

BOGEN®



MODEL MX6A-T

MIXER-PREAMPLIFIER

LEAR SIEGLER, INC.



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INSTALLATION AND OPERATING MANUAL

READ THOROUGHLY BEFORE OPERATING EQUIPMENT

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DESCRIPTION

The Bogen Model MX6A-T is an all-silicon transistor, four-channel mixer-preamplifier. The unit increases the versatility of a sound system by providing four additional inputs from a high or low impedance microphone, tuner, crystal phonograph, or tape recorder.

The mixer has been designed to amplify guitars and other electronic instruments and is ideally suited for use by musical groups with guitars and vocalists. Two MX6A-T mixer-preamps may be used for stereo applications, such as stereo tape recording. Two or

three units may be paralleled to provide 8 or 12 inputs, respectively, each with its own volume control.

A high-level audio output is provided for connection to a booster amplifier, a tape recorder, or to the AUX input of a public address amplifier. The low-level audio output may be connected directly to a guitar amplifier or to the MIC input of a public address amplifier.

A Bogen Model RPK-28 rack panel kit is available for mounting the MX6A-T unit in a standard 19" x 3½" rack panel.

SPECIFICATIONS

HIGH OUTPUT: 5 volts rms at 2% distortion; 4 volts rms at 1% distortion; 2 volts rms at 0.5% distortion.

LOW OUTPUT: 0.1 volt rms at 2% distortion; 0.08 volt at 1% distortion; 0.04 volt rms at 0.5% distortion.

OUTPUT IMPEDANCE (High and Low Level): 2.2K Ω.

SENSITIVITY (Input for 4V Output): MIC HI Z, 4 mv; MIC LO Z, 0.4 mv; AUX, 0.4 volts.

INPUTS: 4 MIC (High or low impedance), 2 AUX.

INPUT IMPEDANCE: MIC HI Z, 150K Ω; MIC LO Z, 200 Ω; AUX, 250K Ω.

FREQUENCY RESPONSE: 50 to 20,000 Hz ±2 db.

HUM/NOISE: 68 db below 5 volts (less than 2 millivolts).

MIC CROSSTALK: Less than 5 millivolts at 1 KHz (60 db below 5 volts).

CONTROLS: 4 Volume, Power (on-off).

SEMI-CONDUCTORS: 6 silicon transistors, 2 silicon diodes.

A.C. POWER CONSUMPTION: 1.2 watts at 117 vac, 50-60 cps.

DIMENSIONS: 9¼" x 6" x 2-5/8".

SHIPPING WEIGHT: 6 pounds.

INSTALLATION

UNPACKING

Inspect shipping container and unit for indications of improper handling. The unit was carefully checked before leaving factory. If the equipment has been damaged, make an immediate claim to dealer or distributor from whom it was purchased. If unit was shipped to you, notify transportation company without delay and place your claim.

CONNECTIONS BETWEEN COMPONENTS

Use single conductor, low-capacity shielded audio wire for connecting the record player, tape recorder, and other input components to amplifier. Keep leads under ten feet in length.

POWER AND GROUNDING

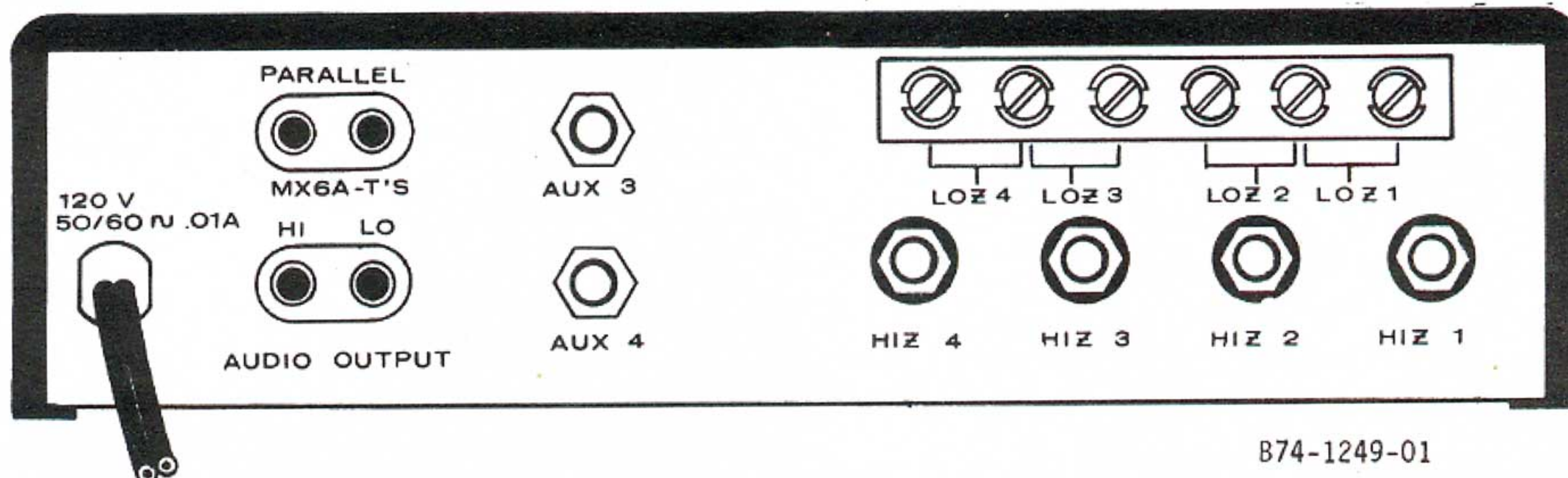
The preamplifier is furnished with an ac line cord

terminated in a three-prong plug. Plug the line cord into a three-wire grounded outlet providing a nominal 120-volt, 50-60 cycle power source. This will ground the pre-amp as well as supply power to it.

If a three-wire outlet is not available, an adapter such as Leviton No. 5017 should be used to convert a standard two-wire outlet for use with three-wire plugs. The adapter is provided with a grounding pigtail which should be connected to the screw holding the wall plate to the receptacle.

NOTE

Instructions for connecting the unit for emergency DC operation will be found on page 7.



B74-1249-01

Figure 1 - Rear Panel, MX6A-T Preamplifier

INPUT CONNECTIONS

MICROPHONE

Up to four high-impedance microphones (15,000 to 150,000 ohms) may be connected to the pre-amplifier. The four microphone input receptacles are located on the rear panel (see figure 1) and are marked HIZ 1, HIZ 2, HIZ 3 and HIZ 4. Connect the high-impedance microphone plug into any one of these four receptacles.

Each of the four channels will accommodate a low-impedance (150 to 600 ohms) instead of a high-impedance microphone. Low-impedance microphones are connected to the terminal strip on the rear panel, marked LOZ 1, LOZ 2, LOZ 3 and LOZ 4 (see figure 1). The second and fifth terminals are each common to two adjacent microphone channels.

Low-impedance microphones should utilize shielded audio cables, with cable lengths ranging from 500 to 2000 feet, depending on the cable. Connect the conductor to any one of the four hot terminals. The braided shield is connected to the corresponding common terminal. A typical connection utilizing four low-impedance unbalanced microphone inputs is shown in figure 2.

NOTE

A low-impedance and high-impedance microphone may not be connected to the same channel. Remove any microphone cable plug which may be connected to the HIZ jack before connecting a low-impedance microphone to the same channel.

AUXILIARY

Channel 3 and 4 will also accommodate inputs from a crystal or ceramic phonograph cartridge, a radio tuner, a tape recorder or any other device with a high-impedance output ranging from 0.4 to 20 volts rms. Such auxiliary inputs are connected to the AUX 3 or

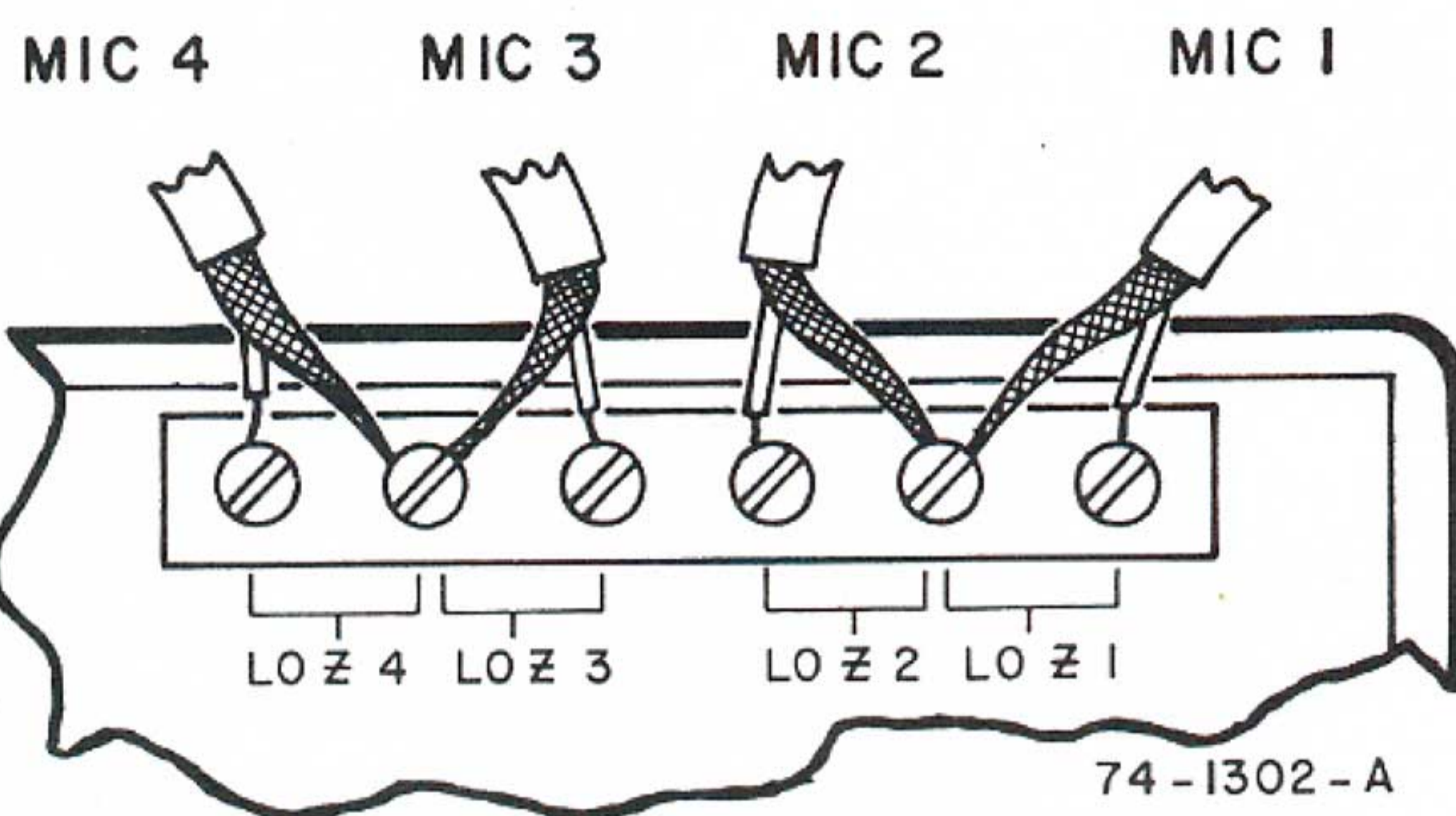


Figure 2 – Connecting Low-Impedance Unbalanced Microphone Inputs

AUX 4 input receptacle or the rear panel (see figure 1).

NOTE

Channels 3 and 4 may each accommodate either a microphone or an auxiliary input. A single volume control for the channel sets the level for either input. Normally, only a MIC input or an AUX input is utilized for Channel 3 or 4. However, both inputs may be mixed simultaneously in the same single channel, providing the AUX input is compatible with the MIC input or an external volume control is used for the AUX input.

GUITAR

An electric guitar or other electronic musical instrument is plugged into any of the HIZ receptacles on the rear panel of the preamplifier. Further instructions for connecting electric guitars will be found on page 6.

OUTPUT CONNECTIONS

AUDIO OUTPUTS

The HI AUDIO OUTPUT receptacle is used to connect the high-level output of the MX6A-T mixer-preamp to a public address amplifier. Connect this output to the AUX (high-level) input of a standard public address amplifier.

The high-level output will also drive a booster amplifier with a sensitivity of 2 volts or better or a tape recorder. For connections to booster or tape recorder, see the instructions supplied with these equipments.

The LO AUDIO OUTPUT receptacle is fed to the MIC input of a public address amplifier. It may also be used to connect the output of the MX6A-T preamp to a guitar amplifier, as shown in figure 5B.

PARALLELING OUTPUTS

The PARALLEL MX6A-T's receptacles are used to parallel two or three units to increase the number of inputs in a sound system. Two paralleled MX6A-T units will provide a total of eight inputs. Three MX6A-T preamps may be paralleled as shown in figure 3 to provide a total of 12 microphone inputs. Six of these channels will also accept AUX inputs.

It should be noted that this method of paralleling three amplifiers by means of the PARALLEL jacks reduces the dynamic range of the MX6A-T to 2 volts rms and results in a one-third loss of the gain in each channel. This method should, therefore, be used only when the sensitivity of the power amplifier fed by the MX6A-T's is such that a 2-volt dynamic range is sufficient to drive it to full output.

A second method of paralleling three MX6A-T outputs is shown in figure 4. In this method, the HI AUDIO output of the first MX6A-T is fed to the AUX 3 input of the second preamplifier. The HI AUDIO output of the third MX6A-T goes to the AUX 4 input of the second preamp-mixer. The HI AUDIO output of the second MX6A-T is connected to the HI Z input of the booster amplifier.

Paralleling through the AUX inputs need not be restricted to three units. In fact, there is virtually no limit to the number of MX6A-T preamp-mixers that

can be paralleled in this way.

A disadvantage of this method, however, is that when an AUX input is used for paralleling, the corresponding channel is no longer available for amplification. For example, in the three-stage arrangement shown in figure 4, input channels 3 and 4 of unit No. 2 are given up for the advantages of paralleling. With such a combination, each microphone level should be controlled at the mixer to which the mic is directly connected.

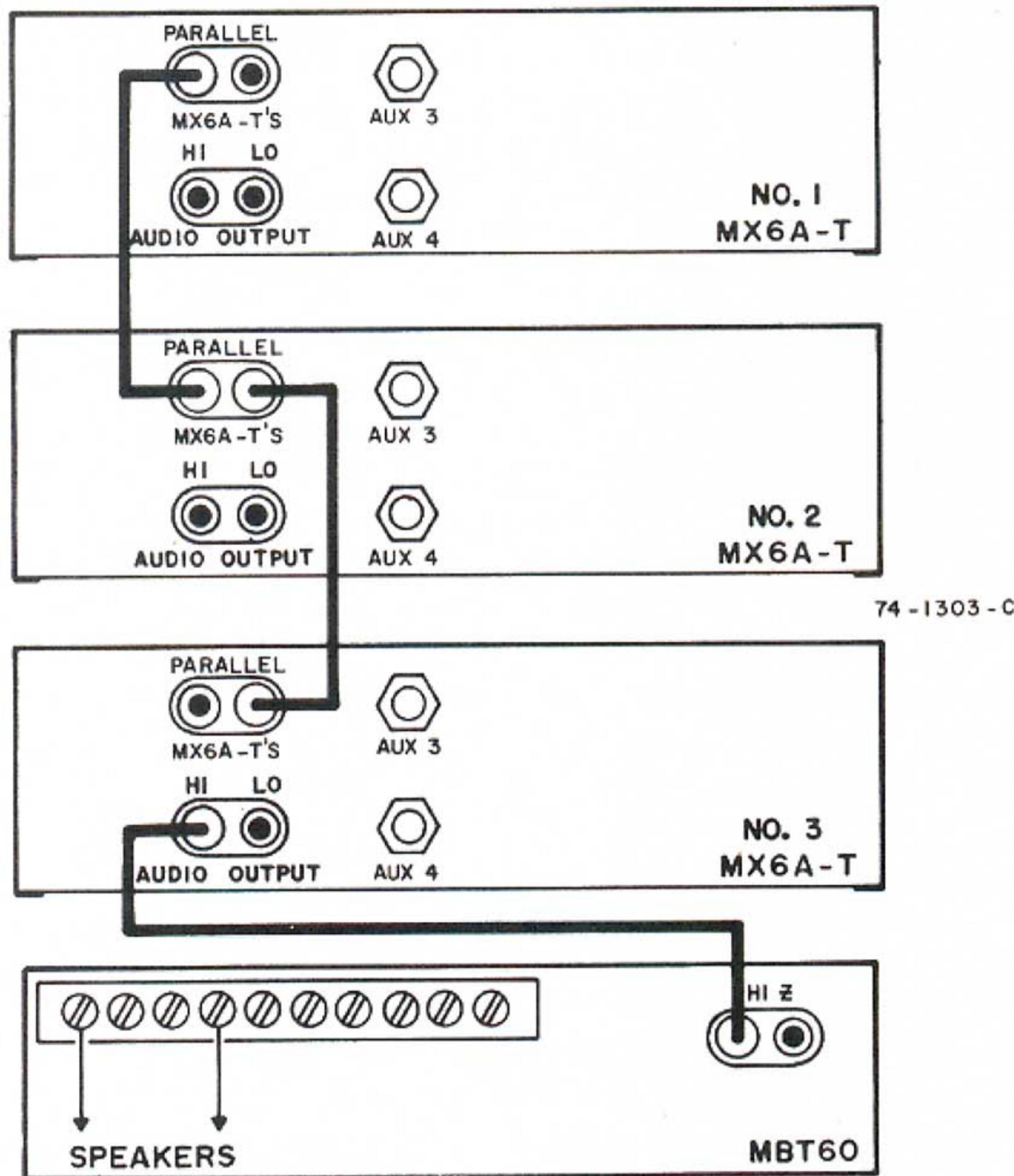


Figure 3 - Paralleling MX6A-T Outputs Through Parallel Jacks

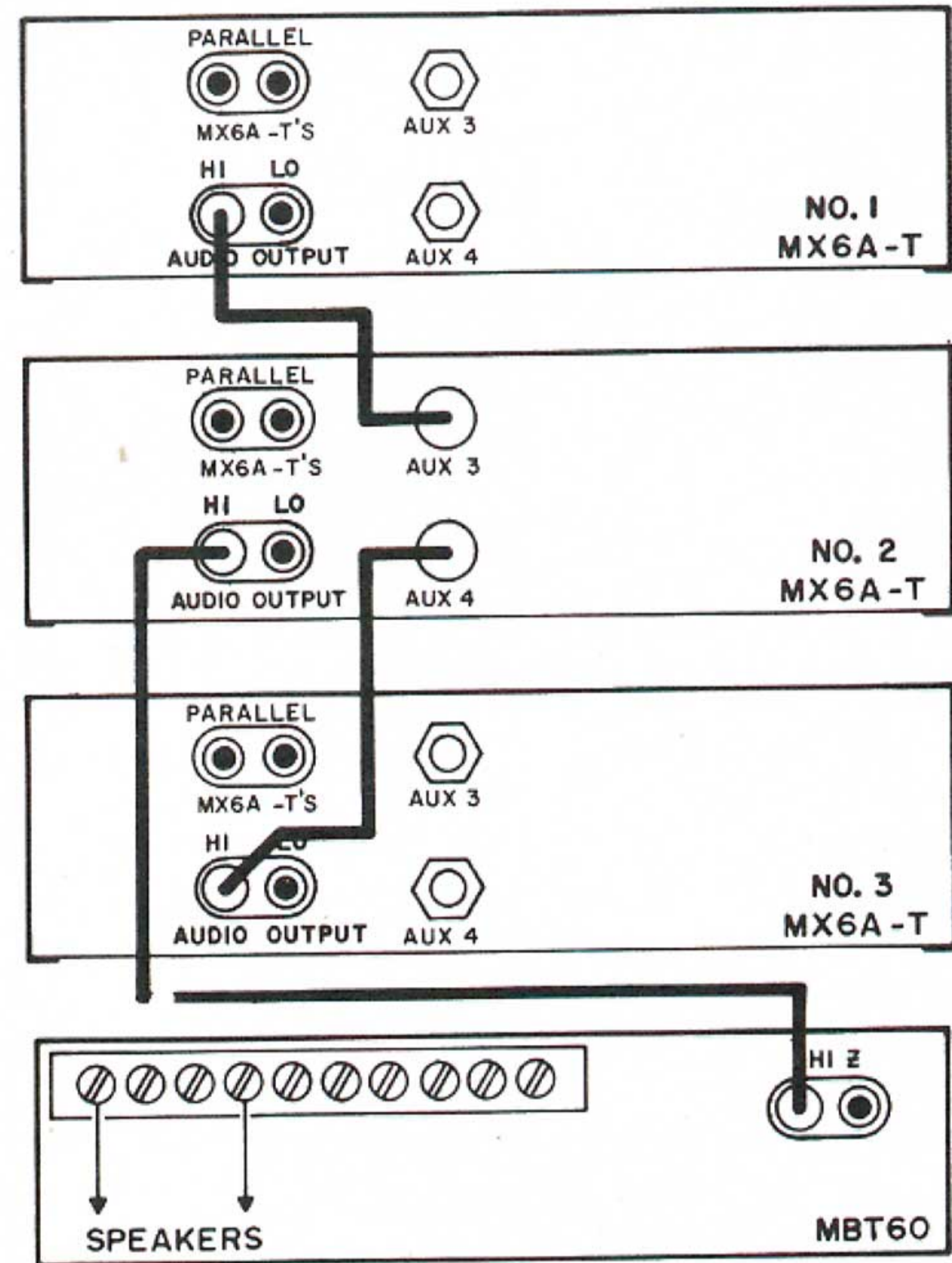


Figure 4 - Paralleling MX6A-T Outputs Through AUX Inputs

CONTROL FUNCTIONS

POWER SWITCH

The POWER switch on the front panel is used to turn the preamplifier OFF and ON. The POWER light is illuminated when the switch is turned ON.

VOLUME

Each of the four input channels has a separate

volume control on the front panel marked CHANNEL 1, CHANNEL 2, CHANNEL 3 and CHANNEL 4. Each controls the level of the microphone input with which it is associated. The CHANNEL 3 and CHANNEL 4 volume controls will also regulate the level of any AUX input into these channels.

OPERATION

The MX6A-T is turned on by moving the POWER switch to the ON position. The desired volume of each channel is set individually by the four CHANNEL volume controls on the front panel. Turn the control clockwise in the direction of the higher numbers to increase the level. Turn it counterclockwise to decrease the volume. If a channel is not in use, its volume control should be kept at zero to prevent noise pickup.

POWER AMPLIFIER SETTING

The volume control on the power amplifier or booster should be normally adjusted so as to obtain the best compromise between a high dynamic range and a low signal-to-noise ratio, and then left at this point. This setting will vary with the sensitivity and gain of the power amplifier or booster.

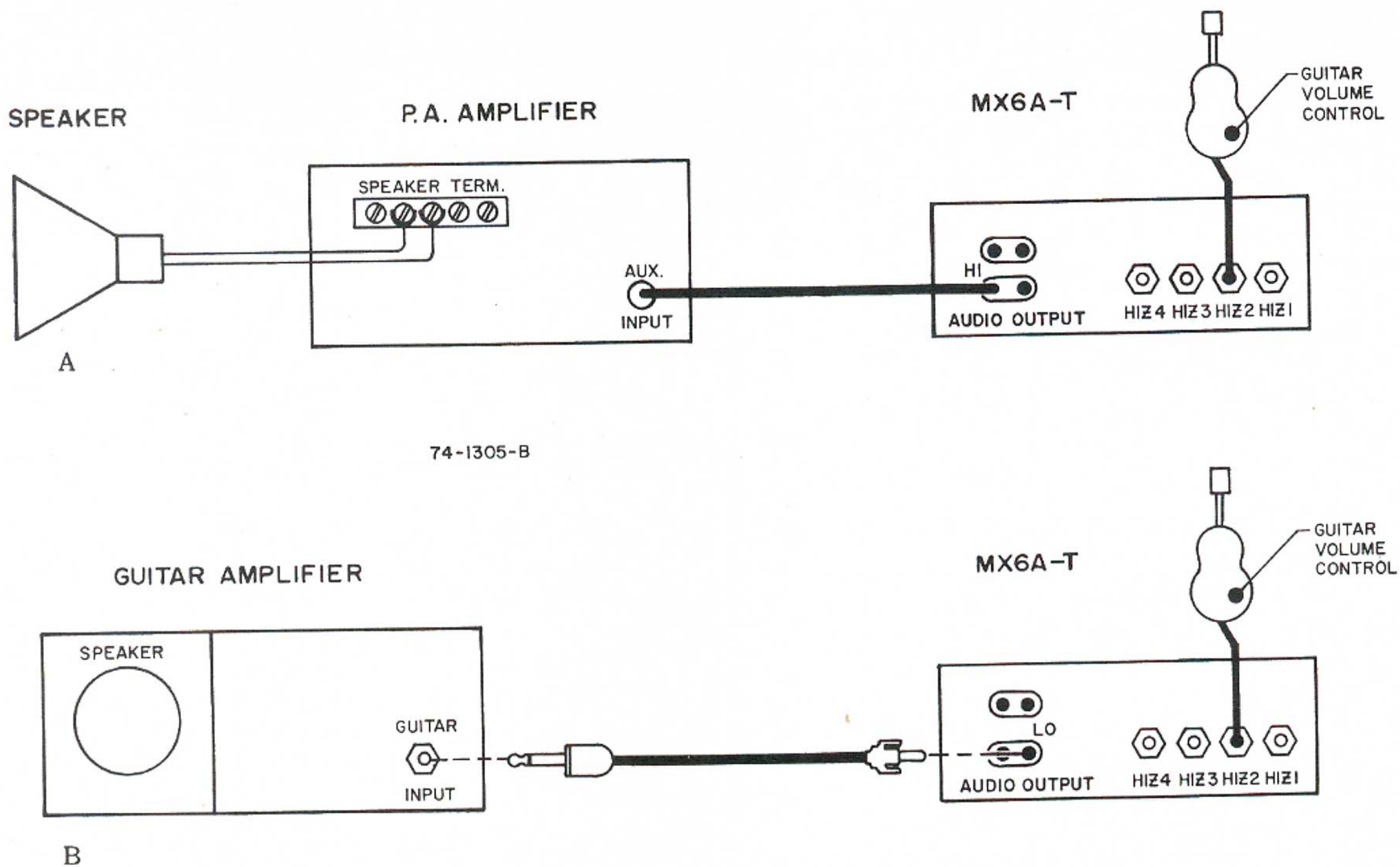


Figure 5 - Connecting Electric Guitars to MX6-A Preamplifier

ELECTRIC GUITARS

The MX6A-T preamplifier may be used to amplify an electric guitar or other electronic musical instrument. The guitar is plugged into any of the HIZ input receptacles on the rear panel, as shown in figure 5A. Connect the HI AUDIO output of the MX6A-T to the AUX input on the PA amplifier or the high impedance input of the booster amplifier.

Set the channel volume control in the MX6A-T to position 3, and adjust the volume control of the power

amplifier and the guitar volume control simultaneously to provide the desired output level with the least noise and distortion.

The MX6A-T will also drive a guitar amplifier directly, with the connections as shown in figure 5B. Plug the guitar into any HI Z receptacle on the rear panel of the MX6A-T unit. Connect the LO AUDIO output of the MX6A-T preamplifier to the input of the guitar amplifier. For additional information, see the instructions furnished with the guitar amplifier.

MAINTENANCE

BOGEN SERVICE

We are interested in your Bogen unit for as long as you have it. If trouble ever develops with your unit, please 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, New Jersey 07652.

When communicating with us, give the model number and series letter of your unit. Completely describe the difficulty encountered. Describe the effects each operating control has upon the symptoms of trouble. Include details on electrical connections to associated equipment and list such equipment.

When we receive this information, we will send you service information if the trouble appears to be simple, such as bad transistor or incorrect connections. If trouble requires servicing, we shall send you the name and address of the nearest Bogen authorized service agency to which you can send your unit for repair.

When shipping your unit, pack instrument well, using sufficient filler material to prevent damage in transit. Send unit, fully insured and prepaid, via railway express. Do not ship via parcel post unless so instructed. The unit will be promptly repaired and returned to you via express collect.

TRANSISTORS

Unlike tubes, which have a definite life expectancy, transistors will last indefinitely under normal conditions of operation. However, if a unit is not functioning properly and it is suspected that a transistor or diode is the cause, only a qualified technician should test them.

To isolate a faulty transistor, first check the DC potential of capacitors C15, C16 and C17 against the values shown on the schematic diagram, figure 7. Also check the voltages at the collector of each transistor. If all voltage readings are satisfactory, inject a 1 KHz signal of 2 millivolts into each HIZ jack in turn and trace the signal through the preamplifier.

PILOT LIGHT REPLACEMENT

The pilot light is a long-life neon bulb which will seldom require replacement. If it should burn out, replace the entire lamp assembly (Bogen Part No. 94-0309-01).

INCREASING GAIN

Under normal circumstances, the MX6A-T unit will provide more than adequate gain. However, in rare cases it may be necessary to increase the gain of the

preamplifier. This may be achieved by shorting out the LOZ terminals of any of the four channels.

Only the HIZ input for that channel may then be used. A 2-volt output will be provided in this fashion, with a 0.2 millivolt sensitivity and an input impedance of 50,000 ohms.

EMERGENCY DC OPERATION

The MX6A-T mixer-preamplifier may be operated from a 22½ volt DC source to maintain operation in an emergency. A slight modification is required in the MX6A-T chassis to provide this facility.

Remove the bottom cover of the unit and install the DC connections across capacitor C16. See the schematic diagram (figure 6).

Connect a 22½ volt battery to the terminals. Eveready type 763, which will provide 500 hours of operation in this application, is recommended. The battery drain is 4.7 ma.

CAUTION

Observe polarity carefully when making connections to battery to prevent damage to capacitor.

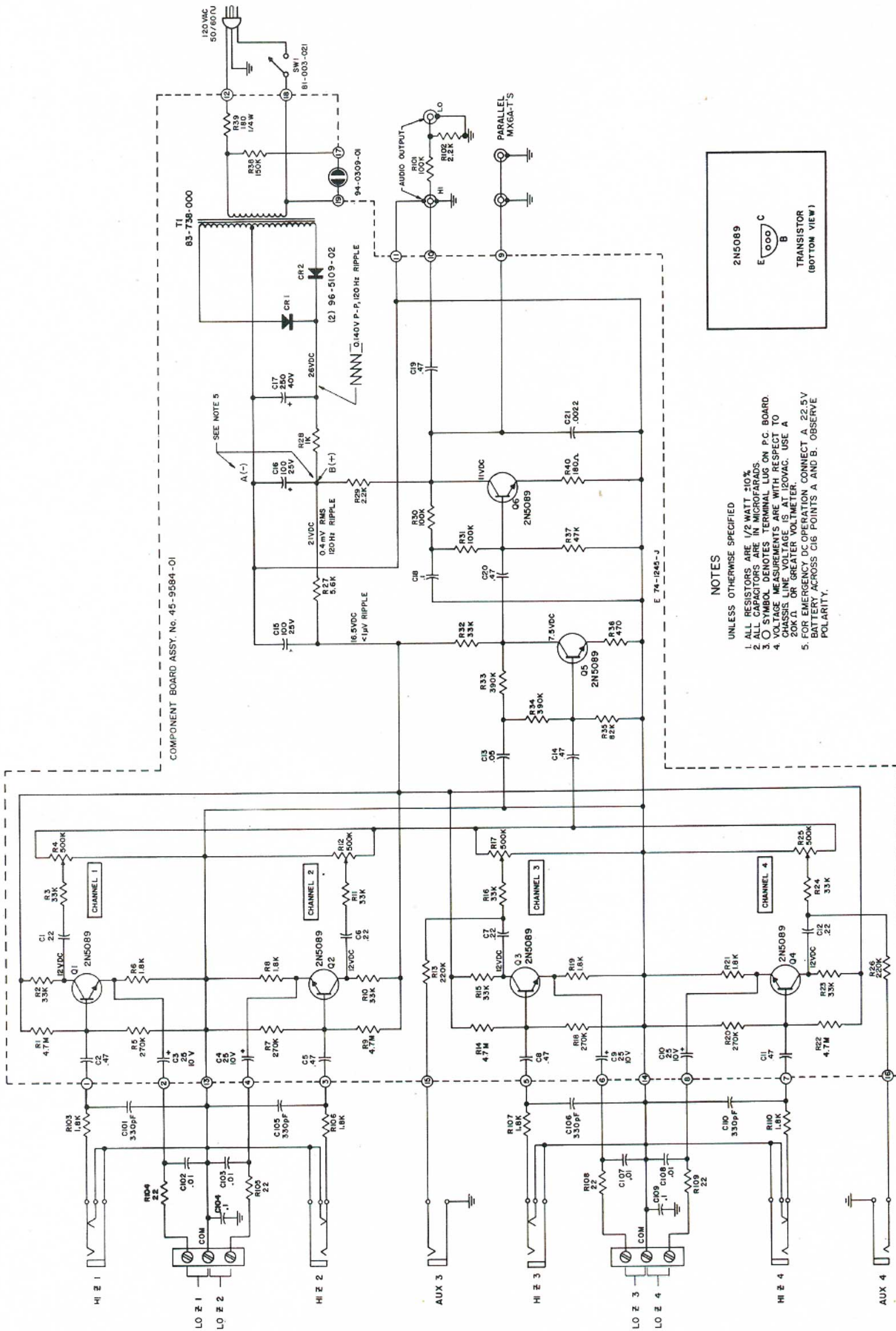
REPLACEMENT PARTS

The components used in the Model MX6A-T preamplifier, with the exception of items listed below, are standard parts available through all reputable parts jobbers. However several parts are custom-made to strict specifications and should be replaced only with genuine parts. These custom-made parts are listed here and are available through distributors, service agencies or direct from the factory.

Ref. No.	Part No.	Description
C3, 4, 9, 10	79-008-034	Capacitor, Electrolytic, 25 mfd, 10 V
C15, 16	79-008-047	Capacitor, Electrolytic, 100 mfd, 25 V
C17	79-005-063	Capacitor, Electrolytic, 250 mfd, 40 V
CR1, 2	96-5109-02	Diode, Rectifier
Q1-6	96-5213-01	Transistor, 2N5089

When ordering a part, specify part number and description of the part as listed below. Specify the model and give the series designation, which is a run letter followed by numbers, stamped or screened on the rear of the chassis. Also, give the component board assembly number (45-) for all parts mounted on PC boards.

Ref. No.	Part No.	Description
R4	77-001-642	Control, Channel 1
R12	77-001-642	Control, Channel 2
R17	77-001-642	Control, Channel 3
R25	77-001-642	Control, Channel 4
SW1	81-003-021	Switch, Power
T1	83-738-000	Transformer, Power
-	94-0309-01	Neon Pilot Light Assy.
-	03-0607-02	Knob, Control (4)



COMPONENT BOARD ASSY. No. 45-9584-01

NOTES

- UNLESS OTHERWISE SPECIFIED
1. ALL RESISTORS ARE 1/2 WATT ±10%
 2. ALL CAPACITORS ARE IN MICROFARADS
 3. ○ SYMBOL DENOTES TERMINAL LUG ON P.C. BOARD.
 4. VOLTAGE MEASUREMENTS ARE WITH RESPECT TO CHASSIS. LINE VOLTAGE IS AT 120VAC. USE A 20K Ω OR GREATER VOLTMETER.
 5. FOR EMERGENCY DC OPERATION CONNECT A 22.5V BATTERY ACROSS C16 POINTS A AND B. OBSERVE POLARITY.

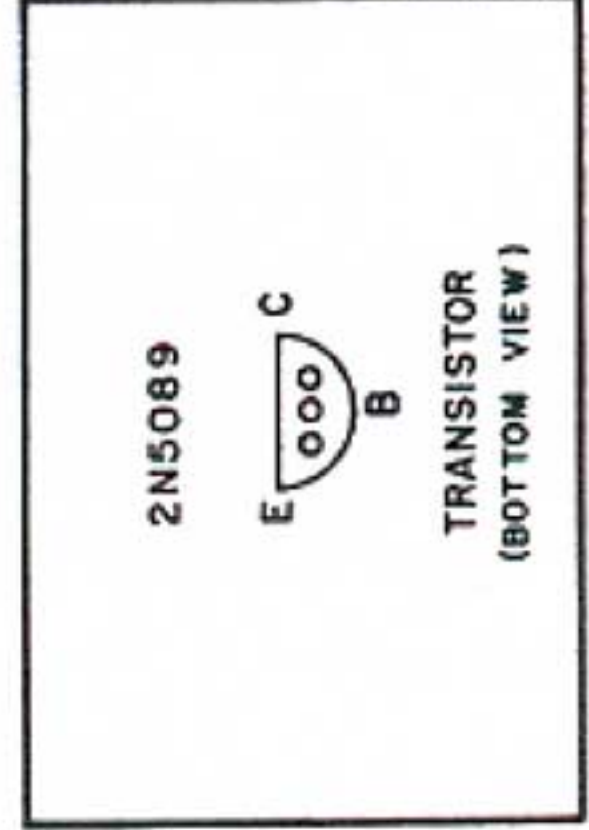


Figure 6 - MX6A-T Mixer-Amplifier Schematic Diagram