Rerecording Mixer

MI-3108-B

DESCRIPTION

The RCA MI-3108-B Rerecording Mixer is a four-channel mixer, designed to be used between one to four phototube preamplifiers and the main voltage amplifier of the rerecording system. Controls in the MI-3108-B Mixer make possible switching from one preamplifier to another, mixing the outputs of a possible four preamplifiers, and controlling the output volume (after mixing).

Each mixer channel consists of an input key switch, input transformer, and a bridged T-pad attenuator. The output circuits of the four channels are connected together into one master bridged T-pad attenuator. The output of this master attenuator is connected to the primary of an output transformer, and the secondary of this transformer is connected to the output terminals of the mixer. The key switches serve to connect or disconnect the circuits between the input terminals and the transformers in the respective channels. Terminals are provided in each channel so that, if desired, external compensation (MI-10101) may be connected into any one or all channels.

INSTALLATION

The MI-3108-B Rerecording Mixer is designed to fit a standard RCA Photophone recording rack (without false panel) or a mixing console (with false panel). All components (except knobs and switch controls) are enclosed in a metal case on the back of which is mounted the terminal board for making electrical connections to associated equipment.

Input and compensator terminals for each channel, and also output terminals are clearly marked

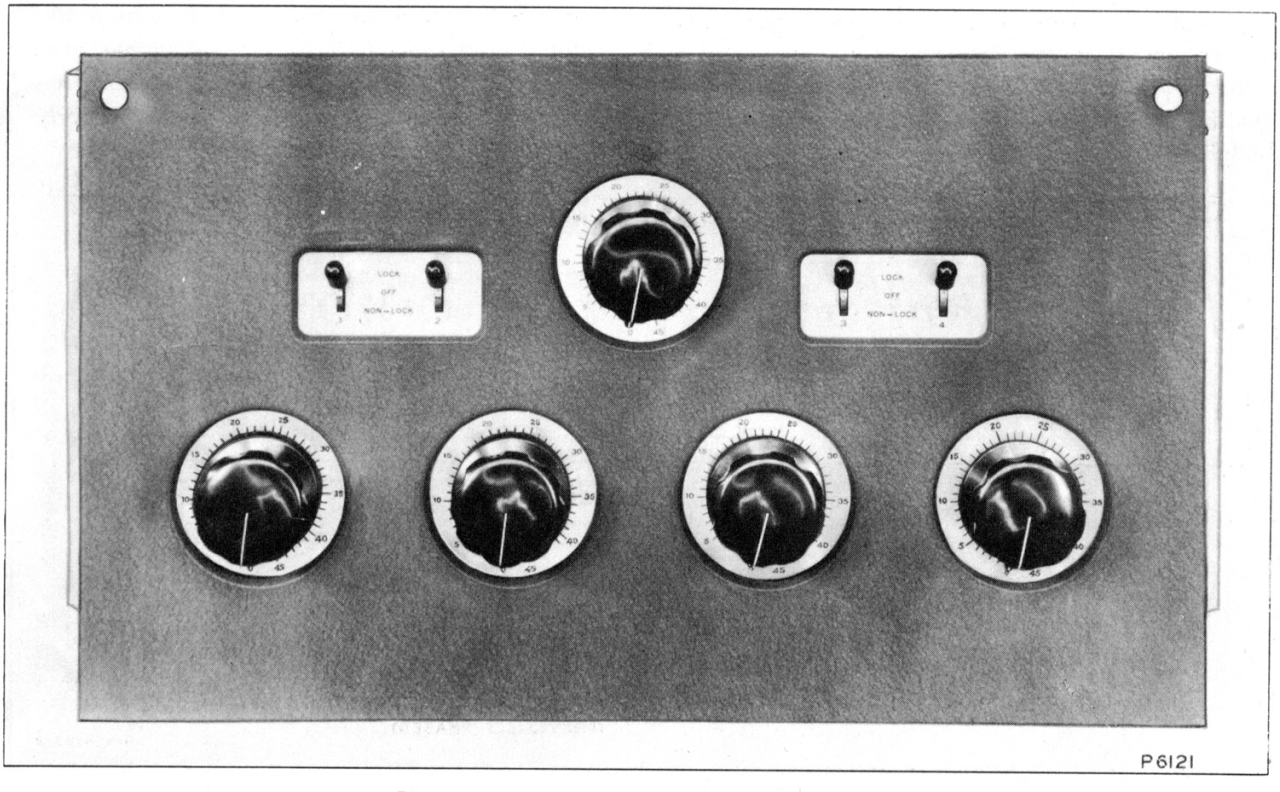

Figure 1—MI-3108-B Rerecording Mixer.

TECHNICAL DATA

Input Impedance
250 ohms (can be wired for 500 ohms)

Output Impedance
250 or 500 ohms (balanced)

Frequency Range
30 to 10,000 cycles

Minimum Insertion Loss
10 db

Number of Channels
Four

Number of Controls
One disconnect switch for each channel
One mixer attenuator for each channel
One overall master attenuator

Attenuator Range
1½-db attenuation per step, 45 steps, linear taper

Mounting
Rack or Console

Dimensions
For rack mounting (without false panel)
Length—19 inches
Height—10 1/2 inches
Depth 5 5/16 inches
For console mounting (with false panel)
Length—20 inches
Height—11 13/16 inches
Depth—5 9/16 inches
Weight—44 pounds

on the terminal board. Connect the GND terminal to the case. If in any one or all channels no compensation is required, connect together the compensator terminals in those channels. If a compensator is to be used, connect it between the compensator terminals (for any one respective channel) in accordance with the instructions for the compensator.

As shipped from the factory each channel input is wired for operation from a source impedance of 250 ohms. If it is desired to operate from a source impedance of 500 ohms in any one channel remove the leads from terminals 2 and 4 of the input transformer, and connect instead to terminals 1 and 5, respectively. If this is done replace the 250-ohm loading resistor (mounted on the back of the LOCK, NON-LOCK key switch) with a 500-ohm resistor in the channel being changed.

CAUTION: When changing transformer leads, take care that the leads are connected exactly as indicated above. Otherwise phasing may be reversed, which may result in distortion.

OPERATION

CAUTION: Make certain that all connections to the equipment have been properly made, that compensator terminals have been linked across (or compensator inserted where desired), and that the GND. terminal has been grounded to the case. Also make certain that external shielded leads have been properly grounded.

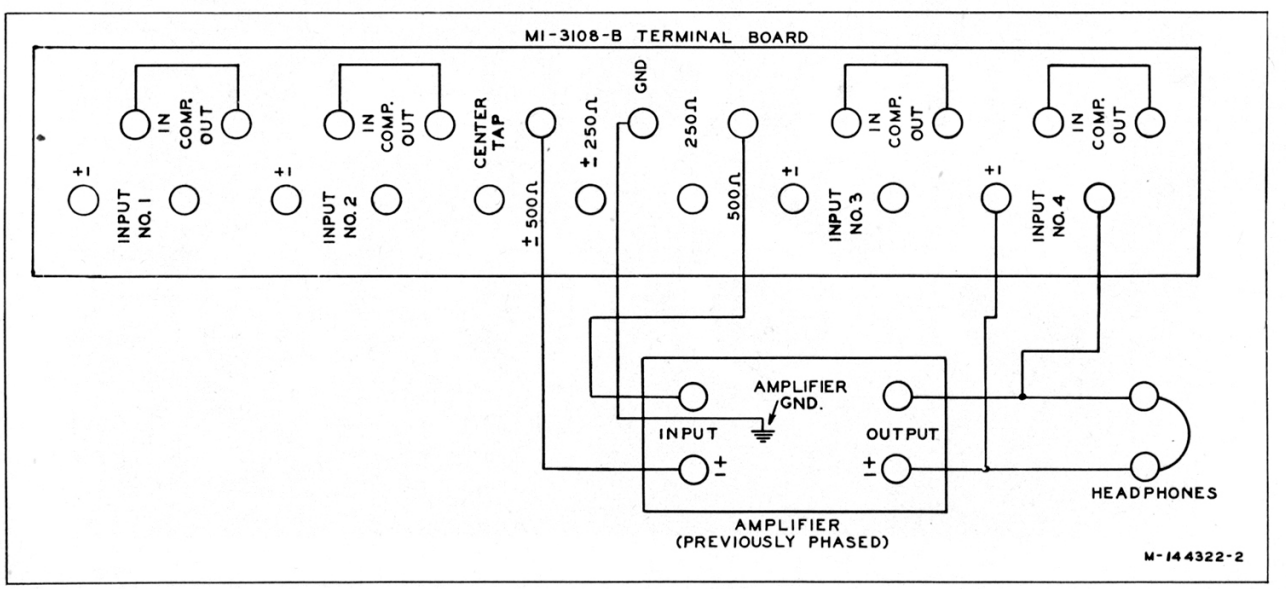

Figure 2—Test circuit for checking phasing.

Phasing

It is important that all inputs and outputs be in phase when connected according to standard markings on the equipment units, or varying degrees of distortion and loss of gain will result. For convenience corresponding input and output terminals on RCA equipment bear the designation ±. When making inter-apparatus connections, connect the output terminals on one unit to the input terminals on succeeding units that bear the same marking. This insures consistent results on all recording channels when the same recording technique is used. All RCA equipment is correctly phased at the factory. However, it is possible that the phasing in one or more circuits may be inadvertently reversed during maintenance or repair work. To check the phasing, proceed as follows:

1. Connect the output of the MI-3108-B Mixer to the input of an amplifier which has been previously phased. Make sure that the phasing marks (±) are connected together (see figure 2).

2. Connect one of the inputs of the mixer to the output of the amplifier, making sure that the phasing marks (±) are connected together. Connect a pair of headphones across the amplifier output terminals.

3. With the proper key switch in the LOCK position, and the master attenuator and proper channel attenuator in the maximum clockwise position, advance the gain of the amplifier to a point where a "motorboating" sound or a weak high frequency whistle is heard in the headphones. A motorboating sound indicates correct phasing. A high frequency whistle or no sound at all indicates incorrect phasing.

Make this test for each of the input channels, and reverse the internal connections as may be found necessary to phase any one channel.

Adjustment of Controls

Each input channel is equipped with a key switch having positions marked LOCK, OFF, and NON-LOCK. When the switch is in either the LOCK or NON-LOCK position the input is connected directly to the primary of the input transformer. When the switch is in the OFF position the input circuit is opened, one side of the input circuit is grounded, and a 250-ohm resistor is connected across the primary of the input transformer.

If it is desired to connect certain channels through the mixer continuously, the key switches for these channels may be thrown to the LOCK position. If any channel is to be connected temporarily, or at intervals only, the switch for that channel may be held in the NON-LOCK position.

Attenuator controls should be adjusted during the re-recording process so as to obtain the desired combination of sound.

MAINTENANCE

Should it become necessary to service or repair any of the components of this equipment, reference may be made to the replacement parts list

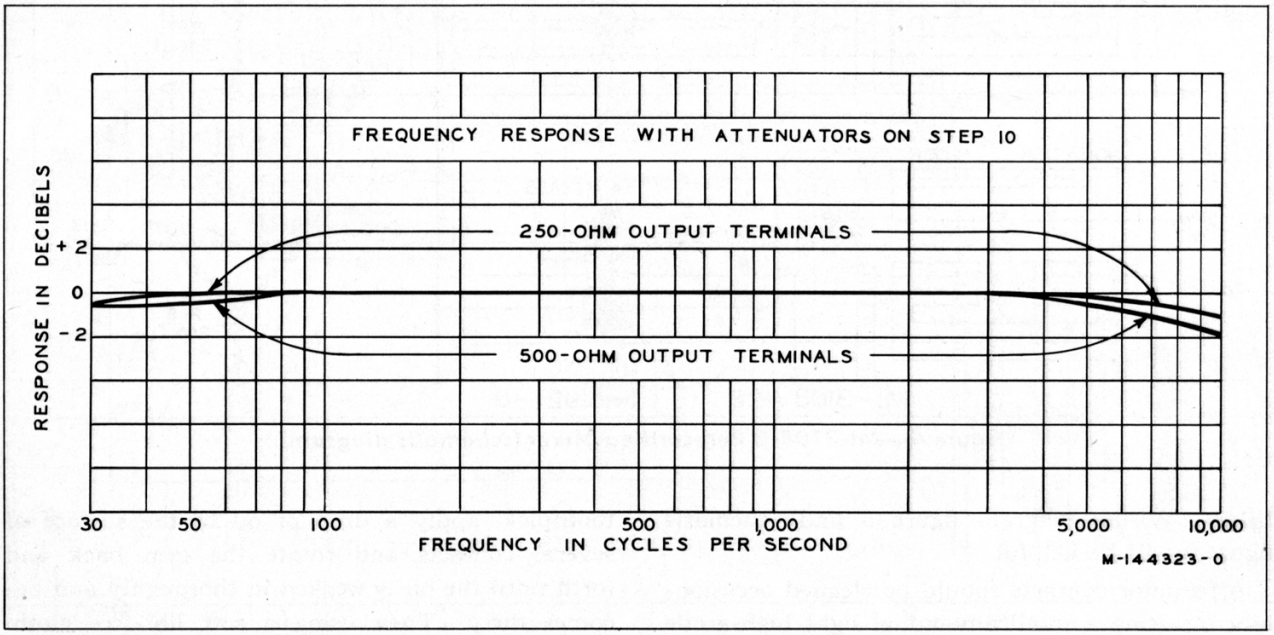

Figure 3—Frequency response of MI-3108-B Rerecording Mixer.

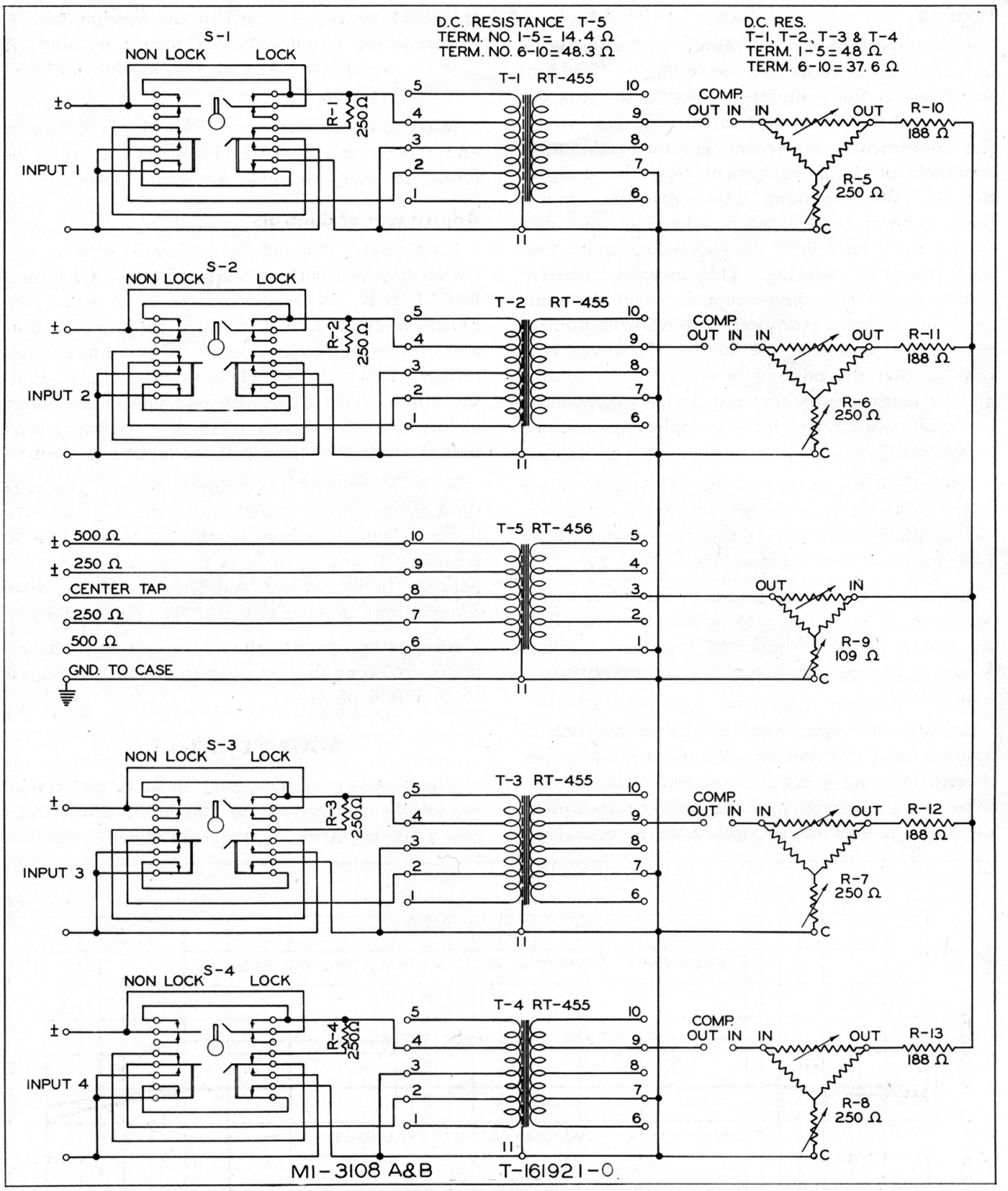

Figure 4—MI-3108-B Rerecording Mixer (schematic diagram).

below. Wiring diagram figure 5 and schematic figure 4 will be helpful.

Attenuator contacts should be cleaned occasionally by using a small amount of light high-grade machine oil such as camera or watch oil. Using a toothpick, apply a drop of oil to the surface of several contacts and rotate the arm back and forth until the oil is worked in thoroughly and becomes dirty. Then using a soft lint-free cloth, wipe off the contacts thoroughly. Repeat this

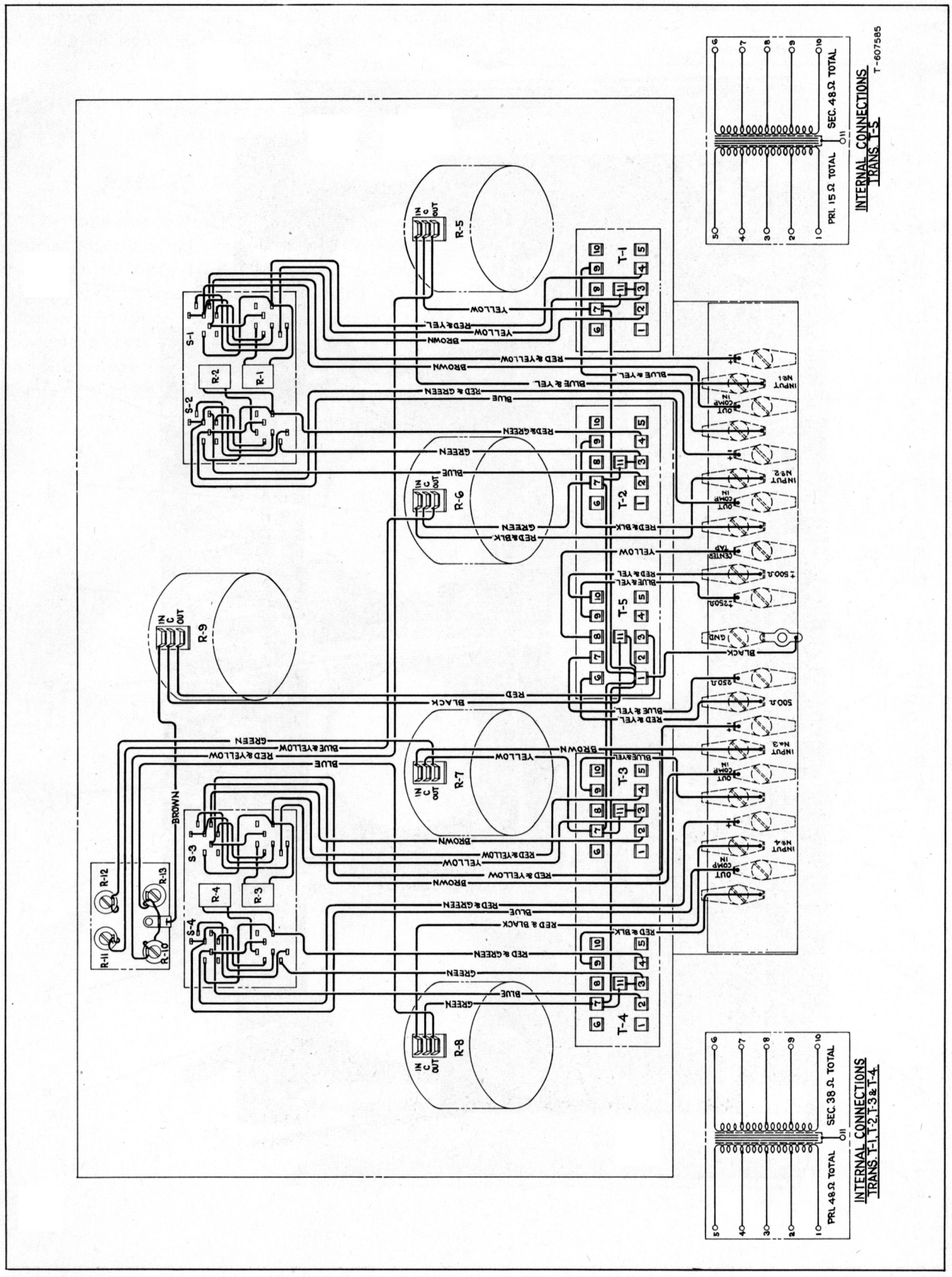

Figure 5—MI-3108-B Rerecording Mixer (wiring diagram).

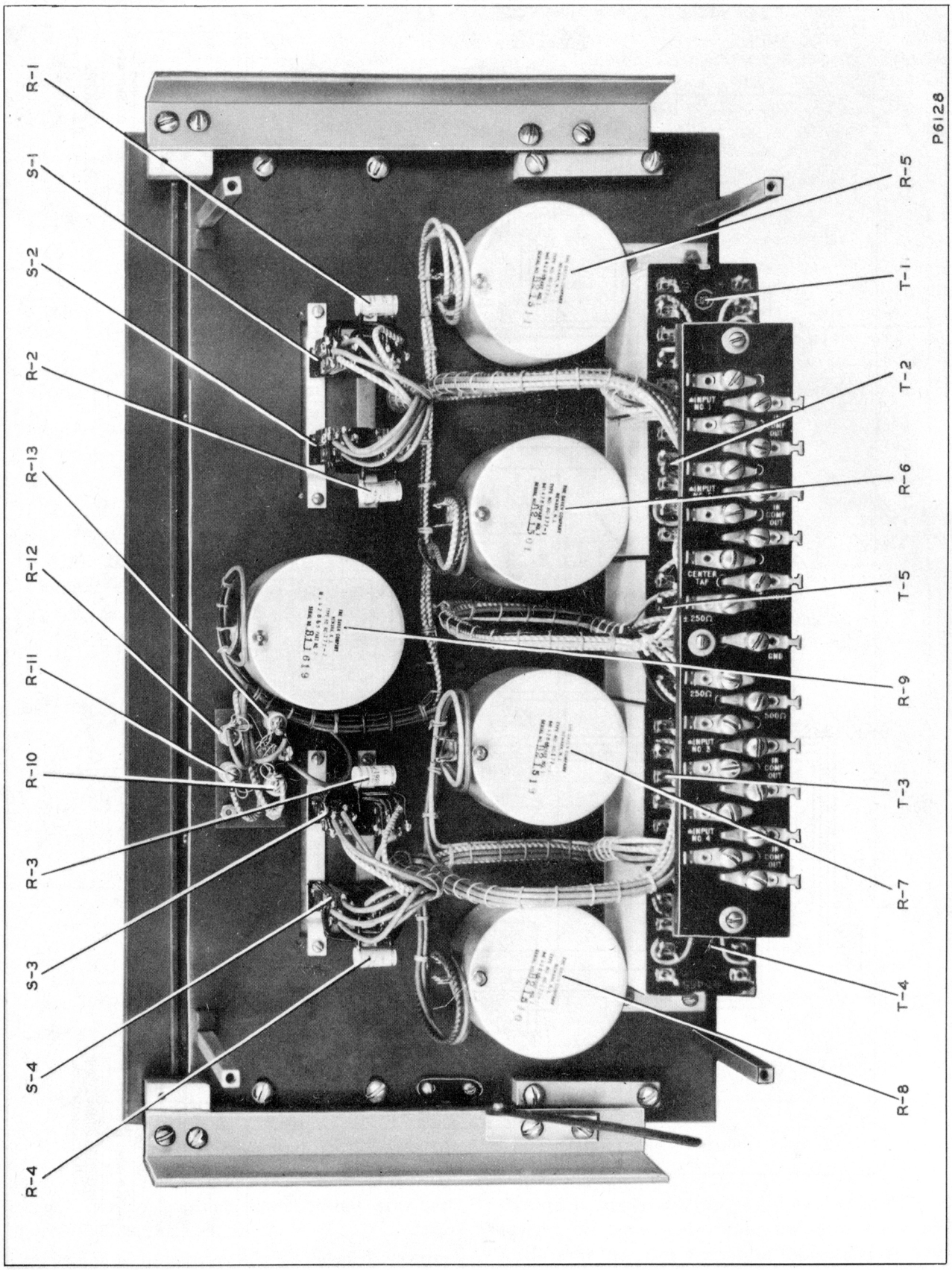

Figure 6—MI-3108-B Rerecording Mixer (rear view—cover removed).

procedure until the oil remains clean. When the cleaning is completed, all oil should be wiped off with a dry lint-free cloth.

CAUTION: Never use sandpaper or harsh abrasives to clean the contacts.

REPLACEMENT PARTS

The following parts list is included to provide proper identification when ordering replacement parts. Order from RCA Replacement Parts Department, Camden, New Jersey, giving the *stock number* and *description* of the parts wanted. Replacement parts supplied may be slightly different in form or size from the original parts but will be completely interchangeable with them.

Symbol No.	*Description*	*Stock No.*
R-1, R-2, R-3, R-4	Resistor, 250 ohms	17014
R-5, R-6, R-7, R-8	Attenuator, variable, 250 ohms	49034
R-9	Attenuator, variable, 109 ohms	49035
R-10, R-11, R-12, R-13	Resistor, 188 ohms	17590
S-1, S-2, S-3, S-4	Switch, key	20972
T-1, T-2, T-3, T-4	Transformer	20949
T-5	Transformer	20974
.....	Knob, attenuator	17269

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