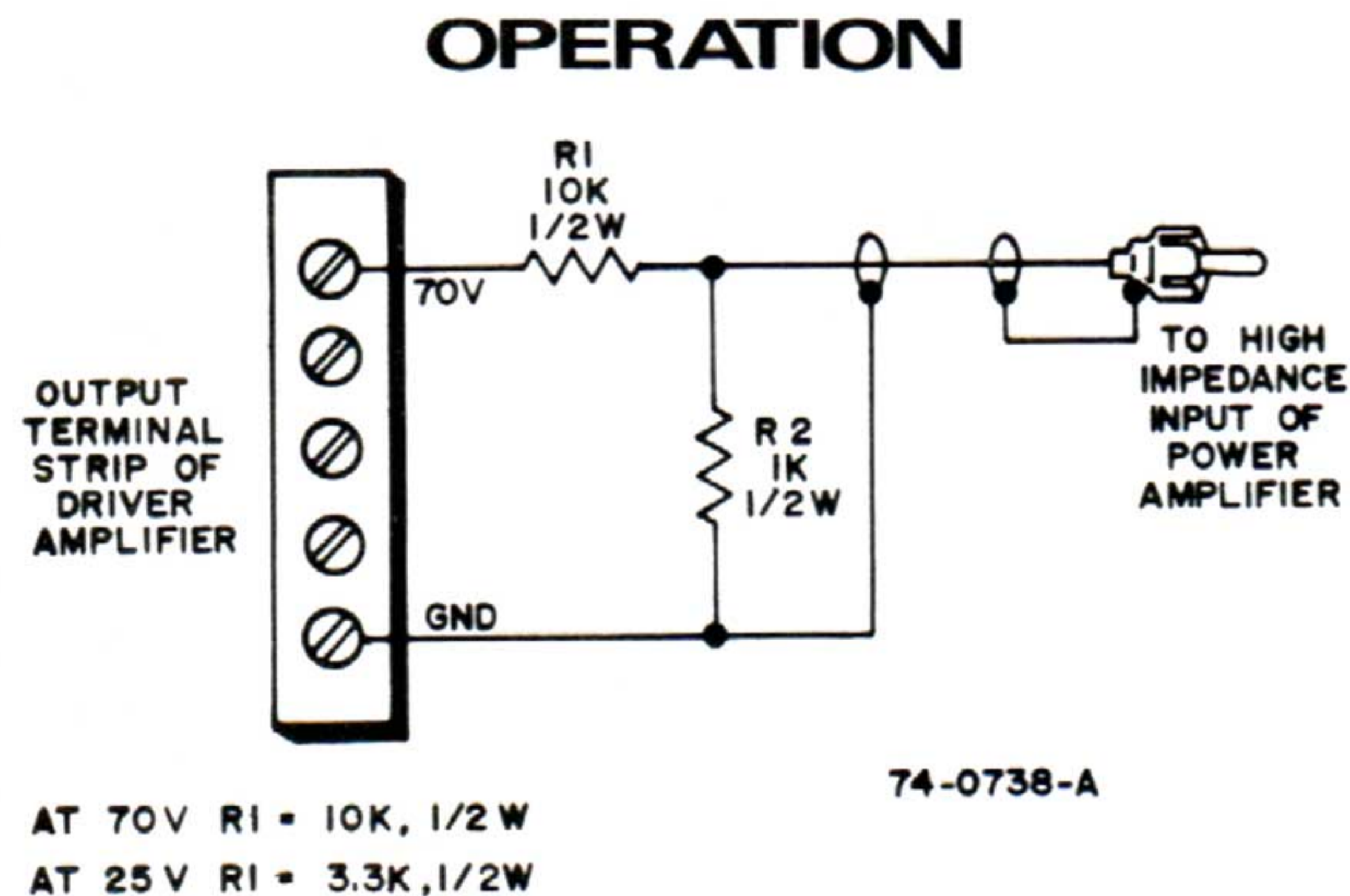


Figure 1 – Connection to Constant – Voltage P.A. Amplifier Driver.

25V CONSTANT-VOLTAGE OUTPUT. For 25V constant-voltage unbalanced operation, connect the speaker leads to 25V (5Ω) and COM 1, leaving the link connected between COM 1 and GND. For balanced operation, *open the link between COM 1 and GND*. If the output transformer center tap must be grounded, connect a jumper between 25VCT and GND.

16 OHM & 8 OHM OUTPUT. For 16Ω or 8Ω operation, connect the speaker leads between the desired output terminal and COM 1. If ungrounded operation is desired, open the link between COM 1 and GND.

POWER CONNECTIONS.

The booster amplifier may be operated from 120 vac or 48V to 56V dc.

120 VAC SOURCE. Connect the ac power cord to a 120 vac source capable of providing at least 325 watts. Use a 3-wire receptacle with the center pin connected to earth ground.

If desired, auxiliary equipment may be connected to the AUX POWER receptacle on top of the unit. Do not draw more than 380 watts from this receptacle.

48V – 56V DC SOURCE Connect the amplifier to a dc source capable of delivering at least 2.7 amperes at 48 to 56 volts. To do this, remove the two push-on lugs (Amphenol 42888-1) from the coin envelope packed with the unit. With the dc supply off, wire the power supply output to the push-on lugs. Connect the lugs to the dc power receptacle on the rear of the unit, *making certain to observe proper polarity*.

OPERATION

VOLUME CONTROL

A volume control located on the rear of the unit is used primarily to compensate for variations in preamplifier output levels. The VOLUME control permits the gain of the amplifier to be preset so that the preamplifier volume control may be operated near the center of its range, rather than at an extreme maximum or minimum. The VOLUME control is a screwdriver adjustment which needs to be set only once for any given preamplifier input.

SETTING FOR MXM-A PREAMPLIFIER. Because of the high output of the MXM-A, it is important to adjust both the MXM-A and the booster amplifier properly to avoid excessive system gain, hum, noise or possible oscillation. After installing the equipment, proceed as follows:

- Rotate the MT125 VOLUME control (on rear of unit) to approximately ¼ turn from the off (fully counterclockwise position).
- Set the MASTER volume control on the MXM-A to “6”. All the preamplifier-mixer channels will now have sufficient sensitivity without providing excessive overall system gain.

DC POWER OPERATION

When the amplifier is operated from a dc power source, the ac power switch and ac power indicator lamp will be inoperative and there will be no power at the AUX POWER receptacle on top of the chassis. Turn the amplifier on and off from the power switch on the dc power supply or by inserting and removing the dc power leads on the rear of the unit.

MAINTENANCE

CAUTION

There are no user replaceable parts within the unit. Have all internal servicing done by a qualified technician.

AC OPERATION

There are two overload protective devices used with ac operation, the 4A circuit breaker and the temperature overload thermal breaker.

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

THERMAL BREAKER. If the temperature thermal breaker opens, there will be no audio output but the ac power lamp will remain on. Wait approximately two minutes for the breaker to reset. If the breaker 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 one of the output transistor heat sinks reaches 104°C. (219°F.).

DC OPERATION

There are two overload protective devices used with dc operation, the 3A Slo-Blo fuse and the temperature overload thermal breaker. If either the fuse or breaker opens, there will be no audio output. The ac power lamp does not light during dc operation.

DC FUSE. Before replacing the fuse, turn off the dc power supply or disconnect the dc power leads at the rear of the unit. Use a 3 ampere Slo-Blo type fuse. If the replacement fuse blows, do not attempt to operate the unit but have the trouble investigated by a qualified technician.

THERMAL BREAKER. See the applicable paragraph under "AC OPERATION".

REPLACING TRANSISTORS

Transistors show little, if any, deterioration with age and are considerably more reliable than the best vacuum tubes. This is why some transistors are soldered into equipment like resistors or capacitors. If the unit is inoperative, it generally is safe to assume that the transistors have not failed and that the trouble is elsewhere in the equipment.

If a transistor must be unsoldered for testing or replacement, be certain to remove all power from the unit to prevent possible voltage transients in the circuit which might damage the transistor. To prevent overheating the transistor when soldering or unsoldering a lead, grip the lead between the point of heat and the case with pliers or tweezers. These will act as a heat sink to conduct heat away from the transistor. Do not bend a transistor lead closer than 1/16" from the transistor case.

Power transistors must be properly mounted to insure good heat dissipation. Make certain there is no foreign matter on the contact surfaces between the transistor and the heat sink and brush a thin coating of heat transfer compound (such as Dow Corning No. 340 Compound silicon grease or equivalent) on both surfaces. Similarly coat any insulators used between the transistor and the heat sink and secure the transistor firmly to the heat sink.

BOGEN SERVICE

We are interested in your Bogen equipment for as long as you have it. If trouble ever develops, do not hesitate to ask our advice or assistance. Information can be obtained by writing to Service Department, Bogen Division, P.O. Box 500, Paramus, N.J. 07652.

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

Do not return the unit to Bogen without prior clearance from our Service Department. If you do ship the unit, pack it carefully to avoid damage in transit. Send the unit, fully insured and prepaid, via United Parcel or Railway Express. Do not ship via parcel post unless so instructed.

REPLACEMENT PARTS

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

When replacing transistors, use those made by the specified manufacturers. Transistors from other suppliers may not be satisfactory. Certain resistors must be Allen-Bradley. These are designated by "AB" on the schematic diagram.

Ref. No.	Part No.	Description
A1	45-9855-01	Driver Component Board, Complete
C2	79-008-063	Capacitor, Electrolytic, 2μF, 100V
C5	79-008-062	Capacitor, Electrolytic, 100μF, 50V
C9, 11	79-112-002	Capacitor, Electrolytic, 800μF, 60V
CR1	96-5022-01	Diode, 50 PIV, 750 mA
CR2	96-5202-01	Diode, HVR-3
CR3	96-5193-01	Diode, 200 PIV, 2A
Q1	96-5321-01	Transistor, MPS6767 (Motorola)
Q2	96-5320-01	Transistor, MPSU56 (Motorola)
Q3	96-5327-01	Transistor (Bogen)
Q4	96-5316-01	Transistor (Bogen)
R17, 19	76-107-105	Resistor, 4.7Ω, 2W
R18, 20	76-116-003	Resistor, 0.27Ω, 7W

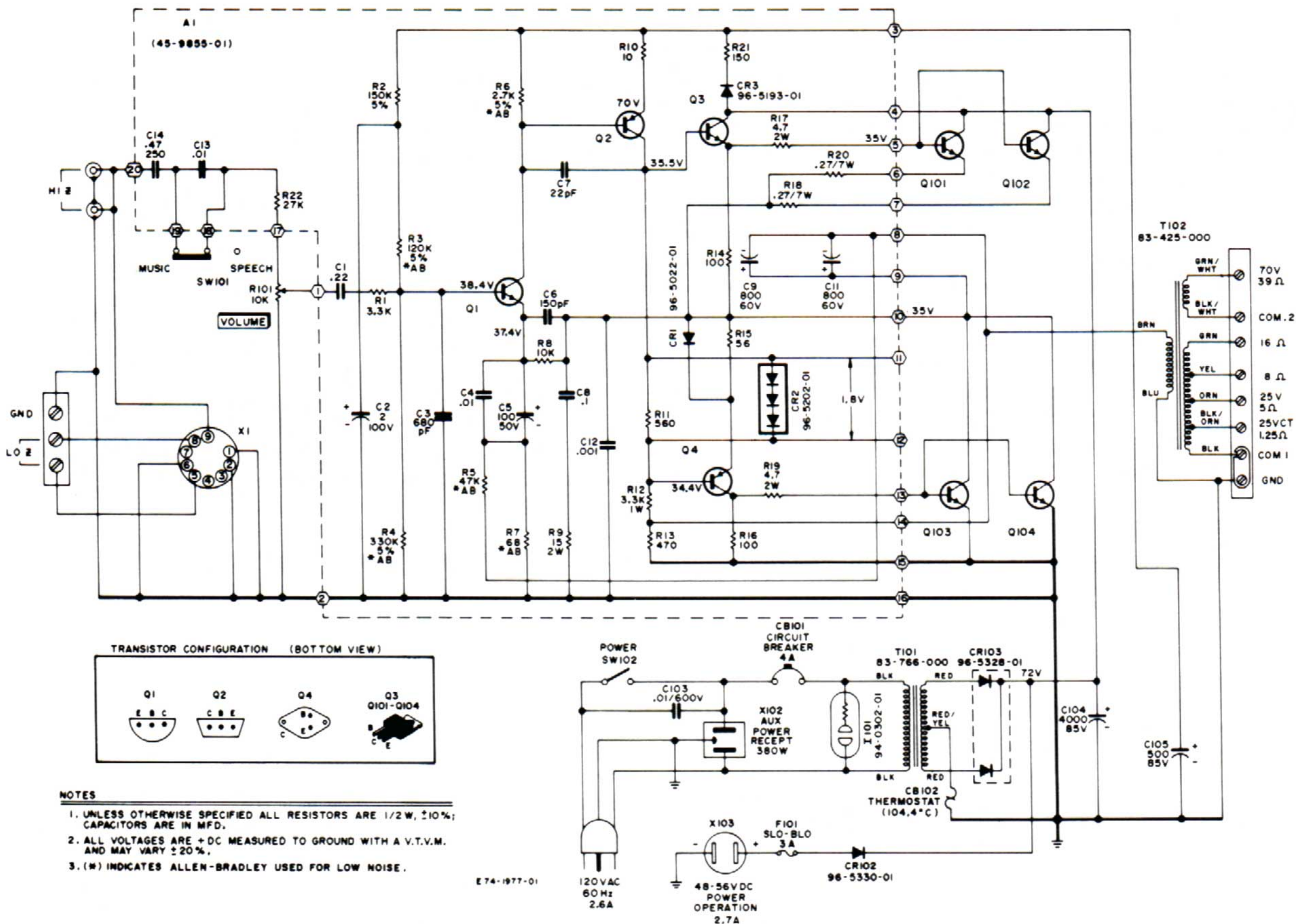


Figure 2 – Model MT125 Booster Amplifier, Schematic Diagram.

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
CHASSIS ELECTRICAL PARTS					
C104	79-509-075	Capacitor, Electrolytic, 4000 μ F, 85V	Q101-104	96-5315-01	Transistor, 2N3773 (Solitron or Pirgo Div Sprague)
C105	79-009-071	Capacitor, Electrolytic, 500 μ F, 85V	R101	77-001-400	Control, VOLUME, 10K
CB101	94-0008-08	Circuit Breaker, 4A	SW101	81-003-016	Switch, SPEECH-MUSIC
CB102	94-0014-02	Thermal Breaker, 104°C.	SW102	81-002-098	Switch, Power ON-OFF
CR102	96-5330-01	Diode, 300 PIV, 18A	T101	83-766-000	Transformer, Power
CR103	96-5328-01	Diode, Dual, 300 PIV, 15A	T102	83-425-000	Transformer, Output
I101	94-0302-04	Pilot Light Ass'y.			